
SYSGO
EMBEDDING INNOVATIONS
SYSGO: Enabling Compositional Certification

# SYSGO AG

- Founded in 1992
- Leading European Provider for Embedded Operating Systems
- 120 employees in Germany (Mainz, Ulm, Rostock, Hamburg), France (Paris, Lyon), Czech Republic (Prague) and USA (San Jose)
- Part of THALES Group since 11/2012

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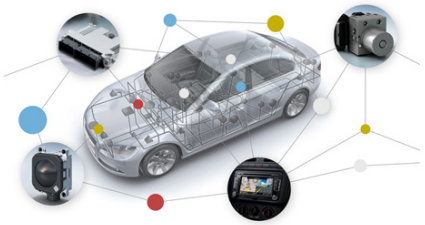
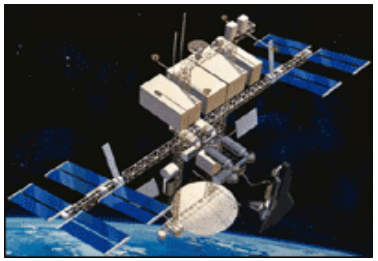
# Mission Statement

European technology leader to provide the **safest and most secure** operating system for connected devices.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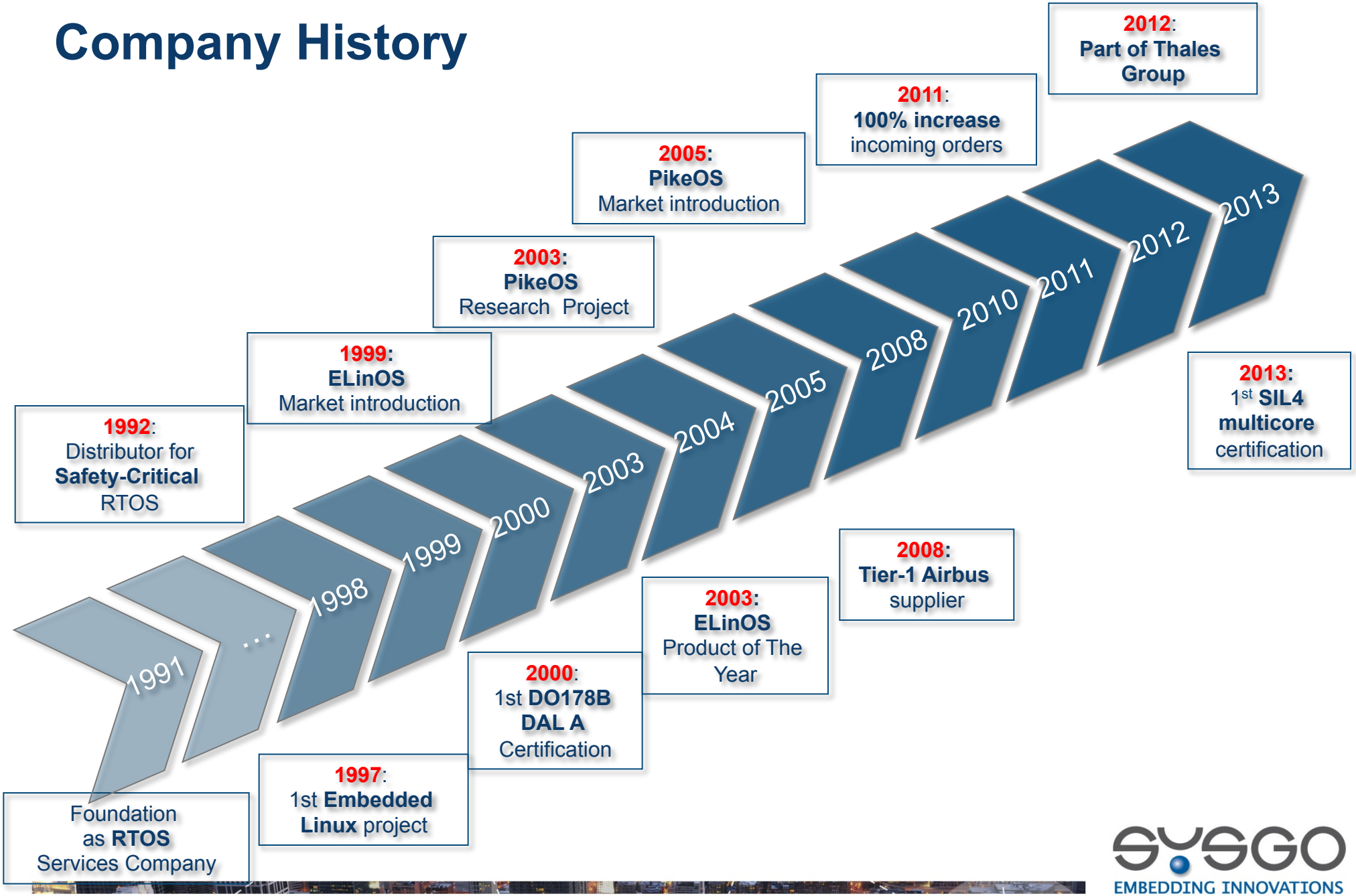
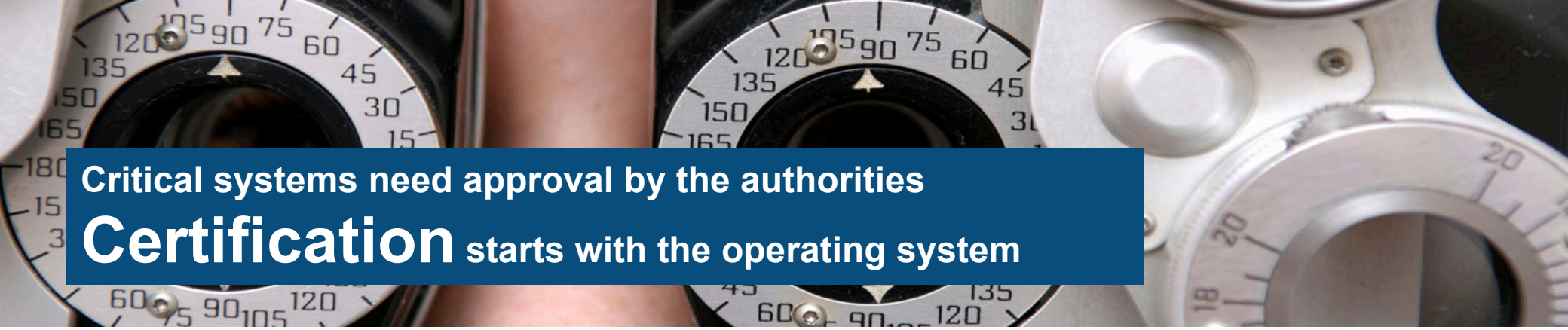
# Focus on critical systems

- **Sicherheit [ˈzɪçɐhaɪ̯t], *noun***
  1. as in „safety“**:** the condition of being safe from undergoing or causing hurt, injury, or loss**;** a device designed to prevent inadvertent or hazardous operation
  2. as in “security”: something that secures or protects; measures taken to guard against espionage or sabotage, crime, attack, or escape

- **Certification for safety & security**
  - DO-178B, EN50128, IEC61508, IEC62443, CC’s EAL, MILS ...

# Company History





## Critical systems need approval by the authorities

# Certification starts with the operating system

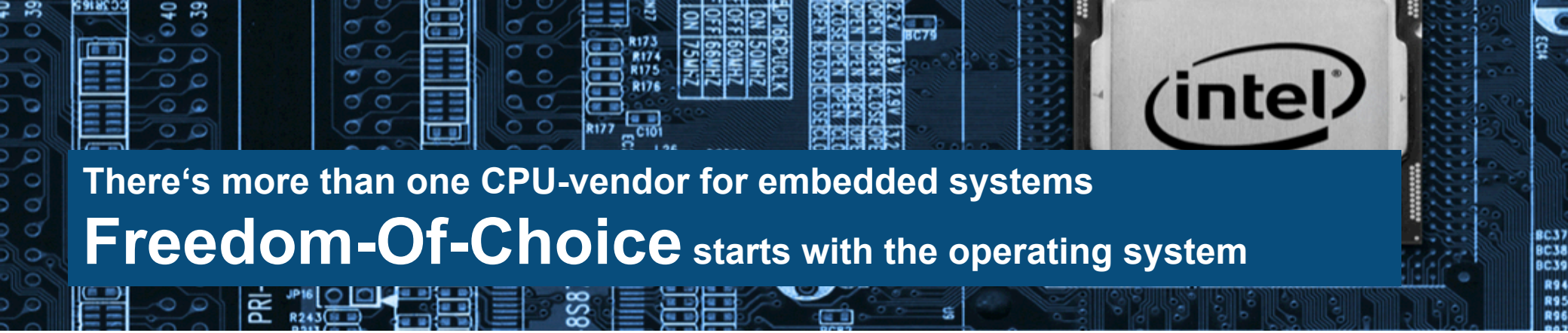
The reliability of a system is more and more determined by software. Consequently software certification is becoming mandatory for many industries.

Avionics started with DO-178, other industries followed with IEC-61508 and right now the automotive industry is implementing its own standard, called ISO-26262.

Security standardization for safety-critical systems **is on-going**, e.g. IEC62443 (part 4) is not yet ready

**A certified operating system is the foundation for critical systems. It provides both, the technology and the certification artifacts ready for approval by the authorities.**

PikeOS
Safe.Secure.European.




## There‘s more than one CPU-vendor for embedded systems

# Freedom-Of-Choice starts with the operating system

In contrast the mono-culture in the PC-market, embedded systems have created a huge eco system of different CPUs.

The Internet-of-Things will even push for more specialization.

**To support that ecosystem, the operating system shall be prepared for variety and not be tied to a single CPU-vendor.**



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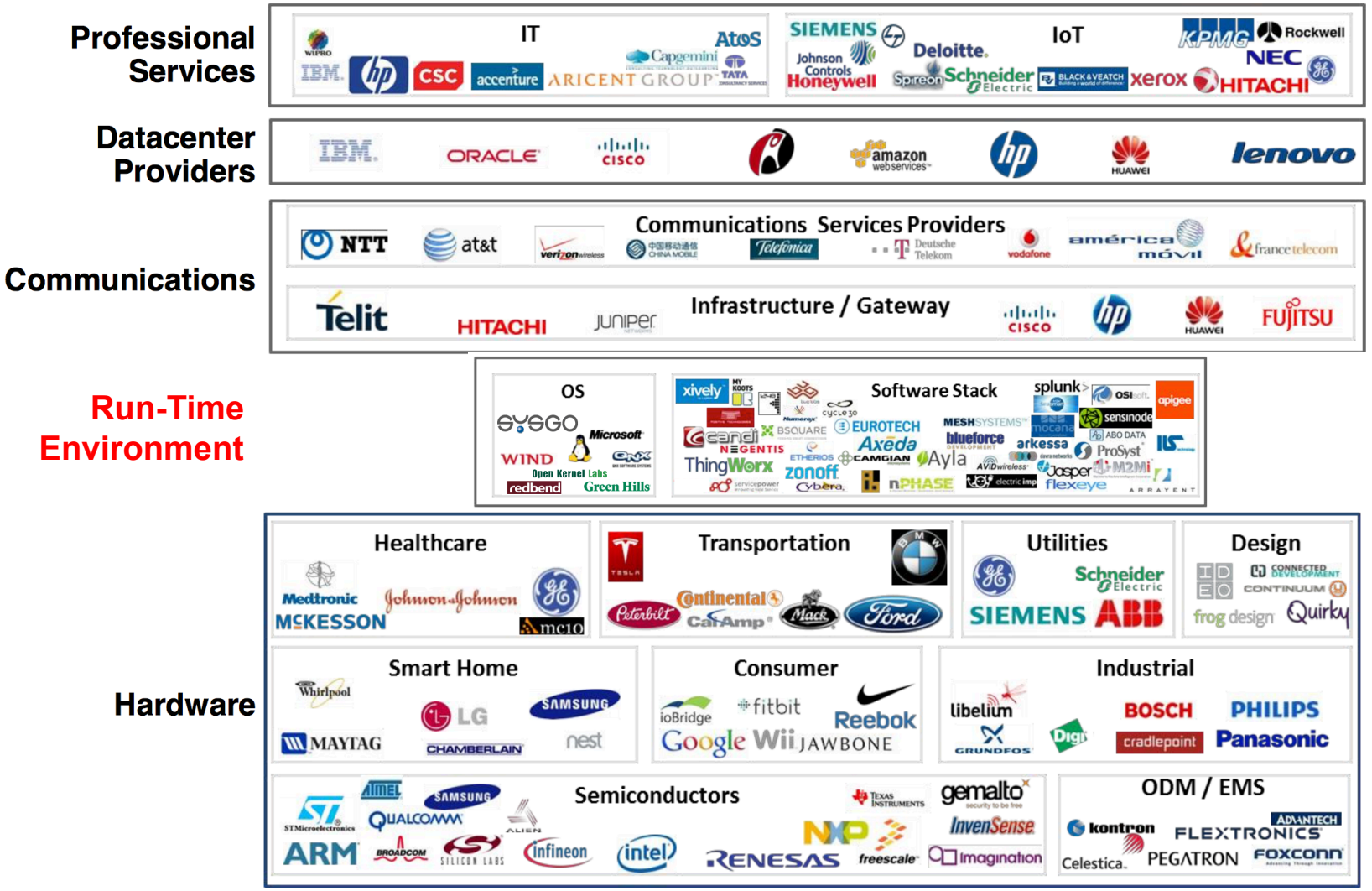
# Where are we in the „Internet Of Things“?



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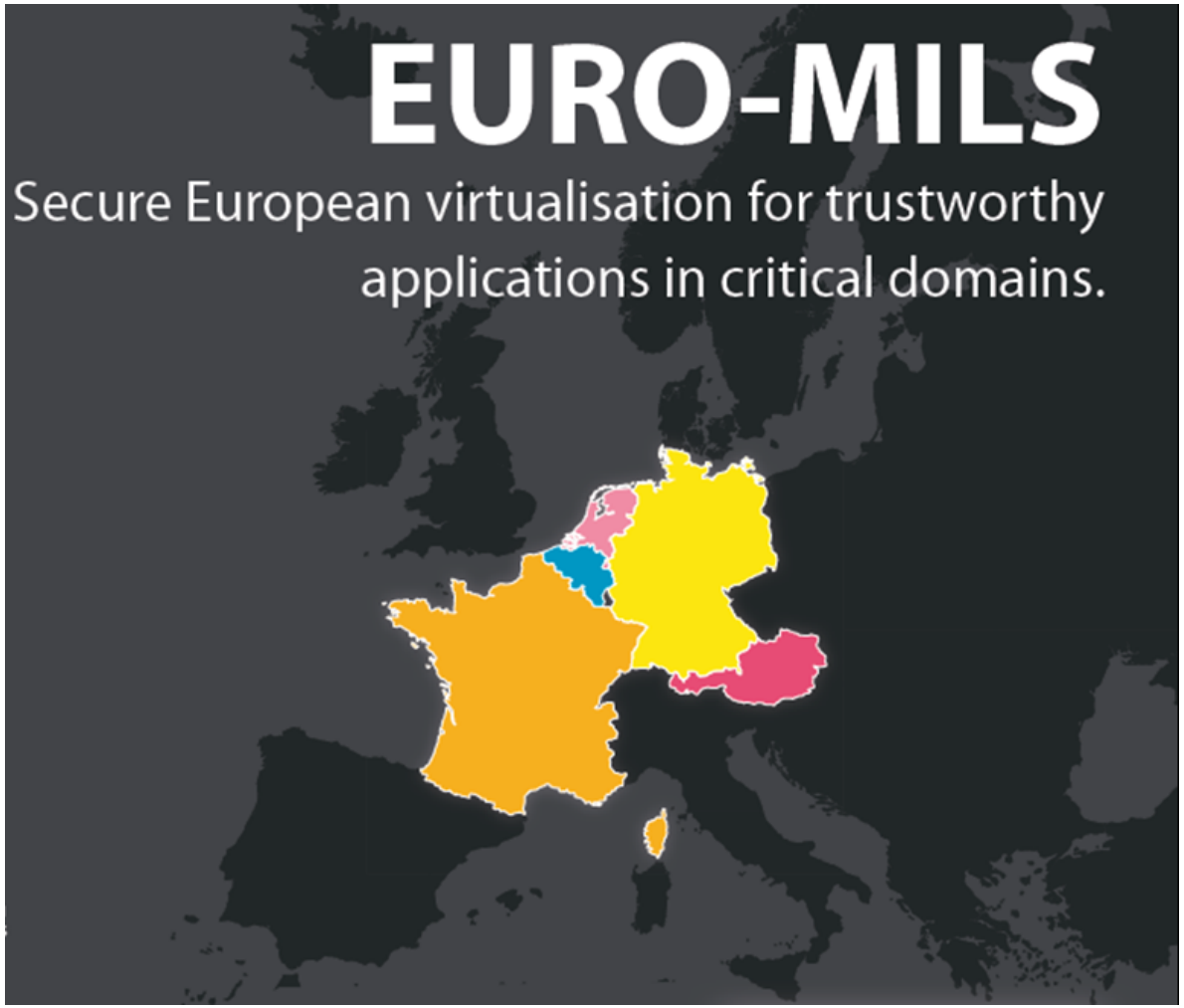
# Related European Projects: EURO-MILS

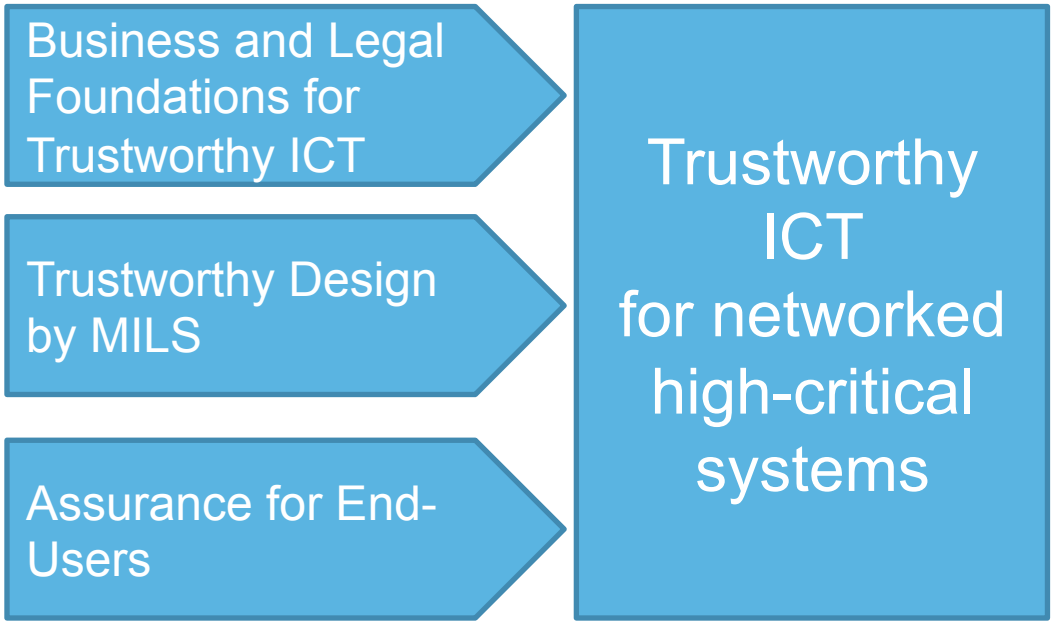


# EURO-MILS Objective and Strategy

- **High-criticality networked cyber-physical systems**
  - Drivers are avionics and automotive
  - EURO-MILS delivers cross-domain solutions

- **Integration and networking requires trustworthy ICT**

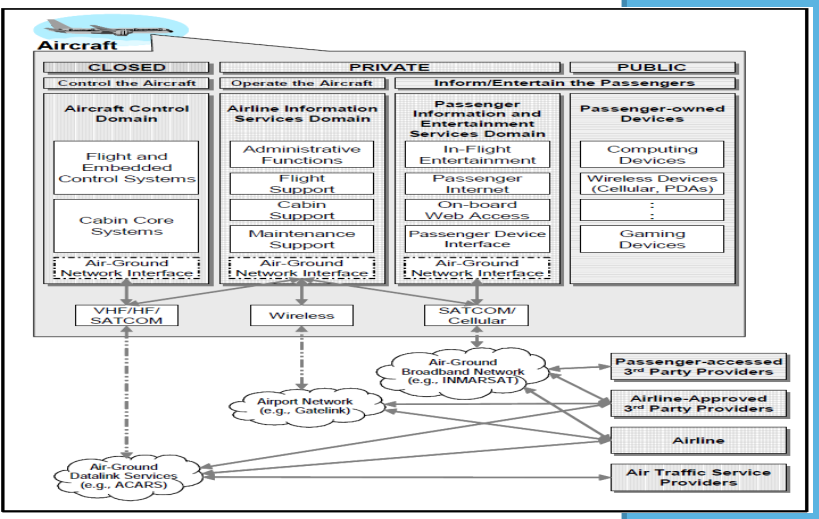
- **MILS –**
  **Multiple Independent Levels of Security**
  - **High-assurance security architecture**
  - **Scalable and affordable security**
  - **Compositional**
    **design, assurance, security**




- **EURO-MILS: First pan-European MILS architecture and certifiable platform**
- **EURO-MILS: Compositional methodology for security evaluation with high-assurance methods**
- **EURO-MILS: Protection Profile for critical ICT component**

# EURO-MILS:
# 2 prototypes on the MILS platform

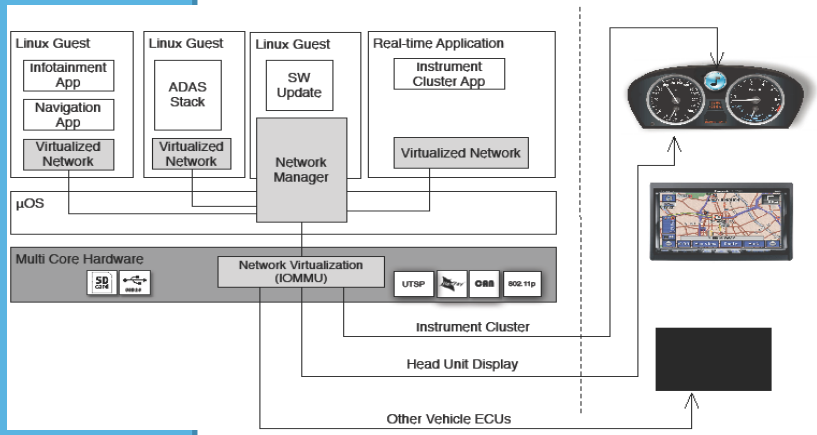
## Avionic




EURO-MILS

Trustworthy ICT
for networked
high-critical systems

## Automotive

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# Selected EURO-MILS Results

- MILS Architectural Template


http://euromils.eu/downloads/2014-EURO-MILS-MILS-Architecture-white-paper.pdf

- MILS OS Protection Profile


http://euromils.eu/downloads/Deliverables/Y2/2015-EURO-MILS-Protection-Profile-White-Paper-V1.2.pdf

- MILS: Business, Legal and Social Acceptance


http://euromils.eu/downloads/Deliverables/Y3/EURO-MILS-D13.2-PU-M36-V1.0.pdf

- Used Formal Modelling


http://afp.sourceforge.net/entries/CISC-Kernel.shtml

- Non-Interfering Composed Security Evaluation


http://euromils.eu/downloads/white_paper_non.pdf

- Addendum to CC CEM for high-assurance


http://euromils.eu/downloads/Deliverables/Y3/EURO-MILS_D33.1_Addendum-to-CEM_PU_M36-V1.0.pdf

- Formal Models


http://euromils.eu/downloads/Deliverables/Y2/2015-EM-UsedFormalMethods-WhitePaper-October2015.pdf

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