ECSEL Pilot Lines Success Stories & Impact

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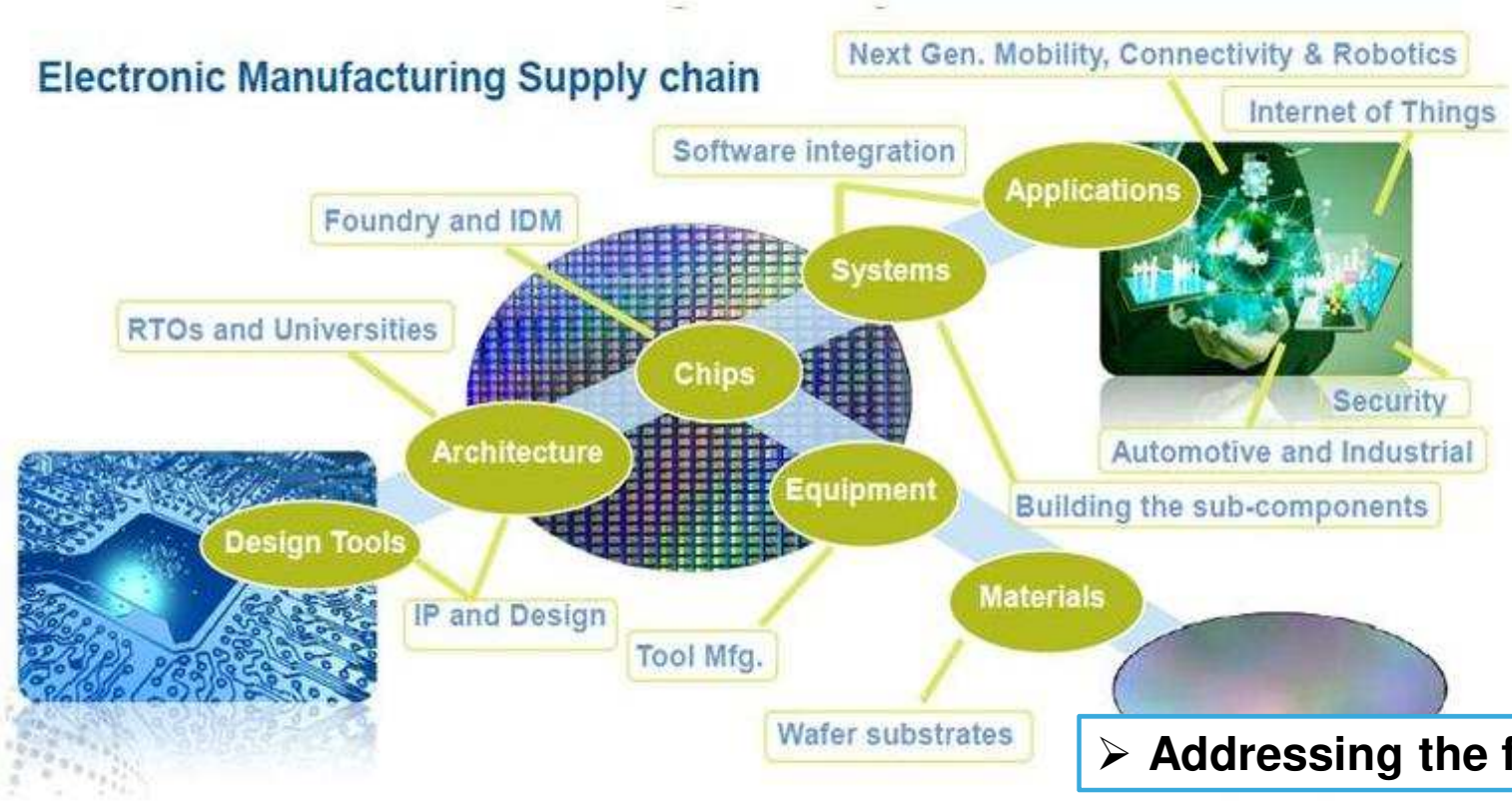
Strengthen the European supply chain of Electronic Components and Systems

Pilot Lines: Scope & Mission

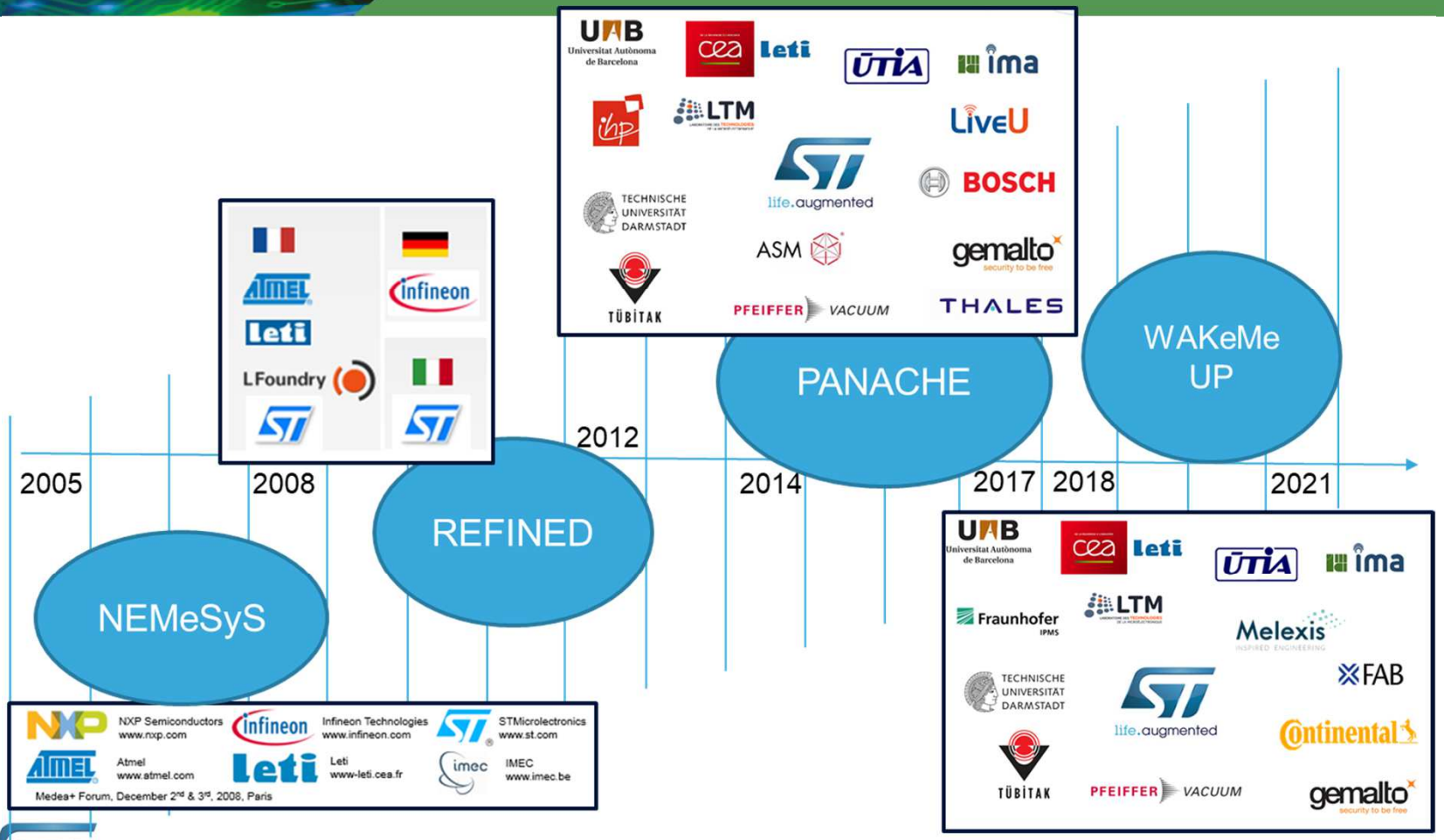
From design …..

…..to Applications and Services



➢ **Addressing the full value chain**

European Projects on eNVM

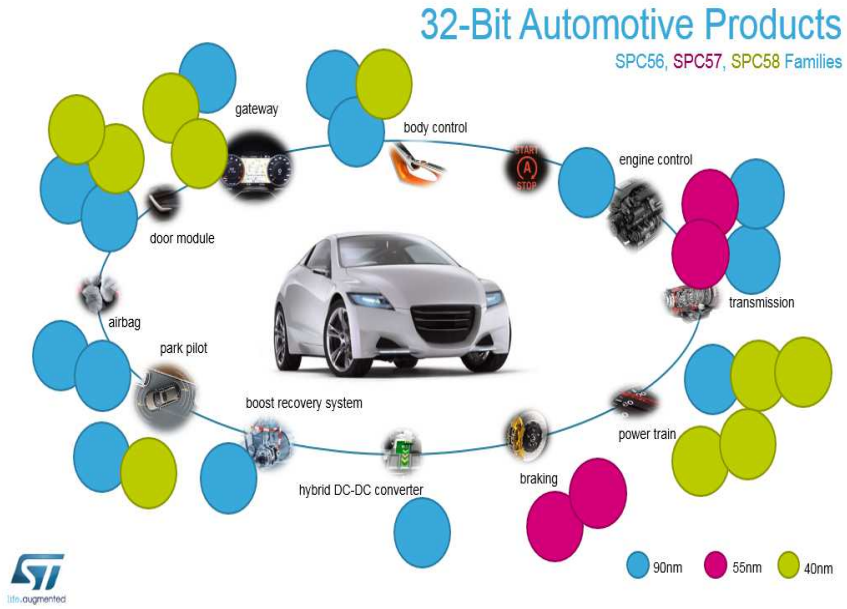


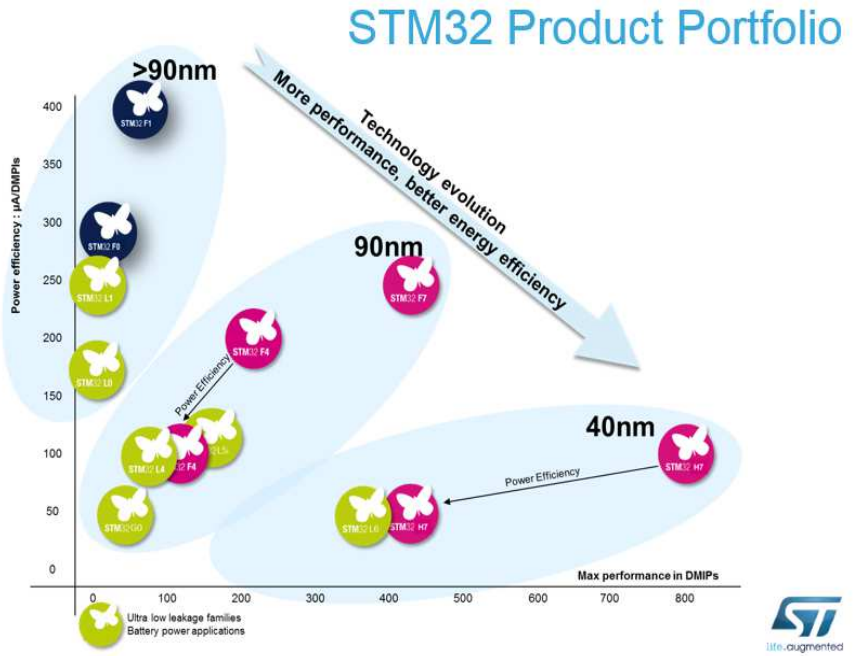
20 years of collaboration on eNVM !

ST Microcontrollers portfolio

WAKeMeUP
Wafers using Memories, embedded in Ulsi Processors

ECSEL-JU proved impact!





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Strengthen the European supply chain of Electronic Components and Systems

ST MEMS/MOEMS portfolio

Accelerometers

Advanced power-saving features that make them the ideal choice for ultra-low-power applications.

Automotive sensors

Include digital accelerometers with low and high g full scale, and digital 3-axis gyroscopes.

Gyroscopes

Analog and digital gyroscopes offer superior stability over time and temperature.

e-Compasses

Include embedded self-test and smart power functionalities to minimize current consumption.

L4M-II
Lab4MEMS – II

Humidity sensors

A planar capacitance technology that integrates humidity & temp. sensors in the sensing element.

Industrial sensors

A broad range of sensors offer the high-performance, accuracy, calibration, size and temperature range required for industrial design.

iNEMO inertial modules

Offer more compact, robust, and easy-to-assemble solutions compared to discrete MEMS products.

MEMS microphones

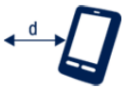
For all audio applications where small size, high sound quality, reliability & affordability are required.

ECSEL-JU proved impact!

Pressure sensors

Innovative MEMS techno to provide extremely high pressure resolution, in ultra-compact & thin packages.

Proximity sensors



FlightSense technology can be used in a host of application areas where accurate ranging is required.

Temperature sensors

Use in a wide range of applications: industrial, consumer, medical and computer market segments.

T-Plus MEMS sensors

Temperature sensors with embedded MEMS motion and environmental sensor ICs.

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MOEMS Outcomes and Applications

L4M-II Lab4MEMS-II

STMicroelectronics, Italy – OKMETIC, Finland

- 20 Partners, 9 Countries
- Duration: 42 months
- From 1-NOV-2014 to 30-APR-2018
- Total cost: 20.6 M€
- JU funding: 3.078 M€
- National funding: 5.638 M€
- In-kind Private Contribution: 11.8 M€

MOEMS	Target Application
µ-mirrors modulating in VIS range	Micro-projectors, future holographic TVs, projectors
µ-mirrors for IR scanning	3D reconstruction, gesture and facial recognition; IR digital cameras; ToF distance measurement; Mood Identification; Avatar; 3D Distance Camera; 3D Rendering; Driver Sleepiness Detection
Fabry Perot Interferometer (FPI)	Spectrometry
Laser Street hopper connectivity	Telecommunications
Reflecting cantilevers	Elemental innovative sensing
Mirror arrays	Light switches, mask-less lithography
Micro lenses or Lenslets	Light field cameras for novel photographic applications; beam homogenization optics for projection systems.
Digital micro-mirror device	Digital Light Processing (DLP), projection display
LIDAR laser scanner	Automotive: distance / 3D image reconstruction
Tunable lenses	Autofocus

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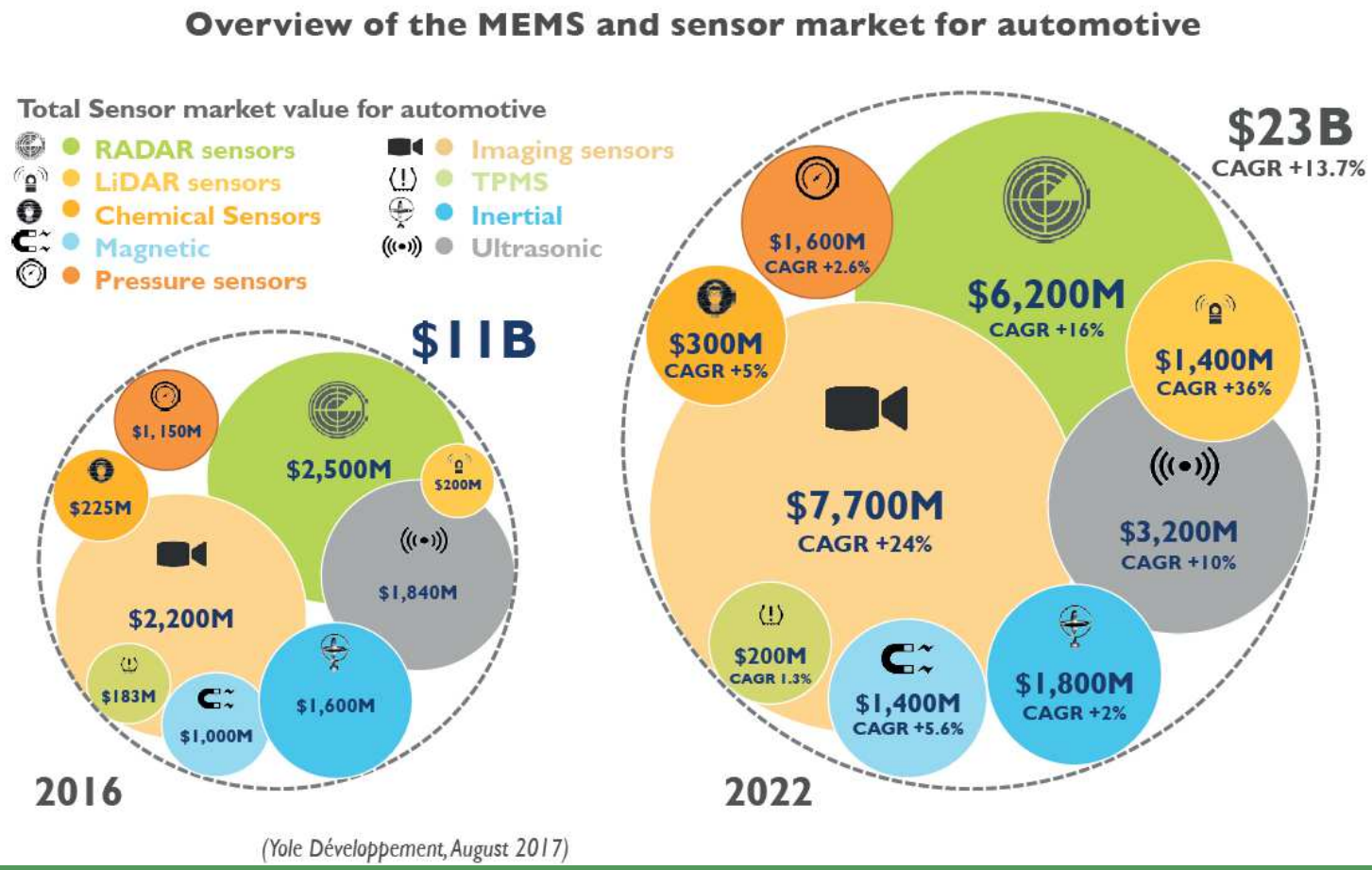
MEMS Market Impact for Automotive



Conclusions

1. **Reinforce partnerships with key european actors in Industrials, RTOs, Academics, SMEs**

2. **Get funding to mitigate the risk of industrial R&D on high-tech products**

3. **Maximize Impact of ST's technos/products through strategic markets, i.e.:**
   - **Automotive, Industry 4.0, Consumer, Security, IoT …**

ECSEL Joint Undertaking