

Orga Systems.

#1 choice for real-time charging and billing



SIMtelligence™ Center GSM-R
SIM Profile Management for Railways



Wouldn't it be great to have the complexity of SIM card profiles managed professionally?

The implementation of dynamic SIM card updates that fit the requirements of the daily railway operation are an immensely complex procedure. With Orga Systems' SIM Profile Management, SIM card handling is reliable, efficient and secure. This system successfully applies Orga Systems' profound experience in SIM card management solutions for GSM to the GSM-R world. Our domain specific solutions support GSM-R integration and grow seamlessly with your GSM-R network. As the world leader for Over-The-Air SIM Profile Management in GSM-R networks and with our experience of more than 10 years within this domain, Orga Systems is a reliable business partner for railway companies and system integrators.

The Challenge

Under the organization of the UIC, the EIRENE (European Integrated Railway Radio Enhanced Network) work group evaluated and approved GSM systems to meet the railway's communication requirements. The resulting GSM-R specification conforms to the worldwide standard for railway telecommunication networks, providing reliable and flexible services for the coordination of train operation, control and maintenance activities. Train drivers, controllers, engineers and trackside and shunting teams require a seamless communication among each other – this is where GSM-R services come into play.

Communication pathways are subject to constant changes, according to the railway companies' daily coordination requirements. New or modified services must be provided to traveling staff or to staff on shift duty. Trackside maintenance workers need

to be assigned to dedicated broadcast groups, shunting team members must be grouped to new voice call service groups. Onboard team members rely on links to common communication groups within the train. All these different functions call for a fast and secure system providing support for Functional Addressing and ASCI (Advance Speech Call Items) group call and precedence & preemption features.

These and other dynamic GSM-R services require modified parameter settings or updated data fields on the SIM cards in the subscribers handsets and in the locomotive's cab radios. Such settings are stored on SIM profiles. Cab radio units especially can be managed very efficiently via Over-The-Air technology, since updating the embedded SIM card in the cab is not viable as maintenance crews have to dismount and reinstall the SIM manually.

- _ Are you looking for an easier way to handle the SIM parameter settings and data fields of all subscribers?
- _ Do you need a solution to avoid issuing new SIM cards every time you change subscriber profiles and communication groups?
- _ Do you want to reduce train maintenance times by updating the cab radio SIMs via an Over-The-Air interface?

The Solution: SIMtelligence™ Center GSM-R

Our company handles all issues regarding Over-The-Air SIM card management in your GSM-R network – proven, reliable and flexible. SIMtelligence™ Center GSM-R was especially developed for railway telecommunication networks and designed to comply with EIRENE and MORANE standards.

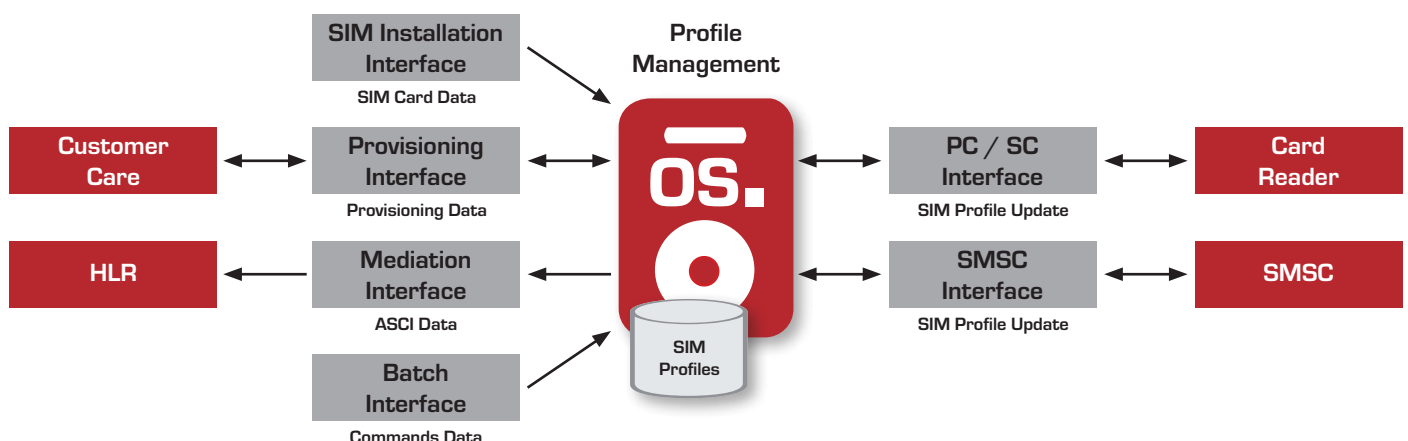
Unlike the standard OTA platforms for public GSM networks, the SIMtelligence™ Center GSM-R product additionally includes Orga Systems' patented SIM Profile Management technology.

A combination of proven OTA functionality and SIM Profile Management results in a world-class solution package for GSM-R.

In light of the railway's operational needs, SIM Profile Management is the preferred method for handling individual GSM-R services. SIM Profile

Management assigns task- and duty-specific SIM profiles to GSM-R subscribers or groups of subscribers and supports tracing the history of all profile changes per subscriber.

Utilizing its Over-The-Air interface, SIMtelligence™ Center GSM-R remotely installs profile data on the subscriber's SIM cards. Any profile updates can be transmitted to the cards without an actual physical interaction with the SIMs by subscribers or maintenance staff. Additionally, all SIM updates can be processed via networked card reader/writer devices. This makes it possible to load new SIM profiles onto subscribers' SIM cards in areas without GSM-R coverage.



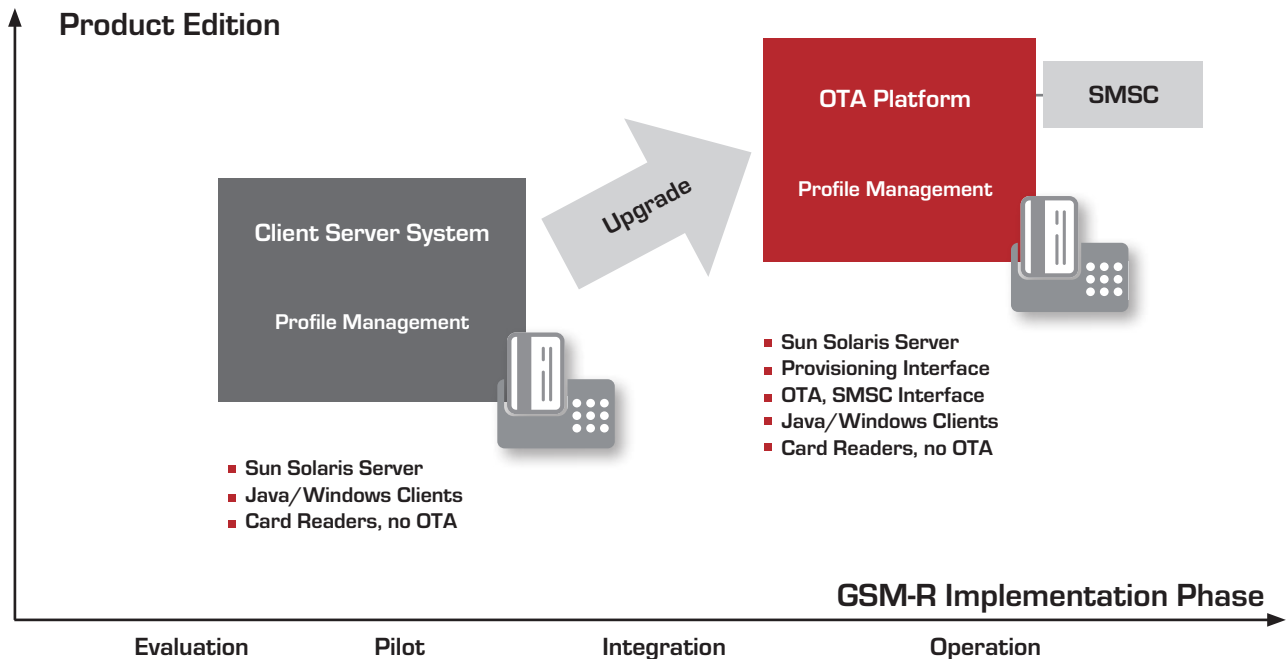
SIMtelligence™ Center GSM-R Supports Each GSM-R Implementation Phase – How It Works

Orga Systems supplies full support in each GSM-R implementation phase, providing scalable SIM management solutions to establish a functioning GSM-R communication network.

Our product portfolio is comprised of two upgradeable editions of SIMtelligence™ Center GSM-R, each matching the growing requirements of the ongoing GSM-R project. They include software for preliminary evaluation purposes and pilot projects and an OTA platform edition for highly efficient Over-The-Air subscriber and cab radio SIM Card management.

Typically, an early project phase will see isolated GSM-R network elements with basic functionality in place. In this period, Orga Systems already offers a basic Client Server System.

During the pilot phase, system integration and increasing interoperability raise the network elements to production level. More subscribers with feature-enriched SIM profiles are added to the network. In the early project phase, the Client Server System can be expanded seamlessly up to an OTA Platform, using the previously created SIM profiles.



Features

SIM Profile Management for Flexible Railway Communications

SIM Profile Management is the key to flexible railway communications services. More advanced than standard GSM card handling, SIM Profile Management grants a better access and control. It allows full remote management of files and settings on the SIM card, with central monitoring and secure transmission of all transactions. SIM Profile Management does not require loading an additional applet onto the SIM during GSM-R service updates or modifications. Thus, valuable card memory space can be preserved for individual railway service enhancements and additional functionalities.



Unique SIM Profile Management

- _ Profile generating: Display, create, modify and update SIM profiles
- _ Profile versioning: Parent profiles, profile derivation, archiving and history
- _ Profile lifecycle: Profile evaluation, activation and deactivation process

User-friendly Client Applications

- _ Self-explanatory Java GUI: The administration services of Orga Systems' SIMtelligence™ Center GSM-R support the user through easy-to-use GUIs and useful help functions
- _ Multi-language support: Optional inclusion of different languages in the client applications

Advanced OTA Platform

- _ SIM selection: Assign profiles to SIMs or SIM groups
- _ SIM update: Create and request SIM card updates
- _ SIM status: Monitor the status of pending and completed updates
- _ SIM query: Read and display the SIM card content remotely via OTA

SIM Card Reader/Writer

- _ Local or networked loading of new SIM profiles in areas without GSM-R coverage
- _ Card Terminal Client: User-friendly client application for not technically versed users (e.g. office staff)

Powerful System Administration

- _ System configuration: Configuration editor, user and password maintenance
- _ SIM card insertion: Easy installation of new SIM cards in SIMtelligence™ Center GSM-R inventory database
- _ Reports: Display and evaluate system reports
- _ Profile import/export: Import and export technical and logical SIM Profiles
- _ Batch processing: Processing jobs for activation and modification of SIM cards

ASCI Functionality and Functional Number Support

- _ SIM profiles with settings for the ASCI features VGCS, VBS and eMLPP (enhanced Multi-Level Precedence and Preemption)
- _ Maintenance and network provisioning of Group IDs for Voice Group Call Service and Voice Broadcast Service
- _ SIM Profiles with Functional Numbers for mobile-originated and ground-originated call addressing

SIM Management Security Features

SIMtelligence™ Center GSM-R provides security features that give the operator total control over the SIM card inventory. These systems comply to the most recent GSM standards for SIM card communication:

- _ SIM query: files on the SIM card can be retrieved for content control using Over-The-Air SIM Query
- _ Transport security: All OTA data transferred to the SIM card are secured by cryptographic checksums or full message encryption
- _ Proof of Receipt: Messages to the SIM card are answered by a detailed Proof-of-Receipt response message, stating the successful or unsuccessful processing of the received OTA commands

The new Dynamic Group Communication (DGC) feature improves organizational processes and reduces the overhead costs of GSM-R network and service management. DGC allows self-care functions for subscribers and remote setup of group communication services as day-to-day tasks and challenges require.

DGC enables onboard train crews to form internal communication networks at short notice, with full flexibility to assign new members to the group at any time during the journey.

SIMtelligence™ Center GSM-R supports Dynamic Group Communication for standard and emergency calls and works in combination with the GSM-R back-end systems, e.g. the IN System.

The Benefits

Simplified SIM Procurement Process

- _ All required GSM-R SIM cards can be sourced with a common technical profile in one batch.
The subscriber-specific logical profiles are simply added after procurement.

Customer Care Optimization

- _ Interoperation of OTA with Customer Care, Provisioning and Billing Systems for seamless activation of subscribers and association of profiles

Top-level Security – Safe Operation

- _ System access security via LDAP
- _ Central encrypted storage of OTA download keys
- _ Secured Over-The-Air transmissions
- _ Proof of Receipt for downloads
- _ Secure external interface protocols

Investment Protection

- _ two feature-graded product editions for careful step-by-step investment according to the successive GSM-R implementation phases (pilot - integration - production)
- _ Benefits from the learning curve: all product editions utilize the same SIM profiles created during previous phases

Cost Reduction

- _ OTA significantly reduces the total expenses for card logistics and SIM updates, compared to the laborious manual maintenance of SIM cards in handsets and cab radios

Additional Revenue-generating Services

- _ SIM Profile Management reserves card memory for multiple revenue-generating add-on services, e.g. Java applets providing updated departure and arrival times or ticket services for passengers.



