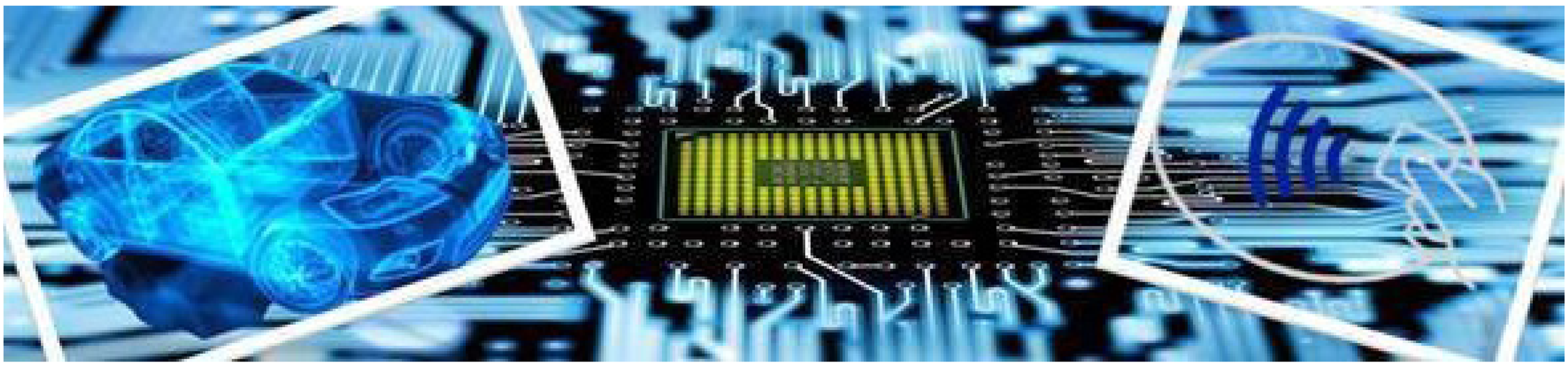
WAKeMeUP

ECSEL JU

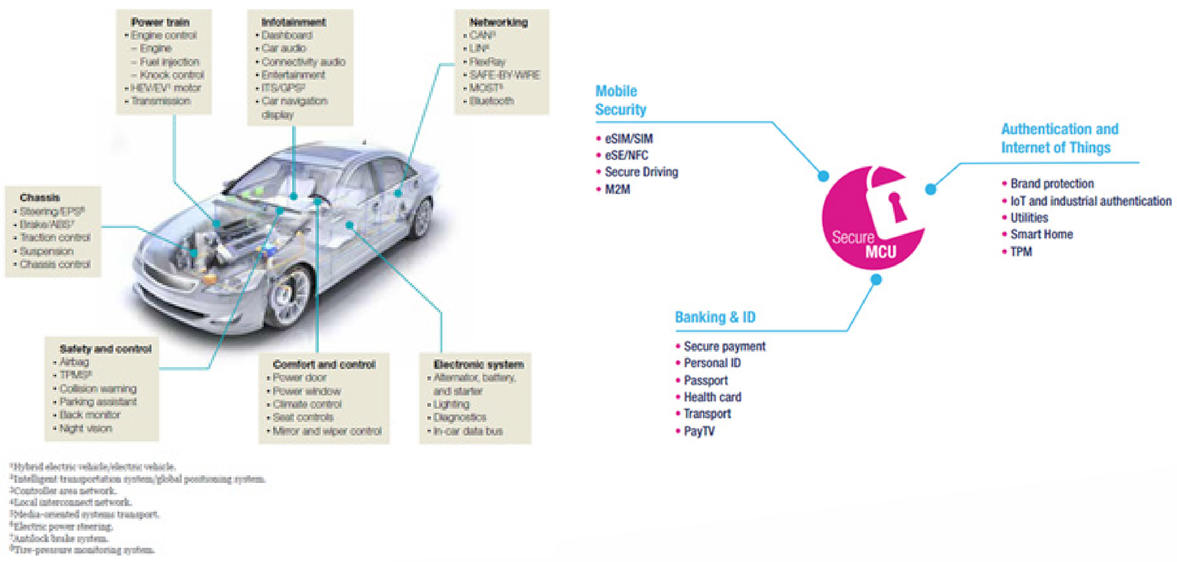
Wafers for Automotive and other Key applications using Memories, embedded in Ulsi Processors



Objectives

WAKeMeUP project will:

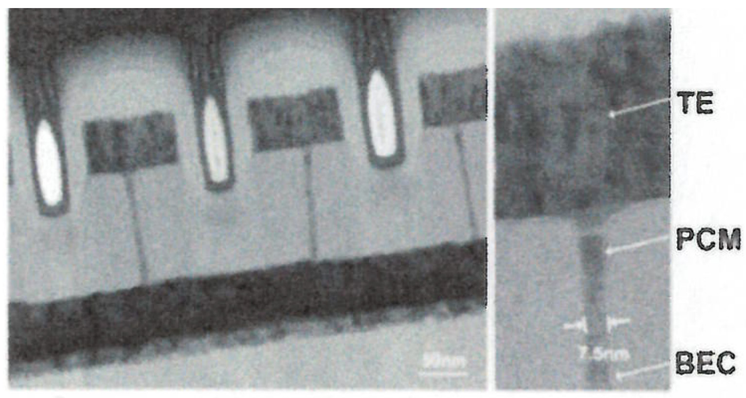
- Setup a complete manufacturing platform for non-volatile embedded Phase Change Memory - ePCM - disruptive technology built on top of the 28nm FDSOI logic for the prototyping of innovative microcontrollers in Europe.
- Extend the microcontroller 40nm technology platform with the integration of flash memory, power management, connectivity and strong security and to build a solid manufacturing platform.
- Benchmark alternative non-volatile memory solutions with the ePCM and the 'conventional' eFlash.
- Develop new devices and systems on the application side in automotive, secure and general purpose, based on the 40nm and the 28nm FD-SOI microcontroller technologies.
- Extend the MCUs portfolio in Europe with Low power and High Performance, integrated RF and strong security versions able to answer next step of disruptive digital innovation and to sustain the corresponding fast-growing markets – including "smartX", IoT.



Relevance and Impact

The project will reinforce the leadership in the semi-conductor industry of microcontrollers where Europe is strong and the market is increasing. The first target of the products development proposed in WAKeMeUP is the automotive market where the growth rate is expected to be the highest among all the electronic components (IC insights estimation is 4,9% CAGR from 2015-2020). The automotive market is demanding from a quality perspective, but with good growth opportunities for the semiconductor vendors that are able to provide a high percentage of the applications functionality.

The MCUs offer will be extended for more pervasion in historical markets and also ready for IoT coming waves of products and innovations.



TEM images of dash-type confined cell structure. The width of PCM in the contact is approximately 7.5nm.Source: D.H. Im et al. (Samsung), IEDM 2008.

The economic impact of strengthening the Nano electronics manufacturing capabilities in Europe includes more than the direct effect in skilled wages. When the demand for Nano electronics increases, the demand for materials, services, labor, machinery and equipment required in producing silicon devices increases, setting off a ripple effect throughout the European economy. This indirect impact is effective in all other industries, particularly in the SMEs sector which is playing a key role in delivering services and equipment depending on Nano electronic devices. Moreover, the field of applications enabled by the WAKeMeUP project encompasses all aspects of the electronics industry, and the widest range of applications, from automotive, to secure payments, and all kinds of small objects and appliances.

Technical Innovation

The project will face the challenge of the successful integration of the ePCM on the FDSOI 28nm for the automotive market up to prototyping. This will lead to very high performance and low power MCUs circuits able to power highly-advanced automotive components starting with powertrain application, unleashing the power behind automotive innovations and supporting the evolution of vehicle electronics going to the autonomous vehicle.

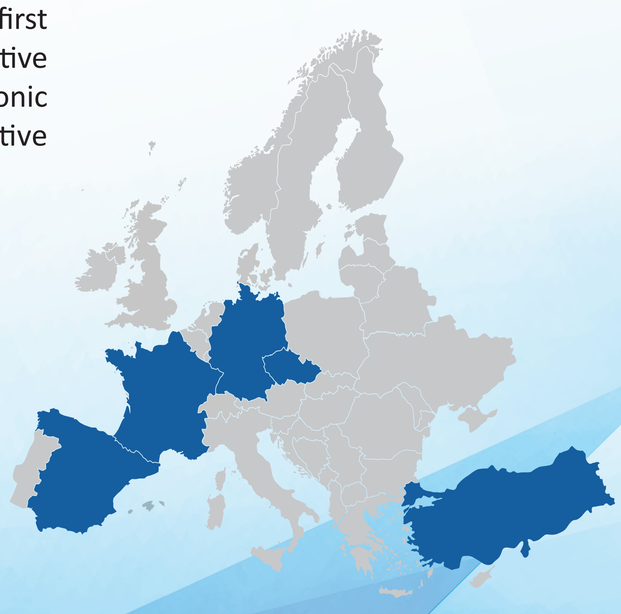
Check Republic
USTAV TEORIE INFORMACE A AUTOMATIZACE AV CR VVI
INSTITUT MIKROELEKTRONICKYCH APLIKACI S.R.O.

France
STMICROELECTRONICS CROLLES 2 SAS
GEMALTO SA
COMMISSARIAT A L ENERGIE ATOMIQUE
ET AUX ENERGIES ALTERNATIVES
STMICROELECTRONICS ROUSSET SAS
STMICROELECTRONICS GRENOBLE 2 SAS
STMICROELECTRONICS (GRAND OUEST) SAS
PFEIFFER VACUUM
CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS
STMICROELECTRONICS SA

Germany
FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.
TECHNISCHE UNIVERSITAT DARMSTADT
X-FAB DRESDEN GMBH & CO. KG
MELEXIS GMBH

Turkey
TURKIYE BILIMSEL VE TEKNOLOJIK ARASTIRMA KURUMU

Spain
UNIVERSITAT AUTONOMA DE BARCELONA



WAKeMeUP

Project Coordinator
Dominique Goubier

Institution
STMicroelectronics

Email
dominique.goubier@st.com

Start
1-5-2018

Duration
36

Total investment
€M 97

Participating organisations
18

Number of countries
5