Research projects in Aalto University (former TKK)

- PraNA: ProgrAmmable Network & Analytics 2016-2018
  Funded by Tekes, PraNA aims to open 5G verticals to creators of value added services such as Quality of Experience (QoE) and security by enabling them to intelligently program the 5G infrastructure. The PraNA project provides a programmable 5G infrastructure for digital businesses to use the underlying network as a service without being constrained by its heterogeneity. The PraNA project allows the underlying network infrastructure to be programmed in real-time by in-network elastic data analytics engines. These elastic engines (i.e. scalable and resource-efficient, located at the edge and in the cloud) opens another dimension of services to digital businesses.
- Image-based indoor product navigation system 2016-2017
  Funded by Tekes, this is a project that aims to develop new knowledge and business from research area. Our solution includes cloud-based indoor mapping, positioning and navigation services, as well as mobile apps for end users to access the services. Customers of the retailers can use our mobile apps for finding shops and products. We sell our customers, e.g., retail merchants, product positioning map with real-time user location, identification and preference information. This would enable a new, highly personalized shopping experience increasing sales volume and customer satisfaction. Meanwhile, customers of retailers save money from customized product information and discount offers.
- Mobile Crowdsensing in Ubiquitous Cloud Environment (CUBIC) 2014-2017
  Funded by the Academy of Finland, this project Develop new methodology and techniques for scalable mobile crowdsensing and intelligent data analysis of large-scale heterogeneous datasets in ubiquitous cloud environment, combine expertise of two mobile research groups, provide modular re-usable instruments for distributed mobile computing systems, evaluate the solutions through prototypes and public deployment, publish research results in high-quality international journals and conferences, and increase competence in Europe in theoretical and experimental areas of mobile computing.
- Internet of Things ICT SHOK (IoT SHOK) 2012-2015
  The Internet of Things holds many promises: it will create a plethora of innovative applications and services, which enhance quality of life and reduce inequalities whilst providing new revenue opportunities for a host of enterprising businesses. However, first and foremost the IoT is a technological revolution, which nature can be seen from three different perspectives: the telecommunications, the Web, and the cyber-physical interaction.
- Green ICT 2012-2014
  Funded by Aalto University, School of Science, the overarching goal of the Green-ICT research project within the Aalto University Energy Science Initiative (ESCI) is to find innovative techno-socioeconomic solutions to bridge social media and energy efficiency, which could lead to a major energy and environmental impact. This will require covering the whole innovation chain from the theory of basic ICT to

social behavior of users, business models and linking to energy systems.

- Energy-Optimized Mobile Computing (eMo) 2011-2014
  Funnded by the Academy of Finland, this project builds on our experiences gathered over the last couple of years in research on energy efficiency in mobile communication, especially in the context of the Future Internet SHOK programme. We have made significant amount of contribution in modeling energy consumption in mobile devices and designing and evaluating specific solutions to save energy. In this new project we plan to provide models for understanding and evaluating the energy consumption of existing protocols and applications in mobile devices and access networks, and based on these models develop new solutions for mobile computing that consume radically less energy than the currently used ones.
- Massive Scale Machine-to-Machine Service (Mammoth) 2011-2013
  MAMMoTH project focuses on very large scale machine-to-machine (M2M) network. The main goals include pushing the scale of the current M2M network to its limit, meaning to the magnitude of tens of millions of nodes or even more.
- Cloud Software program (ICT SHOK) 2010-2013
  The Cloud Software program aims to improve the competitive position of Finnish software intensive industry in global markets. According to the 2009 survey most significant factors of competitiveness are: operational efficiency, user experience, web software, open systems, security engineering and sustainable development**.** Cloud software ties these factors together as software increasingly moves to the web. Cloud Software program especially aims to pioneer in building new cloud business models, lean software enterprise model and open cloud software infrastructure.
- Future Internet ICT SHOK (FI SHOK) 2008-2012
  The goal of the Future Internet programme is to bring together the key research resources to develop future Internet networking technologies and to create new global ICT based business ecosystems. The programme is a part of the ICT cluster of the Finnish Strategic Centres for Science, Technology and Innovation (ICT SHOK).
- OtaSizzle TKK MIDE project (OtaSizzle) 2008-2011
  The objective of the project is to create experimental facilities for developing and studying innovative mobile social media applications in the campus. We aim to reach larger user communities for test periods longer than typically possible in projects. This requires a scalable experimental platform instrumented for collecting experimental data for multidisciplinary research of mobile service innovations.
- Intelligent Structural Health Monitoring System TKK MIDE (ISMO) 2008-2011
  Structural health monitoring is a new approach to provide diagnosis of the structure's condition during its life using the sensor data. An intelligent monitoring system with wireless sensor networks can provide reliable information about the structure's condition, replace visual inspections, provide ease of installation and configurability, save costs, and ultimately save people's lives. There is a large number of applications including bridges, buildings, wind power turbines, ships,

masts, spacecraft, forest harvesters, lift trucks, reach stackers, various crane systems, pipe systems, and amusement park rides.

- Flexible Services EDEN ICT SHOK (EDEN FS SHOK) 2008-2010
  The goal of the Flexible Services programme is to bridge between business, users, social and economical needs, and computing and communications support in a way that enables creation of value services, instead of just services. The programme is a part of the ICT cluster of the Finnish Strategic Centres for Science, Technology and Innovation (ICT SHOK).
- Nordic HIP 2007-2010
  The NordicHIP project involves issues in both areas of Security and Internet communication services. The identities provided by HIP are essential to support trust and authentication between hosts.
- Infrastructure for Host Identity Protocol II (InfraHIP II) 2007-2009
- Trustworthy Internet 2006-2008
- Web Services in Ad-Hoc and Mobile Infrastructure (WeSAHMI) 2006-2007
- Interconnected Broadband Home Networks (InHoNets) 2006-2007
- Infrastructure for Host Identity Protocol (InfraHIP) 2004-2007
- Seamless Service Interworking in Heterogeneous Mobile and Ad-hoc Networks (SESSI) 2004-2005
- Internet Protocol Datacasting (INDICA) 2004-2005