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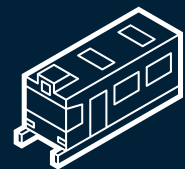
**30 +
COUNTRIES**

with active
Icomera installs



**30 +
PATENTS**

within mass
transit connectivity



**28,000+
VEHICLES**

connected with
Icomera solutions

Satellite, cellular, and trackside connectivity unified on board
as a single, trusted, fleet-wide service layer. **Find out more...**

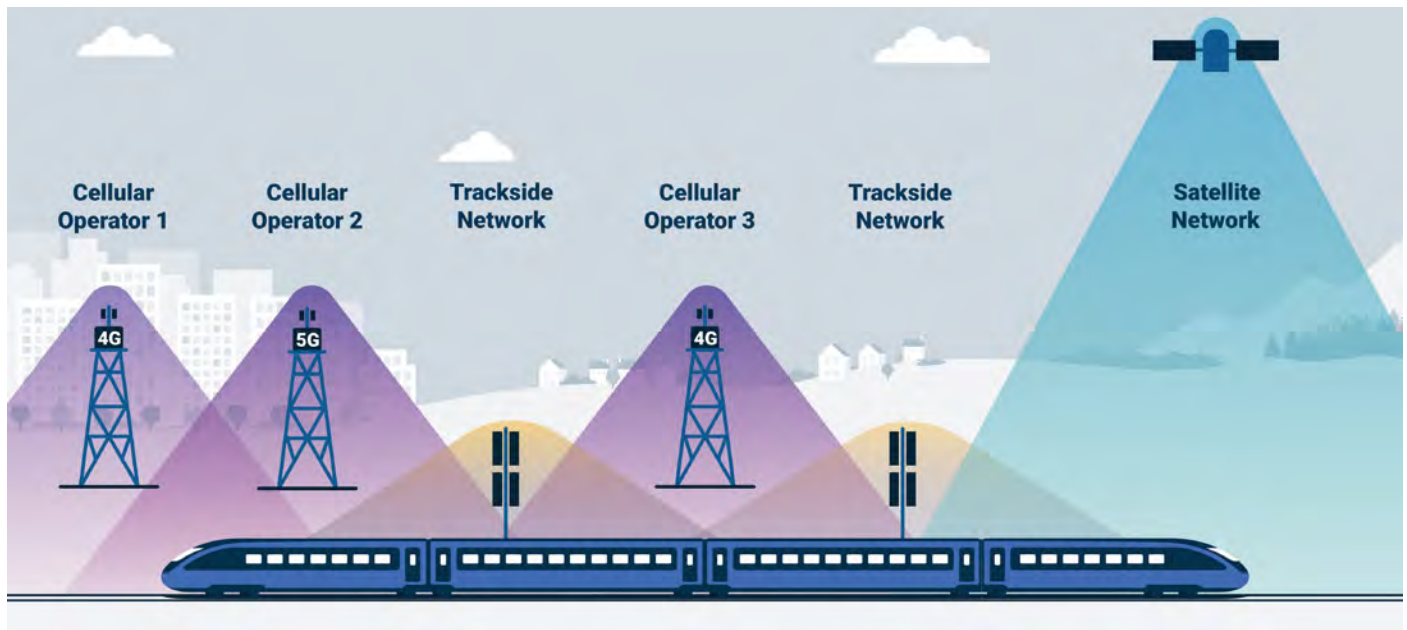




Connectivity & Wi-fi

Icomera

Icomera XS1: A Connectivity-First 5G Rail Router for the LEO Satellite Era



As LEO satellite becomes part of the onboard internet connectivity mix, rail operators need router architectures that can combine 5G, trackside and satellite networks in the right way for each fleet. Icomera's XS1 has been developed for connectivity-first deployments, extending a portfolio built around different onboard requirements.

After years of working within the constraints of terrestrial coverage alone, low-Earth-orbit (LEO) satellite networks are beginning to reshape what is possible for onboard Internet connectivity, particularly when combined intelligently with cellular and trackside networks. As operators explore how these new capabilities can be integrated into onboard systems, a wider challenge is becoming clear: connectivity requirements are becoming increasingly diverse.

Rail operators are now balancing differences in fleet type, vehicle architecture, available installation space, passenger expectations and operational priorities, all of which influence the onboard technology choices that need to be made.

One Architecture No Longer Fits Every Fleet

Rail operators should not be forced into a one-size-fits-all approach to onboard internet connectivity. Some deployments require high-performance onboard computing, virtualised applications and large-scale storage. Others need reliable, secure connectivity in a compact form factor that is easier to install, retrofit and operate across a fleet.

To address this, Icomera has developed a router portfolio designed to support this full range of requirements, with products built on a common X-series software foundation and lifecycle operating model.

XS1: Designed for Connectivity-First Deployments

The newly available Icomera XS1 has been designed specifically for connectivity-first deployments. A compact, rail-grade 5G router, the XS1 is well suited to fleet modernisation projects, space-constrained vehicles such as metros, light rail and regional trains, and modular or distributed onboard connectivity architectures. Its smaller and lighter form factor supports easier installation and retrofit, while dedicated migration designs help simplify transitions from earlier-generation Icomera routers.

Crucially, connectivity-first does not mean connectivity-limited. The XS1 brings together aggregated connectivity across 5G cellular, private trackside and LEO satellite networks into a single onboard service layer. This includes support for Starlink, where Icomera is an authorised reseller, alongside other satellite connectivity options. Rather than treating satellite as a standalone overlay, Icomera integrates it alongside terrestrial networks as part of a unified onboard architecture.

Combining Cellular, Trackside and Satellite Connectivity

This matters because the rail environment rarely offers one perfect connectivity option across an entire route. Cellular capacity, private trackside coverage and satellite availability each have a role to play. The value lies in combining these networks intelligently, managing them consistently, and presenting them to onboard systems as a trusted connectivity layer. For passenger Wi-Fi, crew applications, telemetry, digital information systems and operational services, this approach helps support more resilient connectivity as trains move between different coverage conditions.

A Portfolio Approach to Onboard Connectivity

Icomera's router portfolio, which also includes its flagship X7 mobile connectivity router, has been developed to support these different onboard requirements.

"The XS1 expands our portfolio of rail-specific connectivity products, complementing the flagship Icomera X7 router," explains Damien Convert, Chief Business Officer at Icomera. "While the X7 combines high-perfor-



mance connectivity with substantial built-in computer processing power and storage to support multiple, resource-intensive applications, the XS1 is optimised for deployments where reliable connectivity is the priority, and onboard computing plays a less central role."

Together, this approach gives operators greater flexibility to select the right connectivity architecture for different vehicles, service patterns and operational requirements, rather than forcing a single solution across an entire fleet – an increasingly important consideration as onboard systems continue to evolve.

Proven at Fleet Scale

Both Icomera routers share the same proven software foundation. The XS1 is built on Icomera's established X-series software architecture, already deployed at scale across live rail fleets worldwide, supporting large numbers of onboard systems and millions of passenger journeys every day. Like other Icomera products, it also operates within the company's 'People, Processes and Tools' model for managed rail connectivity: dedicated service delivery teams, clearly defined operational processes and purpose-built cloud tools working together to support predictable performance, lifecycle management and clearly defined service levels.

Preparing for the Next Generation of Connected Rail

As rail operators prepare for the next generation of connected services, the challenge is no longer simply how to connect a train. It is how to select the right onboard architecture for each fleet, integrate new technologies such as LEO satellite, and operate connectivity reliably over the full lifecycle of the asset.

With the XS1, Icomera is extending its router portfolio to meet that broader range of needs, offering a compact, connectivity-first product built on the same trusted foundation that supports its most demanding onboard deployments.