



CyberTWIN-EV

Powering **Secure Mobility** Through Digital Twins and Cyber Resilience.



CYBERTWIN-EV is a £300,000 collaborative R&D initiative

funded by Innovate UK, part of UK Research and Innovation, under the “[Building a Secure and Resilient World](#)” (BSRW) programme. Supported through the “[Digital Twins and Cyber Resilience in Energy Networks](#)” competition, the project aims to develop advanced simulation tools and cybersecurity assessment frameworks using digital twins for Electric Vehicle (EV) charging infrastructure.

CYBERTWIN-EV will enable the design, testing, and validation of cyber-secure energy systems by integrating threat modelling, anomaly detection, and risk assessment across vehicle, grid, and EVSE interfaces. By focusing on data interoperability, real-time monitoring, and cyber threat response, the project will contribute to improving the cyber resilience of the UK’s energy networks while engaging end users and operators throughout development.



Brief

The initiative brings together CyberAutonomy's energy digital twin platform and Secure Elements' CRISKLE cybersecurity suite to simulate, model and assess vulnerabilities in EV-grid interactions.

It introduces four core innovations:

- 01 EV and Grid Digital Twin for behaviour simulation.
- 02 CRISKLE-powered threat and cybersecurity risk assessment (TARA).
- 03 Vehicle to Grid (and vice versa) interaction modelling to understand Predicted Maintenance and Dynamic Load Management behaviour in the context of ongoing cyber-attacks (DOS, MITM) in the EV-Grid system and
- 04 Vehicle and Grid based Intrusion Detection System [IDS] IDS to detect simulated cyberattacks.

Outcomes

01

Enhanced Grid Cybersecurity: Increased resilience of EV charging infrastructure and grid systems against cyber threats like MitM and DoS attacks.

02

Real-time Intrusion Detection: Deployment of a vehicle digital twin-based IDS that identifies anomalies and logs them to CRISKLE's Mobility Security Operations Centre (MSoC).

03

Validated Simulation Models: Use of digital twins to simulate complex cyberattack scenarios that are impractical to recreate physically.

04

Interoperable, Data-Driven Insights: High-quality, interoperable data outputs for energy providers to improve grid operations and response strategies.

05

Commercialisation and Collaboration: Increased SME and academic collaboration leading to commercially viable cybersecurity solutions for EV providers and Energy/Grid Networks.

Consortium

The consortium is led by:



Secure Elements is an automotive cybersecurity SME, focused on securing modern mobility systems. They provide CRISKLE Workspace – an Integrated Product Security Platform comprising of advanced cybersecurity tooling solutions, including risk assessments (TARA & HARA), Vulnerability Management & SBOM's and Continuous Monitoring through our Mobility Security Operations Centre (MSOC) to help automotive products achieve secure-by-design standards in compliance with ISO/SAE 21434 and UNECE R155.

www.secureelements.co.uk



An SME providing the Digital Twin capability.

<https://www.cyberautonomy.io/>



Provides Model Based Systems Engineering [MBSE] based development of EV-Grid as a System Model and will conduct project evaluation.

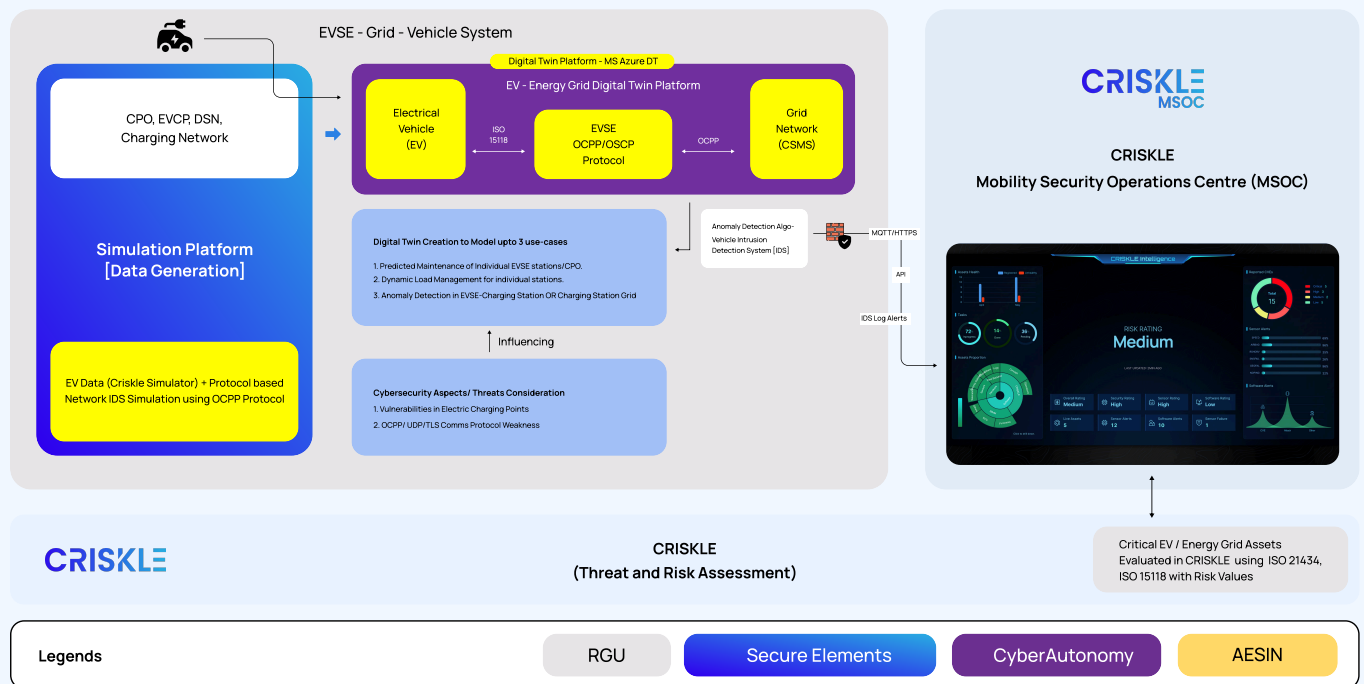
<https://www.rgu.ac.uk/>



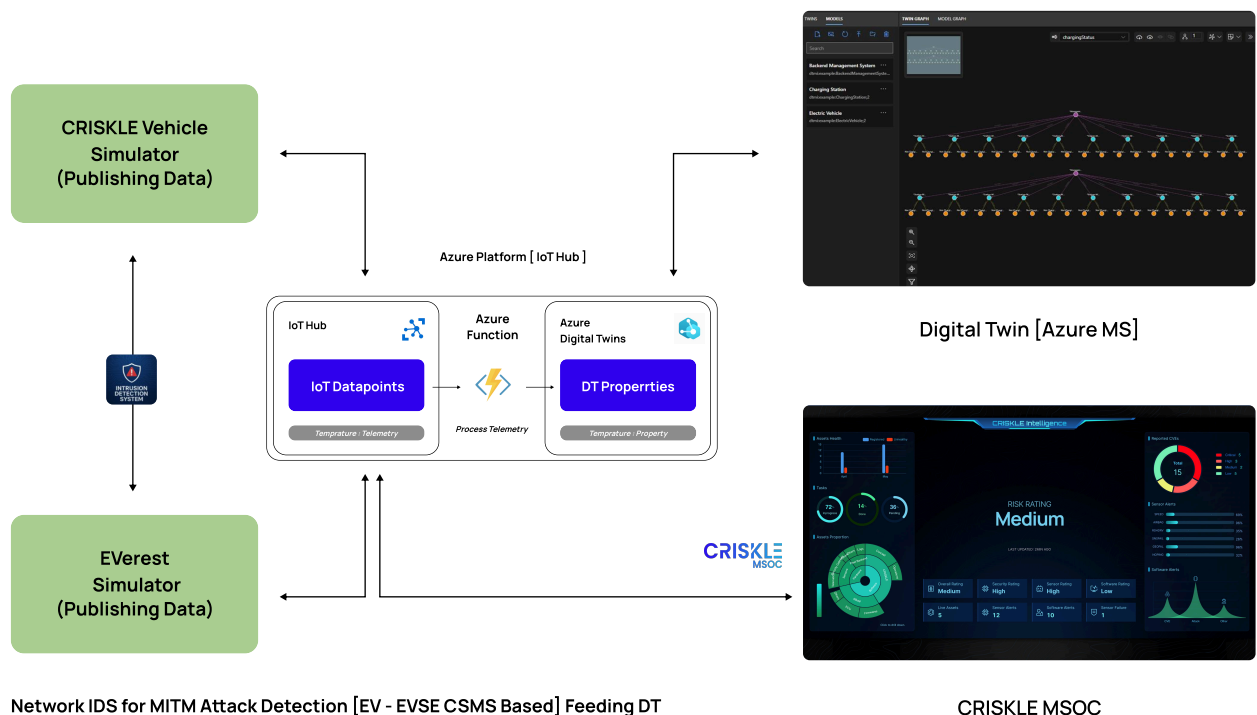
Provides key industry and regulatory engagement supported through it's member driven wider Techwork's community to ensure project dissemination, real-world relevance and application.

<https://aesin.org.uk/>

Automotive Cybersecurity Assessment of Energy Grids using Digital Twins for EV Application



Vehicle IDS for DOS Attack Detection (CAN Based) Feeding DT

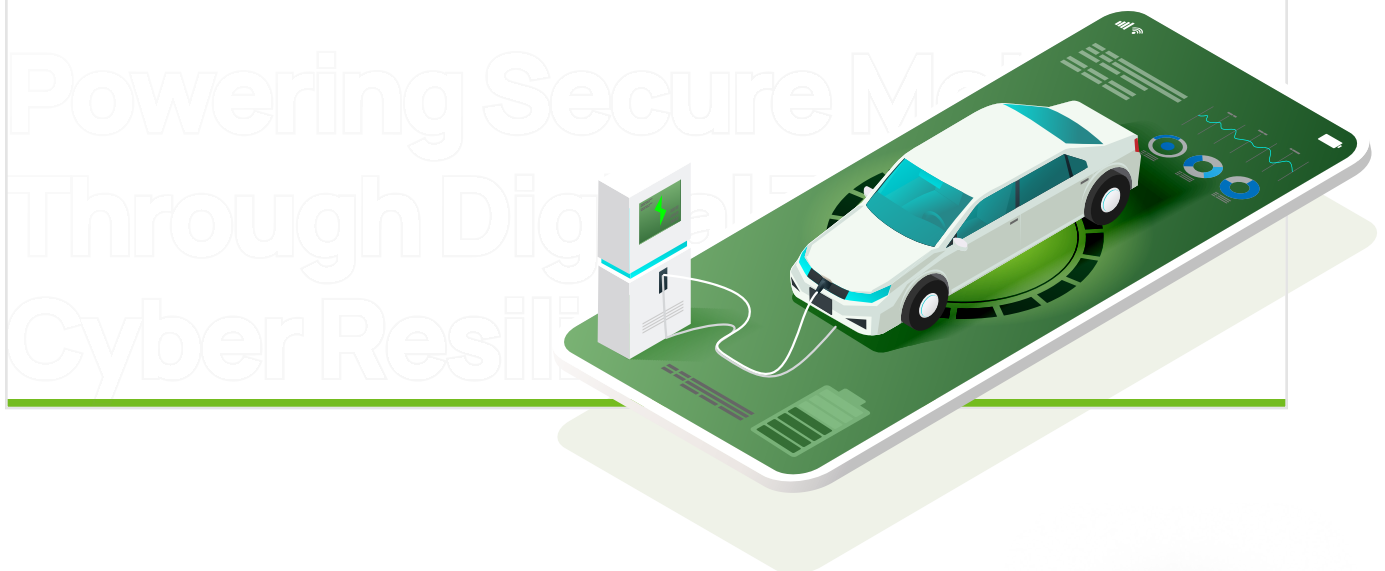




CyberTWIN-EV

Scan the QR Code to visit
the Project Site

<https://aesin.org.uk/cybertwin-ev/>



GET IN TOUCH

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