

SICS Center for Networked Systems



SICS Center for
Networked Systems

SICS Center for Networked Systems

The Institute Excellence Center conducts, integrates, and exploits research in the area of networked systems with a new, multidisciplinary approach. We combine methods and results from three research areas; networking, distributed systems, and intelligent systems.

The center supports an environment, a creative meeting place, where SICS and the participating industry and university partners collaborate closely and effectively. We define and carry out projects together. The center actively promotes personnel mobility between the center partners, and supports competence development of the center partners. The center builds on and further enhances SICS' international research reputation and constitutes a platform which increases our ability to participate in international research programs.

The center is guided by the vision of [The Reliable Internet](#), a secure and reliable infrastructure for industry and society.

Internet technology of today has fundamental deficiencies concerning security, reliability, predictability and manageability. These deficiencies become severe when we start to depend on the network for critical applications, both for business and for government services including emergency and rescue services.

We take a [networked systems approach](#), comprising the complete system view from user expectations to the underlying network technology, in order to address the needs of critical applications. Examples of such networked systems are

- mobile telecommunications systems
- industrial automation systems
- command and control systems for emergency services.

Challenges

Increased heterogeneity of devices and physical networks. Both wired and wireless networks vary greatly in bandwidth, latency, and connectivity. Networks connect sensors and embedded devices as well as both high and low-end machines.



Increased complexity in terms of size and interaction patterns challenges network management methods.

Mobility and dynamicity. Users and sites will no longer have fixed addresses. Mobile users and new application and usage patterns demand great dynamicity.

Threats. Networks are under increasing attack by criminal, malicious or just anti-social elements (i.e., spam).

Networked applications. Proliferation of grid and peer-to-peer applications and increasing use of the Internet for content distribution.

Research Areas

- Networking of information — taking an information-centric approach to designing the network of the future.
- Networked embedded systems — creating the programming and communication platform needed to realize the Internet of Things.
- Self-management of networks and systems — developing automated methods for, e.g., resource management, and fault detection and analysis.
- Security for systems and platforms — making secure computing platforms efficient to initialize, customise and deploy.

SICS Center for Networked Systems is an Institute Excellence Centre, started in 2007 with a 6 year funding from VINNOVA, The Knowledge Foundation and Swedish Foundation for Strategic Research.

Industry partners in the center are ABB, Ericsson, Peerialism, Saab, TeliaSonera, T2 Data, and Vendolocus Development. Academic partners are KTH, Mälardalens högskola, and Uppsala University.

Contact

Center Director: Bengt Ahlgren, bengta@sics.se

Center Coordinator: Maria Holm, mh@sics.se

- Networking of information: Björn Grönvall, bg@sics.se
- Networked embedded systems: Thiemo Voigt, thiemo@sics.se
- Self-management of networks and systems: Daniel Gillblad, dgi@sics.se
- Security for systems and platforms: Christian Gehrman, chrisg@sics.se

www.sics.se/cns