STMicroelectronics

February 23, 2016 Barcelona





Agenda 2

Agenda



ST Making everything smarter Meeting the needs of the IoT **Smart Connected Driving** Takeaways

Questions & Answers 11:00 am End



Speakers



Carlo Ferro **Chief Financial Officer**



Claude Dardanne EVP, General Manager, MDG



Benedetto Vigna EVP, General Manager, AMG



Marco Monti EVP, General Manager, ADG

Forward Looking Statements

Some of the statements contained in this release that are not historical facts are statements of future expectations and other forward-looking statements (within the meaning of Section 27A of the Securities Act of 1933 or Section 21E of the Securities Exchange Act of 1934, each as amended) that are based on management's current views and assumptions, and are conditioned upon and also involve known and unknown risks and uncertainties that could cause actual results, performance, or events to differ materially from those anticipated by such statements, due to, among other factors:

- Uncertain macro-economic and industry trends;
- Customer demand and acceptance for the products which we design, manufacture and sell;
- Unanticipated events or circumstances, which may either impact our ability to execute the planned reductions in our net operating expenses and / or meet the objectives of our R&D Programs, which benefit from public funding;
- Financial difficulties with any of our major distributors or significant curtailment of purchases by key customers;
- The loading, product mix, and manufacturing performance of our production facilities;
- The functionalities and performance of our IT systems, which support our critical operational activities including manufacturing, finance and sales, and any breaches of our IT systems or those of our customers or suppliers;
- Variations in the foreign exchange markets and, more particularly, the U.S. dollar exchange rate as compared to the Euro and the other major currencies we use for our operations;
- The impact of intellectual property ("IP") claims by our competitors or other third parties, and our ability to obtain required licenses on reasonable terms and conditions;
- The ability to successfully restructure underperforming business lines and associated restructuring charges and cost savings that differ in amount or timing from our estimates;
- Changes in our overall tax position as a result of changes in tax laws, the outcome of tax audits or changes in international tax treaties which may impact our results of operations as well as our ability to accurately estimate tax credits, benefits, deductions and provisions and to realize deferred tax assets;
- The outcome of ongoing litigation as well as the impact of any new litigation to which we may become a defendant;
- Product liability or warranty claims or recalls by our customers for products containing our parts;
- Natural events such as severe weather, earthquakes, tsunamis, volcano eruptions or other acts of nature, health risks and epidemics in locations where we, our customers or our suppliers operate;
- Changes in economic, social, labor, political, or infrastructure conditions in the locations where we, our customers, or our suppliers operate, including as a result of macro-economic or regional events, military conflict, social unrest, labor actions, or terrorist activities;
- Availability and costs of raw materials, utilities, third-party manufacturing services, or other supplies required by our operations.

Such forward-looking statements are subject to various risks and uncertainties, which may cause actual results and performance of our business to differ materially and adversely from the forward-looking statements. Certain forward-looking statements can be identified by the use of forward looking terminology, such as "believes," "expects," "may," "are expected to," "should," "would be," "seeks" or "anticipates" or similar expressions or the negative thereof or other variations thereof or comparable terminology, or by discussions of strategy, plans or intentions.



Some of these risk factors are set forth and are discussed in more detail in "Item 3. Key Information — Risk Factors" included in our Annual Report on Form 20-F for the year ended December 31, 2014, as filed with the SEC on March 3, 2015. Should one or more of these risks or uncertainties materialize, or should underlying assumptions prove incorrect, actual results may vary materially from those described in this release as anticipated, believed, or expected. We do not intend, and do not assume any obligation, to update any industry information or forward-looking statements set forth in this release to reflect subsequent events or circumstances.

ST making everything smarter

Carlo Ferro Chief Financial Officer



ST at a Glance



Making **driving** safer, greener and more connected



Making everyday things smarter, connected and more aware of their surroundings



- A global semiconductor leader
- 2015 revenues of \$6.90B
- 21% R&D/Sales



Enabling cities to make more of available resources



Making homes smarter, for better living, higher security, and less waste



Enabling the evolution of industry towards smarter, safer and more efficient factories and workplaces

Takeaways from our FY2015 Earnings

- ST has turned the page and entered a new phase
 - Financial metrics improved
 - Room to further improve profitability
- Set-top box plan announced
 - Discontinue development of new platforms and standard products
- Renewed focus on growth in 2016 centered on two core applications:
 - Smart Driving
 - Internet of Things





Application Strategic Focus

The leading provider of products and solutions for Smart Driving and the Internet of Things



Addressing a Serviceable Available Market (SAM) of around \$150B



Preliminary numbers based on FY15 Revenues

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Organization Aligned to Strategic Focus



Smart Home & City





ST Making Everything Smarter



ST Making Everything Smarter



Wireless is Important 11







**Including Imaging division and Mobile Legacy Products

12

Meeting the needs of the IoT Microcontrollers & Ecosystem

Claude Dardanne

Executive Vice President General Manager, Microcontrollers and Digital ICs Group



IoT Devices come in many Form Factors 14





...but their Needs are the same



IoT Landscape 16

Securely connecting any device to any service







Microcontroller Market Trend 18

Growth driven by IoT deployment

Market Dynamics



General Purpose + Secure MCU TAM *

• Secure MCU growth :

2007 – 2014: Limited arowth

- Secure Smartcard solutions : Banking, ID
- Object authentication (Brand protection...)
- General Purpose revenues impacted by \$ ASP trend

2015 – 2018: Significant growth

- General Purpose Microcontrollers embedding advanced connectivity and security features
 - Wearable market, smart home
- Secure Microcontrollers
 - Mobile transactions: NFC and contactless migration



* Excluding Automotive Source: WSTS February 2016

General Purpose Microcontrollers 19



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* Excluding Automotive Source: WSTS February 2016

Secure Microcontrollers 20



Secure MCU SAM

Source: WSTS February 2016

STM32

Versatile Embedded Processing Platform



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Secure Solutions for IoT 22



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The 1st wave of IoT products

- Growth linked to smartphone business
- Smart watches, fitness, smart glasses, health...

ST solutions

- Ultra-low power 32-bit MCU: Sensor hub, application processor \bullet
- Connectivity: Bluetooth Low Energy
- Security: Anti-counterfeiting & personal data protection \bullet
- Seamless development tool: STM32 Nucleo based \bullet



Wearable Market 23





Source : ST, various sources including ABI

Wearable & Secure Transactions 24

Wearable applications embedding secure transaction capabilities







IoT Architecture Managing risks

In order to prevent a node/object from perturbing the network, the node/object must be:

- Trustable (no fake objects)
 - Object must be authenticated
- Not corrupted
 - **Platform integrity** is guaranteed
- Respecting privacy
 - Data must be encrypted

STSAFE-A: Trustable Security

Fact-based security evaluated by independent third parties



STSAFE-A relies on a Common Criteria EAL5+ certified HW Fact-based resistance to attacks

IoT application developers can trust STSAFE-A





Scaling Security across IoT Market 27



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Payment

Smart Grid, Industrial gateways



Smart meter





Wearables



Smart home



Cost-effective resistance based on risk management for

- Asset protection
- Privacy
- Traceability





STM32 + LoRa® 29

More than 4000 possible combinations



- STM32, STM8 products available in more than 1000 references
- LoRa® SX127x offers **4 different** lines





Selling the ST Portfolio together

The **STM32 Open Development Environment** is a flexible, easy and affordable way to develop innovative applications using ST components

Over 150K boards shipped in 2015



Function packs SW APIs and examples enabling specific applications



Developer community and support Compatibility with free and commercial development environments



Takeaways





General Purpose + Secure MCU Revenue*

Revenue \longleftrightarrow MCU market share

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MCU share % vs TAM (Source: WSTS February 2016)

* Excluding Automotive MCUs

Pursue double-digit profitable growth and market share gain capitalizing on solid foundation

Maintain WW leadership :

- 32-bit General Purpose MCU
- 32-bit Secure Element

Reinforce & proliferate advanced connectivity solutions: Bluetooth Low Energy, LoRa, NFC...

Deploy easy to use & cost effective security solutions: authentication, trusted platforms...

Drive evolution of IoT market embedding more connectivity and security on top of GP MCUs Targeting to become the #1 WW IoT player

Meeting the needs of the IoT Sensors, Analog, Power

Benedetto Vigna Executive Vice President General Manager, Analog and MEMS Group



Motion MEMS in 2015



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> 6 Billion motion MEMS shipped to date

Highlights

- Launched new industry leading 6-axis sensor with lowest power consumption
- 3rd generation Gyroscope for Optical Image Stabilization footprint <5mm2, thickness <0.7mm



Brand new STMicroelectronics 3 mm x 3 mm LGA package featuring a 3D digital gyroscope and 3D digital accelerometer.



"This is the first time that we see **a true 6X sensor** in an Apple product that doesn't require an external accelerometer." Chipworks

LSM6DS3

Software enhanced features focus in 2015



Step counter and step detector For activity monitoring

Significant motion detection
For triggering a change in user location



For system inclination monitoring

Embedded time stamp **For accurate data correlation**



Sensor Hub & Ironing correction External sensors connection and magnetometer correction



Smart FIFO For data storage and system power saving

New Generation 6-axis MEMS IMU 36

Over 100M units sold





OIS System Architecture Support 37

Separate gyroscopes for User Interface & Image Stabilization



Ideal for pre-calibrated camera system

Common gyroscope for User Interface & Image Stabilization



Optimized for lowest power and highest integration



Motion MEMS Roadmap





Body placement detection User activity mode detection Step detection Attitude filter User walking direction determination Position update logic

Pedestrian Dead Reckoning Offering a complete solution

Gyroscope

Accelerometer

39

Pressure Sensor

Pedestrian Dead Reckoning (PDR) Software

Magnetometer



PDR Output

Diversification Strategy 40

▲ New products



New Markets



Automotive MEMS 41





Smart

Driving





T3714D

STMicroelectronics Identified by IHS as Fastest Growing Automotive-Sensors Supplier

Geneva, November 10, 2015 – STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, has been recognized by IHS, the leading global source of information and analytics, as the leader in automotive sensors for navigation and telematics, as well as the fastest growing automotive-sensor supplier worldwide.¹



Environmental Sensors Broadening the Portfolio



- More than 100 million Pressure sensors shipped in 2015
- Introduced world's smallest pressure sensor in tiny package (2x2x0.76mm)
- Applications
 - Altimeter
 - Indoor navigation
 - Weather station





- World's first sensor to provide a direct digital output of the Ultraviolet Index (UVI)
- Now in a wearable device

Humidity Tem

Temperature

43

 Combined temperature & humidity sensor in smart home projects



Touchscreen 44

FingerTip™ Touch-screen Controller

- Expanding customer base
- 3D touch solutions with **force sensing**
- Winning value proposition
 - Lowest power consumption
 - Very good high-end analog performance
- FingerTip technology well positioned to address wearable, security and active pen applications





What we do with MEMS Micro-actuators 45



Micro-mirrors



Jourb & re-focu

Thin-film Piezo-electric MEMS



3D scanning

- In production with multiple OEMs for Intel RealSense[™] Depth Camera
- Opportunities for other micro-mirror applications

Camera Autofocus

 Lower power consumption and higher speed versus Voice-Coil Motor (VCM) based solution

Low nowe

Instant focus

 Partnering with innovative lens maker PoLight for autofocus actuator in smartphones



Printing

High-speed inkjet print head for commercial and industrial applications

- High-viscosity materials
- Different printing materials

MEMS Micro-actuator Offer 46





Micro-mirrors for Image Projection 47



HUD Driver information



Image projection Extending mobile displays



Wearable Devices





Small Portable Projectors 48



PATENT INTELLIGENCE SERVICES

STMicroelectronics Micromirrors, Microvision, and Sony Bring Pico-Projection to the Pocket









Piezo Micro-Actuator for AutoFocus Jointly developed with PoLight





Building Micro-actuators Micro-mechanics and analog

MEMS micro-actuators & MEMS sensors use the **same principles** and **same basic processes**



Leveraging our BCD technologies



Analog & Power for IoT 51

Analog & Power - necessary for every IoT device

Analog & Power		
Operational amplifiers	AMOLED Display Power	Gimbal
Large portfolio of high power- efficient op amps in tiny packages	High efficiency solutions for any display size	Control
Current sensors	Wireless Charging	STSPIN Electronic
High accuracy current measurement for contactless battery chargers	Solutions for wireless charging applications requiring from 1 to 30 Watts	Speed Control
Audio amplifiers	Motor Control	
High-efficiency Class D and G amplifiers for headsets and speakers	Solutions for applications requiring from 1 to 30 Watts	
Actuator Drivers	Analog switches	
Driver ICs for piezo-electric actuators	Compact single and dual switches for audio and USB	



Analog Functions needed Everywhere 52





"After a little device de-processing we learned that the driver IC inside the tip of the pencil is designed and fabricated by STMicroelectronics."

http://www.chipworks.com/about-chipworks/overview/blog/the-apple-pencil-a-lot-of-semiconductor-content-something-so-small



Enabling the Wireless Power World 53

1 cm

Receiver



IoT Connectivity

Short-range and wide-area network processors

BlueNRG

 Highly energy-efficient Bluetooth Smart network processor



SPIRIT

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 Very low power RF transceiver for SubGHz license-free ISM and SRD bands







Source: ABI

Offering more than Hardware Open Software expansion libraries

55





Takeaways 56



- Automotive, Drones, Virtual Reality, ...
- Expanding offer with new Sensors and Micro-actuators
 - Partnerships with big players and startups
- ST provides all technologies enabling IoT applications, beyond MEMS
 - Analog and efficient power solutions
 - Short-range, wide-area connectivity network processors



Smart Connected Driving

Marco Monti

Executive Vice President, General Manager, Automotive and Discrete Group



Internet of Things has changed Automotive 58

Smartphones and broadband connectivity have transformed Automotive, adding advanced

services for both driver and passenger for a safer and fascinating driving experience.



Connectivity

Traditional Automotive

- Car conceived purely as a means of transportation
- Emphasis on mechanical content
- Isolated object
- Entertainment restricted to the car radio
- No phone integration
- Data Streaming linked to navigation

Smart Driving

- Car conceived with complete user experience in mind
- Innovation driven by electrical & electronic content
- Extensive Connectivity & Communication functions
- Huge Data processing capabilities
- Smartphone integration and remote control



Cars & Smartphones Closer and Mutually Dependent

Permanently connected to the cloud



Over the air Software update



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Smartphone remotely monitoring the car



Strong dependancy on screens with graphics capabilities



Sensing and man/machine interface





Smart Driving Core Connected Applications

ADAS and Active Safety



Autonomous Driving **Assisted Driving** Park Pilot Pedestrian Detection Infotainment



Entertainment **User Services**



60

V2X **Insurance Box** E-Call **Remote Car Monitor** Remote SW upgrade









ST in ADAS Applications

Wide product portfolio addressing all techologies





(*) Core apps: Forward collision warning, lane departure warning, pedestrian detection, adaptive cruise control, blind-spot detection (**) TAM excludes camera, memories and optoelectronics

Source: Strategy Analytics, ST



(*) Core apps: Forward collision warning, lane departure warning, pedestrian detection, adaptive cruise control, blind-spot detection

Radar: Beyond Vision-Processing in ADAS ST solid leadership in RADAR system



24/77 GHz **Radar System**

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Long/Short Range Radar (77 GHz) TAM \$180M (*) Microcontroller & DSP TAM \$600M (*) **Power Management** TAM \$80M (*)

(*) Estimated Market size in 2020 – Strategy Analytics, ST

More Connected Additional \$700M opportunity by 2020(*)

Wi-Fi

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• Internet Hot-Spot

Access to the cloud

- Car-to-Car Communications
- Car-to-Infrastructure Communications

Terrestrial Broadcast

 Digital tuner audio and data stream: Multi Standard Digital Radio Receiver



Satellite

- Navigation
- ADAS through precise positioning
- Satellite data stream



Cellular

- Smart Phone Replication
- Emergency Call
- Insurance Box
- Infotainment & Internet Access

More Connected Additional \$700M opportunity by 2020(*)

Wi-Fi

Car-to-X: Craton2 with Autotalks

- Single chip Automotive Wi-Fi Processor
- V2X and Internet Hot-Spot
- Remote SW updates ready
- Enabling cloud connectivity
- Awards from 3 major car makers targeting >50% of installed base by 2020

Terrestrial

- Market leader
- Digital tuner audio and data stream: Multi Standard Digital Radio Receiver





Satellite

Navigation: Teseo III



- 3rd Generation in production
- Multi-constellation, Beidu-2 ready

ADAS: Teseo-P

• Sub-meter precision for ADAS

Satellite data stream

- SiriusXM Partnership
- FD-SOI for low-quiescent current

Cellular



Emergency Call / Insurance-Box: TELEMACO



Multi-core ARM processor

Infotainment & Internet Access: Accordo 5

- Android Auto & Car-Play ready
- Enabling cloud connectivity

20%

market share 2015



More Connected and More Secure End-to-end secured product portfolio



Security in Automotive needs two levels of protection

1st Level: Authentication & secured connection with the external world

2nd Level: Data integrity and secured communication inside the car and in the car sub-systems



The Foundations of Smart Driving 30 years in automotive







Smart Power









APG Revenues In 2015







2015 Market Share

13%

Takeaways

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- Automotive is changing and ST is leading the Smart Driving transformation
- ST is the market leader in ADAS covering the full spectrum of functionalities
- ST masters all technologies to enable car connectivity







Questions & Answers



Visit our Stand Hall 7 A61



Demonstrations

- STM32 Open Development Environment
- STM32 Ecosystem
- FlightSense™ Time-of-Flight Sensors
- 4 Sensing Solutions

- Wireless Charging
- Secure Solutions for Wearable
- NFC Solutions





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