SBB Lab

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SBB Research Fund: Research Topics Spring 2024

Expressions of interest relating to one of the seven subject areas can be submitted.

1. Customer oriented Railway: *Innovation, to develop new, customer-oriented offers and services, and to make trains even more attractive (safe, punctual and clean).*
   - How can SBB maintain customer confidence in collective transport after a crisis (cyber-attacks, health concerns etc.)?
   - How to attract new customers for public transport? And to have people give up their cars? Or include (elderly) people who had to give up driving?
   - Review of differentiating factor (customer value/USP) of railway transport in tomorrow's mobility system
   - Which promising* customer journeys are there for the development of very specific - expansive "consumer worlds" around the core process of collective transport? (**regarding market volume and potential for a positive development of market shares for public transport; cf. endeavor to increase modal split)*
   - *Concepts to cope with long term structural capacity constraints also with regard to leisure traffic*

2. Simplified access to Railways: *Innovation, to simplify access to railway and promote integrated mobility through physical and digital network of SBB. For example:*
   - Which models are relevant to combine mobility modes and facilitate the access to railways (offers, partners, MSPs...)?
   - What is the future of international transport as a substitute or supplement to air transport? Do we need new bundle offers? How should / can the railway work together with the airlines?
   - What are (the) requirements for a uniform European railway tariff system? As simple as booking airplane ticket.
   - What is the impact of strategically positioned parking areas (cars, (e)-bikes, shared mobility...) on the modal shift and how to define those locations?

3. Flexible offers and production models: *Innovation to develop more flexible supply and production models.*
    - How to make timetables more robust (more reserves, dynamic management)?
    - How better adapt our timetable planning to customers' needs ? (in respect to new trends like new work/overlap of work - leisure traffic, special equipment…).
    - How to design more agile delivery systems in order to enable real-time demand-driven operations, allowing for example conflict prediction and resolution?
    - Methods or approaches to cope with the population and demand growth given capacity restrictions in the future.

4. Resilience and Efficiency: *Innovation to increase resilience in railway system, the robustness of rail infrastructure and for the efficiency in the use of funds.*
    - How to design the new assets for service and use automatization to drive maintenance speed up and costs down (data of entire rail asset life cycle, IoT...)
    - How to reduce/cope with network capacity losses due to construction works or unplanned disruptions?
    - How can the resilience of SBB be increased on an organizational and on a network level?

5. Long-term strengthening of SBB: *Innovation to use new opportunities and avoid risks from mobility related, social and socio-economic developments, according to the hypothesis of integrated long-term planning.*
    - Future of Railway: What is the contribution of rail transport to solve the problems of population growth and new forms of life and work in a modern Switzerland. How will mobility develop, and will it come with disruptive changes?
    - How to achieve doubling the share of public transport in the modal split in Switzerland?
    - How to secure or retain implicit knowledge in a generation change of employees?

6. Environmental Sustainability: *Innovation to increase the ecological sustainability of SBB and achieve climate neutrality by 2030.*
    - Which existing circular business models (CBMs) from other resource-intense industries can be applied to the challenges at SBB (building construction and civil engineering)?

- How to leverage new technologies and alternative materials to improve the transparency and circularity of SBB assets?

7. Optimized freight logistics: *Innovation to further automate freight transport and to better align it with market needs, along the entire value chain. For example:*
   - How much are freight forwarders and shippers willing to pay to be 1 minute faster in transport (Value of travel time savings VTTS)?
   - How to organize the last mile in cargo logistics?

For some research topics existing SBB data might be used. For a first impression on available data please check following documents:

- *Facts and figures including time series you find here.*
- *Available raw datasets are categorized by SBB as follow:*
  - *Open data is available for download here.*
  - *Restricted data can be obtained for specific projects under consideration of certain restrictions.*
  - *Closed data is not available for research.*
  - *An overview on raw datasets is available here.*

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