

PRESS RELEASE

Paper, cardboard and plastic products that ‘talk’! CAPID Tokens consortium plans to develop technology that could bring wireless communication to millions of everyday objects

Six companies — Cartamundi, Cartamundi Digital, imec, TNO, Simply-X and Rebased — from four different EU countries have joined forces in a new consortium that aims to extend wireless communication to thousands — perhaps millions — of everyday objects.

The CAPID — Capacitive Identification — Tokens consortium will develop, over the next three years, a new generation of wireless tags.

CAPID tokens will be thin, lightweight and use flexible electronics; this means they can be embedded in printed paper or plastic products. The tags will send a dynamic capacitive signal — a type of electronic sensing process — to reading devices.

CAPID technology will enable the production of smart products at very low cost and in high volumes. These products will be able to connect to the Internet, simply by being placed on a touchscreen.

The potential applications for this technology are many and varied, from board games to entrance tickets and payment systems. More advanced CAPID tokens could even allow two-way communication with touchscreens by using photo sensors inside cards.

Every CAPID token will have its own unique identification code. These codes will be more secure than short-range electronic 'reading' technologies like QR (which can be copied) or NFC (which can be read from distance), and they will be able to detect the exact position and orientation of objects on a touchscreen.

The CAPID consortium is inspired and supported by the European Horizon 2020 programme. The members of the CAPID consortium are drawn from the worlds of electronics, games, printing, payment, ticketing and technology innovation.

They will establish a complete supply chain to embed CAPID tokens into paper, cardboard and plastic components, bringing thin film electronics technology to a whole new level.

Within the consortium imec will focus on chip design. TNO will work on mass manufacturing processes for the tokens. Rebased, simply-x and Cartamundi Digital will work on demonstrators within their market expertise in payment, ticketing and game boards. Cartamundi will integrate CAPID tokens into physical products and is coordinator of the consortium.

This is an important step in the realisation of potentially one of the most exciting technological developments of the 21st century to date — the Internet of Things: objects that can collect and exchange data.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 732389.

About Cartamundi

Cartamundi is Latin for "Cards for the World". With a history dating back to 1765, today Cartamundi is the world's leading manufacturer of card- and board games. With a network of

owned sales offices, 11 state-of-the-art manufacturing plants and an over 2,200 people strong workforce, Cartamundi is a prominent and growing supplier to the global games industry. In 2016, Cartamundi established revenue of 387 million euro, marking a revenue growth of 45% compared to 2015.

Legendary board games such as Monopoly® and Trivial Pursuit® run off the Cartamundi production lines, as do many different varieties of playing cards and card games for consumers as well as casinos.

With its strong Shuffle brand, Cartamundi produces a compelling range of children's card games and family games which can be found in all major retailers across Europe. All contributing to fulfilling the Cartamundi purpose of "Sharing the Magic of Playing Together".

Cartamundi headquarters is in Turnhout, Belgium. Cartamundi's factories are located in Japan, India, Poland, Germany, France, Belgium, United Kingdom, Ireland, United States of America and Brazil.

About imec

Imec is the world-leading research and innovation hub in nano-electronics and digital technologies. The combination of our widely acclaimed leadership in microchip technology and profound software and ICT expertise is what makes us unique. By leveraging our world-class infrastructure and local and global ecosystem of partners across a multitude of industries, we create groundbreaking innovation in application domains such as healthcare, smart cities and mobility, logistics and manufacturing, and energy.

As a trusted partner for companies, start-ups and universities we bring together close to 3,500 brilliant minds from over 70 nationalities. Imec is headquartered in Leuven, Belgium and also has distributed R&D groups at a number of Flemish universities, in the Netherlands, Taiwan, USA, China, and offices in India and Japan. In 2015, imec's revenue (P&L) totaled 415 million euro and of iMinds which is integrated in imec as of September 21,

2016 52 million euro. Further information on imec can be found at www.imec-int.com.

Imec is a registered trademark for the activities of IMEC International (a legal entity set up under Belgian law as a "stichting van openbaar nut"), imec Belgium (IMEC vzw supported by the Flemish Government), imec the Netherlands (Stichting IMEC Nederland, part of Holst Centre which is supported by the Dutch Government), imec Taiwan (IMEC Taiwan Co.) and imec China (IMEC Microelectronics (Shanghai) Co. Ltd.) and imec India (Imec India Private Limited), imec Florida (IMEC USA nanoelectronics design center).

About TNO

TNO has some 3000 professionals who put their knowledge and experience to work in creating smart solutions to complex issues. These innovations help to sustainably strengthen industrial competitiveness and social wellbeing. We are partnered by some 3000 companies and organisations, including SMEs, in the Netherlands and around the world.

For more information about TNO and the five societal themes that are the focus of our work, go to www.tno.nl

About Cartamundi Digital

The company was founded in 2007 as Playlane. Since Playlane became part of the Cartamundi Group in 2013, the name changed to Cartamundi Digital. Cartamundi Digital is specialized in creating unique applications for mobile and online usage. To make the applications unique Cartamundi Digital created technologies and products such as iCards. These give the opportunity to let the world of cards meet the digital world and make the application hybrid. Cartamundi Digital creates apps for national and international companies such as Ferrero, Delhaize, Walt Disney, Studio 100, Hasbro, ... Next to this, Cartamundi Digital also creates own products such as Shuffle, Fun.ki, Fundels and Play That Card.

For more information concerning the technologies of iCards, visit www.demo.cards

About Rebased

Rebased is a web and mobile development company from Poland, with offices in three cities and over 20 world-class software developers. Founded in 2011, Rebased specializes in innovative applications that integrate and improve various existing systems for companies from Europe, USA and Canada. This includes industrial applications like software for controlling solar power stations, payment system for ride-hailing service and conference management system fully integrated with existing payment, ticketing and CRM providers. Besides commercial work, Rebased contributes to open source and gets involved in initiatives focused on teaching programming.

More information about Rebased can be found at <https://rebased.pl/>

About Simply X

Situated in Bad Gandersheim, simply-X is a hardware- and software-development company focussed on the event-industry with more than twenty years of experience. Beside its primary product portfolio in the access-control space, simply-X also offers modern point-of-sale- & ordering-systems, digital signage systems, customer-loyalty systems and custom-build fan apps. Because of the in-house production, simply-X delivers custom solutions that fit any event.

With a young and dynamic team that is highly-engaged and qualified, simply-X continuously invests into innovative new products as well as the improvement of its products to the highest quality standards. Using it's experience in software development, hardware production, networking and consulting,

Press Release Capacitive Identification Tokens (CAPID)

simply-X delivers complete solutions to the ever-changing event landscape.

Our Philosophy: Optimal service, easy-to-use products, all at an affordable price.

For all information about the project and its partners, visit www.capid.eu

For all news & press please contact:

Cartamundi

Office: +3214420201

Visbeekstraat 22 BE – 2300 Turnhout

www.cartamundi.com

Twitter @cartamundicards

Facebook/cartamundicards

Imec

Hanne Degans, Press officer and communications specialist,

T: +32 16 28 17 69

Mobile: +32 486 065 175

Hanne.Degans@imec.be