

Smart Freight Train

Introduction

The Smart Freight Train (SFT) project concerns the realization of a new interoperable system for freight train movements through Europe which is in line with the European policy. The EC objectives are laid down in the Fourth Railway Package (2016) and in the White Paper “Roadmap towards a Single European Railway Area” (2011). The SFT system is for the common interest of all parties involved with the rail goods transport in Europe.

In phase 1 of the project the SFT Associate Partners will invite all future users in Europe to join the Smart Freight Train user participation program. Via a simulation of the “digitized SFT freight train operations process” they will experience which benefits the SFT system will bring.

The actual realization and operational introduction is planned for phase 2 of the project.

Smart Freight Train and TAF

The Smart Freight Train process starts with the input of the final train documents of a planned freight movement and will finish with the handover of the train consist at the final destination. In the TAF environment the Path Coordination System (PCS) can provide the Train Path to the SFT system and the RU will provide information to produce the final train documents. From the moving freight train on a real-time basis “Train Reports” will be provided to stakeholders at trackside. The “Train Reports” can also be provided to the Train Information System (TIS).

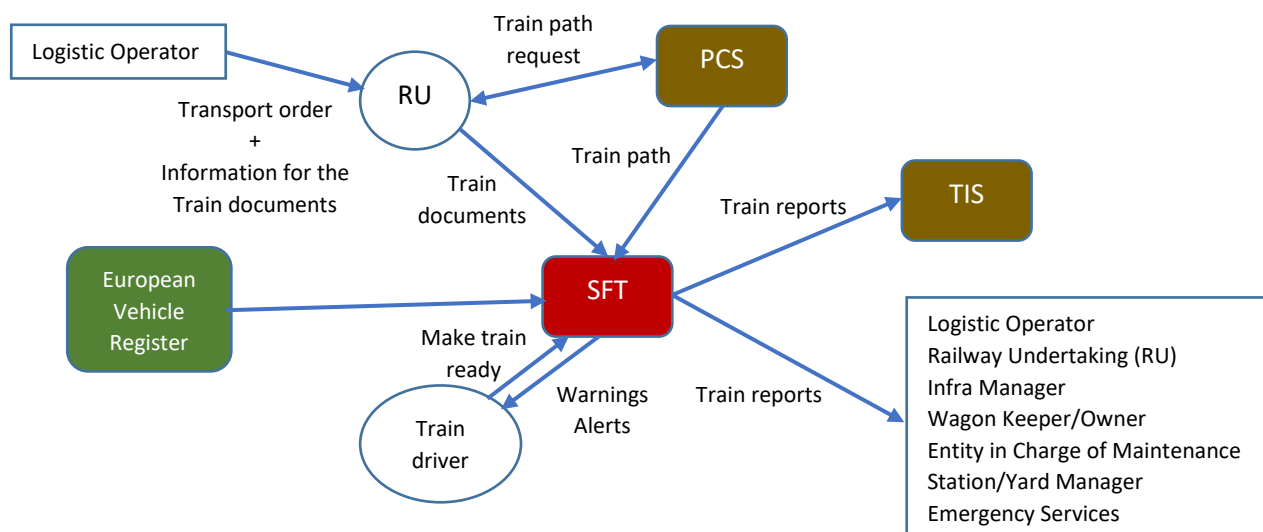


Figure 1. Environment of TAF & Smart Freight Train system

The Smart Freight Train

What is the Smart Freight Train?

A freight train consist equipped with the on-board Smart Freight Train system will provide real time information about the technical condition of the wagons and the status of the train while moving through Europe. The Smart Freight Train system is characterized by the following statement:

“The continuous on-board condition monitoring of the wagons of a freight train consist and the train integrity monitoring are related to the operational safety risks of freight train operations”.

Smart Freight Train

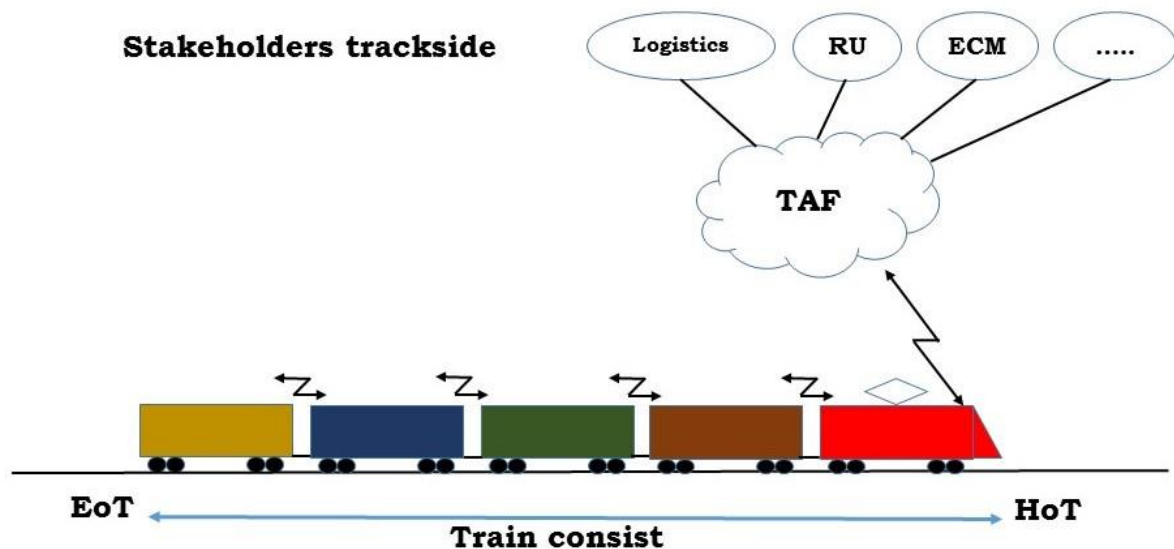


Figure 2. Concept of the Smart Freight Train system

Who are the customers and why should you use the system?

All parties in Europe involved with the rail goods transportation can benefit from the Smart Freight Train system. The main benefits for these users are:

- The train driver gets a “rear view mirror” to keep track of what is going on behind him. He will receive warnings and alarms about technical irregularities on the wagons which raise the risk of a derailment or accident. He can slow down or stop his train to prevent a derailment.
- The Railway Undertaking will prepare digitally all train documents which information is needed for the on-board functionality.
- The Infra Manager (traffic control) will receive train reports “train ready for departure”, “train at departure location”, “train departed” to keep track of the real usage of the planned train path. Not used railway network capacity might be used for other train movements.
- The Logistic Operator and Railway Undertaking will receive train reports about the progress of the train movement which is relevant to determine the expected time of arrival at operations points.
- The Entity in Charge of Maintenance will receive train reports about the technical condition of the wagons which he will use to organize predictive maintenance scheduling for the workshop.
- The Wagon keeper / Asset owner will receive train reports about arrival of the train consist at a station or yard. They will be able to keep track of their wagons and plan the availability for the next assignment.
- Station and yard managers will receive train reports about due arrival times which will trigger them to take appropriate action for reception of the train and follow up actions.
- Emergency services will receive train reports about events which require their assistance. Information of dangerous goods on-board can be provided instantly.

These customized train reports will help with the efficiency of the individual operational processes.

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The Smart Freight Train Project

The Smart Freight Train system is fully designed by the SFT Associate Partners. The project plan is setup in 2 phases. Phase 1 has focus on the user program and will give validated input for phase 2.

1. Building the pilot system & perform a real life trial
 - a. Inviting future users in Europe to participate
 - b. Simulation “digitized SFT freight train operations processes”
 - i. The simulation will demonstrate all interactions with the user organizations, i.e. interfaces and work procedures.
 - ii. An animation film will show the performance of the SFT system in the real environment.
 - c. Development and building the prototype of the SFT system (SFT Online application, SFT control unit, SFT On-board units), perform tests
2. Building and introducing the SFT system

SFT Project structure

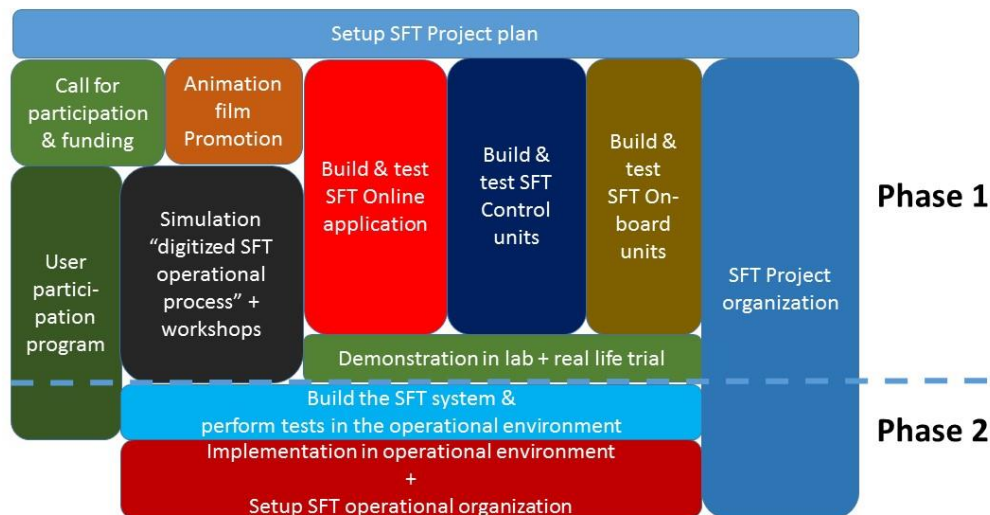


Figure 2: SFT project structure with 2 phases

Contact

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