

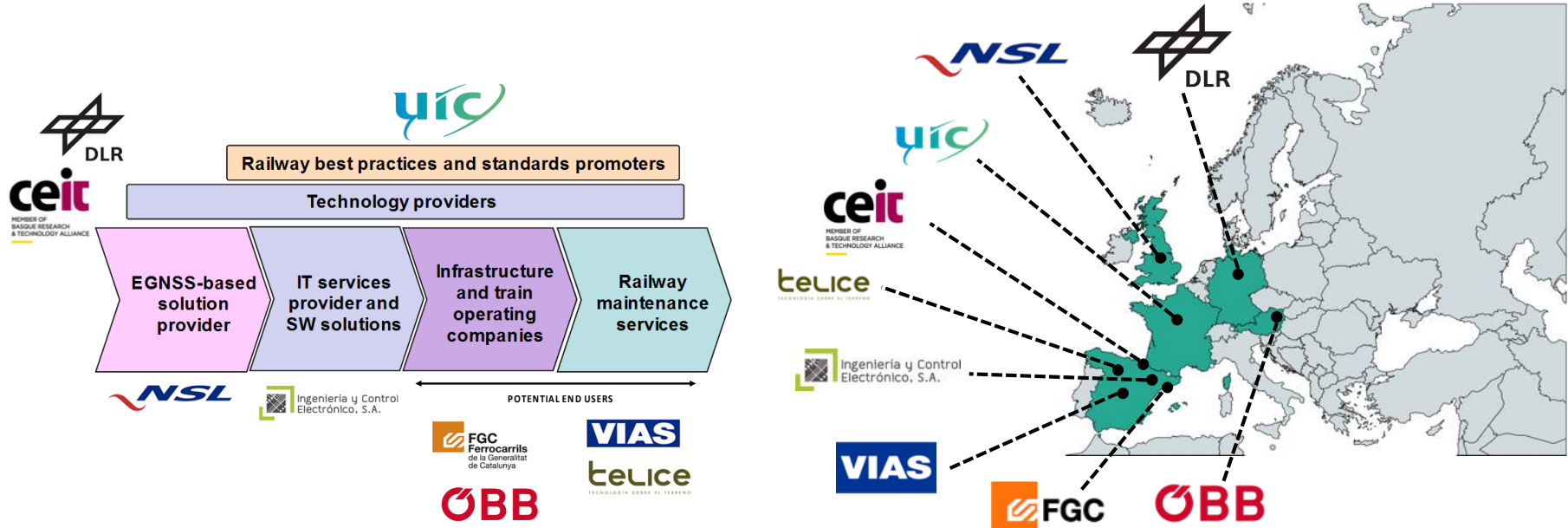


# Project overview

Unai Alvarado – CEIT ([ualvarado@ceit.es](mailto:ualvarado@ceit.es))

SIA mid-term webinar, July 9, 2020

# Consortium

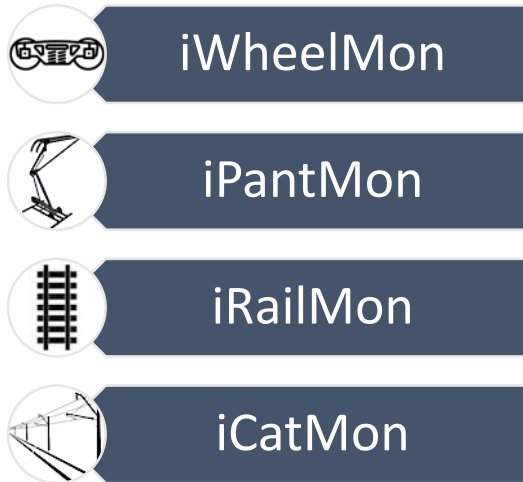


This project has received funding from European Union's Horizon 2020 research and innovation programme and from the European Global Navigation Satellite Systems Agency under grant agreement #776402

# Objectives

## MAIN GOAL

To develop four ready-to-use new services to provide prognostic information about the health status of the railway's most demanding assets in terms of maintenance costs, at the points of the interaction between the vehicle and the infrastructure (wheelset, pantograph, rail and catenary)



### Common features:

- Web interface
- Real-Time info about assets' status
- Prognostic health status assessment
- Integration with operation systems

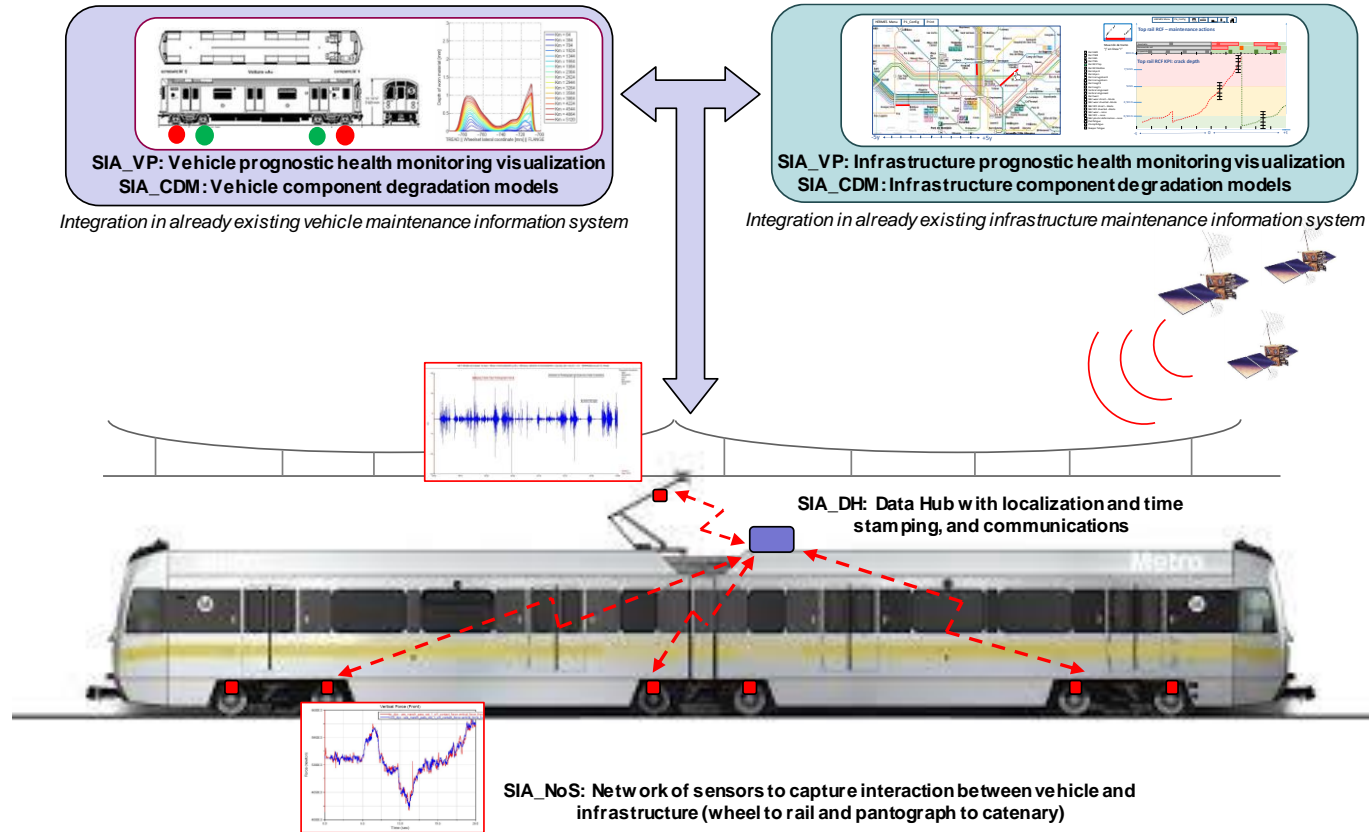


# Objectives

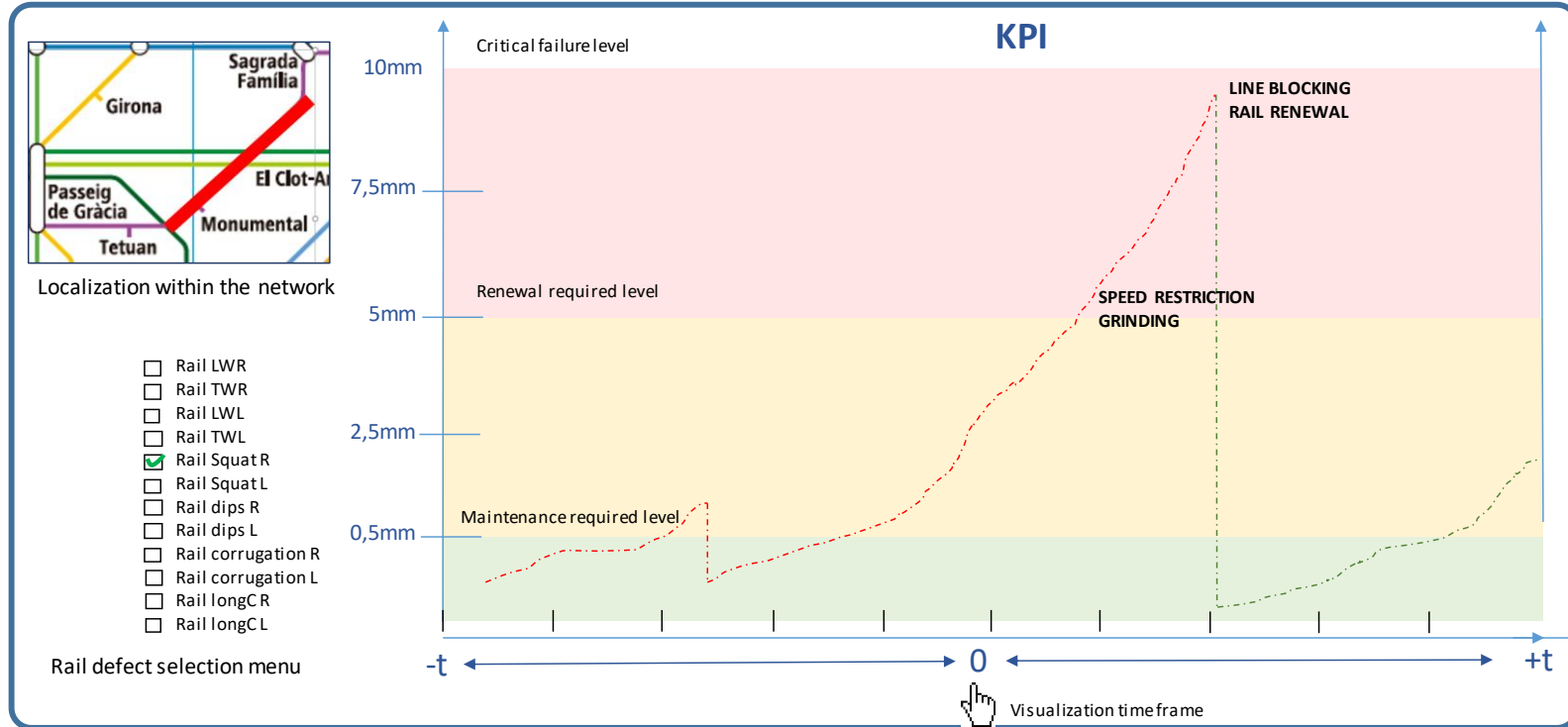
- Development of **low-cost sensor nodes** for wheel to rail and pantograph to catenary interaction characterization.
- Development of **data hub** that collects on-board information, provides accurate position and time stamping with high availability, and transmits the information to a trackside visualization platform.
- Development of **predictive component degradation models** that will enable to connect the monitoring information from wheelset, rail, catenary and pantograph with the asset management information system of end-users.
- Development of a **visualization platform** with two plug-in software modules specific for the railway infrastructure (track and catenary) and vehicle maintenance (wheelset and pantograph).
- Development of **EGNSS-driven applications** for asset management in the railway domain



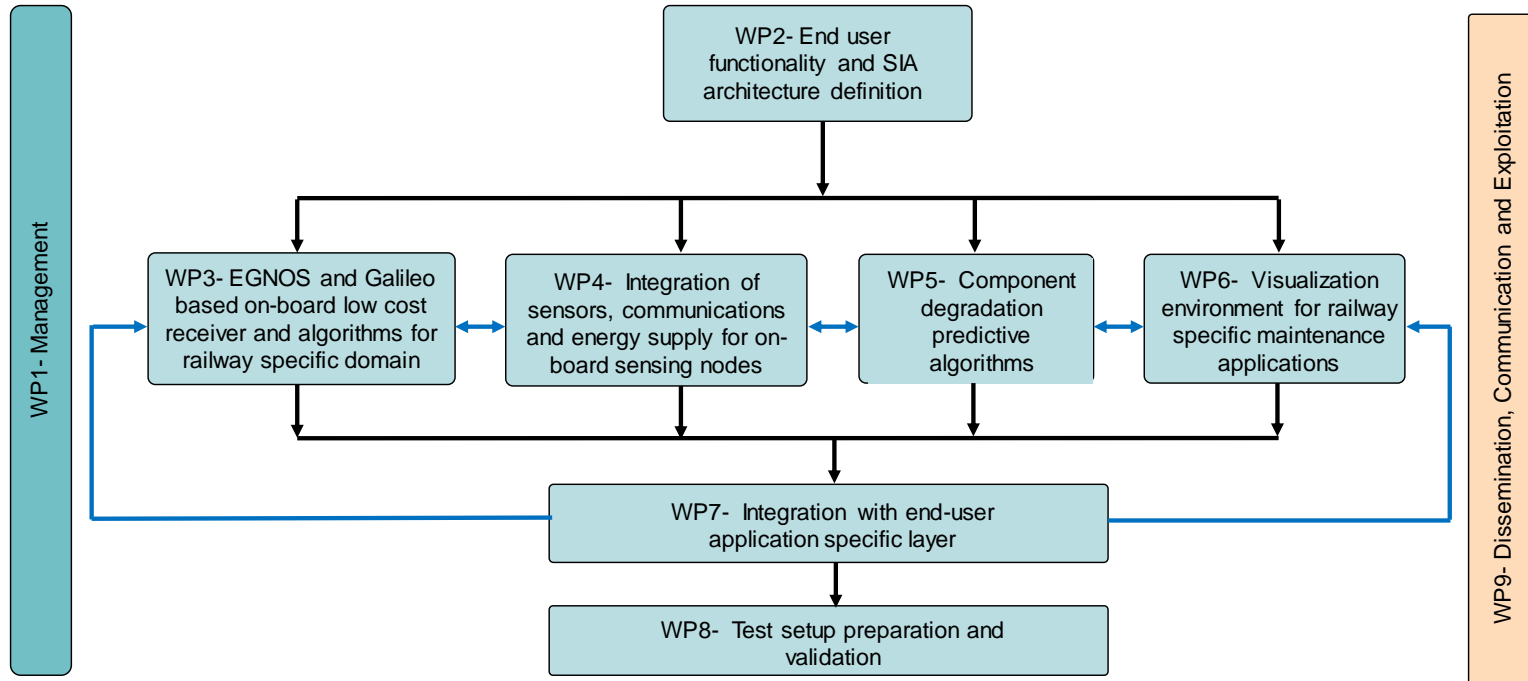
# Concept & Components



# Concept. Visualization example



# Workplan





# Thank you

Unai Alvarado – CEIT ([ualvarado@ceit.es](mailto:ualvarado@ceit.es))

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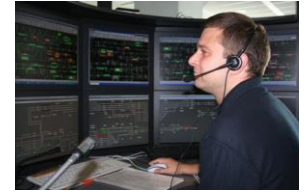
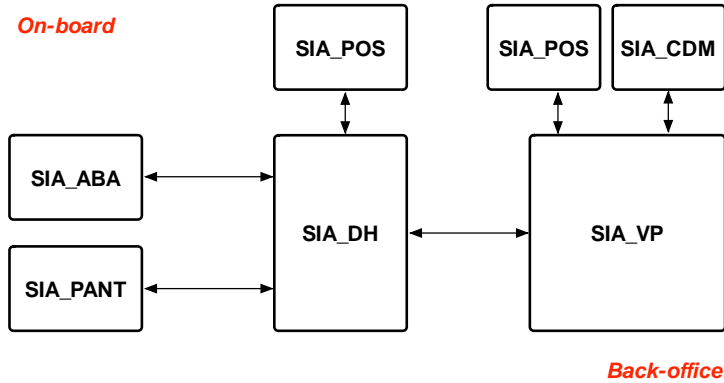


# System overview

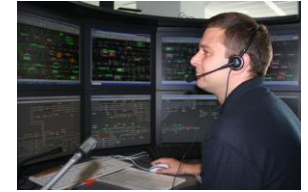
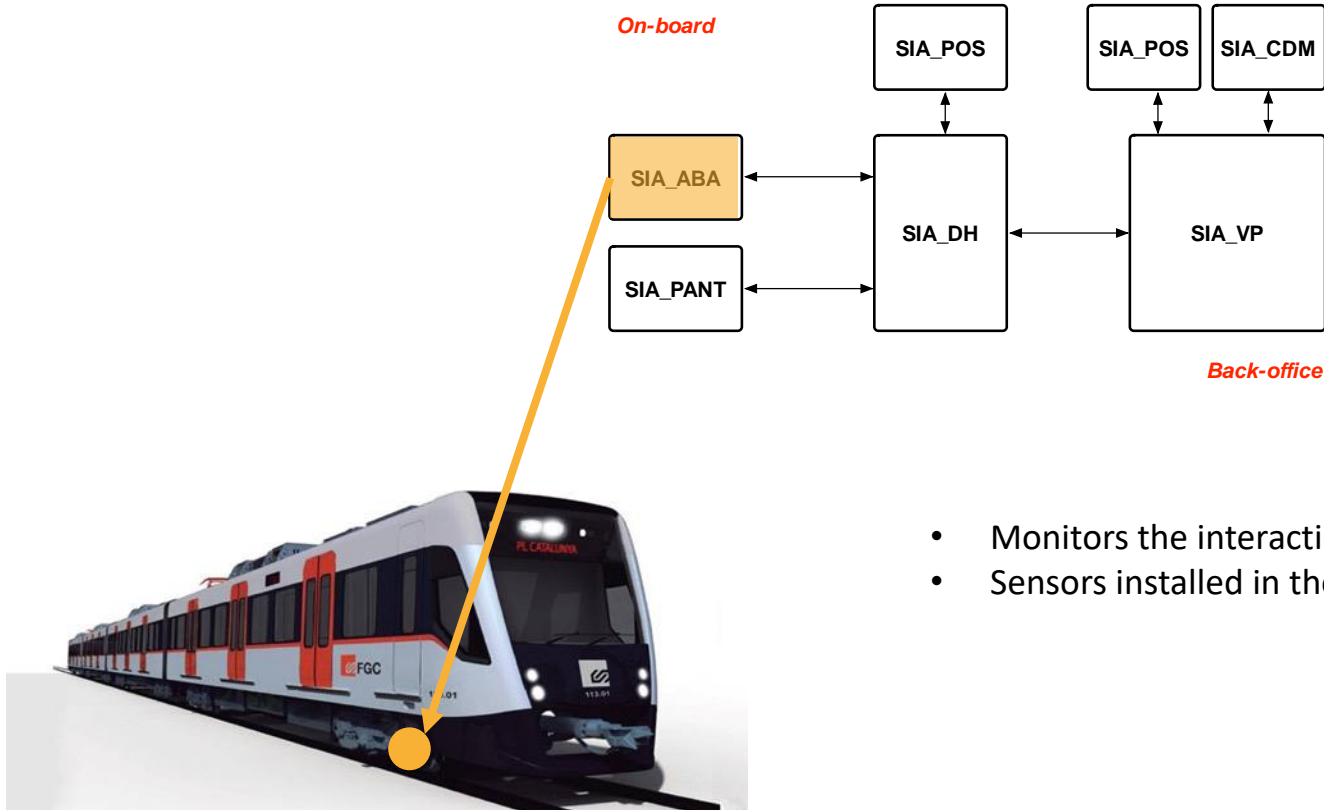
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# SIA system overview

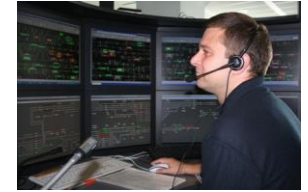
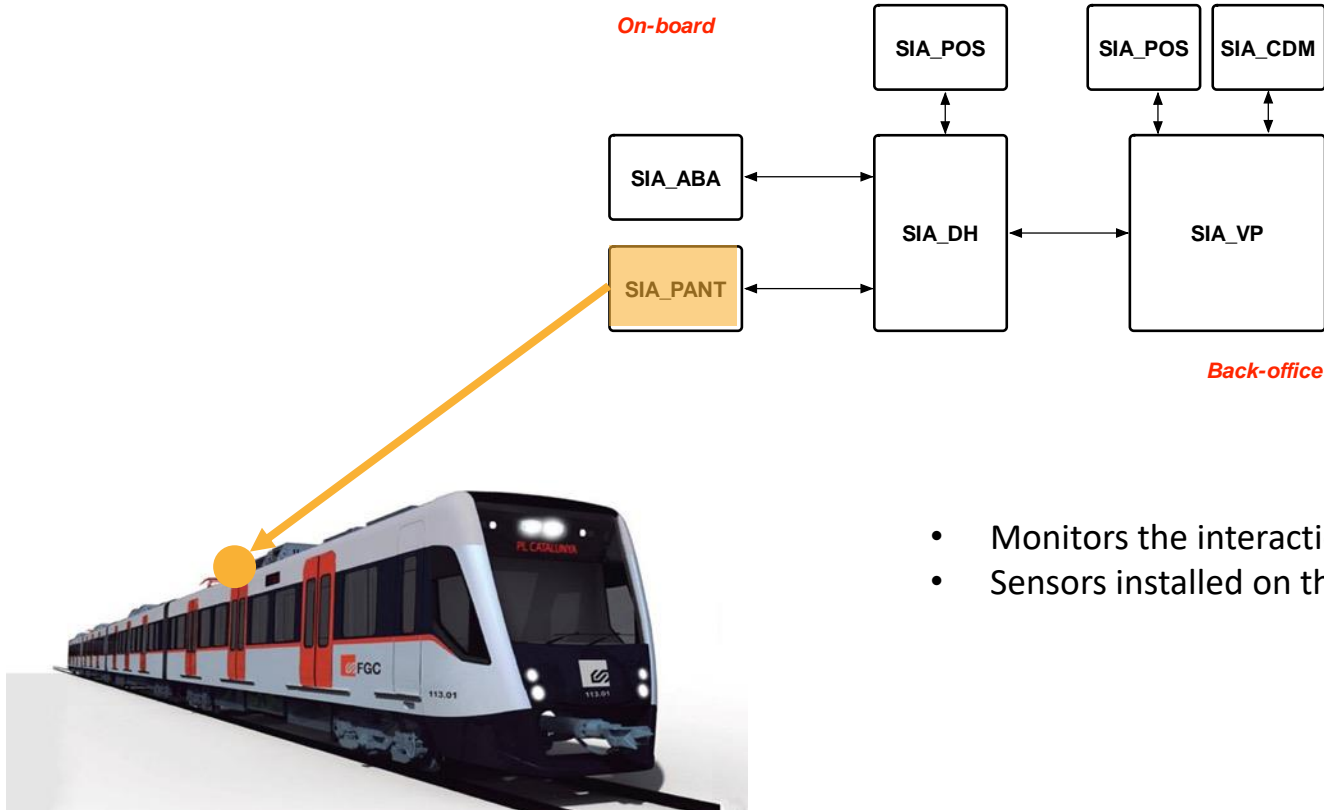


# SIA system overview



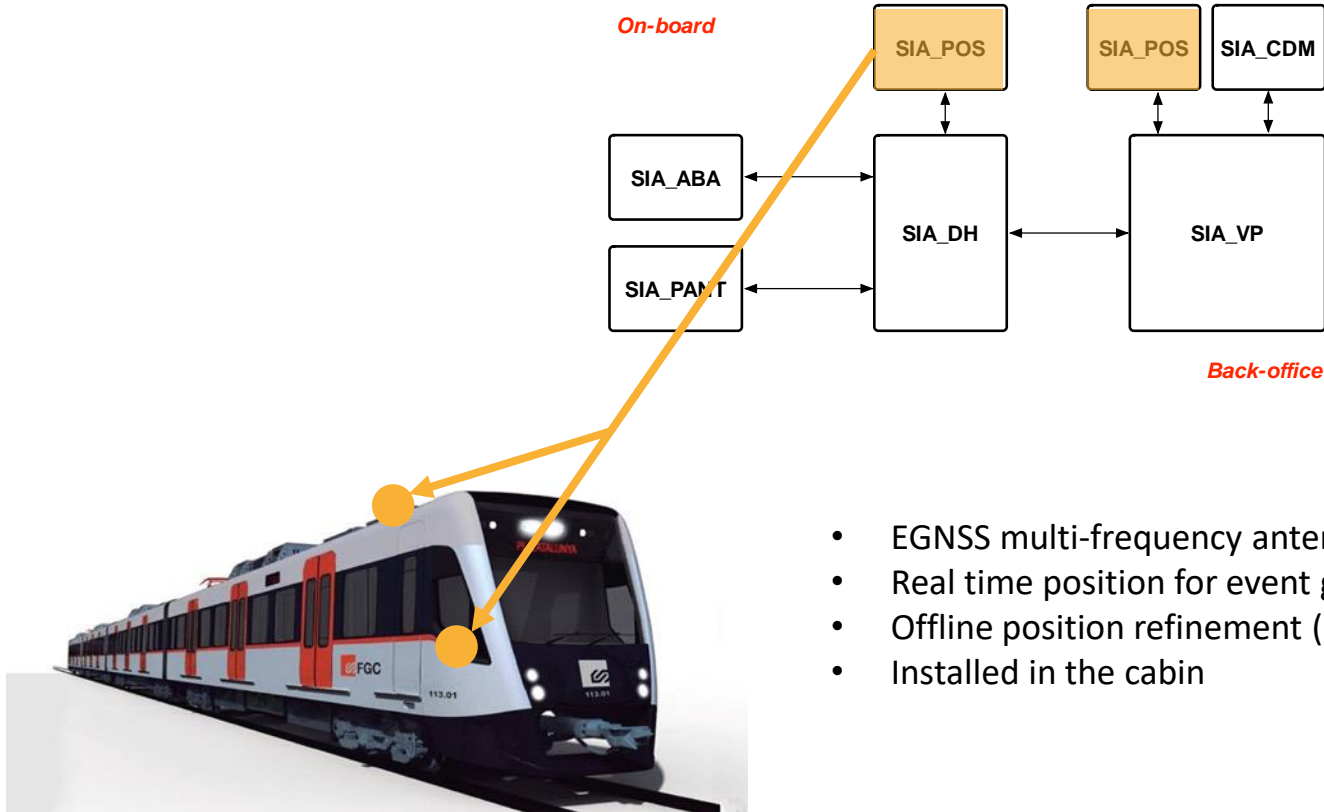
- Monitors the interaction of wheel-rail
- Sensors installed in the axle-box

# SIA system overview



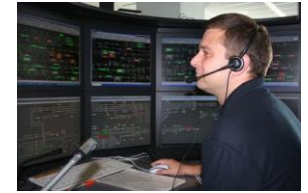
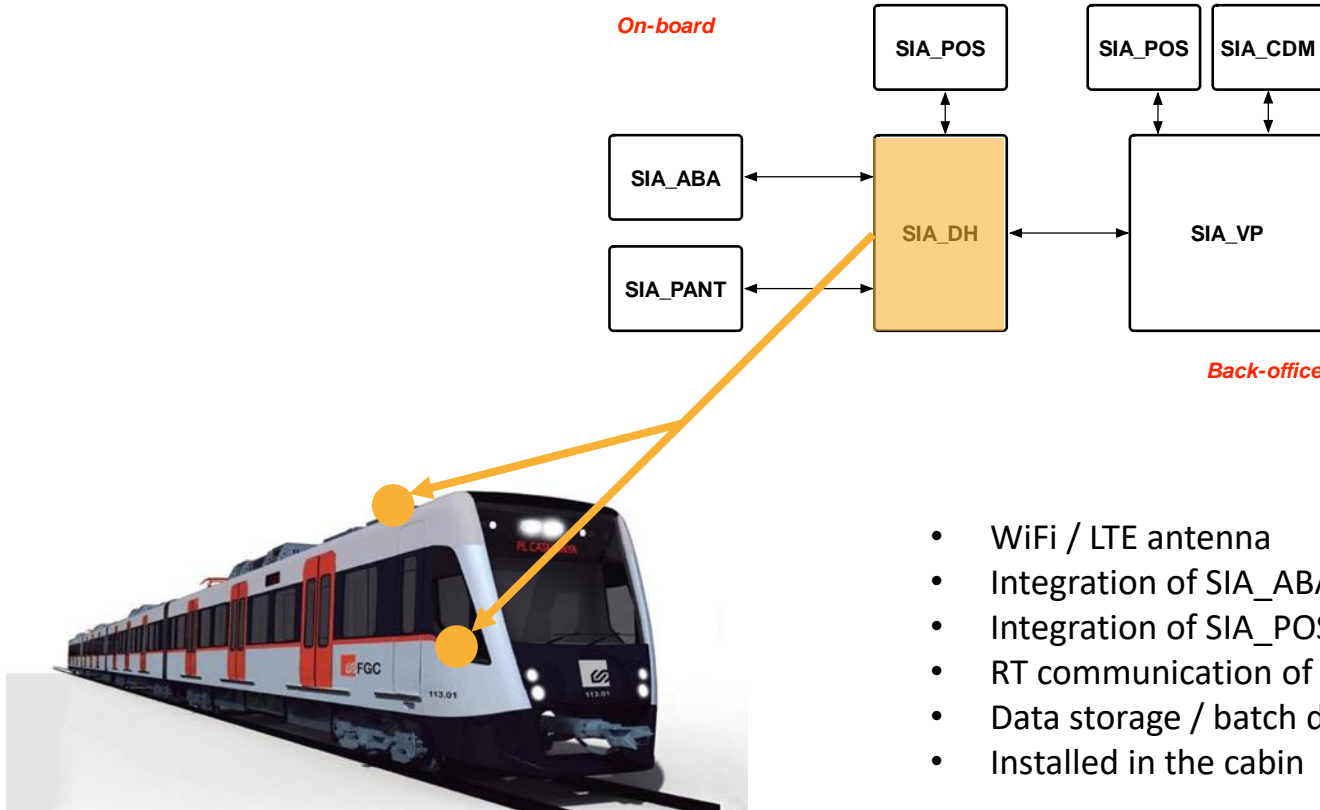
- Monitors the interaction of pantograph-catenary
- Sensors installed on the pantograph

# SIA system overview



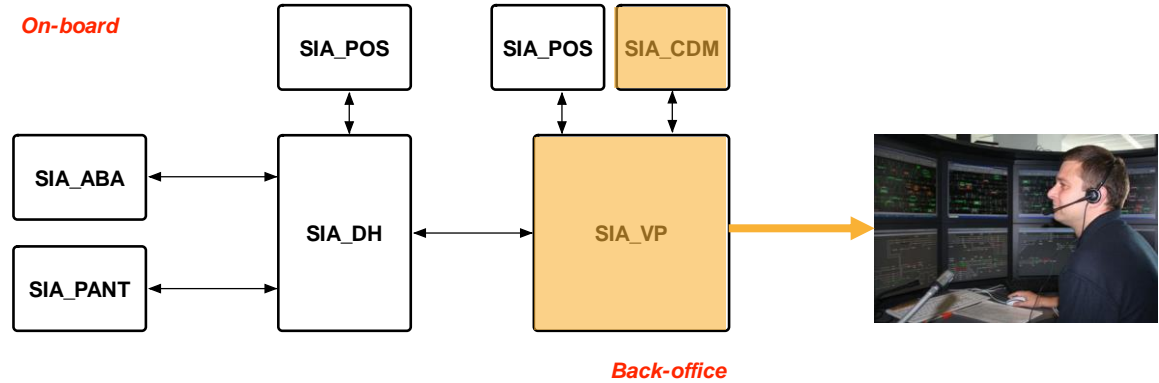
- EGNSS multi-frequency antenna / receiver
- Real time position for event generation (onboard)
- Offline position refinement (back-office)
- Installed in the cabin

# SIA system overview



- WiFi / LTE antenna
- Integration of SIA\_ABA / SIA\_PANT
- Integration of SIA\_POS
- RT communication of events to SIA\_VP
- Data storage / batch download (SIA\_VP)
- Installed in the cabin

# SIA system overview



- iCatMon
- iPantMon
- iWheelMon
- iRailMon
- Visualization of KPIs
  - Past
  - Present
  - Future



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