



**Welcome to the  
IFR Press Conference  
18 October 2018  
Tokyo**

## Agenda

### Welcome

### Presentation of the speakers

### World Robotics 2018 Industrial Robots

- Review 2017 and forecast 2018-2021
- Main markets – customers - trends
- Robot density

### World Robotics 2018 Service Robots

- Professional Service Robots
- Personal/Domestic Service Robots
- Companies

### Questions



## Speakers on the panel



**Junji Tsuda**

IFR President

Representative Director  
Chairman of the Board  
Yaskawa  
Japan



**Steven Wyatt**

IFR Vice President

Group Vice President,  
and Head of Marketing &  
Sales Robotics, ABB  
Switzerland



**Gudrun Litzenberger**

General Secretary

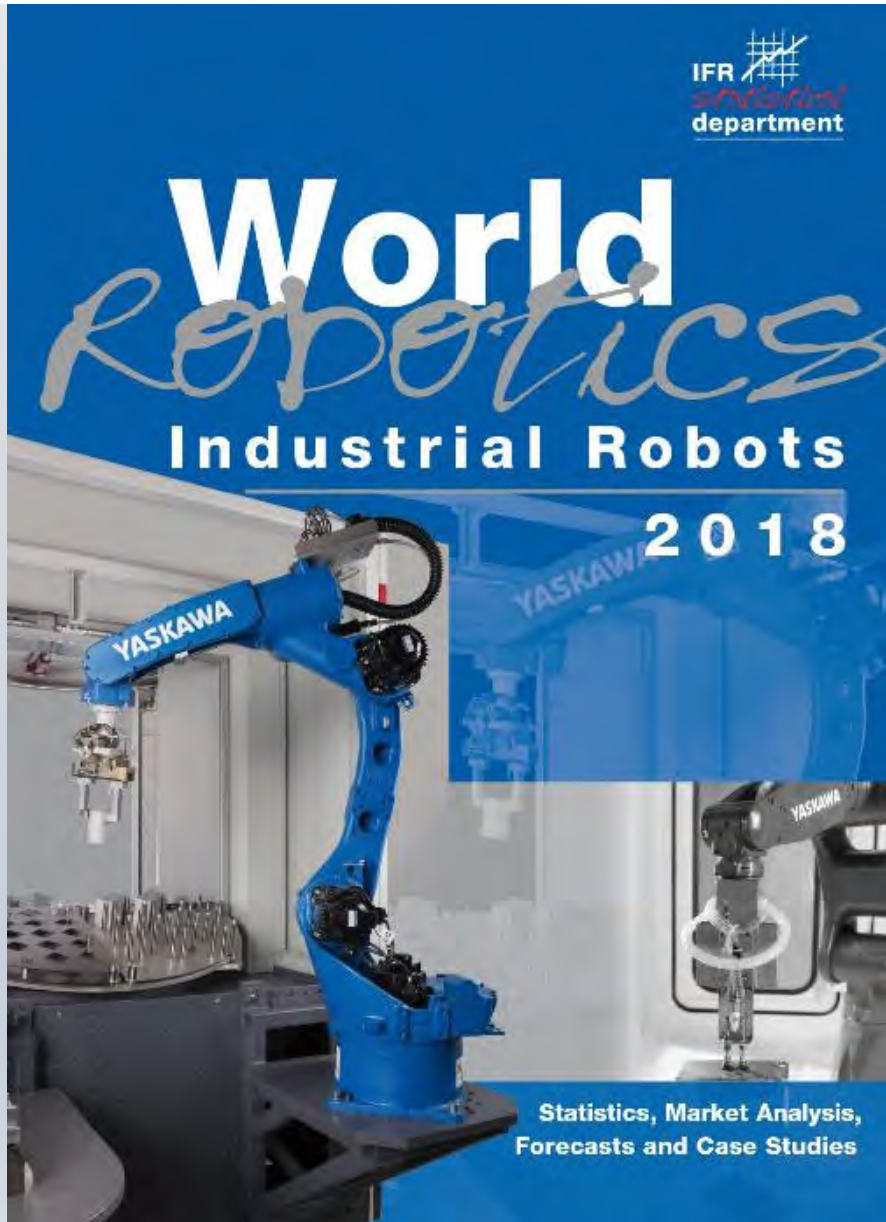
International Federation of Robotics  
Germany

# International Federation of Robotics – Representing the global robotics industry

- **Robotics turnover 2017: \$48 billion**
- **More than 50 members:**
  - National robot associations
  - R&D institutes
  - Robot suppliers
  - Integrators
- **Sponsor of the annual International Symposium on Robotics (ISR)**
- **Co-sponsor of the IERA Award**
- **Primary resource for world-wide data on use of robotics – IFR Statistical Department**







Junji Tsuda

## Records, records

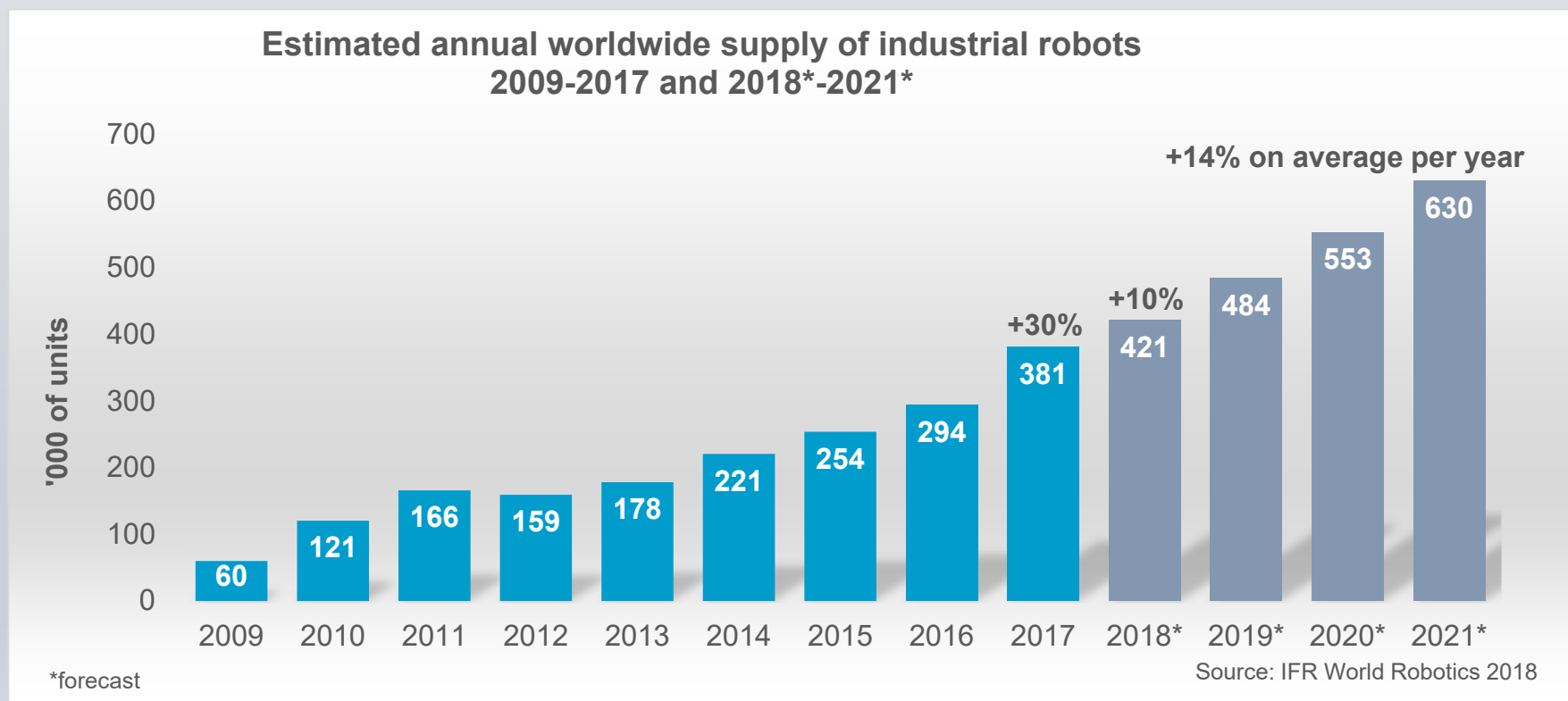
**2017: 381,300 units, +30%**

**2018: 421,000 units, +10%**

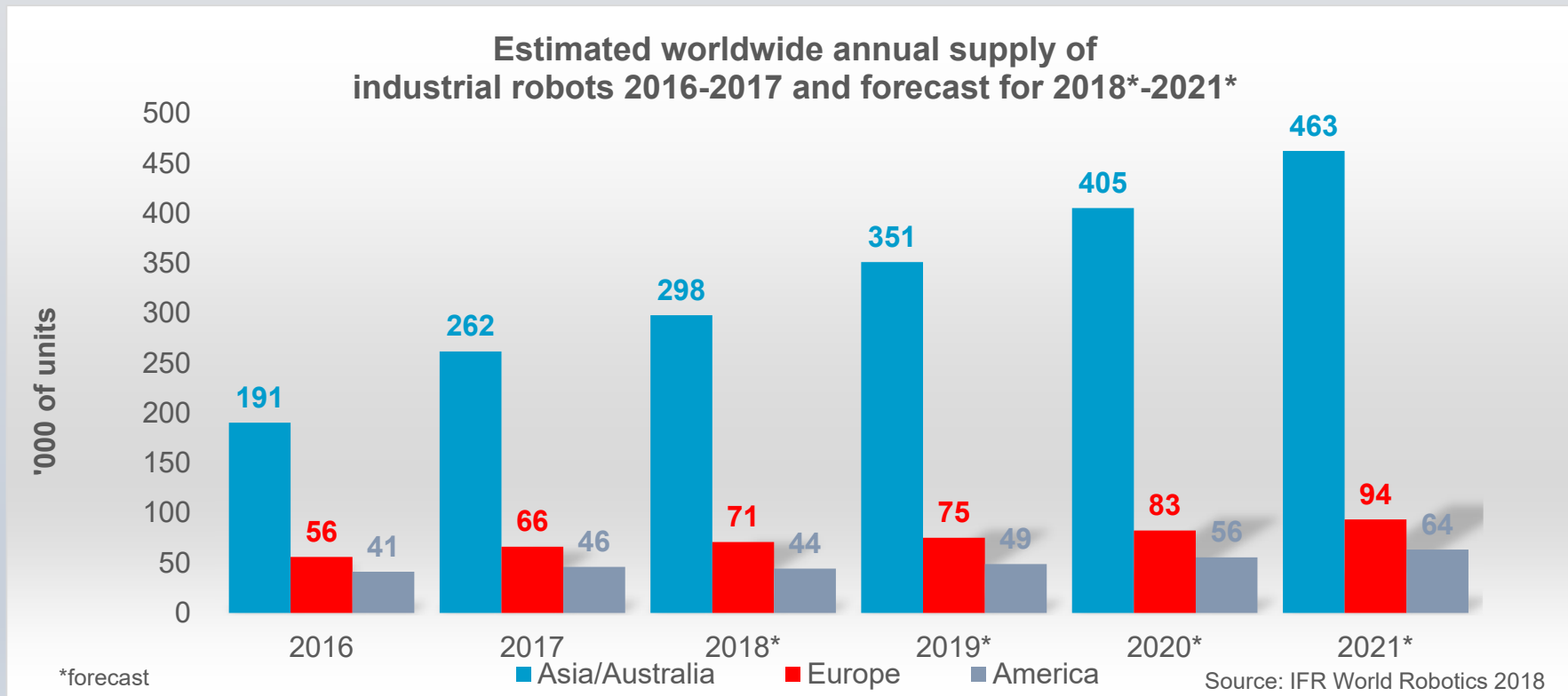
**2021: 630,000 units,  
+14% on average per year**



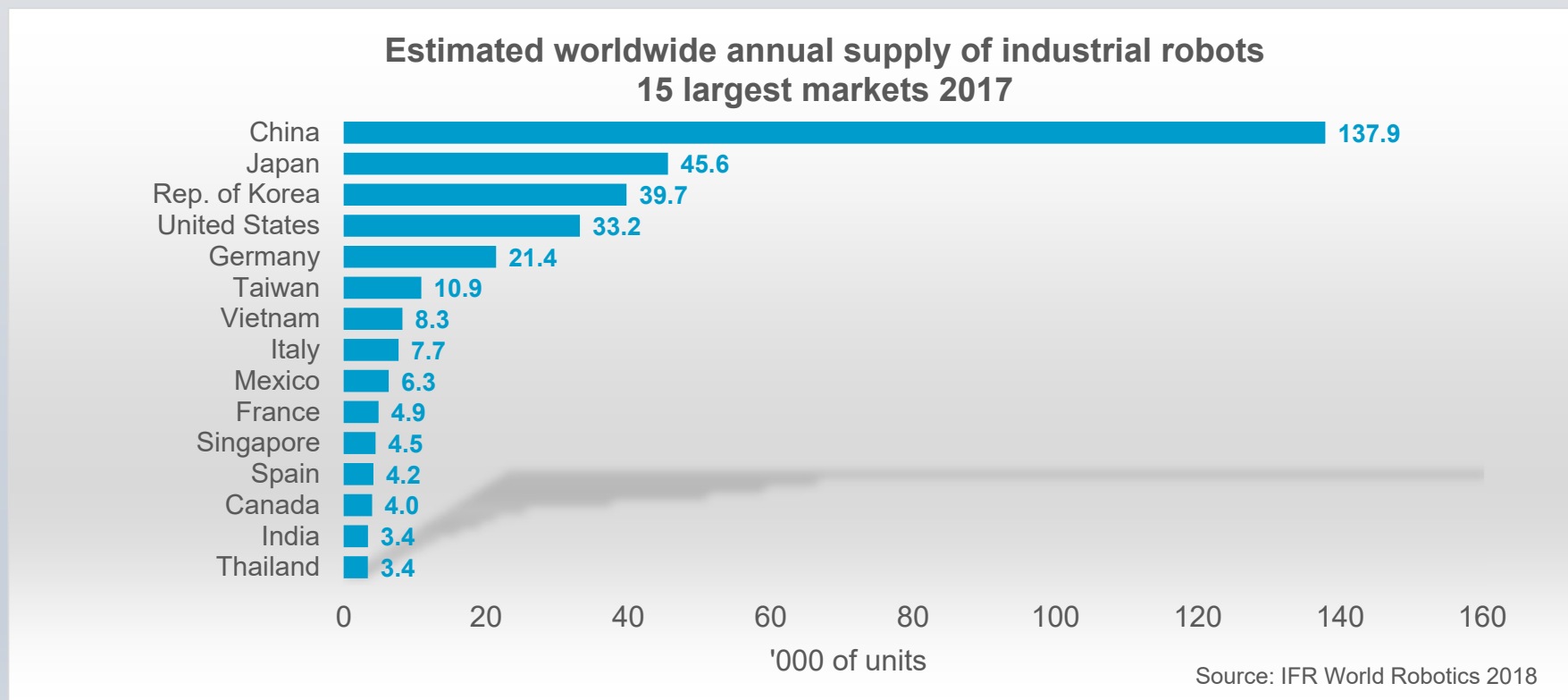
## Continued record sales since 2013



## Emerging region Asia

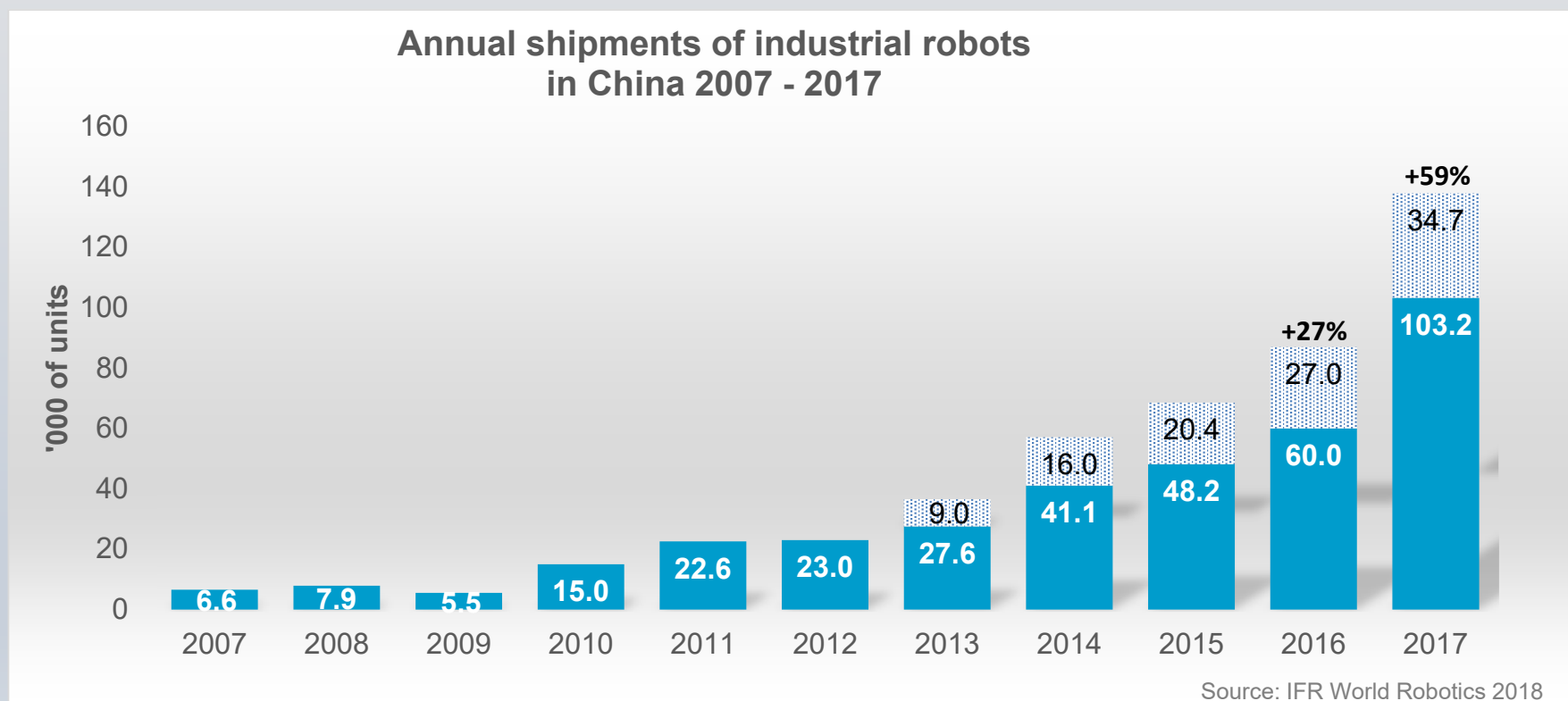


## China has significantly expanded its leading position

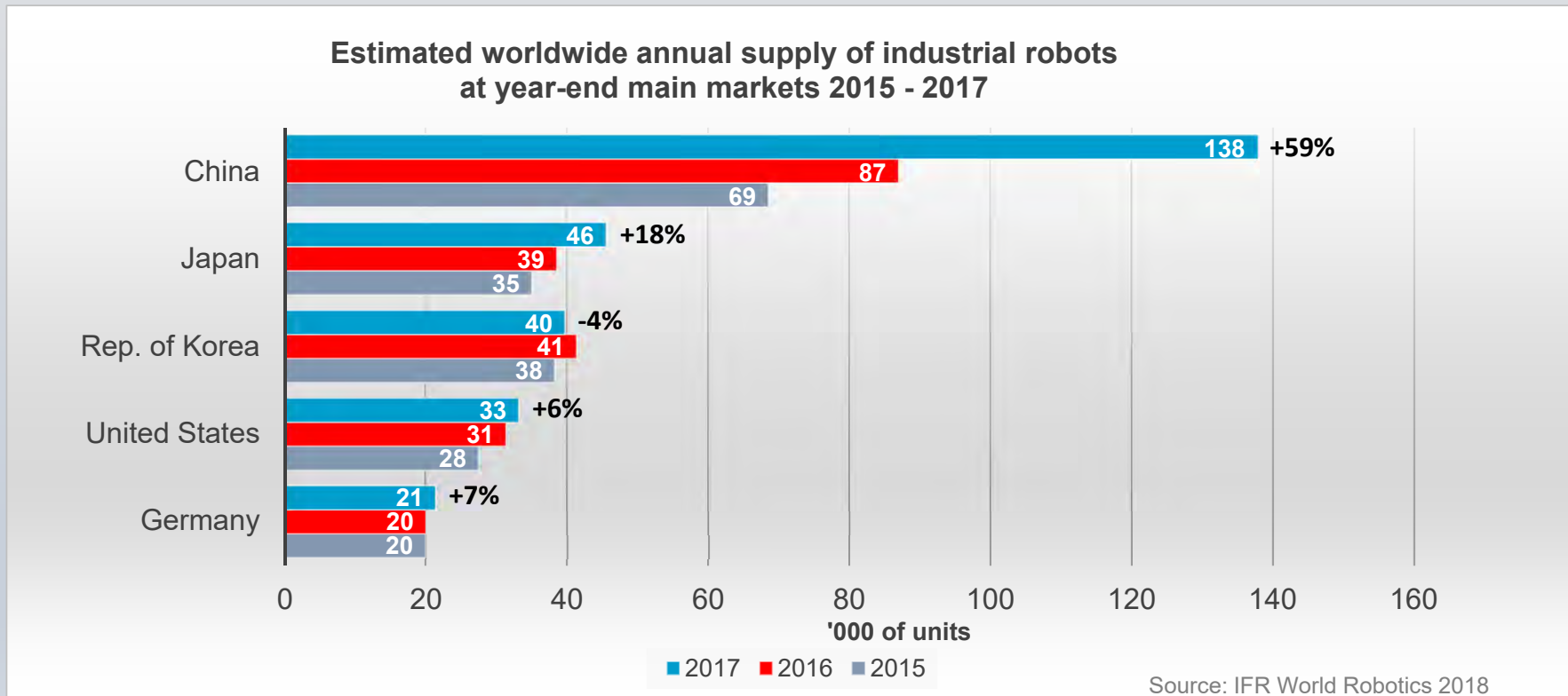




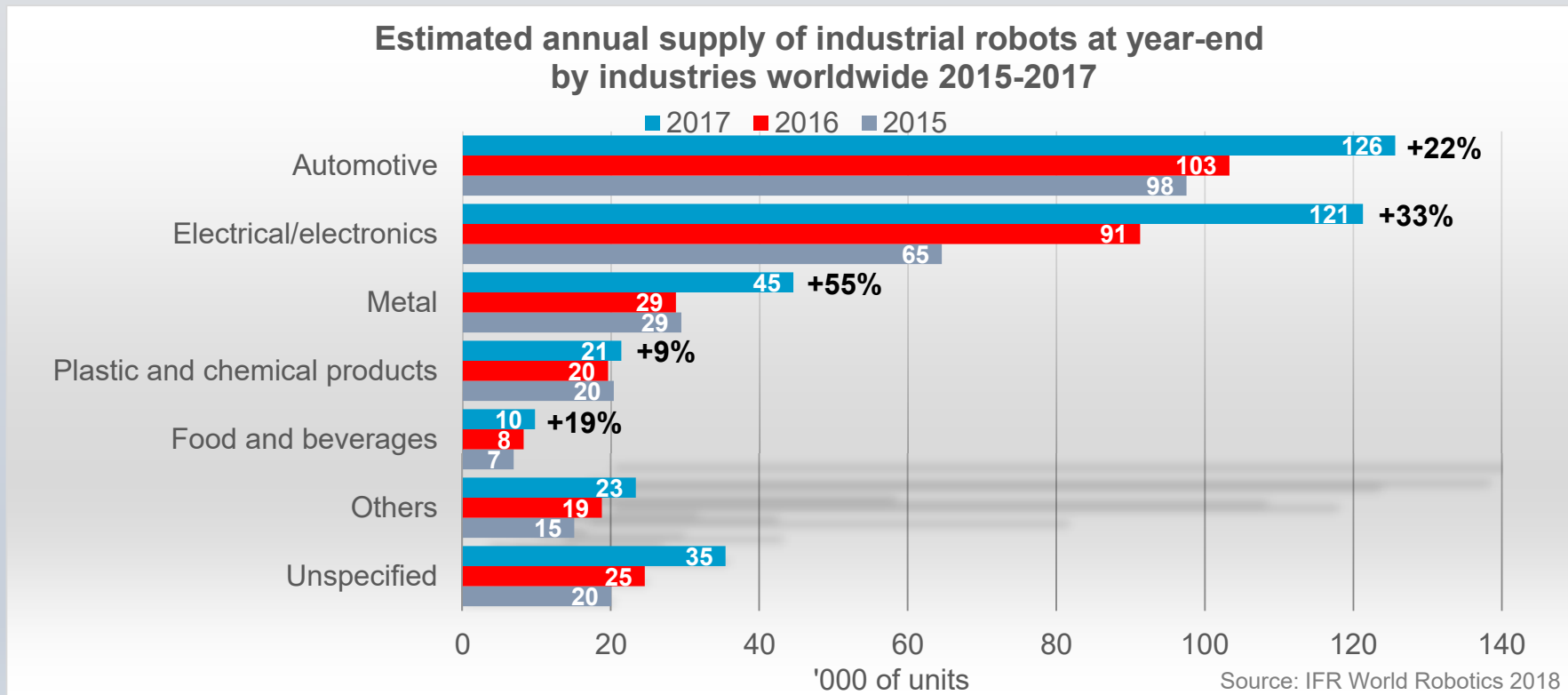
## China: Strong increase of robots sales of foreign companies



# Top 5 countries represent 73% of total sales in 2017



# Main drivers of the growth 2017: automotive, electronics, metal



## **Key Drivers for Automation more relevant than ever**

**Shift to high mix/low volume production**

**Global competitiveness**

**Digitalization of manufacturing – Industry 4.0**

**Growing consumer markets**

**Energy efficiency-driven technology shifts**

**Regionalized production**



Image: KUKA



## **Main customer: automotive industry**

**Transition from Internal Combustion Engines (ICE) to electric vehicles/hybrids**

**Increased complexity**

**Customization – increasing mix requires more flexible production**

**Automation of final assembly**

**Automotive parts suppliers – more SME's will use robots**



Steven Wyatt

## **Main customer: electrical/electronics industry**

**Continuously increasing demand for  
batteries, chips and displays**

**Short life cycles of electronic products**

**High turnover of people with associated  
labor shortages**

**Increasing degree of robot adoption**

**Higher quality demands on manufacturing  
process**





## **Robot sales will in increase in all other industries**

**Metal industries – more flexibility and cost efficiency**

**Rubber and plastics industry – more integrated manufacturing concepts**

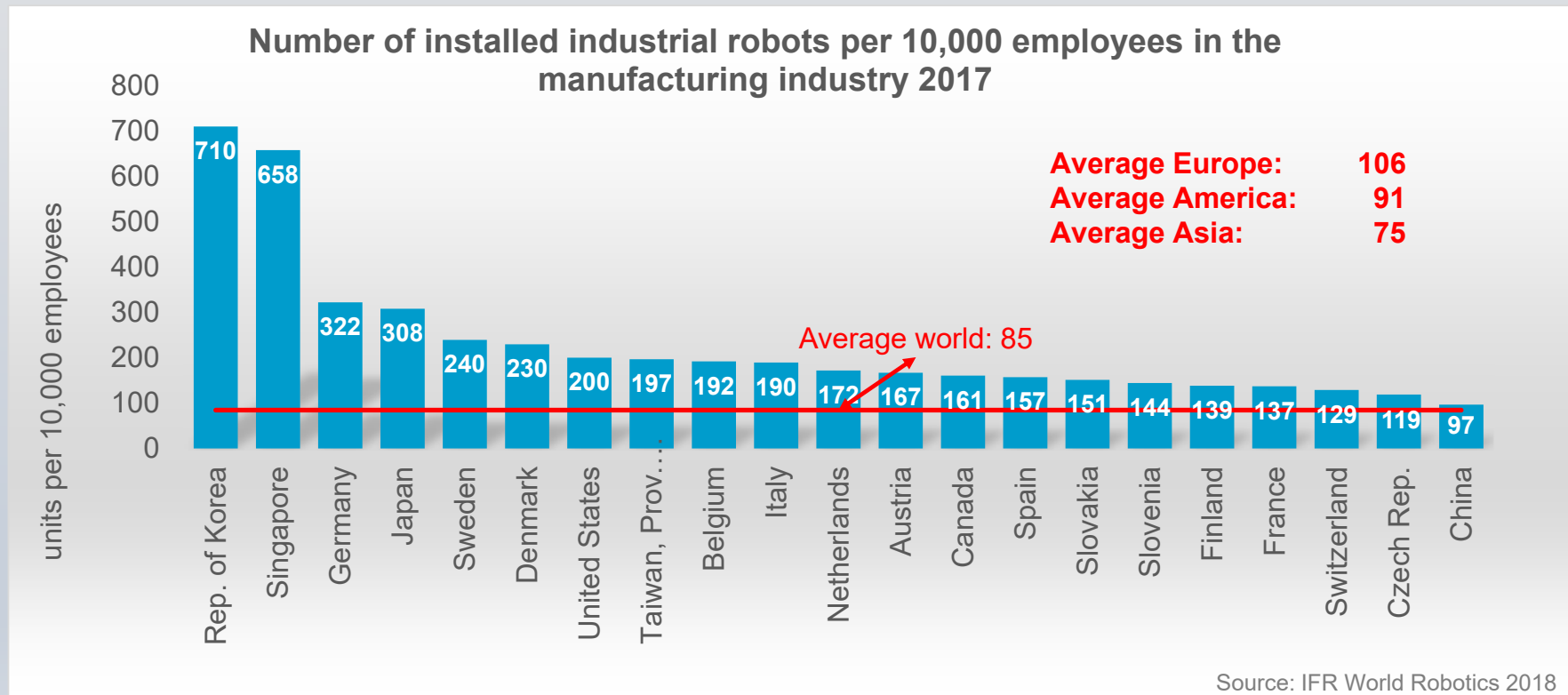
**Food and beverage industry – shift to even shorter production runs**

**Pharmaceutical industry - improving productivity without sacrificing quality**



Steven Wyatt

## Highest robot density in Korea - lowest average in Asia



# Technological Developments expanding Robot Adoption

## Today

- More intelligent components, e.g. Smart Grippers
- Greater connectivity, e.g. “Plug & Play” interfaces and Cloud Computing
- Easier to Use, e.g. “Programming by Demonstration”

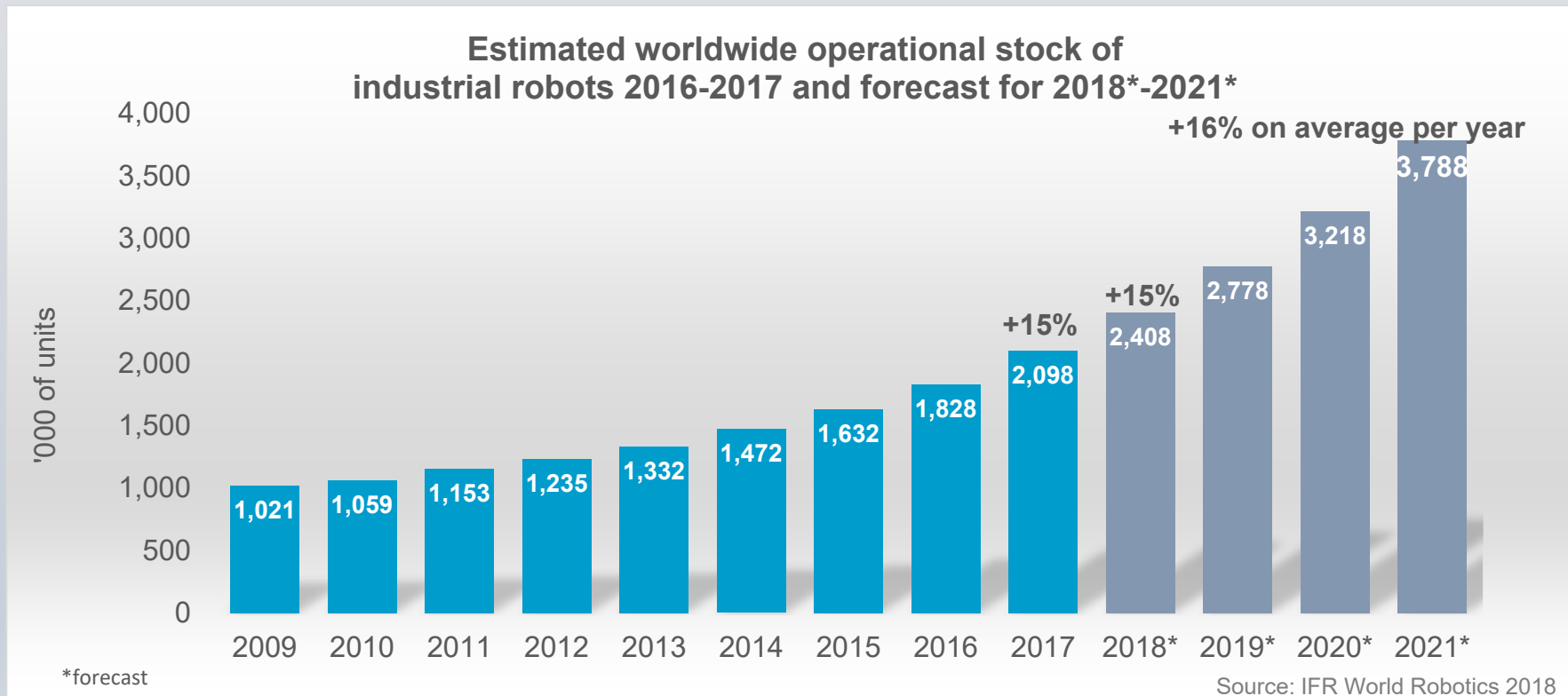
## Tomorrow

### “Machine learning” enables robots ....

- to learn by trial-and-error or by video demonstration.
- to self-optimize.
- to communicate with other machines to improve entire processes.

### New business models, e.g. Robotics as a Service (RaaS)

# 2021 : 3.8 Million Industrial Robots in the World's Factories





## Professional Service Robots have entered our daily lives



### Value of sales

2017: US\$ 6.6 bn, +39%

2018: US\$ 8.7 bn, +33%

2019-2021: US\$ 37 bn, +19% (CAGR)

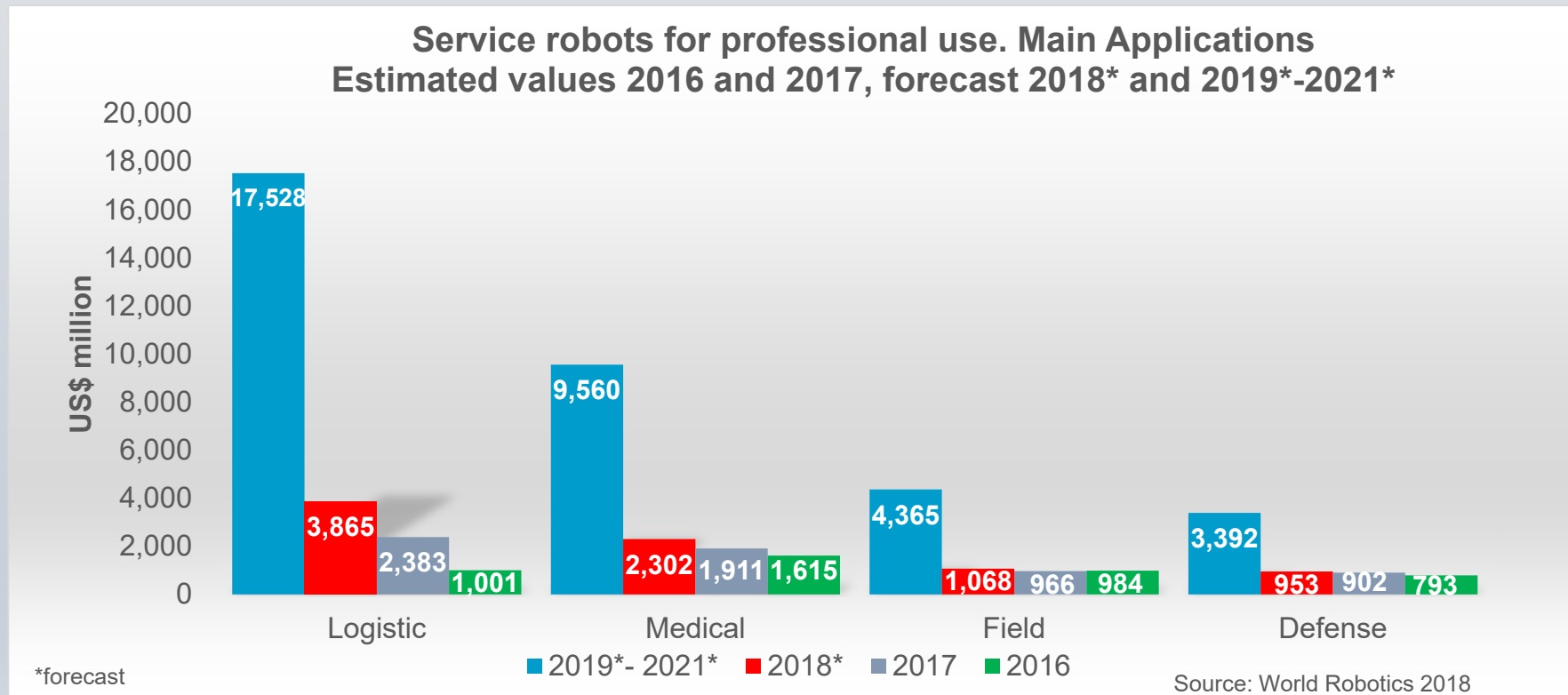
### Unit sales:

2017: 109,500 units, +85%

2018: 165,300 units, +32%

2019-2021: 736,600 units, +21% (CAGR)

## Professional Service robots: Main drivers of the value growth are logistic systems





## AGVs in factories, warehouses, logistic centers, hospitals...

**69,000 units installed in 2017, 162% more than in 2016**

- 6,700 units in manufacturing
- 62,200 units in warehouses, logistic centers, hospitals ...

**2018:**

**115,000 units, 66% higher than in 2017**

**2019-2021:**

**485,000 units, +18% on average per year**

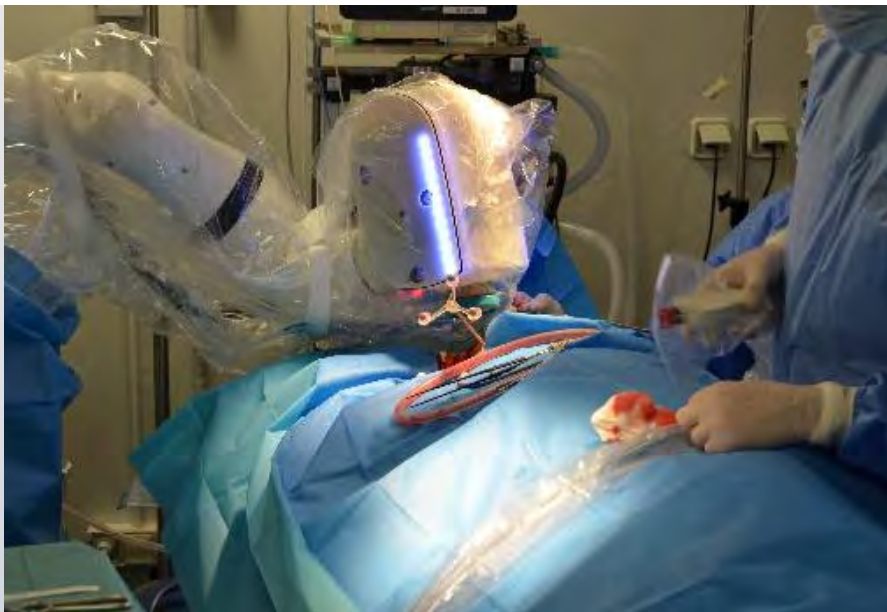


## Medical robots – most valuable service robots: US\$ 1.9 billion in 2017

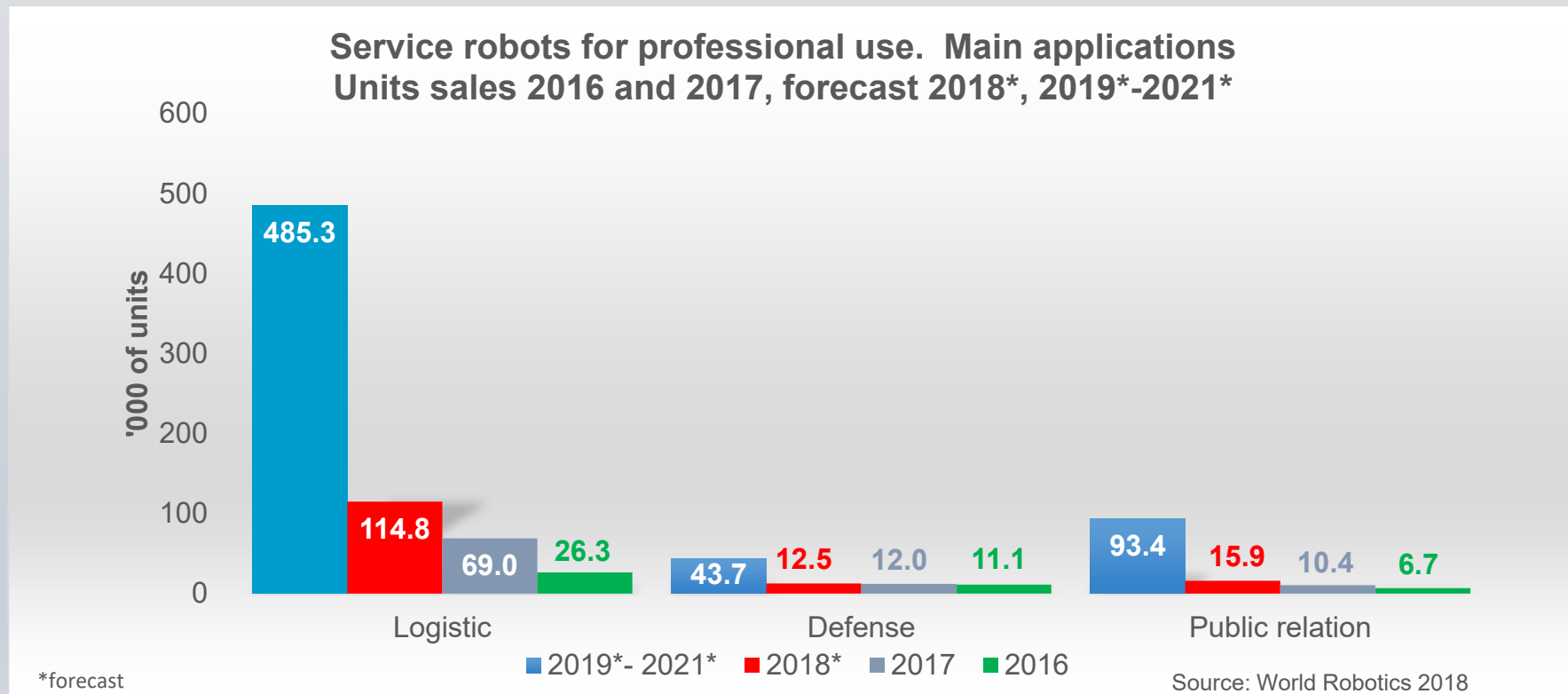
- 2017: 2,900 units, +75%
- 2018: 4,400 units, +49%
- 2019-2021: 22,100 units, +27% (CAGR)

## Field robots – mostly milking robots

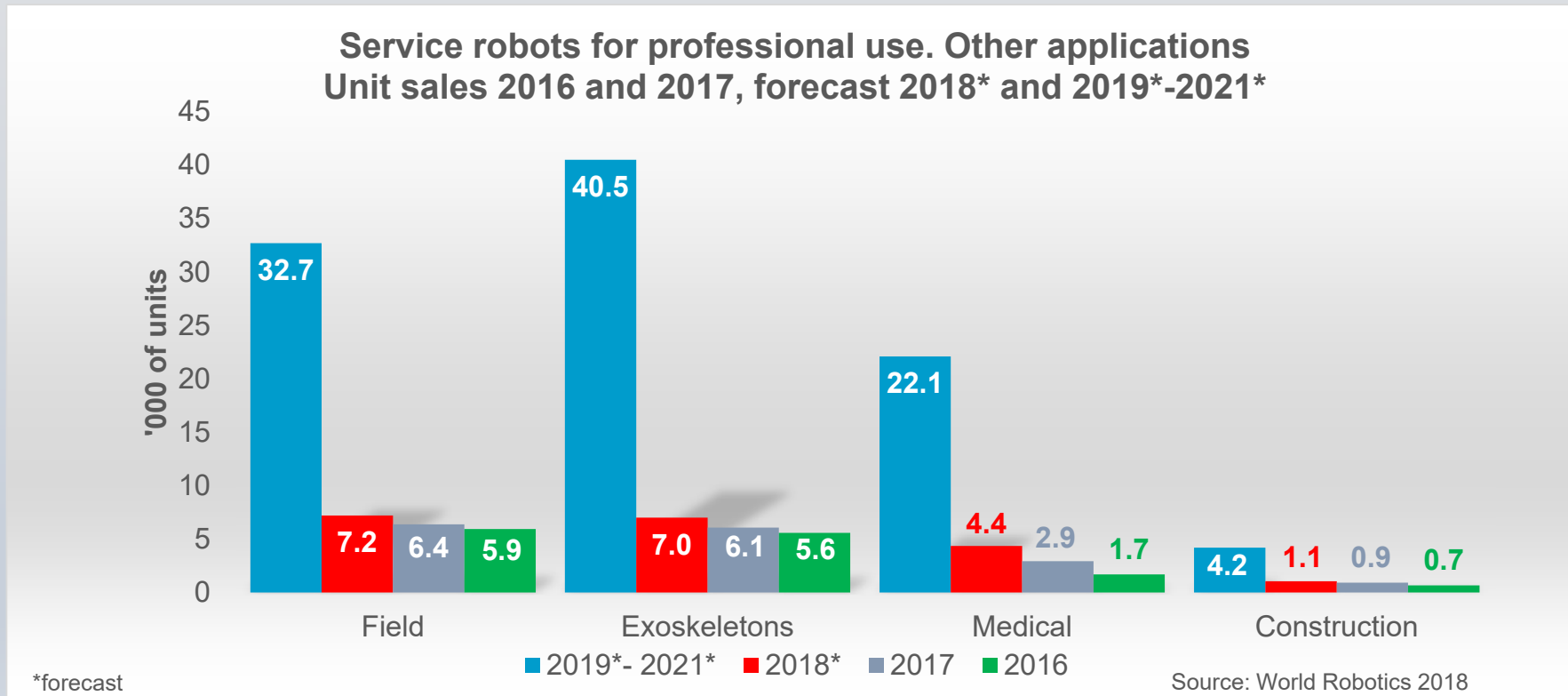
- 5,400 milking robots in 2017, slight increase
- Still low number but high increase: agricultural robots – 520 units in 2017 up from 190 units
- 2018: 7,200 field robots, +17%
- 2019-2021: 32,700, +22% (CAGR)



## Logistic systems are also the drivers of the growth in units

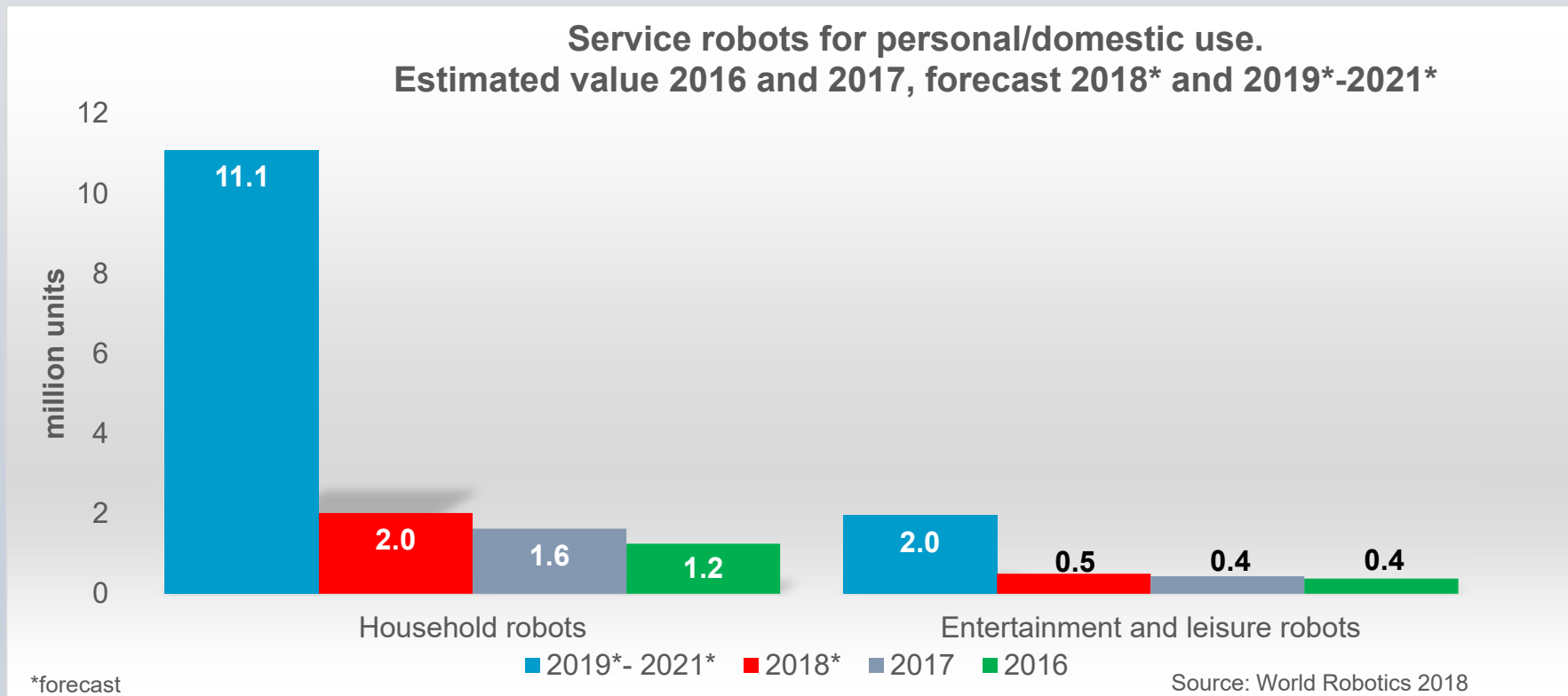


# High potential for exoskeletons

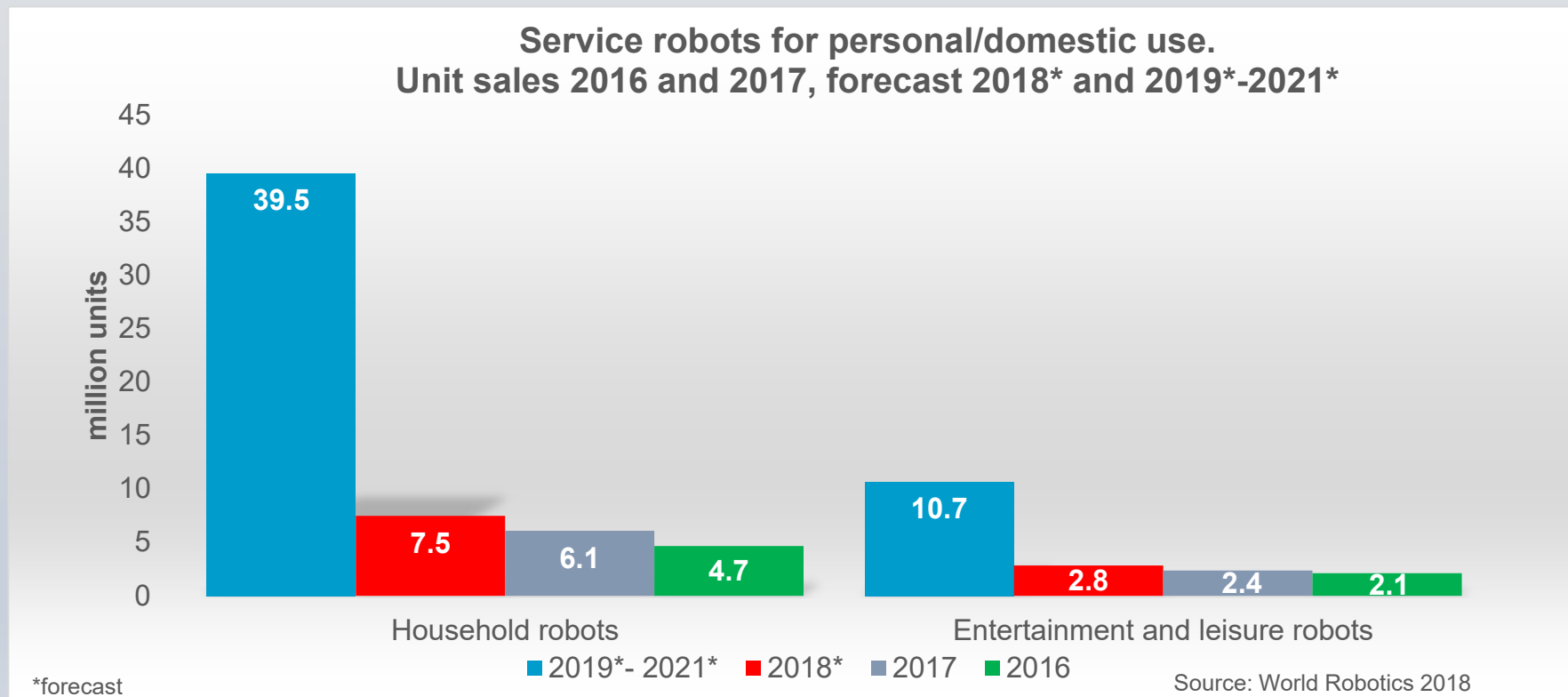




## Vacuuming and floor cleaning robots are most established personal/domestic service robots



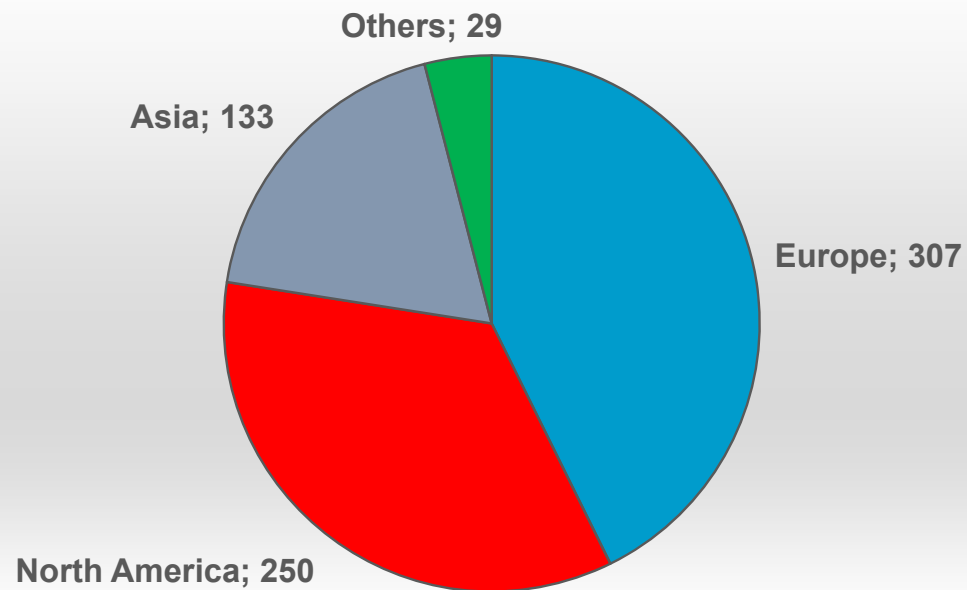
## 2017: 8.5 million units, +25% - considerable increase expected





## More than 700 service robot companies identified

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



Source: World Robotics 2018

# Thank you!

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