REWIRE

REWiring the CompoSItional Security VeRification and AssurancE of Systems of Systems Lifecycle

MISSION

The REWIRE project envisions a holistic security management framework that can safeguard IoT environments during the whole spectrum of their lifecycle, from the Design to the Runtime phases. REWIRE will define and leverage advanced and lightweight attestation mechanisms to enable the establishment of trust relationships in next generation Systems-of-Systems based on trust assertions and indisputable evidence.

MAIN GOALS

- Compositional Assurances through Formally Verifiable HW Security & Crypto Design Models
- Firmware & Software Integrity Verification
- Customizable TEE for In-Chip Security & Trust Assurance
- Secure Trust Aware Auditing for Software Updates through Blockchain

USE CASES

Smart Cities: Secure device on boarding, collaborative threat and misbehaviour detection, and software and firmware updates for critical IoT devices

Automotive: Ensure the correct authentication and authorisation, prior to receiving the software updates to assess the trust level of unreliable sources

Smart Satellites: deployment and isolation of applications, services, software and security patches on a spacecraft in a secure manner

APPROACH

REWIRE will be a 4 layered security sandbox that offers a harmonized toolchain to efficiently protect IoT deployments during their entire lifecycle. It relies on the following core pillars:

- Provable secure cryptographic protocols, definition of customized instruction set
- Firmware & software security updates and patching validation
- Runtime attestation for verification of IoT devices' operational assurance using customizable lightweight TEEs
- Blockchain assisted AI based misbehaviour detection in distributed fashion

STANDARDISATION

Planned outcomes include the development of standardization proposals to push the state of the art in cryptographic constructions towards secure device execution, formal hardware verification dynamic and runtime trust assurance in heterogeneous environments, firmware and software integrity analysis in connected devices, secure and trust aware data auditing based on blockchain.

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