CyberASAP: Secure Railway Systems — A Framework of Ontology-based Security ERP for Cyber Resilient Digital Railway Systems

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PROJECT TIMELINE:

Start date: 01/04/2022.

Finish date: 31/07/2022.

INTRODUCTION:

The CyberASAP project, Ontology-based Security Automation for Digital Railway Systems (DRS'OSA) is to commercialise the research results of the PETRAS project, "Cognitive and Socio-Technic Cyber Security for Modern Railway Systems" (01/01/2022-30/06/2023).

AIM:

To implement the socio-technical ontology-based security ERP and commercialize the solution for creating a cyber-resilient digital railway system.

WHY:

Smart railway initiatives bring many cyber risks to railways. Railways are the critical infrastructure of a country. Attack surface is greatly increased due to the introduction of advanced IoT technologies. Malicious cyber-attacks on the rail infrastructure could have far more serious implications, including danger to life. A holistic security solution is needed.

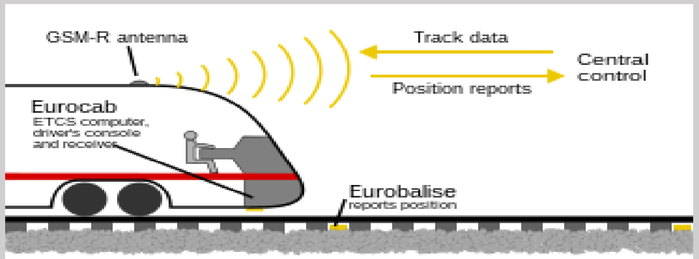

Fig.1. Europe ETCS L3

METHODOLOGY:

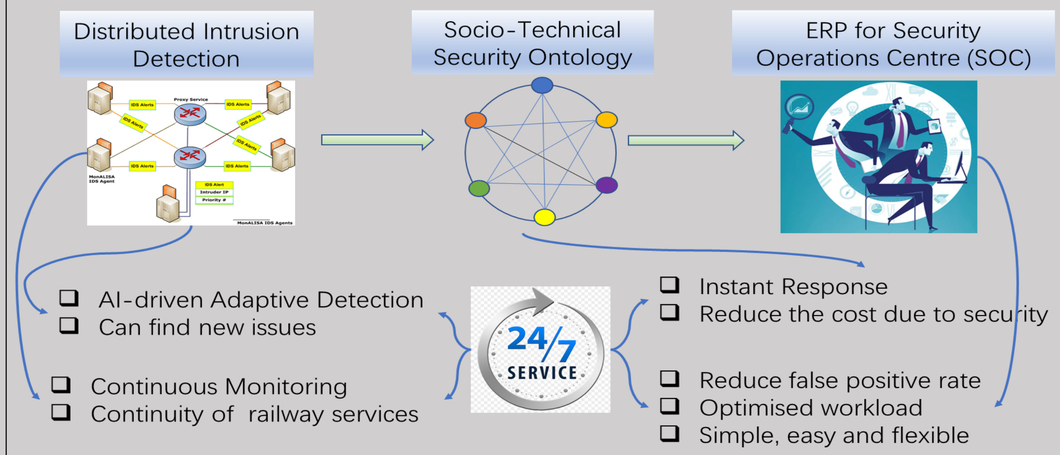

Figure 2. The Architecture of DRS'OSA

KEY COMPONENTS:

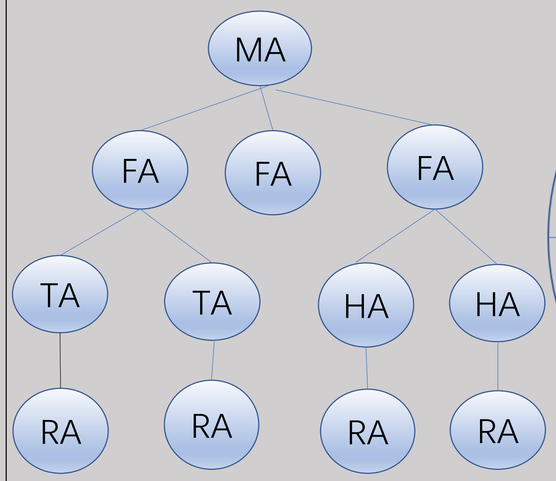

Fig.3 A Distributed Intrusion Detection System

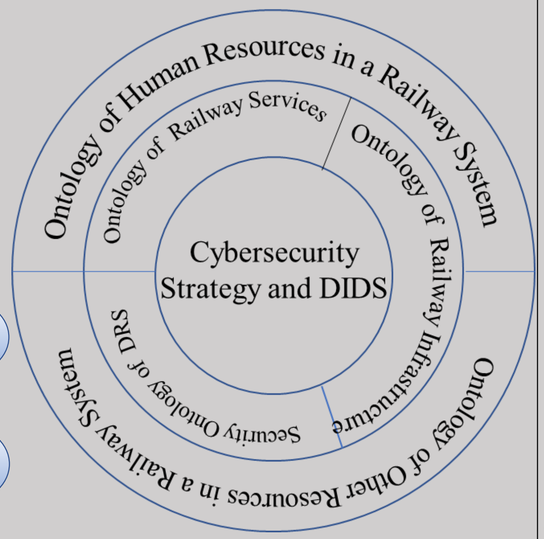

Fig.4 A Socio-Technical Security Ontology

EXPECTED IMPACT

The work is timely and significantly important for helping the UK Digital Railway Strategy. It will

- ✓ provides a holistic security solution for UK digital railway plan with an innovative and secure SCS
- ✓ Improve the safety of railway systems and their users, avoiding security incidents, which could influence the safety of railways
- ✓ Enhance the security awareness of stakeholders
- ✓ Train young experts in the cybersecurity of digital railway systems
- ✓ Provide good evidence and references to UK relevant government departments and policymakers
- ✓ Fill the gaps in the protection of national infrastructure

KEY FINDINGS

- ✓ Potential commercialisation of the proposed Socio Technical Ontology based Security ERP for Digital Railway Systems
- ✓ Value proposition for commercialising the research outcomes

USER PARTNERS

National Cyber Security Centre, East-West Rail, Birmingham Centre of Railway Research and Education, COSTAIN, National Skills Academy, Global Vega Systems, Cerberus Security Lab

ACKNOWLEDGMENT

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PUBLICATION:

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