

THALES



Digital Rail Market

11th Florence Rail Forum

Florence School of Regulation
27 November 2015

Luigi RUCHER
Thales Italy Technical Director

www.thalesgroup.com

OPEN



Thales



Group Revenues in 2014
13 billion euros



Employees
61,000



Avionics
 Land & Air Systems
 Defence Mission Systems
 Secure Communications & Information Systems
Ground Transportation Systems
 Space



Global presence
56 countries



Self-funded R&D
675 million euros

GROUND TRANSPORTATION SYSTEMS

A WORLDWIDE PRESENCE

Over 100 Customers in more than 50 countries
26 Large local centres all over the world
7,000 Employees worldwide

5 CAPABILITIES FOR A COMPLETE TRANSPORTATION OFFER



THALES GROUND TRANSPORTATION MARKETS



IT-based critical systems for ground transport

Rail / metro infrastructure project



Safety systems expert
Value added services provider
Strong customer satisfaction focus

- > Signalling
- > Supervision
- > Communications
- > Security
- > Passenger information & comfort
- > Fare collection

IT-based critical systems for ground transport



A proven worldwide track record

Rail control leader

Signalling

- > Leader in **electronic interlocking** present in 25 countries
- > Leader in **ETCS** trackside (European Train Control System)
- > #1 in urban rail **CBTC** (Communication Based Train Control)
- > #1 in electronic **axle counters**

- > #1 in integrated **supervision & communication** systems

Integrated Supervision & Communication

Fare Collection

- > Unique provider of **fare collection** systems integrated on a nation-wide scale; Systems in use all over the world
- > Major supplier of advanced **road tolling** solutions
- > Leader for **car park management** systems in France

Over 100 customers worldwide

Thales Ground Transportation Systems by the numbers



60 metro lines over **30** major cities secured by the Thales SelTrac® CBTC systems

3 billion passengers carried annually by the Thales SelTrac® CBTC systems

Thales supervises more than **100** metro lines in **46** cities throughout the world



Thales Ground Transportation Systems by the numbers



16,000 km of track equipped with the Thales AlTrac ETCS solutions

219,949 Thales rail field equipment installed worldwide

15% traction energy savings with Thales train management system

ARAMIS Traffic Management System is currently controlling:
72,000 kms of route, **52,000** trains per day in **16** countries of which
4 are total national networks

Digitalisation, a strategic move towards future



A major trend towards digitalisation

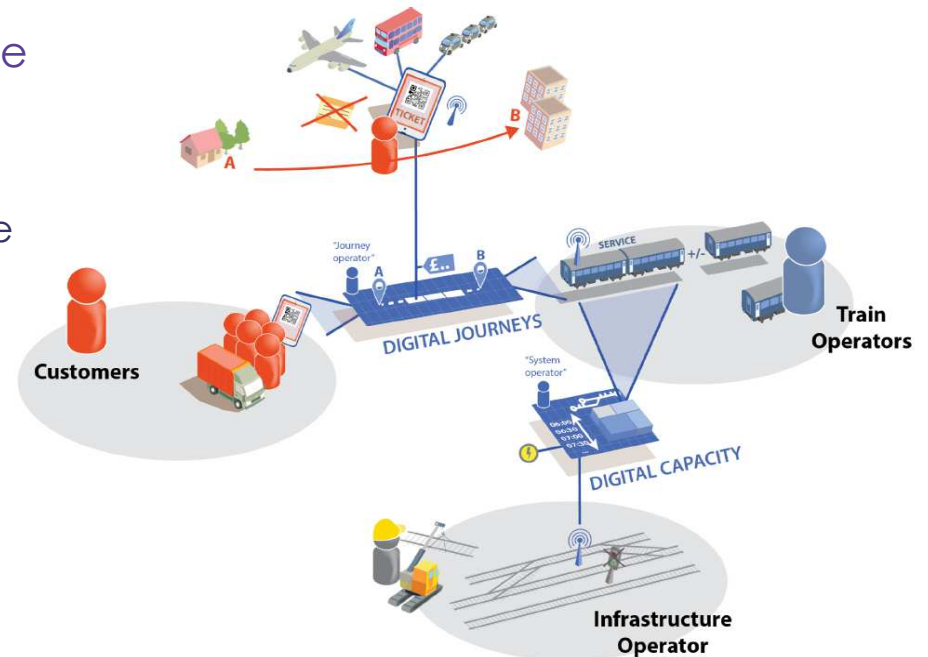
SNCF “Leverage **digital technology** to give **each user** a more **powerful tool**”

- Staff: “greater efficiency”
- Passengers: “seamless, stress-free, comfortable mobility”
- IT developers and partners: reliable, robust resources to develop innovative services

NetworkRail: “The Digital Railway Programme”

- Designed to **benefit the economy**

DB: « Digitalisation is the biggest challenge in DB's history.”



Source: Network Rail, Digital Railway, April 2015

THALES, key partner in most of the EU transport initiatives

ETCS

- Thales played a key role in UNISIG defining and implementing this European standard and now offers fully compliant solutions.

GALILEO et EGNOS

- Thales Alenia Space is one of the major players defining, developing, and deploying Galileo and EGNOS positioning system project.

CleanSky

- Thales is a founding member of CleanSky and Cleansky2

SESAR

- Thales is a founding member of Sesar

Shift²Rail – Joint Undertaking



Thales founding member

- Leading IP4 on “IT solutions for attractive railway services”
- Main partner in IP2 on most of the topics
- Active in Predictive maintenance in IP3
- Integrated Mobility Management (Cross Cutting Activities - CCA)



THALES

Other GTS European initiatives on Digitalization

■ Digital SERA

- Thales has been an active contributor of the **Digital Railways** white paper

■ FosterRail : Roadmap for future research in the rail sector

- Thales is preparing the « IT and Enabling Technologies » research topic presented at ERRAC general assembly on 10th November

■ PPP Big Data on Transport

- Thales is currently looking at leading a specific sub-project on public transport

■ Many research activities on Cyber security

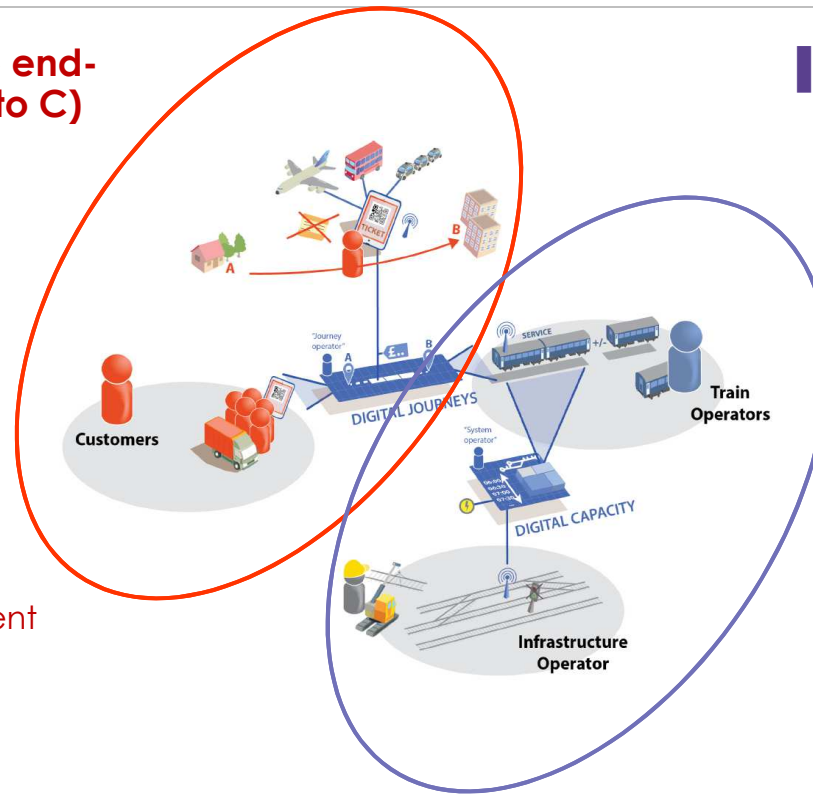
Thales Strategy

Digitalisation to improve end-user experience (B to B to C)

- **Cloud-ready** solutions: Transcity UP
- Ticketing as a service
- Customized & real-time passenger information
- Business analytics from **Big Data**
- **Cyber security**

Smart station (Hub)

- Multimodality management
- In-door location systems
- Physical security: convergence of ICS-SIX (PRS) portfolio



Digitalisation to improve network operation

- **Predictive Maintenance**
- Signalling **digitalisation & virtualization**
 - Movement authority with no field equipment
 - Virtual blocks
 - ATO
- Traffic management systems (cloud-ready): Aramis and OCC
- Energy efficiency
- Business analytics from Big Data
- **Cyber security**
- Signalling through GNSS, depending on SIL4 and business model

Cyber security & Ground Transportation

Ground transportation is changing from analog to digital world

- Railway companies have grown to become major national players for data highways
- Many railway companies have similar or even bigger backbone infrastructure compared to telecom providers
- Many railway companies use commercial telecom providers for the setup of redundant network connections
- One of the biggest challenges is to secure their infrastructure against cyber threats

But:

- Systems that have life cycles of more than 25 years of age must be supported.
- Safety relevant technical functions such as latency times for example can not be compromised.
- Safety certifications/approvals can only be maintained if adequate measures are established.
- The railway industry needs new standards for Cyber Security (e.g. CENELEC).

After n-Cipher in 2008, announcement (Oct 19, 2015) of the acquisition of VORMETRIC reinforcing Thales expertise in cybersecurity

Significant reshaping of the rail industry landscape

- Rolling stock firstly impacted
- Refocusing on profit-making rail control business
- Multimodal industry players blossoming

Awareness of railway operators towards digitalisation initiated and supported by governmental institutions

Thales, thanks to one of the most comprehensive customer-base and technological portfolio, is keen to contribute more actively to the Digital Railways initiatives