THALES

Emerging Trends in Road – Rail Traffic Management

Dr Stephen Ayers

UIRR digital workshop
Brussels
14th December 2016

OPEN

Thales Ground Transport – Business Lines, Markets and Capability
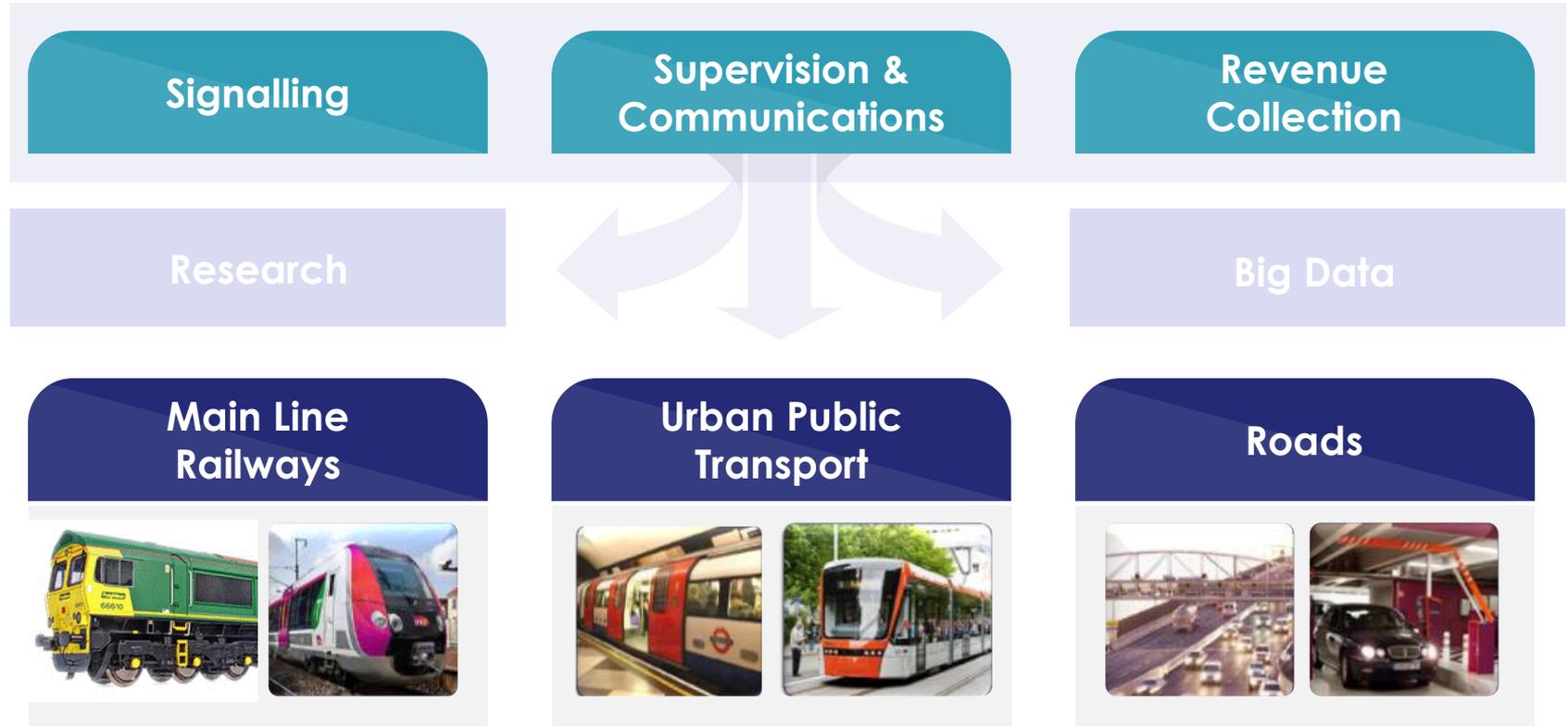
Signalling

Supervision & Communications

Revenue Collection

Research

Big Data

Main Line Railways

Urban Public Transport

Roads

OPEN

THALES

Challenges in Rail Traffic Management

Operational Improvements through TMS

OPEN

TMS – Experience

ARAMIS TMS Operational in 15 countries; 6 more clients in deployment

> Controlling 55,000 trains/day; over 300 commercially separate operators

Deployed nationally/regionally

> Mainline: Mixed traffic / dense networks; Ports / tunnel management

> Decision support; UK – integrating with mainline signalling;

Addresses Challenges to

> Increase network capacity; reduce congestion; improve staff efficiency

> More reliable, predictable point-to-point transportation

> Provide improved visibility of current and future operations (IM/RU)

Aligned with Digitisation Agenda

> TMS, DAS, ETCS, …

OPEN

THALES

Thales ARAMIS – Rail Traffic Management

Denmark 2012

Germany Harbour 2010

Germany 1995

Finland 2002

South Africa 2013

Latvia 2011

Great Britain 2014 2 ROCs

Poland 2013

Luxembourg 2013

Hungary 2007

Austria 2001

Bulgaria 2011

Slovenia 2010

Portugal 1997

Saudi-Arabia 2012

Croatia 2013

Italy (Sicily) 2003

OPEN

Bbrussels 14/12/16

THALES

Assisting Rail Freight
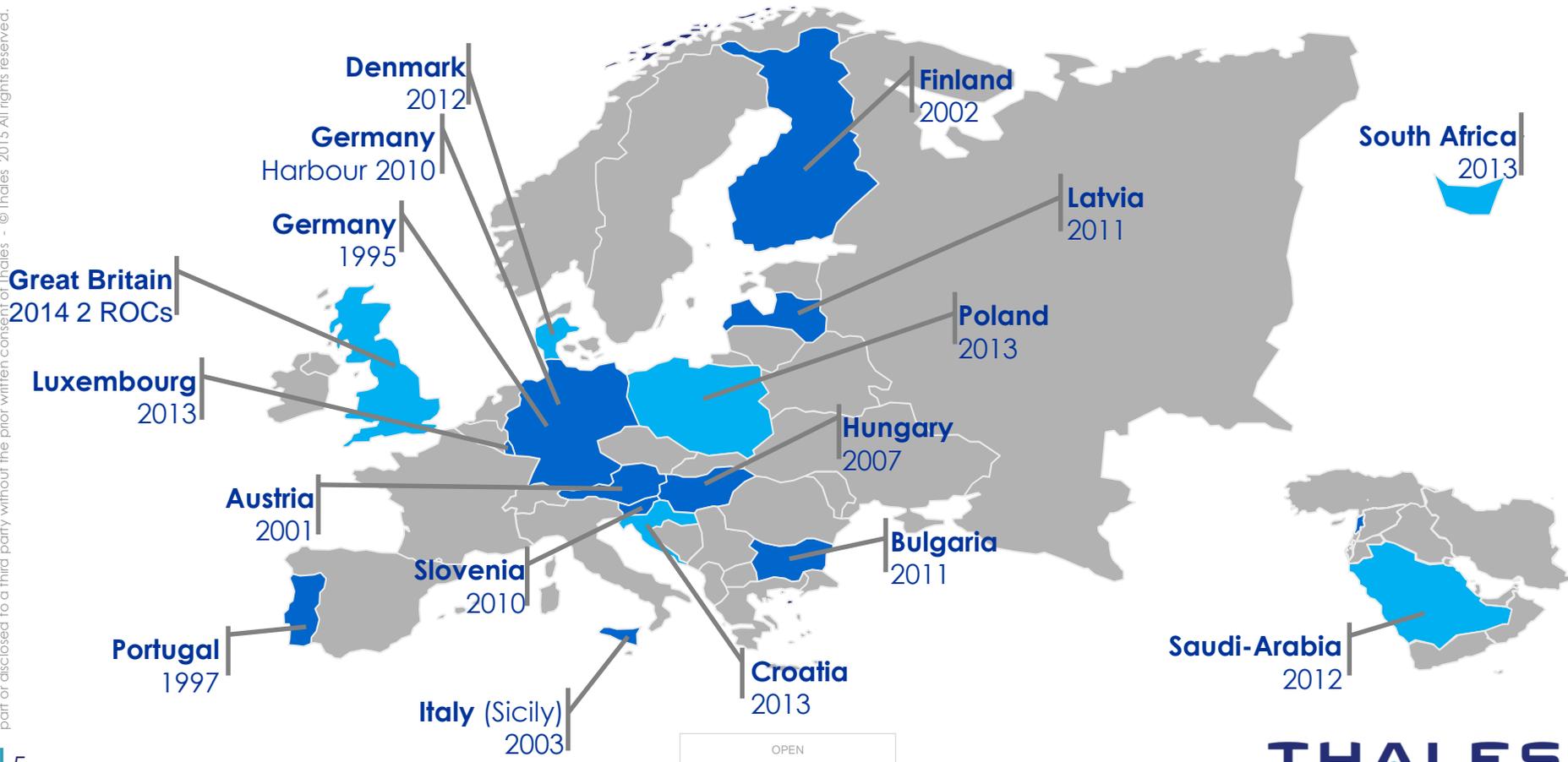
Improved location and forecast visibility to rail freight operators

> Train location clarity (t+2hr); enables proactive action on incident future effects

> Better synchronisation of staff changeover/relocation; accuracy of arrival

Minimisation of reactionary/secondary delay following incident

> Giving more reliable expected journey times; end-client certainty of delivery

> Train delays (by location/across network; within fleet) reduced by c. 15%

> Freight terminal and / yard delays c. 20%

TMS with Connected (real-time) DAS – minimise conflict movements

> Also provides c.15% energy saving

TMS: higher network resilience; consistency; reliability end-to-end timing

> High quality, accurate, timely train service information esp. during disruption

OPEN

THALES

Challenges in Road Traffic Management

Operations Improvements through RTM

OPEN

UK Case Study: Road Transport Manager / User Imperatives

"Know the state of the city/regional/national road network; maximise its utility by sharing travel knowledge to public/business in useful ways"

HIGHWAYS ENGLAND - KPIs	LORRY DRIVER PRIORITIES

REDUCE CONGESTION – MAXIMISE NETWORK CAPACITY	REDUCED TRAVEL TIMES
IDENTIFY / RECOVER FROM INCIDENTS (RESILIENCE)	BETTER DELAY MANAGEMENT
IMPROVED JOURNEY RELIABILITY	JOURNEY RELIABILITY
INFLUENCE BEHAVIOUR	BETTER DISRUPTION INFO
ECONOMIC BENEFITS – GVA (UK)	

OPEN

THALES

Case Study: NTIS Managed Service

▌ **Management of English strategic road network (Motorway/"Trunk" Roads)**

> ❯ The processing of traffic information: statistics and events

▌ **Thales Business Service Outsourcing (7 year) for Highways England (HE)**

> ❯ 71 staff: operators, traffic engineers, business reporting, IT support

▌ **Delivery aligned with HE's national KPIs set by DfT**

> ❯ User (journey) satisfaction
> ❯ Efficiency (cost saving)
> ❯ Economic Growth – Reduced Average Delay;
> ❯ Traffic Flow
>   - Network Availability (97%)
>   - Incidents cleared (85% within 1 hour)
> ❯ Road Safety (KSI reduction)

OPEN

THALES

Collects Information – Multiple Sources/Stakeholders

**Extensive Visibility of what
is happening and why**

Police

Local Authorities

HA RCCs

Managing Agents and DBFOs

Met Office

Neighbouring Network Operators

Data Feeds and Travel Media

Telematics And Floating Vehicle Data

Significant Traffic Creators

THALES

Processes and Acts on Data

CCTV

Weather Conditions

Delays

Time of Incident & Duration of Event

VMS PLANS

VMS Plans

Other Events

Early incidents detection – abnormal behaviour
Predicts recovery time for incident
Acts quickly to minimise disruption
(with Tactical Ops Centres)

Decision Support to Operations

OPEN

11

THALES

Distributes Information

> Web (public)

> Open data feeds to operators

> VMS – Road network

> Travel Media (Tom-Tom …)

> Information Points

> HE Contact Centre

> Media Partners

> Operational Staff

**Distributes accurate, consistent, reliable info
Across road network – to where needed
Dedicated dissemination channels
Facilitating public and freight alternatives
Improving end-to-end journey reliability**

OPEN

THALES

EU Research – Multi-modal Shift and Big Data

Focus on multi-modal freight

OPEN

SHIFT2RAIL

€920m, 7 year collaborative research & innovation programme

> S2R founders Network Rail, Siemens, Bombardier, Alstom, Ansaldo, CAF, TrV, Thales

> EC provides 47% of the members funding

IP5 - Technologies for sustainable and attractive European rail freight

> Shift of 30% of road freight over 300 km to modes such as rail or waterborne transport by 2030, and more than 50% by 2050

> Cost-effective, attractive service to shippers / clients

> Value-added services, terminal operations, improved real-time customer information and better data exchange between intermodal chain parties

> Theme: Novel Terminal, Hubs, Marshalling yards, Sidings

OPEN

CFM-IP5-01-2017 Real-time information & energy efficiency for rail freight

Network Management

> Improved interaction: network management and yard management;

> Data exchange for inter-modal hubs, connecting rail freight stakeholders, facilitating operation of mixed traffic (passengers and freight)

Intelligent Video Gate (IVG)

> Terminal design; specification of information flow between different stakeholders

> Assessment of IVG technology - integrating image-based, non-intrusive technologies/sensors, to gather dynamically data/features of freight compositions;

> Selection and testing of technologies and definition of services for automatic rolling stock identification and train classification.

OPEN

THALES

Transforming Transport (Horizon 2020) – Freight/Logistics and Big Data

▌ **Freight projected increases (2005 base): 40% in 2030; 80% in 2050**

▌ **Challenge – how will logistics sector benefit from Big Data technologies?**

> 10% efficiency improvement will lead to EU cost savings of 100 B€

▌ **Transforming Transport (40+ partners; 30 months; 1/1/17) …**

▌ **Intelligent Ports – Operational Efficiencies**

> Improved terminal operations & planning; better traffic flow from/to port; optimised handling of trains, barges, trucks…

▌ **Integrated/Consolidated Urban Freight Mobility**

▌ **Shared logistics for E-commerce**

S2R/TT: Greater involvement re rail freight/logistics challenges

THALES

In Summary

OPEN

Recurring Transport Infrastructure (Rail/Road) Themes

Optimise through Rail/Road Network Management Systems

> Best use of existing network capacity; Get more from the same infrastructure …
> Facilitate end-to-end journey reliability by sharing of true /future network state

Facilitate Customer Satisfaction through better use of Real-time information

> Smarter data collection about the network and its users (operators/travellers)
- Large and complex data sets to provide multi-modal, multi-operator solution
> Up-to-date knowledge of planned changes and incidents that affect journeys
- Access, co-ordination & publication of relevant timely information to right users
> Manage, plan & predicting incident impact on multi-modal network

Optimising multi-modal journeys

> Requires further joining up of transport silos (rail, road, port …) v silo approach
> Build on existing research to deploy real-world solutions

OPEN

THALES

Questions and Discussion

Dr Stephen Ayers

steve.ayers@uk.thalesgroup.com

+44 (0)7802 556870

www.thalesgroup.com

OPEN