



INTERNATIONAL UNION  
OF RAILWAYS

# **CEF PSA UBS WORKSHOP**

## **OPERATIONS & SAFETY**

### **« AMOC » & UIC**

**Frédéric HENON**

Head of Ops & Safety

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MANDATORY

## Interoperability Directive

6 essential requirements <sup>(1)</sup>

## Mandatory Rules

- TSIs <sup>(2)</sup>: EN standards and **UIC documents** (as specifications or technical documents) are referenced /quoted in TSIs
- National rules: some **UIC documents** are also referenced in national rules

Level of details

## Presumption of Conformity

- Harmonised EN standards <sup>(3)</sup>: many EN standards are **UIC based** and must respect copyrights
- AMoCs <sup>(4)</sup> : may be used for the assessment of projects <sup>(5)</sup>
- Guidelines <sup>(6)</sup>  
AMoCs and Guidelines can be **drafted by UIC**, and then approved and published by ERA

VOLUNTARY

## Voluntary 'Sector Standards'

- EN standards, ISO, IEC Standards
- Some **UIC Leaflets / IRSs** are used by manufacturers on a voluntary basis
- Some **UIC Leaflets / IRSs** are adopted by railway operators (SMS)

## Other Public Standards

(1): The European regulations and directives lay down the **6 essential requirements** that European railway actors shall meet, related to: **safety; reliability and availability; health; environmental protection; technical compatibility; and accessibility.**

Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union (recast)' Annex III  
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016L0797&from=EN>

(2): *“TSIs may make an explicit, clearly identified reference to European or international standards or specifications or technical documents published by the Agency [ERA] where this is strictly necessary in order to achieve the objectives of [the Interoperability Directive]. In such a case, these standards or **specifications** (or their relevant parts) or **technical documents** shall be regarded as annexes to the TSI concerned and shall become mandatory from the moment the TSI is applicable”*

Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union (recast)' article 4.8  
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016L0797&from=EN>

(3): *“Interoperability constituents and subsystems which are in conformity with **harmonised standards** (...) shall be **presumed to be in conformity** with the essential requirements covered by those standards or parts thereof.”*

Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union (recast)' article 17  
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016L0797&from=EN>

(4): *“The Agency shall ...issue opinions which constitute **acceptable means of compliance** [AMoCs] concerning deficiencies in TSIs, in accordance with Article 6(4) of Directive (EU) 2016/797, and provide those opinions to the Commission”*

Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016 on the European Union Agency for Railways and repealing Regulation (EC) No 881/2004 article 19.1 (d)  
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0796&from=EN>

(5): *“At the request of the Commission, the Agency's opinion referred to in paragraph 2 shall constitute **acceptable means of compliance** and may **therefore be used for the assessment of projects**, pending the adoption of a revised TSI.”*

Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union (recast)  
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016L0797&from=FR>

(6): *“The Agency may also issue **guidelines** on railway safety and safety certification, including lists of examples of good practice, in particular for cross-border transport and infrastructure.”*

Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016 on the European Union Agency for Railways and repealing Regulation (EC) No 881/2004 article 13.5 (d)  
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0796&from=EN>

# UIC TECHNICAL SPECIFICATIONS IN TSIs

**Mandatory Rules**  
• TSIs<sup>1)</sup>: EN standards and **UIC documents** (as specifications or technical documents) are referenced /quoted in TSIs  
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## CCS TSI

- **Current (GSM-R)**  
EIRENE FRS & SRS  
MORANE Documents (Euroradio, etc.)
- **Next (FRMCS)**  
FRMCS FRS & SRS  
TOBA SRS & SRS  
FRMCS FFFIS & FIS

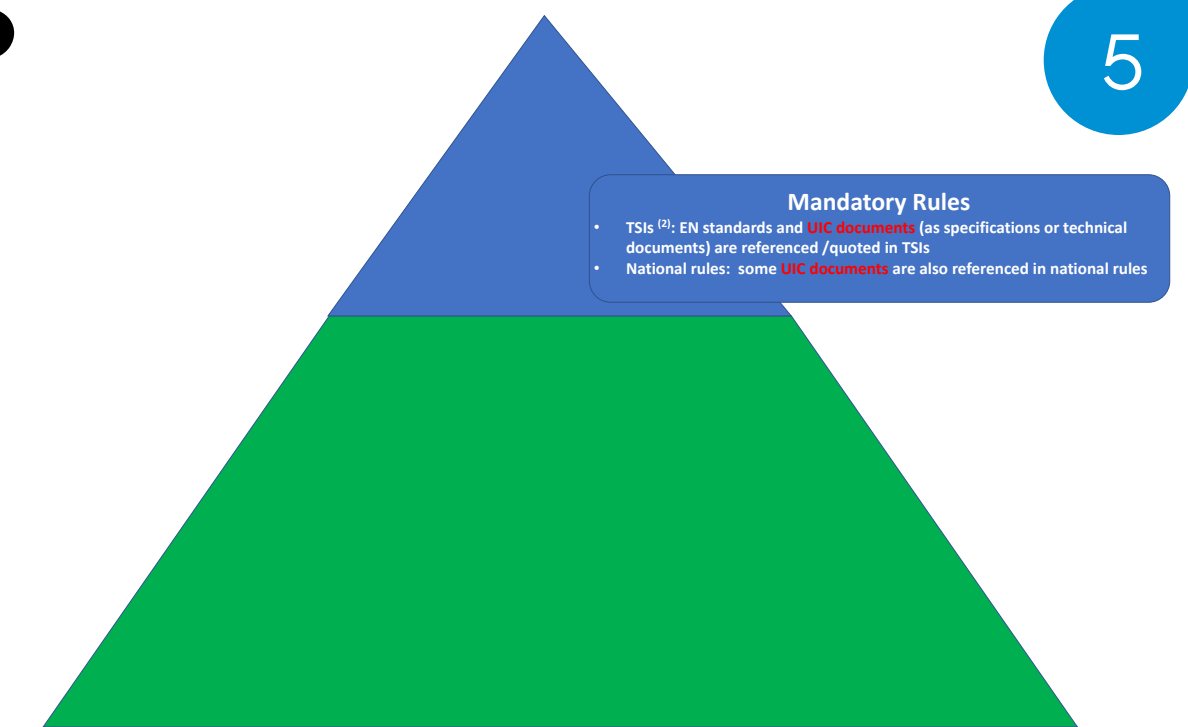
## TAP TSI based on UIC-ERA Technical Agreement

- **Current**  
TAP TSI Technical Documents B1 to B5 and B8 to B12 corresponding to UIC IRSs concerning Ticket Distribution and Exchange of Data (tariffs, timetables...)
- **Next**  
TAP TSI Technical Document B13 and B14 corresponding to UIC IRS 90918-10 (OSDM) and 90918-4 (eTCD)
- **Notes: according to UIC-ERA Technical Agreement**
  - Only “Corresponding Parts” (CPs are highlighted in the UIC IRSs) are subject to the alignment
  - UIC IRSs and TAP TSI TDs are evolving in a synchronised manner in common meetings (3 times a year), and through the Change Control Management process

# UIC IRSs/Leaflets REFERENCED IN TSIs

## LOC&PAS: 2 UIC leaflets

4	End coupling – manual UIC type – lateral location of brake pipe and cocks	4.2.2.2.3	UIC 648:Sept 2001	relevant cl. (1)
5	Rescue coupling – interface with recovery unit	4.2.2.2.4	UIC 648:Sept 2001	relevant cl. (1)
114	Physical interface between units for the signal transmission	6.2.7a	UIC 558, January 1996	Plate 2



## WAG TSI: 3 UIC leaflets

Running gear for manual change of wheelsets	4.2.3.6.7	—	—
	6.2.2.5	UIC leaflet 430-1:2012	Annexes B, H, I
UIC 430-3:1995		Annex 7	
Service brake	4.2.4.3.2.1	UIC 544-1:2014	all

## Appendix C of the WAG TSI: 6 UIC leaflets

UIC brake	C.9	UIC 540:2014	all
		UIC 544-1:2014	all
		UIC 542:2015	all
		UIC 541-4:2010	all
Tow hooks	C.16	UIC 535-2:2006	1.4
Protective devices on protruding parts	C.17	UIC 535-2:2006	1.3
Label holders and attachment devices for rear end signal	C.18	UIC 575:1995	1

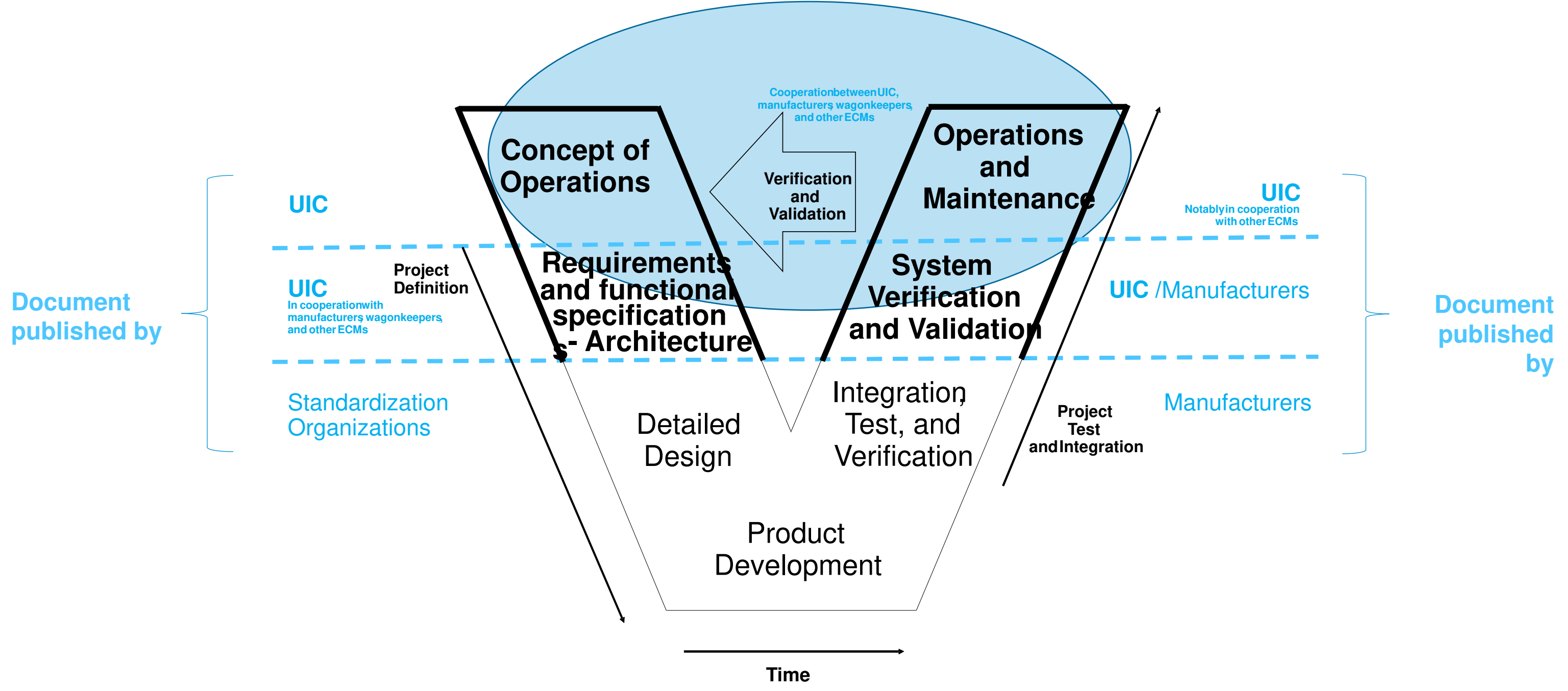
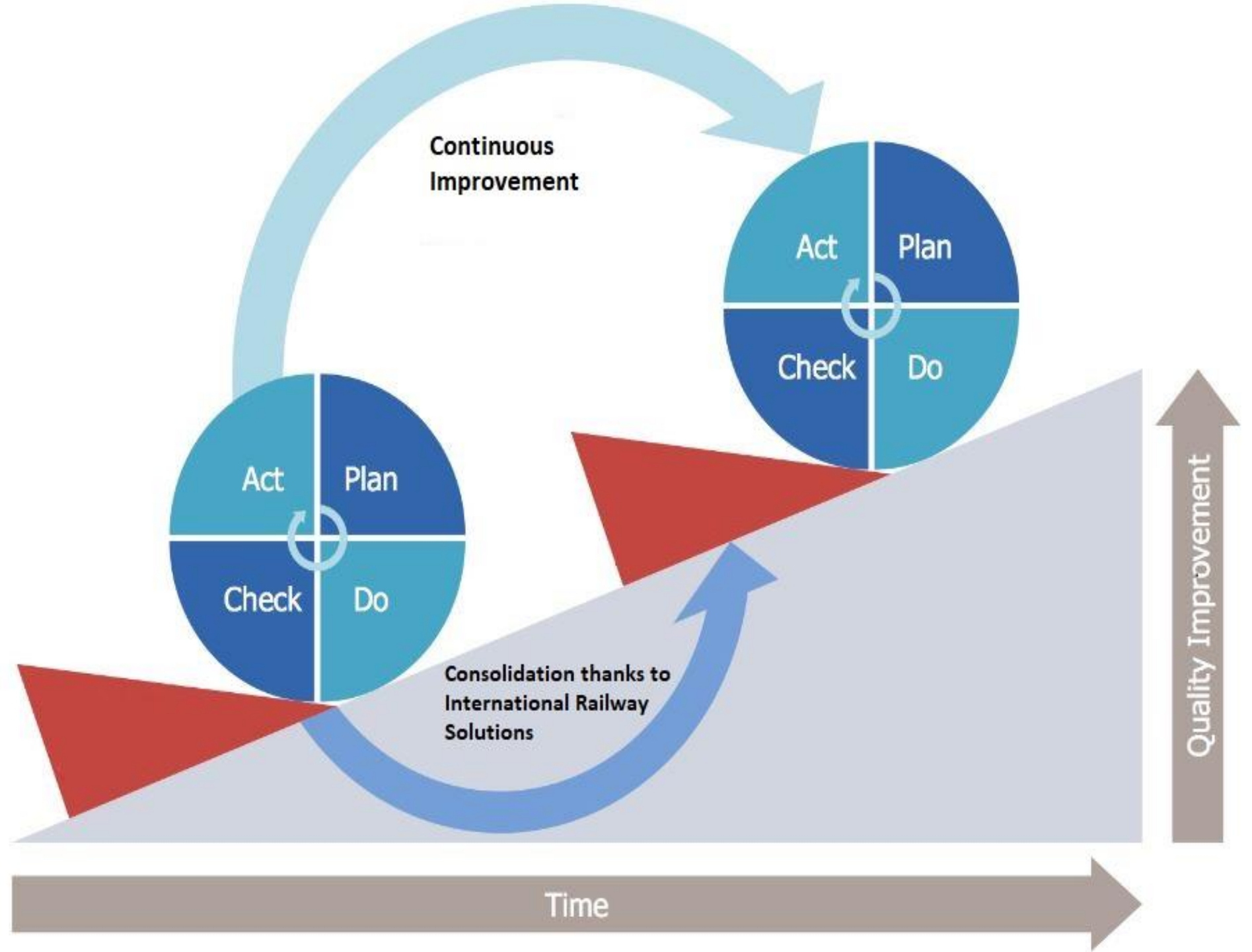
## Appendix G of the WAG TSI: 2 UIC documents

9th edition of the UIC “Design rules for composite brake blocks (K)” :2013

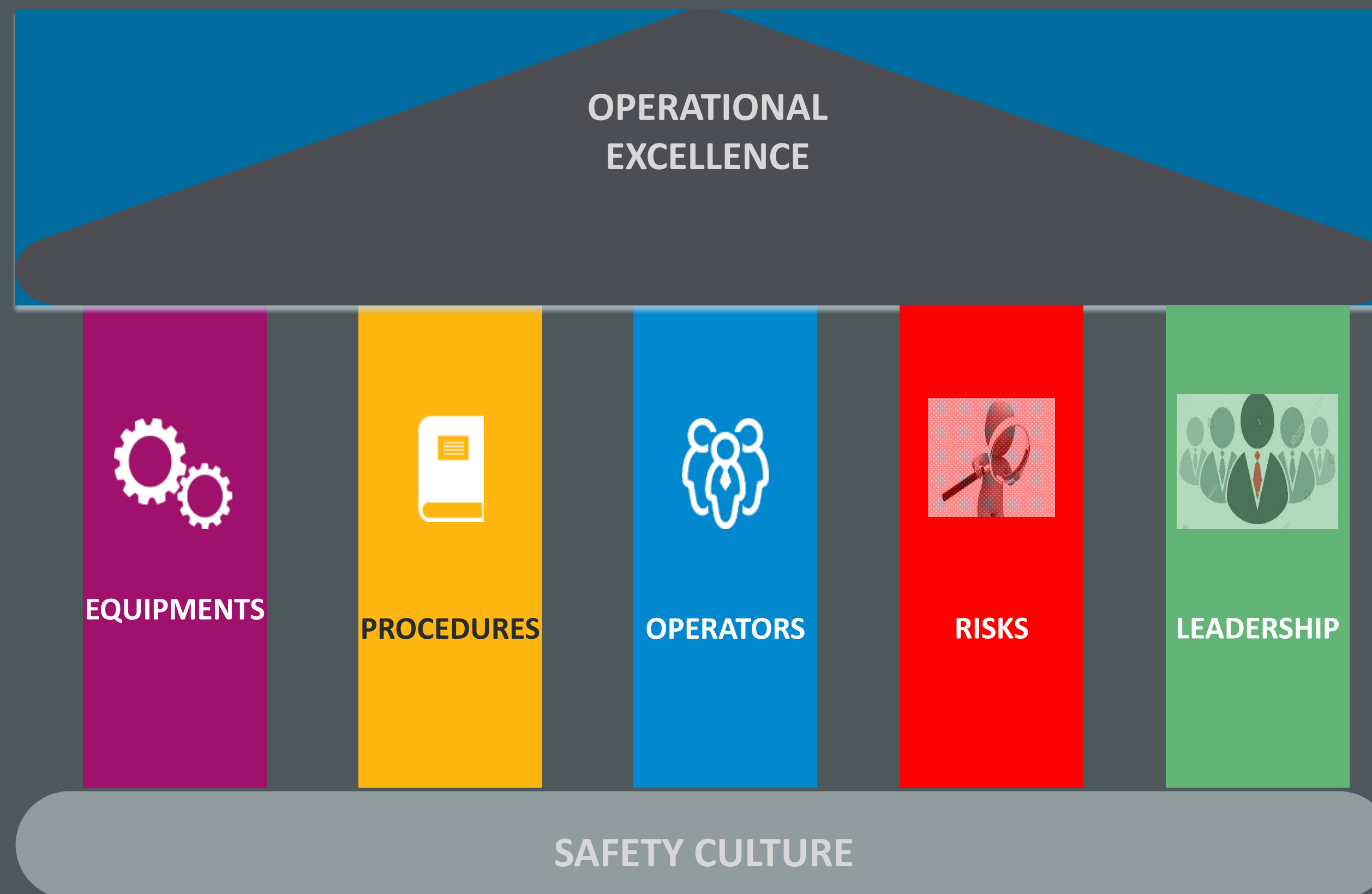
10th edition of the UIC “Usage guidelines for composite (LL) brake blocks” :2013

# UIC transversal activities of Safety Unit + Operations Sector 6

“Operations” encompass all the processes and responsibilities required to operate a train with passengers or freight, from “service design” to “return of experience”.



- Operational Standards
- Managerial Standards
- Organisational Standards



## Objectives OPS&SAF

- Achieve with an **efficient and practicable** « **Return of Experience** » based on a **confidential international process of « sharing »**
- **Deliver UIC technical solutions** (ops principles, guidances, reports, tools, etc.), as **means of performance for « Operations and Safety »** (ex: IRS, AMoC)
- Design and **Deliver Trainings and Tools (Academy + Cluster/Hub)**

# AMoC : Legal, Concept, Liability

Interoperability as foreseen in TSI-OPE is hindered by many national rules  
Removal of operational barriers is key objective

- The basis for the development of AMOCs is EU Regulation 2019/773, paragraph 4.4 which requires ERA to produce AMOCs on a number of topics. These are:
  - **Safety of load**
  - **Checks and tests before departure, including brakes and checks during operation**
  - **Safety of Passengers**
  - Train departure
  - Degraded operation.
  
- An AMOC provides a presumption of conformity with elements set out in EU Regulations 2018/762 and 2019/773. This means that the AMOC should be accepted throughout the EU by Member States and NSAs. Importantly, if a Member State and/or NSA requires an RU or IM to comply with national requirements, then that MS or NSA will have to provide evidence as to why their national requirements provide a higher degree of risk control than that set out in the AMOC. As a result, this AMOC can be accepted by ERA or the NSAs when an RU or IM applies for a safety certificate or authorisation, against the requirements of EU Regulation 2018/762 on safety management systems and against the applicable requirements of TSI OPE.
  
- The RU and/or IM remain responsible for how the AMOC is used in their SMS. They should ensure that they can identify which risks the AMOC provides controls against. The AMOC should not just be included in the SMS without the RU and/or IM justifying its use through their risk management procedures and their document management system. ERA nor the provider of the good practice remain liable for the use of the AMOC. It is particularly important that when the RU and/or IM use the information in the AMOC that they provide return of experience and/or information from accidents to ensure that the advice remains relevant and up to date Any links to good practice is the responsibility of the provider to ensure that they remain up to date and keep ERA informed of any changes/amendments”



- Technical Opinion concerning the Acceptable Means Of Compliance (AMOC) was sent to the European Commission on 20 December 2021 and today the documents have also been published on the ERA website
- RISC 94: creation of an application guide to connect TSI WAG, INF & ENE requirements with TSI OPE and UIC IRS as AMOC

ERA/OPI/2021-08 Opinion of the European Union Agency for Railways to the European Commission regarding TSI OPE – RSD (Acceptable means of compliance)

#### Publication date

20/12/2021

#### Related TSI

Operation and Traffic Management

#### AMOC



#### Related documents :

- [Opinion ERA/OPI/2021-08 \(290.77 KB\)](#)
- [ERA-OPI-2021-8 AMOC Light Impact Assessment \(295.61 KB\)](#)
- [AMOC supporting guidance \(293.61 KB\)](#)
- [TSI OPE AMOC Safety of Load \(201.05 KB\)](#)
- [TSI OPE AMOC Safety of passengers \(238.99 KB\)](#)
- [TSI OPE AMOC tests checks braking \(349.84 KB\)](#)
- [TSI OPE AMOC tests checks braking - Annex I - Appendix A - brake sheet \(529.57 KB\)](#)

## Contents



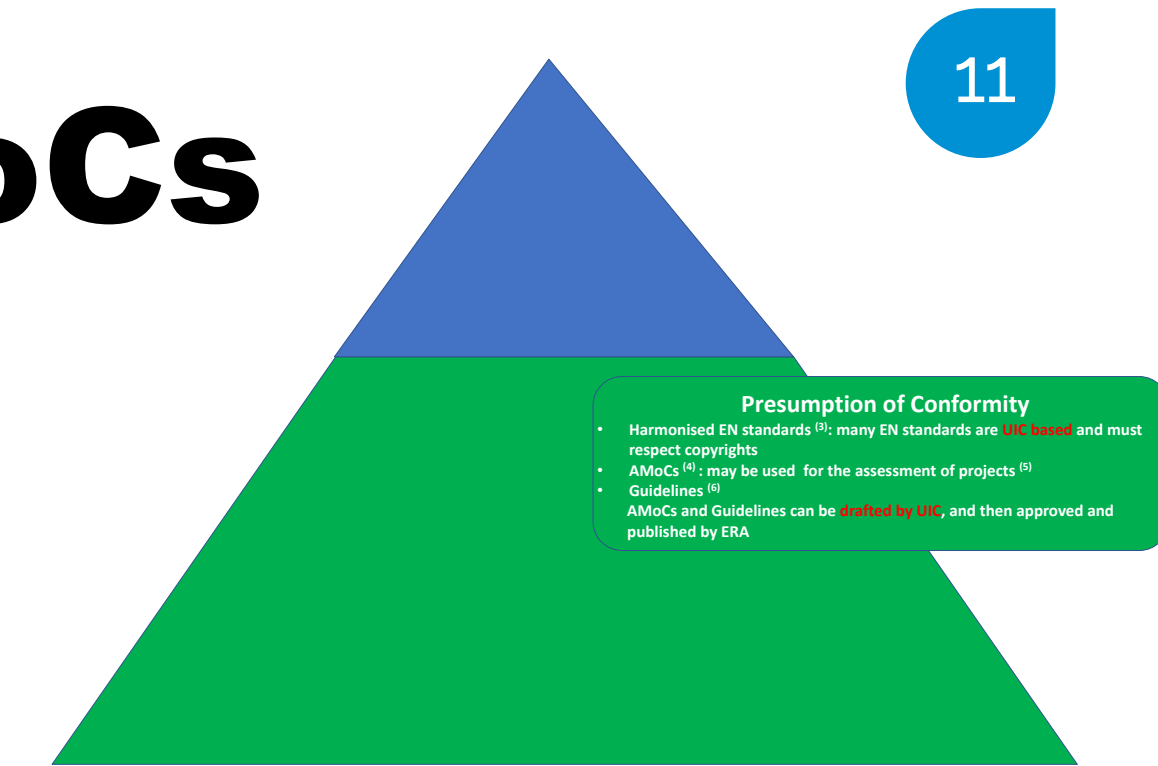
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2.6.	UIC Loading Guidelines - Code of Practice for Loading and Securing Cargo on Vehicles in Rail Freight Traffic - Volume 1 - Principles and Volume 2 - Goods .....	9

The UIC Guidelines are published every year in April – ISBN identification

# IRSs AND TECHNICAL DOCUMENTS as AMoCs

## UIC DOCUMENTS TO BE “STAMPED” AS AMoCs (by the end 2021) “safety of loads” and “tests and checks before departure”

- UIC Loading Guidelines - Code of Practice for Loading and Securing Cargo on Vehicles in Rail Freight Traffic :  
Volume 1 – Principles  
Volume 2 – Goods
- IRS 40471-3 : Inspection of dangerous goods consignments (inspection before train movement)
- IRS 40453 : Procedures for air brake tests effected with a traction unit : Brake tests for conventional freight train (wagons)
- IRS 40421 : Rules for the consist of and braking of international freight trains : rules for freight train brake settings as well as the content and format of the brake sheet and wagon list for use in freight traffic
- IRS 40472 : Braking sheet, consist list for locomotive drivers and requirements for the exchange of data necessary to the operations of freight rail services
- ATTI-GCU appendixes 9 et 11 for:
  - Inspections before train movement
  - Quality assurance procedure,
  - Managing defects and irregularities



## UIC PRIMARY IDEAS FOR FUTURE “AMoCs”

IRS 40421 (future edition): Rules for the consist of and braking of international freight trains - Brake settings - Content and format of the unified brake sheet in freight traffic

Leaflet 474 : Catalogue of harmonised train procedures for cross-border freight operations

IRS 40454: Operating rules for securing trains and train components to prevent rolling away on open track with due consideration of holding force

\* IRS 40474 catalog of harmonised procedures for cross-border freight operations (Incl. IRS 40476)

New IRS 40472

TrainDy study for articulated wagons

# International Brake Sheet / Wagon List

Train number:  Departure date:

International brake sheet and wagon list			5. Country code			
1. Issuing RU	2. Train number	3. Departure date	6. Train profile:			
4a. Valid from station		4b. Valid to station	7. $v_{max}$ , km/h:			

**Train parameters**

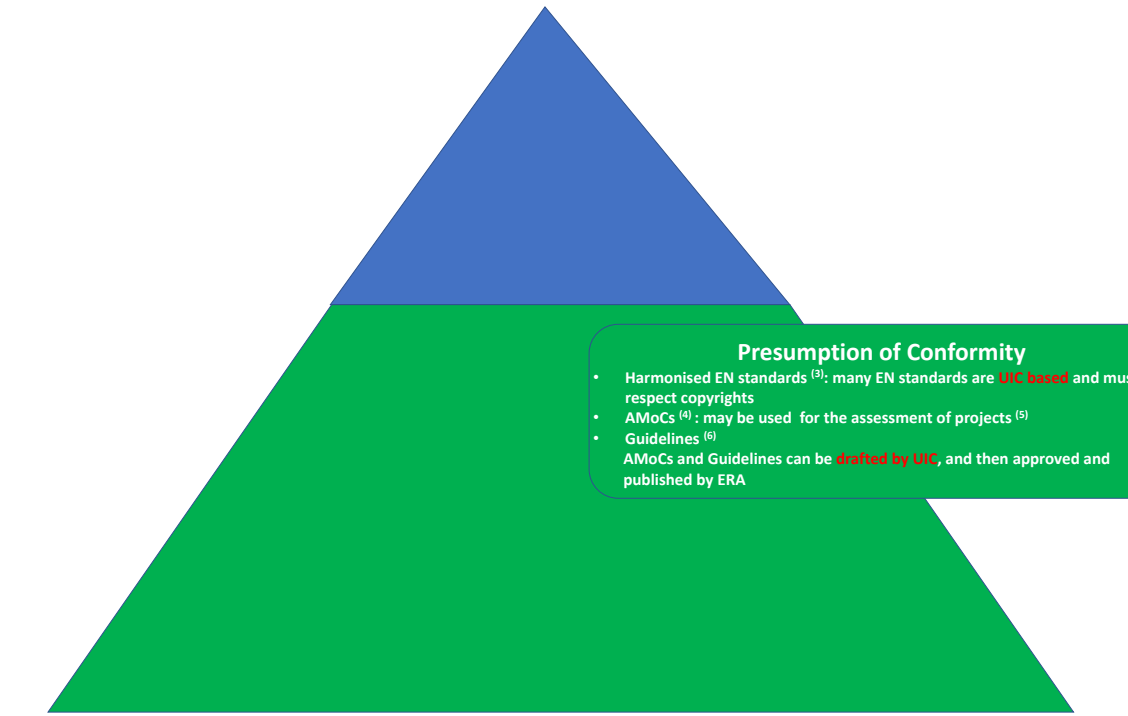
8. Remarks during the journey	9. Special features of the train
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<input type="checkbox"/> 10. Dangerous goods in train	16a. Valid from station	16b. Valid to station	16c. Valid from station	16d. Valid to station		
<input type="checkbox"/> 11. Exceptional consignment in train	17a. # of first wagon	18a. # of last wagon	17c. # of first wagon	18c. # of last wagon		
<input type="checkbox"/> 12. Additional documents about restrictions added	a	b	a+b	c	d	c+d
<input type="checkbox"/> 13. Waste shipments in train	Active locomotives	Wagons and inactive locomotives	Total	Active locomotives	Wagons and inactive locomotives	Total
19. Count, pcs						
20. Length, m						
21. Hand brake holding force, t / kN						
22. Braked weight after deduction, t						
23. Gross weight, t						
14. Required line classification	15. Brake setting	24. Available brake %:		24. Available brake %:		
	<input type="radio"/> G <input type="radio"/> P <input type="radio"/> GP <input type="radio"/> P+LL <input type="radio"/> R	25. Required brake %:		25. Required brake %:		
		26. Missing brake %:		26. Missing brake %:		
		27. % of braked weight braked by cast iron blocks:		27. % of braked weight braked by cast iron blocks:		

**Active locomotives in train**

28. Seq.	29. Number	30. Class	31. # of axles	32. Length over buffers, m	33. Gross weight, kg	34. Brake block type	35. Brake position	36. Braked weight, t	37. Remarks
1									
2									
3									
4									
5									

38. Date of issue	39. Time of issue	40. Issued by
41. Date of review	42. Time of review	43. Reviewed by
		44. Remark



# SPECIFICATION / STANDARDISATION

## HOW UIC WORKS WITH THE SECTOR

- UIC continues to cooperate with all relevant stakeholders, developing documents with a focus on:
  - **Functional concepts and operational principles**
  - **Functional Requirements and Specifications**
  - **Integration in the railway system architecture**
  - **Tests**
  - **Operations**
  
- On the basis of the above, the UBS alignment process will be proposed as an AMOC (Acceptable Means of Compliance), bearing in mind general :
  - through adequate agreements & MoUs,
  - work programs of the different stakeholders are synchronized/harmonized beforehand
  - synchronized/harmonized documents of the different stakeholders are therefore cross-referenced
  - MoUs / agreements include the necessary compliance by UIC with the CCM ERA process



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**Thank you for your kind attention.**