

# Kitsuregawa, Toyoda, Nakano, Nemoto LAB.

## [Advanced Technologies for Ultra-large-scale Data]

Center for Information Fusion

<http://www.tkl.iis.u-tokyo.ac.jp/>

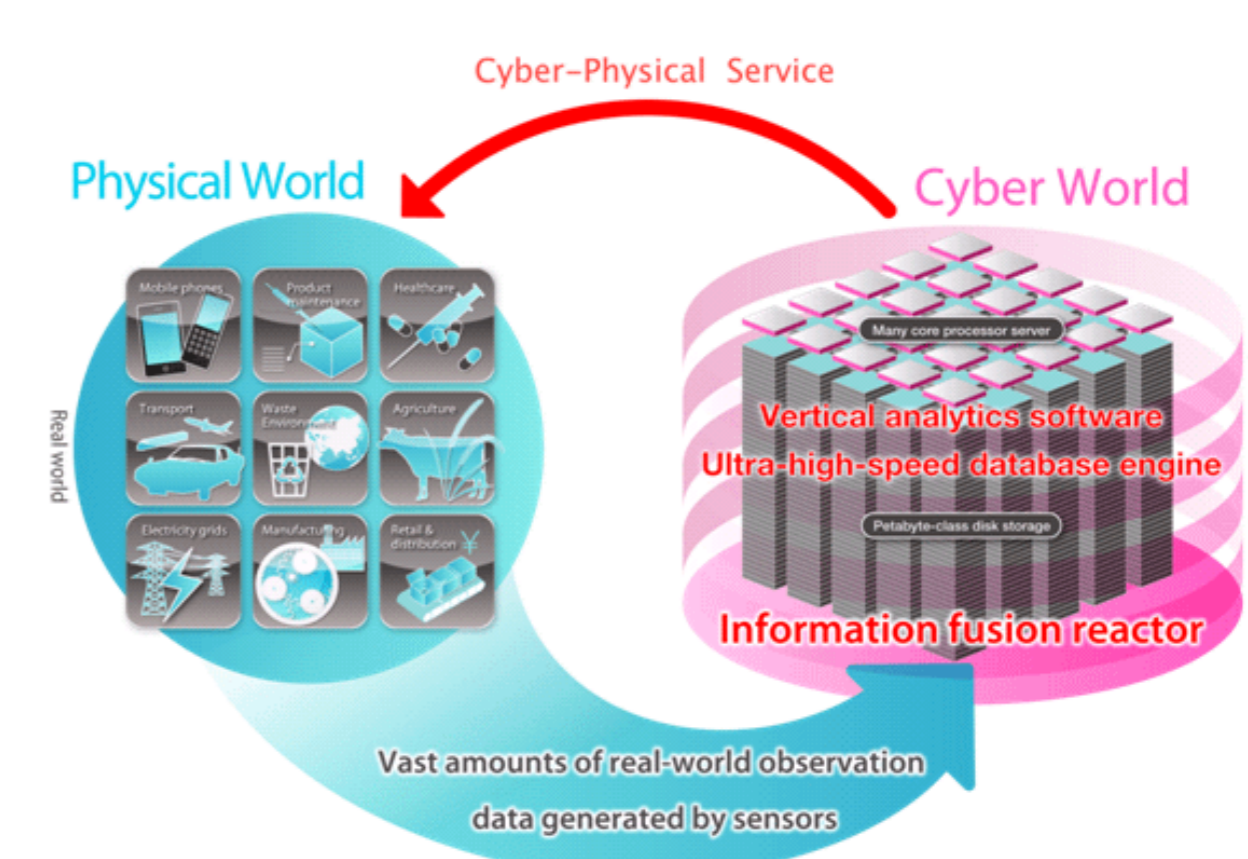
### Database Engineering, Web Engineering

Information and Communication Engineering

The volume of data created by human, sensors and computers has explosively increased in recent years. Our Lab has wider focus on researches based on database engineering, which is the basis of the technology for handling large quantities of data, including system software, advanced applications, hardware and algorithms.

### Funding Program for World-Leading Innovative R&D on Science and Technology (FIRST): Development High Performance Database Engine for the Information Explosion Era and Research on Cyber-physical Services

Our research group is developing "World-leading High Performance Database Engine" based on a novel out-of-order execution principle. The engine is projected to achieve x800 boosting for substantial range of analytical queries. Our group also plans to construct an experimental system of next-generation strategic social services (cyber physical services) to clarify effectiveness of the new database engine.



### Ultra-large-scale Web Archive and Cyber Space Analysis System

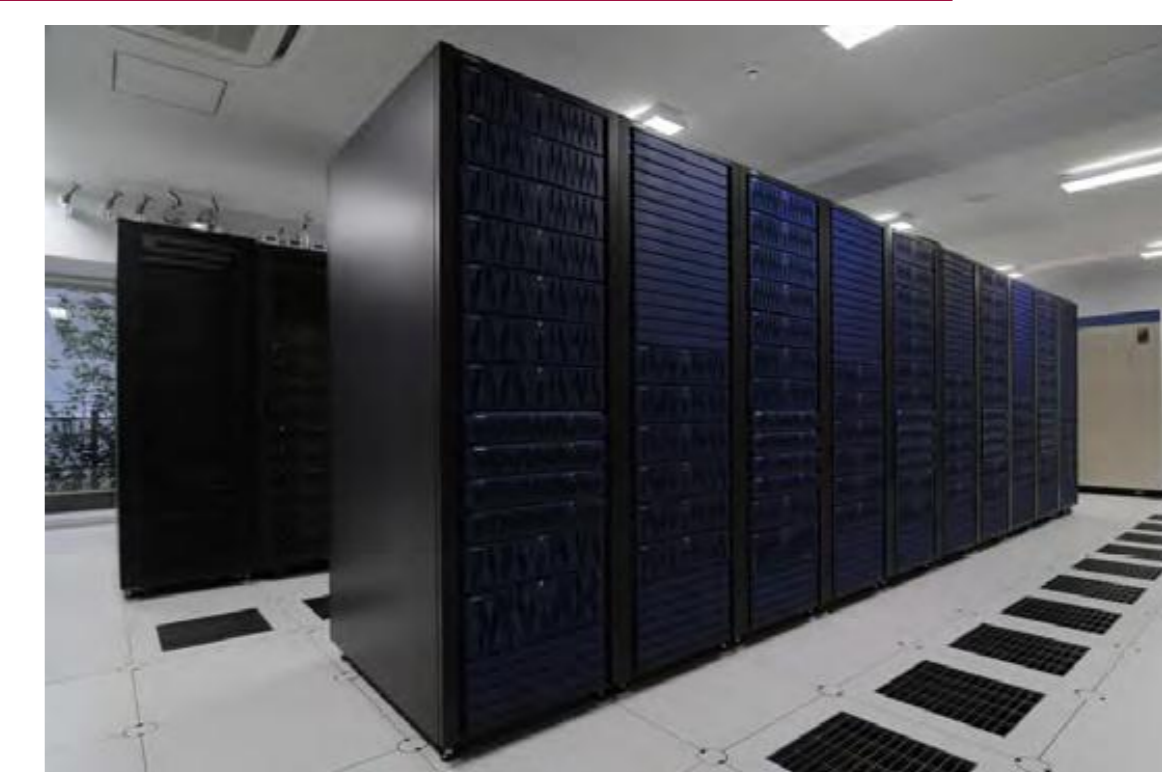
Our lab has continuously collected Japanese Web pages since 1999 and has constructed a Web archive system including over 16 billion pages. We are trying to develop an analysis system based on the Web archive. We have then constructed an interactive visualization system to show a cyber map that is a result from structural and temporal analyses on a large display wall.



The cyber map visualization system on the display wall

### Petabyte-scale Global Environment Information Fusion System

It is necessary to access usable information on the environment to deepen our understanding of the earth environment. We have been developing a large scale global environmental information fusion system for data integration and analysis that includes the supporting functions of life cycle data management, data search, information exploration, scientific analysis, and partial data down-loading.



Petabyte-scale global environment information storage

### Reliable and Power-saving Network Control Technologies for Cloud Computing

Cloud computing -- large-scale on-demand distributed computing environment -- has become very popular. We are trying to develop a new technology to construct cloud applications with dynamic load balancing and fault resilience. Large-scale search problems have some difficulty to apply these techniques, therefore we're focusing on distributed computing platform to develop such applications with ease.



Cloud Computing environment that has more than 1000 cores