Remembering the good and bad times of new train procurement

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Representing RDG and RSSB

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A Better, Safer Railway

- Background
- EuroSpec
- Key Train Requirements (KTR)
- Questions

- Why RDG & RSSB?

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Historical synergy

- In 2009 the Technical Strategy Advisory Group (TSAG) remitted the Vehicle / Vehicle System Interface Committee (V/V SIC) to develop guidance on key technical requirements for new trains. These requirements represented best practice that experience had demonstrated not to be adequately covered by mandatory standards. First version of KTR published in 2011.
- In 2011, a little despondent with the standardisation bodies remit, a group of European Operators agreed to produce documents to fill the gaps not covered in any standardisation work. This was on Toilet systems. A perennial problem for all train operators. First Eurospec published 2012.

What is EuroSpec?

- The acronym “EuroSpec” stands for European Specifications for railway rolling stock.
- The activity is an initiative of several European train operating companies (TOC) and executed as a multilateral project.
  - France (SNCF),
  - Germany (DB),
  - The Netherlands (NS),
  - Austria (OBB)
  - Switzerland (SBB)
  - with RDG representing British operators on the Steering Group (SG) and in Working Groups (WGs)

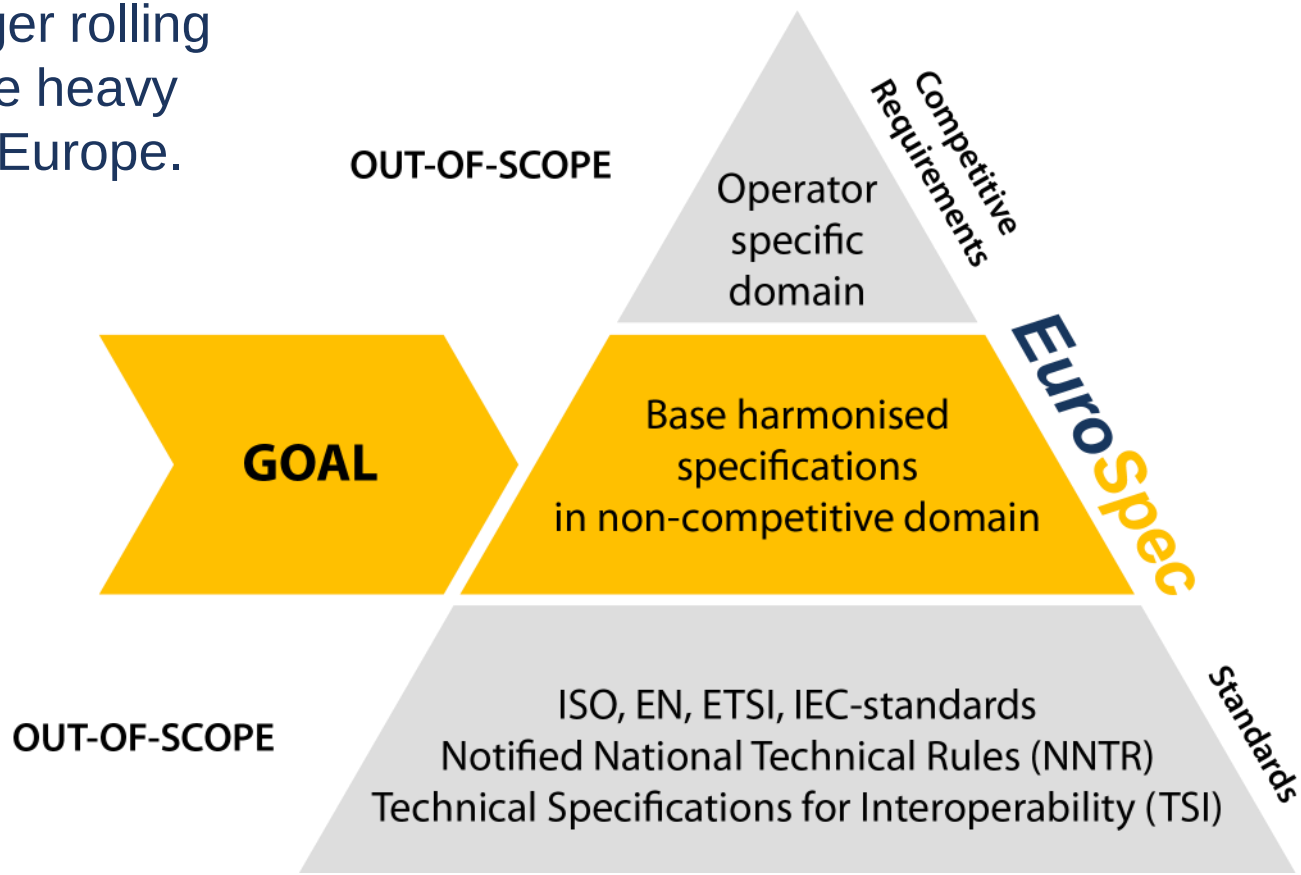
- Chairmanship of SG currently with DB

What is EuroSpec?

- The partners aim to provide voluntary technical specifications, as an explicit set of requirements, for all kind of rolling stock components and systems, such as toilets, HVAC, parking noise, among others to be used as support for purchasing and refurbishing railway rolling stock.
- These specifications are company and product neutral.
- They are intended to:
  - add detail to TSIs and European Standards.
  - fill gaps in current industry standards that have been shown to cause reliability problems for operators.

How EuroSpec fits

EuroSpec is focusing on the domain of passenger rolling stock for use on the heavy railway network in Europe.



Governance of EuroSpec

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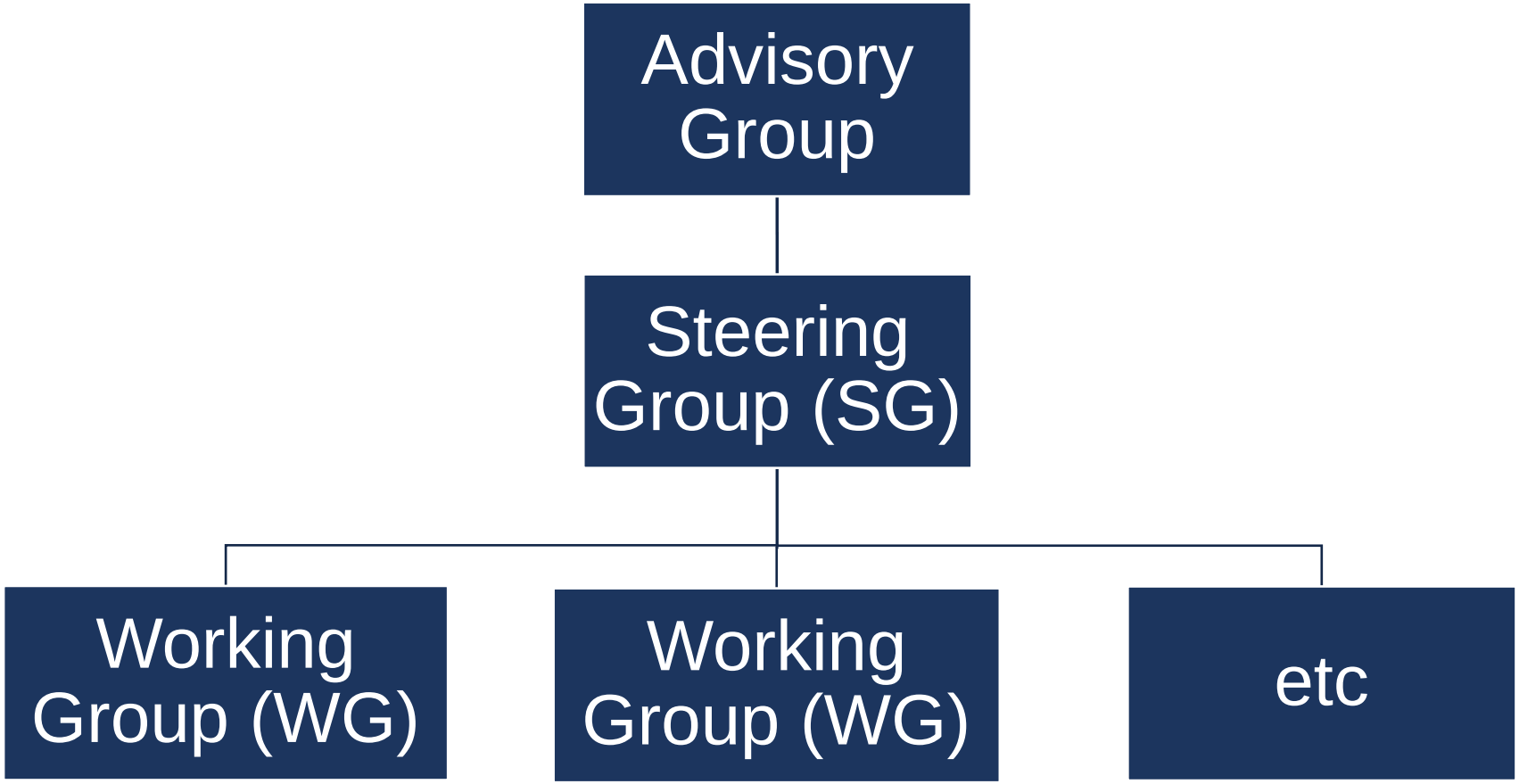

Published EuroSpecs

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EuroSpec
Pantograph Strips v1.0
Wheel & brake disc 1.0
Requirement Management v3.0
Documentation v2.0 Documentation Data Exchange v1.0
Automatic Couplers v1.0
Sliding Steps v2.0
HVAC v2.0
Alternative Traction Energy Supply – Battery v1.0

EuroSpec
Parking Noise v1.0
TCMS Data Service v1.0
Seat Comfort v1.0
Water tightness v1.0
Common IDs v1.0
Toilet Systems v3.0
On Board Data Availability v1.0

Future potential EuroSpecs

EuroSpec
TCMS part 2
Upgrading Software
Global Comfort Evaluation 1. Bicycles & Onboard Circulation Comfort (BOCC) 2. Luggage & Onboard Circulation Comfort (LOCC)
Common Structure
Life Cycle Cost
Replacement refrigerants for HVAC
Improve accessibility
Door systems

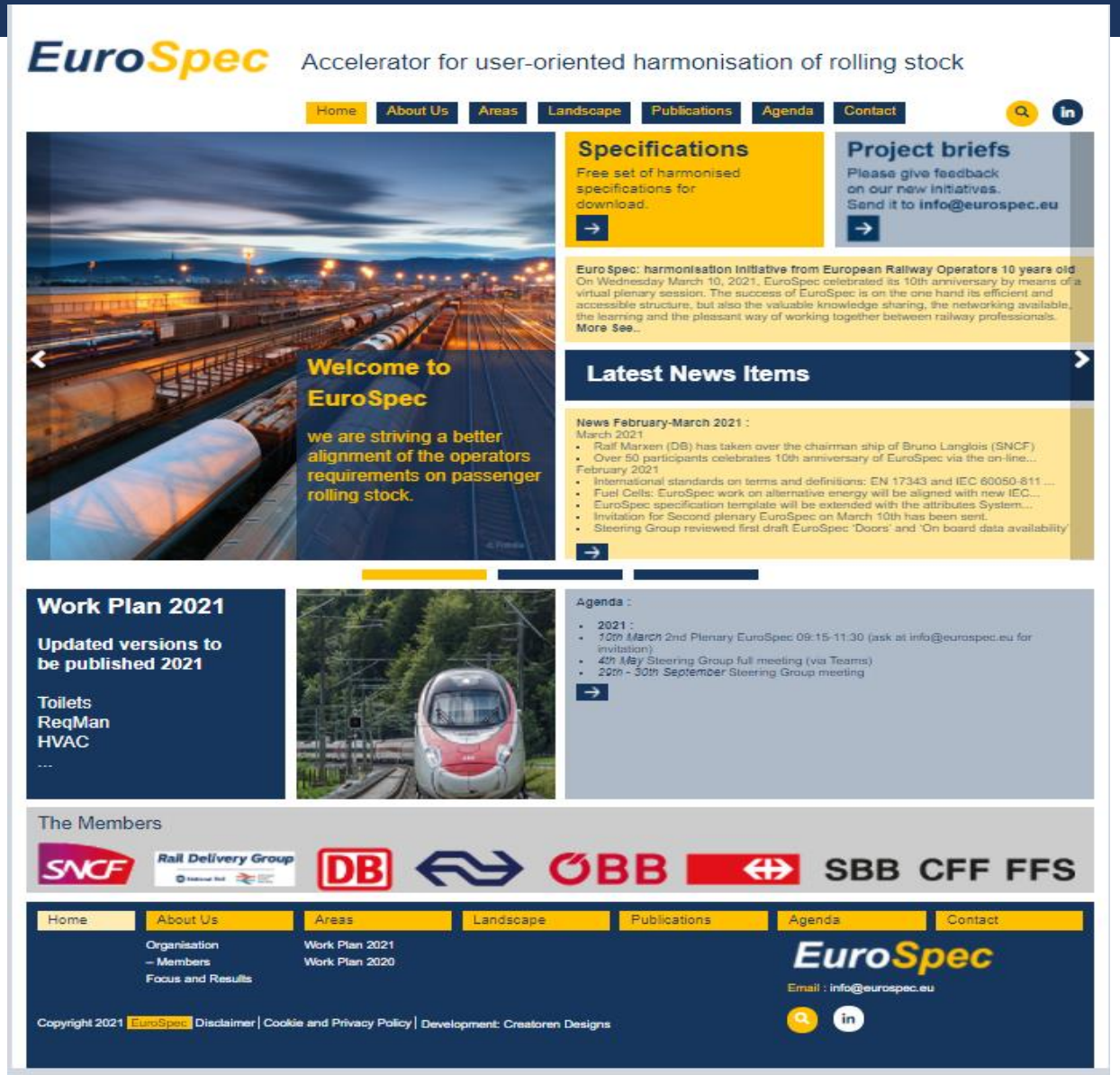
EuroSpec
Circular material lifecycles
Maintenance Software
Exterior Hatches & Covers
Vandalism protection
Wheel & brake disc interface
Upgradability
Alternative Energy Supply 2 Hydrogen
On-board Data
Maintenance file structure (XML)

EuroSpec Meetings

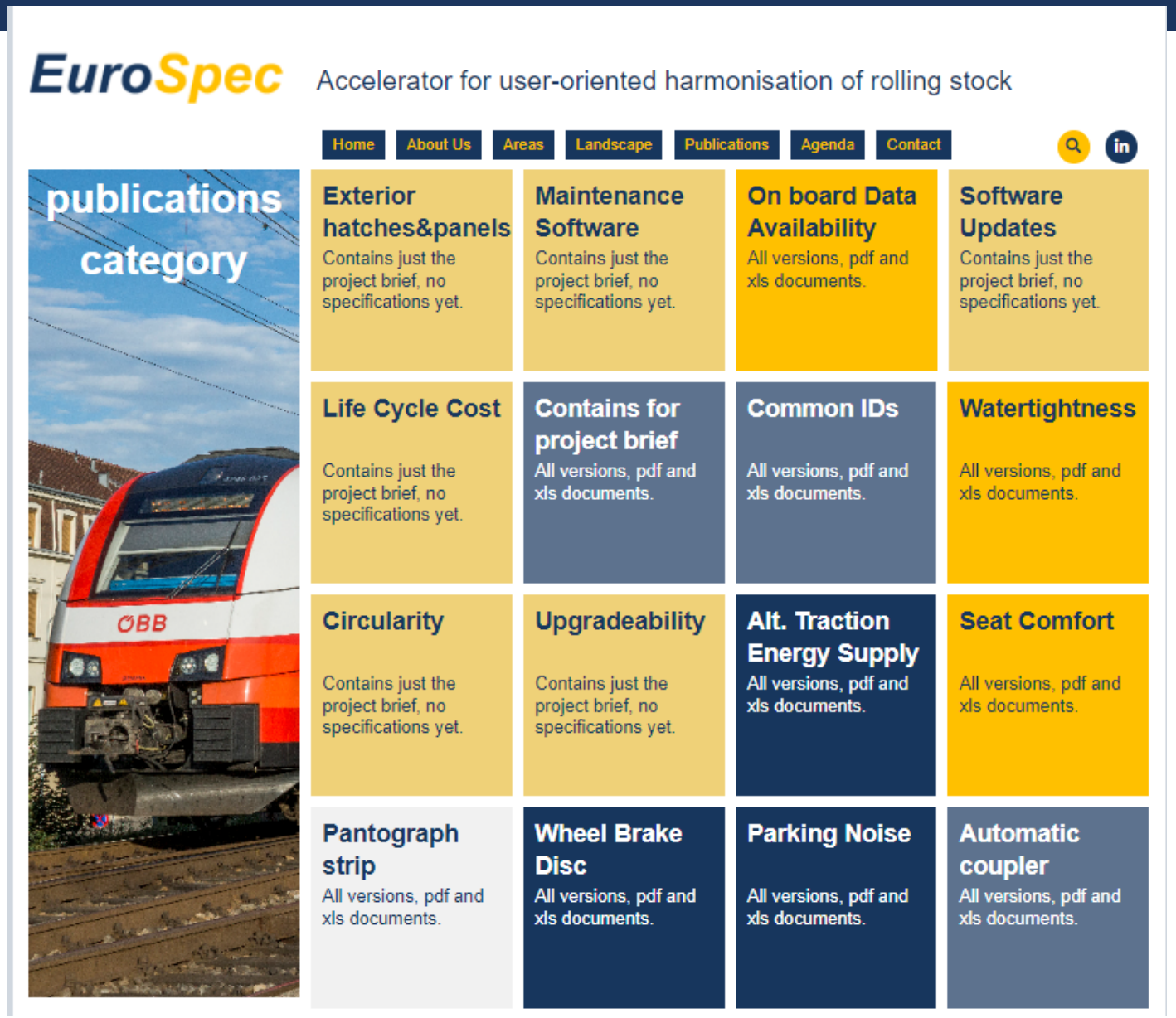
- Held a face-to-face Plenary in January 2018 and Virtual Plenary in September 2021 for all members
- Steering Group meetings
  - During pandemic all with Teams, future will be face-to-face.
  - May in Zurich
  - Sept in Vienna
- WG meetings arranged by the WG leader

Extensive EuroSpec website

- www.eurospec.eu



EuroSpec website



UNIFE and sub-suppliers are asked to review and comment before publication on website

All EuroSpecs free to Download.

Excel spreadsheet of requirements on request

Seat Comfort is the most downloaded document

Key Train Requirements (KTR)

- Version 6 published November 2020
- Completed virtually

Why & what is KTR?

- A document considered by the industry to represent best practice that experience has demonstrated not to be adequately covered by mandatory standards.
- Recognises “Good” practice.
- Ensures previous “Bad” practice is not repeated.

- Evolved into a “repository” to capture relevant research outcomes.

  .....also equally applicable to vehicle refurbishment.
- Captures areas not previously recorded, e.g. catering and sleepers.
- DfT expects to see responses to the KTR in tenders.

KTR drafting group

Drafting group consists of:

- RDG chair - me
- TOC (First Group, Avanti, AGA, Northern)
- Network Rail
- Rosco (Eversholt)
- Suppliers (Serco)
- Train builders (Alstom, CAF, Siemens, Stadler, Hitachi)
- Consultants (ESG)
- RSSB
- Government – DfT, ORR and BEIS.

KTR Content

The Main Requirement chapters in version 6 are:

1. Technical
2. Performance & Environmental
3. Passenger Facing
4. Operational
5. Communications and Diagnostics

There is a temporary Chapter 0 about Covid-19.

Chapter 1. Technical

Vehicle Mass	RAMS *	Global Navigation and Satellite System on-board
Track/Train Interface	Traction Capacitors	Management of Speed
Couplers	Equipment Redundancy	Load Shedding Strategy
Braking Systems	Water Ingress	Multi-Mode
Wheel-Rail Treatments	Train Security *	TCMS
Consumable Capacities	Locks & keys *	Train Location
Windscreen Wipers	Vehicle gauging	Automating Train Preparation *
Electrical Connectors	Electrical Collectors	
Adhesive Bonded Components	Systems Architecture	

Chapter 2. Performance & Environmental

Aerodynamic Performance	Energy Efficiency & Traffic Management
Propulsion	Auxiliary Power
Sustainability	Pneumatic Air Supply
Track Circuit Actuators *	Meteorological Effects *
Pressure limits	

Chapter 3. Passenger Facing

HVAC	Luggage Space	Catering
Passenger Security	Toilets	Wheelchair ramps
Passenger Ergonomics * Seats, Tables etc	Cleanability	Seat Reservation Systems
Ride Quality	Vandalism Mitigation	Signage *
Passenger Information	Interiors	Access doors
Sound, Noise & Vibration	Passenger Special Spaces	PTI
Passenger Counting	Passenger Power Supplies	Scooters
Bodyshell design	Lighting	
PIS	Bins *	

Chapter 4. Operational

Driver Controlled Operation (Passenger)	CCTV – Forward, Pan
Selective Door Operation	Emergency Equipment
Location of Driver Resettable Controls	Driver Training Manuals
Cab Design & Interfaces	Crew Storage *
Human Factors Mitigation	Train Crew Local Door Controls
Supply System Changeovers	

Chapter 5. Communications and Diagnostics

Software Security	GSM-R - Data
ERTMS	Mobile Communications
ATO	Passenger Internet Access
Remote Condition Monitoring	On Train Data Recorders
Train Diagnostics / Prognostics	Future Railway Mobile Comms
GSM-R – voice	

Appendices

A - items intentionally excluded

B – links to research & innovation programmes in GB & Europe

C - toilet design

D - software security and cyber security

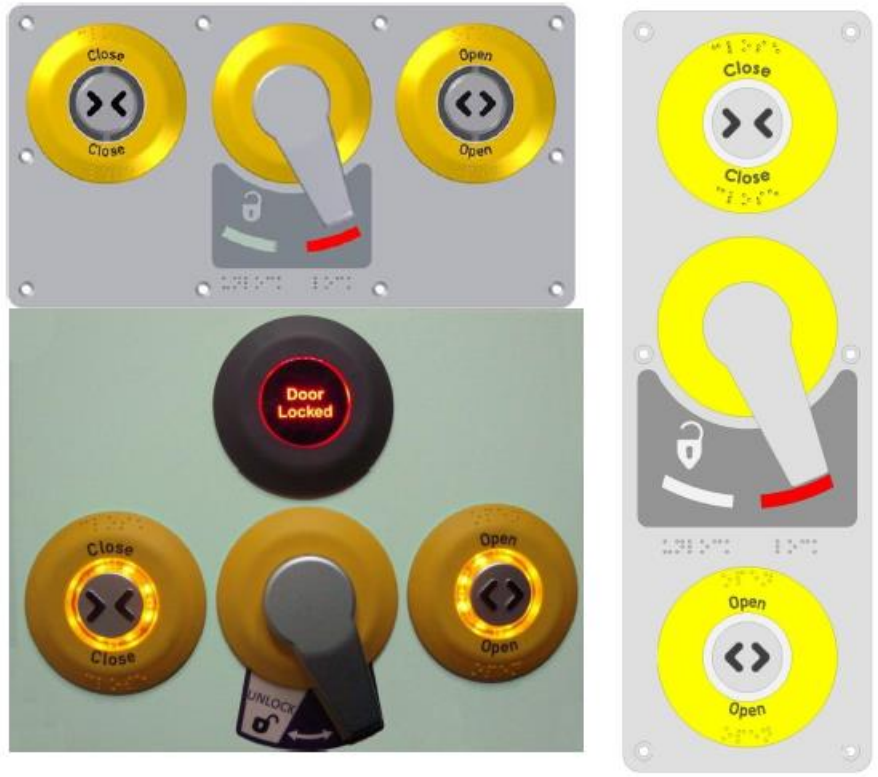
E – fastener guide

F – Monitoring Infrastructure from the train

G – Useful information & research

H – Automating train prep

J – Catering equipment *



KTR v7

- Started April 2021
- Over 180 items considered and discussed
- Items for consideration, include:
  - Driver alertness
  - Locks and keys
  - Driver’s cabs update
  - Double Variable Rate Sanders
  - Snow issues
  - Running through floodwater
  - Carmont derailment
  - Sustainability, CLEAR and DeCarb Projects

A few of the new items for KTR v7

- More items:
  - Mention of recent RSSB projects
  - Industry cyber security documents
  - Reference to NIR & RAIB reports or incidents
  - Improved wording to remind about use of Railway Industry Standards (RIS)
  - Reference to RISs and removal of related text
  - Mention of hybrid technology
  - Traction capacitors design, maintenance and exploding
  - Aluminium cracking of bodyshells
  - Accessibility.
- Anything missing?

KTR Expert areas

Special meeting on cabs

- ORR and Industry experts
- ASLEF included in an advisory capacity

Cyber Security

- Specialist meetings held, new experts recently joined

Decarb & Clear

- Presentations and discussions taken place to include outputs

KTR v7 publication plan

- Started April 2021
- Industry review planned August & September 2022
- Publication planned for February 2023

KTR Spreadsheet

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RDG

ID	Requirement classification	Requirement-text	Rationale	Reference information	Link
1.		Key Requirements - Technical			
1.1		**Vehicle Mass**			
1.1.1	E	The mass of the rolling stock shall be optimised to deliver the lowest whole life cost to the "railway system".	*Mass reduction through intelligent / innovative design is clearly beneficial, but this should not be pursued as an end in itself.*	It is recommended that the outputs of Railway Safety and Standards Board (RSSB) Project *"T712: Research into Trains with Lower Mass in Britain"* are used to inform any decisions as to the target mass for new builds of rolling stock	http://www.rssb.co.uk/library/research-development-and-innovation/research-brief-t712.pdf
1.2		**Track/train interface**			
1.2.1	E	Rolling stock shall be assessed using an industry recognised whole life, whole system vehicle / track interaction model so that the vehicle / track interface is optimised	*To ensure the system is considered as a whole, rather than the vehicle or the infrastructure in isolation*	For example, the RSSB Vehicle / Track Interaction Strategic Model (VTISM).	https://www.rssb.co.uk/research-development-and-innovation/research-project-catalogue/t792
1.2.2	D	Adoption of active suspensions (mechatronics) should be considered to improve ride and curving performance	*However, given the rapid development of mechatronics this technology should be considered subject to an assessment of its maturity and the robustness of the supporting business case*	It is recommended that the work being led by V/T SIC on behalf of the Technology Leadership Group (TLG) is used to inform any decisions as to the appropriateness of mechatronics	
1.3		**Couplers**			
1.3.1	E	Dependent upon the maximum operating speed and usage the following end coupler shall be chosen at a respective height above rail level (ARL)			
		>250kph - refer to Loc & Pas TSI	*This removes a barrier to the interworking of vehicles supplied by different manufacturers*	Loc&pas TSI	See ERA website.
		< 250kph Dellner 12 / Voith 136 Faiveley 130 or equivalent, at a nominal 925 mm Above Rail Level		RSSB Project *"T1003: Standardisation of Coupling Arrangements"*	http://www.rssb.co.uk/library/research-development-and-innovation/research-brief-T1003.pdf
1.3.2	D	The ability for interworking with subsets of existing designs of rolling stock should be demonstrated, recognising the aspirations for the long-term use of the rolling stock	*This permits easier cascade of the rolling stock.*		
1.3.3	D	To facilitate rescue of stranded trains an "emergency - limited functionality" mode of communication between the stranded and rescue train should be considered. As a minimum this would provide: - Emergency brake, - Full service brake application, - Traction Control	*This enables the failed train to remain suitable for passenger-use with limited operational restrictions, until reaching a suitable location to be taken out-of-service, taking into account the passenger environment.*		

Conclusions

- Capturing experiences is going on
- It’s a good thing
- It ensures corporate memory
- It helps new entrants to the market to understand GB
- It reduces the number of requirements being repeated
- It gives a more common approach
- It provides networking opportunities between operators and other industry disciplines
- It gets feedback and input from train builders
- It includes the current state-of-the art.

Questions?

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KTR v6

Key Train Requirements

Version 6

Thank you

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