



life.augmented

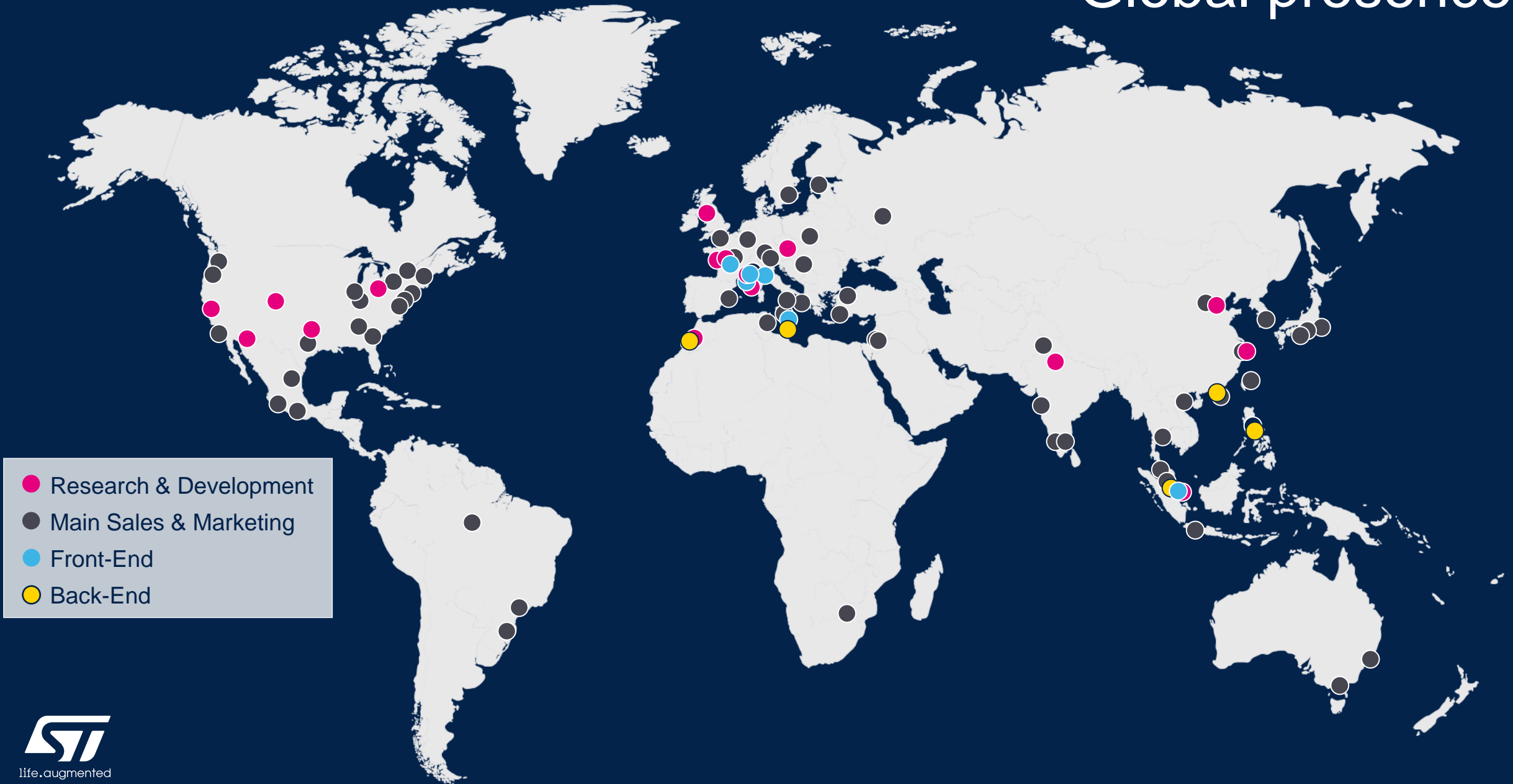
# Company presentation

May 2021

# We are creators and makers of technology

- One of the world's largest semiconductor companies
- 2020 revenues of **\$10.2 B**
- **46,000** employees of which **8,100** in R&D
- Over **80** Sales & marketing offices serving over **100,000** customers across the globe
- **11** Manufacturing sites
- Signatory of the United Nations Global Compact (UNGC), Member of the Responsible Business Alliance (RBA)

# Global presence



**Jean-Marc Chery**  
President &  
Chief Executive Officer



**Benedetto Vigna**  
Analog, MEMS  
& Sensors  
Group



**Marco Monti**  
Automotive  
& Discrete  
Group



**Claude Dardanne**  
Microcontrollers  
& Digital ICs  
Group



**Marco Cassis**  
Sales, Marketing,  
Communications  
& Strategy  
Development



**Orio Bellezza**  
Technology,  
Manufacturing  
& Quality



**Lorenzo Grandi**  
Finance,  
Infrastructure  
& Services  
CFO



**Rajita D'Souza**  
Human Resources  
& Corporate Social  
Responsibility



**Steve Rose**  
Legal Counsel

Public Affairs

**Frédérique  
Le Grevès**  
France

**Giuseppe  
Notarnicola**  
Italy

**Thierry Tingaud**  
Europe

**Eric Aussebat**  
Imaging  
Sub-Group

**Stefano Cantù**  
Smart Power Solutions  
Macro-Division

**Michael Anfang**  
EMEA Region

**Fabio Gualandris**  
Back-End  
Manufacturing  
& Technology

**Giuseppe Notarnicola**  
Treasury

Corporate  
Compliance, Ethics  
& Privacy

**Philippe Dereeper**

**Matteo Lo Presti**  
Analog  
Sub-Group

**Paul Cihak**  
Americas Region

**Joël Hartmann**  
Digital Front-End  
Manufacturing  
& Technology

Audit and Risk  
**Franck Freymond**

**Jerome Roux**  
Asia Pacific Region

**Michael Hummel**  
Analog & Power FE  
Manufacturing  
& Technology

**ST Executive  
Committee**

**Claudia Levo**  
Integrated  
Marketing &  
Communications

**Nicolas Yackowlew**  
Product Quality &  
Reliability

Transformation  
Office  
**Chouaib Rokbi**

**Alberto Della Chiesa**  
Supply Chain

# Our vision

**ST stands for**  
**life.augmented**

Everywhere microelectronics  
make a positive contribution to people's lives,  
ST is there

# Our value proposition

## For our shareholders



Return value in line with our sustainable, profitable growth objective

Sustainable and profitable growth

## For our customers



Provide differentiating enablers

Independent, reliable & secure supply chain

## For other stakeholders



Committed to sustainability

Our values: Integrity – People – Excellence

# Our technology starts with you

At ST we create  
technology that starts with  
**You**

Our employees  
Our customers  
Our partners

# Where you find us

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



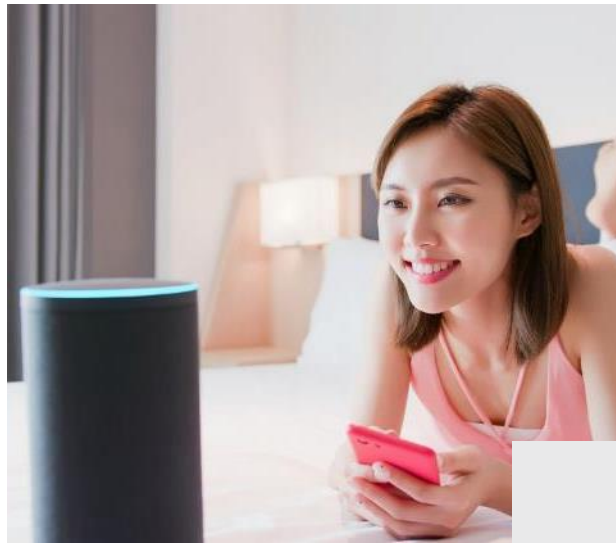
Enabling the evolution of **industry** towards smarter, safer and more efficient factories and workplaces



Making **homes & cities** smarter, for better living, higher security, and to get more from available resources

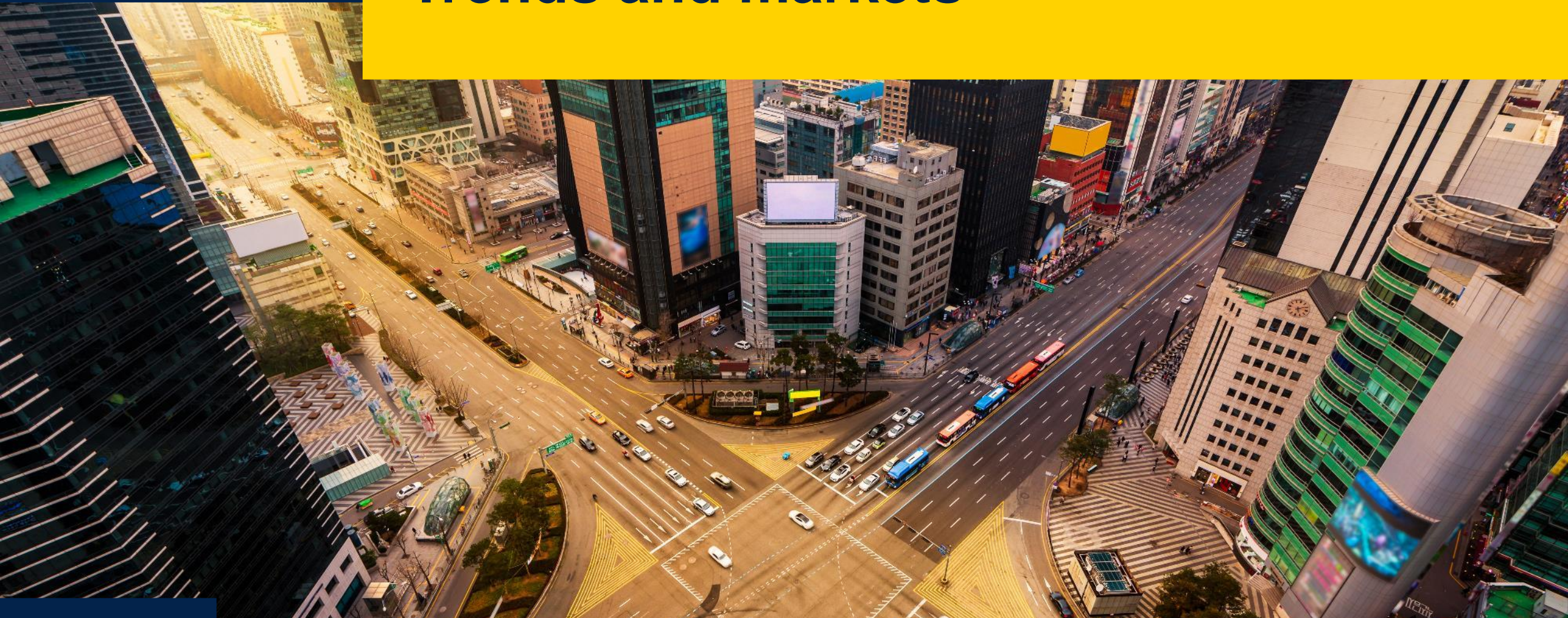


Making everyday **things** smarter, connected and more aware of their surroundings





# Trends and markets



# Our strategy stems from key long-term enablers

## Smart Mobility



**ST** provides innovative solutions to help our customers make driving **safer, greener and more connected** for everyone

## Power & Energy



**ST** technology and solutions enable customers to increase **energy efficiency** everywhere and support the use of renewable energy sources

## Internet of Things & 5G



**ST** provides **sensors, embedded processing solutions, connectivity, security and power management**, as well as **tools and ecosystems** to make development fast and easy for our customers

# Smart mobility

ST provides innovative solutions to help our customers make driving safer, greener and more connected for everyone

Increase safety for road users  
& driver comfort and convenience

Road crashes carry a high human toll  
and cost > **\$500** Billion every year

Affordable, desirable electric vehicles

Electric vehicles\* from **9%** in 2019 to  
>**20%** in 2025 of global car production

Cleaner, greener Internal Combustion  
Engines (ICE)

ICEs in > **90%** of new vehicles produced  
2020-2025

# Power & energy

ST technology and solutions enable customers to increase energy efficiency everywhere & support the use of renewable energy sources

Rising demand for and usage of electrical energy

> **30%** global electricity demand increase from 2020 to 2030

Decrease carbon emissions to reduce global warming impact

**45%** CO<sub>2</sub> emission reduction from 2010 to 2030 to limit warming to 1.5oC

Increase use of renewable energy

Electrical energy from renewal sources from ~**10%** in 2020 to ~**20%** in 2030

# Internet of things & 5G

ST provides sensors, embedded processing, connectivity, security and power management, as well tools and ecosystems

Cloud connected and data-enabled services

**Two** billion industrial IoT & utility connected devices by 2022

Digital security for all data

IoT security services market > **\$10** billion in 2021

5G accelerating the connection of objects to the IoT

> **90** million new 5G IoT connections in 2026

# Our strategy



# We address four end markets

Automotive



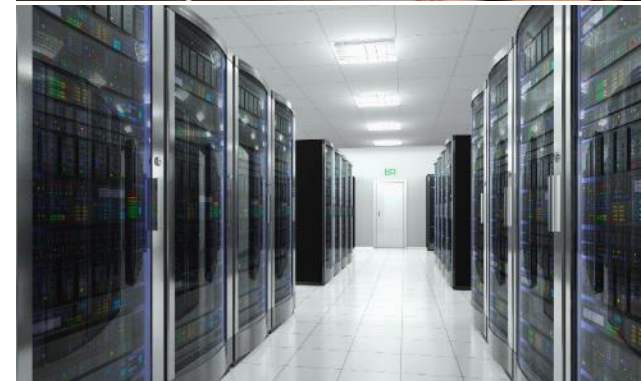
Industrial



Personal electronics



Communications equipment,  
computers & peripherals



# Our strategic objectives

## Automotive



Lead in **car electrification**



Lead in **car digitalization**

## Industrial



Lead in **embedded processing**



Accelerate growth in **analog & sensors**



Expand in **power & energy** management



Accelerate growth with **industrial OEMs**

## Personal electronics



Lead in **selected** high-volume **smartphone** applications with differentiated products or custom solutions



Leverage **broad portfolio** to address high-volume applications

## Communications Equipment, Computers & Peripherals



Address **selected** high-volume **applications** with differentiated products or custom solutions



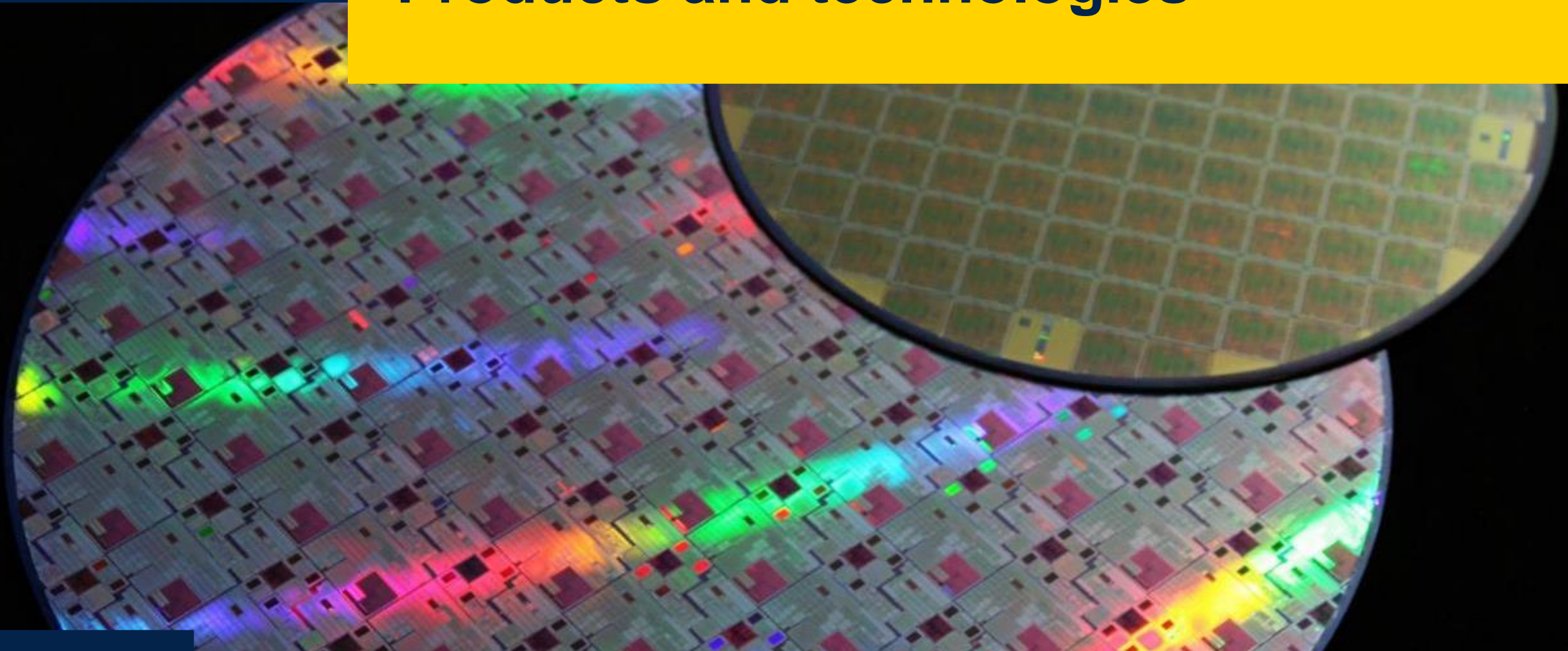
Address selected applications in **cellular** and **satellite communication** infrastructure



Leverage **broad portfolio** to address high-volume applications



# Products and technologies



# Differentiated technologies are our foundation



## **MEMS**

for sensors & Micro-actuators

## **Smart Power: BCD**

(Bipolar - CMOS - Power DMOS)

## **FD-SOI CMOS**

FinFET through Foundry

Discrete, Power MOSFET, IGBT  
Silicon Carbide, Gallium Nitride

## **Analog & RF CMOS**

**Vertical Intelligent Power**

## **eNVM CMOS**

**Optical sensing solutions**

## **Packaging technologies**

Leadframe – Laminate – Sensor module – Wafer level

# Our products and solutions enable customer innovation

Dedicated  
Automotive ICs



Analog, Industrial &  
Power Conversion ICs



GP MCU & MPU,  
Secure MCUs, EEPROM



Discrete &  
Power Transistors



MEMS & Optical sensing solutions



ASICs based on ST  
proprietary technologies

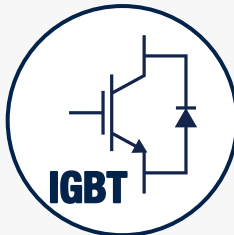
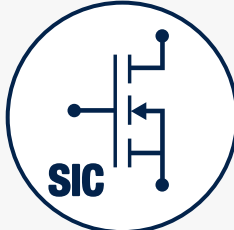


# ST product portfolio enabling strategic trends

Dedicated Automotive ICs



Discrete & Power Transistors



Analog, Industrial & Power Conversion ICs



GP, Connected MCU, MPU  
Secure MCU, EEPROM



MEMS & Optical sensing solutions



ASICs based on ST proprietary technologies



Smart Mobility

Power & Energy

Internet of Things & 5G

# Dedicated automotive ICs



## Automotive MCUs



- Scalable single- and multi-core MCU solutions
- Targeting cost-sensitive to highly-advanced applications
- Comprehensive development ecosystem

## ADAS solutions

- CMOS image sensors
- Image signal processors
- Radar transceivers
- V2X communication solutions

## Infotainment and telematics



- Makes the driving experience more fun and comfortable
- Outstanding audio fidelity and positioning accuracy in every condition
- Secure smartphone mirroring
- Safe vehicle connectivity with wide set of peripherals

## Automotive Analog & Power

- Compliance with rigorous automotive requirements
- Design-ins at automotive suppliers and car makers
- Wide portfolio of analog, power and digital products
- VIPower\* HSDs, LSDs & H-bridges and LED drivers
- Complete system kit solutions

# Discrete & power transistors



## Diodes

## Rectifiers

## Thyristors (SCR)

## AC switches

- Silicon carbide (SiC) & high- and low-voltage silicon diodes
- Ultra-fast & bridge rectifiers
- Power Schottky diodes & field-effect rectifiers
- Thyristors (SCR) & Triacs
- ACS\* AC switches

## Transient Voltage Suppressors (TVS)

## Integrated EMI filtering and protection ICs

- ESD protection
- EOS & lightning surge protection
- Current limiters
- IPAD\* Integrated EMI and ESD protection devices
- Integrated passive devices
- Smart antenna tuning



## Key power technologies & packages for:

## Car electrification

## Power management

## Motor control

- Gallium Nitride (GaN) on silicon power and RF transistors
- LDMOS & DMOS RF power transistors
- Silicon-Carbide MOSFETs
- High- and low-voltage silicon power MOSFETs (STripFET, Planar & MDmesh\*)
- IGBTs
- Power bipolar transistors
- ACEPACK\* power modules
- SLLIMM\* intelligent power modules

# Analog, industrial & power conversion ICs

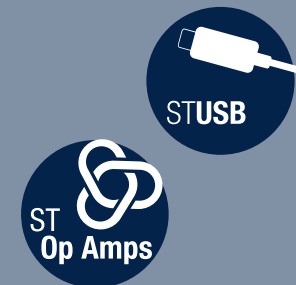
## Power management

- AC/DC & DC/DC converters
- Analog & digital controllers
- Linear voltage regulators
- Voltage reference
- eFuses
- LED drivers & lighting ICs
- Intelligent Power Switches
- Battery management ICs
- Wireless power solutions
- Power-over-Ethernet ICs
- Photovoltaic ICs
- Rad-Hard products



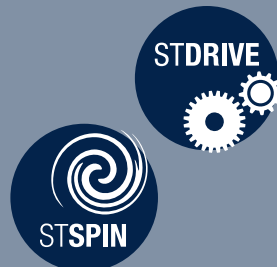
## Analog products & Specific ICs

- Operational amplifiers
- Comparators
- Current sensing amplifiers
- Filtering & signal conditioning
- Interfaces & transceivers
- Audio ICs
- Switches
- Reset and Supervisors
- Rad-Hard products
- Medical ICs
- Smart Metering ICs



## Motor control

- Brushed DC motor drivers
- Brushless DC motor drivers
- Stepper motor drivers
- MOSFET & IGBT gate drivers
- Galvanic isolation ICs
- GaN drives



## Connectivity solutions

- Bluetooth® Low Energy ICs
- Sub-1 GHz transceivers
- Sigfox-compatible devices
- LoRaWAN® technology
- Short-range RF transceivers
- Powerline communication ICs
- IO-Link



# MEMS & optical sensing solutions



## Motion sensors



- Accelerometers
- e-compasses
- Gyroscopes
- iNEMO\* inertial modules
- T-Plus: Motion MEMS with embedded temperature sensor

## Environmental sensors

- Pressure sensors
- Temperature sensors
- Humidity sensors
- MEMS microphones

## Micro actuators

- Actuators for printheads
- Micro mirrors & drivers
- Piezoelectric actuators
- Electrostatic actuators
- Electromagnetic actuators
- Thermal actuators

## Optical sensing solutions



- FlightSense\* ToF proximity & ranging modules
- 3D FlightSense\* ToF sensors
- Global shutter CMOS image sensors
- Ambient light sensors
- Custom optical solutions



# General purpose MCU & MPU, secure solutions & NFC



## GP 32-bit MCUs & MPUs



- STM32\* 32-bit general-purpose microcontrollers (MCUs) and microprocessors (MPUs)
- 1000+ compatible devices
- Arm® Cortex® Cores
- Maximum integration
- Extensive ecosystem

## GP 8-bit MCUs



- 8-bit general purpose microcontrollers (MCUs)
- Dedicated series for mainstream, ultra-low-power and automotive
- Rich ecosystem

## Secure Solutions



- Secure MCUs
- eSIM, eSE, NFC for mobile
- eSIM, eSE and TPM for industrial, IoT and automotive
- Secure payment solutions
- Authentication and Brand protection solutions

## NFC & Memory



- NFC / RFID Tags
- Dynamic NFC Tags
- NFC / RFID Readers
- UHF Readers
- High-performance & high-endurance EEPROM

# ASICs based on ST proprietary technologies



ST offers strategic independence and product differentiation to ASIC customers through three key enablers:

- Advanced manufacturing technology platforms
- Worldwide design resources and advanced IP
- ST's Independent Device Manufacturer supply chain

## Digital ASICs

System-on-Chip designs in CMOS and FD-SOI technologies with eNVM option, as well as FinFET (through foundry)

## Analog & RF ASICs

Unique expertise in RF and analog design using advanced technologies, such as RFSOI, BiCMOS and millimeter wave

## MEMS and imaging ASICs

Proprietary micromachining process, deep expertise in MEMS integration  
Custom imaging solutions and premium foundry services

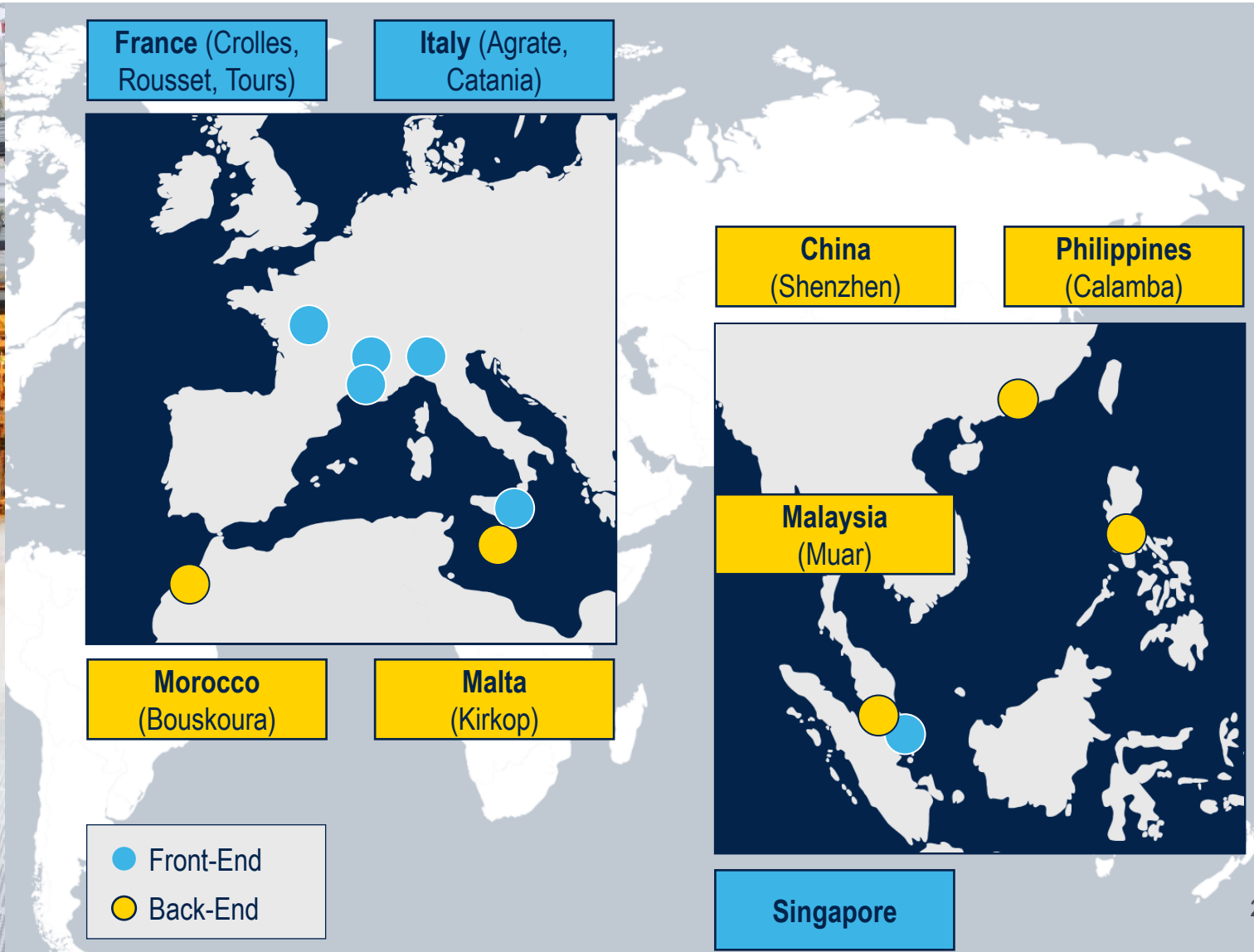
## Power ASICs

A broad portfolio of differentiated technologies including BCD, VIPower\*, SiC, GaN and power MOSFET

# Manufacturing and R&D



# We offer quality, flexibility and supply security



# We are drivers of your innovation

Advanced R&D centers around the world for close collaboration with operations and customers



- **~18,000** patents & **557** new filings in 2020
- **~15%** of revenues invested in R&D
- **~8,100** people working in R&D and product design

# Quality as a key business enabler

## Our Quality Vision

Elevate ST to the highest level of quality as an asset for our customers



## Our Quality Mission

Ensure ST products meet the highest quality and reliability requirements of customers in the markets we address

How do we achieve this



Sustainable culture of quality excellence



Customer focus



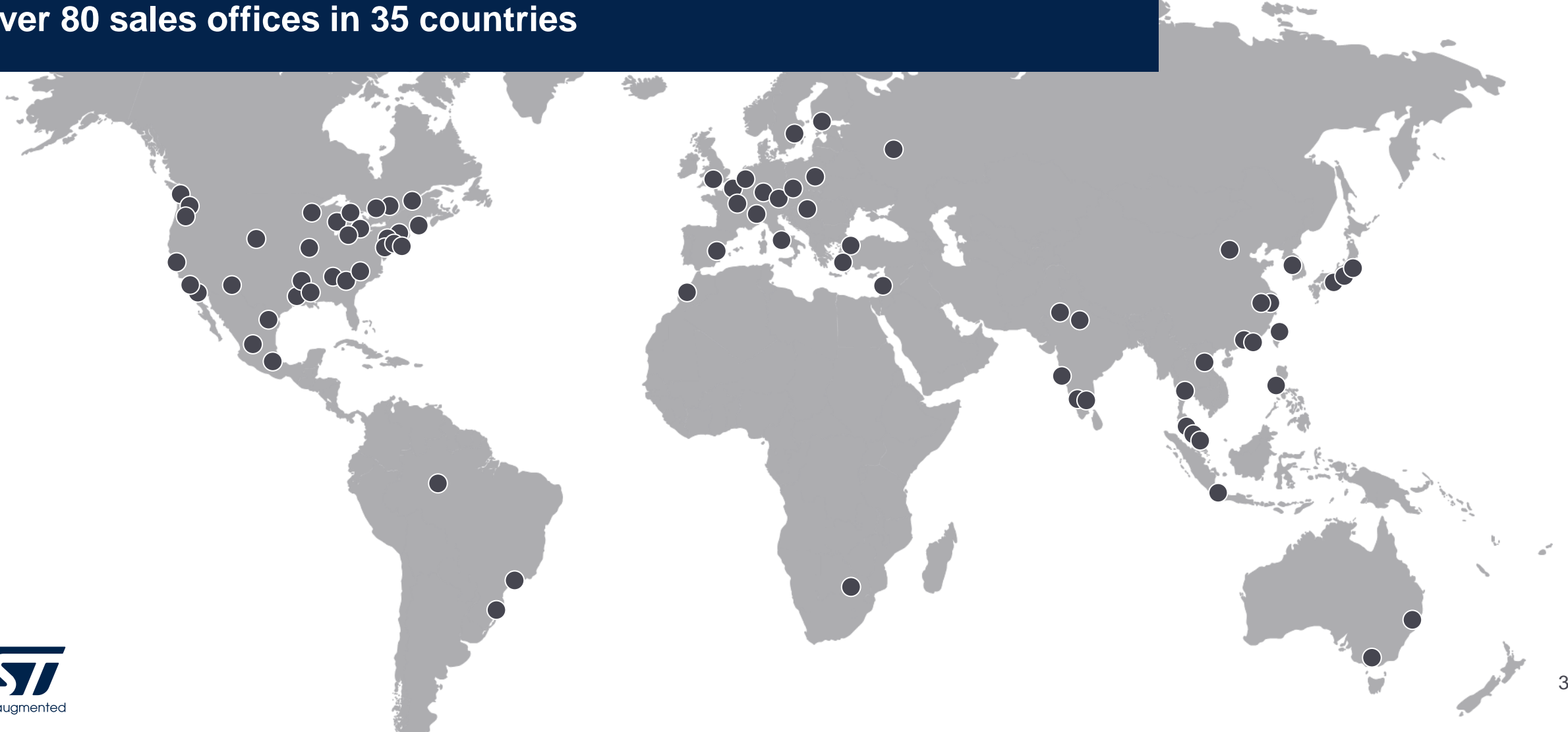
Result-driven improvement programs

# Customers & sales



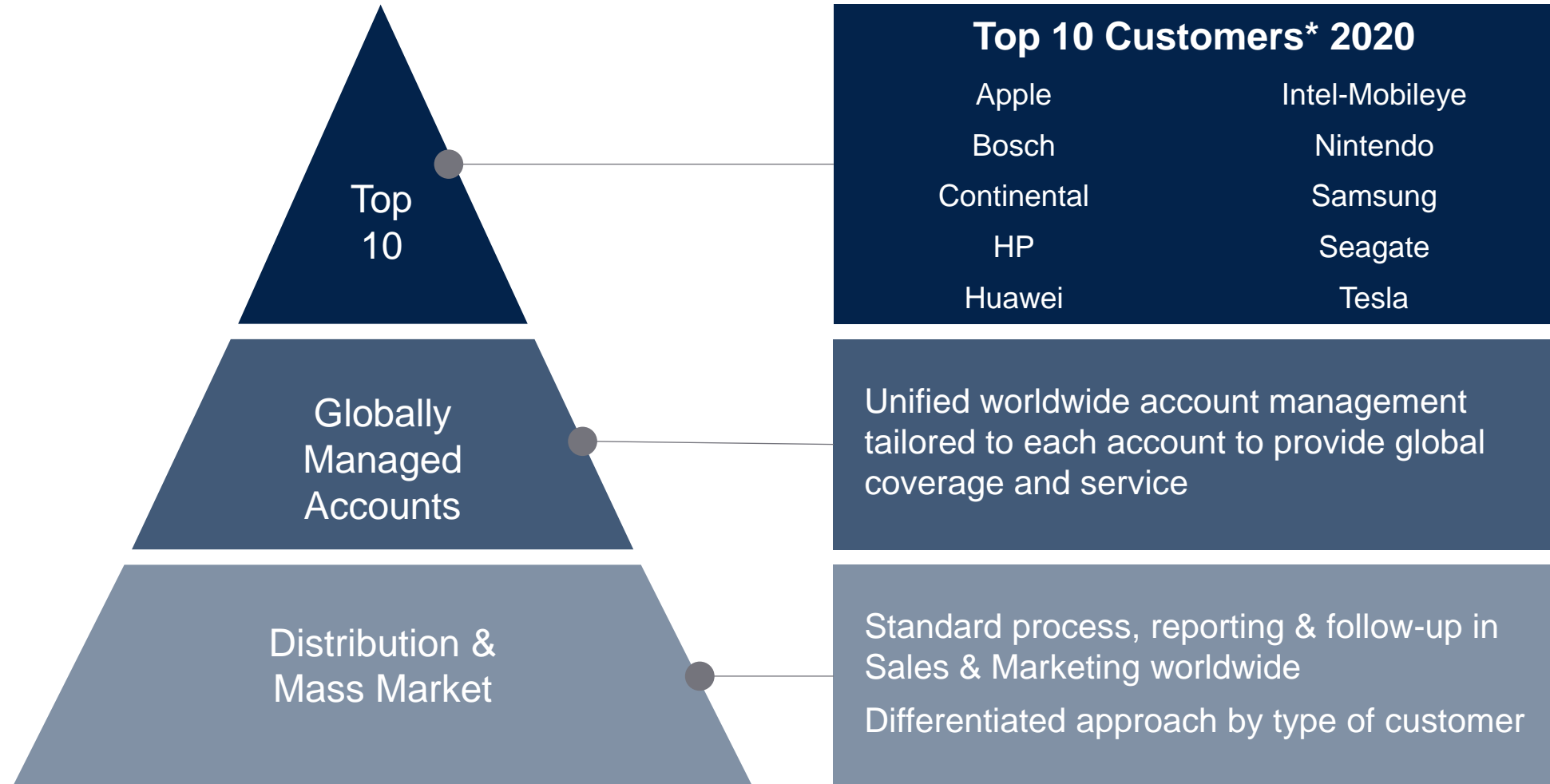
# We are partners with our customers worldwide

Over 80 sales offices in 35 countries



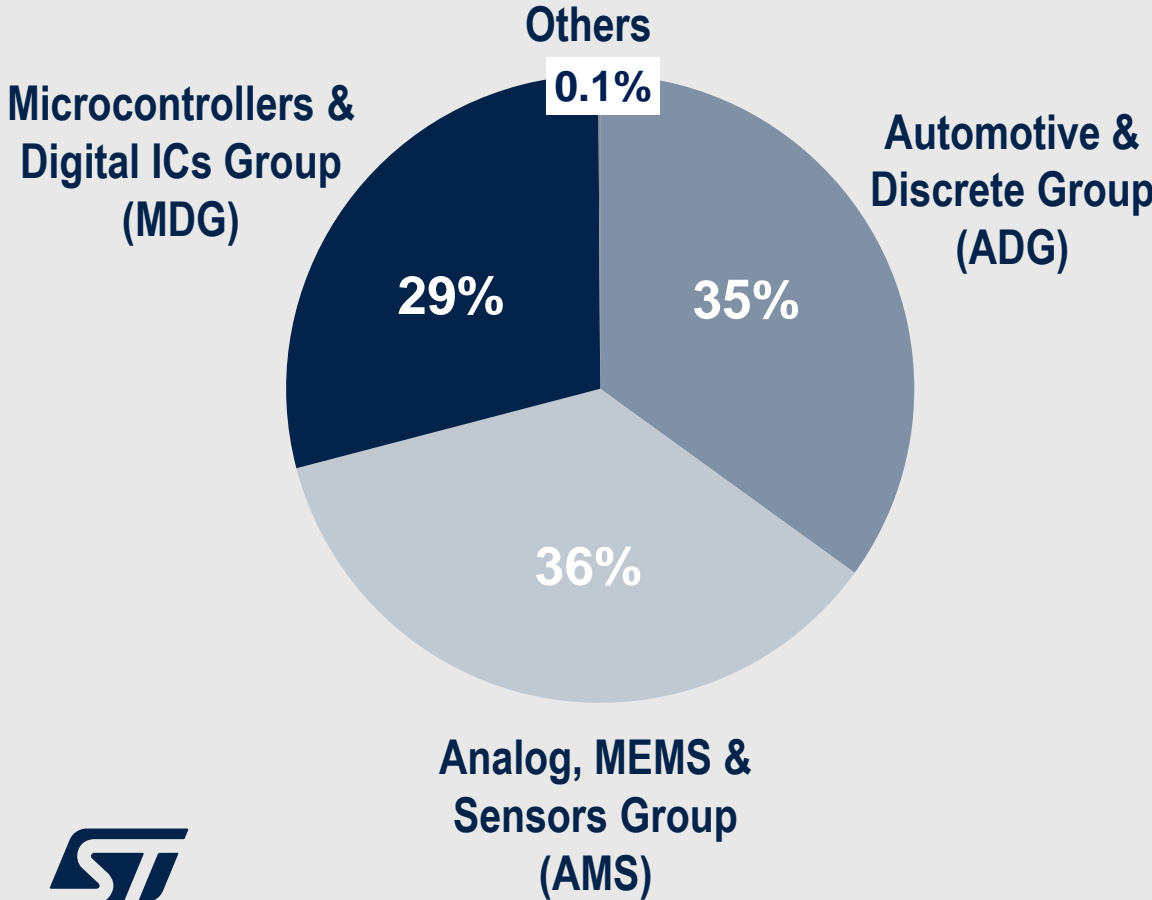


# We serve more than 100,000 customers

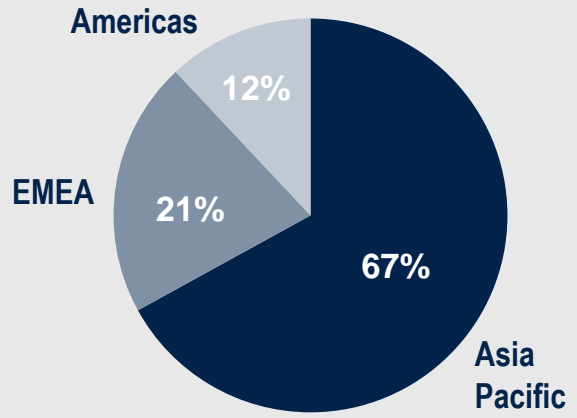


# Q1 2021 Revenues

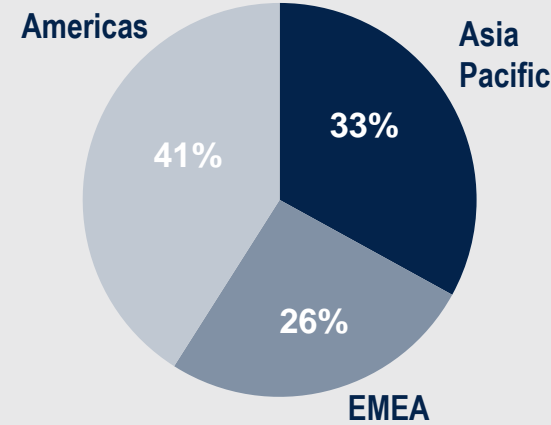
### % by product group



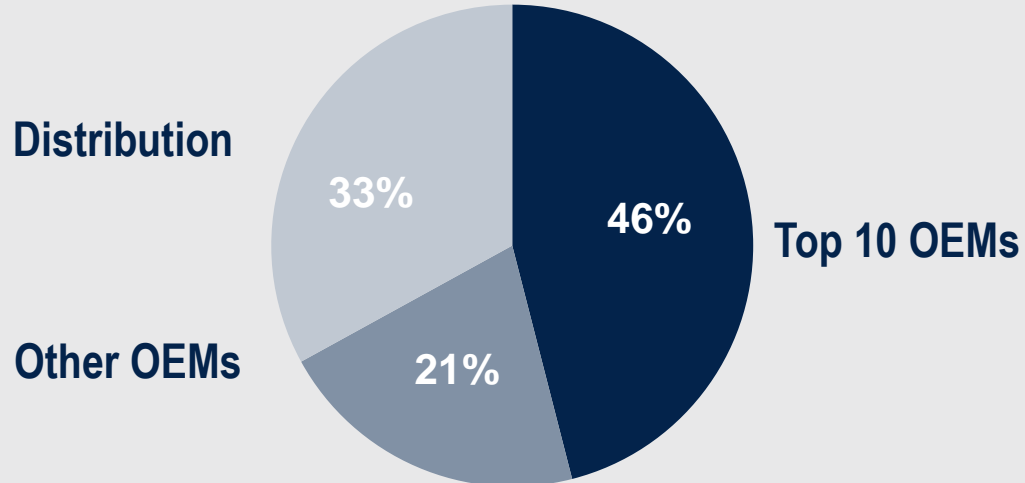
### % by shipment location



### % by region of origin

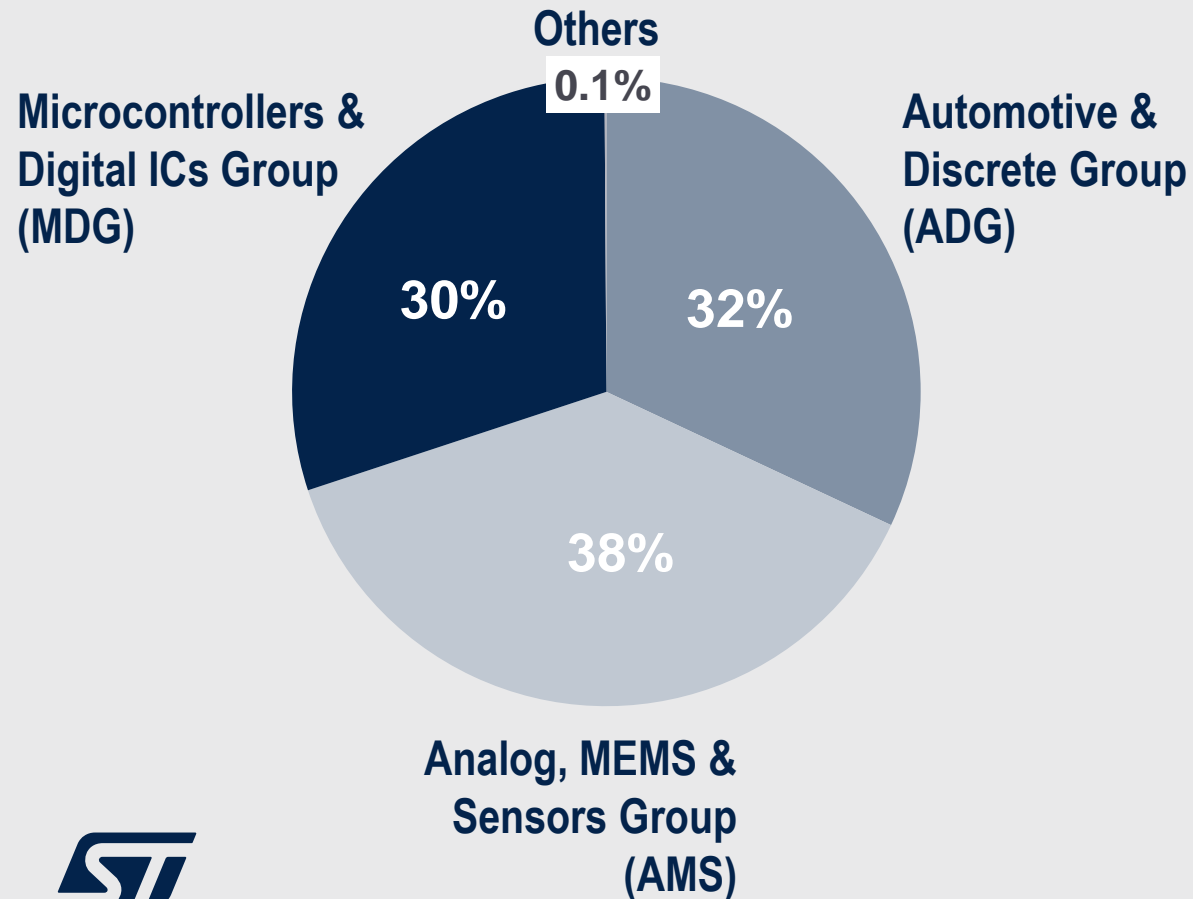


### % by customer type

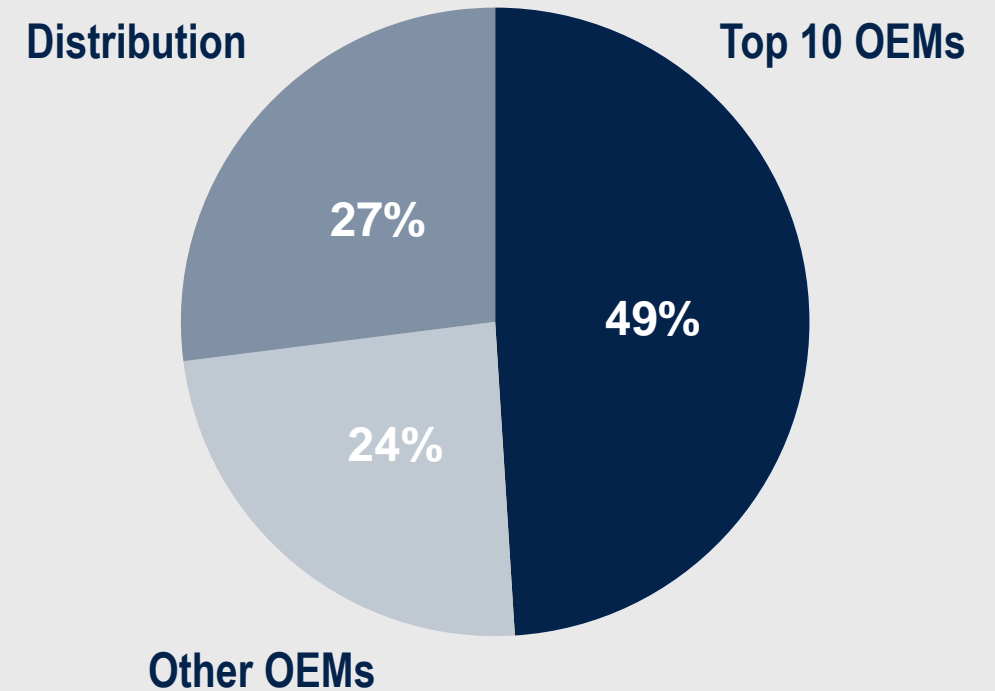


# 2020 revenues by product group and customer type

% by product group

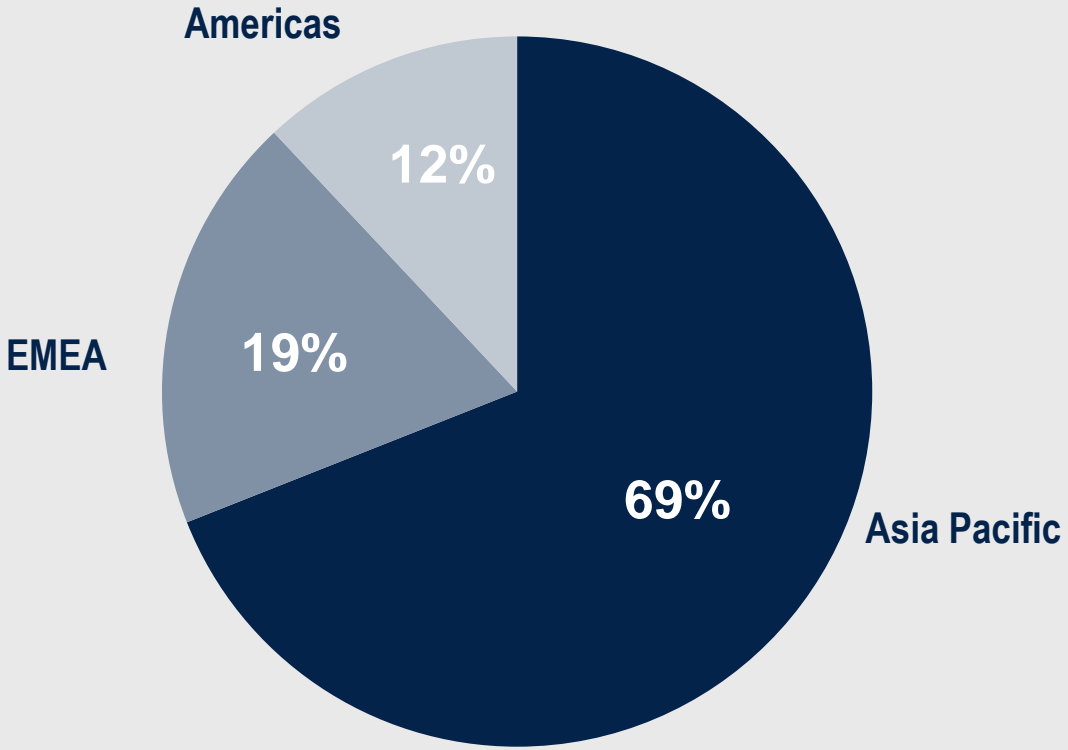


% by customer type

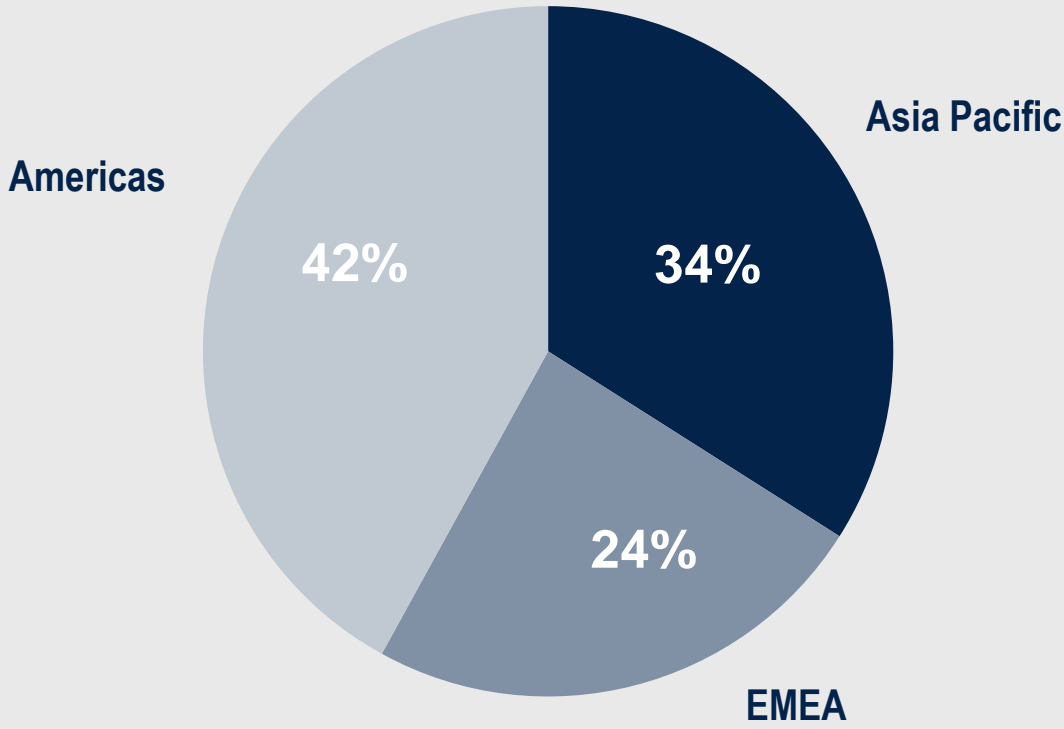


# 2020 revenues shipment location and region of origin

### Shipment location



### Region of origin

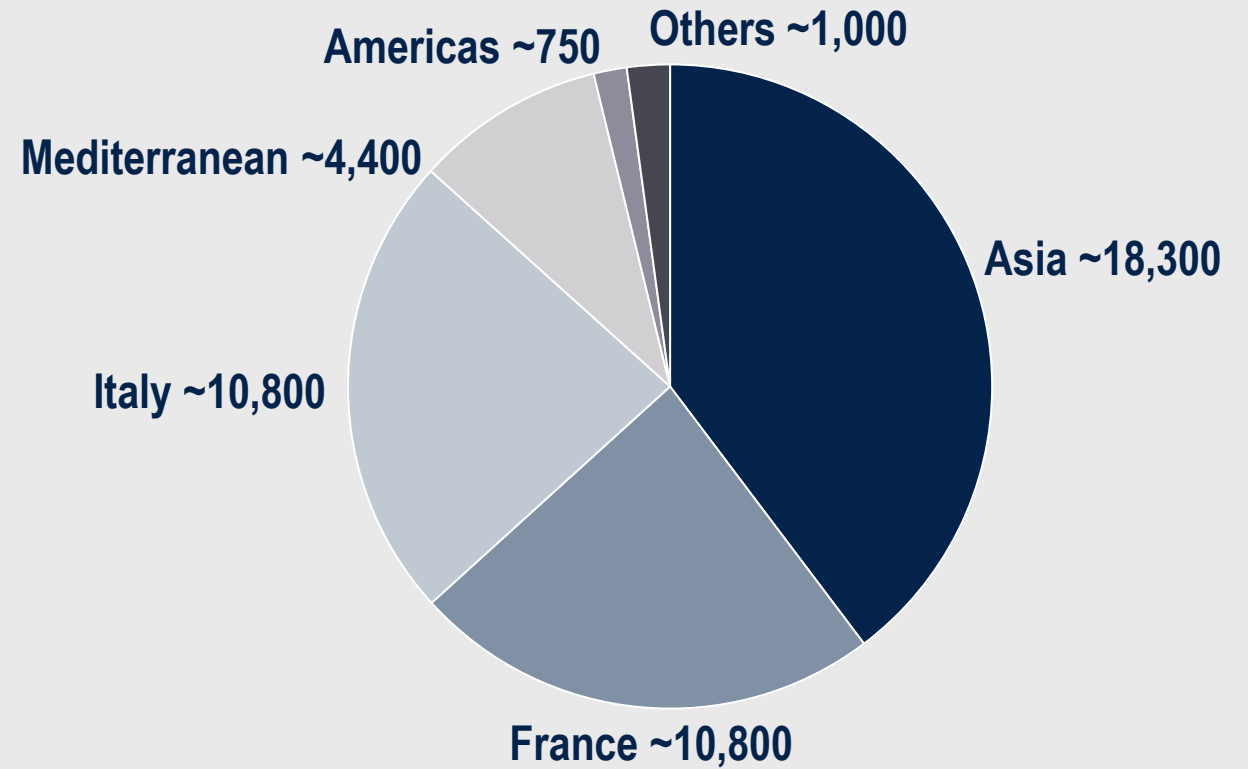


# Our people



life.augmented

# Our technology starts with our people



Manufacturing	~ 65%
Research & Development	~ 18%
Marketing & Sales, Divisional Functions, Administration & General services	~ 17%

As of December 31, 2020

# Sustainability



life.augmented

# A longstanding commitment







**ACCELERATING SUSTAINABILITY  
TOGETHER**

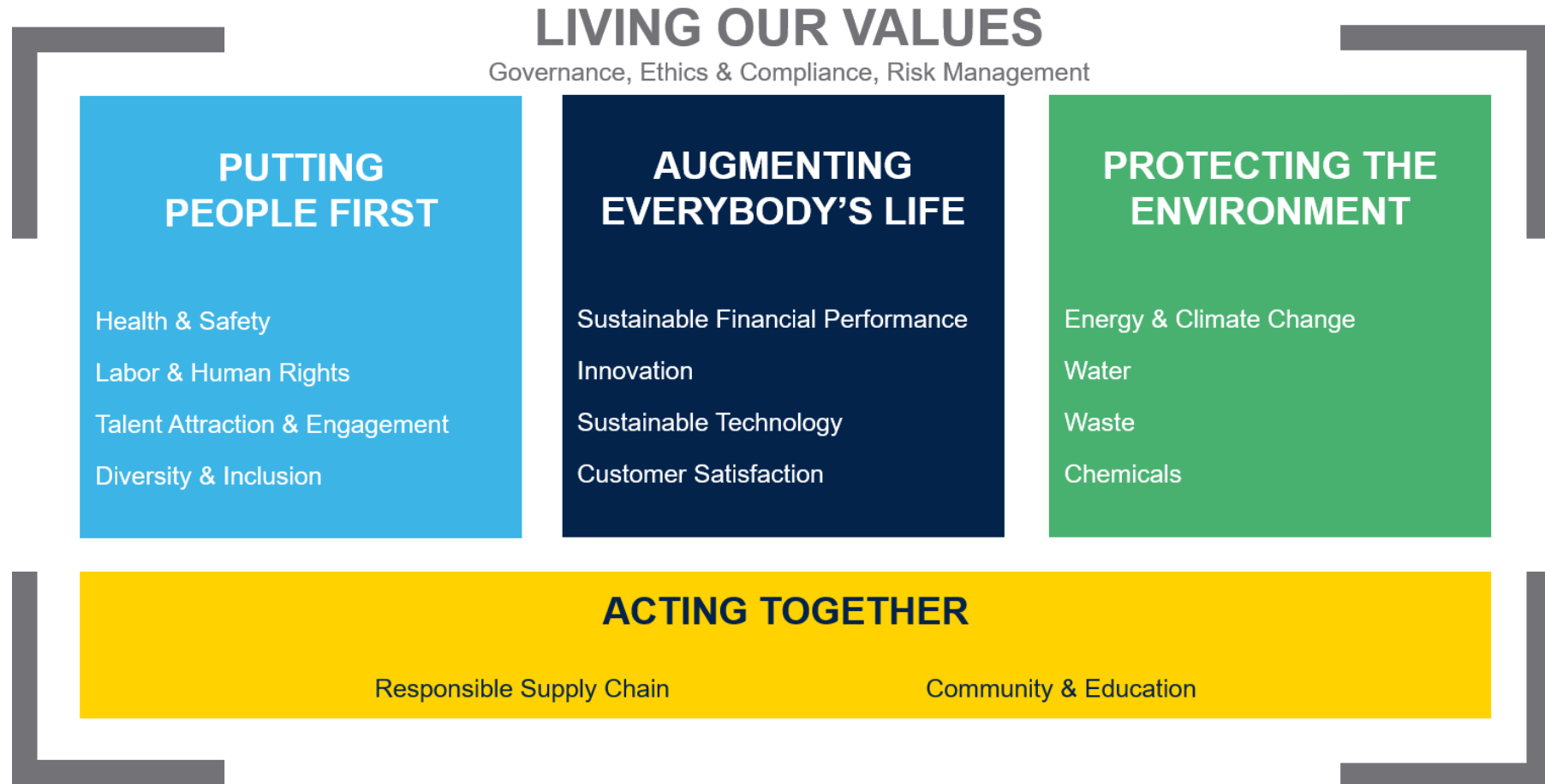
# Our sustainability strategy





**ACCELERATING SUSTAINABILITY  
TOGETHER**

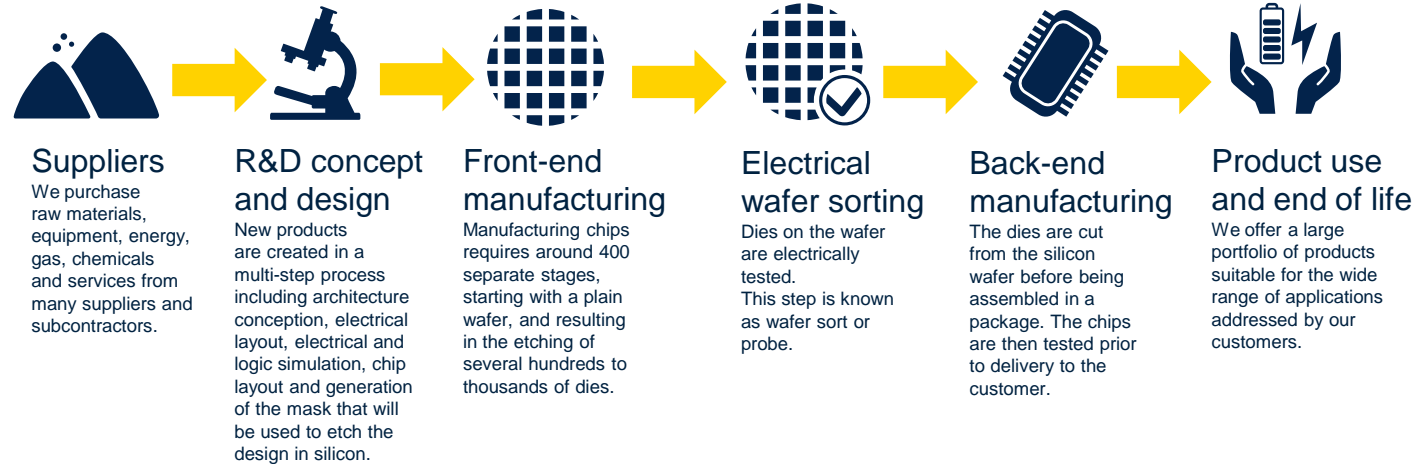
# Our sustainability strategy



# Our business model

## Value created

## Main steps in our value chain



### Suppliers

We purchase raw materials, equipment, energy, gas, chemicals and services from many suppliers and subcontractors.

### R&D concept and design

New products are created in a multi-step process including architecture conception, electrical layout, electrical and logic simulation, chip layout and generation of the mask that will be used to etch the design in silicon.

### Front-end manufacturing

Manufacturing chips requires around 400 separate stages, starting with a plain wafer, and resulting in the etching of several hundreds to thousands of dies.

### Electrical wafer sorting

Dies on the wafer are electrically tested. This step is known as wafer sort or probe.

### Back-end manufacturing

The dies are cut from the silicon wafer before being assembled in a package. The chips are then tested prior to delivery to the customer.

### Product use and end of life

We offer a large portfolio of products suitable for the wide range of applications addressed by our customers.

## Management of our impacts

### Suppliers

We require our suppliers to implement the Responsible Business Alliance (RBA) standards and encourage ISO and OHSAS certifications to address ethics, social, environmental, health and safety risks. We participate in the Responsible Minerals Initiative.

### Products

Through our Sustainable Technology program we design products systematically taking into consideration the environmental impact of the device during its whole life cycle, including raw materials, transportation, manufacturing, usage and end of life.

### People

We ensure the health and safety of our employees through advanced management systems and certification. We implement our Code of Conduct and the RBA standards in all our sites to mitigate our ethics and labor and human rights risks, and carry out regular assessments and audits in all our production sites.

### Environment

We deploy programs to reduce our direct and indirect greenhouse gas emissions from all our operations, including Perfluorinated Compounds (PFCs), which have a very long atmospheric lifetime and high global warming potential. We minimize the environmental, health and safety risks related to the chemicals and materials used in the manufacturing process, by basing the selection, handling, and substitution on the precautionary principles. We are continually reducing our water footprint through reuse and recycling and all our wastewater is treated before being discharged into the environment. We reduce, reuse, recycle or recover as much of our waste as possible, rather than sending it to incineration or landfill.

## Resources

### Human

- ~46,000 employees
- 103 nationalities
- 34% women, 66% men
- Average age: 40

### Financial

- US\$14 billion total assets
- US\$1.3 billion capital investments
- US\$1,099 million net cash

### Intellectual

- ~8,100 employees in R&D
- US\$1.6 billion R&D investments
- 143 R&D partnerships

### Manufactured

- 11 main manufacturing sites in 7 different countries
- ~65% of employees in manufacturing
- >6,000 suppliers

### Natural

- 2,626 GWh of energy consumed
- 40% of renewable energy
- ~20 million m<sup>3</sup> of water withdrawn
- >5,900 chemicals used

### Social and relationship

- ST values and Code of Conduct
- US\$2.1 million cash donated by ST to local communities
- >114,000 hours donated to local communities

### Human

*Engaged and skilled people in an inclusive and safe workplace*

- average of 44 hours training per employee
- 81% of employees recommend ST as a great place to work
- 0.14 recordable case rate (injuries)

### Financial

*Sustainable financial performance*

- US\$10.22 billion net revenues
- US\$3.07 billion salaries and benefits
- US\$174 million taxes paid
- US\$168 million cash dividend

### Intellectual

*Innovative products and solutions*

- ~18,000 active patents
- 63% of new products classified Sustainable Technology
- 15% of revenues generated by new product lines

### Manufactured

*Responsible and effective business operations*

- >100,000 customers served
- ISO 9001, 14001, 22301, 50001 45001/OHSAS 18001 and IATF certifications
- 100% of manufacturing sites covered by RBA audits
- 98% of new suppliers screened on social responsibility criteria

### Natural

*Mitigation of the impact of our activities*

- 78% decrease in PFC emissions since 1994 (per unit of production)
- 88% of waste reused, recovered or recycled
- 41% of water recycled or reused

### Social and relationship

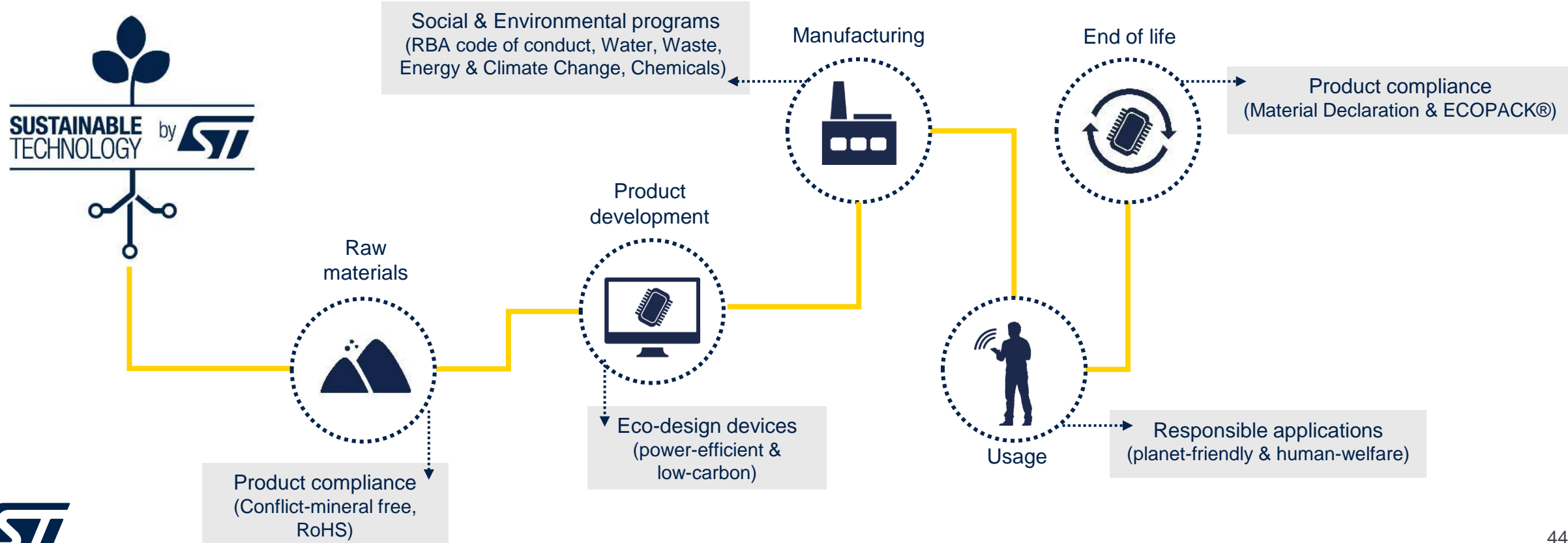
*Knowledge and values shared with all*

- >163,000 beneficiaries in local communities
- 340 volunteering initiatives from 35 sites worldwide
- >770,000 people trained on computer basics by ST Foundation since 2003

# Sustainable technology

Our Sustainable Technology program aims to develop responsible products which:

- improve our social and environmental footprint at every stage of the product life
- have the greatest positive impact on the planet and people in the end-application



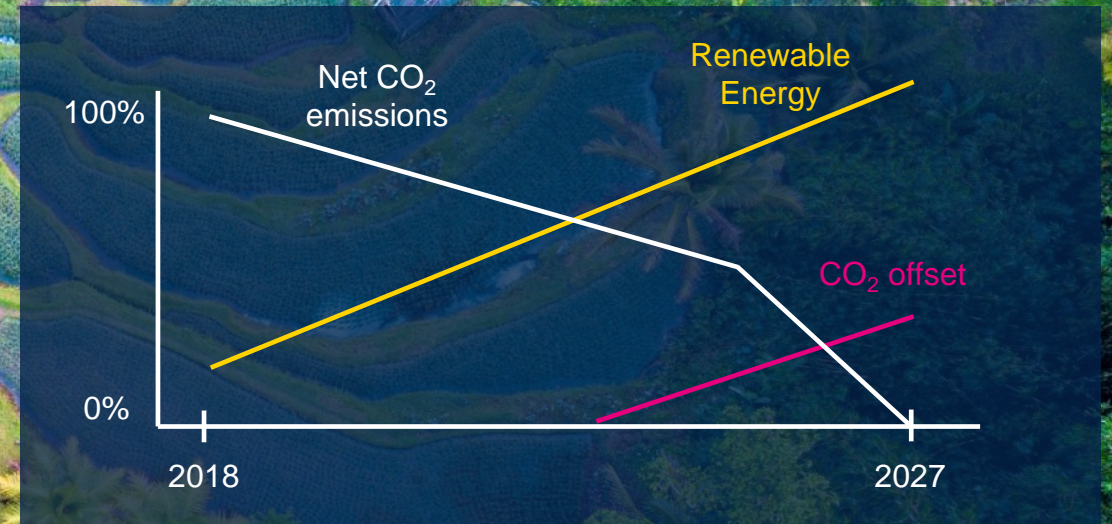
# Commitment to Carbon Neutrality

**ST will be Carbon Neutral by 2027**



## Milestones

- Compliance with the 1.5°C scenario (Paris COP21) by 2025
- Carbon neutral by 2027
- Sourcing 100% renewable energy by 2027
- Collaborative programs and partnerships for carbon neutrality throughout our ecosystems





# Sustainability reporting 24<sup>th</sup> edition

Accelerating sustainability,  
together

## Transparency – Reliability – Comparability

- Economic, environmental and social performance
- Our long-term sustainability ambitions and goals
- Program progress
- Focus on site initiatives
- Stakeholder inclusiveness
- Aligned with international reporting standards and disclosures:
  - Global Reporting Initiative (GRI)
  - Sustainability Accounting Standards Board (SASB)
  - Task Force on Climate-related Financial Disclosures (TCFD)
- Content and data verified by a 3<sup>rd</sup> party

2021  
Sustainability report

2020 performance

Read ST's 2021 sustainability report: [sustainabilityreports.st.com/sr21/](https://sustainabilityreports.st.com/sr21/)

# Our technology starts with You



Find out more at [www.st.com](http://www.st.com)

© STMicroelectronics - All rights reserved.

ST logo is a trademark or a registered trademark of STMicroelectronics International NV or its affiliates in the EU and/or other countries.

For additional information about ST trademarks, please refer to [www.st.com/trademarks](http://www.st.com/trademarks).

All other product or service names are the property of their respective owners.



life.augmented