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AI CORE Patents ?

*From: Frédéric Caillaud M.D. Ph.D
Deputy GM in charge of Innovation*

- Plenty of AI definitions...
- 630 000 papers about AI
- 18 000 AI patents filed in 2015 OECD
- Most from Asia



G06N, G06F 17/00 et 17/30 + Key words

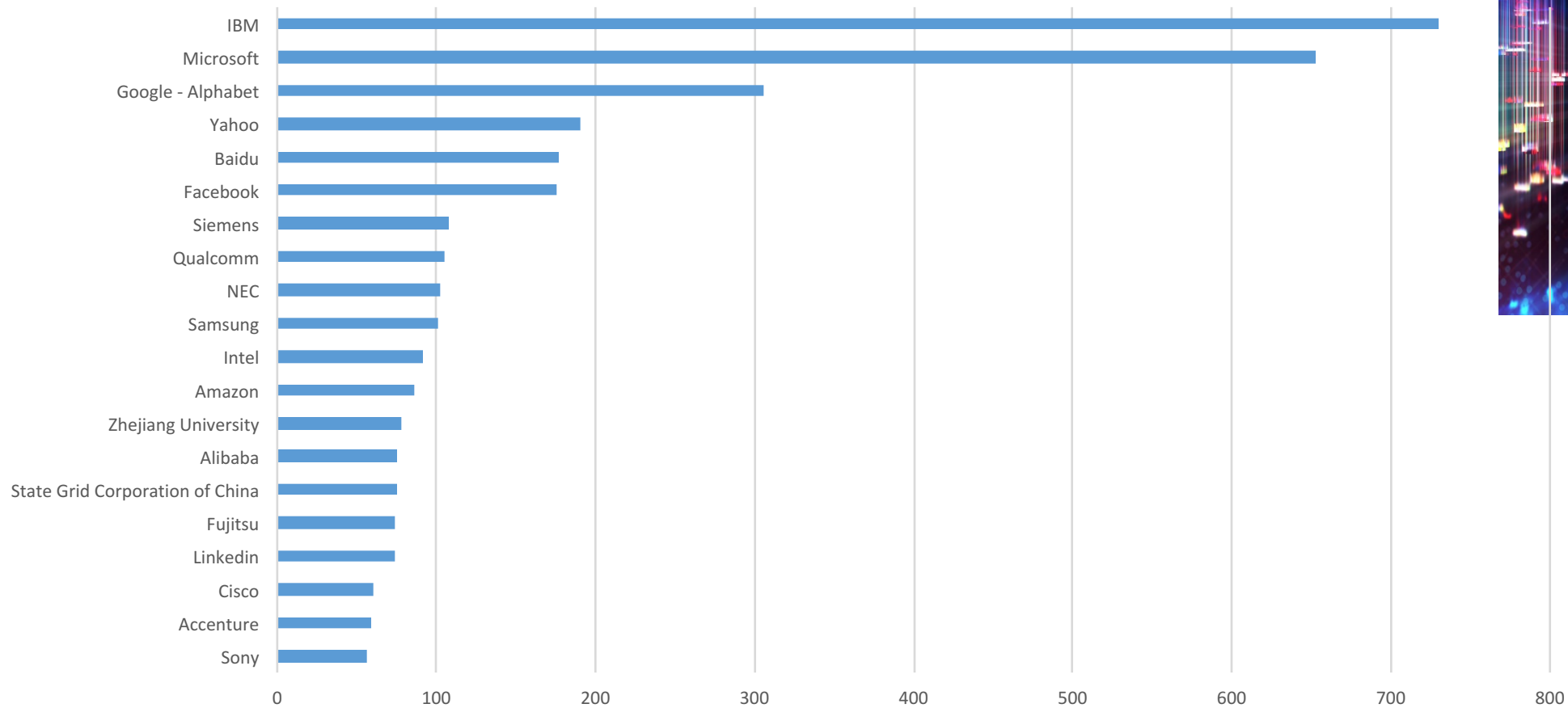
12 208 families of patents



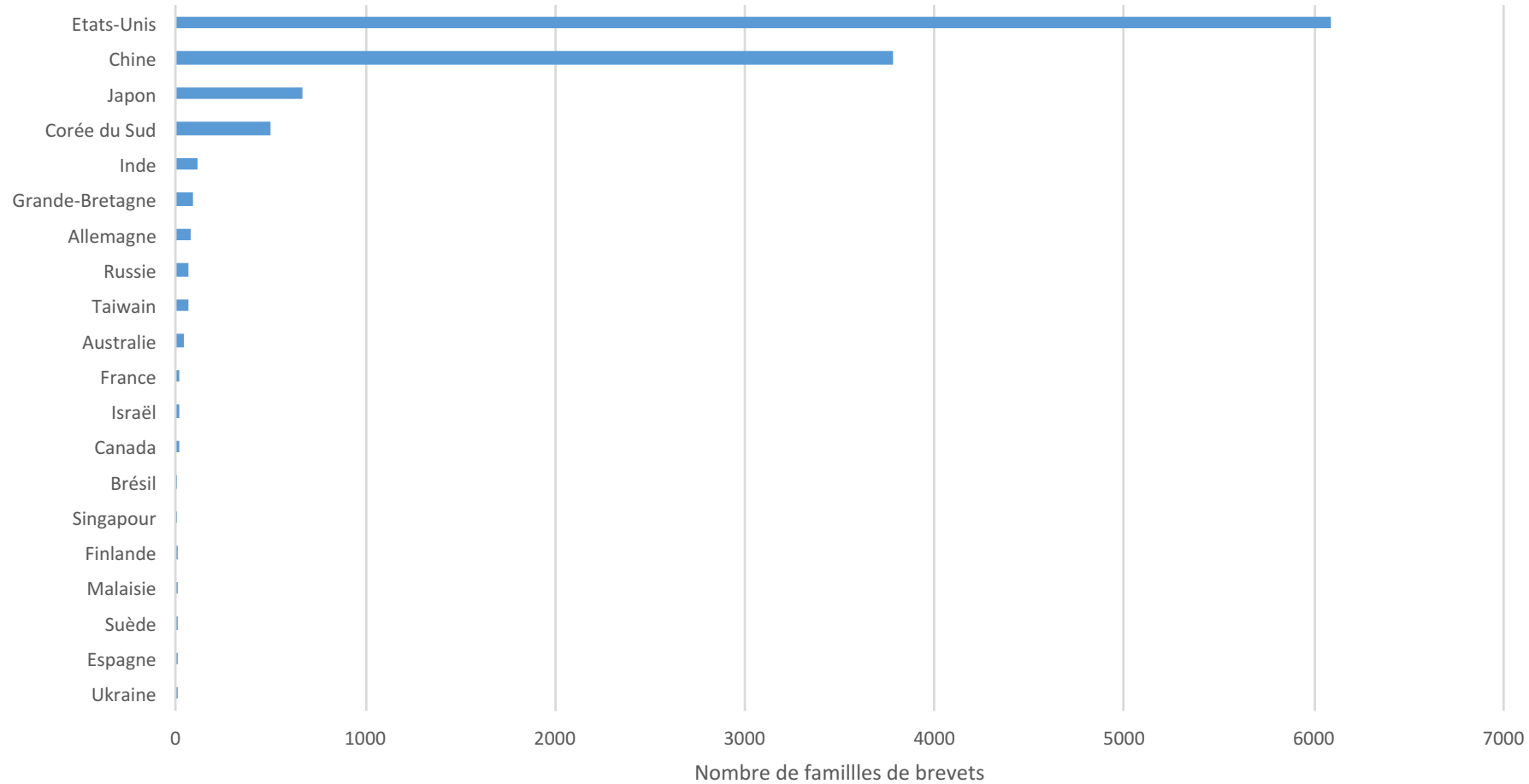
Applications

Core ?

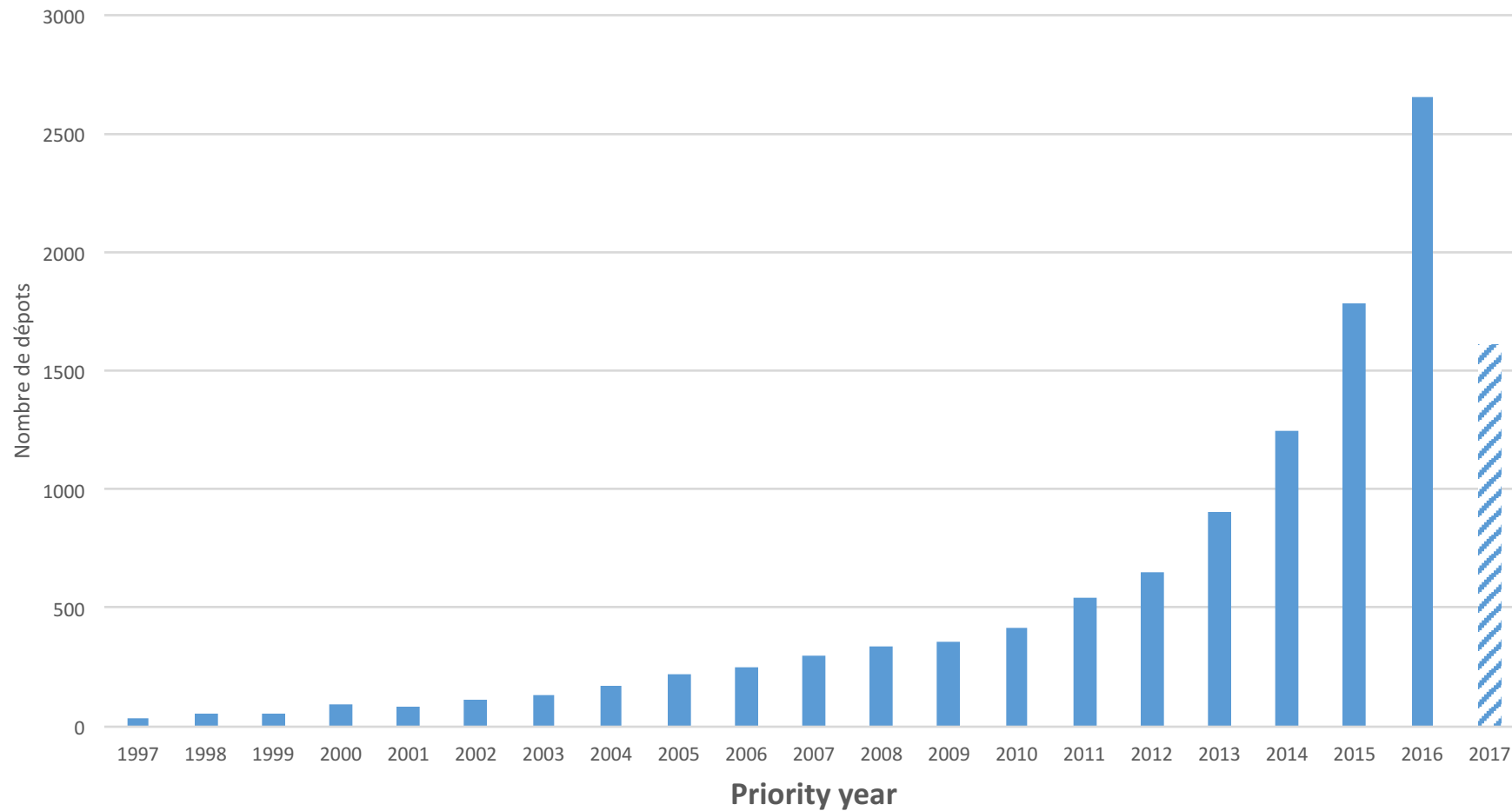
Top 20 Companies



Top 20 Country

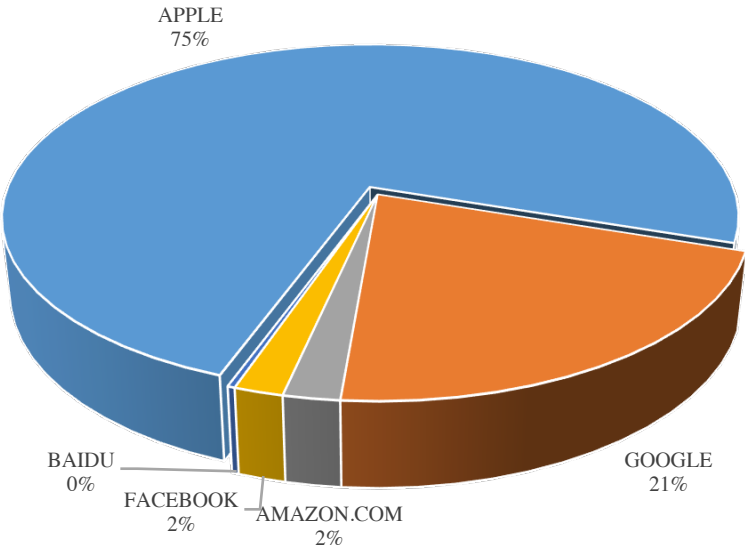


Patent filing/priority date

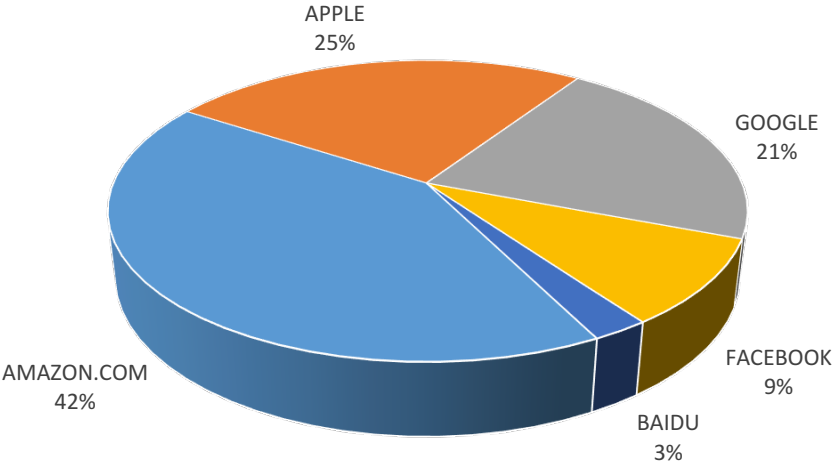


2. The issue of control of intangible assets

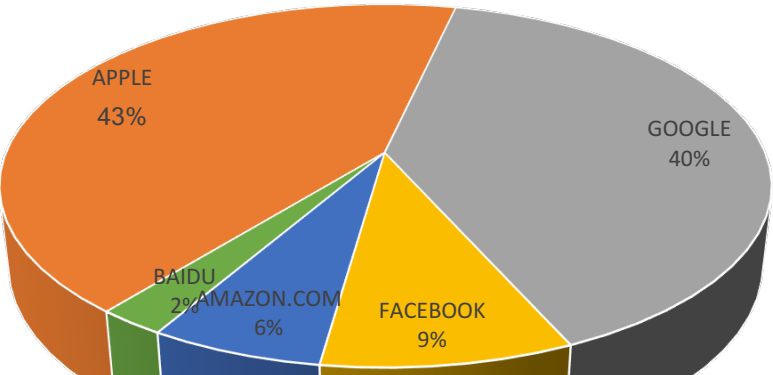
Design



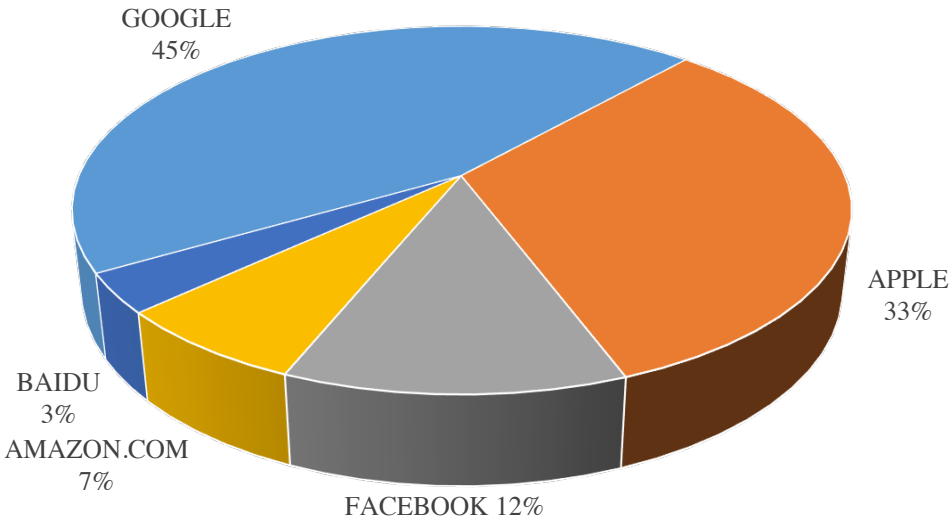
Trademarks



Patents

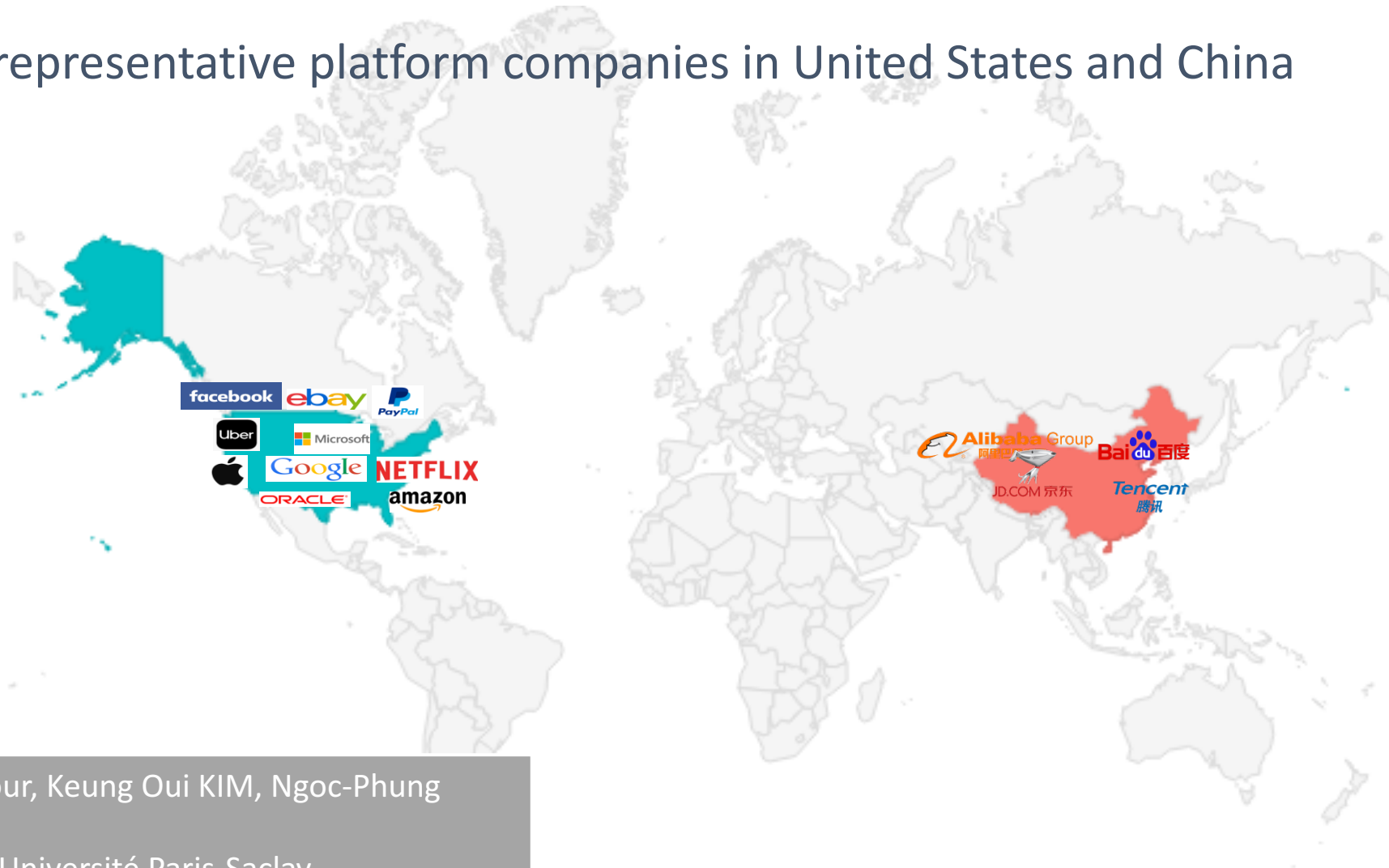


Merging AI



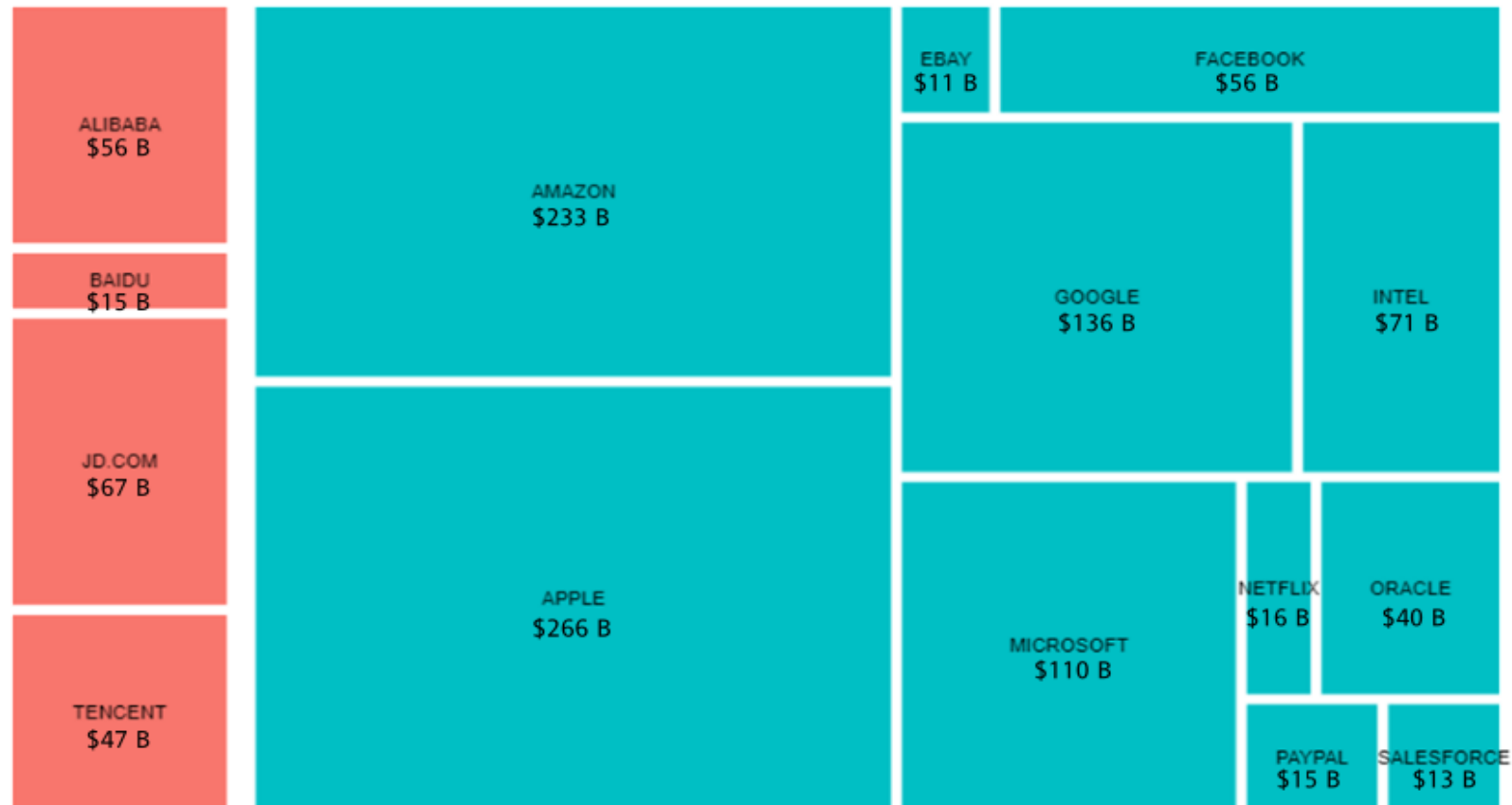
3. Some reference data for major platforms

Selected 15 representative platform companies in United States and China



From: Ahmed Bounfour, Keung Oui KIM, Ngoc-Phung
TRAN
Université Paris-Sud, Université Paris-Saclay

3. Some reference data for major platforms



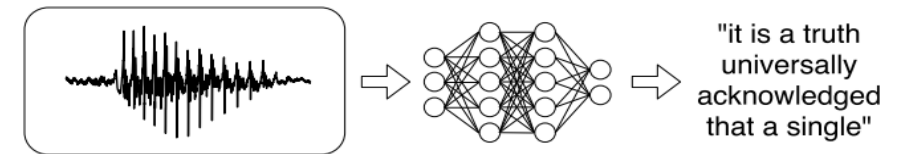
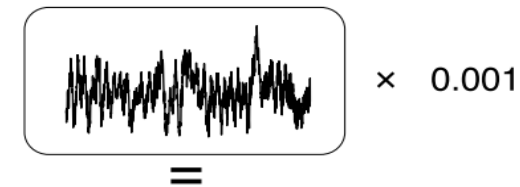
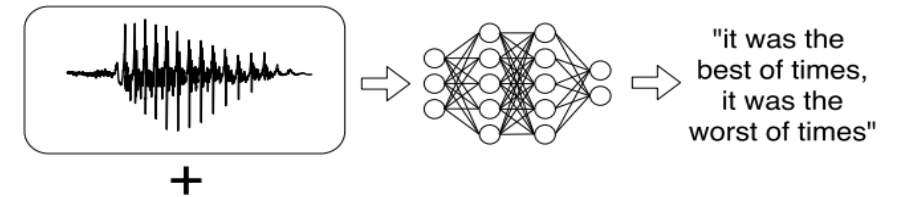
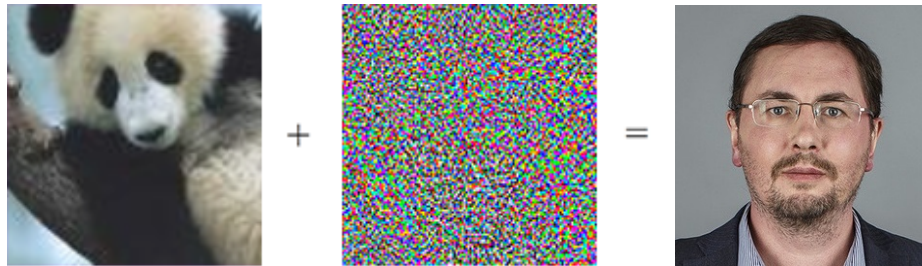
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Major platform companies, classified by revenue (USD) in 2018
Data source: Orbis, retrieved July 2019

AI technologies based on data are susceptible to manipulations through data

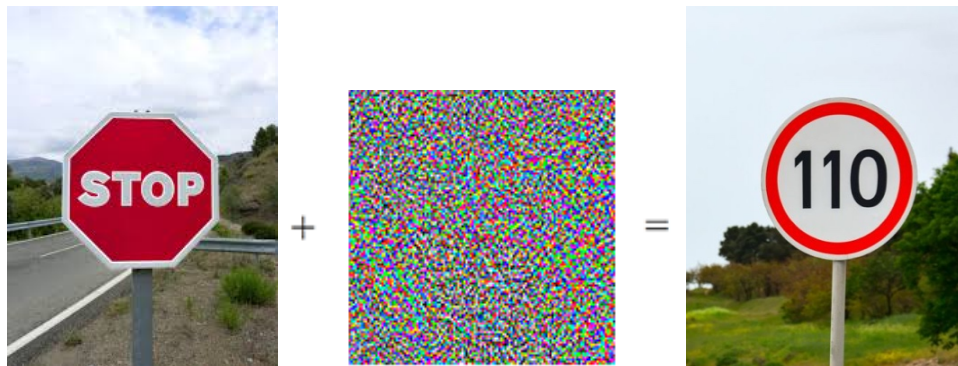
Adding specially designed noise to images can confuse the neural networks and lead to unrespectable results

Face recognition



See the background mathematics in *Valentin Khrulkov, Ivan Oseledets*; The IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018, pp. 8562-8570

Autonomous driving



An Overview of National AI Strategies

France

President Macron announced "To boost AI research in France"

- France's AI strategy (2018/3)
 - Key sectors: Healthcare, Transport-mobility
 - GDPR against GAFAM, China, Russian Federation
 - Doubles the number of students in the AI major
- 42 (nonprofit and tuition-free computer programming school)
 - Training 10,000 students in 5 years

United states of America

GAFA lead the world, and the government also addresses AI as a priority for R&D

- National Artificial Intelligence Research and Development Strategic Plan (2016/10)
- White House Summit on AI for American Industry (2018/5)
 - Discussing the policy for the US to take the leading position in AI.
 - Establish a special committee under the NSTC and consider it
- President Trump released an executive order "Maintaining American Leadership in Artificial Intelligence" (2019/2)

China

Aim for the world's best with data enclosure and AI intensive investment

- A Next Generation Artificial Intelligence Development Plan (2017/7)
 - AI's core industry exceeding 7 trillion (JPY), and exceeding 70 trillion (JPY) as driven by the scale of related industries.
 - Enhancement of data localization by the Cybersecurity Law

Germany

Industry 4.0 platform construction centered on manufacturing

- Strategy on Artificial Intelligence (2018/11)
 - provide around €3 billion for the implementation of the strategy (~2025)
 - Establish a national network of at least twelve centers and application hubs.
 - Competence center for small and medium-sized companies

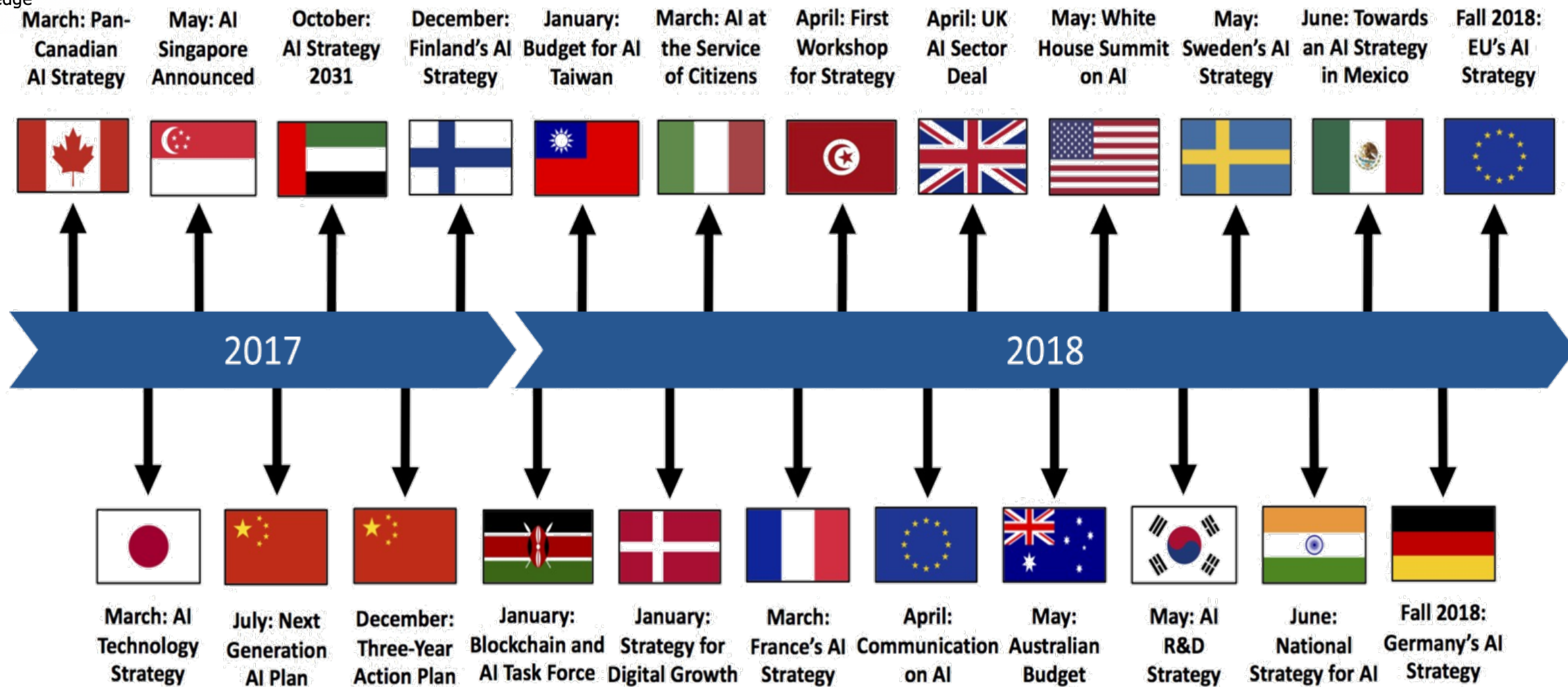
Singapore

Enhance the national programs to gather talents from all over the world, and STEM education

- AI Singapore (2017/3)
 - Founding national programs for fundamental researches, grand challenges, 100 experiments (100E), human resource development, to collect talent from all over the world
- Enhancement of STEM education for primary and middle schools
 - All primary schools to have applied learning program (ALP) by 2023.

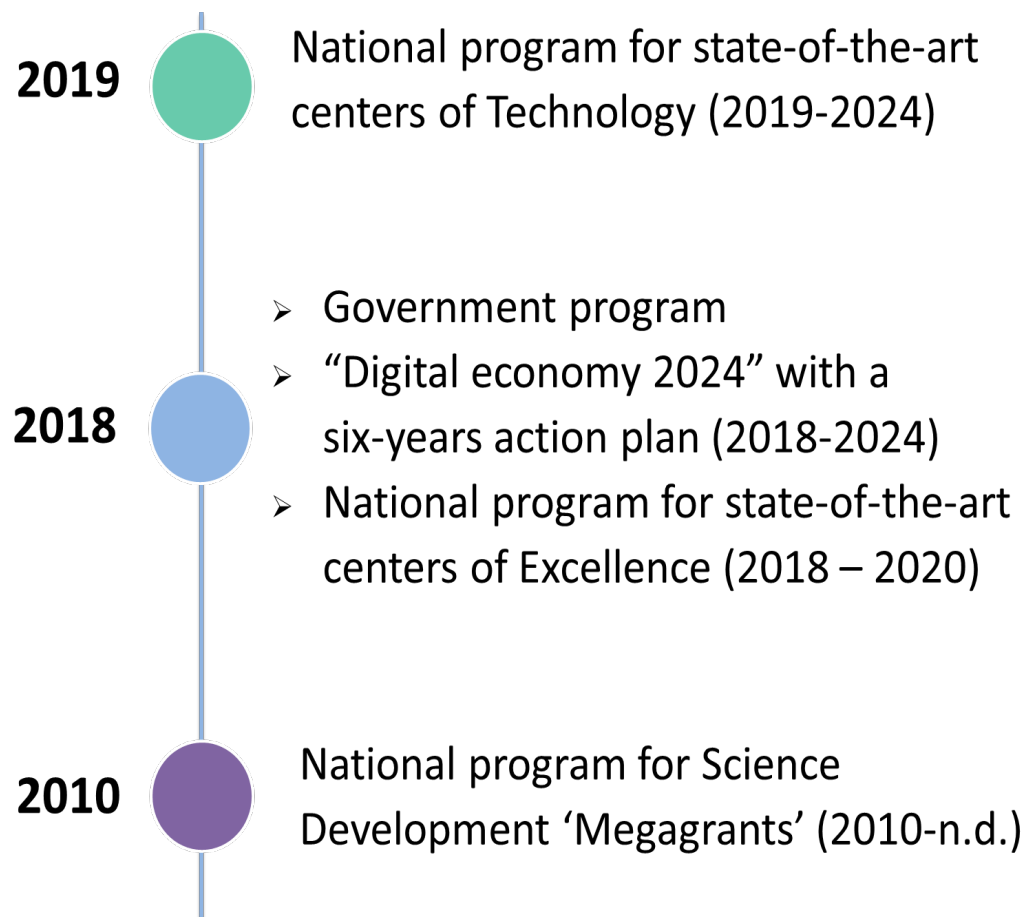
Worldwide movement for AI Strategies and Plans

Intellectual Capital
for Communities
In the Knowledge
Economy



AI in Russia

National AI Strategy of Russian Federation is under development; will be advertised soon (2019)



11 & 12 July 2019

Key Factors for AI Industrial Development according to the ‘Digital Economic’ Program

Legislation & policy development

Technology



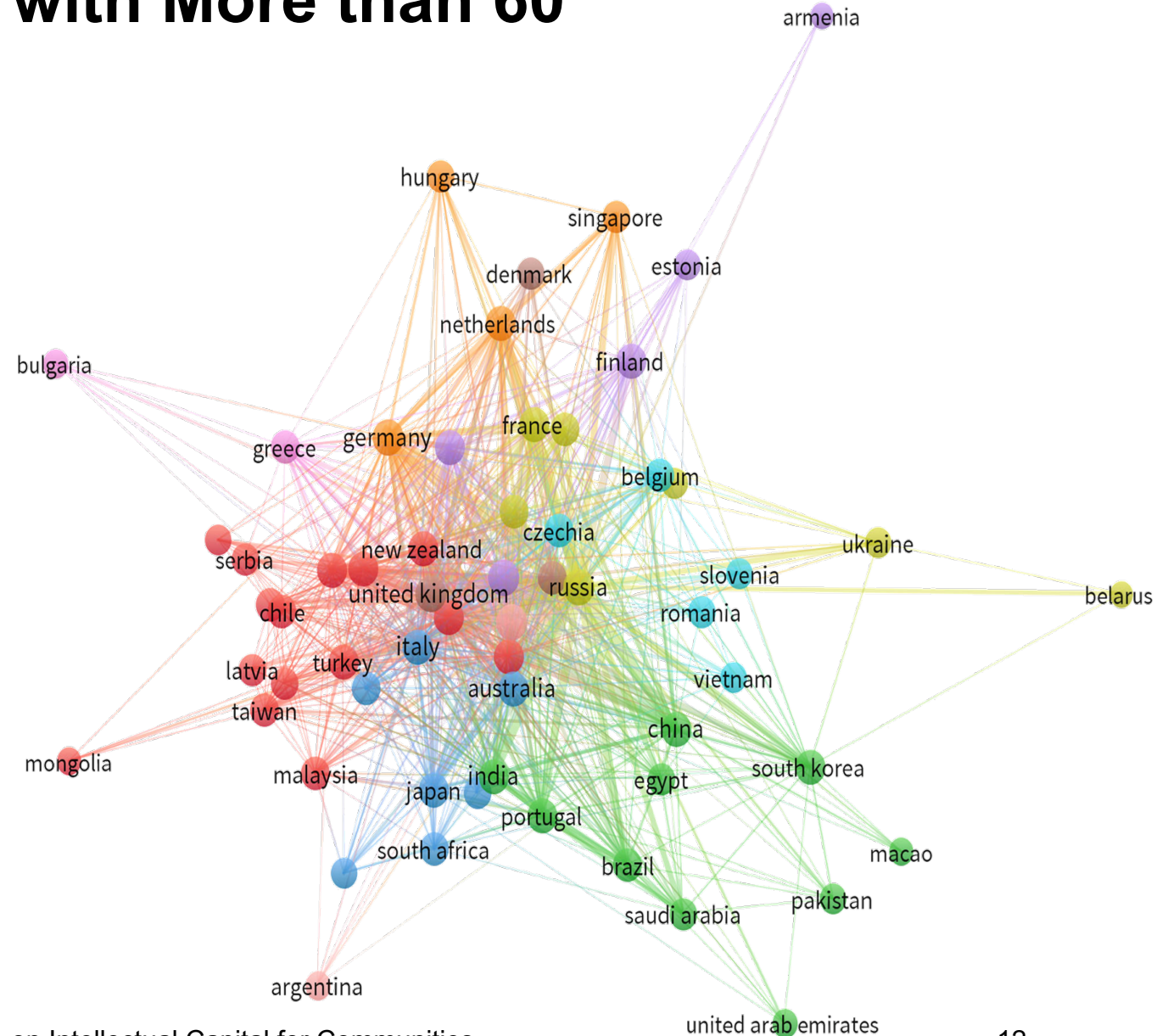
AI Infrastructure

Education and Talents

Russia Collaborates with More than 60 Countries in AI

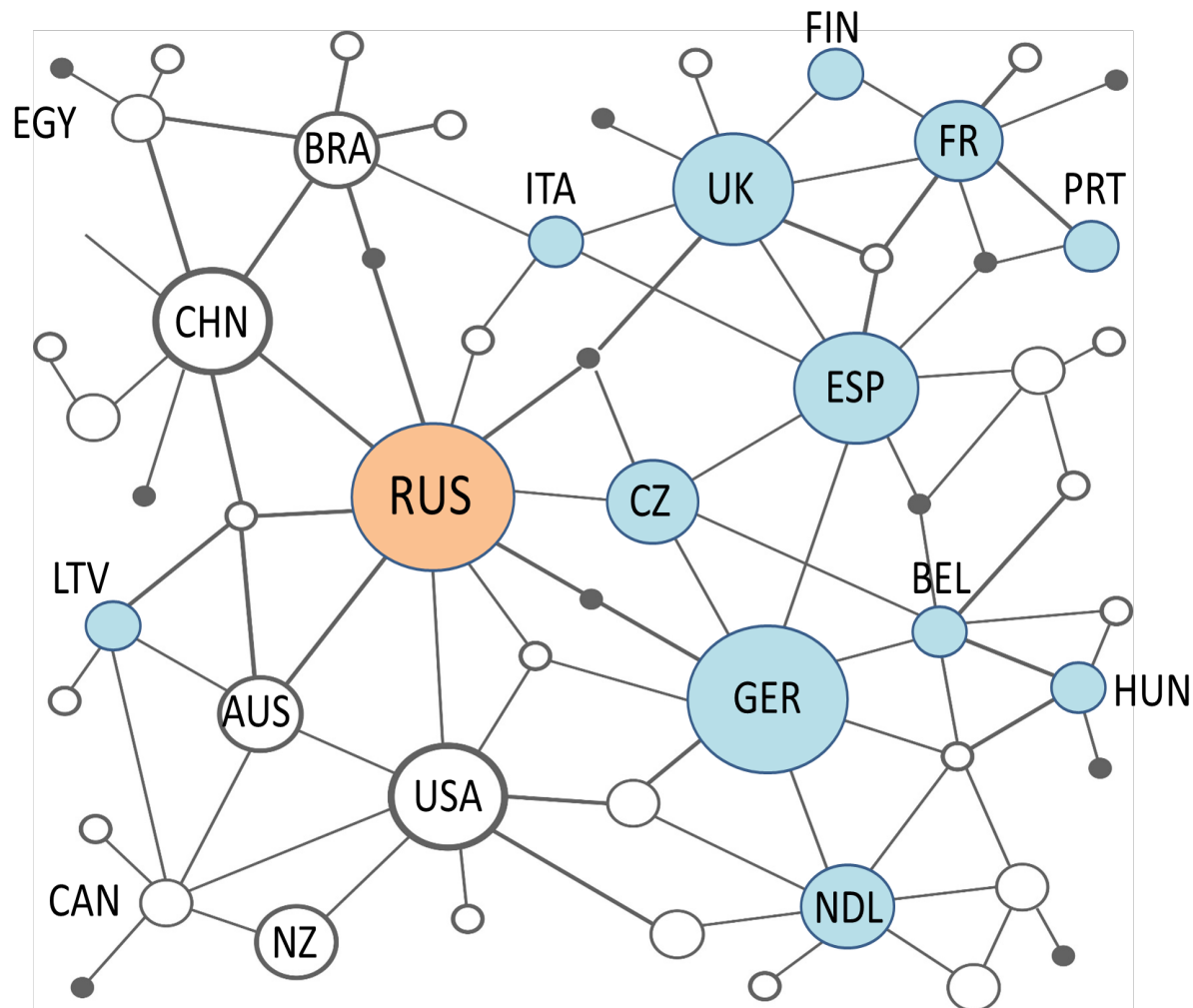
Network of Russian scientists' international collaborations in AI captured by *Dimensions.ai* (2010-2018)

60% of Russian publications on AI-related areas were originated from ***international*** collaborations



TOP-20 Countries in Terms of Numbers of Joint Papers

8000 joint
publications
on AI related
subjects



Final Comments and Suggestions

- Russia stays involved in many international projects and activities in AI-related innovation and policies development. It closely cooperates on AI-related matters with a number of international organisations: UNESCO, OECD, IEEE (Global Initiative on Ethics), ISO, ITU, etc.
- It is important to *orchestrate and synchronise* all these efforts to ensure the efficient and effective international collaboration on development of the AI-related policies and to avoid duplications as well as inconsistencies in approaches to these important matters in different countries.
- An important step forward can be a creation of a *global* platform under UN auspices for discussion of AI-related matters in education and development of corresponding policies, agreements and recommendations.
- At the national level, it is important to promote comprehensive and consistent strategies in the field of AI education, to ensure close cooperation of the states, the scientific community and the IT industry.
 - **All new technologies related to AI must be human-centred:** National and international policies shall ensure that crucial AI decisions **have to be always vetted by humans**. Feedback from users will play an important role in monitoring results of applications of AI-based tools.
 - Training programs in AI-related subjects must include *obligatory* courses in *ethical* aspects of these technologies.
 - An *international framework* has to be developed for certification of AI-based products, systems and devices.