The industrial research school RELIANT targets reliable, safe and secure intelligent autonomous Cyber-Physical Systems (CPS) and aims to be instrumental in development and deployment of the latest research results regarding **intelligent autonomous systems** *in Swedish industry. Our partners are found within vehicle solutions in transportation and construction, autonomous and intelligent systems, as well as electronics and software for autonomous systems. The results of RELIANT will support all business sectors where next generation products are assumed to have autonomous functionality with maintained or increased reliability, safety and security.*
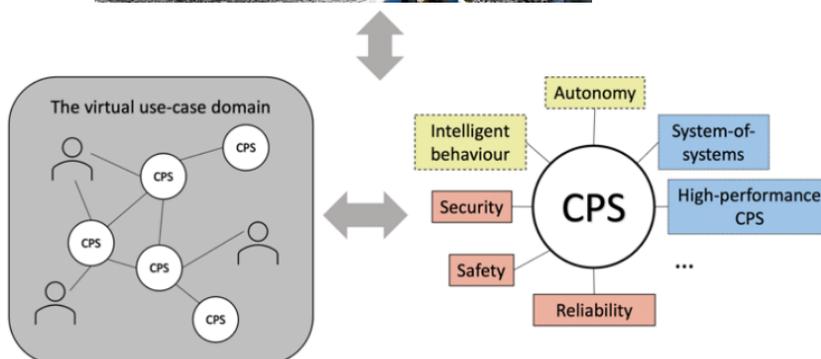
> **CPS are advanced computing systems embedded into a physical system, typically together with sensors and actuators. Some CPS examples are robotic/autonomous systems, modern manufacturing solutions, healthcare monitoring systems, automatic lawn mowers, etc.**

The primary goal of RELIANT is to strengthen the Swedish competitiveness within safety, security and reliability for intelligent autonomous high-performance CPS. Topics covered within the school are system and software engineering of CPS with emphasis on autonomous CPS; resilient, safe and secure CPS; self-configuring, self-healing CPS; autonomous collaborative CPS; dependability in heterogenous and evolving computing environments in CPS, and reliable and secure connectivity for CPS.

Unique for the RELIANT research school is that all PhD-projects will be **oriented around a common virtual use-case** (Figure 1). The common use-case will ensure that the students (and the companies) all contribute to, and learn from, something larger than their individual project.

Figure 1 *(Top)* View of a construction site which represents a generic virtual use-case. *(Bottom left)* A simplified scheme showing possible interactions between autonomous systems/CPS, and humans at such a construction site. *(Bottom right)* Key properties of a CPS as defined in RELIANT.

RELIANT aims to make significant advances in technology and methodology for development of **intelligent autonomous high-performance CPS** and use of such systems in modern industries. The results should be able to use COTS (Commercial-of-The-Shelf) components and development tools, making our results directly applicable to industry. RELIANT will target the conjunction of autonomy and **reliability** in combination with **safety** and **security**, with the goal to integrate all this into CPS. A key aspect of RELIANT is to address such problems through the collective experience facilitated by the virtual use-case concept (Figure 1).

RELIANT is an integral part of the strategic research area of Mälardalen University (MDU) affiliated with the School of Innovation, Design and Engineering (IDT) and comprising three complementary activities:

> 1) ***Research***, organized in the form of PhD research projects in real industrial contexts. The PhD students will work in close cooperation with senior researchers at MDU, industrial specialists, and international researchers and experts.

> 2) ***Networking activities***, with the goal of establishing strong networks between PhD students, industrial specialists and managers, as well as with prominent international and national researchers.

> 3) ***Courses***, seminars, and activities related to interdisciplinary competence, especially targeting engineering of the next generation of *reliable, safe and secure intelligent autonomous CPS*.

RELIANT spins off, and complements, the ongoing KKS research profile DPAC (http://www.es.mdh.se/dpac/) at MDU. In RELIANT we further extend the network of participating companies in the DPAC ecosystem, and we draw upon the existing research results we gained on dependable and safe CPS.

CONTACT

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