During the workshop we introduced the System Pillar, the main objectives, complementarity to the already ongoing work as regards TSI and the proposal for outcome of the work regarding operational harmonisation

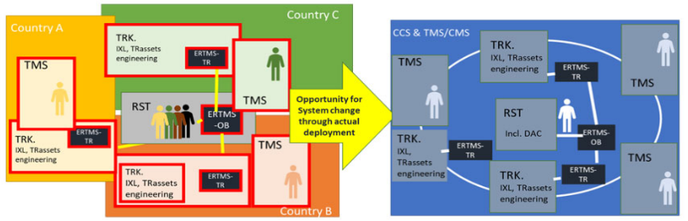
System Pillar

- The System Pillar is the “generic system integrator” for the Europe’s Rail Joint Undertaking (EU-Rail), and the architect of the future EU’s railway system.
- Whilst most individual railway systems have views of the future railway architecture, there is no common EU railway system view that is used today. **The problem with this is that innovations and changes to the system are very difficult and costly to achieve**.
- System Pillar is the opportunity for the sector to converge on the evolution of the railway system – operational concept and system architecture.

System Pillar
4 Years Program

~ 400 *experts from Sector*

Cost: 50 *m EU funded*



Goals

Rail as integral part of mobility services and intermodal transport

Cost efficiency: integration, maintenance and evolution

Increase Performance and interoperability.

Strengthen the market with large scale, **Support** European rail industry **Competitiveness.**

System Pillar complementarity

- Scope of actors
  - Consideration of all actors (especially signaller) included in the analysis beyond a driver focus
- Scope of rules
  - Harmonised rulebook through reducing the variability of trackside implementation, i.e. by discipline and uniform in the implementation of the functions and engineering
  - Deeper consideration of processes
  - Consideration of harmonised degraded modes taking opportunity of new only ETCS lines including steps of harmonized and uniform system requirements for other underlying systems
  - Configuration dependency of harmonised operational processes
- Presentation and structuring of the Operational rules
  - A scenario-based (situation specific time-ordered process sequences of state-dependent actor actions and interactions with systems) as well as functionality-based description, with the advantage of a description from the perspective of the user that this text can be copied in its entirety in a rulebook subset for the RU.

Future TSI OPE considerations

Current TSI : App A

6.44. .**Managing a level crossing not protected**

The train is approaching a level crossing which is not protected.
Levels 1, 2

6.44.1.
If in FS, OS or LS
When the following symbol is displayed:
the driver shall apply rule 7 of Appendix B2.

6.44.2.
If in SR
When the following text message is displayed:
“Level crossing not protected”,
the driver shall apply rule 7 of Appendix B2

Future TSI : App A + App A2 ?

SP OD 315 **Managing a level crossing not protected (driver)**

When approaching a defective level crossing the following symbol on the DMI is shown.

A braking curve is offered to an EOA that is in approach of the level crossing.

If the train is close enough to the level crossing, the MA will be extended by a maximum speed of 30 km/h.

When approaching the level crossing, the driver sounds the horn and stops in front of the level crossing if safety so requires.

If the level crossing is obstructed, the driver shall call the signaller

As soon as the front end of the train has passed the level crossing, the LX symbol disappears of the DMI and the MA shows a higher speed again.

During the second part of the workshop we presented the systematic approach to derive system analysis and logical architecture from the operational needs.

Many stakeholders requested a way to include their expertise and concerns in the work of the SP.

The best way is through the mirror groups which can be accessed by contact with the sector organisations that are part of the System pillar steering Group:

https://rail-research.europa.eu/system-pillar-governance/system-pillar-steering-group/

Or by email the System pillar core Group: spcg@rail-research.europa.eu

From OH to target system requirements

Operational domain → Architecture domain → Traffic control & supervision → Train control & supervision

4. Example 315 - Passing non protected Level Crossing (3)

Excerpt from TSI OPE Appendix A, B, D

6.44 MANAGING A LEVEL CROSSING NOT PROTECTED

The train is approaching a level crossing which is not protected.

Levels 1, 2, 3

6.44.1 If in FS, OS or LS

When the following symbol is displayed:

the driver shall apply Rule 7 of Appendix B.

6.44.2 If in SR

When the following text message is displayed:

"Level crossing not protected",

the driver shall apply Rule 7 of Appendix B.

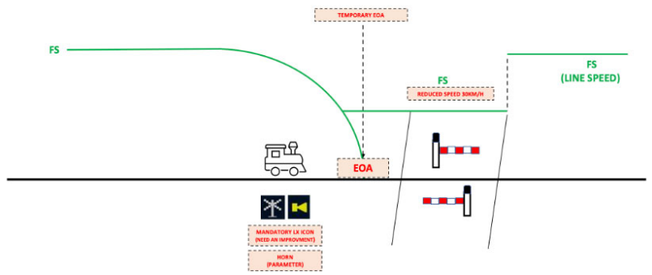
Harmonized uniform Proposal

Full Supervision with Temporary EoA

Blinking yellow icon shown to the train driver

Acknowledgment before passing the LX

Parameters: Speed and compulsory stop



https://polarion.rail-research.europa.eu/polarion/redirect/project/SPT2OperationDesign/workitem?id=SPT2OD-1267

ARC domain Key topics

- Why is architecture important?
  - Common understanding through a clear and concise description on the system needs, behaviour and functionality.
- What do we do?
  - Analyze Operational Need and determine the system function and actor role responsibilities. Including the CCS system boundary and external actors.
  - Functional allocation between different systems based upon functional and non-functional requirements.
- What is it used for and by who?
  - Agree with Operational Design on how the technical system fulfils the harmonized operational processes.
  - Inform the system domains on their functional and interface requirements.
  - Provides the link from the business and operational targets to the detailed system specifications.

Design approach for Traffic CS

Linking top-down and bottom-up work

Operational domain → Architecture domain → Traffic control & supervision → Train control & supervision

Top-down

- Common Business Objectives
- Operational Concept
- Functional Architecture

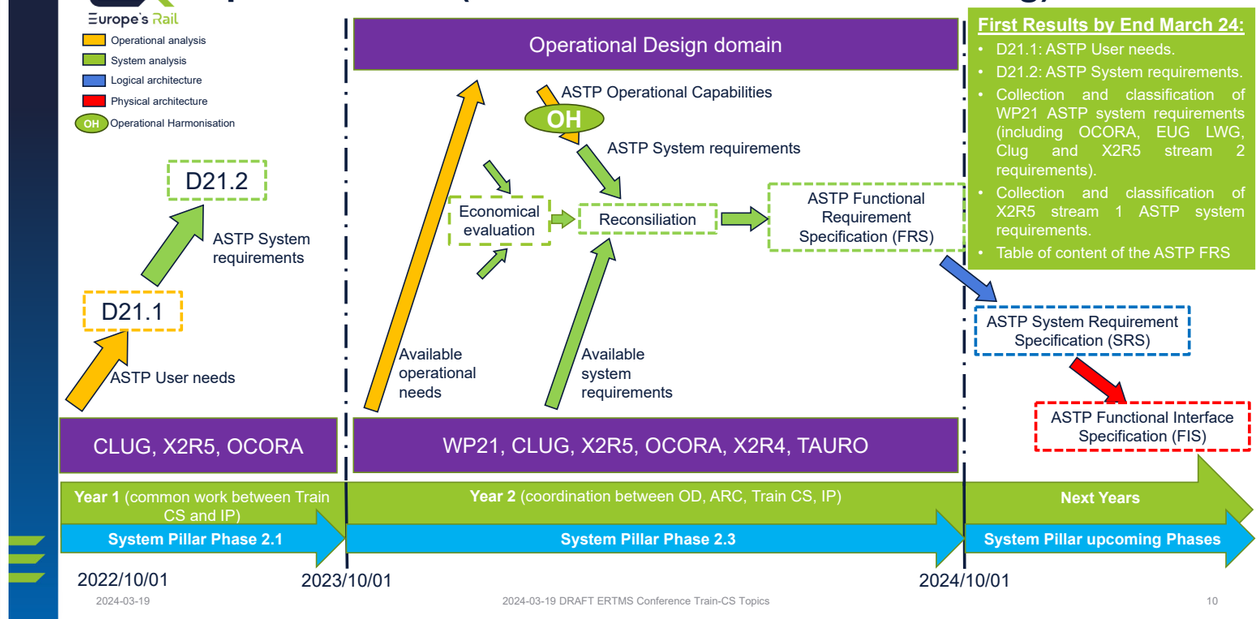
Bottom-up

- Existing harmonised specifications (e.g. ETCS, EULYNX)
- Concepts/drafts for technical specifications from RCA and Shift2Rail (Without operational concept)

Traffic CS Specification

- Linking from operational and functional requirements to technical requirements
- specification achieves consistency and traceability of requirements as well as re-use of existing work as much as possible

Specific ASTP (Advanced Safe Train Positioning)

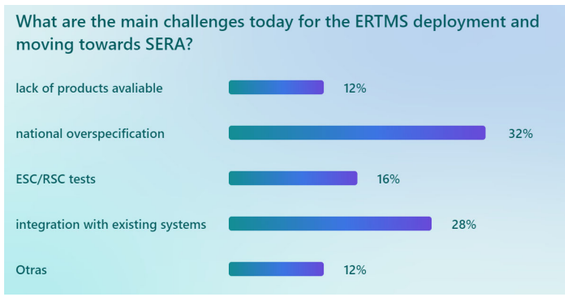
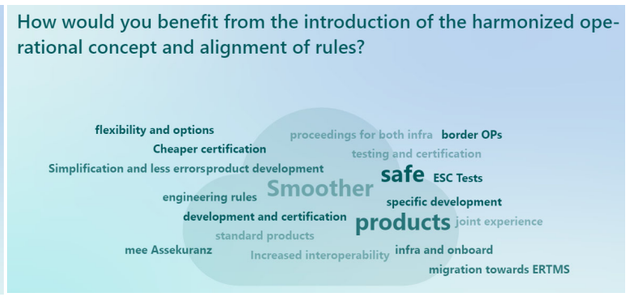
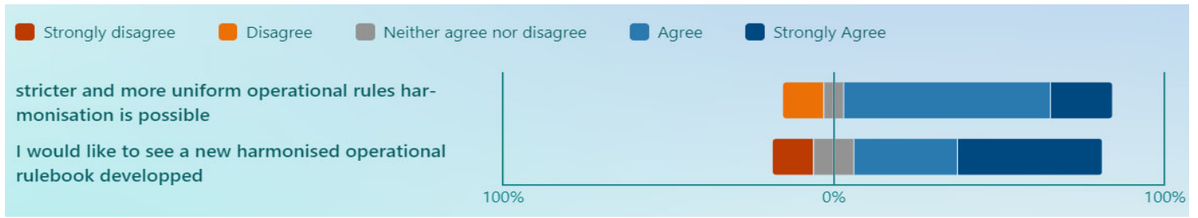


First Results by End March 24:

- D21.1: ASTP User needs.
- D21.2: ASTP System requirements.
- Collection and classification of WP21 ASTP system requirements (including OCORA, EUG LWG, Clug and X2R5 stream 2 requirements).
- Collection and classification of X2R5 stream 1 ASTP system requirements.
- Table of content of the ASTP FRS

There were many interesting discussions on the feasibility of achieving a more uniform stricter operational processes in Europe and the challenges that this will mean taking into account migration and the existing CCS deployments

Agreement was reached in the need to stop increasing the variability of deployments and work together to define as target this more uniform system.

The objective includes to standardise hardware and software modules, reducing cost, freeing capacity for faster development and implementation, accelerating deployment and streamlining certification and authorisation

Some results from our sessions yesterday