




Subsidiarity.



 Switzerland.

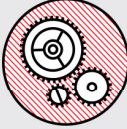

A WELL-BALANCED MECHANISM

1+26+2,000=1
Power is shared by the federal government, the 26 cantons and around 2,000 communes.

SUBSIDIARITY
The cantons and communes have authority over a wide range of matters (e.g. schools, hospitals, tax and policing) and a great deal of autonomy. The federal government only takes on tasks that the cantons and communes cannot manage alone.

Federalism is what allows the different aspects of Switzerland, with its four national languages and large geographical differences, to coexist. Federalism was one of the founding principles of the Swiss Confederation in 1848.


Every canton has its own constitution, parliament, government and courts. About a fifth of communes have their own parliament, in particular the cities.

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The Federal Council (President and Ministers).



 Switzerland.

ALL FOR ONE AND ONE FOR ALL

Switzerland's government (Federal Council) is a collegial body with seven members elected for a four-year term by Parliament. The Federal Chancellor acts as Chief of Staff of the Federal Council.




PRIMUS INTER PARES
The President of the Swiss Confederation is elected for one year only and performs special ceremonial duties.

POWER-SHARING
The members of the Federal Council usually belong to the political parties with the biggest electoral base and come from different linguistic regions.

Each member of the Federal Council heads one of the seven departments of the Federal Administration.

1984 was the first year in which a woman held a seat in the Federal Council. In 2010 there were more women than men in the Federal Council for the first time.

The Federal Council is a collegial body in which the members share equal power.

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The Parliament.



Switzerland.

2 CHAMBERS — 1 PARLIAMENT

National Council (200)

Council of States (46)

The Swiss Parliament (Federal Assembly) is the highest legislative authority at federal level. It is made up of 246 representatives elected by the people. They are from 12 parties and sit in two chambers.

The Federal Assembly is a semi-professional parliament, with most council members also pursuing a profession. The two chambers meet 4 times a year for 3 weeks each and at least once a year together. The sessions are open to the public.

Since 1971 (when they obtained the right to vote) the proportion of women in National Council has risen from 5% to 42%.

→
5%

→
42%

The parties with the most seats in Parliament:

	The Swiss People's Party (SVP)
	The Swiss Social Democratic Party (SP)
	The Liberals (FDP)
	Centre*
	Swiss Green Party (the Greens)

*Merger as of 01.01.2021 of BDP and CVP

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Direct Democracy.



Switzerland.

WE HAVE THE FINAL SAY

DIRECT DEMOCRACY

Switzerland is a direct democracy. Sovereignty resides with the people, who exercise supreme political power.

Decision

There are 2 ways to cast your vote:

at the ballot box

by postal vote

The Swiss electorate votes up to 4 times a year on approximately 15 different federal popular votes.

PARTICIPATION

Swiss citizens have comprehensive rights to participate in political life.

Initiatives to amend the constitution: → 100,000 signatures

Optional referendums against new laws passed by Parliament: → 50,000 signatures

Switzerland tops the world rankings for active political participation by citizens.

45.4%

is the average voter turnout for federal votes.

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History.



Chronology.



13th Century Construction of the first bridge crossing the Schöllenen canyon supported by the Devil

1799 Crossing of the Gotthard pass by Russian general Suworov (24.9.-10.10.1799)

1882 Opening of the old Gotthard Railway Tunnel

1992, 1998 and 2014 Popular votes on construction and financing of the New Rail Link through the Alps (NLRA)

1999 Start main propulsion of the Gotthard Base Tunnel

2010 Main breakthrough of the Gotthard Base Tunnel

2016 Opening Gotthard Base Tunnel

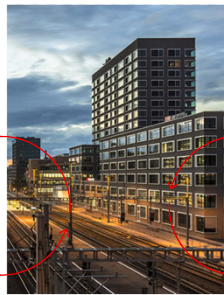


SBB - Who we are and where we come from.

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As an integrated railway, we get Switzerland moving – every single day.



Passenger Services
Production
11,260 trains/day

Passenger Services
Markets
1.10 m. passengers/day

Real Estate
3,500 buildings

Infrastructure
3,265km of network

SBB Cargo
185,000 tonnes of freight per day

10

A few interesting figures.



93,1%
train punctuality for
passenger services



80.7 points
for customer satisfaction



413,000
Annual tickets in
circulation



7,000
media enquiries, 250
press releases each year



804
stations and stops for
passenger services



20,000
Infrastructure
construction sites



11,260
trains on the network
every day



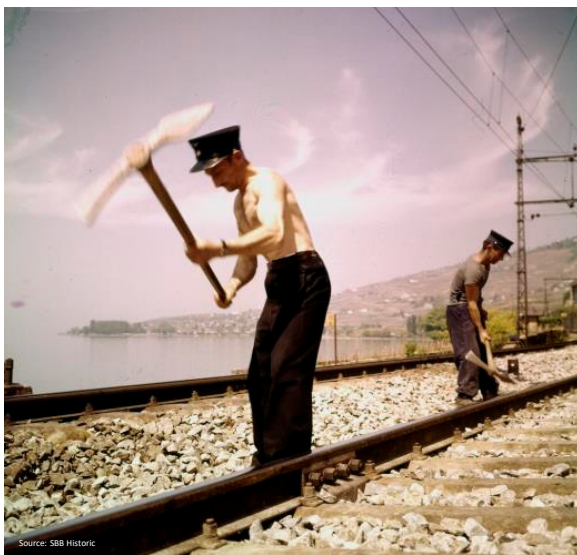
AUD 8.81bn
annual purchasing
volume



656
multiple units,
108 power cars,
1,982 passenger coaches,
543 mainline locomotives

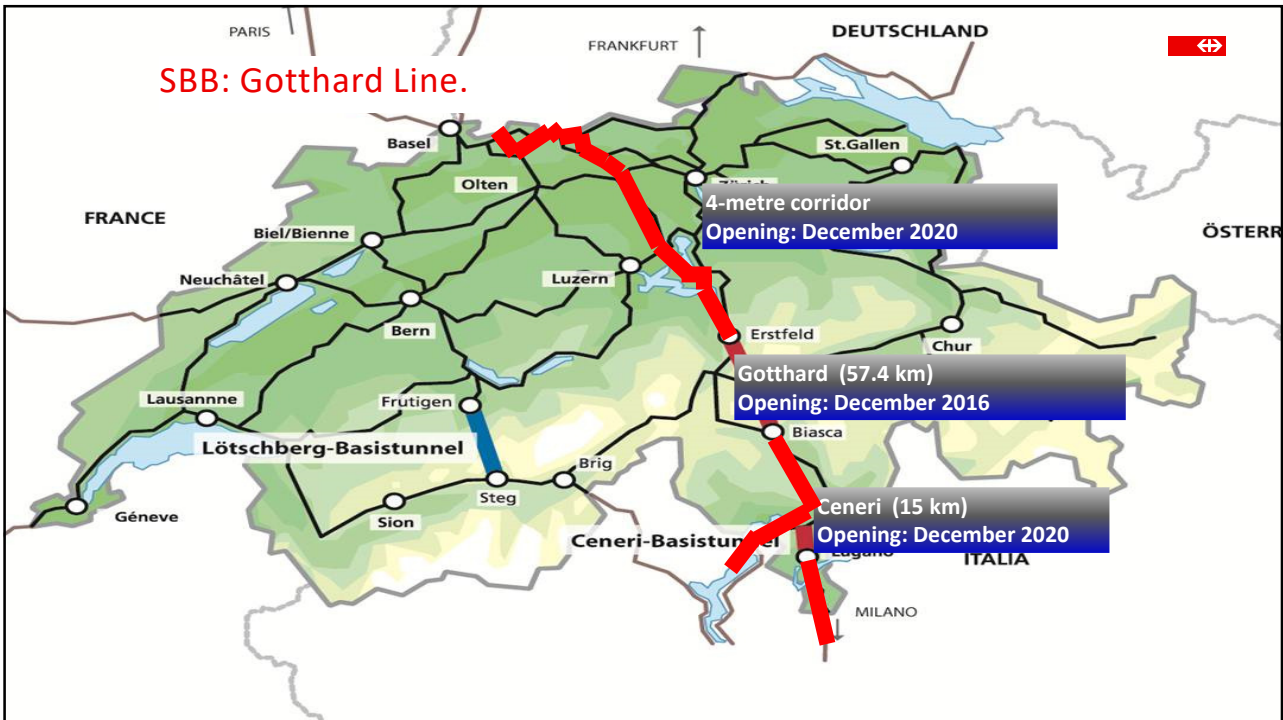
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SBB is the backbone of mobility in Switzerland.

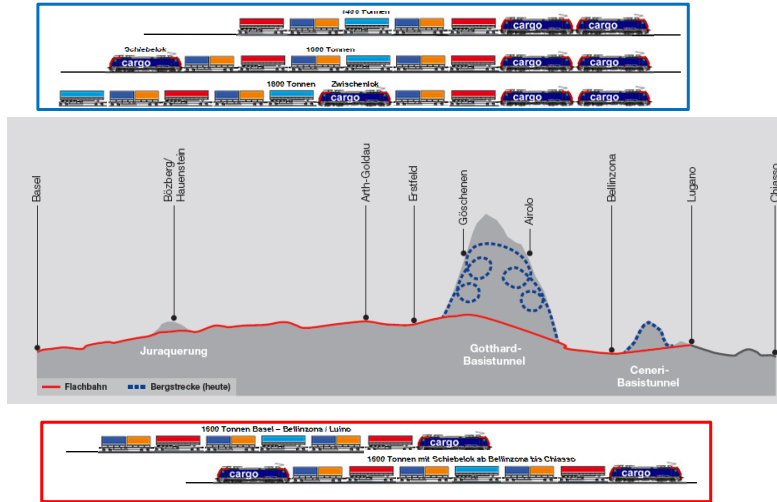


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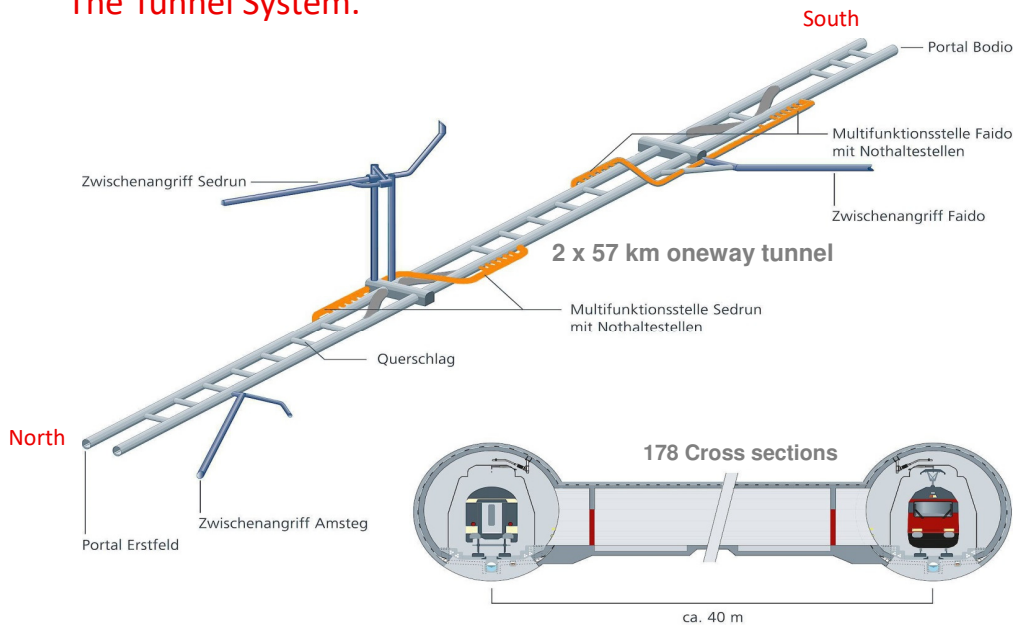
The Gotthard Linie.



Easier gradients - less locomotives for freight trains.



The Tunnel System.



Facts & figures.



- Mix traffic (passenger and freight trains)
- max. speed passenger trains: **230km/h**
- max. speed freight trains: **160km/h**
- max. length freight trains: 750m
- **2 passenger trains/h** and direction
- **6 freight trains/h** and direction
- Trucks on train: max. height 4.2 m
- max. declination: 12.5 per mill
- radius: $\geq 5'000$ m
- Life cycle: min. 100 years
- max. temperature inside the tunnel: **>40°C**

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How did Switzerland build such a tunnel?



3 popular votes.

1999-2016 Implementation by Alp Transit Gotthard (ATG).

2012-2016 Preparation for operation and commissioning by SBB.

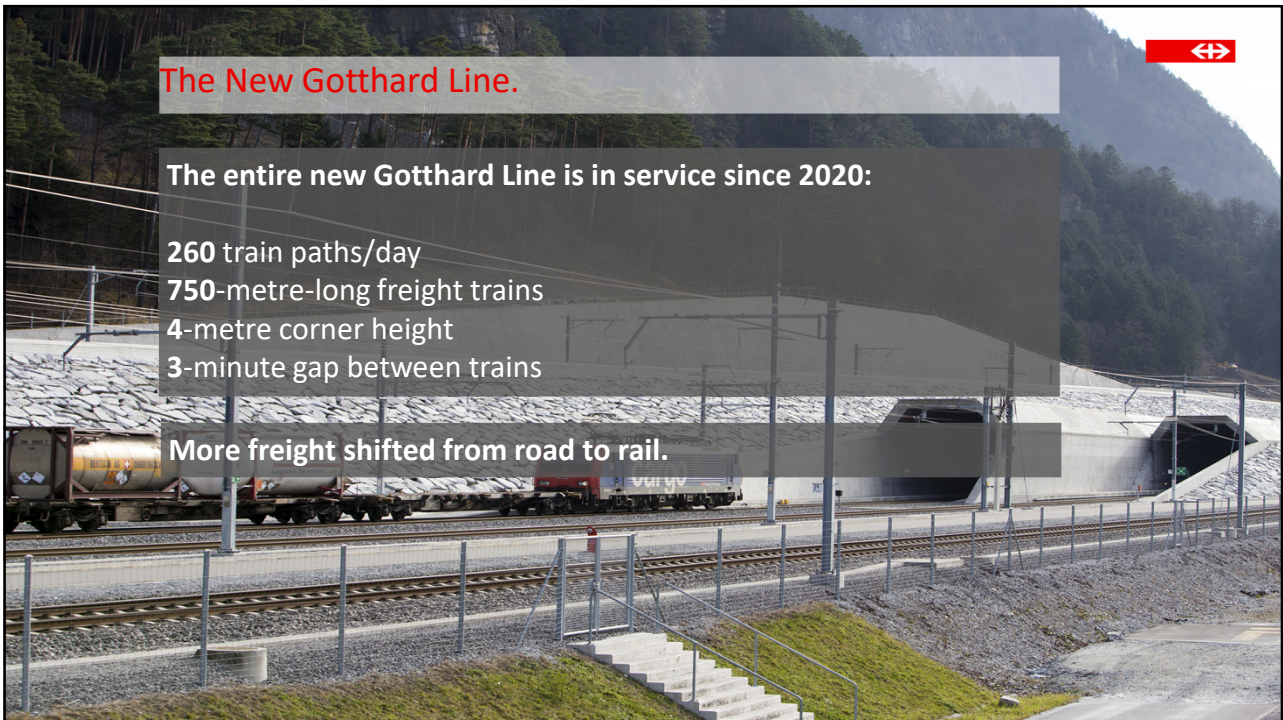
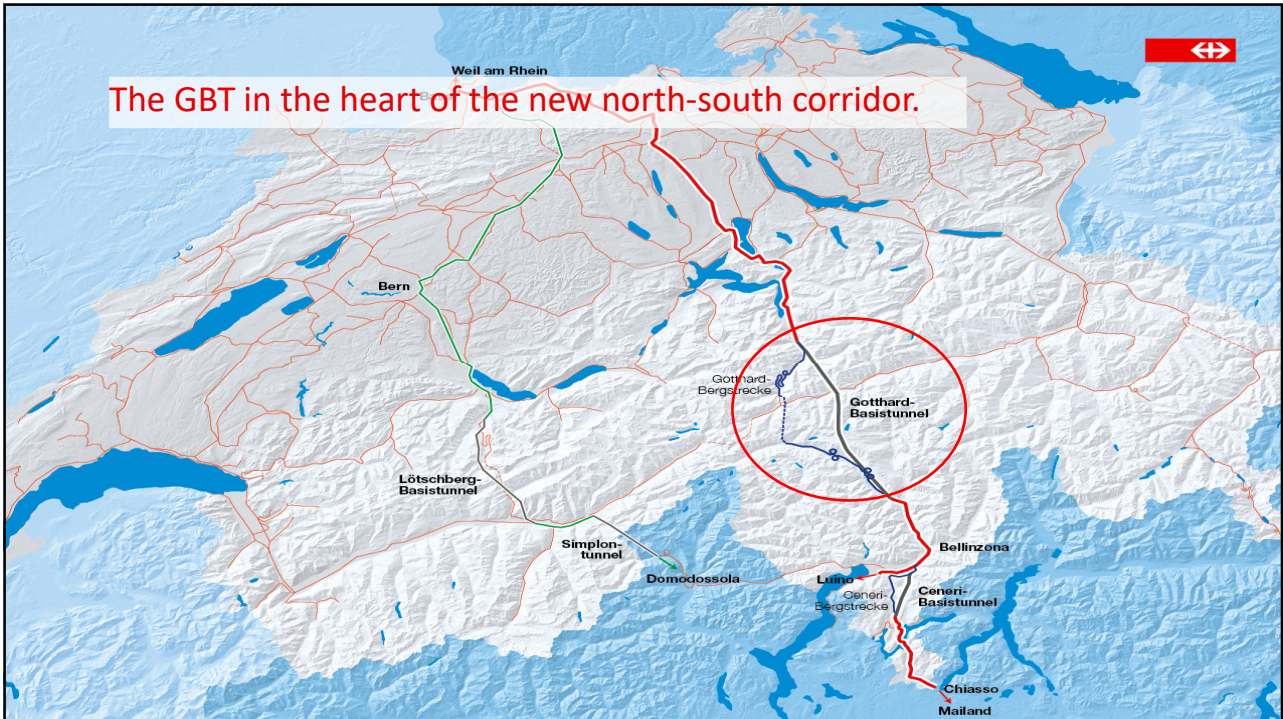
The Gotthard Base Tunnel (GBT).

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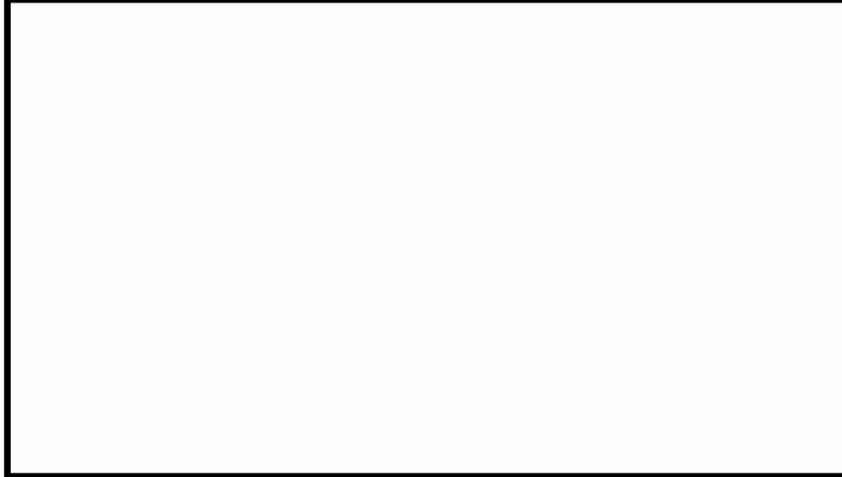




Services and concept of operations.



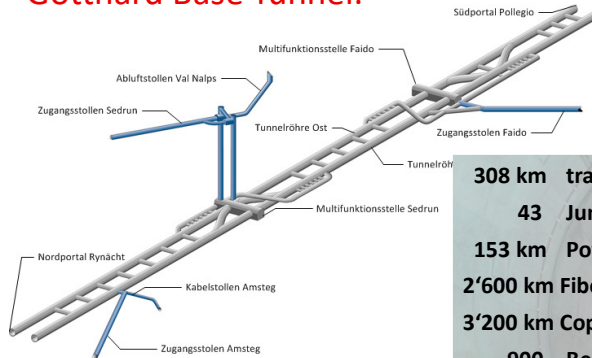
Clip: How SBB operates the Gotthard Base Tunnel.



Maintenance.



The extraordinary dimensions of the installations of the Gotthard Base Tunnel.



- 178 Cross passages
- 2 MFS-NHS (multi functional and emergency station), junctions
- 3 Access tunnels

308 km tracks
43 Junctions
153 km Power line
2'600 km Fiber optic cables
3'200 km Copper cables
900 Beacons (ETCS)
360 Axe counters
2'200 Electric cabinets
10'000 Lights
500 km Drainage tubes
several IT-Systems

www.frgi.ch

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General Challenges.

Access is largely only possible under difficult conditions.

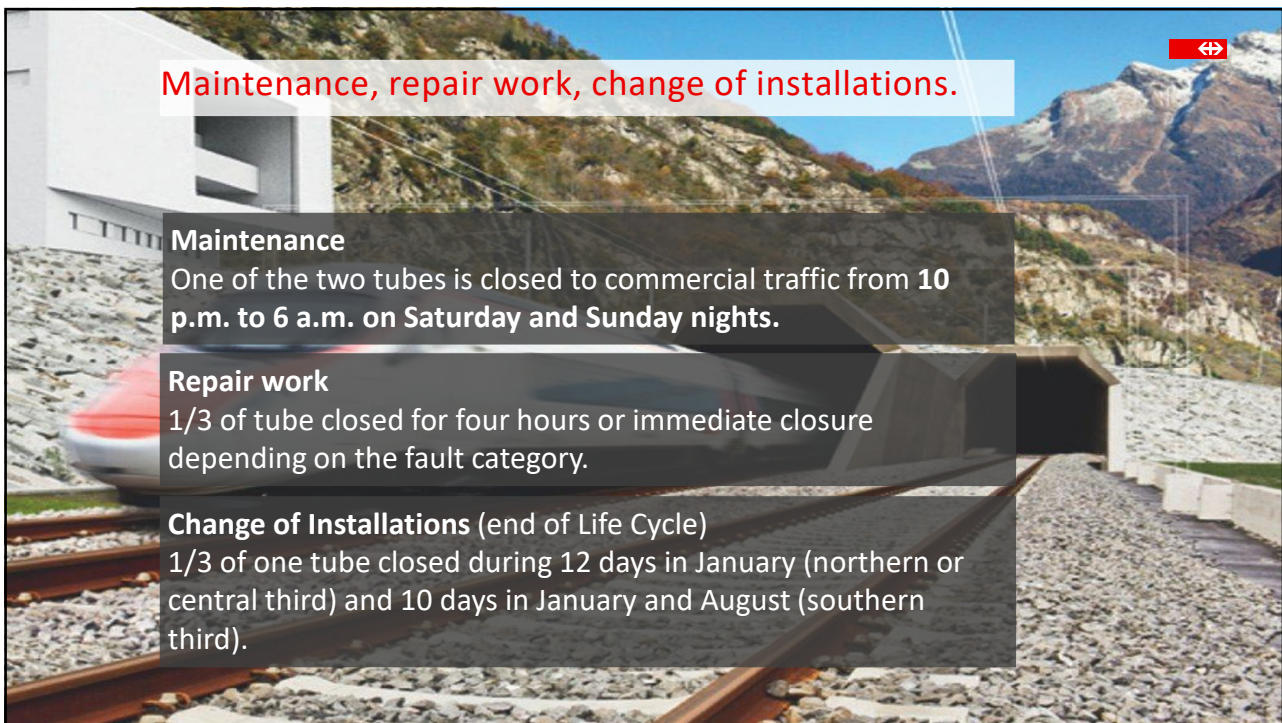
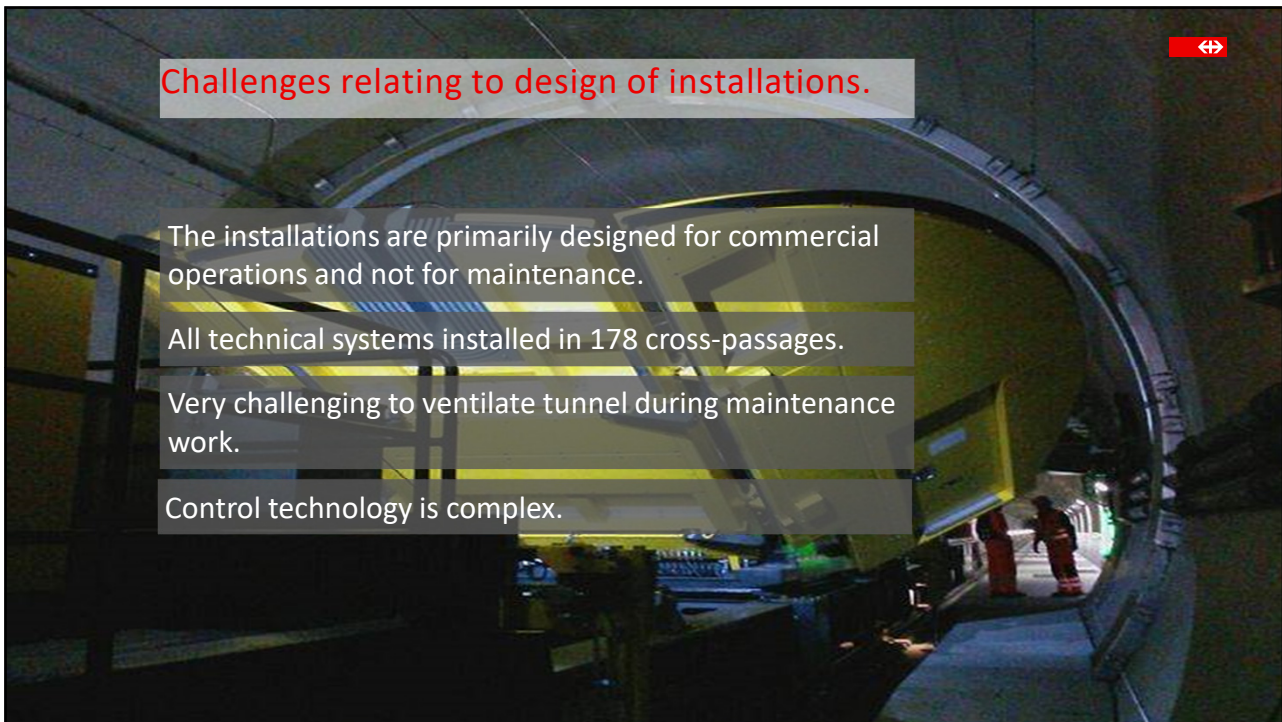
Large physical quantities.

Climatic conditions and dust in the tunnel.

Shift planning must be flexible and adaptable to allow for unforeseen incidents and disruptions.

Low net working hours.

Two languages and cultural differences.



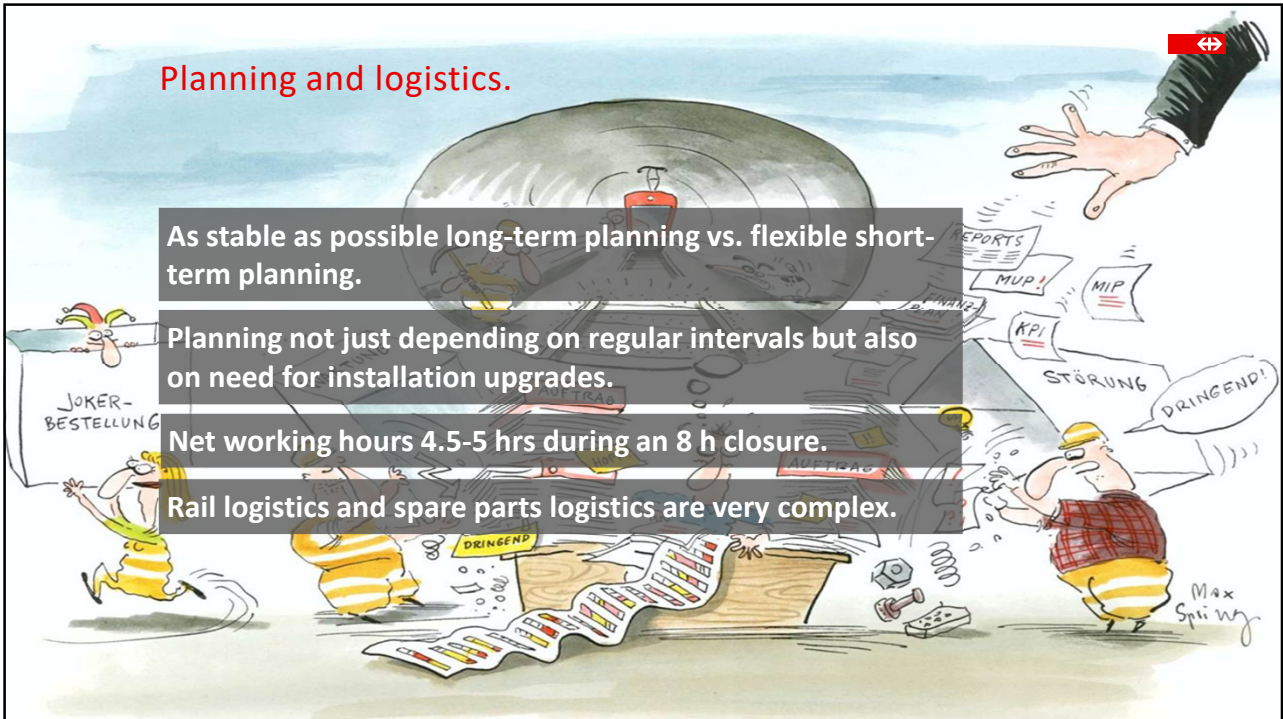
Planning and logistics.

As stable as possible long-term planning vs. flexible short-term planning.

Planning not just depending on regular intervals but also on need for installation upgrades.

Net working hours 4.5-5 hrs during an 8 h closure.

Rail logistics and spare parts logistics are very complex.



Tunnel cleaning.

Material collected in two shifts
(around 11 working hours)



253 kg lost freight



1,020 kg fine dust



Maintenance train.



Anzahl	Fz. Bezeichnung	
10	Basisfahrzeug Ladekran	
3	Basisfahrzeug Kran	
6	Modultragwagen	
1	Modultragwagen mit Kran mit Negativkniek	
6	Tiefenwagen oder Taschenwagen	
1	RoLa Wagen	
1	Modul Hubarbeitsbühne	
2	Modul Kabelabrollbock mit Spill	
3	Modul Personal PM	
2	Modul Kessel oder Kesselwagen	
2	Mobile RoLa Rampe EIZ	
2	Mobiles Erhaltungstor MET	







Grunddaten Basisfahrzeug.

Typ	Xern, 1. Serie
Baujahr	2016 - 2017
Anzahl	13
Lieferant	Harsco
Antriebsart	Zweiradrt
Motor	MTU PowerPack 12V1600R80L
Bremse	DK-GP-ep-A K
Feststellbremse	Federspeicherbremse
Raddurchmesser	920 mm
Radstrahltyp	SA004
Partikelfilter	Ja
Abgasnorm	IIb (N ISO8178-4)
Länge (LüP)	22000 mm
Zulassung	CH

Leistungsdaten / Fahrzeug.

Vmax	100 km/h	Leistung 550 kW (Diesel)
Arbeitsfahrt	10 km/h	1080 kW (Fahrdraht)



Description of vehicles for maintenance GBT.

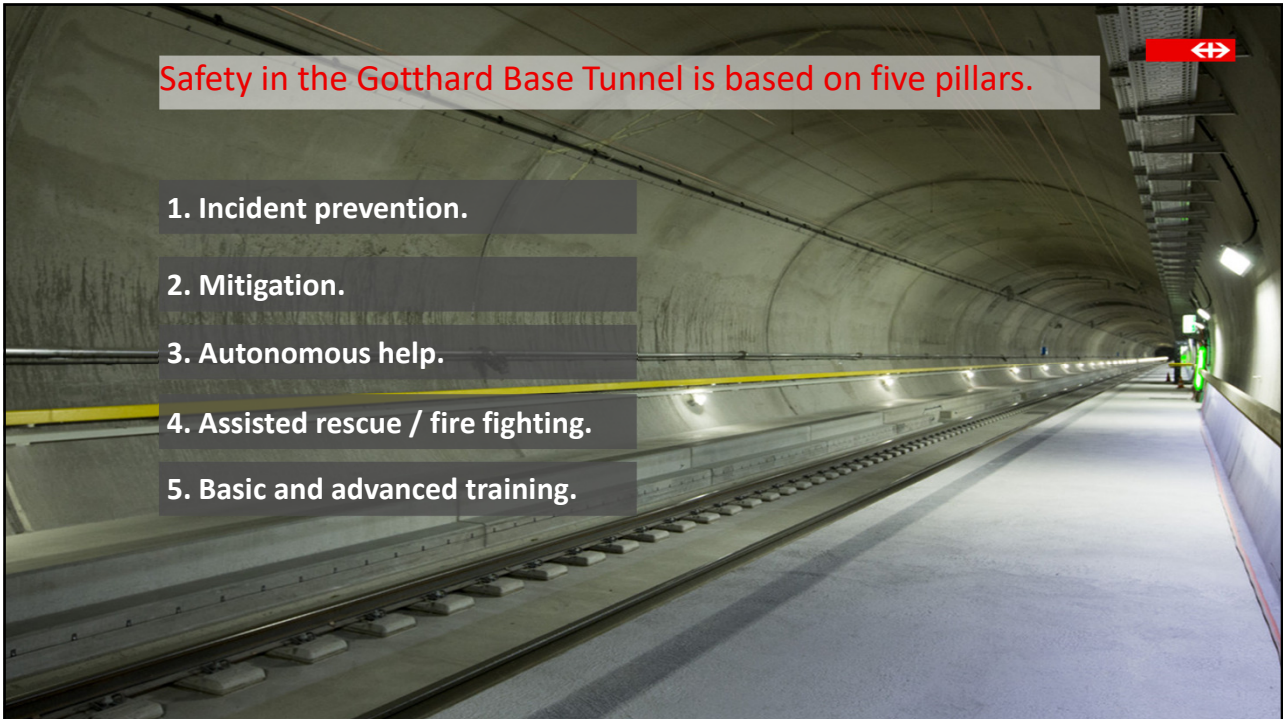




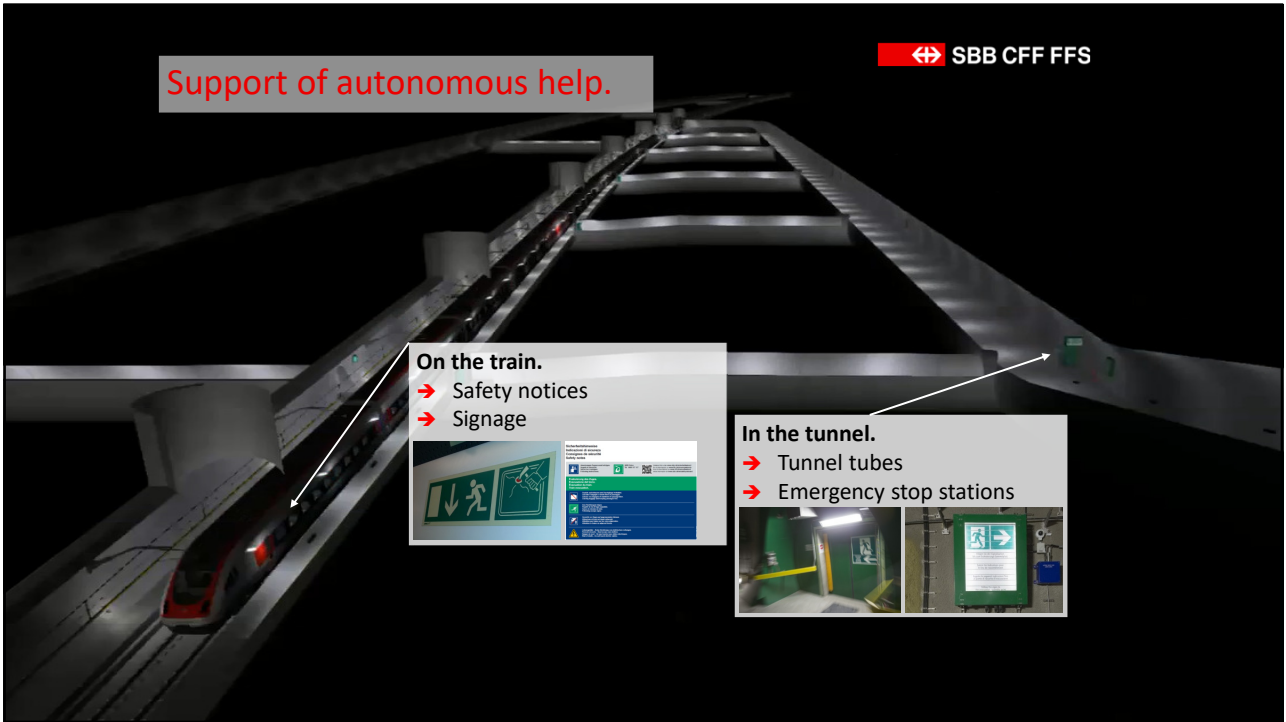
Maintenance and intervention centers
Erstfeld and Biasca.



Safety, fire fighting
and rescue.











Future challenges.

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Lifecycle estimation.

The GBT is composed of many different interdepening systems. Considering their lifecycle, we could divide them into the following “families”:

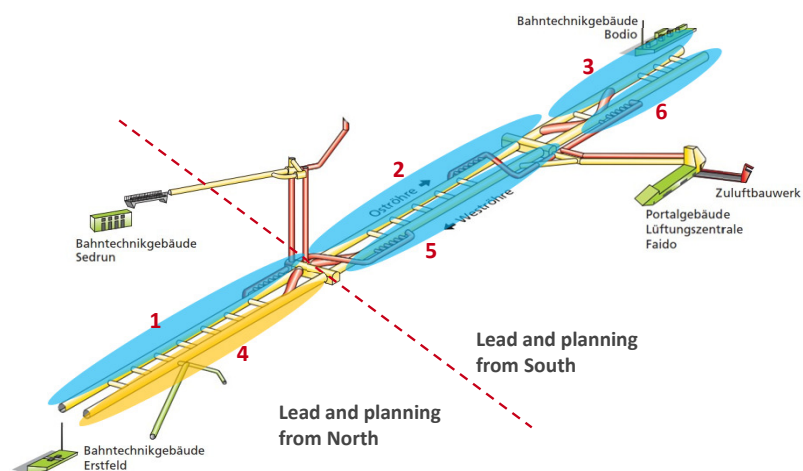
- Civil engineering manufacts	→	50-100 years
- Railway tracks and switches	→	10-30 years
- Cables	→	25-45 years
- Safety System	→	20-40 years
- Electromechanical systems	→	10-20 years
- Telecommunication systems	→	8-10 years
- IT-Systems	→	5-8 years
- ...	→	

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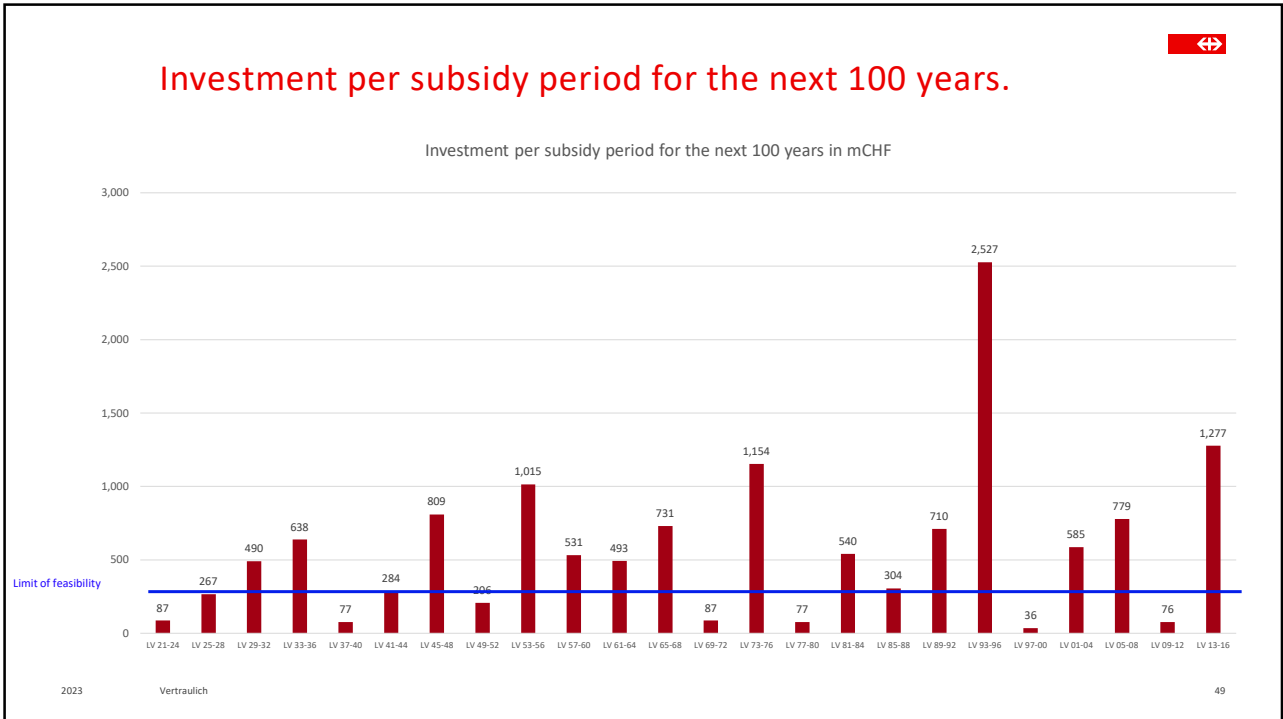


Long interval.

The new concept for the big renovation projects is called *Langintervall*



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How do we face these challenges?

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The weakest link determines the agenda.

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Crash of cargo train on 10 August 2023.

What happened?

Derailment of freight train.

Damage caused

30 carriages derailed

Track damage on 8km

Crossing gate fully damaged.

est. AUD 50-90 million of damage on infrastructure

Repair work

14 days until retaking into operation of eastern tube

approx. 8 months until retaking into operation of western tube









Thank you for your attention.