International & Europe

In an international context that underscores the challenges of sovereignty, the Nanoelec teams have decided to consolidate an international strategy around a few simple principles:

➔ Giving priority to reinforcing the positions of the consortium's current members, which already have global reach but which are faced with international competition: at least, five of our core partners have a global footprint,

➔ Continuing support for national startups capable of addressing international markets,

➔ Accelerating international partnerships, in particular in the fields of materials and production or instrumentation equipment: Nanoelec runs associated projects with major actors from Europe, North America and Oriental Asia,

➔ Finally, re-energizing Europe within the new framework programs and the Chip Act

From the scientific viewpoint, it is worth noting the presence at various major conferences in 2023: IEEE Silicon Photonics, Date for design work, ECTC for 3D integration technology, FIC for cybersecurity, Display Week, Mems & Imaging Device Summit.

European projects adopting Nanoelec's technology and know-how

Cytometry

Partners of the EU Neoteric project are developing a reconfigurable photonic circuit to detect cancer cells in a solution (cytometry) using a machine learning (ML) method. ◊

https://neoterich2020.eu/

Neuromorphic computing

The EU Prometheus project aims to manufacture a complete neuromorphic computing chip (set of interferometers using low-consumption BTO-based phase shifters for the synaptic part and pulsed lasers integrated on silicon for the neural part). ◊

https://prometheus-he.eu/

Secure hardware accelerators

For the first time, EU Neuropuls will develop secure hardware accelerators based on novel neuromorphic architectures and PUF-based security layers leveraging the benefits offered by the integration of photonics, PCMs and III-V materials. ◊

https://neuropuls.eu/

Nanomechanical materials characterization

NanoMECommons is an H2020 collaborative project focusing on the development of new characterization methodologies tailored to industrial needs in the nanomechanical field. ◊

https://www. nanomecommons.net/

Addressing key bottlenecks in nanoscience research

NFFA (Europe's Nano Foundries and Fine Analysis Pilot) is an H2020 collaborative project which prefigures the first distributed research infrastructure within the EU, offering access to high-level instrumentation in the field of nanosciences and nanotechnologies. ◊

https://www.nffa.eu/

Exploring radiation effects

Radnext (for RADiation facility Network for the EXploration of effects for indusTry and research) is an H2020 collaborative project aiming to launch a distributed research infrastructure within the EU devoted to the industrial and university irradiation community. ◊

https://radnext.web.cern.ch/

Digitizing European industry

DigiFed has involved over 200 SMEs and mid-sized companies from all over Europe in its innovation program to demonstrate the benefits of digital technologies in terms of hardware security and privacy, human-machine interaction and autonomy for small and medium enterprises. ◊

https://digifed.org/

Reducing e-waste

The main aim of the EECONE project is to reduce electronic waste on a European scale through a vision including the responsible management of the end-of-life of electronic products right from the development or process design stage. Led by Infineon Technologies, the project brings together 49 partners from 16 European countries covering a wide range of sectors, including STMicroelectronics and CEA through Nanoelec, one of the 15 French partners. With a budget of €35 million, EECONE is paving the way for a zero-waste electronics industry. ◊

https://www.eecone.com/eecone/home/

Ethical IC for police investigation

The EU Poliiice project ushers in a new lawful-interception, investigation and intelligence era, including technologies like 5G&Beyond, end-to-end encrypted communication and Quantum based encryption, in a dedicated legal and ethical framework strictly complying with preservation of privacy and ethical rules of operation. Within Nanoelec/Pulse, CEA has developed a new Type 1 Cyber Intelligence, which does not require physical access to the target, that extracts secrets via leaks in the microarchitecture. ◊

https://poliiice-project.eu/

Artificial intelligence of things

The EU InSecTT (Intelligent, Secure, Trustable Things) project aimed to combine the Internet of Things (IoT) with Artificial Intelligence (AI) by building trust in AI-based smart systems and solutions. InSecTT focused on the security of embedded AI. As a partner in this three-year project, CEA-Leti developed innovative solutions at Nanoelec to authenticate intelligent systems and protect them from various cyber-attacks. ◊

https://www.insectt.eu/

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AMONG INITIATIVES SUPPORTED BY EARASHI EU PROJECT, A PROJECT TACKLES ONE OF THE MAIN CHALLENGES IN THE PRODUCTION MACHINES/TOOLS SECTOR, AND SPECIFICALLY IN THE FOOD INDUSTRY. THE AIM IS TO IMPROVE WORKING CONDITIONS IN TERMS OF HUMAN SAFETY, STRESS, AND WELL-BEING SINCE WORKERS ARE RESPONSIBLE FOR CONTROLLING MACHINES AND TOOLS TO PROCESS RAW MATERIALS IN ORDER TO PRODUCE FOOD PRODUCTS
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AI &robotics for human-oriented industry

The EU's Earashi project aims to support European startups and SMEs in the adoption of advanced eco-friendly digital technologies to help workers in their daily activities and improve their working conditions, leading to increased productivity, while respecting privacy and data protection. Nanoelec/Pulse offers hardware components, building blocks and expertise in cybersecurity. ◊

https://earashi.eu/

Photo,
**YOUNG PEOPLE ARE
LOOKING FOR JOBS
THAT MAKE SENSE
FOR SOCIETY, IN
MICROELECTRONICS AS
IN ALL OTHER FIELDS**
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Training design for greener chips

The overarching goal of the GreenChips-EDU project is to increase the number of students pursuing studies in electronics and to enhance the professional development of individuals working within the industry. The focus of the degree programs is the development and production of sustainable and energy-efficient microchips. ◊

https://www.unite-university.eu/unitenews/novel-education-programmes-for-sustainable-microchips-made-in-europe

Training design to address the transformational challenges facing businesses

The aim of the EU Digi-Me project is to create, develop and nurture a European community of leaders capable of designing, initiating and implementing innovations based on advanced digital technologies (AI, generative AI, augmented intelligence, digital twin, blockchain, data analytics, and IoT), in order to meet the strategic and transformational challenges facing businesses. ◊