

# newsletter

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Verantw. Uitg.: Peter Simkens • DSP Valley vzw. - Gaston Geenslaan 9 - 3001 Leuven (Belgium) • tel. +32 (0) 16 24 14 40 • fax +32 (0) 16 24 14 49 • www.dspvalley.com

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## Easics Successfully Demonstrates Datapath Modeling Approach in CMOSIS Camera-Chip for the New "Leica M" Camera

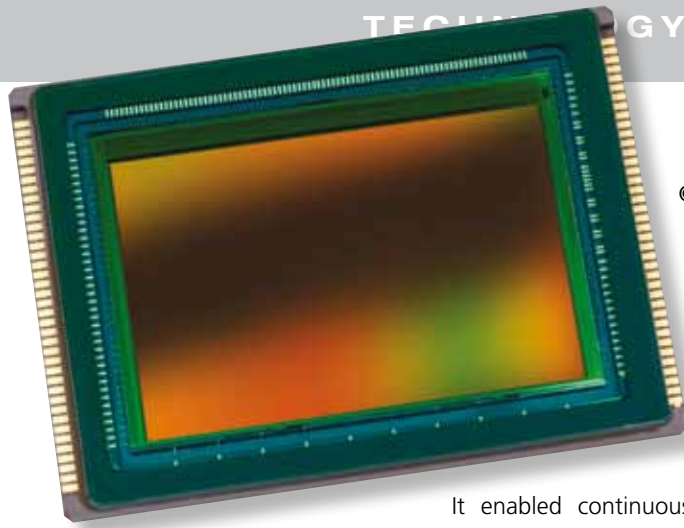
Easics has modeled, implemented and verified proprietary digital pixel processing algorithms for CMOSIS' novel intelligent CMOS image sensor chip for the "Leica M" camera. Easics' model-based approach resulted in first time right silicon.

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continuation from page 1

Easics created a high-level model of the proprietary digital noise cancellation and correlated double sampling algorithms for the CMOSIS "Leica MAX 24MP CMOS Sensor" chip. This model gradually precedes over the textual specification document, while iteratively refining it. It becomes a bit-true executable specification. Important executable use cases (main operational modes as well as corner case behavior) emerged naturally from this iterative refinement. They form the basis of the regression-based verification suite, and enable test-driven development. Easics used the model as reference for all verification. CMOSIS signed off on it, turning it into a formal decoupling point between the specification document and the detailed implementation.

Frequent specification changes are part of the game in leading-edge mixed-signal ASIC developments. In this development, they merely lead to iterations



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on the high-level model, rather than on detailed implementations (which would potentially cause major rework and schedule slips). The model-based approach is hence a key design productivity enabler, as the model is designed at the "right" level of abstraction for its purpose: right before converting the "what" into the "how". It drastically improves the time-to-market and keeps the budget under control.

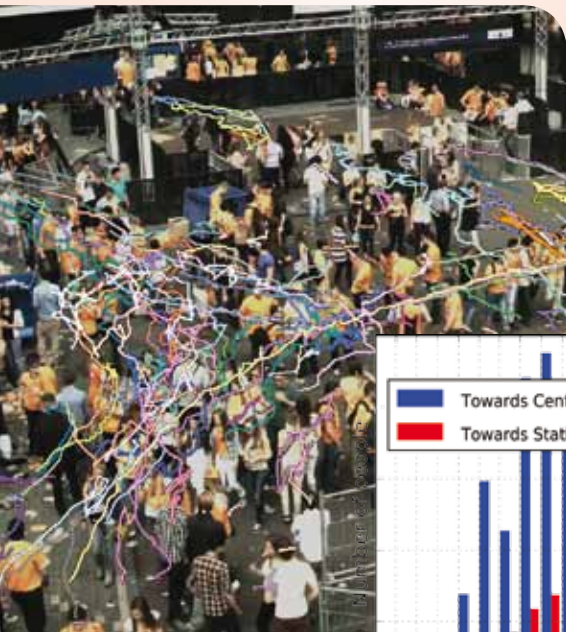
Easics further used the model as reference for the detailed implementation.

It enabled continuous integration, as the model served as an initial version of the implementation. Implementation decisions such as mathematical operator implementation, pipelining and clock-gating took into account performance, area and power constraints.

A model is unambiguous and "richer" than a natural language specification. It is elegant thanks to its high abstraction level and the use of available libraries.

This model-based approach proved to be highly effective for CMOSIS' high dynamic range, 24 megapixel full-frame

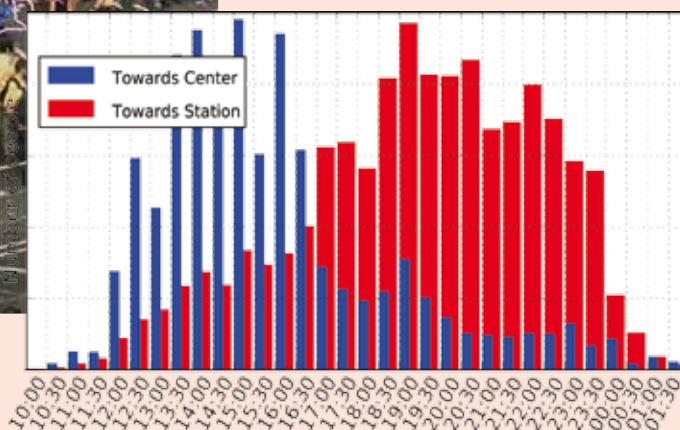
## ViNotion introduces People Counting system for events



Statistical information about the flow of people is very important for marketing research in e.g. retail and for security and safety of crowds. ViNotion has developed a technology for the counting of people in indoor and outdoor environments. The system is perfectly suitable for the counting of people in large numbers, for example during events, in shopping centers, in city centers, in museums, at airports and at railway stations. Most counting systems fail in challenging light conditions or

when many people pass the camera. Moreover, they typically have a limited sensing range. The ViNotion system has been specifically designed to cope with these challenges.

In cooperation with the Eindhoven University of Technology (TU/e), ViNotion has developed pattern recognition technology for the detection of objects. Instead of using conventional motion detection, the recognition engine searches the image for objects that have a similar appearance as the object that we are looking for. Advanced machine learning algorithms are used to automatically create a model of the object that we want to detect, using a set of example images of such object. For the people counting application, the system has been trained to detect persons. Once a person is detected in the image it is followed over time, frame by frame, which is called object tracking. Tracked persons are counted





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35mm format CMOS image sensor chip development for Leica. Proprietary innovations in both digital and analog domains resulted in low temporal and spatial noise and non-uniformities. First-time right silicon success was achieved on time and in a tight schedule. Leica Camera AG launched the new “Leica M” camera, containing this chip, at Photokina 2012 in Cologne, Germany.

This approach is part of Easics’ mixed-signal ASIC design toolbox. It is ideally suited for datapaths and signal processing, and is complemented with techniques such as SystemC and Verilog-AMS modeling and in-the-loop simula-

tion. Easics creates the model in the high-level language that the customer prefers, such as C++ / SystemC, Matlab, Python, or Ruby. This fits nicely in Easics’ vision of maximally using software tech-

niques and high levels of abstraction for chip design and verification. Easics uses similar high-level modeling techniques for advanced FPGA development. ■



### About CMOSIS

CMOSIS is a pure-play supplier of standard off-the-shelf and application-specific CMOS image sensors for the industrial and professional market covering applications such as machine vision, high-end DSC markets, scientific, medical, automatic data capture and space. CMOSIS was founded in November 2007 as a fabless CMOS image sensor vendor providing in-house design, characterization, testing and qualification facilities for research, development and volume production. CMOSIS has developed unique IP related to CMOS image sensors such as global shutter pixels, fast and low-noise AD converters, backside illumination and increased dynamic range, resulting in six patents and several more pending. The company has grown continuously and consistently, currently employing more than 40 at its headquarters in Antwerp, Belgium.

**About Easics:** see more information on page 7.

when they cross a user-defined line or walk a certain minimum distance. To count crowds, each person is uniquely detected and tracked over time.

The algorithm runs on standard off-the-shelf computer hardware, allowing real-time people counting in a broad shopping street with cameras up to 1-MPixel resolution. The object counting system is currently being prepared for extreme high-throughput applications such as people counting on very large areas or vehicle counting on a ten-lane highway. To achieve this goal, the pixel-processing parts have been ported to be executed on a GPU coprocessor that is traditionally used for gaming on a PC. Such GPU allows highly-parallel processing in software for both embedded systems and high-performance computing platforms.

The system was validated during several pilots and has already been deployed on several occasions in the Netherlands. For example, people were counted in a shop-

ping street in Roermond during a fun fair, at the Queensday 2012 event in Eindhoven that attracted 120,000 people, during the “Vierdaagse” walking event in Nijmegen, and also at the “Oktoberfest” in Sittard as well as the 2012 GLOW Light festival in Eindhoven that attracted 450,000 visitors. By using a novel low-light sensitive 20-MPixel video camera that is manufactured by Prodrive, the system has been able to accurately count all visitors in real-time during the dark evenings of the GLOW festival in Eindhoven.

Mezuro, a partner of ViNotion, combines the people counting system with measurements on the mobility of people, based on anonymous statistic data from a mobile communications network. This allows for example city marketers to see where the visitors are coming from, how long they visit the event, etc. Such unique propositions allow ViNotion to expand their business with the people counting system. ■

### About ViNotion

ViNotion is specialized in intelligent image interpretation of video for the recognition of objects, with applications in video surveillance and people counting. The autonomous computer systems are based on video analysis technology by pattern recognition and machine learning. Next to standard products, ViNotion also develops customized solutions. These vary from software libraries, integratable in existing solutions, to complete system solutions including the hardware platform. The ViNotion innovative systems for video image interpretation can be applied for:

- People Counting
- Perimeter surveillance
- Detection from moving vehicle
- Auto-tracking
- Face recognition
- Ship detection in harbours
- Leak detection

# Imec, Holst Centre and Panasonic Present Wireless Low-power Active-Electrode EEG Headset

Imec, Holst Centre and Panasonic have developed a new prototype of a wireless EEG (electroencephalogram) headset. The system combines ease-of-use with ultra-low power electronics. Continuous impedance monitoring and the use of active electrodes increases the quality of EEG signal recording compared to former versions of the system. The data are transmitted in real-time to a receiver located up to 10m from the system. The realization of this prototype is a next step towards reliable high-quality wearable EEG monitoring systems.

The system integrates circuit level components including imec's active electrodes and EEG amplifier together with a microcontroller and a low power radio. It is capable of continuously recording 8 channel EEG signals while concurrently recording electrode-tissue contact impedance (ETI). This simultaneous ETI recording enables continuous, remote assessment of electrode contact status during EEG recording. The active electrodes reduce the susceptibility of the system to power-line interference and

cable motion artifacts, thus improving signal quality. The system can be configured at run-time to change the settings of the recordings such as the number of channels, or enabling/disabling the impedance recording. The autonomy of the system ranges from 22 hours (8 channels of EEG with ETI) to 70 hours (1 channel of EEG only).

The system has a high common-mode rejection ratio (>92 dB), low noise (<6  $\mu$ Vpp, 0.5-100Hz), DC offset tolerance of +/- 900mV and is AC coupled with configurable cut-off frequency. Sensitivity and dynamic range are configurable through a programmable gain stage (default 1.5mVpp and 366nV, respectively). The system (with dry electrodes and no skin preparation) is validated against a commercially available wired reference system (with wet electrodes and skin preparation), comparing the spectra between 1 and 30Hz. The high correlation coefficients (ranging from 0.81 to 0.98 in four 1-minute recordings with eyes open) indicate that both systems have similar performance.

The heart of the system is the low-power (750 $\mu$ W) 8-channel EEG monitoring chipset. Each EEG channel consists of two active electrodes and a low-power analog signal processor. The EEG channels are designed to extract high-quality EEG signals under a large amount of common-mode interference. The active



Preface

## Smart Innovator – another Step towards the new DSP Valley 2.0

In October, DSP Valley started a new project, with the name "Smart Innovator". For DSP Valley, participation in this project means an important step in the implementation of the new strategy of DSP Valley 2.0. Indeed, the ambition of the Smart Innovator project is to help businesses to create and develop new innovative smart products, based on opportunities offered by the newest micro/nano-electronics technologies and related embedded software technologies.

For DSP Valley, this project ambition perfectly fits into our new DSP Valley 2.0 strategy, aiming at creating an enlarged eco-system or cluster, in which the

core DSP Valley members (active in the design and development of new embedded signal processing technologies) will be connected with the system integrators and product developers in different smart application domains. Selected application domains include smart health systems (e.g. medical devices), smart home, smart mobility, smart textiles and others.

Selecting these smart application domains is a very natural extension of the DSP Valley cluster: the micro/nano electronics and embedded software designed and developed by the "good old DSP Valley 1.0" members indeed

have the inherent capability of rendering any type of applications smart: they provide the connectivity, the sensors for capturing information from the environment, the electronics and the embedded software to process and interpret this information and to act autonomously. In this way, the technologies from the core members become real Key Enabling Technologies (KETs), fully compliant with the definition also given by the European Commission, as a cornerstone for their future Horizon 2020 program.

DSP Valley will run the Smart Innovator project together with other Flemish

electrode chips have buffer functionality with high input impedance (1.4GΩ at 10Hz), enabling recordings from dry electrodes, and low output impedance reducing the power-line interference without using shielded wires

The system is integrated into imec's EEG headset with dry electrodes, which enables EEG recordings with minimal set-up time. The small size of the electronics system, measuring only 35mm x 30mm x 5mm (excl battery), allows easy integration in any other product.

Industry can get access to imec's technology for intelligent body area networks with wireless sensors, such as this EEG, by joining imec's Human++ program as research partner or by licensing agreements for further product development. Within the Human++ program, imec and Holst Centre develop solutions for an efficient and better healthcare.



partners: Sirris (lead partner), Agoria and iMinds. Together we form a strong team, with all needed competencies to make the Smart Innovator project a real success, with many new innovative business cases as a result.

If your company has an idea about creating a new and innovative smart product, please do not hesitate to contact our team. We will be very glad to guide you to a success.

Sincerely,

Peter Simkens  
Managing director  
DSP Valley



## AnSem and Rational Products developed a remote energy management demonstrator.

Within 5 to 10 years, about 100 million smart meters and appliances will be installed worldwide. This requires monitoring and controlling devices at low costs and low power consumption. Current Power Line Communication (PLC) technologies are either too costly (developed for multimedia applications) or have a too low data rate for an effective monitoring (e.g. building automation).



The functional prototype exists of several nodes distributed over a building and a central energy gateway. The nodes measure the energy consumption of appliances and regulate the electricity flow. Each node is connected to a master controller/gateway through the power line and communicates over the G3-protocol.

For this prototype, AnSem connected its PLC-Analog Front End chip with a commercial digital modem and Rational Products power line network technology. The set up communicates over the Power Line in different frequency bands (between 10 and 500 kHz) with the use of programmable filters on the AFE-chip. The high signal sensitivity of the receiver assures robust communication over noisy power lines in buildings. The system has been successfully demonstrated in the offices of AnSem showing that attenuations of more than 86 dB between transmitter and receiver do not affect the communication quality. This is higher than the performance of other comparable chips under similar conditions.

AnSem and Rational Products brought their knowledge and expertise together in the frame of the Crossroad Program to develop a remote energy management demonstrator.



### About AnSem

AnSem is Europe's leading fabless analog ASIC design service company, designing and delivering state-of-the-art analog, RF and mixed-signal integrated circuits to customers worldwide. Founded in 1998 and based in Leuven, Belgium, AnSem specializes in the development of advanced integrated circuits for wired and wireless data transmission, data acquisition and ultra low-power applications. AnSem is ISO 9001 certified and is a proven and solid development partner for ambitious and visionary customers, reaching for leadership in global markets.

## Correction in previous Newsletter n° 5

On page 8 of Newsletter N° 5 in the article on the greener and more efficient airplane handling thanks to Essensium's

LOST™ technology, we regret that the introductory text in the grey box was repeated from a previous article about imec and Murata. These companies however have nothing to do with the LOST™ technology of Essensium. Therefore the article should be read

starting with the text on the white background.

We apologize for this misunderstanding. Below you can find another implementation on the LOST™ technology of Essensium.



ESSENSIUM

## BASF focuses on Employee Safety with Position Detection System from Essensium



**BASF announces successful deployment of a Safety Assistance System to help in the protection of employees operating Container Handling Equipment (CHE) at their Antwerp facility.**

*"'Never Compromise On Safety' is one of the core values at BASF," explained Joost Naessens, Manager Logistic Site Services, "so when we expanded our container handling facility at Antwerp, we knew we needed to implement a system to reduce the risk of collision between the vehicles."*

The project in Antwerp extended the quay area to increase the number of con-

tainer barges which could dock simultaneously. Additional CHE in the form of Reach Stackers and Barge Handlers were deployed to increase the handling capacity. The higher capacity and greater number of vehicles operating simultaneously increased the risks of a collision, so BASF appointed a team to select a Position Detection System (PDS) able to operate reliably in the difficult environment of a container handling facility.

After investigating multiple PDS options, BASF selected the Essensium solution due to its unique capabilities. *"Various PDS solutions were offered", said Maarten Misschaert of BASF, "but no other provided the reliability and accuracy we required for a system which should be used to help ensure the safe working conditions of our operators."*

## Caeleste, Easics and SELEX Galileo signed an ESA contract for the Development of a Prototype ASIC for Large Format NIR/SWIR Detector Array.

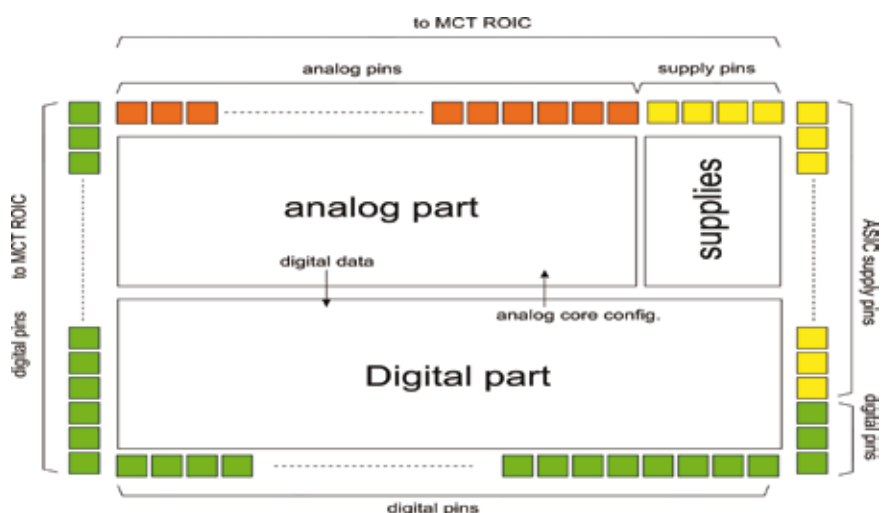
The European consortium formed by the companies Caeleste (Belgium), Easics (Belgium) and SELEX Galileo (United Kingdom) won the European Space Agency's call for tender AO/1-6814 Development of Prototype ASIC for Large Format Cryogenic NIR/SWIR (Near / Short Wave Infrared) Detector Arrays.

The ASIC will allow cryogenic operation down to 77K, as well as at slightly higher temperature (120K), and even at room temperature with limited performance. This will allow system builders to trade off performance and thermal

The ASIC is targeted for use in ESA's future Space Science and Earth Observation missions. Its 18 month development aims to design an ASIC dedicated to large format cryogenic NIR/SWIR Detector. It will simplify the design of infrared instruments for space applications.

The complex presents several challenging features:

- 77K operation temperature
- Radiation hardness
- Fully programmable sequencer on chip
- 16-bits analog to digital conversion chain



Essensium's LOST™ (LLocation for Sensor Tracking) solution uses a Wide-over-Narrowband RF implementation providing both high accuracy and long range, and operating both indoors and outdoors. Integrated GPS capabilities ensure location tracking across the wider area of the facility, while the higher performance LOST™ tracking and ranging capabilities are used for inter-vehicle ranging and for areas where there is no adequate GPS coverage.

With a reaction time of less than one-quarter second, a red strobe light and audio signal warn the equipment operator when the system detects that the safety distance with adjacent handling equipment is being violated. "Visibility can be limited when carrying a 40 foot container and maneuvering between container stacks" said Lauris Van Hove, Head of Safety at BASF, "we have evaluated this system together with the drivers, and it is a great reassurance to have this safety assistance feature implemented on site".

"Safety is productivity. The reduction of collision or near-miss incidents between



handling equipment increases the safety of the work environment. And a safe workplace avoids downtime due to incidents and thus increases productivity. With the extension project and this system in place," said Dirk Vanreusel, Head

of BASF Rail & Terminal Services, "we have been able to increase our operational capacity by 30%, without sacrificing our key priority of employee safety." ■



budget. The aim is to tailor the ASIC to a larger variety of devices, including CMOS and CCD image sensors by integrating PGAs (programmable gain amplifiers) and CDS (correlated double sampling). Of course, the sequencer is programmable for these purposes too.

The project will benefit from the experience of each consortium partner. Caeleste is responsible for the project supervision and the design of the analog section of the ASIC. Easics is designing the digital section of the ASIC using

**continuation on page 8**

### About SELEX Galileo

SELEX Galileo, a Finmeccanica company, is an international defense electronics supplier. The company's UK-based InfraRed (IR) detector facility has all the equipment and expertise required to design, evaluate, qualify and manufacture IR detectors for a wide range of industrial, military and scientific, space-based applications.

### About Caeleste

Caeleste is designer and supplier of custom CMOS image sensors, and specializes in high performance applications in the field of space, medical and scientific imaging. Caeleste was founded in 2006.

### About Easics

Easics is a System-on-Chip design company, targeting designs in both FPGA and digital & mixed-signal ASIC technology. Easics designs reliable and scalable high-performance and low-power embedded systems for leading product companies active in industrial, imaging, medical, multimedia, wireless & wired communication, aerospace, and measurement equipment. Easics performs custom design using its innovative methodology, and offers licensing of its IP: innovative digital building blocks and EDA software tools. Easics is based in Leuven, Belgium and was founded in 1991 as a spin-off of Imec and the University of Leuven - ESAT. Easics is privately owned since 2004.

# ICsense continues growth in mixed-signal IC design



## Team of +40 experts

For the 8<sup>th</sup> year in a row, ICsense is proud to present a strong double-digit growth with a CAGR of 39%. Despite the financial crisis, ICsense was profitable and could further strengthen its cash flow and financial position. Its analog and digital team has grown to over 40. The financial stability and growth of the expert mixed-signal team confirms ICsense's position as a leading custom mixed-signal ASIC design and supply company in Europe.

## First silicon success

The investment in an internal digital team and Synopsys design tools in the beginning of 2012 has significantly leveraged the analog expertise. This led to several complex mixed-signal ASICs tape-outs for medical and industrial applications in 2012 already. "ICsense will continue to invest in its team and in its unique design environment," states

Bram De Muer, CEO of ICsense. *"Apart from enabling structured analog IC design, the addition of a state-of-the-art digital flow allows for full mixed-signal verification and coverage. Our unique approach enhances design efficiency and leads to what we are most proud of: first silicon success."*

## Further growth in 2013

For the next year, ICsense foresees again a double-digit growth. The focus of ICsense is to remain the long-term partner for industrial, medical, automotive and consumer ASIC developments and supply. In particular, ICsense will engage in the development of highly reliable ASICs for medical implanted applications, radiation-hard ASICs for space applications and safety critical industrial ASICs.

## Radiation hard ASIC design

### ESA satellite applications

Thales Alenia Space ETCA, imec and ICsense are collaborating on a radiation hardened ASIC for satellite applications. The development is under a programme of and funded by the European Space Agency. This ASIC is a generic digital power controller holding 4 processors, ADCs, DACs, PLLs, regulators, instru-

mentation, high-voltage drivers and DCDC converters. It can be used for power management, motor control, instrumentation, ...

## Simulation methodologies for rad-hard design

ICsense has incorporated state-of-the-art simulation methodologies for radiation hard IC design in its unique design environment. Yves Geerts, COO of ICsense, explains; *"When designing analog and mixed-signal ICs for space, we need to take into account effects like TID (Total Ionisation Dose), SEE (Single Event Effects), such as SET (Single Event Transients) and so forth. Simulations over process variations and monte carlo are not sufficient. Our structured analog/mixed-signal design environment is extended with a unique method to simulate radiation effects and quantify counter measures for SETs and SEEs."*

ICsense performs the designs in the DARE solution (UMC, XFAB) provided by imec, who are supporting manufacturing, packaging, testing and qualification of the ASIC. Read more on the collaboration with Thales/imec on the website [www.icsense.com](http://www.icsense.com).

*"The view expressed herein can in no way be taken to reflect the official opinion of the European Space Agency"*



## continuation from page 7

imec standard DARE library for radiation hardness. Easics is also in charge of the FPGA-based test system development. SELEX Galileo joins as IR/cryogenic expert and will provide support for cryogenic operation, test and evaluation.

It is Caeleste's aim to work together with infrared image sensor suppliers to develop key circuitries to improve the overall infrared imaging chain. The development of this ASIC fits in that

scope. Indeed, Europe has a vast offer of high-end infrared sensors both in cooled and uncooled domains. But there are very few ASICs that can handle the dataflow and supply the corresponding sequence of signals necessary to operate the sensors. This is especially true in space applications.

This development fits in Easics' strategy to focus on System-on-Chip developments for markets and applications demanding

high reliability, high-performance and future-proofness. Moreover, imaging is one of Easics' areas of expertise.

The consortium is now in prototyping phase, which will result in a prototype chip in 2013. The final industrialized version will be available in 2015.





## I-TRAVLE: Game-based arm training for MS and stroke patients

Arm movements are often a struggle for multiple sclerosis (MS) and stroke patients. Difficulties when moving their arms obviously have a major impact on activities in daily life for the patients. The I-TRAVLE system, Individualized, Technology-supported and Robot-Assisted Virtual Learning Environments, has been designed and developed in the context of the Interreg IV project Rehabilitation robotics II in a multidisciplinary consortium. The Human-Computer-Interaction-group (HCI) of the Expertise Centre for Digital Media (EDM, Hasselt University) has developed the system, led by Prof. dr. Karin Coninx (EDM) and Prof. dr. Peter Feys (Biomed/Reval).

### The I-TRAVLE approach

Patient-centric robot-assisted rehabilitation allows for frequent training and contributes to the motivation of the patient to keep up the training efforts. Robot-assisted rehabilitation and vir-



tual environment (VE) technologies have proven to be promising tools in addition to traditional therapy to create an even more effective training, and therefore these technologies are combined in our I-TRAVLE system. Using a haptic robot (Haptic Master, realized by MOOG) as the central hardware component, a software and hardware system setup has been realized to support systematic and personalized training for MS and stroke patients. The patient interface gives access to training exercises (training one type of movement) and games (training combinations of movements) in game-like virtual environments using haptic feedback. Haptic feedback of the robot either supports the patient or

hinders the patient to make the training more challenging. A specific selection of individualized and motivating training exercises is necessary to strive for a successful rehabilitation trajectory. The module for therapists allows us to define, to personalize, and to monitor the training. The therapist can define difficulty levels for the training, study the progress of the training and discuss this with the patient.

### Promising results

The effectivity of the upper limb training with the I-TRAVLE system has been

studied in an RCT where 17 MS-patients were involved. Promising results are found after a training period with three training sessions a week for eight weeks. Several patients report about enhanced capabilities in using their arms as well as increased power, when performing activities in daily life. The impact of being able to move and use their arms better certainly contributes to the patients' independence. Furthermore, the results of the effectiveness evaluation show that the I-TRAVLE, based on a rehabilitation robot and haptic feedback, is a particularly useful therapy for patients that are more affected by the MS symptoms and have very limited movement skills.

### Rehabilitation at home

Nowadays, MS and stroke patients can perform upper limb training in rehabilitation centers and hospitals using specialized equipment. Our I-TRAVLE system, based on rehabilitation robotics technology, is one example of an advanced training system. However, specialized



equipment and rehabilitation robots are expensive, and the patients have to go to the rehab center for their training sessions. In an ongoing Interreg IV project, the I-TRAVLE concept is extended using smaller robots and other devices, to support training at home. This approach makes it possible for the patient to keep on training frequently and in a familiar environment, which is of course beneficial for the overall results of the therapy. ■

## Siemens to Acquire LMS, Becoming the First PLM Software Company to Provide Closed-Loop, Systems-Driven Product Development Solutions



Siemens expands its portfolio of industry software by acquiring LMS International NV (Leuven, Belgium), a leading provider of test and mechatronic simulation software including model-based systems engineering to the automotive, aerospace and other advanced manufacturing industries. With this acquisition, Siemens will become the first product lifecycle management (PLM) software

company to provide a closed-loop systems-driven product development solution extending all the way to integrated test management. The integrated solution will increase simulation accuracy, which improves decision making and enhances customers' ability to design the product right the first time. The decision making process is underpinned by a deep and accurate virtual analysis linked to the physical world.

Siemens is the leader in next generation product development, through a strategy that unites the virtual and real worlds and is well positioned in integrating virtual product development with physical manufacturing. The complexity of today's products demands a systems

driven approach to product development. A key element of this approach is systems engineering which requires the merging of the virtual and physical domains for product development. With the acquisition of LMS, Siemens can provide a complete suite of virtual design, simulation and physical performance testing applications intelligently integrating all aspects of the product development process.

*"With the acquisition of LMS, we are expanding our portfolio of industry software in an area that is critical for many customers. They will now be able to simulate, test, optimize, and produce their products in a unified, consistent data environment. This will make them faster,*

## Cochlear and NXP to Strengthen Cooperation for Future Generations of Implantable Hearing Solutions

**NXP Semiconductors and Cochlear announce an agreement to extend and reinforce their long-term partnership.**



NXP Semiconductors N.V. (Nasdaq: NXPI) and Cochlear Limited (ASX: COH) – the leading global expert in implantable hearing solutions – announced an agreement to extend and reinforce their long-term partnership.

The collaboration focuses on joint development of high performance mixed signal devices to power Cochlear's future generations of implantable hearing solutions. This encompasses the development and supply of ultra-low power miniaturized solutions for speech processing, wireless connectivity and non-volatile storage.

*"Cochlear's primary objective is to offer our implant users the best possible hearing experience. To continue to do this, it's vital that we remain at the forefront of semiconductor innovations enabling better hearing outcomes," said Jan Janssen, senior vice president, design and development at Cochlear. "As a thought leader in this specific area, NXP Semiconductors is a long-standing partner for Cochlear. Our ongoing close cooperation has helped us to consistently deliver market-leading hearing solutions."*



*"This agreement marks a new milestone in the ongoing partnership between Cochlear and NXP. We are excited and honored to work with the leader in implantable hearing solutions, as it is a fantastic endorsement of our renowned strength in body area networks and personal health devices," said Bart De Loore, vice president and general man-*

**Bart De Loore, Jan Janssen and Carl Van Himbeek**

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more efficient, more flexible, and more cost-effective," explains Anton S. Huber, CEO of the Industry Automation Division.

"By acquiring LMS we continue to deliver on our goal of providing the full breadth of product development solutions, from the virtual to the physical. This will enhance our core competencies by adding model-based simulation, design, test and measurement capabilities to both the virtual design and physical test process. Integrating the full environment gives our customers the ability to bring together information from the logical model, physical model and functional model to refine and optimize designs and measure results, which transforms decision making in product development. It's something our customers appreciate today and will even more fully appreciate tomorrow. We are committed to investing both organically and through acquisitions to achieve our vision, which includes providing world class simulation solutions," said Chuck Grindstaff, CEO and president of Siemens'

PLM Software Business Unit.

"We will continue to focus on our core strength of test and mechatronic simulation," said Urbain Vandeurzen, Chairman and CEO of LMS. "In combination with the entire Siemens PLM Software portfolio we plan to further expand our leading position in the automotive, aerospace and other advanced industries. We are confident that the strong market recog-



Urbain Vandeurzen, CEO of LMS

inition of LMS' engineering excellence will continue to be visible and to appeal to customers in all industries."

The manufacturing industry faces a sig-

nificant challenge of efficiently developing the right products while mastering the growing complexity of next generation products. One aspect of this growing complexity is the rapid expansion of products integrating mechanical systems, electronics and software, referred to as mechatronic systems. With the acquisition of LMS, Siemens is well positioned to deliver PLM solutions where the mechatronic systems in a new design will simultaneously be optimized.

This acquisition builds on Siemens' HD-PLM vision of providing an immersive, decisionmaking environment to help customers make smarter decisions resulting in better products. Siemens and LMS are both committed to providing open solutions, which allow customers the flexibility to integrate with existing systems to improve the efficiency and effectiveness of their product development and manufacturing processes.

ager of NXP's personal health business. "NXP continues to tirelessly innovate and address demanding personal health solution needs including disruptive low power consumption, system miniaturization, robust operation and human lifetime reliability."

"The partnership with NXP demonstrates how collaborative development between partners with complementary know-how can lead to outstanding results," said Carl Van Himbeeck, General Manager of Cochlear Technology Centre. "The advanced technology requirements from Cochlear will require both parties to work collaboratively in the development on new specifically designed solutions. An important enabler for such collaborative development is geographical proximity. Both Cochlear Technology Centre as well as NXP's Product Line Personal Health are located in the Eindhoven-Mechelen-Leuven triangle."

## KIFFER.be partners with Acreo for OSGi resource management

KIFFER.be (formerly /k/ Embedded Java Solutions) has signed an agreement with Swedish research institute Acreo ([www.acreo.se](http://www.acreo.se)) to investigate the problem of monitoring and management of shared computing resources using the software technology OSGi. The main area of study will be the "residential gateway", but the results are expected to have implications for many other fields.

"The gateway which connects today's homes to the broadband internet has evolved from a mere 'modem' to a powerful multimedia computing platform", explains KIFFER founder Chris Gray. "This opens up the prospect of using this platform as the nerve-center of a digital home, providing for example eHealth or smart energy services or – most impor-

tantly – services which no one has even thought of yet. To use this potential fully it is essential that parties other than the communication service provider are able to install software on the gateway without risk to the smooth operation of the gateway. OSGi technology addresses many aspects of this challenge, such as isolation between software modules and flexible control over access rights, but one thorny problem remains: that of ensuring that a module will not render the system unusable by consuming too much memory or CPU time, opening too many network sockets, etc.". Together Acreo and KIFFER will explore the possibilities using KIFFER's MikaMax runtime environment as a testbed, and drawing on KIFFER's extensive experience of working with OSGi technology.

**Acreo** Innovation for growth.



# ICT for Health Monitoring and Ambient Assisted Living

The ageing of the population, combined with our desire for independence and the urgent need to reduce health-care expenses, causes the research into solutions for Health Monitoring and Ambient Assisted Living (AAL) to gain momentum. ICT is a crucial enabler in this context. With this in mind, the Leuven Centre on Information and Communication Technology (LICT – [www.kuleuven.be/LICT](http://www.kuleuven.be/LICT)) has organized a workshop on this topic on October 9th 2012. *“Personal health monitoring and smart assisted living will have a large impact on our life from cradle to grave”* says Georges Gielen, Chairman of LICT. The workshop featured both internal LICT speakers, presenting ongoing research within KU Leuven in this domain, as well as three internationally recognised invited keynote speakers.



The workshop was kicked-off by Professor Louis Scheffer of the Howard Hughes Medical Institute, Janelia Farm Research Campus, who introduced the audience into the world of interfacing

with one of the most complex parts of our body: “The Brain”. His presentation started with sketching both the historical background as well as the present State-of-the-Art in Human Brain Interfacing. For providing input to the brain only techniques operating from inside the skull (=implants) are



sufficiently specific, motivating as such the further exploration of the domain. Referring to the many research challenges that still exist, Scheffer said that *“Besides for the usual improvements like lower power, better biocompatibility and more/closer electrodes, the most important to advance is to understand how the brain works”*.

From a completely different perspective was the speech of Professor Peter Lucas of the Radboud University Nijmegen who started from the idea that *“To improve care quality and to reduce costs, part of the medical decision process should move to the patient”*. The theory behind (biomedical) data and medical reasoning was illustrated by the real-life example of the self-management of preeclampsia by means of a smartphone application.

The third keynote speaker was Piet Verhoeve of Televic, who gave an inspiring speech on AAL and what this can

bring for the elderly people. From his speech we learned that it is ultimately important to introduce AAL technology in a “Big Mother”-like scenario instead of in a “Big Brother”-like one. Verhoeve concluded that *“It’s not AAL about health, care and technology. It’s about bringing (partially existing) technologi-*



*cal solutions - to the USER - in a non-stigmatic (acceptable) way - so that they WANT our products instead of needing them...”*.

In between the keynote speeches KU Leuven LICT researchers presented their own activities in the workshop’s domain. During these presentations the complete scale of LICT health related research was addressed. This involved a.o. in-body and on-body sensor (interface) development, micro- & mm-wave-based solutions, security & privacy, voice controlled assistive technology, solutions for resuscitation support, machine reading of biomedical texts and machine learning for clinical domains. As said by one of the participants to the workshop, Bart Collet of Health Startup Europe: *“I was not aware that all this research takes place at the KU Leuven”*. ■



## ASACA Corporation releases a new range of Broadcast servers based on intoPIX HD JPEG2000 technology

intoPIX, the leading provider of JPEG 2000 compression solutions for Broadcast, announced the successful integration of its JPEG 2000 codec IP-core in the new ASACA servers developed for studios and master control rooms.

With the powerful intoPIX visually lossless intra-frame compression engine, ASACA brings to the market new broadcast servers processing two HDTVs channels, Fill and Key, in an ultra-com-

pact and cost effective FPGA chip.

Well-suited for production and broadcast, JPEG 2000 is an easy-to-edit I-frame format and is integrating by an increasing number of broadcast servers. ASACA is now delivering three new products powered by intoPIX codecs to broadcast facilities. The ASACA AVR-

800/801 VAF servers deliver Telop for CM and Audio, used in master control room. The AVR-802 AV File records and playbacks Telop used in studio. With one input and two outputs, it also processes simultaneously Fill and Key.

ASACA Corporation exhibited the new products during the interBee Show in Makahuri Messe from November 14<sup>th</sup>-16<sup>th</sup>. The intoPIX team also exhibited its latest JPEG 2000 technology developments at interBEE. ■

### About intoPIX

intoPIX is a leading supplier of image compression technology to audiovisual equipment manufacturers. We are passionate about offering people a higher quality image experience and have developed FPGA IP-cores and compression solutions that enable leading-edge JPEG 2000 image compression, security and hardware enforcement.



### About ASACA

ASACA is a developer and manufacturer of video audio products for broadcast companies, storage systems and linear IC testing systems. It was founded in 1971. In addition to video audio file (VAF) system equipments, it also has unique products using mechatronics technology, like Blu-ray disk library systems.

## MINDCET exhibits at the Electronica International Trade Fair in Munich



The Electronica 2012 final report states: International trade fair leaves industry feeling confident:

- More than 72,000 visitors from 78 countries
- Automotive electronics the main attraction in all halls
- CEO Round Table a popular attraction

The 25<sup>th</sup> Electronica, the International Trade Fair for Electronic Components, Systems and Applications, came to a close with more than 72,000 visitors. A

total of 2,669 exhibitors from 49 countries presented the future of electronics and showcased application-oriented solutions during the four-day fair, which revolved around intelligent and energy-efficient solutions in the sectors for energy storage, LEDs and smart grids.

### MinDCet's positions itself in the market

In the overwhelming jungle of booths and major halls MinDCet clearly positions itself in the heart of Electronica 2012: Energy Efficient Solutions. The next-generation state-of-the-art power conversion products, high-speed control systems and drivers, both on ASIC



level as discrete, got a lot of attention of the visitors. Looking for new, but proven, technology, that is exactly what they found at the MinDCet booth. In that sense MinDCet succeeds in both attracting new prospects and maintaining existing customer relations. The

continuation from page 13



outcome looks excellent and will more than likely result in expanding business in 2013. To be continued...

**MinDCet: What you see is what you get**

Beyond telling visitors what we do, we like to just show them. Ultra-efficient reconfigurable DC-DC converters, wireless power transfer and communication, high-speed laser drivers, low-power class-D audio amplifiers, accurate inductor measurements...showing our hands-on approach always works: visitors immediately see what we mean. More important still is that they are introduced with MinDCet's company policy of a no-nonsense approach with products that simply work and outclass competitors on a technical level.

**About MINDCET**

MinDCet is an ISO9001:2008 certified fabless mixed-signal electronic design company, with a focus on integrated and discrete Power Management. MinDCet applies their expert-level competences in the field of highly/fully integrated and discrete DC-DC converters, drivers, control systems, class-D amplifiers, power and battery management – empowering your products with cutting-edge technology to be efficient and competitive. The services of MINDCET include:

- Turnkey IC Solutions
- IC Design Services
- System/Feasibility Studies
- In-House Testing and Inductor Characterization

# /K/ Embedded Java Solutions becomes KIFFER.be

After almost ten years of trading as /K/ Embedded Java Solutions, we decided to change our name. For one thing the typographical oddity of the "/k/", while not without its merits, sometimes made

us hard to find in a list or catalogue. The name was also too specific; the use of Java in embedded systems remains our main focus, but we also have skills in other areas such as Linux systems pro-

## FS@ES: Functional Safety on Embedded Systems

Project proposal IWT-TETRA 2013,



supported by IWT

Currently, embedded systems are used more and more in safety-critical applications, for instance in automobile, avionics, medical, or machine manufacturing. Software for safety-critical systems is software which can cause damage to human operators or the environment, when it does not operate correctly. In most applications, a critical and non-critical path can be identified and it is very important that these are strictly separated. This means that the non-critical path may not influence the operation of the critical path. In order to develop safety-critical software, a variety of standards were developed to describe methods to build such software and guarantee its operation (IEC 62304 for medical applications, DO178B for avionics, etc.)

**Project goal**

In this TETRA-project we will investigate how software can be developed for safety-critical applications. Our experiences will be translated to practical knowledge and techniques which are directly applicable for our industrial partners. This project is a collaboration between CoSys

lab of the University of Antwerp and ReMI-EP of KU Leuven campus Ostend. Both research groups have their own focus. EP will emphasize on design patterns and testing safety-critical software, the CoSys lab will focus on implementation techniques and tools.

During the exploration phase of the project, a thorough literature study will identify the existing standards, design techniques and tools. After the first phase, the current state of the art in the academic and industrial field is put into practice through a couple of elementary applications. Afterwards, a feedback seminar will be organized to present our lessons learned. In the following phase the acquired knowledge will be applied in an industrial relevant application, in close cooperation with the members of the user group. Each phase the useful knowledge is gathered and made available on the Content Management System. Furthermore, to spread the knowledge amongst the industrial partners, a seminar will be organized.



gramming or SDK development which are not reflected in the old name.

For our customers nothing changes; we are still the same legal entity and still the same people with the same dedication to realizing your vision of embedded and mobile systems driven by Java and OSGi technologies. The existing k-embedded-java.com websites and mail addresses will also remain active

for an extended period, and of course we remain part of DSP Valley!

# KIFFER.be

## Contact Information

### **Easics Successfully Demonstrates Datapath Modeling Approach in CMOSIS Camera-Chip for the New “Leica M” Camera • p1**

Mr. Ramses Valvekens, CEO Easics • Tel. +32 16 395 613 • [www.easics.be](http://www.easics.be) • [ramses@easics.be](mailto:ramses@easics.be)

Mr. Wim Wuyts, Director of Sales and Marketing CMOSIS nv • Tel. +32 3 260 17 33 • [www.cmosis.com](http://www.cmosis.com) • [wim.wuyts@cmosis.com](mailto:wim.wuyts@cmosis.com)

### **ViNotion introduces People Counting system for events • p2**

Dr. ir. Egbert G.T. Jaspers, CEO ViNotion B.V • Tel. +31 40 236 67 61 • [www.vinotion.com](http://www.vinotion.com) • [egbert.jaspers@vinotion.nl](mailto:egbert.jaspers@vinotion.nl)

### **Imec, Holst Centre and Panasonic Present Wireless Low-power Active-Electrode EEG Headset • p4**

Mrs. Katrien Marent, Corporate Communications Manager Imec • Tel. +32 16 28 18 80 • Fax +32 16 28 16 37  
[www.imec.be](http://www.imec.be) • [Katrien.Marent@imec.be](mailto:Katrien.Marent@imec.be)

### **AnSem and Rational Products developed a remote energy management demonstrator. • p5**

Mr. Joan Ceuterick, Business Development Manager AnSem • Tel. +32 16 38 65 07 • [www.ansem.com](http://www.ansem.com) • [business@ansem.com](mailto:business@ansem.com)

### **BASF focuses on Employee Safety with Position Detection System from Essensium • p6**

Mr. Stephen Dunphy, Director Sales and Marketing Essensium • Tel. +32 16 28 65 00 • [info@essensium.com](mailto:info@essensium.com)

Mr. Philippe Heyvaert, BASF • Tel. +32 3 561 2518 • [www.basf.be](http://www.basf.be) • [philippe.heyvaert@basf.com](mailto:philippe.heyvaert@basf.com)

### **Caeleste, Easics and SELEX Galileo signed an ESA contract for the Development of a Prototype ASIC for Large Format NIR/SWIR Detector Array. • p6**

Mr. Ramses Valvekens, CEO Easics • Tel. +32 16 395 613 • [www.easics.be](http://www.easics.be) • [ramses@easics.be](mailto:ramses@easics.be)

Mr. Patrick Henckes, CEO Caeleste • [www.caelete.be](http://www.caelete.be) • [Patrick.henckes@caeleste.be](mailto:Patrick.henckes@caeleste.be)

Mr. John Stevenson, Press Officer SELEX Galileo • Tel. +44 7540 628691 • [www.Selexgalileo.com](http://www.Selexgalileo.com) • [john.stevenson@selexgalileo.com](mailto:john.stevenson@selexgalileo.com)

### **ICsense continues growth in mixed-signal IC design • p 8**

Mr. Bram De Muer, CEO ICsense • Tel. +32 16 589700 • Fax +32 16 589720 • [www.icsense.com](http://www.icsense.com) • [demuer@icsense.com](mailto:demuer@icsense.com)

### **I-TRAVLE: Game-based arm training for MS and stroke patients • p9**

Prof. Karin Coninx, EDM UHasselt • Tel. 32 11 26 84 11 • [www.i-travle.eu](http://www.i-travle.eu) • [Karin.coninx@uhasselt.be](mailto:Karin.coninx@uhasselt.be)

Prof. Peter Feys, Biomed/Reval UHasselt • [www.i-travle.eu](http://www.i-travle.eu) • [peter.feys@uhasselt.be](mailto:peter.feys@uhasselt.be)

### **Siemens to Acquire LMS, Becoming the First PLM Software Company to Provide Closed-Loop, Systems-Driven Product Development Solutions • p10**

Mr. Peter Vandeborne, VP Marketing & Communications LMS International • [peter.vandeborne@lmsintl.com](mailto:peter.vandeborne@lmsintl.com)

### **Cochlear and NXP to Strengthen Cooperation for Future Generations of Implantable Hearing Solutions • p10**

Mr. Carl Van Himbeek, General Manager Cochlear • Tel. +32 15 362837 • Fax +32 15 362800

[www.cochlear.com](http://www.cochlear.com) • [cvanhimbeek@cochlear.be](mailto:cvanhimbeek@cochlear.be)

Mr. Bart De Loore, VP and general manager Personal Health Business NXP Semiconductors • [www.nxp.com](http://www.nxp.com) • [bart.de.loore@nxp.com](mailto:bart.de.loore@nxp.com)

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#### **/K/ Embedded Java Solutions becomes KIFFER.be • p14**

Mr. Chris Gray, Managing Director Kiffer • Tel. +32 3 2160369 • Fax +32 3 2162123 • [www.kiffer.be](http://www.kiffer.be) • [chris.gray@kiffer.be](mailto:chris.gray@kiffer.be)

### **ICT for Health Monitoring and Ambient Assisted Living • p12**

Mrs. Greet Bilsen, LICT coordinator KU Leuven • [LICTcoordinator@kuleuven.be](mailto:LICTcoordinator@kuleuven.be)

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Mr. Jean-Baptiste Lorent, Product and Marketing Manager intoPIX s.a • Tel. +32 10 23 84 70 • Fax +32 10 23 84 71

[www.intopix.com](http://www.intopix.com) • [jb.lorent@intopix.com](mailto:jb.lorent@intopix.com)

### **MINDCET exhibits at the Electronica International Trade Fair in Munich • p13**

Mr. Mike Wens, CEO MinDCet • Tel. +32 16 40 95 28 • [www.mindcet.com](http://www.mindcet.com) • [mike@mindcet.com](mailto:mike@mindcet.com)

### **FS@ES: Functional Safety on Embedded Systems • p14**

Mr. Piet Cordemans, Research Group EP, KHBO • Tel. 32 59 56 90 01 • [www.ep.khbo.be/projects/proposals](http://www.ep.khbo.be/projects/proposals) • [piet.cordemans@khbo.be](mailto:piet.cordemans@khbo.be)

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