SOLUTION ARCHITECTURE – SMART SOLUTION FOR RAILWAYS

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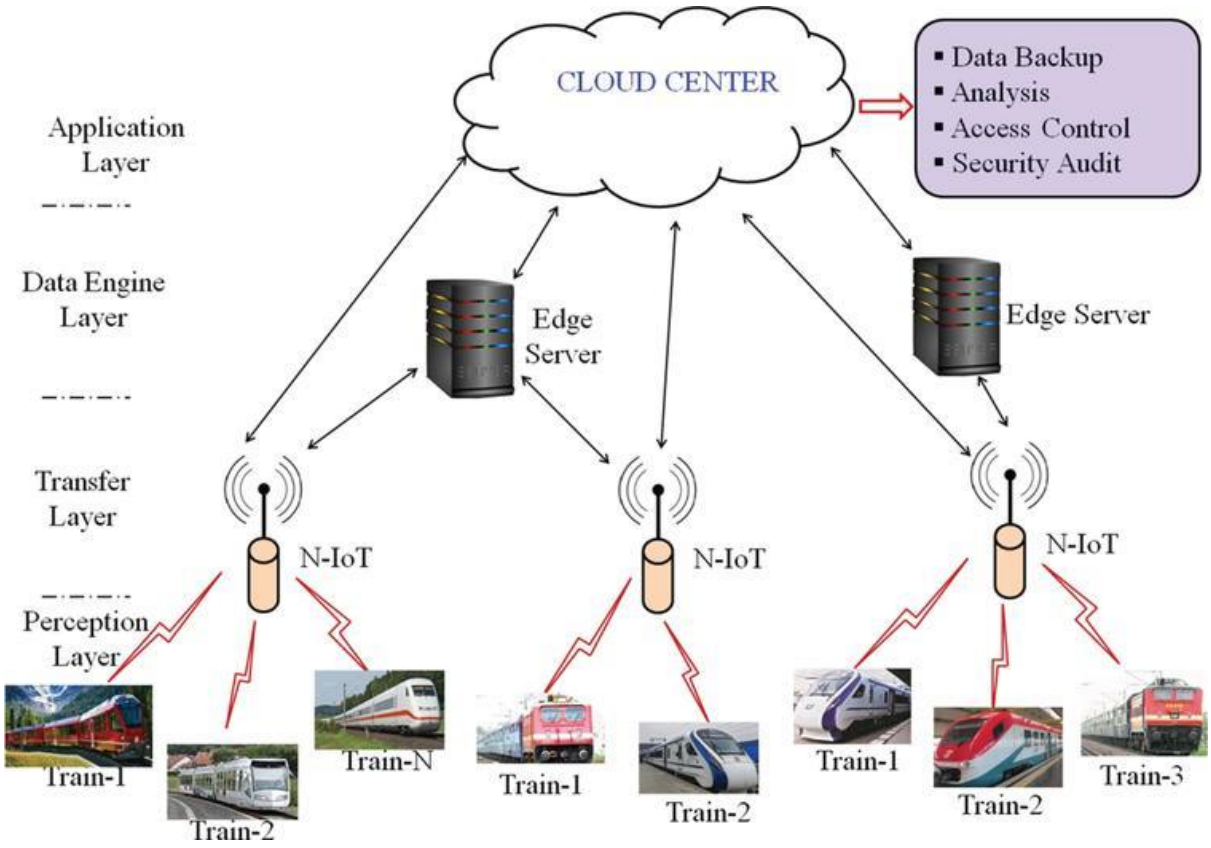
The following chapter defines the proposed architecture itself for the interoperability platform which stands in the focus of the WP5. Based on the preceding efforts, especially on the requirements of the CITs, the fit & gap analysis is to be stated on the first place. Then the scope of the architecture together with its components is to be identified, and the logical database with the general architectural approach is to be proposed. Data sharing on both the railway infrastructure and train services operation is the focus of the interoperability platform, reflecting also the governance models and the necessary system services as security, authentication, authorisation etc. For the interoperability platform to be implemented in the CITs, its governance models are then to be covered within D5.2. The proposed logical database is designed in accordance with the semantic model described in D5.3. 4.1 Fit & gap analysis First of all, the existing platforms and tools with their functionalities (as described in Chapter 3) are to be compared with needs and requirements identified in Chapter 2. The systems were often developed isolated and have varying functionalities, architectures and data formats, which is why an interoperability platform is sought. The difference between the target requirements and the state-of-the-art determines the need for the interoperability solution. The available solutions are classified in four main categories. The following clusters were identified: - data-based solutions; - solutions using cooperative, ICT tools, - synchro-modal solutions aimed to increase the rail share in day-to-day logistics operations, - technical/logistics solutions improving the flexibility and efficiency of equipment usage and Capacity-related solutions, optimising railway capacity and resource utilisation. Based on CIT requirements, Smart-Rail requirements are close to the logistics solutions including consolidation of information provided by different IT systems on a “cooperative mode”. The traditional Rail systems are designed as “silos”, focusing on RU requirements, not on Customers needs. The key role of the production, the high costs of the assets explain this “classical” design of RU IT solutions. The platforms are designed to exchange information between different actors. The key issue for Rail, is the lack of available information to be part of the game as an alternate solution to the road. The logistics processes are extremly well defined and polished by years of use and a strong competition between the business players. The main “gap” is the access to reliable information: for CIT1, with a well defined scope, it’s possible to deploy a mobile solution to collect the field information and to consolidate it. It works, but it’s not easy to duplicate. Raildata and ISR is another approach, more “industrial” based on production RU data, and the quality is the quality of the kind of information. To improve large RU data, massive investments are needed: the good news is the emergence of appropriate solutions (like active tags, M2M low power solutions,...), but rail is not an early adopter of such a solution.

Another issue is to deploy a “booking” system for Rail, in the context of an “unstable’” production context. If you compare the different transportation modes, the quality of rail production is extremly

low, due to the high impact of disruption, maintenance events on a infrastructure with a limited capacity for freight. IT solutions are not able to find solutions if the resources are not available.

Scoping the platform

As depicted below in the generic Figure 4-1, the paramount task for the interoperability platform being suggested, is collecting the data from various data sources and consolidating them for the use by the data consumers, i.e. by the target applications as in the CITs.



- Ensure alignment with Metiers global business processes for Application Engineering and RAMS solutions
- Collect and manage demands from central Business
- Prepare recommendations for decisions-making at Change Control Board
- Model and maintain solution referential & design documentation
- Promote Alstom Core Model, by leading evolution and ensuring its consistency
- Contribute to all phases of applications lifecycle from definition, architecture, design trough implementation, debugging, testing and early support
- Support operations teams with regards to critical incidents
- Control quality of partners deliverables
- Contribute to business processes development and improvement
- Build best practices on development activities and continuous improvement
- Analyze technology industry and business trends and determine their potential applicability at Alstom
- Support roll-out, ensuring that Core Model is applied