



## NXP Semiconductors Austria GmbH & Co KG: **SEAMAL IPCEI**

### Company presentation

**NXP Semiconductors N.V. (NASDAQ: NXPI)** enables secure connections and infrastructure for a smarter world, advancing solutions that make lives easier, better, and safer. As a world leader in secure connectivity solutions for embedded applications, NXP is driving innovation in the secure connected vehicle, end-to-end security & privacy, and smart connected solutions markets. Built on more than 60 years of combined experience and expertise, the company has approximately 30,000 employees in more than 30 countries and posted revenue of \$11.06 billion in 2021. The company's headquarter is situated in Eindhoven (The Netherlands). In Europe, other main locations are spread over The Netherlands, Germany, France, Austria and Belgium.

NXP Semiconductors Austria is the global competence centre for secure contactless identification and communication systems within NXP. More than 650 highly qualified employees at the site Gratkorn focus on research, design and marketing of integrated circuits for secure contactless systems, including technical customer support. NXP-AT addresses secure contactless electronic documents, bank cards, tickets and solutions based on NFC (Near Field Communication). Technology application domains including car access and immobilization systems, as well as solutions for object identification and authentication complete the product offer. Most recently activities on UWB based localization solutions, secure Machine Learning and Battery Management Systems have been added to the portfolio. NXP-AT has a long and successful history of 30 years in contactless low power/passive solutions on different frequency platforms, including HF and UHF, as well as a deep knowledge in security.

### Project Information

- Technology field: TF1 - Energy efficient chips
- Project coordinator: Mr. Michael JERNE, Mr. Marcus BORRMANN
- Project duration: 48 months
- National funding agencies: FFG and aws
- Location: Gratkorn, Austria

## Challenges

“Cybersecurity” is one of the most vital pillars to ensure trustworthy solutions based on electronic based systems, with high user acceptance. Also security is a key ingredient for resilient critical infrastructures and European sovereignty. Given continuous digitalization efforts and ever growing connectivity, security is more vital than ever before. Challenges arise from the fact that the domain is very dynamic, with attackers having continuously more tools and resources to attack systems, as well as the fact that at first glance security is causing additional cost. This has lead to a situation, where further research and deployment of advanced security concepts has become more important than ever before. The security aspect has not been significantly covered in the IPCEI ME, with NXP joining the consortium this gap has been closed.

## Objective

The overall objective of NXP Semiconductors Austria in IPCEI ME is to add advanced security concepts to the IPCEI ME portfolio, with an initial focus on TF1 (Energy Efficient Chips). This includes advanced secure low-power solutions like they are used in UWB-based localization systems or smart Battery Management Systems.

Thus hardware-based security concepts are one of the core elements in SEAMAL IPCEI. By implementing the project and developing a new generation of high-security ICs, NXP is contributing to promoting secure and efficient industrial solutions, safe and smart mobility and a secure Internet of Things in general.

The main focus of the R&D&I and FID activities within the IPCEI is on developing a next-generation security IC, a so called “Secure Element” and do the first industrial deployment of this device. Additional work is done on improving analog virtual testing methodologies to advance development and achieve faster time-to-market. Results of SEAMAL IPCEI will finally ensure safe and secure system operation by developing a hardware secure element and integrating it into the overall IC platforms and chipsets. The planned activities within the IPCEI fully contribute to providing reliable ultra-low-power wireless IoT solutions with improved time-to-market. A high level of learning and continuous improvement efforts in terms of quality, reliability and producibility are required to meet the increasing demands related to energy efficient and fit-for-purpose security solutions in various applications.

### Project coordinator

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## Solution approaches

Given the hardware based and microelectronics-centered approach towards cybersecurity solutions inside the IPCEI ME, in general solutions will be based on the following ingredients resp. competences: detailed understanding of a) security threats and related trends, b) user and application requirements, c) frame conditions and options in different verticals/sectors, d) options and limitations given by power and resource constraint hardware based devices, esp. in ultra-low power (partly passive) wireless connectivity applications, e) overall security architectures and scalability concepts and f) related standardization, evaluation and certification aspects. Only by combining all these competences, which have been developed over decades inside NXP, an efficient and trustworthy solution can be developed.

R&D&I and FID activities of the device in scope in the IPCEI ME follow the classical design approaches and development cycles used in the microelectronics industry, with specific consideration of the security related specialties mentioned above.

## Perspectives

Cybersecurity is a “horizontal” technology, which increases potential re-use (considering scalability) and impact across several domains. The key application areas for the technology solutions developed in SEAMAL IPCEI are the industrial IoT, automotive and smart mobility solutions, as well as mobile and personal devices, segments with major relevance for European economic growth and sovereignty. Only with appropriate levels of security, safe and trustworthy systems can be built, contributing to energy efficient and resilient infrastructures. Technology and knowledge transfer will occur along the value chain and beyond the primarily targeted areas. Thus, areas such as Digital Life (e.g. Smart Health) and Digital Industries also benefit from the results of the IPCEI project. Long-standing and fruitful cooperation with academic partners remains vital, and universities and RTOs will benefit significantly from the SEAMAL ICPEI program by gaining deep market insights into current and future market needs and teaming up with a global market leader in security. These collaborations ensure that scientific results find their way into usable innovations via applied research. Future generations of young talents are a part of this from the very beginning. Last but not least, the IPCEI ME has laid a great foundation for Europe and NXP to scale up, like currently targeted by the IPCEI ME/CT.

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