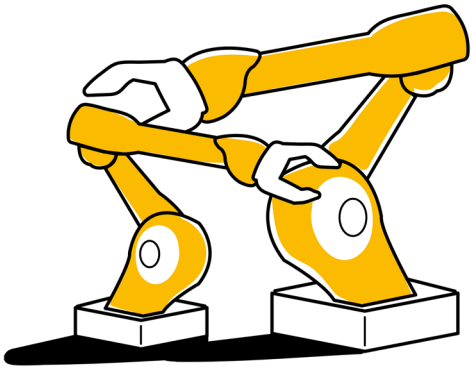
NOVEMBER 1, 2023 (REPORTING PERIOD: SEPTEMBER 26 – OCTOBER 24)

MERICS China Industries



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MERICS TOP 5

1. China wants green, efficient, and controllable computing power

At a glance: Six government agencies led by the Ministry of Industry and Information Technology (MIIT) released a two-year action plan for expanding and optimizing computing power infrastructure. Key targets are:

- Reach a computational power of 300 ExaFLOPS (EFLOPS) by 2025, with 35 percent allocated to artificial intelligence (AI) and efficient resource distribution between coastal and inland provinces
- Achieve low and ultra-low latency between the various data and computing nodes, deploy the Optical Transport Network (OTN) in 80 percent of important sites, and integrate technologies and protocols such as IPv6 and SRv6
- Ensure storage capacity of 1,800 exabytes (EB), 30 percent of which should be "advanced" capacity, and achieve full disaster recovery coverage for "important" and "core" data in key industries
- Create 30 application benchmarks per focus area, covering industries such as finance, transport, and education to promote the digital transformation of the economy

MERICS comment: The 300 EFLOPS target, which would require China to significantly expand its existing performance of 197 EFLOPS, is not new. The figure was already included in the sectoral five-year plan as the government strives to satisfy the thirst for compute of the AI and supercomputing industries. To get there, a host of measures are planned to improve the supply of computing power, boost transmission efficiency, develop indigenous and "controllable" storage technology (e.g., all-flash arrays), and reduce the network's power consumption and carbon footprint.

Since 2021, the government has prioritized the National Integrated Computing Power Network, an infrastructure mega-project to build an interconnected and efficient grid of computing hubs and data center clusters. This is also linked to a plan to have data from more economically advanced coastal areas of China processed in Western provinces, where land and electricity are cheaper. US export controls on advanced semiconductor technology are a big driver of these efforts but will also complicate their execution: While efficient use of available computing resources has become more important, lack of access to the most advanced US chips could drive up energy consumption at Chinese data centers.

Article: Action Plan for the High-quality Development of Computing Power Infrastructure (算力基础设施高质量发展行动计划) (Link)

Issuing bodies: MIIT, CAC, MOE, PBoC, NHC, SAMR

Date: August 10, 2023

2. Flying high in a green sky: China aims for green upgrade to its civil aviation industry

At a glance: Four government agencies led by the MIIT issued a plan outlining China's ambition to develop a sustainable, leading-edge aviation industry by 2035. The document aims to foster innovation at every stage of the domestic civil aviation industry's value chain, with a clear focus on developing green aviation technologies. These include electric and hydrogen-based propulsion systems, as well as sustainable manufacturing processes, lightweight components, recycling, new materials and improvements in aerodynamics. Intermediate goals, to be realized by 2025, include:

- Reduce greenhouse gas emissions, energy consumption and noise levels for domestically made civil aircraft
- Demonstrate civil aircraft powered by sustainable aviation fuels, such as hydrogen and fuel cells
- Commercialize electric aircraft and support electric vertical take-off and landing (eVTOL) aircraft to enter the pilot phase

The plan envisages that by 2035, new energy aircraft will become mainstream and an integrated, advanced and safe green aviation manufacturing system established.

MERICS comment: China wants to become a manufacturing, transportation and aviation superpower, and its push for green aviation marks a step towards that overarching national goal. Firmly embedded within the "innovation-driven development" and "high-quality development" agendas championed by Xi Jinping, the plan sends a clear signal for markets and local governments to allocate resources accordingly.

As shown by the C919, China has made progress in producing its own commercial aircraft. Yet to a large degree it remains reliant on foreign inputs, and achieving leadership in green aviation components will likely be an uphill battle due to the still dominant position of Boeing and Airbus and their suppliers in the global market. Nevertheless, success should not be too rigidly defined; even if only some of the outlined goals are achieved, the competitive boost to the up-and-coming green aviation industry could still be significant.

Interestingly, the plan calls on officials to harness the industrial and technological synergies with New Energy Vehicles and other transport-related industries, to replicate their success in green aviation. While their relevance is likely to be limited to battery-powered technologies, such as eVTOLs, this could emerge as another "leapfrogging" opportunity for China. In October, eHang became the world's first fully certified eVTOL air taxi, cleared for commercial flight.

Article: Notice on the issuance of the green aviation manufacturing industry development outline (2023-2035) (工业和信息化部等四部门关于印发绿色航空制造业发展纲要（2023-2035 年）的通知) (Link)
Issuing bodies: MIIT, MOST, MOF, CAAC
Date: October 10, 2023

3. Self-assessment requirements for industrial & IT data security get more concrete

At a glance: MIIT released draft rules for implementing data security assessments for industrial and IT data processors. The ministry is collecting feedback until November 7. The draft rules require:

- Processors of data classified as "important" and "core" to complete yearly risk assessments, either self-conducted or by trusted third parties. The reports are to be submitted to local ministries, which in turn report to the MIIT.
- Assessments cover the method and purpose of data processing, data security procedures, qualifications of personnel, potential impact in case of security breaches, and any transfer of data outside the organization.
- Cross-border data transfers must be reported and approved by the relevant authorities.
- MIIT and local authorities can conduct their own assessment of the security practices of data providers and may oversee their data security efforts.

MERICS comment: These implementation rules follow the Data Security Law and the accompanying Administrative Measures for Data Security in the Field of Industry and Information Technology, which this newsletter first reported on in October 2021. The final version of this second law has been in effect since January 1 of this year. The requirement for operators to self-assess was already stated, but these rules provide more detail on the scope of the reports.

In the same vein as these rules, in July the People's Bank of China (PBOC) released draft guidelines for the financial sector to implement data protection and data security measures. Similar guidelines and self-reporting requirements are expected to follow across different data-intensive sectors, such as healthcare, pharmaceuticals and automotives.

The requirements around cross-border data transfer overlap in part with the Measures for the Security of Cross-Border Data Transfer that came into effect last year, issued by the Cyberspace Administration of China (CAC). For individual operators, the increasing burden of compliance with various regulations from different agencies continues to be a cause for concern. Third-party organizations specialized in conducting data security assessments – referred to in the implementation rules – may help to alleviate the burden put on companies, by standardizing review procedures and allowing them to outsource certain steps.

Article: Implementation Rules for Data Security Assessment in the Field of Industry and Information Technology (Draft for Comments) (公开征求对《工业和信息化领域数据安全风险评估实施细则（试行）（征求意见稿）》的意见) (Link)
Issuing body: MIIT
Date: October 9, 2023

4. Under the microscope: SAMR pushes local measuring instrument firms to level up

At a glance: The State Administration of Market Regulation (SAMR) issued directives to advance the development of the measuring instruments sector. The policy includes a list of priority technologies, with instruments related to scientific research and engineering (such as advanced scientific microscopes and coordinate measuring instruments) featuring most prominently. The list also covers instruments related to healthcare, ICT, sensors and the environment.

By 2025, the regulator aims for some domestic measurement instruments to approach and reach an internationally advanced level, before becoming world leading in some areas and overcoming "bottleneck" technologies by 2035. The guidelines instruct officials to:

- Overcome weaknesses in the measuring instrument industry and gradually realize the localization and import substitution of high-end measuring instruments
- Improve basic measurement capabilities, strengthen research on quantitative transmission and traceability technology, including based on quantum technology
- Strengthen financial support, for instance by encouraging private capital funds to invest in related research and related companies to seek funding on the capital markets

MERICS comment: These guidelines build on the Metrology Development Plan (2021-2035) released in January 2022, adding more concrete directives focused on measuring instrument production. This remains a key weakness in China's domestic industrial capabilities. China's firms are concentrated in mid-to-low-end products, suffer from a lack of key core technologies and are reliant on imports of high-end instruments and core components.

For Beijing, this must change so the country can achieve a higher degree of independence and control over its measuring and quality assurance system. As the government attempts to shift toward manufacturing as the main growth driver for the economy, high-quality measuring instruments will be essential for developing innovative products and supporting industrial upgrading.

China's weakness in basic research and the fragmented nature of measuring instrument technology will make advances difficult, especially since policymakers in the US and EU are now increasingly wary of sharing technology in critical areas such as quantum and AI. While it's unlikely China will be able to cultivate local high-end measuring instruments across the board, long-term investment in R&D is likely to yield success in some areas.

Article: Guiding Opinions on Promoting the High-Quality Development of the Metrology Industry (市场监管总局关于计量促进仪器仪表产业高质量发展的指导意见) (Link)
Issuing body: SAMR
Date: October 19, 2023

5. State Council strives to turn global lead in patents into technology leadership

At a glance: The State Council issued a three-year action plan for patent commercialization and application. The plan sets targets for 2025, including reaching CNY 800 billion in domestic technology trade involving patents, CNY 1 trillion output value of registered patent-intense products, and a batch of firms with key patents in hard technologies. It proposes to do this by:

- Promoting patent commercialization, including through mapping current patents in a national database and supporting sectoral patent application offices
- Addressing blockages, including legal restrictions on commercializing on-the-job inventions at public universities and research institutes, and by improving intellectual property (IP) protection
- Nurturing IP trade by promoting open licenses, building platforms, and promoting the use of IP as collateral for loans. Foreigners are encouraged to commercialize patents in China under the principle of voluntary and equal marketization

MERICS comment: China leads the world in patent applications, accounting for 46.6 percent of the global total in 2021, according to the World IP Organization. But only 3.9 percent of patents filed by Chinese universities are commercialized, reports the China National IP Administration, and 13.3 percent of patents filed by R&D institutes. One reason is the poor quality of patents. The emphasis on patents in evaluations prompts researchers, labs and companies to pursue volume over value. The action plan does not address patent quality and instead focuses on optimizing patent use.

Steps to remove barriers for commercialization may be insufficient. Pilots since 2020 give universities more leeway in licensing patents, although these remain state property. The 2021 Science and Technology Progress Law empowers project leads to commercialize or license results. The current action plan promotes open rather than exclusionary licenses with the idea that multiple parties working on commercialization simultaneously increases the chances of success. However, companies are unlikely to favor this approach.

Although Beijing realizes that patents are key to integrating the innovation chain, progress remains piecemeal and slow. Local officials will welcome foreign actors who bring patents, as well as the know-how to increase the yield of R&D investment.

Article: Action Plan for Patent Commercialization and Application (2023-2025) (专利转化运用专项行动方案（2023—2025 年）) (Link)
Issuing body: State Council
Date: October 19, 2023

NOTEWORTHY

Policy news

- *October 8:* MOST released trial measures outlining the requirements for ethics review procedures in the field of science and technology (S&T), building on the guidelines to strengthen S&T ethical governance released in March 2022 (MOST notice)
- *October 11:* MIIT launched applications for the 2023 innovation challenge covering 21 focus areas in the field of smart manufacturing system solutions; the program seeks to master key technologies and advance independent and controllable supply capabilities (MIIT notice)
- *October 11:* The National Information Security Standardization Technical Committee released draft rules on the basic security requirements for generative AI services (TC260 notice)
- *October 13:* The State Council announced that MOST will transfer certain responsibilities to MIIT, including the formulation of plans and policies for high-tech development and industrialization and guiding the construction of S&T parks (State Council notice)
- *October 18:* MIIT released the list of characteristic SME industrial clusters for 2023, for which officials are encouraged to direct policy support and increase resource investment (MIIT notice)
- *October 24:* Yin Hejun (deputy party secretary of the Chinese Academy of Sciences) was appointed as Minister for Science and Technology, replacing former Minister Wang Zhigang (Xinhua article)

Corporate news

- *September 28:* Reports suggest that Kyndryl, IBM's former IT services unit, plans to split off its China business, potentially affecting around 6.000 employees, amid growing geopolitical tensions and Chinese data laws (Financial Times article)
- *September 28:* China Eastern Airlines ordered 100 domestically produced C919 aircraft for USD 9.9 billion; the order boosts China's ambition to rival Airbus and Boeing in the narrowbody aircraft market (Bloomberg article)
- *October 11:* China's photonic quantum computer, the Jiuzhang 3 prototype, broke the quantum computing world record by solving problems one million times faster than its predecessor; the technology offers potential applications in fields, such as big-data optimization and material design (Yicai article)
- *October 12*: BioNTech signed a deal with Chinese drugmaker MediLink Therapeutics to acquire the worldwide rights to its new cancer drug. BioNTech

will make an initial payment of USD 70 million to MediLink, which may increase up to USD 1 billion (Yicai article)

- *October 12*: China's first hydrogen-powered vessel, the Three Gorges Hydrogen Boat No 1, completed its maiden voyage, showcasing the application of hydrogen fuel cell technology in inland waterway vessels (China Hydrogen Bulletin substack)
- *October 19*: Reports revealed that Stellantis is selling automotive assets worth USD 234 million, including land use rights and buildings, to its Chinese partner Dongfeng Motor Group, following the discontinuation of Jeep production in China (Automotive News Europe article)
- *October 23*: Chinese authorities launched multiple investigations into Taiwan-based Foxconn regarding its tax audits and land use, and also detained one senior executive and later two more former employees of media agency GroupM (Business Insider article)

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