

The background of the advertisement features a scenic view of a mountain range with a prominent, snow-capped peak under a clear blue sky. In the foreground, a modern orange and grey cable car or train is visible on a track. The scene is overlaid with digital graphics, including binary code (0s and 1s) in red and blue, glowing blue lines, and semi-transparent rectangular panels containing illegible text, suggesting a high-tech or data-driven environment.

SIEMENS

Ingenuity for life

Controlguide[®] Ittis as a Service (ILaaS)

The most efficient Ittis variant for
increasing demands

[siemens.ch/mobility](https://www.siemens.ch/mobility)

Control technology always on state-of-the-art

What are the advantages of a cloud-based solution?

ILaaS is attractive financially since much less capital is tied up compared with having your own system. Under the license-based business model, rail operators simply pay a fixed amount for use and maintenance. You incur no investment costs for setting up your own IT landscape.

ILaaS guarantees regular security patching and a reliable update procedure based on permanent updates.

Service and maintenance for on-site deployments are not required since the system is located at a Siemens Mobility site and is operated and maintained from there. Not only is this more cost effective, rather also decidedly eco-friendly.

Is ILaaS sufficiently mature?

Yes! ILaaS has already been in operation since 2016 and is currently used by the Gornergrat Railway and BOB. The Ittis servers are operated as virtual machines in specially dedicated data centers at Siemens Mobility sites in Switzerland.

In addition, we have long-standing experience with virtualization techniques. ILaaS is state-of-the-art technology developed and operated by Siemens Mobility in Switzerland.

IT security

With digitalization of the railway and the increased system networking associated with this, IT security is coming under increasing scrutiny. To meet the stricter security requirements, public authorities are demanding a high level of protection against external tampering. Among other aspects, this includes regular updates for Ittis computers. ILaaS ensures that your operation and control system infrastructure always complies with the latest IT security standards.

Investment protection

With ILaaS, there is no need for any local cell servers. Siemens Mobility is responsible for the operation and entire management of the Ittis hardware (cell servers) and ensures that your control equipment is up to date at all times. Meanwhile, you can continue to adapt the workstation hardware setup to suit your individual requirements. Future Ittis software releases are installed at no additional cost.

Always up to date

ILaaS creates the optimum conditions to flexibly and cost-efficiently activate new features/services, such as the PSS process interface, georedundancy in the cloud, or the Ittis detail view web service.

Our specialists likewise ensure obsolescence management for you on request, as well as maintenance and monitoring of cell servers.

Focus

This reduction in workload allows you to focus fully on rail operations. As a rail operator, you will benefit from improved cost-efficiency in operation and a high level of investment protection, while maximum availability and scalability are assured thanks to the latest data center technology.

Redundant network connection for the best availability

Your cell servers are connected via a fully geographically redundant VPN tunnel network connection (provided by Swisscom). This ensures continued data exchange between cell servers and your workstation hardware in case of a connection failure.

Cryptoboxes for a secure connection

The latest encoding technology (cryptoboxes) secures the redundant connections, protects the data from external influences, and thus fulfills both the IT requirements and the rail safety regulations.



The Bernese Oberland Railway (BOB) has been using ILaaS successfully since April 2019 and the Gornergratbahn (GGB) since 2016.

As a rail operator, Ittis as a Service (ILaaS) allows you to obtain Ittis functionality in the form of a flexible service. While your focus lies on rail operation, Siemens Mobility keeps your operation and control system up to date and takes care of the cell hardware and all software releases, while ensuring compliance with statutory IT security requirements through the provision of IT security updates.

How does Siemens Mobility inform operators about maintenance work in the data center?

Two fixed maintenance windows are scheduled each year and the customer is informed accordingly. Any additional maintenance required is notified in good time and agreed with the railways where necessary.

Is there a risk of interruption due to maintenance work being carried out by the rail operator and Siemens Mobility at the same time?

Such a risk of collision does not exist since all work undertaken by Siemens Mobility is planned in advance and discussed with the customer early on. In addition, the georedundancy functionality will enable hot standby in the future, which means that the line can continue to be used in such cases.

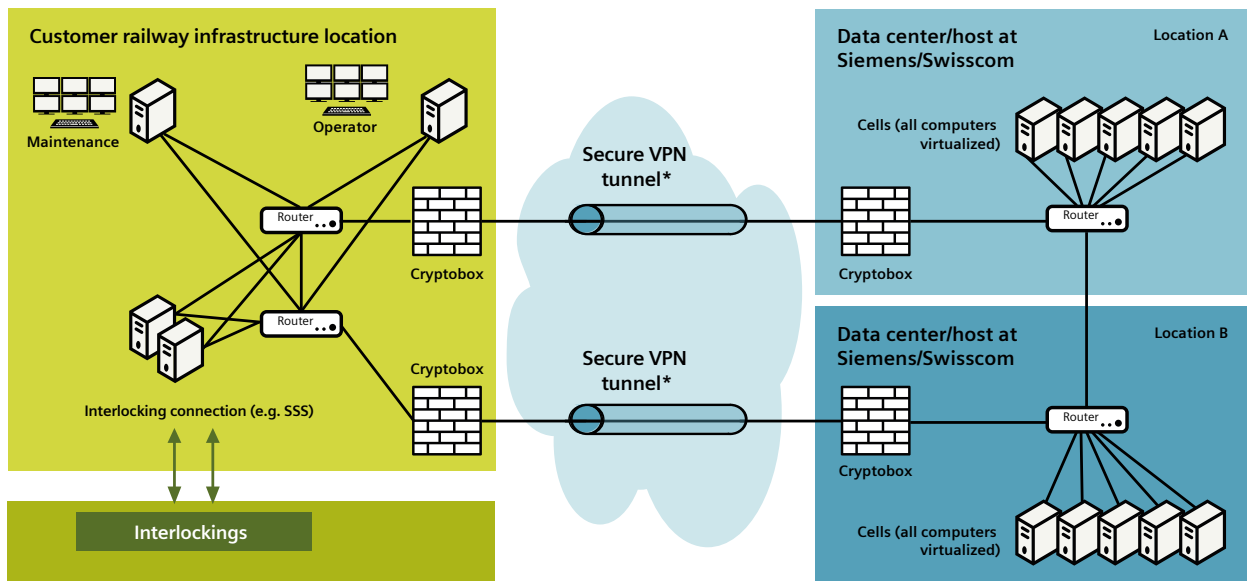
How does the future look for ILaaS?

A third rail operator is set to operate in a virtual environment from 2020 with Aare Seeland Mobil (ASm). A further Swisscom location is planned for summer 2020 in Zürich (with no additional costs for ILaaS customers) and additional customer queries are currently being processed.

ILaaS helps to reduce hardware, simplify maintenance, and therefore protect the environment sustainably.

Comparison between Ittis vs. ILaaS cloud service

| Provision and administration | Ittis | ILaaS |
|--|-------------------------|--|
| Third-party software licenses for cell servers on the host | | ✓ |
| Operation of Ittis hosts | | ✓ |
| Update of Ittis releases | | ✓ |
| Corrective maintenance of the cells | | ✓ |
| Preventive maintenance of the cells | | ✓ |
| Technical responsibilities and all maintenance activities are fully undertaken by Siemens Mobility | ✓ | ✓ |
| On-site software updates | Ittis | ILaaS |
| Full interlocking interface software updates | | ✓ |
| IT security management of workplaces, interlocking interfaces, and networks (regular security patches) included | | ✓ |
| Georedundancy (half-cells) – from R62 | Ittis | ILaaS |
| Redundant cell hardware at two geographically distinct sites. In the event of malfunctions, operation switches automatically to the other half-cell with no interruption (hot standby) | ✓ One-off investment | ✓ Annual fee |
| Cell hardware at customer site, additional costs owing to lack of virtualization | ✓ | Georedundancy in the cloud, no critical hardware at rail operator's site |
| Corrective maintenance | Ittis | ILaaS |
| Service Level Agreement: Best-effort / on-site hardware deployments included (spare material at customer site) | Optional | ILaaS Standard |
| Service Level Agreement: 24x7 – telephone callback within 30 minutes, remote login in four hours, on-site support within six hours included | Optional | ILaaS Premium |
| Preventive maintenance | Ittis | ILaaS |
| Hardware replacement of material after six years – interlocking interface / workplaces / operations cluster included | Optional | ILaaS Premium |
| Spare material maintained by Siemens Mobility | Optional | ILaaS Premium |



*) The connection between the data center/host and the location of the railway operator infrastructure is redundant in accordance with the IT security standards (ICE 62443) and is secured cryptographically.

With ILaaS, we assume overall responsibility for the management of your Ittis cells.

Siemens Mobility Ltd.
 Hammerweg 1
 8304 Wallisellen
 Switzerland
 Phone: +41 585 580 111

Order-No.: MOMM-T10189-00-76CH / 9103/320
 Subject to change

© Siemens Mobility Ltd., August 2020