

# Case Study

**BERNMOBIL**  
ZUSAMMEN UNTERWEGS

**APG | SGA**  
Traffic



**Customer:** Bernmobil, Bern, Swisterland



**Website:** <http://bernmobil.ch>



**Employees:** over 500



**Founded** in 1947

## Bernmobil First Swiss-wide ScreeneX pilot operation in tram. From the idea in the innovation process “Project Tram procurement 2020” to the test operation on our network.

### Overview

Bernmobil is a public transport operator in and around the Swiss capital city of Bern. Bernmobil operates the city's network of trams, trolleybuses and motor buses. It was founded in 1947 by the merger of the **Städtische Strassenbahn Bern (SSB)**, which operated trams and trolleybuses, with the **Stadt-Omnibus Bern (SOB)**, which ran motor buses.

In August 2018, [Bernmobil](http://bernmobil.ch) undertook the first on-board ScreeneX proof of concept in Switzerland on on-board its Combino XL tram. Bernmobil is the first company in Switzerland to test our new innovation and implement a pilot on their tram.

This project has been overseen by Bernmobil headquarters and engineers' team, in close cooperation with [APG-SGA](http://apg-sga.ch), a Switzerland's leading Out of Home advertising company and specialist in the provision of digital and analogue Out of Home solutions at busy locations.

This PoC project was part of Bernmobil's wider innovation project. For the project "Trambeschaffung 2020" Bernmobil used the methods of innovation management for the first time. Cross-divisional ideas came together in the innovation tool. The idea of Martin Voser, innovative engineer at Bernmobil, was particularly well received: to integrate the screens directly into the glass panes in the future. The solutions Mr. Voser envisioned, are exactly what OSG developed as part its ScreeneX product line. APG Traffic was a great partner for this project.

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## The Challenge

Bernmobil has positioned itself as an innovative operator in Bern aiming to constantly bring new technologies to their fleet to improve the service for their passengers. As part of this effort, they looked for an innovative passenger information display system ("PIDS") that can improve passenger experience and cabin design.

Existing solutions in the tram included "standard" external mounting screens, which are mounted externally and include a metal housing or frame.

In addition, two additional objectives were set: a special screen for disabled people that will be implemented in the driver cab window and enable people to view dedicated content from close distance.

The Second objective was to add a screen in the center of the car that will become a platform for on-board digital advertisement. This screen was to be designed in a super-slim way that will communicate with existing design, and also cause minimal interference to cabin space.

## The Solution

Per the above needs, OSG provided 3 ScreeneX TRN 21 systems:

**TRN 21 implemented in the tram's side window:** This solution is part of the ScreeneX concept of utilizing existing glass elements for other usages by integrating technologies inside the windows – such as PIDS. Even though the Combino XL's windows are large, this solution utilizes a small portion of the relatively large windows of the tram offering a fresh way for passengers to see the information they need, without interfering with the ability of looking out the windows and see the city.

**TRN 21 implemented in the driver-cab window:** This unit was designed to part of the window and not protrude to the passenger cabin space from one side, and not to interfere with the driver cab rear dash-board and space from the other. Also, it was important that the solution is maintaining the upper part of the window transparent. Accordingly, the ScreeneX fully embedded solution fits perfect for this aim.

**TRN 21 implemented in a designed passenger partition:** The unique technology of ScreeneX enables to offer a super-slim solution (20mm total thickness). The slim partition was mounted in a design stainless-steel frame to fit the existing design of the car. The outcome is a designed super-slim screen that takes only a small portion of the cabin space but has great visibility and accessibility to passengers.

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*The three units which were installed in the Bernmobil PoC project; Bern; August 2018*



## The Project

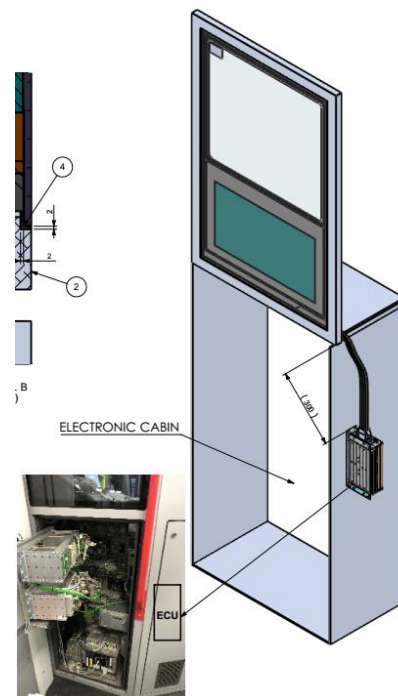
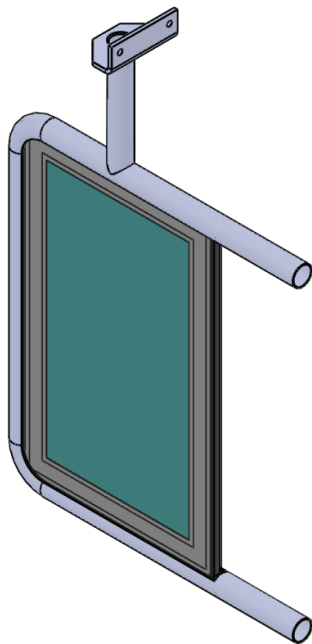
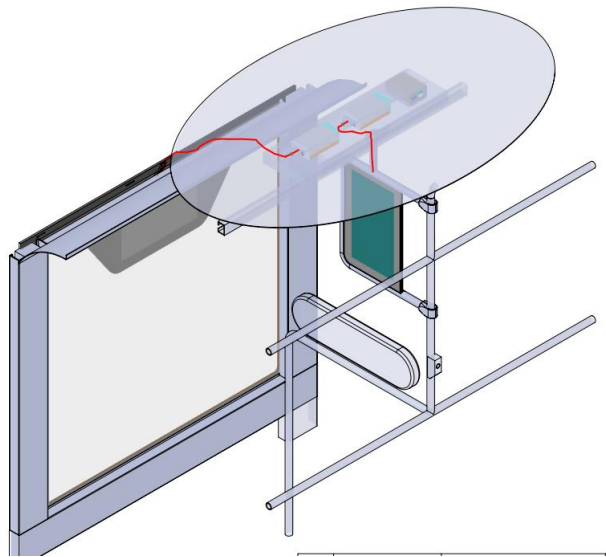
The design stage of the project includes the design of the WS – the glazing unit with the embedded screen(s) and the configuration of the system per the content and architecture of the PIS solution chosen by the operator.

**Design and planning:** The joint engineering work between OSG, APG and Bernmobil began in March 2018. The parties defined together the scope and requirements for the pilot project. The next steps were the design of the ScreeneX system to fit the defined locations by OSG and the joint design of mechanical integration and passenger information to be presented on the systems. This stage was done together with the professionals from all 3 companies.

**Design of the ScreeneX glazing unit:** The entire design process is done by OSG's design and engineering team which are glazing experts in "design per spec." or per drawing of various glazing systems. The other part of the design team is the ScreeneX Integration engineers which oversaw the integration of the screens into the glazing as well as the configuration of the system. The design was based on the drawing of the original window and frame, measurements taken in the train.

The outcome was a new glazing unit which is an IGU with the embedded screens which perfectly fits the existing interfaces of the tram car and is ready for installation.

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*Integration drawings of the units; Such drawings were designed by OSG and confirmed by Bernmobil to ensure proper integration to the vehicle*



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**Silk-print and design:** we work with the client to define the preferred serigraphy pattern and design. For example, for the passenger partition, the client wanted the screens to be located in a certain height from the floor so the support poles will not interfere with the viewing angle. For the side-window system, the serigraphy was design to minimize the interference with the transparency of the window.

**Design of the Screenex System Architecture:** for this part the Screenex team needs to fully understand the wishes and plan of the client in terms of content and network configuration. In this case the Screenex system was intended to connect to the existing PIS information source. The logic interface for all systems was a video signal output. Accordingly, we chose to use an ECU from our M-Series. The ECU-M has a video input – in this case DVI/VGA/HDMI and is suitable for architectures in which the Screenex system performs solely as a "monitor".

**The Screenex Systems:** All systems were based on Screenex TRN 21 system, which features a fully embedded 21.5" (16:9) FHD LCD panel.

OSG can offer such partition also in a dual-side screen configuration.

**Dismantling of existing units:** The dismantling of the existing windows was carried out by Bermobil. The new Screenex glass units (WS) with embedded screens were assembled by Bermobil employees under the close supervision of OSG employees.

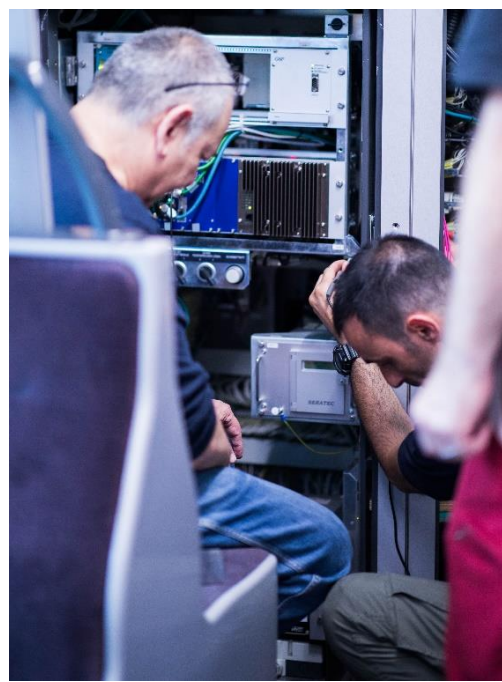
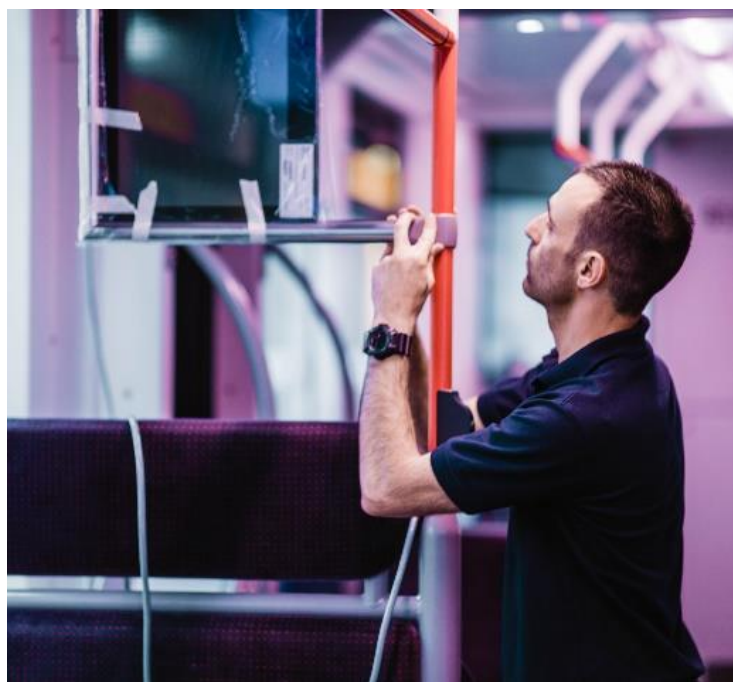
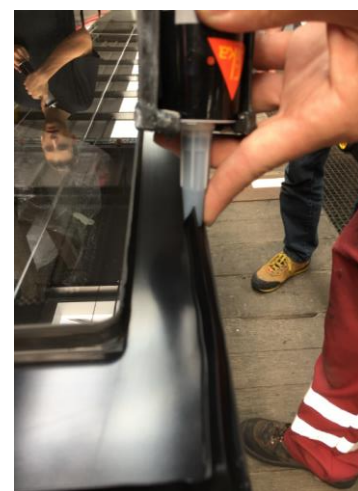


*Assembly process of the side-window and partitions systems in the Combino XL tram car*

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**Integration:** another critical part of the design of each project is the design of the integration of the HW and cables. The design of the 3 ScreeneX units take into consideration integration issues such as the type of display cable used (cable between the glazing unit and ECU), display cable length, display cable exit point and other issues.

**Pre-assembly testing:** Before the final installation, the ScreeneX units were connected electrically and successfully tested.



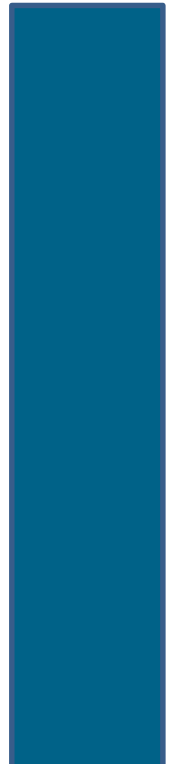
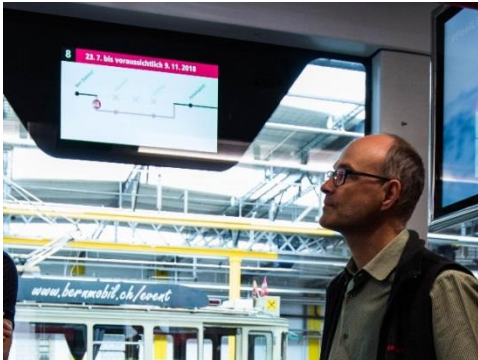
*Joint work of the Bernmobil professional team and OSG's integration team*



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### The outcome

**Test drive and acceptance test:** On Thursday, August 16, 2018, the Tram 653 was handed over in the operational driving mode. The function of the monitors was observed during the first round between the terminal Weissenbühl and Bern station and then finally released for operation. No faults were reported as of this date.



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**Customer reviews:** Bernmobil reports that passengers are impressed by the look and design of the systems. The design outcome supports Bernmobil internal branding as market leader in innovation and passenger experience.

Bernmobil is willing to show the installation of interested customers, if the operational driving permits this, otherwise the vehicle can be visited on the line network.

Bernmobil is very pleased about the very cooperative collaboration with OSG Israel and AGP SGA Traffic AG.

In less than 6 months, the implementation of the project, starting from the project sketch and finished into the operative pilot operation on the vehicle succeeded successfully.

*From left to the right: Avi Shemesh (OSG R&D Engineer), Stefan Siegmann (APG SGA Traffic AG), Markus Anderegg & Martin Voser (BERNMOBIL), Fabian Schenk (APG SGA Traffic AG), Helfried Kloiber (OSG Sales Manager - Transportation Division Europe) & Itzik Yaron, ScreeneX-OSG Project Manager)*



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