



Fujisawa Lab

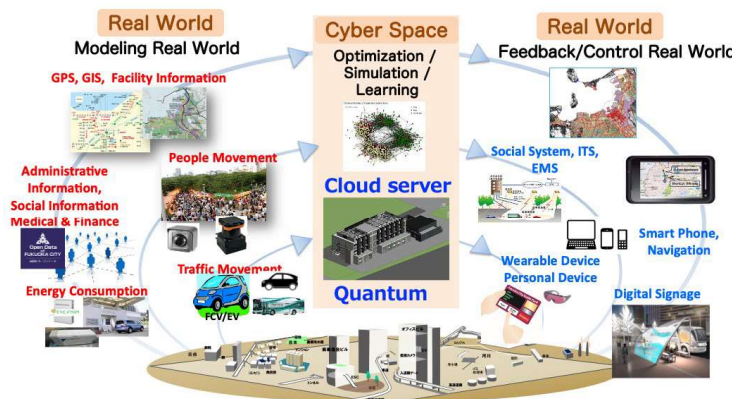
The realization of digital twins aims to solve various challenges faced by cities, regions, and industries.

The Laboratory for Future Interdisciplinary Research , Digital Twin Unit

<https://sites.google.com/view/fujisawa-lab-en/>

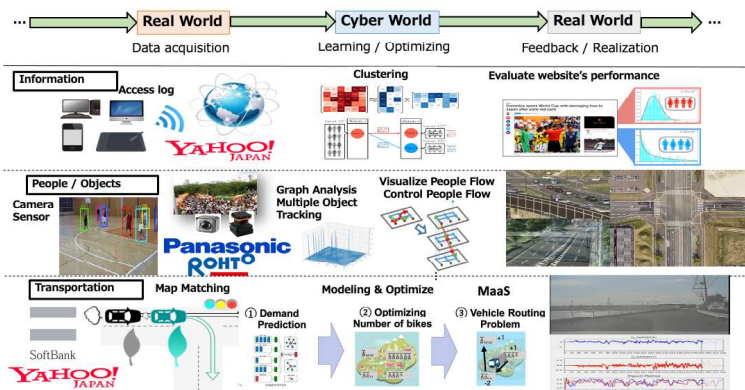
- Creation of industrial applications through the realization of digital twins
- Mathematical models and algorithms for mobility optimization
- Utilization of deep learning and quantum computing in production settings
- Detection and tracking technologies for moving objects using deep learning
- Large-scale data analysis using supercomputers

Efforts are being made to construct digital twins (integrating physical and cyber spaces) using the latest mathematical and information technologies, thereby advancing the resolution of various challenges faced by cities, regions, and industries, in what is known as the realization of Society 5.0 (a super-smart society). Our unit is collaborating with private companies to drive projects that integrate reality with virtual space, aiming to solve challenges through the realization of digital twins.



Components of Cyber-Physical Systems (CPS) Utilizing Digital Twins:

By digitizing real-world phenomena, application development aimed at improving the real world becomes possible. CPS constructs digital twins representing the pair of the physical world and cyber space.



How will CPS change things?



Functions of Mobility Optimization in CPS:

Mobility predictions, optimizations, and controls can be performed by mathematically expressing three types of mobility within CPS.

Industry-Academia Collaboration Leveraging CPS (Joint Research with Rohto Pharmaceutical):

CPS will be implemented at Rohto Pharmaceutical's mother factory, the Ueno Techno Center, to achieve smart factory operations. The initiative will eventually be expanded across the entire supply chain.