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RISC-V in China

An extensive state support for the industry

2014/2015 : National Guideline for the Development and Promotion of the IC Industry - Made in China 2025 plan

- Main objective was about manufacturing capacity
- Hints about the whole value chain (from design to
- Produce 40% of the semiconductors used in China 2020 and 70% by 2025 – objectives haven't been achieved

A bit about Big Fund

- In 2014 / 2015, central government create the **national IC fund**, tasked with investing in the industry
- Assisted by local-level IC fund, it invested up to 181 Bn€

2021 : 14th five-year plan

- Ensure China technological sovereignty by 2035 through the development of **national champions** able to substitute foreign industries in strategic sectors
- Semiconductors and integrated circuits are explicitly mentioned

Dependance on foreign intellectual property for semiconductors: an unbearable situation for China

CPU/GPU/SoC

Design tools

Sub-14nm foundries

Manufacturing equipments

ISA

Huawei case : a scary screenplay for all China

Barred from ARM licences

Barred from acquiring design tools

Barred from using TSMC

Barred from using SMIC !!

Barred from purchasing from Mediatek

Barred from purchasing from Qualcomm for 5G

(Barred from Google's Android)

RISC-V: an opportunity China seized to reduce risks regarding ISA



A significant involvement with the RISC-V International foundation

- ⑩ 8 Chinese persons at the *Board of Directors*, on a total of 19 (including Huawei, Alibaba, Academy of Sciences, Unisoc)
- ⑩ 7 *Premier Members*, on a total of 13



A Chinese organization aiming at fostering development and adoption

- ⑩ Managed by the Chinese Academy of Sciences
- ⑩ Close to the central government



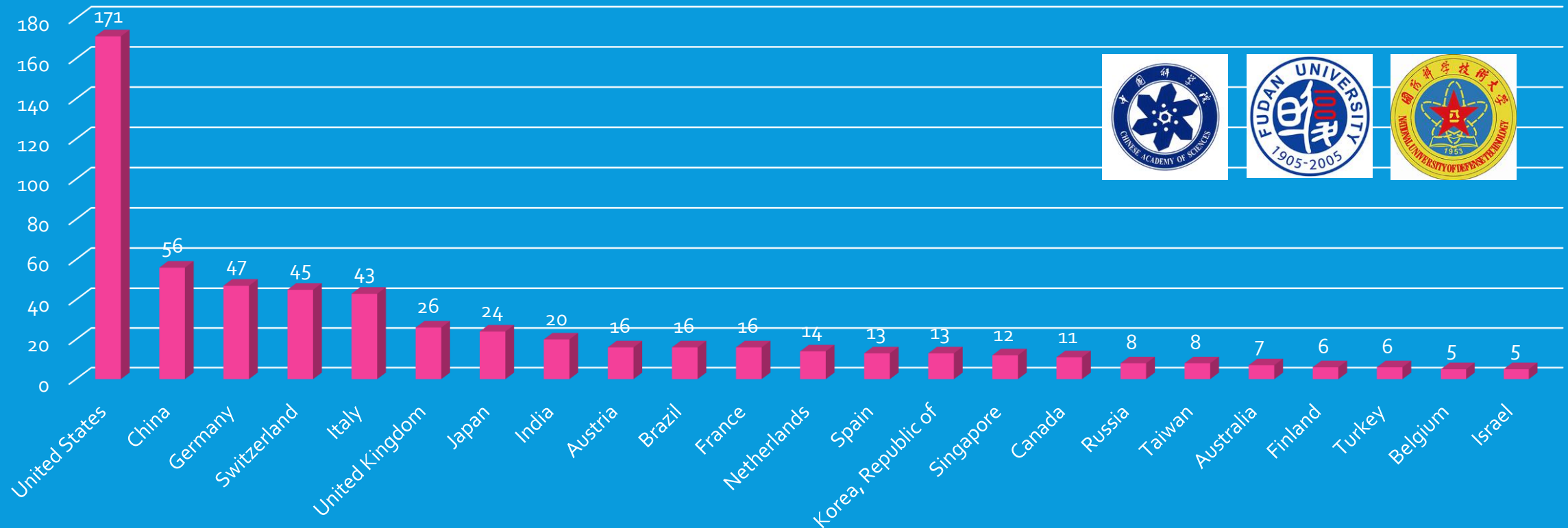
Another Chinese organization aiming at fostering development and adoption

- ⑩ Managed by the Municipality of Shanghai

An academic effort not (yet?) significantly high compared to the rest of the world, for interest in 'sexier' topics

RISC-V

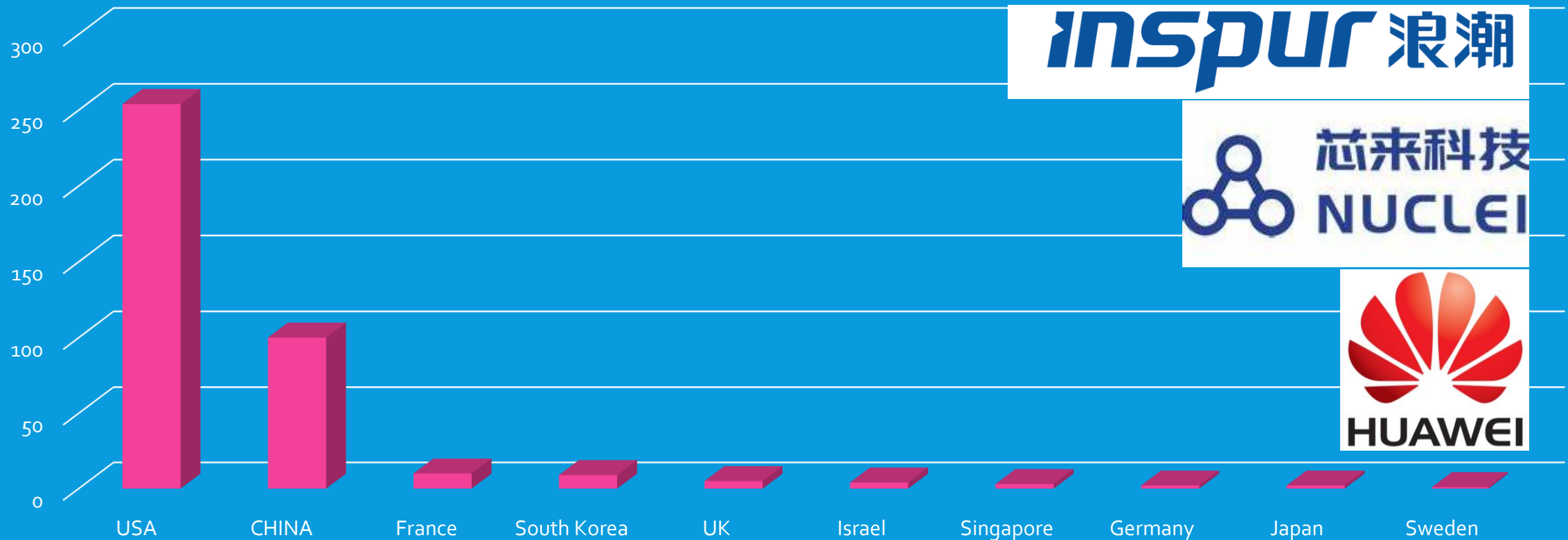
2010-2021 - Published papers by country of origin (source Lens.org)



Patent-wise, China lags behind USA but widened the gap with the rest of the world

RISC-V

Patent families count per country of origin of applicant (till 2020 included), all jurisdictions



A viable way for China to reduce its dependance may rely on RISC-V, an international effort originated in the USA!

IoT, AIoT : concrete developments already here and spreading

Servers, data centers : expected in 2 to 3 years

Smartphones, desktops computers : will take more time, and will heavily depend on OS suppliers (Microsoft, Google, Huawei)

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Thank you