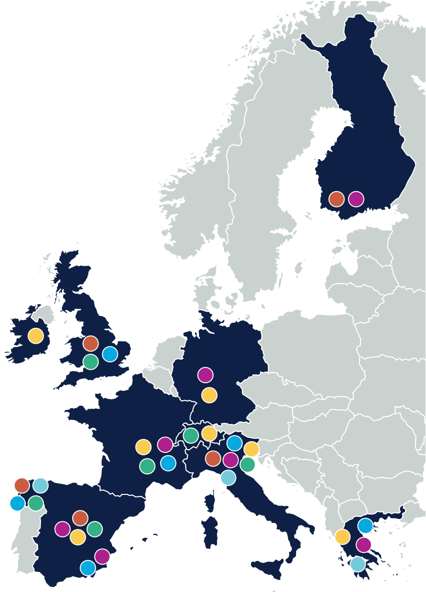

● **SME**
MYSPHERA
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ATENZIA
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GNOMON INFORMATICS
INFOTRIP
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TELEVÉS
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● **ACADEMIA**
UNIV. POL. MADRID
UNIV. POL. VALENCIA
UNIV. DI PARMA
TURKU UNIVERSITY
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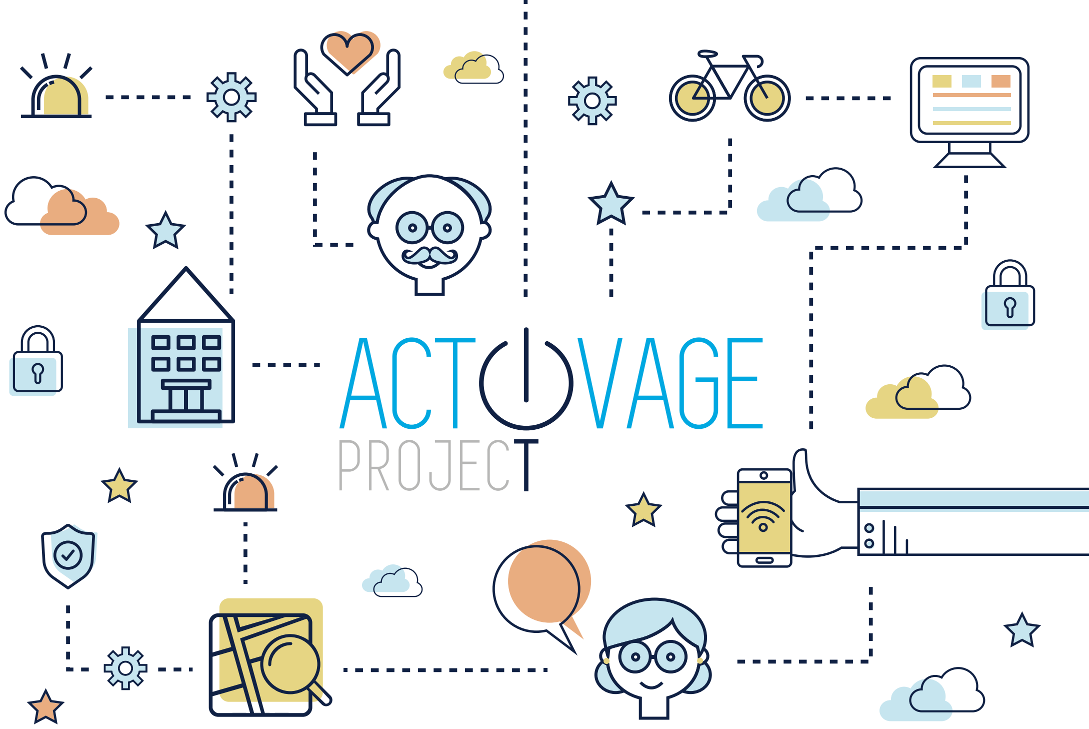

Join the ACTIVAGE challenge,
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ACTIVAGE project

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 732679

ACTIVAGE Security & Privacy achievements

GDPR compliance

Secured Gateway by a dedicated Secure Element device (TPM)

Co-developed within ACTIVAGE by CEA-IRT Nanoelec & STMicroelectronics

Protect devices

Security Technologies Provide strong security primitives to protect against malicious firmware upgrade attempts and reverse engineering.

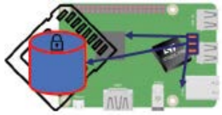
Ensure Secure Communications

Communication encryption is a requirement for IoT devices which may send and receive sensitive and/or personal data. Authentication and strong encryption ciphers protect both your data and privacy.

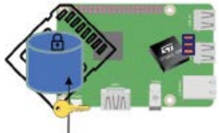
Enable privacy

Recent adoption of the GDPR makes cybersecurity essential to ensure privacy.

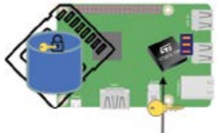
This proof of concept has been designed to operate the ACTIVAGE IoT devices with high trust based on integrity measurements, memory, and communication encryption.



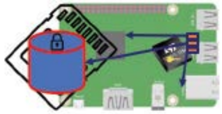
At start-up TPM is measuring various parts of the board instance: RAM contents, bootchain, serials, etc, measurement hashes are stored in PCRs.



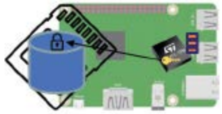
Operator provides decryption key at boot while TPM is un-provisioned.



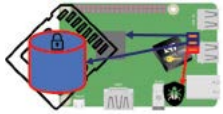
Operator seals the key into the TPM with an authentication policy based onto the PCR state.



Next startup the key is stored within the TPM, which measures again the system.



If system measurements are aligned with the reference hash, the decryption key is unsealed by the TPM and passed to the system.



If a measurement differs from the sealing policy, for example after a firmware or hardware modification, then the key won't be released

ACTIVAGE Security & Privacy Issues

According to GDPR, IoT technologies bring concerns for initiating and applying core principles, security and privacy tools for handling **big data management & processing and sensitive data (Health Data).**

To cope with these concerns and comply with **GDPR**, ACTIVAGE initiated **Data Privacy and Security measures**:

- **Privacy policies** and terms:
  - **Encryption** procedures.
  - **Transparency, Accountability.**
- Methods as **data minimization and Pseudonymising personal data** as soon as possible as defined from the beginning of the project.
- **DPIAs assessment carried out according to GDPR.**

To protect human rights and ensure data processing in compliance to legal and ethical requirements, ACTIVAGE implemented a number of General practices & Security and Privacy tools:

- **'Privacy by design'.**
- **Policy framework** in consistency with **ethical and legal requirements**.
- **Privacy Enhancing Technologies (PET's)**, as Blockchain technologies.
- **Mitigation measures** for potential **data breach**.

Within ACTIVAGE a need emerged for **Security & Privacy (S&P)** module development that aims to provide a trustful digital environment. Five key principles have been initiated: user and entity authenticity , authorization, integrity, confidentiality and non-repudiation. The S&P Layer implements the following services:

- **Access control Management** (Identification, Authentication, Authorization and Accountability).
- **Sensitive Data Handling & Security Administration requirements**.