Implementing in Europe's Rail Freight the

European Visual Inspection Catalogue (EVIC) for freight wagon axles

to be applied **in light maintenance** of freight wagons **in workshops**

Joint Sector Group for ERA Task Force on wagon/axle maintenance
Delitzsch, Germany
11 and 18th March 2010

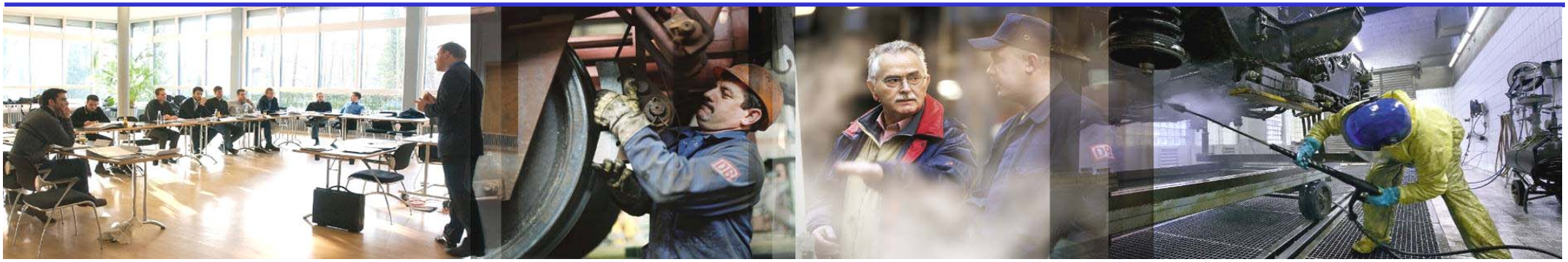
Where do we come from? The Joint Sector approach for a European problem

- European wagons keepers have developed since many decades a maintenance system assuring a safety which allowed to become the safest land freight transport.

- However, after the tragic accident in Viareggio,
  - the European Railway Agency
  - the European NSAs and
  - the Joint Rail Freight Sector (CER, ERFA, UIP, UIRR, UNIFE)

  agreed to investigate in the frame of the **ERA Task Force** the possibilities for a **European approach** for **harmonised criteria** and **immediate and mid-term measures** ascertaining an even enhanced railway safety in an appropriate way.

The Joint Sector Program worked out in the ERA Task Force was fully adopted in Viareggio in december 2009



- **European Action Program:**
  - A **Visual Inspection** of the European wheelset/axle population (according to EVIC)
  - A more in-depth **investigation of samples** of wheelsets from defined operating areas
  - A European-wide implementation of **systematic traceability of wheelset maintenance** (for the EVIC campaign and for general wheelset maintenance)

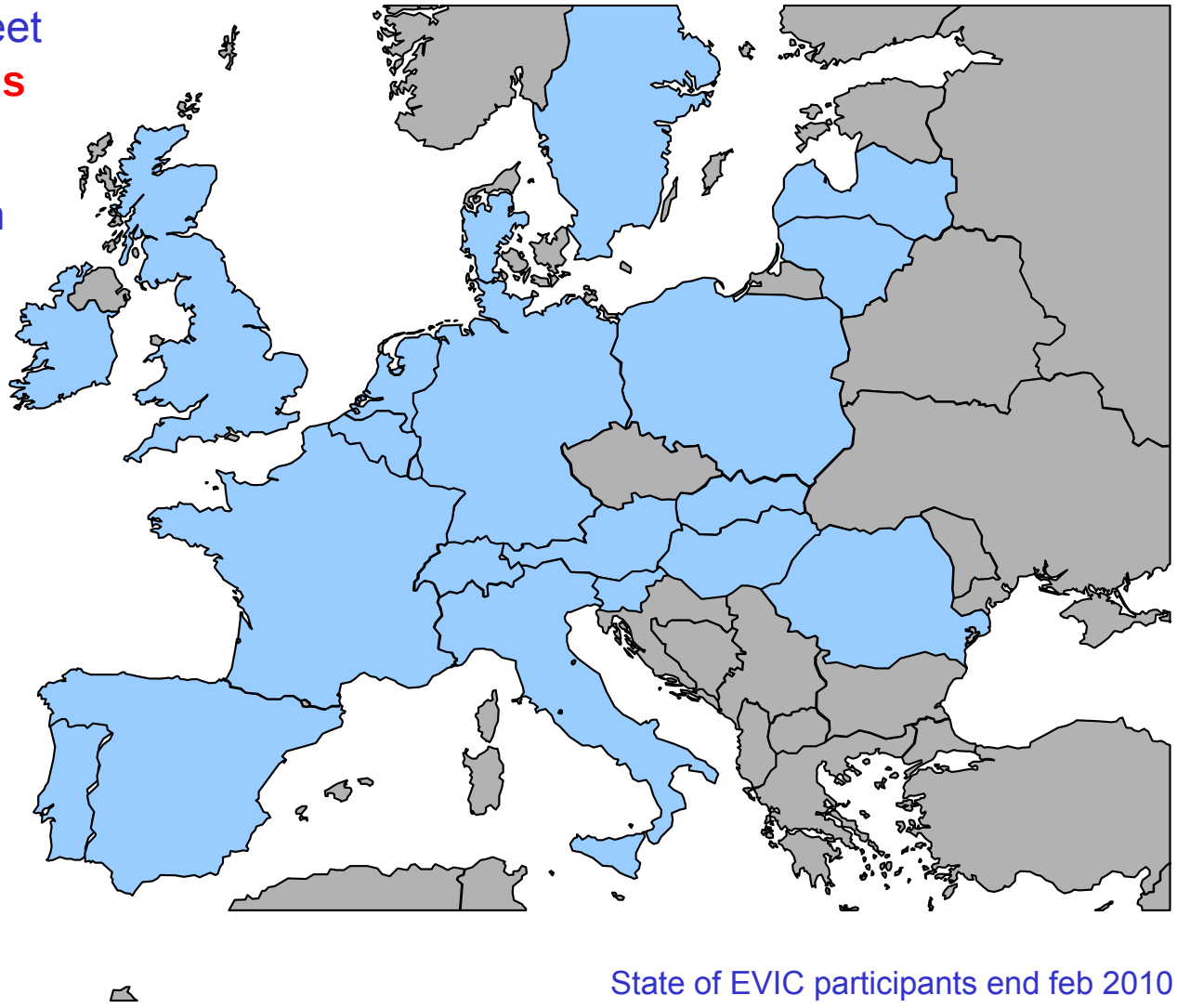
- **Confirmation of the European standard axleload of 20t for UIC Typ A axles** (and the special cases, e. g. France, Belgium, Sweden)

What is to be done now: the Sector must fulfil its safety responsibilities!

- The Joint Sector program was approved by all EU authorities and NSAs
- It is up to the Sector to implement now what has been decided
- **Implementation as a self-commitment in the Sector Association‘s companies – no legal obligation! (but GCU)**
- NSAs to audit the decided measures

The objectives of the EVIC program (Visual Inspection program)

- to subject the European freight wagon fleet to a **Visual Inspection of the axle status**
- **to judge the axle status** according the criteria in the European Visual Inspection Catalogue (EVIC)
- **to remove from service axles in a not admissible state** (immediately / after unloading)
- **to record a set of minimum data** for the inspected axles
- **to hand over removed axles to heavy maintenance with appropriate treatment and NDT**



State of EVIC participants end feb 2010

EVIC program: timeframes

From 01.04.2010 onwards,

- all wagons
  - **for dangerous goods (only RID tank wagons)** and
  - **operating under corrosive conditions**

  will be checked under EVIC conditions to 100% in a **4 years** period

- All **standard wagons** will be checked under EVIC conditions to 100% in a **6 years** period

- In case of removal of the wheelset, the wheelset must be handed over by the keeper to regular heavy maintenance with NDT in accordance to the relevant maintenance systems.

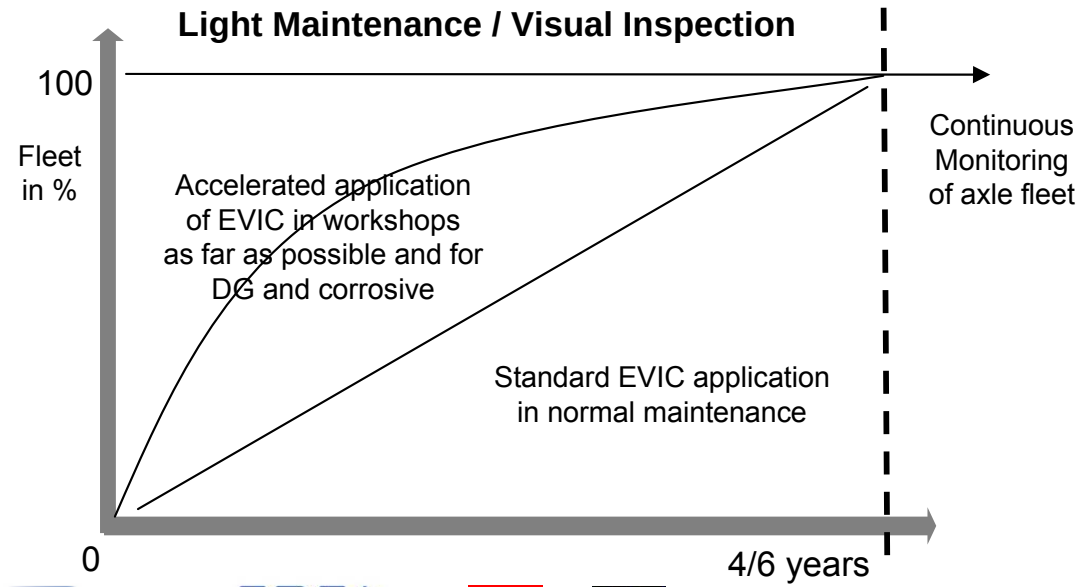
- After having checked the fleet to 100%, the EVIC will be applied continuously and/or amended depending on the return of experience

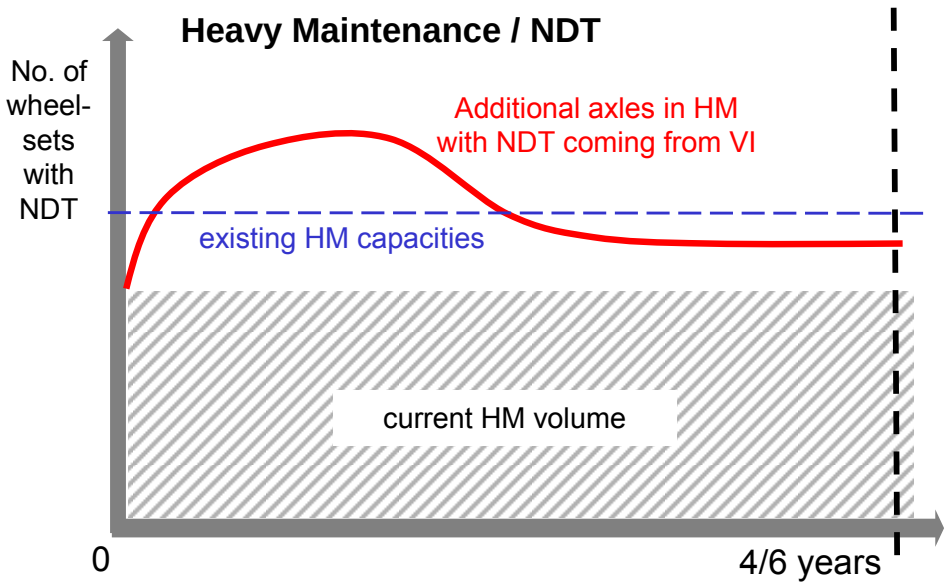
Recommended priorities for standard wagons:

- high loading factor (e. g. 50%, F-, T-wagons)
- impact due to drop loading (e. g. some E-types)

EVIC program: volume effect of axles in light and heavy maintenance

- Up to 40% of the total fleet is expected to be checked visually within the first year.
  The number of axles inspected over years will so not be linear but accelerated
- German sector experience shows that this will increase the number of axles
  - by 15-20% sorted out in light maintenance and handed over to heavy maintenance
  - up to 30-40% additionally in yearly heavy maintenance with NDT in comparison to now
- This additional yearly load will stress heavy maintenance capacities to the maximum





The Joint EVIC body per country

To be completed

Country	Languages	UIP / Rivière	CER / Müller	ERFA / Heiming
France	FR	David Tillier dtillier@ermewa.fr	Lafaix SNCF bernard.lafaix@sncf.fr	
Switzerland	DE, FR, IT	Olga Wisniewska tech@cargorail.ch	Bernet SBB thomas.bernet@sbbcargo.com	Nicolin AAE johannes.nicolin@aae.ch
Germany	DE	Albert Hartmann VPI hartmann@vpihamburg.de	Manfred Bergmann DB manfred.bergmann@dbschenker.eu	Mallikat VDV mallikat@vdv.de
Italy	IT	Mauro Pacella ASSOFERR Mauro.pacella@assoferr.it	Paolo Fusarpoli TI p.fusarpoli@trenitalia.it	**Joint EVIC body**
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United Kingdom	EN	Geoffrey Pratt geoffrey.pratt@btconnect.com	*Paul Antcliff* *paul.antcliff@dbschenker.com*	Lord Tony Berkeley tony@rfg.org.uk
Ireland	EN		Damien Lambert IrishRail damien.lambert@irishrail.ie	Lord Tony Berkeley tony@rfg.org.uk

The Joint EVIC body per country

To be completed

Country	Languages	UIP / Rivière	CER / Müller	ERFA / Heiming
Czech Republic	CZ	Martin Vosta sekretariat@sdruzeni-spv.cz	Martin Vosta sekretariat@sdruzeni-spv.cz	
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Latvia	LAT		Dainis Zvaners LDz dainis.zvaners@ldz.lv	
Lithuania	LIT		Kęstutis Rakauskas k.rakauskas@ litrail.lt +370 5 269 31 48	Edita Gerasimoviene e.gerasimoviene @transachema.lt
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Slovenia	SLO		Viktor Sinkovec viktor.sinkovec@slo-zeleznice.si	
Portugal	POR		Joaquim José Martins Guerra jmguerra@cp.pt	
Luxembourg	FR, DE		Gaston.Zens gaston.zens@cflcargo.lu	
Greece	GR			

The tasks of the Joint EVIC body per country

- organize the **translation in the national language** and **the issueing** of the EVIC
- organize **joint central training session(s) per country** for
  all associations, all keepers, all related workshops, keepers **(RUs for information)**
- **manage all information** of all concerned parties (workshops, keepers,…)
- **collect the EVIC traceability data** from the keepers and
- **condense the data collected from the keepers** (per country) for the Joint Sector Group
- **monitor the implementation** of EVIC in the respective companies (e.g. by a checklist)

Preparing the working documents

- The conditions for the EVIC program are laid down in the **EVIC Implementation Guide V2.2**
  The traceability logging charts are laid down in the **EVIC…. V2.2.xls**
  The criteria for inspections, illustrations and required actions are laid down in the **EVIC V2.11**

- **The references are the English language (EN) versions.**
  All documents (english and translated) will also be published officially on **xxx website.**

- **The Joint EVIC body** per country delivers the EVIC documents in the national language

- **The Joint EVIC body** per country issues the EVIC documents to the countrie's keepers (and, for information, to the RUs)

- **The keepers** (ordering the Visual Inspection from the workshops) hand over the documents to the executing workshops.

- **The executing workshop** adds the required national and local working rules as well as all supporting further instructions on/for application on the workshop level.

Mandating and invoicing the EVIC inspections

- **The implementation of the EVIC in the GCU (including traceability)** has already started (annex 10, new appendix 3)
- **The EVIC execution must be mandated to the contracted workshops by the keepers** (in the meantime until the full EVIC implementation in GCU)
- **The keeper must take over the costs** for executing the EVIC program (inspection and tracing) and potentially for a required change of the wheelset (future amendment in GCU annex 12)
- **In a first step, the workshops must not execute the EVIC inspections in a wagon GCU repair if not specifically ordered by the keeper** (implementation in GCU is in progress)

Under urgent clarification!

- **The workshops** must give the results of the EVIC tracing to the **keeper**
  - with the corresponding invoice (maximum after one month) or
  - separately with the monthly separate summary sending
- **The workshops must register** the wheelset IDs/number(s) **of the new mounted wheelset(s)** (replacement for “EVIC failed” wheelset) **in the invoices/reporting document to the keeper** (normally already done in the maintenance documentation)

Staff qualification

- The inspections have to be conducted by staff qualified in application of this Visual Inspection Catalogue.
- It is not necessary for the operatives conducting such visual inspections to be qualified as NDT visual inspectors pursuant to EN 473.
- The staff involved in this inspection **should be trained one day** for the correct use of this procedure.
- It is under the responsibility of the workshop to update a list of trained workers for the use of the present procedure.

Conducting the Visual Inspections

- The Visual Inspection of the freight wagon's axle shafts for damage to material and coating (if existing) is mandatory
  - **during light maintenance**
  - **each time the wagon is in a workshop (not mobile team)**

  and if one of the following conditions is fulfilled:
  - **the wagon is on a pit or**
  - **the wagon is lifted**

- **In case of non judgeable defects (not sufficiently detailed by the descriptions in the EVIC), the executor of the EVIC inspection must contact the keeper for further instructions.**

- **A replacing wheelset for a sorted out axle must be in an "EVIC ok" status**

- The EVIC doesn't replace existing maintenance rules. First, existing maintenance rules must be applied, then the EVIC check. If an axle is sorted out with current maintenance rules, it is not necessary to apply the EVIC

Conducting the Visual Inspections

- The visual inspection **covers the complete area of the axle-shaft surface between the wheels.** See special instructions for the **abutment area** in the EVIC V2.11.

  The inspection area is to be examined for

  - **mechanical damage** (fluting, pitting and notching, cracks)
  - **surface damage** (areas eaten away, corrosion scars)
  - **coating damage** (with and without corrosion) *if coating system existing*

- **Reference images** (typical damage features) are used for identifying inadmissible forms of damage.

- **It is not foreseen to clean the axle.** In case of doubt, clean axle (locally) to allow examination

- If natural light intensity is too poor, a supplementary white light source must be used in order to obtain an adequate visibility on the axle.

- Axle shafts with inadmissible forms of damage are to be repaired according to the prescriptions, if possible. Otherwise, the axles must be replaced

Conducting the Visual Inspections

- An example for an adequate position for the staff conducting the visual inspection is given in the figure below.

- If the wheelset cannot rotate (if the wagon is not lifted up), the visibility of the full surface of the axle must be assured in a different way.

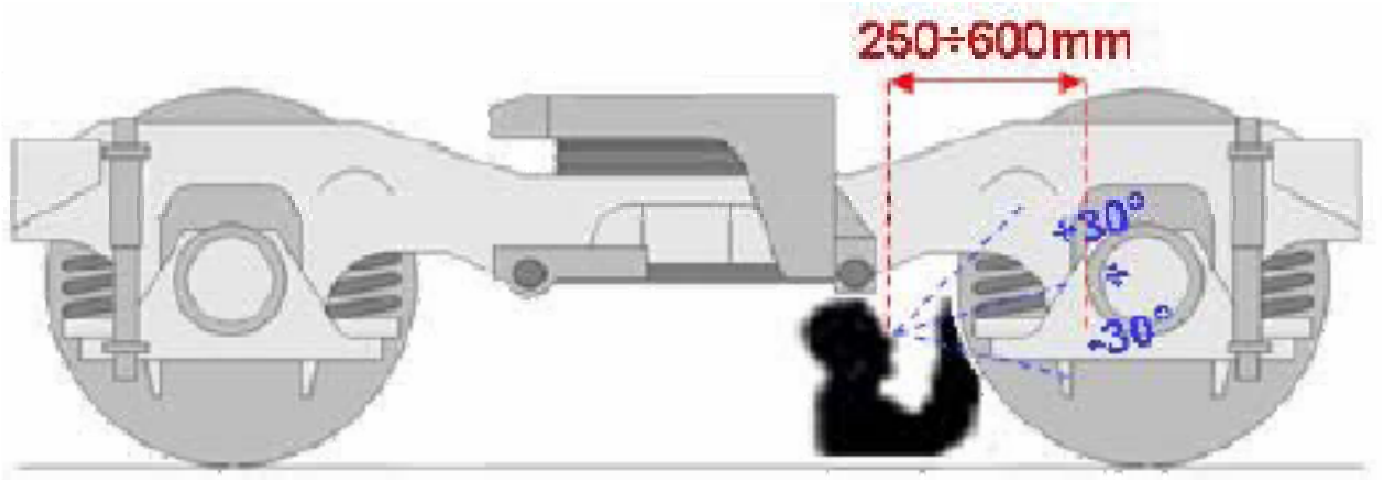


Figure 2 – Inspection angle and distance

Actions to be taken after inspection (cases)

The following **cases** describe the actions to be taken after a Visual Inspection of the axle:

A Remove the wheelset from service without delay

B Remove the wheelset from service after unloading the wagon
and/or sending back to home workshop

C Leave wheelset in service until the next revision/overhaul of the wagon
or repair the damage in situ on the wheelset.
In the next revision/overhaul, the remove from service is mandatory

Remove from service = replace or repair (in situ if possible) according to the criteria

For wheelsets operated in wagons under heavy corrosive conditions, only the categories A and B are allowed

Recording the Visual Inspections
Overview on EVIC categories and logging

			Category for EVIC logging	
	Painted and unpainted axles			
30	No defects		**ok**	
40	No defects		**ok**	
	Painted axles			
31	Mechanical damage	sharp edged circumferential fluting	**X**	**(not ok)**
32	Mechanical damage	smooth edged circumferential groove	**X**	**(not ok)**
33	Mechanical damage	sharp edged notching	**X**	**(not ok)**
34	Mechanical damage	cracks	**X**	**(not ok)**
35	Surface damage	large and heavily corroded areas	**X**	**(not ok)**
36	Surface damage	single, deeply pitted corrosion scars	**X**	**(not ok)**
37	Coating damage	with or without corrosion	**C**	
	Unpainted axles			
41	Mechanical damage	sharp edged circumferential fluting	**X**	**(not ok)**
42	Mechanical damage	smooth edged circumferential groove	**X**	**(not ok)**
43	Mechanical damage	sharp edged notching	**X**	**(not ok)**
44	Mechanical damage	cracks	**X**	**(not ok)**
45	Surface damage	very heavy, deep and large corrosion	**X**	**(not ok)**
46	Surface damage	single, deeply pitted corrosion scars	**X**	**(not ok)**
47	----	---		
	All axles			
50	Abutment area	--	**X**	**(not ok)**

Recording the Visual Inspections
TO DO workshops: “EVIC keeper traceability”

The workshops must

- record the results of the Visual Inspection
- **for each keeper**
  - in paper or
  - in electronic file format

according to

“EVIC keeper traceability V2.2” file:

Workshop: TERGNIER Year: 2010

Country of the workshop: France Month: 5

Keeper: ERMEWA (as written on the wagon)

Data are only examples

				enter only 1 result per wheelset			
				Other check result	EVIC check result		
		- as far as identifiable - enter NI if not identifiable		e. g. GCU check	enter 1 where appropriate		
wagon number (set wagon number only once for all axles)	Date	wheelset N°	wheelset type	enter 1 where appropriate	"ok"	"X"	"C"
338712345689	02.05.10	12345	9056		1		
		12312	9052		1		
		345621	9052			1	
		41414	9056				1
338700000002	12.05.10	19	9076		1		
		287	9076		1		
		NI	NI	1			
		294	9076		1		
338700000123	12.05.10	13213213	9076			1	
		1232131414	NA	1			
338701231123	13.05.10	34562133	9052				1
		34562132	9056				1

Recording the Visual Inspections
TO DO keeper: “EVIC monthly keeper report”

The keepers must

- **collect the monthly results** from the contracted workshop (per country) **1st week of next month**
- **keep the records**
- **condense the received monthly results from all workshops (per country) in electronic file format** (according to the “EVIC monthly keeper report V2.2” file, name of the keeper acc. to VKM or registration in NVR)
- **report monthly electronically the condensed “EVIC monthly keeper report” to the Joint EVIC bodies (details to be defined by the Joint EVIC bodies themselves):**

Example Germany: **evic.germany@vpihamburg.de**

Data are only examples

Country FRANCE

ID of the keeper to be formatted according to VKM or NVR registration

keeper	Month	Year	No of wagons checked	No of axles sorted out for other reasons	No of EVIC axles „ok“	No of EVIC axles „X“	No of EVIC axles „C“
XYZ	5	2010	400	100	1000	80	120

Recording the Visual Inspections
TO DO Joint EVIC bodies: “EVIC monthly country report”

The Joint EVIC bodies must

- **collect the “EVIC monthly keeper reports”** from the different keepers
- **summarize electronically the monthly results of all keepers per country** **2nd week of next month** (“EVIC monthly country report V2.2”)
- **send this report monthly electronically** to the JSG: **evic.europe@deutschebahn.com**

Country FRANCE

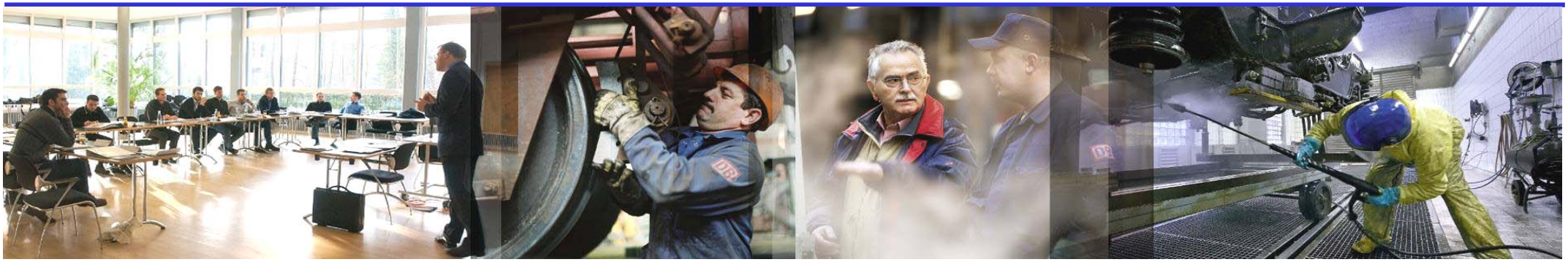
ID of the keeper to be formatted according to VKM or NVR registration

Data are only examples

keeper	Month	Year	No of wagons checked	No of axles sorted out for other reasons	No of EVIC axles „ok“	No of EVIC axles „X“	No of axles „C“
UVW	5	2010					
XYZ	5	2010					
Sum			700	90	1800	120	200

Only summarized data are reported in the ERA Task Force

Your most important TO DOs now as a Joint EVIC body



- Translate the EVIC documents into your national language
- Identify your national
  - keepers
  - workshops
  - RUs **(for information)**

assistance by GCU country member's excerpt lists, delivered by JSG

- Organise the national training sessions — before 01.04.2010 — **Adapt JSG "national letter"**
- Start the EVIC application in your country — from 01.04.2010 onwards
- Collect the first traceability sheets from the keepers — from 1st week of 05.2010 onwards

Thank you for your attention and for your support!

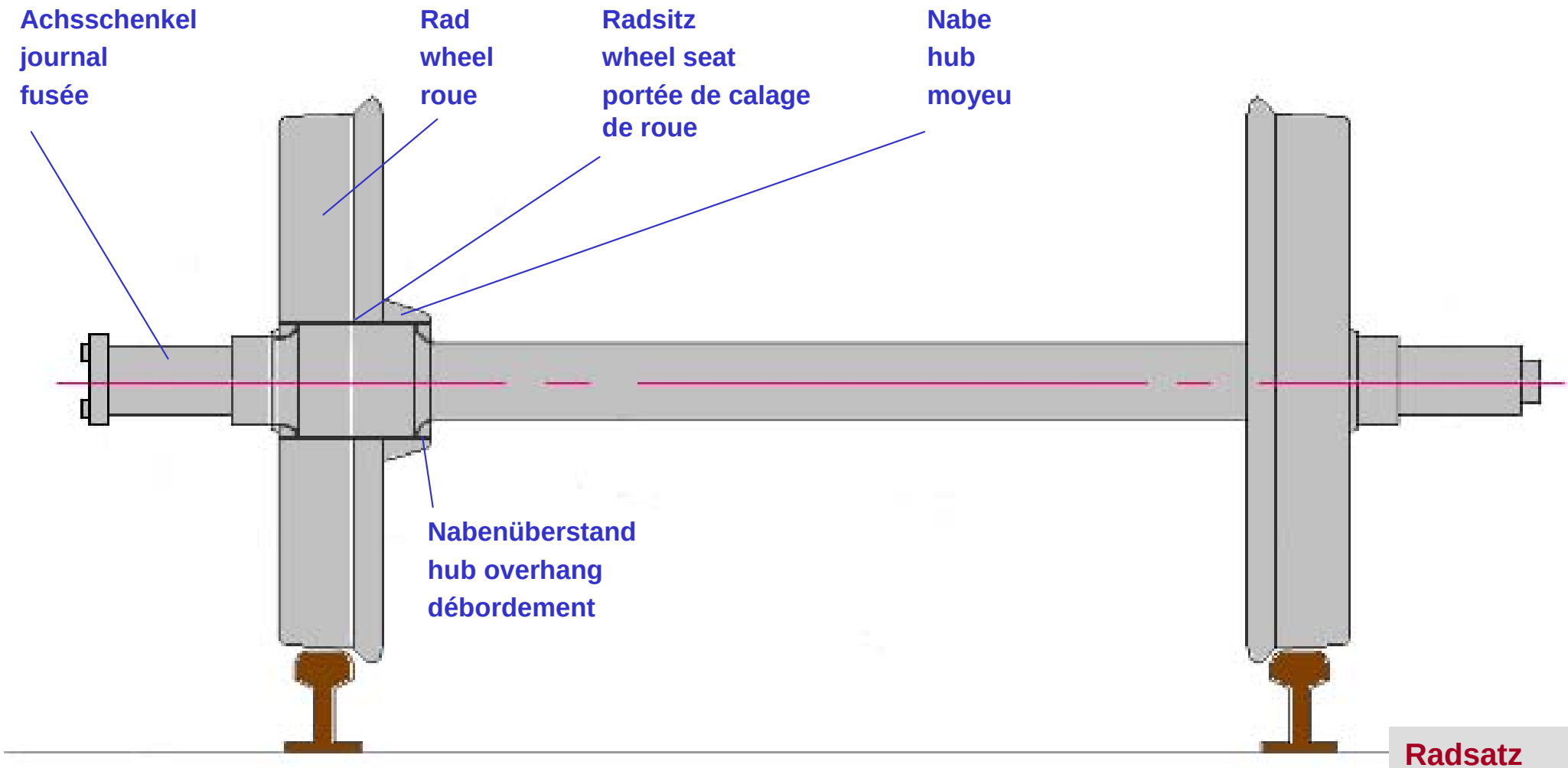
Definitions

Replace = take the wheelset out of the wagon (and repair it in a suitably competent workshop, if possible)

Repair = repair the damage in situ (wheelset mounted) according to the relevant rules

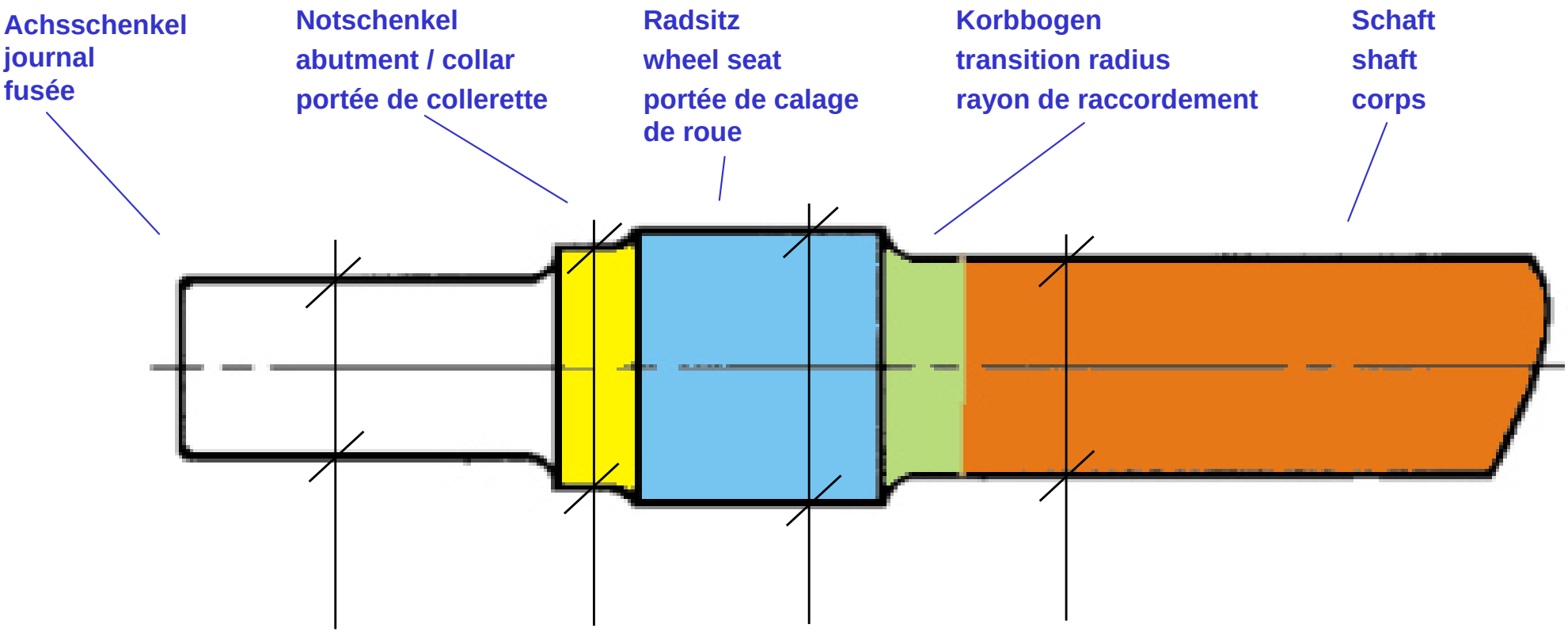
Remove from service = replace or repair (in situ if possible) according to the criteria

Definitions



Radsatz
Wheelset
Essieu monté

Definitions



Radsatzwelle
Axle
Essieu-axe