

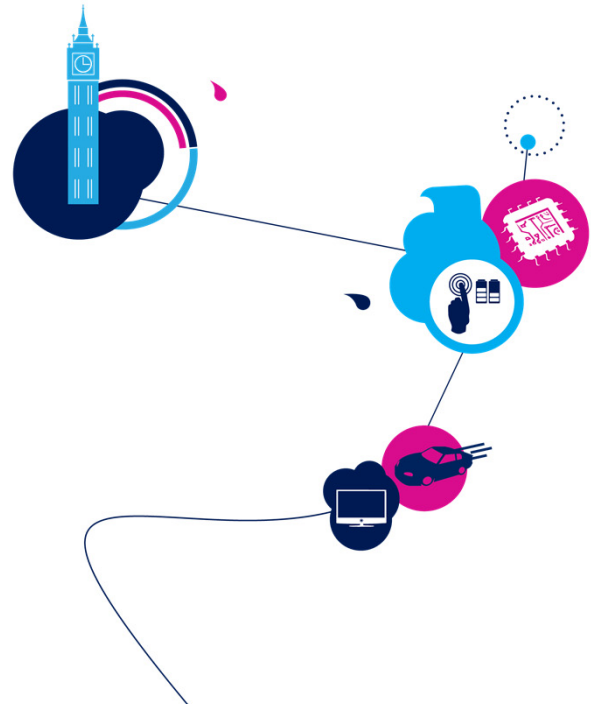
Manufacturing and Technology R&D

Jean-Marc Chery

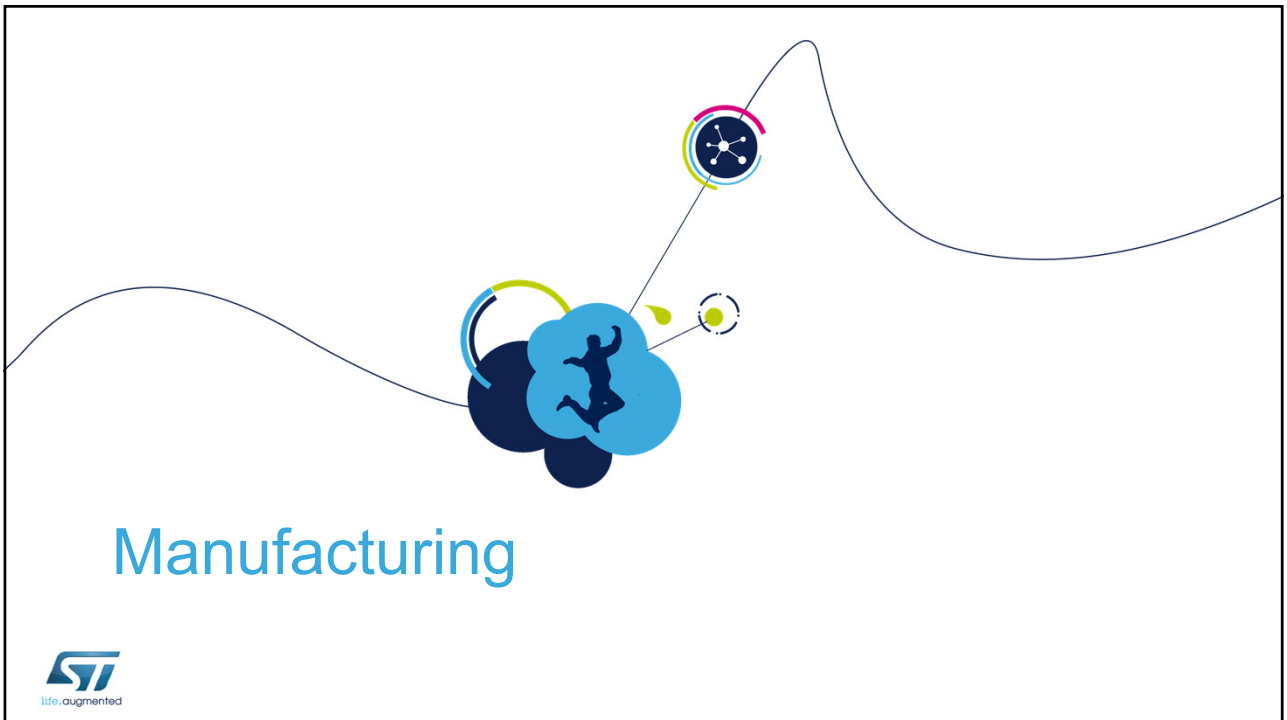
Executive Vice President
Chief Manufacturing & Technology Officer,
General Manager, Digital Sector

Orio Bellezza

Executive Vice President
General Manager, Front-End Manufacturing
& Technology R&D, IMS & APG



Manufacturing



Integrated, Flexible Manufacturing Engine

3



Large technology portfolio
Clustering approach
Internal and external flexibility



Front-End Manufacturing: Unique Capability

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Discretes



Tours



Singapore

Discretes
Power
BCD

Advanced BCD
Advanced PMOS



Catania



Agrate

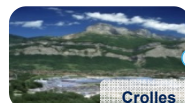
Advanced BCD
MEMS

Foundries



Rousset

Embedded-NVM
Logics



Crolles

Advanced Logic
Logic
Image Sensors
Embedded-NVM

Embedded
Processing
Solutions



Front-End Manufacturing Vision

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Advanced CMOS and derivatives

- Crolles 300 growth, focusing on balanced mix of technologies
- Embedded-NVM, Analog CMOS and BiCMOS at both 200 and 300 mm (Rousset, Crolles)
- Multiple foundry options to support further growth and flexibility

Sense & Power technologies

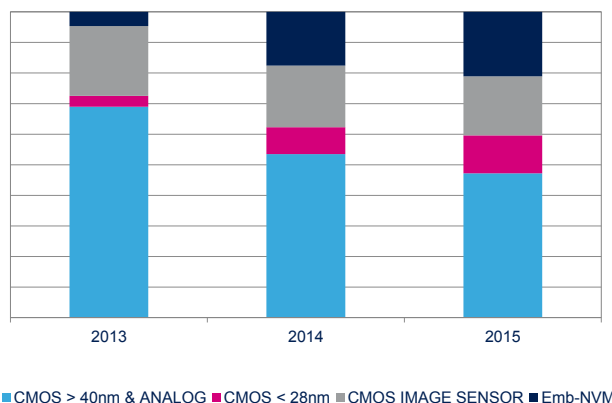
- Strengthen differentiation at Europe fabs, for MEMS, BCD & Discretets
- Huge scale in Singapore 6". Option to grow 8" for mature technologies
- Foundry outsourcing, to increase flexibility



Crolles 300 Differentiation Engine

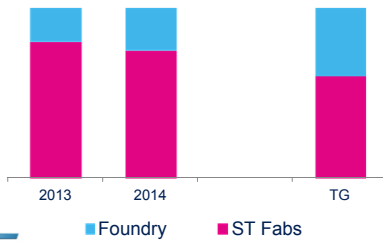
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- Growing differentiating and proprietary technologies
 - High-end CMOS: introducing and ramping FD-SOI <28nm
 - CMOS Image Sensor: ramping 1.4 and 1.1µm BSI
 - Embedded-NVM : 90/55/40nm for Micros and Automotive
- Improving flexibility and assets utilization



CMOS and Derivatives Sourcing

- Crolles/300 expansion and Rousset/Crolles clustering
- Technology/Manufacturing partnerships in Image Sensor/BSI and CMOS FD-SOI
- Multiple sourcing for flexibility
Outsourcing growth, targeting 40%



Technology / Source	First: Time to Market	Second	Alternative
CMOS 40LP	Crolles 300	Foundry	Foundry
CMOS 28LP/RF	Foundry	Crolles 300	Foundry
CMOS 28 UTBB FDSOI	Crolles 300	Foundry	Foundry possible
CMOS 20LPM	Foundry		
CMOS 14 UTBB FDSOI	Crolles 300	Foundry	Foundry possible

Technology / Source	First: Time to Market	Second	Alternative
IMG 140 BSI	Crolles 300	Foundry	
IMG 110 BSI	Foundry	Crolles 300	Foundry
BICMOS55/PHCS 25GB/S	Crolles 300		
CMOS M55/M40	Crolles 300	Foundry possible	
CMOS F 80/ 90 PCM	Rousset 200	Crolles 300	Foundry possible

Sense & Power and Automotive



Agrate
Advanced BCD and MEMS



Catania
Smart Power and Power Discretes

Technology differentiation

- MEMS 6-axis motion sensor
- Smart Power BCD9s
- Power discretes SiC and GaN
- Tunable antenna discretes

Integrated Manufacturing and R&D

- Time to market – time to volume
- Clusters of leadership Mfg/R&D/Product



Cost competitive HVM in Singapore



Tours
Discretes and Tunability



Singapore
High Volume Manufacturing



Packaging & Testing Manufacturing

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Multipurpose sites
Serving both Product Sectors



Analog, MEMS
& Sensors



France
(Crolles, Rousset, Tours)

Italy
(Agrate, Catania)

China
(Shenzhen / Longgang)

Digital
Convergence
Group

Automotive



Morocco

Malta

Malaysia

Philippines

Microcontroller,
Memory & Secure
MCU

Industrial &
Power Discrete



Singapore

Partners

Front-End
Back-End

Imaging, BiCMOS
ASIC & Silicon
Photonics



Packaging & Test Manufacturing Focus

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- Fast time to volume and competitive manufacturing
 - Innovative sensors solutions (MEMS and optical)
 - High Power Modules for Industrial and Automotive
 - High Density lead frames technology
- Gold to Copper conversion road-map
- Relentless quality improvement
- Multi-sourcing for materials
- Increase flexibility vs OSATs



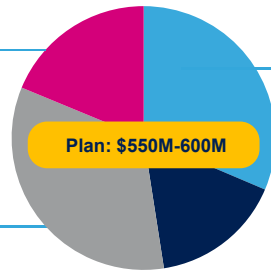
2013 Capital Spending 11

Back-end Manufacturing

- Capacity increase and mix evolution at Asian plants
- Copper wire conversion
- Manufacturing automation

Test & Others

- Testing, IT, quality and safety



■ Front-End ■ R&D ■ Test&Others ■ Back-End

Front-end Manufacturing / R&D

- 300mm 14nm FD-SOI capability
- 300mm Image Sensor BSI capacity
- MEMS
- Smart Power mix change
- Productivity and efficiency

Investments focused on:

- Strategic businesses growth and key product ramps
- Proprietary technology and manufacturing



Priorities 2013 – Manufacturing 12

2013

300mm Crolles

- CMOS FD-SOI 28nm Manufacturing ramp-up
- Imaging 1.4μP BSI volume production

e-NVM and RF/Analog

- 90nm e-Flash high volume production
- Optimized 130nm RF SOI in production ramp-up

Smart Power and Discrete

- BCD mix evolution to 0.16μm / thick Cu
- IGBT 650/1200V production ramp-up

MEMS

- 6-Axis combo volume production
- μPhone and Compass production ramp-up

Innovation
Time to volume
Quality Excellence
Lean Manufacturing
Productivity
Cost reduction



Manufacturing Summary

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- Highly efficient and flexible manufacturing engine, Front-End and PTM
- Differentiating technologies and packages, serving both product segments
- Time-to-market and time-to-volume, driven by clusters of leadership
- Cost efficiency, driven by global lean manufacturing initiative



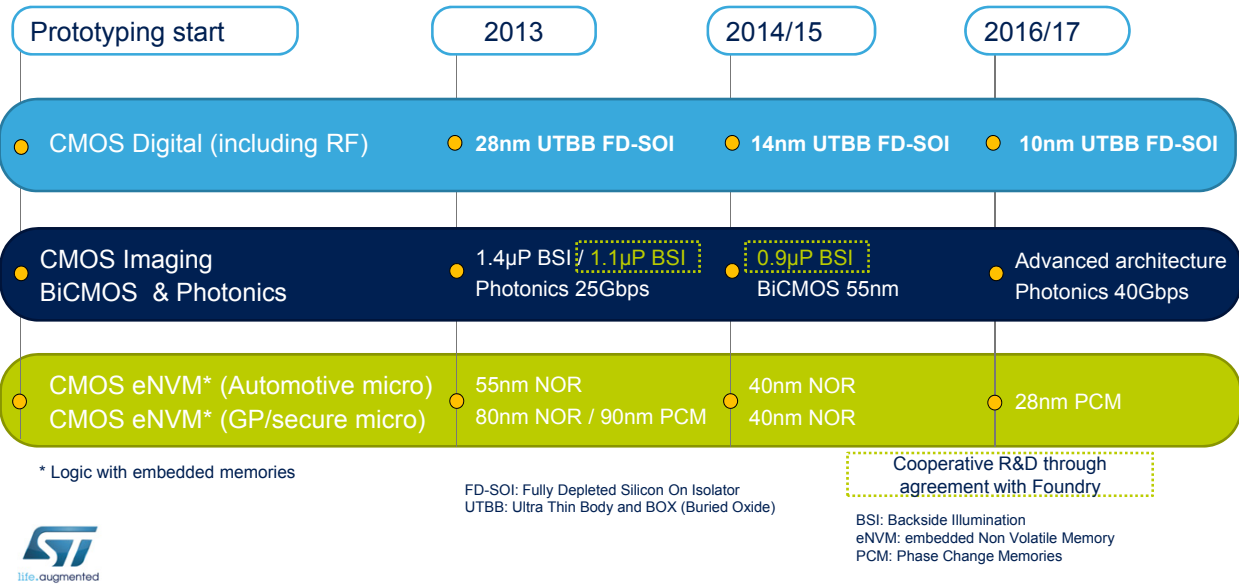
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Technology R&D



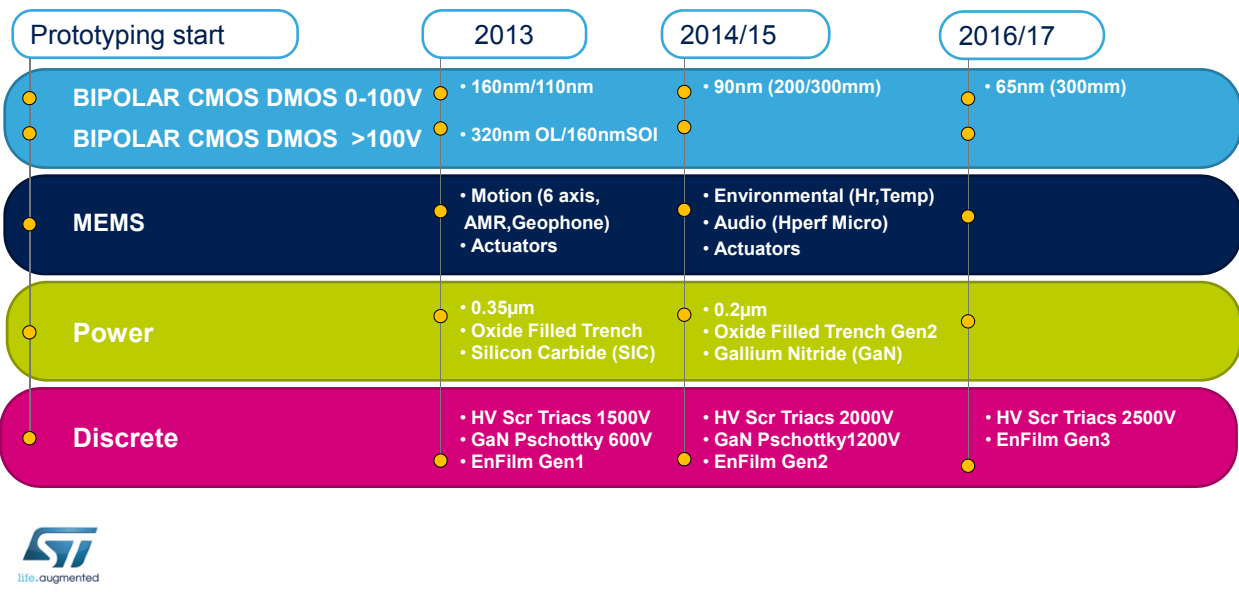
EPS - Technology Roadmap

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SPA - Technology Roadmap

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Priorities for 2013 - Technology

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2013

BCD9S technology platform to be ready for production
Power ASIC for Automotive (ABS/ESP)
engineering samples delivery
demonstrating superior device performances and die area reduction

FD-SOI 14 nm technology to be ready for prototyping and IPs validation vehicles for superior performances and low power consumption SOC and ASICS

Embedded flash 40nm technology for high performance MCUs
Readiness for prototyping and IPs validation vehicles

