Summary of the study
"SBB Work Environment of the Future 2025-2035"

A study initiated by the SBB Digitalisation Fund

SBB CFF FFS

sev — Gewerkschaft des Verkehrspersonals
Syndicat du personnel des transports
Sindacato del personale dei trasporti

transfair
eigenständig. mutig. persönlich.

Kaderverband des öffentlichen Verkehrs KVöV
Associazione dei quadri dei trasporti pubblici AQTP
Association des cadres des transports publics ACTP
www.kvoev.ch   www.actp.ch

VSLF
Verband Schweizer Lokomotivführer und Anwärter
Syndicat suisse des mécaniciens de loc et aspirants
Sindacato svizzero dei macchinisti e aspiranti

pwc
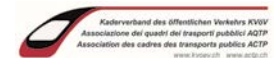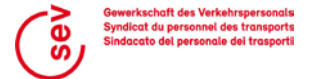
Disclaimer: The study results presented reflect the current status of results and are part of further investigations. The results will be further refined and are therefore not yet finally validated.

The main points at a glance

- The "SBB Work Environment of the Future" baseline study commissioned by the SBB Digitalisation Fund is now complete. The results and measures will lead the way for SBB and the social partners in creating a future-oriented work environment.
- The study assumes that by 2035 SBB's workforce will remain at the same level as today or could reduce by up to around 15 per cent. The range is the result of two different future variants of digitalisation and automation[1].
- By 2035, significantly more employees will be retired than jobs are expected to be lost as a result of digitalisation. Even if SBB employs fewer people in the future due to automation, the decline can, in principle, be cushioned by retirement and natural fluctuation.
- The current shortage of skilled workers will therefore continue to increase on the labour market as a result of demographic developments (e.g. particularly in IT and data science, but also in rail-related professions such as locomotive drivers or customer service representatives). Comprehensive recruitment efforts will be necessary in these profiles.
- In certain occupational groups where automation is possible, a labour surplus could result, e.g. for fitters or in procurement. Here it will be a question of further developing current jobs.
- A large proportion of SBB employees will be affected by digitalisation. Far-sighted planning and targeted measures in the following areas should cushion the shortages and surpluses of workers and specialists at an early stage:
  - Development and further training of the required skills (lifelong learning)
  - Retraining and more flexible forms of work
  - Increased presence on the labour market and targeted use of technology (e.g. automation)
  - Securing railway know-how, particularly in view of retirements
  - Development of instruments that cover mutual and future needs under the terms of employment contracts
- In addition to the Digitalisation Fund, SBB will continue to provide a comprehensive and future-oriented range of training opportunities (e.g. "fit4future") in order, among other things, to secure and further develop the company's valuable rail expertise in the long term.
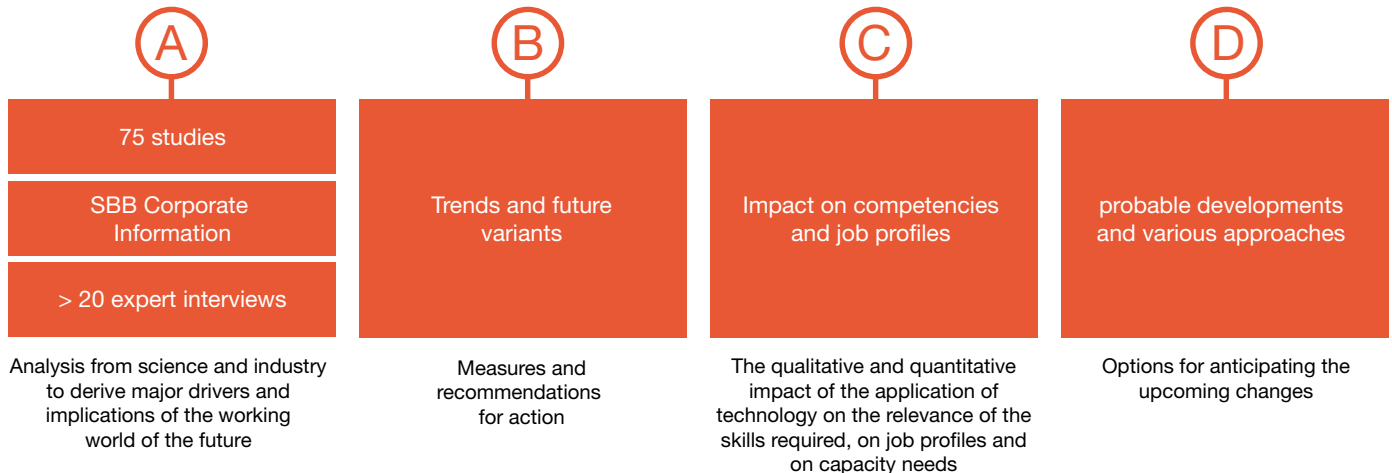
[1] Automation refers to the complete replacement of certain activities within a role by technology, so that this activity is no longer performed by humans (for example, automated data processing in accounting).

The baseline study "SBB Work Environment of the Future 2025-2035" shows what the change in the work environment due to digitalisation could look like and how it can be shaped for SBB

The baseline study was produced by the consulting firm PricewaterhouseCoopers (PwC) with the collaboration of ETH Professor Gudela Grote and was closely monitored by SBB and the social partners. The study summarises the findings of 75 relevant scientific studies and over 20 expert interviews on the topics of digitalisation, mobility and changes in the work environment, supplemented with information from SBB. For the timeframe of 2025 to 2035 it shows, against the backdrop of two different variants, how the occupational profiles could change, where jobs may be created or lost and which skills will be in

demand in the future. It also provides SBB with recommendations for action, taking into account existing internal initiatives and programmes.

It is not possible to predict the world of 2025+ nor the exact development of technology. The study illustrates potential developments of SBB's work environment and presents various approaches to proactively shaping change in response to technological development.

A	B	C	D
75 studies			
SBB Corporate Information	Trends and future variants	Impact on competencies and job profiles	probable developments and various approaches
> 20 expert interviews			
Analysis from science and industry to derive major drivers and implications of the working world of the future	Measures and recommendations for action	The qualitative and quantitative impact of the application of technology on the relevance of the skills required, on job profiles and on capacity needs	Options for anticipating the upcoming changes

(A)

Studies and expert interviews show that the total number of jobs in Switzerland will remain the same but that the skills will change

The first step was to research the scientific foundations of the topics of digitalisation, mobility and changes in the future work environment. In a second step, the insights gained were examined in the SBB context, i.e. what adjustments will result for the SBB work environment of the future.

Results from science, studies and expert interviews

- The studies differ greatly in their statements on the development of the number of jobs. The impact on the work environment can vary depending on the country and sector.
- It is quite possible though, that the number of jobs within some companies will change considerably as a result of the developments. Technologisation and artificial intelligence will automate individual job profiles, create new profiles and change the focus of existing ones.
- From an economic perspective, the total number of jobs in Switzerland is not threatened by digitalisation. However, significant shifts in their type and characteristics are to be expected.
- There is greater consensus between the studies on the skills required in the future. The relevance of skills that require analytical understanding, creativity, innovation and interdisciplinary skills (e.g. social and emotional intelligence) will increase.
- Although routine activities will decrease, this does not mean that the basic cognitive and/or physical abilities required for these will be obsolete. However, the focus is shifting towards higher cognitive and analytical abilities.
- There are indications that jobs with high qualification requirements will increase and those with medium to low requirements will decrease.

Three most frequently cited megatrends

The three most frequently cited megatrends that influence SBB's work environment are digitalisation, future mobility and demographic change. These trends are embedded in an overall system that is changing due to increasing competitive pressure, changing customer needs and new legal requirements.
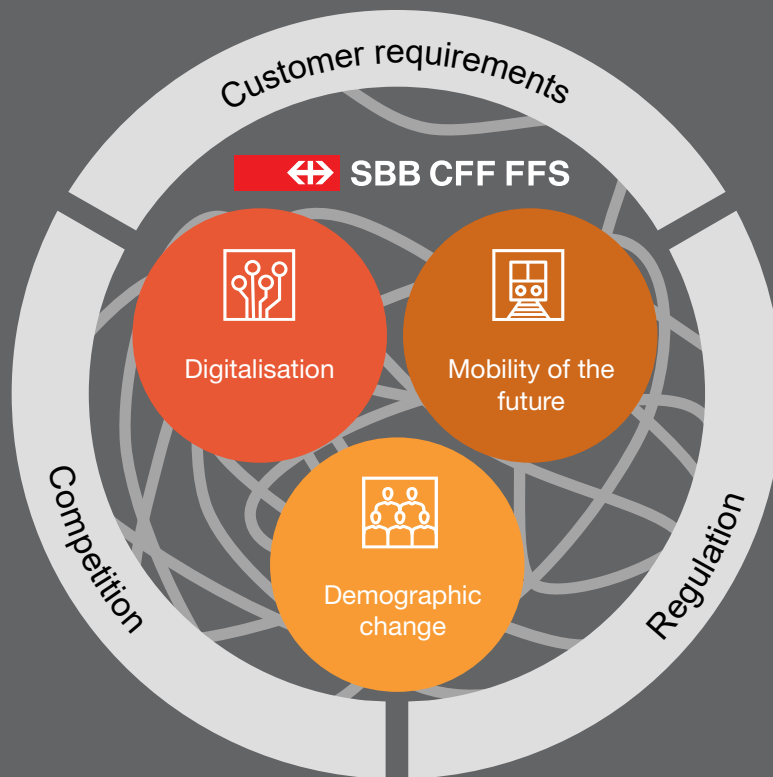
Two variants of the future
The variants both assume that there will be multimodal mobility but they differ in the extent of digitalisation and technologisation.

New networked mobility PLUS

In the "New Networked Mobility PLUS" variant, technologies are applied that relieve the SBB workforce, especially in their cognitive activities. For example, external and internal communication is supported by automated language assistance. Process automation increases efficiency in finance and personnel management, and algorithms combined with historical data facilitate decision-making in the areas of line planning, maintenance and personnel management. Robotics will also be used in the same way as in the automotive industry, mainly for maintenance work, thereby reducing physical strain on employees.

This variant represents a substantial change of the future SBB work environment due to the use of technology:

- The degree of technologisation is increased and strongly accelerated.
- Many work activities are automated.
- Data and information are intelligently linked and knowledge is even easier to access.

Integrated public transport PLUS

In the "Integrated Public Transport PLUS" variant, simple and recurring employee activities and processes are automated. In addition to process automation in finance and personnel management and robotics in maintenance-intensive areas, other robots are used, for example, which can detect defects in the rail network at an early stage using sensors. In addition, predictive analyses facilitate investment decisions and the planning of maintenance periods.

This variant is based on a lower level of technologisation and thus less pronounced effects on SBB's future work environment:

- Technologies are generally adopted more slowly, are used as a complement and, in some cases, heavily regulated.
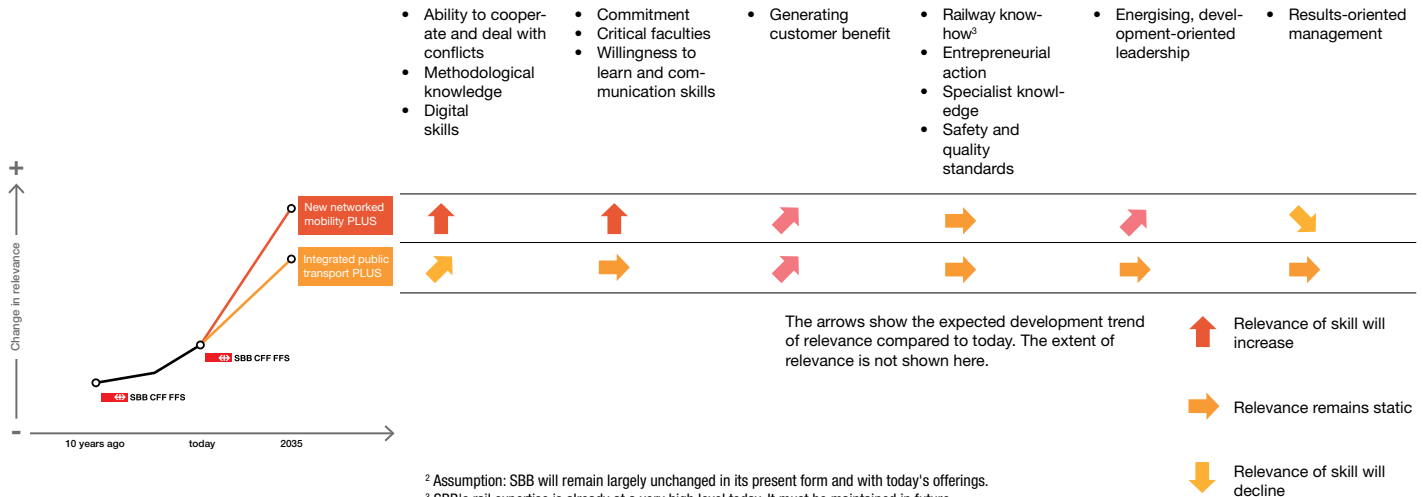- Technology is used more as a complement than as a prerequisite for work.

The future formula for shaping the work environment at SBB: Supplementing railway know-how and extending it with interdisciplinary competencies

Together with SBB experts, the occupational fields were assessed on the basis of the SBB Skills Model as to how the relevance of the 13 skills will potentially change by 2035 in the two future variants. SBB will remain a company driven by railway know-how with a mix of technologies. This means that old and new technologies (e.g. for the safety systems) operate simultaneously. This requires the corresponding parallel railway skills over an extended time period. In addition, cross-disciplinary skills, such as social and emotional intelligence, generating customer benefits, cooperation (including network and community) and conflict skills as well as digital skills are becoming increasingly relevant.

Development of the relevance of the 13 skills in each variant[2]

- Ability to cooperate and deal with conflicts
- Methodological knowledge
- Digital skills

- Commitment
- Critical faculties
- Willingness to learn and communication skills

- Generating customer benefit

- Railway know-how[3]
- Entrepreneurial action
- Specialist knowledge
- Safety and quality standards

- Energising, development-oriented leadership

- Results-oriented management

The arrows show the expected development trend of relevance compared to today. The extent of relevance is not shown here.

Relevance of skill will increase

Relevance remains static

Relevance of skill will decline

[2] Assumption: SBB will remain largely unchanged in its present form and with today's offerings.
[3] SBB's rail expertise is already at a very high level today. It must be maintained in future and be developed further in the context of the new technologies.

Changes in skills in the two variants

New networked mobility PLUS

- Strongly increasing relevance of personal skills (e.g. commitment), social competencies (conflict, criticism and cooperation skills - incl. network and community) as well as methodological knowledge. This shows the increasing importance of multidisciplinary and digital skills.

- Decreasing relevance of "results-oriented leadership" and increasing relevance of skills in "energising and development-oriented leadership". This is due to the increasing importance of value-oriented leadership, self-organisation with individual coaching and a trend away from pure results management and strong coordination. At the same time, there will be areas where, for example, stability is more important than agility and vice versa.
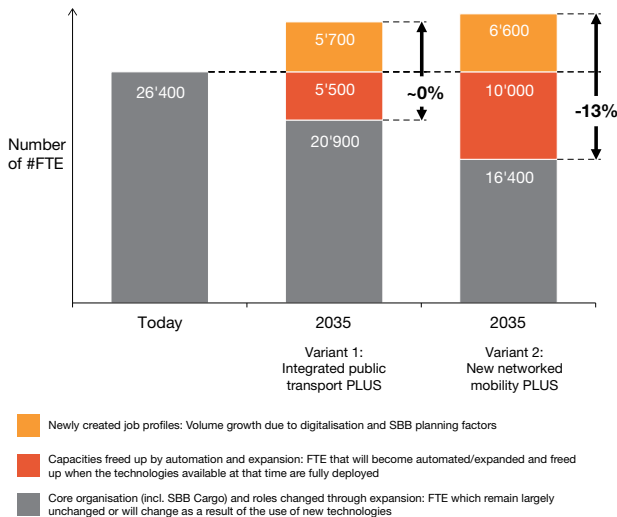
Integrated public transport PLUS

- The changes are more moderate. Abilities to cooperate (including network and community) and deal with conflict, methodological knowledge and generating customer benefits are the skills that will gain the most relevance. This shows the increasing importance of interdisciplinary skills. Digital skills are necessary especially for the interpretation of data in cooperation with technology.

- The leadership skills of "results-oriented leadership" as well as "energising and development-oriented leadership" will remain more or less the same. Leadership is characterised by a balance of values orientation and results orientation.

Digitalisation frees up capacities through automation and extension[4] and results in the creation of new jobs

Expected development of the SBB workforce in the two variants

Number of #FTE

| | Today | 2035 Variant 1: Integrated public transport PLUS | 2035 Variant 2: New networked mobility PLUS |

- 26'400 (Today)
- 5'700 / 5'500 / 20'900 (Variant 1) ~0%
- 6'600 / 10'000 / 16'400 (Variant 2) -13%

■ Newly created job profiles: Volume growth due to digitalisation and SBB planning factors

■ Capacities freed up by automation and expansion: FTE that will become automated/expanded and freed up when the technologies available at that time are fully deployed

■ Core organisation (incl. SBB Cargo) and roles changed through expansion: FTE which remain largely unchanged or will change as a result of the use of new technologies

[4] Extension is the support of certain activities through technologies, so that capacities can be freed up or efficiency in the role can be increased (e.g. train traffic managers focusing on monitoring). In this case, it should be noted that part of the time is spent in the interaction between human and technology and part of the time is free for taking on other activities.
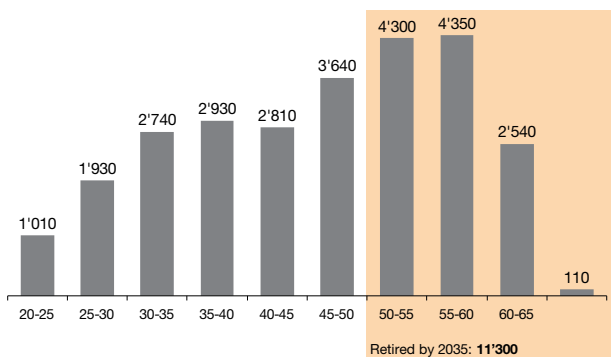
Conclusion for SBB based on the quantitative analysis

- The quantitative analysis of the two variants foresees a range of job loss potential from a constant headcount (0%) to around 13% in the timeframe leading up to 2035. Based on the framework conditions known today, it can be assumed that the development over the next 15 years will remain between these two variants and that a slight reduction in capacity is be expected.

- In the respective variants, it can be assumed that approximately 5,500 or 10,000 FTE respectively will be released through automation and extension. This reduction will be offset by around 5,700 and 6,600 new FTE respectively, required as a result of digitalisation and SBB planning factors.

- These plans will lead, among other things, to a need for additional employees, because SBB's seat kilometres offered will increase by 2035, as will maintenance of rolling stock and investments in the railway infrastructure.

- Digitalisation will affect a large part of the SBB workforce, as tasks and activities will be automated, existing job profiles will change and new jobs will be created. In particular, an increase in jobs for highly qualified employees and a decrease for medium and low-skilled employees is to be expected.

- In addition to today's rail-specific expertise, skills profiles especially in the areas of IT (software, infrastructure, security, etc.) and data science (data analysts, data engineers, etc.) will gain relevance by 2035.

By 2035, the number of people going into retirement will exceed the number of jobs that are automated due to digitalisation.

Age structure of SBB workforce (#FTE)

1'010	1'930	2'740	2'930	2'810	3'640	4'300	4'350	2'540	110
20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	

Retired by 2035: **11'300**

Notes:
- As far as the capacities freed up by automation and extension are concerned, these are activities that are distributed across multiple people and not whole positions.
- The age structure is a static view, e.g. entries and exits are not reflected.

Conclusion for SBB based on the demographic development

- By 2035, through automation and extension, a constant headcount (variant 1) up to free capacities of approx. 3,400 FTE net (variant 2) can be assumed. This can be set against more than 11,000 retirees. The demographics, i.e. retirements and fluctuations, in some instances thus far exceed the potential automation figures by 2035. The results should be put into perspective insofar as the age structure is a static view and, for example, does not show future entries and exits.

- For certain occupations, a particularly strong retirement wave will be seen until 2035 due to demographic developments, affecting up to approx. 50% of jobs within these occupations. This is most extreme for the "train driver" occupational group, for which there will even be a shortage of around 1,500 locomotive drivers due to demographic effects.

- In principle, the possibilities offered by technology put SBB in a position to partially compensate for demographic risks through automation and digitalisation and thus respond early to upcoming retirements or absorb them.

The study uses best practice examples to show that there are different ways of dealing with change in the work environment through digitalisation

There is no such thing as a "universal approach" but certain patterns and success factors can be identified and were adapted for SBB.

Defining a capability-driven strategy

Define strategic and differentiating skills and competences within the company

Focus on the customer

Identify key moments for the customer that make the difference

Use new technologies

Embed technological innovation in the overall strategy

Allow new ways of thinking

Accept and actively shape continuous change

Company

Companies are called upon to create a work environment, including the technologies used, in which employees can continually develop and acquire important skills in the future. The job descriptions must be put to the test at least every two years in order to identify changes in skills at an early stage. Central success factors in keeping up with new competitors and the faster pace of change are a culture that focuses on learning, possibly a flatter hierarchy, adjusted error tolerance in selected areas as well as entering into cooperations.

Executive staff

Executives need to develop strong digital leadership skills to ensure the most agile work environment possible with a high degree of employee self-direction, increasingly take on coaching and enabling roles, and motivate employees for lifelong learning. However, this requires managers to relinquish an increasing amount of control.

Employees

For employees, taking on more personal responsibility is key, especially with regard to lifelong learning. They should make use of the new possibilities offered by digitalisation and acquire skills that will be required in the future such as methodological knowledge, critical faculties and the ability to cooperate as well as digital skills.

Social partners

The social partners are committed to future-oriented and competitive working conditions and to maintaining the employability of all employees and thus their social security. They are ensuring that as many jobs as possible can be offered within SBB, opening up to new industries (e.g. ICT) and forms of employment (e.g. freelancers, crowdworkers) and helping to shape the human-technology interface to ensure that work remains meaningful.

The study identifies 15 pivotal measures to shape the digital transformation of the work environment
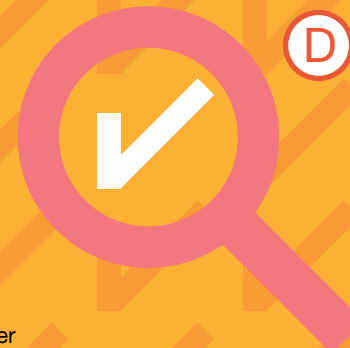
Based on the qualitative and quantitative analysis, concrete proposals for measures which fall into four thematic clusters were derived. Some of the measures are already being implemented at SBB (e.g. further development of digital skills with the fit4future programme; strategic career field and resource planning). The measures will be prioritised and implemented together with the social partners.

I. Maintaining, training and developing skills	II. Actively planning and controlling technologies and workforce	III. Promoting new forms of work and culture	IV. Creating framework conditions under labour law
1. Preserving and further developing railway know-how and the railway professions 2. Reverse coaching or mentoring with regard to new technologies 3. Future- and needs-oriented further development of employees 4. Partnerships with IT and data institutes 5. Recruitment of IT and data profiles	6. Control over technology and maintenance of skills 7. Strategic career field and resource planning 8. Use of technology to minimise the risk of skilled worker shortage 9. Facilitation of career transitions	10. Relocation of line tasks to projects 11. Preparation of managers for digitalisation	12. Modularisation of collective labour agreements (CLA) 13. Contractually guaranteed access to education and training 14. Flexible handling of new forms of employment 15. Expansion of the social partnership to external employees

Conclusion of the baseline study: Digitalisation with all its opportunities and challenges can be tackled through the cooperation of companies, managers, employees and social partners
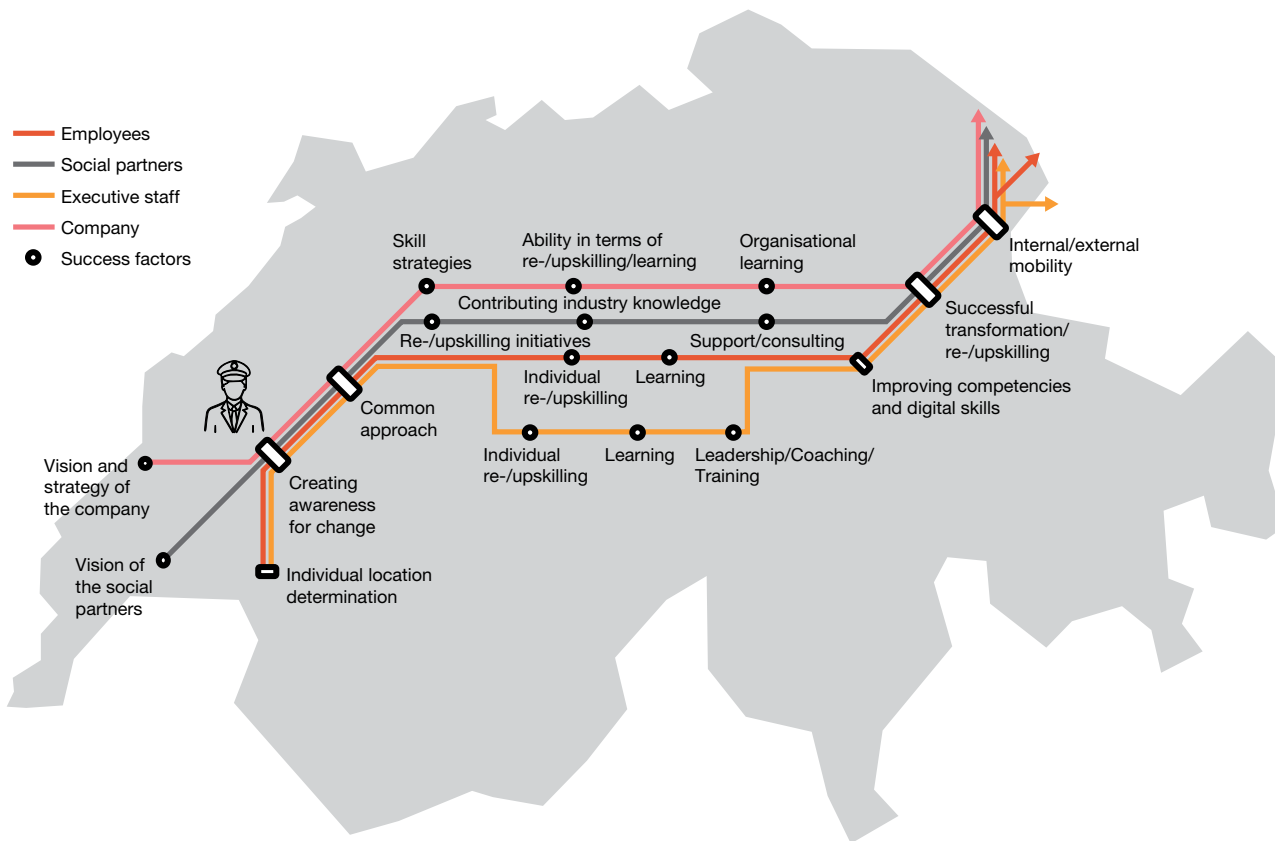
The study shows that SBB's headcount will remain at the same level as it is today until 2035 or could fall slightly. The range is the result of two different future variants.

Retirements and fluctuations could exceed the reduction in jobs through automation and thus compensate for the decline in jobs. Due to the additional shift in the required skills, a shortage of labour or skilled workers can be expected in some occupational groups and, in a few, a surplus of labour may result.

With far-sighted planning, targeted and early use of technology and measures initiated as early as possible, SBB can buffer these labour shortages or surpluses and further expand the path it has taken in the use of technology and digitalisation. Here SBB relies on smooth cooperation with its managers, employees and social partners.

SBB needs steady skills and technology management that is geared to its corporate strategy in order to implement the strategy and to actively accompany its employees and managers, together with the social partners, on the journey of change. Employees can and should work continuously on their personal and professional development.

The social partners also need a clear vision and a strategy to influence developments in the work environment in a targeted way and to ensure future-oriented working conditions.

Legend:
- Employees
- Social partners
- Executive staff
- Company
- Success factors

Map labels:
- Skill strategies
- Ability in terms of re-/upskilling/learning
- Organisational learning
- Contributing industry knowledge
- Re-/upskilling initiatives
- Support/consulting
- Internal/external mobility
- Successful transformation/re-/upskilling
- Individual re-/upskilling
- Learning
- Improving competencies and digital skills
- Common approach
- Individual re-/upskilling
- Learning
- Leadership/Coaching/Training
- Vision and strategy of the company
- Creating awareness for change
- Vision of the social partners
- Individual location determination

SBB is forging new paths with its social partners in order to respond to the opportunities and challenges of digitalisation

SBB, together with social partners SEV, transfair, KVöV and VSLF, has formed a Digitalisation Fund endowed by SBB with CHF 10 million. Many operational jobs will be affected by the digitalisation process, potentially changing many professions.

The aim of the fund is, among other things, to enable SBB to compete through entrepreneurial and social partnership-based digital change and at the same time provide its employees with prospects. The employees' sense of personal responsibility is also to be strengthened in the process. Committed employees will continue to be the most important factor for a successful public transport company in the future.

The Digitalisation Fund is conducting studies and initiatives to analyse the long-term opportunities and challenges of SBB and its employees and to derive appropriate measures. The fund will also be used for the design of development programmes for existing and future occupational groups that are undergoing major changes as a result of digitalisation. In addition, the fund should also offer a constructive discussion platform for sharing "best practices & lessons learnt". The results should point the way for the design of future framework conditions.

Contacts

Baseline study

PwC

Gabriele D'Achille
Senior Manager and Digitalisation Expert
gabriele.dachille@ch.pwc.com

Swiss Federal Institute of Technology Zurich (ETH)

Gudela Grote
Professor of Work and Organisational Psychology
ggrote@ethz.ch

SBB Digitalisation Fund

Conradin Caviezel
Executive Director SBB Digitalisation Fund
conradin.caviezel@sbb.ch

Thomas Streule
Project Head SBB Digitalisation Fund
thomas.streule@sbb.ch