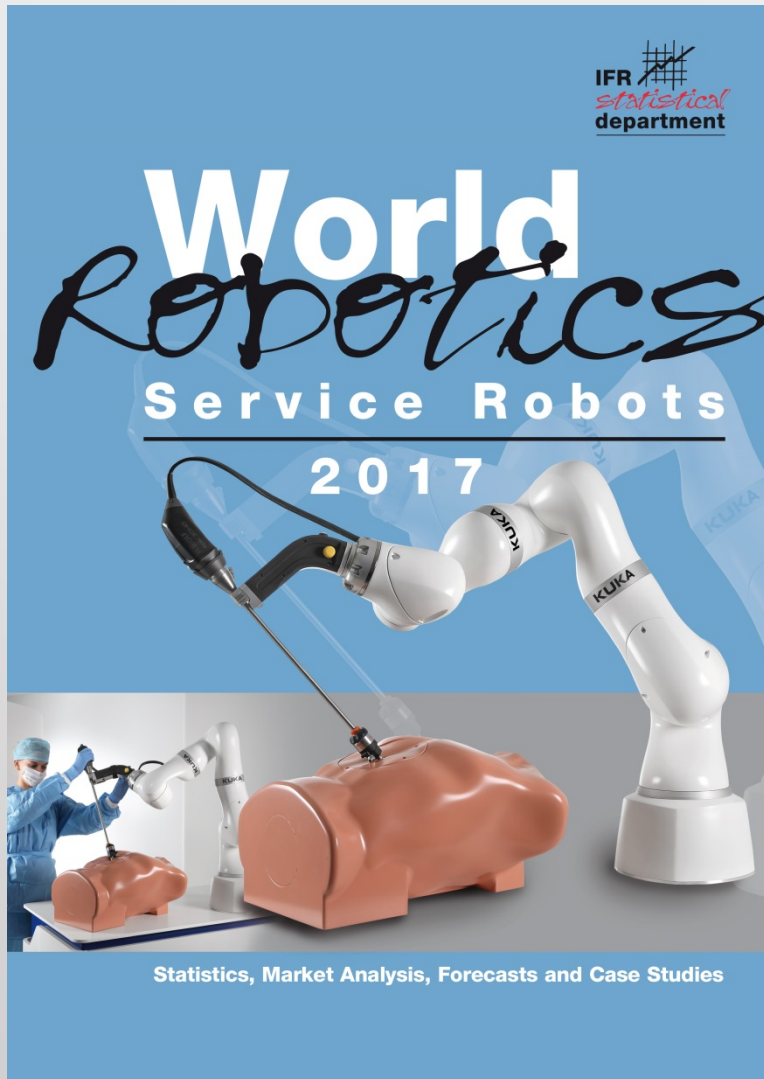




Why service robots boom worldwide

IFR Press Conference, 11 October 2017
Brussels



Schedule

- Welcome and introduction of the panelists
- Global service robot market up to 2020 by Gudrun Litzenberger
- Dynamics of the service robotics industry
- Technological enablers by Martin Hägele
- Questions

International Federation of Robotics

Representing the global robotics industry

- Robotics turnover 2016: \$40 billion
- More than 50 members:
 - National robot associations
 - R&D institutes
 - Robot suppliers
 - Integrators
- Sponsor of the International Symposium on Robotics (ISR)
- Co-sponsor of the IERA Award
- Primary resource for worldwide data on use of robotics – IFR Statistical Department



Speakers on the panel



Martin Hägele

Chairman IFR Service Robot
Group

Head of Robot and Assistive
Systems

Fraunhofer IPA, Stuttgart,
Germany



Gudrun Litzenberger

IFR General Secretary
Frankfurt

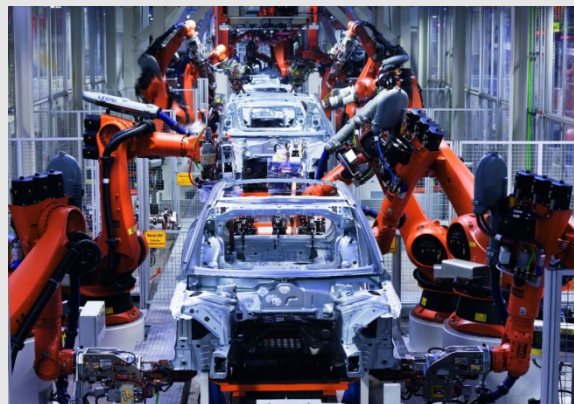


Gudrun Litzenberger

Global Service Robot Market up to 2020

What is a service robot?

Industrial Robots



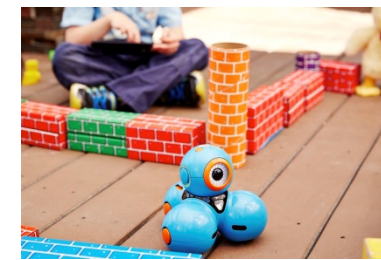
Industrial environments

Service Robots

Professional Use



Personal/domestic



Non-industrial environments

Professional service robots: significant growth

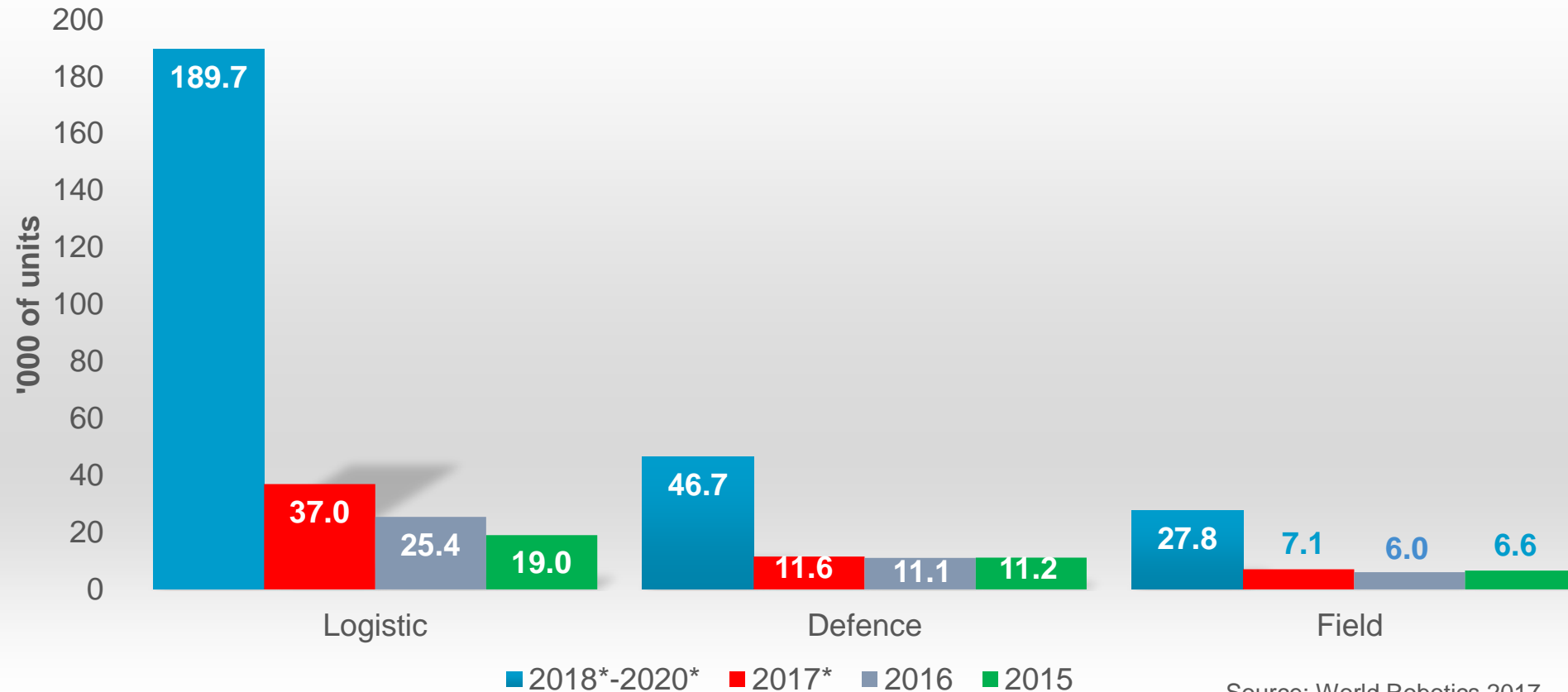
2016: almost 60,000 units, +24%

Forecast 2017: +17% -almost 79,000 units

**Forecast 2018 -2020: about 400,000 units
20% to 25% on average per year**

Main drivers: logistic systems

Service robots for professional use. Main applications
Units sales 2015 and 2016, forecast 2017*, 2018*-2020*

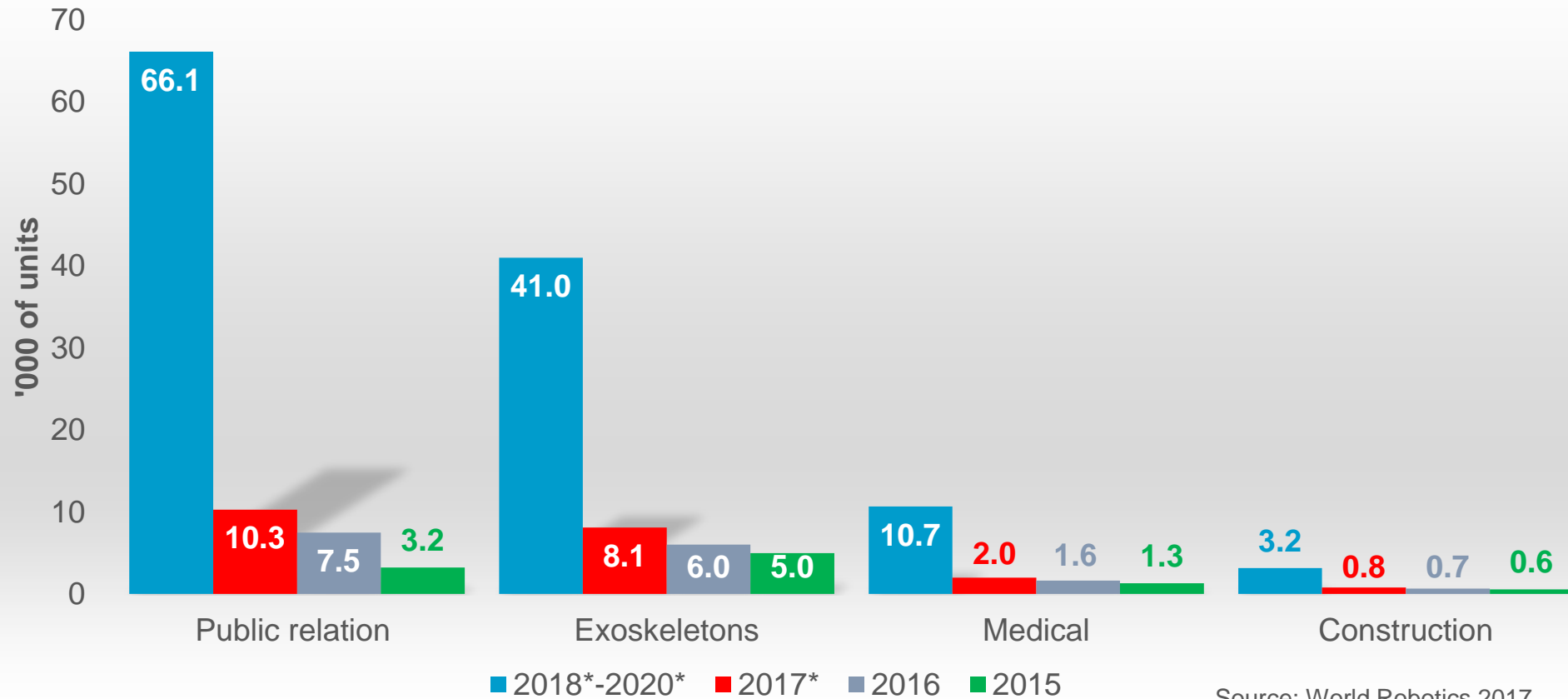


*forecast

Source: World Robotics 2017

Public relation robots and exoskeletons on the rise

Service robots for professional use. All other applications - 1 -
Units sales 2015 and 2016, forecast 2017* and 2018*-2020*

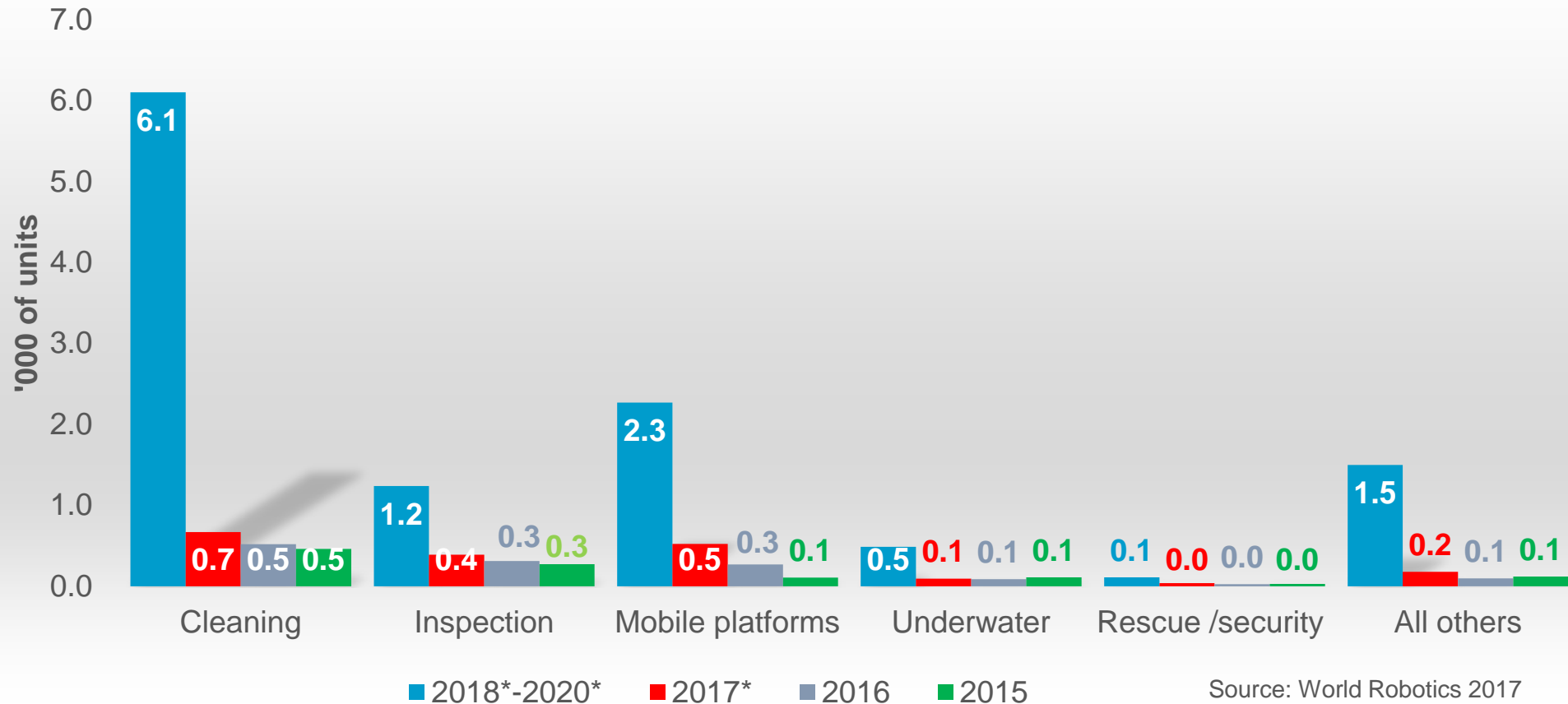


*forecast

Source: World Robotics 2017

Good prospects for cleaning robots

Service robots for professional use. All other applications - 2 -
Units sales 2015 and 2016, forecast 2017* and 2018*-2020*



Professional service robots: increasing turnover

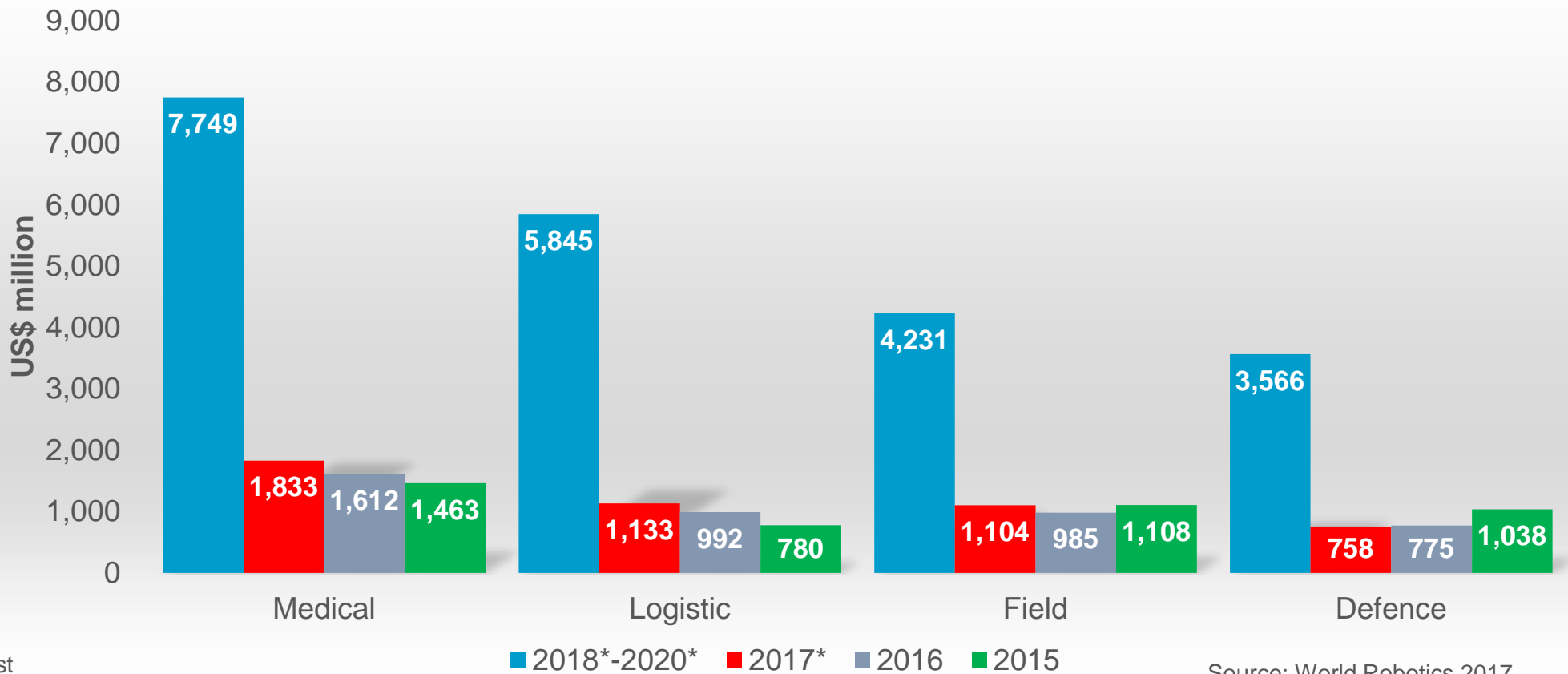
2016: 4.7 US\$bn, +2%

Forecast 2017: +12% - 5.2 US\$bn

**Forecast 2018 -2020: 26.8 US\$bn
20% to 25% on average per year**

Medical robots: most valuable

Service robots for professional use in main applications. Estimated values 2015 and 2016, forecast 2017*, 2018*-2020*

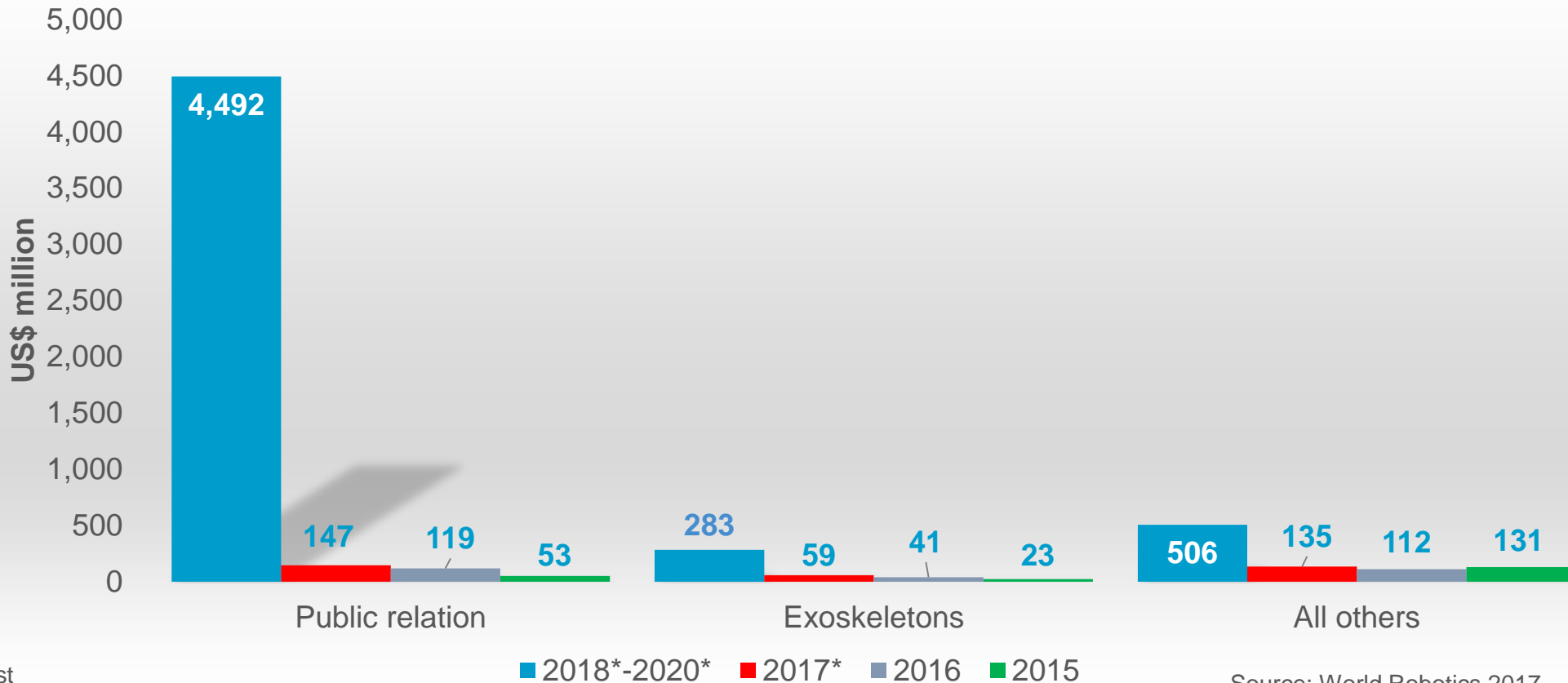


*forecast

Source: World Robotics 2017

Public relation robots: significant increase of turnover

Service robots for professional use. All others
Estimated value 2015 and 2016, forecast 2017*, 2018*-2020*

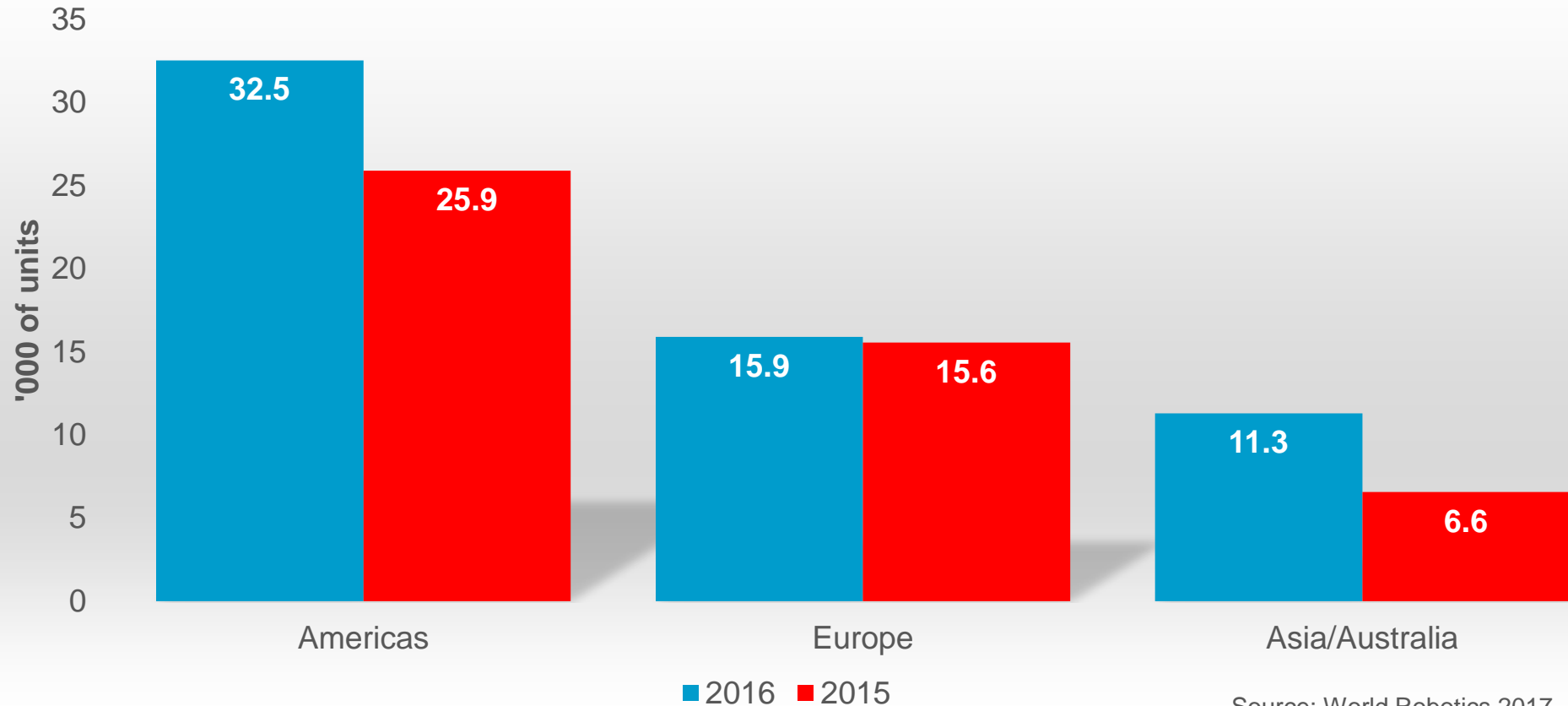


*forecast

Source: World Robotics 2017

Professional service robots: more than 50% from the Americas

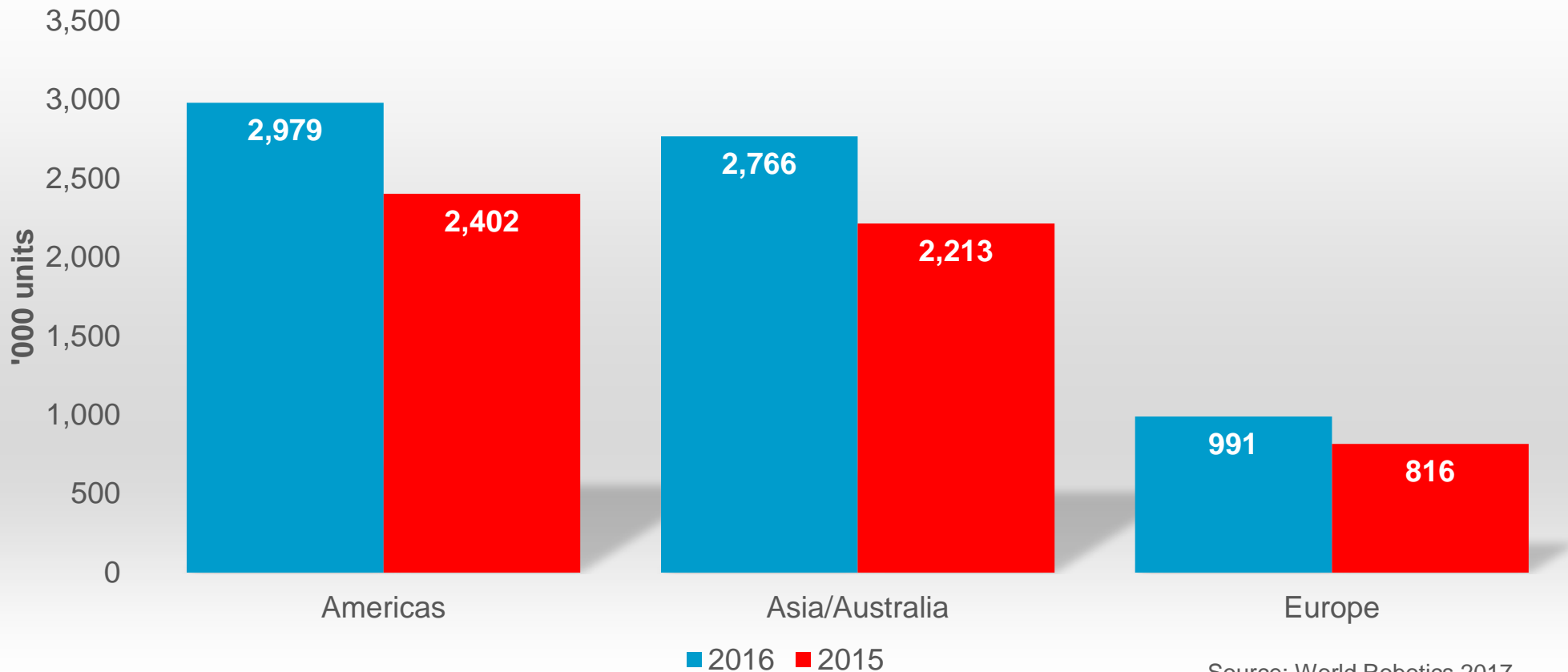
Service robots for professional use
Unit sales 2015 and 2016 by region of origin



Source: World Robotics 2017

Personal/domestic robots on the rise

Service robots for personal/domestic use. Unit sales 2015 and 2016 by region of origin.



Source: World Robotics 2017

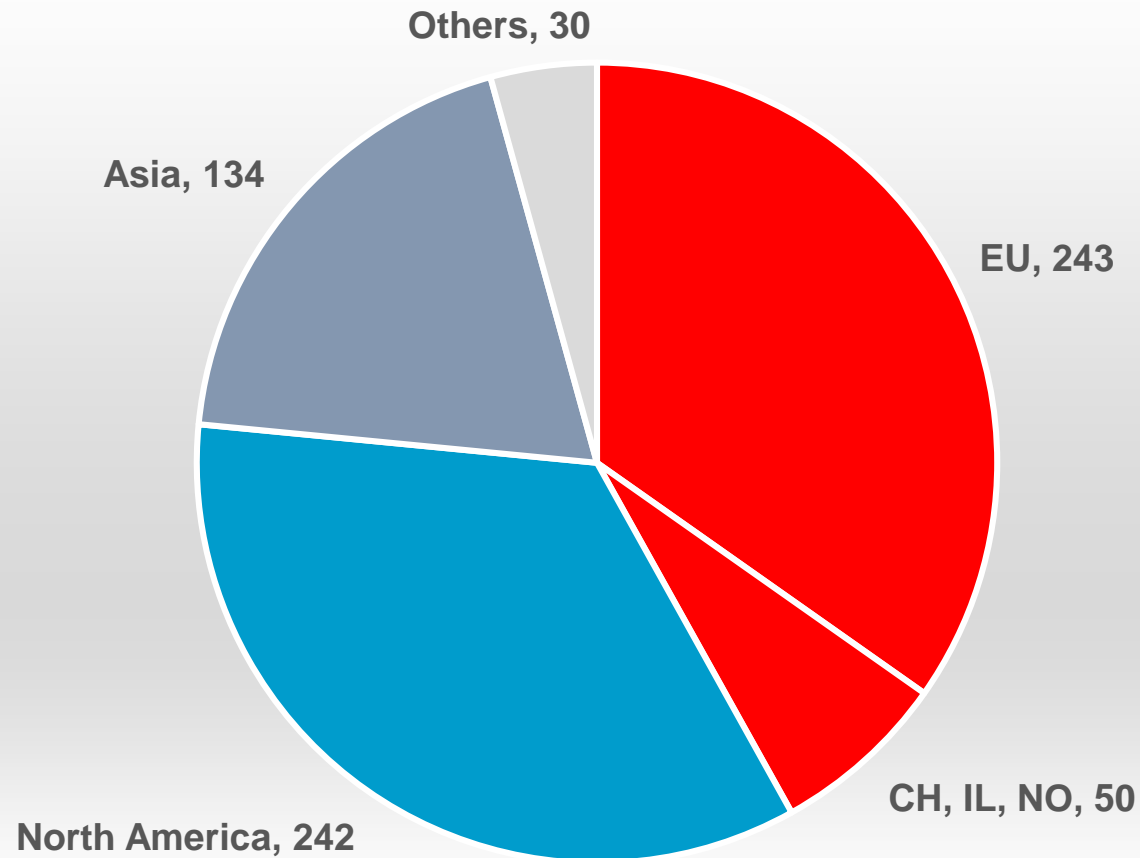


Martin Hägele

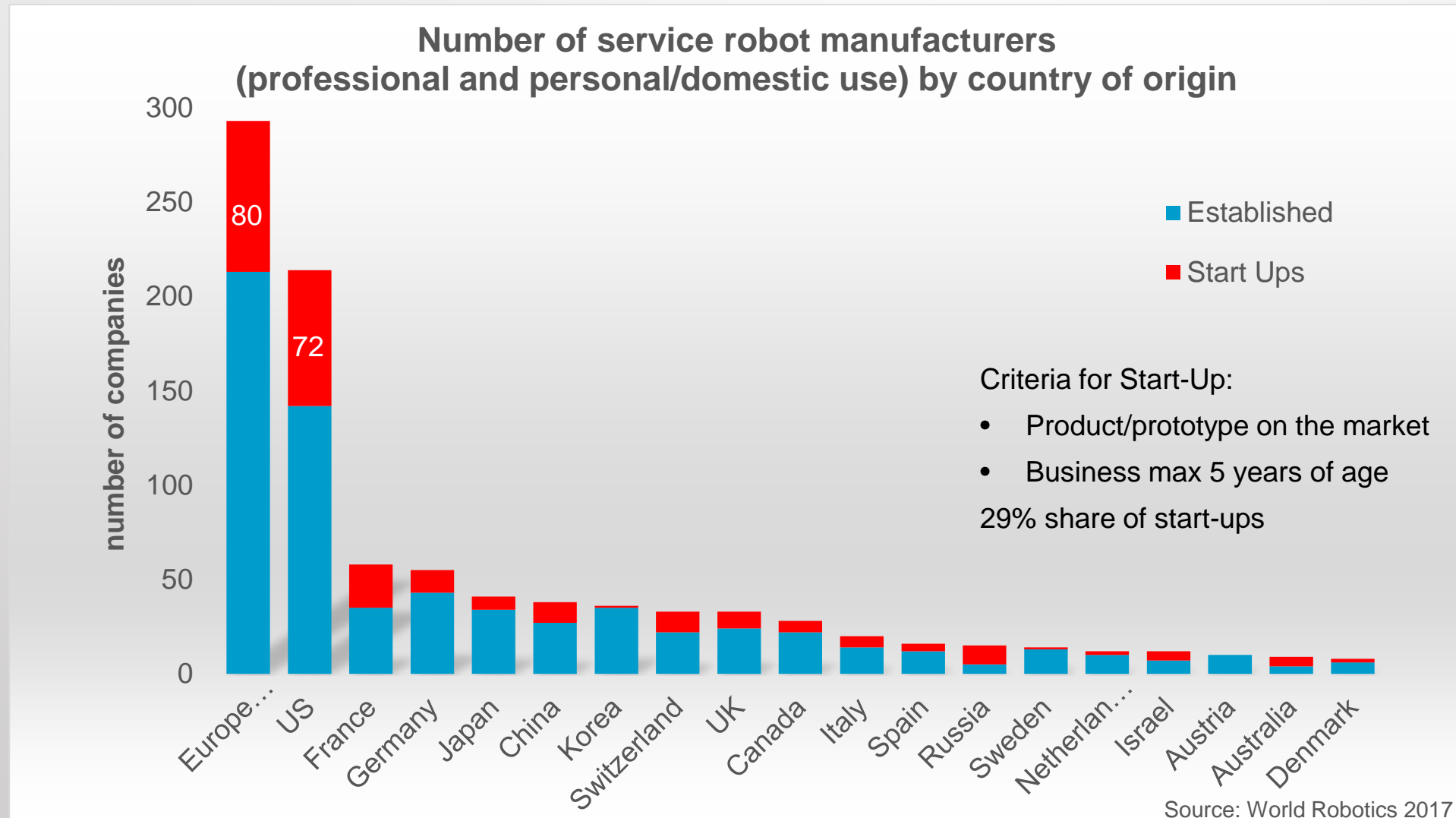
- **Dynamics of the service robotics industry**
- **Technological enablers**

Number of service robot manufacturers of all types by region of origin (N=699)

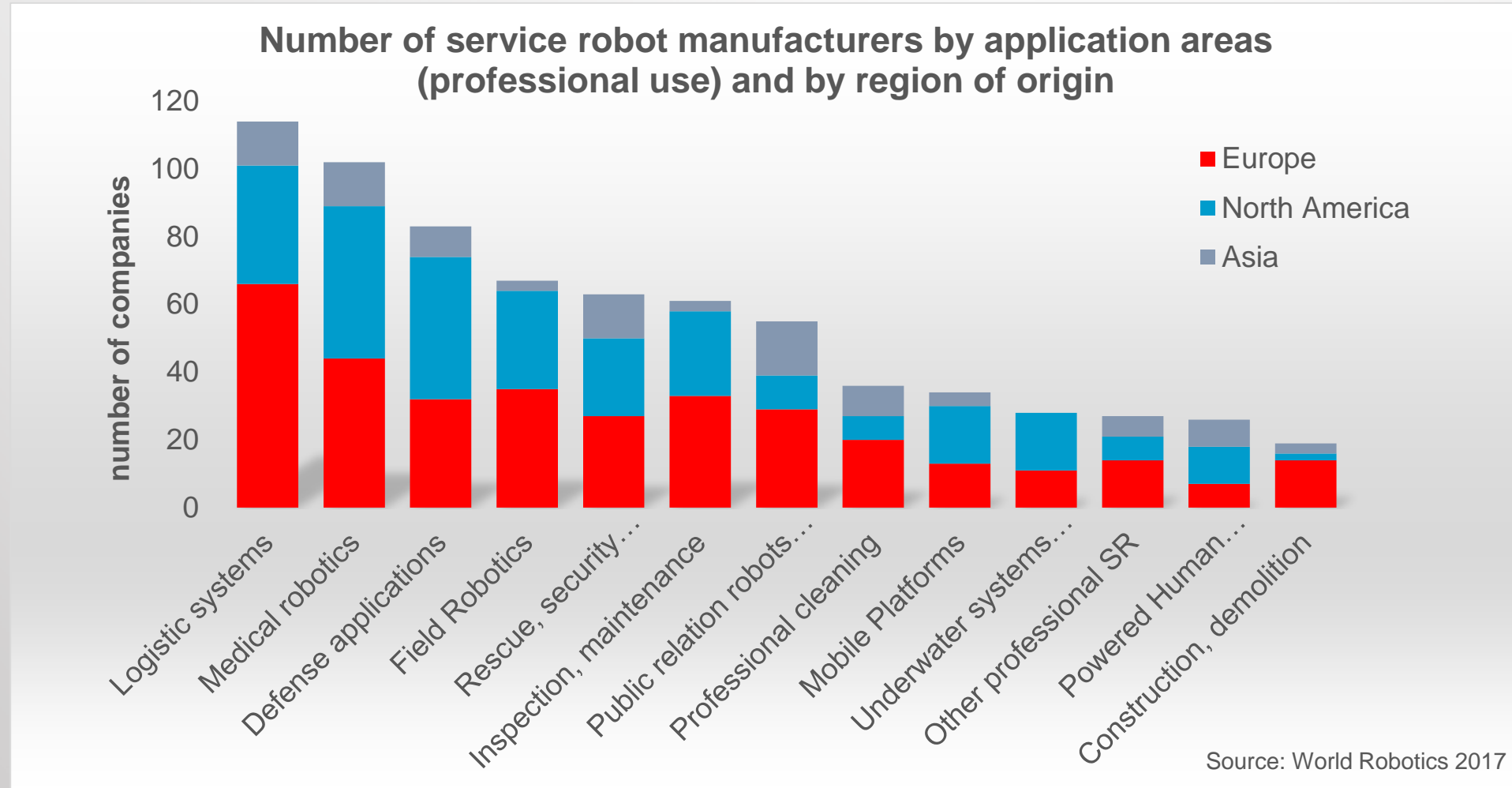
Number of service robot manufacturers of all types
(professional and personal/domestic use) by region of origin



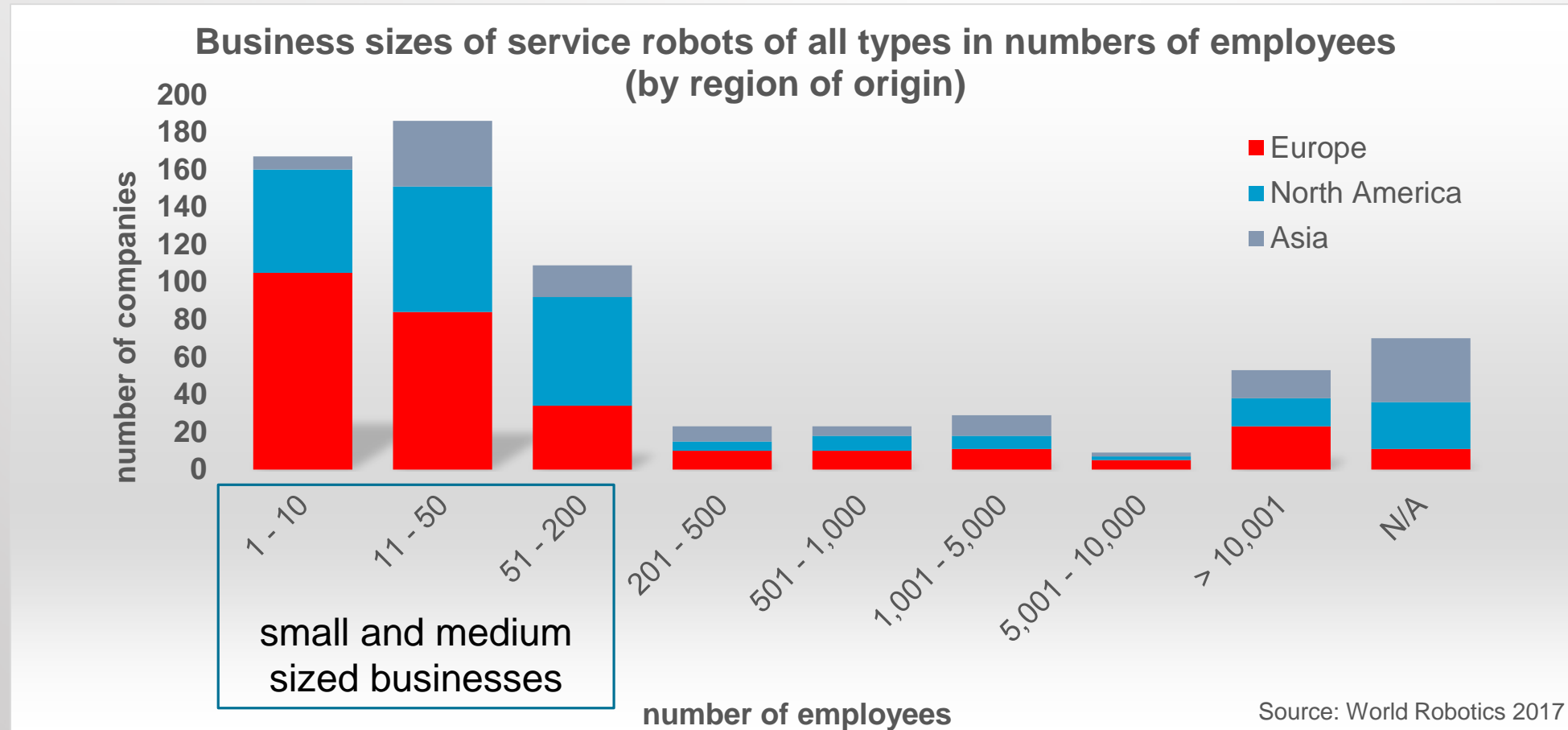
Europe fares well in service robot start-up creation



European strongholds in service robotics suppliers: logistics, field, inspection/maintenance, construction



75% of European service robot suppliers are SMEs



Start-up examples (I): Service robotics in agriculture

Fresh fruit picking robot Platform for vineyard maintenance

Robotic weeder for vegetable farms



FF Robotics (Israel)

WALL-YE (France)

Naïo Technologies (France)

Start-up examples (II): Service robots in public-relations



Unity Robotics (D)



Bots and us (UK)



Promobot (RU)

Start-up examples (II): Service robots in logistics



Mobile Industrial Robots MiR (DK)



Fetch Robotics (USA)



Robotnik (ES)

Creating a European Eco-System in robotics

- **Robotic key-technologies:** perception, human-machine-interaction, mechatronics, safety, ...
- **Software:** Major cost-/performance factor in service robotics, 30+% cost share
- **Supply industry** for robotics key-components, software (computer vision, motion control, mobile navigation etc.) emerges
- **Open Source Software** systems hugely popular; e.g. >2/3 of all service robot suppliers use Robot Operating System ROS (and other OSS)
- With **€700M in funding from EU 2014 – 2020, SPARC** is the largest civilian-funded robotics innovation initiative in the world.



Thank you!