



50 YEARS OF PIONEERING INNOVATION

Marie Semeria – CEO



THE 2 TRANSITIONS IN PROGRESS



THE DIGITAL REVOLUTION



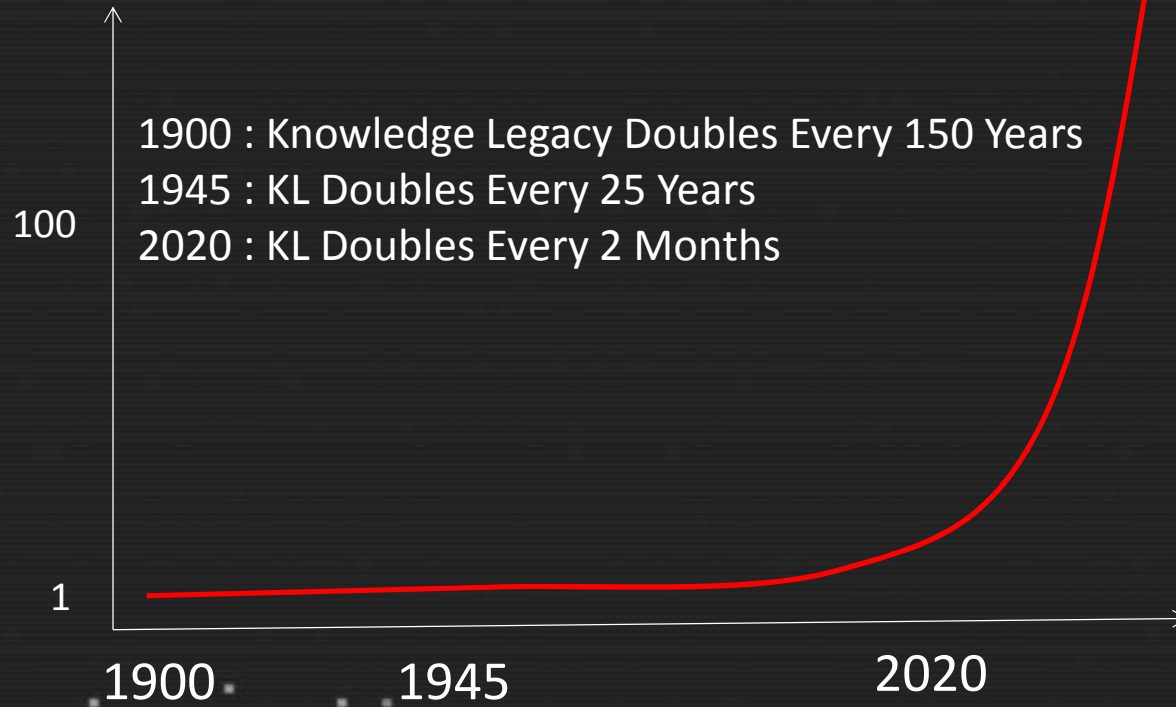
THE ENERGY TRANSITION



SO MUCH DATA !



Knowledge Legacy (KL)





~~X~~ The present sciences are **knowledge of singularities**.

The algorithmic thinking that allows to digitize everything allows us to grasp the individual in its plurality

~~X~~ Our universe is disparate, thinking is **connecting the disparate**.

The more information we receive, the more we are led to relate things that are not related to each other.

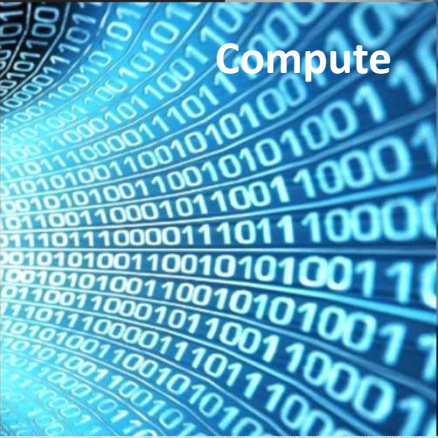
~~X~~ The society of communication becomes a **society of pedagogy**.

Michel Serres — Pantopie : « de Hermès à petite poucette »

October 2015



FONCTIONS ENABLING THE DIGITAL TRANSFORMATION



Compute



Store



Communicate



Sense

At the Convergence Between Real World & Digital



Display



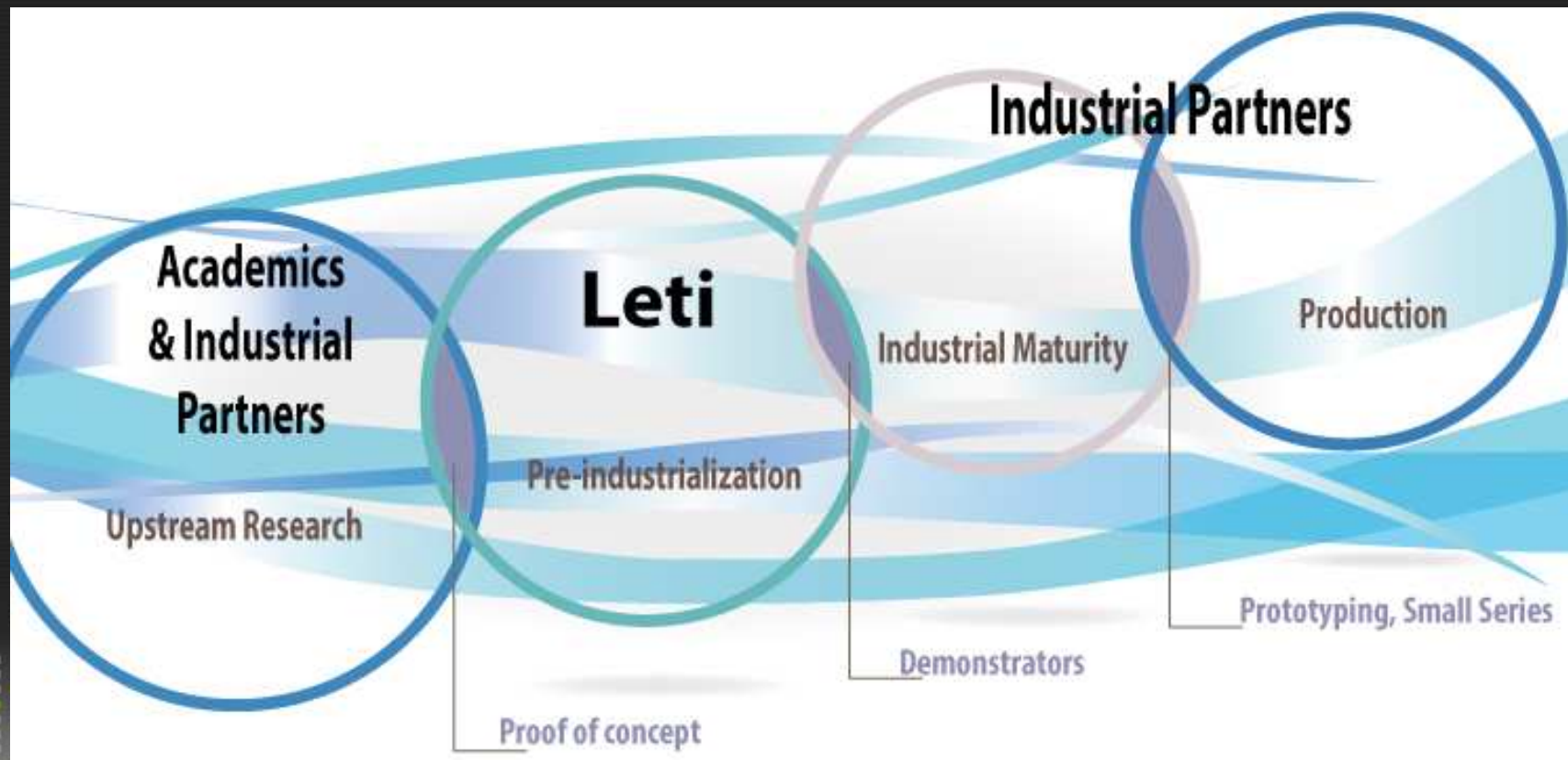
Security



Save Energy

LETI'S MISSION

Committed to innovation, Leti pioneers differentiating solutions in miniaturization and energy-efficient technologies to enable industrial solutions for a human-centered world





Michel CORDELLE - First Leti CEO- 1957



"In the navy where I spent 18 years, we liked to say that "the initiative is an indiscipline that succeeds". Could it be said in the same way that innovation is a challenge to accepted ideas that leads to success.

In the future I wish that, even at the top of his achievement, Leti never neglects innovative ideas and renewal in all shapes."

ROUTES TO INNOVATION FROM « IOT » TO « IOI »

From Internet of Things to Internet of Intelligence



THE DIGITAL REVOLUTION

The wave that's transforms our society, our industry, our business models the way we live, we move, we share.

ARTIFICIAL INTELLIGENCE ROOTS IN HW



Cloud Computing

TODAY

Supervised Learning
Inference
Memory + GPU
Memory + Specific HW

TOMORROW

Supervised Learning
Memory + GPU
PIM

AFTER TOMORROW

Memory

Embedded Computing



Signal Capture

Personnal Assistant

Inference



Environment Awareness
Data Fusion

Autonomous Car

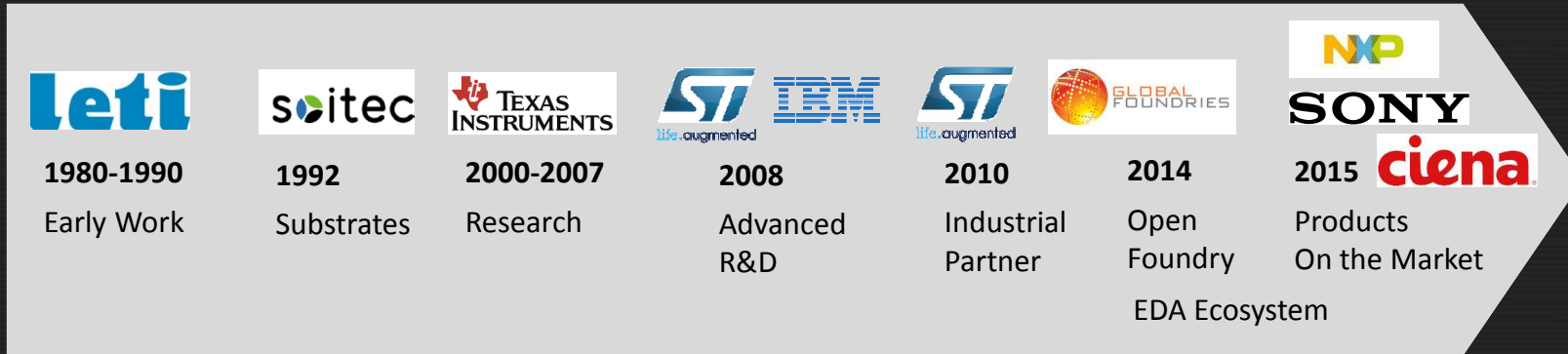
Non-supervised
Learning Inference



Bio-Inspired Approach
Learning Though Interactions
Regularity

Robot Assistant

FDSOI TACKLES THE CHALLENGE OF « IOI »

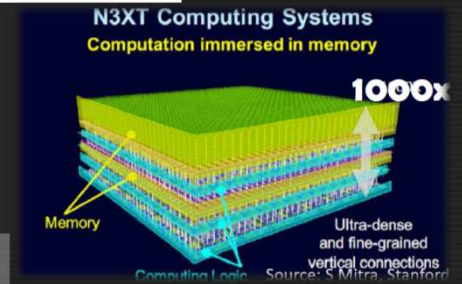
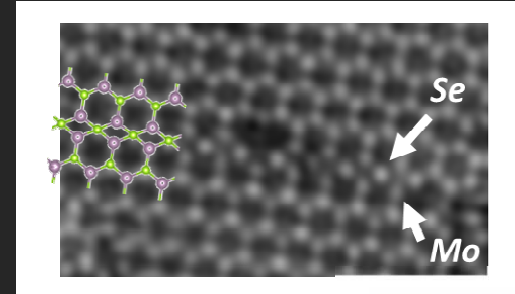
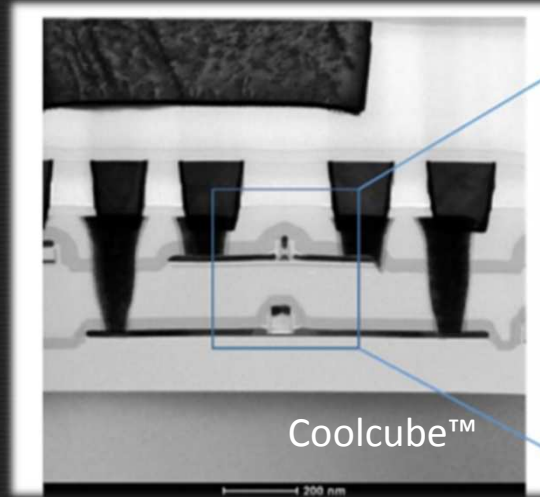
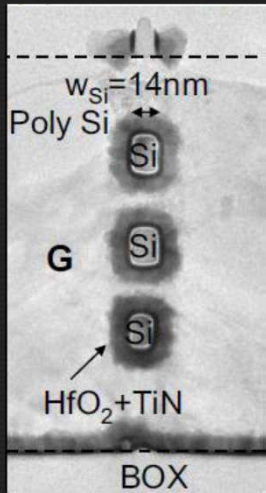


40% Power Saving, Cost Decrease, 100% Gain in RF, eNVM
 FDSOI Extension Up to 7 nm
 State-of-the-art Compact Modeling Adopted by Industry
 Leti and FgG Part of the GF FDXcelerator™ to Design SoC Solution



FDSOI is THE Low Power Low Cost Platform for IoI

THE NEXT MAJOR DISRUPTIONS



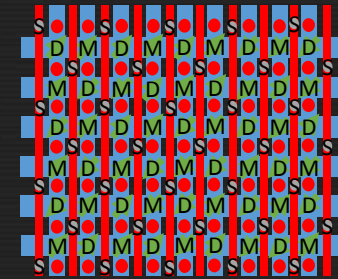
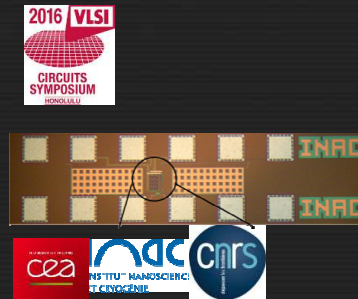
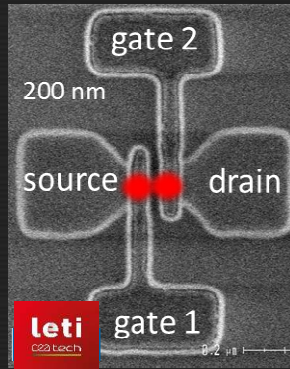
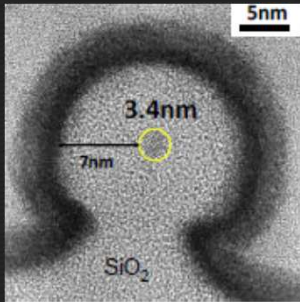
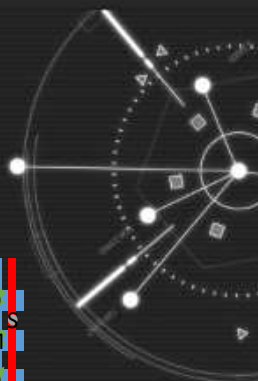
Si Nanowires Will be the Next Platform
State-of-the-art Modeling and Advanced Si Devices



Disruptive 3D Architectures for Computing
3D Integration, Coolcube™, NanoSystem



Innovative Materials: 2D, Functional Materials



Large-Scale
Qbit Integration

First 2 Qubits Logic Gate on Si 28 Compatible with CMOS300 Demonstrated
 Grenoble Unique Technologic Hub : Si Technology and Cryogenic Electronics
 Leti Leads the European Project Mosquito in Quantum
 French Research and Engineering Program in Quantum
 European Flagship in Preparation



Leti Q Platform Open to Physics, Mathematics and Computer Science
 Teams to Experiment

ROUTES TO INNOVATION

<https://www.makeourplanetgreatagain.fr/home>

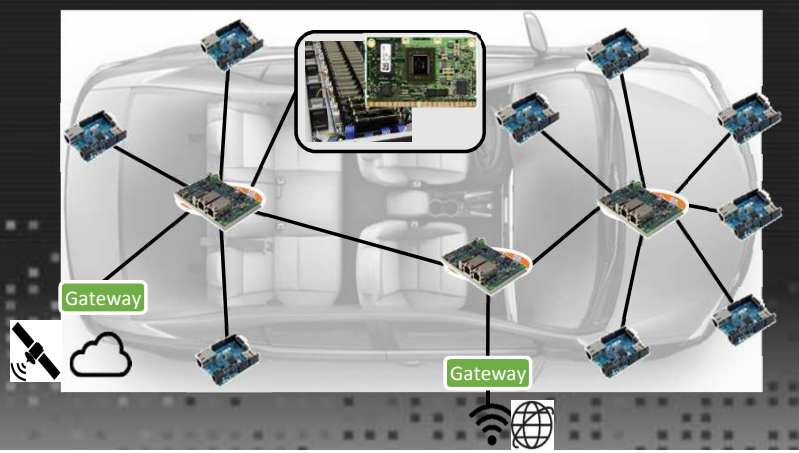
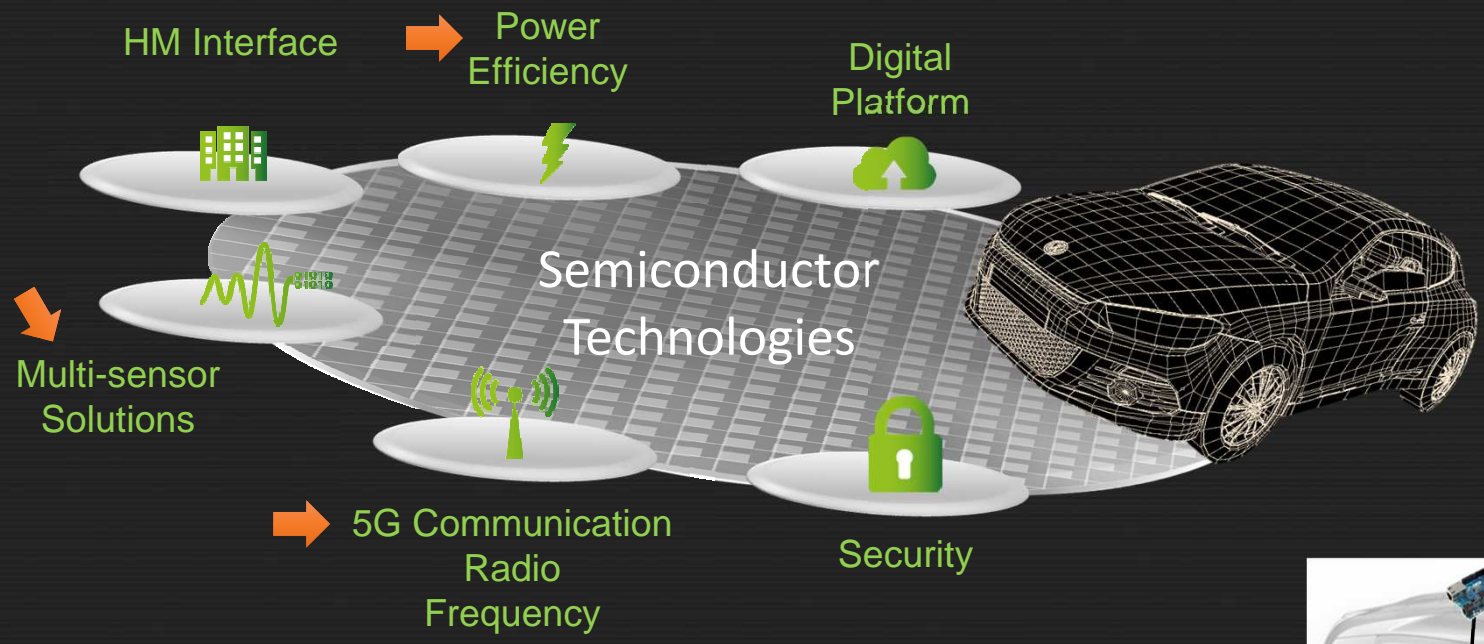


THE ENERGY TRANSITION

Electronics drive the change
New Mobilities
New Way of Living



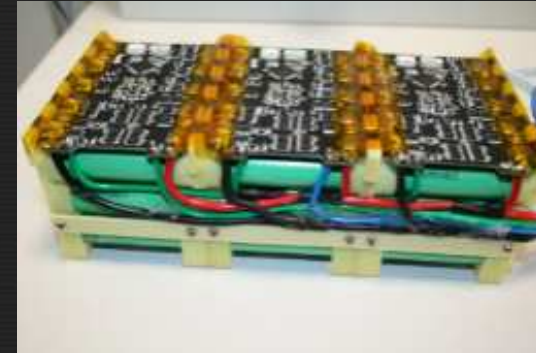
SEMICONDUCTOR ENABLERS



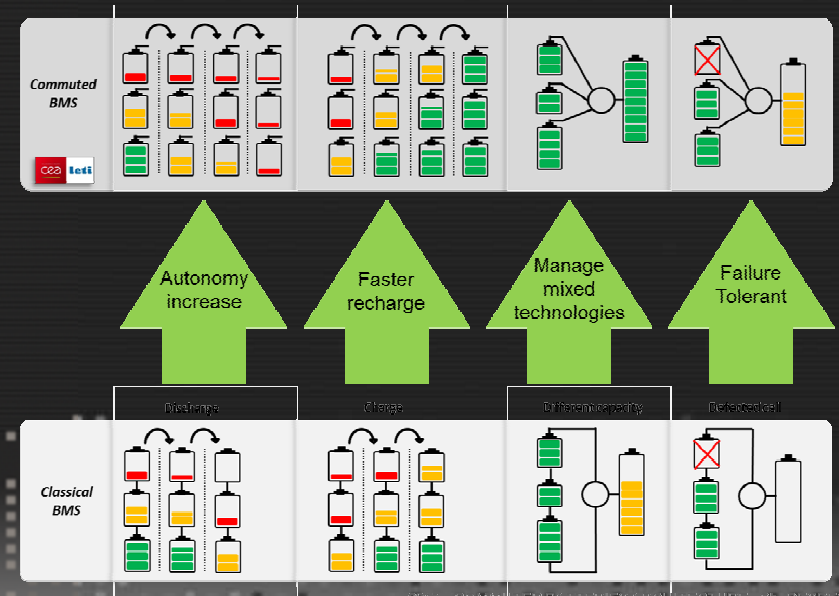


Switching cell concept advantages:

- Simplification of electrical distribution
(capability to carry the driving signal from any place)
- Full usage of battery capacity (thanks to high level BMS performances)
- Simplified cooling system
- Reducing electric noise (thanks to low frequency switching)
- Easy maintenance



BMS, charger, inverter in a unique system



SMART SENSORS ARE THE GAME CHANGERS

IMAGE SENSING



1 Billion €
1500 employees
10000 m² of clean rooms

Low Energy and High Performance

New Materials, Transducers, WLpackaging, ULP Imagers

Beyond Eye Vision

3D Imaging, VIS & IR, X Spectral, X Sensor, Night Vision

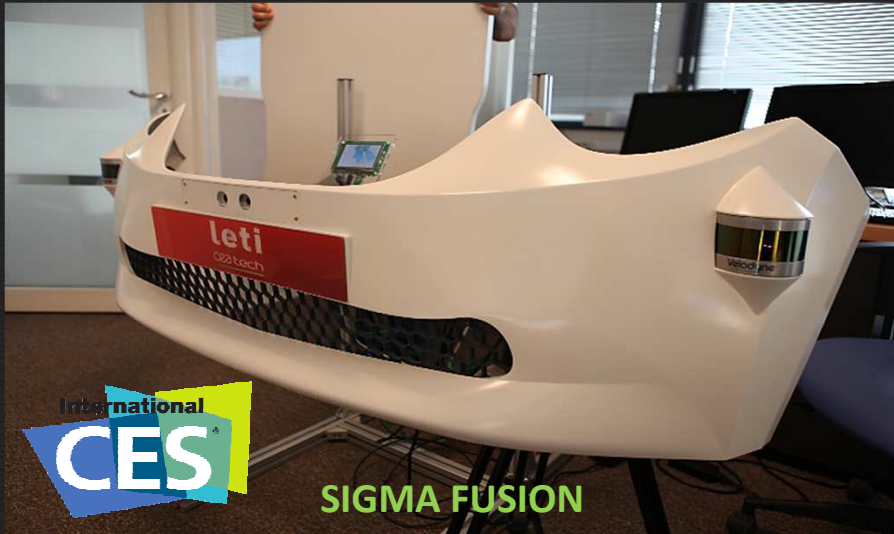
Embedded Intelligence System

Embedded Image Processing for Low-power, Higher-security and Smaller Latency Enablers for ADAS, VR&AR, Health & Wellness, Factory 4.0

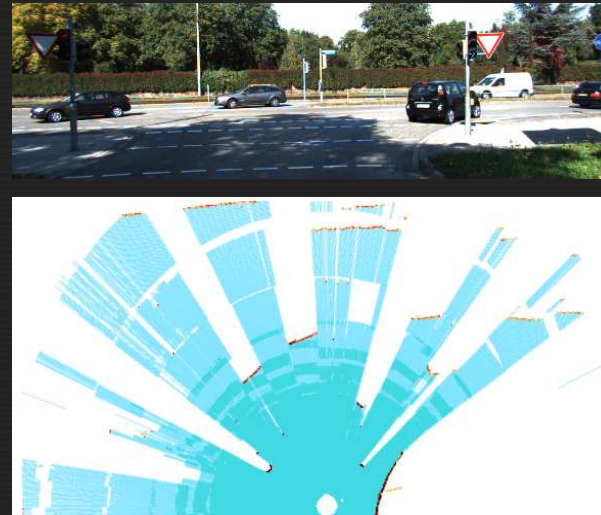
leti
cea tech



SENSOR FUSION ALGORITHMS



SIGMA FUSION



< 1 Watt, Gain x 100
Compatible with Any Sensors
(Optics, Camera, Radar, Ultrasound,...)

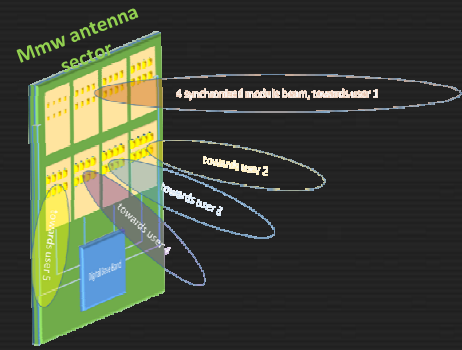
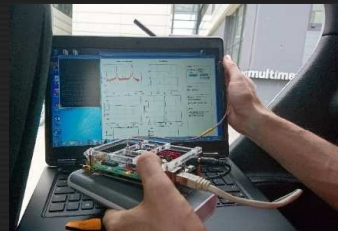


ASIL-D
certified platform

SIGMA FUSION SOLUTION: Low-power Sensor Fusion Solution
For Safe Autonomous Driving

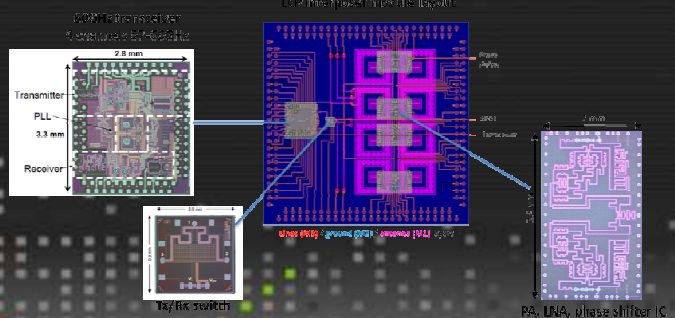
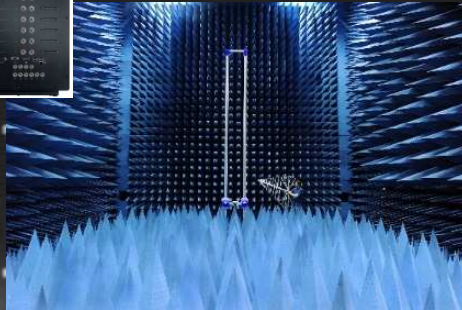


LETI AT THE HEART OF 5G



Investigating New Opportunities for End-users
 New Multi-service Radio
 Field Trials in Grenoble in 3,5GHz
 Massive IoT Development Platform

Driving the Roadmap with the Vision of systems
 Mmwave Radios, Backhauling & Fronthauling
 Platform for New RFICs
 RFSOI and New Materials



leti
C22 tech

50
1967-2017

Some of Leti's Partners at the Forefront

MAPPER
lithography

ARKEMA
INNOVATIVE CHEMISTRY

Lam
RESEARCH

APPLIED
MATERIALS.

set
Smart Equipment Technology

EVG

SCREEN

soitec

III-V lab

EXAGAN
Accelerate Power Transition

Panasonic

muRata
INNOVATOR IN ELECTRONICS

IBM

GLOBALFOUNDRIES

ST
life.augmented

hp HEWLETT
PACKARD

HUAWEI

Panasonic

muRata
INNOVATOR IN ELECTRONICS

tsmc

MICROOLED

ST
life.augmented

Radiall

sigfox

infineon

Aledia

tronics

ULIS

SOFRADIR
Sensing your future

InvenSense

URGO

Mentor
Graphics

illumina

SYNOPSYS

QUALCOMM

intel

davey blakford
high-tech initiation company



BUREAU
VERITAS

BOUYGUES

Valeo

Schneider
Electric

RENAULT

From Materials

To Systems

INSTITUT
CARNOT
Leti



‘I want France to be a “start-up nation”, meaning both a nation that works with and for the start ups, but also a nation that thinks and moves like a start up’

President E. Macron – Vivatech-July 2017

Leti did and will continue to act as a startup incubator and startup partner

FRENCH TECH VISA



Innovation Fund of € 10 billion





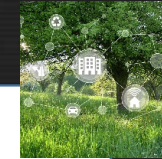
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STARTUPS



THE DIGITAL REVOLUTION



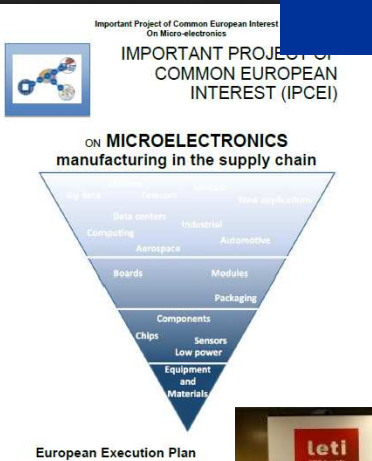
THE ENERGY TRANSITION



A NEW EUROPEAN INITIATIVE IN MICROELECTRONICS



- Microelectronics is a Key Enabler for Competitiveness and Innovation
- IPCEI: Comprehensive Project of Common European Interest
- Allows Europe to Stay Sovereign for its Industrial Future for Decades to Come



**Want to Forge a New French-German Partnership for Shaping
the Technological Digital Future**



" Since its creation, the Leti has found the meaning of its action, key to its success.

*In a world that has profoundly changed and that is questioning today its future, **intelligence technologies** will play a major role in the next years to get out of the trap, a whole program for Leti "*

Jacques Lacombe

innovate!



Michelle Cordelle
1967-1983



Jacques Lacour
1983-1990



Denis Randet
1991-1998



Jean Therme
1999-2003



Bernard Barbier
2003-2006



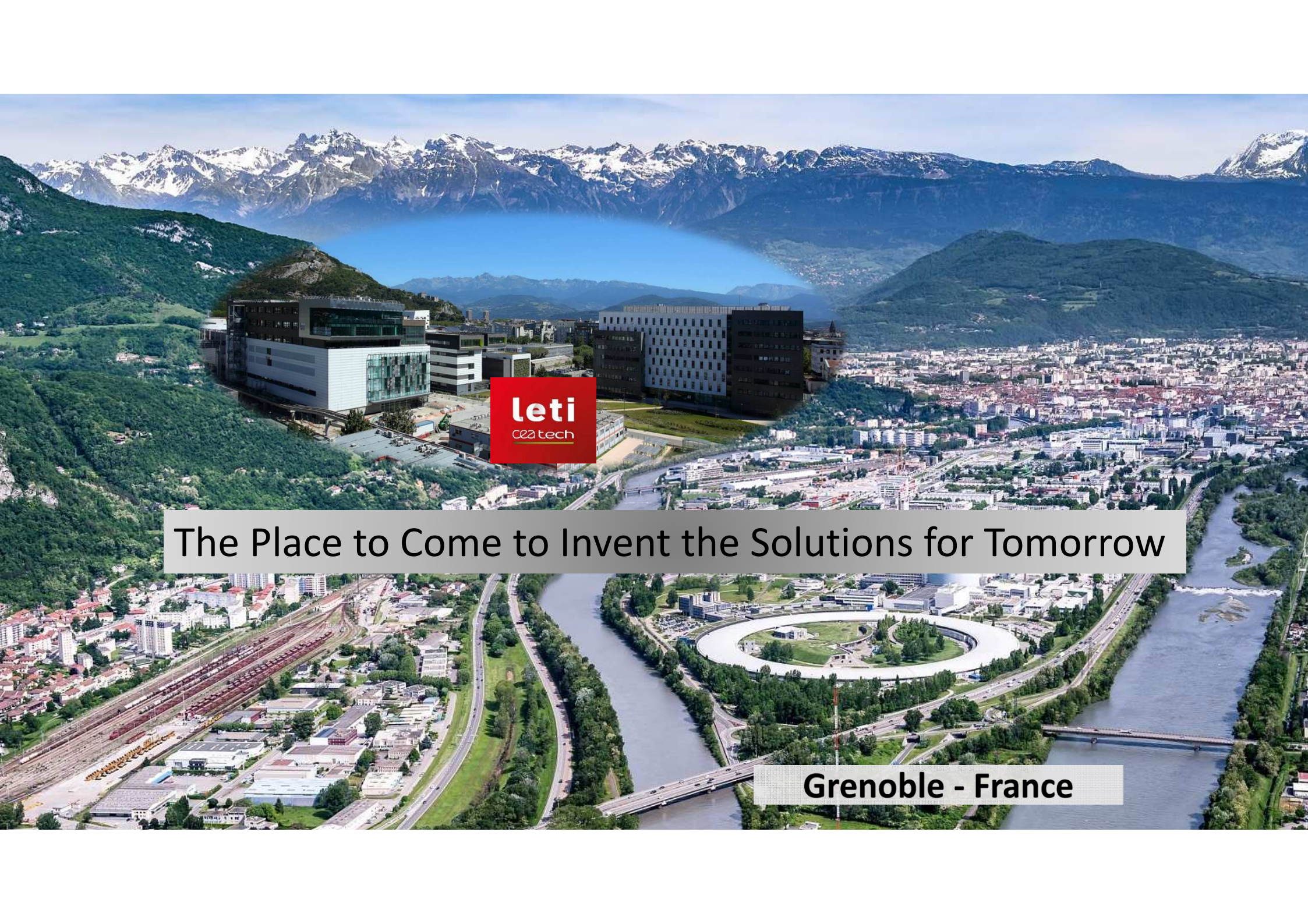
Laurent Maller
2006-2014



Marie-Noëlle Semeria
2014

- Materials
- Process integration
- System integration
- IC architecture
- Usage





The Place to Come to Invent the Solutions for Tomorrow

Grenoble - France

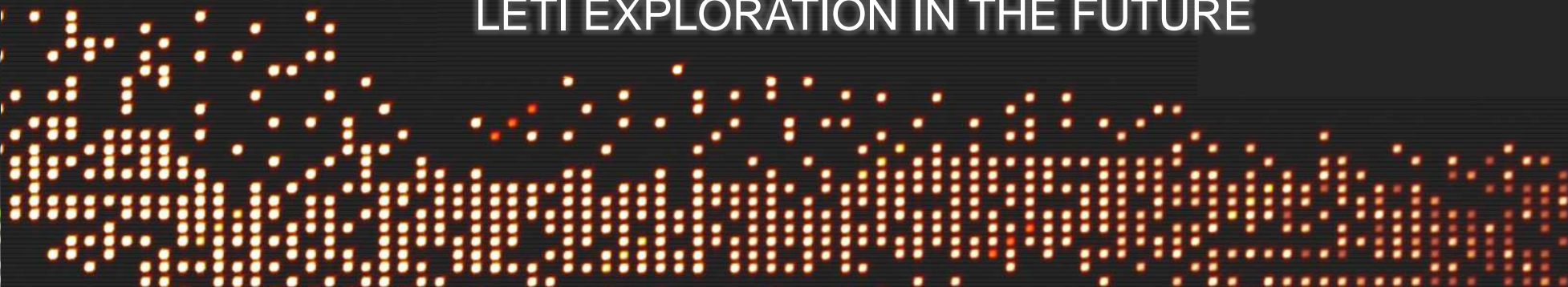
leti
cea tech



leti
cea tech



LETI EXPLORATION IN THE FUTURE



INSTITUT
CARNOT
Leti