

# Using connected Driver Advisory Systems throughout Europe

*Fact or Fiction?*

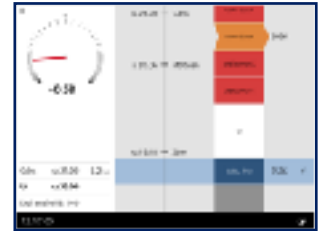
RailTech – Utrecht – 27 March 2019



# WAS IST DAS ?

## Driver Advisory System

- Tool providing advice to the driver in order to **be on time & save energy**.
- It can be **stand-alone** or **connected** to the Traffic Management System.



# DAS NS / TimTim

When is it good enough to meet business requirements?

## High complexity and density of the railway system

- Intensively used railway system
- Fine-meshed network with high level of interlinking and high station density
- Overlap of Intercity and Commuter train services + overlap with freight train services

## Complexity all around

- Complex IT infrastructure
- Complex information to process
- Complex algorithms
- New data sources continuously needs to be integrated

A lot of reasons to go for an agile software development approach!

Small steps and quick feedback from our stakeholders

# DAS NS / TimTim

The screenshot shows the TimTim application interface. On the left, a speedometer displays a red needle and a '+2:53' indicator. Below it, a yellow box with the number '10' and '20.5 - 21.8' indicates temporary speed constraints. Further down, a list shows 'Gdm 12:08:00 8.7 km' and 'Ht 12:22:00', with a speed of '110 km/h' and a reference of '17.1'. At the bottom left, the time '12:06:35' and 'VIRM 6' are shown. The main part of the screen is a timetable in seconds, with a vertical yellow line at 12:07:18. On the right, a list of status blocks is shown, including 'MBT WAZ 94', 'MBT WAZ 92', 'BK', 'GDM-305B', 'GDM-505A', 'GDM-30', 'BT', '3539', 'BT', and '694'. Callouts point to these elements: 'Indicator when traction can be turned off' points to the speedometer; 'Temporary speed constraints and low adhesions' points to the yellow box; 'Distance to the station and reference to the track' points to the Gdm/Ht list; 'Timetable in seconds' points to the central timetable; and 'Show actual status blocks (interlocking) connected !' points to the right-hand list.

Indicator when traction can be turned off

Temporary speed constraints and low adhesions

Distance to the station and reference to the track

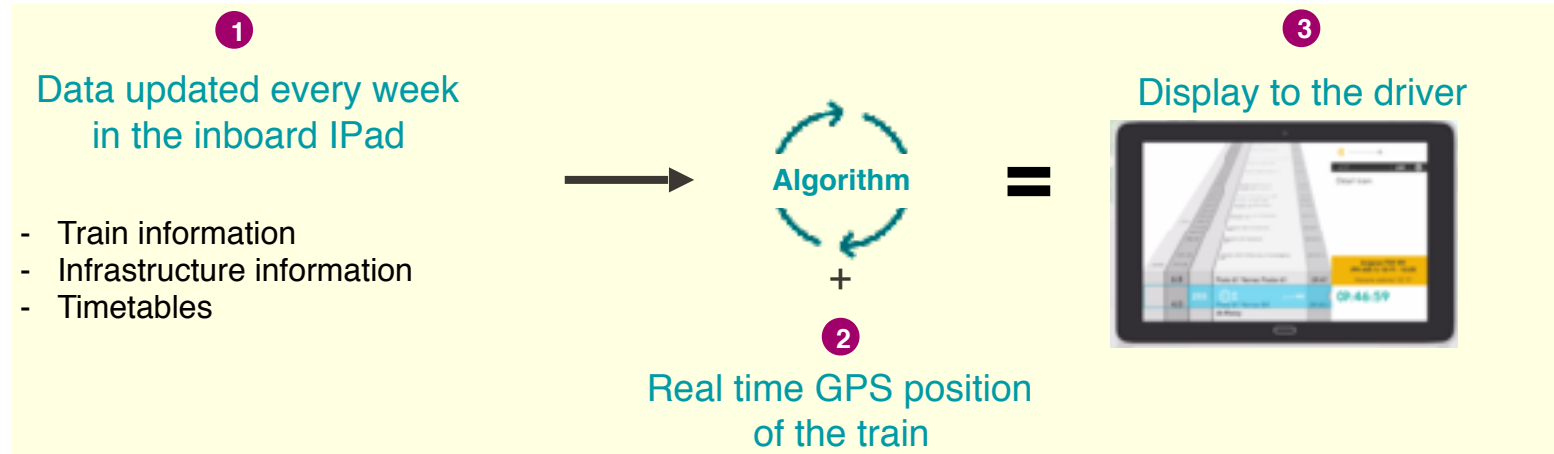
Timetable in seconds

Show actual status blocks (interlocking) connected !

# DAS SNCF / Opti-Conduite

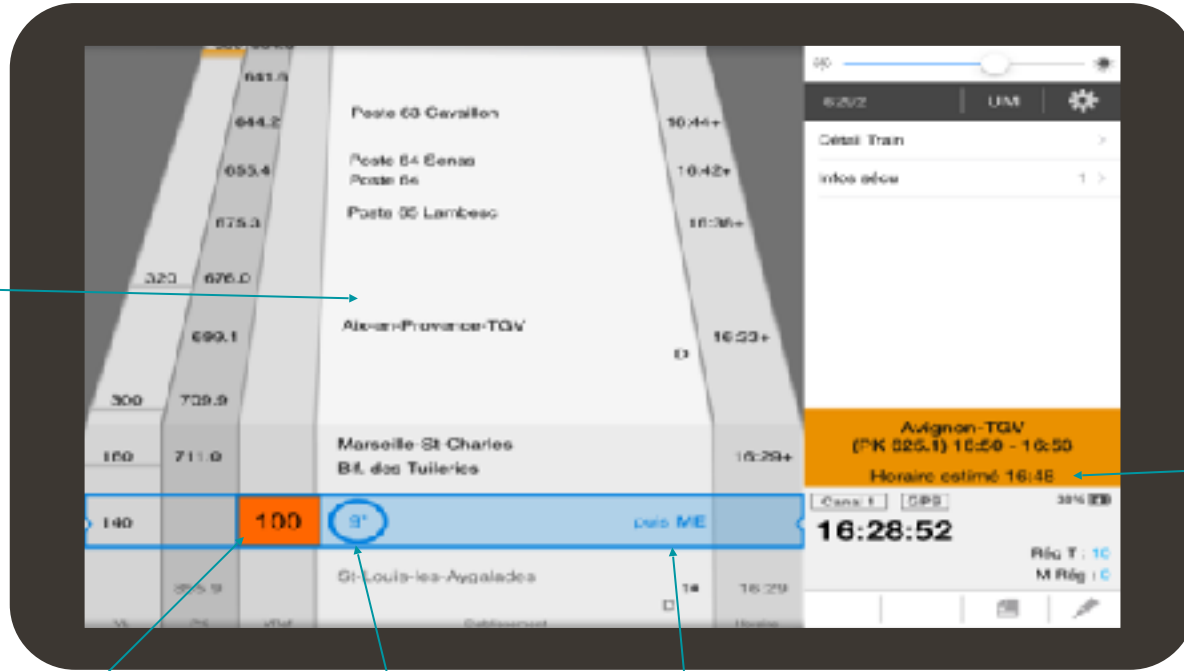
## OPTIMAL DRIVING

This system is a fully operating stand-alone DAS integrated in the existing driver's interface. Implementation ongoing on all passenger trains.



# DAS SNCF / Opti-Conduite

Existing basis =  
transport plan



Live  
update of  
the info

Estimated  
arrival time

Speed advice

Time to hold the  
advice

Next advice  
("then coast")

# SFERA PROJECT

Smart communications  
For  
Efficient  
Rail  
Activities

## TARGETS



- Facilitate the use of Connected-Driver Advisory Systems (C-DAS) for international traffic by **standardizing the data exchange** between on-board systems and Traffic Management Systems (TMS).
- Automate the transmission of TMS decisions to all trains in a multi-RU environment, by implementing the conditions for the development of "off the shelf" C-DAS products.
- Helps the ATO over ERTMS implementation through data flows preparation

## OUTPUT



UIC International Railway Solution 90940 (IRS 90940) defining these data exchange requirements: model, content, format and mechanisms of C-DAS data exchange between on-board and ground systems

# WHY SFERA?

- Increase **punctuality** overall and prepare for **increase in train services**
- Energy costs for EU railways total about 6 Billion € per year
- DAS is a **major lever to reduce energy consumption**: average savings are estimated between 5-10% for simple DAS and up to 12% for connected-DAS
- Current **implementation is very low**
- **Different solutions** are developed
- **Different communication protocols** used by infrastructure managers



# RISKS IF WE DON'T DO SFERA

- ✗ Each actor will develop a system on its own (algorithm, data, functional rules...)
- ✗ Systems will not be interoperable → difficult for international railways to:
  - reduce their energy consumption & costs
  - realise a better punctuality & increase train services
- ✗ Infrastructure Manager will have to be able to handle different languages according to the DAS used by the railway operators
- ✗ Higher costs for DAS systems if each project needs to define its own protocol
- ✗ Difficulty in the evolution of the systems

# PROOF OF CONCEPT

25/10/18

April 2019

DATA PREPARATION

TEST LIVE IN PASSENGER COACH

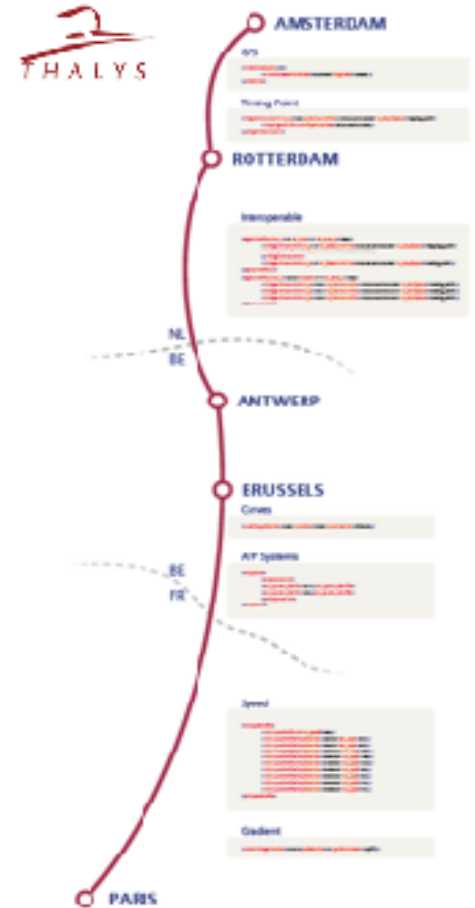
TEST LIVE IN DRIVER COACH



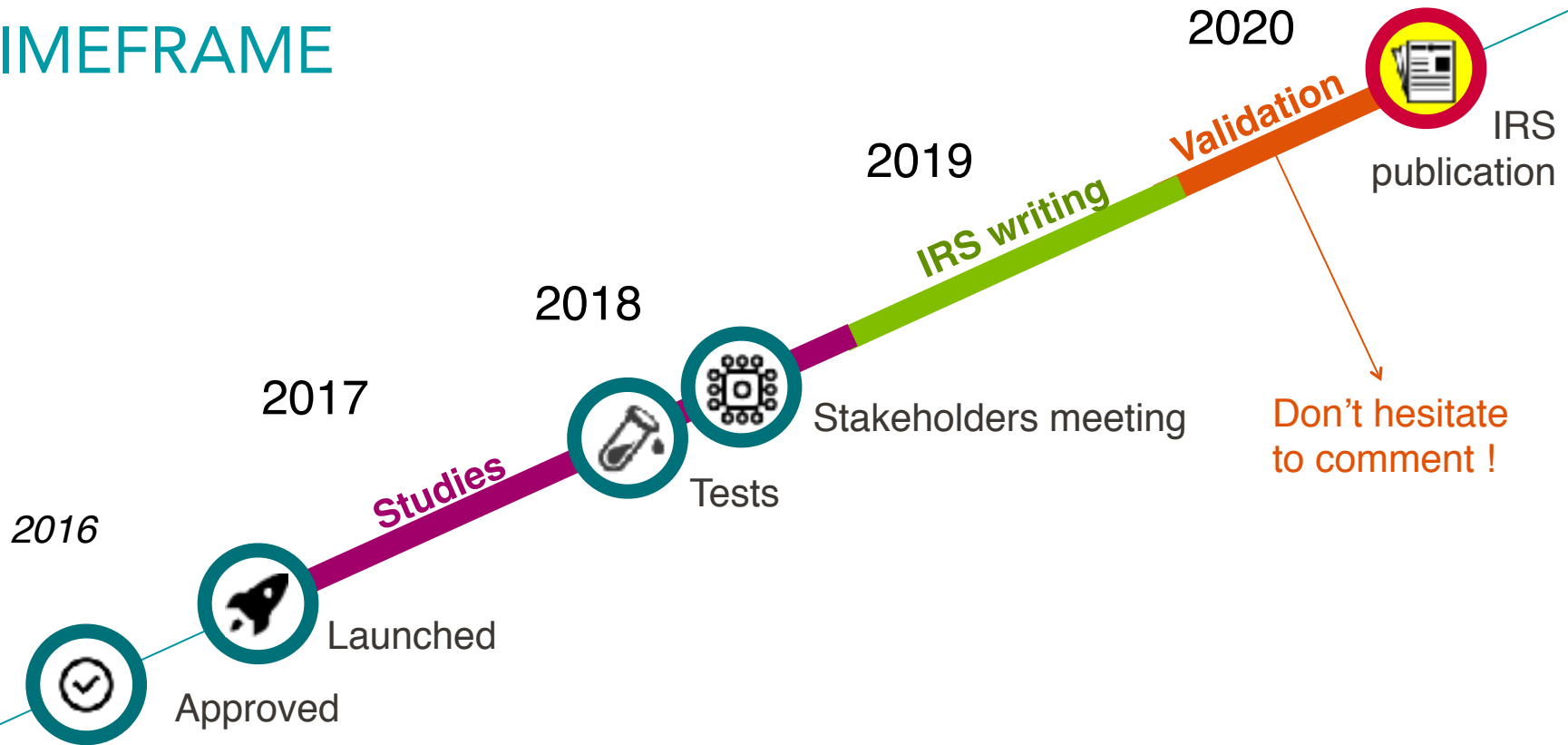
10 experts



10 devices



# TIMEFRAME



# Thank you for your attention !

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Chloé Lima-Vanzeler / SNCF

