Feedback from 2A/2B workshops

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The three ERTMS vehicles upgrade projects analysed

355 international freight locomotives

- as explained earlier

DB Trainsets for High Speed Service

- 4 trainset types concerned: ICE-1, ICE-3, ICE-T and BR407
- Driven by the need to operate on ERTMS only infra
- Financing 100% by the vehicle owner

SNCF regional trains for FR-LU services

- upgrade forced by decision of Luxembourg to stop MEMOR-II+ at end 2019
- Alstom Bi-Standard BL3 products (integrated ETCS-KVB) only available option
- Financing: 82% by the region, 18% by INEA

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Lessons Learned and Recommendations (1)

- **ERTMS onboard installation first while trackside immediately follows** (and Class B are removed) is considered the most economical option but initial costs for RUs must be considered
- **ERTMS upgrade is often a MUST** but not profitable per se (strong negative business case especially in the freight transport), so **external financial aid is inevitable**!
- **Restricted choice of Suppliers (**Vendor lock-in with initial onboard manufacturer)
- **Scarce interest** of ERTMS onboard suppliers to engage **in retrofitting & upgrade** (high cost for vehicle adaptation and long authorisation periods)
- **The risk of loosing an existing even limited vehicle authorisation** while waiting to get the new wider authorisation is high

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Lessons Learned and Recommendations

- **An upgrade of an ERTMS onboard** must be designed to be demanding **less investment, quicker and more attractive** for the vehicle owners
- **TIU is far from covering all the technical details of ERTMS integration with vehicle**; lot of engineering work required for each vehicle type-ERTMS OBU combination
- **Equipping vehicle with ERTMS only and running solely on ERTMS corridors is not a realistic option** – Class B will remain beyond 2030
- Installing **STMs instead of Class B independent is often impossible** (lack of STM) or not a convenient option (low STM performances…)
- **Member States do not make efforts to provide STMs** they are obliged to; **CEF funding is not covering any STM or Class B installation**

Key factors for successful ERTMS large scale deployment projects:

- ✓ **Onboard first, trackside to follow**, with parallel Class-B decommissioning
- ✓ **Integration** of train equipment project with infrastructure project organization
- ✓ **Early start of consultation** of all authorities and IMs included for more efficient implementation steps
- ✓ **Involving ERA** as soon as possible on how to solve open points and interoperability issues in different countries
- ✓ **Establishing compensation mechanism** (transfer of financial advantages) from IMs to RUs