

2012

The visual theme of the Annual Report this year is based on our business. While the abstract upper images represent neural processes in the brain, the lower photos show the objectives of our planning: optimal utilisation of railway connections, punctual trains, an efficient infrastructure and reliable technical systems.

# Contents

<b>Thinking ahead, planning ahead</b> .....	5
<b>Business segments and projects</b> .....	7
Railway system planning .....	7
Operational optimisation .....	11
Process consulting .....	13
Viriato and ZLR .....	15
IT services .....	16
<b>Marketing and communications</b> .....	19
<b>Personnel</b> .....	23
<b>Financial report</b> .....	29
<b>25 years and beyond – a postscript from the founder</b> .....	30
<b>Appendix</b> .....	33
Employees and organisation in 2012 .....	33
Newsticker .....	34
List of abbreviations and key organisations .....	37
Publisher’s imprint .....	38



# Thinking ahead, planning ahead

A quarter of a century ago, three experts came together to provide railway planning as an independent consultancy service and the company SMA und Partner AG was born. For 25 years Werner Stohler, one of the founders, remained the driving force in the company which had grown to a staff of 60. At the end of 2012, in the 25<sup>th</sup> anniversary year, he handed over the reins to the next generation and retired at the age of 72. With his personality, immense experience and the company culture which he had created and lived every day of his life, Werner Stohler not only set the standards for our company but also far beyond it for the whole industry.

There has never been a year like this one for SMA: in addition to the 25<sup>th</sup> anniversary of the company and the management handover, there was the launch of the new software program Viriato 7, which we presented at the InnoTrans fair in Berlin, and we developed the foundations of our next product Viriato Enterprise. In addition, we unveiled the first elements of a fresh company image for SMA in the form of two new high quality brochures.

Although this Annual Report looks back over the past year, it is our supreme duty to plan ahead because that is the very essence of our business. Our customers expect us to work with them to prepare for the railway of tomorrow.

When developing specific concepts, processes and software, as a matter of principle we always consider the whole railway system. As the number of people and components involved grows, and political leadership and decision-making structures become increasingly intangible, the complexity of this system grows rapidly. It is our role to co-ordinate the interests of all participants, to initiate dialogue and by so doing to open up fresh potential. This report includes a selection of projects in which we have done just this.

The new management of SMA hopes you will enjoy reading the 2012 Annual Report.

Eric Cosandey  
CEO, Head of Consulting

Thomas Bickel  
Head of IT



# Business segments and projects

**Railway system planning** Today's railway systems generally developed step-by-step in a strictly linear and sequential fashion. But railway performance and service depends on the interaction of all the technical components, so these should be taken into account in the planning at the earliest possible stage. The room for manoeuvre is greatest at the conceptual stage where the costs can still be lowered. SMA has provided creative solutions of this sort in the following projects and made a contribution to the improvement of public transport.

**Increased capacity on the Olten–Zurich route before the implementation of the new Chestenberg line** The planned new Chestenberg line will take the pressure off the Olten–Zurich route. During the transition phase through to its implementation there is a demand for an increased service but on a modest budget. Together with BAV, the cantons involved and SBB we have developed, elaborated and evaluated several variants in infrastructure and service concept. The preferred variation is the implementation of an already planned infrastructure project and facilitates an improvement in the S-Bahn service and adds additional freight train paths at peak traffic times. It enjoys the support of all the parties involved and is likely to be implemented in the near future.

**Zurich S-Bahn 2<sup>nd</sup> Generation** What will the Zurich S-Bahn be like when demand has doubled on all the routes? In the first phase of the project the planning team, together with representatives of ZVV, SBB and SMA worked out the basic plans and direction for a "beacon" of how the Zurich S-Bahn could be. The main focus in the second phase was to put together an offer, determine rolling stock design and to work out the locations of the holding and servicing sidings. This work concluded with an approximate estimate of the costs for the necessary infrastructure measures.

Phase 2 is the targeted planning of a timetable structure which defines a basic principle for the second generation of the Zurich S-Bahn. From this it will be then possible to derive the first stages of implementation.

**Project communication LIS-oAES+SPNV Aurich–Emden (EAE)** The Aurich–Emden line in North Germany has only been used for freight traffic since 2008. Already the demand for traffic outside the normal loading gauge dimensions is so high that the clearance profile will be extended. This also provides the opportunity to re-introduce passenger traffic to this line. As this project will not be possible without the support of the local population, a comprehensive communication strategy is essential. Amongst other things, SMA has with the infrastructure operator EAE created the project website which gives comprehensive and up-to-date information on the state of the project to interested parties ([www.aurich-empden-bahn.de](http://www.aurich-empden-bahn.de)).

**Lorraine (RFF ALCA) capacity study** The railway network in Lorraine is very complicated and its capacity is heavily used. On the basis of a previous capacity study there are now developments in the key stations. In the light of the planned opening of the second section of LGV Est européenne in 2016, and the related restructuring of the offer, we have conducted a new capacity analysis working with the region and the state with the aim of establishing requirements for improvements in the short and medium term.

**Development of a workshop concept for DB Regio AG, South-East** In the coming years, all passenger traffic in the South-East of Germany will go out to tender. This raises the question for DB Regio as to how heavily used the existing train workshops will be and what changes to consider.

Together with Interfleet, SMA has created a concept for the region's workshops. We conducted a competitive analysis in order to estimate from an operational point of view what short distance passenger traffic services should be provided. In addition, SMA developed a model to forecast the operating hours and the utilisation of each workshop. The most important factors are the production hours per vehicle type, the probability of winning each network and the gradual division of maintenance services to the workshops.

The measures to shift from maintenance work and improving individual workshops will be implemented in stages from 2013.

**Dieselnetz Allgäu (BEG) Tender** The Dieselnetz Allgäu contract includes Munich and Augsburg via Buchloe to Memmingen, and via Kempten to Oberstdorf and Lindau. In addition, there are the express trains from Olm via Memmingen to Pfronten-Steinach and Oberstdorf. The Bayerische Eisenbahngesellschaft (BEG) is tendering for these contracts and hopes to start operations at the end of 2016. During the course of this contract – probably at the end of 2019 – there will be fundamental changes in the timetable: the line from Lindau via Memmingen to Geltendorf will be electrified and a new station will be in operation at Lindau-Reutin. Commissioned by BEG, as a basis for the tender process we developed two operational stages and timescales for the timetables and agreed the practical aspects with DB Netz. The available train kilometre volumes had to be respected and the train requirements for both stages determined and harmonised.

**Railway development in the Winterthur area** The town of Winterthur and its public transport will continue growing over the next few years. To ensure that this growth is as environmentally friendly as possible, the overall traffic design of the town envisages the development of a second town centre in the area of Winterthur Grüze station. A central element is the development of the station to make it a transport hub which integrates rail and bus services perfectly and produces a marked improvement in connections with the main railway station through what is known as a public transport high performance corridor. Building on the fourth set of extensions to the Zurich S-Bahn, SMA has developed an evolution of the S-Bahn in the Winterthur area which can be progressively implemented and will enable all S-Bahn trains to stop on the Frauenfeld platforms of Grüze station. This study also shows the benefits of these developments in terms of travelling time and infrastructure and operational costs.

**New line Stuttgart 21–Wendlingen–Ulm (NVBW)** Discussions on the scope and design of the new Wendlingen–Ulm line and also its connections with the existing network are still inconclusive. Numerous infrastructure variations were considered in the context of the process known as the "Filder-Dialog S21", which we conducted on behalf of Nahverkehrsgesellschaft Baden-Württemberg (NVBW). We assessed their compatibility with the planning aims of Baden-Württemberg and also the operational implications. The integration of the new Wendlingen–Ulm line in the Ulm area also required a number of studies regarding changes to the plans in order to check the compatibility of the timetabling and vehicle rolling stock usage with the planned infrastructure. SMA also assisted DB Netz with operations analysis.



**Study on the extension of the Baudrecourt–Saarbrücken–Mannheim (CG Moselle POS Nord) line** In the summer of 2012 work commenced on an international study for the extension of the Baudrecourt–Saarbrücken–Mannheim line. SMA developed designs for this with defined travel times from which infrastructure measures could then be derived. The detailed planning of the infrastructure is being conducted by project partners Ingenieurbüro Vössing and Schroeder & Associés. The intention is to present various timetable-based development scenarios for this European corridor which can be agreed with the participating network operators, the German Länder, French Départements and the purchasers. This work will be continued in 2013 and 2014.

**Reference timetable “15 Trassen pro Stunde” (15 paths per hour) on French railways (RFF)** There is a need for common principles for planning capacity and operation planning at national level for research into medium- and long-term infrastructure projects in France (with a realisation time of 10–15 years). Finding a reference timetable for the national and international high speed paths provides a significant and innovative roadmap which highlights the related elements in the projects and the agreed planning of a path catalogue for a future timetable.

SMA is developing as part of this study a number of timetable scenarios and defining the requirement for additional infrastructure in order to iteratively optimise the quality of the paths and the nodes at national level.

**Support for the infrastructure specifications of SOB** Various projects are under way to extend the infrastructure of the Schweizerische Südostbahn (SOB). Specifications are used as the basis for forecasting the infrastructure and operational requirements for the extension project. SMA assisted SOB firstly by creating the specifications and secondly with the headway times between trains and the most suitable locations for signals.







**Operational optimisation** Operational optimisation aims at creating the best solutions for activities within a given context of infrastructure and rolling stock. Our task becomes increasingly demanding because of increased system complexity and traffic density. The multi-layered system can be described and modelled so that the effects of changes in individual components can be studied and quantified. Operational quality and costs and benefits can then be assessed on the basis of detailed figures. During the period covered by this Annual Report the following projects were undertaken:

**Timetable analysis for the Bergensbanen (NSB)** The Norwegian Bergensbanen, which connects the capital Oslo with Bergen, requires optimisation at the northern end. SMA has analysed the current situation and has developed short- and medium-term actions to stabilise and improve the situation. The analysis of capacity using Viriato software shows that the existing shortcomings were primarily related to the design of the timetable which does not take into account the infrastructure adequately. We suggested new timetable designs based on realistic assumptions which could be implemented without changing the infrastructure. Using simulations we showed that this could produce a significant improvement in punctuality.

**Rolling stock optimisation for the Rhine-Main S-Bahn (RMV)** The RMV has tendered the Rhine-Main S-Bahn in three sub-networks, with DB Regio Hessen having been awarded all three contracts. This meant matching the existing timetable and operational considerations to the operator and taking into account the new conditions. With the aim of optimising rolling stock use in the Rhine-Main S-Bahn, there were also other possible fleet strategies and synergies between the sub-networks with different running times to be taken into account.

**Railway technology and operation of the Limmattalbahn (ZVV)** The preliminary Limmattalbahn study was completed at the end of 2011. Following this numerous responses from client cantons, communities, transport undertakings and stakeholders had to be examined. On that basis the construction project has been underway since March 2012. SMA is developing and optimising the service and operational plans, and in the context of "Bahntechnik und Betrieb" (railway technology and operation) is supporting the project management of the Limmattalbahn AG and the planning teams in all project phases together with specialised partners. The main focus for the work in the reporting year was optimising travel time, incident procedures, operational questions in the common sections of line with VBZ (up to Schlieren) and BDWM (in Dietikon) and supporting the overall project management in communicating service benefits.

**Basel detour (SBB-P)** There used to be a cross-frontier connection on the edge of Basel, between France and Switzerland. A number of studies have looked at re-establishing this connection but without success. Commissioned by SBB Regionalverkehr and the Swiss cantons, SMA has carried out a study for the re-introduction of this connection in conjunction with the stakeholders. After setting up a focus group, we were able to establish the aims of the stakeholders involved. The timetables which we have designed also take into account the projected rail link to the EuroAirport.

**Timetable design 2014–2016 (RFF)** As part of the “Cadencement 2012” project, we supported RFF, SNCF and the regions in working out a national basic interval timetable for the whole of France. After it was introduced, RFF commissioned us to develop the timetable design for the years 2014–2016. In several regions a partial or complete customisation of the timetable structure is necessary for various reasons, such as with the implementation of new infrastructure elements, to meet the wishes of customers or simply to enable major infrastructure work to proceed.

**Second opinion on staffing requirements for TILO SA** Railway services in the canton of Tessin and the Lombardy region are to be significantly extended with the new Mendrisio–Varese rail connection which is planned to start running in 2014. These additional services will require additional train crews and as a basis for calculation, SMA has provided a second opinion on staffing requirements for the whole of the S-Bahn network in Tessin, taking into account the regulatory and operational factors.

**Optimisation of service and train allocation list of TGV Lyria for 2014** Lyria SAS, a joint venture of SNCF and SBB, has had its own train fleet for the TGV service between France (Paris, Marseille, Montpellier, Nice) and Switzerland (Geneva, Lausanne, Zurich) since December 2012. Using the Viriato rostering module, SMA examined the potential for optimisation in timetable and train allocation. A number of parameters and factors were included in the study, both with regard to the market requirements (demand, line layout and quality of the paths) and also fleet management (maintenance of trains and operations at the terminal stations).

**Path catalogue study San Joaquin for Caltrans Division of Rail (Sacramento, California) and BNSF Railway (Fort Worth, Texas)** Intercity trains in California are becoming increasingly popular and the service financed by the State of California is being expanded. As the operation is to a large extent taking place on railway infrastructure used for freight trains, it is important to manage capacities carefully.

In this study SMA investigated whether systematising operations using a path catalogue would increase the capacity of the line. We have analysed the freight traffic and categorised it. On the basis of these identified requirements on freight paths we have developed a number of path catalogues with the aim of achieving additional capacity through the coordinating of freight and passenger traffic. We tested these path catalogues with a sample input of freight trains in terms of the capacity achieved and the service performance for both passenger and freight traffic.

This design study showed that systematising operations not only increases capacity but also improves the quality of freight and passenger traffic. On the basis of these results we were able to identify specific infrastructure improvements which would provide an efficient extension of capacity.

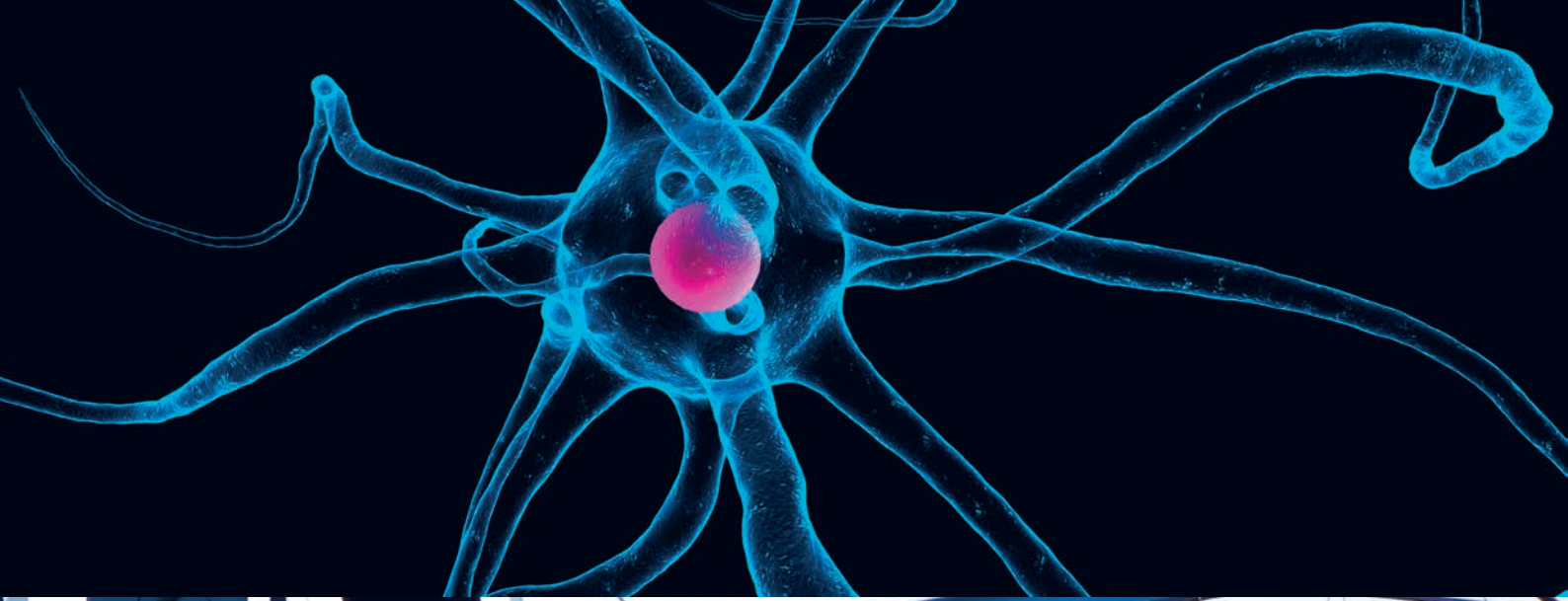
**Process consulting** To an increasing extent our work goes beyond supporting, planning and software configuration. We also assist our clients in implementing their projects. Our process consultancy benefits from the expertise of our teams in planning and IT, and our detailed knowledge of railway systems is particularly useful in these complex projects.

**Timetable automation neXt (DB Netz AG)** DB Netz AG intends to standardise its timetabling processes from long- through to short-term planning by developing its current process into an automated one. SMA has developed methods and procedures to build and subsequently allocate paths to transport requests:

- A “mesoscopic” infrastructure model shows the best possible basis for the automation of timetabling. Paths are not detailed at nodes before allocation.
- Four types of nodes provide the necessary planning detail whilst reducing the workload.

Building on this we have devised a model for the allocation process and tested it with typical business situations. Internal requirements such as the processes of travelling and building are taken into account.

Finally we developed an allocation algorithm, demonstrated its technical feasibility and performed initial tests on the basis of selected data. The work is expected to continue in 2013.





**Viriato and ZLR** Thanks to new technology and system architecture, the 2012 version of the timetabling system Viriato is more powerful than ever. The aim of the redesign was to make it future-proof and achieve a significant improvement in the performance and expandability of the application. The software is used primarily to design services and operations and enables the user to develop and compare a number of variations in a short time.

The second standalone software solution is the running time calculator (ZLR) for long-term, medium-term and short-term planning, and also for the disposition of rolling stock. The ZLR was calibrated for use in Switzerland in conjunction with SBB and today the calculated journey times match the actual train times precisely.

**Increased planning flexibility with Viriato Enterprise** This year we have continued to develop Viriato Enterprise, an extension to our existing Viriato product family. While Viriato is focused on developing the structure of a timetable from a long-term strategic viewpoint, Viriato Enterprise allows greater flexibility for shorter-term operational planning and provides a means to cope with the reality of operating a railway and the complexity that entails.

The infrastructure model has been made more flexible allowing dated changes throughout the timetable period. This means that a timetable can include features such as closures and diversions for engineering work, the creation of a new track layout in a station, revised speed limits after an upgrade etc.

Simultaneously the train model has been made more flexible. The traditional Viriato train families have been extended to allow variants within a group of trains. This variation may be to the timings, routing or composition of a train, and allows the train family to have as much flexibility as required. The development of Viriato Enterprise allows train operators and infrastructure managers the flexibility to perform all of their planning from long- through to short-term in a single integrated tool.

**Robustness analysis** A new Viriato module called robustness analysis calculates the effects of delays on the timetable. In a given delay scenario, i.e. with one or more trains delayed, the module calculates the spread of consequential delays from a perturbation. The calculated results can be output numerically (delays per train or station, duration of the complete consequential delays etc.) and/or analysed directly in the graphic timetable.

**IT services** SMA has always employed specialists with years of experience in both the railway sector and the IT industry. This combined competence in planning and IT enables us to combine business procedures with the most efficient technical processes. This includes integrating our products into the business processes of clients. We have developed specific flexibility in core areas, we have implemented interfaces between the Viriato platform and associated systems and advise our clients on integration into their own systems.

**DB long distance traffic: Project FF (Fahrplan-Fortschreibung – Developing the timetable)**

In 2012 SMA responded to a Europe-wide call for tenders and was awarded the contract to deliver a new system for the planning of DB long distance rail traffic time intervals. The project is fundamentally based on the proven Viriato software and its extension Viriato Enterprise. It includes numerous features and processes, such as integrated functions for qualitative and quantitative assessment of plans and support for evolutionary development of time intervals through their whole life.

This project, which started in April, is by far the largest in the history of SMA. On the development side we pressed ahead with the modelling and development of Viriato Enterprise to create the fundamentals for the new Viriato.FF system. Creating the FF specific functions took up a major part of our development resources in the second half of the year, but we delivered to the client the first release of the new system before the end of the year.

**SBB infrastructure: Epsilon energy saving paths for ADL** The SBB ADL project aims at avoiding unplanned train stops at red signals. By recommending lower speeds to drivers in advance, they can arrive at the signal when it is showing a green aspect again. This has two advantages: it reduces energy consumption and also reduces delays. Within this project, SMA has developed an additional module for ZLR called "Epsilonstrasse". As well as avoiding the need to stop at red signals it also reduces energy consumption, not through suggesting a single constant speed to the driver but by issuing updated driving recommendations. The recommendations in the form of acceleration, braking or coasting to a target speed are calculated using a dynamic programming algorithm. The driver can select various options such as the maximum number of recommendations and the earliest and latest times they can pass specific locations.

**SBB infrastructure: AAFD project (Replacing legacy dynamic analysis system)** The IT project AAFD for SBB was completed in late 2012 with the successful expansion of the ZLR toolbox into a versatile analysis application. From 2013, the software will be used by SBB to investigate headways and travel times, plan signal locations and speed restrictions. This year we will add additional functionality to include analysis of infrastructure-related speed restrictions and improve the user experience based on the experience from last year's field testing phase.

**SNCB: Viriato Book-In interface** To comply with European competition guidelines, Infrabel has set up a portal for train paths named Book-In through which will eventually pass all requests. The project Viriato Book-In developed for SNCB creates a new module for the automatic creation of train paths from a Viriato schedule, and managing them during the negotiation process between the operator and infrastructure manager. A first functional version of this module was delivered in 2012.



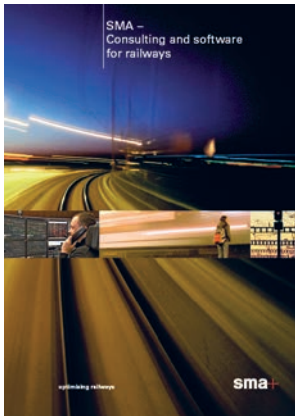
**Vietnam Railways (VNR): Viriato as part of the overall solution** Our partners IVU Traffic Technologies AG in Berlin have been awarded the contract for their software solution IVU.rail. VNR will receive a complete solution covering all areas of planning, use of rolling stock and control of daily operations right through to passenger information. SMA is providing its proven product Viriato for medium and short-term timetabling.

As is usually the case with process-integrated use of Viriato, the suggested solution will be customised to meet the client's specific requirements. One particular challenge in this project is the fact that the client will go overnight from a world of pencil, rulers and telephone to the complexity of a total IT system.



# Marketing and communications

2012 was one of the most intensive years in the history of our company for marketing and communications. We always need to engage constructively with specialists and managers with decades of experience in railway system planning, but also with political decision makers with various levels of technical knowledge, in the projects of our clients. Our communications processes and presentations have to be presented with the target group in mind.



At the start of the year we carried out a number of workshops with the assistance of an external communications agency, which specialises in technology and science, where we collected the key success points from more than 2000 projects that SMA has completed. The new brochures show the start of this process.

Also arising from this co-operation is our new tag line: optimising railways.

These two words reflect the very essence of our activities and are understood internationally. The workshops produced a definition of our five business areas. We have to thank Eggmann-Design who have made a splendid job of designing our documents since the very start of the company for SMA will remain true to itself despite our new image.



The InnoTrans trade fair in Berlin, which ran from 18 to 21 September 2012, was the high point of our year. More than 125,000 professionals from 140 countries visited the fair. SMA appeared with its new image, and we were delighted with the crowds of visitors.

At an Apéro, a Swiss-style drinks reception, we celebrated two happy events with our friends and clients:

Firstly the completion of the new completely revised Viriato planning system, and secondly the 25<sup>th</sup> anniversary of SMA und Partner AG.

## Presentations, lectures and conferences

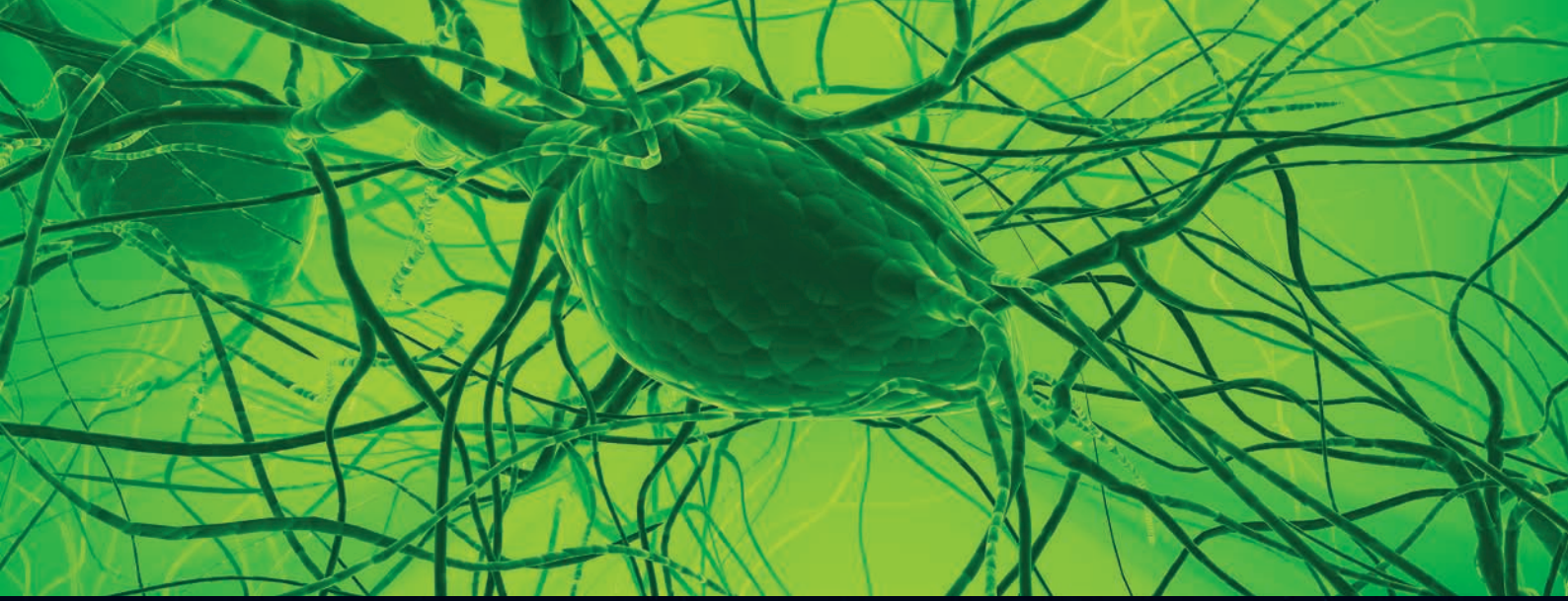
January 23	Washington, D.C.	Presentation to Transportation Research Board in Washington, D.C., Intercity Passenger Rail Committee, on the subject: "Could California Benefit from a Swiss Approach to High Speed Rail?"
March 8	Brussels	TreinTramBus.be: Studietag Bahn2020 Presentation: "Relations entre horaire, matériel roulant et infrastructure, le modèle suisse"
May 3	Lausanne	"Les chemins de fer à voie métrique dans le système suisse de transports publics" at the EPFL "Semaine ENAC 2012"
June 1	Warsaw	"Integration of multiple operators' timetables", Forum of Railway Operators
September 17	Paris	"Génération d'horaires cadencés par PESP (Periodic Event Scheduling Problem)"
November 27	Lyon	"Le cadencement dans l'exploitation ferroviaire" at the ENTPE (École nationale des travaux publics de l'État) Lyon, in the course "Optimisation de l'usage des infrastructures de transport"

## Publications

SER 01/2012	Fahrplan-Revolution in Frankreich
Eisenbahntechnische Rundschau 6-7/2012	Geschichte und Entwicklungsperspektiven der langfristigen Fahrplan-Planungsprozesse in ausgewählten Ländern Europas
SER 12/2012	Netgraph Timetable Switzerland 2013
SER 12/2012	30 Jahre Taktfahrplan, 10 Jahre Netzgrafik Schweiz
SER 01/2013*	Eine Regiobahn durchs Liechtensteiner Oberland

\*Schweizer Eisenbahn-Revue: published in December 2012







# Personnel

**Leadership change** At the beginning of 2013, 25 years after he established SMA und Partner AG, Werner Stohler transferred his shares in the company to a group of long-term employees. This management buyout increases the number of partners at the firm from three to eleven.

Eric Cosandey remains Head of Consulting and is also taking over operational control of the company as CEO. Thomas Bickel, Head of IT, continues as a member of the management team. Werner Stohler is maintaining his connections with the company as a consultant.

So what difference has this made to SMA? The eleven partners have all been in SMA for many years, and they live the traditions and values of the company just as the founders have always done. Needless to say the strategy and independence of SMA remains intact. We look forward to continuing to develop SMA und Partner AG as did its founders.



**Hello and goodbye** At the end of 2012 SMA had a workforce of 60. During the reporting year, six team members left and there were seven new arrivals. Our new colleagues come from three countries.

### **New employees in 2012**

January	Lydia Alonso	Ing. dipl. UPC Barcelona Tech	Planning
January	Stephan Sigg	MSc ETH CSE	IT
April	Urs Dietrich	MSc Engineering	IT
April	Bosko Stupar	MSc Electrical & Computer Engineering	IT
June	Janosch Spillmann	Informatiker EFZ	IT
September	Pierre Robyr	Dr. rer nat., MSc ETH	IT
October	Marietta Lengen	Stud. MSc Psychologie	Planning

During the year we have said goodbye to Armin Häberling, Mike Kaestner (both from IT), Helena Matos (Planning), Felicella Tedesci (back office), Ramon Rey and Romain Orbolato (both on student work experience).



## Staff in 2012

At the end of 2012, the staff profile was as follows:

	Head-count	of which PhDs
Engineer Diploma or MSc	41	
Maths and IT (Diploma or MSc)	8	3
Other academic qualifications (Geography, Planning, Economics)	5	
BA, BSc, technical university	2	
Apprentice	1	
Administration	3	
Average years of work experience	9.9 years	
Average years at SMA	6.3 years	
Average age	34.4 years	

It is worth noting that as previously, a high proportion of our team members have an academic background. Like others, we are naturally aware of the oft-lamented lack of technically qualified people. But once again we have succeeded in extending our proven team with excellent new talent.

**Students** It is our custom to give at least four trainees a year the opportunity of gaining insight into traffic planning and what may become their future career. Of these, one place is reserved for IAESTE (International Association for the Exchange of Students for Technical Experience). This year the IAESTE trainee came from Scotland.

The following students worked for us in 2012:

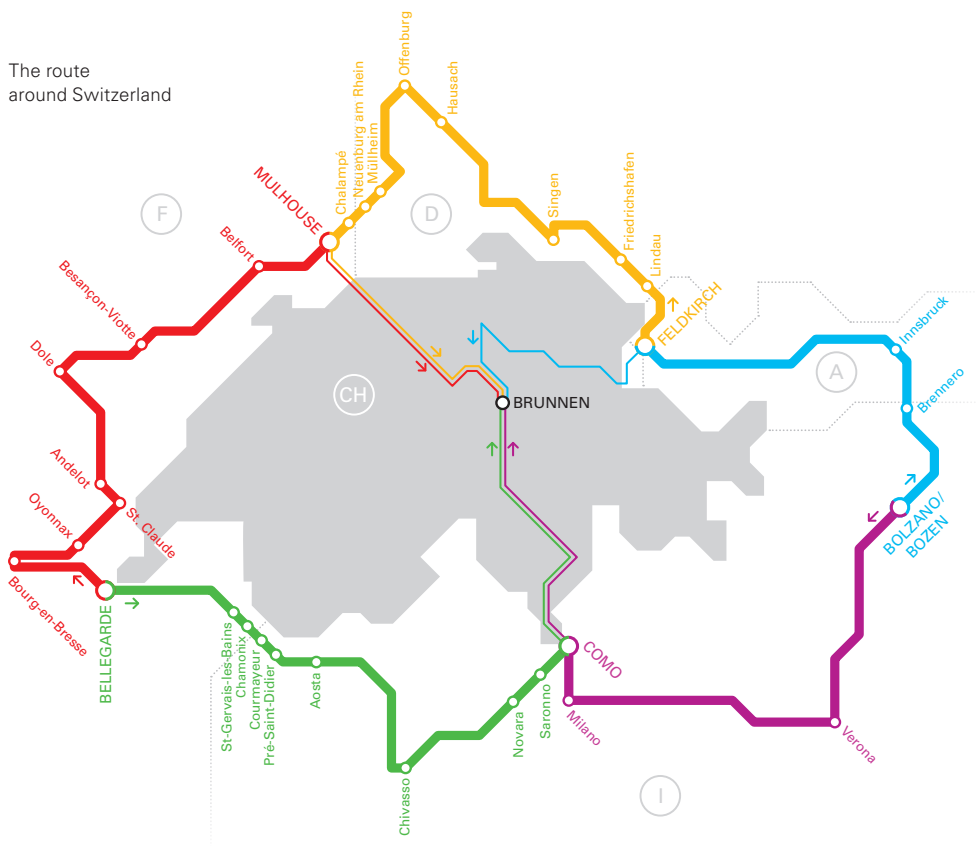
James Karrer	Switzerland
Marc Sinner	Luxemburg
Adam Piechotka	Switzerland
Hamish Pollock Fraser	Great Britain
Jiayi Wang	Germany/China

**Study trip** The history of SMA and the history of annual study trips are inseparable. These journeys are an element in our common past and our company culture which differs in many respects from the thinking of other companies and organisations.

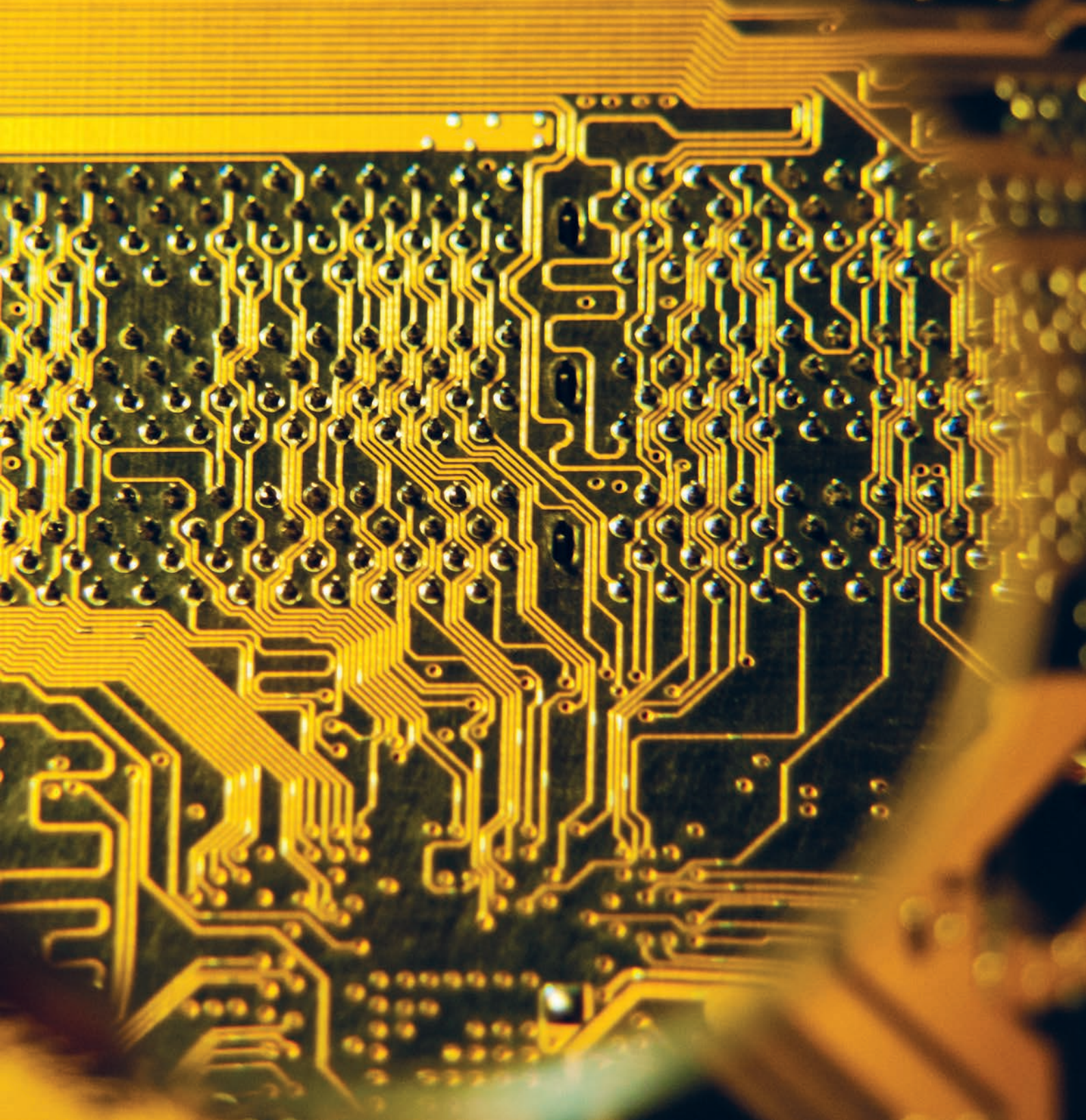
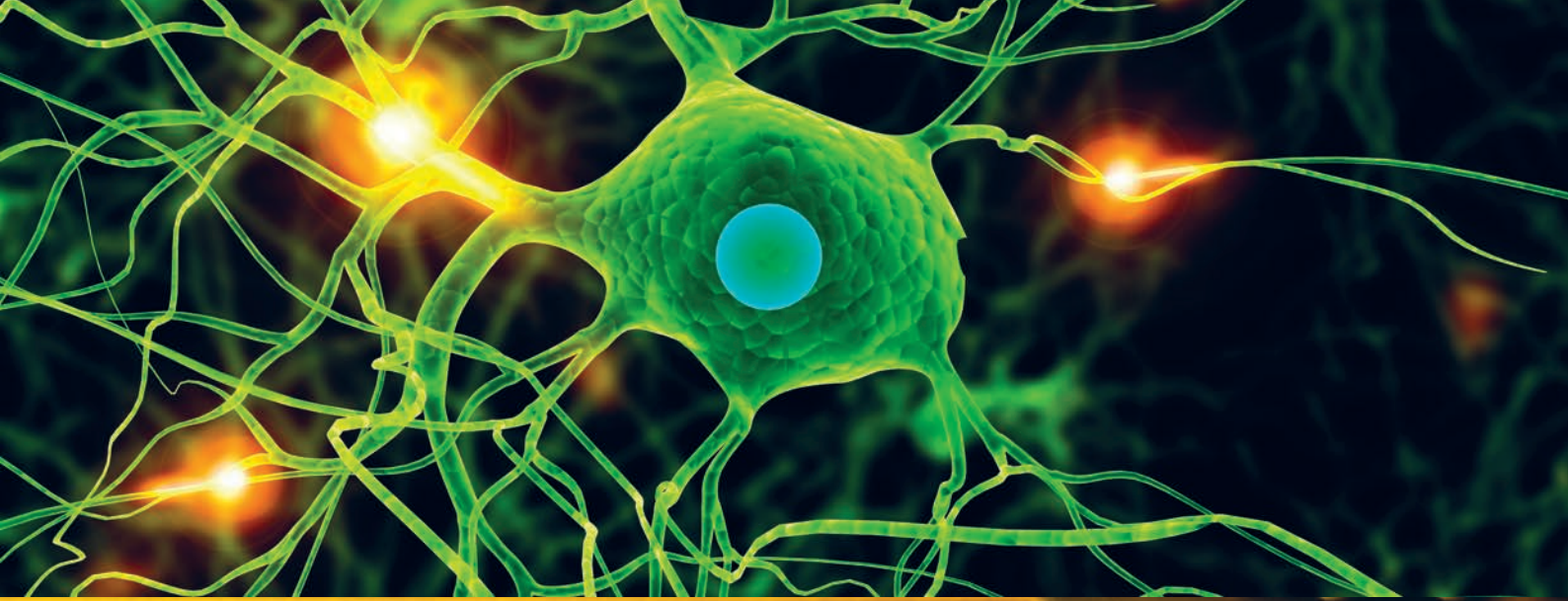
The exact date of the study trip may vary, but it belongs to the rhythm of our year in the same way as traditional bank holidays. It's almost like our daily tea breaks. The study trip offers an opportunity to get to know people, cultures, towns and countries better, usually countries in which SMA is already active or perhaps will be active in the future.

In our early years we made do with a dining car. But since then, dining car compartments have reduced in size and the firm has grown. We have adapted to this development and we have opened a new chapter with the study trip in 2012 on the 25<sup>th</sup> anniversary of SMA. It was a trip in smaller groups who organised themselves and symbolically headed for a common destination. The company has now achieved a size which requires aims, organisation and delegated responsibility.

Travelling around Switzerland close to the frontier on foreign railways is possible. All the groups homed in on Brunnen in the centre of Switzerland, and so closed the circle which over a period of 50 hours they had experienced as a whole. There was a further continuous development day, and the traditional hike, which took place on the Saturday in beautiful sunshine.











# Financial report

**Cold climate** 2012 was not one of the best years for the world economy. The continuing financial crisis in Europe did not leave SMA completely untouched, and many clients are noticeably holding back in their commitments to external consultants. We have on the one hand narrowly missed our targets, but on the other hand we succeeded in extending our range of clients in terms of both their geographical location and their technical needs. We also added a new continent to our portfolio – North America, with the acquisition of customers in the USA.

**Sunny prospects** 2012 was a year of investment, firstly in the next generation of the software programs Viriato and Viriato Enterprise, and secondly in terms of personnel and marketing. We can now be considered for major projects that we would not have had the capacity for even a short while ago. We have prepared the way for success and we all look forward to the future with optimism.

Key figures in millions of Swiss francs	2012	2011
Gross turnover	10.45	11.08
Expenses and external services	0.45	0.78
Net turnover	10.00	10.30
Turnover/colleague (54.8 full-time positions)	0.19	0.21

Turnover by country

- Switzerland
- France
- Germany
- Belgium
- USA
- Various



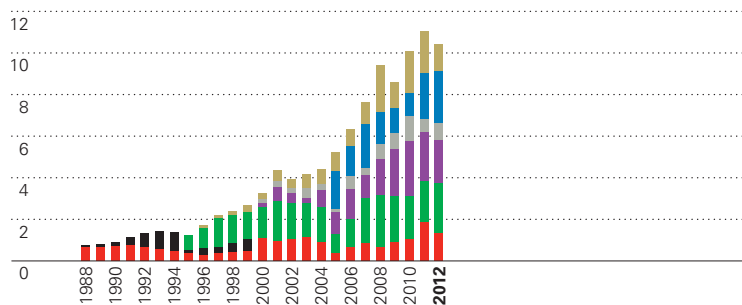
Turnover by client category

- Rail manufacture managers
- Integrated railways
- Transport operators
- Public agencies
- Private companies



Development of turnover 1988 – 2012 (millions CHF)

- Viriato
- IT
- International
- France
- Germany
- Other foreign countries combined until 1999
- Switzerland



# 25 years and beyond – a postscript from the founder

The Annual Report in 2010 bore the motto “Continuity and Change” and addressed the process of a generation change in the company. In the 2012 reporting year, coinciding with the 25<sup>th</sup> anniversary of the founding of SMA, this has come to a successful conclusion. An extended group of partners, all long-term employees, has taken over responsibility for the whole company. The new organisation, which is already in operation, and the management will continue unchanged. For the founder of a company, there can be no greater satisfaction than knowing that his life’s work is being continued and will go on developing.

Rather than looking back at the last 25 years, let us look forwards and ask ourselves where transport systems, and especially railways, will go in the next 25 years. The tension is indeed impressive. On the one hand global networking is racing ahead inexorably with unimaginable quantities of data and transfer speeds. On the other hand, journeys are still physical and subject to natural limits in time and space. Travel times seem constant. If it was previously a one-hour journey to the nearest market place, nowadays it is an hour on the train to work. A day out is still a day out. Journeys will always be judged by human measures. So we are using the new possibilities which IT offers us and remain aware of the physical and political constraints. Consequently the dual strategy of SMA is planning and IT, embedded in cultural values which will remain for all time.

My sincere thanks to the countless clients, colleagues, friends and people I have met along the way, who over the last 25 years have contributed to the success of SMA. I would now ask you all to transfer your trust which I have always enjoyed to the new generation in the company.

Zurich and Lausanne, May 2013
































































Werner Stohler







## Employees and organisation in 2012

<b>Board of Directors</b>	  	<p>1 Werner Stohler Chairman of the Board of Directors and CEO</p> <p>2 Cécile Grünenfelder Stohler Chief Financial Officer</p> <p>3 Peter Weber</p>
<b>Management Board</b>	   	<p>4 Dr. Thomas Bickel Head of IT</p> <p>5 Eric Cosandey Head of Consulting</p> <p>6 Georges Rey</p>
<b>Consulting Division Heads of department and Customer Managers</b>	    	<p>7 Warner Oldenzel</p> <p>8 Frederik Ropelius</p> <p>9 Philipp Schröder</p> <p>10 Luigi Stähli Manager Lausanne office</p>
<b>Employees</b>	                        	<p>11 Lydia Alonso</p> <p>12 Olivia Anders</p> <p>13 Cyrill Bärtsch</p> <p>14 Andreas Berchtold</p> <p>15 Carolina De Boni</p> <p>16 Michael Frei</p> <p>17 Rafael Haas</p> <p>18 Clément Haller</p> <p>19 Pascal Joris</p> <p>20 Pierre Ka-Wai Ho</p> <p>21 Raphael Karrer</p> <p>22 Patricia Kottmann</p> <p>23 Simon Landureau</p> <p>24 Ulrich Leister Marietta Lengen (without picture)</p> <p>25 Marten Maier</p> <p>26 Daniel Mäusli</p> <p>27 Gösta Niedderer</p> <p>28 François Périllon</p> <p>29 Carole Raynard</p> <p>30 Stefano Regazzoni</p> <p>31 Lukas Regli</p> <p>32 Robert Siegel</p> <p>33 Daniel Wipf</p>
<b>IT Division Heads of department and Key Account Manager</b>	     	<p>34 Claudia Wirz</p> <p>35 Florian Zunklei</p> <p>36 Hans Rudolf Akermann</p> <p>37 Markus Apell</p> <p>38 Elie Arnal</p>
<b>Employees</b>	                	<p>39 Matthew Holliday</p> <p>40 Björn Glaus</p> <p>41 Christian Grosse-Wilde</p> <p>42 Alain Bosonnet</p> <p>43 Dr. Dan Burkolter</p> <p>44 Matthias Cavigelli</p> <p>45 Urs Dietrich</p> <p>46 Benjamin Ernst</p> <p>47 Martin Gämperle</p> <p>48 Steve Hauffe</p> <p>49 Pierre Robyr</p> <p>50 Joachim Rubröder</p> <p>51 Michael Schuler</p> <p>52 Lukas Schwab</p> <p>53 Stephan Sigg</p> <p>54 Robert Simons</p> <p>55 Janosch Spillmann</p>
<b>Back office</b>	  	<p>56 Bosko Stupar</p> <p>57 Dr. Markus Ullius</p> <p>58 Rolf Würth</p> <p>59 Lulu Leanza</p> <p>60 Maria Miceli Gozalo</p> <p>61 Barbara Schwander</p>

As of December 2012

<p>December 2012</p>	<p>The presentation on the estimated passenger numbers ensuing from the bus/rail plans in the Aurich area concludes the traffic design work.</p> <p>The Bundesamt für Verkehr (Swiss Federal Office of Transport) awards SMA in conjunction with EBP and Infrac the contract for designing the 2030 expansion of the strategic development programme for the rail infrastructure (STEP).</p> <p>The research commission of SVI allocates research to assess the effects of measures of longer transfer and dwell times. The proposal by SMA and Rapp Trans for the project is successful.</p> <p>SMA is writing an expert report for DB Netz AG, to investigate the integration of effects on capacity of the restoration of the second track on the Rhine bridge at Baerl on the western Ruhr planning with regard to the port hinterland traffic in North Rhine-Westphalia.</p> <p>We have now completed work for DB Netz AG on a reference case for Netzkonzepktion 2030 (network design) and for plans for various German Länder.</p> <p>SMA carries out a feasibility study for the northern extension of the truck transshipment facility, which is planned to take place in the railway base tunnel during the upgrading of the St. Gotthard road tunnel.</p> <p>The building phase optimisation for Platform 4 Strasbourg-Vendenheim, which we have produced on behalf of RFF, is concluded.</p> <p>We write a report for SBB Infrastruktur on the Geneva framework plan for the strategic development of the rail nodes.</p>
<p>November 2012</p>	<p>We start the study to assess the link from St-Etienne to Lyon-St-Exupéry airport.</p> <p>SMA presents 4 workshops with the Repla (regional planning associations) of Aargau on the 2013 public transport programme that extends over several years.</p> <p>In Laupheim we present the results of the service and operation study for the planned Regio-S-Bahn Donau-Iller.</p> <p>We analyse various alternatives for Stadtwerke Ulm for passenger traffic to be restarted on the Senden–Weissenhorn line at the end of 2013.</p> <p>Completion of the study for Eindhoven of service and infrastructure improvements in the Düsseldorf–Mönchengladbach–Eindhoven corridor.</p>
<p>October 2012</p>	<p>SMA provides the Munich S-Bahn with further incident procedures for the 2013 timetable.</p> <p>In the context of the Schaffhausen urban area programme SMA is developing a design study and upwards compatible stages for the development of regional and long distance traffic. Requirements for the Schaffhausen node will be defined on this basis.</p> <p>We are commissioned by BDWM Transport AG to do a feasibility study for the further development of the Bremgarten-Dietikon-Bahn.</p> <p>We implement the railML<sup>®</sup> 2.1 import and export interface for DB AG.</p>

September 2012	<p>BEG commissions SMA to develop a timetable design for the Nuremberg S-Bahn as the basis for the planned call for tender.</p> <p>On behalf of RFF, SMA develops an interface for importing journey time calculations or paths from the planning system THOR into Viriato.</p> <p>On behalf of the canton of Schaffhausen, SMA completes a preliminary survey to establish what infrastructure improvements would be necessary to reduce the journey time from Schaffhausen to Zurich to 30 minutes.</p>
July 2012	<p>SMA supports Thalys in working on the improvement of the international pathways for 2014 and in developing international basic interval connections.</p> <p>The VRR (Verkehrsverbund Rhein-Ruhr) and SMA conclude a framework agreement with the main focus on planning rostering and a workshop design for the "RRX" tendering network in North Rhine-Westphalia.</p> <p>SMA assists in the North Rhine-Westphalia ITF planning of the KC ITF NRW. The main focus in 2012 was on investigating rescheduling of the Rhine-Ruhr-Sieg S-Bahn to a 15/30 minute frequency.</p> <p>We are also working on numerous other planning projects for parts of the network.</p>
June 2012	<p>In the context of estimated capacities for the Lake Constance area we check what effect an improved service would have on demand on the Bodenseegürtelbahn (Lake Constance belt railway).</p> <p>SMA RFF commissions a study to adapt the project of reactivation of Belfort–Delle to an integrated timetabling situation on both the Swiss and French sides.</p> <p>On behalf of FMG we are testing the express track to Munich Airport and an improvement in the capacity of the airport station.</p> <p>For RFF we are updating the studies on service infrastructure to design E1 on the Annemasse network in the context of the Geneva S-Bahn.</p>
May 2012	<p>We are awarded the contract by Bremgarten-Dietikon-Bahn to carry out a demand and operation study.</p> <p>DB Personenverkehr awards us the contract for both railML 2.1 and PCS (Path Coordination System) interfaces in the Viriato timetabling system.</p> <p>SBB orders 2 licences for our Topovisio tool including functional add-ons.</p> <p>BAV awards SMA the contract to implement a comparison of options for a new railway line between Zurich and Rapperswil in a joint venture.</p> <p>Santiago de Chile is planning a denser traffic frequency for its Metro. We are constructing a model for dynamic simulation and providing a basis for increased capacity on the underground with short- and moving-block signalling technology.</p>

<p>March 2012</p>	<p>We are starting a study to evaluate the international rail connection between Switzerland and France, from Neuenburg to Besançon.</p> <p>On behalf of BDWM Transport AG, SMA is analysing the advantages and disadvantages which would result from changing the S17 line to service provision by bus in the Wohlen–Bremgarten West section.</p> <p>There has been a second referendum on the future of the Lindau railway stations. SMA is supporting BEG and DB Netz in the further development of the tender design and the infrastructure in Lindau-Reutin.</p> <p>On behalf of Stadtwerke München (Munich City Utilities) we are developing an alternative solution for the redesign of the Romanplatz tram node which had been made necessary by the implementation of the new western tangent tram line.</p> <p>In Nuremberg we present the contingency variations for the West sector together with its evaluation which we devised on behalf of BEG and VGN.</p> <p>SMA supports SBB in the role of business analyst in the project INFO+ (Swiss national timetable integration system).</p> <p>SMA concludes the operational and timetable optimisation study for 2-minute frequency on the Munich underground and for increased frequency on lines U2 and U6.</p>
<p>February 2012</p>	<p>SMA develops alternative planned objectives for an improvement in the canton of Glarus public transport system which envisages a systematic long distance train stop in Ziegelbrücke.</p> <p>SMA signs a 3-year Framework Agreement with the PI department of DB Personenverkehr (Deutsche Bahn passenger traffic) covering various projects in connection with tenders and infrastructure. We are starting on a study into how the sidings in the Basel Badischer station can be optimised.</p>
<p>January 2012</p>	<p>SNCB Mobility awards SMA the contract to support the development of the new timetable from December 2013.</p> <p>In Nice, we present our study on the effectiveness of the tilting technology for an upgrading of Nice–Genoa connection.</p> <p>SMA and DB Fernverkehr AG sign a framework agreement for support in the VDE8 tender design (Verkehrsprojekte Deutsche Einheit – German unity transport projects).</p>

## List of abbreviations and key organisations

AAFD	Ablösung Altsysteme Fahrdynamik Project to replace train running dynamics calculator
ADL	Adaptive Lenkung Adaptive train driving
ALCA	Alsace–Lorraine–Champagne–Ardenne
BAV	Bundesamt für Verkehr Swiss Federal Office of Transport
BDWM	Bremgarten-Dietikon and Wohlen-Meisterschwanden Railway
BEG	Bayerische Eisenbahngesellschaft Bavarian public transport agency
BNSF Railway	The Burlington Northern and Santa Fe Railway, USA
Caltrans	California Department of Transportation
CG Moselle	Conseil général de la Moselle Departmental council of the Moselle
DB	Deutsche Bahn German Railway
EAE	Eisenbahninfrastrukturgesellschaft Aurich–Emden mbH Railway infrastructure company Aurich–Emden
EBP	Ernst Basler + Partner
ENTPE	École nationale des travaux publics de l'État, Lyon, France
EPFL	École polytechnique fédérale de Lausanne Swiss Federal Institute of Technology, Lausanne, Switzerland
FF	Fahrplan-Fortschreibung Updating timetables
FMG	Flughafen München GmbH Munich Airport
IAESTE	International Association for the Exchange of Students for Technical Experience
ITF	Integrated clockface repeating timetable
KC ITF NRW	Specialist centre for integrated repeating timetables, North Rhine-Westphalia
LGV	Ligne à Grande Vitesse High speed line
LIS-oAES+SPNV	Increased loading gauge for optimised connection of the Emden seaport with rail transport between Aurich and Emden
NSB	Norges Statsbaner Norwegian State Railways
NVBW	Nahverkehrsgesellschaft Baden-Württemberg Local transport agency of Baden-Württemberg
PCS	Path Coordination System
POS	Paris–East France–South West Germany
POS Nord	Mannheim–Saarbrücken Line
Repla	Regional planning association
RFF	Réseau Ferré de France French railway infrastructure manager
RMV	Rhein-Main-Verkehrsverbund Rhine Main Transport Network
RRX	Rhein-Ruhr-Express
SBB	Schweizerische Bundesbahnen Swiss Federal Railways
SBB-P	Swiss Federal Railways, passenger services
SER	Schweizer Eisenbahn-Revue
SNCB	Société Nationale des Chemins de fer Belges Belgian National Railway Company
SNCF	Société nationale des chemins de fer français French National Railway Company
SOB	Schweizerische Südostbahn Swiss South Eastern Railway Company
SPNV	Schienenpersonennahverkehr Local rail services
STEP	Strategic Rail Infrastructure Development Program
SVI	Vereinigung Schweizerischer Ingenieure Swiss Institute of Engineers
TGV	Train à Grande Vitesse High speed train
THOR	A timetabling software system at RFF
TILO	Treni Regionali Ticino Lombardia
VBZ	Zurich Public Transport
VDE	Verkehrsprojekte Deutsche Einheit German Unity Transport Projects
VGN	Verkehrsverbund Grossraum Nürnberg Nuremberg area transport authority
VNR	Vietnam Railways
VRR	Verkehrsverbund Rhein-Ruhr Transport authority Rhine-Ruhr
ZLR	Zuglaufrechnung Running time calculator
ZVV	Zürcher Verkehrsverbund Zurich Transport Network

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