A Brief Analysis of the Technological Trends and Implications of "Precision Health" Exhibits at Expo 2025 Osaka, Kansai

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The Expo 2025 Osaka, Kansai, officially set to open on April 13, 2025, on Yumeshima in Osaka, Japan, highlights how "precision health technologies" can address the societal challenges brought about by an aging population. As both Taiwan and Japan transition into "super-aged" and "ultra-aged" societies, respectively, the technologies on display reflect critical focal points in healthcare innovation. This article examines the expo's exhibits through three main lenses: (1) cross-disciplinary PHR integration services, (2) care robots that accurately respond to real-life scenarios, and (3) forward-looking technologies that reshape healthy living.

Cross-Disciplinary PHR Integration Services Powered by AI

During the Expo, Japan's Ministry of Economy, Trade and Industry (METI) launched an integrated data platform called PHR CYCLE, which serves as a demonstration site for cross-sectoral PHR (Personal Health Record) data integration services. Visitors can log into this platform to explore a range of PHR data service case studies, experience digital health services firsthand, and provide feedback. In this regard, Taiwanese authorities could develop a similar PHR Data Utilization and Value-Added Service Innovation Platform, bringing together notable domestic case studies and linking them with service platforms. This could be coupled with hybrid (physical and virtual) demonstrations at key annual healthcare exhibitions to collect public feedback while showcasing local software and hardware innovations.

Scenario-Based Care Robot Demonstrations

Japan's Ministry of Health, Labour and Welfare (MHLW) supports universities and care institutions through its "Platform Project for the Development, Validation, Dissemination, and Promotion of Care Robots to Improve Productivity in the Field of Care." This initiative established "Living Labs" that simulate real-life environments to test and evaluate care robots. At the Expo, exhibition areas were designed to reflect the life stages of caregivers and care recipients, creating narrative-based spaces that inspire visitors to envision practical robotic care solutions. Taiwan could adopt a similar

supply-demand integration strategy, encouraging its university research centers, laboratories, and care institutions to establish Care Robot Prototyping and Evaluation Centers. These would help manufacturers develop prototypes with practical value and coordinate with related exhibitions to create thematic displays that simulate real-life care contexts, encouraging exploration of innovative applications in robotic caregiving.

Digital Twins and Regenerative Medicine for a Reimagined Healthy Lifestyle

With “Rebirth” as the central theme, Osaka Prefecture and Osaka City have established the Osaka Pavilion for Medical and Health Innovation, integrating regional academia-industry research partnerships in regenerative medicine and digital health. The pavilion offers immersive experiences of future healthy lifestyles while dynamically showcasing breakthrough technologies and sharing the vision for a regional precision health industry ecosystem. In response, Taiwan could build on its Smart Care Validation Fields, linking local healthcare sites and associations to create an Aging-Friendly Technology Exhibition Center. This center could host a Senior Tech Product Advisory Panel, composed of elderly users and long-term care providers, to test and assess the real-world functionality of new precision health technologies. Their feedback could guide R&D institutions in refining their strategies and identifying combinations of technologies with strong market potential.