HS trains in Switzerland: an successful example of interconnection also without high speed lines
Switzerland: a small confederation in the heart of Europe, …
... in the middle of the Alps mountain chain ...
with only 8 million citizens and 4 languages, ...
... full of mountains, ...
... but with a very dense railway network, ...
... that is the most densely used in term of traffic and one of the most frequented in term of passengers in the world!

- **Freight modal share for rail:** ~ 45%
  
  *position 5 in the world with the USA and European champion*

- **Passenger modal share for rail:** ~ 17%
  
  *position 2 in the world after Japan and European champion*

- **Passenger-km travelled per year and per inhabitant:** ~ 2’200
  
  *position 1 in the world ahead Japan*

*In Switzerland the train is organised to be interesting for everyone and to do everything*
Switzerland, a country of mountains and lakes: is there room for high speed services?

- Tilting trainset on the vineyards of the Lake Geneva
- Tilting trainset on the Gotthard line through the Alps
- The Rhaetian Railway through the Grisons
Switzerland was historically very involved in the development of the TEE - Trans Europe Express.

“connect over 90 European cities”

“Brussels – Basel in 6 hours”

“In 4 hours from Zurich to Milan”
The TEE network continued to expand starting from the 50's and new luxury trainsets were put into service, ...
like the first-class-only Swiss RAe TEE, introduced in 1961,
... able to run under four different overhead line voltages and different signaling system in many countries.
A wonderful trainset that continues to run today thanks to the “Swiss Federal Railways Historic” Foundation.

Gönnerclub
«RAe TEE II 1053»
But after the early 70's the network began to shrink, due to the strong development of the road traffic...
... and the first high-speed trains in Europe, with the “orange” TGV PSE trainset reaching Switzerland.
But at the end of the ’70, the Swiss population rejected a project for a new HS line between Geneva and St Gallen.

How to develop High Speed services without high speed line?

We can take a look at the line running along the lake Walensee!
The train running on the Walensee: Commuter, Intercity (single deck and double deck) and freight trains, ...
... tilting trainset, new national double composition deck train, the historic TEE trainset (!), ...
… as well as ICE HS train from Germany, TGV HS train from France and Railjet HS train from Austria.
Today you can observe many different high speed trains in various stations of Switzerland:

- TGV and ICE3 in Basel SBB
- ICE1 and ETR470 in Basel SBB
- Railjet and TGV in Zürich main station
- ICE1 in Bern
- TGV and the Swiss ICN tilting train in Lausanne
- TGV’s in Geneva
This is possible thanks to the configuration of the HS networks in the countries close to Switzerland.
The European HS network today (2017) and the “connection strategy” of Switzerland

Participation in the financing of new HS lines or renovation of existing classic lines outside the national territory

Legend:
- 310 - 320 km/h 190 - 200 mph
- 270 - 300 km/h 165 - 185 mph
- 240 - 260 km/h 150 - 160 mph
- 200 - 230 km/h 125 - 145 mph
- < 200 km/h < 125 mph
- Under construction / upgrading
Some examples of Switzerland investment outside the country: reopening the conventional Haut Bugey line.
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Travel time reduction Geneva – Paris from 3h30 to 3h00
Some examples of Switzerland investment outside the country: reopening the conventional Haut Bugey line

Maximal speed: 100 km/h
Some examples of Switzerland investment outside the country: reopening the conventional Haut Bugey line.
Some examples of Switzerland investment outside the country: support the new French Rhin-Rhône HS line

- Maximal speed: 320 km/h
- Travel time reduction Zurich-Paris from 4h30 to 4h00
- Arrival in Paris at the more convenient Gare-de-Lyon station instead of Gare-de-l’Est
- Connection with the Swiss peripheral region Jura thank a new line and station
Some examples of Switzerland investment outside the country: support the new French Rhin-Rhône HS line.
But Switzerland continue to invest also on the national network to improve capacity and speed.
But Switzerland continue to invest also on the national network: new line Zurich Bern, 45km, 200 km/h (2005)
But Switzerland continue to invest also on the national network: new Lötschberg Tunnel, 37km, 200 km/h (2007)
But Switzerland continue to invest also on the national network: new Gothard Tunnel, 57km, 200 km/h (2017)
To open the doors to high speed services it is *not absolutely necessary to build everywhere new infrastructures.*

With an *extended or integrated high speed concept* it is possible to *expand the benefit to the conventional rail network.*

This is the *big power of high speed*, this is the way it is done in Switzerland, a small country, full of mountains, full of trains... and also high speed trains! 😊