After 21 years,
present in 21 countries

2008

Annual Report

sma

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In last year's annual report, we were able to see "an upbeat market environment". Today, we would neither allow ourselves to write something like that nor even try to describe the economic environment in precise words, much less dare to make a forecast. A few comments are nevertheless permitted. All attempts at forecasting future economic development have a conspicuously short horizon: 2009, or perhaps 2010 as well. For planners in the public transport field, however, these years belong to the present, not the future. Planners think in steps of five to ten years, or even in generations.

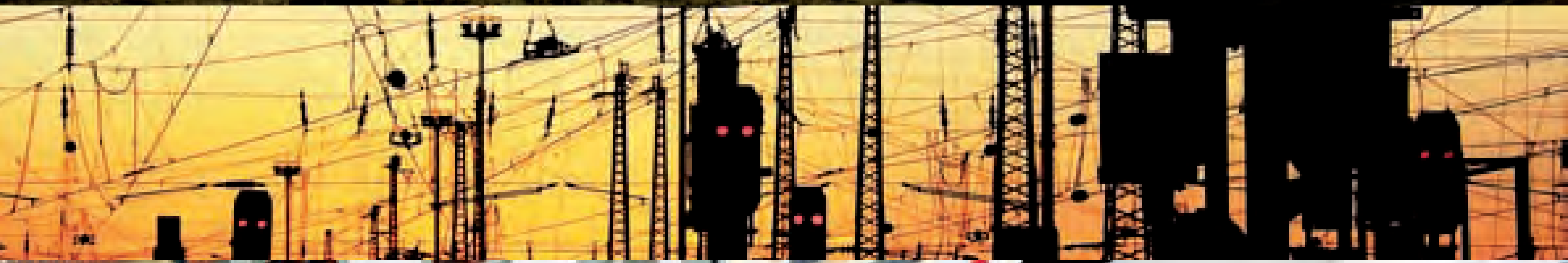
For example, the main routes of the Swiss motorway network were established in the 1960s. Since then, it has been being built and extended. Although traffic has since exceeded all demand forecasts, the main network structure established then has remained the same.

A similar remark applies to the railway network, whose improvement was undertaken a generation later. A main feature of the Rail 2000 concept, which is known far beyond the borders of Switzerland, is its simultaneous description of infrastructure and service quality. It is still a standard of reference today. The two transalpine base tunnels fit into this concept seamlessly.

In the referendum of 1987, the Swiss people approved the concept of Rail 2000. Not all of its elements have been built and put into service. Nevertheless, at the end of 2008, the Swiss parliament recognised the long-term nature of this endeavour, launched the planning and conception of the next generation's railways and set aside the necessary funds. What is true for Switzerland also applies in many other countries in the world. This closes the circle of the remark we made at the outset.

In transport network planning, the time horizons are much longer than in the short-lived, fast-moving (consumer) economy. It may be that this economy will have to operate at a lower level for some time. A drop in public funding for mobility is to be expected in the short term. But it is precisely in such times that investments in infrastructure are more important than supporting consumptive behaviour. When the next economic upswing comes, this infrastructure will be badly needed.

Valais|Switzerland



Prague | Czech Republic

After 21 years, present in 21 countries

One of the constants of Swiss (industrial) history is that it only recognises those who also succeed outside Switzerland.

Switzerland has always been too small to feed its population alone or to satisfy all of its people's dreams and aspirations. Signs of this drive toward the wider world were the mercenaries in the service of foreign warlords and, more recently, the export of inventions, goods and services.

Confectioners from the mountains, great architects and engineers, entrepreneurs and scientists: many of the great Swiss names acquired their names outside Switzerland.

Our small company SMA und Partner AG thus has its place in a long tradition. That in its 21st year, SMA had contacts and assignments in a total of 21 countries, may be a coincidence, but it is nevertheless measurable proof of this tradition.

Parallel to the reports on all these countries, we invite you on a trip in pictures: little-known images of cities, broad landscapes and, in the form of colours and forms, invitations to one day travel to these countries.

1 Switzerland

In the course of 2008, our assignments reflected Switzerland's small-scale organisation. They came from Swiss federal agencies, the Swiss Federal Railways (SBB), cantons, cities and private companies. But they are all embedded in a larger whole, which continues to steadily develop.

In Switzerland, rail service planning focuses on three time horizons. Short-term measures seek to optimise the timetable within the limits of the existing infrastructure and the available rolling stock. The Swiss federal parliament has approved an investment package for the future development of rail infrastructure (ZEB in German). In the middle term, the task is to implement construction projects and – from about 2020 – corresponding new timetables. For some large construction projects whose time horizon is even more distant, current financing mechanisms are insufficient. They are being planned under the working title Rail 2030 (formerly ZEB II). At the political level, it has been decided to present these planning efforts to the Swiss parliament before the end of 2010.

Service concepts and operational studies A number of smaller railways in Switzerland are called "private" because unlike the SBB, they are not wholly owned by the Swiss Federation. For a number of years, these companies have been facing strong growth in demand both in metropolitan areas and tourist centres that calls for further expansion of service.

In 2008, we worked on a broad set of interrelated topics for several Swiss private railways, including:

- The Matterhorn Gotthard Railway (MGBahn)
- The Bremgarten–Dietikon–Wohlen–Meisterschwanden Railway (BDWM)
- The Appenzell Railway (AB)
- Bern–Solothurn Regional Transport (RBS)
- RegionAlps

These clients asked a variety of questions, including short-term optimisation of operations to deal with increased demand, more precise planning of infrastructure projects, requirements for and the effects of new signalling systems and evaluation of new vehicles.

Planning projects for public agencies The constantly growing demand for public transport leads to questions within Swiss public agencies at the federal and cantonal levels and among regional transport authorities about the future development of service concepts and rail network capacity. In ten years, the Gotthard base tunnel is planned to enter service. Although the tunnel's opening will eliminate a bottleneck through the Alps, other bottlenecks are appearing in the approach routes, which will also be burdened with a strong growth of passenger traffic within central Switzerland. The first expansion measures in the context of ZEB's initial phase will also enter service in this timeframe. In the Zurich area, the new underground station and its associated approach line will create additional capacity. A number of assignments in 2008 reflected this environment:

For the approach lines to the new Gotthard and Lötschberg transalpine base tunnels, we presented a capacity analysis showing how and under what circumstances the paths demanded by political entities could be made available.

The 2007 opening of the Lötschberg base tunnel and associated service changes triggered studies for short-term service adjustments. In the canton of Valais, we developed a solution allowing the regional services and the new concept for the Cisalpino trains to Italy to better complement each other.

In the canton of Fribourg, we demonstrated the technical feasibility of a further expansion of services and supported service concept planning for the 2015 time horizon with run time calculations.

The Zurich metropolitan area transport authority (ZVV) is reacting to growing demand and to coming improvements to infrastructure in the Zurich area with an expansion of the metropolitan area's S-Bahn train system. Working with the Hermann Alb transport planning firm, we accompanied this work as specialists and prepared a planning report and presentations for decision makers.

In the western suburbs of Zurich, the future Limmattal public transport system will serve the residential and workplace districts between Altstetten and Spreitenbach. In an assignment from the cantons of Zurich and Argovia, we estimated potential demand and examined both the choice of technical system and various ways of connecting the new line to the future public transport network. In addition to conventional single- and bi-directional rail vehicles, buses running in guideways are also being considered. On the basis of the system's objectives, the variants were compared with each other in terms of selected indicators.

In the course of 2008, SMA continued to support the various partners (the canton of Geneva, the French Rhône-Alpes region, the French rail infrastructure operator RFF, the SBB and French National Railways) in the project for a metropolitan area rail service connecting the Swiss cantons of Vaud and Geneva and neighbouring France. This service will run on the new infrastructure connecting Geneva Cornavin station, Eaux-Vives and Annemasse (CEVA). The work focused on various technical and organisational aspects and on the development of numerous cross-border timetable variants. The result that emerged was supported by all partners and fulfilled all the objectives and constraints of the French and Swiss networks.

UNO – the topology database of SBB's infrastructure division The topology database Unified Network Objects (UNO) is conceived as a common, national Swiss data basis for traffic control (RCS-D in German), automatic train routing (ZLD), run time calculation (ZLR) and network-wide path management (NeTS) systems. UNO provides a logical link between data on the infrastructure as it really exists and data for the traffic control system. It thus creates the basis for modelling and managing operations with these systems on a timely basis and for providing the data that traffic control requires.

Ever since the initial UNO implementation phase in 2004 and continuing through to the operation of this database today, SMA has been advising the SBB on data modelling and quality assurance.

ZLR – SBB's train performance calculator At the end of 2008, we were able to bring into the operational trial phase the user interface, the final building block in the modular landscape of the train performance calculator ZLR. This application helps optimise timetable and infrastructure by means of train headway calculations and comparative run time calculations.

All components of ZLR have now been introduced within the production process of SBB. SMA is responsible for maintenance and ongoing improvements.

PULS 90 The goal of SBB's PULS 90 project is to place more trains in the timetable without infrastructure changes by means of a new planning and operational concept. An important component of PULS 90 is the concept of specifying and operating the timetable to the nearest second. This requires new IT solutions.

SMA developed the central software package "Pulsplattform", which enables both the timetable planner and the dispatcher to replan or modify paths in a graphic display of the timetable adapted to the PULS 90 concept. Also available is a function to automatically replan paths for conflict resolution.

Since 2007, Pulsplattform has allowed the timetable planner to develop daily timetables with exact paths in offline mode. These timetables can then be passed to dispatchers.

In 2008, SMA extended the application to real-time operations. By means of an interface, field reports from trains that are running late (or early) are displayed in Pulsplattform in real time. The dispatcher can directly react to such events and quickly reorganise paths in order to maintain a conflict-free (in other words, feasible) timetable even during disrupted operations.

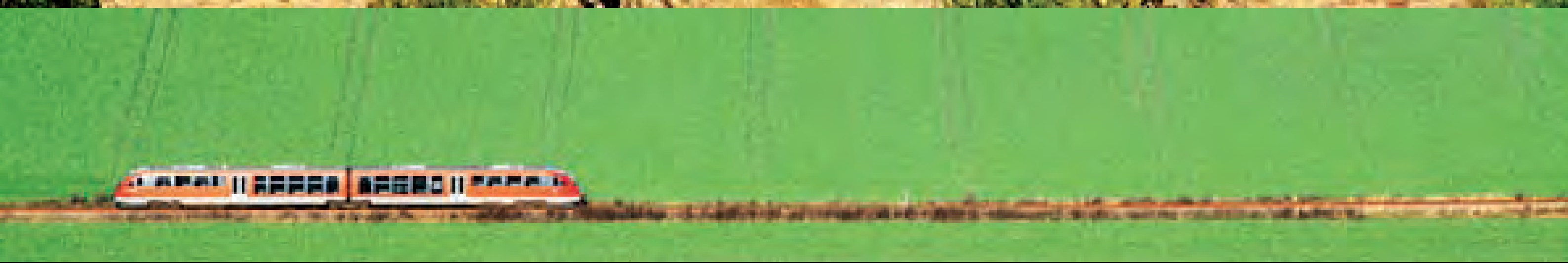
When the dispatcher makes such adjustments, they are transmitted to the driver of the affected train via the FARE tool, which is present in the cabs of test trains. In this way, the driver receives a new speed instruction whose observance quickly resolves the disturbance.

2 Germany

Hardly any other pair of neighbouring countries are so strongly connected by their railways as Germany and Switzerland.

This is true in a geographical and technical sense, but also with regard to the service concepts for local and long-distance trains. In terms of both political organisation and population distribution, both countries are structured as federations. In contrast to centrally organised countries with dominant traffic flows to and from the capital, Germany has a variety of mid-sized traffic flows between and within its numerous metropolitan areas. For the Swiss, Germany is like a big Switzerland, with greater distances, longer travel times and higher speeds. Mathematically formulated, however, the two railway networks have a comparable degree of complexity.

Algarve|Portugal



Valencia|Spain

Significant differences exist nevertheless in the political setting and in the methodologies and assessment approaches for the expansion and further development of the railway. In the German federal plan for transport corridors, new lines for fast passenger service have priority over capacity expansion for large stations and their approaches. In the short-term development of timetables, this often leads to bottlenecks or immovable elements.

As planners and advisors, we always make an effort to understand the railway system as a whole, which usually leads to globally better solutions. The higher the demands and expectations concerning the railway – and here we especially mean domestic and international high-speed routes or very frequent services in metropolitan areas – the more a long-term-oriented, integrated planning of construction and operations becomes necessary.

Assistance to public agencies A number of train operators provide regional passenger services under contract to German public agencies, who select the operators by competitive bidding. SMA worked with a number of these agencies in 2008.

In Germany, a timetable change can be expected to incorporate conceptual modifications only when it marks the opening of a new line that accelerates long-distance trains. In terms of timetable design, this means changes in the times at which these long-distance trains serve intermediate stations. Local trains must then be adjusted to the mainline ones.

But in the years between such major changes, local train service does not remain frozen and immutable. A variety of exogenous or endogenous changes in constraints constantly necessitate big or small modifications. Such changes can be triggered by:
- Major maintenance work on track or civil engineering structures.
- Launch of new rolling stock with better acceleration and braking.
- Adaptation to constantly changing demand and especially to overload situations at rush hour or weekends.
- Adaptation to financial constraints, especially budget cuts.
- Adaptation to changes and especially reductions in long-distance services of German Railway.

A strong driver for better service in Germany is the legal requirement to put local train services out to tender. The most important element in such calls for tender is the service scope description, including line and network structure, number of trains and frequency of service on weekdays and weekends. The prospective operator sometimes has a little planning freedom, but usually the timetable's basic structure is fixed in advance down to the minute in order to guarantee connections in nodal stations and coordination with all other trains. This conceptual timetable is the practical heart of each call for tenders and all other components must be organised around it.

In 2008, the clients requesting studies in these areas were agencies that finance public transport in the Rhine-Main area (RMV) and in the German federal states of Baden-Württemberg (NVBW), Bavaria (BEG) and North Rhine-Westphalia.

Development of a concept for the Hamburg railway node Against the background of the port's steadily growing hinterland traffic, in 2008 the German federal ministry for transport, construction and urban development (BMVBS) commissioned a study of the future development of the Hamburg railway node. In this study, we assigned the forecasted freight flows to elements of the railway network in the Hamburg area and pointed out the emerging bottlenecks. On this basis, we derived infrastructure changes that will allow the rail network to handle the forecasted freight flows of 2025.

Optimisation of service on Berlin's S-Bahn Since Germany's reunification, Berlin's metropolitan rail network, or S-Bahn, has made enormous efforts to modernise its line network and close the gaps left by the country's division. At the same time, a thorough rehabilitation of tracks, stations, signalling and many civil engineering structures was necessary. The rolling stock fleet was also largely renewed. All the technical requisites are now available to optimise services and train operations on the basis of the newly available means of production. The operator, S-Bahn Berlin GmbH, commissioned SMA to develop a new timetable and operational concept for the 2010 timetable change.

A comprehensive analysis of run and dwell times (which depend on the time needed for passenger exchange) showed that small changes in train operations could yield improvements in service quality.

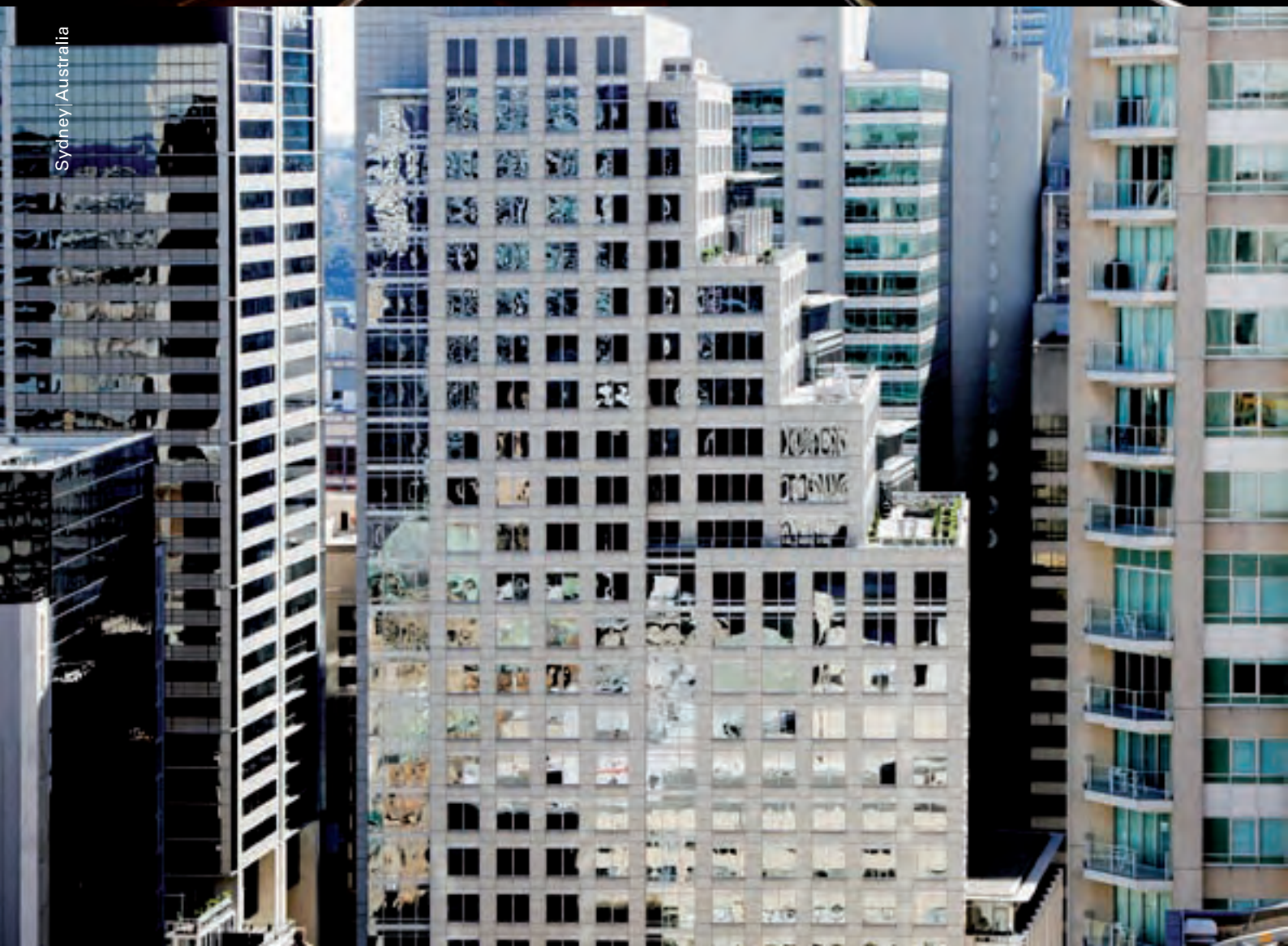
Munich's S-Bahn and U-Bahn The ongoing growth in demand for public transport in the greater Munich area has been causing overload situations in both the regional S-Bahn and the underground network (U-Bahn). This was the context for the following studies, on which we worked in 2008:

- Identification of infrastructure changes that could be implemented in the short and middle terms to improve the quality and productivity of S-Bahn operations.
- Development of the S-Bahn's emergency and contingency plans for the 2010 timetable change, which will introduce a new stop at Hirschgarten on the network's central section.

At the same time, planning for the Munich S-Bahn's second main line continued. In the area of East Station (Ostbahnhof), a new alignment variant emerged that would also let trains coming from the easterly lines stop at Ostbahnhof. This change in the plans would allow a better connection to Munich airport from the second main line. The development of the corresponding service concepts as the basis for a cost-benefit analysis was also necessary.

Service to Munich airport After the abandonment of plans for the Transrapid maglev system as a fast link between downtown Munich and the airport, the Bavarian state ministry for commerce, infrastructure, transport and technology issued a call for an assessment of possible airport links. Within this assignment, the ministry commissioned SMA the service planning task. Working with the assessors for infrastructure and traffic forecasts, we examined the many airport link proposals and identified a manageable number of variants for more detailed study.

Brittany | France



Sydney | Australia

Electrification of the Lindau–Ulm and Lindau–Geltendorf lines A treaty between Germany and Switzerland governs the future improvement of the railway links via the Basel, Schaffhausen and Lindau border points.

For faster Zurich–Munich Eurocity services, infrastructure improvements are necessary along the whole route. On the German side, it is planned to electrify the Lindau–Memmingen–Geltendorf(–Munich) line and equip it for 160 km/h running. The opening of a new through station named Lindau-Reutin and electrification of the Lindau–Friedrichshafen–Ulm line are also planned at the same time. These improvements will allow faster runs for long-distance trains and, thanks to the elimination of locomotive changes, simpler train operations. In parallel, a number of possibilities exist for improvements to regional rail passenger service.

In an assignment from the agencies in Bavaria and Baden-Württemberg that contract out regional train services, SMA developed a timetable concept that takes advantage of the opportunities for improvement created by the new infrastructure. To ensure that the island in Lindau will remain accessible by rail after the main station is moved onto the mainland, SMA assessed a variety of link variants.

3 France

In 1981, with the Paris–Lyon TGV line, the French National Railways were the first to bring high-speed rail to Europe. Today, what began as isolated, individual lines is becoming a well-connected network that will continue to grow in the future.

Increasing network density on any railway calls for new forms of operation that are only manageable with systematic, fixed-interval timetables. France is in the middle of this fascinating metamorphosis and has turned to us for major tasks concerning its conception.

After several years' preparation, the first phases of the project "Structuration du graphique", which aims to organise trains in line with the principles of the fixed-interval timetable, have been launched in commercial service. This launch occurred:

- In December 2007 for most TGVs in southeastern France and for the regional trains in the Rhône-Alpes region and in southern Burgundy.
- In December 2008 in the Provence-Alpes-Côte d'Azur region of France, between Paris and Burgundy and in Normandy.
- In July 2008 south of Bordeaux (in the Aquitaine region).

The results are positive in all respects. The number of train runs could be increased without infrastructure changes, even in rush hour. Passengers like the simplicity and legibility of the timetable, and this is yielding an encouraging increase in ridership. The quality of the service associated with the timetable, especially on-time performance, has improved. A majority of those who originally opposed these changes are now convinced that the fixed-interval timetable represents a key element for the further development of the French railway system.

Particular attention has been paid to the integration within French domestic and international services of new infrastructure elements such as the Rhine-Rhône high-speed line and the Bourg–Bellegarde (Haut-Bugey) line, which will accelerate trains between Paris and Geneva from 2011.

A strategic timetable for 2020 The infrastructure operator RFF has decided to develop a long-term timetable at national level. The aim is to drive forward the future development of the French railway network by defining new infrastructure changes that best fulfil the needs of train operations. This strategic approach is based on the design principles of an integral fixed-interval timetable like the one developed for Switzerland's Rail 2000 project.

In 2008, SMA worked with RFF to develop the approach, project organisation and first drafts of service offerings for 2020. The project itself starts in 2009.

Significance of the fixed-interval timetable The fixed-interval timetable is widely used in Europe today. It was introduced in the era of vertically integrated railway companies with the objective of reducing operating costs, optimizing use of the means of production and increasing both demand and revenue.

Until recently, France was an exception to this rule outside the Paris region (Ile-de-France). The current implementation of the fixed-interval timetable is changing this. An important aspect of the project is that the infrastructure operator RFF is initiating and leading it. RFF wants to make network operations more efficient, rationalise investments and respond optimally to requests for train paths.

To lend a scientific basis to this corporate effort, RFF commissioned a research project at the Sociological Research Laboratory of the Swiss Federal Institute of Technology in Lausanne (EPFL). SMA supported this project in the role of technical experts. This work should demonstrate to RFF the advantages and appropriateness, but also the limits of the fixed-interval timetable and present means of implementing and improving this system in France.

Normandy The Normandy timetable study covered all lines from Saint-Lazare station in Paris to Le Havre and Cherbourg and the corresponding regional trains. The study also was an opportunity to engage in strategic reflections for later implementation horizons. The study centred on the nodal station at Rouen, which is practically trapped between the Beauvoisine and Saint-Maur tunnels.

In the Paris region, service to Mantes-la-Jolie station was another major focus. Mantes-la-Jolie is at the heart of a major development project. In the long term, line E of the Paris metropolitan area network (RER), which now ends at the Haussmann-Saint-Lazare station in Paris, is to be extended to Mantes-la-Jolie. Several long-term scenarios, broken into intermediate phases, have supported decisions on the alignment of a new line that will help to separate long-distance Normandy trains from Paris suburban traffic and thus to adapt the existing network to growing demand.

The studies for the timetable improvements of December 2008 also showed that a reduction of run time of 13 minutes on a new line toward Caen would provide the ideal basis for introducing trains within the node concept of the Basse-Normandie region.

Paris region (Ile-de-France) A fixed-interval timetable was introduced on several sub-networks of the Ile-de-France region with the December 2008 timetable change: beneficiaries included suburban services southeast of Paris together with regional trains toward Burgundy, and the suburban network operating out of Montparnasse station in Paris.

A new service design for Line C of the Paris metropolitan area rail network (RER) was also implemented. The branches of this octopus-like line connect the northern suburbs of Paris with those in the region's extreme south by way of the new satellite cities in the west. The goal is the complete integration of line C in the nationwide fixed-interval timetable for the 2012 timetable change.

Although the objectives are chiefly operational, several service improvements could be proposed, particularly a five-minute interval for service in the centre of Paris, even outside rush hours.

Bordeaux–Spain This study builds on an evaluation of the high-speed line between Bordeaux and the Spanish border (with mixed passenger and freight traffic), that SMA carried out in 2006 on assignment from the French National Commission for Public Debate.

The Paris–Bordeaux–Spain corridor is one of the most important in France for freight traffic. Capacity bottlenecks are already visible on the section between Bordeaux and the Spanish border today.

RFF commissioned SMA and the firm Louis Berger France to devise a development concept for the existing infrastructure on the Bordeaux–Dax–Hendaye–Irún line in order to raise its capacity for the expected increase in traffic between now and 2020.

The region Provence-Alpes-Côte d'Azur (PACA) SMA's work in this region is looking at two very different time horizons.

A first study has a short-term implementation horizon and concerns the start of service on a third track between Marseille and Aubagne. The aim of this infrastructure is to enable both more local train service in the Marseille area and better regional and long-distance service, particularly between Marseille and Toulon.

SMA's investigations resulted in an optimal functional configuration of the third track. A timetable stability analysis demonstrated that managing the third track independently, as if it were a single-track line (as between Geneva and Coppet in Switzerland), allows the best operational quality for all affected traffic. The final design of the third track, which will enter service in the next few years, is based on our recommendations on traffic management and infrastructure.

The horizon of the second study is much longer-term. Its focus is planning the new high-speed line (LGV) for the PACA region.

Two objectives of this new line are to connect the Côte d'Azur and the department of Var with the European high-speed network and to better connect the metropolitan areas of the Mediterranean coast with one another. Beyond this, this line should relieve existing lines and nodes of long-distance traffic, thus liberating capacity for new regional services. In a region plagued by congested roads, this will allow the emergence of an attractive alternative to the automobile.

Two variants were compared with respect to their timetable and operational concepts, capacity, longer-term development possibilities (through 2040) and required investments: an alignment via Toulon and Marseille (with a new, underground station) and a more direct alignment that would split off near Avignon toward the Alpes-Maritimes department.

Given the aim of assuring efficient development of rail service at regional, national and international level, the results show that the alignment variant via Marseille and Toulon constitutes the best scenario. This scenario also assures excellent service quality in the whole region and brings significant additional development potential for rail service. Moreover, this variant lets infrastructure be built and thus service started in phases.

Strasbourg Alsace is one of the French regions pushing hardest to improve regional rail service. The regional council is following a policy of more frequent trains running on fixed intervals and has set ambitious development goals for the coming years.

But the Alsatian network has already reached the limits of its capacity in many places. Improvements are particularly needed in the rail node of Strasbourg, in part due to the start of service on the high-speed lines LGV Rhine-Rhône (2011) and LGV East (phase 2 in 2015).

Working together with the RFF management groups in Alsace, Lorraine and Champagne-Ardenne, we specified the required improvement projects for the coming 12 years. In the course of 2009, this project will also take in the network in south Alsace around Mulhouse. The tried-and-proven approach of timetable-driven improvements is also being applied here.

The investments in the Strasbourg area amount to about €200 million, and include expansion to four tracks between Strasbourg station and the junction at which the new line toward Paris will split off. An aspect of note is the reorganisation of passenger operations to make use of areas whose tracks are no longer needed for freight or shunting operations.

4 Portugal

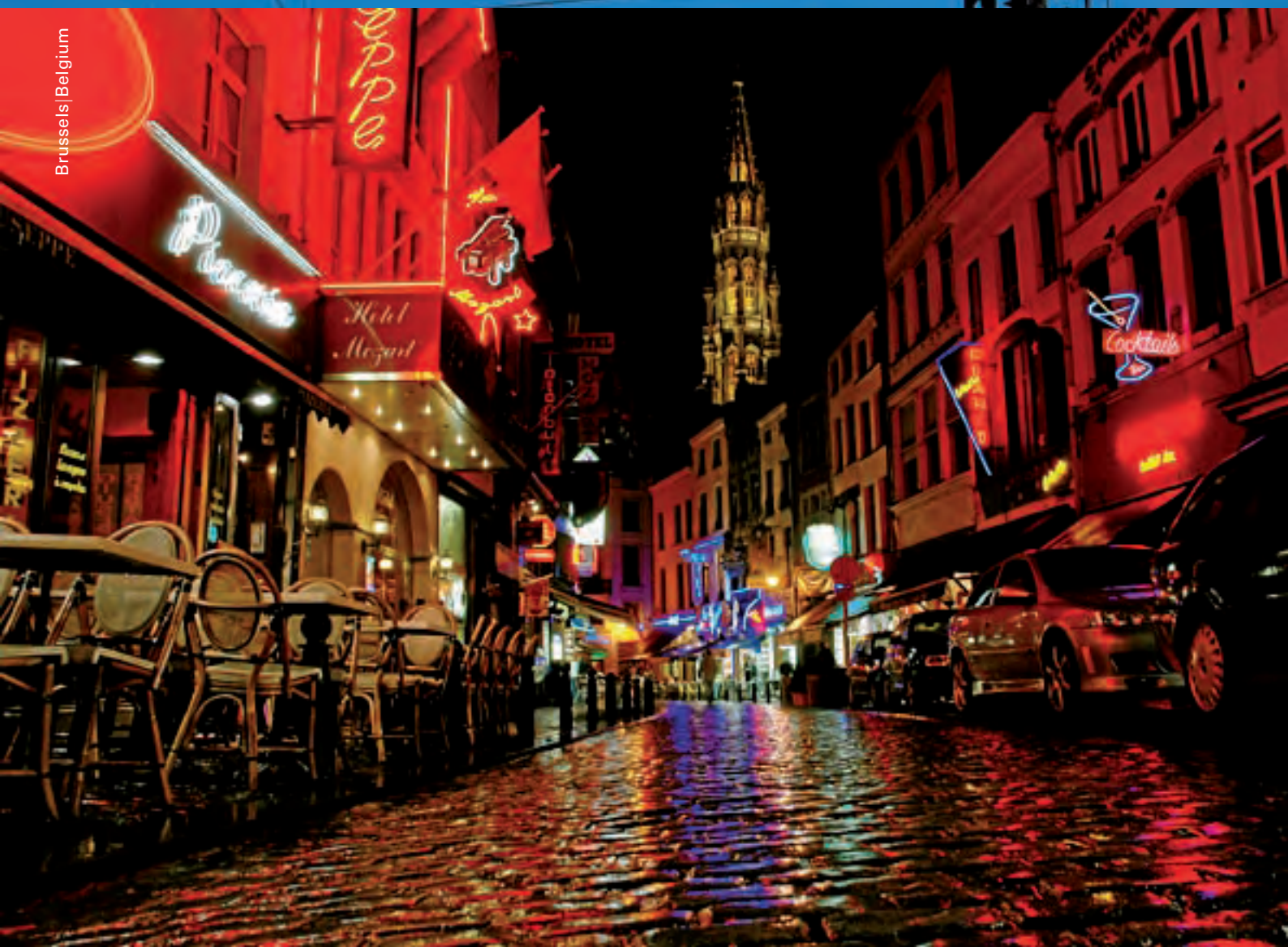
The cultural and political contrasts between Portugal and Switzerland could not be greater. But it is almost as in love: contrasts prove mutually attractive and lead to synergies from which both partners can benefit a great deal.

In 2008, we were entrusted with a greater volume of tasks than ever before. The year began with what can only be called a planning and political bomb: after years of planning for a new international airport in Ota (about 45 km north of Lisbon), the government accepted a counter-proposal and established a new location south of Lisbon. The very advanced construction and operational plans for the high-speed network and for the Lisbon metropolitan area's rail network now had to be adapted to this new situation under great time pressure.

Fortunately, the custom of a monthly workshop with both decision makers and technical people, already well-practiced and proven, allowed a rapid integration of the new planning constraints. This effort included the preliminary design of an airport rail station with both track gauges, a new concept for maintenance facilities for the high-speed trains and new timetable concepts for both long-distance and Lisbon-region trains.

Just as important for us as planners in 2008 were the new, intensive contacts with Portugal's national train operating company, CP. They entrusted us with a timetable study whose aim was not just to search for service improvements but also to make timetable coordination a way of bringing the relatively independent operating units for long-distance trains, regional trains, Lisbon and Porto suburban trains and freight service closer to each other.

Jaipur | India



Brussels | Belgium

In parallel, CP's long-term planners were integrated within the planning process for high-speed service. Before the planning process continued, a consensus emerged that irrespective of future competition among train operating companies, infrastructure planning cannot yield optimal solutions without the experience of such a company.

Our Portugal chapter cannot close without a great thank you to the firm Ferbritas S.A, who are our partners in all studies. Together, we serve the client as a single company would.

5 Spain

At a speed equalled nowhere else in Europe, Spain's railways are being catapulted into a new age. With enormous investment sums, the high-speed, metropolitan-area and metro networks are being improved and the rolling stock renewed. The new capacities now available are generous, which means that for the time being, there are no problems of capacity or coordination of timetables.

We are present in Spain with the first Viriato licences. A permanent representative is observing the market's development. As the success of the trains increase, however, the same questions concerning capacity and coordination will be asked in Spain that we have already addressed with great success in other countries.

6 Italy

The Italian rail system took a great step forward in 2008 with the start of service on the new high-speed line between Milan and Rome. Numerous other construction projects are now nearing completion, such as the new Rho–Novara line section between Milan and Turin; other projects are in the study phase. One of the largest projects is undoubtedly the Lyon –Turin base tunnel. With a total length of 52 km, it will significantly impact the rail systems of the French Rhône-Alpes and Italian Piedmont regions.

The Italian transport minister has created an interdisciplinary working group charged with developing supporting material for decisions in this project. In this context, the capacity of today's network, especially operations in the rail node of Turin, and possible alignment variants across the Turin metropolitan area are to be studied.

In order to study the functionality and capacity of the Turin node and to analyse its interactions with the existing network in detail, the strategic network development group of the Italian network operator RFI decided to acquire a second Viriato licence and the supplementary module CAPRES for capacity analysis.

Thereafter, another study commissioned by RFI and carried out by the Turin metropolitan agency for mobility was able to demonstrate the impact of the new operational concept on the global development of service and especially on the creation of an attractive rail network for the Turin metropolitan area.

7 Austria

Good contacts have existed for many years with the Austrian federal states of Vorarlberg and Tirol close to Switzerland, but also with Steiermark. There, as part of planning for the Koralm tunnel, we conducted various service and operational studies for the Austrian Federal Railways, the Graz-Köflacher railway and the state of Steiermark. We are also entrusted with consulting tasks in the Austria-Germany-Switzerland tri-national border area linked with the coordination of cross-border traffic.

In the coming years, in the area of Lake of Constance, various infrastructure improvements are planned in German, Swiss and also Austrian territory. Among these are electrification of lines in Bavaria and Baden-Württemberg, the connection of eastern Switzerland to the European high-speed network and improvements between St. Margrethen and Bregenz. Technical and political hurdles at the national borders hamper planning for cross-border local rail services. With the participation of responsible agencies and affected railways, SMA is leading a coordination effort that aims to harmonise the country-specific timetables and develop new ideas for cross-border train services.

8 The Netherlands Based on the work of Dutch strategic planners with a Viriato licence, we regularly exchange experience with the infrastructure operator ProRail. Beyond this, there are efforts to integrate Viriato within ProRail's existing tool landscape by means of interfaces and to thus take advantage of Viriato's network-wide view in the planning process.

Along with the national train operators of France, Germany and Belgium, the Dutch National Railways were partners in the consortium commissioning a 2006 timetable study for Thalys, which operates high-speed trains connecting these four countries. Conducted in close cooperation with a working group representing the four railways and Thalys, the study highlighted the complexity of designing timetables for international high-speed trains that are compatible with national constraints. Increasingly, these difficulties are not just technical, but also legal. They are the natural result of putting regional train services out to tender and the resulting contractual environment. The European rules in place until now are still very distant from the hard realities of the railway system.

This situation will, however, make it even more fascinating in the future to design rules allowing European high-speed services to successfully develop in coexistence with other services.

9 Belgium

After an international call for tenders, the Belgian National Railways (SNCB) decided in early 2008 to assign SMA the task of delivering a software package for the study and development of service concepts for rail transport.

In the context of this assignment, SNCB ordered a first set of standard Viriato licences, including the supplementary modules for run time calculation, conflict recognition, travel time analysis, calendar management and rolling stock roster planning. This first acquisition, destined for the mid-term and long-term planning group of passenger services, was followed by a second purchase for the short-term planning group, which from now on will use Viriato for the annual production of the timetable.

Dråby|Denmark

Aït-Ben-Haddou|Morocco

All this opens new horizons in Belgium. Viriato is now part of an important series of processes between the train operator SNCB and the infrastructure operator Infrabel. The experience gained to date all through Europe, and particularly in Germany, Switzerland, Portugal and now in Finland, shows the need to jointly coordinate and mutually adapt a series of processes, mechanisms and IT systems.

10 United Kingdom The British were the first to reorganise their railways in line with Europe's then-nascent railway reform. In the UK, this led to an institutional fragmentation of the railways into nearly 100 independent companies of various kinds. This environment puts an integrative planning philosophy, as we have come to know it, in a difficult position. By way of contacts with the purchaser of a Viriato program licence, we are closely observing developments in the UK.

Just before Christmas, we helped an employee of a train operating company develop a timetable as part of a response to a call for tenders for the concession to operate a line.

11 Denmark Our most recent work was a number of years ago. What was then known as ABB Skandia asked us for run time calculations to accompany its bid for the supply of diesel multiple-units (DMUs) in Spain. ABB Skandia won the bid and the vehicles remain in regional train service today.

12 Norway For a simulation of the timetable for their busy suburban network in the Oslo metropolitan area, the Norwegian Railways (NSB) put a study out to tender that we won together with OpenTrack Railway Technology. The study involves the development of a complete infrastructure model with which NSB wants to study their planned 2012 timetable. SMA's support in a consulting role is foreseen for timetable questions in the context of NSB's Timetable 2012 project.

13 Sweden In early 2008, the operation of the entire underground network (Tunnelbana) of Stockholm was put out to international tender. One of the bidders asked for our help in checking the operational feasibility of service concepts by means of a comprehensive simulation of all lines and in assessing expected service quality. In addition, measures to improve the stability and quality of operations on the network were to be developed and verified.

14 Finland Our first contacts with the Finnish Railways (VR) were nearly ten years ago. What began with a presentation arranged by a Swiss engineer who was working in Finland and believed in the fixed-interval timetable has since become a strong client relationship. Together with the Finnish Rail Administration (RHK), the responsible supervisory agency for path management, VR has become an important client of Viriato.

2008 saw the start of implementation of the LIIKE project. Viriato forms the central element of this system, which supports path planning and path allocation at the train operating companies VR Passenger and VR Cargo and also at the capacity manager RHK. As with the path portal at German Railway, the entire process of path ordering and allocation is modelled within the system.

Our IT specialists are implementing functional adaptations and interfaces in Viriato for a first phase of LIIKE implementation. Its operational launch entailed an increase in the number of user licences for Viriato.

15 Czech Republic More than once, interns have gained hands-on experience with railway operations planning with us in Zurich and then later found in their professional environment that they no longer wanted to do it without the efficiency that planning software like Viriato makes possible.

A former Czech intern has been working for the Czech Railways (CD) since last year. We are discussing with CD the introduction of the Viriato program and its adaptation to their country's specific requirements.

16 Greece In August 2008, the Greek transport minister announced a restructuring plan for the national railway company, OSE. The associated project aims to make the railway more attractive, efficient and profitable over the coming years and to thus contribute to a revival of this transport mode. The Greek government also implemented Direction 91/440 of the European Commission by creating the new rail infrastructure operator EDISY and by transferring authority for all passenger service activities (including the Athens suburban network) to the new train operating company TRAINOSE.

In order to implement an innovative approach to service planning, for the first time in Greece, TRAINOSE tasked an interdisciplinary working group with the development of a new national timetable that takes into account all elements of the rail system, including infrastructure, traffic control and rostering of personnel and rolling stock. The management of TRAINOSE turned to SMA to support this working group in developing the new national service concept.

After analysing the characteristics of the network, the areas to be served and current service, SMA proposed that TRAINOSE adopt an approach based on the principals of the fixed-interval timetable. SMA developed the draft concept for a new national service concept and presented it to the working group. It foresees the creation of nodes offering systematic connections and a fixed-interval service for the regional and intercity trains on the Athens – Thessaloniki corridor.

Initial assessments are indicating that simultaneous achievement of better service and optimised resource use is possible.

17 Morocco After initial contacts and a first visit for the presentation of Viriato in 2005, we were pleased and honoured to be contacted again at the start of 2008 by the Moroccan national railways, ONCF.

ONCF wants to rework its strategy for the development of rail passenger service, especially in view of the coming start of operations on their first high-speed lines. SMA advised the ONCF strategy group on how best to manage a project of this kind and helped them define the methodology to be applied in coming years to assure coordinated development and the integration of future high-speed lines with national and regional services.

18 Chile

Santiago – the capital of Chile, with about five million inhabitants – has a metro network with five lines, three of which are equipped with the Parisian tyred metro technology. It is planned to extend the current 85 km network length by 20 km in the coming years.

At the start of 2007, the responsible agencies radically remodelled public transport in the Santiago region. Whereas previously, bus service was provided by hundreds of small and mid-sized companies – generally with a commission for the driver, who had to actively seek riders – now only a few companies are operating, on government concessions. At the same time, the fare system was rebuilt from the ground up. Today, a unified fare system for the region offers passes for unlimited travel and multi-trip tickets in the form of chip cards with touchless readers.

This reorganisation of local public transport brought the metro a huge increase in demand. From the end of 2006 to the end of 2007, daily ridership grew from 1,3 to 2,3 million. This brought the metro to the edge of collapse. Under current conditions, riders who will be attracted by the network extensions cannot all be accommodated.

Most affected is line 1, which serves the city centre. Today, in the rush hour, the interval between the trains, composed of seven to eight carriages, is 105 seconds. Nevertheless, occupancies of over seven riders per square metre are reached.

The metro has therefore started a project to equip line 1 with a new signalling system using moving blocks and fully automatic driving to reduce the train headway to 80 seconds.

To explore the operational impacts of this system, the Santiago metro bought the OpenTrack software package. Using OpenTrack, the capabilities and operating conditions of the new system are to be determined by means of a number of dynamic operation simulations. In the context of this project, we are providing technical assistance and model validation. Among other activities, a week of on-site work was organised in Santiago in December 2008 in order to assure correct definition and modelling of the system.

19 Venezuela

With a population of about four million, the port city of Maracaibo in northwest Venezuela is among the largest cities in the Caribbean. Until today, public transport has been provided by a fully overloaded network of buses and taxis. Construction of the new metro is meant to save the city from a threatening collapse of transport. In the long term, the operation of four lines is planned. Commercial operation started on the first section of line 1 in early 2009.

For the conceptual planning of metro operations in Maracaibo, the Venezuelan subsidiary of the Swiss firm Pöyry Infra AG bought a licence of the Viriato program.

20 Australia

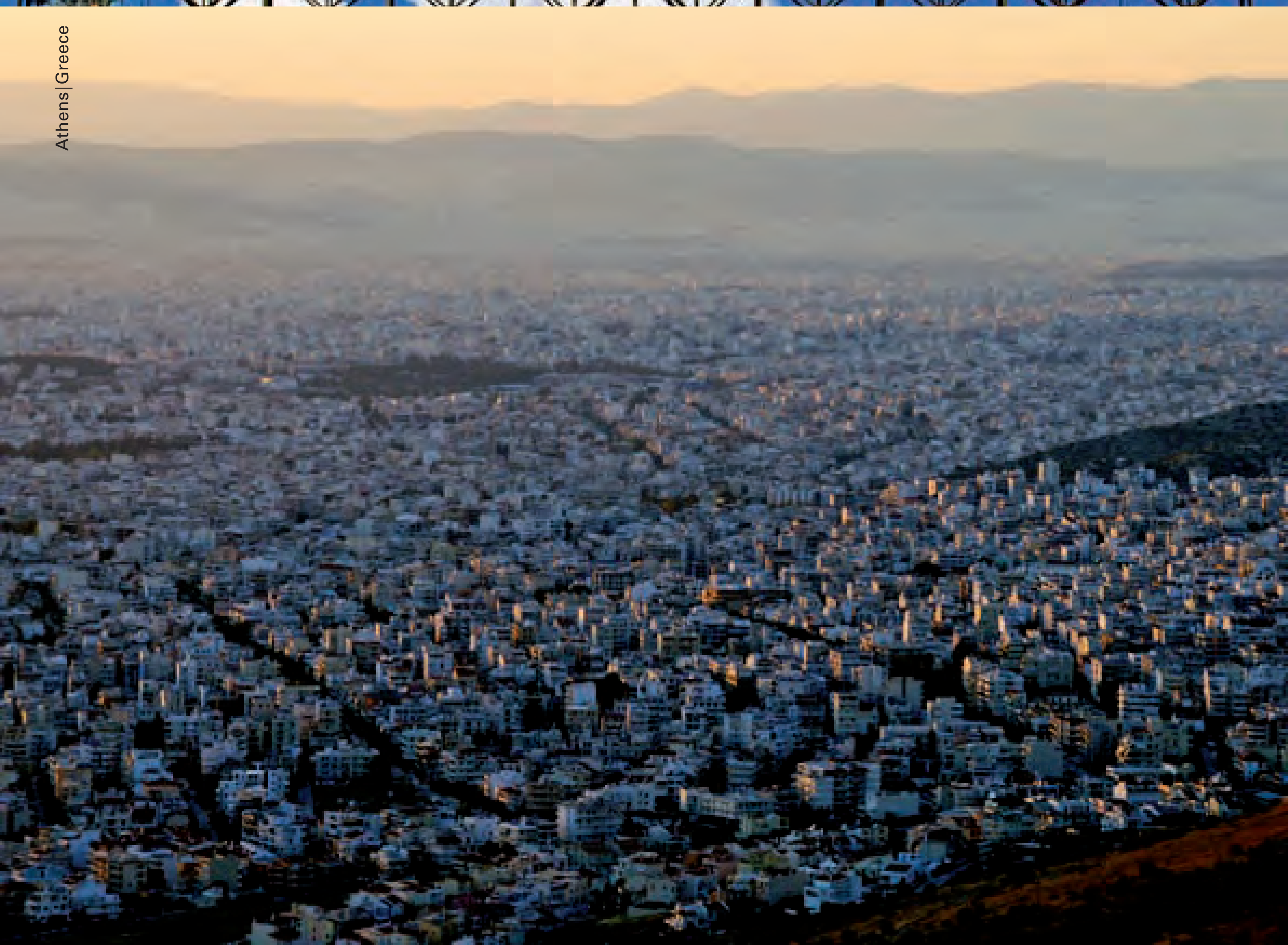
Several Viriato licences are in use in Australia. Thanks to the regular Viriato user workshops, which our Australian friends always attend, we are able to keep abreast of their projects and the challenges they face.

21 India

With 64,000 route kilometres and 11,000 daily trains, India is one of the world's largest railway markets. Although long-distance trains are still almost fully under state control, the rail passenger systems of the metropolitan areas are contracted out to international consortia in the context of public-private partnership (PPP) projects. Currently, annual investments amount to nearly €3 billion. An increase in investment is to be foreseen in the coming years.

SMA is ready to help and is in contact with various Indian operators and investors with a view to fulfilling the need for optimised service and operating concepts as practiced in Europe. In order to be culturally and organisationally present in such a large market, good contacts are indispensable. In this context, one of the largest Indian planning firms is assisting us. Founded 20 years ago, Barsyl possesses deep-reaching knowledge of all railway segments and thus provides a good basis for future collaboration in Asia.

Atacama | Chile



Athens | Greece

Viriato 6.0 and Viriato Rostering 2.0 In the summer of 2008, the new Viriato versions 6.0 and Viriato Rostering 2.0 were completed. Besides a new look and error corrections, the new versions again implement a variety of suggestions from users and improvements.

In parallel, parts of Viriato underwent a complete rework "under the hood". The user cannot see these changes, but they reduce errors thanks to better data consistency and allow simpler and more efficient implementation of future requirements and user wishes.

The versatility of the application for very different clients and the spread of its use throughout Europe have made Viriato a standard software package for rail operations planning. Viriato's core was created over ten years ago as an internal support tool for our service planning projects. Constant further development has transformed Viriato into a comprehensive planning system. Today, for 80 clients in 14 countries, Viriato is an indispensable instrument in service and production planning.

Supplementary module "Network Visualisation and Graphic Train Definition" Viriato 6.0 has been extended to include the supplementary module "Network Visualisation and Graphic Train Definition". The design and optimisation of train services and operations on a complex infrastructure is a central function of Viriato. With the help of this supplementary module, users can now graphically display infrastructure defined in Viriato. Also, without detailed knowledge of the infrastructure, the user can quickly and simply design and manipulate train runs in a graphic interface. The module offers a series of features that make working with Viriato even more effective:

- Visualisation of selected lines, positioned either by their geographic coordinates or by hand.
- Export of the displayed infrastructure as a vector graph for further processing in drawing programs.
- Graphic design of train runs, including shortening and lengthening on predefined networks.
- Graphic rerouting of parts of a train's run.

The Network Visualisation module enlarges Viriato's functional scope by facilitating work on train run design and offering a simple way of presenting the infrastructure.

Interface between Viriato and Thor Since the start of our collaboration with the French infrastructure operator RFF, the basis for all train run time calculations has been a joint RFF/SNCF program named Thor. Growing data volumes and the use of Viriato within RFF's timetable group have led to the development of an interface for the automatic import of trains into Viriato.

As it transfers data, the interface progressively "learns" how the infrastructure models of Thor and Viriato relate to each other. The interface offers an open architecture that allows adaptations to future development of the software packages and its use on various databases in projects with a variety of objectives. SMA developed the Thor-Viriato interface in collaboration with RFF. RFF also uses the interface in its own studies.

The path portal TPN The institutional separation of the railway into infrastructure and train operators is leading to a new mode of information exchange between these companies. Of particular importance is information exchange concerning timetables. The German supervisory authorities have defined the legal framework for train path requests in a regulation concerning network access called EIBV.

With the path portal TPN, the infrastructure operator DB Netz has created a medium that supports the process of ordering and offering paths and manages the entire associated workflow. The goal was the creation of a single, XML-based interface for all internal and external clients (typically, train operating companies).

The passenger division of German Railway, DB Personenverkehr, has been using the Viriato system for a number of years for timetable and operations planning. As an extension, SMA developed a connection to the path portal. This functional extension models the entire process of path ordering in Viriato and manages the associated workflow. Thanks to this solution, at any time the train operating company can access information on the current status of paths it has ordered.

Viriato training programmes In 2008, Viriato training programmes were again held throughout Europe: from Turin to Paris, from Montreux, Lausanne and Zurich to numerous German licence holders and all the way to Helsinki, new users were made familiar with the Viriato timetable system.

Training occurred intensively at German Railway (DB). In several one-week courses, new users were able to learn how to use Viriato and practice on a variety of examples. Additionally, one-day courses taught the functionality of the path portal that lets the user request a train path directly out of Viriato.

Oslo | Norway

Stockholm | Sweden

Economic assessments Again and again, planners are confronted with the question of the probable economic effects of a new service concept or need to know which variants are preferable from an economic viewpoint. Assessments on the demand side are generally based on assignment models that usually involve significant modelling costs. In contrast, there are few tools to help quickly evaluate timetable concepts from the viewpoint of the wider economy. As planners whose ambition is to offer our clients a comprehensive and innovative palette of services we want to also cover this area in the future.

Together with the Institute of Transport Planning and Systems (IVT) of Professor Ulrich Weidmann at the Swiss Federal Institute of Technology (ETH) in Zurich, we began a research and development project on this subject in 2008 that aims to develop a tool to assess timetable concepts from a wider economic viewpoint.

The project is sponsored by KTI, the Swiss federal agency for the transfer of know-how and technology between universities and industry. Under the credo "science to market", companies develop new knowledge for products and services together with universities and implement it in the market.

The project will develop a prototype that is heavily based on Viriato and that aims to fulfil the needs of all of the railway system's stakeholders (including public agencies and related entities, train and infrastructure operators, and consultants) with regard to economic assessment and optimisation.

Timetable stability: comparison of MakSi, FASTA and UIC method The double objective of our current projects with infrastructure operator RFF in France is (1) implementation of fixed-interval timetables at national level and (2) optimisation of network maintenance work. Important criteria for decisions thus are both the quality of the timetable per se and how this quality is affected by various maintenance strategies, such as the type and duration of periodic maintenance work. In the context of these questions, several macroscopic tools allow assessment of timetable robustness.

An internal SMA research project performed a comparison of three such tools that each apply very different methods: FASTA applies a deterministic method, MakSi a probabilistic approach and the UIC a simplified method that measures the degree of infrastructure utilisation by compressing timetable paths.

A multi-criteria analysis indicates the FASTA tool developed by the LITEP laboratory at the Swiss Federal Institute of Technology in Lausanne (EPFL) provides the best response to RFF's concerns. In contrast, the MakSi approach developed by the VIA institute in Aachen proved to be more relevant to networks that have already fully implemented a fixed-interval timetable and whose infrastructure is in good condition or has been sufficiently renewed. In addition, the inefficiency of the UIC method for the appraisal of the stability of a network timetable was demonstrated.

The study revealed algorithmic limitations within FASTA that can serve as guidelines for the tool's further development. Recommendations were also made for improvements in MakSi, especially concerning its interoperability with Viriato.

Netvisio – visualisation of network features In 2008, we continued to develop Netvisio. One of the recurring tasks of railway planning is the fast and simple communication of complex operational information. Schematic maps are excellent for this purpose. The observer is generally familiar with geographic features and can thus quickly analyse and evaluate data displayed geographically.

With Netvisio, we have developed an application for the creation of schematic maps. Netvisio allows the user to concentrate on the interpretation of data. The graphical display of the data can be configured and is fully automated. A simple but effective versioning concept permits rapid visualisation both of multiple variants and of successive development steps over time.

In a few steps, the user can make individual choices about the presentation of very different kinds of content on the same basic map. This enables very efficient work and assures both graphic consistency and conformity with corporate identity.

The Swiss Federal Railways SBB uses Netvisio in its strategic network planning, for example to illustrate infrastructure variants in compact form. SMA has been using Netvisio as a medium in various projects, for example when comparing different service concepts, presenting demand data or visualising key indicators for timetables.

The most recent new features include the import of Viriato data and the creation of line network maps.

The Treno program The development of service concepts and timetable planning again formed the heart of SMA's activities in 2008. But today, planners also deal with other challenges, such as increasing traffic and the progressive saturation of existing infrastructure.

These trends are making it ever harder to implement services that meet the expectations of train users and operators, particularly concerning punctuality and greater capacity in the form of more trains.

In order to reinforce our consulting activities in the area of traffic control and its optimisation, SMA has purchased the new software Treno, which stands for "Train Reliability and Network Operations analyser". This software was developed by the Institute for Railways and Transport at the University of Trieste in Italy.

The Treno software is tailored to the analysis of railway operations and allows fast and efficient visualisation of differences between planned and real train runs. Timetable deviations, delays and disturbances can be presented in several ways:

- A simplified diagram of the network in which the software ranks critical line segments and nodes in different colours.
- Graphic timetables that superimpose theoretically planned and actually operated paths.
- Distribution diagrams that allow visualisation of the variability of dwell times in stations and of run times on lines.

SMA first used Treno for the analysis of a heavily used and oft-disrupted line segment in a European capital in order to identify existing problems and propose solutions for more trains and better service.

Marketing

The high point of the marketing and communication activities in 2008 was undoubtedly the IT08.rail event. Sponsored by four organisers – the IVT Transport Planning and Systems group at the Swiss Federal Institute of Technology ETH in Zurich, OpenTrack Railway Technology, systransis AG und SMA – and visible worldwide in the media, the symposium assembled 350 participants in ETH's Auditorium Maximum on 25 January 2008.

The previous day, a workshop had offered guests numerous insights into the newest extensions of Viriato and OpenTrack. The symposium improved understanding of how future train operations will become more efficient through new processes, changed responsibilities and greater use of IT solutions in all production cycles. It also highlighted trends in the development of traffic management systems. A technical outing to the new Lötschberg base tunnel with a tour of the new Visp station and the BLS dispatching centre in Spiez rounded off the three-day programme.

The next symposium, IT10.rail, will be held on January 21–23 January 2010, in Zurich. Current information will appear on an ongoing basis at www.it10rail.ch.

SMA was again present at the InnoTrans 2008 international trade show in Berlin. Within the larger Swissrail stand, and along with our partner, OpenTrack Railway Technology, we were able to greet our international clients and present current new product features and services.

We also took advantage of a number of other conferences and events to present SMA, its services and its products.

Presentations, participation at conferences and trade show visits

16 January	Stockholm	Capacity of Railway Infrastructure – Interaction of Capacity and Timetable Planning
24–26 January	Zurich	IT08.rail International Railway Conference: Closing the Loop – Capacity and Quality of Railway Systems
14 February	Berlin	IVU – 2008 users' forum: Timetable Design and Data Exchange with RailML
28 February	Oviedo	La explotación de redes de ferrocarriles – El modelo suizo y su hipotética aplicación en Asturias
17–19 March	Amsterdam	UIC Highspeed 2008: Key Issues for the Establishment and Success of a High-Speed Network in Europe
29 May	Berlin	Zukunftsforum Bahn: Vorbild Schweiz? Planung, Umsetzung und Erfolge eines landesweiten ITF
6 June	Munich	TU Munich: Fixed-interval Timetables
9 September	Lausanne	L'exploitation ferroviaire en Europe à l'heure du cadencement
19 September	Berlin	Netzbeirat der DB AG: Erfolgsfaktoren für die Schaffung eines europäischen Hochgeschwindigkeitsnetzes
23–26 September	Berlin	Stand at the InnoTrans 2008 trade show
14 November	Lausanne	Vision de l'offre des transports en commun pour 2030 en Suisse et impacts sur les gares
19 November	Horb	26. Horber Schienentage: Taktverkehr in Frankreich – eine Vision setzt sich durch
28 November	Beijing	Workshop on Railway Planning, Design and Operations at Beijing Institute of Technology (B.I.T.): Railway Culture in Switzerland and Integrated Railway Planning

Publications

Neue Zürcher Zeitung, 20 February 2008	Eine neue Bahnlinie für den Güterverkehr – Vorschlag für einen dritten Jura-Durchstich
ETR – Eisenbahntechnische Rundschau 3/2008	Liberalisierung des internationalen Personenverkehrs – Konsequenzen für die Fahrplanung
ETR – Eisenbahntechnische Rundschau 6/2008	Kolloquium an der TU Dresden bringt mathematische Theorie und betriebliche Praxis zusammen
ETR – Eisenbahntechnische Rundschau 11/2008	Ziel Pünktlichkeit: Fahrplanstabilitätsuntersuchung für die SBB
Schweizer Eisenbahn-Revue 12/2008	Netzgrafik Schweiz 2009
Railway Gazette International 12/2008	2009 Swiss Timetable Netgraph

Published articles about SMA

Neue Zürcher Zeitung, 26 January 2008	Eisenbahnplaner für die halbe Welt – Ein Zürcher Ingenieurunternehmen als bedeutender Nischen-Player im Verkehrswesen
Railway Gazette International 3/08	Software Aids Timetable Architects
hinundweg, Spring 2008, No. 20, pages 6–7	Sauber geplant
Privatbahn Magazin 4/2008	Architekten der Fahrpläne
Press release from the Swiss embassy in the People's Republic of China	China and Switzerland Co-host Railway Planning Workshop to Create Sustainable Technological and Urban Development

Swiss Timetable Netgraph With each annual timetable change in Europe, it has become almost traditional for SMA to publish maps showing the newest fixed-interval timetables for Switzerland and the Zurich metropolitan area. A single sheet shows the arrival and departure times at almost all stations in Switzerland. A second sheet shows times in the Zurich area. The maps thus indicate train connections and connection times in nodal stations. The Swiss Timetable Netgraph appeared in the December 2008 issues of the Swiss Railway Review and Railway Gazette International. Both the Swiss and Zurich maps are available on the SMA website for download as PDFs.

At the end of 2008, SMA had 45 employees.
The year saw three departures – two part-time secretarial posts and at year's end Bernhard Seybold, who had been head of the IT department and 13 new hires:

7 April	Simon Landureau Engineering degree, national university for public works (ENTPE), master's degree in urban and regional public transport (TURP), Lyon	Planning
1 May	Steve Hauffe Certified IT application developer	IT, maintenance and support
1 June	Michael Karlen Software engineering degree, EPFL**	Software development
16 June	Raphael Karrer Engineering degree, ETHZ*	Planning
1 July	Daniel Mäusli Engineering degree, EPFL**	Planning
1 August	Felicella Tedeschi	Back office
1 September	Florian Zumklei Engineering degree, Rhine-Westphalia Technical University (RWTH), Aachen	Planning
1 September	Martin Gämperle Master's degree in computer science, ETHZ*	Software development
15 September	Lukas Schwab	Software development
1 October	Christoph Inhelder Engineering degree, EPFL**	Planning
1 October	Cyrill Bärtsch Master's degree in civil engineering, ETHZ*	Planning
1 November	Lulu Leanza	Accounting assistant
1 November	Markus Apell Master's degree in traffic and transport at Darmstadt Technical University	Business development

* Swiss Federal Institute of Technology Zurich
** Swiss Federal Institute of Technology Lausanne

Two of the new arrivals had done an internship at SMA while students. Daniel Mäusli had already worked for SMA from 2001 to 2005 and has now returned after three years abroad. Thomas Bickel is on a one-year leave of absence to complete an MBA at the University of St. Gallen.

Again this year, a number of students took advantage of the chance to do an internship with us. They were: Simon Landureau and Yvan Thomson (France), Martin Winkelmann and Florian Zumklei (Germany), Lapalu Gangul Manikkuge (Sri Lanka) and Tobias Fumasoli, Christian Schlatter and Lukas Schwab (Switzerland).

The study that Simon Landureau carried out during his internship at SMA, a comparison of macroscopic methodologies for assessing timetable stability, won the first prize of the AFITL (Association Française des Instituts de Transport et de Logistique) in the category Internship Projects. He received the prize on 5 March 2009 in Paris.

Despite heavy workloads, our employees continued to benefit from ongoing training programmes. The objective of about ten working days of training per employee was 80% attained on average. Most of these programmes were internal training days, often with invited speakers. The topic "Dialectics: the art of holding a conversation" continued the series for the training of consultants. In autumn, a first group of employees attended the course "Fascination in presentation".

The theme of the traditional SMA study trip was "Transport, culture and nature in and around Berlin". The richly loaded programme included travel to Berlin on a CityNightLine train, an excursion with the historical S-Bahn museum train along the Berlin ring line and from there to the Bombardier plant in Hennigsdorf, whose sights included a preview of the new train prepared for the InnoTrans trade show. Other traditional elements are a festive dinner with clients and friends and a cultural high point. This time, we saw Prokofiev's opera "The Gambler" at the German State Opera Unter den Linden. The social part of the study trip was rounded off by a night tour of the Berlin underground in unique open carriages and, on Saturday, an extensive trip in paddle boats through the Spree forest's widely branching network of waterways. These outings provided perspectives and insights that no other Berlin tour programme offers.

Under the title "SMA Futuro", our corporate structuring project began in 2008. Consultants Reinhard Vissa and Thomas Kuhn of the SANTIS consultancy conducted interviews with all employees who were at SMA at the end of 2007 and on that basis wrote a profile of our company concerning identification, communication culture and visions for the future.

This profile was further developed by a group of employees at a first workshop and transformed into a strategy paper. For employees under the constant pressure of project deadlines, it was not easy to find time for questions of this kind, which went far beyond their daily work. This is one reason the process has lasted longer than originally thought. The results will be implemented in the course of 2009.

Parallel to the rising number of employees, the firm's turnover again saw strong growth. Gross turnover increased by 20%. Due to higher expenses for subcontractors and other third parties, net turnover increased by 16%. At times, the demand for services exceeded our resources, and more than once we had to decline to respond to calls for tender.

		2008	2007
Key indicators (millions CHF)	Turnover	**9,33**	7,79
	Subcontractors and third parties	**1,05**	0,61
	Net turnover	**8,28**	7,12

		2008	2007
Distribution of hours (in %)	Projects	**60,1**	61,2
	Tenders	**2,2**	2,2
	Software maintenance and sales	**12,1**	5,8
	R&D and professional training	**13,8**	15,9
	Administration	**11,6**	14,9

The number of Viriato licences sold strongly influences the financial results. The investment in the Viriato program and its supplementary modules that we have been making over many years is now beginning to pay off and is allowing us to finance out of our own resources the large investment that we are about to make in a redesign.

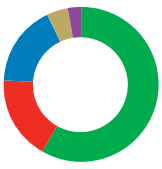
The distribution of assignments by country continues to show a dominance of clients in Germany, France and Switzerland. In percentage terms, however, the importance of these countries has been continuously decreasing in the last few years. This means a welcome diversification of risk. The profile of our clients has not significantly changed: three quarters are transport companies; the other quarter is composed of public agencies and non-transport companies such as consultants.

The historical development of our results displays an interesting pattern: growth spurts and consolidation phases occur in a clear seven-year cycle. With a slight time lag, phases of world recession are followed by phases of contraction in our own results. The current economic environment seems to be confirming this rule once again. The firm has thus already adjusted its financial planning to deal with the difficult economic times that we now expect.

Turnover by country

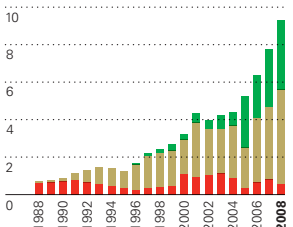
- Germany
- Switzerland
- France
- Portugal
- Various

Turnover by client category



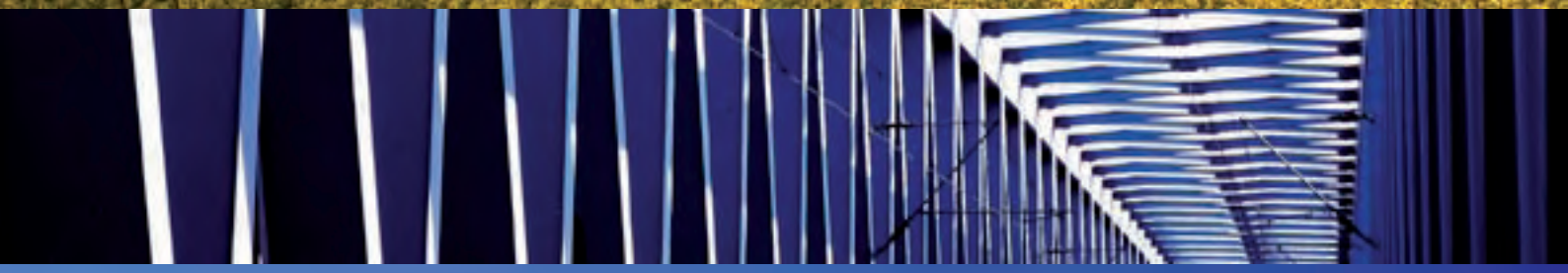
- Transport operators outside Switzerland
- Swiss transport operators
- Public agencies outside Switzerland
- Swiss public agencies
- Private firms

Development of turnover 1988 – 2008 (millions CHF)



- IT
- Planning international
- Planning Switzerland

Brandenburg | Germany



Caracas | Venezuela

Outlook

The year 2008 will remain engraved in our memories as the year of the cyclone that struck the financial markets with the macroeconomic results we observe today at global level. Estimating the true extent of the problems entailed by the current recession or the time needed to reverse its trends is impossible.

This context causes us to cast a critical eye on the financial and economic model that recent years have imposed on us. At the same time, we can only be proud of what we achieve every day as engineers, planners and IT professionals. Indeed, what would happen if we based our services and solutions on the kind of promises and risk analyses that the finance wizards devised?

We are deeply convinced that our work is in full contact with what is now known as the "real economy". This allows us to face the future with equanimity and confidence, and to pursue our task with the aim of creating quality, innovative, high-performance and sustainable transport systems. In the future, these systems will continue to constitute a collective good that no financial crisis can weaken and will help provide future generations with a better quality of life.

We are also conscious that SMA will continue to evolve, grow and innovate. Only in this way can we continue to offer our current and future clients the high-quality, high-value-added services that underlie our company's strength. We have therefore decided to develop our competence in the domain of daily operations, productive processes and the performance of the railway as a system. This will allow us to offer a comprehensive palette of services ranging from long-term strategic planning to the optimised day-to-day operation of new railway services.

With this aim, and in the context of our internal process, "SMA Futuro", the new corporate vision has been set in words:
An independent company, SMA is the leader in consulting and engineering services for the planning of railway systems.
Our information systems group lends essential support to our activities and creates applications for the railway sector.
We deliver innovative, feasible solutions with high added value.
The keys of our success lie in the motivation of our employees, our technical skills, our cultural values and also in the quality of our work environment.

This common vision, shared by all of SMA's employees, will be your and our guarantee for a relationship based on confidence in the years to come.

We thank our clients for the loyalty they have shown, often over many years, and our employees for their tireless efforts.

Employees in 2008

Management






1 Werner Stohler
2 Hans-Rudolf Akermann
3 Giuliano Montanaro
4 Georges Rey
5 Hans Ruedi Rihs
6 Bernhard Seybold*

Marketing


7 Olivier Allemann*
8 Alexander Schaeffer

* Left in 2008

Projects and concepts











9 Cyrill Bärtsch
10 Eric Cosandey
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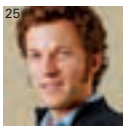



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