

# SERVICES BASED ON ENERGY METERING

***AN INTERNATIONAL COLLABORATION USE CASE***



***ERESS FORUM***

***Paris – May 31<sup>st</sup>, 2017***

**HASLERRail**

**SAIRA  
ELECTRONICS**

**ETCS**

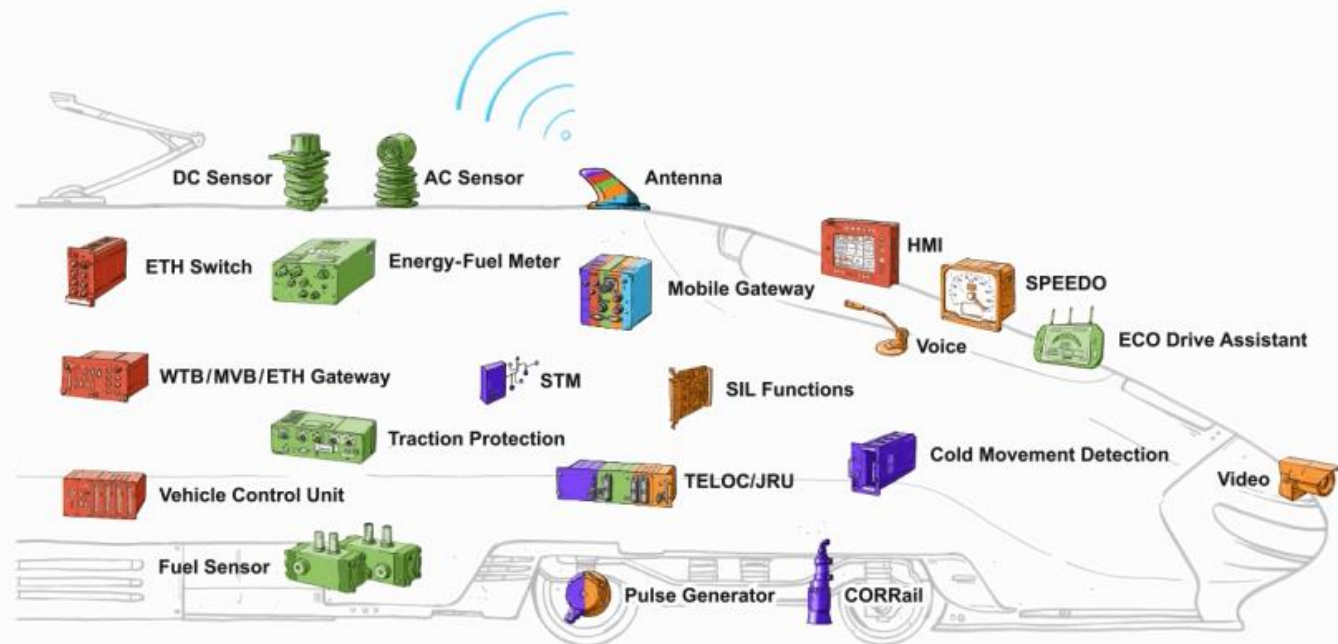
**TCMS**

**Energy Metering**

**Data Recording/Safety**

**Data Management**

**IOTrains**



# Evolution of Energy Metering System

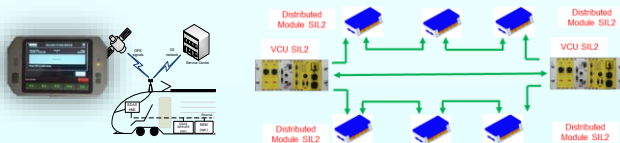
## METERING FOR BILLING



EN 50463:2016

## METERING FOR SAVING

- DAS
- Onboard Energy Management



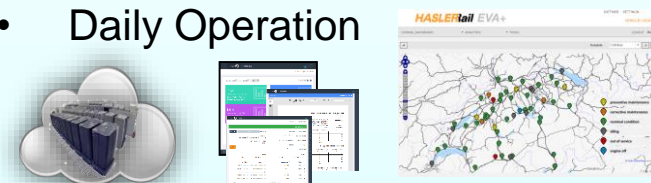
## METERING FOR PROTECTION

- SIL2 Functions
- Harmonic Monitoring



## METERING FOR SUPERVISION

- Fleet Management
- Daily Operation



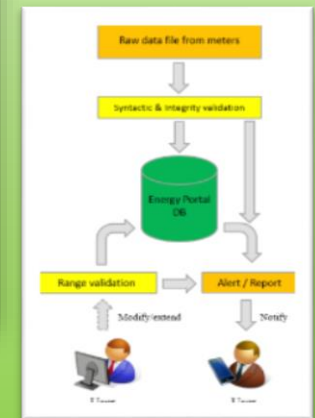
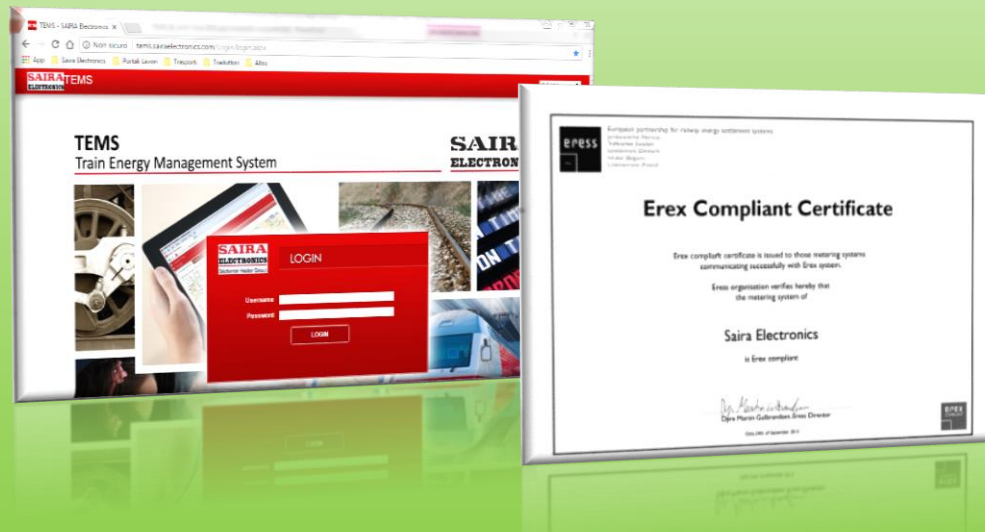


# An International Collaboration Use Case (1/2)



- **2015** : Jernbanverket, Trafikverket and Banedanmark selected Saira Electronics as supplier of certified Energy Meter devices for the retrofit of freight/passengers fleet
- The signed Frame Agreement includes also the development of additional features on DCS

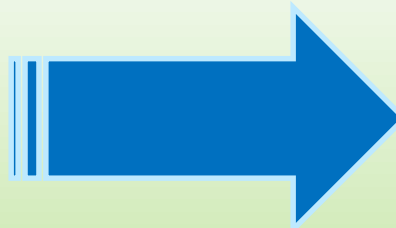
- **2017**: TEMS develops to ENERGY PORTAL
- Energy Portal gives to the energy manager a single shareable place, where he can easily transform raw data into useful information and take energy saving **decisions**.
- The new features are based also on the Infrastructure and Fleet Management experience by BaneNOR and Trafikverket



# An International Collaboration Use Case (2/2)

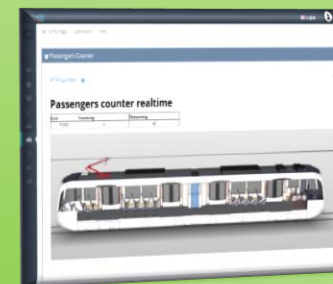
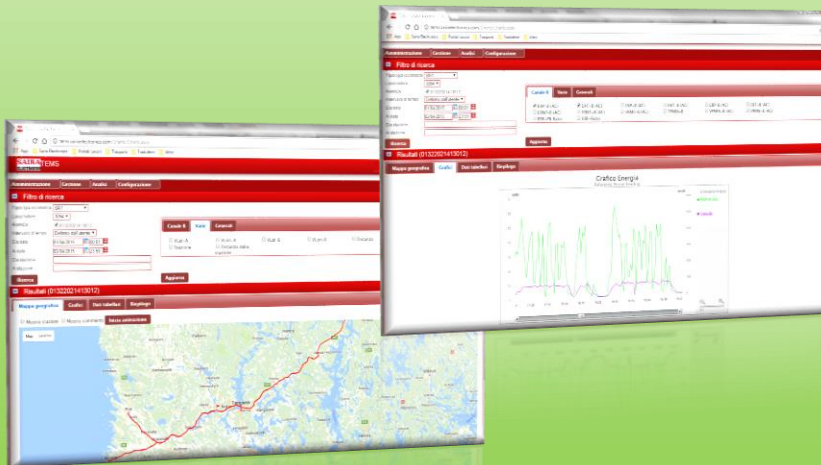
## FROM TEMS-BVT

- Only CEBDs management
- Developed for Billing purposes
- CEBDs hosting and organization
- Web based interface
- Different data visualization ways
- Basic data export features
- Approved by Eress



## TO ENERGY PORTAL

- All features available at TEMS-BVT
- Improved Fleet Management
- Extended Data Management (not only CEBD)
- Data validation feature, based on customizable set of Validation Rules
- Automatic operative procedures such as:
  - thresholds monitoring
  - energy model executions
  - report distributions
  - remote control
  - billing
- Ready for EN 50463:2016



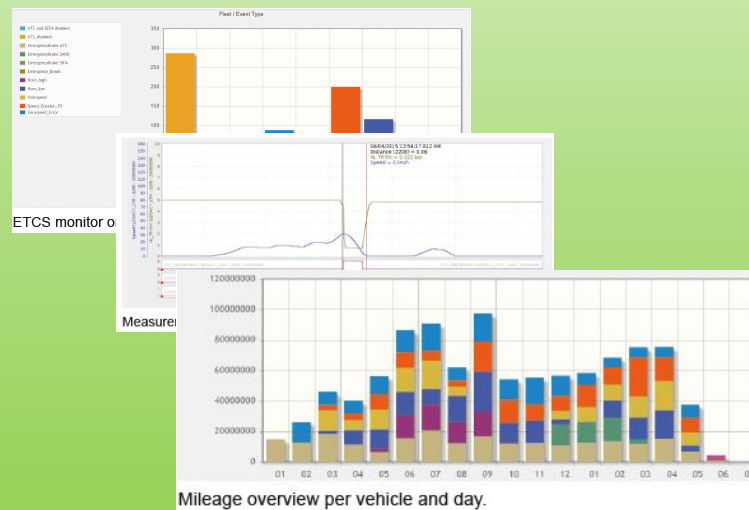
# Data Management: a vision on the future

## ENERGY PORTAL



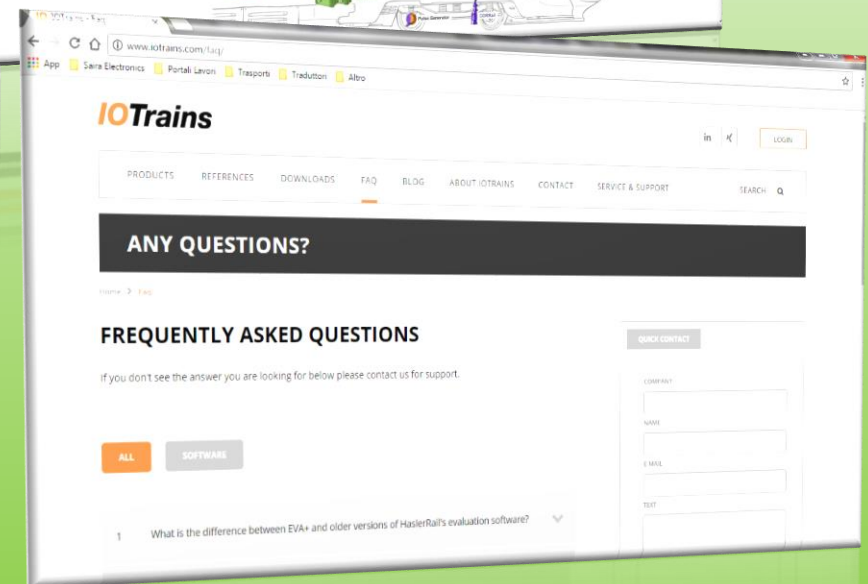
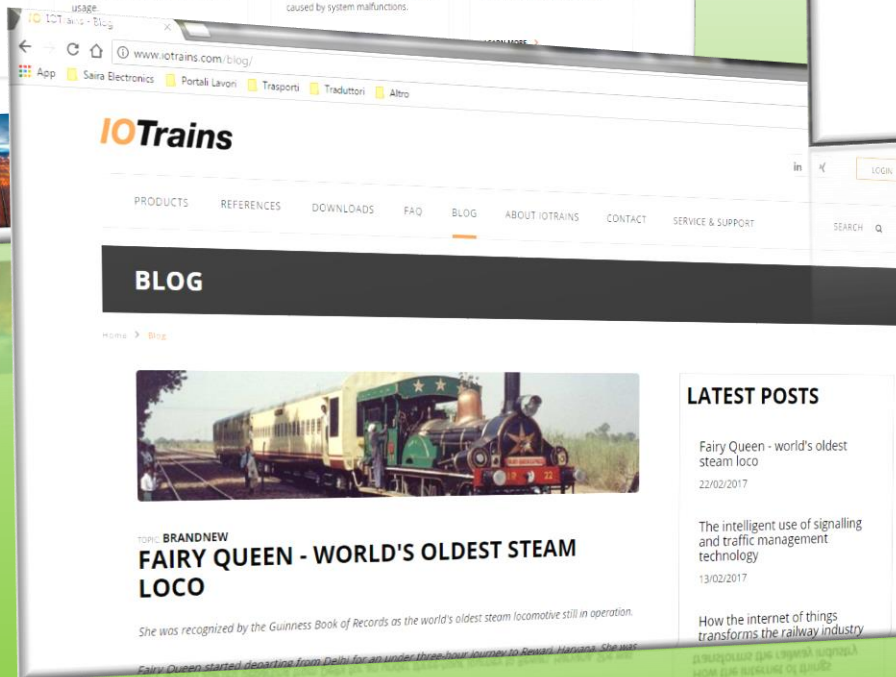
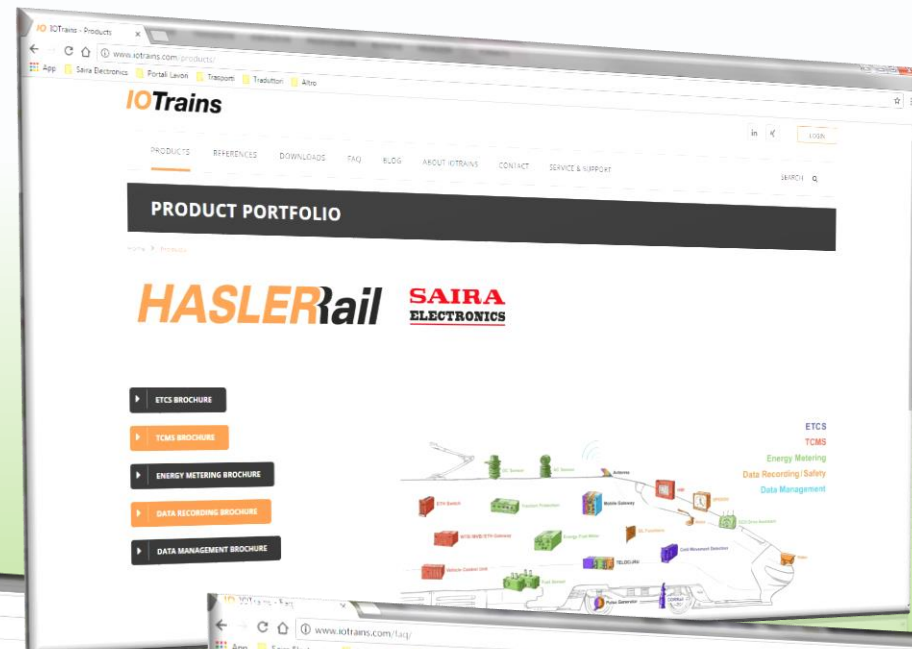
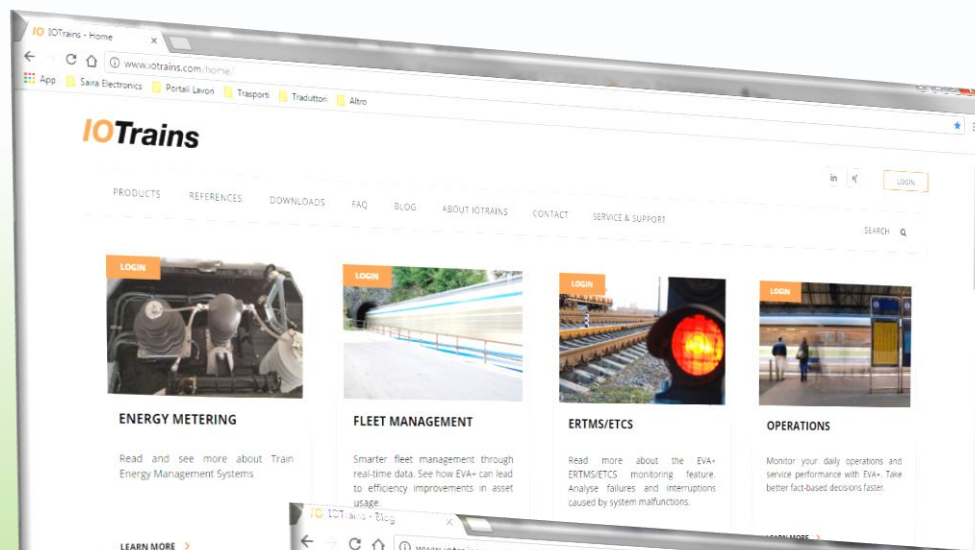
## EVA+

- **ERTMS MONITOR**
  - *Balise Group Error Check*
  - *Odometer Quality Check*
  - *ERTMS Performance*
  - *Mileage calculation*
- **FLEET MANAGEMENT**
  - *Timetable accuracy verification*
  - *Proactive fault management*
  - *Monitor availability & reliability*



## INTEGRATED DATA ANALYSIS CENTER

# IOTrains The new Information Exchange Platform





# THANK YOU FOR YOUR ATTENTION

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