

ISG

THE ISRAELI SMART GRID CONSORTIUM



OCS-Office of the
Chief Scientist
MINISTRY OF INDUSTRY, TRADE & LABOR



ABOUT MAGNET



The MAGNET Program, in the Office of the Chief Scientist of the Ministry of Industry, Trade & Labor, sponsors innovative generic industry-oriented technologies to strengthen the country's technological expertise and enhance competitiveness. The MAGNET Program, in the Office of the Chief Scientist of the Ministry of Industry, Trade & Labor, sponsors innovative generic industry-oriented technologies to strengthen the country's technological expertise and enhance competitiveness. MAGNET operates in 4 main tracks. The common denominator collaboration is a win-win proposition. Both industrial companies and academic research groups are better able to continue developing new and innovative products through synergetic collaboration than if it each worked alone. Any company with a forward vision can find a framework that can promote its needs and it is welcome to participate in the MAGNET activities. MAGNET welcomes new proposals and looks forward to providing you with assistance in establishing a new operation within its framework or by enabling you to join an existing activity.

The MAGNET Environment

MAGNET operates alongside the traditional Research Committee that deals with product development and activities that encourage entrepreneurs to establish new companies. MAGNET's main goal is to allow companies to develop technologies in addition to all the other activities of the company.

Incentives

The program by definition is high risk and the ROI is only obtained after a long period of time. Therefore the grant rate to an industrial company is up to 66% of the total recognized expenses and no royalties are expected to be paid back. Academy partners are granted 66%, 80% or 90% according to the chosen track, with the balance borne by the industrial companies.

R&D Collaboration

MAGNET activities are based on collaboration between companies and academic research groups organized in consortia with several members or as a dual cooperation between one academic group and one industrial company, according to the track. The collaboration is always considered as the tool to achieve the goal and not as the goal itself.

ABOUT ISG

www.isg.org.il

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Consortium profile

Israeli Smart Grid (ISG) is an Israeli consortium of 8 industrial companies and 5 academic institutes.

ISG was established in 2011 and its mission is to develop new technologies and solutions for the Smart Grid with an emphasis on Communication, Control Systems and Demand Response technologies. The ISG consortium is comprised of the following companies: CEVA, Yitran, ECI Telecom, Motorola Solutions, PowerCom, Mobix, Satec and Control Applications. ISG also includes 5 academic Institutions including Tel Aviv University, Ben Gurion University, The Hebrew University, Ariel University center and Holon Institute of Technology. Our mission is to 'Develop a technological infrastructure for the integration of communication and control networks that will enable optimal use of energy for a cleaner world'. ISG creates a synergy between small companies that have new/advanced technology and large companies with an established presence in the market.

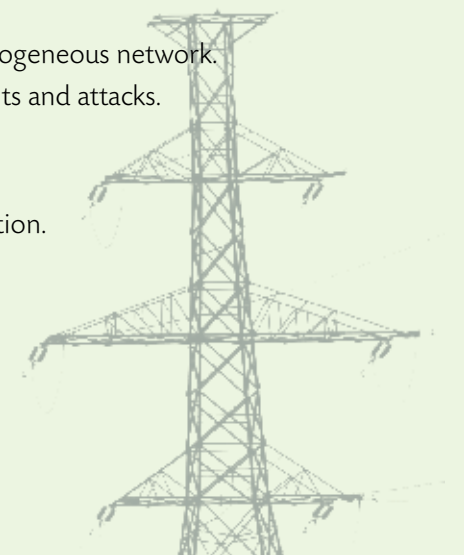
Background

The consortium was founded by Shay Adar from CEVA and Aner Shoham from Wavion. The consortium R&D activities are funded by the MAGNET Program, in the Office of the Chief Scientist of the Ministry of Industry, Trade & Labor, which sponsors innovative generic industry-oriented technologies to strengthen Israel's technological expertise and enhance competitiveness.

Technologies & Products

ISG is focusing on the following topics:

- > Accurate demand forecasting for smaller groups of users using advanced data mining, graphical models and consumer "signatures" methods.
- > Real-time early detection and prevention of failures in the grid.
- > Isolation of failures to prevent the "domino effect" by automatic isolation of the faulty area.
- > Management of a large distributed control network.
- > Unified network architecture to support multiple types of networks as one homogeneous network.
- > Protocols to support network immunity reliability and survivability in face of faults and attacks.
- > Support for high rate and low delays in noisy communication channels.
- > Accurate and reliable time synchronization in large networks.
- > Advance communication algorithms for enhanced PLC and wireless communication.



CEVA Inc.



Headquartered in Mountain View, California, CEVA is the world's leading licensor of silicon intellectual property (SiP) primarily for the handset, portable and consumer electronics markets. CEVA's IP portfolio includes a wide range of programmable DSP cores and platforms with different price/performance metrics serving multiple markets, including cellular baseband, ISP, vision, HD audio, voice over packet (VoP), Bluetooth, Serial ATA (SATA), and Serial Attached SCSI (SAS).

CEVA's state-of-the-art IP is primarily deployed in high volume markets, including wireless handsets (low cost phones, feature phones & smartphones), mobile computing (tablets, notebooks, e-Readers, machine-2-machine), smart grid, home entertainment (DVD/Blu-ray players, set-top boxes, digital TVs), game consoles (portable and home systems), solid state drives (SSDs), and telecommunication devices and applications (residential gateways, small cells and VoIP phones).

Today, CEVA's technologies are widely adopted by the world's leading semiconductor vendors, including Broadcom, Broadlight, Icom, Intel, Intersil, Marvell, Mediatek, Mindspeed, MStar, Nufont, NXP, PMC-Sierra, Renesas, Samsung, Sharp, Solomon Systech, Sony, Sequans, Spreadtrum, ST Ericsson, Sunplus, Toshiba, VIA Telecom and Xincomm. More than 3 billion CEVA-powered chips have shipped to date, and in 2011 alone, CEVA licensees shipped more than 1 billion CEVA-powered units to a wide range of end-markets. CEVA has 190 employees worldwide, with research and development facilities in Israel and Ireland and sales and support offices in Hong Kong, China, Taiwan, Korea, Japan, Sweden, Israel, and the United States. CEVA is traded on NASDAQ (CEVA).

CEVA is a founding member of the ISG consortium. CEVA is committed to the Development of a dedicated computational platform (DSP) that targets the physical and MAC layers of existing and future communication standards, which will be integrated into a smart grid and will operate over the electricity grid and concurrently with it. The platform to be developed will support communication of end-user products in the customer's environment as well as for smart meters. In addition, it will support short and long range communication protocols for smart grid use cases.



www.ceva-dsp.com

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YITRAN COMMUNICATIONS LTD.



Yitran Communications Ltd., founded in 1996, is a fabless semiconductor company and leading provider of cutting edge communication technology for command and control applications. These applications include Energy Management and Demand Response, Automated Meter Reading/Management (AMM/AMR), Home/Building Automation, Switching and Lighting, White Good Appliances, HVAC Control, Remote Meter Reading, Street Light control and more. Yitran designs, develops and markets integrated circuits that utilize existing power lines and eliminate the need for costly dedicated communication infrastructure.

Yitran's narrowband PLC modem chips feature Physical, MAC, Network and Profiling Layers on a SoC (System on a Chip) device. Since its founding, the company has gained international recognition as a fertile source and leader for elegant solutions, technology, patents and expertise.

Innovative and cost-effective products

Yitran provides innovative technology for superior performance and robustness. Yitran designs, develops and markets high performance, low cost PLC modem chips and solutions complying with HomePlug C&C, ITU G.hnem, Prime, G3 and IEEE 1901.2 standards based on DCSK/OFDM modulation. Yitran's products provide robust and reliable communication over existing electrical wiring to enable a variety of Smart Grid applications.

Strategic partnerships

Yitran has formed several strategic partnerships with leading international companies. These partnerships strengthen Yitran's already solid position in the command and control market and have led to the co-development of products; utilizing the strengths of each company and opening new markets for Yitran technology.

- > Microsoft and Yitran collaborated to implement Microsoft SCP (Simple Control Protocol) on Yitran's PLC modem in a single chip.
- > LG Electronics includes Yitran components in 10 of their white goods appliances and promotes Yitran as their standard in Korea through the LNCP forum.
- > Renesas licenses Yitran's technology and offers compatible devices.
- > Haier, Media (shown in Expo 2010), China State Grid and Nari, in China, are using Yitran's technology for appliances, as well as mid-voltage communication.
- > Yitran and Planet Systems, a leading provider of PLC systems in Korea and member of the Korean PLC forum, co-developed a PLC solution for the Korean market.
- > Hitachi ULSI has developed a PLC module based on Yitran's PLC and Renesas' H8 MCU, offering high performance at a very low cost.



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MOTOROLA SOLUTIONS (ISRAEL)



Motorola Israel Ltd. was established in 1948, and since 1964 is a wholly owned subsidiary of Motorola Inc., a multinational communications corporation headquartered in the USA. In January 2011, Motorola Inc. was divided into two separate companies: Motorola Solutions and Motorola Mobility. Following the division, Motorola Israel remained unchanged in essence and scope (with the exception of the cellular unit) and comprises a part of Motorola Solutions Inc.

Motorola Solutions Israel was Motorola Inc.'s first branch outside the USA, and the first to establish a design and development center in Israel.

The company develops and provides communications solutions based on advanced technologies to governmental and public safety bodies, to courier companies and to a variety of commercial entities both in Israel and around the world. It employs a workforce of some 1300 professionals, approximately 700 of whom are design and development engineers.

The Company Comprises a Design Center and Three Business Groups: The Communications Systems Group for Israel market, The Communications Systems Group for export markets and the Services division.

The areas which Motorola deals within the framework of ISG include:

- > Automatic fast fault location in a power grid and isolation of the faulty part.
- > Communication interface between existing electric control centers using legacy standard protocols and modern substation smart devices that use modern protocols, as well as an interface between existing substation equipment and modern substation equipment.
- > Generic smart meter concentrator, which enables electric utilities to interface with smart meters made by various vendors, over a variety of communication media, and to perform low voltage grid monitoring.
- > Efficient unified integration and management of devices and smart elements from various vendors, in a very large Smart Grid system.
- > Efficient model for data collection and data distribution servers on the Smart Grid network.



www.motorolasolutions.com

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ECI TELECOM LTD.



Your Partner for Growth

ECI Telecom delivers innovative network solutions, unified network management systems and comprehensive lifecycle services to carriers and service providers worldwide. Since we opened our doors for business in 1961, we've evolved from a small technology company into the partner for growth for our customers worldwide, transcending the role of a traditional telecom vendor.

At the heart of everything we do is 1Net, our framework for addressing your pain points and needs in your day-to-day operations and as you plan your next business and technological move. What is keeping you up at night? Whether it's reducing time to market for new services, mitigating risk, improving performance or protecting investments, we're there as your true partner.

Headquartered in Israel, with R&D centers in China, India, US and Israel, we are a global company whose underlying motivation is to help you address your network challenges.

We count some of the leading service providers around the world as our valued customers. Our customers are traditional service providers, utilities and government entities. We cater to wireline and wireless telecom service providers, multiple service operators (MSOs) and cable companies, utilities and carriers of carriers. Our solutions also empower governments, municipalities and defense entities as they improve their telecommunications systems.

Our customers operate in both developed and emerging markets, as our solutions support both advanced services and mass deployment and scalability of basic services. Our customers include British Telecom, Deutsche Telekom, France Telecom/Orange, Vodafone Global, Tata, Airtel, Smart Communications, Elro, MTS, Transtelecom, Vimpelcom, GVT, Viettel, Togo Telecom, Neotel, MTN Uganda, UPC, Virgin Media, BrightHouse, ICE, SDN, Schiphol Airport and Tutor Municipality.

ECI's research topics as part of the ISG MAGNET project will include:

- > Developing distributed architectures and topologies to allow scalability, survivability and resiliency of utilities' communications networks.
- > Developing technologies and protocols for real time management monitoring and control with target to predict potential failures, automatic isolation and self-healing of communication networks.



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POWERCOM LTD.



POWERCOM Ltd. is positioned as a market leader in the remote and control metering system industry. The Company is engaged in developing, manufacturing and marketing a complete smart grid solution for electricity, water and gas utilities with a range of superior benefits provided by its unique and patented technology. Founded in 2006, POWERCOM's corporate headquarters are based in Israel with subsidiary companies, regional headquarters and local offices in India, Portugal and South Africa.

The Company's (AMI) Advanced Meter Infrastructure for electricity, water and gas utilities includes a portfolio of innovative products, from a data management system housed at utilities data centers, to leading edge meters and concentrators, all the way through to intelligent consumer monitoring solutions for managing consumption. The system utilizes all available open protocol communication such as PLC, RF, GPRS, and Ethernet, and is built as a flexible open platform to seamlessly connect and integrate to third party suppliers.

POWERCOM has received extensive recognition for its exceptional Power Line Communication (PLC) performance, having achieved 99%+ communications in real-time. The breakthrough was achieved by developing a Dynamic PLC technology which allows bi-directional data flow over the low voltage grid lines, enabling readings from any smart meters at a distance of up to 2 km of electricity wires, at any world location in seconds.

This system will provide a range of functionality such as: efficiently handling prepayment, identify revenue loss, outage detection, implementation of complex TOU or step tariff, demand response, load control, as well as energy monitoring and management. Alert notifications are automatically programmed into the system to send an SMS or email to the system operators providing real time notification of exceptional events for rapid response. It is also capable of supporting optional functionality including demand side management, forecasting, smart homes, electric vehicle charging, and renewable energy and energy forecasting, etc.

POWERCOM has proven its superior technology through installations with utilities across the globe through a series of very successful installations with leading utilities in more than 12 countries within different environments and installations. The data from these installations show that the investment payback period for the utility is very short (in some cases a few months).



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CONTROL APPLICATIONS LTD.



Control Applications Ltd. (CA) is a private company that was established in 1992 as a manufacturer of Building Management Systems (BMS). In 2004 CA started to manufacture high quality and accuracy energy powermeters as well as power quality analyzers. CA develops, produces, markets, exports and installs their computerized control systems for commercial and industrial applications all over the world.

CA's metering and control systems consist of both hardware and software products that are user-friendly as well as being technically superior.

The products are intended for use in industry, utility companies and public buildings such as factories, office blocks, hotels, hospitals, universities, shopping centers and more.

Elnet line of products is consisting of:

- > Electrical powermeters – advanced user friendly, multi functional, three-phase powermeters.
- > Electrical Energy meters – highly accurate multi functional, three-phase energy powermeters.
- > Power Quality Analyzers – recording and analyzing power quality events (EN50160).
- > Power factor controllers – advanced user friendly controller with harmonics protection and capacitor life saving features.
- > Software products for electrical networks monitoring and generating electrical bills.

Today Elnet powermeters and SuperBrain controllers are well known brands, combined with CA's Web Based software grant to its user's state of the art technology to save and measure the energy as well as monitoring its quality.

Our distributors enjoy market dominating products and instant online support.

Control Applications Ltd. develops smart grid technologies for the following areas:

- > Technologies for analyzing power quality.
- > Fault location Technologies for medium and high voltage lines.
- > Technology that enables smart grid measurement devices to be time synchronized at accuracy of 1 micro second.
- > Forecasting algorithms for energy demand at neighborhood/factory/site level.



www.ddc.co.il

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MOBIX WIRELESS SOLUTIONS LTD.



Since as early as 2004, Mobix Wireless Solutions (MWS) has been introducing innovative solutions to what began as Automatic Meter Reading (AMR) and transformed into Advanced Metering Infrastructure (AMI) and the Smart Grid. From the very beginning, Mobix has dedicated itself to provide the most advantageous and affordable two-way communication infrastructure to the industry. MWS wide experience in PLC and RF based solutions has led to the realization that both technologies suffer from fundamental inherent flaws such as limited PLC coverage due to different phases and LV transformers, RF interferences and limited RF performance indoors.

In order to overcome those flaws customers need to spend more money and resources in costly location specific design and implementation. There is a bigger and continuous need to invest in hardware and network infrastructure as the environment dynamically changes.

In 2009, our research and development team introduced a solution in the form of a fused PLC and RF communications into a virtual Dynamic 3D network (n-DNet™). This technology, a first of its kind, is patented. By dynamically combining these technologies into one virtual physical medium, each technology covers up for the other thus dramatically lowering cost of ownership, reducing the deployment and maintenance efforts and increasing reliability and scalability in a dramatic manner (Every physical link in the network is at least 3 times stronger (3Xspeed/distance/reliability). A network with stronger links has exponentially stronger performance in total).

With offices in the USA, Brazil, Germany, Russia, China, Israel and the Czech Republic we are always close to our customers.

Mobix has joined ISG (Israel Smart Grid) in 2012 to further expand its cooperation with leading Israeli companies active in the smart-grid Industry. Mobix goal in the ISG research group is to study new technologies of PLC and RF that are considered as the future standards for smart-grid communication by utilities worldwide. Mobix next generation n-DNet systems will incorporate the advantages of these new standards into one united platform. As part of this exciting development Mobix will introduce a new distributed mesh network management system that will allow robust deployment of n-DNet technology in the various smart-grid market segments.



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SATEC INC.



SATEC has been a proven solutions-oriented global leader in the research, development and manufacturing of energy management systems since 1987. With two decades of rich experience in energy management, SATEC provides total solutions for customer applications worldwide. Our greatest strength lies in our deep technological expertise and our ability to provide flexible solutions for a wide range of customer applications.

SATEC's device product line serves both energy utilities and energy consumers in various fields. Our application-based product line includes devices spanning from basic power meters up to high performance revenue meters with advanced power quality analysis capabilities. All SATEC devices comply with world-acknowledged regulations and are supported by our energy management software.

Our cutting-edge power quality analysis capabilities provide a rewarding solution enabling energy utilities to take timely corrective action and permitting energy consumers to prevent equipment failures.

SATEC is committed to protecting the environment.

SATEC products help our customers save energy and reduce CO2 as well as other greenhouse gas emissions, while our unique renewable energy management solutions increase the performance of solar and wind power generation plants. SATEC products are RoHS compliant and are lead free.

We at SATEC regard our clients as our most valuable asset. We consider excellence of products and service as a key to gaining customer loyalty and satisfaction. Our customer base consists of industrial facilities, commercial enterprises, government and public services, and major power utilities.

SATEC takes pride in catering to the unique needs of our varied customer base. As a leader in the field, we at SATEC set the standard by continuously developing and upgrading our products and services, to perfect our clients' energy management systems. Our products are user-oriented and designed for easy installation and operation.

SATEC exports to over 60 countries worldwide throughout Europe, North and South America, Asia, Oceania and Africa. Our worldwide distribution network provides local marketing service and prompt professional support.

Our team of scientists and industry experts are available to dispense expert technical support, and provide technical solutions to questions ranging from generic to complex. SATEC's support team is closely involved in the development process, to assure a product of the highest quality that is also tailored to our customer's needs.



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