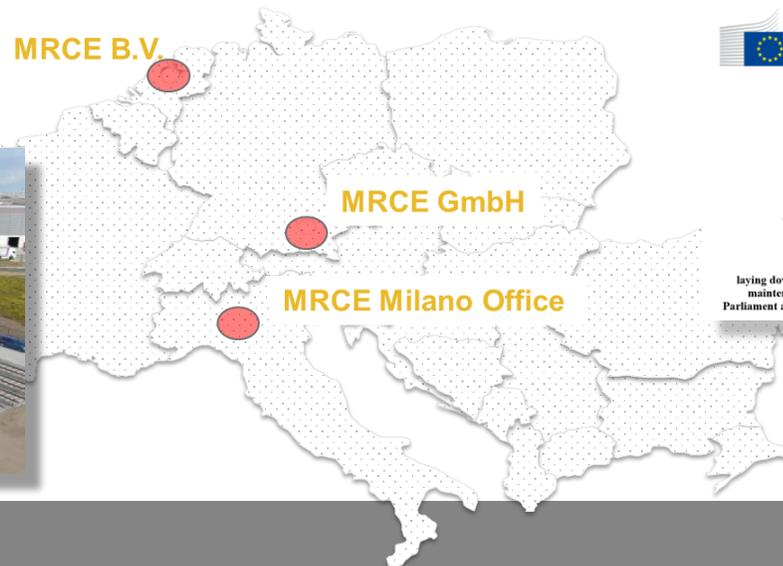




“15 years of Mitsui Rail Capital Europe”
A Company History against the background of the ETCS
deployment in Europe
ERTMS Conference 2019 - Valenciennes

- MRCE B.V. was founded in 2004 in Amsterdam
- Shareholder: Mitsui & Co. Ltd, Tokyo
- In 2006, MRCE acquired Siemens Dispolok. From that time on, MRCE has been providing «Full Service Leasing» of Locomotives to the Railway Market in Europe
- In 2014, first successful audit as being «ECM – Entity in Charge of Maintenance», fulfilling all aspects of the Regulation EU 445/2011 for Locomotives (future: EU 2016/798)
- 2016: introduction of MRCE's «Milano Office», in order to manage the Italian Service Market upfront
- In 2019, MRCE's first Workshop «LWR – Locomotive Workshop Rotterdam» went in operation (Joint Venture with Siemens)



Brussels, 16.5.2019
C(2019) 3582 final

COMMISSION IMPLEMENTING REGULATION (EU) .../...

of 16.5.2019

laying down detailed provisions for the maintenance of vehicles
Parliament and of the Council

MRCE's Customers: Operators of the Locomotives

MRCE: Keeper & ECM for Locomotives

ECM Maintenance Development ECM Fleet Management ECM Maintenance Delivery

MRCE's contracted Service and Maintenance Network

(October, 2019)

Locomotive type	Manufacturer	Models	Total fleet
Electric		ES64U2	52
		X4E "Vectron"	127 + 9 ordered
		ES64F4	124
		TRAXX AC / MS	29
Total			341 (332 + 9 ordered)



Siemens, Vectron



Siemens, ES64U2



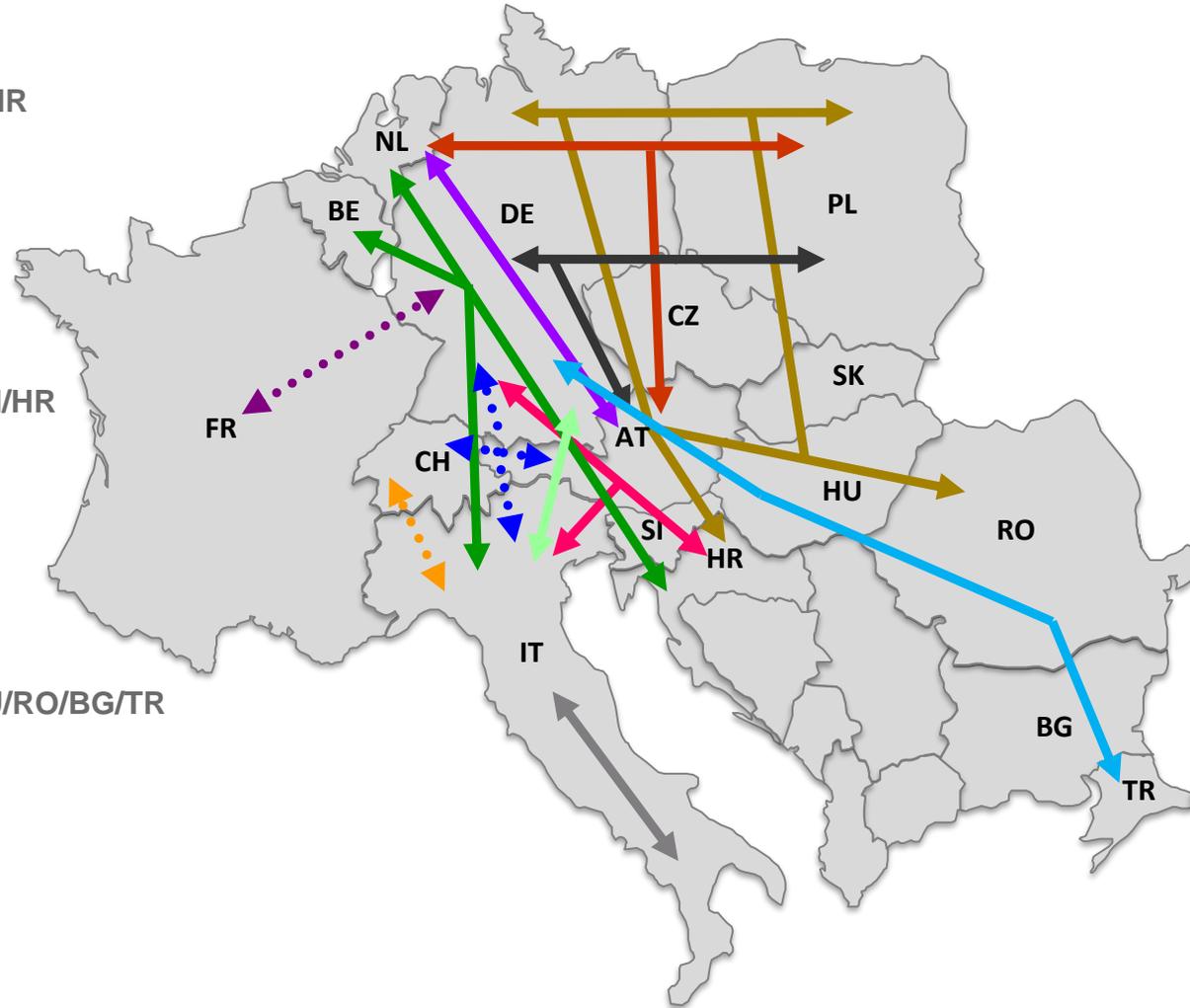
Siemens, ES64F4



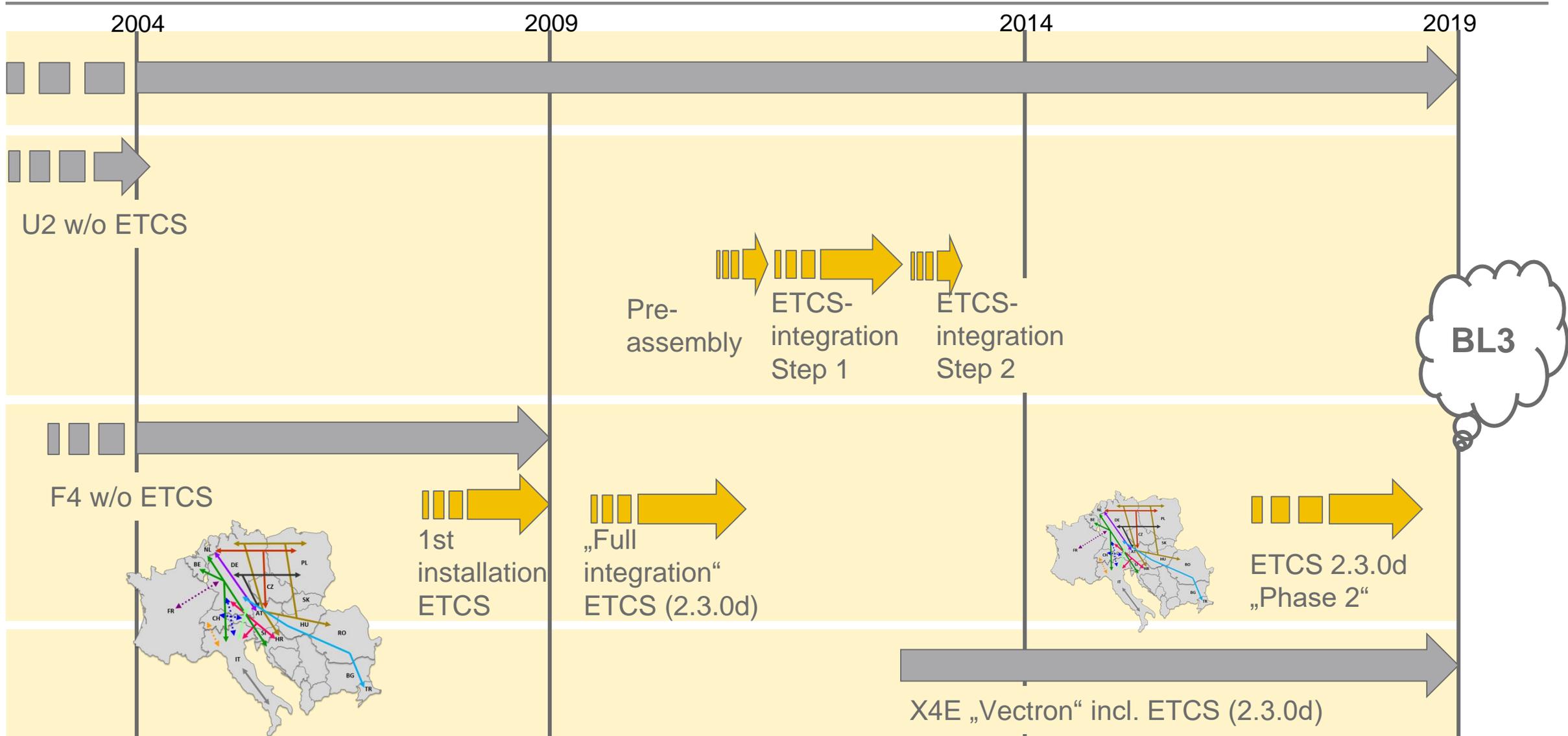
Bombardier, E185

-  F4 VM: DE/AT/PL/CZ/HU/RO/SI/HR
-  F4 VO: DE/AT/PL/NL
-  F4 VJ/VK: DE/NL/AT
-  F4 VD: DE/AT/IT/SI/HR
-  F4 VE/VL: NL/BE/DE/AT/IT/CH/SI/HR
-  F4 VI: IT
-  F4 VH: DE/AT/PL
-  TRAXX 484: CH/IT
-  U2 BosphorusSprinter: DE/AT/HU/RO/BG/TR
-  TRAXX DACHI: DE/AT/CH/IT
-  TRAXX DF: DE/FR
-  Vectron DAI: DE/AT/IT

... to be continued...

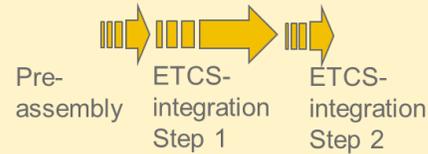


MRCE's History against the background of ETCS Upgrades





U2 w/o ETCS



Pre-assembly:

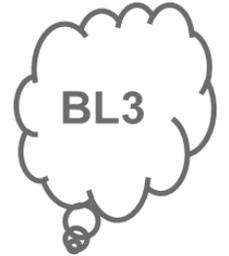
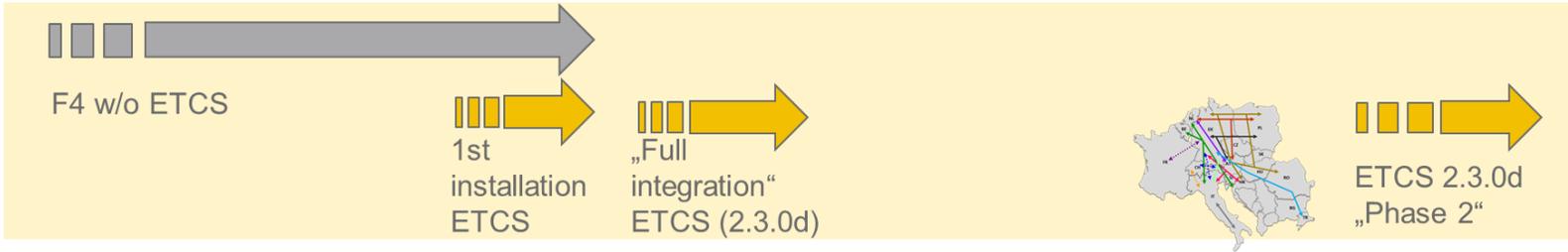
- Replacing „MFA“ and JRU
- SW-Release „S“

ETCS-integration Step 1:

- Activities for Operation in „Classic Mode“
- Re-Authorization in AT, DE, HU for Step 1

ETCS-integration Step 2:

- Preparation for Operation in „ETCS switched on“ mode
- Re-Authorization in AT, DE, HU for Step 2

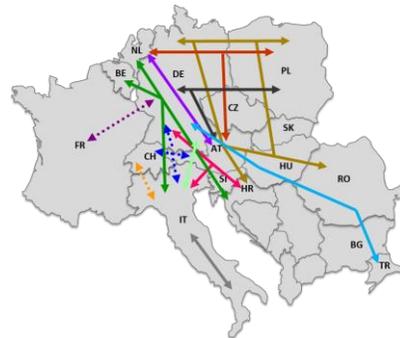


1st implementation ETCS:

- 3-Display solution (only temporarily authorized)
- Integration of ATB & SCMT as STM
- Homologation *in all relevant countries*

ETCS „full integration“ (2.3.0d):

- Upgrade to 2.3.0d after achieved homologation of 2-Display-solution *in all relevant countries*



ETCS Upgrade „2.3.0d Phase 2“:

- Integration of LZB/PZB as STM
- Integration of „Euroloop“ (for Austria)
- Fulfillment of 2 CR for Switzerland (usually specified for BL3)
- **Re-authorization in all relevant countries of each homologation package**

X4E „Vectron“ incl. ETCS (2.3.0d)

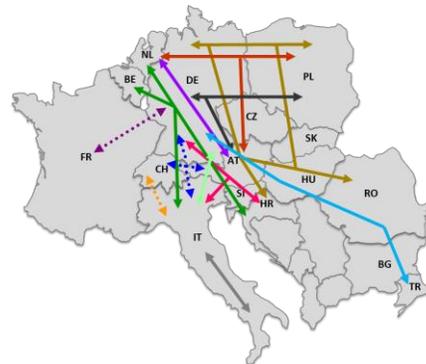
BL3

Delivery Status:

- ETCS 2.3.0d

Within every order procedure of new Variants, the same question occurs:

- Which will be the best definition of an Option of „Baseline 3“?



How the future Upgrades after first integration of Baseline 3 will look like?:

- Homologation procedures?
- Necessary future investments?
- Necessary downtimes for installation of Upgrades?
- ... *to be continued* ...

- So far, for continuous Upgrades of ETCS on the Multi-System fleet of MRCE, an **investment in the range of a significant high double digit amount of mln Euros** had to be made
- To make it clear: we are talking about **just 124 Locomotives** in total...
- If you take **all ETCS-related costs / opportunity losses** together, this reflects **15% of the total Asset Value**
- During that period, these Locomotives have achieved only the **lifetime of in average 13 years** (in other words: we are talking about Locomotives which are still at least within the first half of their Life Cycle)

- During almost **30% of the lifetime** of these Locomotives, MRCE has been within a phase of **ETCS Upgrade-Projects** so far
- Approx. **1.5% of their lifetime**, these Locomotives have been **out of Operation for Upgrade activities**

- **None of the Upgrades have been „off-the-shelf-products“** (due to the vice versa impact between the ETCS specification as such and the impacted STM's)
- That means: due to the extended period of ETCS deployment, we needed to understand the Matrix of development paths of ETCS and the various STM's
- Without the knowledge of these complex dependencies, as keeper / owner we might have been driven into „wrong“ investments at the „wrong“ time

- That means: **as keeper / owner of ETCS equipped Locomotives we've been forced to have capabilities to design Project packages** together with our supplier(s) and all other stakeholders – which means: highly qualified resources!
- **The most significant impact on the investment side** for the Upgrades of the ES64F4 came from the **re-homologation / re-authorization** – *in principle one change request from one country have had impact on all other authorizations of the affected homologation package!*

- The ETCS supplier intends to minimize the variety of development paths, each STM supplier does the same - **both facing independent changes of regulations and resulting specifications**
- The manufacturers of the Locomotives as system integrators have in the end the same interests – keeping the development paths of configurations and Software Releases as much harmonized as possible
- In the result, **highly customized Projects – far away from an approach of „Industrial Production“** – have been executed

- Side effect: there is a „competition“ between the overlapping ETCS Upgrade Projects – and with e.g. 94 Locomotives, you are normally not „Priority A“ ...
- Especially in the case of the „ETCS 2.3.0d Phase 2“ Project, there was no added value for the operators (meaning: MRCE's customers) – **the Locomotives just kept the authorization of operating under ETCS 2.3.0d**

- From the perspective of a private investor, there is still no sufficient planning reliability in place – therefore the **ETCS deployment has to be further harmonized** as much as possible
- A continuation of the **high frequency of ETCS Upgrades** (including up to 5 weeks of stand still time for each single Locomotive) would be further **jeopardizing the Business Models within the Railway Sector** in Europe
- Since we don't expect a significant decrease of the „vice versa impacts“ between ETCS and STM requirements for the near future, the opportunities of **enhanced funding models** for keepers / owners of ETCS equiped Rolling Stock Assets have to be further evaluated

- We need on short term a clarification how the **4th Railway Package** has to be executed for Locomotives / Rolling Stock Assets, which were deployed without any TSI homologation (in other words: how to deal with „**grandfather rights**“?)
- The concept of the „**one stop shop**“ for authorization has to be adapted accordingly for „**aging fleets**“, which still have to run at least 20 additional years...

There are still many open topics on the Agenda of the ERTMS deployment in Europe – let's discuss later during the panel discussion...

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