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Project Profile

HOMEPOT

Unified management of heterogeneous devices

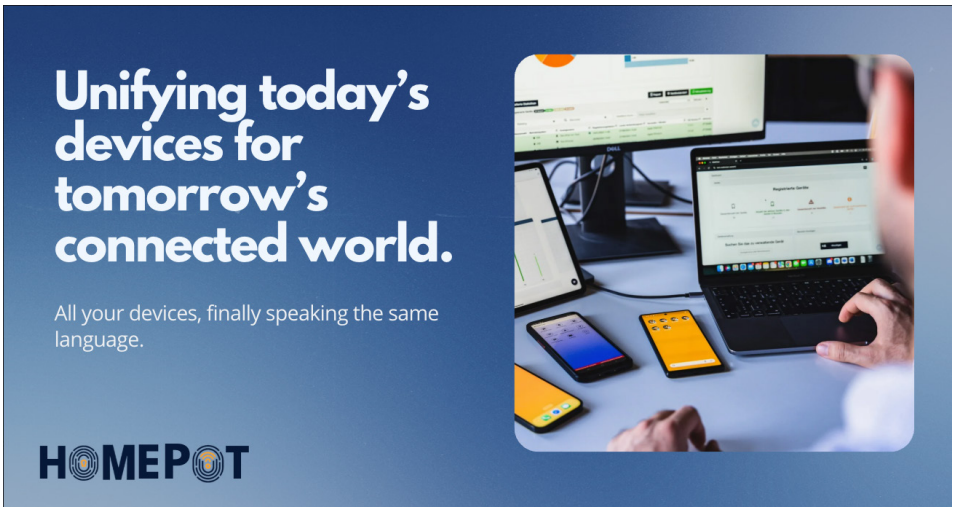
By developing a single, secure platform for homogenous device management, the ITEA project HOMEPOT (Homogenous Cyber Management of End-Points and OT) will streamline the integration and use of a wide array of operational technology (OT) and Internet of Things (IoT) devices within smart, connected ecosystems.

Addressing the challenge

Securing, managing, monitoring and processing data from an ever-expanding array of OT and IoT devices is becoming increasingly challenging. A key element of this is heterogeneity, whereby manufacturers choose distinct, tailored operating systems (OS) for different devices. While this approach promotes innovation, it results in a large range of hardware, software and architecture variations that are difficult to manage in terms of both user-friendliness and security. For manufacturers and consumers alike, a solution lies in the homogeneous management of such devices.

Proposed solutions

HOMEPOT aims to achieve this via a standardised platform for remote management, monitoring and data gathering across IoT systems and devices with different OS, hardware architectures and application programming interfaces (APIs). An important innovation will be a policy mediator that serves as both a decision-maker and translator, mapping policies between different systems to efficiently integrate new devices. This will be complemented by artificial intelligence (AI) to enable the conversion of proprietary communication protocols into standards – enabling flexibility and consistency while maintaining a standardised baseline – and a policy interpreter to automatically map user policies to any device OS. Security, meanwhile, will be supported by a monitoring module with a flexible architecture, integrating machine learning for device traffic analysis to detect and mitigate security issues. This module will facilitate the recognition and authorisation of new IoT devices, supported by user guidance for advanced, AI-enhanced security practices. The ultimate result will be a universal roadmap that bridges the gap between hardware, OS, and their respective management interfaces.



Projected results and impact

Successful implementation of HOMEPOT would have a significant impact on the management and monitoring of IoT systems on a one-platform basis. For users, the platform will distinguish itself through a unique emphasis on dynamic user interfaces that enable comprehensive device management from smartphones, computers and televisions, as opposed to the sensor-based focus of conventional IoT platforms. In combination with the mediator (which should increase policy implementation across diverse devices and OS by over 95%) and the policy interpreter (which intends to reduce manual adjustments during device transitions by 80%), consumers will be able to streamline their smart homes and avoid vendor dependency. As for manufacturers, support for multiple OS opens up new market opportunities, with HOMEPOT partners set to benefit from the competitive edge gained by solving the heterogeneity challenge. Finally, the implementation of streamlined device management will significantly facilitate timely software updates and enable a swift response to cybersecurity breaches, through which the project aims to reduce security incidents by 20%. HOMEPOT therefore represents the complete package needed to take the next step in IoT.

Project partners

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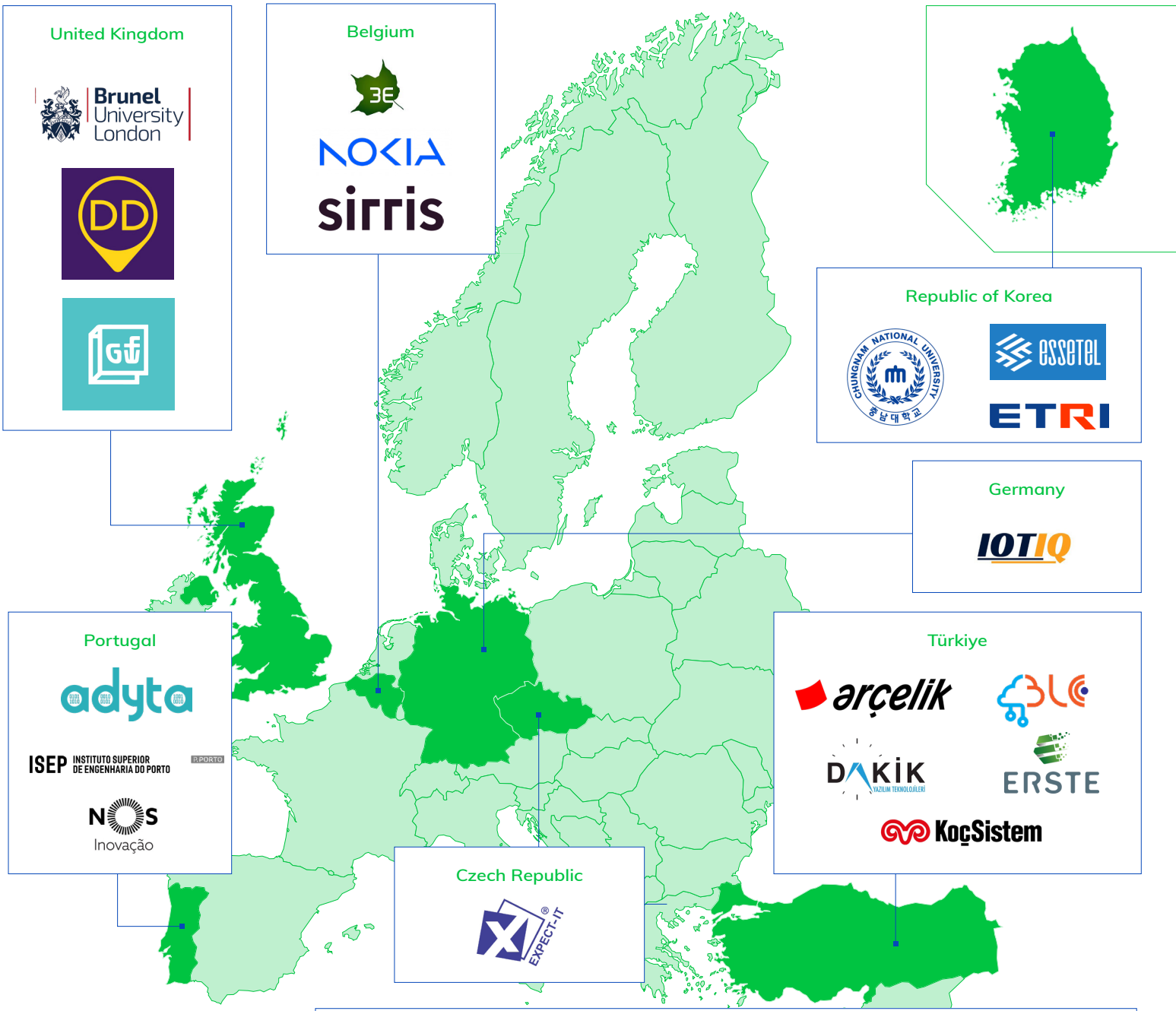

Project start
December 2024

Project end
July 2028

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Project website
https://itea4.org/project/homepot.html
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