



**Smarter  
Elektroniksystem**  
ELECTRONIC COMPONENTS & SYSTEMS

# Granted Projects 2016

**Smarter  
Electronic Systems**

ELECTRONIC COMPONENTS & SYSTEMS

A strategic innovation program to increase competitiveness and growth in Swedish industry

# Granted Projects 2016

## **The call for feasibility studies, which closed on 1 Sep 2016, gave the following results:**

A total of 18 applications were granted out of the 37 that came in with funds totaling SEK 5.6 million in support. A total of SEK 11.7 million was applied for. Read more about all approved projects here.

## **The call for research and innovation projects that closed on 3 March 2016 yielded the following results:**

Within the Strategic Innovation Program Smarter Electronics Systems, 11 projects are granted a total of 33 million in support. These projects have total budgets of SEK 71.5 million. Read more about everyone granted projects here.

## **The call for research and innovation projects that closed on 3 March 2016 yielded the following results:**

Within the Strategic Innovation Program Smarter Electronics Systems, 11 projects are granted a total of 33 million in support. These projects have total budgets of SEK 71.5 million.

## **The following projects have been granted funding:**

### **Millimeter-wave backhaul with over 100 Gbit / s - drive smart antennas to their peak**

Project budget SEK 8,181,000, grant awarded SEK 3,988,000

Participants in the project: Chalmers University of Technology, Ericsson, Qamcom

Objectives of the project: "We intend to demonstrate transmission speeds of at least 100 Gbits / s, and a spectral efficiency of at least 100 bits / s / Hz, in an environment typical of the wireless backhaul networks of the future.

[Read more about the project here.](#)

**Final report:** [Vinnovas portal](#)

# Granted Projects 2016

## **Large area sensor for temperature monitoring - for detecting lining wear and process optimization**

Project budget SEK 6,492,998, grant awarded SEK 3,030,000

Participants in the project: Acreo Swedish ICT, ABB, Agrells Group AB, Sandvik Materials, Fiberson AB, Höganäs, Borås University, Swerea, Södra Cell

Objectives of the project: "To greatly increase the maturity of a new technology, large area temperature sensor for lining monitoring, and evaluate it in equipment at the industry where they see great needs.

[Read more about the project here.](#)

**Final report:** [Vinnovas portal](#)

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## **SEEN – Smart Eye-tracking Enabled Networking**

Project budget SEK 8,380,000, grant awarded SEK 3,970,000

Participants in the project: KTH, Tobii AB, Ericsson

Goals for the project: "Using eye-tracking SEEN project will optimize data-intensive products on 5G, this will boost user-experience on mobile platforms and benefit Swedish mobile industry.

[Read more about the project here.](#)

**Final report:** [Vinnovas portal](#) and a report here [ericsson.com](#)

# Granted Projects 2016

## **60GHz RF beam-steering solution with phased array antenna for Small Cell backhaul and wireless access points**

Project budget SEK 11,891,880, grant awarded SEK 4,000,000

Participants in the project: Sivers IMA AB, Uppsala University

Objectives of the project: "Develop a 60 GHz phased array antenna with beam-steering for wireless backhaul. This solution can also be used in WiFi 802.11ad access points.

[Read more about the project here.](#)

**Final report:** [Vinnovas portal](#) and articles [ETN](#), [Press release 180611](#)

**Project follow-up 2020:** [Pressrelease "Sivers IMA lanserar unik 5G modul" 200930](#)  
[Pressrelease "Sivers IMA genomför en riktad nyemission"](#)

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## **Humidity sensor in superabsorbent wound dressings**

Project budget SEK 4,878,000, grant awarded SEK 2,440,000

Participants in the project: ABSORBETS AB, Acreo Swedish ICT

Objectives for the project: "To develop a superabsorbent dressing with a built-in moisture sensor and to do a first patient study with this dressing.

[Read more about the project here.](#)

**Final report:** [Vinnovas portal](#) och [video](#)

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## **Prototype system for massive MIMO in the new frequency bands for 5G**

Project budget SEK 4,252,000, grant awarded SEK 2,122,000

Participants in the project: Lund University, Sony Mobile

Goals for the project: "The goal of the project is to build a complete and flexible test bed for solid-MIMO-based 5G at 30 GHz carrier frequency. [...]"

[Read more about the project here.](#)

**Final report:** [Vinnovas portal](#)

# Granted Projects 2016

## **SPECT - method and equipment for protection against ionizing radiation**

Project budget SEK 5,772,000, grant awarded SEK 2,886,000

Participants in the project: Mid Sweden University, Gammadata Instrument AB, Note Norrtelje, LKAB, the Swedish Radiation Protection Authority

Objectives of the project:

- A measurement method, with associated lab demonstrator for identification of radioactive sources
- A plan for how a manufacturable product is to be realized, technically and financially

[Read more about the project here.](#)

**Final report:** [Vinnovas portal](#)

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## **Reliable cooled microwave amplifiers**

Project budget SEK 6,016,000, granted grant SEK 3,000,000

Participants in the project: Chalmers University of Technology, Low Noise Factory AB

Goals for the project: "Unique reliable cooled low-noise microwave amplifiers in order to make the Swedish electronics industry attractive in a global market for Big Science

[Read more about the project here.](#)

**Final report:** [Vinnovas portal](#)

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## **Integrated WLAN power amplifier with high efficiency and high linearity in 28 nm CMOS**

Project budget SEK 8,215,000, grant awarded SEK 3,959,000

Participants in the project: Linköping University, Catena Wireless Electronics AB, Sweden Connectivity

Objectives of the project: "Design of a high-efficiency and linear power amplifier (PA) in 28 nm CMOS for the new standard 802.11ac WiFi according to a new concept related to Envelope Tracking (ET).

[Read more about the project.](#)

**Final report:** [Vinnovas portal](#)

# Granted Projects 2016

## Smarter melt

Project budget SEK 1,500,000, grant awarded SEK 700,000

Participants in the project: Uppsala University, Acreo Swedish ICT, Agells Group AB, AB Sandvik

Objectives for the project: “[...] When the project is completed, the information must have been disseminated within the consortium so that its industrial parties have a good idea of what they should invest in to enable the monitoring of steel melts in Sweden to bypass the state of the art. There must be clear conclusions about how further collaboration can take place, how the already developed sensor concepts can be passed on to products, which new sensors with similar concepts but other measurement parameters should be studied, and how significant results should be protected.

[Read more about the project here.](#)

**Final report:** [Vinnovas portal](#)

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## Sound enhancement for voice control of smart speakers

Project budget SEK 5,918,000, grant awarded SEK 2,959,000

Participants in the project: Limes Audio AB, KTH

Objectives of the project: “To develop a world-unique solution for pre-processing microphone signal (s), with the aim of removing background noise and reverberation, for voice control of smart speakers.”

[Read more about the project here.](#)

Final report: Missing. The project was discontinued when Limes Audio was acquired by Google

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A total of 18 applications were granted out of the 37 that came in with funds totaling SEK 5.6 million in support. A total of SEK 11.7 million was applied for.

# Granted Projects 2016

**The following projects have been granted funding:**

## **Towards a wireless intensive care unit**

Project budget SEK 937,400, grant SEK 400,000

Coordinator: Kristian Soltesz, Lund University, Department of Control Engineering

Project partners: Hedgehog Life Science

Purpose and goals of the project: "The project's goal is to demonstrate the benefits of wireless sensors in intensive care. This is done by developing a prototype hardware for continuous diuresis measurement.

[Read more about the project here.](#)

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## **Smart sensors for mobile collection of atmospheric parameters**

Project budget SEK 795,300, granted grant SEK 397,650

Coordinator: Anders Petersson, SPARV EMBEDDED AB

Project partners: Uppsala University

Purpose and goals of the project: "Demonstrate the benefits of smart sensors and a general sensor protocol adapted to map atmospheric measurements with drones.

[Read more about the project here.](#)

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## **Integration of image analysis and artificial intelligence in alcohol measurement systems**

Project budget SEK 645,000, granted grant SEK 300,417

Coordinator: Bertil Hök, Hök Instrument AB

Purpose and goals of the project: "The project goal is to demonstrate how the integration of advanced image processing and artificial intelligence in alcohol measurement systems can be realized in a future R & D project.

[Read more about the project here.](#)

# Granted Projects 2016

## **Towards the Development of Smarter OTA Characterization of 5G Antenna Systems**

Project budget SEK 800,000, granted grant SEK 400,000

Coordinator: Andrés Alayón Glasunov, CHALMERS TECHNICAL UNIVERSITY STOCK COMPANY, Department of Signals and Systems

Project partners: Ericsson

Purpose and goals of the project: "To evaluate new promising technologies and concepts for testing base stations and large group antennas over the air communication interface from a system perspective. To promote new industrial business opportunities for the Swedish telecom industry by conducting relevant research in standardized testing of antenna solutions and hardware at the Department of Antenna Systems at Chalmers. In the subsequent projects, to create a full-fledged OTA (over-the-air) test platform that can bring together several Swedish actors to collaborate towards common goals for mutual benefit.

[Read more about the project here.](#)

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## **The radio of the future for the Internet of Things**

Project budget SEK 611,592, grant awarded SEK 305,000

Coordinator: Magnus Midholt, Mistbase AB, Ideon Science Park

Project partners: Lund University

Purpose and goals of the project: "The project is a feasibility study to evaluate different radio architectures for extremely power-efficient transceivers for the so-called Narrow band Internet of Things (NB-IoT) standard. Cost-effective radio architectures that are particularly suitable in terms of power consumption and interference sensitivity will be studied. Too high a degree of integration, an integration of the power amplifier is planned, which places demands on being able to handle thermal problems on the chip. A competitive product also requires minimization of the silicon surface and the canister.

[Read more about the project here.](#)



# Granted Projects 2016

## **mm-Wave UWB Smart Group Antenna In Chipform with New Capped Bowtie for 5G communication systems and future smart systems**

Project budget SEK 797,000, granted grant SEK 350,000

Coordinator: Jian Yang, CHALMERS TECHNICAL UNIVERSITY STOCK COMPANY, Department of Signals and Systems

Project partners: Gapwaves Ab & Leax Archivist Telecom AB

Purpose and goals of the project: "Aiming for more than 10 Gbps data transfer capacity in 5G communication systems and other smart systems, smart millimeter-wave (MMW) wireless systems are inevitable. The purpose of this project is a feasibility study of an MMW UWB on-chip array architecture - connected leveled Bowtie array over 40-160 GHz, to open up the possibility of implementing massive MIMO systems on micro base stations and mobile end-user devices. The goal is to design, manufacture and verify a new on-chip connected leveled Bowtie  $4 \times 4$  group antenna over 40-160 GHz in preparation for the full proposal in March 2017.

[Read more about the project here.](#)

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## **Photonics in power electronics for more efficient power grids and smarter electricity distribution**

Project budget SEK 770,000, granted grant SEK 380,000

Coordinator: Erik Zetterlund, Acreo Swedish ICT AB, Kista

Project partners: ABB AB, Swerea SICOMP AB

Purpose and goals of the project: "There are currently no opportunities to continuously monitor operating conditions inside high-voltage (HV) components. With fiber optic measurement technology integrated in HV components, conditions are created for monitoring, controlling and effectively controlling electricity distribution and for utilizing the electricity networks in an optimal way. In the full-scale R&D project, this technology is intended to be further developed towards a commercial product. The result goal for this project is to verify that the technology works in HV and build the necessary consortium needed for a successful full-scale project.

[Read more about the project here.](#)

# Granted Projects 2016

## **Coexisting Radar**

Project budget SEK 442,114, grant awarded SEK 173,933

Coordinator: Emil Nilsson, Halmstad University, Academy of Information Technology

Project partners: Chalmers University of Technology, Linköping University, Lund University, SAAB, Saferadar Research AB

Purpose and goals for the project: "The goal of the project is to create a project plan and an application for Coexisting Radar for Vinnova's call within Smarter Electronics Systems. We will examine coexisting radar systems, waveforms, hardware, and applications. We will also spread knowledge about radar technology to universities and colleges, and help Swedish industry to become competitive in this technology area.

[Read more about the project here.](#)

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## **Adaptive IoT resource management based on integrated monitoring of integrated circuits**

Project budget SEK 251,140, granted grant SEK 125,000

Coordinator: Erik Larsson, Lund University, Department of Electrical and Information Technology

Project partners: Ericsson and Ericsson Research

Aim and objectives of the project: "The project aims to create tools to ensure secure and reliable communication with sensors in IoT applications and the aim of the project is to demonstrate the propagation of subsystem status in integrated circuits to system-level resource management algorithms.

[Read more about the project here.](#)

# Granted Projects 2016

## **Compact Millimeter-scale construction method for the Communication and Sensor System of the Future**

Project budget SEK 500,000, granted grant SEK 250,000

Coordinator: Christian Fager, CHALMERS TECHNICAL UNIVERSITY STOCK COMPANY, Department of Microtechnology and Nanoscience

Project partners: Ericsson & SAAB

Purpose and goals for the project: "Ericsson, SAAB and Chalmers will in this feasibility study jointly investigate the conditions for a new construction method for the future multi-antenna etc. wave system. The proposed construction method enables a compact and high-performance integration of gallium nitride, silicon CMOS and ball-grid array enclosure. This opens up completely new possibilities for realizing advanced millimeter wave systems that combine high power, high energy efficiency, high functionality and low cost with small size.

[Read more about the project here.](#)

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## **my-IMI**

Project budget SEK 1,519,000, granted grant SEK 400,000

Coordinator: Lars Asplund, Asplund Data AB

Project partners: Unibap AB

Purpose and goals for the project: "The goal of the project is to produce a demonstrator that has the same size as the future product my-IMI and with the same functionality, but with an external calculation unit. The project aims to show the technology's durability and usability for applications such as the virtual keyboard - a company is currently developing a completely new type of PC, where my-IMI will be used. Other applications that will be shown are based on gesture control.

[Read more about the project here.](#)

# Granted Projects 2016

## **Metallization of AM-made ceramic electronic components**

Project budget SEK 800,000, granted grant SEK 360,000

Coordinator: Ola Lyckfeldt, Swerea IVF AB

Project partners: Mälardalen University, Omnisys Instruments AB, POR Microtrans AB, MA Kapslingsteknik AB

Purpose and goals of the project: "The project intends to inventory and initially test possible methods for complete and selective metallization of ceramic 3D components for electronic applications where the advantages of AM technology are utilized in terms of design and dimensional control. The aim is to identify the metallization method or methods that can be demonstrated through consideration and verification experiments to have a potential for further development in a future major project.

[Read more about the project here.](#)

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## **Robust, Modular and Scalable Platform for Next Generation Industrial Radio Control and IoT**

Project budget SEK 800,000, granted grant SEK 400,000

Coordinator: Peter Enmalm, ÅKERSTRÖMS BJÖRBO AKTIEBOLAG

Purpose and goals of the project: "The purpose of this feasibility study is to investigate the possibilities for Åkerströms to develop a product platform for the industrial radio control of the future which not only meets the harsh environmental and interference requirements of radio in industrial environments but is also scalable modular and adapted to integrate together with both sensors and control of industrial processes. The aim of the study is to study industrial requirements, needs and technologies available to develop the next generation product platform for industrial radio control and digitization.

[Read more about the project here.](#)

# Granted Projects 2016

## **Infrared electro-optical integration**

Project budget SEK 400,000, granted grant SEK 200,000

Coordinator: Cristina Rusu, ACREO SWEDISH ICT AB, Gothenburg

Project partners: SenseAir AB

Purpose and goals of the project: "The specific goals of that research study are to conduct a feasibility study in a strategic area for SenseAir: needs and future development in MEMS technology (micromechanics) that is relevant to sensors, e.g. integration and encapsulation aspects. Decisive questions for accurate, reliable and cost-effective MEMS enclosure are still unanswered. Innovative concepts and technologies are needed for the integration of electro-optical components for a significant increase in the measurement resolution in the next generation of gas sensors based on NDIR technology.

[Read more about the project here.](#)

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## **Advanced distributed fiber optic measurement technology on aircraft**

Project budget SEK 600,000, granted grant SEK 300,000

Coordinator: Ingemar Söderquist, SAAB AB

Project partners: Acreo, KTH

Purpose and goals of the project: "To evaluate the possibilities of using optical fiber sensors, embedded in aircraft wings, for advanced 2D / 3D mapping of air pressure around the wing and vibrations in the construction. This should be seen as a feasibility study and risk reduction before a major development program that is intended to begin in 2017, within Vinnova's program for Smarter Electronics Systems. The long-term goal is to develop sensor technology for aviation technology, to increase performance and reduce environmental impact.

[Read more about the project here.](#)

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## **New technology for measuring rock movements for the benefit of Swedish industry and society**

Project budget SEK 519,650, grant awarded SEK 258,000

Coordinator: Linda Sharp, MECHANICAL ENGINEERING IN OSKARSHAMN AKTIEBOLAG

Project partners: Svensk Kärnbränslehantering AB (SKB), Acreo Swedish ICT AB, Oskarshamn Municipality (Strategy and Business Unit), SKB Näringslivsutveckling AB

# Granted Projects 2016

Purpose and goals for the project: "In the project, development work will take place with the goal of achieving productification and commercialization of an FBG-based sensor system for measuring rock movements.

The project aims to further develop, test and evaluate the prototype to ensure and verify that the instrument meets the potential end customer's requirements, as well as to prepare and plan a subsequent FOI project that includes field tests in SKB's underground rock laboratory, Äspö HRL. The goal is that the project has laid a good foundation for productification and future commercialization of the technology.

[Read more about the project here.](#)

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## **Innovative combination of established fiber sensor technology creates new opportunities**

Project budget SEK 800,000, granted grant SEK 400,000

Coordinator: Magnus Lindblom, Acreo Swedish ICT AB, Kista

Project partners: SKF

Purpose and goals for the project: "The project's idea is to investigate the possibilities of combining two different fiber optic sensor technologies, FBG technology and distributed fiber sensor technology to utilize the strengths of each technology. Specifically, it must be investigated whether the combination makes it possible: 1) Increased flexibility by measuring at points that were not known to be interesting when the sensor was mounted. 2) Overall monitoring of large lengths / surfaces simultaneously with high accuracy at selected points. 3) Combination of the different signals for more informative data.

[Read more about the project here.](#)

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## **New methods for precision spectroscopy on gases**

Project budget SEK 420,000, granted grant SEK 200,000

Coordinator: Ingemar Petermann, ACREO SWEDISH ICT AB

Project partners: National Forensic Center, Serstech AB, Nyfors Teknologi AB

Purpose and goals for the project: "The project's idea is to investigate the possibilities of combining two different fiber optic sensor technologies, FBG technology and distributed fiber sensor technology to utilize the strengths of each technology. Specifically, it must be investigated whether the combination makes it possible: 1) Increased flexibility by measuring at points that were not known to be interesting when the sensor was mounted. 2) Overall monitoring of large lengths / surfaces simultaneously with high accuracy at selected points. 3) Combination of the different signals for more informative data."

[Read more about the project here.](#)