The Insights for Taiwan from the Sovereign AI Development Strategies of Various Countries

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The World Economic Forum (WEF) has released the " Sovereign AI: What it is, and 6 strategic pillars for achieving it," providing guidance to countries on how to develop sovereign AI while considering economic growth and national security. WEF defines sovereign AI as "the ability of a country to plan and establish its own AI infrastructure, core capabilities, and industries to enhance national competitiveness and safeguard future development." With the rapid development of generative AI, risks such as misinformation and job displacement increase, posing threats to society and national security. Taiwan also faces challenges, such as China dominates Chinese language models. Developing sovereign AI will help ensure that model outputs align with Taiwan's language and cultural needs, avoiding foreign cultural and political influences.

The key to achieving sovereign AI lies in establishing domestic AI capabilities, ensuring that AI development aligns with national values, and reducing dependence on external technology. This involves two major aspects: first, national ambition, where countries must cultivate their own AI technology, developing tailored solutions for specific domestic needs such as healthcare or agriculture; second, the technical aspect, where sovereign AI systems must operate independently, protecting data privacy and reducing reliance on external data. However, the specialization of such systems may limit their flexibility, and training large models requires substantial computing resources and infrastructure, which may exceed the capabilities of some countries. Additionally, data scarcity and a lack of expertise pose challenges, particularly in ensuring system protection from cyberattacks and safeguarding data security.

The strategies for developing sovereign AI across nations emphasize building domestic AI capabilities to maintain economic competitiveness and safeguard national values. WEF has proposed "Six Strategic Pillars for Achieving Sovereign AI," which include digital infrastructure, workforce development, research innovation, regulatory frameworks, industry incentives, and international cooperation, providing countries with a roadmap. These strategies strengthen AI applications in sectors such as aerospace, defense, and education, while ensuring data security and independent technological operation. According to the 2023 Global AI Index, the top five ranked countries (the U.S., China, Singapore, the U.K., and Canada) excel in infrastructure,

research and development, and commercial applications. Each country's sovereign AI strategies differ, with the EU focusing on building trustworthy AI frameworks, China prioritizing AI applications and national security, and the U.S. emphasizing innovation and leadership. Other countries like India, Singapore, and the Netherlands are actively investing in AI infrastructure and large language models to address global competition.

In response to the trend of sovereign AI development, Taiwan's National Science and Technology Council is promoting the "Localization of Critical Application Systems," emphasizing the need for Taiwan to leverage its semiconductor advantages and develop autonomous AI systems to safeguard cybersecurity and national security. Taiwan's sovereign AI strategy is application-centered, focusing on addressing challenges such as climate change, energy demands, population aging, and the threat from China. Specific measures include strengthening digital infrastructure, particularly advancing AI supercomputers like "Taipei-1," and ensuring data sovereignty and security. Taiwan aims to promote " adapt AI for industry and adapt industry for AI" while expanding the application of Trustworthy AI Dialog Engine. Talent development is key, and the cultivation of AI system developers is essential. Finally, Taiwan should actively engage in international cooperation, maintain competitiveness in the global AI race, ensure digital sovereignty, and safeguard national security and economic interests from external dependencies.