Intelligent Secure Trustable Things

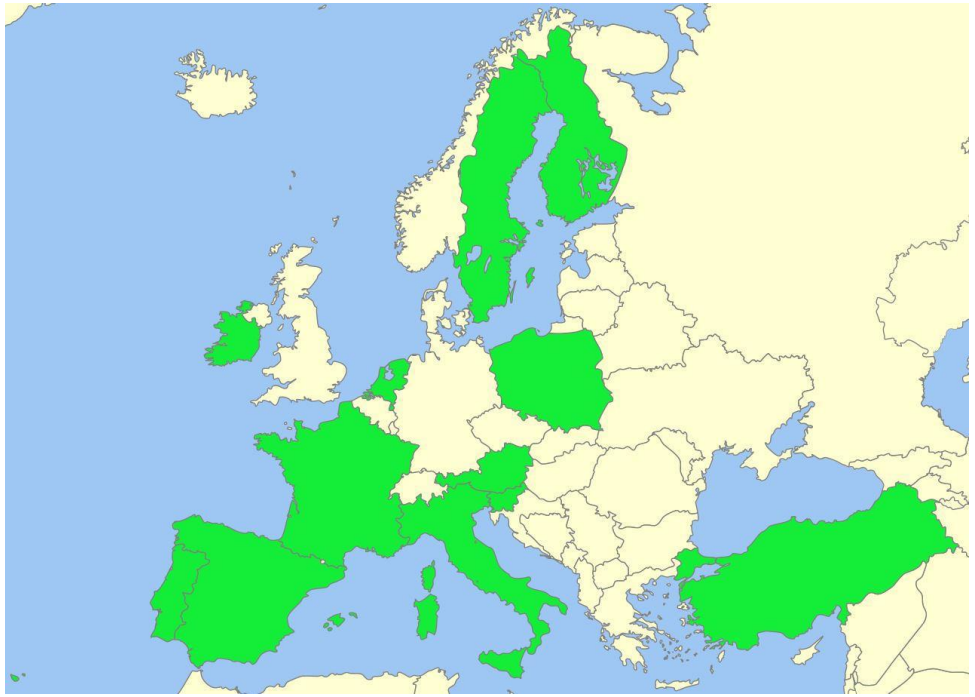
Introduction & Overview

Michael Karner (VIRTUAL VEHICLE)

InSecTT has received funding from the ECSEL Joint Undertaking (JU) under grant agreement No 876038. The JU receives support from the European Union's Horizon 2020 research and innovation programme and Austria, Sweden, Spain, Italy, France, Portugal, Ireland, Finland, Slovenia, Poland, Netherlands, Turkey

InSecTT Project Data

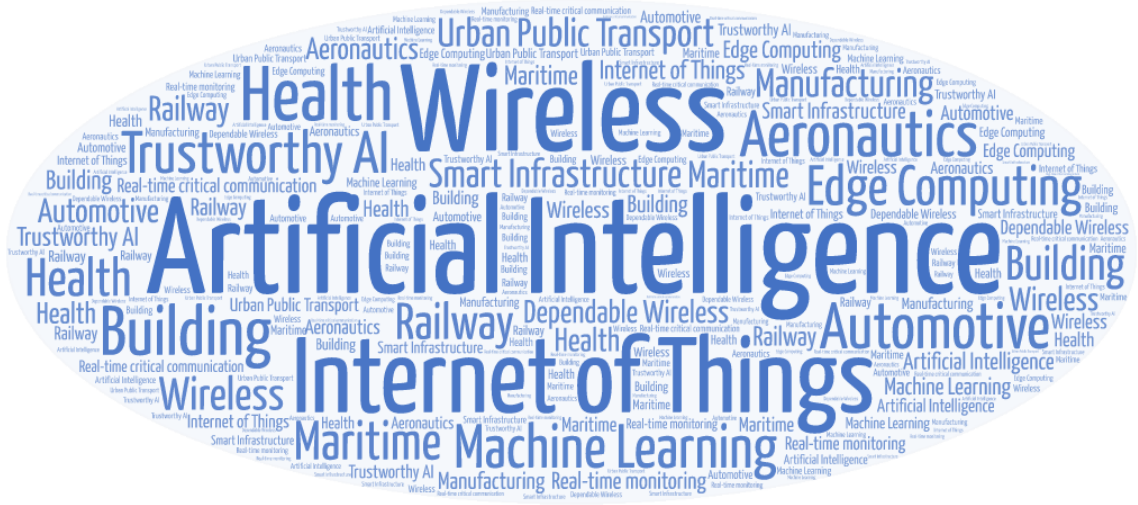
- **Funding**: ECSEL Call 2019 – Innovation Action
- **Coordinator**: VIRTUAL VEHICLE Research GmbH
- **Duration**: 36 months (June 2020 – May 2023)
- **Partners**: 52 from 12 countries (EU+Turkey)
- **Use Cases**: 16 from 9 industrial domains
- **Building Blocks**: 5 (reliable AI for IoT)
  5 (secure, safe and reliable wireless systems)
- **Effort**: 5600 person months (~155 full-time equivalents over 3 years)
- **Project size**:
  - Total: 48 Mio EUR / 25 Mio EUR Funding



Partners, e.g. VIF, ABB, AVL, Altran, CISC, CEA-LIST, Indra, JKU, Leonardo, Liebherr, KTH, NXP, RISE, Silicon Austria Labs, ST Microelectronics…

Project Goals & Objectives

- **In**telligent
  - Intelligent processing of **data applications** and communication characteristics locally at the edge
- **Sec**ure
  - Industrial-grade **secure, safe and reliable solutions** that can cope with cyberattacks and difficult network conditions
- **T**rustable
  - **Increase trust for user acceptance**, make AI explainable and give the user control over AI functionality
- **T**hings
  - With energy- and processing constraints, in heterogeneous and **hostile/harsh environments**
- applied in **industrial** solutions for European industry



Bringing Internet of Things and Artificial Intelligence together

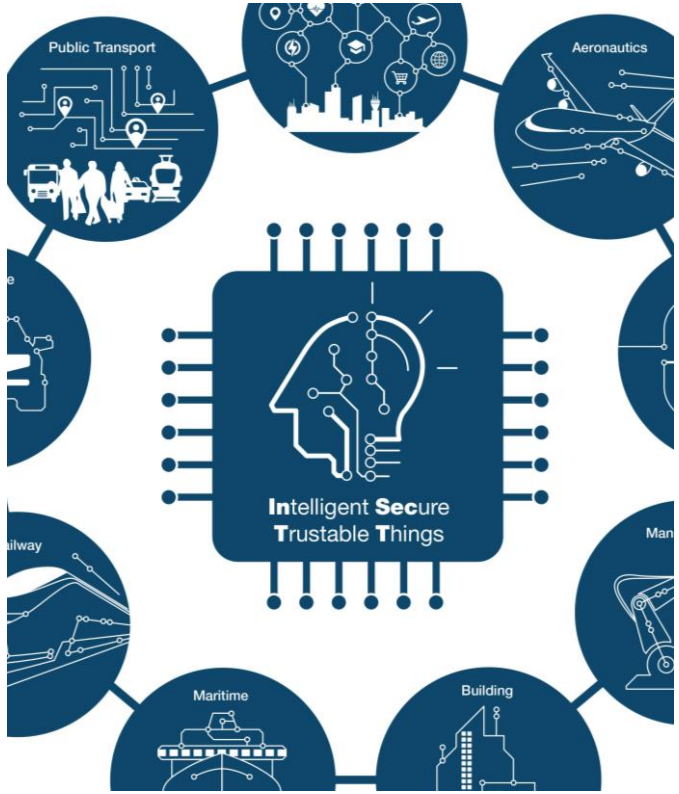
→ **AI + IoT = AIoT** (Artificial Intelligence of Things)

InSecTT Video: https://www.youtube.com/watch?v=CF8aVYzv_zo

Edge… bring computation and data storage closer to the location where it is needed

Artificial Intelligence of Things (1)

- **Artificial Intelligence of Things** (AIoT):
  natural evolution for both AI and IoT (mutually beneficial)
  - **AI increases the value of the IoT**
    - through machine learning -> transforming the data into useful information knowledge
  - **IoT increases the value of AI**
    - through connectivity and data exchange



- **Moving AI to the edge**
  - **Processing data locally** on a hardware device
  - **Real-time applications** for self-driving cars, robots and many other areas in industry can be enabled

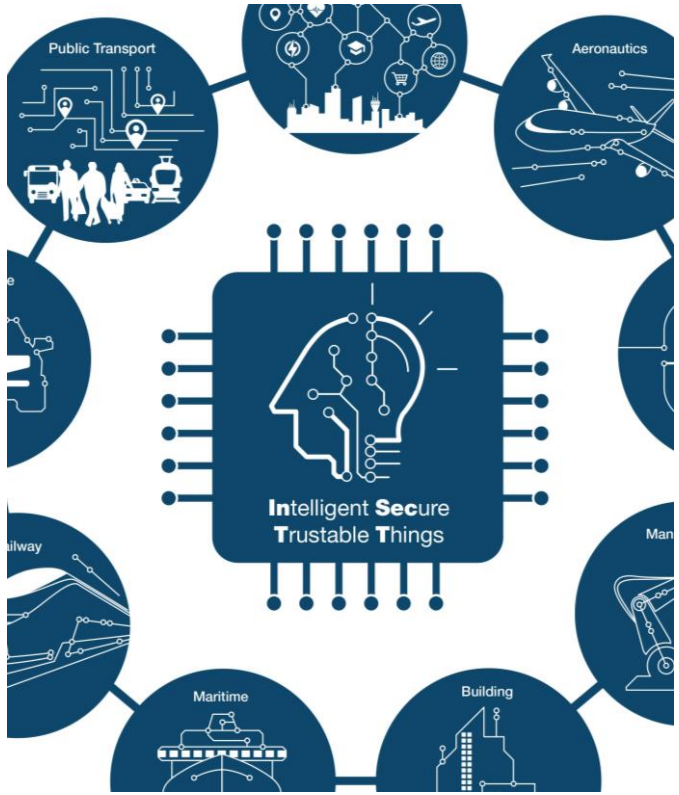
Edge… bring computation and data storage closer to the location where it is needed

Artificial Intelligence of Things (2)

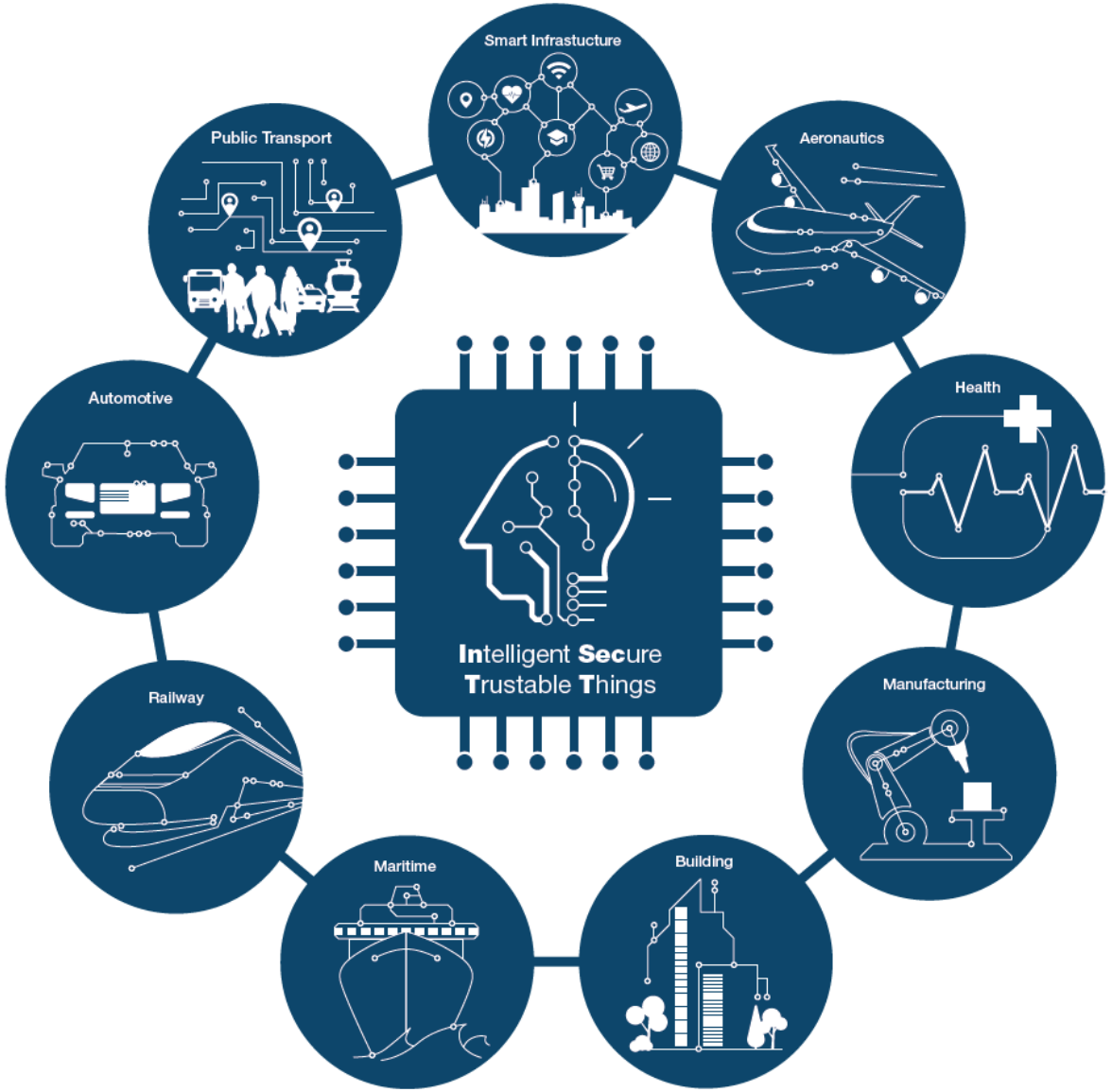
- **Users are challenged to understand and trust** their increasingly complex and smart devices
  - Resulting in **mistrust, usage hesitation and even rejection**
  - → **Ethics and public trust** in deployed AI systems are now receiving **significant international interest**

- **AIoT in InSecTT:**
  - Focus on **robustness and ethics**
  - Ensuring the developed systems are **resilient, secure and reliable**
  - Prioritizing the principles of **explainability and privacy**

- InSecTT is utilizing AI for **two core tasks** in the IoT context:
  - **AI-supported Embedded Processing** for industrial tasks, but **also specific smaller control and monitoring tasks** needed in **industry**
  - **AI enhanced wireless transmission**
    - Improving **reliability** as well as **security** in heterogeneous and even hostile environments



Use Cases / Domains driving the Project



Summary

- InSecTT = Bringing Internet of Things and Artificial Intelligence together

  → **AI + IoT = AIoT** (Artificial Intelligence of Things)

- Building Trust in the AIoT
  - Dependability, security, safety, privacy and trustworthiness
  - Explainable, understandable, "interactable" AI

- Showcased in a broad variety of industrial domains

www.insectt.eu

InSecTT

Intelligent Secure Trustable Things

Thank you!

insectt@v2c2.at

www.insectt.eu

InSecTT has received funding from the ECSEL Joint Undertaking (JU) under grant agreement No 876038. The JU receives support from the European Union's Horizon 2020 research and innovation programme and Austria, Sweden, Spain, Italy, France, Portugal, Ireland, Finland, Slovenia, Poland, Netherlands, Turkey