

**BRIEF ON STATISTICAL ANALYSIS OF
ARTIFICIAL INTELLIGENCE (AI) PATENTS WORLDWIDE**

Study by the CNIPA

CATEGORIZATION OF AI TECHNOLOGY

1.AI hardware

1.1 Smart chip

- 1.1.1 GPU
- 1.1.2 FPGA
- 1.1.3 ASIC
- 1.1.4 Brain-like chip
- 1.1.5 NPU

2.AI algorithm

2.1 Machine learning

- 2.1.1 traditional machine learning
- 2.1.2 Reinforced learning
- 2.1.3 Deep learning
- 2.1.4 Privacy computing

2.2 Knowledge Graph

2.3 Brain-like intelligence computing

2.4 Quantum Computing

2.5 Pattern recognition

2.6 Swarm intelligence

2.7 Hybrid intelligence

3.AI application technology

3.1 Natural language processing

- 3.1.1 Machine translation
- 3.1.2 Semantic understanding

3.3 Computer vision

- 3.3.1 Image recognition
- 3.3.2 Image enhancement
- 3.3.3 Image synthesis

3.4 Biometric identification

- 3.4.1 Fingerprint recognition
- 3.4.2 Face recognition
- 3.4.3 Iris recognition
- 3.4.4 Voiceprint recognition
- 3.4.5 DNA recognition
- 3.4.6 Behavioral Character Recognition

3.2 Smart Voice

- 3.2.1 Speech Recognition
- 3.2.2 Speech synthesis

3.5 VR/AR

- 3.5.1 Augmented Reality
- 3.5.2 Virtual Reality

3.6 Human-computer interaction

- 3.6.1 Voice interaction
- 3.6.2 Somatosensory interaction
- 3.6.3 Gesture interaction
- 3.6.4 Brain-computer interaction

AI TECHNOLOGY AND IPC CONCORDANCE TABLE

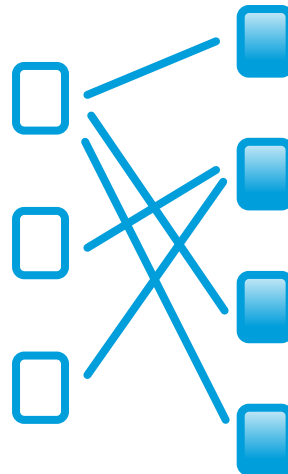


3-level Branches of AI

Level 1 with 3 parts

Level 2 with 14 branches

Level 3 with 28 branches



International Patent Classification (IPC)

5 Sections

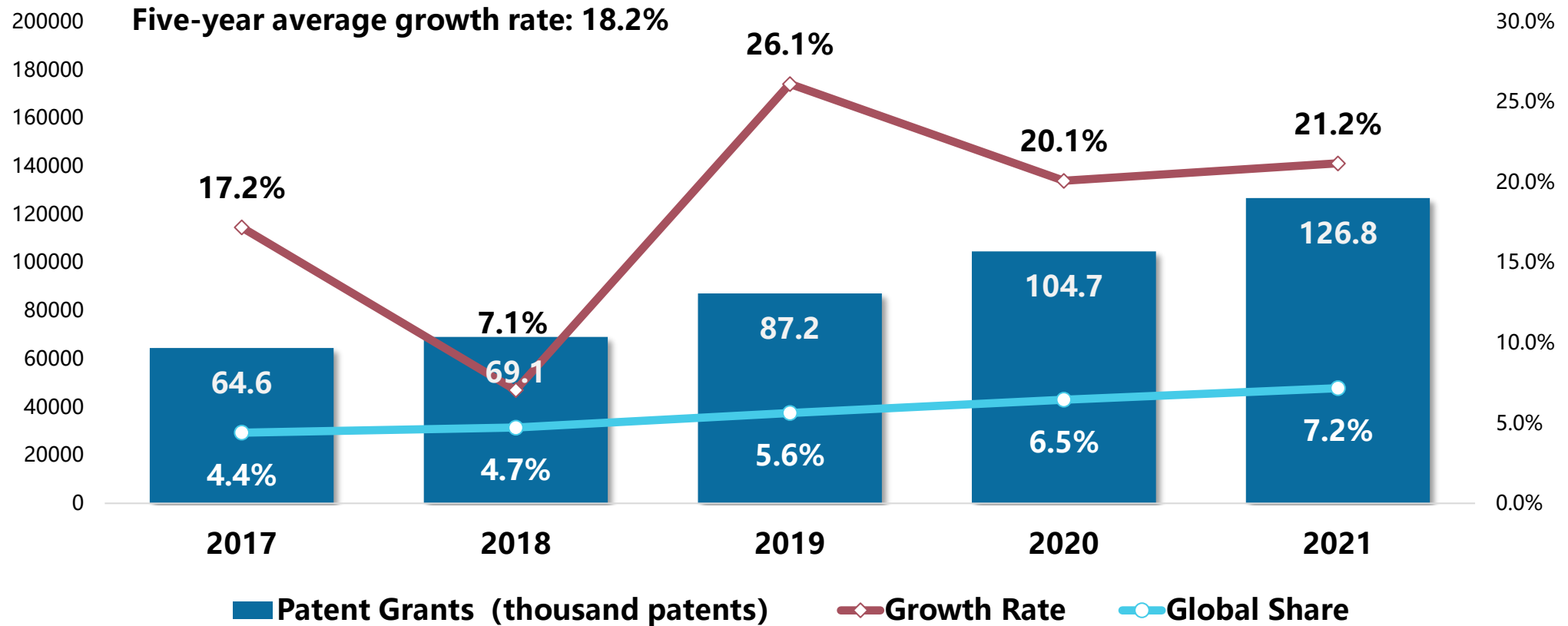
20 Classes

40 Subclasses

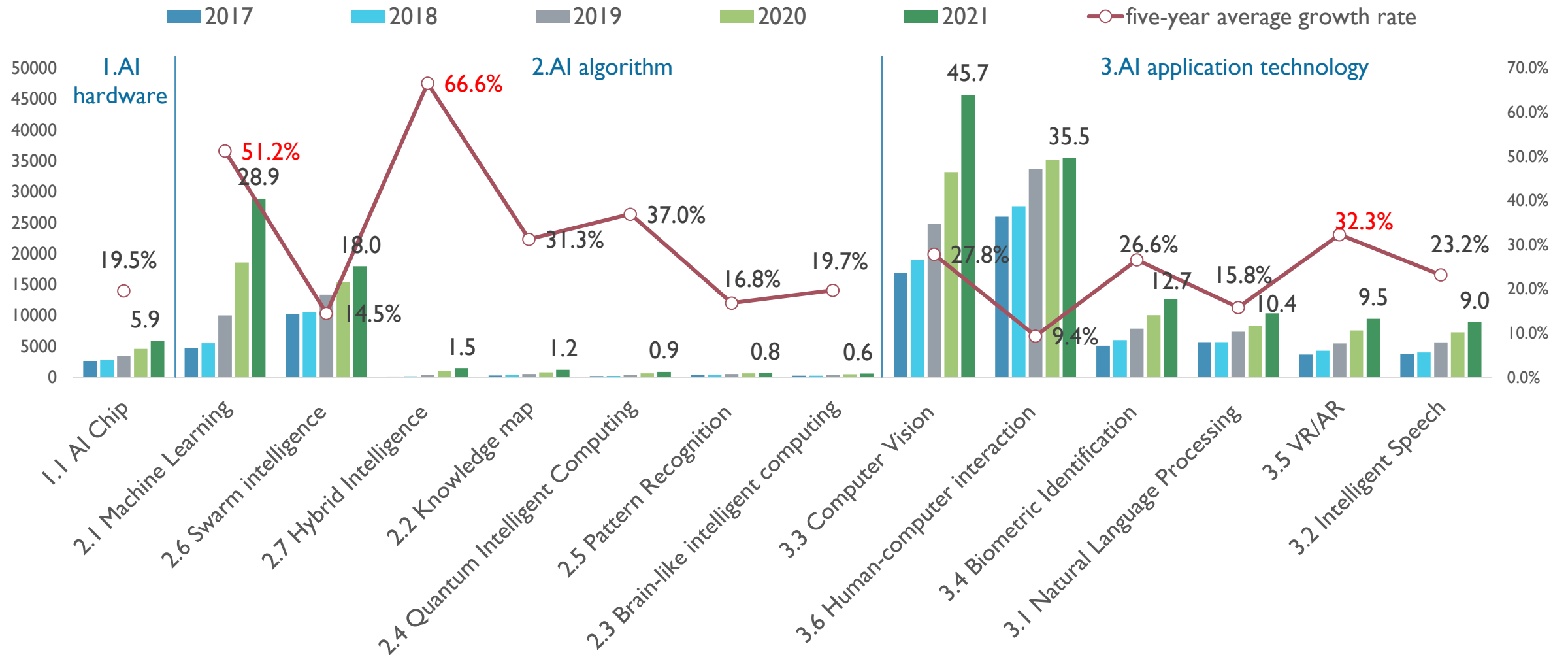
2000+ Groups

+ Keywords

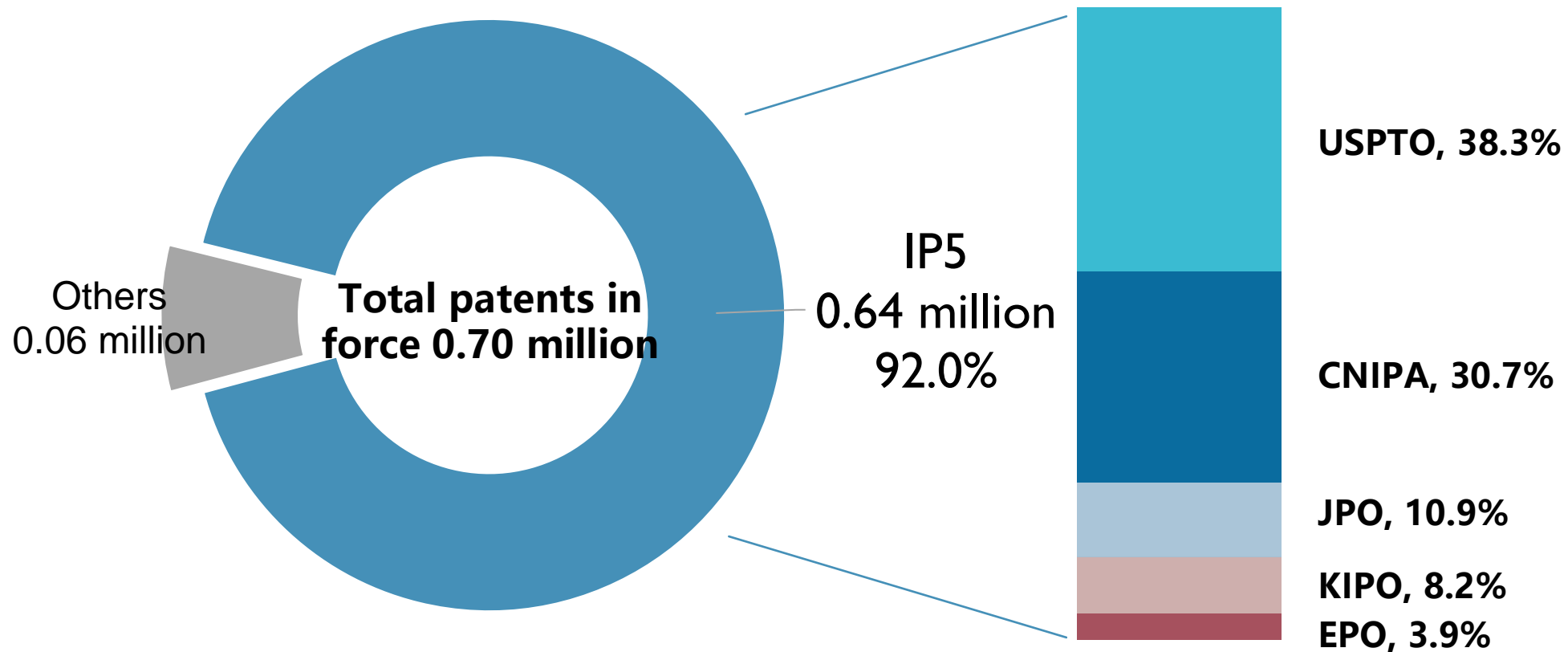
NUMBER OF ARTIFICIAL INTELLIGENCE PATENT GRANTS FROM 2017 TO 2021



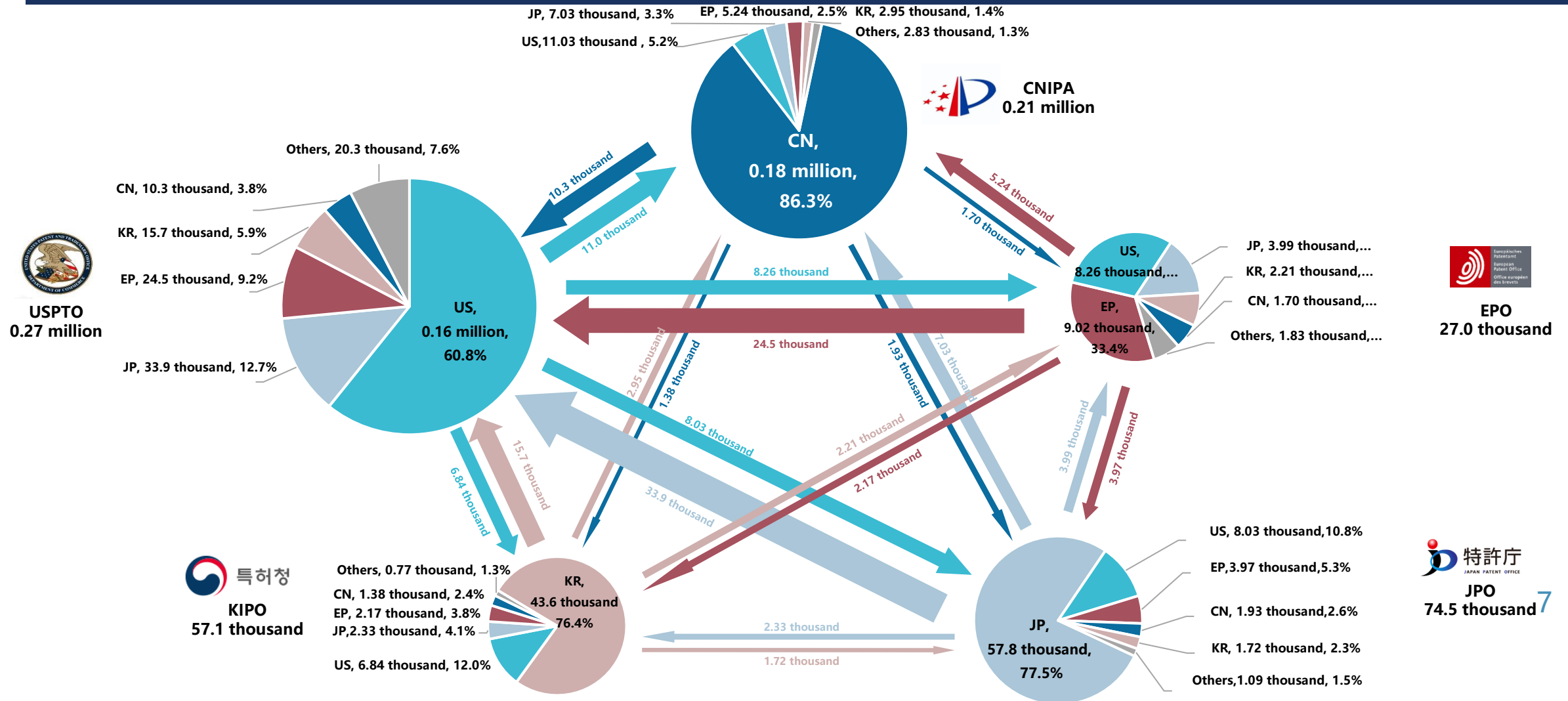
NUMBER OF AI PATENT GRANTS (THOUSAND) BY SUB-TECH AREAS FROM 2017 TO 2021



DISTRIBUTION OF ARTIFICIAL INTELLIGENCE PATENTS IN FORCE AS OF MAY 2022



PATENTS FLOW OF IP5 IN FORCE





THANK YOU!