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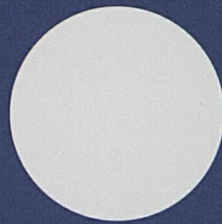
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Infrastructure





A close-up, profile shot of a man with short dark hair, looking intently at a computer monitor. The monitor displays a complex technical diagram with various lines and a prominent red circular area. The background is dark with some out-of-focus lights.

# We join.

The Operating Management is increasingly being centralised. Monitoring and controlling of the ever denser train traffic, and the guarantee of a high security standard, are now unthinkable without automation of all routine proceedings. Yet also at the highly technicalized operating management, it is the human being operating the machinery and intervening in case of failures, who ultimately is the decisive factor.









SITUATION 1:100

Legende Fahrleitungen  
Gleitwand





# We realise.

In a few years, the Intercity trains shall cross the present line Olten–Bern near Roggwil at a speed of 200 km/h over a bridge. The SBB not only plans big projects for the railway of tomorrow, but it is also responsible for the timely and cost-efficient realisation. This is an exacting task, especially at the new line construction Mattstetten–Rothrist, where construction was delayed a number of years for juridical reasons, and where construction is now proceeding at full speed, so that in 2005, revenue service can be taken up.



## Infrastructure

**The Infrastructure Division has reorganised itself new, assuming responsibility for results, and putting the client first. With a benefit of CH 78.4 million, the division has reached the goal of a balanced account.**

The Infrastructure Division has grown out of the former Infrastructure Department. Its main remit consists in maintaining, operating and further developing the infrastructure, in order that the railway can become faster, more comfortable, safer and more reliable. This means that the installations must be built in a client-oriented and cost-driven way, and that they must be operated efficiently. To reach these goals, productivity must be improved every year.

In order to meet all these requirements, the Division was restructured. The new organisation distinguishes itself by flat hierarchies and clear attribution of competence and responsibility. The business fields Finances and Network Management, Major Projects, Fixed-Asset Management, Maintenance, and Operation Management, form together the "core business" of Infrastructure. They are responsible for a best-possible use of the existing railway network, its further development, as well as for safety and quality. The other business fields (Development and Technology, Construction Logistics and Purchase, Real Estate, Telecom, Energy, Personnel, and Legal Service) in a way are ancillary suppliers, providing services for the core business of the Division, or for passenger or freight traffic, or third parties.

### Train Path Sale

The Infrastructure Division's main source of income is the sale of train paths (time windows for train runs). The aim is to make a best-possible use of the existing railway network and thus to maximise profits. In the past year, the income from the sale of train paths amounted to CHF 647.4 million.

The sale of train paths to clients in and outside the SBB is a new task of SBB infrastructure. Since 1st January 1999, network access by third parties is possible in freight traffic and in parts of passenger traffic. The SBB grants network access to authorized railway undertakings against a usage charge, to the same conditions as valid for its own operators. The sales office works in a result-oriented way along the principle of non-discrimination, and observing the provisions of the Network Access Ordinance. Appeals against decisions in train path attribution are possible to an independent authority of appeal set up by the Federal Council.



Punctuality is a prime target of the SBB.

In 1999, network access contracts were concluded with 25 different undertakings. Since the timetable change, the SBB network was used daily by around 150 trains in the open-access regime. Compared with the around 6900 trains of passenger and freight traffic of the SBB every day, this number is still small, but not insignificant.

In passenger traffic, SBB tracks are used by the Cisalpino AG and the GIE (TGV traffic) in international traffic, and by the BLS and the "Regionalverkehr Mittelland" (RM) for the S-Bahn of Bern.

In freight traffic until today, mainly train paths for block trains are on demand. In this high-yield area, an increased competitive pressure can be noticed. As there is mainly intra-modal competition, the network access has scarcely led to additional railway traffic, a declared objective of the railway reform. This is due, among other things, to the fact that before the coming into force of the bilateral agreements with the EU, network access is limited to domestic traffic. Apart from that, it is possible that demand could also increase in combined traffic in future. It must be mentioned however, that the Freight Freeways, launched by the EU in 1997 with the concurrence of the SBB, have not yet met with any significant demand. One reason is no doubt the still too big differences in national regulations.



The railway network is always more intensively used,  
and the leeways in timetable  
planning are always getting smaller.



Safety at construction sites  
is a big challenge for all.

## Safety and Quality

### → Punctuality targets only partly reached

In 1999, the punctuality targets in passenger traffic could only partly be reached. The target of 75% of the trains to reach their destination with a delay of not more than one minute, could, with a figure of 77%, be attained. However the target of 95% of trains with a maximum delay of 4 minutes could, with a figure of 92%, not be reached. Two main reasons for this are to be mentioned.

On the one hand, the extreme weather situations that were experienced several times. Heavy snowfall in February, floods in the early summer, and the hurricane Lothar shortly before the end of the year, put great demands on Operation Management. On the whole, these difficulties were well mastered, and the inconveniences to clients could be kept within limits, considering the circumstances.

On the other hand, quality risks were deliberately taken with the timetable 99, in order to develop new and better offers. This in part had repercussions on punctuality on some connections. Targeted measures brought lasting improvements.

Timetable stability in Switzerland is also largely influenced by the situation beyond the national borders. Now as before, punctuality of the international passenger and freight trains, particularly from the north and south, is unsatisfactory. This rendered on-time train operation on the Gotthard line more difficult. Only thanks to a highly developed art of improvisation, record volumes of goods could repeatedly be mastered. In international freight traffic, therefore no statements can be made regarding punctuality. In domestic traffic, the punctuality targets in freight traffic (90% of the trains with a delay of less than 30 minutes) was surpassed with 94%.

### → Tightening and easing of the timetable

In the past years, the SBB continually improved its offer with the phased introduction of Rail 2000, first stage, and with various S-Bahn projects. With the realisation of further projects (Rail 2000 2nd stage, AlpTransit, and connection to the high-speed network), the offer is further rounded-off with attractive rail connections. With this additional traffic, the existing rail network is used always more intensively, and the leeways in timetable planning are always smaller. In view of the already very high utilisation of the network, the density of the different types of traffic and the free network access, the continuing increase of the timetable offer is only possible thanks to top performances in this area.

Each intensification of the timetable sequence puts punctuality at a risk because it reduces stability. For this reason, each step of extension is followed the next year by a "small" timetable change, in which certain instabilities are corrected. The timetable changes in the past years were marked by a two-year rhythm of tension/improvement (97/99) and relaxation (98). This pattern will be continued also in the coming years. Despite use of the latest electronic tools in timetable planning, the fine finishing must be done by hand in real time.



### → Automation of operation management

Seen the ever increasing utilization of the whole network, the operation management is faced with a big challenge, because also in future, clients want to arrive at their destination safely and punctually. This means that because of the always shorter headways and higher speeds, quality and safety must be accorded a yet higher priority. The operation management however cannot fulfill these requirements with the existing technology and working methods. Operation management will be automated step by step. Automation improves the overview on the whole operating situation, shortens communication ways and prevents losses of time, as well as misunderstandings. The transformation is already in progress. In a few year's time, each station will be remote-controlled by one of the around 30 remote control centres.

### → Construction site and failure management

The numerous engineering works on the network are a special challenge for a punctual and safe operation management. In 1999, on average 180 worksites were in operation every day.

Also the failure management must be further professionalised. With a systematic planning of large-scale works of supervision, of restorative and of preventive maintenance, it was possible to keep the number of failures and urgent repairs at a low level. Nevertheless in case of a failure, mobile teams of specialists from different specialised fields see to a quickest-possible repair.

### → Safety audits

Safety audits rank very high in importance within the Operating Management and Maintenance. The safety aspects are broken up into the areas industrial safety, operational safety and dangerous goods.

In the business field Operating Management alone, more than 800 audits were carried out in regard to industrial safety. Normally the auditor intervenes with the staff directly after assessment. By an active communication, the safety standard can be kept high.

In the area of operational safety, audits are carried out at train operation, as well as shunting services. Main points assessed in 1999 were the departure processes, the application of train service prescriptions, and the protection of passengers on platforms from passing trains. Based on 47 audits in this area, numerous optimisation measures were ordered and for the most part already put into practice.

Nearly as many audits (41) were carried out in the area of dangerous goods. There, it was mainly a matter of checking if the prescriptions are applied by the railway and the senders. It was gratifying to note a further reduction in the number of objections.

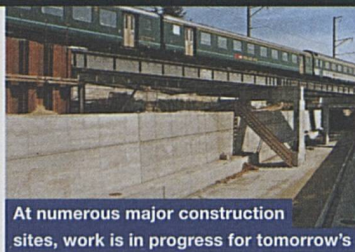


## Network Development

### → Selective disinvestment

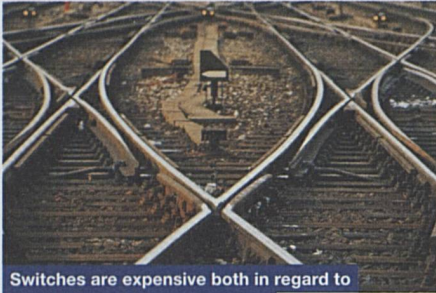
The railways' hitherto strong orientation on the technical and operational aspects had the consequence that many installations were too liberally dimensioned in order to cater for all eventualities. The costs of this "keeping in reserve" were given too little attention. Today, a regular fixed-assets management is applied, and more importance is laid on economic efficiency. Installations that are not used, are removed in order to save maintenance costs. In the scope of the project "Lean Infrastructure", the whole SBB network has been checked for such possibilities to economise. Of course not only the present needs were taken into consideration, but also future ones. As a result of the studies, numerous installations that require much maintenance were earmarked for dismantlement. So for instance 190 km of track, and 2700 switches, one sixth of the total number, can be removed.





At numerous major construction sites, work is in progress for tomorrow's railway.

The second stage of Rail 2000 shall enable a further leap in the quality of the overall system.



Switches are expensive both in regard to procurement and maintenance.

The realisation of disinvestment has started and 31% of the measures are already turned into effect. The initial strategy of removing the installations only when the next renovation becomes due, has been revised. The "Lean Infrastructure" has been termed a key project of company-wide importance, and implementation was speeded up. Until 2005, the disinvestments shall be terminated, so that the costs of operation and maintenance of the infrastructure can be lastingly reduced.

#### → Rail 2000 makes good headway

Tomorrow's railway is under construction. Realisation of single projects of the first stage of the Rail 2000 scheme is in full swing. The major projects "Neubaustrecke Mattstetten-Rothrist", extension of the Zurich knot, and the double-track tunnel Zurich-Thalwil are in construction. The new lines near the Lake of Neuchâtel could be partly taken into service already. The 3rd track between Coppet and Geneva is under construction, the Adler tunnel between Muttentz and Liestal, and the tunnel between Vauderens and Siviriez are pierced through. Apart from these major projects, many smaller measures are on course, such as new track alignments, closing of gaps in the through doubling of tracks, new train control systems for shorter headways, and numerous other measures are taken to adapt the performance capacity of the railway network to the growing demands.

Until the end of the year, close to one fifth of the new constructions of the first phase were taken into service, and over half of them are in construction. The ambitious realisation schedule until the year 2005 can be adhered to until now. The costs are under control and will, in today's view, be considerably below the approved amount.

While the 1st phase of Rail 2000 is being realised, the concept studies for the 2nd phase have begun. In effect it is the long-term further development of the system of public transport in Switzerland. The aim is not to realise some individual projects, but to enable a further leap in the quality of the overall system. To achieve this, the individual projects must be chosen so as to achieve the greatest network-wide benefit and an improvement of the economic efficiency of the system as a whole.

In an exemplary form, the procedure was tested with the project "railway perspectives for the economic area of Zurich". This was triggered by a strong opposition from the public against the planned extensions around Zurich's main station. In cooperation with the Cantonal Office of Transport, the Traffic Community of Zurich, and the Municipality, the SBB have prognosticated the traffic developments until 2025. Derived from them, the corresponding offers of public transport were defined, and infrastructure variants were developed. A decision on the choice of a variant is expected for November 2000.



### → Tunnel boring at the Gotthard is under way

The other mega-project of the SBB, the Gotthard axis of AlpTransit, is the responsibility of its subsidiary AlpTransit Gotthard AG. In autumn, the construction works at the base tunnel could be started. The aim is to open the tunnel and its access lines to traffic in the year 2012.

### → Innovation and technology

Also railway technology is in a constant process of change. With a professional innovation management, the SBB wants to systematically recognise and open up fields of application for new products, methods and procedures. Thereby, cost control and technical reliability must be given the highest priority. The business field Development and Technology is responsible at corporate level for making available new technologies in the railway field, while implementation is in the competence of the business areas concerned.

The most important projects of the SBB in regard to new railway technologies are:

- Locomotive driver cabin signalling ("cab signalling")
- Fully automatic client information
- Automation of operating management
- Noise abatement measures on the rolling stock

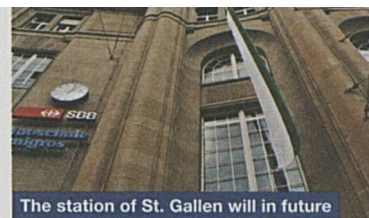
These projects are very diverse in nature. The common denominator is that the new technologies must provide a higher productivity at lower costs and higher quality.

### Real Estate

The business field Real Estate performs two important functions for the infrastructure. It carries the responsibility for safe and inviting stations giving easy access to the railway. Stations shall be designed as attractive services, shopping and communications centres, and the surrounding areas shall be developed as busy sites with working places well served by public transport. This enables the SBB at the same time to increase the revenue from its properties. They generate a substantial contribution that enables to lower the infrastructure costs and to relieve the operating account.

In many big cities, station refurbishments took place:

- In Geneva, the extensive renovation of the west wing was started. This will provide space to open a new restaurant and shops on the ground floor in autumn 2000.

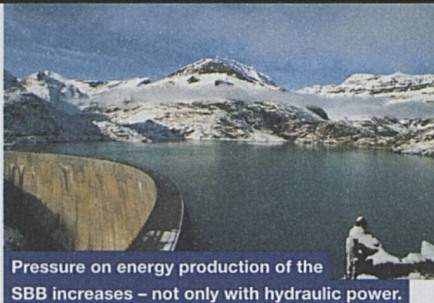


The station of St. Gallen will in future be a place of much learning.

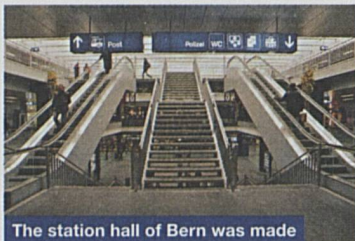
- The station hall in Bern was completely renovated and made more spacious, with new stairs and an arcade on the gallery floor.
- With the inauguration of the new western tract in Lucerne, the 28 years long planning and construction time of the new structures on the station compound could be terminated.
- In Winterthur, construction of the new office building "Stadttor" near the main station was started, realised by a total contractor commissioned by the SBB.
- In St. Gallen, the rehabilitation and transformation works of several years' duration, could be terminated. New shops were opened and the Migros Club School could move into its new centre.

With new technologies,  
a higher productivity at lower costs and  
with better quality shall be achieved.





Pressure on energy production of the SBB increases – not only with hydraulic power.



The station hall of Bern was made more spacious.

A promising model worked out by Real Estate is the project "avec.", because it not only enables to increase revenues from SBB properties, but it also satisfies the wish of Passenger Traffic for new forms of station occupancy. "avec." is a joint venture of the three partners Migros, Kiosk AG and SBB, each of them bringing its core competence into the project. The "avec." scheme consists of a services centre requiring but a minimum of space, with coffee bar, kiosk, groceries, ticket sale and communication possibilities, awarded as franchises to independent shopkeepers. After the success of the first "avec." shops in Schüpfen, Brugg and Mettmenstetten, over 50 such shop establishments are planned over the next years.

## Energy

Until a few years ago, energy policy of the SBB was centred on security of supply. For a long time, the SBB fared well with this solution, because electrical energy could be produced in its own power plants at relatively little cost. As a consequence of the Europe-wide surplus of electrical energy, its price on the free market has gone down very much. In addition, the SBB has, years ago, concluded contracts with foreign suppliers, at conditions that under the present circumstances lie considerably above the market price. Thus the SBB must buy electrical energy which it does not need itself, and which it can re-sell only at a loss.

Apart from this, the SBB's own power plants, like all power plants in Switzerland, produce electrical current at costs that differ from each other. More recent power plants that were built or upgraded in expectation of increasing consumption, as for instance Amsteg, have relatively high prime costs.

In spite of increasing traffic, consumption of electrical energy decreased in the past 10 years. From an ecological point of view, this efficiency gain is to be welcomed, however it aggravates the problems of the business field Energy. This is faced with a fundamental reorganisation. In 2000, it will be decided on the future strategic orientation, after assessment of all possible options. Besides, it is to be mentioned that the valuation of the business field Energy in the opening balance sheet has been left open for the time being.

## Telecom

The business field Telecom is responsible for satisfying the requirements of the SBB in the telecommunications area reliably and at little cost. Apart from the installations for operational communications at the stations, this business field must also supply the capacities for a big part of the rapidly growing data communication within the whole enterprise SBB, for instance for the Intranet. Thereby, the own optical fibre cable with a length of some 2000 km does good service. Lately, the business telephone sector was put out to tender.

One future-oriented task of Telecom SBB is the taking into service of a GSM-R network between Olten and Lucerne. Based on the well-tested GSM technology used for mobile telephony, a radio system for the in-cab signalling system is being developed. This enables to do without lineside signals and is the precondition for speeds over 160 km/h, hence for running over the newly built lines. As from the year 2000, trial runs will take place on the test sector Olten–Lucerne.

In spite of increasing traffic,  
current consumption  
decreased in the past 10 years.