



Welcome to ST Catania

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Visita della Commissione Lavoro, previdenza sociale del Senato della Repubblica

Agenda

- 13:00 14:00 Incontro presso il ristorante VIP STMicroelectronics
Introduce il Presidente On. Maurizio Sacconi
Light lunch*
- 14:00 15:30 Visite CNR e M5 Window Tour*
- 15:30 16:00 Presentazione ST*
- 16:00 16:15 Presentazione 3SUN*
- 16:15 16:35 Presentazione CNR*
- 16:35 16:50 Presentazione Università di Catania*
- 16:50 17:30 Messaggi chiave*
- 17:30 18:00 Saluto del Sindaco On. Enzo Bianco
Conclusioni del Presidente On. Maurizio Sacconi*



Who We Are

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- A global semiconductor leader
- 2016 revenues of **\$6.97B**
- Listed: NYSE, Euronext Paris and Borsa Italiana, Milan

- Research & Development
- Main Sales & Marketing
- Front-End
- Back-End

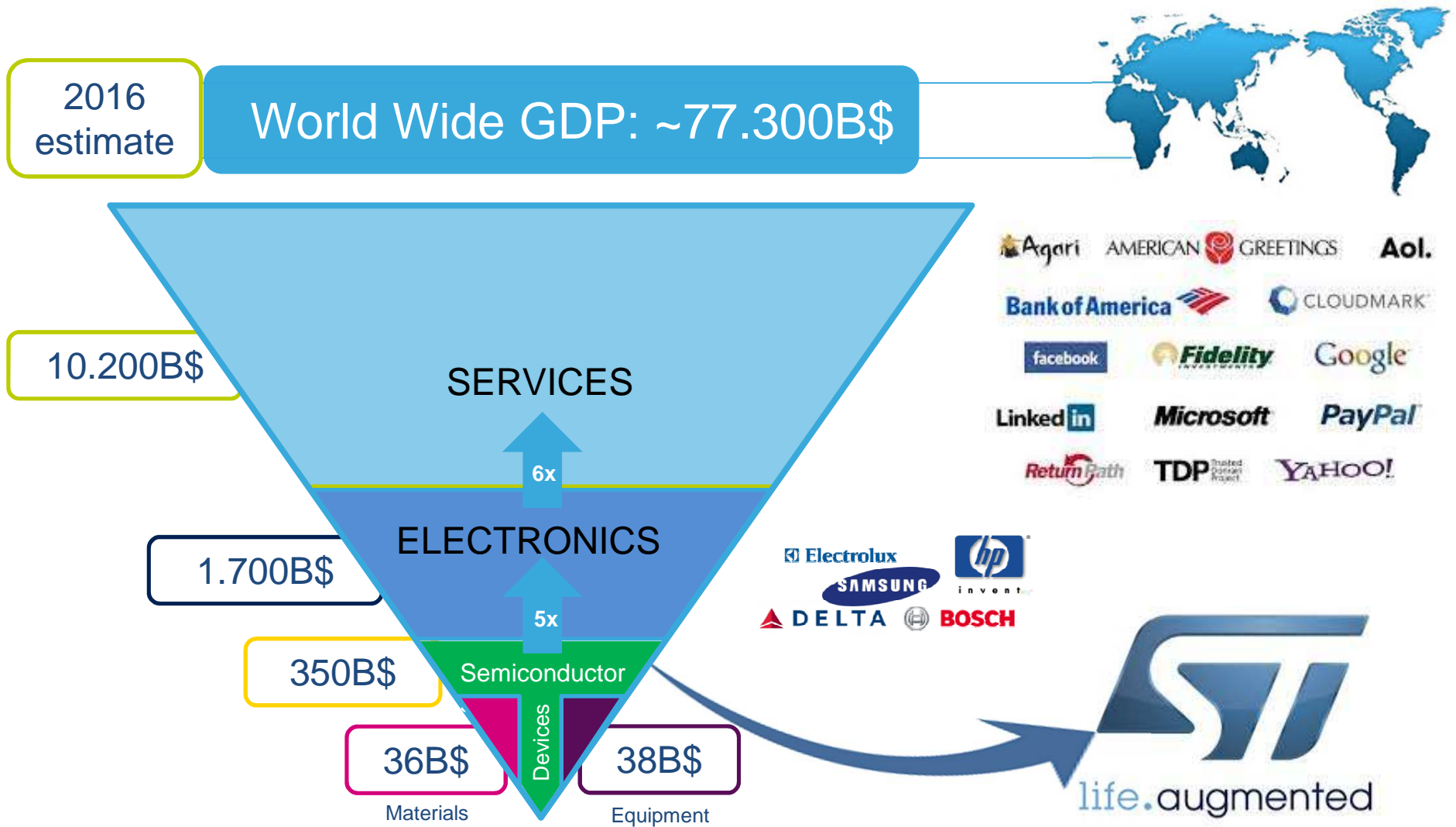


- Approximately **43,500** employees worldwide
- Approximately **7,500** people working in R&D
- **11** manufacturing sites
- Over **75** sales & marketing offices

As of December 31, 2016



Microelectronics: the development enabler

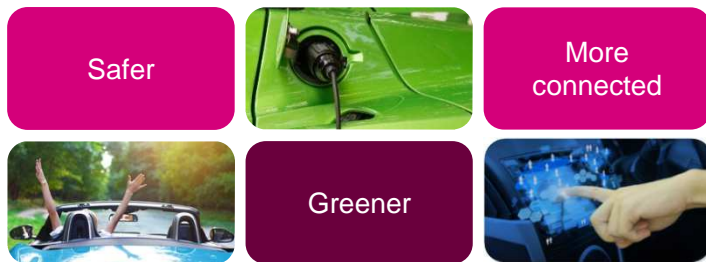
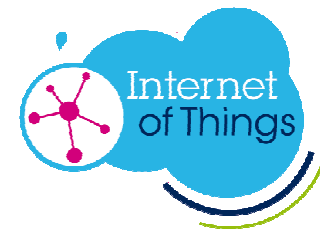


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 Sources: IMF (International Monetary Found)/ SIA (Semiconductors Industry Association)/World Bank.org/ WSTS

Application Strategic Focus

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



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

STMicroelectronics Italy

Aosta
Design
Headcount: 50

Castelletto
Design, R&D, Sales & Marketing
Headcount: 1038

Marcianise
R&D, Manufacturing, Sales
Headcount: 252

Palermo
Design
Headcount: 45

Agrate
Design, Technology
R&D, Manufacturing, Marketing
Headcount: 4526

Arzano
Design
Headcount: 123

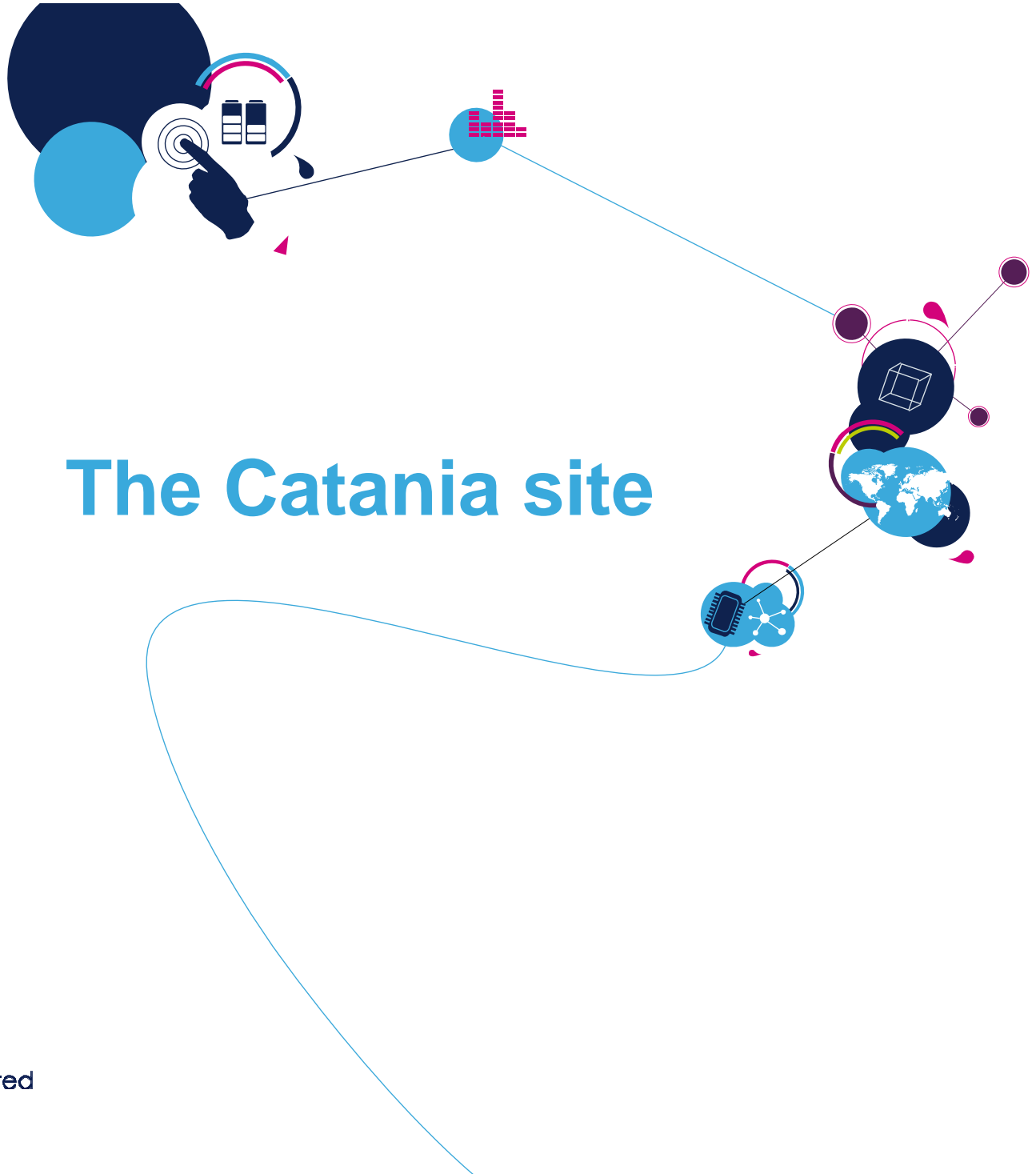
Lecce
Design
Headcount: 18

Catania
Design, Technology
R&D, Manufacturing, Marketing
Headcount: 3906



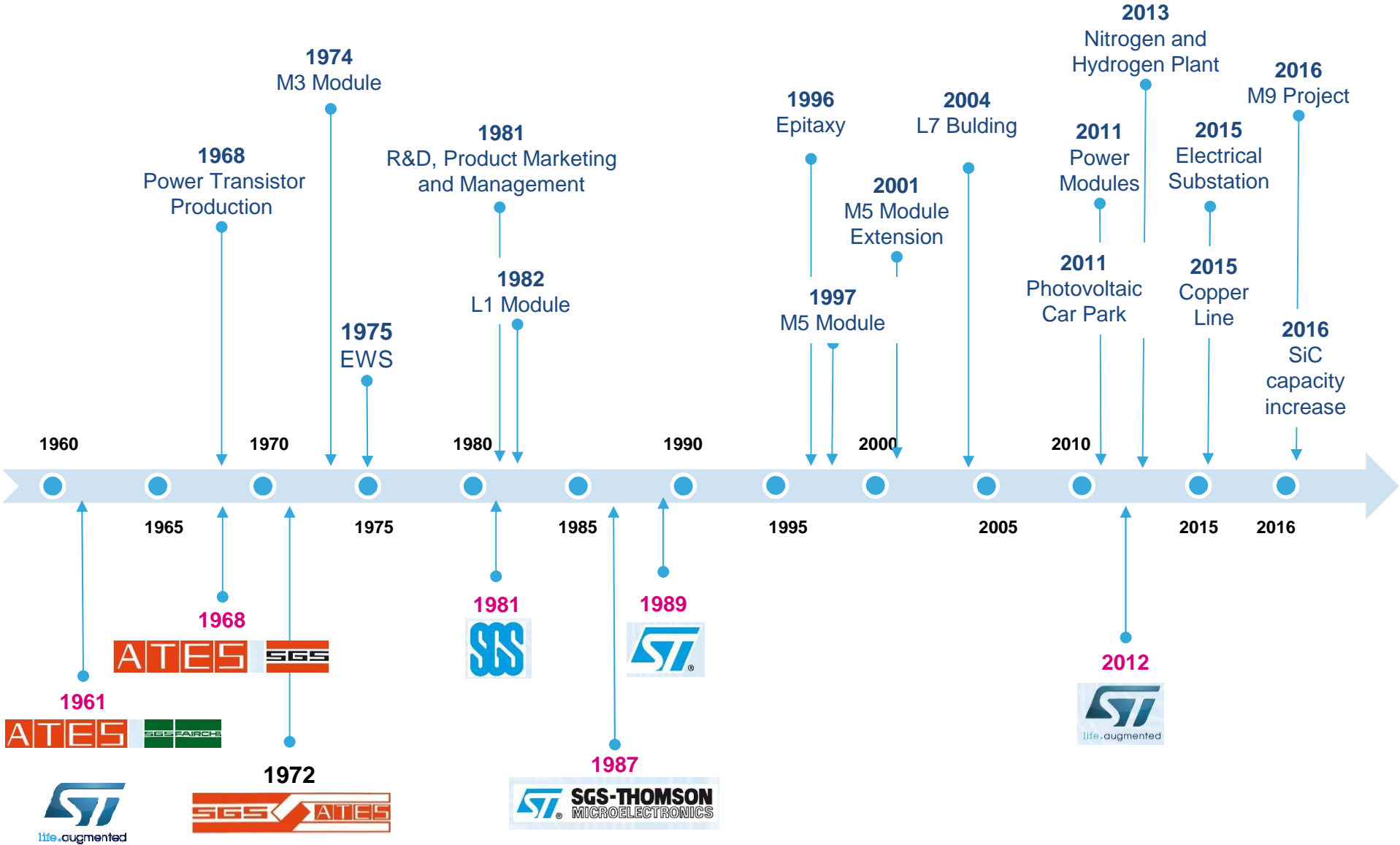
Total employees: 9958 (end of June 2017)





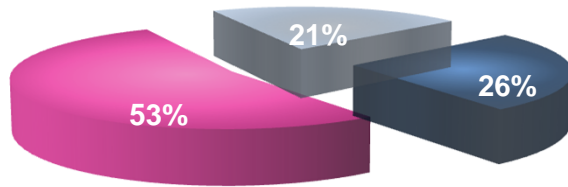
The Catania site

Site milestones



STMicroelectronics Catania site

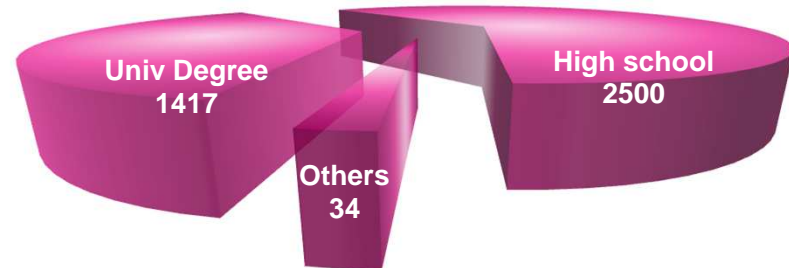
3951 employees



- R & D & Designers
- Manufacturing
- Product Management & Administration



R&D:
940
people



ST Catania: Distinguishing Factors

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Integrated Excellence Center: R&D, Design, Manufacturing, Marketing & Supply Chain

Recognized leadership in “Discrete and Integrated Power”

Availability of competent and competitive University graduated resources

Product expertise in key growing microelectronics applications: Healthcare, Renewable Energies, Smart City...

Strong teamwork with Universities and Research Centers

National and Worldwide collaborations with Universities and Research Centers

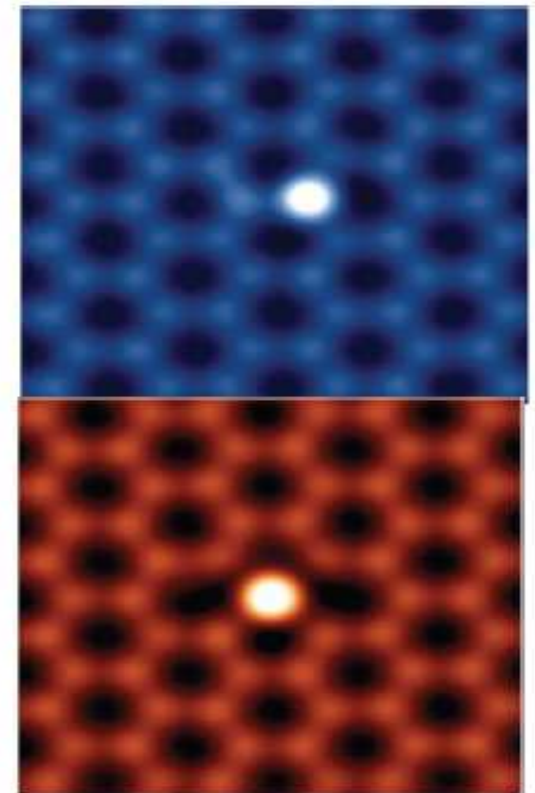
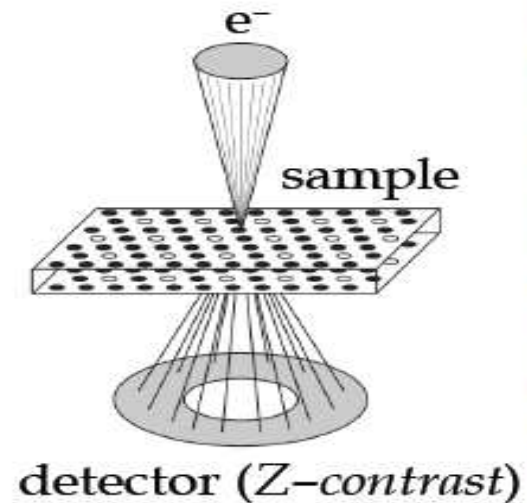
11

- Università di **Catania** *
- Università di **Palermo**
- Università di **Messina**
- Politecnico di **Torino** *
- Scuola Superiore S.Anna, **Pisa** *
- Università di **Bologna**
- Università La Sapienza, **Roma**
- Università della Calabria, **Cosenza**
- Politecnico di **Bari**
- Università di **Firenze**
- INAF (Istituto Nazionale di Astrofisica)
- INFN (Istituto Nazionale di Fisica Nucleare)
- CNR (Consiglio Nazionale delle Ricerche) *

(*) joint labs in the Catania site premises

- CEA-LETI and Liten, Grenoble, **France**
- University of Tours, **France**
- CNES, Grenoble, **France**
- CERN, Geneva, **Switzerland**
- ESA, Brussels, **Belgium**
- IMEC, Brussels, **Belgium**
- Fraunhofer Institute, **Germany**
- VTT, Helsinki, **Finland**
- MIT, Boston, **USA**
- Johns Hopkins University, Baltimore, **USA**
- Arizona State University, Phoenix, **USA**
- IME, IMRE Labs of A*STAR, **Singapore**
- University of Tunis, **Tunisia**
- Waseda University, Tokyo, **Japan**

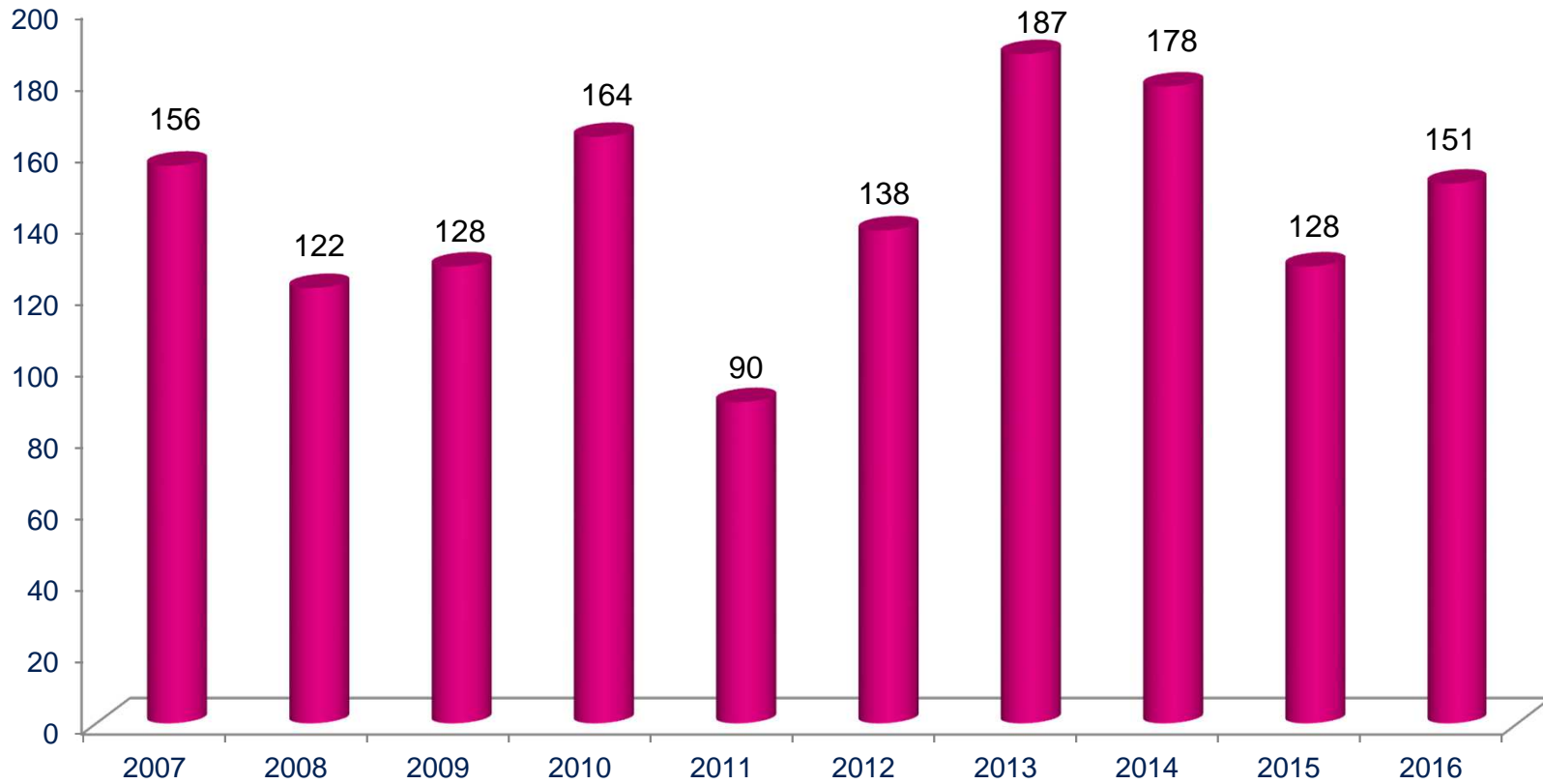
CNR Lab working in the ST Catania premises: Sub-angstrom microscope



- > 5M\$ tool, the most powerful microscope in Europe
- Opening public ceremony on last November 11, 2013



Patents at STMicroelectronics Catania

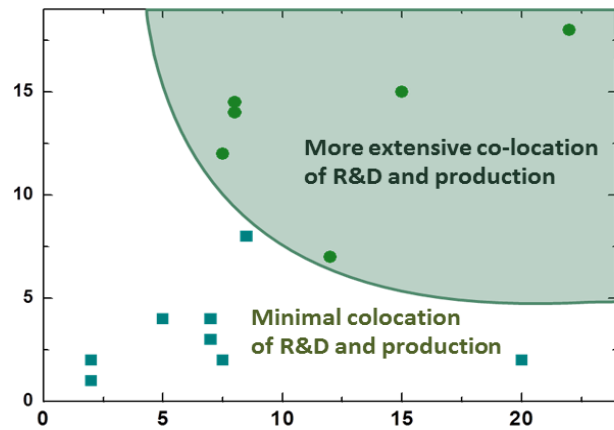


Key success factors

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Complexity of production and level of innovation determine need for co-locating R&D and production

Innovation level of industry
R&D intensity (% of revenue)

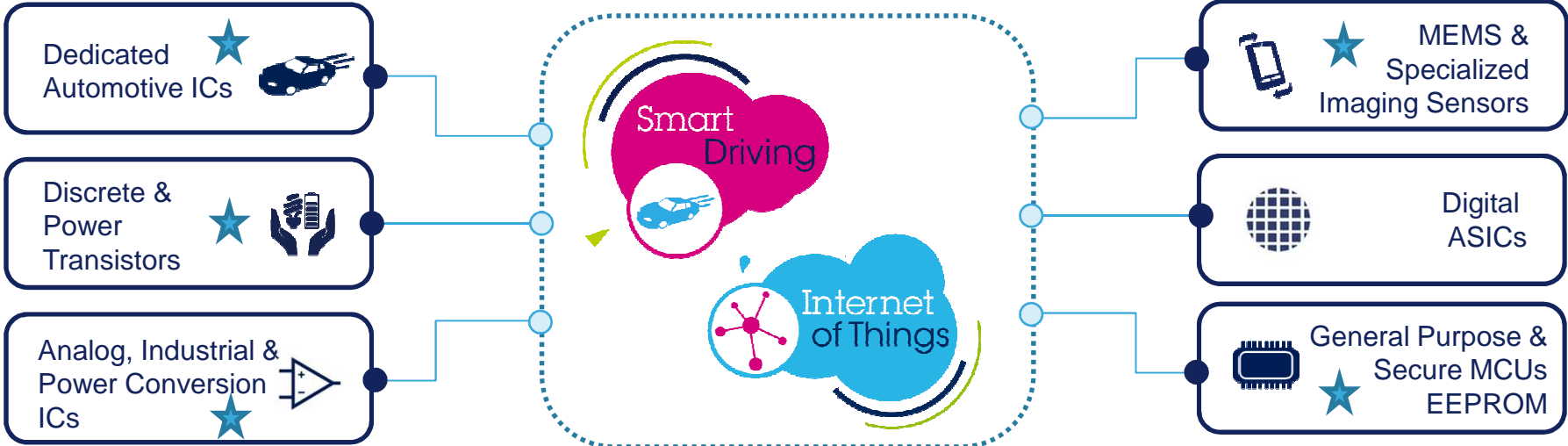


Source: McKinsey

- Co-location of R&D and production
- Technical and scientific cooperation with Universities and Research Center
- High qualified employees
- Joint R&D Labs inside the plant
- Partnership with local ecosystem (160 companies with 3000 induced jobs)

Product Family Focus

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



Portfolio delivering complementarity for target end markets, and synergies in R&D and manufacturing

★ Catania contribution



The ST “Made in Sicily” in our life....

Sensors and Actuators for Automotive



Electrical car and charging stations



Drivers for Hard disk for the top manufacturers
80% of market share



Smart Electricity power meters
100% of Italy's market



Power Supply for leading smartphone manufacturers



Wireless charging solution for mobile phone



Smart Home Appliance with low power consumption
50% of Europe's market

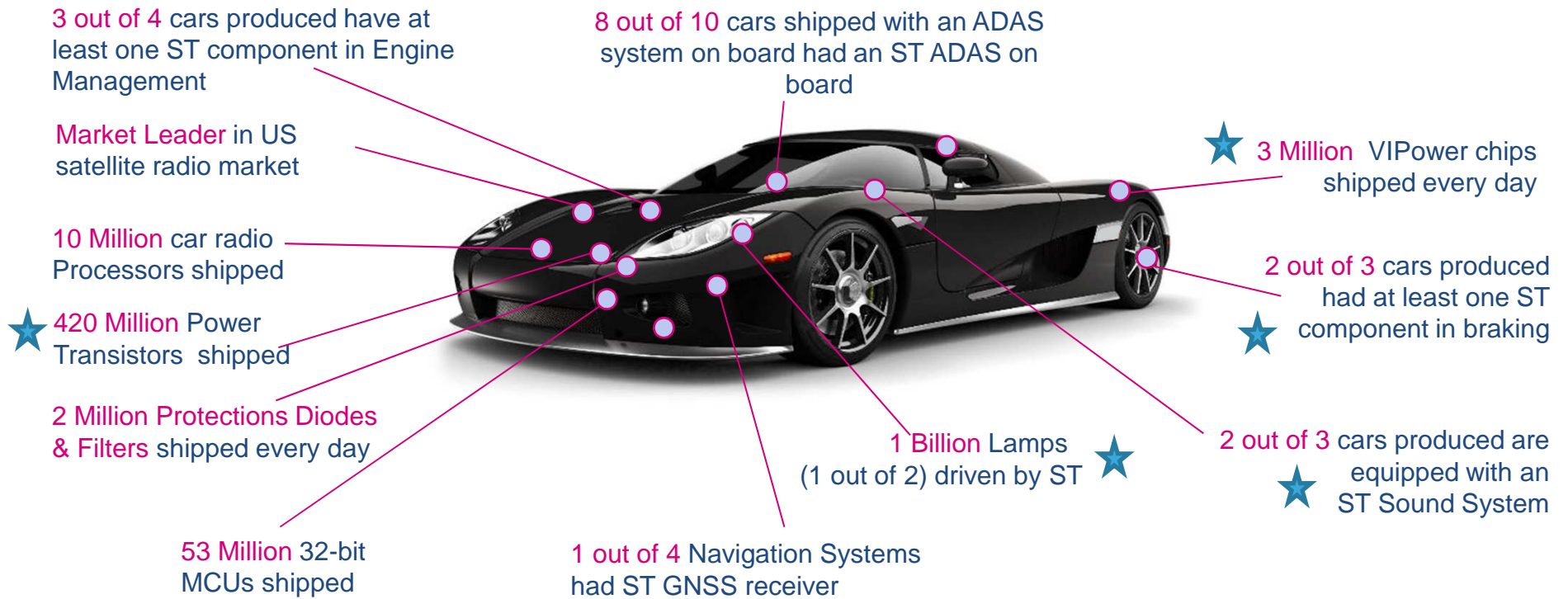


Drivers for AMOLED TV, mobile display
80% of market share

...and much more!

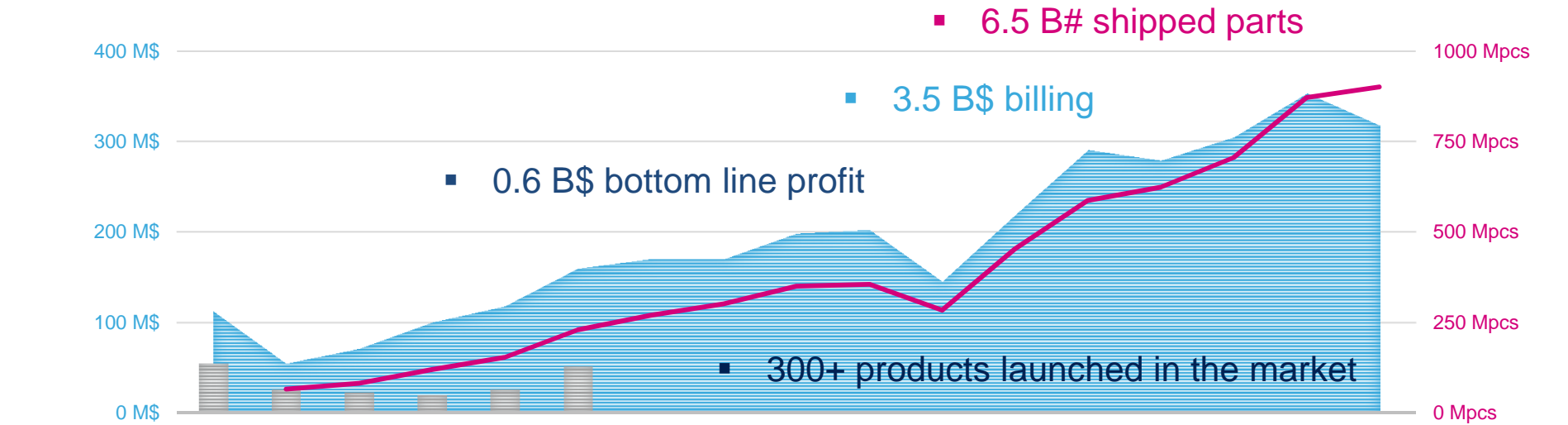
Strong commitment to Automotive

2016: ~35 components for each new car produced

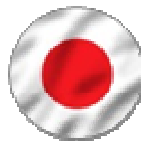


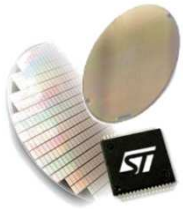
★ **Catania contribution**

Evolution of the VIPower ecosystem

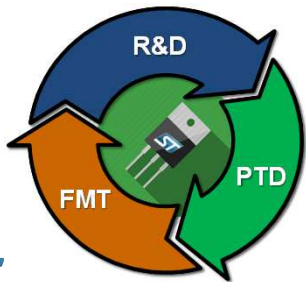
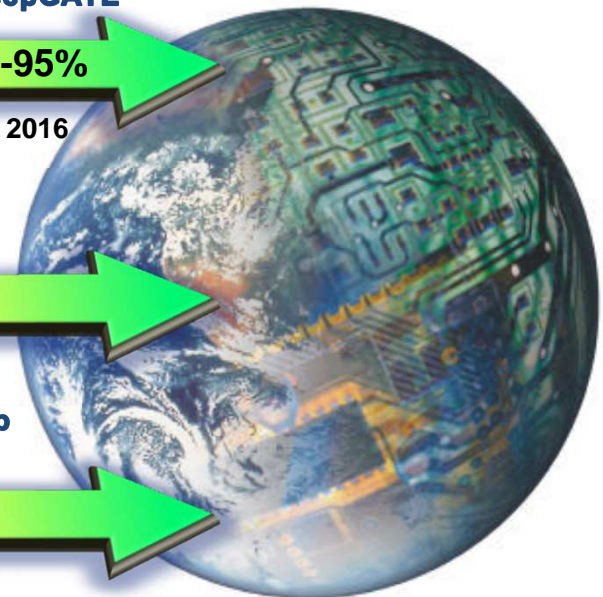
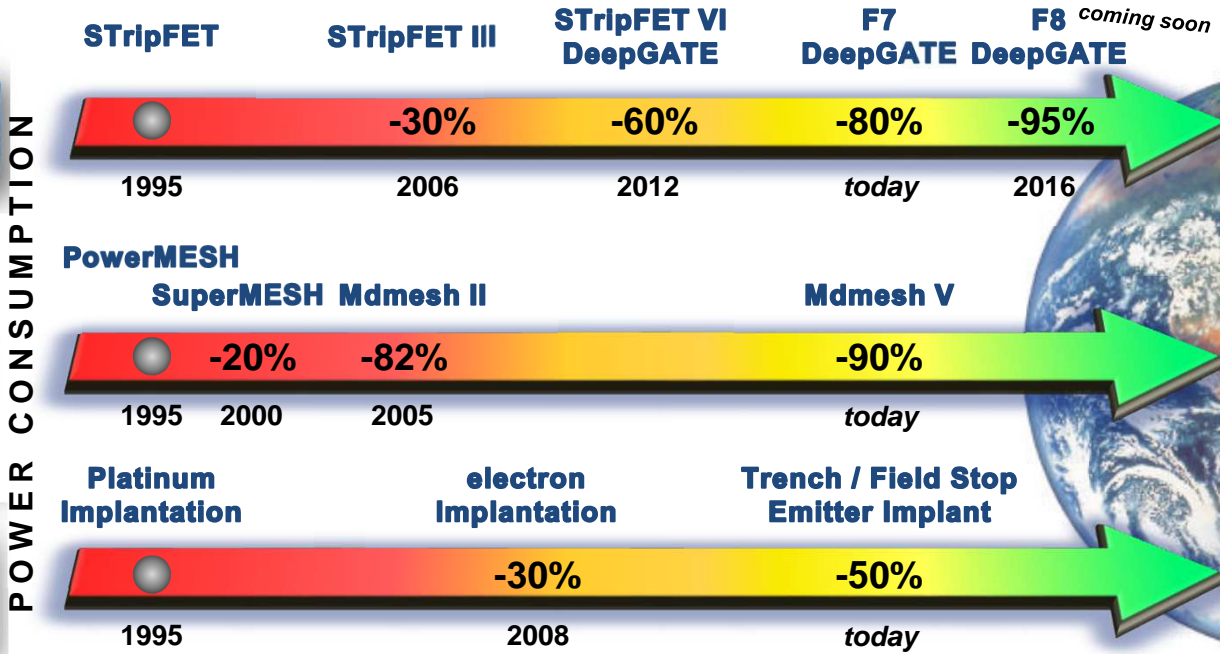


100 MIn\$





Power Transistors: energy efficiency improvement through technology innovation



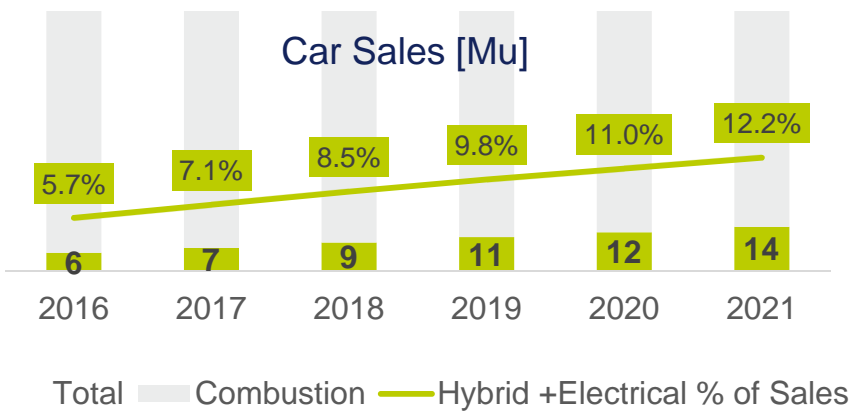
Cutting Power losses through Power Discrete Technologies



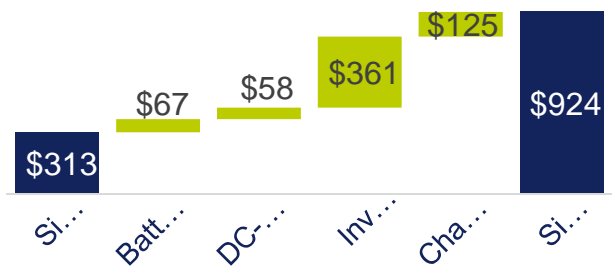
Car Electrification Trend

Major opportunity to expand car silicon contents

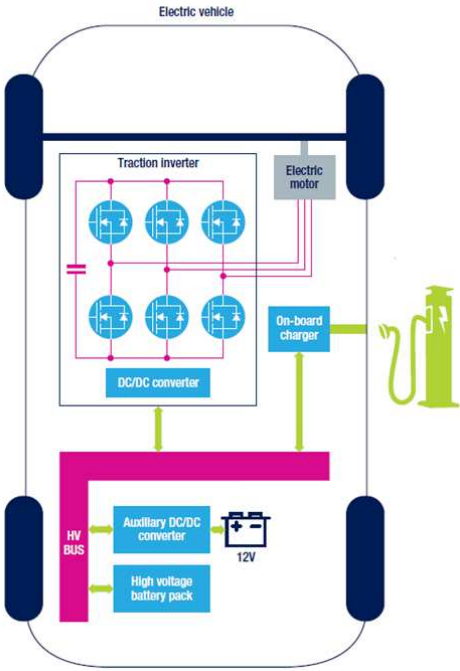
Vehicle Sales Progression 2016-2021



~600\$ Additional Opportunity per Vehicle (*)



Electrification enabling elements



- Efficient main inverter driver
- Fast Charging
 - In-car charging
 - Fast charging station & Infrastructure
- Li-Ion Battery management

ST has technology leadership in all these technologies

SiC Technology

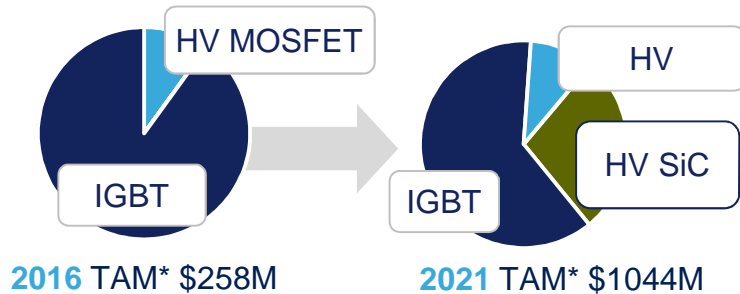
main inverter and charging

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ST Leadership

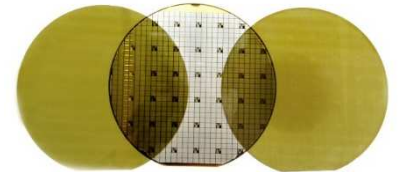


Market Evolution (*)



SiC Advantages vs. Conventional IGBT

- 5 ~ 8x smaller size
- 7x lower switching loss (W)
- 40% lower total loss (W)
- 15% higher working temperature



Execution on track

- SiC diode in full volume production
- Transistor qualified
- Customer qualification in progress
- Capacity in place
- Supply chain secured
- Full production in H2 '17



ST unique competitive offer

- Main inverter SiC MOSFET (650/1200V)
- Chargers SiC diode (650/1200V)
- On Board Charger SiC MOSFET (650/1200V)

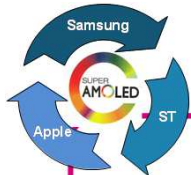
Many joint programs started with several car makers

(*) Pure EV's, Hybrid Plug-in

ST restricted

AMG Catania Excellences

few examples



AMOLED power Supply
(Cascade1, Cascade2, STOD3xx)



Bluetooth & RF Family

fitbit charge 2
HEART RATE • FITNESS WRISTBAND



Wireless Charging
Best in class solution

Power Management

Wide standard product portfolio

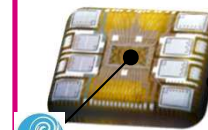


AirPods

**High Power Density
Stepper Motor Driver**

Motor Control





Leadership and Innovation



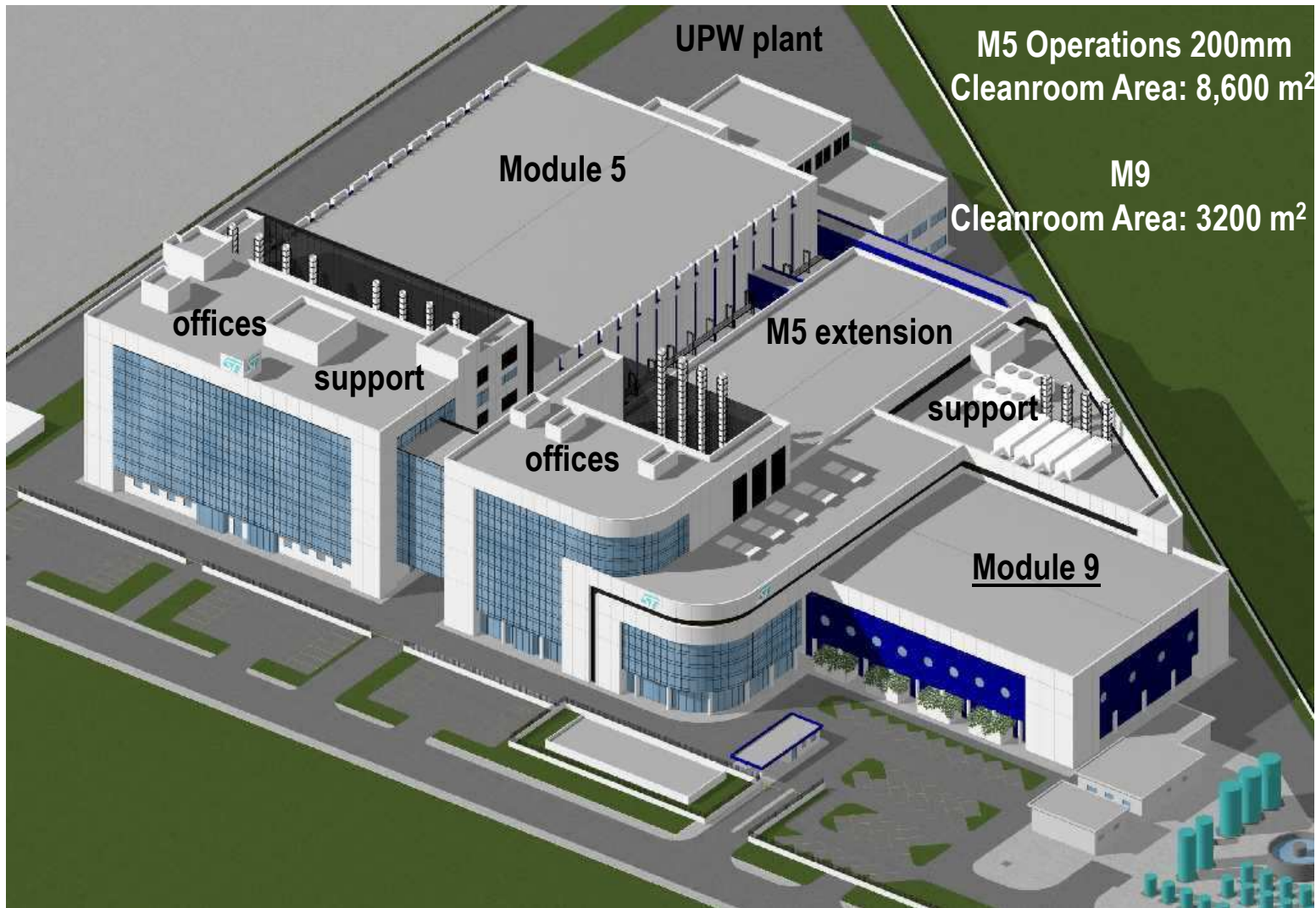
PowerMOS F7

STSPIN Control

Manufacturing

	FAB 8''	FAB 6''	EPI	EWS
				
Wafer Fab Area	10500 m²	8300 m²	1000 m²	1.300 m²
Clean Room Class	1	10	10	100
Technology Node	0.11 μm	0.35 μm	n.a.	n.a.
Mask Level	22	10	n.a.	n.a.
People	1115	600	106	125

M9 New 8" Clean Room Project



Site Consumptions



ELECTRICITY: POWER CONSUMPTION

260 Million Kwh/year as much as a City of 100.000 people



GAS (Methane) CONSUMPTION

3.8 Million m³/year as much as a City of 10.000 people



WATER CONSUMPTION

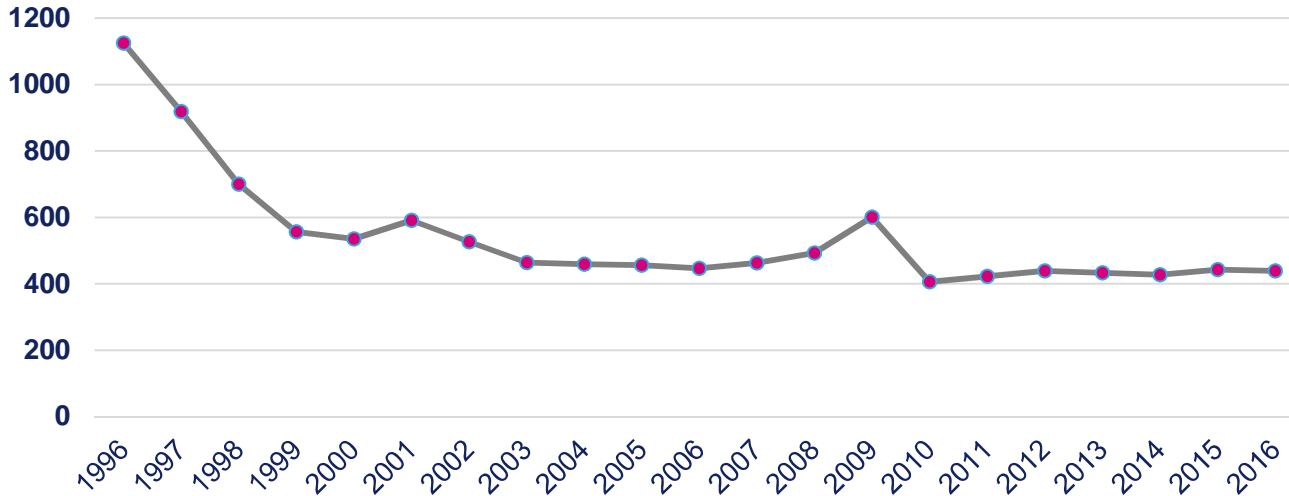
3.0 Million m³/year as much as a City of 60.000 people



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Ecological Footprint

kWh/Wafer out(Electricity)

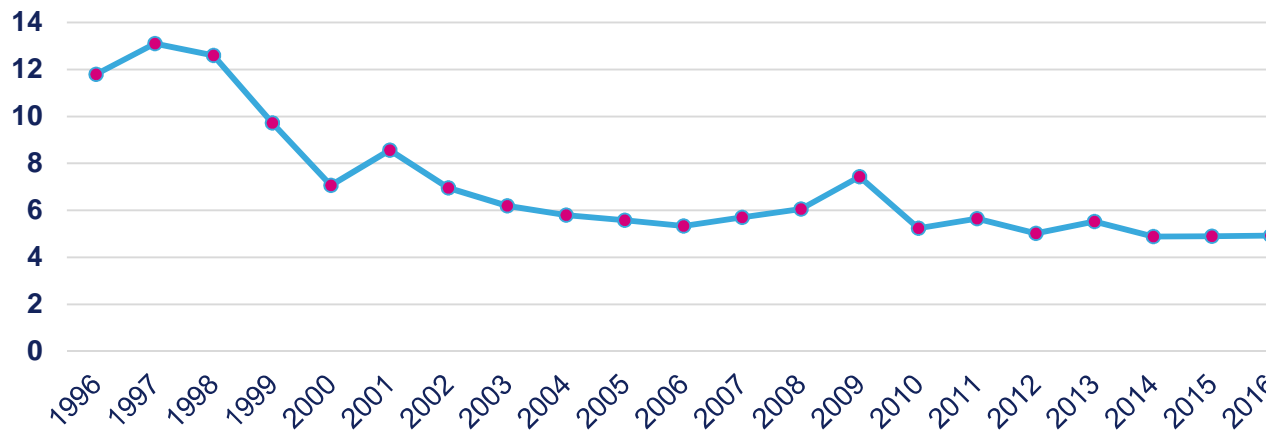


Electricity
– 61%

IN 20 YEARS

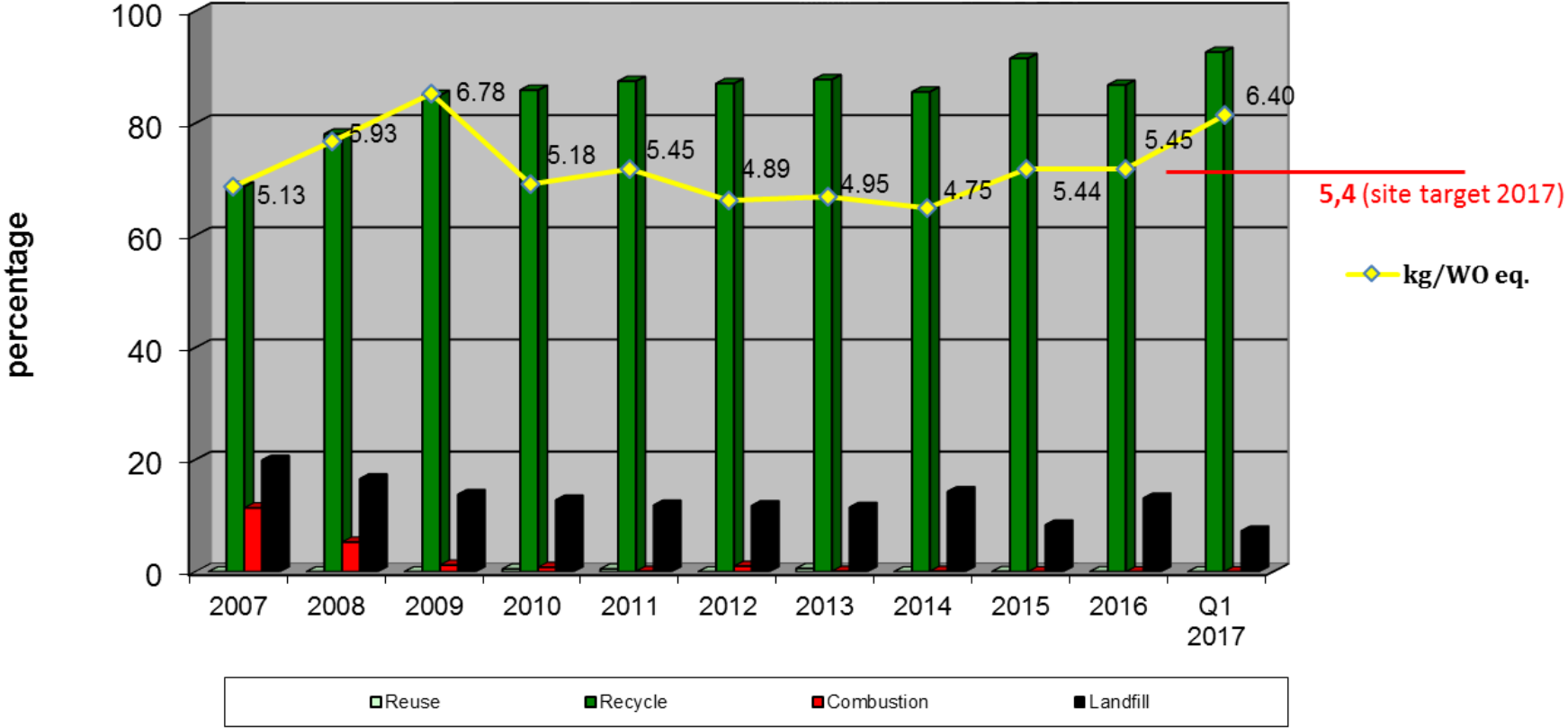
Raw Water
– 58%

m3/Wafer out (Raw Water)



Waste

TOTAL WASTE "LADDER CONCEPT" (%)



ST Catania primo sito industriale italiano registrato nel 1997



● Training sessions for Firefighting Personnel on **fire control**



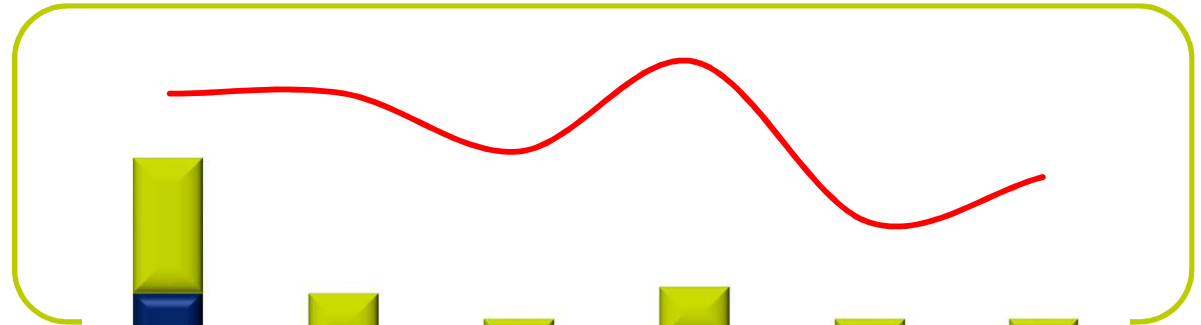
**SAFETY
FIRST**

● Training sessions for Firefighting Personnel to **rescue injured people in “restricted areas”**



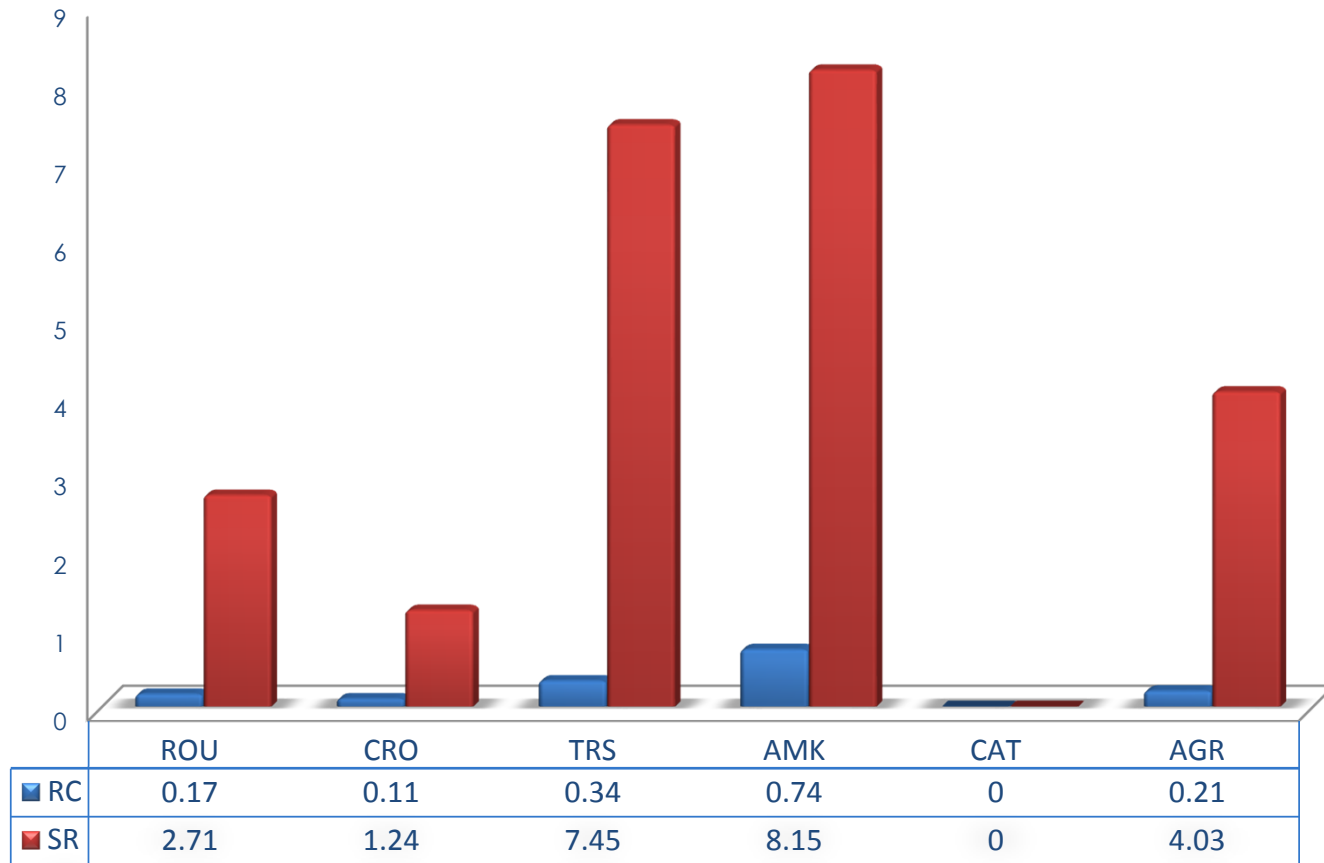
11.700 hours

**Safety
Training**



	2011	2012	2013	2014	2015	2016
Dom	21	8	6	8	4	2
Ind	12	4	2	5	4	6
In Itinere	43	43	34	48	23	30

Recordable and Severity rate in ST for @ Q1 2017



Donations 2016

ST in the territory



Opening of and informatics laboratory
Ist. Vittorino da Feltre
 Nesima
22 Laptops



Ass. Italiana Persone Down - Milazzo
12 Laptops



Centro Prov. l'Istruzione degli Adulti
Casa circondariale
 Caltagirone
12 Laptops / 6 Desktops



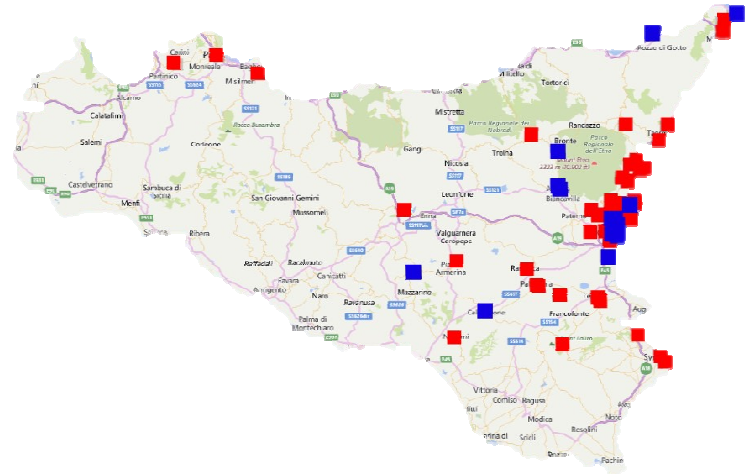
Ist. G. Turrisi Colonna - Catania
14 Laptops



3° C. D. Giovanni Paolo II
 Gravina (CT)
4 Laptops / 8 Desktops



Ass. InseparAbili
 Adrano
10 Laptops



Digital Unify Program STMicroelectronics Foundation

Corso base di informatica

- ✓ Ist. Omnicomprensivo Statale "A. Musco"
- ✓ Ist. Comprensivo Statale "Pitagora"
- ✓ Ist. Comprensivo "Vitaliano Brancati"

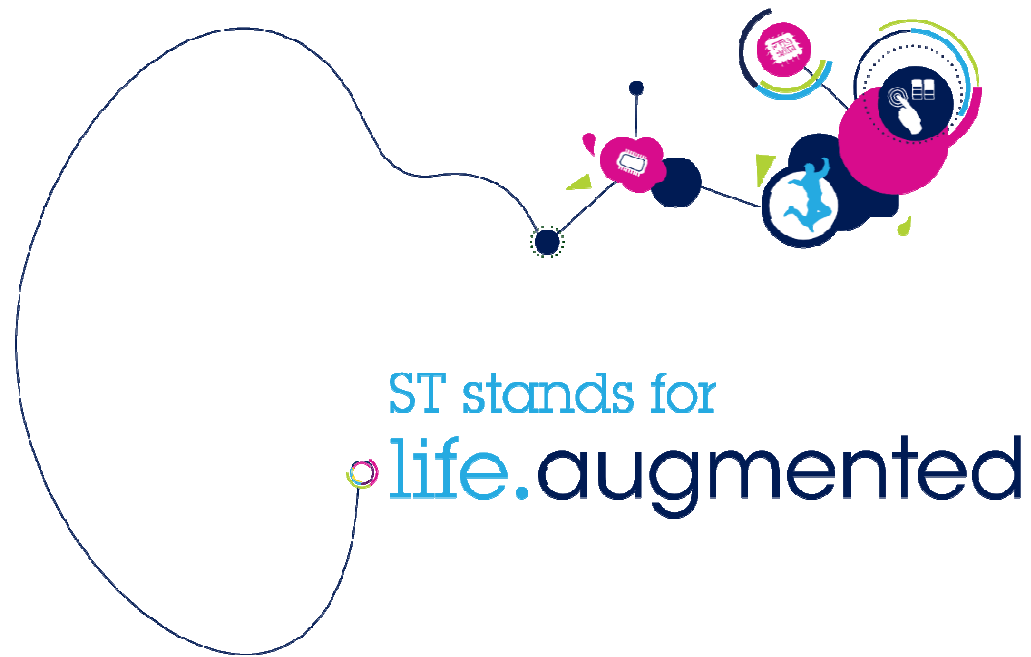


Tripled
 no. volunteers **9** (2015) **33** (2016)



Thank you

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Limiti e criticità riscontrati su bandi PhD 1/2

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Ministero dell'Istruzione, dell'Università e della Ricerca

MIUR dottorati industriali (Giugno 2017)

DD n. 1377 del 05-06-2017 Bando PON per Dottorati di ricerca innovativi a caratterizzazione industriale 2017/18, per il finanziamento di borse di dottorato aggiuntive per il ciclo XXXIII, A.A. 2017/2018.

L'art.5 lettera b) prevede: "Tutti i prodotti e gli strumenti realizzati, così come i dati e i risultati, saranno di proprietà degli autori; l'Università si riserva tuttavia il diritto di utilizzare prodotti, strumenti, dati e risultati citati per i fini legati alle attività di comunicazione e disseminazione degli interventi realizzati nell'ambito del PON RI 2014-2020».

ST non ha potuto sostenere le richieste pervenute dalle Università per l'attivazione di dottorati, in quanto l'art 5 del bando non consente all'azienda di avanzare rivendicazioni su eventuali contributi IP forniti dal dottorando (generando ad es. casi, non accettabili per policy aziendale casi di co-ownership di invenzioni). L'azienda rinunciarebbe inoltre al controllo sulla divulgazione di quanto il dottorando possa apprendere all'interno dei propri laboratori.



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Limiti e criticità riscontrati su bandi PhD 2/2



Bando PhD ITalents (Settembre 2015)

Tre contratti di lavoro dipendente per candidati in possesso del titolo di Dottore di Ricerca:

- *Novembre 2015 chiusura bando iPhDTalent -> 9000 domande presentate,*
- *Marzo 2016 selezionate le imprese e 730 candidature valutate positivamente a fronte di sole 136 finanziabili,*
- *Giugno 2016 apertura formale urgente delle relative posizioni in azienda,*
- *Novembre 2016 colloqui e selezione da parte dell'impresa (70 candidati ammessi dalla fondazione e valutati da ST),*
- *Gennaio 2017 ulteriore valutazione da parte di CRUI su accoppiamento posizione/profilo del candidato nessun candidato elezionato da ST tra i primi 136 finanziabili*
- *Maggio 2017 scorrimento graduatoria fino alla posizione 229a e inizio iter attivazione 1° assunzione per ST,*
- *Luglio 2017 il candidato n. 229 di alto profilo selezionato da ST ha già trovato occupazione dopo 2 anni di attesa.*
- *Luglio 2017 ulteriore scorrimento fino alla posizione 247a*
- *Settembre 2017 assunzione del candidato n. 247 in corso*

ST si è imbattuta in un iter lungo e farraginoso: a fronte delle richieste autorizzate dal management dei gruppi coinvolti, nel 2015 per tre nuove assunzioni, dopo due anni, solo una posizione è in corso di finalizzazione.

