



# Development of Industrial Robots and the Education & Training

**China Machinery Industry Federation (CMIF)**  
**China Robotics Industry Alliance (CRIA)**

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April 24, 2019 Moscow



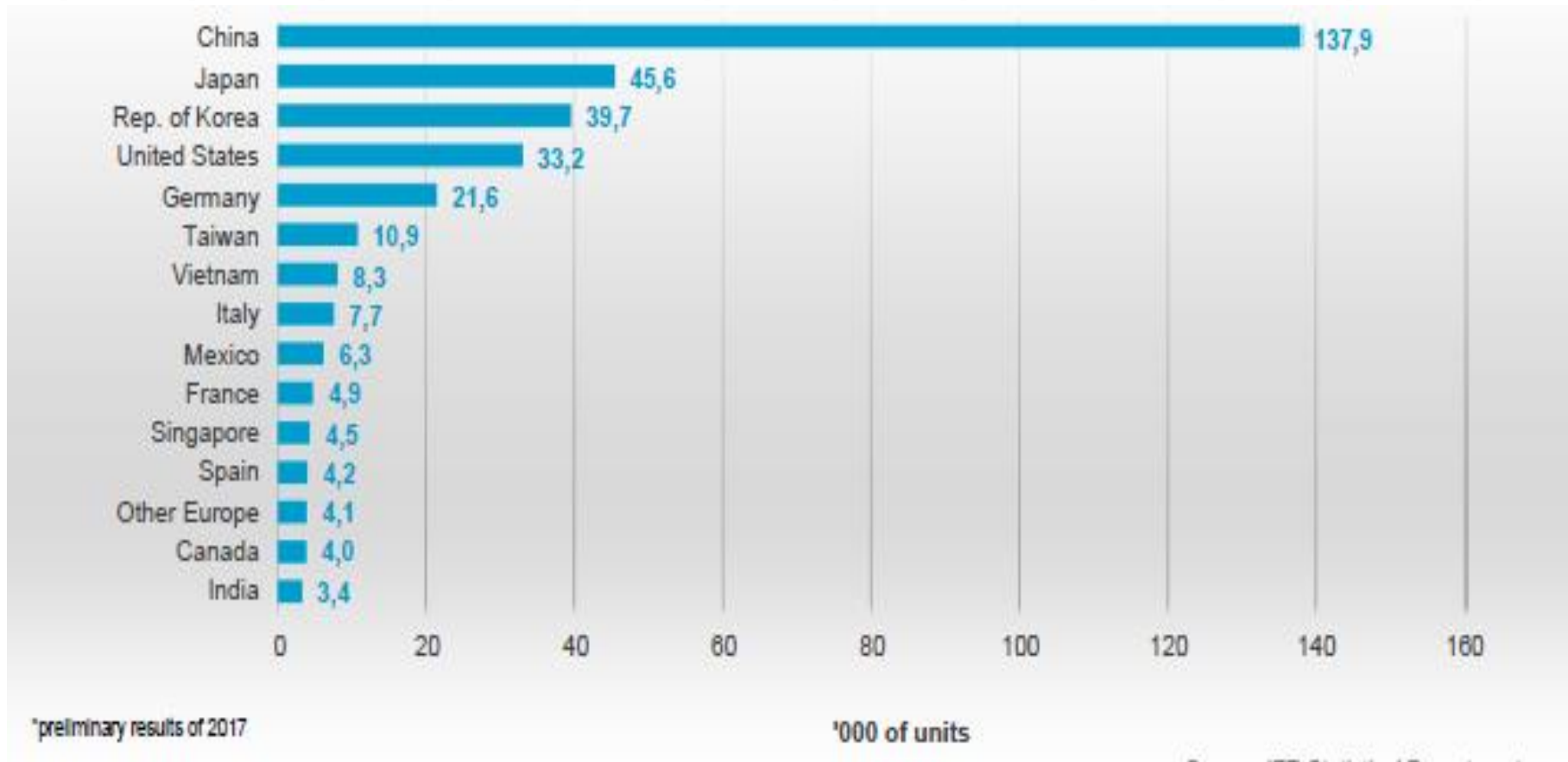
# China Robot Industry Alliance (CRIA)

- Initialized by CMIF and supported by Government, CRIA was established in April, 2013. The Secretarial of CRIA is set up in CMIF
- So far CRIA has about 400 members, including robot companies, parts and components companies, foreign companies registered in China, related universities, research organizations, also some financial and investment organizations.
- The aim of CRIA, guided by national industrial policy and following market demands, set up a platform of Robot industry, University and research organization, user sectors, through pushing forward robots to be applied in various manufacturing sectors, to promote robot industry development and its innovations

# International Market:

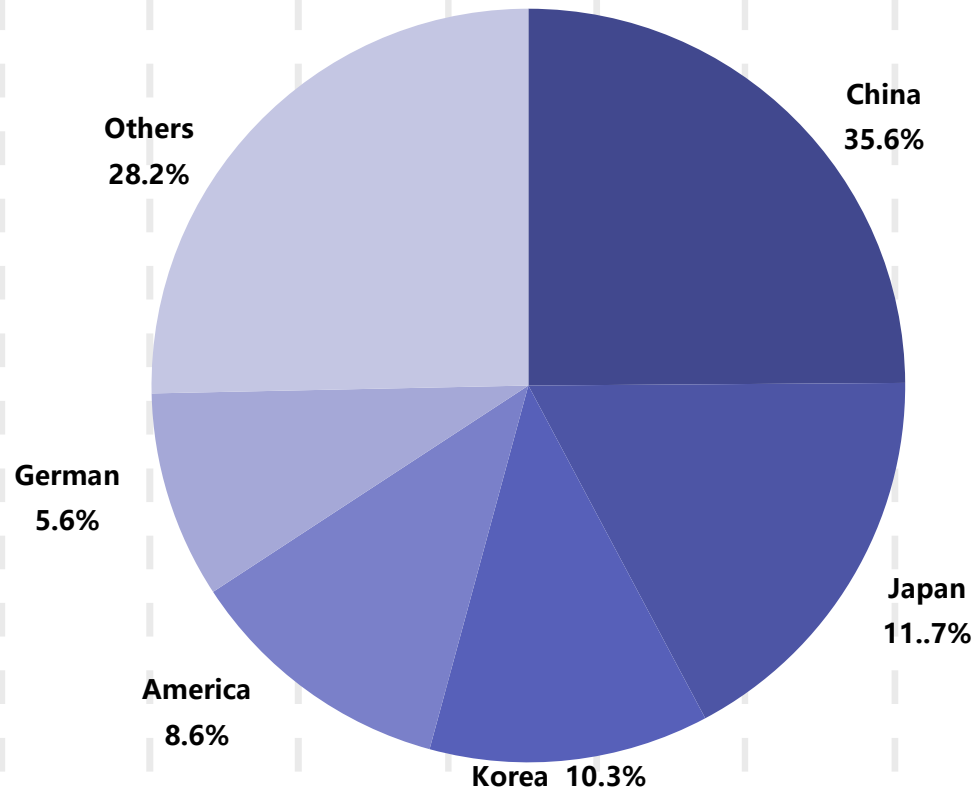
In 2017, The leading five markets globally are China, Japan, Korea, US, Germany, covering about 71.8% of the world market

Since 2013, China has been the biggest single market, about 35% of the world market



# International Market:

## Distribution of the world market of industrial robots in 2017

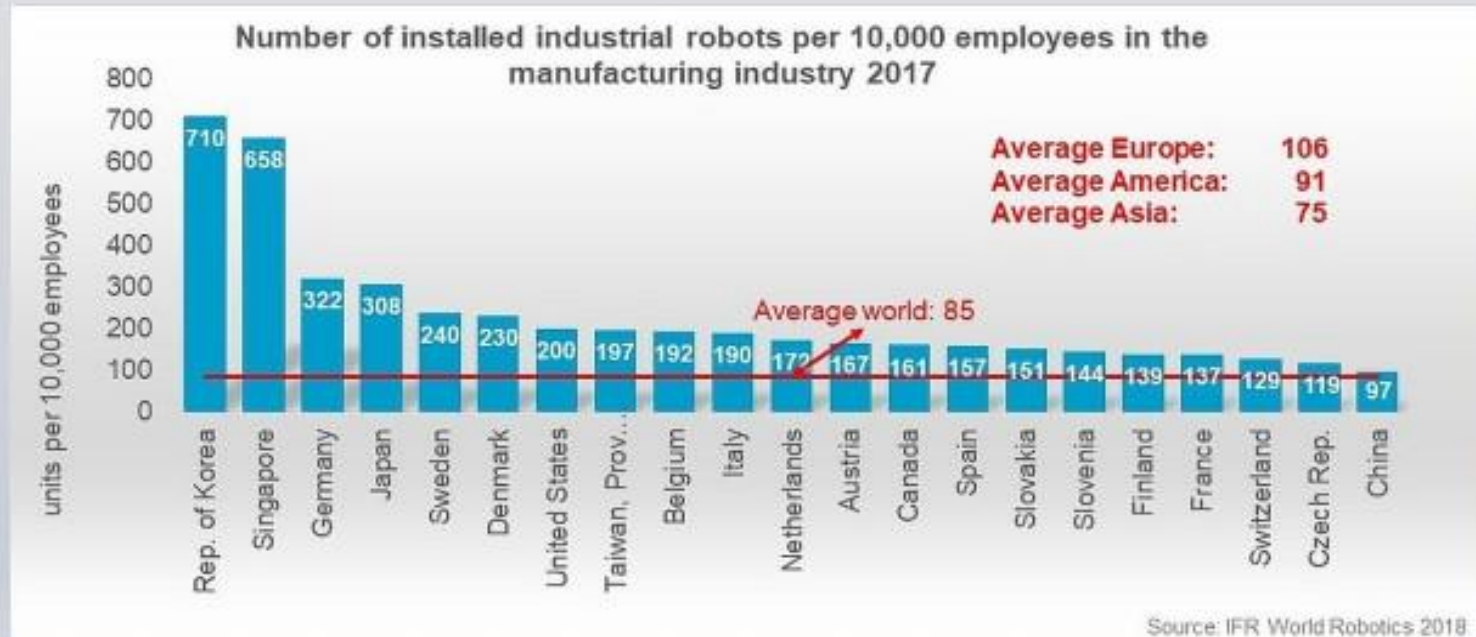


Sources: IFR, CRIA

# International Market:



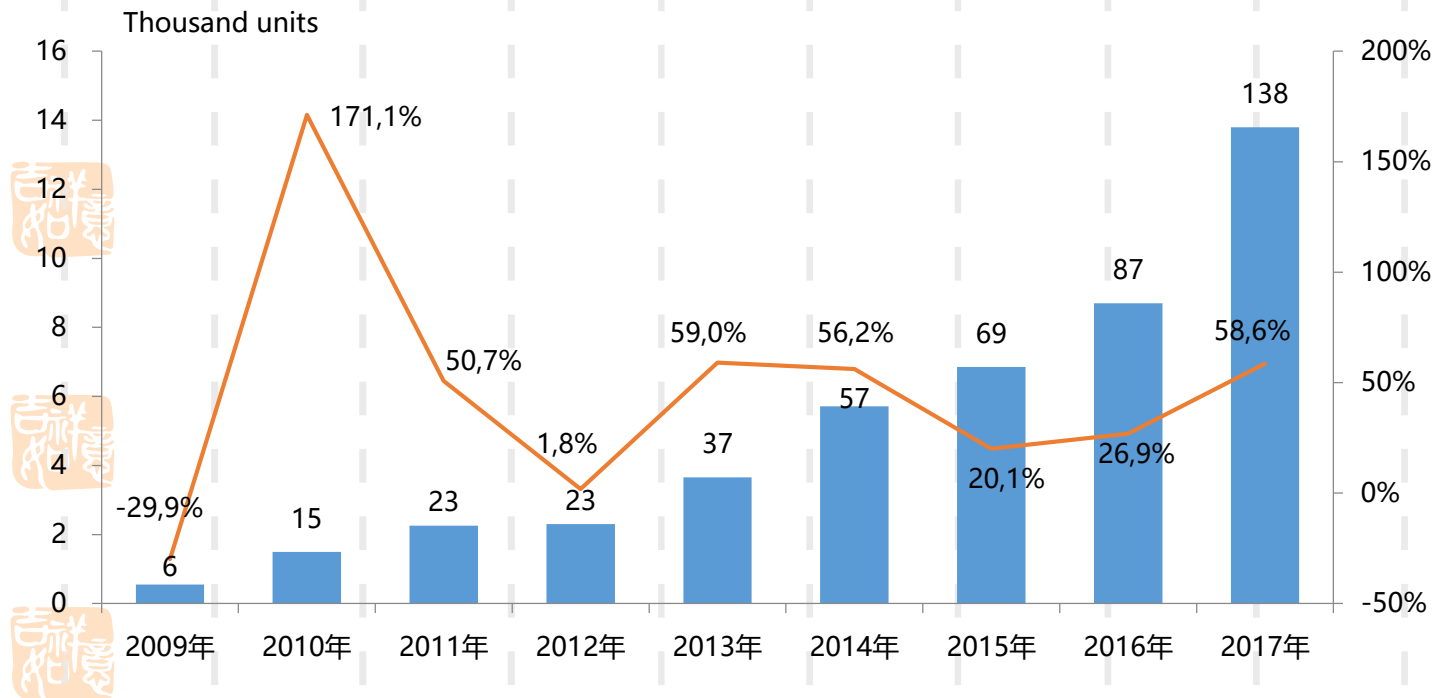
## Highest robot density in Korea - lowest average in Asia



# Chinese Market, fast increase since 2010

- 2010-2017, The yearly average growth rate of industrial robots sale is 50
- Since 2013, China has been the biggest industrial robot market
- In 2017, the first time the robot sale is over 100,000 units.

### 2009-2017 Industrial Robots sale in China



Source: IFR, CRIA

# Requirement of the Education and Training

- Manufacturing sectors major target: upgrading through automation, digitalization, industry internet, advanced manufacturing
- Robotics is the key supporting equipment for the target
- Wide application of robots in various manufacturing sectors need more skilled technicians and workers in Robotics.
- It is predicated that Until 2020, there will be a shortage of 3 million skilled technicians and workers in Robotics, until 2025 there will be a shortage of 4.5 million

# National Initiatives in Educational and Training

## University Education: increasing more universities and colleges to set up robotics major

-- In 2017, Ministry of Education approved 25 more universities to set up robotics majors, such as Robotics Engineering

-- In 2018, Ministry of Education approved 60 more universities to set up robotics majors

-- All together now, there are about 400 universities and colleges have set up robotics major in China





# National Initiatives in Educational and Training



## Vocational Education and Training

April 1, 2019, Ministry of Human Resources and Social Security published 13 new occupations, two of them are in Robotics

1. AI Technician
2. Cloud Computing Technician
3. IoT Technician
4. Digitalization Manager
5. BIM Technician
6. Big Data Technician
7. Drone Operator
8. Agriculture Manager
9. IoT Installation and Debugging Technician
10. Esports OP
11. Esports Operator
- 12. Industrial Robot OP**
- 13. Industrial Robot system Operator**

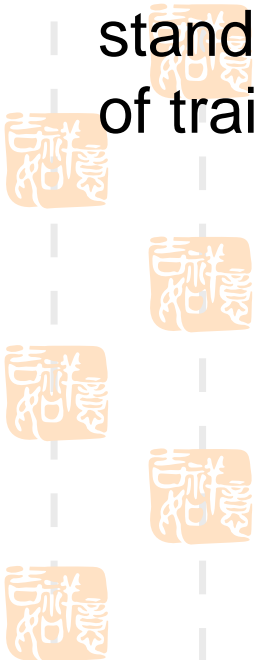


# National Initiatives in Educational and Training



## Evaluation of Education and Training

Start from March, 2019, Ministry of Education will gradually set up evaluation organizations national wide for Vocational Education and Training to make standards of different levels and to assure the quality of training





## Summary

- To further develop robot industry, especially to meet the requirements of wider and deeper applications in various manufacturing sectors, one of the most critical challenges is the education and training
- China has just started to face the challenge to strengthen it



吉祥

Thank you!

