



New slab track design and bench testing for dense traffic and high speed

FFE (Madrid, Spain) – 21 September 2017

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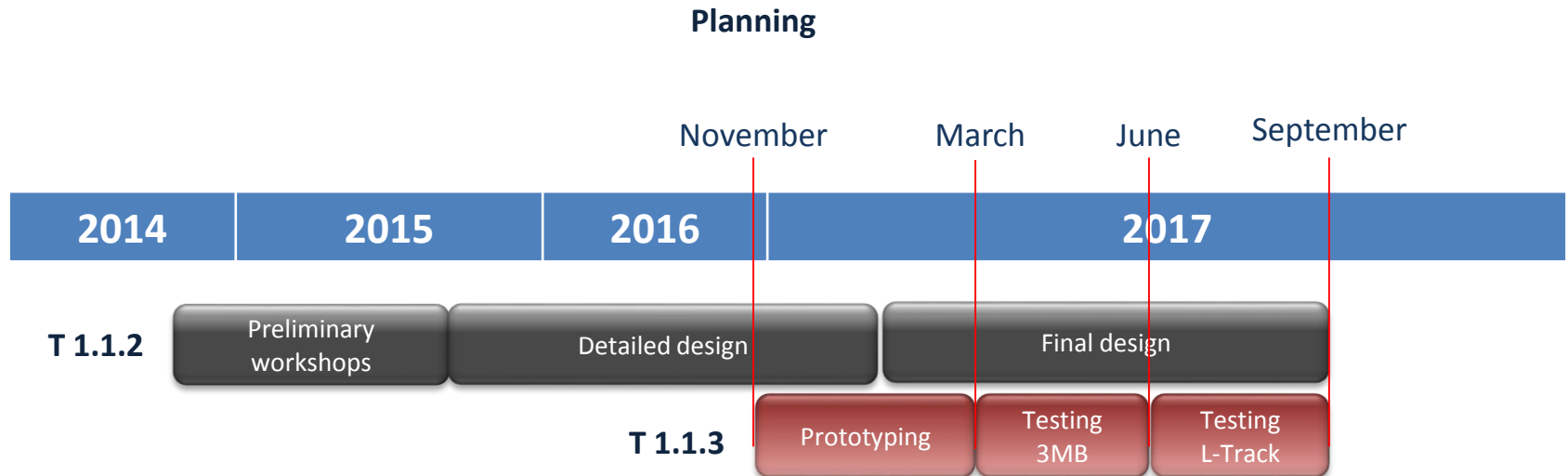
SP1 Leader

SYSTRA



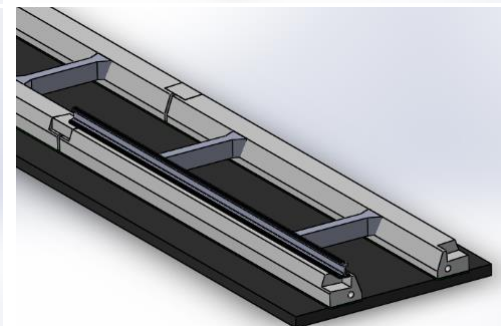
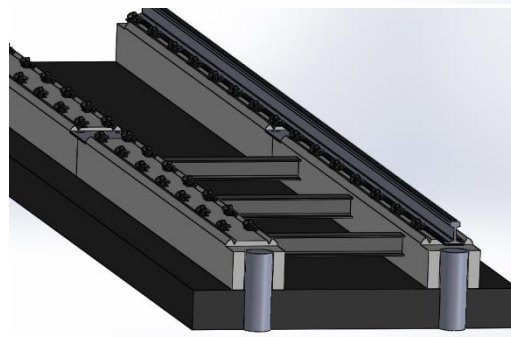
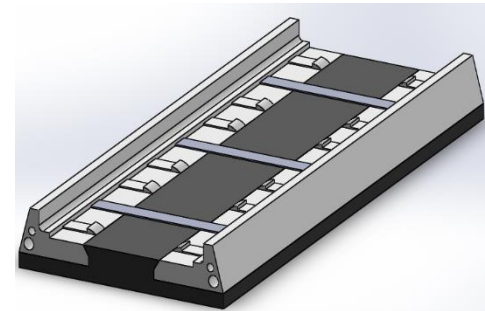
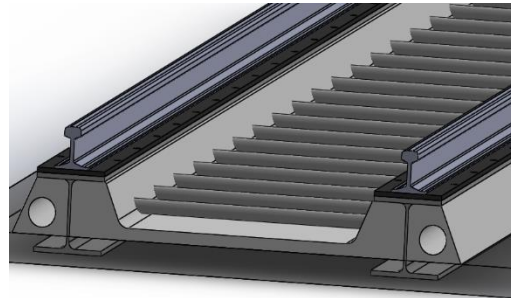
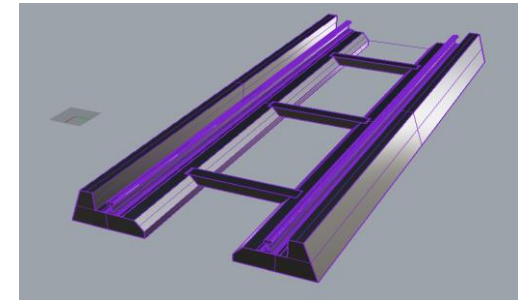
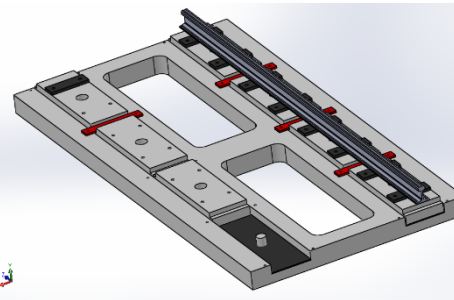
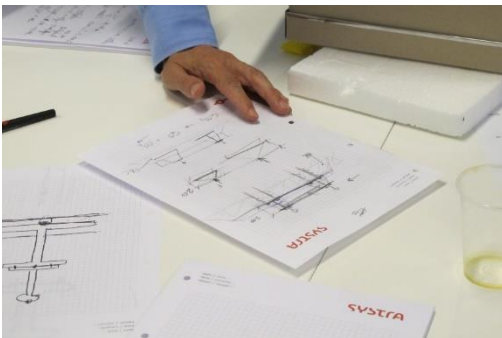
Task 1.1.2 & Task 1.1.3

- New slab track concepts, generation, design, prototyping and testing



Task 1.1.2

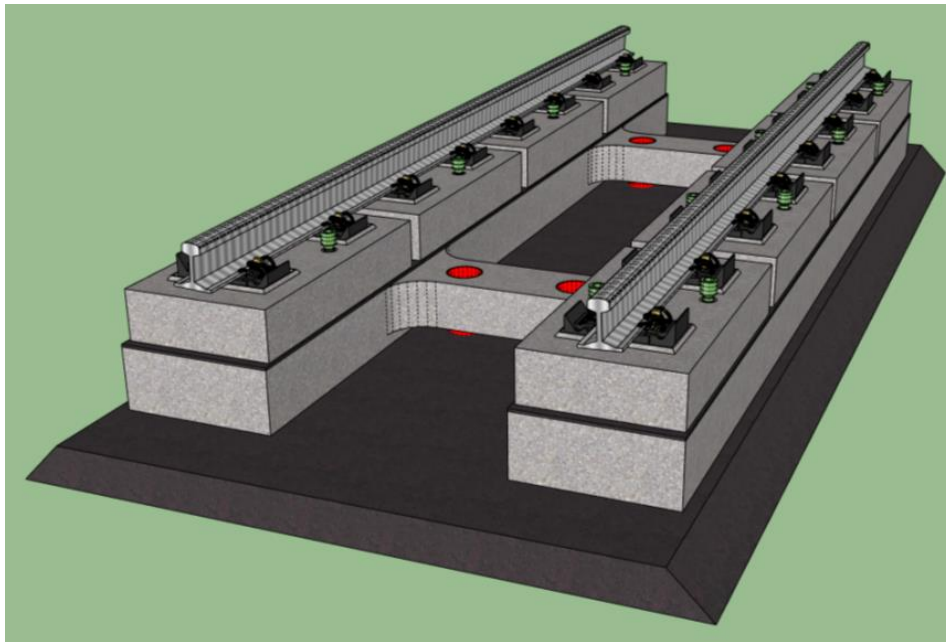
- New slab track concepts generation through collaborative workshops



Task 1.1.2

- New slab track concepts most promising selection

3MB



- RAMS oriented design
- All elements are precast
- Asphalt subgrade
- Easy parts replacement
- 2 stiffness levels

Co-owners

SYSTRA

 **acciona**

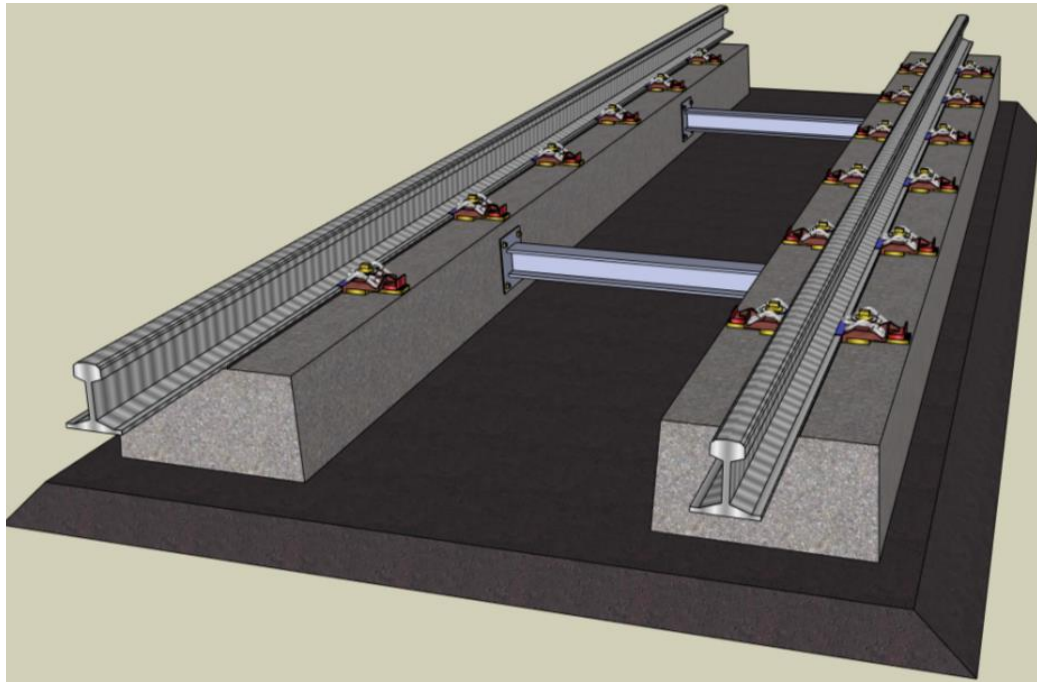
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Task 1.1.2

- New slab track concepts most promising selection

L-Track



- LCC oriented design
- All precast elements
- Asphalt subgrade
- Continuously supported rail

Co-owners

SYSTRA

 **acciona**

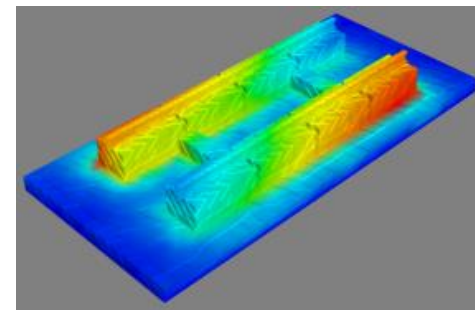
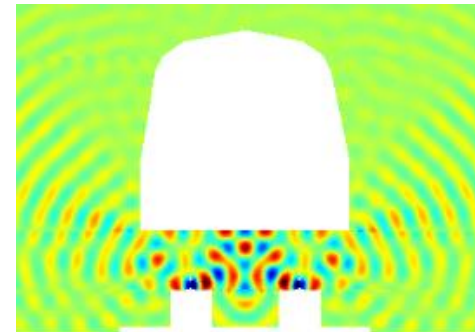
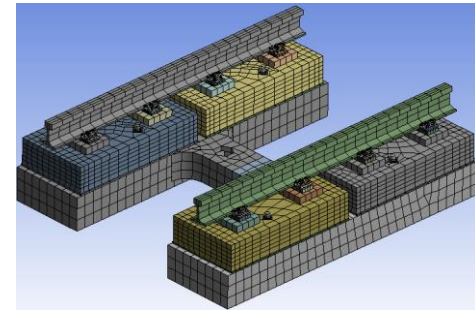
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Task 1.1.2

• New slab track concepts detailed design

| Studies | |
|---------------------|--|
| Structural design | Static calculation |
| | Stiffness levels calculation |
| | Dynamic calculation |
| | Fatigue calculation |
| | Digital model |
| | Fastenings selection |
| Geotechnical design | Subgrade calculation |
| | Drainage design |
| Integration | Earthing, Stray currents |
| | Transition zones with bridges and ballasted tracks |
| | Signalling equipment |
| RAMS and LCC | Construction process and costs |
| | Maintenance plan and costs |
| | LCC model |
| Business model | Business model |



Task 1.1.2

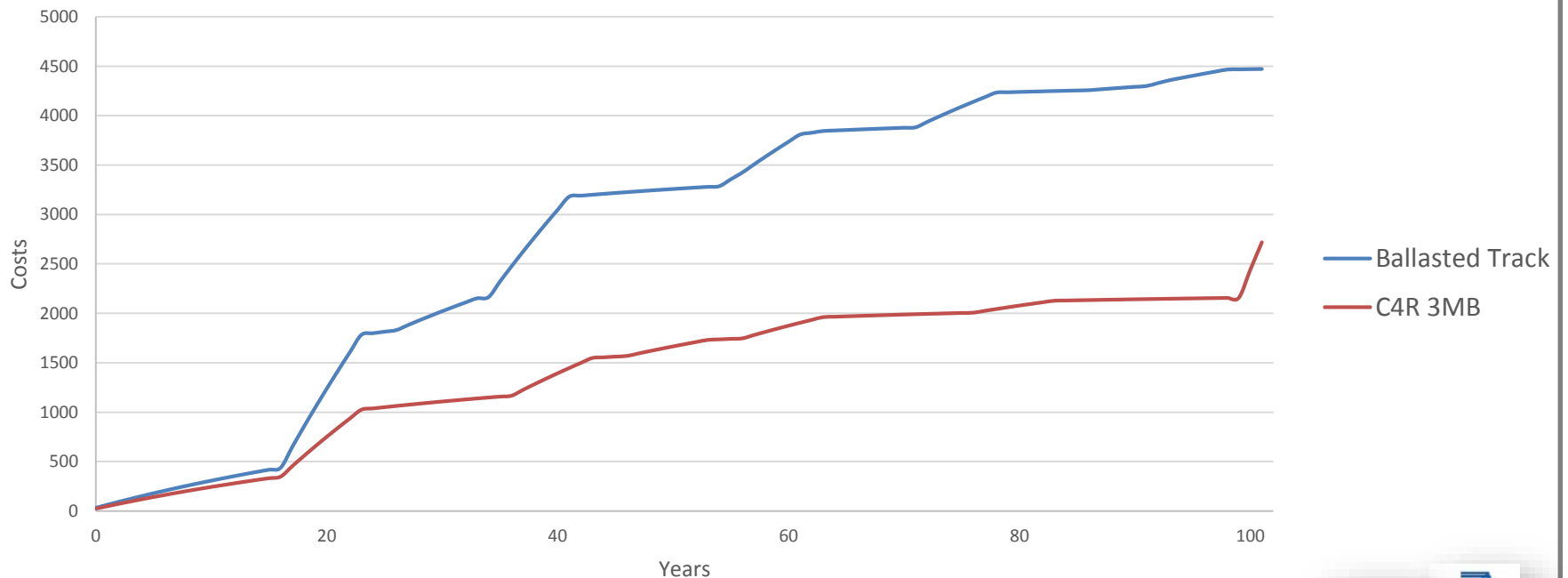
• New slab track concepts, generation and design

- 3MB Maintenance and Renewal costs

Assumptions :

- East European HSL (Phase 2) : 106 km
- Max speed : 320 kph
- Tonnage : 40 MT/year
- SNCF Maintenance procedures

Cumulated maintenance costs per kilometer of double track [k€]

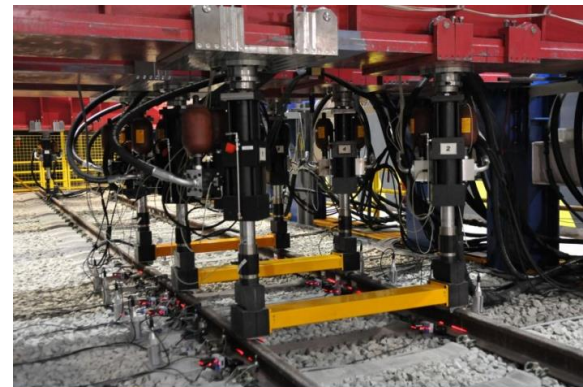


Task 1.1.3

- New slab track concepts testing

List of tests for both concepts :

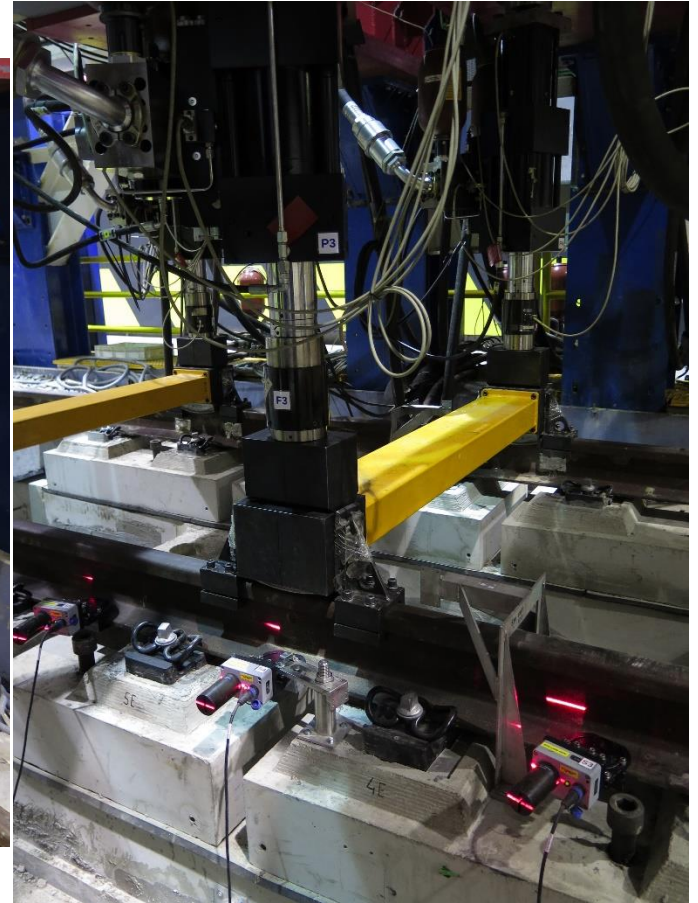
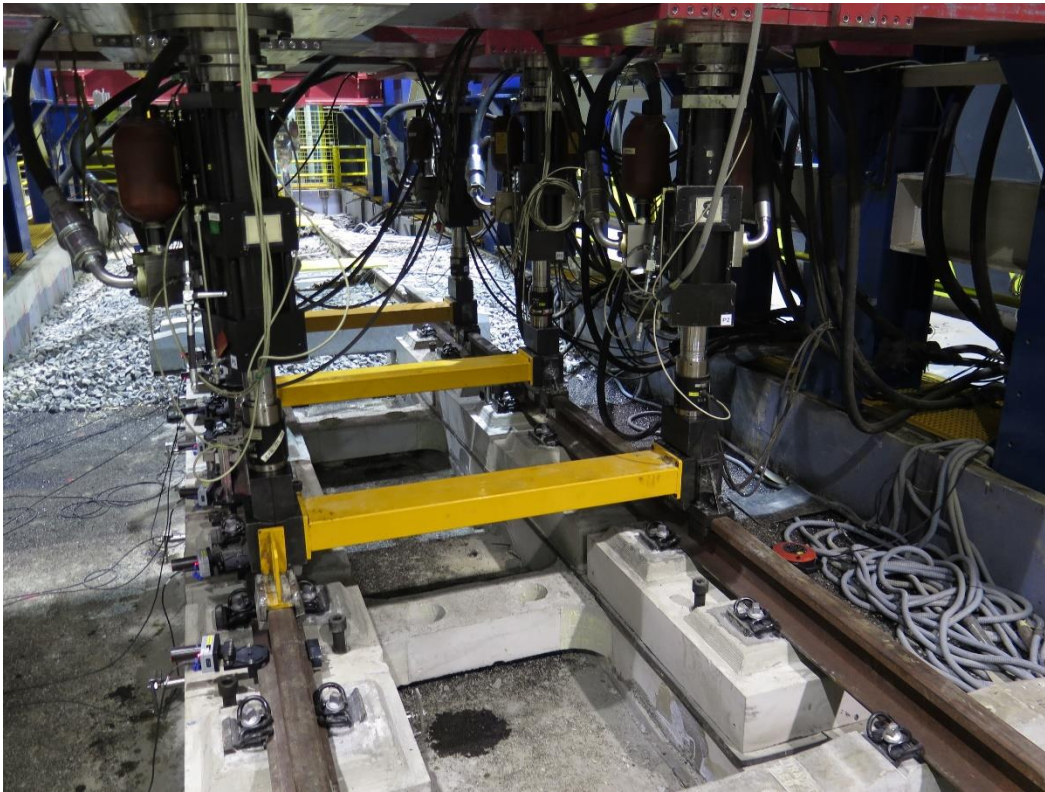
- Settling: 300.000 cycles
- Static test (vertical load to get vertical stiffness)
- Dynamic test (3 actuators per rail, vertical load ~ 10.000 cycles)
- Fatigue test (providing symmetrical inclination loading), according to Standard (3.000.000 axles in 1 month)
- Static test (vertical load to get vertical stiffness)
- Dynamic test (3 actuators per rail, vertical load ~ 10.000 cycles)
- Curve simulation test



CEDEX Track Box

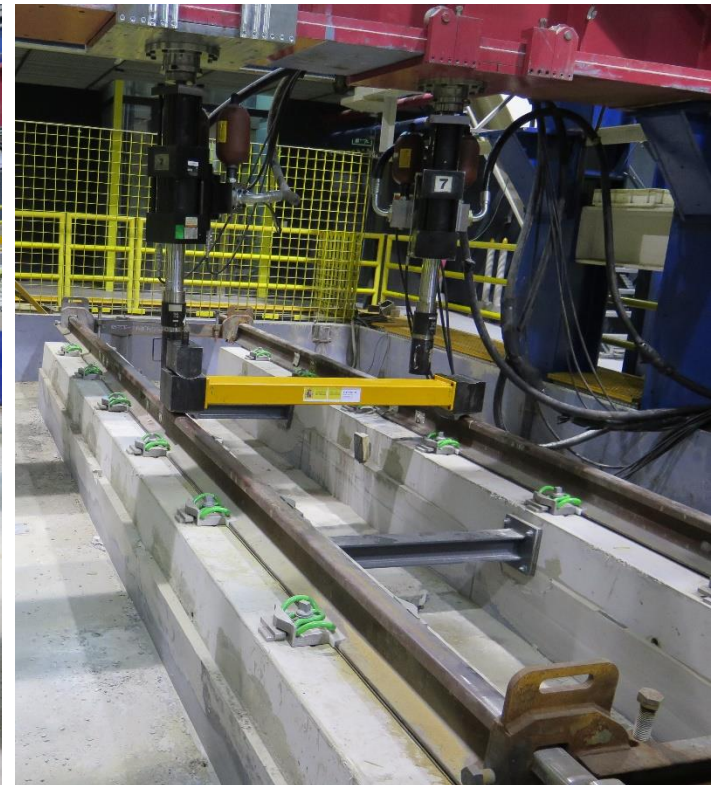
Task 1.1.3

- 3MB Testing



Task 1.1.3

- L-Track Testing



Thank you for your kind attention

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SP1 Leader

SYSTRA

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