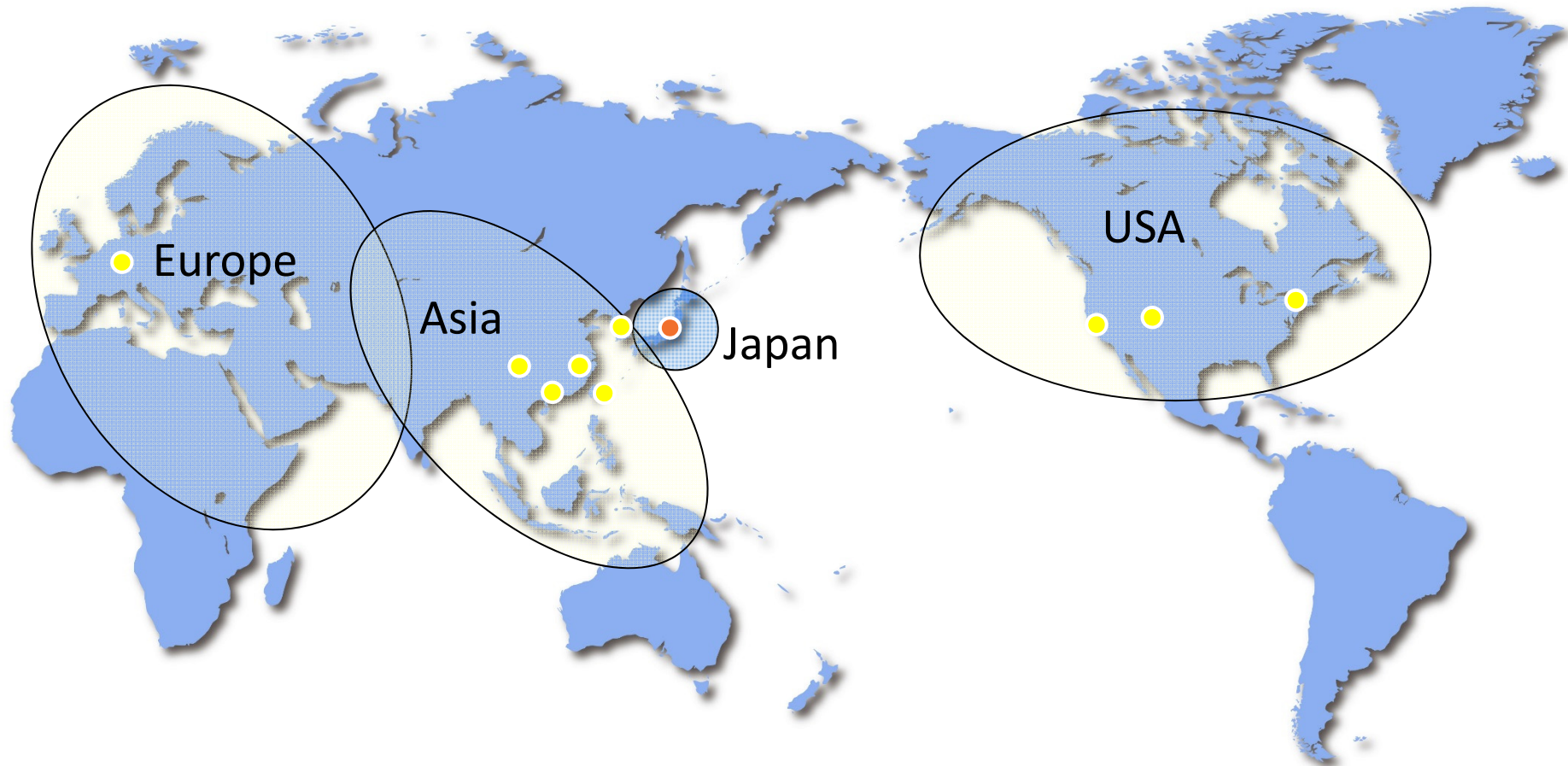




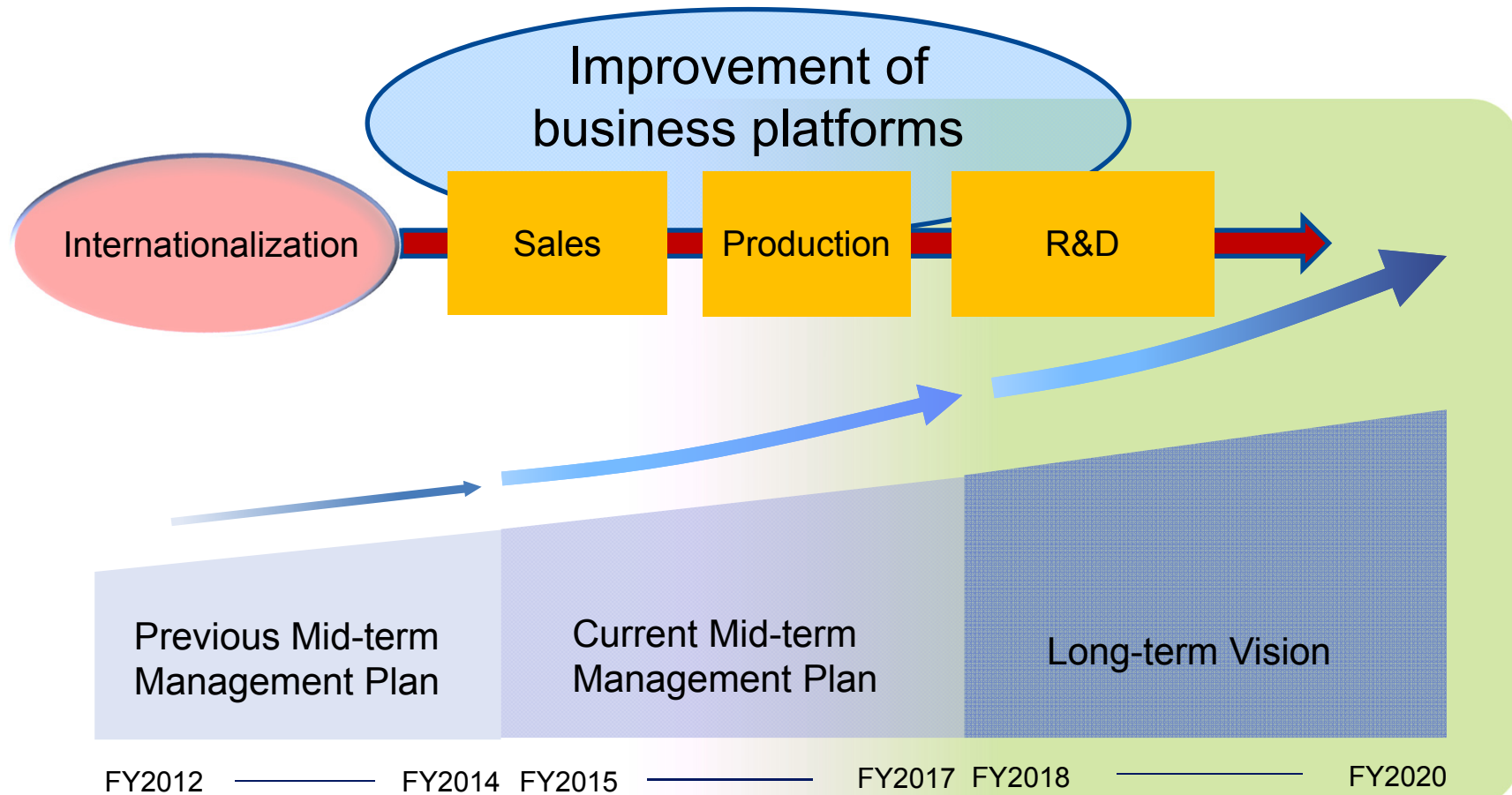
# *Future Outlook*

# 1. Four Global Bases

Subsidiarization of Harmonic Drive AG ➡ Four global bases



# 1.1 Significance of HDAG Subsidiarization



# 1.2 HDAG Profile

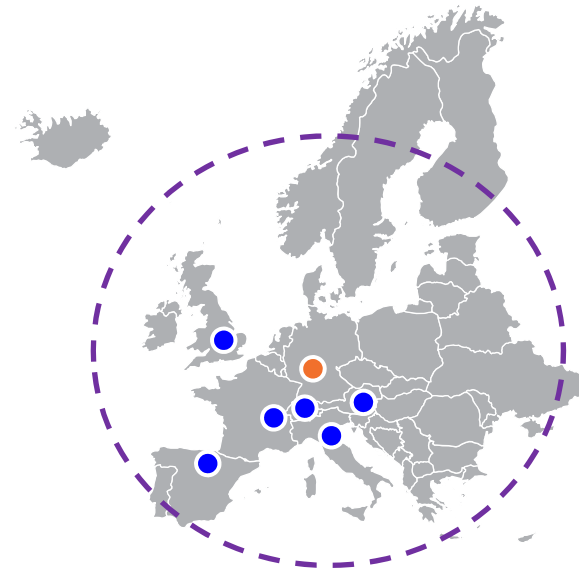
## Outline of Harmonic Drive AG subsidiarization

Company name	Harmonic Drive AG
Location	Germany
Founded	October 1970
Sales	94.8 million euro (as of the fiscal year ended December 31, 2016)
Business domain	Development and production of speed reducers and mechatronics products; sales to Europe, the Near and Middle East, Africa, India, and South America
Sales subsidiaries	UK, Spain, Italy, and others
No. of staff	297 (as at the end of 2016)
Main clients	ABB, KUKA, Universal Robots, and others

**ABB**

**KUKA**

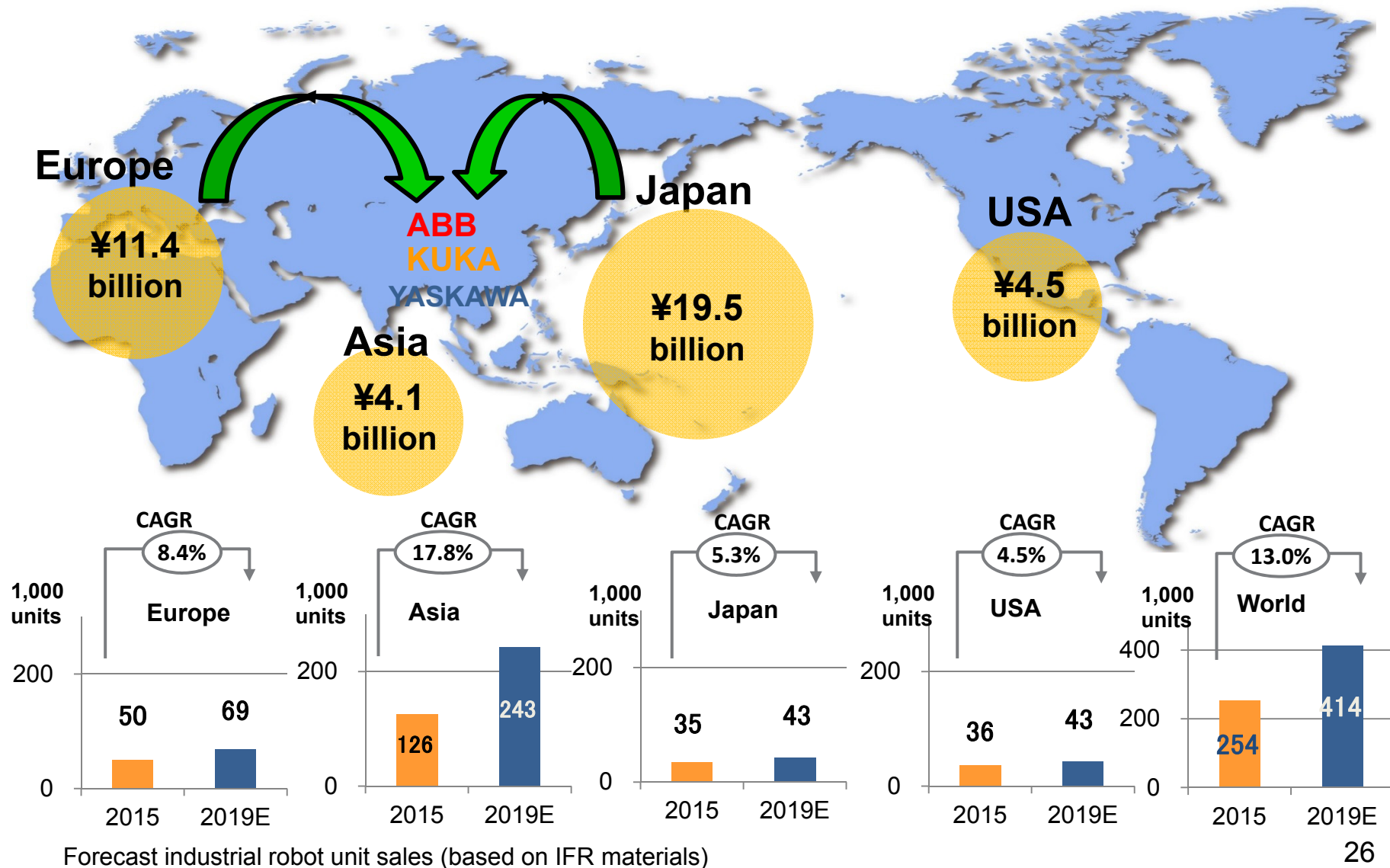
**UNIVERSAL  
ROBOTS**



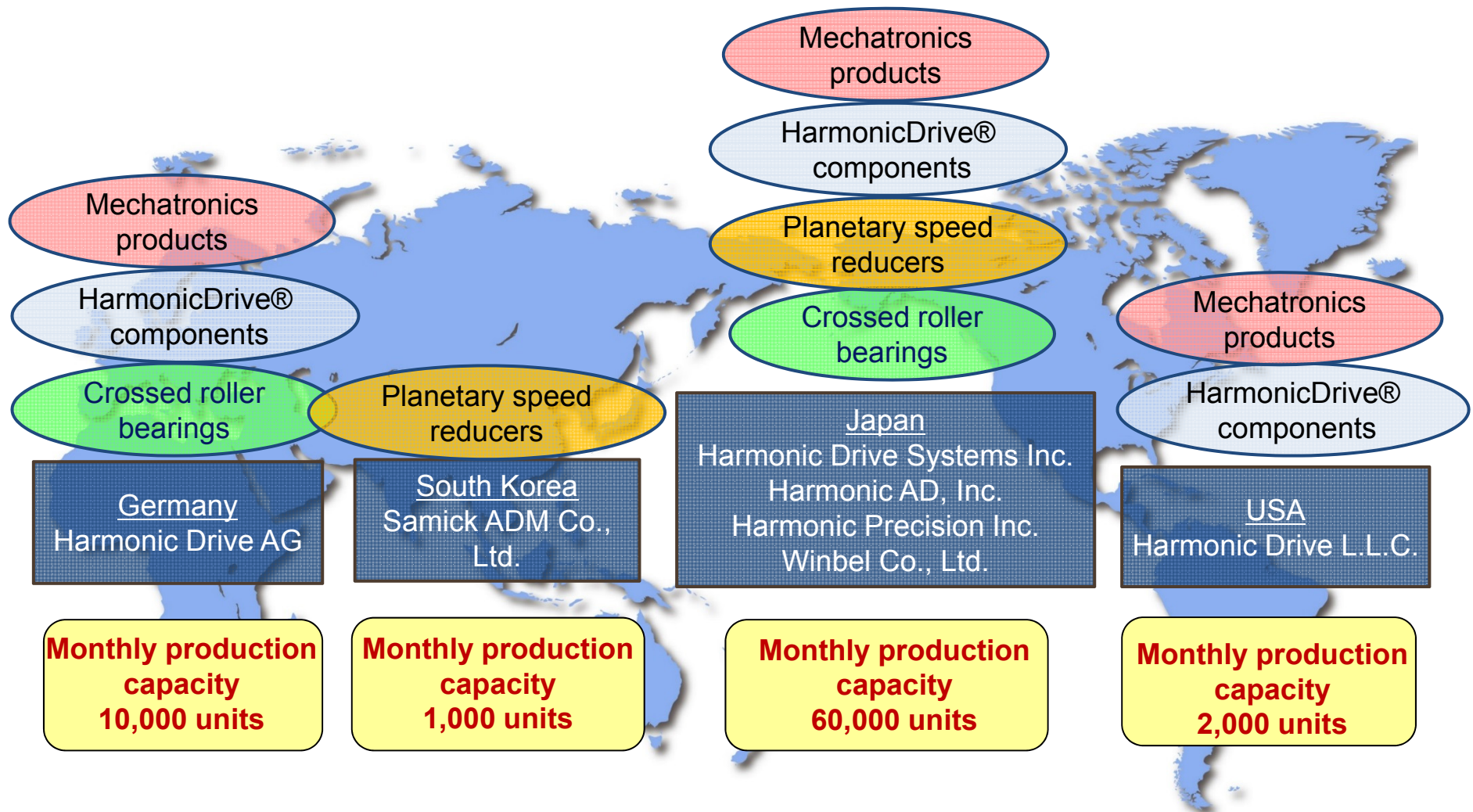
- Excellent customer base, including such major European manufacturers as ABB, KUKA, and Universal Robots
- Added boost from Industry 4.0

# 2.1 Sales Structure (FY2016 Sales)

Four global bases to respond to global customer needs

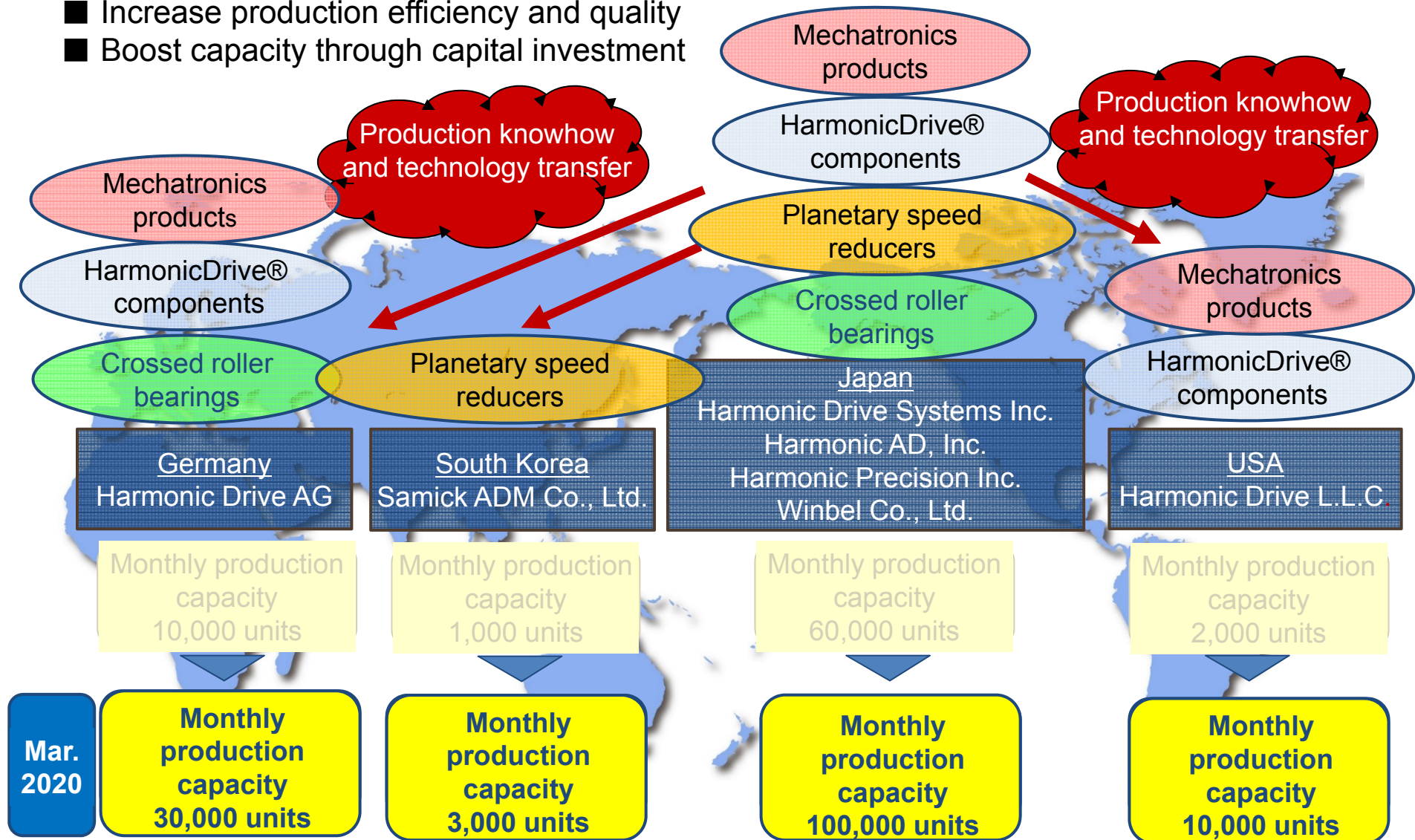


## 2.2.1 Production Structure (Current)



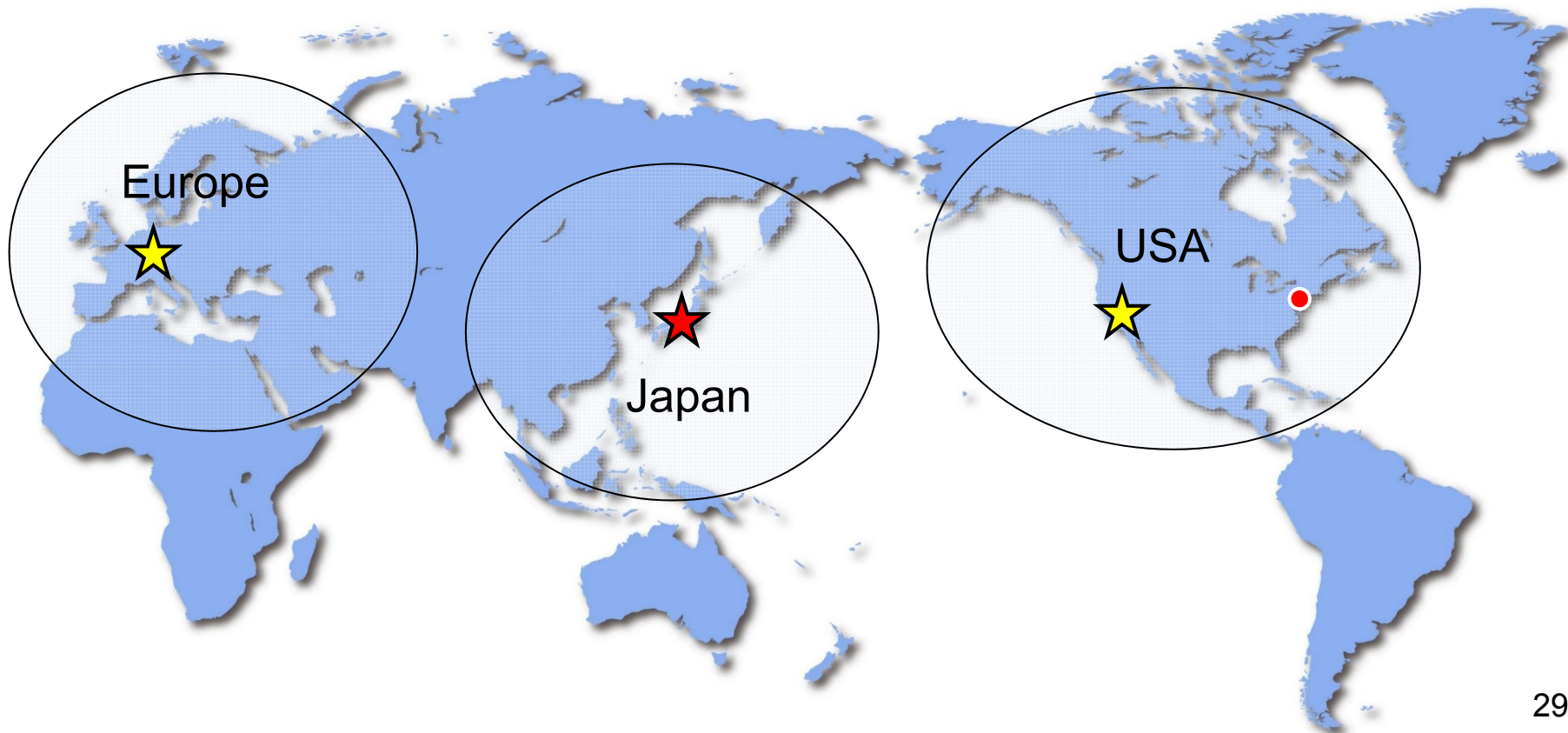
## 2.2.2 Production Structure (Future)

- Increase production efficiency and quality
- Boost capacity through capital investment



## 2.3 Development Structure

- Worldwide development and information-gathering
  - Open a Silicon Valley office
  - Find new mechanisms
  - Common themes (new materials, lubricants, stress analysis, etc.)

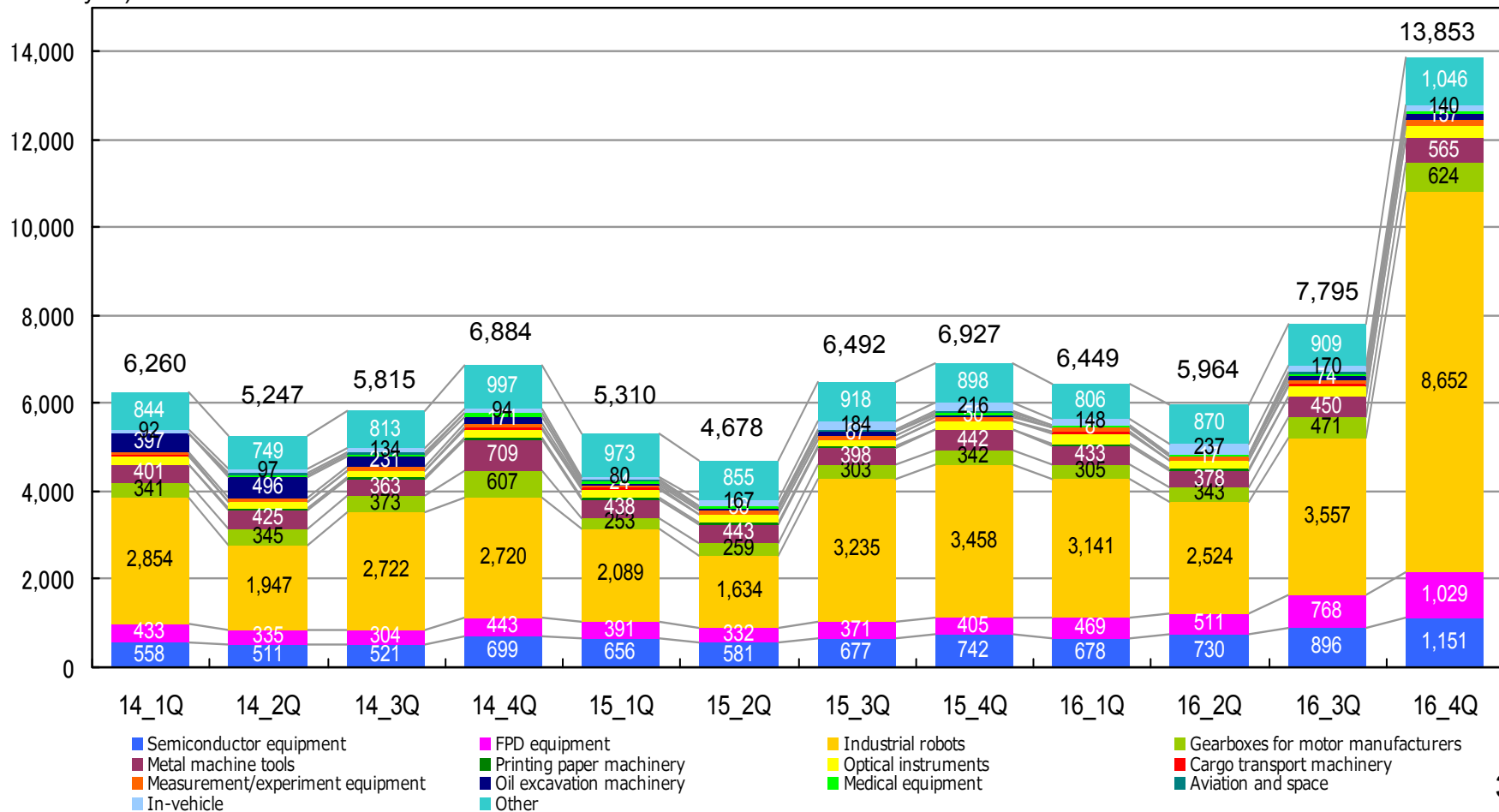


# 3. Bookings Trends

Swift rise in bookings since January 2017

Bookings by application field (non-consolidated; quarterly value)

(millions of yen)



## 4. Investment in Production Capacity

- Expand existing capacity (2 shift/3 shift system, improved productivity), invest in expanding Hotaka Plant facilities
- Acquired land for a new plant in Matsumoto City (Nagano)

Hotaka Plant  
(Azumino City, Nagano)



- ¥1.5 billion investment in machinery for new line
- Increasing production since March 2017 (50,000→66,000 units per month)

Planned new plant  
(Matsumoto City, Nagano)

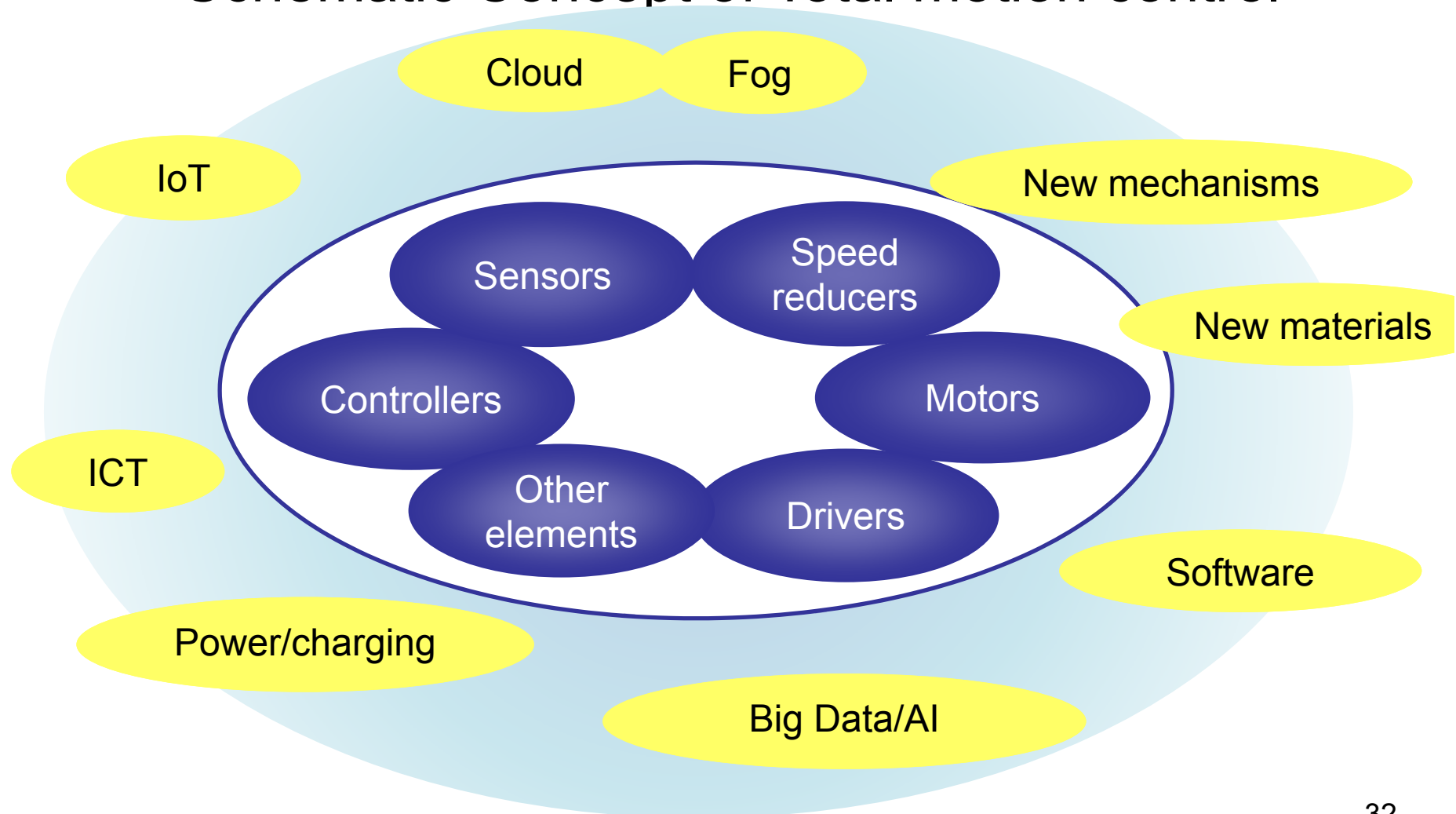


- Detailed design of new factory block underway
- Increase CRB\* production capacity to 100,000 units/month
- Set up as a new production base to supplement the Hotaka Plant

\*CRB = Crossed Roller Bearing 31

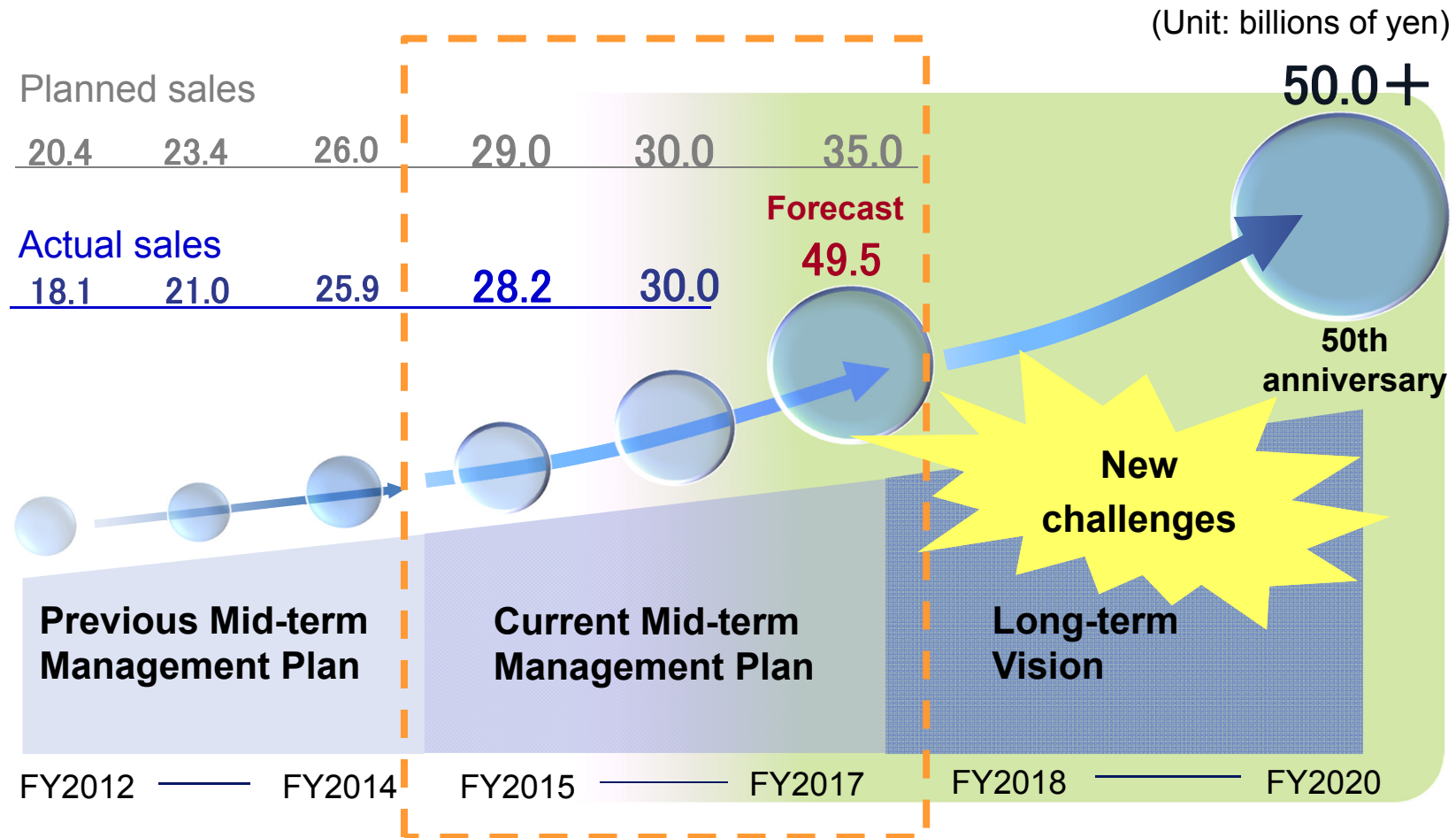
# 5. Total Motion Control Ecosystem

## Schematic Concept of Total motion control



## 6. Further Growth

Sustain growth into the future



# 7. New Challenges

- ◇ Expand production capacity
- ◆ Don't count on current record high sales – it's short term.  
Be aware there always involves a certain fluctuating factors –  
in SEMI, FPD/OLED even Industrial Robot as well.
- ◆ Serious competitor(s) as a reality
- ◆ Can not depend solely on long term relationship based upon  
mutual trust built on our experiences and QCDS.
- ◆ Can these risks be absorbed simply through scale expansion?
- ◇ Continuous effort to diversify applications (medical equipment,  
food industry, pharmaceuticals etc.)
- ◇ Diligent work in R&D; New gear mechanism, New Materials,  
New production method...