SECANT

SECurity And privacy protectioN in Internet of Things devices

Project overview

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Project Coordinator

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SECurity And privacy protectioN in internet of Things devices

SECANT, an EU-H2020 project aimed to strengthen the understanding of risks, at both human and technical level through the delivery of a holistic framework for cyber security risk assessment for enhancing the digital security, privacy, and personal data protection in complex ICT infrastructures, such in the healthcare ecosystem.

A Project coordinated by NTT DATA

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SECANT Key facts

H2020- SU-DS02-2020 call
Sub-topic (b): Cyber-threat information sharing and analytics

Duration: 36 months
Starting date: 1 September 2021
Ending date: 31 August 2024

Budget 6.567.958,75 €
EU funding 5.202.226,38 €

20 partners from 10 countries

- **3 Large ICT industries**
  NTT DATA · THALES Building a future we can all trust · SIMAVI Software Imagination & Vision
- **9 SMEs**
  EIGHTBELLS Independent Research & Consultancy · UBITECH ubiquitous solutions · axon logic · ianus consulting · EXALENS · Adrestia Equilibrium in Research & Development · bi2S Ltd Business and IoT Integrated Solutions · INFOLYSIS · Security Labs Consulting
- **5 research institutes and universities**
  Karolinska Institutet · iti Information Technologies Institute · i2cat · TIC Salut Social · University of Surrey
- **1 Healthcare organization**
  POLARIS Medical
- **1 non-profit foundation**
  IOTA FOUNDATION
- **1 European CERT**
  Guvernul României · DIRECTORATUL NAȚIONAL DE SECURITATE CIBERNETICĂ

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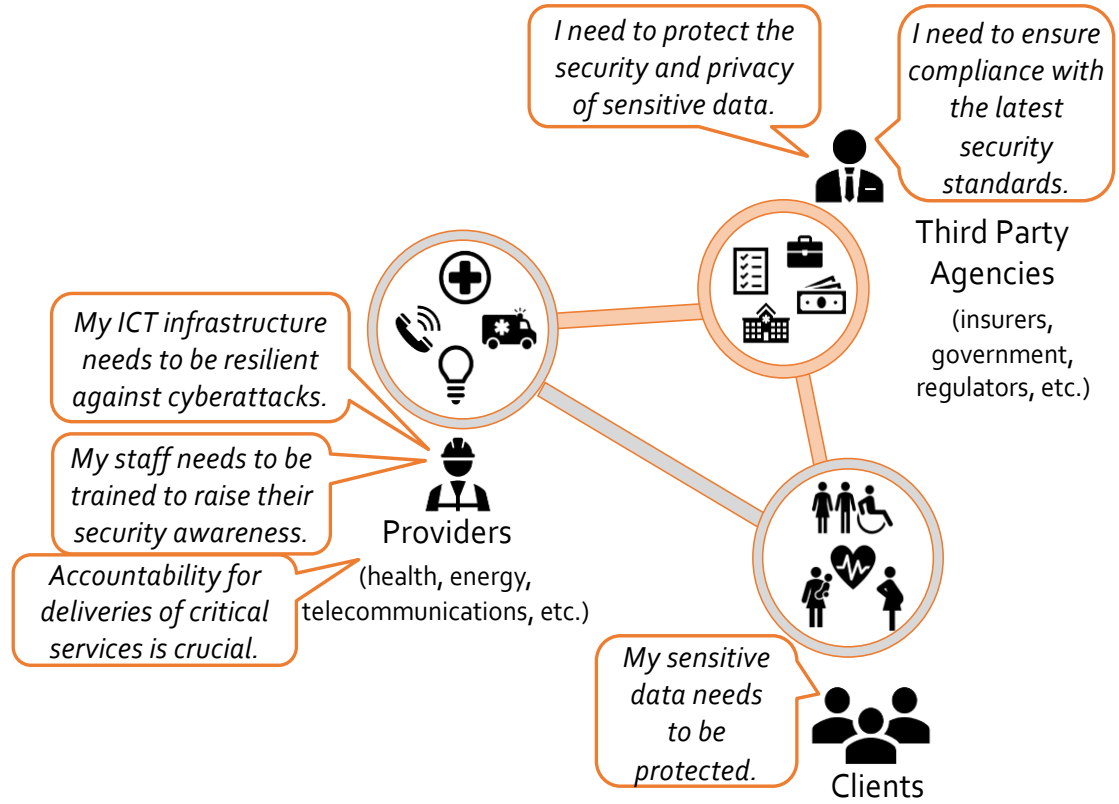
Context and Main Aim

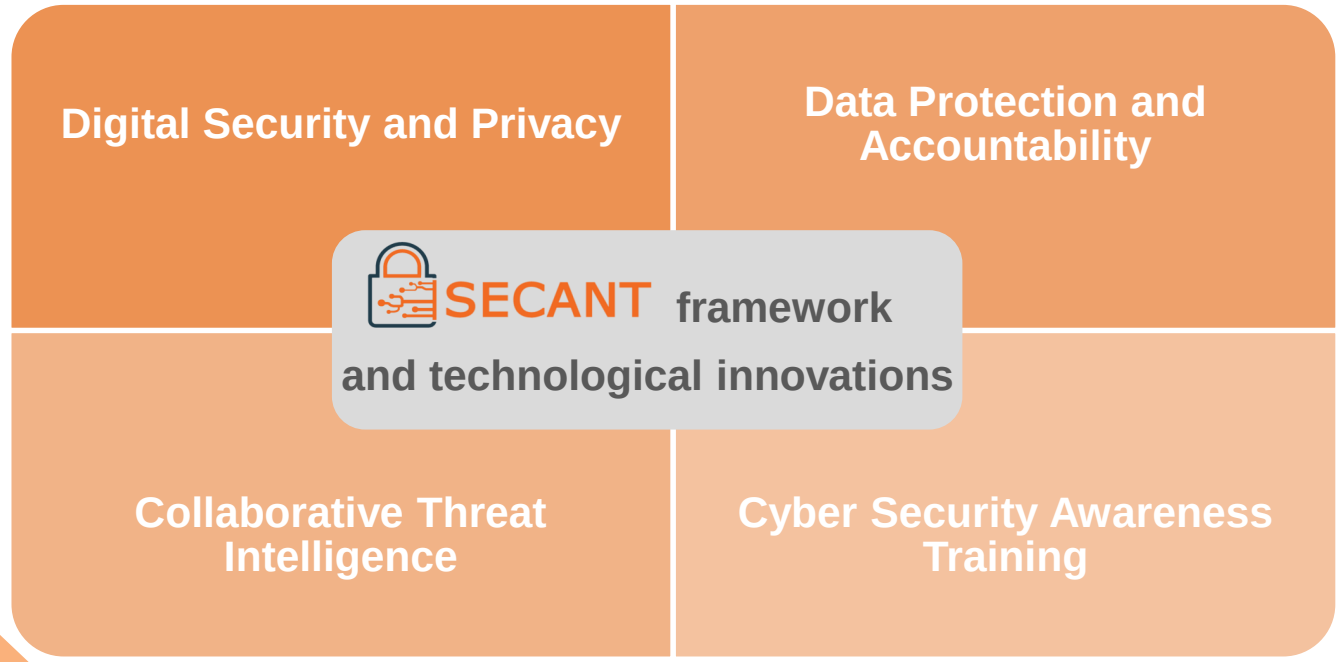
- The industrial sector is experiencing an unprecedented number of changes in recent years:
  - New models of remote delivery, especially in **complex ICT infrastructures**, increase the potential impact of cyber security breaches
  - The level of security awareness is still disproportionately low compared to the criticality and potential of a security breach in critical sectors
  - **Healthcare** is a constantly increasing data-driven ecosystem with a high criticality since the sensitive data
- Need to **complement traditional** platform-specific and attack-specific **countermeasures**

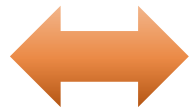


AIM: To strengthen the **understanding of risks**, at both **human and technical level** through the delivery of a holistic framework for cyber security risk assessment for enhancing the digital security, privacy, and personal data protection in complex ICT infrastructures, such in the healthcare ecosystem.

Objective

To develop a **threat detection platform** addressed to CERTs/CSIRTs that is capable of identifying threats and attacks and **promote the situational security awareness** as a priority.





Healthcare professionals

- Doctors and nurses
- Administrative staff (hospital, ambulance, laboratory etc)
- Medical authorities and institutions (Public Health Authority, National Health Insurance Institution)

ICT & Security Professionals

- ICT & Security Professionals
- ICT & Security authorities and institutions

✓ **Improved cybersecurity readiness** against cascading cyber-threats & propagated vulnerabilities in interconnected complect infrastructures

✓ **Increased privacy, data protection and accountability** across the entire industrial chain

✓ **Reduced costs** for managing risks and adopting digital security solutions as well as for security training

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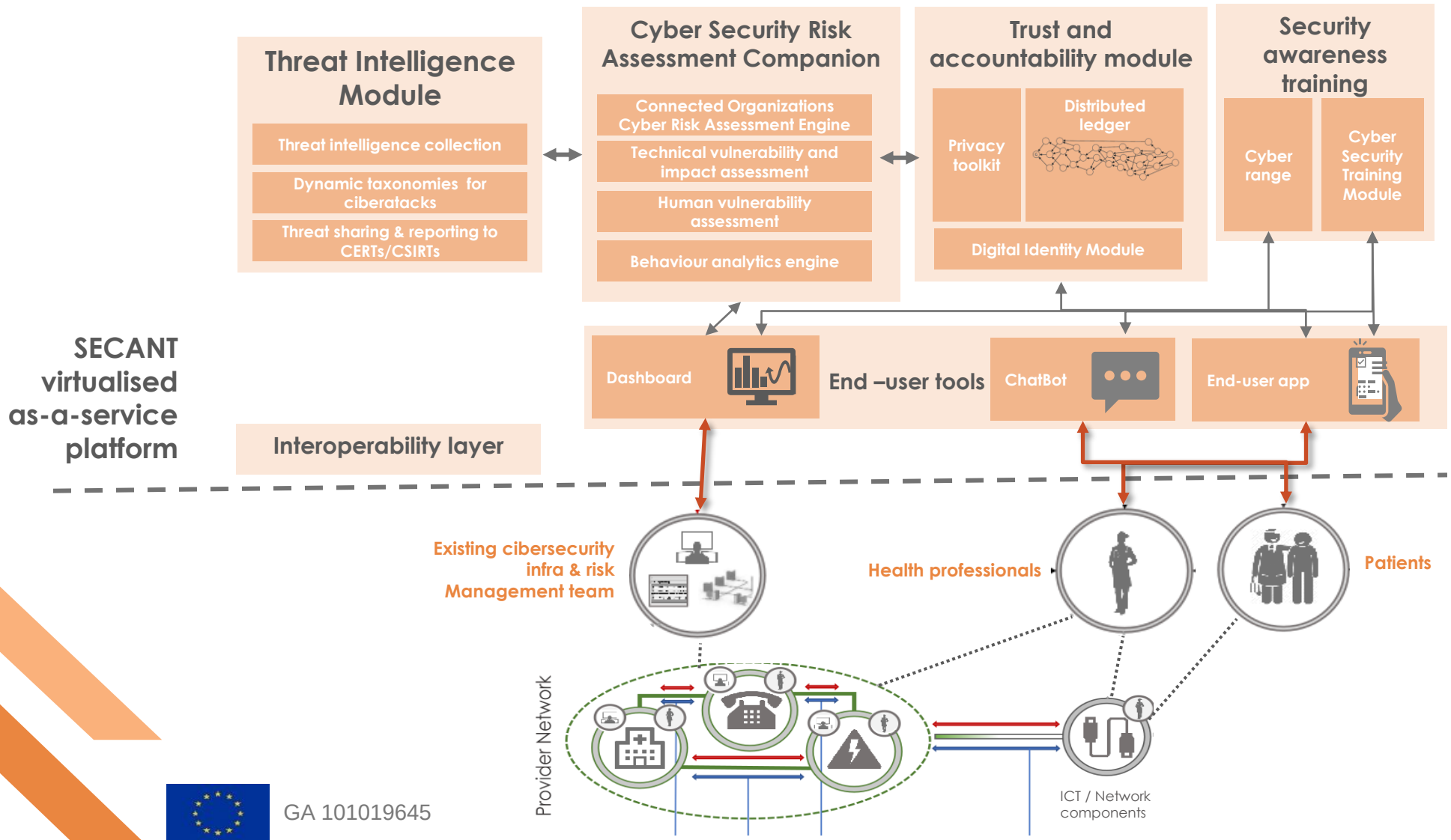
SECANT approach



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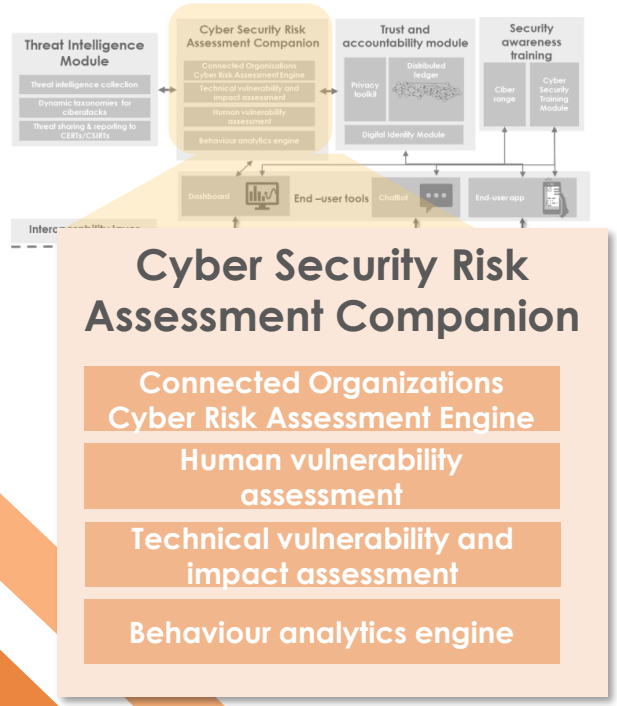
SECANT components

Dynamic, evidence-based **security and privacy risk assessment framework** to deal with the cascading effects of cyber-attacks and with propagated vulnerabilities in interconnected complex ICT systems, services, and applications



Cyber Security Risk Assessment Companion (CSRAC): Facilitate decision making and effective and timely response to detected cyber security risks and minimize their risks

- **Connected Organizations Cyber Risk Assessment Engine** (**CO-CRAE**): analyze cascading cyber-attacks in industrial ecosystems
- **Human Vulnerability Assessment** (**HVA**): tackle and assess Social Engineering attacks
- **Technical Vulnerability and Impact Assessment** (**TVIA**): identify and dynamically isolate propagated vulnerabilities in the ecosystem.
- **Behaviour analytics engine (BAE)**: identify suspicious patterns in the behaviour of an entity in the network.

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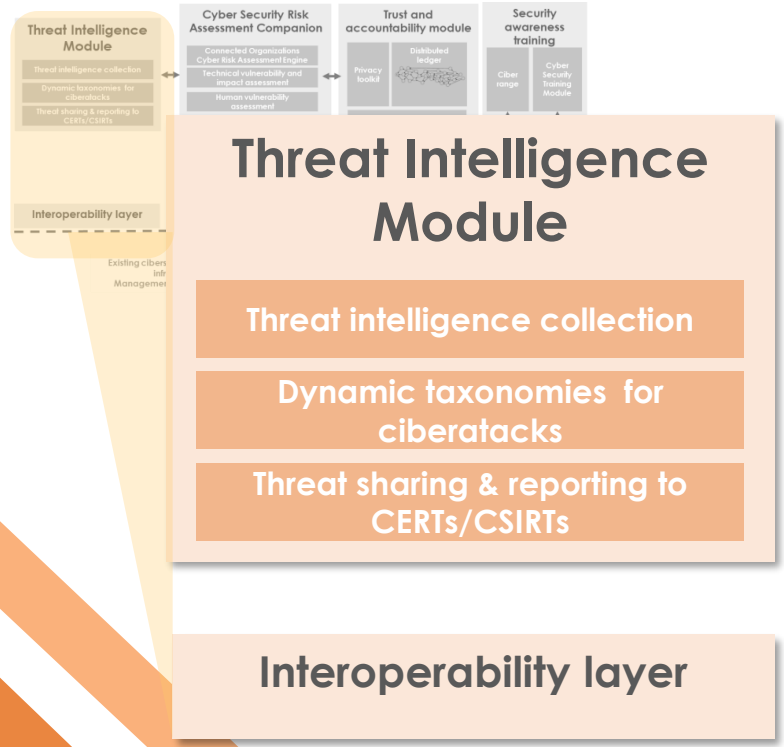
SECANT components

Collaborative toolkit to allow the organization stakeholders and European CERTs/CSIRTs **create and exchange dynamic vulnerability databases** & t**axonomies for cyber-attacks** targeting ICT systems, technologies, applications and services



Threat Intelligence Module (TIM): Supports the creation of dynamic vulnerability databases and taxonomies for cyber-attacks against ICT-based systems, applications and services.

- Collect and share threat intelligence from SECANT's supply chain stakeholders
- Report such intelligence to CERTs/CSIRTs
- Build dynamic taxonomies for cyber-attacks

Interoperative level (IPL): middleware between the medical equipment and the SECANT platform including a central repository

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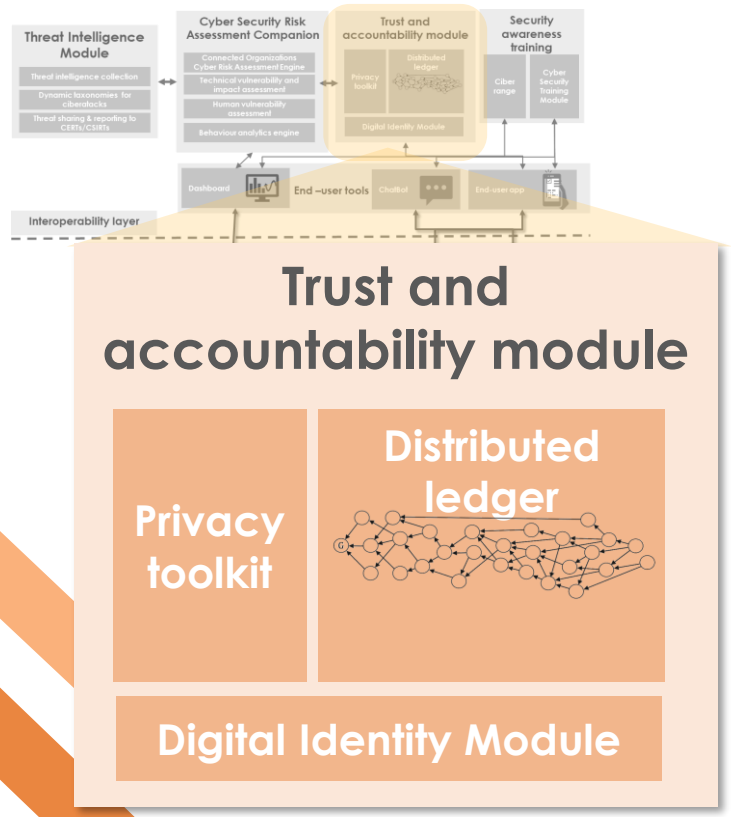
SECANT components

Data protection and multi-level accountability framework, relying on a **distributed ledger system**, to establish **trust, integrity and protect** sensitive data



Trust and accountability module (TAM): Ensures transparency, protection and integrity of the collected data and the management of identities both for devices and persons

- A decentralized infrastructure using a Directed Acyclic Graph (DAG)-based **Distributed Ledger Technology (DLT)** - IOTA Tangle.
- **Digital Identity Management module (DIM):** Unequivocal identification of professionals, clients and instruments of an organization based on SSI concept.
- **Privacy Toolkit:** merge advanced encryption technologies to mediate all access to information flowing through the TAM.

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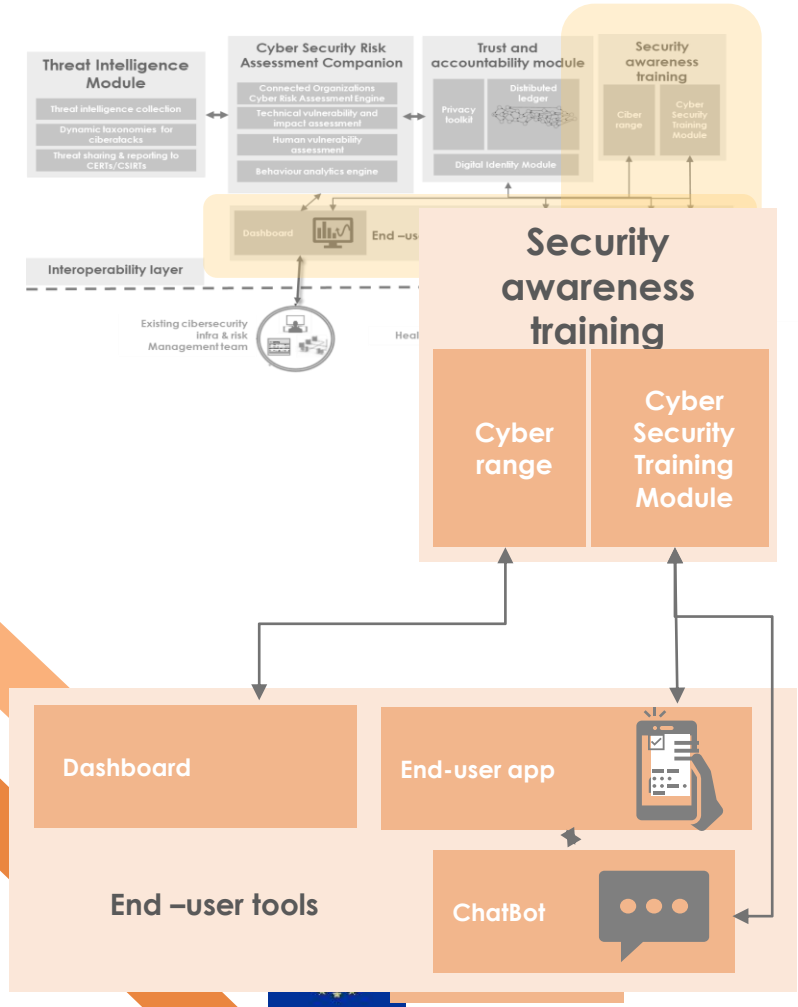
SECANT components

User interfacing applications and **security training platforms** with **cyber range capabilities**



Security Awareness Training : make smarter security decisions with training and simulated social engineering.

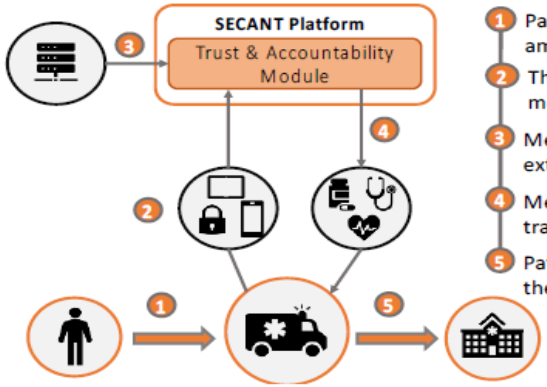
- **Cyber Range (CR):** for security professionals to train using a simulated representation of the supply chain, modelling and emulating the complex ICT infrastructures.
- **Cyber Security Training Module (CSTM):** Security awareness training for other professionals and clients to familiarize themselves with best cyber security practices. Enhanced with **Chatbot** for interactive training.

SECANT Dashboard and End User Application: interfaces to the platform

- **Dashboard:** for cyber security professionals, access to TIM and CSRAC
- **End User Application:** for patients and other professionals to access to CSTM and **Chatbot app**

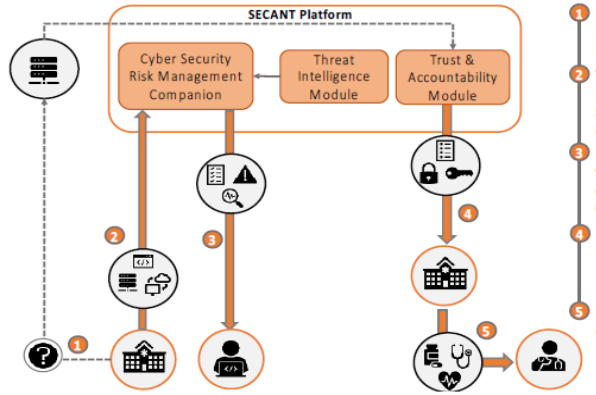
SECANT Pilot Use Cases

PUC1: Protecting the connected ambulance of the future



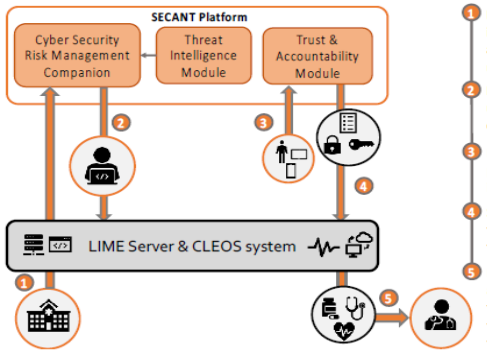
1. Patient is picked up by the ambulance provided by the EMS
2. The EMS requests the patient's medical data via SECANT App
3. Medical data is retrieved by external DB
4. Medical data is securely transmitted to the EMS
5. Patient is treated on her way to the hospital

PUC3: Health data protection in healthcare supply chain



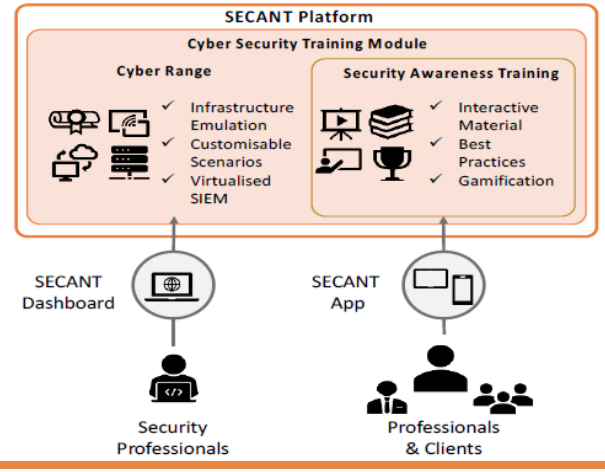
1. Patient data, stored in a remote database is requested by a healthcare organisation.
2. The organisation's existing ICT infrastructure is assessed by SECANT before patient data can be transmitted.
3. Potential threats and vulnerabilities are communicated by SECANT to CERTs of healthcare provider.
4. SECANT's TAM is utilised for the secure transfer of patient data to healthcare organisation.
5. Patient data is utilised for diagnosis and treatment.

PUC2: Cybersecurity for connected medical devices & mobile app



1. LIME server and associated infrastructure and systems is assessed for vulnerabilities using the SECANT platform.
2. Risk assessment results are used by CERTs to refine LIME's existing infrastructure.
3. Patients and medical devices provide multimodal data as input to CLEOS system.
4. SECANT's TAM is utilised for the secure transfer of data to CLEOS system.
5. Medical practitioners are assisted in their diagnosis and treatment plan specification through the data processed via the CLEOS system.

PUC4: Cyber Security Training



SECANT innovations

Innovative risk analysis methodologies

- *Support organizations and stakeholders to identify risks which may impact data security and privacy*

Real-time information sharing capabilities

- *Facilitates to cybersecurity professionals the handling and forecasting of security incidents, complex attacks and propagated vulnerabilities*

Highly scalable DAG-based **ledger infrastructure**

- ***I**nnovations in the field of **trust and accountability** and enables end-to-end integrity and protection of sensitive operational*

SECANT as a whole

- *Allows for both technologically protecting connected organizations and empowering their users towards their better protection*

Contact and more information

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