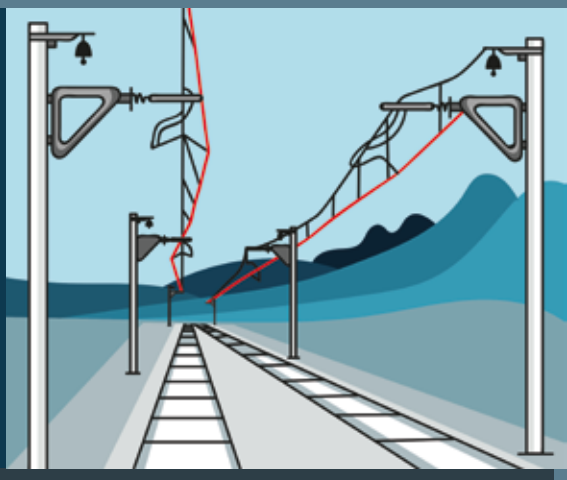
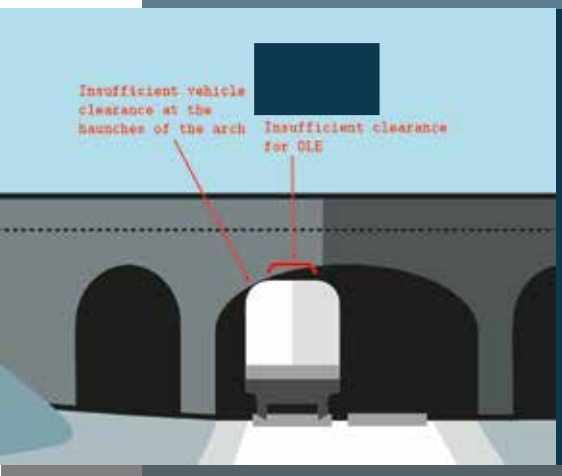
tCat Workstation

SOLUTION PRESENTATION

THE JOB

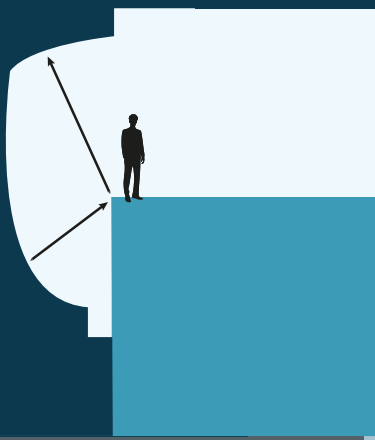
It is vital that **the spatial position** of the contact wire relative to the track lays within the working range to avoid a premature worn out of the wires and the pantograph itself, as well as faults in the system.





Gauge, the available space between the track, the train, the OCS and other structures such as bridges or tunnels is a critical design parameter that must also be monitored during installation, acceptance tests and line operations.

In order to avoid the risk of people coming into contact with live wires or equipment or accidental short circuits, there are requirements on distances or **clearances** from closest standing point to the equipment and between parts of the system.



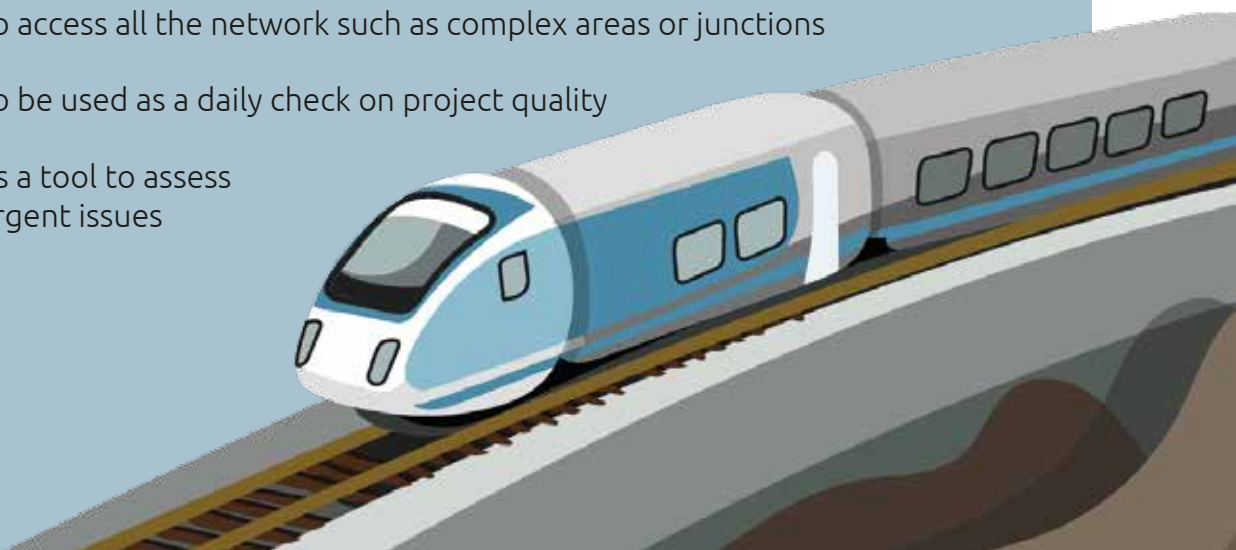
MARKET SOLUTIONS

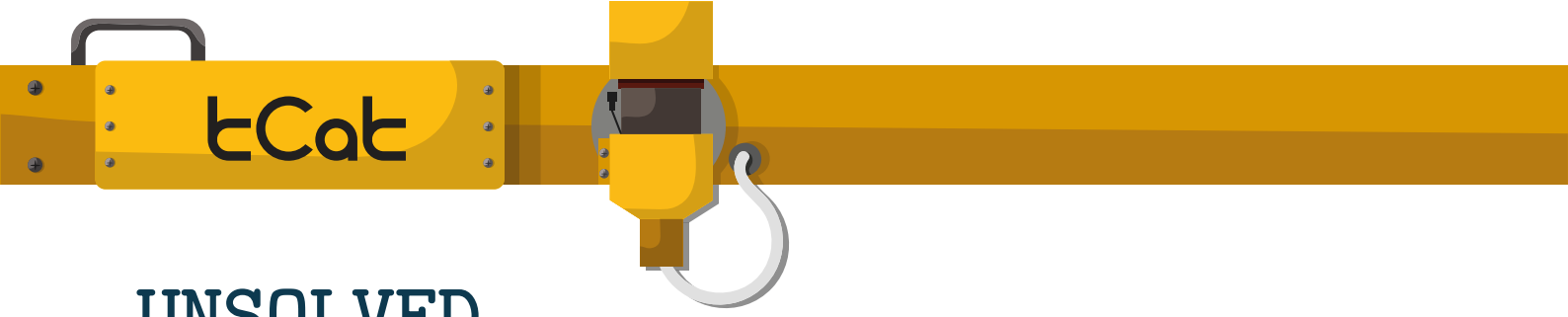
LASER POINTER/RULER

- Reliability very sensible to user skills and knowledge
- Slow, low productivity process
- Involves a heavy manual and error prone process (visual reading, probably and writing on a field note-book, manually entering data on a system, …)
- Only valuable for very small works
- Not suitable for gauge and clearance measurements

MEASUREMENT TRAINS AND ON-BOARD DEVICES

- High investment and maintenance costs
- Operability conditioned to large sections and schedules
- Information overflow
- Some valuable information or parameters are usually missing. No historical data
- Not suitable to access all the network such as complex areas or junctions
- Not suitable to be used as a daily check on project quality
- Not suitable as a tool to assess unexpected urgent issues





UNSOLVED PROBLEMS

NEW ELECTRIFICACION PROJECTS

The status of the catenary geometry is only known at the very end of the project once the measurement train produces the acceptance tests report.

This reduces the time window for adjustments increasing delay risks

UPGRATE AND RENEWAL PROJECTS

- These works are, in a way, commissioned daily thus the key geometrical parameters should be checked daily before delivering them to the network
- There is no way of providing sound evidence of the state of the delivered OCS geometry

MAINTENANCE OPERATIONS

Some issues must be assessed and solved immediately

Some issues need too many resources to be assessed

WORKSTATION

Inspired by our professionalism and customer-oriented values we developed the tCat as an internal R&D project a device to measure the geometrical parameters of the contact wire +10 years ago, which we´ve been consistently using in our own projects since then.

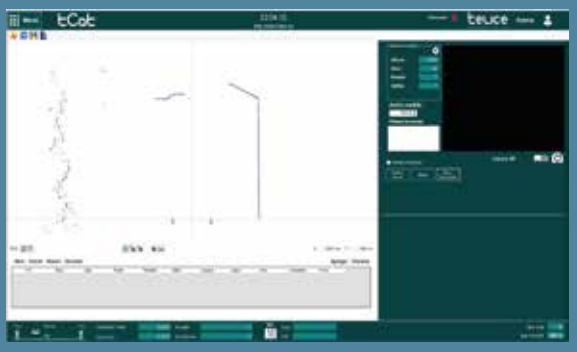
With only a few guidelines provided from the user the system automates the real-time measurement of the relevant geometrical parameters.

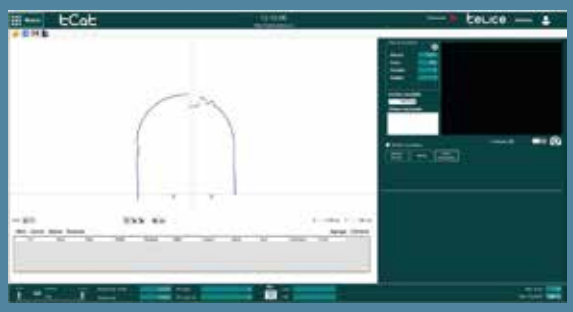
... and tunnel profiling ...

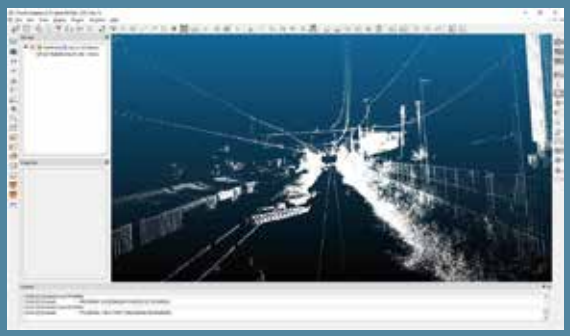
... as well as customized report generation as specified by our clients

tCAT 2.0
PRODUCT VISION

Our product vision is to provide a **real-time, reliable, low cost**, geometry measurement solution, with the best **user experience** that enables **collaboration** among the different roles involved in the design, installation, test and maintenance of the OCS system.







- ✔ **Real time, actionable information**
- ✔ **Automatic measurement**
- ✔ **Cant**
- ✔ **Track gauge**
- ✔ **Odometer readings**
- ✔ **Pics**
- ✔ **Data Base/ customized reports**
- ✔ **Gauge profiles**
- ✔ **Tunnel profiles**
- ✔ **3D point cloud visualization**

A DAY USING A tCAT WORKSTATION

NEW ELECTRIFICATION

1. **OCS Lineman Team**
   Work-package installation test / tCat report
2. **Engineering & Quality Team**
   Assess tCat report and asks for adjustments
3. **Measurement Train**
   Project acceptance tests
   Finds fewer defects
4. **Corrections take less time**
   Correction costs reduction
   Less working pressure

UPGRADE AND RENEWAL

1. **OCS Lineman Team**
   Reviews daily work before returning possession
2. **Engineering & Quality Team**
   Evidence of OCS geometry status
3. **Network**
   Reduction of OCS incidents while in operation

MAINTENANCE

1. **Maintenance Manager**
   Aware of an issue
   Asks for field assessment
2. **Maintenance Technician**
   Performs field measurements
   Reports in real time from the field
3. **Maintenance Manager**
   Takes corrective actions

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TECHNOLOGY IN THE FIELD

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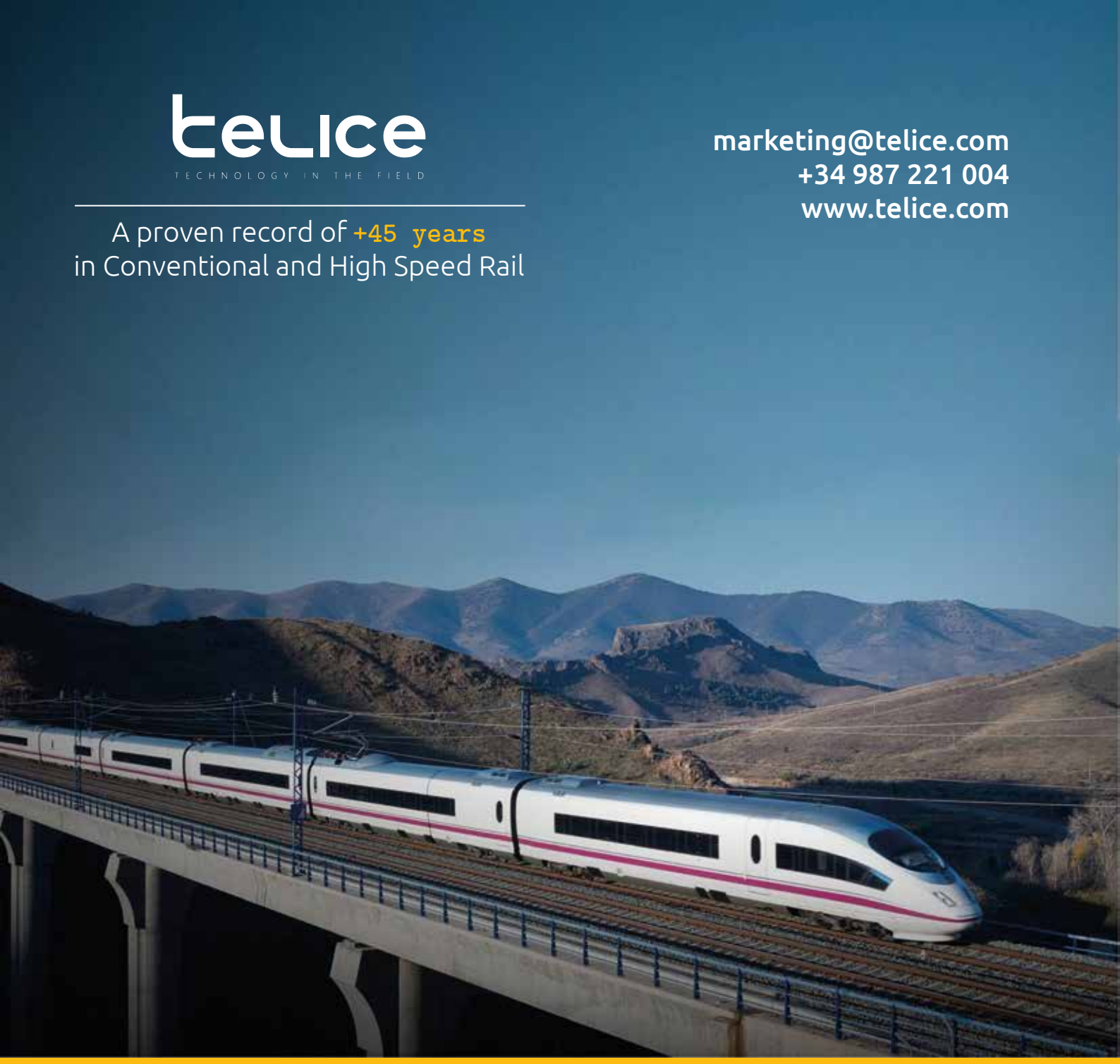

Telice intends to prove and demonstrate this improved **tCat** prototype and reach product matureness to commercially introduce it in key markets by the end of 2019.

This project is cofounded by the **Horizon 2020 Framework Programme of the European Union** under grant agreement No. 778608.