ER - ISAC

Forum on Sustainable Transport Connectivity between Europe and Asia

Olivier De Visscher, Chairman of the European Rail Information Sharing and Analysis Center (ER-ISAC), Belgium
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Context

ER-ISAC contributes to the forum on security aspects of integrated intermodal transport and logistics.

ER-ISAC provides an inclusive platform for railway undertakings in the EU to collectively exchange information on and tackle cyber security threats.

Those threats are explained on the next slides.

DB DB NETZE INFRABEL Right On Track SNCF RÉSEAU SNCF MOBILITÉS ProRail

European Rail Information Sharing and Analysis Center (ER-ISAC)

Presented by :
Olivier de Visscher ER-ISAC Chairman

With assistance of :
Thomas Faenoe from Railnet Danmark

and contribution from :
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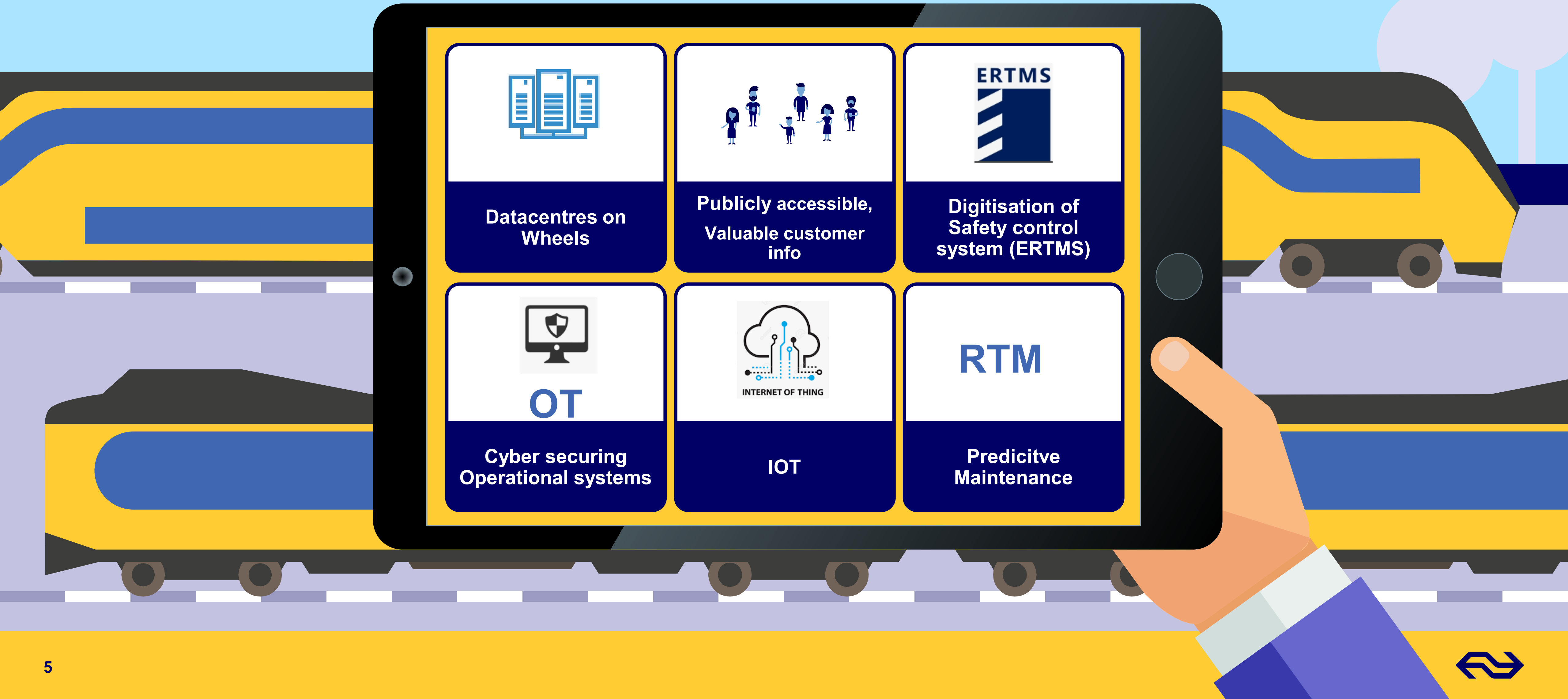
The threat landscape in the Railway transport sector

- Railways technologies are sector specific and split into Signalling and traffic management systems;
- Most of them are safety related systems : Interlocking systems, Speed control, traffic management, Automatic driving, SCADA, remote monitoring and supervision, GSM-R, ETCS-L2, …
- Infrastructure Railway Managers or Railway Undertakings (Operators) are using the same technologies and methods across countries;
- Infrastructure moves towards intelligent, more connected, more assisted systems;
- More data exchange between sectors (Airports, Harbours, …);
- Obsolescence of Safety systems exposed to current and future cyber threats landscape;
- Standards for Safety in Railway not up to date with current cybersecurity challenges

Digitisation of Trains introduces cyber risks



Datacentres on Wheels

Publicly accessible,

Valuable customer info

ERTMS

Digitisation of Safety control system (ERTMS)

OT

Cyber securing Operational systems

INTERNET OF THING

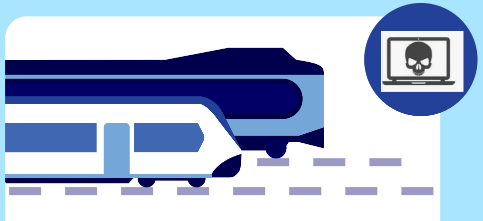
IOT

RTM

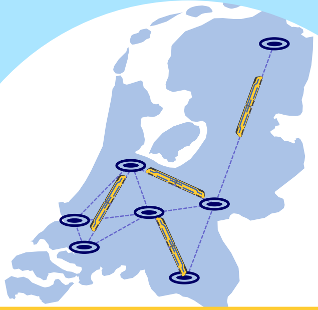
Predicitve Maintenance

There is a great need for policy and oversight

Rail Industry
cyber risk control is
immature



Threats sophistication
increases threat surface
=
increase incidents



Critical Infrastrucure?
Regulation
Standardisation

Dublin's Luas tram system
Website hacked

January 2019

Indian Railway Catering and
Tourism Corporation
hacked

2019

Hackers access accounts of
1,000 Great Western
Railway customers

April 2018

WannaCry attacks,

Deutsche Bahn, ticketing
and information systems

Germany's rail network

May 2017

Four cyber attacks on Uk
Railways

July 2016

Chaos Computer Club, 32nd
congres, Hamburg,
December 27, 2015

NON DISCLOSED

Actually happened

Hypothetically
possible

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The role of ISACs in Europe – and in particular with regard to developing measures to counter cyber threats to (rail) transport networks at the cross border level

Information Sharing and Analysis Centres (ISACs) are non-profit organizations that provide a central resource for gathering information on cyber threats (in many cases to critical infrastructure) as well as allow two-way sharing of information between the private and the public sector. ISACs have created communities within the private sector. They could be oriented on a specific critical sector (e.g. finance, energy, health) or serve as a focal point on the national level to gather information about cyber incidents and analyse it.

To ensure the right level of cybersecurity, cooperation between the public and the private sector is absolutely crucial. ISACs create a platform for such cooperation in term of sharing information about root causes, incidents and threats, as well as sharing experience, knowledge and analysis. In Europe, the first ISACs focused on the Finance and Energy sector.

Source : ENISA - *https://www.enisa.europa.eu/publications/information-sharing-and-analysis-center-isacs-cooperative-models*

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UNECE

UNITED NATIONS ESCAP Economic and Social Commission for Asia and the Pacific

Members per Countries (Oct 2019)

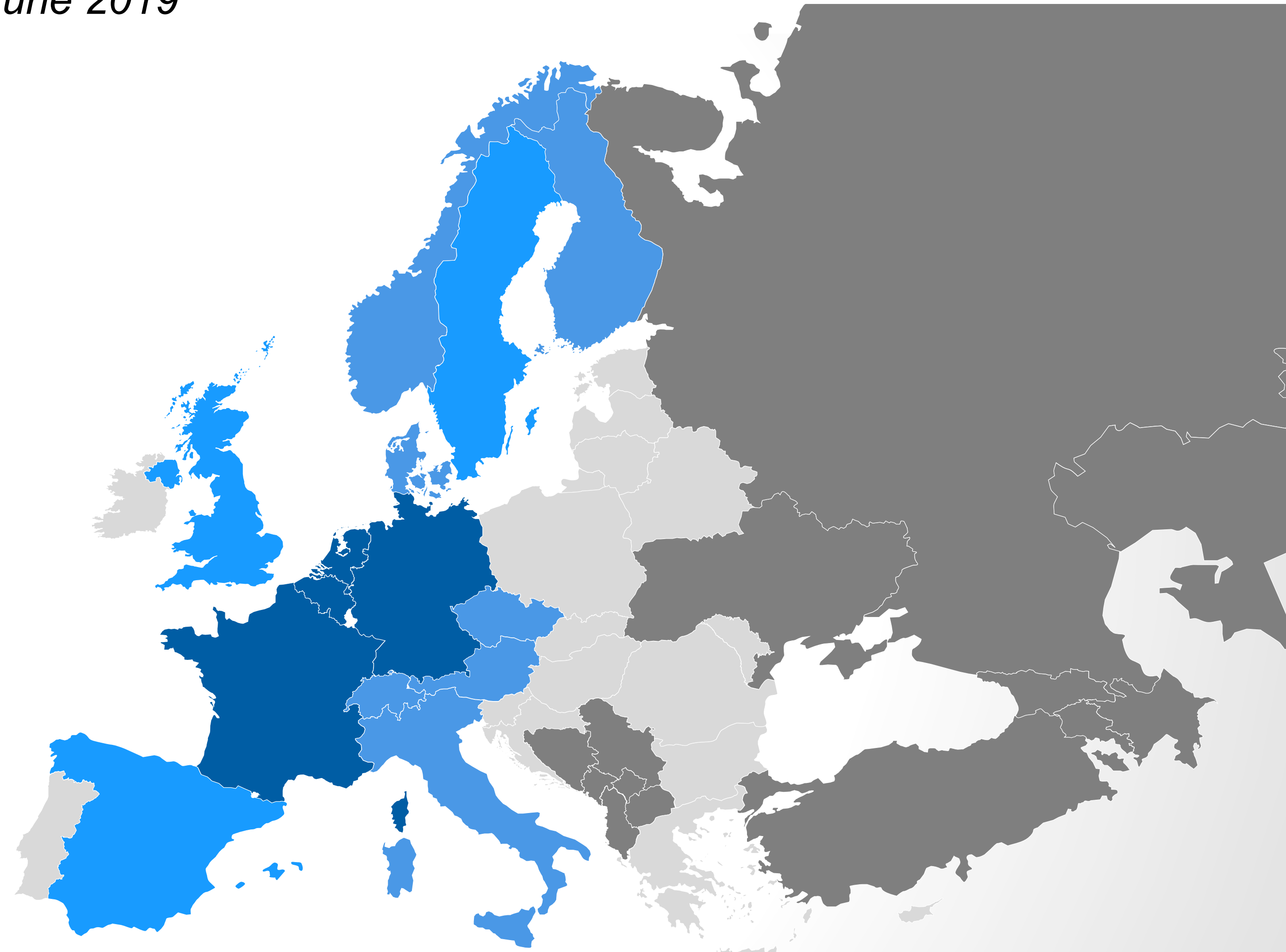
54 organisations since foundation on 4th of June 2019

Co Chair
FR /DE /BE /NL

Members
FI /NO /DK /IT /CH /AT /CZ

Members to be contacted

Possible future partnership



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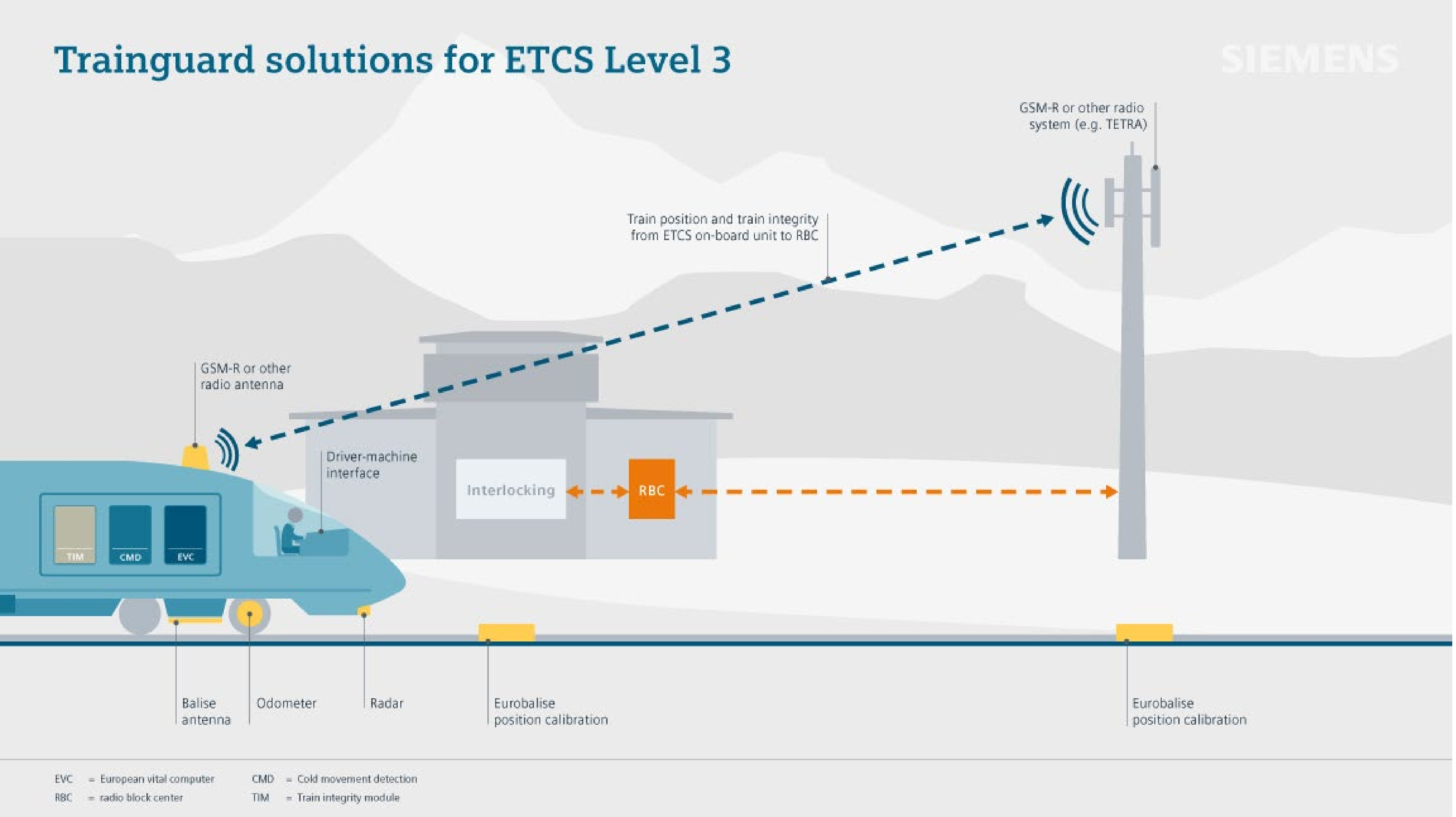
Why collaborate in cybersecurity in the Railway ?


Trainguard solutions for ETCS Level 3
SIEMENS
GSM-R or other radio system (e.g. TETRA)
Train position and train integrity from ETCS on-board unit to RBC
GSM-R or other radio antenna
Driver-machine interface
Interlocking
RBC
TIM
CMD
EVC
Balise antenna
Odometer
Radar
Eurobalise position calibration
Eurobalise position calibration
EVC = European vital computer
RBC = radio block center
CMD = Cold movement detection
TIM = Train integrity module

Standardisation of technologies used across Countries (even outside EU = ERTMS)

Specific technologies for Signalling systems

Same supply chain

Specific Standardisation for Safety in the Railway

=> One issue affects us All

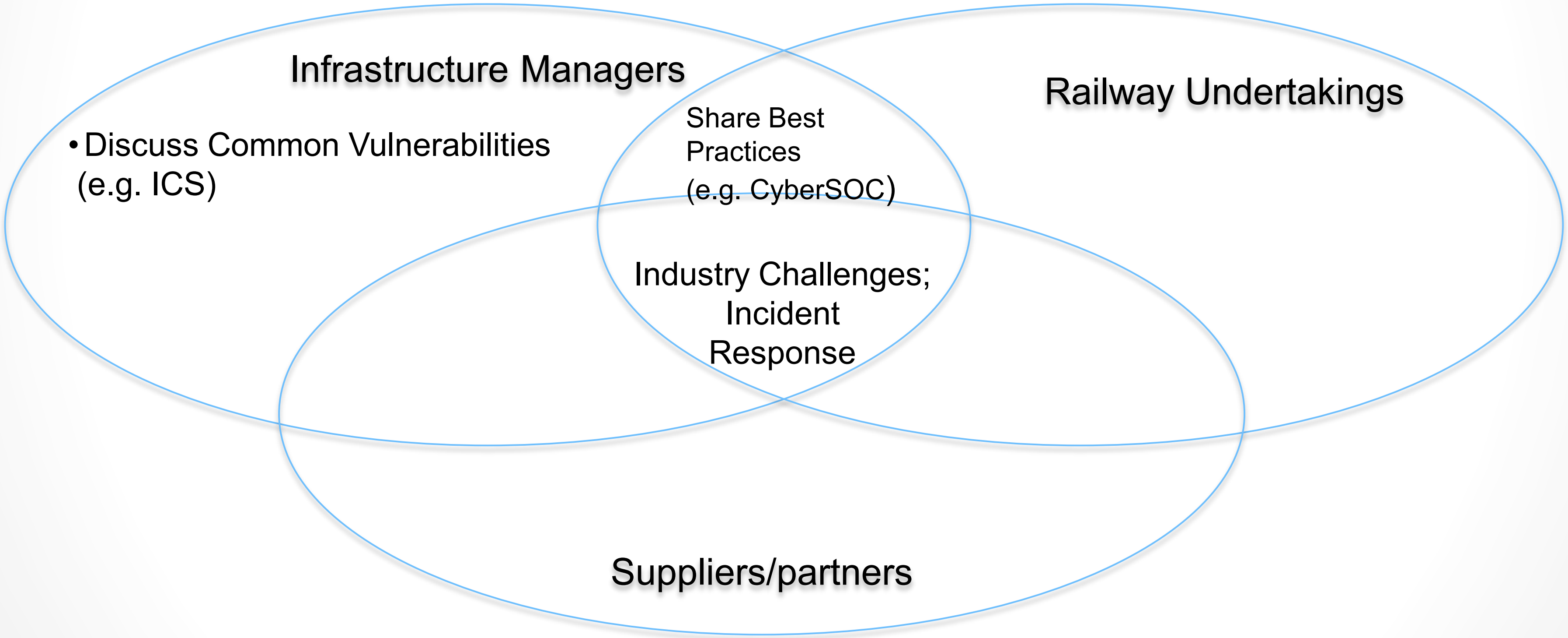
How will the EU Railway Cybersecurity Platform (ISAC) help us

Our vision for collaboration

- Experiences in how aspects of cyber security are handled
  → CyberSOC, ICS, IoT, Artificial Intelligence usage, Crisis management, …
- Cybersecurity standards for Safety related products
- Cybersecurity products certifications and experience
- Alerts/ early warnings, Threat intel, experiences on products vulnerabilities specific to Railway, References on a wider range than national
- Meet regularly to discuss and share information (e.g. threat landscape, fact based approached, …)
- Security Supply chain management (same level of security MUST BE delivered across European Railway by same provider)

Trust building by non competitive environment

- Important to be able to share information only among Rail Infrastructure Managers and Railway Undertakings
  - Plenary sessions with all parties involved
  - Dedicated discussions in working groups as relevant



Infrastructure Managers

- Discuss Common Vulnerabilities (e.g. ICS)

Railway Undertakings

Share Best Practices (e.g. CyberSOC)

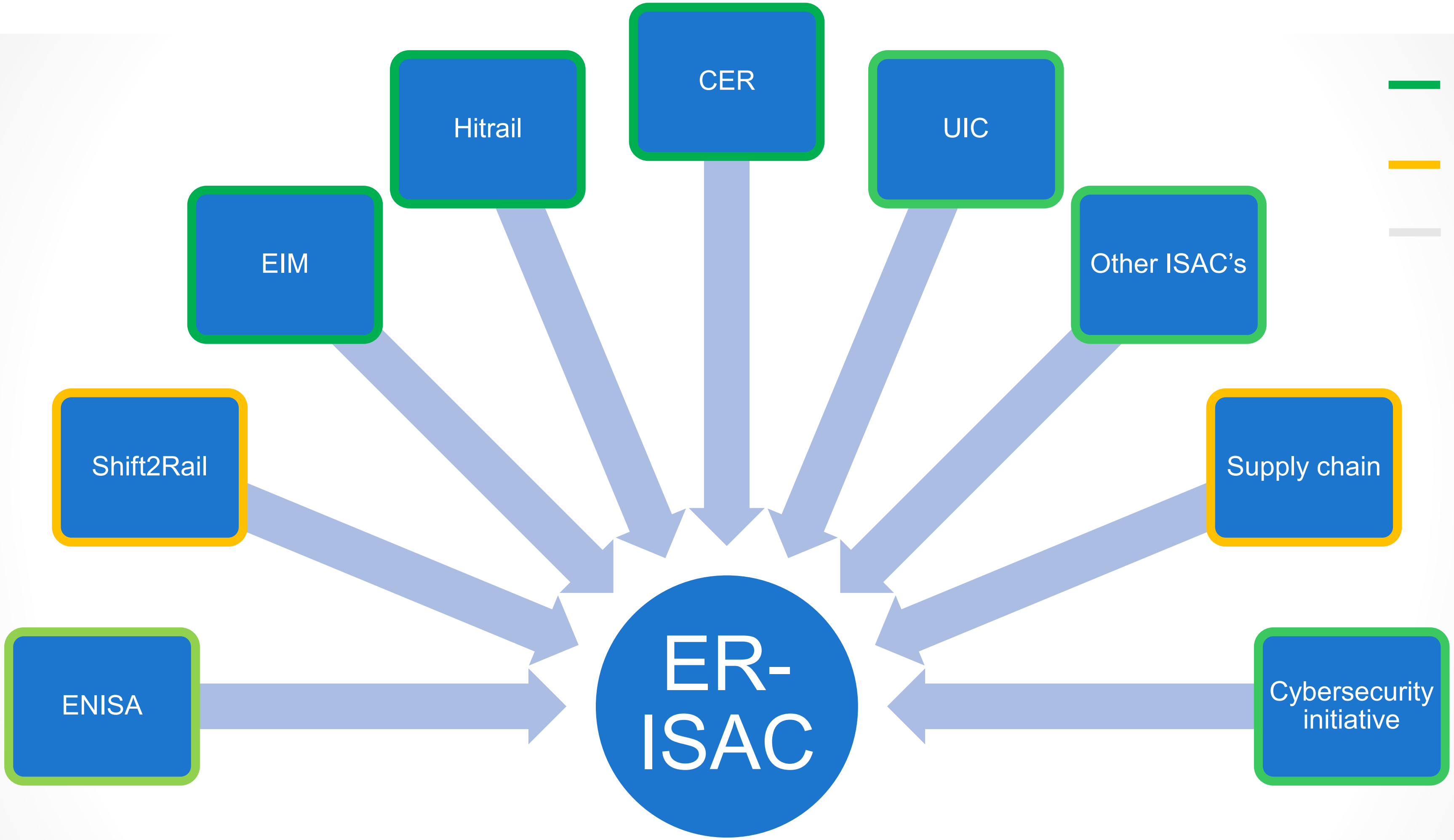
Industry Challenges; Incident Response

Suppliers/partners

Challenges in creation of ISAC’s

- Finding technical expertise in cybersecurity
- Not enough resources & funding (Expertise, tools, management)
- Non binding, collaboration mode
- Conflicts of interests
- Trust amongst members/partners

Administrative management: Information Sharing



🟩 Already connected /presented their contribution

🟨 To be contacted / presentation next plenary in Dec.

⬜ Will be coming soon

One voice in Europe for the cybersecurity in the Railway

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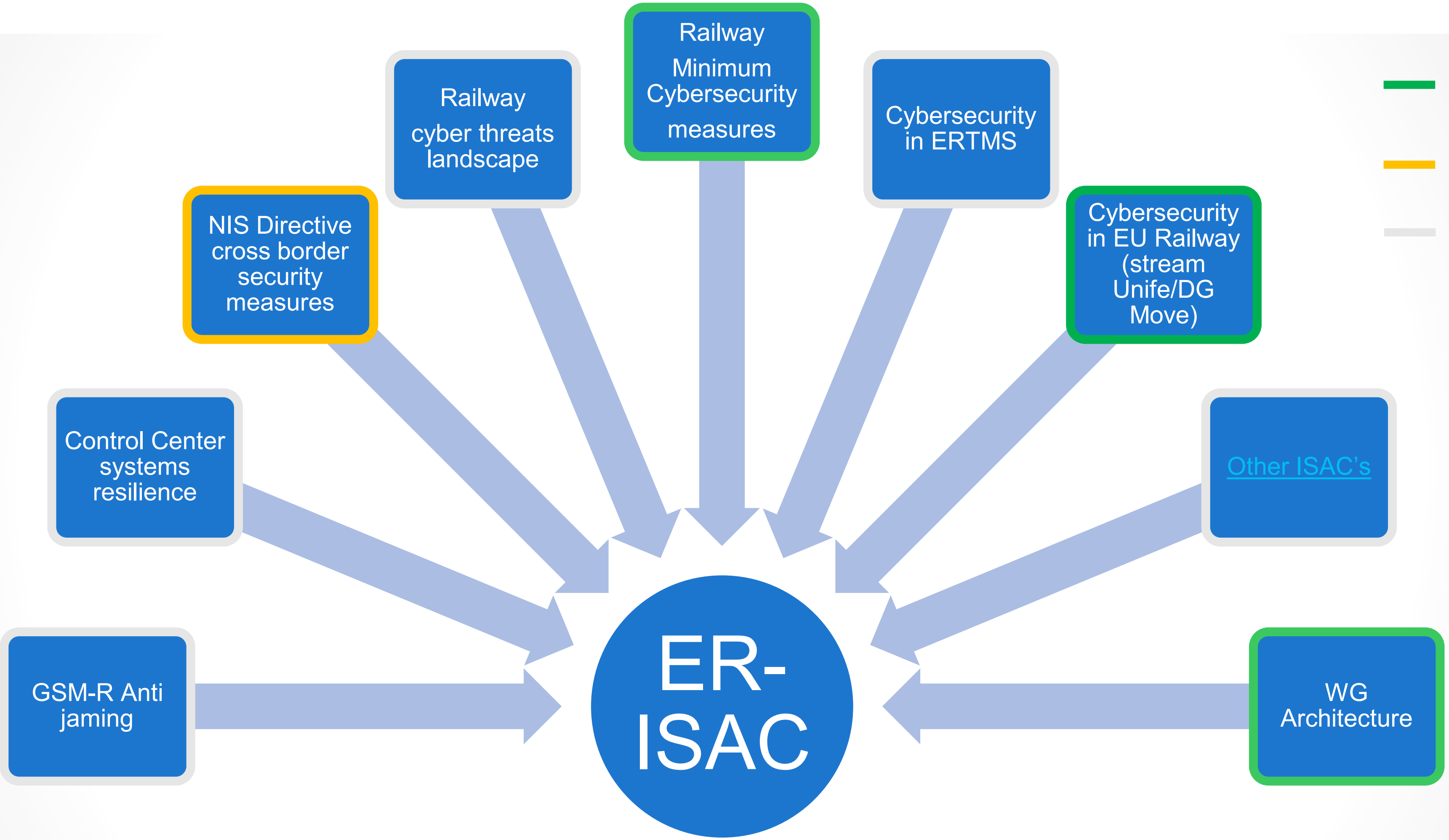
Administrative management: Analysis Center



Railway Minimum Cybersecurity measures

Railway cyber threats landscape

Cybersecurity in ERTMS

NIS Directive cross border security measures

Cybersecurity in EU Railway (stream Unife/DG Move)

Control Center systems resilience

Other ISAC's

GSM-R Anti jaming

WG Architecture

ER-ISAC

🟩 Working Group running

🟨 Kick off done or planned

⬜ Kick off to start

One playground in Europe for the cybersecurity in the Railway

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How is the Cybersecurity for the Railway in Europe is sharing cybersecurity threats between organisations and Countries

Speaker: **Olivier De Visscher**, Cyber Security Adviser Infrabel, Co-Chair of the European Rail Information Sharing and Analysis Center (ER-ISAC), Belgium

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UNECE

UNITED NATIONS ESCAP Economic and Social Commission for Asia and the Pacific

ER ISAC – good initiative for problem solving

- Information Sharing and Analysis Center (ISAC)
- Non-profit organizations that provide a central resource for gathering information on cyber threats (in many cases to critical infrastructure) as well as allow “two-way” sharing of information between the private and the public sector.
- ISACs have created communities within the private sector.
- They could be oriented on a specific critical sector (e.g. transport) to gather information about cyber incidents and analyze it.

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ER ISAC (establishing data-sharing protocol and one organization for railway in EU)

- Members of ISACs exchange information about threats, incidents, vulnerabilities, mitigating measures and also about the best practices and tools.
- The most common tool for exchanging information is a special web portal/platform (following a specific template) and encrypted emails.
- Among the ISACs, there is a common practice to establish so called “circles of trust”.
- Most ISACs use the Traffic Light Protocol (TLP) to share information. It is not necessary to share Red or Yellow TLP categorized information to allow sharing cybersecurity theats.
- Some ISACs also receive information from external sources (e.g. IT security companies) what is very good practice.