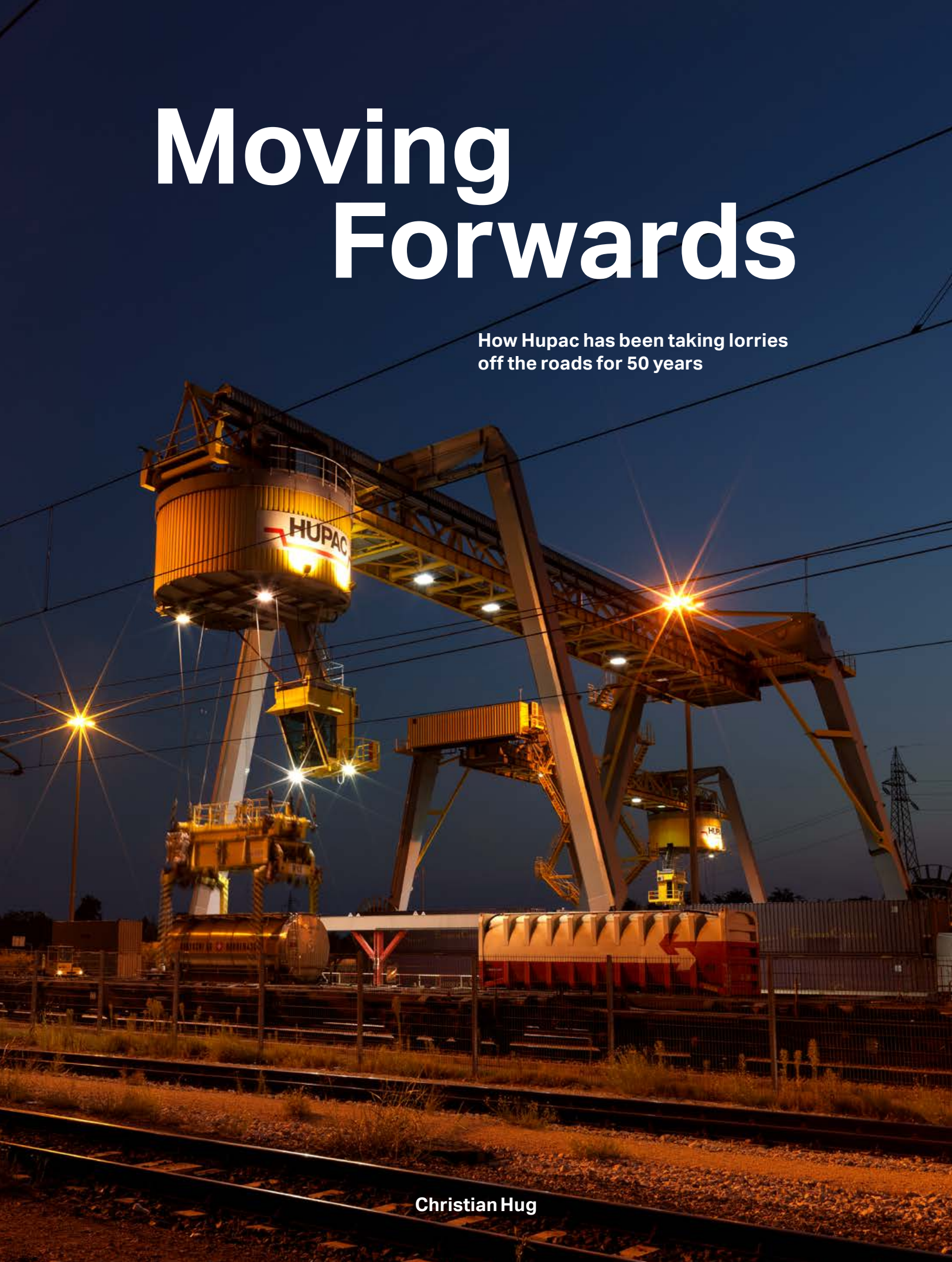
Moving Forwards

How Hupac has been taking lorries off the roads for 50 years



Christian Hug

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Christian Hug

Imprint

June 2017

Editor: Hupac AG, Chiasso
Author: Christian Hug, Stans
Copy-editor: Anita Lehmeier, Stans
Design and layout: syn gmbh, Stans
Proofreader German: Agatha Flury, Stans
Print: Druckerei Odermatt AG, Dallenwil
Bound by: Bubu AG, Mönchaltorf

English translation:
Thomas Skelton-Robinson, Zurich,
and Alexandra Jeane Smith, Winterthur
Italian translation:
CoText Übersetzungs Service GmbH, Zurich

Verlag Bücher von Matt, Stans
ISBN 978-3-906997-83-4

Contents

One train over five sides,
at full scale 562 metres long.


HUPAC
HUPAC
PTSA 018204 2


HILGERS
Thanks to our customers!
HUPAC
50 years
BAS
Transport


P11
475
Central Trailer Rentco


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HUPAC
DITRAS
TRANSCO
FH12
A 325
PEMA
69699
HUPAC
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Dear readers

Since the creation of Hupac in 1967, the European freight market has changed considerably. And while road freight is still very prominent, I remain convinced that Hupac's core business – rail and combined transport – is more relevant than ever in 2017.

As Transport Commissioner, accelerating the transition to low-emission mobility is one of my first priorities. It is the joint responsibility of the operators and regulators to make the most sustainable transport modes – rail in particular – more attractive and competitive.

Such has been the rationale of the market-opening gradually introduced by the European Union since the 1990s. The last legislative rail package, which was adopted in 2016, aims at completing this process. It will also move us closer to a single European rail area by streamlining administrative and technical rules. In the years to come, the European Commission will focus on enforcement so that customers can make the best of the innovations brought on by private operators like Hupac.

Looking ahead, it will be equally important that we contribute to a more level playing field between all transport modes. To this end, the Commission will continue to promote the user-pays and polluter-pays principles by encouraging road-charging across the European Union.

For the last 50 years, Hupac has demonstrated that profitability and sustainability can go hand in hand. This is a source of inspiration for us all. I wish the company a happy anniversary and many more successes for the decades to come.

Violeta Bulc
Commissioner for Transport

Welcome!

Since its founding 50 years ago, Hupac has grown from being a start-up business to becoming one of the key players in implementing the Swiss modal-shift policy.

As an economically independent company, Hupac has greatly contributed to making the shift of transalpine freight traffic to the rails, as decided by the Swiss people, a reality. This is an outstanding example of a successful partnership between the state and the private sector.

The adoption of the Alpine Initiative in 1994 gave great impetus to Hupac's business model. In order to implement this constitutional mandate, the Swiss federal government was prepared to make a considerable financial investment in promoting rail freight transport and making it competitive vis-à-vis road haulage. On the one hand, the performance-based fee for heavy goods vehicles, the LSVA, ensured a level playing field between road and rail. The federal government also committed itself to the funding of an efficient railway structure with the NRLA as its centrepiece, and to the co-funding of transhipment terminals in Switzerland and its immediate neighbours. On the other hand, rail transport of containers, swap bodies and semi-trailers were made considerably more viable through state subsidies.

Thanks to this, 70 per cent of transalpine freight traffic is currently transported through Switzerland by rail – a significantly higher proportion compared to other Alpine countries. The federal government created the institutional context and Hupac took over the entrepreneurial execution. This symbiosis between state and private sector paved the way for the successful implementation of the modal-shift policy.

With the opening of the Gotthard Base Tunnel in 2016, and the completion of the flat rail link with the Ceneri Base Tunnel and the expansion of the 4-metre corridor by 2020, the federal government has set the cornerstones for a further 50 years of success for Hupac. We wish Hupac a continued spirit of innovation and much entrepreneurial success.

Peter Füglistaler
Director of the Swiss Federal Office of Transport

Buongiorno, grüezi, hello

In 1967, two forwarding agents and two hauliers, together with what was then the Swiss state railway, SBB, established Hupac AG. One of the hauliers was my father, Hans, and this fills me with great pride. The idea to sensibly combine road and rail was new and innovative, but from this point on combined transport across the Swiss Alps gradually developed to the point where it now accounts for almost two thirds of all rail freight traffic.

Today, 50 years on, we can allow ourselves a moment to celebrate the fruits of our labours. It is my great pleasure with this book to be able to lead you on a journey through our company's history! It is a story that is worth telling, because in the end it is about much more than just transporting lorries on rails from A to B, rather it is a history for the whole of Europe.

We are celebrating, but we will not rest on our laurels. I am convinced that intermodal transport is the long-distance transport of the future. In terms of efficiency and sustainability, it is clearly superior to both straight road haulage and conventional rail freight transport. Overcoming the barriers of a railway system still strongly shaped by its nationalised past remains an essential factor in the future.

Hupac is resolutely preparing for this. Our wagon fleet is expanding to keep pace with demand. The terminal projects in Basle, Warsaw / Brwinów, Piacenza, Milan and Brescia are advancing. We have a clearly formulated digitalisation strategy, which we are applying in numerous projects. These are only a few of many of the things we are working on. We have an exciting 50 years behind us – and look forward to at least another equally exciting 50 years ahead.

I wish you great pleasure, enjoyment and enlightening moments with this book.

Hans-Jörg Bertschi
Chairman of Hupac's Board of Directors

"Freight is like water. It always finds a way that is quick, short and easy."

Conrad Tobler,
General Secretary of the Swiss Shipper's Council, 2016

01

Canton Ticino:

The founding years

In fact the solution was self-evident

The question was, as it always is within the transport industry: how do I move a commodity from A to B? The answer inevitably resulted, as everywhere in the business world, from a consideration of the costs. If in the end one earns nothing for one's work, then it is better to turn down the assignment. Alternatively one begins to look for other ways in which to carry out the assignment.

In our case there was a clear alternative, namely the railway.

Our thing is road transport. With our lorries we collect goods for our customers in A and transport them to the recipients in B. The amount that we charge our customers for our services consists of all kinds of cost factors: the driver's wage, purchase and maintenance of the lorry, diesel, road tax, administration and so on.

For short and medium distances, this results in a relatively straightforward calculation and a rate of return of between 1 and 2 per cent – enough for us to make a living. However, for long distances above approximately 400 or 500 kilometres, these factors change. The costs mount to a point where both parties – the clients as well as us hauliers – start having to look around for alternatives, because, of course, we don't want to lose our customers.

What if, therefore, we were to transport the goods over longer distances by train? What if the lorry driver were to load the goods onto his vehicle at the customer in location A, drive them to the nearest goods station and once there, rather than reloading everything onto a conventional goods train, simply put the semi-trailer onto the train itself? The railway would then cover the stretches of

hundreds of kilometres to the goods station nearest to destination B, leaving the driver and the lorry tractor unit in the meantime free for other assignments. Upon the train arrival, the procedure would be reversed: a different driver would pick up the loading unit with a tractor and then deliver the goods to the consignee in B. The assignment would then be complete, the whole thing would once again generate a profit, and all the parties would be satisfied.

Because the driver does not accompany the loading unit on the train journey, this method is called unaccompanied combined transport, or UCT, as opposed to accompanied combined transport, where the driver also undertakes the journey together with the whole vehicle. This accompanied version of goods transport is also known nowadays as the "Rolling Highway".

So, the railway it was to be. However, with this apparent solution, the problems had really only begun. What appeared in theory to be such an elementary idea did not turn out to work at all in practice. This was because back then in the 1960s, rail freight and road transport existed as two fundamentally different worlds with virtually no points of contact between them. On the contrary: these two worlds were – out of a deep sense of conviction – intent on not having any kind of interaction with each other whatsoever. Each held the other to be far inferior, where in actual fact both were engaged in the same activity – transporting goods from A to B.

This culture of mutual disdain had a long prior history, beginning with the great historical leap of the railways. Invented by the British Richard Trevithick, the first steam train rattled along the tracks as early as 1804, whereas the first internal combustion engine for the motor car was only invented 81 years later by the German engineer Carl Benz.

During this interlude, the railway was able to evolve unhindered and firmly establish itself, and as early as 1838 the German political scientist Friedrich List presented arguments for the establishment of a national rail transport system. In a referendum in 1898, the Swiss people voted in favour of a merger of the five largest – and up until that point privately owned railway firms into a single, national rail service. The message was clear: the railways should play a greater part in serving the national economy, and more particularly in serving national defence. Consequently, in 1902, the Swiss Federal Railways (SBB) was founded. The Swiss concept of Service public – that is the basic provision of infrastructure by the Confederation – was not yet known in official jargon, but the founding of the Swiss national rail service was very much born of this spirit.

On the roads however, horse-drawn vehicles were still standard, in addition to the odd rudimentarily motorised carriage. Henry Ford, who later fuelled the breakthrough of the motorcar by using an assembly line manufacturing process, only founded his Detroit factory in 1903.

Indeed, it took a further 20 years for the first vehicles that one could rightly call proper lorries to appear on the roads. Thanks to the invention of the so-called giant pneumatic tyre, these lorries could travel at speeds of up to 25 kilometres per hour, allowing a direct comparison between the two rivals.

This invention officially marked the beginning of the competition between the new vehicles – already known at the time in German as schwere Brummer, literally "big growlers" or what the British colloquially refer to as "juggernauts" –

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1 1907: Up until the 1920s, lorries were not serious competitors for the railways.

2 1953: With the construction of the first motorway between Lucerne and Horw (pictured), Switzerland blazed a trail for road traffic.

3. 1950: Long-distance container transport emerged as early as the 1940s, but was small-scale, for instance here with the dispatching of a so-called large container to Holland from Basle goods station.

and the established, state-organised railways. In 1924, the world's first motorway was put into operation, connecting the two Italian cities of Varese and Milan. Needless to say, this pioneering spirit in the field of road transport spread to Switzerland (where, however, the first motorway was only inaugurated in 1955 – at the time a single stretch of road without junctions that ran between Horw and Lucerne). In order to meet growing demand, the Swiss Confederation invested in the road transport infrastructure, primarily with tax revenues. Thanks to this beneficial environment, heavy goods vehicle (HGV) transport rapidly caught up with railway transport, to the extent that in 1929 the SBB had to reduce their tariffs for freight transport by 40 per cent in order to remain competitive with road transport services.

However, the railways still continued to remain a state-protected domain. This was because, by the outbreak of World War I, the critical importance of the railways for military operations had become dramatically clear: with it the

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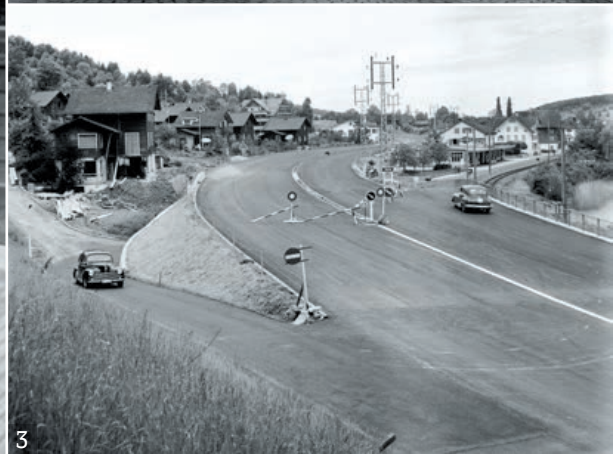

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military was able to quickly move large amounts of war machinery, material and soldiers. On the other hand, during peacetime, the individual railway lines increasingly coalesced to form an international, interconnected rail network. For this reason, the domestic rail system had to be defended, to stop the enemy simply rolling into the country on the train tracks. Swiss political leaders had in fact already understood this long before the First World War: as early as 1886, only four years after the opening of the first Gotthard Railway Tunnel, large efforts were made to fortify and militarily guard the entire Gotthard railway line and with it all the Central Alpine passes. This was the birth of the Swiss National Redoubt strategy, which was rigorously put into effect during the Second World War.

For reasons of national defence, the various state-owned railway companies began to singularise themselves with different engines, varying track gauges, differing power supply systems and individual customs controls, to the extent of even introducing their own unique line signalling and operating regulations. Incidentally, these are conditions that we still have to struggle with to this day. But we will come to this topic in due course.

Whilst the road haulage sector had yet to develop and define itself, the national rail service of all the various countries had been running efficiently and profitably for decades. As shown by statistics for 1950, by this point two and a half times more goods were being transported by rail than by road. That being

said, in the course of the 1950s trains were slowly but surely faced with a structural problem: the continual expansion of the railway network and the infrastructure that went with it were considerably expensive; the maintenance costs for the existing railway network and stations were large. This meant that infrastructure expenditures threatened to exceed the income from goods and passenger transport. Indeed, in 1966, the SBB declared a deficit in their accounts for the first time ever – and have continually done so in their day-to-day running of the company from 1974 until the present. As far as the volume of transported goods in Switzerland is concerned, in 1978 rail and road stood neck and neck.

Let us stay in 1966 for the moment with the following scenario: due to rapid technological advances in lorry design, and thanks their private and therefore more flexible business culture and their innovative, entrepreneurial spirit, the hauliers were continuing to catch up with the rail freight services. The railways, by contrast, were sliding into deficit, yet still remained a protected and state-subsidised enterprise with a performance mandate and military obligations.

However, the decisive factor was this: the economy was revving and the economic outlook was superb. Europe revelled in the euphoria of booming wealth. With the space probe Surveyor 1, the economic wonderland USA put a man-made machine on the moon for the very first time. In the Western world, the expression "free time" had become a term to describe everything that one wanted to do and could do when not working.

Far-sighted transport analysts feared, therefore, that the quantity of cars and lorries would grow faster than the road network needed to carry them. Their conclusion was that road and rail needed to come together somehow in order to shoulder the impact of this growth. Seen in the long term, the construction of a Gotthard Road Tunnel – already widely debated by this point – was clearly going to be insufficient.

Three years previously, in 1963, Federal Chancellor Willy Spühler had therefore already founded the Committee for a Railway Tunnel Through the Alps (Kommission Eisenbahntunnel durch die Alpen, KEA). Its mission: to find out if, how and by what routes railway transportation could be made possible in order to move heavy goods vehicles and their trailers through Switzerland, and thereby relieve the roads. Five possible itineraries were put up for discussion. The KEA today counts as the midwife of the Gotthard Base Tunnel, inaugurated in June 2016 as the centrepiece of the transalpine tunnel named the New Railway Link through the Alps, or NRLA for short. Back in 1966, it was in fact already evident that the KEA would conclude that the construction of the Gotthard Base Tunnel was vital; and in 1970 the KEA published a set of survey findings with precisely this proposal.

As an aside, it should be noted that the idea of constructing a base tunnel is much older. As early as the 1930s, engineers were already toying with the idea of a central Gotthard tunnel as the nucleus of the North–South axis. In August 1947, the Basle engineer and transport planner Eduard Gruner published the essay "Reise durch den Gotthard-Basis-Tunnel im Jahre 2000" ("Journey through the Gotthard Base Tunnel in the Year 2000") in a special edition of the magazine Prisma – Natur, Forschung, Technik. In it, he painted what was a seemingly

utopian picture of the future of the railway, amongst other things outlining a two-track tunnel of 50 kilometres in length through the Gotthard that would run from Amsteg in Canton Uri to Biasca in the Canton Ticino – precisely the tunnel that was later proposed by the KEA. Gruner called it the "Base Tunnel" and enthused about how the journey time from Basle to Chiasso would only take two hours. He even calculated the amount of time taken for its construction (eight years), the volume of excavated rock (5.5 million cubic metres), the construction costs (500 million Swiss francs) and rhapsodised about a tunnel station beneath Sedrun.

With the benefit of hindsight, we now know that Gruner's calculations were somewhat optimistic, to say the least: the construction period for the Gotthard Base Tunnel amounted to 17 years, the volume of excavated material exceeded Gruner's forecast many times over and the costs rose to a total of 12.2 billion Swiss francs – albeit for a system of tunnels of an overall length of 152 kilometres instead of Gruner's estimated 50. The project for the underground train station, named Porta Alpina, was not realised.

Five entrepreneurs – one aim

Returning to 1966, to where the Hupac story begins. It starts with five men, each searching for answers to the question of how to make long-distance transit transportation through the Swiss Alps more efficient and cost-effective than had previously been the case; and how to solve the irritating problem of the 2,100-meter-high Gotthard Pass being closed to road traffic during the winter months. They came to the realisation that the solution was right in front of their eyes – the lorries needed to travel by rail; the different modes of transport had to be combined. The five men in question were Pietro Ris, Sandro Bernasconi, Franz Hegner, Jacky Maeder and Hans Bertschi.

The latter was already experienced in combined transport, his haulier business in Dürrenäsch in the Canton of Aargau being specialised in the transport of chemical liquids – which was why, in 1963, the German chemical company BASF had asked him whether he could undertake the regular transportation of liquid substances from Ludwigshafen to Italy. Half a year later, everything was in place and Bertschi began transporting his lorries on trains from Germany to Italy and back. So Hans Bertschi knew the railway service.

Franz Hegner was the man who had made this happen. He had been named as head of department of the SBB's Commercial Service of Goods Transport (Kommerzieller Dienst Güterverkehr) just at the same time as Hans Bertschi was looking for a solution for his BASF consignments. A blessing for Bertschi, because all his approaches to Hegner's predecessor, the director Hans Dirlewanger, had fallen on deaf ears. For Dirlewanger, transporting a lorry on top of a train was complete nonsense and an undignified undertaking for a proud institution like the SBB. Franz Hegner, on the other hand, recognised both Bertschi's determination to find an innovative solution and also the intrinsic development potential of such a combined solution. Today one would call this a win-win situation.

In terms of experience, Pietro Ris brought two trump cards to the table. On the one hand, he ran his own company, Serbatoi Vino, which he had taken over

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1 1964: For the first time, Hans Bertschi has one of his lorries transported by rail through the Gotthard.

2 1964: In the same year, Fratelli Bernasconi likewise ventures into the realm of combined transport. The picture shows the first transportation from Chiasso to Basle with an SBB container wagon M9.

3 1967: The Gotthard Pass remains closed to road traffic throughout the winter. The only way to overcome this mountainous obstacle is to switch to rail between Airolo and Göschenen.

4 1968: Hupac cannot make Chiasso its trans-shipment centre: there is too little space at the goods station.

from his father. With his own fleet of 80 tank cars, Serbatoi Vino transported wine from Italy to the countries of Northern Europe by rail.

On the other hand, he was the CEO for Italy and the Canton Ticino of the international forwarding company Danzas. In this role, Ris was neither a haulier nor a goods train transporter, but a forwarding agent. He organised all the carriers necessary in order to optimally deliver a consignment from A to B – from lorries to ships, from trains to airplanes, whatever was the fastest and most cost-effective solution. Mostly these kinds of consignments were cross-border ones, making forwarding companies specialists in everything to do with border-control formalities, which at the time were far more complicated than they are today. Forwarding companies mainly carried break bulk cargo, in other words a single

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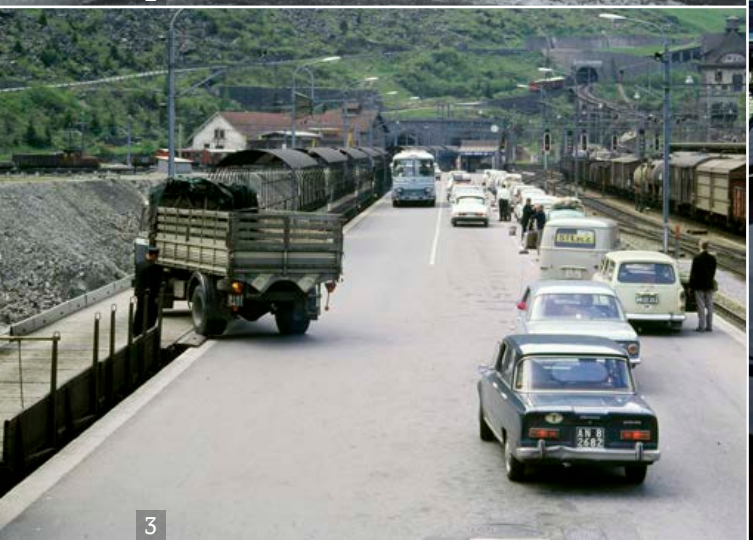
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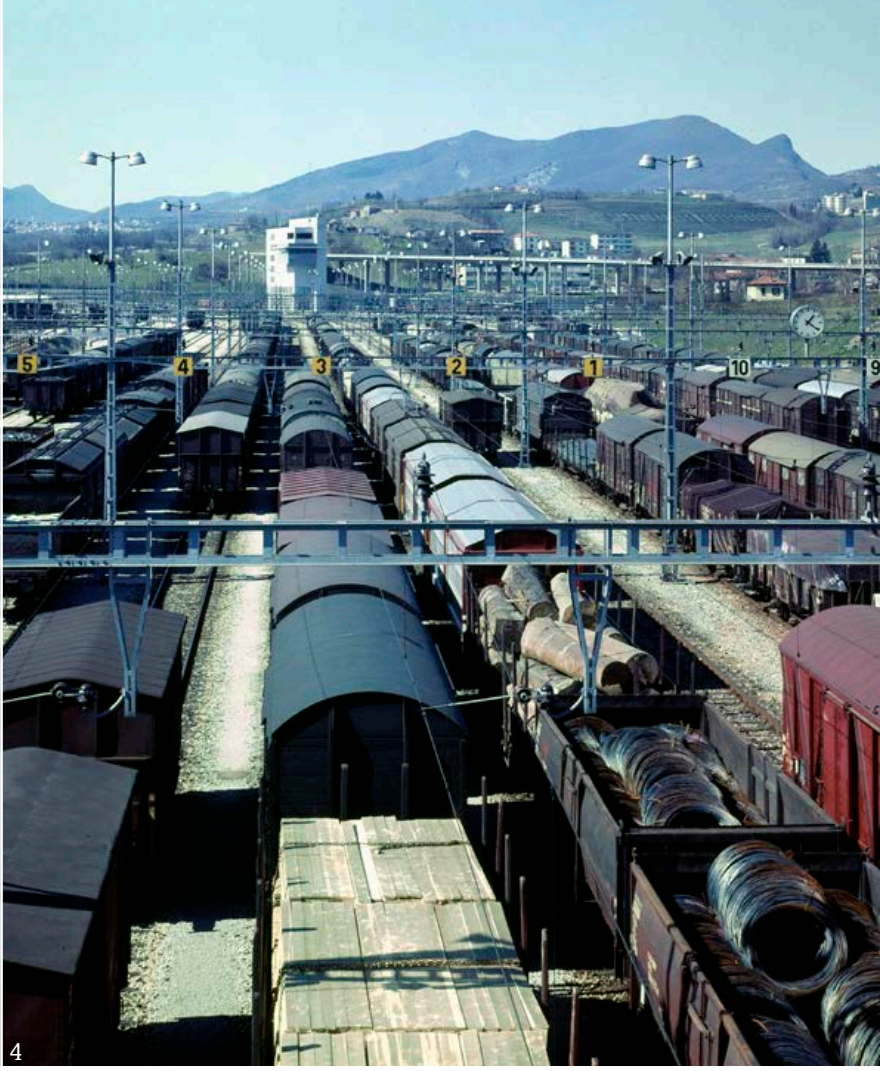

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pallet, a large packet or a single container. Ideally, they bundled these individual goods items together to fill an entire lorry, train wagon or cargo planeload for transport. They therefore owned very few of their own means of transport, but instead sub-contracted the transportation to third-party companies.

As for Sandro Bernasconi, he was the co-owner of the road haulage company Fratelli Bernasconi based in the Canton Ticino – a company that had likewise been successfully transporting wine from Italy to the north for years, albeit using lorries. However, the Swiss maximum authorised mass (MAM) of 28 tonnes for the total weight of a lorry had proved increasingly irksome to the Bernasconi brothers. The detour via Austria or France, where lorries – as in all other European countries – were permitted an MAM of 40 tonnes, was too costly in the long term (the Brenner motorway would only be inaugurated in 1971, whereas the Mont-Blanc road tunnel had already opened in 1965). For this reason, Sandro Bernasconi had begun to load his lorries onto trains. Thanks to the SBB, the 40-tonne vehicles could travel through Switzerland without any problems.

Jacky Maeder, whose real name was Ulrich, was the fifth member on board: an ambitious road haulier and forwarding agent always open to new solutions. Up until this point, his international transport firm in Basle had had hardly anything to do with rail transport, but a new idea should never be too hastily dismissed. It was evident to him too that transit freight transport between the economic conurbations of the Rhine-Main area and the Ruhr in Germany and Milan in Italy held great potential for the Swiss market.

Even if it is a badly constructed montage: The only picture showing all the founding members posing for a photo together dates from August 1973, when Federal Chancellor Willi Ritschard visited Hupac in Lugano. Standing, from left: Sandro Bernasconi, Pietro Ris, Franco Giorgetti (deputy director of the Swiss Federal Office of Transport), Fiorenzo Bernasconi (Sandro Bernasconi's nephew and successor), Peter Trachsel (director of the Swiss Federal Office of Transport), Luciano Camponovo (deputy director of the SBB freight traffic department). Seated, from left: Franz Hegner, Willi Ritschard (Federal Chancellor), Kurt Wellinger (CEO of SBB), Hans Bertschi.

Up until this juncture, these five men had been at best business partners, but they were soon to become friends. They sat down together and thought through the opportunities this novel idea of combined transport presented. The starting point was ideal. Firstly, not merely five men came to the table, but three different philosophies: railways, road transport and international forwarding. Secondly, these five men wanted to break down the ingrained caste conceits of their respective branches. Thirdly, they were all proven professionals with a solid gut instinct for new situations and the right choices. Fourthly, and from an entrepreneurial standpoint reassuringly, apart from the railway director Franz Hegner the company's founders were all their own first customers, ensuring a basic start-up workload.

In the end, they decided to embark on the venture, coupled with the realisation that if they were really determined to take the combined transport approach, they had no choice but to do it themselves. The decision was taken to found their

own company, each of them agreeing to invest 100,000 Swiss francs in start-up capital. No external feasibility studies, no support from national or regional politicians. Franz Hegner's courage and foresight in participating in the undertaking was remarkable: his share of the start-up capital was not as a private stakeholder, rather as a representative of the SBB national rail service. In this way, the SBB was part and parcel of the venture, and essentially there was no harm in that.

Hupac's aim? To transport lorries, or to be precise their trailers and semi-trailers by rail over long distances and through the Gotthard, by means of so-called unaccompanied combined transport. The maxim? Market-friendly supply and not, as with the SBB, dictated by a political agenda. The name? Hupac, derived from the German term Huckepackverkehr, a mode of transport that carries another by piggyback from A to B. The headquarters? Chiasso, for a very simple and cost-effective reason, namely that Danzas player Pietro Ris offered to set up the Hupac headquarters in a vacant office in the Danzas building there, including the use of the Danzas office infrastructure, and moreover rent-free for the first few months. The practical upshot was that the company main office was situated right next to the Italian border. What's more, all the participants ran branch offices of their own companies in Chiasso, making the commute and the decision-making processes short. However, it was decided to load or unload the lorries at a terminus Melide, for the simple reason that the goods station at Chiasso was not well equipped enough for Hupac's requirements.

The most important and one of the most deep-rooted reasons for the later sustainable success of the start-up was that from the outset Hupac made the decision to operate using its own rolling stock, in other words railway wagons had to be purchased. This gave the new company a crucial autonomy vis-à-vis the national rail service. Ideally, Hupac wanted to also operate its own transhipment terminals, but for the moment this was little more than a mirage on the horizon.

For the rest of the world, 8 June 1967 was just another Thursday, but for the future of transportation it was groundbreaking: Pietro Ris, Sandro Bernasconi, Franz Hegner, Jacky Maeder and Hans Bertschi formally founded the Hupac AG company. At a stroke of a pen they all became owners and the board of directors, Pietro Ris serving as the first chairman of the board. The first aim was already set: within a year, rail operations had to be up and running.

Perhaps not surprisingly, these five men were the only ones who celebrated the event – even if Jacky Maeder somewhat sceptically regarded his 100,000-franc investment as à fonds perdu, a non-returnable contribution. Understandable when one considers that the Swiss logistics sector greeted the establishment of Hupac coldly, if not for that matter icily. Outright hostility might be more apt. Franz Hegner's co-directors at the SBB considered him a traitor to the rail service; and in the eyes of the respectable road hauliers, Bernasconi, Maeder and Bertschi were renegades. "Yuck! Just wait," they blustered, "the Gotthard Road Tunnel is coming, and then you'll vanish back into thin air!"

To add to things, the board of directors at the Danzas headquarters in Basle found it incomprehensible that Pietro Ris should be a Hupac co-founder; but Ris had been held in high esteem for years as hard working and reliable, so they turned a blind eye to the fact.

In their initial euphoria, the very idea that these five founding members might be sabotaged by their business colleagues for their supposed treason in their respective branches seemed to them unimaginable. Reality, sadly, would soon catch up with them.

A Europe-wide rethinking

The aversion to this new approach to transport was in a sense understandable. The founding of Hupac was an outstanding pioneering achievement – at least for Switzerland. At an international level however, Hupac cannot be seen as the inventor of combined transport – others had already beaten them to it.

The idea originated in America. Ever since the white settlers had conquered this great country from east to west, they had had to deal with vast distances to transport goods. For this purpose, they had therefore often laid railway lines exclusively intended for goods transport – they had, and still have, enough space to do so. With the emergence of lorries, there were always enterprises that sent their large trucks or just the trailers on their journeys by rail. Or they used swap bodies, these forerunners of the container being brought by lorry to the trains and then by rail to the point of destination.

In 1957, ten years before Hupac was founded, the amount of all the goods transported in the USA forwarded by lorries onto trains in combined transport was 1 per cent. Not a lot, but even so. The Americans called this kind of transport the "piggyback system", which in business German was somewhat clumsily translated as a "shoulder-baggage system" (Schultergepäcksystem), but in fact was equivalent to the German term Huckepack.

The first Europeans to adopt this system were the French. As early as 1936, a French company had already begun to build special trailers – both with tyres and iron wheels – which could be driven onto specially constructed railway wagons. Stema, a French company founded in 1959, had, in its first years, concentrated exclusively on this form of combined transport on the route from Lyon to Milan. By 1965, a total of 500 of these trailers were in operation throughout France, transferred back and forth on a purpose-built network comprising 200 loading stations.

In Holland, 1964 saw the founding of the combination transport firm Trailstar. Belgium followed suit in 1965 with the company Transport Route-Wagon (TRW). In 1966, the French Stema merged with the Groupement Technique des Transporteurs Mixtes (GTTM) and was restructured to form a combined transport company, which operated without the above-mentioned special trailers, and which was re-named Novatrans a year later. In 1967, Hupac joined the list of start-ups, the same year as the railway subsidiary Intercontainer, a company specialised in ship-container rail transportation. Germany followed suit in 1969 with the limited partnership Kombiverkehr, and a year later Hucketrans in Austria and Ferpac in Italy.

In short: a wind of change was blowing through Europe's railway system. In Germany, the Programme to Promote Combined Transport and Private Siding Traffic was debated and put into effect in 1968. Other European states developed similar state-funded programmes. The global economy was on an upturn and the prospects of a steady increase in transported goods looked rosy. New transport solutions were very much in demand, and nobody wanted to miss the proverbial boat.

Nevertheless, Hupac did and still does distinguish itself from all other combined transport companies by consistently combining two very central features: on the one hand, it is by majority a private transportation company, the Swiss national railway holding only 20 per cent of the shares; and on the other, Hupac operates for the most part with its own rolling stock.

Even though other combined transport companies such as TRW in Belgium or Trailstar in Holland were more-or-less entirely founded by private shareholders, these companies owned hardly any of their own rolling stock, instead generally renting their carriages from the state railways.

Additionally, in other countries the national railways hasty invaded the combined transport market, taking over a large portion of the capital stock, the aim being to ensure that the traction, in other words the output of their engines, remained part of the state railway monopoly.

The result was that the old state-protected rail mentality and culture remained engraved in stone, so that ultimately the rail system continued to be its own best customer.

Hupac, by contrast, was and remained substantially independent and flexible, and although the purchase of their own rolling stock entailed risks and liabilities, it also allowed them to face the railways on an equal footing. Important to note: Hupac's customers are not SBB customers, but simply Hupac customers – the best way to realise the new idea of transporting lorries by rail.

But how does such a business work in the first place? A short digression. In principle, it is all very simple: the railway freight service offers transport capacity. If only break bulk cargo is concerned – in other words an individual goods item – then the procedure is similar to what the post office provides: the customer takes the piece goods to the station, the railway calculates the cost of transport according to weight, size and the transport distance, and then conveys the packet together with other piece goods in a collection wagon to the destination station.

If, however, the consignment is so large that a whole railway wagon or even an entire train is necessary to carry it, then the factors affecting the tariff calculation change.

- First and foremost are the proverbial goods to be transported – a lorry, a trailer or a container, which the Hupac customer owns.
- The railway wagon, upon which the goods are to be transported, belongs to Hupac, or is rented by Hupac.
- At the front of the train is the locomotive that hauls the railway wagon from A to B. In the technical jargon this is known as traction, which in Latin signifies simply "to pull". The locomotive belongs to the railway company, meaning that a combined transport provider has to purchase this service from the railway company. Thus the railway becomes a traction provider. If the combined transport provider owns its own locomotives, the rental costs are cancelled from the equation. Since 2001, Hupac has owned its own locomotives, today in total a mixture of ten mainline and shunting locomotives. Hupac had already acquired a railway licence in Germany in 1999; the railway licence for Italy followed in 2001.
- The train journey from A to B follows the railway line, or to be specific the tracks. These are a part of the SBB infrastructure. The train path – that is, the timeframe used for the scheduled journey from A to B – likewise has to be rented.
- Last but not least, the terminals in which the cargo is loaded from the lorry to the train, or the reverse. These can be privately owned, leased or merely operated by the company.

So far so good, but the situation becomes complex because of the arising opportunities. A company can combine several of the above factors in its service portfolio, or concentrate on one single factor, or start competing with the state railways as a private enterprise.

The whole thing gets even more complicated if we project these conditions onto the level of international rail freight transport. In this case, what Hupac aimed to do with its own rolling stock was as follows: on the one hand it saves the cost of renting the wagons, and on the other it can manage their availability

and – in a further step – maintain them itself. What's more: the idea of transporting a lorry on a railway carriage was so new back then, that the necessary technology had yet to evolve. With its own rolling stock, Hupac was able to steer this development itself, together with the SBB, and since the railway reforms of 1992 has done so entirely independently – and as a private enterprise faster, more flexible and more cost-effectively than many state-run railway companies.

Allemann, let's go!

So, the launch had been successfully staged, but two things needed to be addressed for operations to actually start within a year's time. Firstly, an employee was needed to deal with the paperwork, to manage the information flow between the five founding members, and who could act as the public face of the new company as its official contact person. Secondly, the purchase of in-house railway carriages had to be arranged.

The first point was more urgent than the second. Pietro Ris, the Danzas man who always thinks of the obvious, bursts into the office of his Danzas co-worker Theo Allemann, and without beating around the bush announces: "Allemann, we have founded a business – work as our secretary." Ris is a boss through and through. Without exception he addresses all his subordinates with the informal German "Du", whereas he expects to be addressed with the formal "Sie". In his office he is the only one who is seated during conferences, and Sunday counts as a normal working day for him.

Because Ris was also Hupac's house host, so to speak, Theo Allemann simply had to switch offices – and suddenly and unexpectedly found himself working for a new business with new responsibilities.

At this point in time, Theo Allemann was 28 years young and somewhat inexperienced in the world of transport. After finishing his apprenticeship as a laboratory chemist for the firm Ciba-Geigy in Basle, he had decided – without any long-term goal – to start studying languages. To learn French, he took a temporary job with Nestlé in La Tour Peilz, and following that took an English course at a language school in Great Britain. To learn Italian, he went to work for Danzas in Chiasso, for the sole reason that a colleague of his had given him the tip that forwarding companies were always on the lookout for multilingual people. Pietro Ris took a liking to this bright young man, and posted the novice to work in one department after the other, thereby giving Allemann a practical training – in the best sense of the word – as a forwarding agent. Learning by doing is what one would call it today. By now, Allemann had spent four years working for Danzas; in fact one could say that he had got stuck there – luckily for him. Because now, with Pietro Ris's straightforward urge, "start here as a secretary", he landed his job for life.

Theo Allemann got to work in his tiny three-by-three metre cubbyhole: he contacted potential clients, developed tariffs and managed collective negotiations, reshaped safety regulations for drivers, acquired the necessary permits. He learnt on the job – from hauliers how to manoeuvre lorries and from railway employees how railway wagons were assembled and organised. There were four telephones on his desk, all of them for his own use. Because the fax machine

made such a dreadful noise, he occasionally crawled under his writing desk to make calls. Needless to say, he fought his way through the typical mountains of red tape and paperwork. Whenever he found himself floundering, he was always able to fall back on the Danzas secretaries. Four months after starting work, he was assigned a fixed secretary. Both their salaries and all the bills were booked to the Danzas account, and Danzas, in turn, settled the account with Hupac. Theo Allemann had a lot to do; even without the authority to sign he had become the actual managing director. Sometime in the beginning of 1968, Pietro Ris burst into his office again and announced: "Allemann, the first train is going to run on the 1st of March. See to it that it happens."

Privately owned wagons

Before the first journey starts, let us focus for a moment on the second urgent measure that needed to be taken following the founding meeting, namely the acquisition of rolling stock.

This component was once again eased by a further fortunate circumstance of the firm's founding. The precise happenstance was that previously, in 1965, Pietro Ris had already started negotiations with the rail vehicle manufacturer Ferriere Cattaneo SA in Giubiasco to buy new railway wagons for his wine transport company Serbatoi Vino. This valuable know-how was absorbed into Hupac. A stroke of luck, because on the one hand the planning of the technical modifications of the wagons was already well underway, and on the other the delivery time for such wagons usually took at least a year (whereas today it can be done in as little as three months).

The Hupac people began discussions with the Cattaneo specialists and came to an agreement that Cattaneo would contact the Talbot rail vehicle manufacturers in Aachen. Talbot, in turn, just happened to be working on the advanced development of special wagons for transporting lorries and semi-trailers for the then Deutsche Bundesbahn (the German Federal Railways). The project was driven by the fact that rail freight wagons designed for combined transport needed to be deeper than the hitherto existing ones, and the fastening mechanism for the lorries needed to be one hundred per cent secure.

In the end, Cattaneo received the commission to manufacture five double two-axle Wippen wagons under licence from Talbot. The cost per wagon: 101,500 Swiss francs including turnover tax, and, as stated in the contract, "only on condition that, up until the time of delivery, worker's wages do not rise". All these meetings and negotiations had taken place in the run-up to the founding of Hupac, so that already on 19 June 1967 – no more than two weeks after the founding meeting – the manufacture of the first five railway wagons was definitively ordered. Delivery deadline: in ten months. This meant that Hupac's entire seed capital of half a million francs was invested in one go.

However, it quickly became apparent that the planned delivery schedule was going to fall apart: unresolved technical problems in the wagon development phase meant that the production start would be delayed. In response, a Hupac-Cattaneo delegation spontaneously travelled to Munich to be shown the current state of the Talbot wagon technology at the local marshalling yard. The

decision was taken then and there to lease two double wagons with access ramps for the autumn. The SBB also stretched out a helping hand in the form of six M9-model wagons, and the Hupac logo was stuck over that of the SBB.

Thanks the leased rolling stock, Hupac had long since been ready to commence operations by the time Cattaneo finally started manufacturing the five double wagons in February 1968. The target set at the founding meeting to commence unaccompanied combined transport operations within a year had been met. Considering the adverse circumstances and the numerous technical and timing problems, this could be described as a veritable organisational tour de force.

Trial by fire

On 1 March 1968, the big day had finally arrived: at ten o'clock in the morning, at the goods station in Basle, four tractors and semi-trailers – two each from Bertschi and Bernasconi – as well as two double two-axle Wippen wagons stood at the ready. The trailers had to be circled laboriously onto the flat wagons backwards over a ramp, millimetre by millimetre – a job that only the very best drivers were capable of. This done, they then had to decouple the trailer, and the driver then drove the tractor unit off the flat wagon via the same ramp. The trailer was then elaborately stabilised, secured and lashed in place, and, as needed, holes were even drilled into the ironwork of the train wagon to secure the belts and ropes. In addition, a so-called dolly axle was put to use – a fastening system especially developed by Bertschi for the trailer component that was normally coupled to the tractor unit.

When that had all been accomplished, the same procedure was repeated with the second lorry, then the third and finally the fourth. Railway bosses came by to watch; SBB technicians and mechanics gave advice and lent a hand. The whole procedure lasted hours, but at five in the afternoon, after six hours of slaving away and a one-hour lunch break, the four trailers had at long last been immovably loaded and fixed.

Theo Allemann, who watched over the entire procedure the whole day, at four in the afternoon strode into SBB's freight offices, all ready to commence, and filled in all the necessary freight documentation. SBB staff checked the cargo and the lashings, and at half past six in the evening the final form had been duly stamped.

Then Theo Allemann and two mechanics had to wait before they were finally able to attach their two flat wagons to the SBB goods train, which departed as scheduled at nine in the evening on its way to Chiasso. Exhausted but happy, Allemann drove home to Chiasso in his car.

The next morning at six o'clock, the two Hupac wagons were decoupled and parked at the goods station in Melide. At eight o'clock, Allemann and his two mechanics arrived, followed shortly afterwards by two of Bertschi and Bernasconi's lorry drivers, and the whole procedure started all over again, only this time in the reverse order: the freight documents were stamped, the semi-trailer unlashed, the tractor was circled backwards onto the flat wagons, the semi-trailer coupled to the tractor and driven down – and so on with the next one.

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Again, it took hours until all four trailers were unloaded from the railway wagons. Almost two days and dozens of cumulative man-hours to transport four semi-trailers from Basle to Melide ... but it didn't matter: the mission was a complete success. It works! The lorries hauled their freight on to their designated consignees in Italy, and the two railway wagons were forwarded back to Basle the very same day, where the whole thing started all over again.

The trial by fire had been mastered. The learning curve was rapid, and just as quickly the attempt was made to establish normal everyday operations. Three months later, when Ferriere Cattaneo SA delivered the previously ordered five double two-axle Wippen wagons, the operation was already running so smoothly that the wagons that had been leased from the SBB and Talbot were held on to. At Hupac's very first annual general meeting, held in the Park Hotel in Rovio on 5 June 1968, chairman of the board of directors Pietro Ris was already able to announce an almost exhilaratingly positive set of results: a total of

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1 1970: Peak time with a lot of manual and high-precision labour in Melide: the mobile loading ramp is rolled out to the railway wagons standing at the ready.
2 In order to drive onto the Simmering wagon, the driver requires a lot of skill and clear instructions from an assistant.
3 The semi-trailer is anchored to the trestle by a "giant screwdriver".
4 It looks dangerous, but the trailer sits firmly riveted to the railway wagon.
5 The train is ready to depart.

1,662 semi-trailers carrying 12,000 tonnes of material had been successfully moved in what had been 600 transports. The balanced train system was fully operational, meaning that there was always one loaded train on its way from Basle to Melide at the same time as another train – likewise loaded – was travelling in the opposite direction. In this way, empty journeys were avoided.

In his annual report, Ris noted: "I believe that the new approach adopted by us will be a positive element in future transport-sector policy." At this point, Ris could have no idea how crucially important combined transport would in fact very soon become, both for national and international transport policy.

In the same annual report, Ris also highlighted that Hupac had managed to reconcile the positions of the two arch rivals road and rail: "We particularly welcome the SBB's voluntary participation, who are assisting us in solving our daily problems, and for which we are thankful."

What was particularly encouraging was that even at this early stage Hupac could have shifted more semi-trailers than the available Wippen wagon capacity could allow, accelerating the decision to already order a further five own Wippen wagons. In the meantime, based on the accumulated practical experience, many aspects of the technology had been greatly advanced and evolved. Two of the most important were a double four-axle Wippen wagon with a greater load-carrying capacity, and the modification of the tractor unit anchorage system – a trailer lock called a kingpin with which the semi-trailer is coupled to the tractor – to simultaneously match the railway wagons.

By the time the annual general meeting took place, it had been long evident to the board of directors that Hupac had to soon start transporting cargo internationally: firstly, because the demand clearly existed, and secondly, because the further the distance covered, the greater the rate of return – as we have already seen. The member of the board of directors Jacky Maeder, who had originally seen his contributed 100,000-franc start-up capital as a non-returnable investment, had all reason to rejoice. Hans Bertschi and Sandro Bernasconi, although experienced in international forwarding, were less convinced by the idea to expand. They wanted Hupac to remain a national venture, amongst other reasons because they knew that international rail transport was (and indeed remains) – there was no other way to put it – an arduously complicated endeavour.

Hupac goes international

In order to understand this arduousness, another digression is required, this time on the topic: how does international freight transport work on railways and road? Let us take stock of the situation in 1968.

In terms of the road haulage industry, as far back as 1949 several European states had already signed an agreement on international road haulage to make the customs formalities considerably less complex: in essence, the contents of a lorry are declared on a document at the point of departure and the doors to the load compartment are connected shut with a clearly visible lead seal. The driver now merely has to show the document at the customs. The customs officer only has to check that the door, or rather the seal on the doors – or for that matter on the tarpaulin fixing eyes, or the outlet tubes on tanks or silos – is intact, and then takes one of the carbon copies of the original delivery document. Only at the destination is the seal broken so that the goods can be unloaded. This “document of trust” is called a Carnet TIR, short for Transports Internationaux Routiers. It is a permit for international road haulage and is still used today.

The railways are very similar: in this case, a “travel document” is issued for each consignment, regardless of whether it is an individual goods item or an entire container. Each country that the train passes through requires a copy for its respective customs office. The consignee receives a further copy; the original belongs to the consignor. Therefore, if for example a train drives ten containers over two borders, two times ten of these documents are needed, plus another ten each for the consignor and consignee.

So far so good. However, because Hupac combines road vehicles with rail vehicles, any international transport involves corresponding papers for both the road and the railway systems, which amounts to an enormous administrative effort.

But this is only the beginning. Because each state vigilantly guards its own national rail service and does not want foreign trains operating in its own country, locomotives and its personnel can only travel as far as the country's border. Concretely in Hupac's case, this means that the German railways drive a train from a point of departure in Germany to the German-Swiss border, where the German locomotive is decoupled and a Swiss one is attached and Swiss train drivers take over, plus the whole red tape at the customs office. Now the train continues on to the Swiss-Italian border, where the engine and engine drivers are again switched. Not forgetting the elaborate customs procedure and the necessity to organise a separate train path through every country.

Nowadays all engines and drivers can operate internationally, and the customs formalities for the entire journey can be completed electronically before departure.

Freight documents prior to rail liberalisation in 2000

rail document
- per consignment (trailer or container) one paper per country
- plus one document per consignment for both consignor and consignee

plus customs document
- Carnet TIR: per consignment one document each for the entry to and departure from each country
- the Trittico, only for Italy: per consignment one entry and one exit document

Per customs clearance this means at least a two-hour stay for the train, including a change of engine and of personnel.

This much of a digression, now back to Hupac's boardroom in Chiasso. The enormous increase in administrative effort that an expansion would bring with it did little to deter the idea, but even to begin to make international transport possible required detailed preliminary evaluations. Who are the partner railways in Germany and Italy? Where should we start from? Where is the terminal in Italy? Is Hupac able to attach its wagons to scheduled international goods trains? Which permits are necessary to do so? Can the railway customs offices even handle combined transport? Additionally, tariffs needed to be negotiated and options examined for long-term collaboration.

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1 Autumn 1968: The minor sensation has to be checked over: the first international consignment from Mannheim to Milan Rogoredo stands ready at the goods station in Mannheim.

2 February 1969: The very first consignment from Cologne finally arrives at Milan Rogoredo. The loading ramp is wheeled out …

3 … and under the watchful eyes of the track workers, the tractor unit tows the semi-trailer down from the railway wagon.

Danzas man Pietro Ris stiffened his friends' resolve, telling them that he could fall back on the pre-existing infrastructure of the international Danzas network. As a Hupac customer, he was able to transport Danzas semi-trailers from the Danzas branches in the German Ruhr district to those in Milan, in other words from one economic conurbation to the other. This represented a considerable risk minimisation.

In evaluating the circumstances, another factor in favour of an expansion was the fact that all the European combined transport companies were asking themselves the same questions at the time. The obvious course was to exchange ideas, compare experiences and discuss the possible procedures. To this end, the Hupac makers put out feelers, in particular to the French company Novatrans, but also to other companies such as the German Kombiverkehr or the Dutch Trailstar. In meeting after meeting, the idea was continually floated that the European combined transport companies should unite to form a lobby. In the end, Hupac took the plunge: the adventure was worth the hazard.

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As usual, preparations were briskly made. The exact date is no longer in the archives, but the first cross-border transport departed sometime in the autumn of 1968. However, one thing we know for sure: it was a single railway wagon with two Danzas semi-trailers, attached to a scheduled goods train running from Mannheim to Milan. Both the semi-trailers survived the border formalities in Basle without any noteworthy incidents and were duly received in Melide by Danzas staff.

The second stage of the rocket was ignited only a few weeks later, again involving two Danzas semi-trailers on one railway wagon, namely a consignment over two borders, from Cologne to Milan, or more precisely to the terminal in Rogoredo. The decision to drive as far as Rogoredo was, in the best sense of the word, an inevitable one, because the only transhipment terminal in Lombardy was located there and with it a pre-existing infrastructure. This was where the Basle railway subsidiary company Intercontainer daily unloaded trains carrying shipping containers from Antwerp and Rotterdam. Novatrans also drove its trains from France to here. So the terminal was already well utilised, and predictably Intercontainer and Novatrans were not particularly enthusiastic about the prospect of a new contender nestling in there. Hupac, however, had no alternatives. Thus, the first ever Hupac transport with Switzerland as a mere transit country was the journey from Cologne to Rogoredo.

The obstacle course

The new line of business was off to a good start. The first customer was Pietro Ris with Danzas. Hans Bertschi and Sandro Bernasconi felt confident; Franz Hegner and Jacky Maeder's doubts were allayed. Nevertheless, none of this meant that everything always ran smoothly. In February 1969, Theo Allemann, still the quasi-delegate of the board of directors, unwittingly embarked on an odyssey, the dimensions of which he could not have foreseen in his wildest dreams.

It was the first train on the Cologne–Rogoredo route. At the departure point, everything went according to plan: two tractor units each transported one semi-trailer for loading at the station in Cologne – the same procedure as always. As was almost customary by now, they were both Danzas semi-trailers.

The train arrived at the station Badischer Bahnhof in Basle early in the morning at four o'clock, where Theo Allemann stood poised for action. To his side, the stationmaster and a few railway engineers, watching the train arrival, curious to see the novelty of a semi-trailer being loaded onto a railway carriage. The Swiss customs officers carried out his work quickly – this was, after all, only a transit – and stamped all the various forms straight away. The train then proceeded on with the Swiss engine and Swiss train driver to the border at Chiasso, but here the Italian railway customs officers threw a spanner in the works. This here, they announced, is not a case for the railways, rather for the road customs office. It is obviously a road transport vehicle ...

True, argued Allemann, who had driven by car from Basle to Chiasso, showing the Carnet TIR. But the customs officers were completely flummoxed. Where they really being asked to stamp the railway freight documents and the TIR? Not their job! The upshot was that it took hours for the customs officers to finally stamp both forms.

But then they remembered that a Trittico was required, a form for vehicles issued upon their entry into the country and that needed to be presented upon exit. This was Italy's attempt to stifle black-market trading in vehicles. In this case, however, the driving permit for the newly constructed railway wagons to use the Italian railway network was also found to be missing.

The Trittico can be issued on the spot, but the driving permit needs to be obtained from the Customs Directorate in Milan. That takes longer ...

The permit duly arrived the next day, but now the technical officials of the Italian national railways Ferrovie dello Stato (FS) promptly took issue with the fact that the axle load of the wagons amounted to 50 kilogrammes per axle over the permitted weight limit. This required another special permit, obtainable only from the relevant FS administrative office in Florence. This too took a day to process.

Day three: the special permit had arrived. At midday, the officials finally gave the okay for the onward journey, but the scheduled departure of the goods train with Hupac's wagons was for seven o'clock in the evening.

With only ten minutes to go before departure, Italian financial police officials burst into the customs office, shouting stop! The misdemeanour this time: the carriage has been left on the tracks unattended for three days, and in the meantime it could have been possible for someone to smuggle illegal cigarettes

or illicit funds on board. The two semi-trailers have to be inspected, but not today, tomorrow instead. For the third time, "train conductor" Theo Allemann retired home without having achieved anything. He was not amused.

The next morning, on day four, the financial police turned the cargo in the two Danzas semi-trailers upside down, and failing to find dirty money or any other smuggled items, gave permission for the onward journey, scheduled for seven o'clock in the evening. Finally. On to Rogoredo, and from there onwards to the Danzas subsidiary in Milan – the transport continued without any further hitches.

Naturally, the episode was an extreme case. However, it graphically demonstrates how many adversities the newly conceived combined transport industry had to face in its infancy.

In the case of this incident with the finance police, the difficulties in fact stemmed not from the ineptness of the Italian officials, but rather the ill will of the road hauliers. We recall that the rail and road transport branches were still two separate and divided universes, and that the entrepreneurs on both sides were more annoyed than pleased at the foundation of Hupac. Well, a road haulier had phoned the Guardia di Finanza with a tip that the semi-trailers in question contained smuggled goods. Of course the officials from the Italian finance police were obliged to look into the matter ... Amongst all the troubles, the fourth day of the delay was due to a pure act of sabotage on the part of an anonymous, hostile Hupac opponent from amongst the Chiasso road hauliers.

At the time, nobody knew this for a fact apart from the informer himself. It was only 30 years later that an Italian railway official confessed to Theo Allemann that he had been told that the incident had been undertaken to try and torpedo Hupac's operations.

However, there was no way that Hupac was going to be thrown off course by slander. After a year of international piggyback transportation, the number of external Hupac customers had grown to a substantial 15. Even though new wagons kept being purchased at regular and short intervals, by now at the latest the shortage of railway carriages was becoming chronic.

As an ironic aside: two of the first companies to use Hupac's services were actually caught smuggling goods after only a few consignments ...

For a border-free Europe

Nevertheless, business transactions were developing marvellously. In 1969, new money and new people were brought on board: the share capital was raised to 1,700,000 Swiss francs, the number of shareholders rose to 12. With a clear foresight for future international expansion, the latter included three transportation companies, one each from Italy, Germany and Holland, as well as a private train wagon owner. In 1971, in order to achieve a better integration of rail freight transport in Northern Europe, Hupac signed a cooperation agreement with the German Kombiverkehr.

Things are running smoothly, not only for Hupac but for most other European combined transport companies too. It therefore made good sense to join

Easter Saturday 1971: A train with two locomotives, 32 wagons and 1,100 tonnes of load is ready to traverse the Gotthard line.

forces and to coordinate the cross-frontier development of this young industry. We are, after all, talking about international transport.

Herbert Reul, managing director of the Austrian company Hucketrans, gave the impetus for a pan-European collaboration. In November 1969, he invited representatives from the road, rail and combined transport companies to a three-day "International Conference of the Kangaroo-Piggyback-Transport Industry" in Vienna. Twenty-nine participants compiled a 91-page protocol. Their most important resolution: the founding of an international organisation for combined transport – a European umbrella organisation, so to speak. Its remit: political lobbying, international coordination, marketing strategies, the development of international train lines, and so on and so forth.

On 23 October 1970, during the second international transportation exhibition in Munich, the Union Internationale des Sociétés de Transport Combiné Rail-Route, short UIRR, was officially launched. The combined transport companies from Austria, Belgium, Germany, France, Italy, Holland, Sweden and Switzerland inscribed themselves as the initiators. In order to steer the development of international combined transport in the right direction from the word go, the UIRR took a short cut and established direct contacts to other associations. This explains why it was Pieter Groenendijk, secretary general of the International Road Transport Union (IRU), who in collaboration with the UIRR, came to define three basic principles of road-rail transport:

- The road haulier is the main carrier, the Maître (boss), along the entire route, including the rail transportation.

- Amongst the piggyback transport companies, road transport representatives should have the last say.
- All of the road transport operators must have free access to rail haulage.

In short, all of this very much followed Hupac's line of thinking. Soon enough, Hupac took on a leading role within the UIRR, coordinating political lobbying and propelling the development of railway wagon technology forwards. In 1974, based on the rotational principle, Pietro Ris assumed the presidency of the UIRR for the first time for a term of two years.

Hupac also wanted to have a say in its own country's affairs. In 1972, the entire Swiss Federal Council appointed a committee to gather information about the actual state of all forms of transport in Switzerland and to formulate recommendations for a long-term traffic management and development plan. The aim of the planned overall transport strategy was to safeguard the high standard of living for citizens despite the growing volume of all the various forms of traffic.

Meanwhile, in response to the recommendations set out by the KEA (Committee for a Railway Tunnel through the Alps – we recall the events of 1963), Federal Councillor and Transport Minister Roger Bonvin (Christian Democratic People's Party, CVP) commissioned the planning for the Gotthard Base Tunnel – a favourable start.

In 1977, after five years' work, the new Minister of Transport, Federal Councillor Willi Ritschard (Social Democratic Party, SP) presented the results of the Gesamtverkehrskonzeption, or Overall Transport Strategy. He summarised the strategy under 40 theses, amongst which was the recommendation to "as far as possible transfer road haulage travelling through Switzerland onto the rails" – a good idea.

Due to political wrangling, it took a further full 11 years before what was left of the Overall Transport Strategy in the form of the Koordinierte Verkehrspolitik, or Coordinated Traffic Policy, was put to a popular vote, only for it to be rejected. Nevertheless, the results of the Overall Transport Strategy have left an indelible mark on Swiss transport policy ever since. Today's heavy vehicle fee for HGVs, the principle of traffic environmental compatibility, the mammoth Bahn 2000 (Rail 2000) project and the division of responsibility between the federal government and the cantons all have their origins in the Overall Transport Strategy of 1977.

The switch to Greco Pirelli

After this excursion into the wider national and international political situation, let us concentrate on Hupac once again. As previously mentioned, the company was developing marvellously: one year after the spectacular act of sabotage at the Italian border, Hupac already had acquired 15 external clients. In 1973, Hupac entered into an agreement with the Dutch company Trailstar and opened the line Milan–Rotterdam. Only a few months later, the subsidiary Hupac Italiana Srl was founded in order to oversee the terminal stations in Italy, with former Danzas man Michele Fiore assuming the managing directorship.

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1 1976: The goods station in Greco Pirelli is in bad repair, but the Hupac workers make the most of it. They level the ground and procure access ramps.

2 The "command centre" is a small hut.

3 The trailers are loaded using a mobile telescopic crane ...

4 ... or a side forklift truck.

But oh dear! Likewise in 1973, Theo Allemann, who in the meantime had been appointed managing director of Hupac, took a call from the Milanese director of the Italian state railway, FS. The goods station in Rogoredo has become full to bursting point; and Hupac can no longer use the station in future. The director did suggest an alternative, though, namely the goods station of Greco Pirelli to the north of Milan; but Hupac's access to it was conditional on processing at least one block train per day there – if not, the FS would refuse to provide any locomotives.

Through no fault of their own, Allemann and Hupac were confronted with a very real existential problem. In train jargon, a block train is a train with at least 56 wagon axles, and Hupac was not generating these kinds of volumes yet – at least not on a daily basis.

Allemann scribbled a hasty calculation: one Hupac railway carriage to transport two semi-trailers has eight axles; correctly formulated this constitutes one double four-axle Wipppen wagon of the most modern type. A block train there-

3

4

fore amounts to seven railway wagons or 14 semi-trailers. And this multiplied by two, because there is always one train driving from north to south and another driving simultaneously in the opposite direction. Hupac can only muster such a large volume of transport on Fridays and Saturdays; during the week only around three to five carriages can be driven daily. According to the FS, however, it's either sink or swim. And it doesn't end there. An inspection in Greco Pirelli ends in utter dismay: the ground is not asphalted and gets muddy when it rains. There is neither a crane nor an access ramp to load and unload the semi-trailers. But there was no other alternative. What, then, was the solution?

As always, Theo Allemann's reaction was pragmatically farsighted: he invited Vittorio Inneguale, stationmaster at Greco Pirelli, to Switzerland – not on business, but privately on a Sunday with his wife and children. The meeting in Melide turned into a family party: Vittorio's wife Rosaria with the five Inneguale children and Theo's wife Vera with the two Allemann children amused themselves with the scaled-down model Gotthard railway train in the Swissminiatur Park. Meanwhile, the two men went to view the real railway station in Melide, during which the Swiss explained to the Italian Hupac's troubles with the Italian State Railway.

The wives and children and fathers rejoined each other for lunch. During the dessert, Vittorio Inneguale came up with a solution: Vittorio in person was responsible for the dispatching of railway wagons laden with scrap metal upon

import, which then had to be forwarded, empty, from Milano Greco Pirelli back to Germany. It would be easy for him to couple the empty carriages – which needed to travel northwards anyway – to the Hupac trains and, what is more, enough of them daily to reach the required 56 axles of a block train. Hupac would be in the clear, and there was no pressing need to alert the FS general directorship about this little sleight of hand, as long as the FS railway wagons arrived at their various destinations according to schedule.

Hupac was saved: Theo Allemann and Vittorio Inneguale began a friendship that lasted well into their retirement, and after a few months Hupac duly managed to process a block train per day under its own steam. The area was asphalted at Hupac's expense, and a new loading crane soon stood on site. At the start of 1978, five years on, Hupac was already processing two whole block trains with 22 wagons every day in Greco Pirelli.

Incidentally, two block trains means (as already stated) two trains each going in opposite directions, which amounted to 88 semi-trailers per day – which in turn needed a railway fleet of 88 single wagons, or 44 double Wippen wagons. The sheer numbers are eloquent testimony to how rapidly Hupac had grown in the years since its inception – and it has never stopped since.

At long last: a private terminal

However, two block trains was all that Greco Pirelli had the capacity to handle, and the station could not be expanded. Therefore, Hupac had to start looking about for a new "home" in the greater Milan area. Managing director Theo Allemann personally flew over the surroundings of Milan several times in a helicopter on the lookout for a suitable station. The Italian state railway announced that a new major terminal was in planning for the Milan Segrate area, but that it would only become operational in a few years' time. The advice was well meant, but ultimately meaningless: Hupac needed a solution immediately.

The deus ex machina arrived in the form of Mario Morganti, the man responsible for running FS goods stations in the greater Milan region. He advised Allemann over the phone that the paper factory Cartiera Vita Mayer had gone bankrupt in the village of Cairate near Busto. The paper factory had been dispatching five block trains loaded with timber each day at the nearby goods station of Busto Arsizio, but having folded, the station was now practically deserted.

Allemann hung up the receiver, got straight into his car and less than an hour later parked up at the goods station in Busto Arsizio. The site was gigantic (the size of three football fields), asphalted and the loading capacity was double that which Hupac was currently servicing. The downside: the station was not situated close enough to the metropolis of Milan and therefore to the main Basle–Milan railway transport artery. Still, further north in the border village of Luino there was a junction leading from the mainline railway axis to Busto, but this line was mainly single tracked. If one or more preliminary studies had been carried out (as one would usually do today under similar circumstances), then the proposal would probably have been given the thumbs down. However, the Hupac management did that which it had always done in delicate situations and relied on its gut instinct, which says: yes, let's go for it!

1978: At last: Hupac's own terminal in Busto Arsizio, a few kilometres outside Milan.

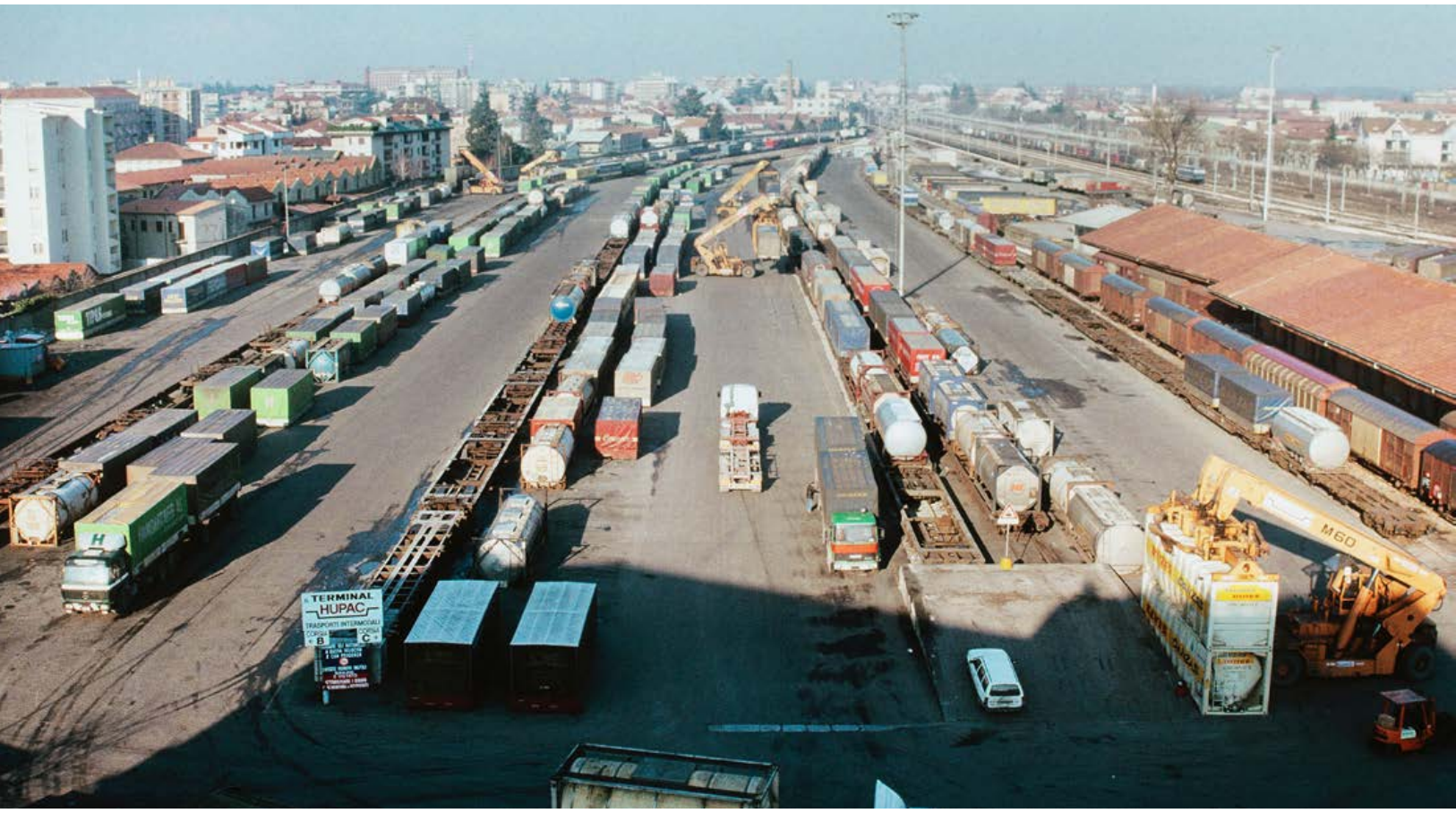
In the autumn of 1978, the groundwork began in Busto Arsizio. The train path from Luino, at the Swiss border, to Busto Arsizio was extended to form the "Luino Line"; transit licences and the night-time operation permit were obtained, cranes for handling goods were purchased ... Half a year later, Hupac commenced operations in Busto.

The station in Greco Pirelli became the destination station for the trains on the Rolling Highway between Freiburg im Breisgau and Milan – and remained operational in this function until 2008.

And, as a footnote, had Hupac taken the announcement of the Italian state railway super terminal at Milan Segrate seriously, they would still be waiting for it now. Even today, the terminal still has not yet reached the capacity promised at the time.

However, it was Hupac itself who in 2012 decided to build the terminal Milan Segrate together with an Italian partner. The reason being that when the NRLA would be finished from end-to-end and fully operational, the volume of combined transport would increase, and new terminals would be needed.

At this point, we will pre-empt Hupac's history somewhat and jump 12 years. In 1991, Hupac moved to another new station, but this time within Busto Arsizio.



1991: Hupac relocates its terminal from the goods station in the middle of the town of Busto Arsizio …

The number of processed trains had risen over the years, and so too had the noise pollution for the inhabitants, the old station being located in the middle of a residential area. For this reason, following very amicable negotiations, mayor Gian Pietro Rossi and his later successor Gigi Farioli proposed that the customs warehouse be moved to the outskirts of Busto Arsizio. An ideal suggestion, because the warehouse would be situated only two kilometres away in the industrial district, and in the neighbouring municipal district of Gallarate there was long-term potential to plan the shunting area and the railway access.

Yet a further factor was decisive, namely the opportunity to finally build a private terminal. The rule is that in contrast to a goods station, the infrastructure of a terminal is wholly geared towards the workflows of combined transport. For example, the asphalted lorry access roads run parallel to the rails. Especially constructed gantry cranes on tracks lift the semi-trailers or containers directly from the access road onto the railway wagons. The entrance to and the exit from the site are designed in such a way that the lorries can bring or alternatively pick up their trailers speedily and efficiently. Additionally, there needs to be enough stowage space in order to store containers.

Needless to say, delegations of Hupac planners inspected several different terminals throughout Europe before the planning of the first private Hupac ter-

... to the industrial zone a few kilometres away. Here, at last, there is enough space (picture from 1994).

minal began in earnest. At the end of 1991, the new terminal went into operation; in the following spring the big inauguration took place with Federal Councillor Adolf Ogi (Swiss People's Party, SVP) as guest of honour – the Swiss federal government, conscious of the importance of the project, had partially funded the construction. The specific reasons for this financial support by the Swiss Confederation will be looked at later.

In the following years, Hupac purchased each and every parcel of land possible in the adjoining municipality of Gallarate, and as a quasi hidden reserve invested six million francs in a further expansion in Gallarate, which eventually came to genuine fruition. In 2005, the terminal extension was ceremoniously inaugurated in the presence of Federal Councillor Moritz Leuenberger (SP) and the Italian Minister of Infrastructure Pietro Lunardi. The handling capacity of the Busto Arsizio-Gallarate terminal was doubled in one fell swoop, and since then has been one of the largest intermodal terminals in Europe.

In the next chapter we will see how Hupac's work is run today.

“In five years’ time we aim to have 95 per cent of our traffic from the Benelux countries to Italy on the rails.”

Lorenzo Bas, CEO and owner of the Dutch logistics company BAS Group BV, 2016

02

Busto Arsizio–Antwerp:

Train ahead

An everyday job. We will follow one of the consignments from the Dutch logistics company BAS being transported on shuttle train number 40240 from the Hupac terminal in Busto Arsizio to the Hupac terminal in Antwerp. 1,092 track kilometres covered in one day, two hours and 36 minutes. The cargo is 25,760 kilograms of a harmless liquid chemical.

Wednesday, 7 September 2016, Busto Arsizio, Italy, 4:27 p.m.: Tomas Bystriansky, from BAS, has driven 19 kilometres from the BAS branch in Cambiago to Treviglio and has picked up his cargo and driven it over a distance of 100 kilometres to Busto Arsizio. He takes the motorway exit to the industrial area in Busto Arsizio and drives around the roundabout ...

4:28 p. ... and parks his vehicle a few hundred metres further at the arrival area of the Hupac terminal Busto Arsizio-Gallarate (TBG for short). A Hupac staff member checks the state of the trailer with a handheld Palm computer. He checks the condition of the loading unit, and also checks whether dangerous goods are being transported and that the semi-trailer has been sealed correctly.

4:30 p.m.: Thomas Bystriansky gets his freight documents ready. He knows his way around Hupac – sometimes he transports as many as five consignments in a single week to the terminal.

4:35 p.m.: At the check-in, Valentina Bombonati checks the freight documents and the booking details. The consignment consists of 25,760 kilograms of packaged chemicals. The total weight including the container is 33,140 kilograms. It has been delivered for train number 40240 destined for the Hupac terminal in Antwerp. Everything is given the okay. Valentina Bombonati enters all the data into her operating software system Goal. The semi-trailer is assigned the identification code BASA004307-1. Tomas Bystriansky is allocated unloading site 320 next to track 1, sector 1.

4:39 p.m.: Tomas Bystriansky drives to the unloading site. The area is well signposted. There is a maximum speed limit of 10 kilometres per hour and a complete smoking ban. Each sector is equipped with a loading lane and a driving lane.

4:46 p.m.: Train number 40240 is ready. Crane operator Gregorio Lo Sapio drives up with his gantry crane and positions the grapplers in the reinforced grapplers pockets of the semi-trailer. A few seconds later …

Terminal Busto Arsizio-Gallarate

Area: 240,000 square metres (= 33½ FIFA football fields)
Staff: 182
Transhipment tracks: 11
Track length: 540 to 760 metres
Gantry cranes: 12
Own shunting locomotives: 3
Own line locomotives: 3
Capacity per day: 34 pairs of trains

4:46 p.m.: *... the trailer hovers above the train wagon – a pocket wagon with a trestle height-adjustable to three levels.*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4:47 p.m.: Terminal staff member Emanuele Bazzano makes sure that the semi-trailer's centre kingpin has been latched correctly to the saddle. Using hand signals and a walkie-talkie he gives the crane operator instructions down to the last centimetre.

4:48 p.m.: Tutto bene. The trailer is securely fastened to the pocket wagon.

4:52 p.m.: Tomas Bystriansky leaves the Hupac site. The "porter" Andrea Giordano conducts the departure check and wishes the driver a good onward journey.

Thursday, 8 September 2016, 2:15 a.m.: The train has been loaded on Wednesday afternoon. The wagon master has rechecked every single wagon and all the cargo. The train is now ready: 24 railway wagons and 48 loading units, and without the locomotive 521 metres long and 1,294 tonnes heavy.


HUPAC
HUPAC


HUPAC
D 100 100HU
HUPAC

5:07 a.m.: The shunting locomotive arrives – a D100-100 HU weighing 80 tonnes with 1,000 kilowatts of power and a length of 14.62 metres. Engine driver Ruggiero Tinelli moves the train from the loading area to the consignment track of Fascio Hupac right next to it. The area is the arrival and departure point of all the trains, and is the entry point into the electrified rail network.

5:45 a.m.: At the Fascio Hupac control centre, the Italian state railway FS operates its own traffic monitoring point, because from here onwards the Hupac trains travel on the Italian railway network. The lady at the console does not wish to be named.

5:45 a.m.: At the Hupac rail operating centre right next door, dispatcher Pasquale Milano monitors the transfer of train number 40240 from the terminal to track 1 of Fascio Hupac.

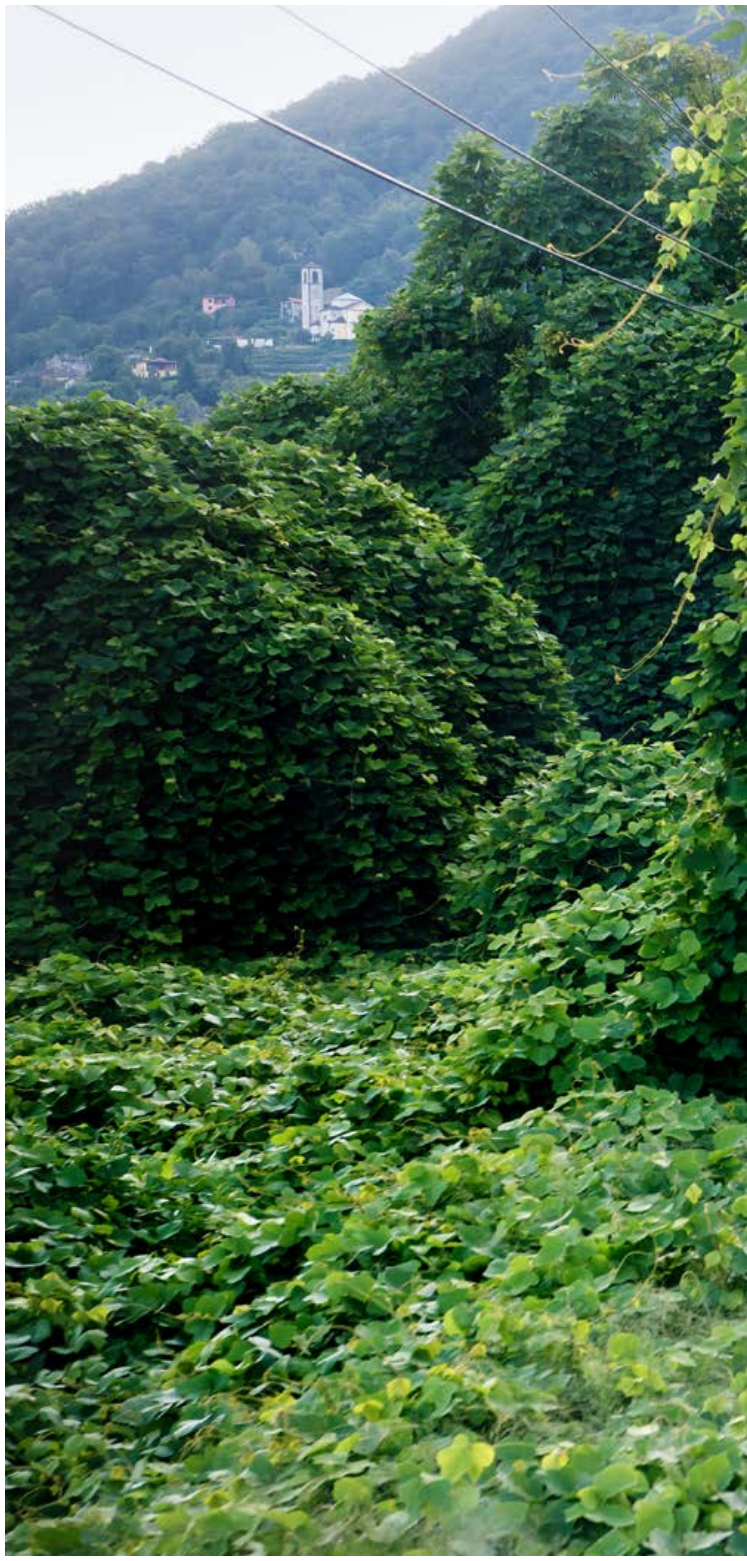
5:45 a.m.: Engine driver Duilio Gentilini prepares himself for the journey. He checks the international braking sheet and enters the necessary data into the locomotive dashboard computer. The transport documents that have been handed over by Hupac are in a large envelope that stays with the respective locomotive until the consignment reaches Antwerp.

***6:22 a.m.:** Because he needs to wait for another train to pass by, Duilio Gentilini docks the locomotive to the readied train a little later than planned. The locomotive, Class 198-F Type 47, with 8,000 kilowatts of power and a weight of 86 tonnes, belongs to SBB Cargo International, the traction company for the journey. The Fascio Hupac arrival and departure yard is made up of six tracks.*

6:53 a.m.: As soon as Pasquale Milano has received the go-ahead from the FS control centre, he gives the green light for train number 40240. With a delay of 39 minutes, the train can now finally start its journey.

6:53 a.m.: At the same time, Thomas Mocchi starts monitoring the train from the control centre in Chiasso. The train is also digitally monitored from the SBB Cargo International control centre in Olten until it reaches Antwerp. Both control centres are connected to each other via an IT system.

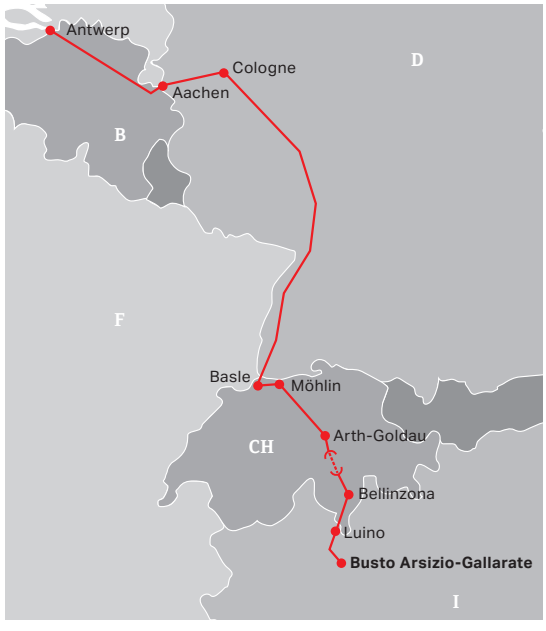
7:24 a.m.: Duilio Gentilini drives attentively towards the Swiss border. The Luino line is outdated, winding and largely single-track. For this reason, the engine driver throttles the speed down to 40 kilometres per hour along some stretches and accelerates back up to a maximum speed of 90 kilometres per hour along others.



8.31 a.m.: The train crosses the border into Switzerland at the small town of Luino. A stop-off at the border for a customs check is not necessary: all customs procedures for the entire route have been transacted via computer the previous day. The Luino line is going to be upgraded by 2020.

8:40 a.m.: The train continues along the Lago Maggiore towards Bellinzona.

The route through Europe



9:00 a.m.: A change of engine drivers in Bellinzona. Duilio Gentilini hands over the train to Franco Menghetti. The latter then sets the train as gently into motion as if he were picking up a sleeping infant from its cot. An on-board digital-frequency and voltage converter prevents any jerking when starting up the engine. At 9.21 a.m. the journey continues as timetabled, so the time lost at Busto Arsizio has been made up for.

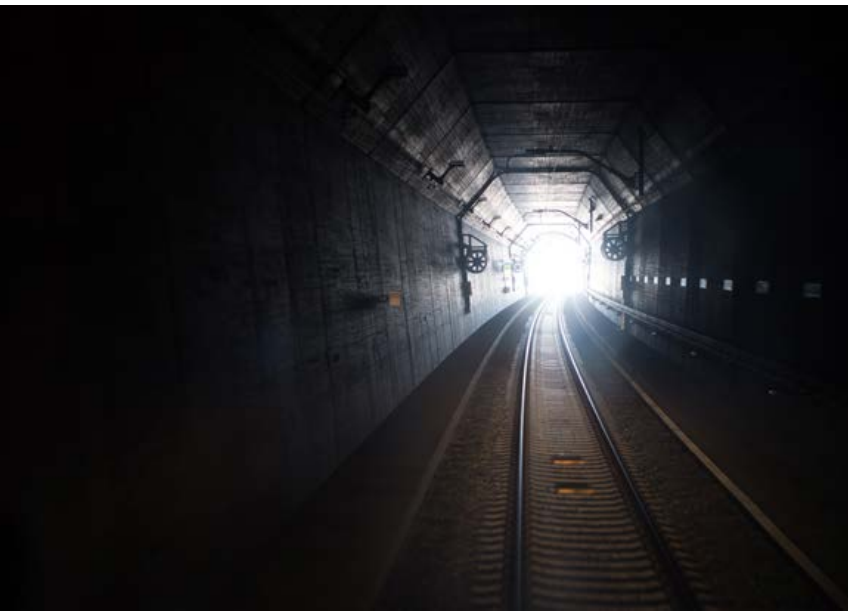
9:24 a.m.: The route right after Bellinzona has been equipped with the digital European Train Control System, ETCS. The signalling changes accordingly. The lineside signals don't direct the engine driver any more, and instead merely indicate a digital transmission point. Franco Menghetti can read off the respective data on his computers in the engine driver's cab.

9:50 a.m.: The Gotthard Base Tunnel's control tower is situated in Pollegio. Franco Menghetti receives the instruction to stop the train, because the route is not yet clear. The tunnel is still in the test phase, so only one train is able to enter the tunnel at a time.

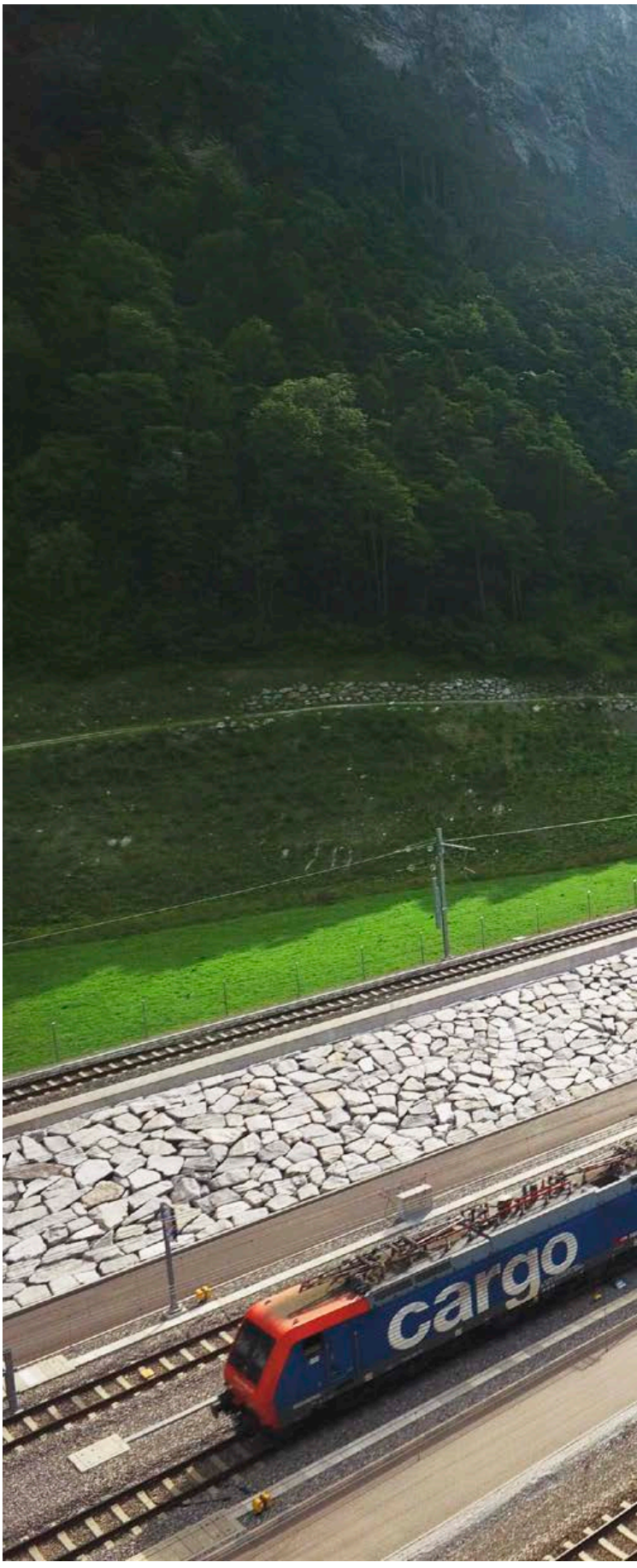
9:53 a.m.: The tower gives the clearance for the stretch. The trip through the Swiss epoch-making construction project commences.

9:57 a.m.: We're in! The ETCS digital control system takes over the locomotive; the engine driver is relieved by the autopilot.

10:15 a.m.: Amazing! With a constant speed of 100 kilometres per hour, the train drives through the level tunnel. In contrast to passenger trains, this is the limit for goods trains, because this is the maximum driving speed the railway wagons are built and authorised for.

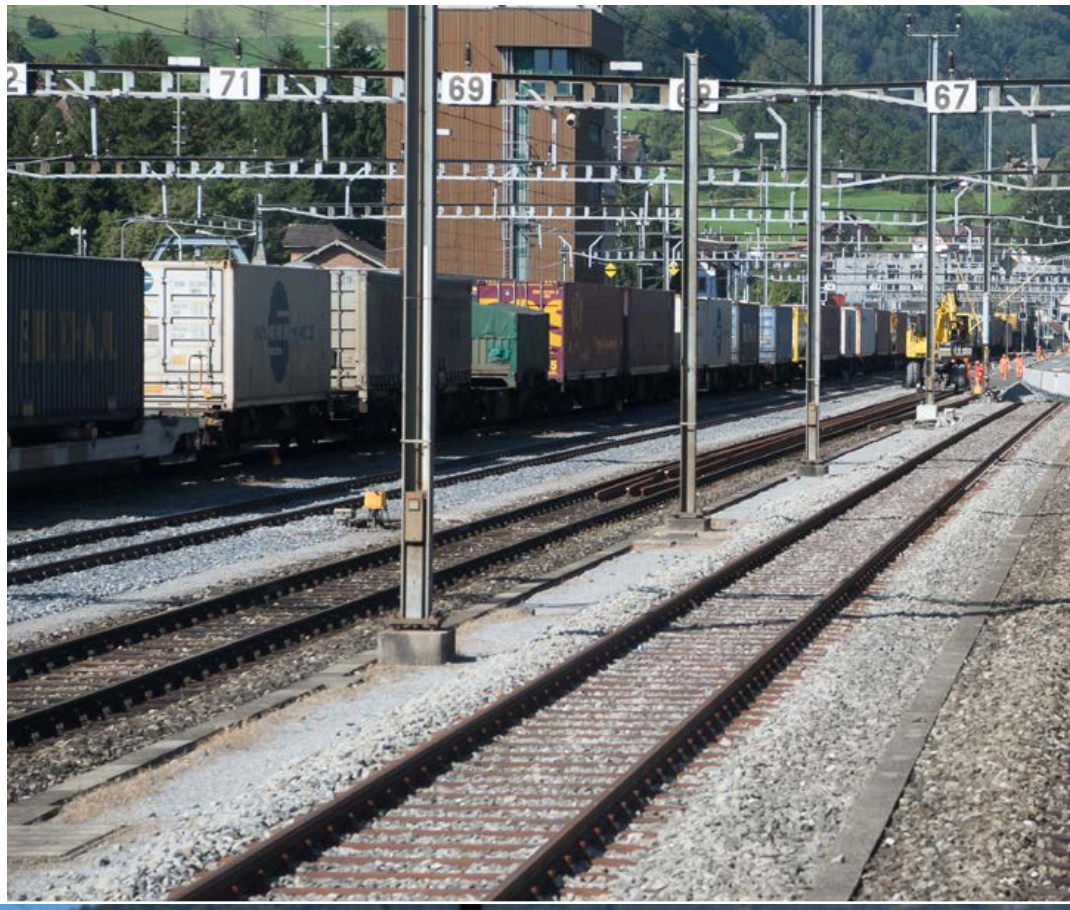


10:32 a.m.: After 57.1 kilometres and a 35-minute trip, the proverbial light at the end of the tunnel slowly appears, and the train emerges again at …



10:33 a.m.: … Erstfeld. At Brunnen the signalling along the line changes back again from ETCS to the customary system. Before this, with the train travelling at full speed, a safety monitoring point attached to the rails checks the train via laser, measuring the weight per wagon axle, the profile of the transported units, as well as the temperature of the brakes.

10:58 a.m.: After driving the picturesque length of Lake Lucerne, the train arrives on time at Arth-Goldau station.



11:00 a.m.: Change of engine drivers. Franco Menghetti hands the train over to Mario Lochau. Only two minutes later the train sets off again according to schedule.

11:34 a.m.: The train passes Boswil. Everything is going according to schedule. Thanks to the latest technology, the wheels of the train wagons create much less noise than older models: 78 to 81 decibels instead of the previous 90 to 94 decibels.

12:45 p.m.: At 100 kilometres per hour with a weight of 1,300 tonnes, the emergency braking distance is 800 metres. Mario Lochau therefore proceeds cautiously down the dip in front of the station at Möhlin …

12:47 p.m.: ...and accelerates again in the open countryside towards Basle.

12:56 p.m.: The train arrives at siding track G of the Basle SBB marshalling yard in Muttenz one minute early. This classification track is the starting point for the trains departing northwards. Mario Lochau is switched to a new driving job, while train 40240 takes a scheduled two-hour stop.

14:35 p.m.: Roland Dürig, hazardous-materials safety advisor for SBB Cargo International, checks the containers carrying dangerous goods with the help of the wagon list. His main focus is that the labelling properly conforms to the international regulations governing the carriage of dangerous goods. He also checks whether the containers have been loaded correctly and, if need be, whether any damage can be seen. Everything is correct with train 40240. Such train checks are made at random intervals.

14:49 p.m.: A change of locomotive. Locomotive Type 482 is shorter and lighter than Type 47, but as a so-called multi-system locomotive , it is equipped with IT for both the Swiss and the German railway networks. The next engine driver, Uwe Anders, couples the locomotive to the train himself.

15:19 p.m.: Roland Dürig hands over the envelope with the transport documents and the international braking sheet to Uwe Anders, who leaves Muttenz punctually and drives towards Germany. SBB Cargo Deutschland, a subsidiary of SBB Cargo International, employs him.

Friday, 9 September 2016, Cologne, Germany, 00:56 a.m.: After a further driver change in Mannheim-Friedrichsfeld, the train arrives at the goods station Cologne Eifeltor ten minutes earlier than timetabled. Here, the first change of direction takes place. The locomotive is uncoupled and reverses to the end of the train...

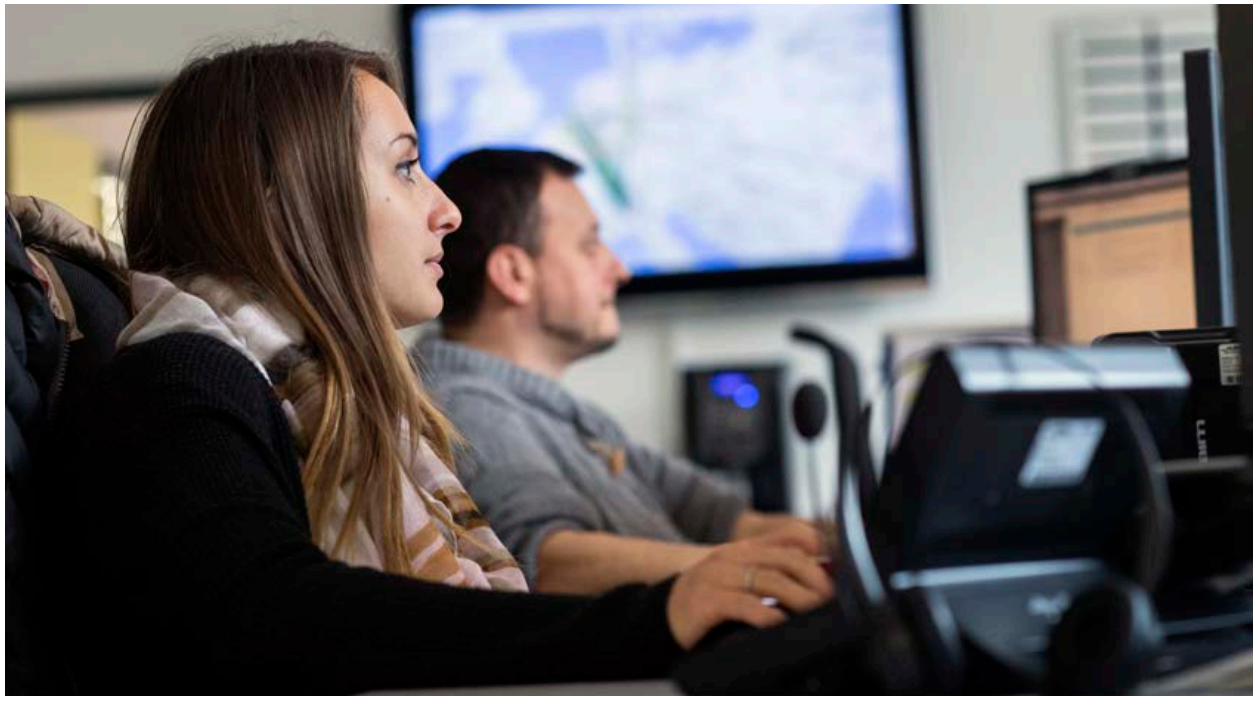
1:04 a.m.: ... and is re-coupled. The journey continues at 2:38 a.m. with a new engine driver.

3:15 a.m.: A night journey with many other goods trains passing by.
Engine driver Frank-Tasso Teichmann remains concentrated on the task at hand.

3:51 a.m.: Arrival at the goods station Aachen West. Another change of locomotive, engine driver and direction: the SBB locomotive that has hauled the train "backwards" from Cologne to here is now uncoupled. A Bombardier Traxx-series HLE28 belonging to the Belgian Hupac partner company B-Logistics couples on to the front of the train. The engine driver is likewise Belgian. At 4:48 a.m. the train continues on according to schedule …

7:40 a.m.: ... and at sunset reaches the Belgian Antwerp North goods station, sector D.

7:45 a.m.: The Belgian locomotive is immediately uncoupled and continues to its next assignment.



7:45 a.m.: At the same time, Alice Rossini registers the arrival of the train in the control centre at Chiasso. The BAS headquarters in Etten-Leur, Holland, is informed that train number 40240 with consignment BASA004307-1 can be picked up from the Hupac terminal on time.

8:14 a.m.: Less than half an hour later, not one but two Siemens Type 77 diesel locomotives drive up to collect the train. They will haul it through the vast port site from the goods station to the Hupac terminal …

9:05 a.m.: … crossing one of the port's main roads. One of the two locomotives has been driven somewhere else in the meantime. The remaining locomotive will switch directions and push the train into the terminal.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HUPAC

9:29 a.m.: The train arrives at the Hupac Terminal Antwerp, HTA for short. It is situated at quay 468 of the Port of Antwerp and is one-hundred-per-cent owned by Hupac. At the same time, Hupac has a 35-per-cent stake in another terminal in Antwerp's industrial zone, the Terminal Combinant.

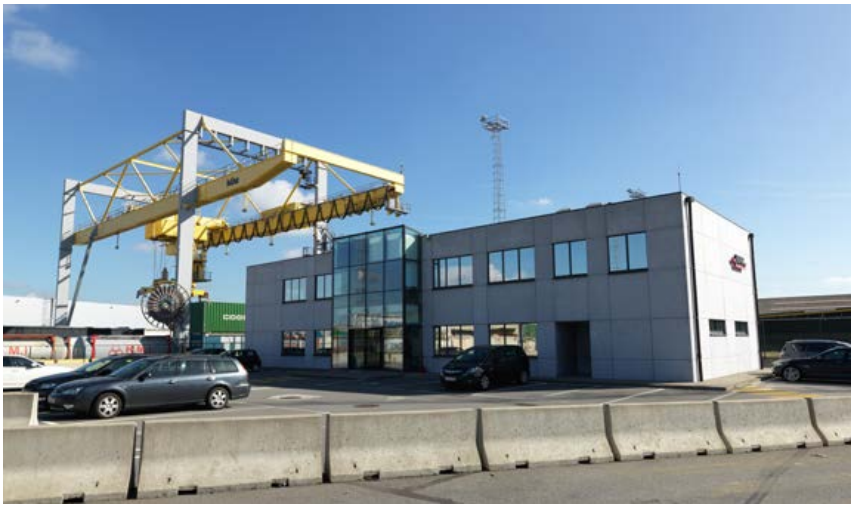
Hupac Terminal Antwerp HTA

Area: 53,000 square metres
(= 7½ FIFA football fields)
Hupac staff: 2
Dubai Ports World staff: 8
Dockers Antwerp staff: 12
Transhipment tracks: 5
Track lengths: 620 metres
Gantry cranes: 3
Capacity per day: 12 pairs of trains


7846

9:29 a.m.: The train fits exactly along the 600-metre-long track 1.

9:32 a.m.: Shunter Atteo Goossens uncouples the locomotive from the train, and together with engine driver Bruno Vandevelde drives the locomotive back to the goods station in order to pick up the next train. Both men are employed by B-Logistics.



9:32 a.m.: Meanwhile, BAS chauffeur Jan van Andel reports for duty at the reception of the terminal's office building to pick up the container with the code number BASA004307-1. He needs to have a permit in order to do this, which in Antwerp is provided by the Alfapass ID card.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9:50 a.m.: Jan van Andel drives the tractor unit up to the gantry crane which then hoists the trailer over to the road where it is anchored to his tractor via the kingpin. In the afternoon, the newly laden train will drive back to Busto Arsizio. Hupac has outsourced the loading and unloading of trains to the company Dubai Ports World.

9:57 a.m.: At the Hupac terminal exit, Jan van Andel meets his boss Lorenzo Bas, CEO of BAS Group BV. He has just come from a meeting with Hupac executives. The two men chat a little before Jan van Andel sets off to deliver his cargo to the BAS customers in Beveren, only a few kilometres away.

Busto Arsizio – Antwerp HTA

Railway route: 1,092 kilometres
Journey time: 1 day, 2 hours, 36 minutes
Railway locomotives: 3
Engine drivers en route: 7
Shunting locomotives: 3
Engine drivers for shunting: 2
Changes of direction en route: 2
Changes of direction during shunting: 1
Border crossings: 3
Delays: 0 minutes
Damages: 0 francs

Lorenzo Bas, CEO of the BAS Group.

"Customer-oriented and reliable"

"Europe will not be the only place in which goods traffic will increase in future. It is therefore crucial to process this flow of goods as efficiently as possible – in an economic sense, but also for the sake of the environment. BAS is a European-wide logistics company with over two hundred staff; we count on trains for long-distance transport. We have been working with Hupac since 1992; today they are our biggest supplier. Hupac is market-oriented and customer-oriented, and above all reliable – these are decisive factors in our line of business. Hupac currently transports around 4,000 consignments per year for us. Five years ago, we processed 40 per cent of our traffic by train; today this number has risen to 75 per cent. In the year 2020 we are aiming for 95 per cent. When the NRLA in Switzerland, with its Ceneri Tunnel and its 4-metre corridor, is fully operational, we will be able to achieve our aim."

“The whole thing has really been messed up by the way the Swiss public voted.”

Günter Topmann, SPD transport expert at the EU Parliament, on the mood in the EU after the Swiss electorate voted in favour of the Alpine Initiative

03

Switzerland:

Two turbulent decades

We will now turn back the Hupac-story clock and stop at the point that had dictated transport policy over the decades before and would continue to do so in decades to come: the opening of the Gotthard Road Tunnel at exactly five o'clock in the afternoon on 5 September 1980. Master of ceremonies Federal Councillor Hans Hürlimann (Christian Democratic People's Party, CVP), head of the Swiss Federal Department of Home Affairs, decided not to cut a symbolic ribbon at the opening of what was the longest road tunnel in the world because, as he explained in his inaugural speech, the Cantons of Uri and Ticino had finally been united. Canton Ticino would no longer be cut off from the rest of Switzerland during the winter months by the snow-covered Gotthard Pass, but connected to it through the tunnel all year round.

Together with the Seelisberg tunnel connecting Uri to the Canton of Nidwalden (which was opened only three months later on 12 December 1980) and the completion of the motorway section from Airolo to Bellinzona, the A2 national motorway between Basle and Chiasso would be completed by 1986, making the motorway route from Hamburg to Sicily practically a continuous one. The happiness at the opening of the Gotthard Road Tunnel was widespread, but so too were the fears of the Swiss population that they would soon be literally overrun by foreign lorries. And for precisely this reason Federal Councillor Hans Hürlimann chose his words carefully in his celebration speech: "The Gotthard Tunnel is not a corridor for heavy traffic", he said, emphasising that transit lorries belonged first and foremost on the railways.

1980, 5 September: Posing for the photo album. On the day of its inauguration, the Gotthard Road Tunnel is open to the public. Many people are wondering when the large lorries are going to come.

Hürlimann meant what he said, as proven by the fact that in March the same year as part of the Overall Transport Strategy, the Federal Council sent a message to the Council of States, proposing the introduction of what was termed a leistungsabhängige Schwerverkehrsabgabe (LSVA), in other words a performance-based fee for heavy goods vehicles. Only a few days after the opening ceremony, the Council of States unfortunately rejected this recommendation. Nevertheless, at least discussions on the alternative prospective routes for the planned NRLA were well underway in the Federal Palace in Berne.

Timeline of the Gotthard Road Tunnel

1955, 1 July: The collection of signatures for the "Referendum to Improve the Road System" starts.

1958, 6 July: The Swiss people vote for the Federal Council's counter-proposal. The new constitutional article forms the basis for the construction of the Swiss national road network.

1960, 8 March: The Federal Councillors pass the federal law on the construction of the national road network.

1960, 23 March: The Federal Council submits a motion requiring the construction of a winter-safe route through the Gotthard. On 8 June, the Swiss Council of States also approves the motion.

1960, 9 April: The Federal Council sets up the "Gotthard Tunnel Study Group", supervised by the Federal Office for Road and River Construction.

1960, 21 June: The Federal Assembly defines the parameters of the national road network.

1963, September: The "Gotthard Tunnel Study Group" presents its final report containing five project alternatives. Its recommendation: a ventilated road tunnel between Göschenen and Airolo.

1964, 7 July: The Federal Council accepts the suggestion of the experts' commission.

1965, 25 June: The Federal Councillors approve the Federal Council's proposal and decide on the construction of the Gotthard tunnel as an addition to the national road network. The "Building Committee for the Gotthard Road Tunnel" is commissioned with the project planning.

1970, 5 May: Official start of the construction of the Gotthard Road Tunnel. The two company groups of the northern and southern sites had already begun the preparatory work in autumn 1969.

1980, 5 September: The Gotthard Road Tunnel opens for traffic.

Subsidies for combined transport

With the new road tunnel and the on-going expansion of the motorways, the starting positions of the two rivals, road and rail, began to shift. Road transport now had a considerably more efficient infrastructure at its disposal, whereas the railway service still ran on a network that was over one-hundred-years old. Comparatively, moving goods by rail now became even more expensive; and correspondingly the politicians in Berne became worried that the longstanding customers of combined transport services would switch back to the roads. A clear threat to their road-to-rail policy.

In actual fact, road hauliers who had stuck loyally to the railways had been complaining for years that the railways were too expensive, that they abused their monopoly position and that performance on the rails was being calculated

differently than on the roads. The opening of the Gotthard Road Tunnel put the railways under even greater cost strains – even though they had already been running at a loss at the latest since 1976.

So, if the Federal Council wanted to prevent the rail freight customers from literally taking to the streets again, they had to exercise steering. But how?

Franz Hegner, head of the Swiss railways, and Federal Councillor Willi Ritschard, who both also knew each other well privately, together tried to hammer out an answer. It is important to know that Willi Ritschard was a fan of Hupac and of combined transport. As far back as 1968, as a member of the National Council, he had met with the Hupac masterminds in Lugano to have the combined transport idea explained to him. As Federal Councillor and Transport Minister, he had visited Hupac again on 19 August 1975 and was impressed with how well the business had developed in the meantime. Ritschard also understood the importance of the Gotthard Base Tunnel and the NRLA Alpine transit route in reinforcing the north–south traffic axis. He was seen as a man of the people and a man of action. No wonder he got on well with the people at Hupac.

So, Hegner and Ritschard were looking for a solution how the railways could recoup their battered reputation with the road hauliers. What they came up with was the so-called piggyback-model calculation. It was a complicated cost calculation system that boiled down to three essential figures: a transit consignment results in 500 Swiss francs in costs for the railway; the railways in turn charge Hupac a market price of 250 francs; the Swiss government covers the 250-franc difference and reimburses it to the railways. Hupac handled 48,000 consignments in 1980, equivalent to a cumulative 12-million-franc expenditure paid out by the Swiss federal government.

De facto this meant that Hupac received an indirect state subsidy in the form of the operational reimbursements to the SBB. This was not something that anyone wanted to shout out loud. Quite the opposite. The reimbursements were indeed correctly declared in the federal accounts, but they were somewhat euphemistically booked under “start-up support”. This discretion was also a healthy one in the sense that it was in nobody’s interest to unduly antagonise the neighbouring railway companies and foreign combined transport firms that also operated through Switzerland, and moreover because right from the start Hupac and the SBB had set the aim of running combined transport without subsidies. However, as we will soon see, due to external circumstances it would take over two decades for Hupac and the SBB to begin to get close to this goal.

This support did not stay “buried” in the federal accounts for long. In 1980 it came into effect, only for it to be officially revised two years later, together with further changes to the SBB’s passenger transport service, into a performance mandate. Swiss Radio broadcasted the news at 7 o’clock in the morning on the Morgenjournal programme: “The performance mandate stipulates that wagonloads have to cover their costs again, something they last managed to achieve in 1976 …”

So, by the time Federal Councillor Hans Hürlimann inaugurated the Gotthard Road Tunnel in front of 1,200 invited guests, and everyone was waiting in suspense to see how the struggle between road and rail would play itself out, Hupac together with the SBB were well prepared.

Timeline of Transport Ministers*

Willy Spühler	SP, Federal Councillor 1960–1970, Transport Minister 1963–1965
Rudolf Gnägi	SVP, Federal Councillor 1966–1979, Transport Minister 1966–1968
Roger Bonvin	CVP, Federal Councillor 1962–1973, Transport Minister 1968–1973
Willi Ritschard	SP, Federal Councillor 1974–1987, Transport Minister 1974–1979
Leon Schlumpf	SVP, Federal Councillor 1980–1987, Transport Minister 1980–1987
Adolf Ogi	SVP, Federal Councillor 1988–2000, Transport Minister 1988–1995
Moritz Leuenberger	SP, Federal Councillor 1995–2010, Transport Minister 1996–2010
Doris Leuthard	CVP, Federal Councillor 2006–present, Transport Minister 2010–present

(* CVP, Christian Democratic People's Party; SP, Social Democratic Party; SVP, Swiss People's Party)

A lorry boom at the Gotthard

As was to be anticipated, the first round went to the roads with a win on points, or in this case lorries. The traffic through the Gotthard increased rapidly over the first ten years, as illustrated by figures from the Federal Office of Transport:

- In only four years, the total traffic volume doubled in comparison to 1979, the year before the tunnel's inauguration.
- In 1981, during the tunnel's first full year of operation, 171,000 heavy goods vehicles drove "down through", of which 72,000 originated from abroad.
- Four years later this amount had already doubled.
- In 1998, the number of lorries crossing the Alps had broken the one-million threshold – 1,035,000 to be precise.
- 2003 was the last year recording over a million lorries. Since then the number has slowly but steadily fallen.

The sheer numbers are striking. However, they do not mean that road had overtaken rail. The continuous increase of heavy goods traffic, as well as passenger traffic, was mainly due to a prospering economy and the various liberalisation measures that had taken place within the EU – factors that were also true for air and deep sea transport. Instead there has been a congruence, namely that rail freight transport and combined transport have both steadily increased over the years, particularly since the European liberalisation of the railways from the year 2000 onwards.

A clear picture of the ratio road to rail emerges if we compare the transported tonnage. The Federal Office of Transport again supplies the relevant concrete figures:

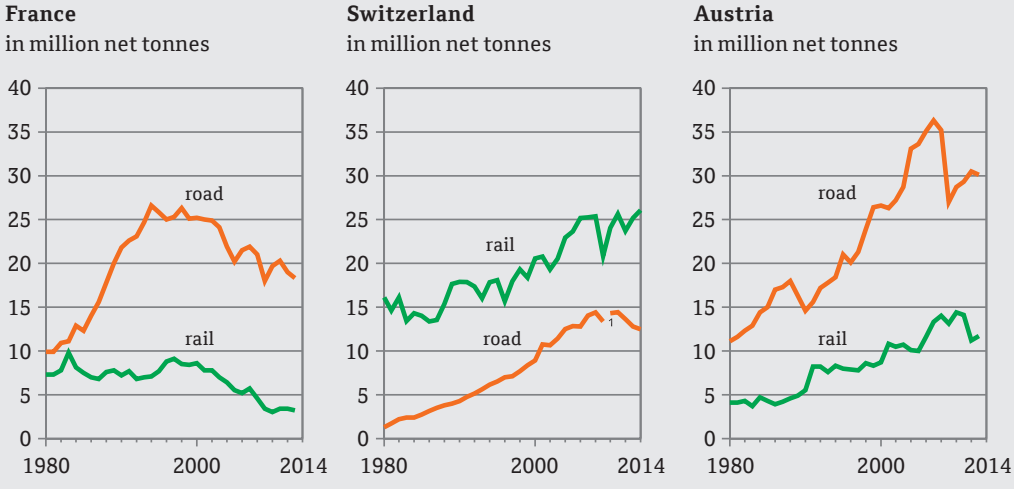
- In 1980, the year the road tunnel was opened, 1.3 million net tonnes of lorries went through the Gotthard; on the rails it was 16.1 million net tonnes – a ratio of 7 to 93 per cent.

Hupac gets the lorries off the road in Chiasso. Whilst the holiday traffic starts to form a queue in front of the border to Italy, lorries are queuing up in order to deposit their trailers with Hupac. Picture from 1978.

- In 1985, four years after the road tunnel was opened, 2.7 million net tonnes were transported by road and 14 million net tonnes by rail – a ratio of 16 to 84 per cent.
- Since 2000, the road-rail ratio has levelled off to a margin of between 30 versus 70 per cent and 37 versus 63 per cent.

At this point it is worth mentioning that in terms of goods traffic crossing the Swiss Alps, significantly more tonnage was and continues to be carried by train than lorry – in stark contrast to countries such as France and Austria, where the road has always played a greater role than the rail. In comparison to Switzerland, only a small part of freight traffic is transported by rail in these countries.

Quantities transported in transalpine traffic



Segment of the Alps from Mt. Cenis/Fréjus to Brenner
1 A break with tradition in haulage methods: from 2010 onwards, control station data of the Performance-related Heavy Goods Vehicle Fee is used (until 2009: data from the Swiss automatic road traffic counts)
Source: BAV, ASTRA – Alpenquerender Güterverkehr © BFS, Neuchâtel 2015

Needless to say, Hupac profited from the steady growth of the freight transport industry, as shown by some key indicators:

Hupac in December 1980:
14 employees
183 company owned wagons
50.5 million Swiss francs turnover

Hupac in December 1985:
13 employees
394 company owned wagons
60.7 million Swiss francs turnover.

But enough of numbers for now, and instead let us go back to the start-up support, or rather the performance mandate, given to the combined transport industry by the Swiss federal government. The clear signal that Switzerland gave in favour of the road-to-rail shift upped the ante on other European countries and forced them likewise into action. They too were obliged to offer their voters an alternative to constantly increasing road traffic, meaning that other governments soon followed suit and began to subsidise their combined transport companies too.

This was all well and good, but for much of the public it was too little too late. For them everything was simply becoming more over-sized and more rapid – not merely traffic, but everything. These anxieties became all the deeper with the sweeping tax cuts and deregulation policies instigated by the US administration of President Ronald Regan from 1981 onwards, mirrored by the government of

British Prime Minister Margaret Thatcher. Public debt rose, but the economy prospered; corporations became more and more global and business managers' greed for profit ever more ruthless. Welcome to the unbridled 1980s – neo-liberalism, Thatcherism, consumerism, atomic energy, and all.

A worried public saw that these developments came at a price, mainly to the environment, and mobilised themselves in political opposition. By 1980, in Germany, this opposition had already coalesced in the form of Die Grünen (the Green Party), Switzerland following suit three years later. Gradually but forcefully, the Green Party's ideas took root and became widely popular, in turn resulting in an important change in general awareness. This has had a long-lasting effect on a whole range of political decisions, in particular in Switzerland's case on the Gotthard transport policy. And amongst the long-lasting ultimate beneficiaries of this shift have been the railways and Hupac.

To begin with though, the world of railway transport at the Gotthard remained frozen. At the end of 1983, after two full years of operational road tunnel traffic, the Federal Council decided that there was no urgency to construct a new transalpine railway tunnel "within the next 20 years", thereby shelving all preliminary studies for the NRLA.

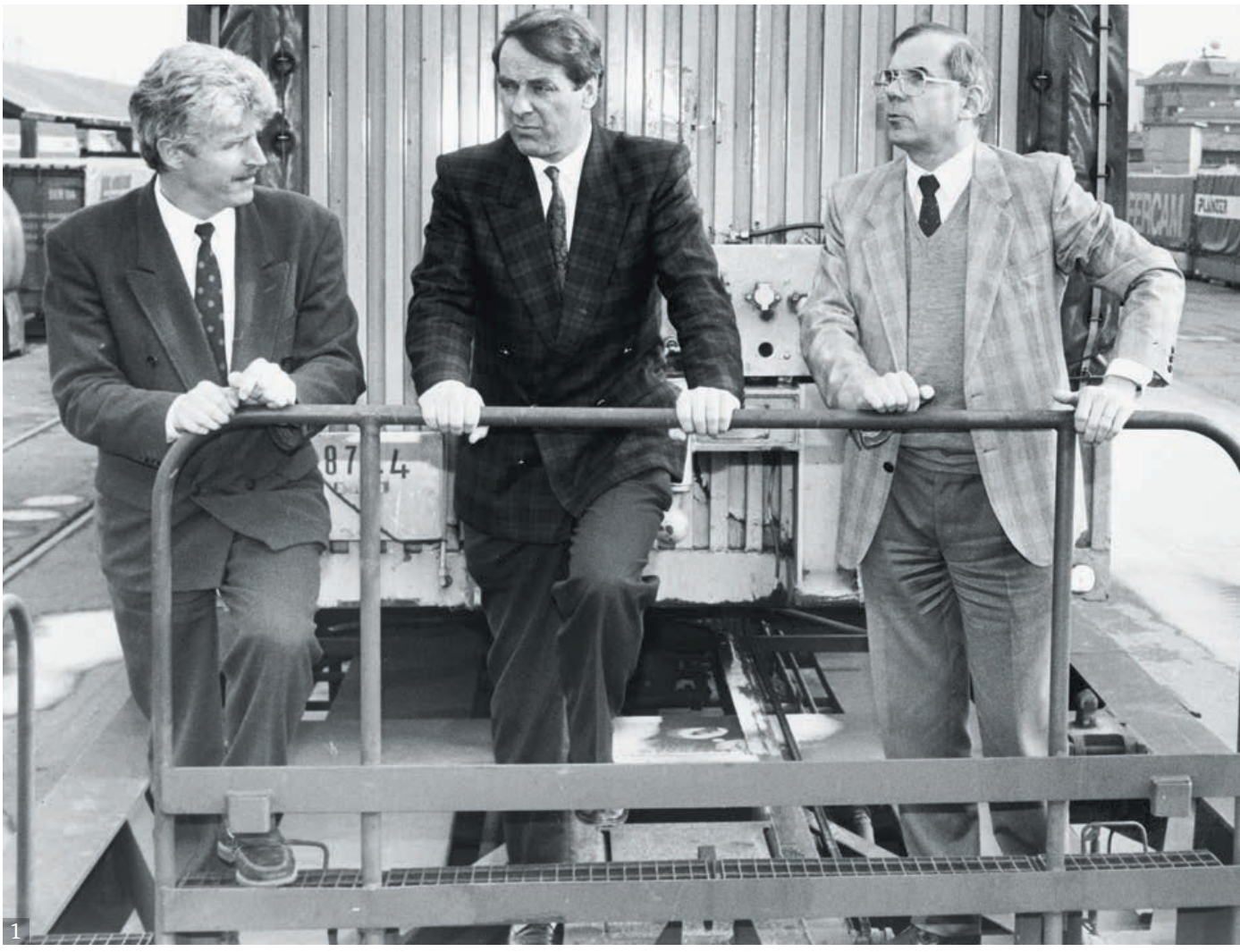
Nevertheless, Minister of Transport Leon Schlumpf (SVP) ordered a survey of the collective capacity of all the transalpine railway lines and compared the figures with the future traffic volume projections. His simple conclusion was that a further one to two new Alpine railway lines would be required, namely in the border area of Switzerland and Tirol. The essential prerequisite, however, was that the Alpine countries harmonise their approaches, giving the impetus for the forming of a deputy committee of the Alpine transport ministries.

Schlumpf officially visited Hupac in 1983 and expressed how much the company's work was valued. In August 1986, he issued instructions for the planning of the potential NRLA routes, involving an evaluation of six prospective variations. In the course of the consultation process, two camps crystallised: a majority for the Gotthard-line solution, and a minority for the Lötschberg alternative.

The flipside was that the French were simultaneously in the midst of planning an Alpine route between Lyon and Turin, and the Austrians a tunnel through the Brenner. Leaving their neighbours to their own devices, the Swiss idea to build a route in their own country might well become superfluous, and Switzerland could sidestep the issue without too much of a bruising ...

The NRLA gets a boost

All of a sudden, Federal Councillor Adolf Ogi (SVP) appeared on the scene. In 1988, fresh in office, he made transport a ministerial matter. In the meantime, as he himself stated, the NRLA files and studies had ballooned to fill an Olympic-sized swimming pool, and executive decisions were sorely needed. As the former managing director of the Swiss Ski Association, Ogi knew how to tackle problems and how to solve them. Ogi wanted to move ahead with the NRLA out of his understanding that the shift of heavy goods transport from road to rail was imperative for the future. Almost all the forecasts predicted that transalpine



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1 Within the scope of the NRLA plan, SBB boss Benedikt Weibel (left) and Federal Chancellor Adolf Ogi visit the terminal I Busto Arsizio in 1990. Hupac CEO Theo Allemann has the right answers for every question.

2 Adolf Ogi and Hupac's Chairman of the Board of Directors Bernd Menzinger advertise the NRLA during their campaign. Picture from 1992.

3 At the church of Wassen in the Canton of Uri (pictured left), Federal Chancellor Adolf Ogi shows the European transport ministers the Swiss traffic dilemma: all transalpine traffic is forced through this bottleneck.

freight transport was set to double by the year 2020. In Canton Uri, the public clamour about the ever-increasing local road traffic level was becoming louder and louder. The policy had to be overhauled – a vision was needed. And Ogi's solution was this: the implementation of the project Bahn und Bus 2000 (Train and Bus 2000), construction of the NRLA, advancement of Zurich's S-Bahn (suburban railway) network as a archetype for other towns and cities, and the finalisation of the motorway network. In other words, a multi-pronged extension of transport.

The decisive factor for the eventual success of the NRLA was, however, that Ogi recognised that in terms of timing the European political landscape presented

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a narrow window of opportunity. Switzerland had a positive standing in Europe and maintained close, if not intimate diplomatic contacts to most European heads of state. There was no better time than now to push the NRLA agenda.

Adolf Ogi – considered by the influential Neue Zürcher Zeitung newspaper to be intellectually ill fitted for the role of Federal Councillor – took an instinctive decision and resorted to an unorthodox approach. On the spur of the moment, he invited the transport ministers from various different European countries to join him in Switzerland and took them on a tour of Canton Uri and the Gotthard – from above. His helicopter flights with his opposite numbers quickly became the stuff of legend and caused a buzz across Europe, forcing the issues Gotthard, railway and combined transport back onto the political agenda of many European parliaments.

The helicopter flights mostly took off from the airfield in Birrfeld in Canton Aargau, whereby the departure point was chosen with a purpose – the local goods station also happily happened to be the transhipment terminal of Hans Bertschi's Cologne–Birrfeld line. Evidently Ogi's intention was to serve his guests a small combined-transport appetizer prior to departure – all part of his transport crash-course sightseeing tours. Up in the air, Ogi showed his visitors how narrow the

Canton of Uri was and the spatial encroachment the transport routes caused. A mandatory part of the tour was a stopover at the famous church in Wassen and the view over the panorama, scarred by the noise and the expanse of the motorway.

The Belgian Prime Minister Jean-Luc Dehaene proved to be a particularly hard nut to crack. It was only after a lot of persuasion that he agreed to visit Adolf Ogi, and just before reaching the church in Wassen he stubbornly explained: "Dolfi, you could build roads, if you wanted to. But you don't want to." Of course "Dolfi" didn't want to build roads – that was the very reason for inviting Dehaene in the first place. But Dehaene is a road disciple: in his view, the railway was simply the wrong vehicle for international goods transport. En route to Kandersteg, Ogi spontaneously asked his pilot to fly right up to the north face of the Eiger and make the helicopter judder violently. No sooner said than done. The pilot flew so close to the rock face, that even Ogi had to gasp, and Dehaene was completely shaken up. During the afternoon snack, Dehaene finally swallowed his pride. He ultimately became one of the NRLA's strongest supporters, doing everything in his power to help Ogi convert their European peers to the NRLA cause. Or at least that's how Adolf Ogi tells the story nowadays.

Even if in hindsight the anecdote may appear slightly exaggerated, the key point is that Ogi propelled the NRLA project forwards. As early as May 1990, the entire Federal Council approved Ogi's plan for the NRLA. Cleverly disguised under the wrapping was an NRLA route that ran through the Lötschberg tunnel – a gift to the French-speaking part of Switzerland. Simultaneously he devised a special refinement in the interests of eastern Switzerland.

The planners based their scheme on the assumption that the future lay in container transport – and as a consequence that the number of large articulated lorries would decline. The Gotthard and Lötschberg routes were accordingly assigned different functions: the latter was to be built in such a way as to ensure that trains loaded with semi-trailers could easily pass through the Gotthard Base Tunnel to the other border – a train with semi-trailers is in fact taller in total than a train loaded with containers, the estimation being a height of 4 metres.

The Gotthard Base Tunnel and the Ceneri Base Tunnel are built to the specifications of the European Railways Act, accommodating a corner height of 4 metres, but the access routes not, as the Gotthard was to remain exclusively a container route. The welcome side effect: overall the NRLA was way too costly, but the special features represented a saving. Nobody at this juncture could have foreseen that the transport trajectory would swing so strongly towards semi-trailers after 2000, but it did. At some point the Gotthard artery became too narrow, and the so-called 4-metre corridor would remain a bone of contention into the twenty-first century – a matter we will return to later.

A ballot cliff-hanger

At the same time, Adolf Ogi hedged what was the largest engineering project in Swiss history vis-à-vis the European Community. On 22 May 1992, Switzerland and the EC signed a transit agreement, in which Switzerland undertook to permit the international transit of heavy goods traffic by rail. In return, the EC commit-

1992: In the same year that the Swiss people vote for the NRLA, Hupac puts its new terminal in the industrial zone of Busto Arsizio into operation.

ted itself to adhere to the Swiss maximum authorised mass (MAM) of 28 tonnes – everywhere else in Europe lorries had been driving for decades with an MAM of 40 tonnes. Furthermore, Italy and Germany undertook to upgrade their connecting sections of the NRLA route. However ideally built the NRLA might be, it would make no sense if the trains would have to be stopped at the border.

The result of the Swiss referendum was awaited with baited breath – not surprisingly given what was at stake, namely a predicted amount of 14.9 billion Swiss francs, plus interest, for a total of three tunnels (the Gotthard, the Lötschberg and the Ceneri). Three referendum commissions opposed the proposal, one of them fearing a total cost closer to 30 billion francs. In the voter information pamphlet, the Federal Council boldly declared, "With the NRLA, the entire future heavy goods transit set to roll over our northern and southern borders can be shouldered by the railways." The Minister of Finance, Federal Councillor Otto Stich (SP), was a lone voice in openly declaring that the Gotthard Base Tunnel, including the Ceneri tunnel, would be more than sufficient, and that he therefore strongly opposed the construction of the Lötschberg Base Tunnel.

Ogi's tactics paid off. He had skilfully exploited the European political situation to his advantage. On 27 September 1992, with a two-thirds majority, the Swiss population voted yes to the NRLA. After 50 years of discussions and project proposals, the largest Swiss construction venture ever could finally be started. Thirteen months later, on 4 October 1993, the first symbolic spadeful of earth was turned for the exploratory bore scheme in the geologically tricky Gotthard rock of the so-called Piora Basin. And then, out of the blue, in August 1995, Federal Councillor Otto Stich announced that he was throwing in the towel, citing old age as his main reason, although he would later admit that his resignation had been an act of defiance in response to the yes to the NRLA ballot.

Timeline of the NRLA

1947: Eduard Gruner outlines the idea for the NRLA in an essay.

1963: Federal Councillor Willy Spühler installs the Committee for a Railway Tunnel through the Alps.

1970: The Committee for a Railway Tunnel through the Alps comes to the conclusion that the NRLA needs to be built as soon as possible.

1979–1980: Various studies on the potential routes of the NRLA.

1983: Three years after the opening of the Gotthard Road Tunnel, the Federal Council announces that the NRLA will not be necessary "for the next 20 years".

1986: Federal Councillor Leon Schlumpf gives instructions to examine the routes for the NRLA again.

1988: Federal Councillor Adolf Ogi risks a U-turn. He takes personal charge of traffic policy and pushes the planning of the NRLA forward.

1992, 27 September: Referendum: two-thirds of the Swiss population say yes to the NRLA.

1993, 4 October: Sod-turning ceremony for the Gotthard Base Tunnel in the Piora Basin.

1996, 6 September: Switzerland and Germany sign the Lugano Convention, forming the joint basis for the extension of the northern connection to the NRLA, also called the Rhine Corridor.

1999, 21 June: Bilateral I Overland Transport Agreement between Switzerland and the EU.

1999, 5 July: Construction commences on the Lötschberg Base Tunnel.

1999, 4 November: Official sod-cutting ceremony for the Gotthard Base Tunnel in Amsteg, Canton Uri.

2000, 13 July: Official sod-cutting ceremony for the Gotthard Base Tunnel in Bodio, Canton Ticino.

2007, 9 December: Opening of the Lötschberg tunnel.

2012, 17 December: Switzerland and Italy sign a memorandum of understanding on common infrastructural projects until 2020.

2013, 13 December: The Swiss federal government passes the Four-Metre Corridor Act, for the construction and financing of the 4-metre corridor with a budget of 990 million francs, of which 280 million francs are intended for funding extension works in Italy.

2014, 28 January: Switzerland and Italy sign a bilateral agreement within the framework of the 4-Metre Corridor Act in which Switzerland agrees to allocate 120 million francs to support the profile modifications on the Italian Luino line.

2016, 1 June: Opening of the Gotthard Base Tunnel.

Planned for 2020/21: Opening of the Ceneri Base Tunnel.

Planned for 2020:
Expansion of the Gotthard line's 4-metre corridor.

Planned for after 2020:
Completion of the NRLA connection to the Rhine-Alpine Corridor in Germany

Planned for after 2020:
Completion of the NRLA connection to the Luino line in Italy.

Planned for 2024:
Operating contributions from the Swiss federal government for unaccompanied combined transport to end.

Planned for around 2030:
Extension of the Lötschberg Base Tunnel to a continuous dual-track line.

Planned for after 2030:
Completion of the Rhine Corridor in Germany.

A paradoxical traffic policy

A triumph for Adolf Ogi, who due to his determination would be christened the "founding father of the NRLA". Ogi's joy, however, was short lived. Faced with what continued to be very positive economic forecasts, many Swiss remained sceptical about the expected increase in traffic. They feared that Switzerland would be overwhelmed with lorries and that the Alps, and with them people, flora and fauna, would perish. The yearning was that the mountains should be preserved in their verdant state, which was why, as early as 1989, the Green Party and like-minded people begin to collect signatures for a referendum to protect the Alps from heavy goods transit traffic. The aim of the initiative was to entirely transfer all transalpine goods traffic from road to rail by the year 2004, and that the capacity of the existing transit routes should be capped as it stood for the future. On 20 February 1994, the popular initiative "For the Protection of the Alpine Region from Transit Traffic" was put to the ballot.

In principle, the initiative overlapped with Adolf Ogi's NRLA and his idea to shift heavy goods traffic from road to rail. In actual fact, Ogi later candidly admitted after leaving office that in his heart of hearts he had always been a supporter of the initiative. However, as Federal Councillor he stridently opposed it, because, as he put it, from a transport policy perspective it would be simply impossible to implement. It was too radical and would create more problems for Switzerland vis-à-vis Europe than it professed to solve. It left Switzerland absolutely no room for manoeuvre.

Nevertheless – and surprisingly for many – the Swiss electorate voted in favour of the initiative by a 52-per-cent majority. The European transport ministers were dismayed, and Swiss politicians now faced a dilemma: on the one hand their aim with the NRLA was to move heavy goods traffic onto the rails, yet on the other the Swiss people had now mandated them to do so to the impossible

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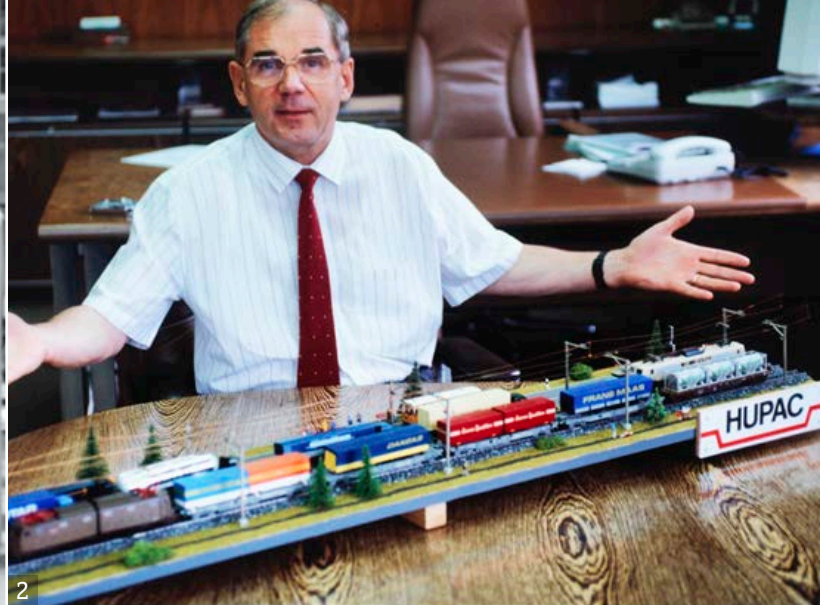

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1 The Alpine Initiative sparks heated discussions.

2 As Theo Allemann demonstrates using a model railway: Hupac is ready!

umpteenth degree. A paradox. The magic political formula to solve this contradiction has since then been known as the modal shift.

As Adolf Ogi had already prophesied: the Alpine Initiative created more problems than it solved. With renewed vehemence, politicians from the adjoining European countries began to pile all the more pressure on Switzerland to raise their MAM for lorries from 28 tonnes to the European standard of 40 tonnes and to finally lift the ban on lorries driving at night and on Sundays. The demands were all the more shrill because the terms of the initiative clashed with the legal European freedom of choice on the mode of transport. In short: Europe wanted a clear run through Switzerland – on the roads, not on the rails.

All the same, an EU Commissioner, who did not want to be named, dropped a hint via the German magazine Der Spiegel that the Swiss yes might also be good for Europe: “The small, stubborn mountain dwellers with their anti-European attitudes might in fact propel Europe a little way further towards a rationally planned, common traffic policy.” Indeed, in the coming years and decades it would ironically be the non-EU-member Switzerland and the straightjacket of the Alpine Initiative that would prove to be a driving force in the liberalisation of the European railways. Back then, however, the perspective was a different one and did nothing to lessen European pressure on Switzerland.

Adolf Ogi’s successor, Moritz Leuenberger, who was elected into the Federal Council and took over the portfolio of Minister of Transport in 1995, felt cornered and decided to take a forward strategy with the European Union: he tied the NRLA and the Alpine Initiative together with the 40-tonne limit, the Swiss Heavy Goods Vehicle Fee and the Swiss motorway toll sticker for car drivers in a package. This turned the NRLA into what could be described as a quid pro quo in the traffic negotiations with the EU, and in 1999 was anchored as a cornerstone of the Bilateral I negotiations in the so-called Overland Transport Agreement. In essence the agreement stipulated that Switzerland would build the NRLA at its own expense and in the process guaranteed – as promised in Adolf Ogi’s Transit Agreement – the transport of 40-tonne lorries by rail through Switzerland. Whoever still wanted to drive on the roads would need to pay higher road tolls.

Timeline of the Heavy Goods Vehicles Fee

To ensure a competition balance between rail and road, the fees levied on heavy goods vehicles were (and continue to be) modified according to the development of the railway infrastructure.

1985: Introduction of the Flat-rate Heavy Goods Vehicle Fee (pauschale Schwerverkehrsabgabe, PSVA), 3,000 francs for a 28-tonne HGV per year.

1995: The PSVA is raised to 4,000 francs for a 28-tonne HGV per year.

2000: The PSVA is raised to 8,000 francs for a 28-tonne HGV per year.

2001: Introduction of the Performance-related Heavy Goods Vehicle Fee (leistungsabhängige Schwerverkehrsabgabe, LSVA), 1.6 Swiss centimes per tonne-kilometre.
- Simultaneous increase in the maximum HGV weight from 28 to 34 tonnes.

2005: The LSVA is raised to 2.88 centimes per tonne-kilometre for the category with the highest emission values, 2.15 centimes for the category with the lowest emission values.
- First classification of lorries into set emission classes, the so-called Euro-Categories.
- Simultaneous increase of the maximum HGV weight from 34 to 40 tonnes.

2008: The LSVA is raised to 3.07 centimes per tonne-kilometre for the highest emission category, 2.26 centimes for the lowest emission category.
- Simultaneous opening of the NRLA Lötschberg Base Tunnel.

2012: The LSVA is raised to 3.10 centimes per tonne-kilometre for the highest emission category, and lowered to 2.05 centimes for the lowest emission category.

2016: Opening of the NRLA Gotthard Base Tunnel.

2017: The LSVA is raised to 3.10 centimes per tonne-kilometre for the highest emission category, 2.28 centimes for the lowest emission category.
Measured in terms of a 40-tonne lorry driving 100,000 kilometres per year, this means an annual charge of 124,000 francs for the highest emission category, and 91,000 francs for the lowest emission category.

Source: Swiss Road Transport Association, ASTAG

Federal Councillor Moritz Leuenberger combines the Heavy Goods Vehicle Fee with the NRLA. He explains how it functions at a UIRR international traffic conference in Lugano on 19 September 1997.

Sounds good, said the EU, but they wanted more: they wanted their 40-tonne vehicles to be allowed to drive on Swiss roads. Fine, answered Moritz Leuenberger and suggested the following deal: Switzerland would step-by-step increase the MAM for lorries to 40 tonnes by 2005. However, parallel to this the fee for heavy goods vehicles would be increased – not as a flat rate per lorry, but according to a performance-related calculation per kilometre travelled and tonne of transported weight. Moreover, the night and Sunday driving ban for lorries would remain in force. This created an advantage for the railways, because they are permitted to transport semi-trailers and containers at night and on Sundays, and Swiss citizens can continue to sleep soundly. Europe agrees. The Swiss people do too, and as a result over the coming years would have to give their approval to a number of Federal Council item resolutions to the agreement.

The problem for Swiss foreign policy had thereby been more or less satisfactorily resolved. However, the domestic political problem still remained. After tough negotiations, Moritz Leuenberger and the initiators of the Alpine Initiative came to an agreement that the number of Alpine transit lorries would not be reduced to zero, but for the moment be limited to 650,000 per year, valid as of the first year after the opening of the Gotthard Base Tunnel. This aim would change over the years according to the circumstances.

Timeline of the Alpine Initiative

1989: The collection of signatures commences.

1994: The electorate approves the initiative:
- Transfer of transit freight traffic from road to rail by 2004
- Abstain from extending transit route capacity.

1995: Federal Councillor Moritz Leuenberger takes up his post and combines the NRLA with the Performance-related Heavy Goods Vehicle Fee (LSVA), the Alpine Initiative, the 40-tonne MAM and the Federal Council's resolution on the Construction and Financing of the Public Transport Infrastructure (FinöV for short).

1998: Referendum: a yes to FinöV's 30.5-billion-franc budget, including the construction of the NRLA with the Gotthard, Lötschberg, and Ceneri tunnels.

1999: Traffic Transfer Act (limited to between 2001 and 2010):
- Introduction of the LSVA as of 2001
- Construction of the NRLA
- Restriction of transalpine HGV transport to 650,000 vehicles per year as of the first year after the opening of the Lötschberg Base Tunnel, in other words 2009
- Railway reform.

2000: Promotion of accompanied combined transport:
- The federal government decides to support accompanied combined transport with 200 million francs per year.

2008: Freight Traffic Transfer Act:
- Restriction of transalpine HGV transport to 1 million vehicles per year from 2011 onwards
- Restriction of transalpine HGV transport to 650,000 vehicles per year two years after the opening of the NRLA Gotthard Base Tunnel, in other words 2019
- Promotion of freight traffic transfer for a total amount of 1.6 billion francs in 10 years
- Subsidisation of combined road-rail transport
- Option of an Alpine Crossing Exchange.

New leaders shape the firm

And Hupac? The company could have easily rested on its laurels. After all, the parties were on their side, and whatever the world of politics or the electorate decided had so far worked in their favour. Combined transport on rails is great! But the good vibes did not make daily business any bit easier. European national goodwill towards the railways and the admirable intentions by no means meant that one should surrender one's own national entitlements.

Of course, the political push for the modal shift and a liberalisation of international rail transport had started. But the processes in this tangle of individual

state interests were highly complex, highly complicated and agonisingly slow. Consequently, the doers of Hupac were obliged to learn to think strategically in the very long-term, decades ahead, whilst incessantly fighting against the resulting difficulties in their real day-to-day business.

Though it wasn't a coincidence, it was nevertheless fortuitous that a number of new managers joined the firm in quick succession during this turbulent phase. Together with the managing director Theo Allemann, they consolidated Hupac and fashioned it into a soundly based and coherently organised company. As a group they would go on to successfully lead Hupac for decades, right up to the present.

The "reshaping" began in 1987, at the same time as Hans-Jörg Bertschi joined the board of directors. Two years previously, the son of Hupac co-founder Hans Bertschi had completed his economics scholarship at the University of St. Gallen with a PhD thesis entitled "Transalpine Transport, as Illustrated by the Development of a New Rail Route through Switzerland". In it, on the basis of his detailed analysis, Bertschi calculated how the planned NRLA should be ideally run in order to make transalpine transport financially viable – both in terms of the national economy and in terms of business management. Bertschi defined for the first time ever the cost-benefit ratio for combined transport in large dimensions and in clear numbers, making the 650-page work a definitive guide for transport operators and transport policy makers. Based on the work, even Federal Councillor Adolf Ogi would seek expert advice from Bertschi as a consultant for both the planning and the construction phases of the NRLA. Hans-Jörg Bertschi was a genuine stroke of luck for the company. He brought with him the practical understanding absorbed at home, and as a doctor of economics he had a firm grasp of the theory too. In addition: the company Bertschi AG was still Hupac's largest customer.

In 1988, a year after Bertschi joined the board of directors, Pietro Ris resigned his mandate as chairman for age reasons. He was replaced by Bernd Menzinger, who was chosen as CEO of Danzas Europe, assuming the position as a delegate of the board of directors for the Danzas Group. The practical outcome was that the mandate of the Hupac board chairman remained under Danzas's guardianship.

And Menzinger knew how a company that had expanded into a large enterprise needed to be set up in order to remain big. Menzinger transferred the Danzas business structures to Hupac – Danzas is after all the third largest forwarding company in the world – and turned, as he himself put it, "this place into a real business". He saw to it that a modern business administration was introduced with clearly structured areas of responsibility and clearly defined aims. In short: more structure and less gut-instinct.

Likewise in 1988, Peter Howald joined Hupac. He's a man with railways in his blood, having started in station service and finally ending up in Milan as the SBB general representative for goods transport. As marketing manager, he would become a prime mover in the development of the Hupac shuttle trains, and in the 2000s, as a member of the company's management board, would define the integrated traction of international trains.

Beni Kunz also joined Hupac in Chiasso in 1988. Admittedly, this wasn't so much a case of joining a new company, rather a homecoming. He had originally joined Hupac in 1978, just after finishing his apprenticeship at Danzas in Zurich, above all because he wanted to learn languages. After two years, Beni Kunz applied to the chairman of the board of directors Pietro Ris for a transfer to a Danzas branch in America to allow him to learn English. Ris consented, under the condition that Kunz should first complete the officer cadet school. No sooner said than done – and the two years in America turned into eight years in New York, Cleveland and Norfolk. There he experienced first hand president Reagan's liberalisation policy, which naturally affected the rail and transport industries – an experience that would serve him well in the wake of European railway liberalisation.

Upon his return from the USA, Beni Kunz became Hupac's operations manager, and in the year 2000 moved up to become Theo Allemann's vice director. In 2004, as the latter's successor, he became CEO of Hupac.

Finally, in 1990, Peter Hafner joined Hupac as head of finance and member of the executive board. Until today, he is still the man who calculates and supervises all on-going and planned projects. Since 2003 he has been doing this as deputy managing director.

The dream team was thereby complete – all except one change. As of the end of 1993, Bernd Menzinger stepped down from his position as chairman of the board. Due to the fact that in the interim he had been promoted to the position as CEO of the Danzas Group, his schedule had become too tight for him to exercise both functions with the diligence he expected of himself.

His successor was Hans-Jörg Bertschi, the man combining straightforwardness with the academic, who in the meantime had acquired enough experience as a member of the board of directors to be a good chairman. He still is today.

Poaching in foreign preserves

The new management team forcefully took up the reins. And because, at the end of the day, the free market means that every company looks out for number one, quite early on the board of directors took a fundamental decision: to expand into "hostile territory".

If we recall, there are many market participants involved in transporting a consignment from A to B, and there are a wide range of diverse possibilities that result from the interplay of all the service providers and service recipients. With the founding of the International Union for Road-Rail Combined Transport (UIRR), the rail services involved in combined transport had formed a kind of European trade union, but here too the internal rules of the game were structured so as to protect the interests of each individual railway. Put simply, the rules ran as follows: the combined transport operator of the country of departure and that of the country of arrival organised a train between them and split the margins. At a later date, even pure transit companies would be absorbed into this set of

Combined transport starts to take off:
Hupac expands into neighbouring countries.

rules. The upshot was that international combined transport did not simply stay a state-run operation, but also a controlled market for the companies in which each player feathered their own nest.

This equation might have been acceptable for providers in major countries such as Germany, France or Italy, because as a more-or-less second pillar they could run combined transportation along stretches of over 500 kilometres in their own country as well. Restricted to within Switzerland, however, whichever way one tries it, combined transport is unprofitable – the country is quite simply too small.

For this reason Hupac decided to take operational control of as much as they could on their international routes. This meant their own terminals and their own company subsidiaries. It also meant breaking the cardinal rules of the UIRR.

The affected UIRR members were, needless to say, hopping mad. Conversely, the move secured Hupac its long-term survival. And ultimately it was a shift that was very much in the spirit of the maxim formulated at Hupac's founding meeting, namely that one of its core aims was to operate using its own rolling stock and therefore be independent of the state railway. By extension, the same applies to abroad – own terminals, own personnel and own rolling stock.

To take Germany as an example. In 1986, contact was established with the transport firm Transco GmbH that regularly exported goods from Rielasingen on Lake Constance to Italy. Hupac was awarded the job of operating the consignments. During a cloak-and-dagger operation, workers at Hupac installed a reach stacker for handling semi-trailers at the freight station in Rielasingen and set up a transhipment terminal. Everything ran smoothly. But as soon as the headquarters of Kombiverker in Frankfurt heard about Hupac's meddlings in their own backyard, they flew completely off the handle. Who do the people at Hupac think they are, and how could they even think about trespassing onto their territory, blustered manager Ralf Jahncke.

This time however, from a legal point of view Hupac was on completely safe ground: Germany and Switzerland were signatories to a treaty under which Rielasingen was fully connected via the Rhine bridge at Hemishofen to the Swiss railway network and serviced by the Swiss railways and Swiss railway staff ...

In other cases, the factual or legal situation was not always so clear-cut, but all of them involved a lot of fuss and hostilities. Hupac evolved into an enfant terrible of European combined transport. Even so, Hupac's chairman Pietro Ris was elected twice to serve a two-year term as chairman of the UIRR, once in 1974 and again in 1986; and Hupac's CEO Theo Allemann even spent 12 years as UIRR general secretary, from 1976 to 1988.

Perhaps these elections to the highest positions were in fact a tacit acknowledgment of the positive knock-on effects of Hupac's aggressive international strategy. Behind closed doors, many UIRR members recognised that in the long run this business model would be of more advantage to the combined transport industry than state protectionism. Over the years, Hupac's actions would come to define and reinforce combined transport in what was ostensibly enemy territory – and continues to do so to this day.

This became particularly apparent during the economically bleak years after the crash in 2008, in which combined transport companies all over Europe either sank or were swallowed by the state railways. Hupac was able to weather these difficult times, thanks to the fact that in so many areas it worked with an infrastructure that was not only rock-solid, but was above all as company-controlled as possible. Small wonder that Hupac today counts as the most economically well positioned and best connected combined transport company in Europe.

One further revolution: shuttle trains

Using their own traffic routes paved the way for the Hupac strategists to undertake a further innovation, one that yet again would shake the whole European branch to its foundations: shuttle trains. Everyone is no doubt already familiar with this system from the private passenger transport sector, for example at the Swiss national wrestling festival, where a shuttle bus runs between the arena and the remote car park, transporting the guests to and from the festival.

In order to transpose the shuttle bus concept to the rails, a more precise definition is needed. The fact that a train has to run reliably at fixed timetables backwards and forwards between A and B still remains the same. In this respect, a shuttle train doesn't differ from a conventional goods train. However, a shuttle train always circulates with exactly the same composition and number of train wagons, no matter whether a wagon has been loaded or not. Precisely this thought was the thing that was revolutionary.

Since the very beginning, all European railways had operated according to a cast-iron maxim: a goods train should only run when it is laden with goods. If a wagon is empty, then it is shunted off. If necessary, an entire train with empty wagons is hauled from one place to another in order to load them. A goods train with empty wagons was a taboo, an anathema – it would represent a financial loss. Instead, empty and laden wagons were shunted backwards and forwards for as long as it took to put a train together composed solely of fully loaded wagons.

As a result, it was completely normal for different service providers to pool their jobs so as to jointly piece a block train together – meaning, for example, that a train might consist of wagons from Hupac, Kombiverkehr and Novatrans, who then split the costs accordingly. Incidentally, this method using trains consisting of individual consignments from different operators is called single wagon traffic.

Looking at the whole thing from an economic perspective, the shuttle train boasts nothing but advantages:

- The shunting of the wagons can be omitted, which saves time and money in scheduling, as well as on site.
- Not having to shunt the wagons means that the trains are more punctual, because the rearranging process regularly entails delays.
- Greater punctuality means fewer customer complaints and fewer administrative overheads.
- Only one single freight document is needed for the whole train, as opposed to the previous requirement of a freight document per consignment. On the one hand this simplifies the internal administration, and on the other it considerably shortens the time spent idling at the border controls – which in turn makes the train faster.
- Shuttle trains can be serviced and revised as a whole. The wagons do not need to be arranged individually, greatly diminishing the logistical effort.
- In contrast to the variable invoice per train as used to date, the loading slots on the shuttle train are offered at a fixed price. This means more efficient budgeting and reduces the workload in the accounts receivable department
- Tremendous capacity improvements in the terminals compared to the dispatching of individual wagons.
- Because shuttle trains consist exclusively of Hupac rolling stock, the administratively time-consuming organisation of jointly operated trains and invoicing is cancelled out.

- The new fixed offer, which in many ways is easier to plan, increases the attraction for hauliers to switch long-distance freight transport from road to rail. Or at least this was Hupac's hope – the shuttle train idea was still in its infancy and had yet to become established.
- The sum of the above points clearly indicates that shuttle trains are also more environmentally friendly.
- The lorry-train and the car-train on the Rolling Highway have anyway always operated using fixed train compositions.

Once again, the obvious thing was to go for the self-evident solution. In addition, in-house calculations showed that when added up, each shuttle train would cost 2,000 francs less than the existing single trains. An IT system that was newly introduced at the same time enabled a better monitoring of the trains on the tracks and an optimised inclusion of the customer in the direct booking system – today known as open source. The bottom line was that once again Hupac provoked a rethinking in the world of goods railways, and once again in favour of the railways themselves. And because the shuttle train had beneficial knock-on effects for the environment, Hupac itself coupled the new service with the introduction of an environmental management system.

The shuttle train was developed by a six-man crew called the Strategic Coordination Group. An unusual and at the same time happy feature of this group was that it was composed half/half of Hupac and SBB members, a mixture that guaranteed that both sides worked towards a common goal – Cuno Amiet, Samuel Ruggli and Theo Stucki from the railways, alongside Theo Allemann, Beni Kunz and Peter Howald from Hupac.

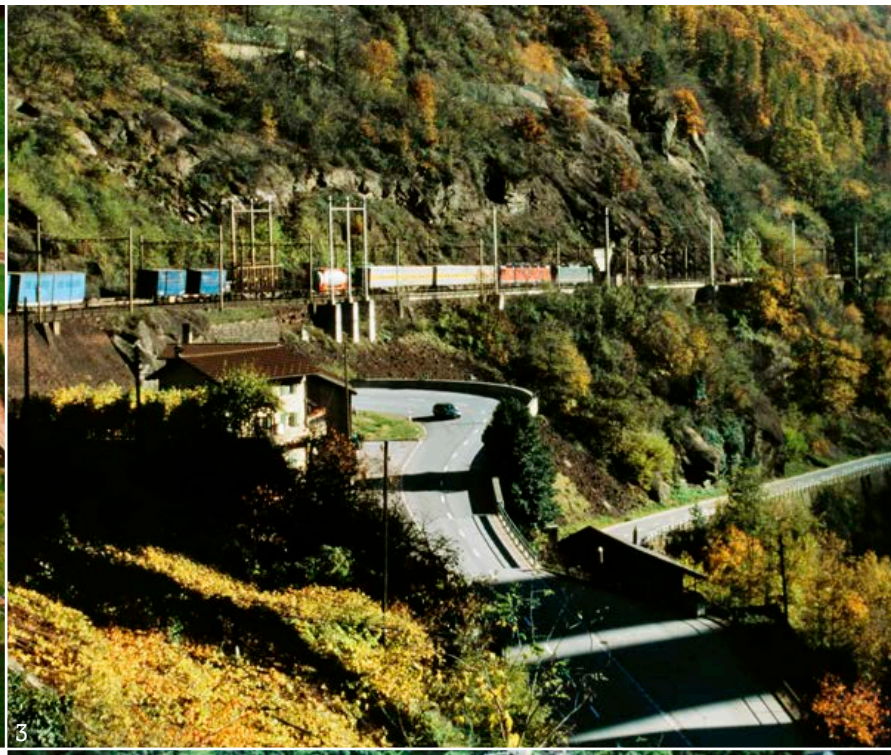
Hupac duly put Europe's first shuttle train into operation to coincide with the timetable change of December 1989. Where? Hardly surprisingly on the tried-and-tested Cologne–Busto Arsizio line – every weekday several times a day. The rest of the railway world, however, reacted indignantly. Traitors! Planning idiots! Job killers! Hardly a voice in the room found the words of praise that the innovation in fact deserved – greater efficiency, long-term thinking, visionary! At least the German Kombiverkehr recognised the inherent advantages of the shuttle train and wanted to join the business or supplement the Hupac shuttle train service with their own train wagons. But precisely this response made no sense, for the above listed reasons, and Hupac turned down the proposal. Kombiverkehr was indignant. The state railways for their part – wilfully or not – failed to recognise the advantages of the shuttle trains, and for years continued to levy the same charge as they did for the ones of single wagon traffic. But Hupac was determined to realise its innovation. The remark by Hans-Jörg Bertschi's father, Hans Bertschi, quickly became legendary: "So what if the railway suits don't get it, we'll carry on regardless, even if it means welding the wagons together."

Within a matter of weeks it became evident that Hupac had got their sums right. The customer demand was huge, and the shuttle network was rapidly expanded. In 1996, six years after the inaugural train, 32 complete shuttle trains with between 27 and 30 wagons were already circulating between Scandinavia, Germany, Switzerland and Italy on a total of eight routes – daily. On the route

Shuttle trains quickly turn into a great success. Out of a few fixed rail links, a shuttle network soon emerges. In 1995, Hupac employs various photographers to show the shuttle trains in their best light.

1 On the Intschitobel bridge above Amsteg, Canton Uri.
2 Between Immensee and Arth-Goldau, Canton Schwyz.
3 Along the Biaschina in Giornico, Canton Ticino.
4 Along the Secken viaduct below Gurtnelle, Canton Uri.
5 Between Steinen and Schwyz, Canton Schwyz.
6 At Cadenazzo, Canton Ticino.

2



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6

Cologne/Mannheim to Busto Arsizio alone, six shuttle trains were running every day. In a period of economic recession, when other transport companies were suffering a slump in sales, the shuttle train boomed – without, moreover, a single price rise in the first four years.

In the meantime, other combined transport companies began to offer the same service too, and became enthusiastic converts, elated at how superb the shuttle trains were for all concerned. In 1997, 80 per cent of Hupac's total transport was being handled using shuttle trains, and the same year the publishing house Huss-Verlag in Munich, which specialises in logistics, even awarded Hupac their prestigious annual European transport prize for their boldness in introducing the shuttle train. The trophy, a metal cube balanced on one corner, is still to be found in the large meeting room of the Hupac headquarters in Chiasso.

It was not without pride that director Beni Kunz observed in an interview for the Handelszeitung, given one year after the award ceremony in Munich, that "with its shuttle train concept, Hupac has set decisive pace-setting norms."

The terminal as a hub

The idea, or rather the practical ramifications of the shuttle train went even further though. If a number of shuttle trains arrive simultaneously at the same place from different starting points, the arriving consignments can be re-bundled and forwarded onwards together. If we assume that two shuttle trains arrive daily in Busto Arsizio from Antwerp, Hamburg, Cologne and Singen, and that each of these trains transports four consignments that are in actual fact destined for Naples, then all these consignments can be transferred to a new train in Busto Arsizio, which then continues on towards southern Italy. If these trains were all people, we would say that they are changing trains.

If we compare this system to that of flight traffic, then Busto Arsizio would be a hub. In the combined road-rail transport system, this is known as a gateway and the vehicles as gateway trains. In 1997, the volume of traffic for shuttle trains was large enough to dispatch the first gateway train south. It drove from Busto Arsizio to Pomezia near Rome.

And yet again the industry glared at Hupac in envy. And once again the railways flew into a rage, this time because the gateway trains were loaded and unloaded using gantry cranes, enabling the consignments to change shuttle trains. The railways had yet to realise that what they saw as the sacrosanct shunting of railway wagons in fact cost far more time and money.

Nonetheless, in due course the gateway system caught on throughout the rest of Europe too. This in turn created a positive "feedback effect" for Hupac: thanks to the rising volume of traffic of the gateway trains, the first shuttle trains in the reverse direction from the south to Busto Arsizio already began to materialise.

And so it was that during this two-decade-long consolidation phase Hupac managed to evolve better than satisfactorily despite facing what were dramatic political, social and economic upheavals.

Hupac in December 1990
40 employees
165,266 consignments (in the whole year)
885 company owned wagons
125 million francs turnover

Hupac in December 1995
125 employees
275,311 consignments (in the whole year)
1,160 company owned wagons
173.4 million francs turnover

Hupac in December 2000
201 employees
373,739 consignments (in the whole year)
1,844 company owned wagons
640 rented wagons
281.2 million francs turnover

As we can see, at the start of the new millennium Hupac was in solid shape. This was extremely advantageous, because at this point the European phase was about to begin. The liberalisation of the railways within the EC, or rather the EU, had already been determined long beforehand, but now, in the 2000s, it slowly began to be implemented – or at least elements of it. In other words, things started to get really complicated.

Before tracing these new adventures however, we will spend a chapter focusing on the development of rolling stock, since here too, over a span of decades, Hupac has again and again set new European standards.

“Company owned rolling stock forms the backbone of Hupac.”

Theo Allemann,
Director of Hupac, 1968

04

From A to B:

The ABC of rolling stock

The core question in combined transport is how to build a wagon so that it can optimally and safely carry a loading unit designed for road haulage. For decades, Hupac's technical department has been amalgamating the requirements of the market, railway infrastructure and operations. Together with rolling stock manufacturers and railway experts, Hupac's engineers have continuously improved and developed railway wagons in terms of length, load carrying capacity, height of loading surface and noise abatement. Many of these technical innovations have been adopted by other players of the railway sector and today they set a Europe-wide standard. Hupac has established itself as Europe's driving force in the evolution of rolling stock for combined transport. Here the Hupac engineers give us an insight into their profession.

2 July 1968: Hupac's first wagons at Giubiasco station by Bellinzona – two 2-axle Wippen wagons. The semi-trailers were loaded onto them horizontally and positioned correctly by a tractor, the weight of the semi-trailer forcing the spring-controlled loading platform (the "Wippe", a German term for "cradle") downwards. Hupac leased these wagons from the German state railway Deutsche Bahn while waiting for its own to be delivered, which had been ordered from wagon manufacturers Ferriere Cattaneo.

The three epochs

First phase of operations, 1968–1977: Rudimentary and rustic – that was combined transport in its infancy. Loading and unloading was carried out horizontally, meaning that a loading ramp was used to manoeuvre the semi-trailers onto the railway wagons, where they are then lashed down with wire ropes. Entire lorries, whose maximum corner height amounted to 3.50 metres, were also loaded.

Second phase of operations, 1978–1988: The time-consuming horizontal loading was superseded by vertical crane technology. New types of loading units, such as tankers and swap bodies, can be transported. With the introduction of the pocket wagon, the corner height was increased to a maximum of 3.60 metres.

Third phase of operations, 1989–today: The industrialisation of combined transport began. Rolling stock has been continually developed in order to transport ever higher and heavier loading units and to accommodate as many consignments per train as possible. Environmental sustainability has likewise improved, also marking the start of the era of noise reduction.

Variety of the fleet and teamwork

Firstly, a freight wagon should weigh as little as possible so as to create the best possible deadweight to payload ratio. Secondly, it should only be very slightly longer than its loading length so that a train can be made up of as many wagons as possible. Thirdly, the height of its loading platform needs to be kept to a minimum.

The variety of Hupac freight wagons is partly a result of ongoing changes to the dimensions and carrying capacity of road vehicles, in addition to a series of technical improvements that have been made by Hupac engineers, Leonardo Fogu – Director Fleet Management – with Michael John and their hardworking team, in collaboration with wagon manufacturers. The main improvements were accomplished together with Ferriere Cattaneo (Giubiasco, Switzerland), Josef Meyer (Rheinfelden, Switzerland), Talbot (Aachen, Germany),and later also with Waggonbau Niesky (Germany). As part of the process, Hupac clients, loading unit manufacturers and the Swiss Federal Railway were also repeatedly consulted.

Today Hupac has over 5,500 company owned railway loading platforms. Apart from the 400 wagons for the Rolling Highway (RoLa), the fleet consists mainly of flat and pocket wagons for unaccompanied combined transport that come in either a 4-axle and a 6-axle design or as 2 x 4-axle short-coupled single vehicles.

A new low-level wagon, 1980

A new Jumbo wagon, 1989

A 2 x 4 axle Mega II double-wagon unit, 2004

The T3000: a 6-axle double pocket wagon, 2014

What is a flat wagon?

A flat wagon has four axles, a 60-foot (18.240-metre) loading platform length and an unladen weight of around 20 tonnes. With a total-load capacity of 70 tonnes, these standard intermodal wagons can carry 20-, 30- or 40-foot containers.

A 4-axle, 60-ft flat wagon

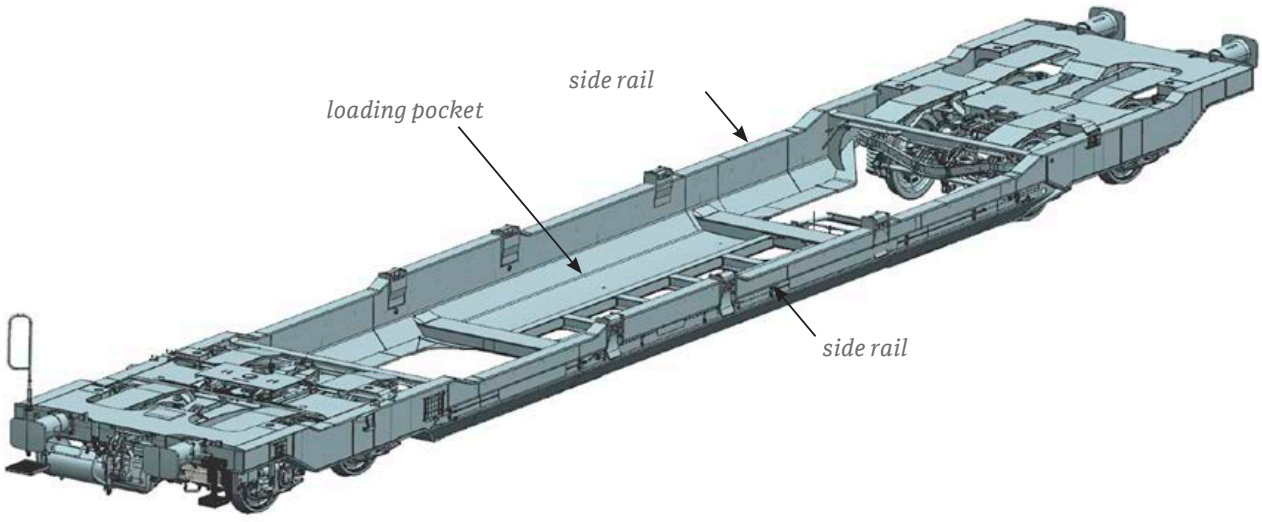
The transportation of swap bodies results in unused loading length. For this reason, Hupac has developed a 4-axle flat wagon (CT Long) for transporting three swap bodies with length of 7.45 metres. With a total length of 23.89 metres, the wagon has an available loading length of 22.59 metres, a tare weight of 22 tonnes and can accommodate a maximum 68-tonne payload.

A 4-axle, 73-ft flat wagon (CT Long)

Tank containers used for transporting liquids often reach weights of 36 tonnes. Correspondingly, two of these tank containers loaded onto a 4-axle flat wagon exceed the authorised payload limit of 70 tonnes. Hupac's answer is therefore a lighter flat wagon, the so-called CT Light, with a tare weight of less than 18 tonnes.

What is a pocket wagon?

Pocket wagons are specially designed for carrying craneable semi-trailers. These bogie wagons essentially consist of two parallel side rails placed far apart with a low-lying, short loading pocket to accommodate the semi-trailer wheels and a king pin box which supports the front of the semi-trailer and locks it into place. The side rails are equipped with flappable pins to enable swap bodies and containers to be transported.



A 4-axle pocket wagon

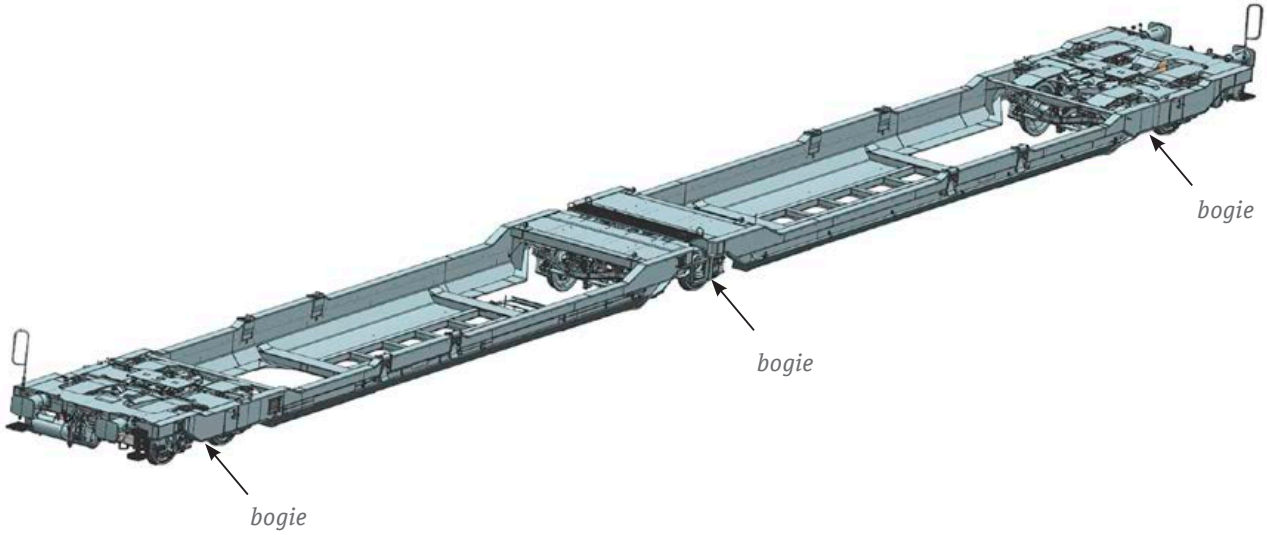
Every pocket wagon also functions as a flat wagon. The flappable pins allow containers or swap bodies to be placed over the pocket of the wagon. The king pin box is either folded into the pocket or slid towards the rear of the wagon and locked into place. On the latest generation of pocket wagons, the lowest king pin box height is deeper than the container/swap body loading surface height.

What are double wagons?

Double wagons consist of two wagons that are coupled together using a so-called short coupling and are not detachable when in operation. This is a 2 x 4-axle wagon unit, with four bogies (eight axles) per wagon.

Alternatively, the two wagons are connected by an articulated joint, in this case requiring only three bogies, with the joint positioned above the middle bogie. This results in six axles as opposed to eight axles per double wagon.

The advantage of double wagons is that they are shorter than two conventionally coupled wagons and with train lengths of 550 metres they allow more loading units to be transported per train.



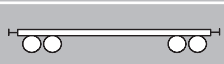
A 6-axle articulated double pocket wagon

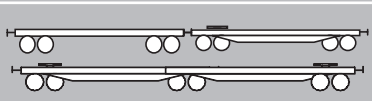
A triple height-adjustable king pin box to anchor semi-trailers to the newest-generation T3000e pocket wagons, in the highest (left) and lowest positions.

Timeline of wagon types

Year	Wagon types				
					
	2-axle	8-axle	4-axle	4-axle	
1967 1968	Wippen wagon				
1969		RoLa wagon “Simmering Graz-Pauker”			
1971					
1979			Pocket wagon I		
1979	Profile re-codification of the Swiss railway infrastructure to a height of 3.80 metres				
1980		Low-level flat RoLa wagon			
1983			Pocket wagon II		
1984			Pocket wagon III		
1987				60-ft flat wagon	
1989 1990					
1992			Pocket wagon IV		

	2 x 4-axle and 6-axle	Loading units / components
		Hupac's first wagon has two axles and an authorised payload of 16 tonnes. Loading and unloading occurs horizontally: the lorry reverses onto the wagon over a ramp. The tractor unit is then uncoupled and the semi-trailer is lashed down with wire ropes.
		The first wagon for loading and unloading entire lorries with a 16-tonne payload.
	Wippen wagon	The new Wippen wagons have four axles and a maximum payload of 25 tonnes.
		The first pocket wagons for vertical loading and unloading by crane suitable for semi-trailers, swap bodies and containers. They boast a total length of 13 metres, a payload of 44 tonnes and a reduced loading height of 330 millimetres above rail level.
		A short-coupled flat wagon with an extra-low end-to-end loading area. The lorries drive onto the train from the rear as if they were driving along an uninterrupted road. The wagon has a 4-axle bogie with extra-small 360-millimetre wheels.
		With a length of 16 metres, the new pocket wagon series can accommodate payloads of up to 60 tonnes.
		The pocket wagon III is 18 metres long and can carry wider loading units of up to 2.60 metres.
		The first container wagon enhanced to transport three 20-foot loading units. Its maximum payload is 70 tonnes.
	Jumbo	The first double wagon with a short intermediate coupling. The loading area for the transport of containers and swap bodies is 23 centimetres lower than standard, allowing correspondingly higher loading units to be transported.
		With the pocket wagon IV, Hupac introduces the dual-level adjustable king pin box, allowing an exact fit for various types of semi-trailer and a height gain of 15 centimetres. The loading platform has been lowered by 6 centimetres down to 270 millimetres above rail level. The market outcome is that the pocket wagon IV allows semi-trailers with an interior height of 270 centimetres to be transported, representing an increase of 20 centimetres against older models.

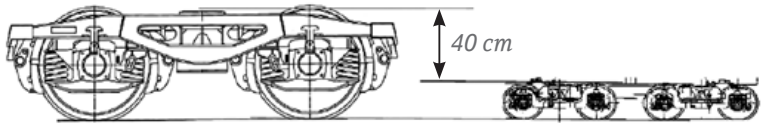
Year	Wagon types				
					
	2-axle	8-axle	4-axle	4-axle	
1994					
1995				73-ft CT Long flat wagon	
1997					
2001	All newly purchased wagons now have “noiseless” synthetic break blocks (K blocks).				
2004		Ultra low-level flat RoLa wagon			
2004					
2005				60-ft CT Light flat wagon	
2006			Pocket wagon V		
2008	Hupac takes full responsibility for the maintenance of its own rolling stock.				
2013				60-ft flat wagon for Russian broad gauge	
2014					
2015	Conclusion of the noise abatement programme; acquisition of wagons with disk brakes.				
2016					
2017				48-ft flat wagon	

	 2 x 4-axle and 6-axle	Loading units / components
	Mega I	The Mega I double wagon evolved from the Jumbo. The wagon has a longer loading platform and can thereby flexibly accommodate different kinds of loading units.
		The 4-axle long container wagon is designed to transport three 23-foot loading units.
	Mega II Series 1	The Mega II double wagon's loading platform is a further 9 centimetres lower (32 centimetres lower than standard) for the transport of containers and swap bodies. It comes in a pocket + pocket and a pocket + flat version, making the wagon extremely versatile.
		The new 8-axle RoLa with a lower loading platform between the bogies for transporting 4-metre lorries through the Gotthard.
	90-ft articulated flat wagon	A 6-axle articulated flat wagon for transporting two 45-foot loading units.
		A lightweight construction for greater payload capacity: by reducing the tare weight from 20 tonnes to 17 tonnes, heavier loading units can be correspondingly transported.
		The pocket wagon V boasts a triple height-adjustable king pin box with a newly designed crash element: semi-trailers can be so safely and securely anchored to the wagon that the need to secure the wheels mechanically is dispensed with. This enables vehicles of all types to be loaded and unloaded more flexibly.
		Hupac for the first time acquires container wagons for the broader Russian track gauge to facilitate expansion into the Russian and Asian markets.
	Articulated T3000 double pocket wagon	The ultra-short T3000 6-axle articulated double pocket wagon can carry two semi-trailers on a loading length of only 34.20 metres.
	Articulated T3000 double pocket wagon with disk brakes	Hupac acquires a wagon with disk brakes for the first time.
		A 48-foot container wagon optimised for transporting heavy 24-foot tank containers with a tare weight of 16 tonnes.

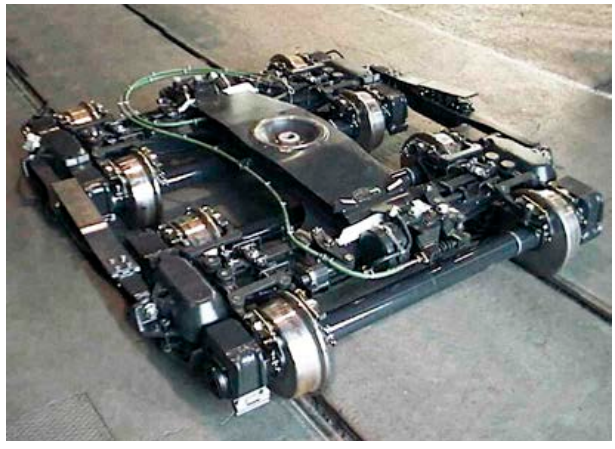
Small wheels for the Rolling Highway

The Rolling Highway (RoLa) entails the loading and unloading of entire lorries, in other words the semi-trailers and their tractor units. Unlike with standard pocket wagons, this requires a low loading height above the bogies. The wagon wheels therefore have a maximum diameter of 380 millimetres – not much greater than that of a wheel on a wheelbarrow.

Because of this, the axle load (the measurement of weight with which an axle can be maximally loaded) of 8.25 tonnes per axle is thereby less than that of "normal" wheels that are roughly 1 metre in size with a maximum axle load of 22.5 tonnes. Therefore, wagons built for the Rolling Highway require eight wheels (8 x 8.25 tonnes = 66 tonnes, minus 18 tonnes tare weight makes 48 tonnes payload capacity). These parameters are met using 4-axle bogies.



Comparison of bogie types: a 2-axle flat or pocket wagon bogie (left) and a 4-axle RoLa wagon bogie



A real-life example of a 4-axle RoLa rail bogie

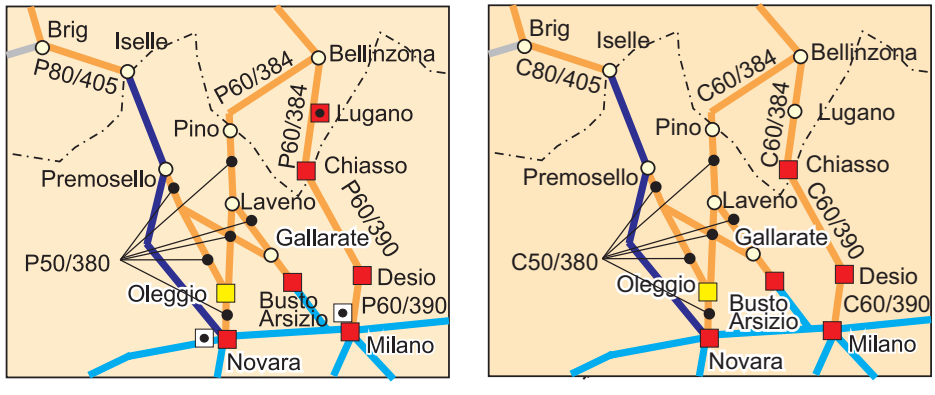
What is the railway profile?

In combined transport, most intermodal loading units (ILUs) that can be loaded onto freight wagons have a corner height that exceeds the railway profile set by various European countries. Thus their carriage is subject to the procedure for exceptional consignments as laid out by the International Union of Railways (Union Internationale des Chemins de Fer – UIC) in their leaflet 502. This procedure was originally somewhat unwieldy, but the rules have been simplified.

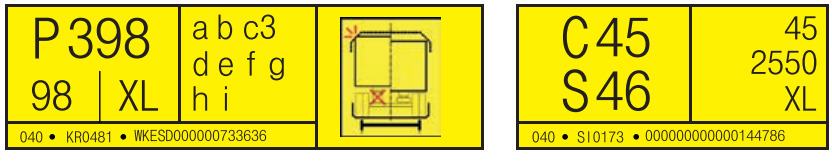
In order to reliably simplify and speed up the procedure, a codification system for each element of combined transport was introduced. This system guarantees the operational safety of intermodal loading units thus specifying their profile. It establishes a correlation between the routes, the intermodal loading units and the freight wagons. This is described in UIC leaflet 596-6.

The codification of routes makes it easy to determine which piggyback profile is authorised for which piggyback wagon and in which piggyback configuration.

For many decades, this system has guaranteed safe operations and is used by the different operators throughout the whole combined-transport chain.



Example of codified routes from Switzerland to Northern Italy
Left: for semi-trailers (P = poche) Right: for swap bodies (C = caisse mobile)



Example of codification plates on ILU
Left: semi-trailer (P). Right: swap body (C)

Why does the railway profile have to be raised?

(See also “Greater loading height for light goods” and “Greater payload capacity for heavy goods” below.)

Combined transport has had to keep pace with the rapid evolution of road vehicles. To the extent that road vehicles became heavier, longer and higher, solutions had to be found for their transportation by rail, both in terms of adaptations in infrastructure and modifications to the freight wagons themselves. Here are the most important developments:

- The load capacity of higher semi-trailers was continuously improved thanks to the development of pocket wagons – type I to type V. The improvements were made possible by lowering the loading platform from an initial 41 centimetres above track level, to 33 centimetres, and finally to a mere 27 centimetres above track level, combined with the use of height-adjustable king pin box (see “The triple height-adjustable king pin box” below).

- During the 1970s, works were carried out on train routes, in particular lowering the tracks and the rail level, increasing the profile and adapting the signalling equipment for traffic management.

- At the start of the 1980s, the P60 profile was introduced – a codification profile for semi-trailers used for combined transport with a total height of 3.9 metres – on the Gotthard routes Basel–Chiasso and Basel–Luino.

- In 1991, Switzerland, Germany and Italy entered into an agreement to improve transalpine transport (Document 0.740.79). The aim was an overall upgrade to P80, a codification profile for semi-trailers with a total height of 4.1 metres.

The triple height-adjustable king pin box

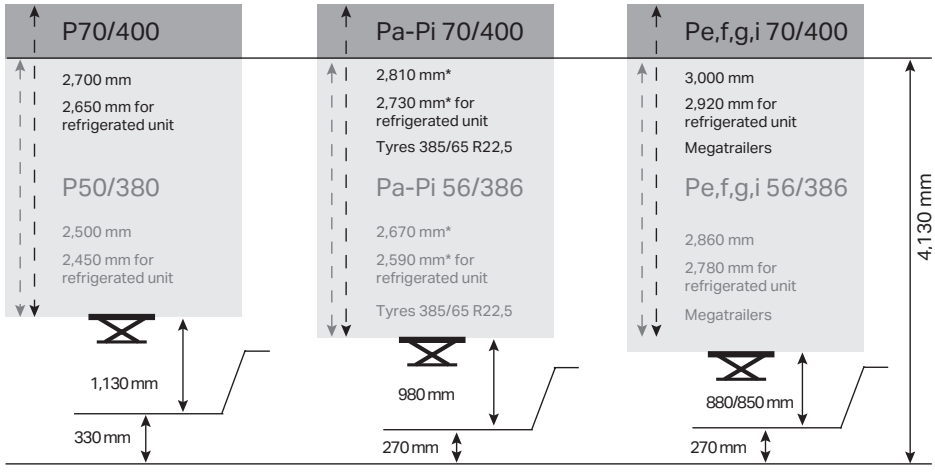
A king pin box, adjustable to three height levels, was developed to load and unload different types of semi-trailers with varying wheel diameters: the highest position, 1,130 millimetres – the intermediate position, 980 millimetres – the lowest position, 880/850 millimetres.

The lowest position of 880/850 millimetres is the height necessary for loading and unloading so-called mega trailers, which due to their smaller wheel diameter have a greater potential load capacity.

height 880 mm

height 980 mm

height 1,130 mm



Maximum measurements for semi-trailers shipped from Northern Europe to the terminals in Northern Italy and vice-versa.

Pa-Pi 70/400 Verona via Brenner and Novara via Domodossola and Borgomanero (Pa-Pi 76/406 on wagons with the number +6). NB: P = "Poche" in French = Pocket. a, b, c, etc. show the compatibility of semi-trailers with different pocket wagons

P50/380 and P56/386 Milan, Busto, Novara, Brescia, Verona… via Gotthard NB: As of 2020 the P400=4 metres will be introduced also on the Gotthard line

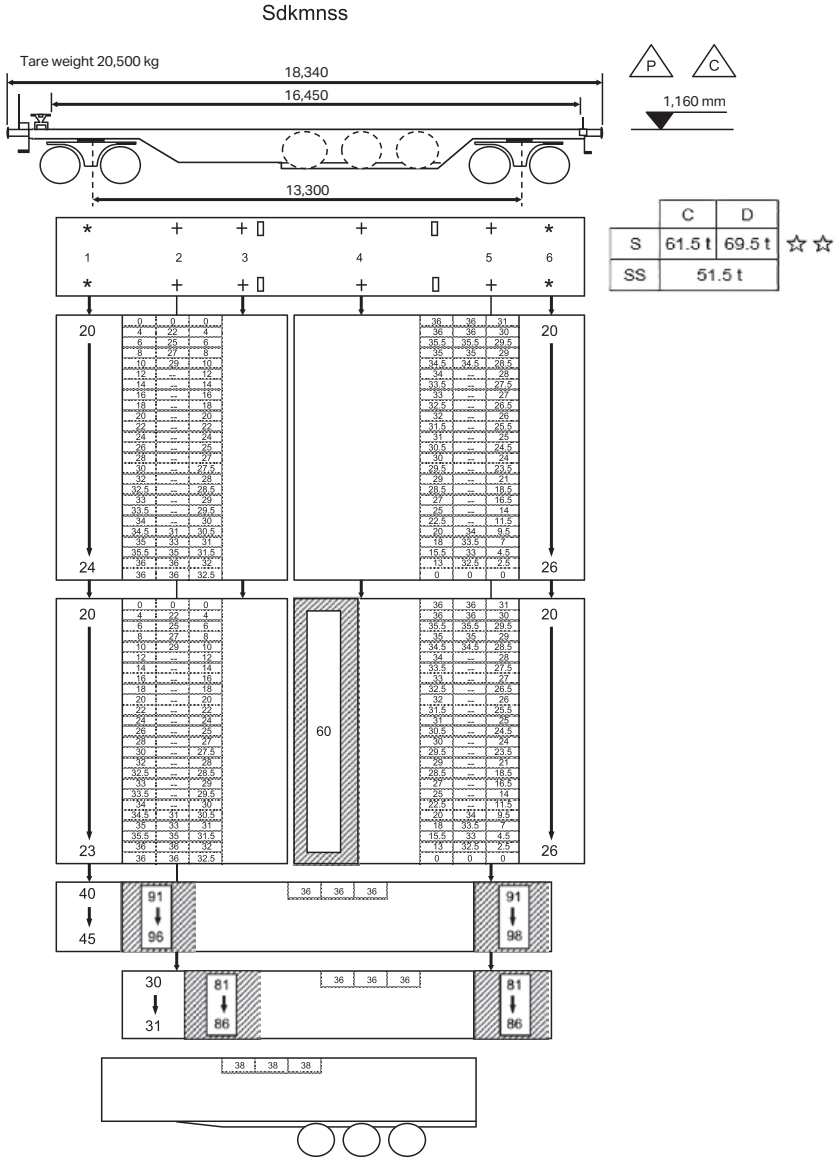
* 385/55 R22.5 tyre types allow an additional height of up to 50 millimetres.

What is the loading scheme?

The loading scheme (see diagram) is a document that serves the optimum loading of freight wagons with different intermodal loading units. It is helpful particularly for the observance of the maximum authorised weights of loading units combined with the exploitation of their different positioning.

The varying length of the swap bodies and containers requires a large number of fixing attachments. To accommodate these different possible combinations of swap bodies and containers, adjustable twists are attached to the wagon that can be positioned as needed.

Computerised loading scheme data can be used for the automatic monitoring of the loading units' weight and also for the optimisation (positioning of the units on the wagon) of the loading of trains.



Example of a loading scheme

Standard gauge – broad gauge

In China and on 90 per cent of the European railway network, the railway track gauge (track width) is 1435 millimetres (4 feet 8½ inches). This is called standard gauge.

Track gauge

With a track gauge of 1520 millimetres, the railway tracks in Russia, Kazakhstan, Belarus and Mongolia are 85 millimetres further apart. Uninterrupted transit from Europe to China via Russia is therefore virtually impossible. All technical options to equip wagons with an automatic gauge-changing facility are expensive and cause delays at the borders.

It is quicker to transfer the consigned goods from narrow to broad gauge wagons and vice-versa. Since 2013, Hupac has also been investing in wagons with wide-gauge bogies for transportation in and through Russia.

One of Hupac's 4-axle flat wagons for Russia

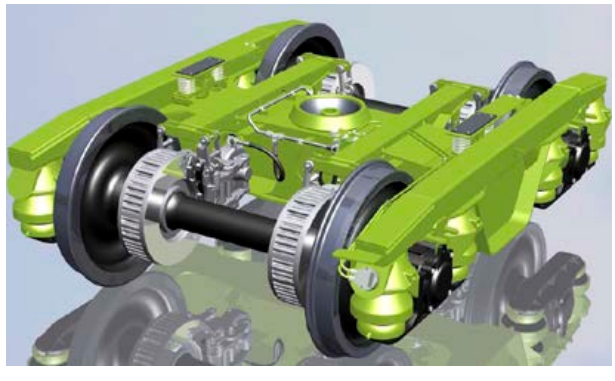
Less noise!

The amount of noise generated by a freight train in motion is mainly a question of materials, as well as the interplay between the brake blocks and the running surface of wheels and rails. The brake blocks roughen the running surface of the wheels, which in turn coarsen the running surface of the rails – and the rougher these surfaces become, the greater the noise.

Cast iron brake blocks (so-called GG blocks) for freight wagons have been standard for decades now. They cause wheel surface wear and tear: thus a passing freight train can produce noise levels of up to 93 decibels. However, brake blocks made of synthetic materials (so-called K blocks) only produce up to 82 decibels, effectively halving the perceived noise intensity.

In June 2006, the European Union adopted the Technical Specification on Interoperability (TSI), which, amongst other things, defines noise limits for new wagons. These can only be met with synthetic brake blocks. In 2001, the Swiss federal law on noise remediation had already defined noise limits that made synthetic brake blocks mandatory for Switzerland. Hupac was therefore ahead of the game, equipping its new wagons with synthetic brake blocks from 2001 onwards and modifying its 800 old wagons to the same standard. The financing of the upgrade was covered by the fund established by the Swiss federal resolution on the Construction and Financing of the Public Transport Infrastructure (FinöV), and was concluded in 2015. Since then, all Hupac wagons run quietly.

A further reduction of the noise level to below 80 decibels can only be achieved by means of alternative braking systems, for instance with disk brakes. Hupac is active here too, having put its first modified wagon prototypes and new wagon series into operation in 2015.

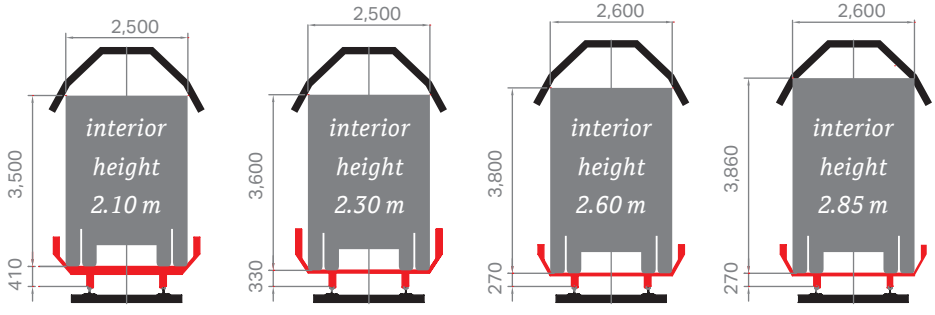


A DRRS bogie for the T3000eD+ with disk brakes

Greater loading height for light goods

Lower loading platforms for wagons, a higher railway profile, optimised rolling stock – all aspects that have made combined transport ever more competitive over the years.

Example: semi-trailers via Switzerland



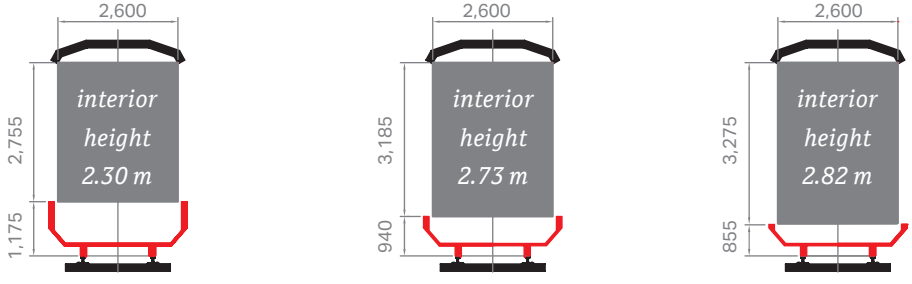
1968
Wippen wagon

1979
Pocket wagon I

1992
Pocket wagon IV

2006
Pocket wagon V

Example: swap bodies via Switzerland



1979
Pocket wagon I

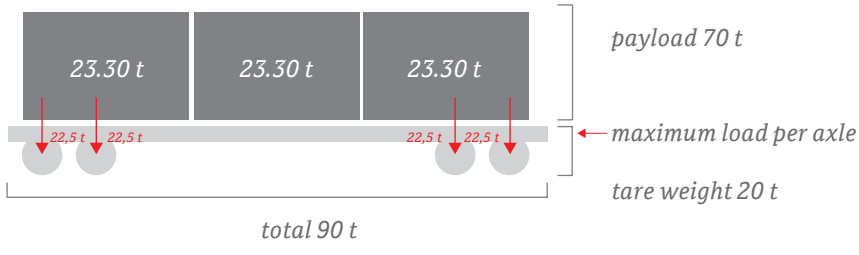
1989
Jumbo

1997
Mega II

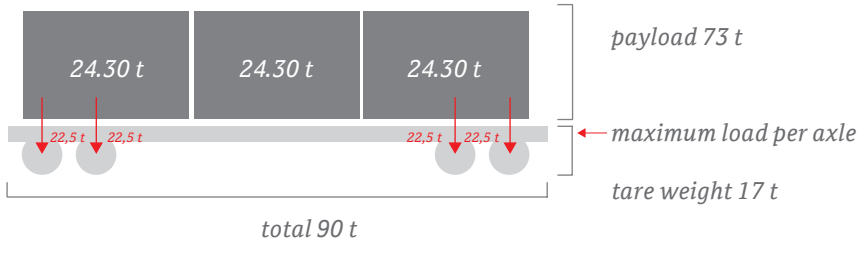
Greater payload capacity for heavy goods

A wagon's payload is limited by the load capacity per axle (see "Small wheels for the Rolling Highway" above). The maximum axle load is 22.5 tonnes: these are the limits of the main European infrastructures. For a 4-axle wagon, this amounts to a maximum load of 90 tonnes. This equates to a payload of 70 tonnes and a tare weight of 20 tonnes. The payload can be increased by reducing the wagon's unladen weight. The light wagon developed by Hupac's engineers, called a CT Light, weighs almost 3 tonnes less than a conventional 60-ft flat wagons for containers and swap bodies and can accordingly transport a greater load.

1987, 60-ft flat wagon



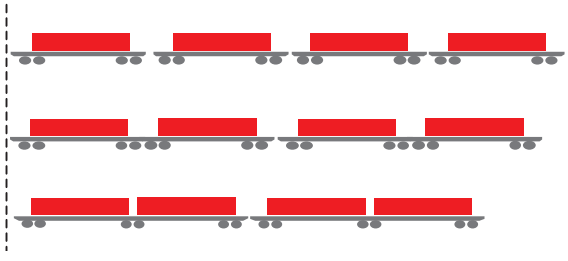
2005, 60-ft CT Light flat wagon



More loading units per train

The maximum train length is determined by the railway infrastructure manager. Over generations of double wagons, Hupac engineers have pared down excess iron from every nook and cranny. This cumulatively amounted to only a few metres per wagon, but with train lengths of 550 metres this has equivalent to an extra pair of the newest generation double wagons. Using these allows several additional loading units to be transported in comparison to standard wagons.

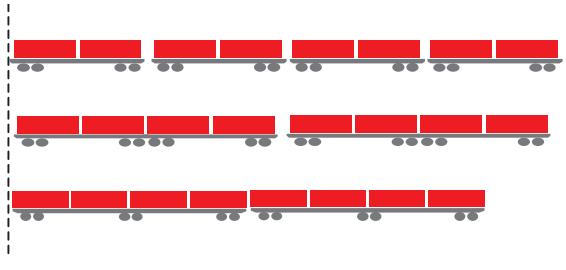
Example: semi-trailers



Composition of a 550-m train:

- *with pocket wagons type IV:*
  27 wagons to transport 27 semi-trailers
- *with Mega I double wagons:*
  15 wagons to transport 30 semi-trailers (+11%)
- *with T3000 double wagons:*
  16 wagons to transport 32 semi-trailers (+19%)

Example: 45-ft containers



Composition of a 550-m train:

- *with 60-ft flat wagons:*
  27 wagons to transport 27 45-ft containers
- *with Jumbo:*
  15 wagons to transport 30 45-ft containers (+11%)
- *with 90-ft double flat wagons:*
  18 wagons to transport 36 45-ft containers (+33%)

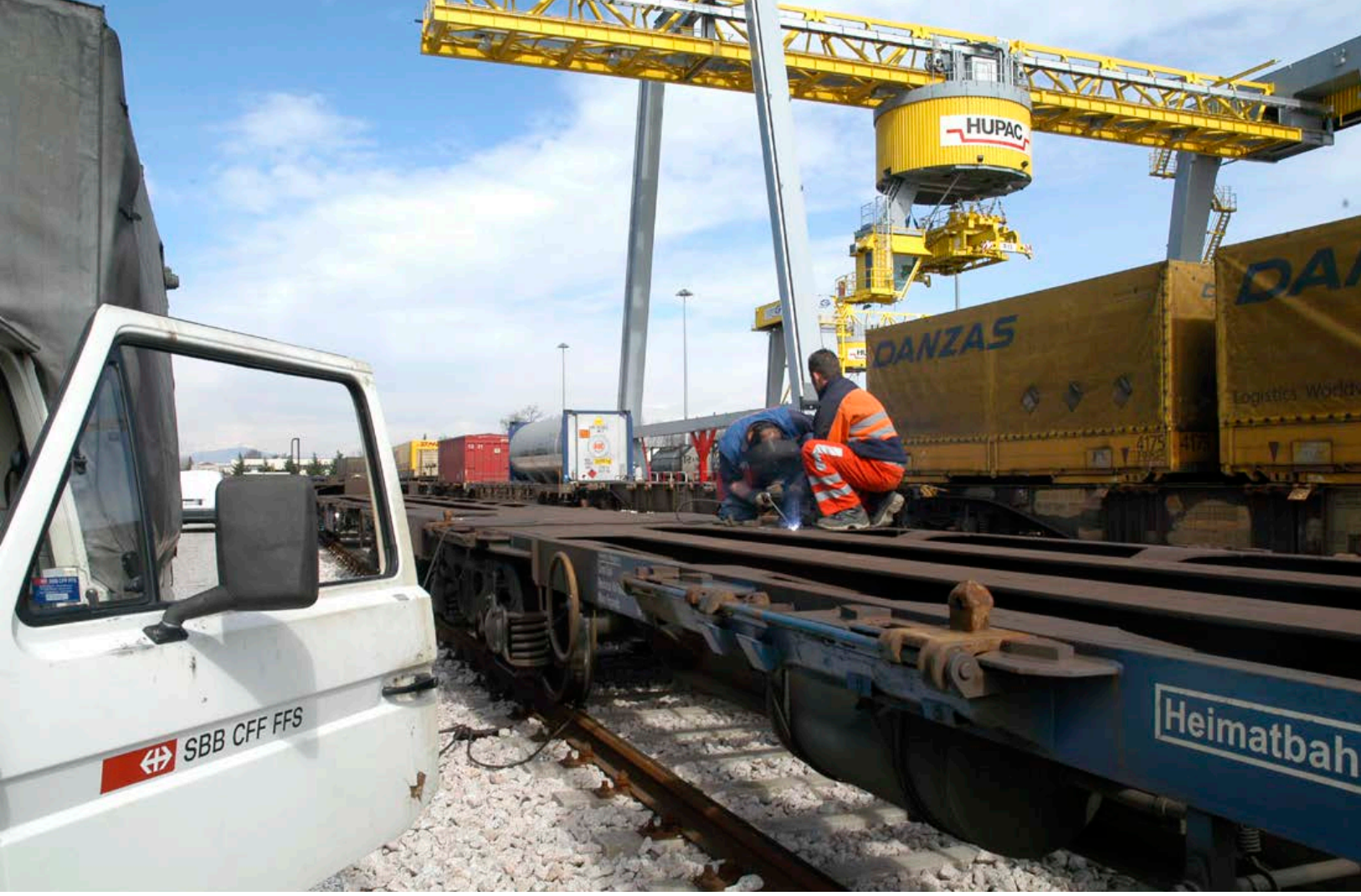
A wagon inspection on the tracks: safety also involves permanent monitoring of the condition of each wagon when in service.

A radical upheaval: maintenance and liberalisation

Technology and its evolution is one aspect of rolling stock. The other is maintenance. Below we will analyze the reason why, in the wake of European railway liberalisation, Hupac became responsible for the maintenance of its own rolling stock and how it overcame this challenge. This slightly anticipates the discussion in chapter 5, but maintenance is also relevant to the current chapter on rolling stock.

Prior to the liberalisation process, which commenced in 1991, the state railways were solely responsible for the maintenance of rolling stock, including that owned by private companies. Accordingly, Hupac's wagons were also contractually registered with the SBB, which was practical because the latter took full responsibility for the wagons and, in the meantime, it also carried out the repair and maintenance activities. From Hupac's perspective an all-round package.

On an international level too, procedures were clearly regulated. The duty to repair a railway wagon was always assigned to the state railway responsible for the stretch of railway upon which the wagon had been damaged. For example, if



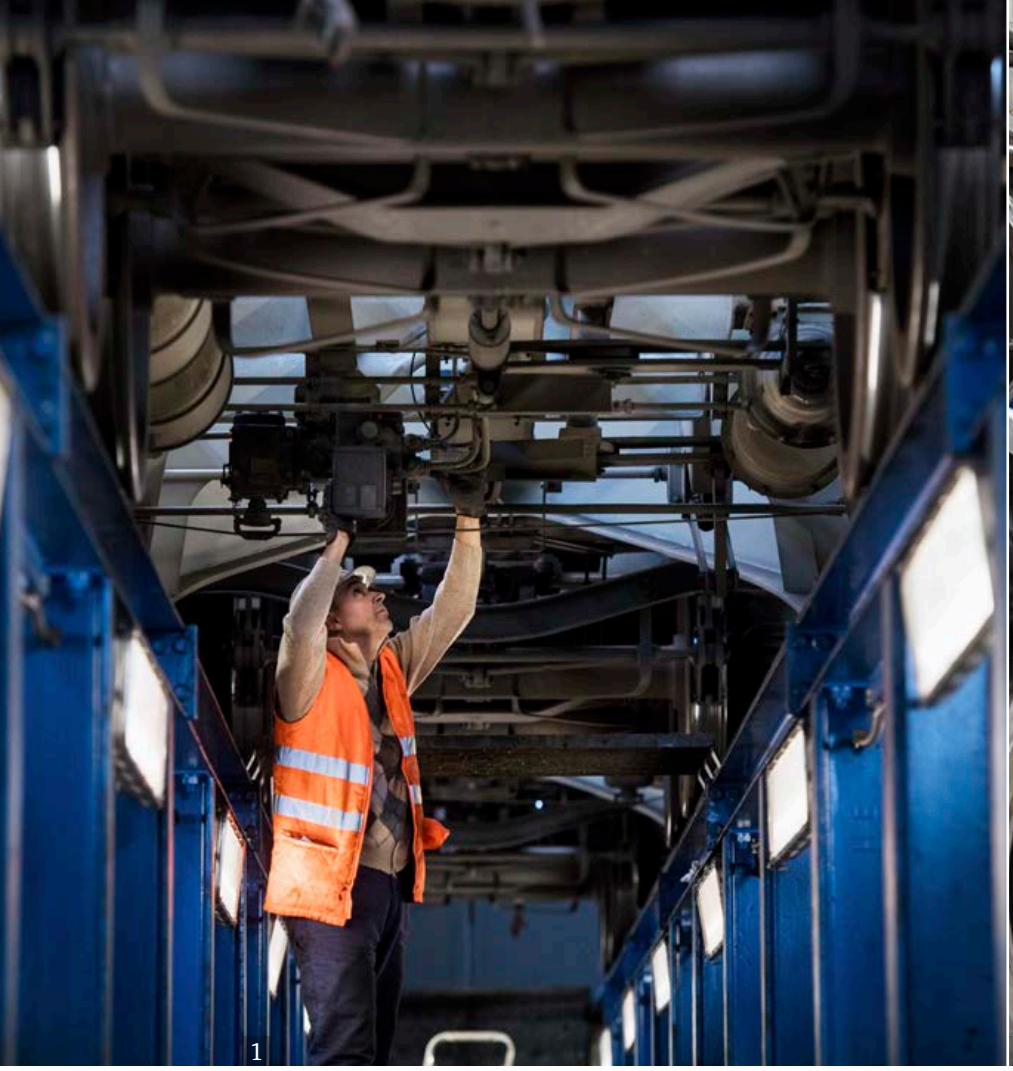
Maintenance comes to the wagon: after the 2006 change in strategy, mobile maintenance teams carry out minor repair work in-situ.

a Swiss railway wagon was damaged in Germany it would be repaired by the German state railway Deutsche Bahn – irrespective of whether it was the property of the SBB, Hupac, or any other company. Conversely, any foreign wagons damaged on Swiss rails were repaired by the SBB without further ado. At the end of the year, the state railways squared the accounts with each other and settled the outstanding differences.

The aim of railway liberalisation was to promote competition amongst railway operators and allow new players equal and fair access to the market. This required a new structure with new legal jurisdictions for repairs and maintenance at a national and international level. In the liberalised market, the wagon's owner was therefore held solely accountable for its maintenance and repair. So Hupac became responsible for Hupac wagons and the SBB for SBB wagons.

The following then happened: at the start of 2006 the SBB annulled their historical contract of registration with Hupac and entered into a new contractual arrangement. From then on they became maintenance partners, or rather independent maintenance and repair contractors against payment of a fee. This way the accountability continued to be shouldered by the SBB.

To return to our example, the new allocation of responsibility meant that if a Hupac wagon broke down in Germany, the Deutsche Bahn could no longer deal

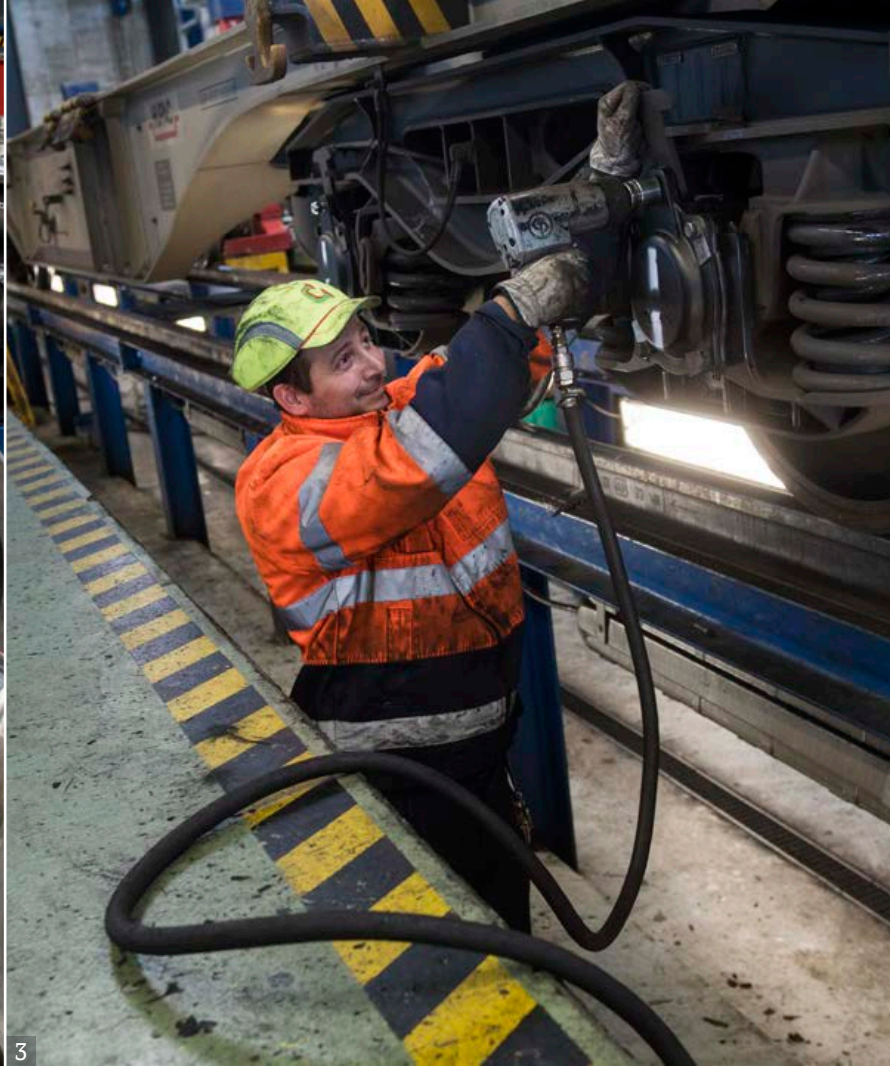


1 In the pit of the wagon workshop in Busto Arsizio.
2 The wheelset refurbishing centre is situated right next to it.
3 Maintenance work in progress at the wagon workshop.

with the problem itself, and instead the task of organising the necessary repair work abroad fell to Hupac. The SBB decided to offer precisely this service in their so-called One-Stop-Shop: Hupac would inform the SBB of any damages and they would then take care of everything in Germany.

In order for this to work, the SBB needed likeminded and similarly well-organised partners in other European countries. But this endeavour proved more difficult than they had anticipated. Towards the end of 2008, the SBB pulled the plug on the service, meaning that in terms of responsibility the proverbial ball was back in Hupac's court.

The project One-Stop-Shop failed. A typical side effect of liberalisation processes occurred. In response to the SBB's plans for internal restructuring in the area of wagon maintenance provision, the industrial workforces in Bellinzona and Yverdon went on strike in the spring of 2008. The unrest dragged on for weeks, turning into months, during which time Hupac's wagons were neither repaired nor could any regular servicing of their wagons be carried out. The consequences were dramatic: the availability of wagons dropped abruptly, or rather the operational wagon fleet shrank and shrank. In order to keep traffic going, Hupac was forced to rent rolling stock from external providers.



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After the SBB dissolved the maintenance contract at the end of 2008, Hupac dared another leap into the unknown and decided to organise things themselves. No mean feat. Hupac had only a few months in which to acquire the necessary skills and build up the organisational structures that up until this point had simply not been available in-house: maintenance know-how, warehousing, spare parts logistics, drawing up maintenance plans, contracts with workshops, spot checks, auditing, to name but a few – and not only in Switzerland, but all over Europe.

A further difficulty added itself to the list of challenges posed by this terra incognita: the process of change from monopolies to a free market ushered in by liberalisation had entered a phase of regulatory uncertainty. The old rules were no longer valid, yet the EU was still tinkering around with the new guidelines that had not yet been put into place.

Within this vacuum, ten EU countries, including Germany and Italy, got together on 14 May 2009 to sign a Memorandum of Understanding for the maintenance of freight wagons – which as subsequent developments proved in fact pre-empted the basis for the new EU regulatory framework. In a second step Switzerland joined the agreement.

According to the new rules, wagon keepers were obliged to appoint a so-called Entity in Charge of Maintenance (ECM), in other words a certified provider who would take full responsibility for the safe maintenance of any freight wagons in its charge in the same sense that the state railways had done previously.

The wheelset pool always has enough reserves.

The consternation in the sector had just been somewhat allayed thanks to the memorandum when a tragic incident drastically ratcheted up the pressure on wagon keepers. On 29 July 2009, in Viareggio, Italy, a freight train derailed. The load of liquid butane exploded, claiming 32 lives and causing many more injuries to people and catastrophic material damage.

In response to this tragedy, Germany demanded further urgent measures to guarantee the level of safety of rail traffic. traffic. As of 1 January 2011, every wagon keeper wishing to circulate rolling stock in Germany had to certify that the appointed Entity in Charge of Maintenance complied with the safety measures stipulated by the Memorandum of Understanding. Wagon keepers also had to accept full liability for their fleet.

Due to the initial lack of officially authorised certification bodies and the limited period of time at disposal to obtain the certification, wagon keepers were permitted to submit a self-declaration. Hupac was one the few companies that took the more challenging route of external certification, and, thanks to a thorough preparation, in October 2010 was awarded certification as an Entity in Charge of Maintenance.

A small afterthought: today the Viareggio train derailment has become a symbol event, that allows to reflect on the proper measures for tackling railway

sector safety, and, in particular, on the search for the balance between commitment and benefit. It is beyond dispute that every initiative to increase safety is to be warmly welcomed. However, the players of the sector seek for a right balance between resources to be dedicated and the achievable improvements.

Simply put, the railways today are already by far the safest mode of transport: according to estimates, rail travel is around 40 times safer than driving. As a result of liberalisation, the sector is going through an adjustment period, where the coordination at European level between the various players and various national entities is not always easy. At the light of this, Hupac monitors the on-going situation with some reservations. Costs arisen from such inefficiencies are increasing exponentially, whilst road travel remained unmolested by equivalent expenditures.

The current safety policies could ultimately eject rail freight transport from the market in favour of what are substantially more dangerous modes of transport. This is a threat that the sector has to avoid. Be that as it may, one thing is clear: safety is the number one priority at Hupac – end of discussion.

So, in 2010, Hupac became a certified Entity in Charge of Maintenance. In a hothouse atmosphere, Hupac engineers worked feverishly on a new maintenance concept, also dealing with the development of a solution to optimise and streamline organisational procedures.

As it turned out, reversing the process proved to be a very efficient approach. Whereas previously wagons in need of repair had been driven to the workshop and then back out again to the terminals, the idea was now to "bring the repair service" to the wagons.

The old concept of the mobile service teams travelling to the terminals and carrying out repairs on site was now extended: Hupac's technicians from different divisions together with external consultants did their fair share. They sat down to discuss the project of building a wagon workshop right next to the Busto Arsizio-Gallarate terminal and of employing maintenance specialists to run it. Not only that, also the large expenditure of time and costs required by trips to workshops and to return to the terminal is avoided.

When the facility opened in July 2010, the positive effects were immediately noticeable. The shorter journeys to the workshop and its capacity markedly reduced the downtime of damaged wagons and the availability of wagons was soon normalised again.

But what does it mean to take on full stewardship of a fleet of freight wagons? In May 2011, the derailment of a Hupac train at Mühlheim in Southern Germany drove the point home sharply. It was the Hupac engineers who rushed to the scene of the incident in the middle of the night. They checked the maintenance plans of the wagons involved.

The analysis carried out in collaboration with Hupac's maintenance partners ensured that a series of wheelsets – provided by them – had not been processed according to the applicable regulations.

Although this mistake did not have the slightest connection with the cause of derailment at Mühlheim, hundreds of wagons had to be preventively sent to the workshop for inspection and retooling. Yet again, wagon availability

plummeted dramatically, reaching a low of 63 per cent. Virtually a third of the Hupac fleet was taken out of circulation, essentially overnight, posing an existential threat to the company.

To avoid getting embroiled in a similar critical situation a second time, Hupac decided to take action. With the recall operation still in progress, the Hupac Board reached the decision to set up a workshop for the exclusive purpose of refurbishing wheelsets. This made perfect sense, because the wheelset – that is, the axle with a wheel attached at either end – is the freight wagon component that most influences the availability of the wagon itself and is the most important for safety.

This is why wheelsets are subjected to suitability testing at regular intervals. So Hupac now set out to build a wheelset refurbishing centre, acquire high-tech machinery for the highly complex processes involved and have it run by specialists under the supervision of Hupac engineers. Located right next to the Busto Arsizio-Gallarate terminal and to the wagon workshop, Hupac's wheelset refurbishing centre was put into operation in September 2012.

Since then, the procedures and timing of rolling stock maintenance have improved steadily. The turnaround time for wagons has been tremendously reduced, empirical data is systematically integrated into the continuing development of maintenance plans, security and reliability of the rolling stock are monitored carefully, and preventive measures are kept to the highest standard. In 2013, Hupac and its main partner workshops were certified as an Entity in Charge of Maintenance according to the new EU rules (Commission Regulation No. 445/2011) – an achievement that also marked the fact that in the meantime the European Union had reached an agreement regarding generally applicable regulations, thereby replacing the Memorandum of Understanding.

Today, the availability of Hupac rail freight wagons has reached a level of 93 per cent. This is a commendable figure. Can it be increased even further? The Hupac engineers have ambitious projects in mind. Digitalisation certainly gives ample headroom for innovation: IT-supported optimisation of workshop capacity, digital management of spare parts, predictive maintenance based on algorithms – these are the buzzwords of the future.

Theo Allemann, CEO of Hupac from 1971 to 2004.

"Our strategy has more than stood the test"

For over 30 years, Theo Allemann acquired rail wagons for Hupac and can say from experience that company owned rolling stock is one of the foremost factors in making Hupac great. Therefore, three questions for Hupac's long-standing CEO.

At Hupac's founding, the focus was already on freight wagons. Has this strategy proved successful?
Company owned rail wagons cost a lot of money to acquire and maintain, but the bottom line is that they reduce operative costs and enable independence. This allowed Hupac to survive various crises comparatively well. Company owned rolling stock forms the backbone of Hupac. So to give you the short answer: yes, our strategy has more than stood the test.

Rolling stock is capital-intensive. Is this a risk?
Our rapid market success was due to us being able keep to our scheduled timetable thanks to close collaboration and the use of our own rolling stock. We soon needed new wagons, but these needed to be paid for... So we steadily increased our share capital, but we also needed to take out new bank loans. These negotiations weren't always easy. This high share of borrowed capital made Hupac very vulnerable in the first 20 years. The financial risk was considerable, but in economic terms, Hupac today stands on a far firmer footing.

What role has Hupac played in the development of railway wagons?
Even on the very first day of operation, 1 March 1968, the maxim that applied was that rolling stock must roll! This demanded a close cooperation between Hupac, SBB engineers and wagon manufacturers. Technology was called for, every little discrepancy had to be analysed and rectified immediately, safety was of the highest priority. Every bit as important as correcting defects was optimising transport potential. And because the cooperation between all the players shaped up so well so quickly, a real pool of innovation soon emerged. Always longer, lower, less noisy and more capable of carrying heavier loads – that was our motto. Many technical developments were adopted by other players of the railway sector and declared European standards. Right up to the present day, Hupac remains Europe's driving force in the development of rolling stock for combined transport. Hupac has every right to be proud of this.

“Improving the railways is like real house-to-house combat.”

Rüdiger Grube, Chairman of Deutsche Bahn, on the modernisation of the railways, 2016

05

Europe:

Ripe for the picking – or maybe not

We pick up our story again on Friday the 31 December 1999. The old century is coming to a close; a new one is beginning. In Russia, a fairly unknown man called Vladimir Putin takes over as head of state. People all over the world are in fear of the millennium bug, which – as far as the rumour goes – is expected at the stroke of midnight to plunge computers the world over into a state of paralysis. The ghost in the machine, as it is soon evident, remains just that – a ghost. On the whole however, people want to do one thing on this day, namely celebrate. After all, a new millennium is about to begin and that surely deserves some fireworks. Before the big celebrations, some people may also decide to review past personal events. It is, after all, not any old New Year but the end of a century.

Hupac's management board, for one, was certainly taking stock. What have we achieved? The answer: a lot. Considering the circumstances, a great deal for that matter. What do we want to achieve in the new millennium? The same answer: a lot. And this prompted Beni Kunz, deputy managing director in 2000 and thereby designated CEO of Hupac, to pose the question: why had railway liberalisation in Europe practically stagnated?

Almost a decade earlier, to be precise on 29 July 1991, after years of inertia the Council of the European Community had announced the start of European railway liberalisation. EU Directive 91/440/EEC, published in the Official Journal of the European Communities L237, stated that "in order to render railway transport efficient and competitive as compared with other modes of transport, Member States must guarantee that railway undertakings are afforded a status

The railways have to be fit to prevail over road transport. With this goal in mind, the European Communities resolve in 1991 to liberalise the rail market.

of independent operators behaving in a commercial manner and adapting to market needs." The intention was to free the railways from the fossilised state structures and to expose the industry to the rigors of free competition. Competition, as every entrepreneur knows, drives innovation, lowers prices and sustains a dynamic market – the key word "dynamic" being a force that the railways had remained stubbornly immune to. In concrete terms, Directive 91/440/EEC stipulated that:

- the infrastructure and transport services of every railway undertaking had to be legally, organisationally and financially separated,
- railway undertakings from different countries could combine to form so-called "international groupings",
- these groupings were to be given non-discriminatory access to railway infrastructure in other countries,
- at a later date free access should be granted to every railway undertaking,
- and that an "improvement of the financial situation" of the railway undertakings was necessary.

Simply put, railways were expected to be run cost-effectively.

A directive of the European Community is neither a policy paper nor a letter of recommendation; it is more like a order. Attention, countries of a united Europe! This is where we're going, the start whistle has been blown, there are no stragglers – off we go!

Of course it is not really that simple. Granted, liberalisation should roll out incrementally in increasingly detailed legislative packages. But in contrast to a regulation, a directive has to be enshrined in each and every respective national law. This means it has to be embedded within all the processes of the given legal system, including referendums and other opportunities for appeals and objections. And because the railways in practically every European country were still a state prerogative when Directive 91/440/EEC was announced, the first thing that happened for years was simply ... well, nothing – or at least nothing that had any impact. This was precisely what made the people at Hupac so nervous on the verge of the new millennium. Of course, it was completely apparent to everyone why nothing was happening, but this was a poor condolence when the practical aim was to shift railways, goods transport and in particular combined transport onwards and upwards.

What was particularly irksome in all of this was that the competition, road haulage, was in the process of making huge strides in reinventing itself as highly efficient. In the HGV world, European liberalisation had already kicked off in 1993, and since 1998 (two years prior to our key date) it had already been possible within the road haulage industry, for instance, for an Austrian transport operator to offer his services in France – known as cabotage in technical jargon – or for a driver from Portugal to take a consignment from Spain to Finland for a German road transport company without needing any particular papers or even a rudimentary knowledge of the respective national languages. This catapulted the competition within the industry to a completely new level, and as a consequence goods transport by road had increased considerably vis-à-vis goods transport by rail. In terms of the so-called modal split – the comparison of the volume of goods carried by different modes of transportation – railways were clearly lagging behind again.

The 1991 directive effectively left international rail freight transport in limbo – the traction for a train that departed from Italy was still provided by an Italian locomotive in Italy, which was driven by Italian engine drivers until it reached the Swiss border, the journey through Switzerland still continued with a Swiss locomotive and Swiss engine drivers ... and so on until Holland. For the journey from Busto Arsizio to the terminal at the Port of Rotterdam this meant four different trains and their corresponding engine drivers, and three time-consuming and therefore costly interruptions to the journey.

Switzerland sets the pace

In the midst of this tangle of state inertia there was one laudable exception, namely Switzerland – the very country that in 2001 would reject accession to a united Europe per national referendum, and that for a second time running, no less. As early as 1996, Switzerland responded to Directive 91/440/EEC by deciding to overhaul its own railway legislation and took it as a starting point for the liberalisation of the Swiss railways. In 1999, only three years later, the Railway Reform 1 came into force. So, on New Year's Eve of the same year, the Hupac strategists could at least be safe in the knowledge that railway liberalisation in their own country was finally underway. In legal terms, the Railway Reform 1

defined infrastructure and freight and passenger transport as legally separate entities. As an upshot, SBB Cargo AG emerged. In judicial language, this meant that the SBB converted its administration into a public limited company with three divisions: freight, passenger and infrastructure. The latter two were initially only financially and organisationally separate. Eventually a legally independent public limited company emerged from the freight division. However, just like the other two divisions, it would remain a wholly owned subsidiary of the SBB, which in turn continued to be wholly owned by the state. Therefore the SBB remained de facto a state railway, poised between the poles of the free market economy and state administration.

Moreover, the Railway Reform 1 allowed foreign railway undertakings non-discriminatory access to the Swiss rail network – naturally on condition that they met all state requirements. Rules about the liberalisation of public goods transport and about debt relief and the restructuring of the SBB were laid down. Switzerland was off to a good start, soon taking the lead within Europe in the implementation of railway liberalisation – a position, it must be emphasised, that it still holds today.

Besides wise economic foresight, the reason why Switzerland was so quick to jump on the European railway liberalisation bandwagon is simple. In the same year, 1999, after years of negotiating with the European Community, Switzerland signed the Bilateral Agreements I and the Overland Transport Agreement contained within it. We recall Federal Councillor Ogi drumming up support for the NRLA and Federal Councillor Leuenberger linking the NRLA to the performance-based fee for heavy goods vehicles. With the Agreement on Overland Transport, Switzerland had committed itself to adopting the laws stipulated by the European Community's Railway Reform. By the time the Railway Reform 1 was concluded, Switzerland had already fulfilled this task by signing the Overland Transport Agreement. Evidently Switzerland was a reliable contracting partner.

This is a lot of praise for the state, and a fitting moment to put in a good word for the railways too. Railway liberalisation is not as simple as it looks on paper in an EU directive. Aside from state protectionism, state railway undertakings are complex enterprises with thousands of employees. State railways are also subject to leveraging from well-established and often rigid political and unionised interest groups. As a result, it is practically impossible to decartelise and deregulate a state railway overnight, particularly in a case like Switzerland's where the railway also had a duty to meet federal government expectations in terms of a Service public. Though this is hardly applicable in the field of goods transit traffic, it holds all the more true for national single wagon traffic and passenger traffic.

Also the frequent criticism that freight trains, even years after gaining independence in 1999, continued to operate at a deficit and needed to be subsidised by the state was off the mark in certain respects. The bare bones of what Switzerland did in order to create three rail divisions was to firstly disperse all its pre-existing departments, personnel and all, between these three areas, and then, due to the sheer immensity of the endeavour, to wait and see what the financial repercussions of this move would be. Only after this, when concrete numbers could be given and new processes had become routine, would it be possible to start saving in terms of general costs and personnel.

1 *The economy relies on the exchange of goods, the railways are the providers. Pictured, a train in Brugg, Canton Aargau.*
2 *At an early stage Switzerland realises that railway liberalisation invigorates the market. Pictured, a train near Gurtnellen, Canton Uri.*
3 *Which is why the Alpine nation paves the way for railways. Pictured, a train in Zug, the capital of Canton Schwyz.*

Despite the praise, nevertheless a small footnote: half a year after the announcement of the Railway Reform 1, Ken Bloch Sörensen, manager of SBB Cargo AG, during a business dinner announced his ambition to acquire 51 per cent of the Hupac shares. As he openly admitted, this was because in his opinion intermodal transport belonged not to the private sector, but to the railways as part of an integrated business model. Needless to say the Hupac board of directors declined. Indeed it had to, the company statutes stipulating that no shareholder was permitted to own more than 30 per cent of the total share capital.

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Hupac likewise becomes a railway undertaking

Let us get back to New Year's Eve 1999 and to the balance sheet of Hupac's management board. At this precise juncture there was another matter that made the blood of the managers and board members of Hupac boil, namely the malicious behaviour of those in charge of Deutsche Bahn, to which Hupac had made a defiant response.

What had happened was as follows. In the autumn of 1998, Theo Allemann, Beni Kunz and Hans-Jörg Bertschi were invited to attend a meeting at the DB Cargo headquarters in Mainz with general manager Eberhard Sinnecker. After the usual handshakes and pleasantries, Sinnecker got straight to the point: "Gentlemen", as Beni Kunz recalls his words today, "Gentlemen. The price for Rotterdam–Italy through Germany is from now on ten per cent more expensive."

Just like that. The intention was clear: Sinnecker wanted to put his own transport operation back on its feet and what is more to preserve his backyard from liberalisation. And it was something he had every power to do, as up until then Deutsche Bahn – or rather DB Cargo – was the only railway providing rail freight transport in Germany, whilst at the same time setting the tariffs for traction. Sinnecker's proposal was correspondingly ruthless – sink or swim.

But there was no way Hupac could stomach such a price hike. Firstly because the already low rate of return of the business would have been entirely eroded away, and secondly because surrender to the German offensive would have meant that all other European railways would almost certainly have loyally emulated them and put their traction prices up too.

As far as traction prices are concerned, it is helpful to know how traction tariffs had traditionally been set prior to this point in time. As an example, let us say Hupac intended to introduce a new service from Busto Arsizio to Antwerp. The various managers of all the relevant state railways would be called to the table and Hupac would present its intention to them. The Hupac people would then exit the meeting room and leave the managers to discuss the pricing amongst themselves: the Italian manager would want to charge a given amount for the rental of the locomotive, use of the line and provision of traction through Italy; the German manager would want to charge a given amount for Germany; and so on. Seen from today's perspective, a classic cartel agreement. After that, the Hupac people would re-enter the meeting room, and the final outcome would be announced to them. There was little if any room for "renegotiations".

If we take these prior conditions into account, it is clear that Sinnecker's demand posed a twofold threat to Hupac, as the representatives of the other railways would not have hesitated to follow suit with a price hike on their part. But there you have it: take it or leave it.

Now furious, Allemann, Kunz and Bertschi ended the meeting, went for a meal in an Italian restaurant, and in the midst of their pizzas decided then and there to purchase three locomotives and acquire a railway licence for Germany. Only authorised railway transport undertakings are allowed to purchase train paths, or rather the right of way on the tracks, and if Hupac could manage to procure its own train paths and provide its own traction, then it would be able to circumvent the hegemony of the German state railways.

And thanks to Directive 91/440/EEC, Deutsche Bahn had absolutely no legal grounds whatsoever to deny Hupac passage through Germany. Looking back, Beni Kunz remarks that the decision was taken in order to create an alternative to a monopoly, and yet he adds that the economic risk was entirely manageable. Certainly, the three Siemens ES64U2 locomotives (electric mainline locomotives with 6.4 megawatt power, universal locomotive series 2) cost 10.1 million Euros, and the licence to operate as a railway undertaking was also hardly a giveaway. But there was an escape hatch. The locomotives could easily be deployed down to Basle on the connection Ludwigshafen–Busto Arsizio – a Hupac line that was continuing to gain in importance. Alternatively, they could be leased to other railway undertakings at a profit at a time when locomotives happened to be a scarce commodity on the international market. And sure enough: the first locomotive was delivered at the end of 2000, the other two

arriving half a year later. In terms of electronics, they were equipped for the German, Austrian and Hungarian rail networks and all required retrofitting for the Swiss network. The German railway licence was issued on 7 July 1999 and valid for 15 years. Thus armed, the operator Hupac had now also become a traction provider. And as speculated, the locomotives were indeed rented out to other companies as well as used for Hupac's own purposes.

Railway Reform 1 and the successful launch into this new line of business were two events that filled people at Hupac with hope for the future on New Year's Eve 1999. A huge change seemed to be in the offing! Even Hupac's traffic continued to run through the first night of the new millennium without any notable hiccups.

After the excitement of the millennium fireworks had died down, daily work quickly resumed. In February 2000, Hupac introduced a new shuttle train running from Singen to Genoa that also offered – within the scope of the gateway concept – a connection to Tunisia in far-away Africa. The following May, the company launched the new connection between Cologne Niehl Hafen to Pomezia to the south of Rome, where as a railway undertaking with German certification Hupac could utilise the German rail network according to the liberalisation principle of free access to foreign railways. In a first step towards the maritime shipping industry, Hupac opened a new connection from the Port of Rotterdam to Basle Badischer Bahnhof in June, after already having established their Maritime Inland Services branch in Basle in 1999. In September, the board of directors authorised the purchase of 200 new pocket wagons. The end of the year 2000 resulted in a traffic increase of a generous 14 per cent compared to the previous year. Annualised, this amounted to the cargo of 370,000 lorries transported by Hupac by rail.

Hans-Jörg Bertschi, chairman of the board of directors, referring to the glacial pace of the liberalisation process, wrote in his introduction to the company's annual report: "The structural problems in collaborating with national railways are having an increasingly negative effect." He called for more competition on the railway. And what he knew, but did not emphasise, was that if the politicians continued to be so slow to act, then Hupac would take matters into their own hands.

Bertschi absolutely meant what he said. At the start of the year, two young Belgians had been in touch with Hupac: Ronny Dillen and Jeroen Le Jeune, the former an industry development manager and the latter a banker. Dillen and Le Jeune wanted to establish a private railway company and were looking for seed capital. Hupac invested 260,000 Swiss francs, acquiring a 40 per cent holding in the company Dillen & Le Jeune Cargo, DLC for short. With this move, Hupac also acquired access to a railway undertaking in Belgium. Two years later, Dillen & Le Jeune Cargo would obtain a railway licence. The following year, in 2003, they would proceed to acquire the railway licence for Italy.

The aim of this strategy was clear. If Hupac, thanks to private railway undertakings, could cover the complete traction through all the countries on the way from Italy to Holland or Belgium, they would have a real, workable alternative to what the European state railways had to offer.

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1 The European Community gets down to business: the railway packages are designed to liberalise the market …

2 … meaning that railway companies are to be granted extra room for manoeuvre.

Europe gets specific: the First and Second Railway Packages

Indeed, more liberalisation is what the Council of Europe also wanted. In 2001 the Council decided on the First Railway Package: a whole bundle of laws and regulations aimed at furthering railway liberalisation. Due to the fact that the implementation of Directive 91/440/EEC was far more straightforward in the area of goods transport than that of passenger transport, the scope of the First Railway Package was on the whole limited to goods transport.

The main points were as follows. Free access for all railway undertakings on all the most important European routes, constituting a total of 50,000 kilometres of track – corridors that eventually came to form the so-called TEN, the Trans European Network. Further to this, the appointment of an independent train path allocation body. Finally, the step-by-step implementation of interoperability, which meant amongst other things that uniform standards were to be put into effect for braking and safety systems, signalling, railway network gauges and service languages.

The First Railway Package came into force on 15 March 2003. Only one year later, this was followed with the Council of Europe's Second Railway Package, refining the regulations of the First Railway Package and widening its scope. Amongst other things, this included the stipulation that free access to the entire European rail network should be extended as of 2006 and an independent European railway agency should be established as a coordination centre for these reforms.

Too little happens

This sounded all well and good, only the states and the railways, to put it amicably, blew hot and cold in their efforts to follow through with the railway liberalisation mandate. England was exemplarily quick and strict to act, even in the area of passenger transport. There, private railway undertakings staked out a 30-per-cent share of the market, and goods traffic increased by 70 per cent. However, many politicians and unions in other countries strongly opposed the trend, for example in France and Belgium. No matter how much the administrations were restructured, outside on the rails there were precious few real signs of the much-promised free competition. Although they were a private railway undertaking, Dillen & Le Jeune Cargo was only a proverbial small fish in the big pond of railway networks. A few state railways established subsidiaries abroad. Others tried to form groupings. Most of them did both – and many failed.

Deutsche Bahn and the Dutch Nederlandse Spoorwegen outsourced their goods transport sector and merged to form Railion. Together, the companies BASF, Hoyer, VTG AG and Bertschi established the railway undertaking Rail4Chem, or R4C, which as the name indicates, dealt exclusively in the transport of chemicals. In 2002, even the furniture company Ikea established its own railway undertaking, only to wind it up again a mere two years later.

For its part, Hupac also entered in selected partnerships with railway undertakings. And anyway, in 1998 the SBB had already calculated how much it would cost them to provide the traction of a train from Italy to Holland – and had presented this in a comprehensive offer made to Hupac.

Timeline of SBB Cargo International

1999, 1 January: Start of the railway reform. The state-run enterprise SBB is converted into a public limited company under special legislation and split into three independent divisions of passenger transport, goods transport and infrastructure. SBB Cargo AG, with headquarters in Basle (today in Olten), is formed from the freight division of the state-run enterprise. Shareholder: SBB.

1999, 3 December: Expansion into Germany. S-Rail Europe SRE GmbH is established in Singen in order to enable operations in Germany. Shareholders: SBB Cargo AG (75 per cent) und Hupac AG (25 per cent).

2002, 24 June: SBB Cargo AG, together with Häfen und Güterverkehr Köln AG (HGK), establishes the production company Swiss Rail Cargo Köln (SRCK) with headquarters in Cologne. Shareholders: SBB Cargo AG (51 per cent), Häfen und Güterverkehr Köln AG (44 per cent) and Hupac AG (5 per cent).
At the same time, SBB Cargo AG newly reorganises its business in Germany, founding SBB Cargo Deutschland GmbH with headquarters in Duisburg. Shareholder today: SBB Cargo International AG.
SBB Cargo AG also converts S-Rail Europe SRE GmbH into the distribution company SBB Cargo GmbH, likewise with headquarters in Duisburg.

2003, 29 April: Expansion into Italy. SBB Cargo AG establishes SBB Cargo Italia Srl with headquarters in Gallarate (today in Milan). Shareholder today: SBB Cargo International AG.

2004: Hupac AG sells its shares in S-Rail Europe SRE GmbH and Swiss Rail Cargo Köln (SRCK) to SBB Cargo AG.

2010, 9 September: International goods transport is split off from SBB Cargo AG to form an independent company: founding of SBB Cargo International AG with its headquarters in Olten. At the same time, SBB Cargo GmbH merges with SBB Cargo International AG.
Shareholders of SBB Cargo International AG: SBB Cargo AG (75 per cent) and Hupac AG (25 per cent). With this, Hupac AG holds a 25 per cent share in SBB Cargo Deutschland GmbH and SBB Cargo Italia Srl
Key figures for SBB Cargo International AG in 2016: a turnover of 294 million Swiss francs, 643 staff, 127 locomotives, 11,108 million net tonne-kilometres' transport performance.

The bottom line was that this was too little – in fact far too little – competition. Costs remained high, the large (state) players remained unchanged, international traffic continued to be costly and brought with it a mountain of bureaucratic red tape. All that happened was that the newly established state railway companies had shaved off a few percentages from Hupac's turnover.

Pretty much everything else remained the same as ever. Meanwhile, the large consultancy firms were predicting that in the near future three to five railways would fight their way through to operate throughout Europe. The consultants used what was happening in the air traffic industry as a basis for their assumption that the "surviving" railways would most likely group themselves around the French and German state railways. Today we know how far off the mark these soothsayers were with their prognoses.

In actual fact, many of the state railways saw the liberalisation process as an opportunity to make the transition from national to continental rail freight operators. Countries such as France and Belgium began eyeing up the opportunities to make profits abroad. On their own turf, however, obstacles were placed in the way to prevent foreign undertakings from getting a foothold. As a consequence, many freight companies made immeasurable losses in their attempts to increase their market share by predatory pricing or dumping, while at the same time losing sight of sustainability.

Beni Kunz knew from his experience during his apprenticeship and travels in America that the sum of these circumstances did not amount to real competition. Since the Shipping Act of 1984, the liberalisation of the US railways had already been realised a long time ago.

At the start of 2004, Hupac felt the time had come to seize the rudder by launching a spectacular manoeuvre. The sledgehammer was called "integrated traction", or at least this is what Hupac called it. To put it precisely, what this meant was the control over integrated traction.

As we have already seen, the introduction of any new line service involved a negotiation process whereby Hupac representatives had to sit down with the state railway representatives, and where the latter would jointly fix the cost of transit through their respective territories.

The Hupac leaders had had enough of attending these talks as a cap-in-hand operator. What they wanted was to outsource the responsibility for the entire traction from start to finish to a third company – namely to one railway undertaking, and for each individual Hupac route.

The representatives of the state railways had only just got used to their cosy tête-à-têtes when this "trick" turned the tables on them and made them into direct competitors, obliging them to assert their naked commercial interests against each other and at the same time sell each other reciprocal services. Add private railways to the equation, and the cosiness was well and truly over. In addition, seen from the liberalisation perspective, responsibility for integrated traction had the advantage that the railways were forced to reorganise themselves to accommodate the new processes.

A single all-round contractor

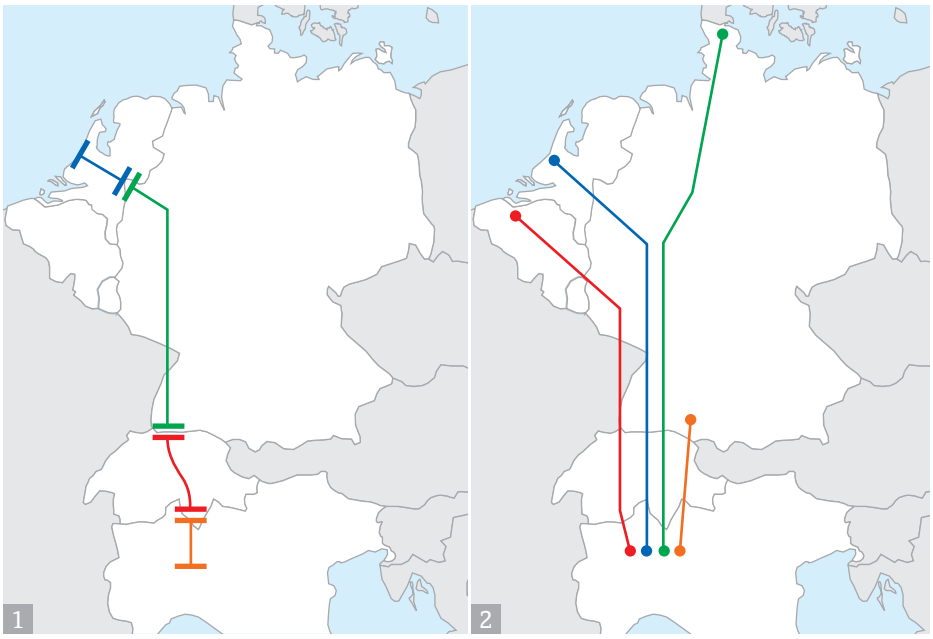
In March 2004, Hupac petitioned all of their seven partner railway undertakings to put in bids for the provision of integrated traction. The initial response was one of complete bewilderment. Integrated? Us? This has never been done before in the whole history of European intermodal rail traffic!

18 March 2005: A sensation! To celebrate their entry into the free market, Hupac lines up a locomotive from each of their partner operators in Chiasso for a group photograph. From left: SBB Cargo (Switzerland), Ferrovie Nord Cargo (Italy), Trenitalia Cargo (Italy), Rail4Chem (Germany/Switzerland) and Railion (Germany). Dillen & Le Jeune Cargo were not yet allowed to operate in Switzerland at this juncture, and Ferrovie Nord Cargo stood in for them at short notice.

Indeed, the idea was new, or to put it succinctly, a breakthrough. Once again, Hupac set out to shake up the industry.

During the obligatory one-to-one talks that followed, Hupac guaranteed the railway bosses a turnover more or less equivalent to before, but on condition that they shoulder the responsibility for the train right the way through from start to finish. In fact Hupac could afford to set these conditions. With 60 fully loaded trains per day and with their own rolling stock and terminals, Hupac had become one of the largest and most independent customers on the market. It would have been unwise for the railways to miss out on their slice of the cake. Especially seeing as decades of experience had taught them that Hupac was a consistently honest partner who invested in sustainable strategic partnerships. Considered objectively, from their point of view integrated traction also provided an opportunity to expand into foreign countries.

Incidentally, the requests for offers were not extended in a tendering procedure. Such a procedure is legally defined and does not, for example, leave room for subsequent renegotiations. Instead, in press releases they were generally referred to as quotes or bidding processes. This allowed Hupac the widest possible scope for manoeuvre in order to introduce compatible concepts together with their railway partners.



1 *Integrated traction illustrated in outline: until 2004, railway undertakings could only operate within their own country and with their own locomotives.*
2 *As of 2005, a single railway undertaking takes responsibility for providing traction for a train from start to finish.*

In September 2004, the various offers were spread out on the table, and shortly afterwards the partners were selected: SBB Cargo, Railion (the cargo division of Deutsche Bahn), Trenitalia Cargo (a subsidiary of the Italian state railway FS), R4C (the private Rail for Chem) and DLC (the likewise private Dillen & Le Jeune Cargo from Belgium). In line with a strategic partnership, Hupac signed three-year contracts instead of the usual one-year contracts customary to the industry. To celebrate this landmark agreement, a photo shoot was arranged with a locomotive from each partner – a trainspotter's delight. Appended to the almost euphoric press release was a sketch depicting what the breakthrough really meant.

Indeed, from 2006 onwards integrated traction provided real competition amongst the railways. It acted as a tonic to deadlocked structures and improved the balance sheets, including Hupac's. A win-win situation – an Anglicism now used even in German. For all intents and purposes, Hupac's incentive to drive forward integrated traction can even be seen as the impetus for the establishment of SBB Cargo International, marked in 2002 when Hupac signed over their German railway licence to the newly established SBB Cargo Deutschland as a form of start-up support ...

Finally the state railway bosses were forced to openly admit that the advantages outweighed the disadvantages. Trains had become more punctual. Fewer locomotive and driver changes were needed. The locomotives had become more productive as they were now more often on the move and less often at a standstill. Administrative expenditure had been reduced. And the icing on the cake – railway liberalisation was possible! A miracle!

Nicolas Perrin, head of SBB Cargo and member of the SBB executive board.

"We can be proud"

Nicolas Perrin can today reap the rewards of having established the international traffic division of SBB Cargo as an independent company in 2010. Three questions for the manager of SBB Cargo.

By establishing the subsidiary SBB Cargo International in 2010, you succeeded in getting the international cargo business to stand on its own two feet. Are you happy with the results?
This step was the right thing to do, and still continues to be so – and it is successful. We have created a business model that caters to the specific market requirements of transit traffic. Thanks to this, we were equipped in good time for the new Gotthard Base Tunnel, and with the extension and upgrading of the access routes we are optimally positioned to provide a competitive service.

Hupac holds a 25% share in SBB Cargo International – a unique business model. What does this mean for both partners in terms of strategy and operations?
For both parties it was an important but initially also an uncertain step. Strategically, we are a perfect match. We continually learn from each other and mutually challenge each other. Ultimately, our customers benefit from our optimal focus on combined transport. One factor that has significantly contributed to our success is that we are operatively independent. We can be proud of the fact that we have successfully managed to firmly position our powerful Swiss partnership in an international market.

Road transport is on the verge of a giant productivity leap: fuel-efficient motors, digitalised processes, mega trucks, platooning. Where do the railways stand?
As a track-bound system, the railway is actually better suited for such innovations. Unfortunately, this is being curbed by numerous national regulations that have a dampening effect on anything new and innovative. What's more, due to lower volumes of individual goods items, the industry itself has shown little interest. However, the SBB are not allowing themselves to be put off by this and are investing heavily in digitalisation and automation. As the freight subsidiary of the SBB, we are spearheading this trend because we don't want to lose the contest between road and rail. My aim is to implement concrete dynamic steps as rapidly as possible.

A victory on paper

The next logical progression in developing stewardship for integrated traction now became a question of actually putting it into practice. A train conveyed from A to B is pulled by a single locomotive; all locomotive changes are done away with. These swaps are still sporadically practiced today, but to a diminishingly small extent. One of the main reasons for the sluggish development of integrated traction in the real world comes down to the actual locomotive itself: it needs to be equipped with all the necessary technical and electronic systems for each transit country. This ends up being pretty expensive – whilst at the same time old, inferiorly equipped locomotives often still need to be amortised. Incidentally, a locomotive is reckoned to have an operational life span of around 30 years – the same length of time it takes to pay it off.

Be that as it may, today Europe counts as fully liberalised in terms of freight traffic, at least as far as the legislative framework goes. But as we have seen countless times over, and will encounter again, the stumbling block lies in the "minor" matter of making this an everyday working reality.

Here a small digression, because whereas passenger transport is governed by a completely different set of rules, the European Union Railway Packages as well as the Swiss railway reforms are always applicable to all areas of rail transport. Here the whole thing is far more complicated and this has, to put it plainly, more deeply rooted causes. One of them is the mandate from the Swiss electorate that the state provide particular public services that are per se unprofitable but wanted. In Swiss parlance this is called Service public. Another is the inherent structure of the state railway that has grown and become intermeshed over the course of two centuries. A third cause is the duty of the state to ensure fair competition. This means for example preventing the wage dumping that total liberalisation would bring with it. This is where in particular the unions are engaged in intensive lobbying.

A further reason is the limitations of the rails themselves. The railways are, in the same way as the electricity or the telephone branches, a so-called network industry. Deconstructing and liberalising them is extremely challenging. According to the textbooks, this can take – if possible at all – up to around 40 years. Seen from the perspective of the protagonists of liberalisation, network industries such as the electricity or telecommunications branches have an "advantage" over the railway industry in that their networks can be used to a more or less unlimited extent. All electricity providers can feed their electricity into a virtually boundless network, whereas the railways, by contrast, have a limited track capacity. Ten providers cannot dispatch their trains across the rails as and when they like.

In short, up until today the European Union has hardly come a single step further in the process of implementing the Third and Fourth European Railway Packages, which above all deal with the interests of passenger transport. Indeed, the member states have gone as far as to oppose the edict. This has partly been in response to the turbo-liberalisation in England, where within the first few years the negative consequences of a free market – particularly in the area of infrastructure – in fact unleashed a veritable chaos in passenger rail transport

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1 Rail traffic booms, in part thanks to market deregulation. The Hupac people have their hands full. Here, concentrated work in the cabin of a gantry crane …

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2 ... organising at ground level ...
3 ... carefully stacking containers ...
4 ... and loading and unloading semi-trailers.

and amongst the affiliated service sectors. Today, England is considered a model example of liberalisation. Now to return to the main narrative.

The pendulum swings back again

It was reassuring for Hupac to know that in the world of goods transportation, at least internationally, conditions were much more straightforward. Which did not mean everything was going smoothly and that all the participants were happy. Far from it. Very early on, a backlash to the liberalisation process had started to gain ground in freight transport. One could call this a "re-monopolisation", almost like after the French revolution when the old kings mustered up all their proverbial might to restore the world order that Napoleon had dismantled. Historians call this era the restoration. And in the world of railway transportation too, the "old guard", or rather the state railways, set about trying to restore the old order following the "unrests" of liberalisation.

A few examples. Belgium decreed that only the state railway could train engine drivers. France vehemently blocked access to its rail network for foreign competitors. In Germany, a court ruled that it was legal for the state railway to pay lower rates for electricity than private railways. In addition, the German parliament, in its Regulation on the Award of Public Contracts, decided that in order to protect the Deutsche Bahn, transport agreements would no longer have to be put out to public tender until 2014. Switzerland likewise opposed the edict to issue a public call for tenders. The latter two examples concerned above all passenger transport, but they are clear illustrations of the struggle to re-monopolise.

Last but not least, this very expansion of the state railways into foreign countries energised the re-monopolisation process. New, young, private railway

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companies, whose ostensible role was to shake up the market, were being bought up by the behemoths, assimilated, or dissolved and quasi-nationalised. The smaller ones disappeared; the larger ones kept on getting larger, creating what was a completely paradoxical situation whereby state railways expanded into foreign territory while at the same time barricading themselves in against would-be competitors on their own turf. What unfolded was essentially a state-sanctioned game of cat-and-mouse with changing roles.

All the same in 2009, Hupac's management board decided to run with an idea circulating in the Swiss parliament for a while, namely to outsource international traffic out of SBB Cargo as an independent firm. The reason? SBB Cargo had badly burnt its fingers with its adventures abroad and was now deep in the red. The widely drawn conclusion was that small Switzerland could not afford its own internationally active freight industry, prompting a debate about whether to break up the freight division into a national and an international branch, the latter in collaboration with a major partner.

Discussions took place with various interested parties, including the cargo divisions of the French and German state railways. But when the French bailed out, Hupac began to panic: what if the entire freight transit through Switzerland falls into the hands of DB Cargo, the second strongest player on the market? That would be nothing short of a new monopoly. Hupac's strategists decided to take the bull by the horns and pitched an offer to SBB Cargo: we will get on board!

Talks with the heads of the Swiss Federal Office of Transport and the SBB soon bore fruit. In 2010, SBB Cargo International was established as a joint subsidiary firm of SBB Cargo and Hupac, with headquarters in Olten and 75 per cent of the share capital in the hands of SBB Cargo and 25 per cent belonging to Hupac. The partnership worked well, the company is today profitable – and that although the euro rate fell from 1.55 francs in 2008 to 1.10 francs in 2016. In 2013, after decades of running at a loss, even SBB Cargo Switzerland managed for the first time to turn a profit.

Timeline of European Railway Reforms

Timeline of Swiss Railway Reforms

1957, 25 March: Declaration of intent
The treaty establishing a European Economic Community formalises the intent to ensure that within 12 years "non-resident carriers may operate national road haulage services within a Member State". This applies to all transport branches, in other words also to railway, shipping and road traffic.

1962, 28 November: No competition regulations
The Council of the European Economic Community excludes transport companies from the EEC competition rules.

1968, 19 July: Special rules
With a new directive, collaboration between internationally operating transport companies is regulated, particularly applying to technical standardisation.

1983, 24 January: Action for failure
The European Parliament wants liberalisation planning to be pushed ahead. With a formal action for failure, it calls on the Council of the European Economic Community to act. The action is endorsed by the European Court of Justice on 22 May 1985.

1991, 29 July: Directive 91/440/EEC
- Rail transport undertakings are to become independent companies.
- Separation of infrastructure and traffic (judicial, organisational and financial).
- Permission to establish groupings.
- Non-discriminatory network access.

1996, 17 November: Revision of the Railway Act
Railway reform kicks off.

1999, 1 January: Railway Reform 1
- Out of the state-run enterprise SBB, as a legally dependent federal institution, the public limited company SBB AG emerges with three transport divisions: infrastructure, passenger transport and freight transport.
- The infrastructure and passenger divisions are financially and organisationally separated.

- The freight division becomes an independent public limited company.
- Debt relief and restructuring of SBB.
- Liberalisation of public freight traffic with non-discriminatory access for foreign freight companies to operate within Switzerland.
- Partial funding of public transport.

2003, 15 March: First Railway Package

- All railway undertakings gain free access to the most important European lines (around 50,000 track kilometres).
- The establishment of an independent European train path allocation body.
- The incremental implementation of interoperability.
- Regulations governing network access, approval of undertakings and rail track access charges are refined and standardised in a number of aspects.
- The separation of infrastructure, passenger and goods transportation is likewise defined in greater detail.
- Independence of infrastructure providers from the state.

2004, 30 April: Second Railway Package

- Systematic advancement of the First Railway Package, in particular in the improvement of safety and interoperability and in accelerating the opening of the market to freight traffic.
- Free access for all railway undertakings to operate on the entire European rail network from 2006 onwards.
- Detailed guidelines on railway safety.
- Free access to the national infrastructures of other member states as of 2007, making cabotage possible.
- Detailed guidelines and definitions of technical standards for interoperability.
- Establishment of the European Railway Agency as of April 2006 as an independent coordination body responsible for implementing the railway reforms, with headquarters in Valenciennes, France.

2005, 23 February: Railway Reform 2

- Mainly focuses on provisions relating to passenger traffic.
- Reorganisation and harmonisation of infrastructure funding.
- Efficiency enhancement in public transport.
- Safeguarding of an efficient railway system through an improved cost-benefit ratio in the use of public funding.

The reform is rejected by parliament and sent back with the remit to break it down into smaller, more manageable steps.

2007, 1 September: Third Railway Package

- Complete liberalisation of cross-border passenger traffic by 2010.
- Definition of minimum requirements for obtaining the European train driver licence.
- Increased competition when tendering for public transport services.
- Improvement of passenger rights.

2010, 1 January: First step towards Railway Reform 2

- Basis for more legal certainty in tendering procedures.
- Basis for harmonisation of the legal status of tendering and ordering procedures.

2013, 30 January: Proposed Fourth Railway Package

Proposed finalisation of the liberalisation process. In particular the target to fully liberalise passenger transport by December 2019, withdraw subsidies, reduce public service provisions and completely separate operations and infrastructure meet with vehement opposition in the European Parliament. It rejects the railway package, returning it to the committee in charge.

2013, 1 July: Second step towards Railway Reform 2

- Provisions for more legal certainty in tendering procedures.
- Provisions for harmonising the legal status of tendering and ordering procedures.

2016, 28 April: Fourth Railway Package, technical measures

- Increases in interoperability.
- Operations and infrastructure are not completely detached from the state. Conversely, cross-subsidies are reduced.

2016, 14 December: Fourth Railway Package, policy measures

- Free access to rail services such as maintenance or ticket sales as of 2020, albeit with restrictions to protect the state railways.
- Public contracts for passenger services must be publicly tendered, albeit with restrictions to protect the state railways.

The second part of the EU's Fourth Railway Package finally came into force in December 2016, marking what was considered to be the official conclusion of the liberalisation process. Nevertheless, hefty debates within and between the national parliaments of the EU erupted, and many of its provisions had the teeth drawn out of them. The state railways were granted special dispensations in numerous key areas, the upshot being, on the basis of political whims, things were left pretty much as they had been. This in turn prompted critics to declare that railway liberalisation had de facto failed. A somewhat more optimistic reading of the situation was that after what had been a colossal administrative effort, very little real change had been achieved. Despite the Railway Reform 1, which had been an outstanding start, Switzerland too had made comparatively little progress.

On a side note, anyone who does an Internet search on the "Fourth Railway Package" will find hardly any useful articles, quite the opposite to the wealth of information when one types in the search term "First Railway Package". One cannot help getting the impression that the whole thing had become too complicated even for the media to deal with.

Admittedly, this so-called failure should not be painted quite so bleakly. On the one hand it is part and parcel of the mechanisms of the free market economy that a few firms win out against the other competitors and grow so big that they can dominate the market ad lib, in effect becoming monopolists. Firms such as Microsoft, Nestlé or Monsanto are cases in point.

On the other hand, European railway liberalisation in fact initiated many changes that today are both recognised and welcomed. This includes a more dynamic market, simplified work processes, more streamlined business structures, more efficient companies, increased interoperability – and yes, even slightly more competition. The situation at the end of 2016: no fewer than 23 operators from across Europe use the Swiss rail network to transport their goods, all of them as direct competitors to Hupac.

To sum up, the railways are no longer what they once were back in 1991 at the time when Directive 91/440/EEC was issued. There are even certain experts who are adamant that if it had not been for the process of liberalisation, both the passenger and freight transport sectors of the old dysfunctional state railways would have long since collapsed.

For Hupac as an operator, in other words as a railway customer, everyday work continued to be what seemed like an endless round of negotiating, mediating and zeroing the balance – all the more so after the American and European housing market bubble burst and the resulting global economic crisis of 2008 saw Hupac's turnover plummet dramatically from one day to the next. The annual balance for 2009 showed a loss of turnover of 18.2 per cent with 13.5 per cent fewer consignments.

The global economic crisis also brought railway liberalisation to a grinding halt when banks and investors suspended investments in what they deemed to be "high-risk businesses". And amidst the turmoil, the euro exchange rate dropped steadily from 1 Swiss franc and 55 centimes per euro down to 1 franc and 10 centimes, amounting to a depreciation of a third. For a firm like Hupac, which

The upper corner of the loading unit defines the maximum height for a train to pass safely through a railway tunnel. For modern semi-trailers, this requires a height of 4 metres.

conducts 95 per cent of its business in euros, this was and remains a bitter pill to swallow. As a result, many rail traction providers went bankrupt or were taken over by the ever-dominant state railways.

4 metres: the railways lag behind

Let us leave liberalisation behind us before we get completely bogged down. After all, there were many other important matters that Hupac had to negotiate, mediate and zero the balance on. We will now turn away from general events in Europe to focus on Switzerland, or to put it differently back to the place where the whole Alpine rail traffic had to cross, namely the tracks. In actual fact the tracks themselves were okay, but what was slowly but surely turning into a problem was everything above track height: tunnels, signalling and road bridges. In order to understand this better, a brief flashback to the NRLA discussions prior to the 1992 referendum is necessary.

At the time, politicians and traffic analysts, transport companies, logisticians and even the strategists at Hupac were in common agreement that the future belonged to the container. This steely magic box had, in the meantime,

established itself worldwide as a supremely practical transport vessel. Solidly built and internationally standardised in size, it was compatible with ships, trains and lorries. The assumption was that the container would come to dominate the roads in due course and relegate the semi-trailer to insignificance.

Compared to the semi-trailer, the container had a slightly lower total height when loaded onto a train wagon: its piggyback measurement from the top edge of the track to the top outer corner of the container was roughly 3.80 metres. A semi-trailer was usually 20 centimetres higher.

The NRLA was planned accordingly. The Lötschberg axis was to be high enough to allow the higher semi-trailers to easily fit through the tunnels and under the various bridges. The key to ascertaining these dimensions is the so-called rail network gauge. It defines the maximum height allowance for the top outer corner of a wagon or container so that the train does not run the risk of touching the tunnel ceiling, or for that matter the signalling equipment. The measurements are taken from the top edge of the track to the top outer corner of the passenger carriage, container or semi-trailer. The clearance gauge along the Lötschberg axis is 4 metres – not only for the base tunnel, but also along the entire stretch right up to and into the terminals. This is known as the 4-metre corridor.

In contrast, the more heavily used Gotthard axis was planned with the lower containers in mind. As a matter of fact, the Gotthard Base Tunnel itself was to be built with a clearance gauge of 4 metres, but the access routes were to be left as they were with a clearance gauge of 3.8 metres.

So far, so good, and 2007 duly saw the festive inauguration of the Lötschberg Base Tunnel. But the 1992 prediction that the container would eventually triumph over the semi-trailer proved to have been misleading. On the contrary: in relation to containers, the proportion of semi-trailers being used for transportation had increased. And what is more, in the meantime semi-trailers had become bigger and bigger and, more importantly, taller. This was an obvious development, given that lorry makers generally strive to develop loading spaces with ever-larger volumes in order to transport ever more material per trip. In this game, every centimetre counts, and every mode of transport is subject to permanent optimisation. By this point, almost all trailers had reached a height requiring a clearance gauge of 4 metres. The Gotthard axis was not geared to this development.

It was not hard to put two and two together and see that trouble was brewing. The number of articulated lorries was growing and the capacity on the Lötschberg axis was limited – there were more lorries on the roads than the trains could actually carry. This may seem an easy calculation, yet it took quite a while for all the parties concerned to really get the message.

"Incredibly important"

At Hupac, this development was of course recognised early on, not least because work and profit were sinking; or in business terms, the growing potential was not being fully exploited.

Slowly but surely, this realisation dawned in political circles, along with the conclusion that the trend ran counter to the Alpine Initiative and therefore also

against the modal-shift policy. These insights crystallised in the question: does the Gotthard axis have to be enlarged into a 4-metre corridor?

Yes, it does – and post haste! At least, this is what Irmtraut Tonndorf, in charge of Hupac's communications, and CEO Beni Kunz insisted at the hearings on the 25 and 26 October 2010 before the Committee for Transportation and Telecommunications of the Swiss National Council in Berne. Over the two days, representatives from various stakeholders and business groups presented their views. None of the speakers definitively opposed the 4-metre corridor, not even Ulrich Giezendanner (Swiss People's Party, SVP), a Federal Councillor and himself a haulier, known as a conservative hardliner.

In her speech, Irmtraut Tonndorf presented the cold hard facts: the Lötschberg Base Tunnel was being used to 90-per-cent capacity, but only met the needs of 10 per cent of the actual demand for 4-metre transportation, because 60 per cent of all vehicles crossing the Alps were oversized articulated lorries. The rail access routes to the Gotthard Base Tunnel were designed to accommodate a maximum of 3.80 metres – therefore 20 centimetres of headroom was missing in order to shift these lorries from road to rail. And, more importantly, the crucial 20 centimetres were also lacking along the connecting lines in Italy.

Tonndorf's conclusion: action needed to be urgently taken. She underlined the virtues of prompt action using an example: in 2000, the clearance gauge along the Brenner line in Austria had been upgraded to 4 metres by lowering the tracks. As a result, the following eight years had seen a six-fold increase in the proportion of semi-trailers being transported on rails and a four-fold increase in the total volume of unaccompanied combined transport.

In the conclusion to his speech, Beni Kunz presented the bottom line: "The 4-metre corridor is incredibly important."

Incidentally, this would not have been the first change in the gauge on the Swiss railway network. Back in 1979, installations and intersections had been adjusted from 3.60 metres to 3.80 metres, initially on the most important routes. The cost at the time: 50 million Swiss francs.

A fast game of ping-pong

But oh oh! After the hearings, the Swiss National Council Committee deemed a 4-metre corridor superfluous and issued a resounding "non, nein, no" in all Swiss national languages. Hupac reacted instantly. Considering the sluggish democratic processes of the Swiss political system, what then followed turned into a bona fide Federal Palace cliff-hanger.

And this is how it unfolded. On 7 November 2010, only a few days after the commission's veto, Hupac, together with a number of like-minded associations, called a press conference during which the issue was not simply elucidated but demands were made: a 4-metre corridor, also encompassing the Luino line from the Swiss border all the way to the Hupac terminal in Busto Arsizio, should be constructed and completed in time for the opening of the Gotthard Base Tunnel.

Including additional terminals in northern Italy. Including the expansion of the overtaking tracks for 750-metre-long freight trains. And ideally also with equal opportunities for goods trains vis-à-vis passenger trains. The estimated costs of the modifications to the approximately 100 bridges and tunnels, not to mention the signalling equipment in Switzerland: between 300 and 600 million francs. To make the corridor more attractive, Hupac also brought the issue of subsidies into play: if the corridor were to be constructed, the increased productivity would potentially enable the Swiss Confederation to reduce its subsidies.

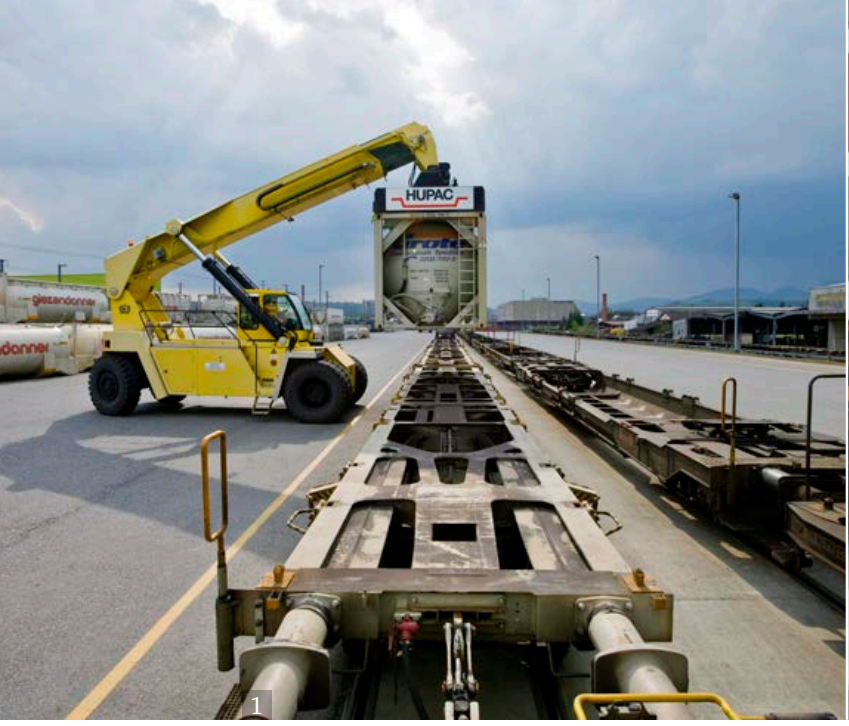
The media response was overwhelming; left-wing circles and rail transporters raised their voices in support, modal-shift proponents likewise, and Alpine conservationists naturally joined the unison. Upon which in Berne, the upper house (the Council of States) followed by the lower house (the National Council) sprang into action. The relevant committee of the Council of States recommended that the issue be reconsidered. The National Council followed this up by immediately appointing the highest executive council – the Swiss Federal Council – to investigate the 4-metre corridor issue. This all happened within a mere nine days of the Hupac press conference.

In judicial language, this review mandate is known as a postulate, which means no matter what the outcome of an investigation it is not binding that further political action be taken.

For precisely two representatives – one from the upper and lower house each – this was too little. On 2 December, Norbert Hochreutener (Christian Democratic People's Party, CVP) put forward a motion in the National Council calling for the Gotthard-NRLA axis to be upgraded to a 4-metre corridor between Basle and Chiasso. Contrary to a postulate, a motion means that if adopted by the political councils a given issue must lead to a yes-or-no result. Only four days later, Rolf Büttiker (Free Democratic Party, FDP) from Solothurn followed suit with an identically worded motion, which he tabled at the Council of States in order to bolster and accelerate the political proceedings.

In terms of Swiss politics, the momentum was spectacular – and the ensuing game of political ping-pong between the two councils became no less demanding. This was all facilitated by, amongst other things, the fact that Hochreutener and Büttiker were essentially preaching to the converted. In the meantime it had become clear to all and sundry that the NRLA would be rendered virtually useless if the 4-metre-high semi-trailers could not transit it – in other words precisely the vehicles that were clogging up the A2 motorway axis between Chiasso and Basle. Both motions were eventually adopted – the 4-metre corridor was given the go-ahead.

The one politician who was particularly elated with this result was Doris Leuthard. As former President of the Christian Democratic People's Party (CVP), she had been elected Federal Councillor in 2006 and in 2010 became head of the Federal Department of Environment, Transport, Energy and Communications. From the outset it had been clear to her that supporting combined transport in every respect was crucial in order to reach the modal-shift goal. Hupac and combined transport in general found in Doris Leuthard an able, strong and like-minded ally.



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1 The way in which a train is precisely loaded depends on many factors, for example the weight of the individual loading units …
2 … the route's clearance gauge…
3 … the length of the individual loading units …
4 … or the maximum permitted load capacity of the freight wagon axles. All the pictures are from Hupac's Aarau terminal.

New insights and a disastrous lapse

So the political bargaining about the 4-metre corridor had been initiated. But for the proponents there was no time to be lost resting on their laurels! In between the basic decision to do something in principle and actually hammering out a concrete plan of action, the millstones of Swiss democracy have a tendency to slowly but surely grind away until things come to a complete standstill. An important part of this equation was the decision made by the various councils in connection with the 4-metre corridor to ratchet down state subsidies and then to completely withdraw them two years after completion of the corridor. The prospective higher rate of productivity thanks to the corridor and the NRLA in general was considered to adequately offset the state support.

To linger with this issue a little longer: at the time of writing, the 4-metre corridor is set for completion in 2020 and subsidies will be definitively withdrawn by 2024. This will not be easy for Hupac, nor for that matter for any of the other combined transport operators driving through Switzerland and who at the moment receive state funding. According to those in charge at Hupac, given the right framework conditions combined transport should be more than able to stand on its own two feet. However, only if the basic requirements are met: 750-metre-long trains, 4-metre rail network gauge, a towable mass of 2,000 tonnes with only one locomotive, a continuous flat rail route, efficient scheduling, reliable quality, fair track access charges – and this across every border along the entire length of the corridor.

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Returning to the game of ping-pong. As equally important as the subsidy issue was the realisation that in order to follow through with its modal-shift policy Switzerland would have to become involved in Italy. Because what good is a fantastic 4-metre NRLA to Switzerland if the heavily laden trains get stuck at the border?

A quick glance over the national frontiers was all it took for it to become worryingly clear that in Germany and Italy the NRLA access routes were practically in a state of suspended animation, even though both countries had guaranteed the connection to the NRLA by signing both the 1992 Transit Agreement and the 1999 Overland Transport Agreement. So while Switzerland had been busily boring away through the Gotthard, things in Italy and Germany had remained inert, accompanied by what was a noticeable political silence or at most a faint mumbling. Granted, Italy was busy building a cutting-edge network for high-speed passenger trains, ditto Germany, but neither of them were showing any signs of clearing the way for international freight traffic.

Alongside this stalemate, from Hupac's perspective a particularly worrying European Union planning failure was taking shape. The EU was just in the process of defining the nine most important freight corridors in Europe, which were to be upgraded to make them super efficient within the coming years. Of top priority was the Rhine-Alpine corridor, which connects the international ports in Liguria in Italy to the ones in Belgium and Holland. Around half of all European industry lies within the catchment area of this line, which runs via Domodossola and Chiasso through Switzerland. But inexplicably the Luino line, which serves to connect the Busto Arsizio and Novara terminals, was classified as a branch line. As we have seen, Switzerland was investing heavily in precisely this line in order to expand the 4-metre corridor.

Bye-bye Overland Transport Agreement?

At any rate, at least passenger transport was making headway. In early August 2011, railway representatives from Italy and Switzerland met in Bellinzona in order to initiate better connections between the two countries in the context of Milan's 2015 World Fair and the foreseeable opening of the Gotthard Base Tunnel in 2016. This included such things as establishing "more reliable train timetables" between Zurich and Milan. In the Accordo dei Castelli (the Castello Agreement), the two countries agreed to do just that.

All very well for passenger transport. SBB boss Andreas Meyer came away with an air of confidence. But during the run up to the meeting, the head of the Italian state railway FS, Mauro Moretti, announced that an expansion of the line from Chiasso to Milan was not in fact required. After the opening of the NRLA, Italy would be ready to "cushion" the anticipated increase in goods trains by employing "operational measures", such as standardising their light-signalling system and shortening the intervals between trains, made possible by the new European Train Control System, or ETCS.

At this point, the alarm bells started ringing loudly at Hupac. Are we hard of hearing, or did Moretti just shatter the Overland Transport Agreement in a single breath? After all, by signing the agreement back in 1999 Italy had given a detailed undertaking to expand the line from Chiasso to Milan from a double- to a quadruple-track railway and to run freight and passenger traffic separately from each other. Had this all been suddenly forgotten? The Swiss signatories in Castello failed to react to Moretti's glaring oversight, which begged the question: has SBB boss Meyer just betrayed the modal-shift policy? Meyer's only response to Moretti's words was a terse "better late than never". But then, what counts as "late" and what counts as "never"?

Naturally, from the perspective of passenger transport the Accordo dei Castelli was a big step forwards. Once again, however, freight traffic had been more or less completely left out in the cold. This was a grave problem for combined transport – all the more so because the Overland Transport Agreement had mainly focused on the Como/Chiasso–Milan connection, while the Luino–Busto Arsizio-Gallarate line had been relegated as a side matter. And as if this was not already bad enough, since the signing of the Accordo dei Castelli the latter line was being passed over in complete silence.

What was more, anyone daring to accuse the Italian railways of malicious intent would have had the Accordo waved under their nose. If the Luino line became moribund then Busto Arsizio-Gallarate, the most important transhipment terminal, would be in the wrong place – and Hupac therefore out of the game.

Instead, the Hupac strategists initiated a dialogue with the Italians, as well as with the Swiss government in Berne. Federal Councillor Doris Leuthard recognised the predicament immediately and personally sprang into action as mediator. During the course of the discussions, the following maxim was coined, summing up the diplomatic "Chiasso and/or Luino" conundrum perfectly: "The Chiasso line is more important, the Luino line more urgent".

Behind this phrase lay the awareness that Milan, with all its bypass routes, was nothing short of a giant bottleneck. Terminals were lacking; the tracks were

being used to almost full capacity. An expansion of the terminals and the access routes for freight traffic on the Italian side as per the Overland Transport Agreement seemed decades away. Hupac could not afford to wait that long, and neither could Switzerland. Another consideration in favour of the Luino line was that, contrary to the Chiasso line, it did not run through the Ceneri tunnel. The third large base tunnel of the NRLA was set to open in 2021, whilst the Luino line would be completed long before then.

And Federal Councillor Doris Leuthard was becoming ever more convinced that if Switzerland was serious about successfully pursuing its modal-shift policy it would have to fund at least part of the necessary infrastructure in Italy itself. While clearly overstepping the principle of territoriality, which dictates that each country is responsible for its own infrastructure, it would not have been the first time that Switzerland had co-funded infrastructural projects abroad out of self-interest. Notable examples include the multi-million-franc involvement in the Swiss Connection to the Trans-European High-speed Rail Network project in France and Germany, set to run till 2020 with the aim of improving TGV connections – nota bene an investment in passenger transport.

To add to this, Switzerland had a further worry: what happens if we build the NRLA at considerable expense and even fund the access lines in Italy, only to find that there are not enough terminals for all the new trains? For the 4-metre-corridor issue – at the time a topic of heated debate in the Swiss parliament – to be signed and sealed once and for all, an argument was needed for the terminal problem that would convince even the very last sceptics.

So, back to the original debate, where in the meantime the following consensus had been reached:

- The 4-metre corridor on the Gotthard axis should be built.
- Likewise, the Luino line should be expanded into a 4-metre corridor.
- The Chiasso–Milan line should also be expanded into a 4-metre corridor.
- All bottlenecks along the Italian access line to the NRLA-Lötschberg axis, the so-called Domodossola line, should be remedied. This meant that both NRLA axes would be upgraded on a par with each other to Milan/Busto Arsizio.
- Switzerland was willing to finance the expansion works on the Italian side.
- Roughly one billion Swiss francs would be made available for all the projected undertakings.
- Concurrent with the line expansion works, new terminals should be built and old terminals upgraded in and around Milan, to remedy Milan's "terminal shortage".

A study intermezzo

Amidst these discussions, yet another argument arose: the French firm Lohr, which specialises in developing both road and rail transport technology, announced the invention of a completely new railway wagon for combined transport. The wagon had a ultra-low swivel-mounted platform allowing for horizontal loading from the sides, in contrast to the vertical loading of semi-trailers and containers by gantry crane. The wagon was called the Modalohr, and its

inventors claimed that the lower loading ramp made the need for the 4-metre corridor redundant.

At the Federal Palace in Berne, the idea was met with warm approval, particularly from the political Left: why invest almost one billion francs in the corridor when we could be investing it in new technology instead?

Things were not that simple, but this only became apparent during the course of political debates that ensued in which various feasibility studies proved helpful, including a key one drawn up by the UIRR. The results, presented on 28 November 2012, were sobering: 1) The wagon could certainly be used without having to adjust the rail network gauge, but instead the tracks would have to be lowered, which would be an exceedingly costly matter. 2) The Modalohr system would generate 30 per cent more system running costs. 3) The Modalohr would require a terminal space two and a half times bigger than current unaccompanied combined transport. 4) The Modalohr would not be compatible with all types of semi-trailer designs. 5) As the sole manufacturer, Lohr could not possibly produce the amount of wagons necessary for the wholesale introduction of this system. The study concluded that while it was crucial to consider all technical innovations, the Modalohr was a niche solution that offered little benefit at a high price. Existing "conventional" combined transport was more efficient.

Thus Lohr's intercession was off the cards. Today, these wagons are used almost exclusively on routes between Spain, Belgium and France.

The same discussion was repeated virtually simultaneously when the German company Cargobeamer brought a similar rail wagon system named after the firm onto the market, but this intercession again amounted to nothing.

A triple breakthrough

Now it was time to initiate talks with Italian politicians and railway bosses. Mauro Moretti, the head of the Italian state railway FS, officially praised the idea of a new terminal strategy for Milan, thereby implicitly agreeing to the upgrading project on the Chiasso, Luino and Domodossola routes – an encouraging sign.

The key breakthroughs were soon to follow. On 11 May 2012, Hupac and its Italian partners FSI and Cemat agreed on a common strategy for the Milan terminals in a memorandum of understanding. On 17 December of the same year, Swiss Transport Minister Doris Leuthard and her Italian counterpart Corrado Passera also signed a memorandum of understanding. The statement of intent covered agreements on both the terminal strategy and the 4-metre corridor; the talk was of Switzerland funding the expansion works for both the Luino and Chiasso lines.

Almost a year later, on 13 December 2013, the 4-metre corridor was finally ratified by both chambers at the Federal Palace in Berne. A total of 20 tunnels and around 100 so-called profile obstacles such as signalling equipment and platform roofs were to be adapted to the 4-metre clearance gauge. The parliament declared a credit in the region of 990 million Swiss francs, of which 280 million was earmarked for the extension work in Italy. Six weeks later, this was followed by the decision to allocate 120 million of this 280 million directly to the Luino line expansion.

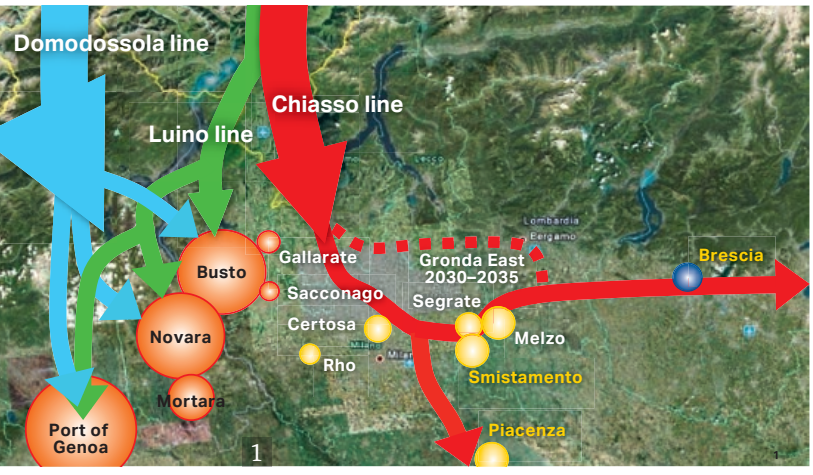
1 *The first breakthrough: the memorandum of understanding on a common terminal strategy for the greater Milan metropolitan area. From left: Bernardino Regazzoni (Swiss Ambassador to Italy), Raffaele Cattaneo (Minister of Infrastructure and Transport for the Region of Lombardy), Fabio Regazzi (National Counsellor, member of the Swiss Transport Committee), Hans-Jörg Bertschi (chairman of the board of Hupac), Marco Gosso (managing director of Cemat), Mauro Moretti (delegate of the board of directors of the Italian state railway and president of the Community of European Railways), Beni Kunz (managing director of Hupac).*

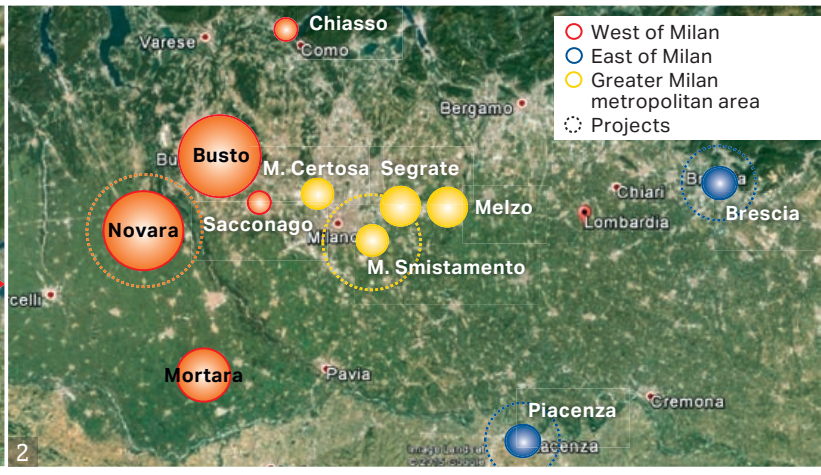
2 *The second breakthrough, a few months later: Italy's Minister of Infrastructure and Transport, Corrado Passera, and Swiss Minister of Transport, Doris Leuthard, sign the memorandum of understanding for the expansion of the 4-metre corridor in northern Italy and the common terminal strategy for the greater Milan metropolitan area.*

The current state of play:

- Switzerland is covering the full costs of the Luino line 4-metre corridor.
- Italy is paying for the upgrading of the Chiasso line in full.
- As far as the Domodossola line is concerned, its clearance gauge has already been adapted since the opening of the Lötschberg axis, but parts of the line are still single track. Although Switzerland has sufficient reserves to fund the potential extension to a dual-track system, there are no projects on the horizon, nor are there likely to be any for some considerable time to come.
- Switzerland is to assist in funding terminal construction and extension projects in the Milan area.
- The Hupac terminal Busto Arsizio-Gallarate is to be connected to the new terminals around Milan.
- The upgrading of the Luino line is set to be completed by 2020.

The fact that the Luino line will be the first to reach completion enables Switzerland to meet its modal-shift policy targets with optimal efficiency. It will be the sole real flat rail line with a maximum gradient of only 12 per mille along the Genoa–Rotterdam corridor. By contrast, even after completion of the upgrading works, a 21 per mille gradient will remain along the Chiasso line – a fact that usually gets obscured in the enthusiasm about the "flat rail link NRLA".





1 Terminal strategy for northern Italy: the flow of goods from the three main lines of the Rhine-Alpine corridor are to be distributed optimally across the greater Milan metropolitan area and forwarded from there.

2 The construction of new terminals and the expansion of existing ones in the greater Milan metropolitan area is set to double the 2010 capacity for combined transport by the year 2020.

Straight down the line

A flat rail link is the description of a railway line that has a gradient of no more than 12 per mille from start to finish. This means that a train climbs or descends a maximum 120 centimetres per 100 metres of track. On the Gotthard line, this is by no means the case: along the access route from Erstfeld up to the Gotthard tunnel and on the other side down to Biasca, the gradient reaches up to 28 per mille – a height difference of 28 metres per kilometre of track. And even this is only possible because a total of seven double loop tunnels have been hewn into the rock along certain access routes known as ramps. This extreme gradient means that two to three locomotives are necessary to haul a single freight train through the Gotthard.

In the Gotthard Base Tunnel, the centrepiece of the NRLA, the gradient drops to 7 per mille. Compared to the old tunnel, the highest point has been lowered by 600 metres to 550 metres above sea level compared to the alternative 1,150 metres. Because the tunnel essentially passes through the foot of the mountain – hence base tunnel – it is around 42 kilometres longer than the old tunnel. Indeed, with its 57.1 kilometres it is currently the longest railway tunnel in the world, with a mere 148-metre difference in height between the tunnel portals at either end.

The flat rail route is one of the central concepts of the Rhine-Alpine corridor. The absence of any notable inclines or declines along its length of 1,400 kilometres allows trains for the first time to achieve new speeds, in particular for high-speed passenger trains.

The Rhine-Alpine flat rail route will only be completed from end to end in a few years' time, when construction works on the 15.4-kilometre Ceneri Base

The Rhine-Alpine corridor connects the international ports in Liguria to those in Belgium and Holland. The Gotthard Base Tunnel is the "heart" of the corridor, Busto Arsizio-Gallarate being one of the central transhipment terminals.

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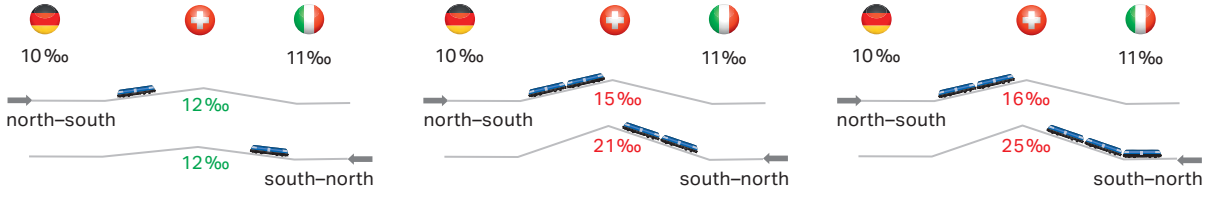

Luino line: flat rail link

Each for a train weighing 1,800 tonnes

Chiasso line: “mountain route”

Domodossola line: “mountain route”

2

1 Superb vistas in Busto Arsizio: the flat rail link has opened up the most rapid route across the Alps.

2 A comparison of the routes: the Luino line will be the only truly flat rail link through the Alps.

Tunnel in Switzerland and the 27-kilometre-long Terzo Valico tunnel in Italy have been completed. Both are scheduled to open in 2020, but in the case of the Terzo Valico, observers have calculated that the forecast is more than overly optimistic. And even when both tunnels are complete, there will still be gradients of up to 21 per mille between the southern portal of the Ceneri Base Tunnel and Chiasso. Likewise on the Lötschberg axis via Domodossola, gradients of up to 25 per mille still remain. This means that the only real continuous flat rail route within the Rhine-Alpine corridor is the Luino line, in other words the line leading to the large Hupac terminal Busto Arsizio-Gallarate. Coming from the north, it already branches off in Bellinzona in the direction of Luino, bypassing the Ceneri Base Tunnel with all its ups and downs.

Bright prospects

The flat rail link has four competitive advantages:

- Only one locomotive is needed, as opposed to two or three.
- If furnished with six axles, the locomotive can provide the traction for trains up to 400 tonnes heavier than before. This equates to a total train weight of 2,000 tonnes, the current maximum being 1,600 tonnes.
- Accordingly, trains can be lengthened from the current maximum of 600 metres to a total of 750 metres.
- The train can run faster, saving valuable time and money.

With the 4-metre corridor factored in, these new opportunities give a productivity increase of around 30 to 40 per cent. These are the figures projected by the Hupac specialists, and with them Switzerland would more than meet the targets of the European Union, which has set itself the goal of transferring at least 30 per cent of all freight to rails or other environmentally sound transport modalities by 2030, increasing to 50 per cent by 2050.

The flat rail link has other distinct advantages. For instance, it shortens the route through the Gotthard Base Tunnel by 30 kilometres compared with the old route across the mountain pass. Locomotives can also use electrical braking more than mechanical braking, allowing them to feed electricity back into the grid. Or the fact that high-speed passenger trains can travel at speeds of up to 250 kilometres per hour.

Yet the most significant potential for productivity increases lies in the European Train Control System, or ETCS for short, with which the Lötschberg and the Gotthard Base Tunnels and parts of the NRLA are already equipped. The ETCS provides a digital autopilot for locomotives that monitors and coordinates the trains en route. The ETCS could potentially halve the current mandatory headway, that is the safety distance between moving trains, from three minutes to one and a half minutes.

It would, solely based on the ETCS, be theoretically possible to move at least twice as many goods trains on the rails than is currently manageable. But this would only work if the control system were installed along the whole NRLA line, or rather the entire corridor. The expense would be considerable, given that it requires equipping both the rails and the locomotives. What is more, the EU originally conceived the ETCS as a standardised system precisely with interoperability in mind, but in the meantime no fewer than four different nationally modulated variations are now in operation. Depending on the route, this means that each locomotive has to be fitted with several ETCSs. Nonetheless, the European states are working on it in conjuncture, and one fine and distant day the whole Rhine-Alpine corridor is to be furnished with the ETCS. On an even finer and even more distant day, the European Train Control System should indeed grace every last corner of the European rail network. But by then, material deliveries by drone might well have become the commonplace practice.

Summit meeting during the inaugural trip through the Gotthard Base Tunnel on 1 June 2016: (from left) Italian Prime Minister Matteo Renzi, Swiss President of the Federal Council Johann Schneider-Ammann, German Chancellor Angela Merkel and French President François Hollande.

The great inauguration

But let us not get too cynical. After all, there were real reasons to be hopeful, and the decades of dogged wrangling over a freely accessible, standardised and extended network for international rail freight transport were honoured by an interim climax when on 1 June 2016, along with its European neighbours, Switzerland celebrated the opening of the Gotthard Base Tunnel. Railway executives, government leaders, transport and foreign ministers, former Federal Councillors Adolf Ogi and Moritz Leuenberger, and many other dignitaries besides shook hands and gave speeches. Over 80,000 visitors attended the on-site event; and TV channels from all continents transmitted live broadcasts of the opening of the world's longest railway tunnel. It was, with all due modesty, nothing less than an epoch-defining construction project.

With an allusion to dreams becoming reality, the British newspaper The Telegraph referred to it, using an image from J. R. R. Tolkien's Middle Earth, as a "modern Moria of tubes and caverns through the massif". German Federal Chancellor Angela Merkel was equally euphoric, but used less whimsical words:

And snip! Swiss President of the Federal Council Johann Schneider-Ammann cuts the ribbon, assisted by the head of the SBB, Andreas Meyer, and Minister of Transport, Doris Leuthard.

"The Gotthard is the heart, now we need the aorta" – referring of course to the northern NRLA link to Germany that had essentially stagnated over the previous years. Swiss Minister of Transport and Federal Councillor Doris Leuthard enthused "now we can transfer even more goods from road to rail". Amongst the audience, the numerous guests from Hupac were thinking, "we're ready!" – and all those present were well aware that the Gotthard Base Tunnel, and with it the entire NRLA including the Lötschberg axis, was in the last resort an outcome of the Alpine Initiative.

In it was stipulated that as of the second year after the opening of the Gotthard Base Tunnel no more than 650,000 lorries travelling internationally would be permitted to cross the Alps by motorway. As a benchmark, Federal Office of Transport figures showed that in 2015 the number of lorries crossing the Alps had totalled 1.010 million.

On the one hand, the number showed that the quantity of transalpine crossings had continually declined over the previous years, the total for 2001 amounting to 1.4 million lorries. This decline was a big achievement. On the other hand, however, the 1.010 million lorries showed that there was still a lot of work to be

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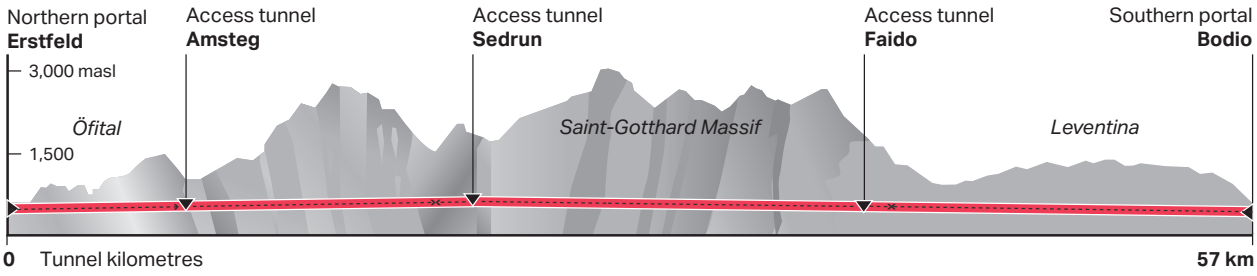


3

1 At the opening ceremony the Patrouille Suisse perform an areal display …

2 … and ballet dancers defy gravity.

3 Dug through the foot of the mountain, the Gotthard Base Tunnel bypasses gradients and deviations.

done in the future if the principle set in the Alpine Initiative was to be met. To reiterate Angela Merkel's words: the heart, the Gotthard Base Tunnel, has been completed, now what remains missing are some individual veins in the blood system – the Ceneri Base Tunnel, the NRLA access lines in Italy and Germany, and the completion of the 4-metre corridor. Only then the NRLA will be fully operational. Only then it will become apparent how many lorries can actually be switched from the roads. This will also depend on many other factors that we have looked at more closely in this chapter: the ETCS and train headway, equal priority of freight and passenger traffic, train length and train weight, labour costs, and numerous other factors besides.

The grand birthday celebration

In the interim, Hupac celebrated its fiftieth anniversary on 8 June 2017, and with it our company history has reached a new zenith. To use the slogan that Former Federal Councillor Adolf Ogi, the NRLA's "founding father", took as his personal mantra: "happiness prevails." As we will see in the next two chapters, Hupac is very well prepared for the future. Therefore, it does not seem exaggerated to say that 50 years are only just the start!

Hupac in December 2005
347 employees
519,160 consignments (in the whole year)
3,339 company owned wagons
680 rented wagons
406.8 million francs turnover

Hupac in December 2010
401 employees
690,251 consignments (in the whole year)
4,515 company owned wagons
1,114 rented wagons
504.5 million francs turnover

Hupac in December 2015
413 employees
661,540 consignments (in the whole year)
5,010 company owned wagons
206 rented wagons
427.5 million francs turnover

Hupac in December 2016
439 employees
737,311 consignments (in the whole year)
5,348 company owned wagons
212 rented wagons
470.3 million francs turnover

Doris Leuthard, President of the Swiss Confederation, Minister of Transport

"We will be an integral part of the steering committees"

Federal Councillor Doris Leuthard is forging ahead with the modal shift. And she wants to have a say in European railway policy. Six questions addressed to the Swiss Transport Minister.

Switzerland is the frontrunner in Europe in promoting rail freight traffic. Although not an EU member state, Swiss representatives have seats in all the important railway committees. What is the secret of Switzerland's success?
The secret of Switzerland's success rests on the widespread popular support for our traffic policy. In recent years, the Swiss population has repeatedly affirmed their resolve to shift transalpine freight traffic onto the rails to the fullest possible extent. The catalyst was the yes to the Alpine Initiative in 1994. In subsequent referendums, the population endorsed the construction of the NRLA, the introduction of the Performance-related Heavy Goods Vehicle Fee (LSVA) and the Fund for Railway Infrastructure. This fund ring-fences long-term financing for rail infrastructure. Additionally, combined transport and rail-traffic noise abatement are issues that Switzerland has taken seriously for a long time now, and this has been vital for the general approval of rail freight transport.

What can Switzerland do to contribute even more?
We are in close contact with our neighbouring countries and the EU. This is crucial for issues such as noise, interoperability, cross-border propositions or the upgrades to the NRLA access routes. Increasing the efficiency of European rail freight corridors is fundamental to the Swiss modal-shift policy. The Gotthard Base Tunnel is the centrepiece of the Rotterdam–Genoa corridor, reinforcing this strategically important axis that connects ports on the North Sea to the Mediterranean. To reap the full rewards, it is important that the access routes to the north and south of the Alps cater for the necessary capacity. We therefore insist that the expansion works that have been agreed on are rapidly brought to a conclusion and that technical requirements are harmonised along the entire route. We are participating in the relevant steering committees to ensure this happens. In the medium term, we would also like to join the European Railway Agency, ERA, which is the European railway authority. The Federal Council approved a corresponding negotiating mandate in 2015.

With the Gotthard Base Tunnel, Switzerland has yet again proved its commitment to environmentally friendly freight traffic. What comes next?
The construction of the Ceneri Base Tunnel will be finished by the end of 2020. Furthermore, within the parameters of the 4-metre corridor upgrade the access routes to the Gotthard line will be made suitable for high-profile goods transportation by rail. Then we will have an uninterrupted flat rail link through the Alps. Depending on developments and financing, a full enhancement of the Lötschberg tunnel with continuous double tracks remains a possibility. In order to make full use of its potential, we need flanking attractive offers – a job for the railway operators and logistics providers. Digitalisation and technical innovations in rolling stock are likewise essential.

With the Single European Railway Area, Europe wants to become a unified rail continent. What are its biggest obstacles?
There are still too many national idiosyncrasies that stand in the way of free cross-border rail traffic, for instance regarding maximum permitted train lengths or the varying technical systems and requirements. Switzerland does a lot to promote standardisation and interoperability. We expect other states to do their bit too.

The aim of Swiss transport policy is still the requirement enshrined in the Alpine Initiative to limit international transalpine haulage to 650,000 lorries per year. Can this ever be achieved?
Our modal-shift policy is effective. Thanks to the LSVA, construction of the NRLA and other measures, the railways have been able to conspicuously increase their market share in transalpine traffic. It now stands at around 70 per cent! Despite a steady increase in goods transport, the last few years have seen a reduction in lorry crossings from around 1.4 down to 1 million per year. The Gotthard Base Tunnel and the Ceneri Base Tunnel will undoubtedly give a further boost to the modal shift. Nevertheless, as the Federal Council has pointed out in the transfer reports, 650,000 annual crossings are unfeasible with the instruments and measures we have at our disposal today.

What will freight traffic in Switzerland look like in 50 years' time? And what do you wish for Hupac in the next 50 years?
50 years is a long time. I am not a fortune-teller, but competition with the roads will certainly remain stiff, and this makes working together all the more important. I am confident that rail freight traffic will become even more productive and efficient thanks to standardisation and innovations, such as automatic coupling; and equally I'm sure that in future Hupac will continue the commendable work that it has accomplished so far and will remain open for new concepts and technical progress. In this sense, I most warmly congratulate Hupac on its anniversary and wish it all the very best success for the future.

The Rolling Highway

The Rolling Highway, or RoLa for short, not only entails the loading of semi-trailers or rather loading units but also the whole lorry, including tractor unit and driver, onto the train. Drivers can travel comfortably in a carriage coupled to the train furnished with seating or couchettes. This is called accompanied combined transport, as opposed to unaccompanied combined transport.

The idea is by no means new. For example, Deutsche Bahn already began experimenting with the transportation of entire articulated lorries as early as 1954. In the negotiations leading up to the 1992 Transit Agreement between Switzerland and the EU, the Rolling Highway was an important EU specification. Primarily, the service was designed to give hauliers without craneable semi-trailers in their vehicle fleets as equal access to combined transport as the haulage companies who had craneable semi-trailers at their disposal, although the obligation became null and void with the introduction of the 40-tonne limit for lorries in Switzerland in 2005. Despite this, the Rolling Highway still continues to remain a political concern for Switzerland. It represents a contributory element in the modal-shift policy, and is subsidised accordingly. In accordance with the Swiss Güterverkehrsverlagerungsgesetz, the freight modal-shift law, "accompanied combined transport can only be supported as a supplement to accompanied combined transport." For a considerable time now, the Rolling Highway has also been made use of by transport companies with craneable semi-trailers who also use unaccompanied combined transport. Even if it appears at first glance somewhat strange to transport an entire lorry on a train, because it leads to a doubling of transport costs, the Rolling Highway still has obvious advantages. One of the most significant, the modal shift, has already been referred to. Further reasons include the reduction of pollutant emissions and the lessening of the volume of road traffic. Or, for that matter, the cut-down in travelling time on shorter routes if, for example, a mountain pass is snowed under. Moreover, it enables a route to be planned so that drivers can take their mandatory break during the train journey. Equally important factors are the avoidance of traffic jams, tailbacks at customs, and the night and Sunday driving ban for lorries on Swiss roads. However, in comparison to unaccompanied combined transport, the RoLa remains a niche service.

The beginning

Hupac's entry into the rolling-highway sector resulted in April 1975, when an avalanche destroyed the Wattinger bridge along the Gotthard line in Canton Uri. Hupac was asked by the government if they could provide a replacement transport service. Of course they could, and on 11 August 1975, Hupac ran its first Rolling Highway back and forth between Altdorf and Airolo. In April of the following year, the line was extended from Altdorf to Cadenazzo. This traffic connection was taken out of service when the Gotthard Road Tunnel opened in September 1980. At the end of 1980, Hupac put the first international RoLa connection between Milan Greco Pirelli in Italy and Freiburg im Breisgau in Germany into operation.

With the Rolling Highway, entire lorries are en route on trains instead of on the roads. The passenger carriage is right at the front of the train, where the lorry drivers are given a ride and can take a break.

In subsequent years, Hupac opened various new national and international traffic connections through the Gotthard: Lugano–Basle, Lugano–Freiburg im Breisgau and Milan Greco Pirelli–Rielasingen (later replaced by Milan Greco Pirelli–Singen, and subsequently again by Milan/Lentate sul Seveso–Singen).

No Super-RoLa

In response to a study by the firm Ecoplan, the idea of a "Super-RoLa" was floated by Swiss parliamentarians between 1996 and 1997, the concept being that the Rolling Highway could be profitable if only it was run on a large enough scale. There was talk of expanding the RoLa to carry 1.4 million lorries per year through Switzerland, equal to a constant daily volume of 3,835 lorries. However, the premises of the study contained a number of errors in reasoning as regards everyday work practice.

The three operators Cemat, Hupac and Kombiverkehr commissioned a more detailed study from the German logistics consultants TransCare. Their analysis concluded that a Super-RoLa could not be profitably operated, and that regardless of this there was anyway an insufficient number of train paths for the projected volume of lorries. To accommodate the daily average of 3,835 lorries, the RoLa would need 354 trains, while unaccompanied combined transport required only 241. As a result, the Super-RoLa idea was promptly dropped. Hupac expressed the issue in a nutshell with the slogan "RoLa – as much as necessary, as little as possible". Nevertheless right up until 2003, Ecoplan would continue to insist that according to its own studies the RoLa could be run at a profit with 800,000 loading places ...

Since the beginning of 2011, the RAlpin company has been solely responsible for the Rolling Highway, providing the connections Basle–Lugano and Freiburg i. Br.–Novara, the latter with a journey time of ten hours and a distance of 414 track kilometres.

A joint venture

In March 1998, the Federal Office of Transport, BAV, put the operation of a Rolling Highway between Freiburg im Breisgau and Novara via the Lötschberg-Simplon axis out to tender. Thanks to profile adaptations along tunnels, on bridges and at railway stations, and in conjunction with a special operational concept, access through this piggyback corridor on restricted train paths could be used for road vehicles with a corner height of 4 metres when loaded onto a ultra-low platform wagon. In 1999, the Federal Office of Transport contracted the consortium Hupac/BLS/SBB to operate this Rolling Highway. In order to do so, on 4 April 2001, Hupac AG, together with BLS Lötschbergbahn AG and SBB Cargo AG established RAlpin AG with headquarters in Berne (today in Olten). The first train on RAlpin's Rolling Highway was taken into service two months later on 11 June 2001.

With the establishment of RAlpin and the start of activities between Novara and Freiburg, where vehicles with a corner height of 4 metres could be loaded and unloaded, Hupac discontinued its operations between Freiburg and Milan Greco Pirelli, but continued to maintain its other connections.

Restricted freedom of movement

In subsequent years, the market increasingly shifted in favour of vehicles with a corner height of 4 metres. These vehicles could be loaded on the Lötschberg–Simplon axis, but not on the Gotthard axis, which only allowed a maximum corner height of 3.80 metres. Because of this, the connections offered by Hupac declined in attractiveness.

In 2004, Hupac developed an innovative ultra-low platform wagon for transporting vehicles with a corner height of 4 metres along the Gotthard axis. This provided an entry to the newly emerging market sectors, but unfortunately, due to conservative registration requirements abroad, these wagons could not be

used internationally. Thus, for many years they could only be deployed within Switzerland (along the Lugano–Basle line). The licence to use them abroad would only be granted years later.

The gauge restrictions along the Gotthard axis and the fact that the new ultra-low platform wagons could not be used abroad led to a loss of marketability of the international connections, resulting in them being discontinued:

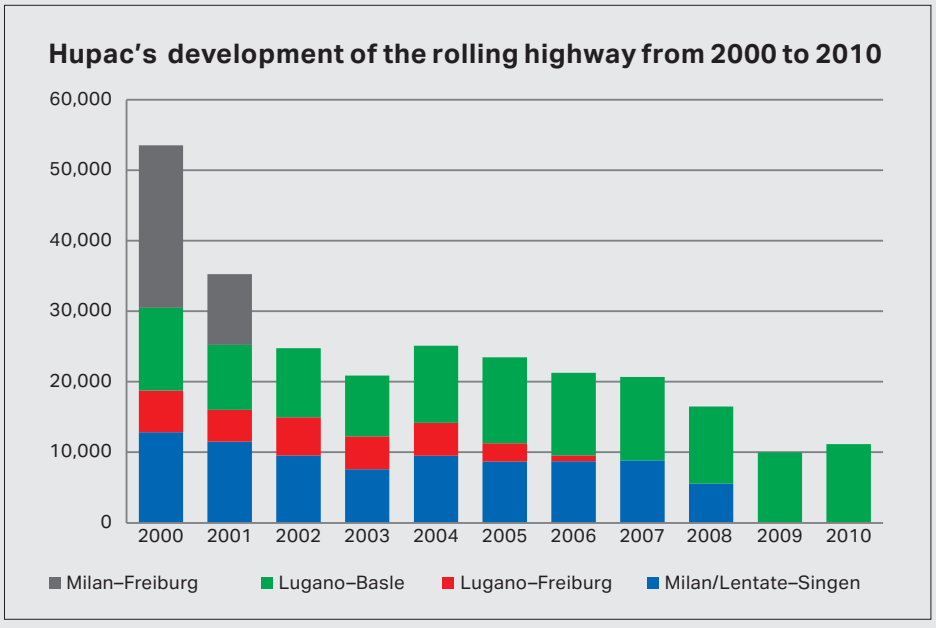
- Lugano–Freiburg was suspended in late 2006.
- Milan/Lentate–Singen was suspended at the end of 2008 (a contributing factor being the closure of the Monte Olimpino tunnel from December 2008 until April 2010 due to maintenance works, impeding rail transit south of Chiasso).

One for all

From the end of 2008 until 2010, Hupac's RoLa service was limited to a single connection between Lugano and Basle.

On 31 December 2010, Hupac ceased all operations on the Rolling Highway.

As of 2011, RAlpin, which was already operating the traffic Freiburg–Novara via the Lötschberg, took over the line. The end result is that Switzerland's entire Rolling Highway service is now operated by one sole undertaking, as stipulated by the Federal Office of Transport's tendering procedure for the operation of the Rolling Highway stretching to 2018. RAlpin has since outsourced the scheduling of the Rolling Highway and sale of the slots to Hupac.



Number of lorries transported per route. The Milan–Freiburg line closed in 2001, followed by the Lugano–Freiburg line in 2006 and the Milan/Lentate–Singen line at the end of 2008. RAlpin has been solely responsible for the Rolling Highway since 2011.

**“We are family!
High, high hopes
we have
for the future
and our goal is
in sight.”**

*Text from the song “We Are Family”
by the band Sister Sledge, 1979*

06

From Europe to Asia:

People of Hupac

Think global, act local – and vice versa! In seven countries, 440 Hupac people get the international combined transport show on the road. The thing that connects them is their enthusiasm for their work and for Hupac's family team spirit – 24 hours a day, seven days a week.

1

2

1 ***Aarau, Switzerland***
Hupac Intermodal Ltd

2 ***Basle, Switzerland***
Hupac Intermodal Ltd

Angelo Barbone, born 1964
Train and Wagon Disposition Manager, Chiasso
With Hupac since 1980

"I stayed on at Hupac after my apprenticeship as an office clerk, because there are very few companies that offer such varied opportunities for professional development – particularly within such an exciting field as combined transport. I did manual work at the Rielasingen terminal in Baden-Württemberg for a year and a half, then I worked in Milan on the Rolling Highway and today I am responsible for the disposition and train monitoring system in Chiasso. Depending on the order intake, I put trains together and look for alternative routes, for example if there's a construction site somewhere along the line that is blocking the way. My working day is pretty stressful. But this is exactly what interests me: I am always on the move, and every day brings new surprises that I have to handle. In the past, we used to be much more all-rounders. Everyone did everything. Today the tasks are spread more precisely: each member of staff is a specialist in his or her particular field. That's the way things go. But this doesn't change the fact that the Hupac people are like family to me. I am very proud to have contributed to the growth of Hupac."

Daniele Antonio Ravenoldi, born 1965
Operator, Busto Arsizio
With Hupac since 1985

"I'm like the air traffic controller at the airport: I direct the incoming trains to their allotted tracks, coordinate shunting work and route the trains safely back out of the terminal. This may sound easy, but it is very challenging – because timetabled trains can sometimes be delayed and I may have to redeploy a track; or because we're running a special train; or because of the opposite situation when we have to keep to the schedule for gateway trains, for example. Accordingly, I also have to direct the arriving lorries to the correct track. For this reason, I stay in close contact with the shunters and other departments – we need to constantly coordinate what we're doing. Twenty-five trains a day in, 25 trains a day out. And the number is growing: the more fully the NRLA line can be used, the more trains will arrive at Busto Arsizio. And they will become longer and heavier. This won't make my job any easier – quite the opposite. But we've mastered every new challenge that has come our way up to now, and we'll get this job done the same way too. Because since I started working here, the business has become more and more complex and challenging, but during all these years we've stayed confidently proficient. It's exactly for this reason that the solidarity and team spirit at Hupac is so strong, including with staff from other countries. We promote family values."

Chiasso, Switzerland
Hupac Intermodal Ltd

Carl Zhong, born 1957
General Manager, Shanghai
With Hupac since 2016

"To put it in a nutshell, I'm Hupac's trailblazer in China. My job is to connect all the Chinese players in the field of combined transport with each other. I talk to managing directors of logistics firms, explain what Hupac does, and clarify their needs and the joint opportunities. I liaise with the relevant government officials and the Chinese state railway officials, as well as with the corresponding officials in the neighbouring countries and in Russia. And conversely, I explain to Hupac people in Switzerland how China works and how Hupac can anchor itself in the Chinese market. Because everything is different here – the culture, the mentality and the laws. For example, in China there are no privately owned railways and no private operators. Hupac needs to become even better at thinking like a global rather than a continental company. I'm qualified to say this, because I spent many years working for worldwide operating logistics companies. My work isn't always simple, but it's always very exciting. In order to get to know how Hupac people tick, I spent many weeks in Switzerland and in Italy, essentially in training. I hope that we'll very soon be able to set up a real team here in Shanghai."

1

1 + 2 ***Busto Arsizio, Italy***
Hupac SpA
Hupac Intermodal Italia Srl
Fidia SpA

2

1 ***Antwerp, Belgium***
Hupac Intermodal BVBA
2 ***Duisburg, Germany***
Hupac GmbH

Carlo Valsangiacomo, born 1970
Area Manager, Chiasso
With Hupac since 1992

"I check the requirements of our clients with them before everyday business begins. We analyse their volume of goods over the course of a month and the year and jointly work out the relevant solutions. I develop general agreements with clients – Hupac needs to re-determine an estimated freight volume every year with the railways and order the corresponding capacity. Each of our customers is allocated a single contact person for commercial issues. This is great for our clients and challenging for me as their advisor, because I have to know my way around all the ins and outs of the whole Hupac network. But this makes my job all the more interesting. Within operations, I'm responsible for the Ruhr area and Central and Southern Italy. I put together the train planning and make sure that our trains are optimally loaded. When demand is high, we organise additional trains during bank holidays or weekends. And when there are anomalies in traffic flow, we work out the best solution, matching up customer needs with what is operationally feasible. Each day there are new challenges to be overcome. Even after 25 years, I have to admit that the work has never become boring for me – on the contrary. Why? Because we work seriously and transparently. We can satisfy wishes and solve problems. And with our new planning tool, Speak, the intention is to reorganise our internal structures. Our management thinks in visionary terms and the company looks after its employees very well. For this reason, I imagine I'll still want to work for Hupac in ten years' time, doing the best job I can, day in, day out."

3

4

3 + 4 ***Singen, Germany***
Hupac GmbH
Terminal Singen TSG GmbH

Daniele Nasi, born 1961
IT Specialist and Analyst, Chiasso
With Hupac since 2001

"We IT specialists deal with Hupac's central nervous system – the hardware and the software. We are a relatively small group of 15 people, but we're completely integrated into the company with its constantly evolving challenges. Even if we aren't strictly speaking a concrete part of daily operations, we know all the processes like the backs of our hands. We make sure that all our services can be processed and controlled digitally. The feeling of togetherness is phenomenal – we're all on the same wavelength. Our department is set to grow dramatically in the future, because we want to move Hupac forward in the digital world. The most important projects? Replacing our traffic management software, Goal, with new web-based systems, then data integration, capacity management, business intelligence, big data – to name but a few. Whenever Hupac ventures into new market areas, we're the forerunners and implement the processes. My specialist field is fleet management; I programme safety and efficiency for our 5,000 plus wagons so they can be serviced correctly. I've been with Hupac for 15 years now. We have developed rapidly over the last few years, but the unique Hupac spirit remains unchanged."

Moscow, Russia
Intermodal Express LLC

Davide Frigerio, born 1966
Electrical Engineer, Chiasso
With Hupac since 1991

"When I started here back in 1991, I'd come directly out of technical college. Hupac didn't yet have its own engineer's office but was building its first terminal, including gantry cranes, at Busto Arsizio. So Hupac and I grew with each other side-by-side over the years. Nowadays, there are eight of us working in the engineering department. We develop and plan Hupac terminals from scratch and guide the construction process until they become operational – we do this for terminals outside Switzerland too. So we need to have a firm grasp of the laws, for instance in Holland or Poland. It took us two years to plan the terminal in Antwerp; the construction took a further two and a half years. During this time, I flew to Antwerp once a week. Because we operate the terminals ourselves, we have accumulated an amazing store of hands-on experience, which we can in turn apply when planning further terminals. This is the thing I like best about my work: the fact that we don't merely invent something new and wave it off onto the market, but that we develop new infrastructures based on practical experience. This welds our team together. We often go on excursions together or meet up for a drink in our free time."

Rotterdam, Netherlands
Hupac Intermodal NV

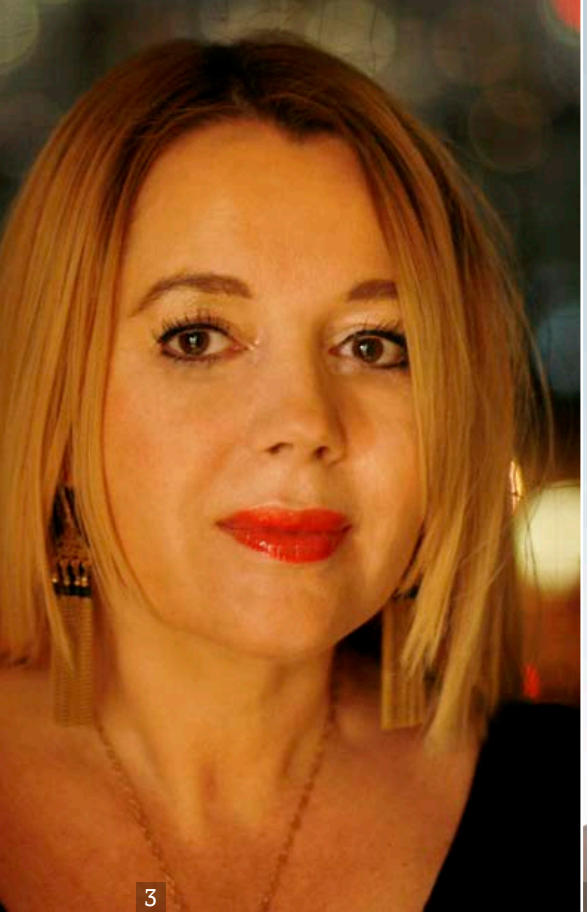
Esther Stocker, born 1993
Customer Service & Operations, Chiasso
With Hupac since 2009

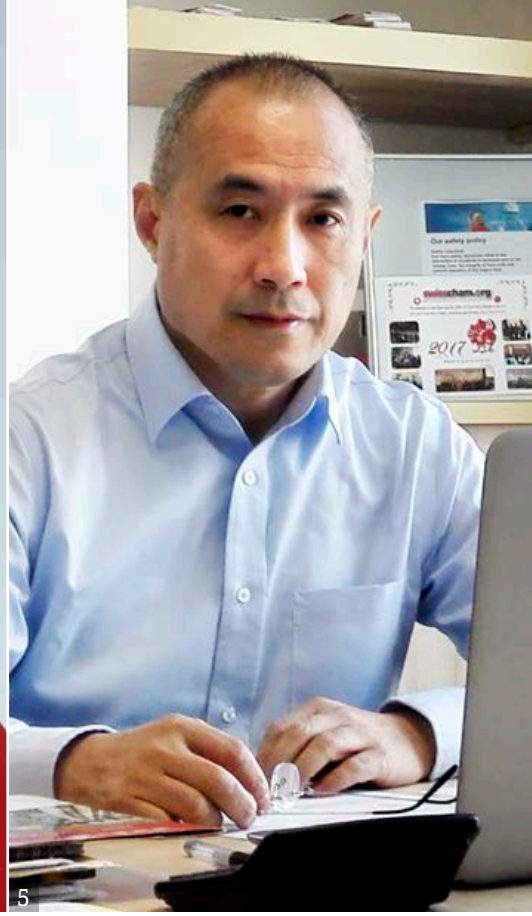
"I started my apprenticeship as an office clerk with a different company, but after the first year of my apprenticeship I switched to Hupac. I liked it here so much that I stayed on after I'd completed my training, because the work offered such good opportunities. I worked at the terminal in Basle for two years in order to learn German and to gain practical experience in combined transport. I now check all the invoices for the customers who are looked after by our team. This is pretty complex, because depending on the situation customers can have different conditions, because a service sometimes consists of several individual items, or because external invoices for additional services are added. I check all the figures and how they've been put together, and clarify details. To do this, I have to be in close contact with our clients. I've already visited customers, in Sweden or Denmark for example, and know exactly what they need and how they tick. It gets quite interesting when complaints are made. Then I have to explain to the customer how and why something was invoiced, or I correct mistakes and make sure that they don't get made again. Over time, you establish a solid, trusting cooperation. That's very important to me. I want to solve problems and make sure that everyone is happy."

1 ***Duisburg, Germany***
Hupac Maritime Logistics GmbH
2 ***Cologne, Germany***
Hupac GmbH

Giovanni Zambito, born 1961
Railway Controller, Busto Arsizio
With Hupac since 1986

"I trained as a car mechanic. At Hupac, I specialised in cranes; later I trained as a locomotive mechanic, and as a crane operator. Thirteen years ago I finished training as a security specialist and since then I've seen to the safety of the trains. With each incoming train, I check the state of every single wagon, and the locomotive, and run a complete safety check. Before the train receives the start signal, I run a safety check of the whole train again, this time checking the loaded containers and trailers as well. Together with filling in all the necessary forms, this takes around two hours per train. The security team consists of 13 people; our office is manned around the clock. Since the Gotthard Base Tunnel opened, safety regulations have increased sharply. In the wake of the accident in Viareggio in June 2009, safety regulations were tightened too. Regardless of this, the technology – and therefore the security of the railway wagons and the goods being transported as well – is constantly being improved, even in the absence of extra regulations. I'd like to stay with Hupac until I retire. After that, I'll become a train spotter and count the Hupac trains on their way to China."





3 ***Warsaw, Poland*** *Hupac Terminal Brwinów sp. z o.o.*
4 ***Warsaw, Poland*** *Hupac Intermodal Ltd Representative Office Poland*
5 ***Shanghai, China*** *Hupac International Logistics (Shanghai) Co. Ltd*

John van Leeuwen, born 1963
Operational Manager, Rotterdam
With Hupac since 1983

"I became interested in logistics during my military service. Then I started at Trailstar, planning railway traffic under the watchful eye of my mentor Jan 'Mister Trailstar' Groeneveld. When Hupac took over Trailstar, I stayed on. Thank goodness, because since then our company has continued to develop with new products and larger volumes at what is the third-largest port in the world. Like this I'm constantly on the move, and logistics continues to be an incredibly exciting field. In the meantime, the operation of the terminal has been outsourced to another company. There are nine of us in the office – a fantastic team. I'm, if you like, the interface to everything: I keep in contact with the people at the terminal as well as with our clients. And I'm connected to Chiasso in the best sense of the word by a constant hot line. I'm in such close contact with the operators in Chiasso, because the train routes are monitored from there and because it's there that the costs are negotiated. I enjoy the freedom to make on-the-spot decisions when I have to solve a problem. But this is only possible if I do my work properly. At any rate, it's always worked out up until now. The port at Rotterdam is permanently being expanded, meaning that my work here continues to be exciting. It looks very much like I'll be staying here until I retire."

Baden, Switzerland
Hupac Intermodal Ltd

Marta Cogliandro, born 1978
Head of Invoicing and Customer Contracts, Chiasso
With Hupac since 2003

"I grew up in Rome where I studied political science, but after an internship with Hupac in Basle they made me an offer that I couldn't refuse. I'm now in charge of invoicing, and ever since I joined everything's stayed moving. We optimise processes, standardise market-oriented and client-oriented procedures, develop new business units, advance the IT, and we're expanding into maritime transport – which is all very exciting. For my part, not only do I invoice our customers, but check all the invoices for our subcontractors. But my service isn't under the accountancy service, because we're not a classic bookkeeping office. Instead, with my team, I check the solvency of new potential customers, their trustworthiness and their business competence. Regarding all these aspects, I keep in close contact with the managers of thirds' terminals and the staff in our own terminals. At the end of the day we're a reputable business and we only work with responsible customers. So I check whether a new client is 'solid'. Our sector is tough; the competitive pressure is very high. It's not enough to be good: we have to be the best."

Novara, Italy
Fidia SpA

Michael Maiocchi, born 1986
Product Manager, Baden
With Hupac since 2010

"The Company Shuttle centre is located here in Baden. I currently look after four customers; there are three of us in the office – but we intend to expand. A company shuttle is something completely different from a usual shuttle train. Although what we're dealing with are similarly shuttle trains in fixed wagon compositions, in this case a single firm always exclusively books a company train. This requires very different preliminaries, from our customers' demands, their connection to our IT system, the preparation of rolling stock, the order of train paths and the request for terminal slots. And of course the delivery and onward transportation on the road. I sometimes even work together with my clients' suppliers and customers. In short: we develop highly individualised production concepts. And I continue to supervise the project even when the train is actually on the move. My education? I studied aerospace engineering in Milan and then went on to train in the field of industrial engineering, which is a combination of economics and engineering. I can apply everything I learnt at Hupac. We're European-wide market leaders in our business. And that's the way things should stay."

1

1 + 2 ***Piacenza, Italy***
Terminal Piacenza Intermodale Srl

Patrick Butti, born 1992
Customer Service & Operations, Chiasso
With Hupac since 2010

"The core of Hupac's shuttle network is made up of five high-frequency connections, each of which is attended to from A to Z by one of our teams. I am a dispatcher of Line 3, which consists of connections on the Scandinavia–Germany–Italy axis. I take the bookings and plan the loading of the trains – so and so many wagons for semi-trailers, so and so many wagons for tank containers, and so on for a given train running from here to there. In the process, I of course have to take into account the customers' priorities, but I also need to make sure that each train is in continuous operation at full capacity on each leg of its journey in the network. If the train is already en route, I monitor its journey and inform the respective customer in the event that, for example, the train is delayed. Most of my work is done at the computer, but I nevertheless really enjoy the close contact with the clients. I also love the fact I can carry responsibilities in my job. If a train is overly delayed, I determine the cause of the delay and put pressure on the people responsible. This is one of the most important things at Hupac: we are like a family. I've got around quite a bit within the company. After business school, I worked for a number of years at the terminal in Aarau and in Basle, in order to learn German. I used to work in Input in Chiasso, now I am working with the Shuttle Net."

2

Hansruedi Buob, born 1965
Crane Operator, Aarau
With Hupac since 1989

"I've been with Hupac for almost 30 years now, and I'm still impressed whenever I see a fully laden, 600-metre-long train roll into the station. The sight of it is quite something. We dispatch six trains a day from here, one each to Cologne, Busto Arsizio, Antwerp and Visp, and two in the direction of Stabio. Each train is loaded and unloaded. As soon as a semi-trailer's ready, uncoupled and with its pipes detached, me and my 110-tonne mobile crane can get it loaded precisely onto the train wagon within two minutes. Ok, a couple of times there have been some damages when I've knocked a container or a semi-trailer somewhere by accident. But I've never dropped a consignment from a crane. I like going to work every day, because I can literally get things moving. And I always want everything to be perfectly loaded. There are nine of us at the Aarau terminal and we're a great team: three crane drivers, four people in the office and two in the workshop – my brother, Andreas, is the workshop supervisor. The terminal has five tracks, but they're too short for an entire train. So we need to split the train up between two or sometimes three tracks. Hupac has always been a role model for international combined transport, and it'll stay that way in the future. I'd really like to work here until I retire."

Timeline of the Board of Directors

Sandro Bernasconi	1967 – 1982
Hans Bertschi	1967 – 1999
Ulrich Maeder	1967 – 1986
Franz Hegner	1967 – 1982
Pietro Ris (President 1967 – 1988)	1967 – 1993
Luciano Camponovo (Member and Secretary)	1968 – 1988
Hans Staub (Technical Consultant)	1968 – 1984
Theo Stucki (Technical Consultant)	1972 – 1985
Luigi Oglio	1972 – 1990
Walter Hoyer	1975 – 1988
Max Rietmann	1975 – 1988
Giorgio Trugenberger	1975 – 1982
Gianmichele Fiore (Director of Hupac Italy)	1979 – 1986
Fiorenzo Bernasconi	1982 – 1996
Walter Möckli (Secretary)	1984 – 1989
Max Lehmann, Bernd Menzinger (President 1988 – 1993)	1986 – 1996
Jakob Eberle	1988 – 1996
Hans Eisenring	1988 – 1990
Franz von Planta	1988 – 1997
Hans-Jörg Bertschi (President since 1993)	since 1988
Thomas Hoyer	since 1988
Rudolf Thomet (Secretary)	1989 – 1991
Bruno Planzer	1989 – 2009
Benedikt Weibel	1990 – 1993
Thomas Baumgartner	since 1990
Samuel Ruggli (Member and Secretary)	1991 – 2003
Walter Moser	1993 – 1995
Hans-Peter Fagagnini	1993 – 1998
Erwin Mauron	1995 – 1998
Ken Bloch Sörensen	1998 – 1999
Peter Hafner (Secretary)	since 1999
Per Utnegaard	2000 – 2001
Daniel Nordmann	2001 – 2007
Theo Allemann	2001 – 2008
Nicolas Perrin	since 2007
Nils Planzer	since 2008

1 *Board of directors and management board, Hupac AG*
above, from left: Hans-Jörg Bertschi, Beni Kunz, Angelo Pirro, Peter Hafner
below, from left: Nils Planzer, Thomas Baumgartner, Thomas Hoyer, Nicolas Perrin

2 *Management board, Hupac AG and Hupac Intermodal AG*

All Hupac employees on 1 March 2017

Aarau (Hupac Intermodal AG) *Fabrice Aeberhardt, Daniel Baumann, Andreas Buob, Hansruedi Buob, Charles Giger, Stefan Maurer, Daniel Richner, Marlis Stutz, Daniel Werren* ***Antwerp (Hupac Intermodal BVBA)*** *Dirk Fleerakkers, Tom Schiettecat* ***Baden (Hupac Intermodal AG)*** *Renzo Capanni, André Flesch, Angelika Hoffmann, Michael Maiocchi* ***Basle (Hupac Intermodal AG)*** *Clemente Cavallo, Luca Cordella, Kristof Csebits, Moises De Sousa Da Silva, Stefano Fieni, Diana Glavonjic, Ulrich Gysin, Hernan Hernandez, Steve Lafranchi, Udo Horst Olaf Massler, Kadir Oezkan, Michel Rey, Peter Schmidlin, Riccardo Serapiglia, Harry Werner, Urs Zbinden* ***Busto Arsizio (Fidia SpA, Hupac Intermodal Italia Srl, Hupac SpA)*** *Leonardo Aggazio, Sergio Aggazio, Emanuele Alberobello, Federico Amadio, Giancarlo Amoruso, Massimiliano Avila, Fabrizio Banfi, Emanuele Bazzano, Luca Bello, Francesco Bellusci, Mauro Bernardini, Maurizio Ettore Bertaso, Claudio Biundo, Monica Bombonati, Valentina Bombonati, Daniele Botturi, Daniele Bove, Paolo Brazzale, Luigi Orazio Brigadieci, Antonio Brunazzo, Andrea Bucceri, Alessio Buggio, Marco Buonaugurio, Diego Butry, Guido Candiani, Massimo Capristo, Antonino Carabellò, Antonio Carlomagno, Sabrina Castiglioni, Andrea Castino, Riccardo Ceppi, Davide Cerello, Dario Chiaravalli, Simon Chiaron, Roberto Chiomba, Walter Cisti, Elisabetta Colombo, Jari Colombo, Simone Colombo, Maurizio Conte, Marco Conti, Patrizia Coppola, Luca Corio, Gianluca Carmelo Costa, Annalisa Cristiano, Francesco Crivelli, Ottavio Crucillà, Claudio Dal Chiavon, Erika Dalla Costa, Riccardo D'Andria, Giuseppe Del Vecchio, Stefano Desimio, Marco Di Chello, Salvatore Di Marco, Piero Dorisi, Francesco Dosio, Brahim Ech Chaibi, Gabriele Fadda, Luigi Failla, Egidio Faradacco, Luigi Fattizzo, Nicola Fera, Gaetano Ferlenda, Stefano Ferracane, Simone Filippi Farmar, Antonio Frumento, Simone Gallazzi, Alessandro Gariboldi, Emanuele Gatti, Fabio Gaudiano, Franco Gennaccaro, Emanuele Genoni, Liliana Gheller, Cosimo Giacomantonio, Monica Giacometti, Lorenzo Giannelli, Claudio Giorcelli, Andrea Giordano, Alberto Girelli, Manuele Giuliani, Francesco Greco, Enrico Guerra, Claudio Iacoviello, Joseph La Barbera, Salvatore La Marca, Alberto Laguzzi, Cosimo Lamberti, Antonio Larocca, Gianluca Lo Coco, Emanuele Lo Monaco, Dario Antonio Lombardo, Riccardo Lombardo, Andrea Lomi, Gregorio Losapio, Nicola Antonio Luce, Maurizio Macchi, Nicola Madalena, Tiziano Maffioli, Alessandro Marin, Paolo Marino, Umberto Martucci, Mara Mastrogiacomo, Nicola Mazza, Giancosimo Mele, Ignazio Melis, Salvatore Messina, Salvatore Mezzasalma, Antonino Micali, Maurizio Milani, Pasquale Milano, Marco Milazzo, Roberto Missaglia, Antonino Montalto, Sisto Montesano, Stefano Morosi, Andrea Muggiasca, Marco Murgia, Gaetano Muzzio, Alex Navia Mera, Stefano Negrini, Nicoletta Oldani, Roberto Paciaroni, Rosanna Paglialonga, Alessandro Pagnoni, Fabio Paracchini, Marcelo Pascolo, Daniele Pedretti, Luca Perandin, Andrea Perri, Johnny Perri, Corrado Perrone, Vincenzo Picone, Francesco Claudio Pirilli, Flavio Pozzi, Massimo Pugliese, Franco Ranieri, Antonio Rapa, Pietro Rapa, Daniele Antonio Ravenoldi, Stefano Re, Andrea Rigiretti, Andrea Rizzi, Giorgio Rizzi, Giuseppe Rizzi, Maria Letizia Rocco, Marco Rosa, Roberto Rosa, Pietro Rovellini, Francesco Russo, Riccardo Salierno, Giampiero Salonna, Salvatore Salvà, Daniele Salvadeo, Angelo Santarcangelo, Massimo Saporiti, Tommaso Scarano, Fabio Scognamiglio, Angelo Scordo, Giuseppe Gianluca Sinatra, Domenico Soffiatti, Vitantonio Spota, Luca Stefanelli, Ettore Stroppa, Luigi Tabarro, Luciano Talpo, Ian Taylor, Roberta Teruzzi, Ruggero Tinelli, Michele Tiritiello, Dante Tognon, Rosario Tomasello, Lauro Tovaglieri, Pierangela Tovaglieri, Carmela Tremi, Claudio Trentini, Claudia Tumbiolo, Gerardo Ungaro, Tommaso Valentino, Simone Vattiato, Mirko Vergerio, Edoardo Vezzi, Stefano Vignati, Raffaele Virgilio, Sandro Virgilio, Matthia Vitale, Domenico Vocaturo, Giovanni Zambito, Luca Zambotto, Massimo Zaroli, Fabio Zenucchi, Massimo Zinetti, Stefania Zingarelli* ***Chiasso (Hupac Intermodal AG, Hupac AG)*** *Giorgio Adami, Manuela Alfarano Del Villano, Michael Amoroso, Salvatore Antona, Dario Arcotti, Maddalena Arnaboldi, Giampietro Arrigoni, Chiara Bacciarini, Serena Baratto, Angelo Barbone, Alessandro Barone, Marco Battilana, Demi Ben, Andrea Bennardi, Loredana Bernasconi, Mirna Bernasconi, Roberta*

Bernasconi, Stefania Bernasconi Fontana, Nadir Berto, Patrick Bianchi, Matteo Biscotto, Giuseppe Borrelli, Melania Botta, Patrick Butti, Luca Calabrese, Giovanni Calizzi, Eliano Camponovo, Zaccaria Caola, Barbara Capizzi, Matilde Casagrande, Davis Casati, Tanja Casati, Carlo Cattaneo, Alberto Cavadini, Giordano Caverzasio, Roberto Cecchi, Federico Centonze, Roberto Cereghetti, Sara Cereghetti, Claus Lynge Christensen, Marta Cogliandro, Raffaele Cogliandro, Stefano Colzani, Cesare Conconi, Fabio Contrafatto, Domenico Corvino, Andrea Crivelli, Patrick Crivelli, Aldo Croci, Gioele Croci Torti, Simone Croci Torti, Roberto Cuda, Guido Dalpiaz, Alberto Danna, Emanuele De Vitis, Leda Debernardi, Vincenzo Del Villano, Massimiliano Di Gennaro, Antonina Donato, Ivo Egli, Giovanni Elli, Michael Fehr, Silvio Ferrari, Paolo Ferrario, Patrizia Ferrario, Oscar Ferraro, Matteo Fietta, Leonardo Fogu, Francesco Fratton, Gelsomino Freda, Davide Frigerio, Christian Gemple, Antonio Giovinco, Alberto Grisone, Peter Hafner, Peter Howald, Mato Jelec, Michael John, Robert St. Clair Jones, Artem Konyushenko, Bernhard Kunz, Christian Leoni, Alice Licata, Michael Livio, Mirko Lukinic, Carlo Lusini, Debora Macchi, Walter Mancini, Luca Mandelli, Pier Battista Mangiacavalli, Laura Maspero Goldhorn, Michela Massa, Cristina Merlo, Nicole Meroni, Thomas Mocchi, Harald Mol, Giorgio Mombelli, Maurizio Mongillo, Monica Montemezzani, Francesca Morandi, Hesameddin Najafi, Daniele Nasi, Milos Nikolic, Denitsa Nikolova, Claudio Orelli, Maurice Pallone, Maria Vittoria Papis, Michele Pavan, Giorgio Pennacchi, Claudio Petraglio, Carlos Andres Peverelli, Diana Piazza, Gian Piero Piazza, Angelo Pirro, Vito Piserchia, Vasco Ponti, Irina Pontillo, Lara Pugliese, Aldo Puglisi, Mariangela Rapis, Sara Ricchiuti, Ronny Riccio, Ivo Rinaldi, Luca Rinaldi, Lucrezia Risi, Olimpio Rivera, Valentino Romano, Alessandro Rondini, Davide Rossi, Alice Rossini, Marzia Roveda, Alessandro Salvagni, Franco Salvioni, Marco Sandrinelli, Thayana Santin Cifone, Giovanni Santisi, Vittoria Sassi, Alberto Schena, Ivan Schick, Michele Sera, Jamin Simoncelli, Magdalena Siwak, Piero Solcà, Roberta Sormani, Gaetano Spaziano, Loris Spinelli, Esther Stocker, Endre Szoby, Andrea Tavernini, Oliver Thewes, Mirco Tommasone, Matteo Tondi, Irmtraut Tonndorf, Alessandro Valenti, Carlo Valsangiacomo, Davide Vanoni, Andrea Vescovi, Antonello Vicini, Mattia Gabriele Vismara, Paolo Vitti, Luca Waldvogel, Peter Ivo Weber, Massimiliano Zampieri, Onorato Zanini, Mattia Zanotta, Tiziano Zingale ***Duisburg (Hupac GmbH, Hupac Maritime Logistics GmbH)*** *Sabiha Hot, Sven Lehmann, Davuth Soeur, Denis Tepper, Burcu Yüce* ***Cologne (Hupac GmbH)*** *Gerhard Kucklinski, Antonio Lupica-Bauso* ***Moscow (Intermodal Express LLC)*** *Maria Avvakumova, Anna Babina, Marina Dunaeva, Olga Emelyanova, Svetlana Faber, Marina Lepetinina, Evgenia Mikhaylova, Andrey Vladimirovich Munkin, Viktor Sadovnikov* ***Novara (Fidia SpA)*** *Marco Ballerini, Christian Cigolini, Marco Costa, Renato Depaoli, Roberto Di Marzo, Giovanni Garda, Fabrizio Gavinelli, Andrea Mignano, Fabio Nalin, Fabrizio Ranza, Pierluigi Restelli* ***Piacenza (Terminal Piacenza Intermodale Srl)*** *Stefano Bisagni, Giuseppe Bragantini, Elena Callegari, Marco Costa, Stefano Embro, Severino Farina, Elena Galli, Lorenzo Grazioli, Roberto Grazioli, Marco Lamberti, Ivano Marin, Roberto Maserati, Vittorio Rossi, Laura Russo, Stefano Russo* ***Rotterdam (Hupac Intermodal NV)*** *Martijn Blom, Anton De Goeij, Mark Jansen, Bjorn Jeurissen, Annette Penning, Domingo Riggio, John Van Leeuwen, Alina Van Meggelen, Theo Van Steijn* ***Shanghai (Hupac International Logistics [Shanghai] Co. Ltd.)*** *Carl Zhong* ***Singen (Terminal Singen TSG GmbH, Hupac GmbH)*** *Sascha Altenau, Michael Blum, Ines Born, Bernd Bosky, Rolf Dehner, Lothar Freudenberg, Jeannette Giradi, Stephan Grumbt, Marlies Hachmann, Armin Herz, Johann Lizenberger, Stefan Löhle, Horst Rigling, Reinhold Rötzer, Waldemar Schmidt, Charlotte Scholz, Andreas Seibert, Wolfgang Stotz, Patrick Stromeyer, David Tribus, Ricco Weiss, Reinhard Wikenhauser, Klaus Winter* ***Warsaw (Hupac Intermodal SA Representative Office Poland, Hupac Terminal Brwinów sp. z o.o.)*** *Diana Batko, Beata Mizeracka*

“Hupac stands on a firm footing. That’s why we can plan the next steps towards the future.”

Beni Kunz, CEO of Hupac, 2017

07

The world:

Big plans for the future

NRLA, digitalisation, intercontinental transport, deep sea transport – there are numerous core issues that guarantee that Hupac's future is going to be exciting. A conversation with Beni Kunz, Renzo Capanni, Peter Hafner, Peter Howald, Angelo Pirro, Alessandro Valenti and Peter Weber.

The economic situation in Europe is noticeably slackening and the Swiss franc shock still lingers: the past few years have been particularly difficult for the transport industry. How has Hupac managed to keep its head above water?
Beni Kunz: In comparison with other intermodal transportation operators, pretty well. In 2016, our consignments increased by 11 per cent. This shows that what we have built up in the last years and decades is robust.

Which means?
Kunz: Most operators only run their business on one or two corridors. But Hupac has built up a pan-European network with its own subsidiaries and functions largely with its own rolling stock. This is why we see ourselves as a European operator, rather than a Swiss one. Today we are one of the biggest international network operators in intermodal transport in Europe. And we are busy working on entering into the intercontinental rail transport market as well as the deep sea market connecting the European ports with the hinterland.

We'll come back to that last point. Hupac has generated around half of the 11 per cent increase in consignments with the Company Shuttle service, which Hupac has been providing since 2015.
Renzo Capanni: Company Shuttle is our term for entire trains that are booked by a single customer. One can compare this to a charter flight as opposed to a scheduled flight, which corresponds to a shuttle train. We are very pleased with how it has advanced. Even during the first year of operations, we were able to acquire several new customers and work jointly with them to develop attractive solutions. These customers are very happy with our new business unit, and that's the decisive factor for us.

With this, Hupac has built up a service that matches a market demand. Is it planned to expand the Company Shuttle business unit?
Capanni: Yes, of course! We're in the position to develop and implement geographically flexible and efficient concepts very rapidly and hand-in-hand with our major clients.

Is Hupac the sole operator in Europe to offer the Company Shuttle service?
Capanni: No, we're neither the first nor the only company. But Hupac has a decisive cutting edge over the other operators: with us, major clients profit on the one hand from tailor-made solutions involving specific transport axes, and on the other from a high-performance shuttle network –all of it from a single source.

Beni Kunz, born 1957, CEO

The fact that conditions for operators have become tougher also has to do with the reduction of intra-group cross-subsidies.
Peter Howald: That's true. Because any shortfalls in the balance sheets were previously offset by the parent company, profitability often wasn't a consideration. Many operators within the rail industry exploited this fact to monopolise transport volumes, even though they weren't running economically. This distorted the market and made life difficult for independent companies such as Hupac. Even the railway's cargo business was a loss-making enterprise for decades. Nowadays, cross-subsidies are no longer permitted. More transparency and efficiency are the demand of the day. On the other hand, the EU's subsidisation programmes have skewed the market too, even though the intention was to achieve the opposite. The funding programmes were conceived as start-up funding for new operators and to ensure more competition in the market. In actual fact, new players entered the game. These subsidy receivers could afford to launch aggressive pricing policies, and by doing so increase their market share. But this policy proved to be unsustainable. After the funding programmes expired, the newly introduced products as well as many of the new operators disappeared.

This form of support is now history, and operators within the railway industry are no longer allowed to be cross-subsidised. Has the market improved?
Howald: Yes, the railways have become more transparent and economically sounder due to the fact that by the end of the year they need to demonstrate that their books are at least balanced. At the same time there are a number of operators who have survived up until now thanks to financial support and who are now struggling.

When the entire NRLA including the 4-metre corridor is ready to be fully used, the federal government wants to completely withdraw cargo subsidies in 2024. Is Hupac prepared for this scenario?
Peter Hafner: We have always thought and acted in commercial and market-oriented categories, which is why we're in such an advantageous position today. Therefore it'll be easier for us than for other operators to survive without subsidies in the foreseeable future. But it won't be easy.

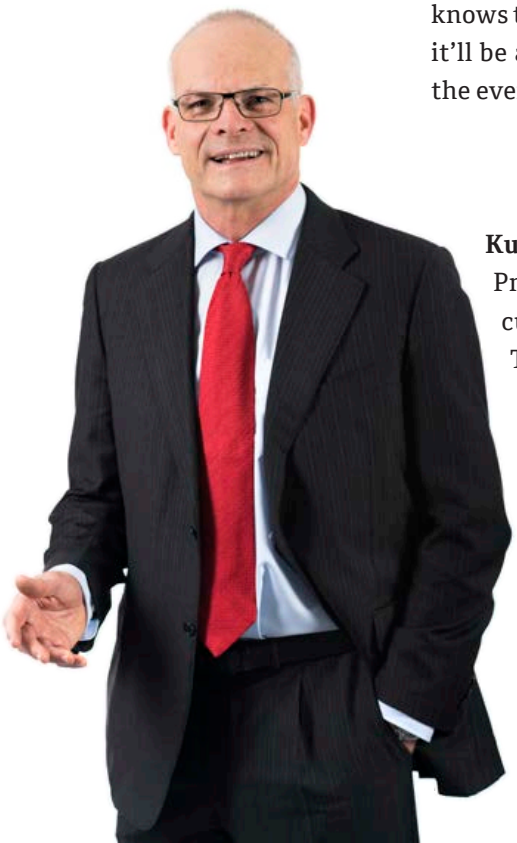
Does the Swiss form of subsidies differ from that of other countries?
Hafner: Nowhere are the subsidies as transparent as they are in Switzerland. Anybody can access them in detail on the Internet.

What would it take to seriously throw Hupac off its feet?
Hafner: As long as we have such a broad shareholder base that has faith in us, Hupac won't topple over. Our shareholders comprise transport companies and forwarding agents, the most important of which have representatives on our

board of directors, giving them the power to determine business strategy. This is why Hupac always remains intrinsically market-oriented. In my opinion, this is critical. It should be added, that as part of Hupac's 2020 strategy we are going to be investing 270 million Swiss francs in new terminals and rolling stock.

At the start of 2017, the German Minister of Transport Alexander Dobrindt gave the go-ahead for gigaliner lorries with a total length of 25.25 metres to be driven on all German roads, whereby the trailer is permitted to be 1.3 metres longer than was previously allowed. Will gigaliners emerge as a new threat to combined transport?
Kunz: Every transport operator endeavours to optimise and increase productivity, which in itself is positive. It only becomes dangerous when a cleft materialises in the competition conditions between transport operators. The long lorries bring with them an increase in productivity of 30 per cent, whereas the realisation of a network for 750-metre-long freight trains is still a far-off pipe dream. This is counteractive to the modal shift. One of the imperatives in combined transport is that road vehicle dimensions and weights remain stable and predictable in the long term, enabling today's railway wagons to continue carrying tomorrow's road vehicles.

On the other hand, with the second part of the Fourth Railway Package, at the end of 2016 the EU gave the member states in many respects a free hand to act as they want. Has railway liberalisation failed?
Kunz: Even with the Fourth Railway Package, the EU still hasn't managed to induce the separation of infrastructure and operations. Railways can continue to be run as integral entities, although this now takes the form of legally separate undertakings within a holding structure. It is up to the regulator to ensure that third-party railways are not discriminated against. But in reality everyone knows that wherever there's the discriminatory leverage, if push comes to shove it'll be applied. Rather than being proactive, the regulator only ever acts after the event.



Do private railway companies have a chance at all?
Kunz: Yes, if the economy supports them and uses them strategically. Private, or rather commercially oriented railways are faster, better, more customer-friendly and more flexible – an essential ingredient, if you like. Through the market pressure exerted by private enterprises we can force through developments in the rail transport sector that at the end of the day everyone profits from.

Peter Hafner, born 1956, CFO

There are predictions that say that the railways will be unable to absorb the expected growth of freight traffic over the next 20 years because the infrastructure has not been upgraded and the railways are not innovative enough. Instead, this growth will migrate to the efficient "lorry 4.0". What's your opinion?

Capanni: True, road vehicles are being digitalised, and with so-called platooning some day it will be possible to steer a collection of digitally controlled lorries in convoy using only one driver. However, the roads are already overloaded, and expanding motorways to six or eight lanes is, politically speaking, impossible. The pressure to transport goods over long distances by rail will increase. So the question is: how can we exploit what we already have more efficiently? In this respect, the railways have much more potential than the roads.

But we keep hearing that the rail network has likewise reached its capacity limit. What exact potential do the railways have?

Capanni: We need to overcome the ruptures caused by the border intersections, and this in every regard: in terms of timetabling and infrastructure, and operationally and administratively. Then the potential will increase dramatically, because rail freight traffic is overwhelmingly cross-border by nature and the numerous system gaps are a serious handicap. But this thinking hasn't sunk in yet in many of the transport ministries: politicians still act from border to border. And the infrastructure managers? They're focused on passenger transport, which is almost exclusively national.

Rail freight traffic efficiency can also be raised with the European Train Control System, ETCS.

Peter Weber: Yes, that's one example. Longer and heavier trains and the flat rail link through the Gotthard Base Tunnel increase efficiency too. The digital ETCS could halve the safety distance between two trains without a problem, which alone would double the capacity of the rails – an enormous potential.

Kunz: The Gotthard and the Lötschberg Base Tunnels are completely fitted out with the ETCS. Switzerland is a forerunner in this regard. The ETCS has also been installed along a handful of sections of other lines in Europe. This is a good start. But it'll still take many years until the entire lengths of the major European corridors are equipped with the ETCS.

Whereas the EU's original idea was to establish a single ETC system, there are now four existing versions.

Kunz: And once again another development is stuck in the quagmire of European territorial politics. The state protectionist mentality is still the biggest hurdle to a unified railway system in Europe. It's sometimes an absurd situation: Hupac is making every effort to facilitate a unified ETC system, and at the same time the Italian state railways still operate with two train drivers per locomotive.

Peter Weber, born 1975, Corporate Development and Procurement

Whereas with the ETCS trains would be fully digitalised, and they could even run without a train driver.

Angelo Pirro: Everybody talks about driverless cars, and at the same time ignore the fact that no other mode of transport is so inherently suited to digitalisation as the railway. On the tracks, the route is predetermined – a train can't get lost or miss a turning, and there are no pedestrians in the way along the route.

Could you hazard a guess as to when the first completely driverless autopilot trains will be in operation?

Kunz: In 20 years, but only on the main lines.

Pirro: I think it'll be sooner.

Kunz: There are studies that say that the stage will be reached in as little as five years. But that's really an over-ambitious prognosis. Before that, the infrastructure needs to be adapted to the new technology, and the technology needs to be installed in the first place. This will be expensive and, as we well know, politically problematic.

Of course, there are plenty of other political difficulties besides. For example the service language.

Weber: The service language remains the respective national language. This is another case of gratuitous state protectionism, and it entails a huge outlay in terms of personnel and their training. In Switzerland alone, where the service language changes in the middle of the Gotthard tunnel from Italian to German or vice versa, it took decades for this "language border" to shift as far as Goldau. However, this change has not solved the problem, merely lessened it.

Kunz: The service language of air traffic is English the world over. In international shipping too. Why should this not apply in rail transport as well? There is no official service language whatsoever for road transport. In this case, a driver from Romania can drive from Poland to Spain without being able to speak a single word of English. The onus is on each respective official to understand the lorry driver.

Hafner: The same erratic situations prevail in the railway industry in the case of track width, power supply, etcetera and etcetera.

Kunz: A further example that makes our life difficult is data exchange. The railways always know precisely to the nearest centimetre where their trains are currently located, whereas we only know whether a particular train has reached a checkpoint. Some railways refuse to provide us with the data on our own trains – this data is the property of the railways. But we're talking about our own trains that are on the move on public infrastructure!

Weber: If we want to know exactly where our trains are, we either need to mount our own GPS transmitter onto our carriages, or if they also have a GPS system installed on their trailers or containers phone one of our own customers. This information void plays havoc with our service, and that across the entire delivery chain. Every partner needs reliable information as to when the train – and with it their loading unit – is due to arrive.

What can be done to rectify this?

Pirro: Don't lose faith, advise, exert pressure, lobby ...in short keep at it.

Capanni: To boil it down to the lowest common denominator: railways are politics – roads are business.

Hafner: That's right! The whole situation becomes particularly evident when there's an accident. If two cars crash into each other, the police clarify the whole thing and find that let's say the driver of the red car is to blame. Case closed. But if an accident happens on the rails, even if there are no casualties, who is at fault? In general, politics – because the state owns the railways. This results an almost never-ending series of investigations and studies, discussions and consensus building, and in the end regulations are either broadened or tightened.

That sounds somewhat pessimistic.

Hafner: Take the train accident that happened in July 2016 in Bari, when two trains were involved in a frontal collision resulting in 23 fatalities. For over 20 years, this route had been used with absolutely no accidents, and the investigation showed that the cause of the accident was clearly down to human error on the part of the stationmaster. On the roads, the cause of the accident would have thus been settled. But instead, the railway transport policy makers initiated processes to improve safety on this particular route and on the rails generally. In the end, every politician wants to show his electorate that he takes these things seriously. This ends in more regulations and for us therefore more expense and effort. And I'll leave aside the question as to whether the cost-benefit relationship still makes any actual sense.

Kunz: Unless it leads to the ETCS being introduced, in which case the "human error factor" would be eliminated by the autopilot.

Let's turn to happier topics. The 4-metre corridor is being built and should be finished in 2020, Italy has at last begun to tackle the upgrading of the southern connection, and Germany wants to upgrade the Rhine-Alpine corridor ...

Alessandro Valenti: ... whereby it's worth reiterating that Germany and Italy already signed a Transit Agreement back in 1992 in which they committed themselves to guarantee the connections to the NRLA from their countries. This was verified in detail in the Overland Transport Agreement of 1999. That was 20 years ago now. In reality, Germany and Italy have both breached the contract.

At least Italy is now extending the 4-metre corridor to the south towards Bari. If one day the whole corridor from northern Germany to southern Italy can be used fully, what will happen then?

Hafner: It'll give the market an enormous impetus, bringing new players to the game. Until now, combined transport has been a tough game of competitive displacement. But as soon as the 4-metre corridor has been completed, the volume of transport will boom to the point at which competition amongst operators will relax a little, or at least to begin with.

Valenti: The completion of the 4-metre corridor on the Adria line is forecasted for the end of 2017. Bari is an important port for Greece and the countries of South-East Europe, which is why this area will become more of a magnet for southern Italian and southern European carriers. For this reason alone, new contenders are bound to join in. They'll be fast and flexible, and willing to experiment with new business models. Whether these will work or not is another story, but come they will. Vice versa, unwieldy companies will fall by the wayside; we saw this happen after the stock market crash in 2008.

So you can't afford to sit back and simply wait until the Rhine-Alpine corridor and the southern access routes have been completed.
Valenti: No. Railway access is guaranteed to any participant at any time, so either way competition will be a permanent factor. In this sense we start each year afresh, permanently invest in the future, develop strategies and optimise our business model in order to guarantee our customers added value. We're already preparing for the scenario in 2020, when we'll finally be able to use the 4-metre corridor through Switzerland.

No mean feat with a profit margin of two per cent, as is generally customary in the transport industry.
Weber: That's true. But the potential of the intermodal shift is still very high and is set to rise even further, although we ourselves won't yet be able to exploit this potential fully in the coming years.

The introduction of a dynamic pricing model goes hand-in-hand with Hupac's long-term strategy. What does it look like?
Pirro: In principle like first class and standard class post. Until now, a train is a train that drives from here to there and costs a given amount. A dynamic pricing model distinguishes between faster and slower trains, off-peak and peak periods, daytime and night trains, all of which are either more or less expensive. As with the post, the client can decide on the speed of delivery.

This presupposes that you have a sufficiently large number of commissions in order to make this distinction in the first place. Is this already the case?
Valenti: No, but we're working on laying the cornerstones for a dynamic pricing model using planning software that should be up and running as of the end of 2017. In 2018, we plan to put it into operation. This software recognises where and how we can transport which consignment, more rapidly and precisely so than any dispatcher. This helps to manage train capacity more tidily and schedule them more precisely.

Angelo Pirro, born 1977, Deputy CFO

Are we talking about big data here?

Weber: Big data is also a topic for us. Hupac has collected a wealth of data for over 20 years, and we want to additionally bring it into play here. In this way, we want to enhance and broaden the identification of correlations, optimise our structures and automate procedures. Our big data project is called Speak, as in the English sense of the word, but in German an acronym that stands for strategic planning, efficiency, occupancy, capacity. With Speak, combined transport will move beyond the commodity zone.

What do you mean by this?

Weber: All providers in the combined transport industry offer the exact same services and products. Which is why, in principle, anyone who wants to enter the business can offer combined transport. But with Speak we're in the process of creating a unique identity for Hupac, which will set us apart from other providers. With this identity, we'll be far closer to our customers than we've been before, because using the data we can offer bespoke solutions to their needs.

Are you the only ones in the industry developing big data projects?

Hafner: No. Other companies are also working on the same kinds of ideas. Digitalisation is a hot topic in our line of business, because in comparison to other branches of the transport industry, such as aviation or shipping, we're lagging far behind.

What else will digitalisation bring with it?

Kunz: Open data platforms. Until now operators have been individually working with self-contained IT systems, erecting the digital equivalent of the Great Wall of China around them so that their own precious data stays securely secret. In future, this won't work. Let's take Apple for example. The corporation wants to know exactly where what is at any given moment across the entire production chain, from the supply of parts to assembly in China, from transportation and the sale in the shop, right up to the installation and use with the final customer. Likewise, our clients want to know exactly how their consignments are progressing. As service providers, we have to be able to tailor to their wishes. Combined transport needs a similar platform to connect all the players across the entire chain of production.

Weber: The sector also needs to catch up in terms of regulation. Who does my transport data belong to? What rights do I have to it? These are open questions that need to be urgently resolved.

Instead of putting yourself through all the trouble of designing such a platform, why don't you simply commission one?

Weber: Because we know best what our sector requires. We've stockpiled an enormous amount of data. Structured appropriately, this could be a real benefit to our clients. As the operator, we are the nexus between the road and the rail. We

want to meet this requirement not only in terms of the physical flow of goods but also in terms of the digital flow of data.

All in all, this means that Hupac's IT department will expand strongly.
Kunz: Yes, it will. Until now, our computer scientists have been preoccupied with constructing this digital Great Wall. Soon they will be occupied with pulling the wall down and building up connections to partners.

Does this digitalisation mean a complete shake up of Hupac?
Weber: No. We simply need to know what we already know in more detail and to be able to pass this on to the client with greater speed and precision.
Hafner: Digitalisation won't shake up Hupac's basic foundations, but it will change its processes.
Pirro: This is precisely what is exciting: everyone knows something is about to happen, but nobody knows exactly what shape it will take. This is always the case with digitalisation.
Kunz: One thing's for sure: the greater the degree of digitalisation, the more we have to make sure that internally the human face of our company remains present and that people start talking to each other more. We've already taken this into account today with the layout of our offices.

Mr Kunz, are you the last gut-instinct dinosaur?
Kunz: No ... we have many employees who have gut instinct, younger people too.

And what does your gut instinct say about deep sea transport, which you mentioned at the outset?
Kunz: Because the global division of labour will continue to increase, the bulk of the flow of goods will continue to gravitate towards deep sea transport and containers. This has been the trend for years, and this is what the prognoses continue to predict. It would be irresponsible if we, precisely as long-haul carriers, were to turn our backs on this development. You don't even need gut instinct to see that ... This is why we're shaping up for the cargo feeder services preceding and following global shipping.

Renzo Capanni, born 1980, Company Shuttle

Particularly because the port in Rotterdam, the third largest port in the world, is currently undergoing a huge expansion expressly due to the NRLA and with the goal to triple the current transhipment volume. What does Hupac's participation in all of this look like?
Howald: We want to pick up containers from the ships at the port and redistribute them across the so-called hinterland. Both the

Rotterdam and Antwerp ports alone handle ten million 20-foot containers per year each. To calculate: if we were to take up over as little as five per cent of this volume at Rotterdam and Antwerp, this would come to approximately half a million loading units – an amount approaching the 700,000 loading units we currently transport annually.

Hupac could more than double its total volume…

Valenti: And the chances of achieving this look good. The state regulations for ports explicitly stipulate that at least 30 per cent of all goods have to be transported out of the ports via non-HGV means. But we're approaching this project with all due caution – in the past there have been many companies that have failed and gone bankrupt after getting involved in maritime transport, or rather in the hinterland distribution of containers.

Why?

Hafner: This has to do with the way in which ships call at European ports. A ship from America always docks first at Hamburg, then Rotterdam and finally at Antwerp, before returning to America. This trip takes five days, which means that a ship in Hamburg will unload six times as many containers as it loads: in Antwerp it's the other way round. This situation alone makes it almost impossible to fill a train in both directions that commutes only back and forth between Hamburg and one of the other ports. Vice versa, the same of course applies to Antwerp.

Howald: The situation gets even more complicated, because the importing industry demands that its goods are delivered immediately from Hamburg, whereas the exporting industry only wants to dispatch its goods once the ship has left the port at Antwerp – in other words, five days later than the importers. Accordingly, the problem of combined maritime transport is to establish routes on which the trains are always being used to full capacity. These could also be triangular or quadrangular routes, but all of it stays a race against the clock. This is the reason why so many transport companies have failed in maritime transport.

Have you already found a solution?

Howald: No. Because an optimum solution will only be possible if the shipping companies will support us.

In what way?

Howald: Until now, overland transport companies have had to dovetail themselves with the timetables and loading times of the shipping companies. As said before, this has driven many forwarding agents to the wall. Now shipping companies have approached us and asked whether we would like to become suppliers and collectors of their containers. No discussion, of course we would. But this can only work if we jointly look for a way to solve our triangular, or rather quadrangular problem. The easiest way would be if the container ships were to adapt their timetables to suit overland transport. But because container ships are incredibly capital intensive, this is unrealistic. This is why we need to meet each other halfway and find common solutions. This is the only way. After all, there are already many good examples in Europe where such solutions have worked.

What does the situation look like in the northern Italian ports? A lot of things are changing there too.
Valenti: An awful lot, to be precise. The majority of the ports in northern Italy aren't deep enough for the larger container ships, and in addition the port infrastructure is mostly out-of-date. This is the reason why many ships that come to Europe from Asia through the Suez Canal sail on for an extra five days until they get to Rotterdam or Antwerp in order to discharge their cargo. However, in 2014 the Suez Canal was widened, meaning that more ships are sailing out of Asia towards Europe. And in Italy, shipping companies are investing billions in order to enhance and modernise the ports of Savona, Vado Ligure, Genoa and La Spezia. In the future, when ships discharge their cargo in Genoa and not in Antwerp, the importer will receive the goods a week earlier than now. And the overland flow of goods from south to north will increase massively. The current estimate is that in 15 years at least 150 goods trains per day will run northwards from the Ligurian ports. That's three times as many as today. Having said that, these forecasts can only be realised on condition that the Italians complete the flat rail link from the ports to Milan, including the Terzo Valico tunnel connecting Liguria and Piedmont.

Will that complicate or simplify your triangular problem?
Valenti: We will see. The main thing involved is simply a shift in the point of departure. Seen from our perspective, we would just be picking up the Asian shipping containers in Italy rather than Holland. The actual volume of cargo from the Asian ships will remain the same, at least for the time being.

In the context of shipping, the latest buzzword is synchromodality. What exactly does the term mean?
Kunz: Up until now, the term intermodal transport described the transport of a goods item with at least two different modes of transport – in our case, lorries and trains. In the context of passenger transport, intermodal means that the passenger changes, for example, from a train to a mountain railway. By contrast, synchromodality entails searching for the optimal combination of every available transport mode to carry a consignment from A to B, in our case including by ship on the high seas or using the so-called short seas or coastal shipping. The decisive factor in the choice of transport mode is the client's wish to have the consignment sent for example in the cheapest or fastest or most environmentally friendly way possible. The concept of synchromodality also encompasses the idea that one can switch to a substitute mode of transport at any point during transit – for example, a consignment can be reloaded immediately onto a train in the event that a ship is cancelled. In this way, the delivery date can be kept to. And it is the provider's job to find the optimum synchromodal route.

Alessandro Valenti, born 1969, Shuttle Net

This ultimately means that Hupac will in future no longer merely be a terminal-to-terminal transport provider, but also a door-to-door provider, so to speak.
Hafner: That's true. Of course, terminal-to-terminal transport will remain our core business. But with the synchromodal concepts we will broaden our transport planning.

When will the idea of synchromodality become a reality?
Kunz: The concept is brand new. At the start of the 2010s, logistics providers started to put it into practice, mainly in the Benelux countries, but it is still in its infancy there too. The whole thing can only be implemented very gradually, because not only does the client's production chain need to by synchronised, but the entire transport network. Nonetheless, the first software programmes for synchromodality have been around for a few years now.

Hupac is building an intercontinental connection between China and Europe. Is Hupac trying to compete with container ships?
Hafner: The position vis-à-vis shipping is better expressed in the description "optimised alternative". But yes, we are indeed developing transport products between China and Europe.

How far has the project advanced?
Hafner: Our office in Shanghai with Carl Zhong is the first concrete step towards our entry into the Chinese market. It's Carl's job to acquire new customers for us. Our first aim is to open our European network to consignments from the Far East.

This sounds ambitious.
Hafner: A lot of the consignments arriving from Asia by train currently cover the last few miles of the journey by road, when in fact they can be transported on the Hupac network by rail. The China Land Bridge business segment is in the process of forging connections between the networks. The respective supply trains – so-called feeder trains – are still in the project phase and will be put into operation in 2017. And this is only the beginning. At a later stage we intend to run entire trains between Europe and the Far East. In addition, we've founded two subsidiaries in Russia, both of them situated virtually on the planned route.

Can intercontinental trains even manage to compete with ships?
Pirro: Definitely. Trains may be more expensive than ships, but they're much faster. A train takes between 18 and 20 days to get from the east coast of China to Switzerland or Germany; a ship on the other hand takes between 33 and 40 days. That's almost twice the time. If the train's point of departure is inland, the time taken to transport the goods, as well as the costs, decrease – the latter by as much as half, because the exporter can bring the goods virtually directly onto the train and doesn't have to transport them to the coast first.

Peter Howald, born 1953, Corporate Projects

The corridor Hupac is currently involved in establishing through the Middle East crosses politically volatile countries.
Hafner: Experience shows that consumption and the flow of goods do not diminish in a country when it becomes politically unstable. Only in situations where war breaks out does the flow of goods slump.

All in all, Hupac has exciting years, indeed decades ahead of it, involving many significant tasks. What are your hopes for the future?
Weber: That the railways market their innovations better and that they work on improving their image.
Pirro: The railway industry needs to become more market-oriented and profitable.
Hafner: Better quality in combined transport and a corresponding helping hand from politics.
Howald: That goods transport and passenger transport are accorded equal priority on the railway network.
Valenti: And that all participants in the production chain of unaccompanied combined transport harmonise with each other more effectively in order to modernise and economise railway logistics.
Capanni: Traditional business models will change radically. My aspiration is that we continue to have the courage to tackle these changes. But I'm confident in this respect – Hupac has continued to actively shape the sector over and over again throughout its history.
Kunz: The essence that Hupac has built up over the last 50 years will hopefully also endure for the next 50 years.

Mr Kunz, where will Hupac be in 50 years' time?
Kunz: By the time Hupac reaches its centenary, all goods will be transported by rail, goods trains will be fully digitalised and communicate with each other, business will have the right to codetermine transport policy, and Hupac will still be pushing back the frontiers of what is possible.

Hans-Jörg Bertschi, born 1957,
Chairman of the Board of Directors

"It's the people who make the difference"

Hans-Jörg Bertschi knows why Hupac is so well-positioned on its fiftieth birthday and why it will continue to be so for the next 50 years. Six questions for the chairman of the board of directors.

How has Hupac always managed to succeed in staying on track despite what have at times been adverse parameters?
Hans-Jörg Bertschi: Hupac's founding fathers understood that a long-term orientation was crucial in order to succeed in what was a new market. What was pivotal was the symbiosis within the board of directors between the heads of family firms that thought in terms of generations and the representatives of the railways. In my opinion, this recipe is also a valid one for the future.

What will the role of combined transport be in 50 years' time?
Intermodal transport is the future of transport. In 50 years it will be the predominant mode of transport for longer distances. In terms of efficiency and sustainability, it is significantly better than both direct road transport and conventional rail transport. My comparison is the global goods trade: 60 years ago, the overseas shipping container began its march to victory and in the meantime they now dominate international trade. In the case of overland transport, this will take a little longer due to national borders and other distinctive features. Nevertheless, neither platooning nor driverless lorries will significantly dent the inevitable success of combined transport. The decisive factor will be that we succeed in overcoming the numerous obstacles prevalent in the persisting world of nationalised railway industries.

Where do you see the biggest future challenges for Hupac?
As with any organisation, it's a case of overcoming barriers. This includes physical barriers, such as the obstacles in the railway industry world. Boundaries in communication are also a significant factor in today's world. Digitalisation allows us to push back these boundaries. Digitalisation enables us to plan and work in an integrated way across whole value chains with numerous parties. Especially for combined transport with its many interfaces, this offers chances for better quality, higher efficiency and greater market acceptance. A third challenge, in my opinion, is the

continued development of our corporate culture. We have successfully established ourselves in Russia and have been present in China since 2016. In 2016 we launched a new business unit for maritime hinterland traffic. New markets require a lot of perseverance. Mankind will transcend boundaries, and corporate culture will evolve forwards accordingly and become more internationalised.

Is Hupac armed for the future?
Hupac's board of directors and management board have a clear strategy: we want to reinforce our leadership position in international combined transport and enter new markets. First and foremost, we're striving towards internal growth through further road-to-rail transfers, and also via new economic activities such as the successfully introduced Company Shuttle business unit and the newly started Maritime Logistics business unit. We're also open to new complementary acquisitions. Thanks to the good quality of our service, we mainly generate the revenue necessary for this growth strategy ourselves – but capital increases are also an option if necessary. Crucial to our success are, however, our staff and management team – they pave the way for our success. Is Hupac well armed for the future? Definitely!

Between Asia and Europe, new trade routes are emerging; there is talk of a new Silk Road. What opportunities do this present for Hupac?
With the founding of our subsidiary company in Shanghai in 2016 we have entered unchartered territory. Today, China has become truly the world's workshop and is developing further rapidly. With the "One Belt – One Road" strategy, China, together with the Asian Infrastructure Investment Bank in which Switzerland is also a participant, is investing massively in the infrastructure to facilitate the exchange of goods between Asia and Europe. The direct railway route between China and Europe along the new Silk Road will be modernised. This opens up exciting new opportunities for combined transport. The transport time by rail is less than half that of the sea route, and this will be further shortened by the infrastructure expansion. Asia and Europe keep on growing closer together! Hupac wants to participate in this future market and is investing in building up combined transport along this axis. The first step will be to connect the new Silk Road – similarly to the Russia axis – via our sites in Eastern Europe to our European intermodal network.

What makes Hupac successful?
It's the people who make the difference. Combined transport can only be successful when staff and managers build bridges. Bridges between road and rail, and nowadays likewise to maritime transport. Bridges between cultures: between Italy and Germany, the whole of Europe and on to Russia and China. Forging bridges has shaped the culture of Hupac. What's more is the long-term strategic orientation and the continuity in leadership initiated by the company's founders at the very outset. Equally, the will to act quickly and courageously – to roll up our sleeves and get down to work whenever a market opportunity presents itself. This requires independence, and that we have. This distinctive corporate culture is a solid foundation for our future success.

About the author

Christian Hug, born 1965, worked for the magazines Schweizer Familie and Schweizer Illustrierte as an editor before becoming self-employed in 2002. He has since worked as a freelance journalist, speechwriter, columnist, and writer for businesses and private clients. As chief editor, he is responsible for the annual Nidwaldner Kalender and the semi-annual PolarNews magazine.

"He is a freethinker, a digger in the past, committed to truth, and a patient composer of various elements to a single picture."
Irmtraut Tonndorf

Publications
2006: Nidwalden unter Wasser – a detailed account of the flash floods of August 2005 in Canton Nidwalden.
2006: Der Sieger – a biography of Werner Sieger, the inventor of Granol plaster coating.
2012: Die selben sieben Last – a history of the Planzer road haulage company.
2015: Nidwaldner Kino – fictitious film scenarios from Canton Nidwalden, together with Silvan Bucher.
2015: Nächster Anschluss: Zukunft – a decade of the Swiss Zentralbahn railway company.
2016: Jetz luegemer obsi – water defence schemes in Canton Nidwalden ten years after the historic floods.

Author's thanks

First and foremost I would like to express my thanks to my "mentor" Irmtraut Tonndorf. You have wonderfully supported me, helped me fill in all my missing knowledge with your expertise, and given me unlimited freedoms whilst at the same time implicitly trusting me.

To my editor Anita Lehmeier, as much as I have ever written I have never before so frequently and repeatedly altered and recomposed my narrative. You have gently nudged me along every step of the way, providing advice, giving me new pointers and providing the space for me to write. To my graphic layout designer and photographer Silvan Bucher, I would like to thank you for your high finesse in arranging the contents of this history in a layout with uncompromising thoroughness, and for gently but rightly talking me out of my occasionally more exuberant ideas.

To my copy-editor Agatha Flury, thank you for your untiring perseverance, your unbelievable meticulousness and all the free time you have sacrificed.

I would also like to thank the following: Martin von Matt for the publishers and the positive encouragement; Sandra Floreano for the selected pictures; Jacqueline Rohrer for her layout accuracy; Erich Keiser for the best possible printing and the professional advice; Beni Kunz for his trust and his flexibility; Theo Allemann for his support and "The founding years"; Alice Licata, Francesca Morandi and Mariangela Rapis for the excellent assistance; Diana Piazza and Vittoria Sassi for the terminology; the engineers Leonardo Fogu, Michael John and their whole team, Giampietro Arrigoni included, for chapter 4; Thomas Skelton-Robinson and Alexandra Jane Smith for the diligent English translation and the Cotext team for their equally precise Italian translation; Markus Leutwyler for his extraordinary geographical knowledge; Hugo Zanin for the reliable transport service; the Keystone team for the additional research; Ti-Press, Markus Leutwyler, Michael Claushallmann and Gian Vaitl for the great pictures; and last but not least Bruno Planzer for the superb mediation.

I owe my thanks to more than 30 men and women who were in the right place and at the right time over three days for the report from Busto Arsizio to Antwerp – it ran like clockwork: the executives Silvio Ferrari (Hupac) and Hanspeter Huggler (SBB Cargo International) thoroughly understand their metier.

I would also like to thank my interviewees and conversation partners. *Within Hupac:* Hans-Jörg Bertschi, Beni Kunz, Theo Allemann, Irmtraut Tonndorf, Samuel Ruggli, Peter Howald, Peter Hafner, Peter Weber, Angelo Pirro, Renzo Capanni, AlessandroValenti, Hansruedi Buob, Giampietro Arrigoni, Leonardo Fogu, Michael John, Sascha Altenau, Piero Solcà, Simone Croci Torti, Bernd Menzinger, Hans Bertschi, and all 13 contributors to chapter 6. *Outside Hupac,* thanks go to: former Federal Counsellor Adolf Ogi, former Federal Counsellor Moritz Leuenberger, Federal Counsellor Doris Leuthard, Nicolas Perrin (CEO of SBB Cargo), Peter König (head of legal services at DETEC), Peter Suter (former head of Alptransit), former National Counsellor Rolf Büttiker, Alf Arnold (former leader of the Alpine Initiative), Beat Grütter (CFO SBB Cargo International), Elias Maier (research associate at ASTAG), Pascal Pfister (SBB Historic), Lorenzo Bas (owner and CEO of BAS Group BV), Peter Füglistaler (director of the FOT), Violeta Bulc (EU Commissioner).

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Outside Hupac: former Federal Counsellor Adolf Ogi, former Federal Counsellor Moritz Leuenberger, Federal Counsellor Doris Leuthard, Nicolas Perrin (CEO of SBB Cargo), Peter König (head of legal services at Uvek), Peter Suter (former head of Alptransit), former National Counsellor Rolf Büttiker, Alf Arnold (former leader of the Alpine Initiative), Beat Grütter (CFO SBB Cargo International), Elias Maier (research associate at ASTAG), Pascal Pfister (SBB Historic), Lorenzo Bas (owner and CEO of BAS Group BV), Peter Füglistaler (director of the FOT).

Hupac

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SBB Historic (21 above, 25 right, 34 left, 35, 42)

Markus Leutwyler (75, 77 above, 78 – 79 above, 160 – 161 above, 180)

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Marc Wetli (198)

Archiv Bertschi (24)

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ISBN 978-3-906997-83-4