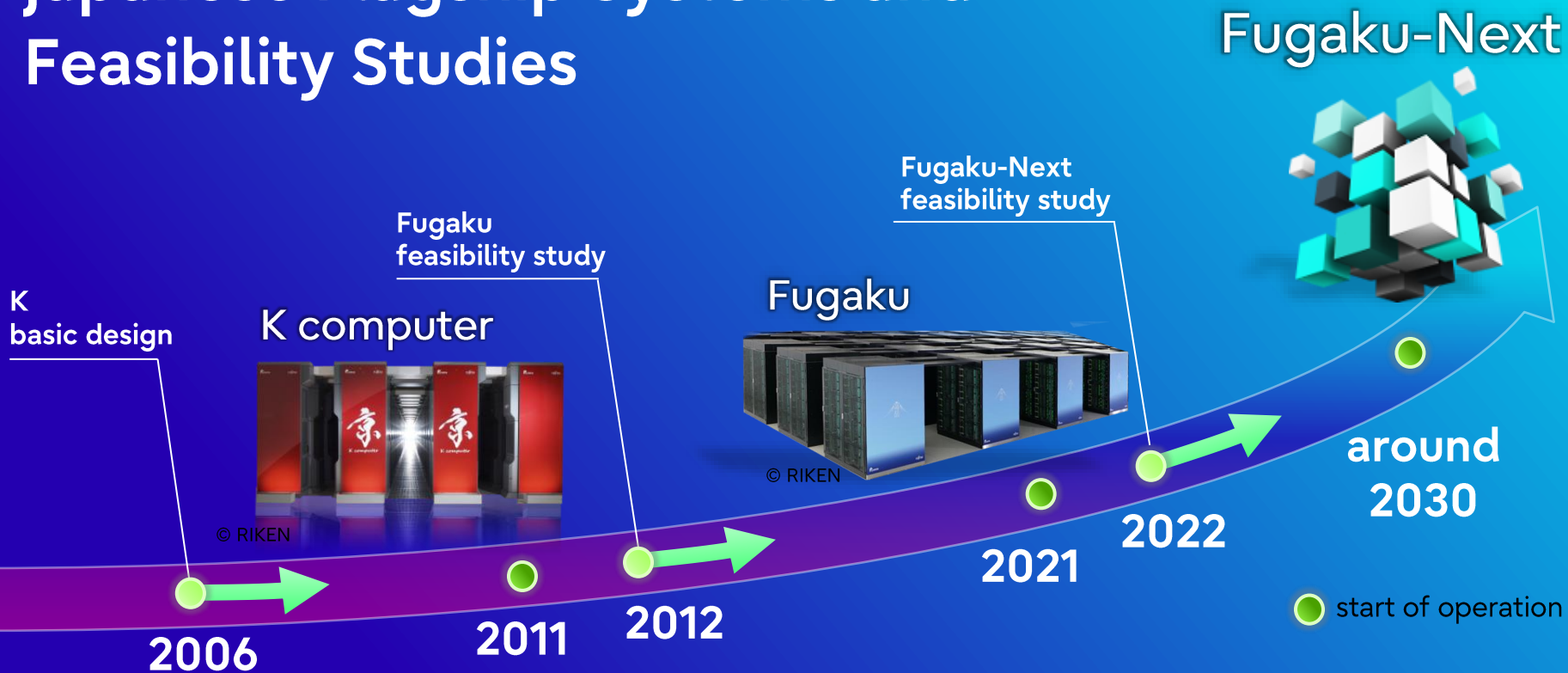


# Feasibility Studies on Next-generation Supercomputing Infrastructures



# Japanese Flagship Systems and Feasibility Studies



The feasibility study for the next computing infrastructure started on Aug. '22

# Background

## The importance of data-intensive science is increasing

- Research with converging simulation, AI, and other technologies

## Digital transformation of research activities is required

- Efficient research leveraging AI, automation, and other technologies
- Remote access to research facilities and equipment

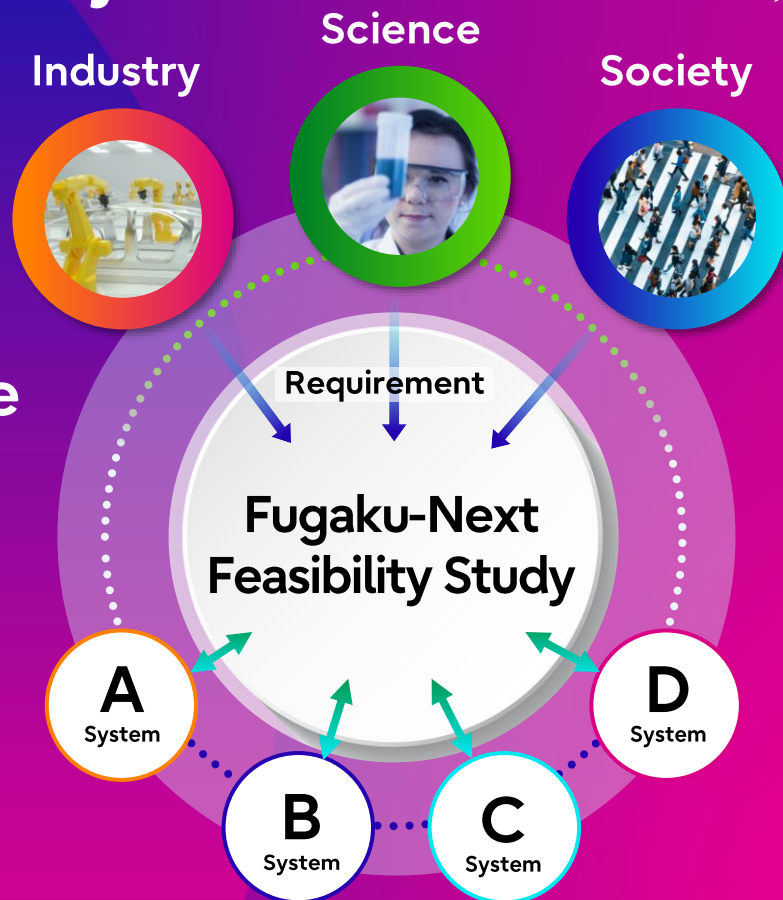
## Supercomputing is a core technology for social digital transformation

**Developing the next-generation computing infrastructure is essential to the government's strategy**

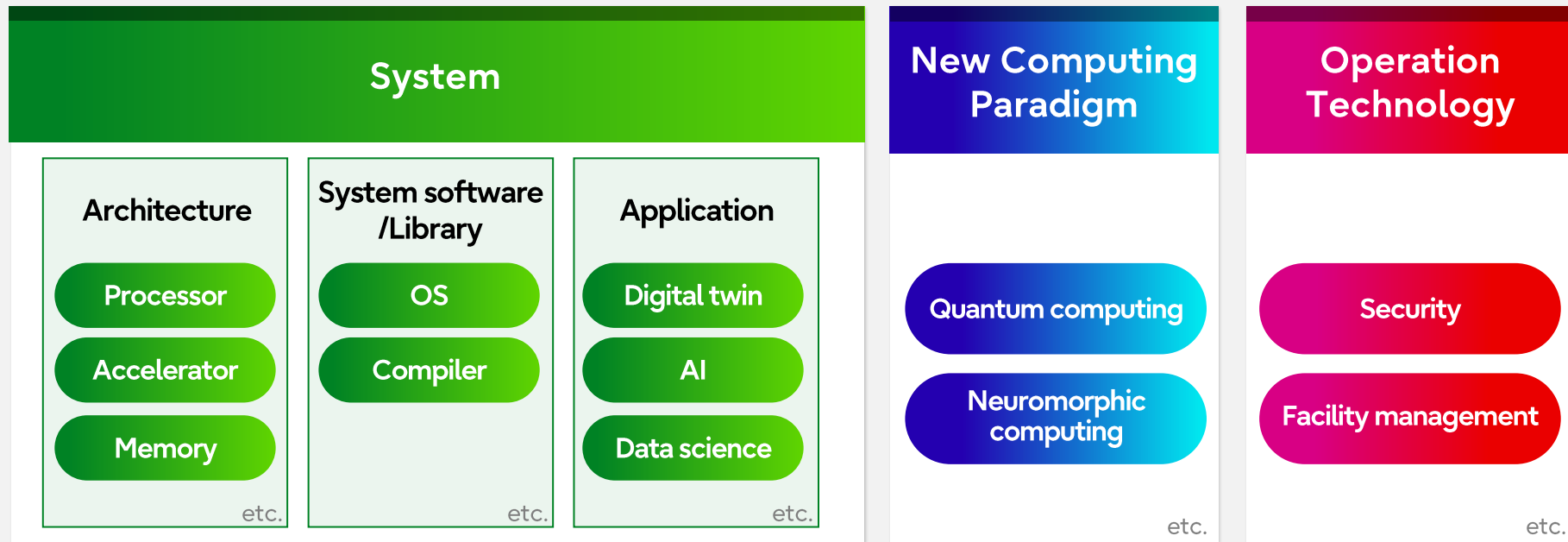
# Objectives of the Overall Project

To clarify the needs of  
industry, society, and science

To propose the options of  
the feasible systems



# Research Items of the Overall Project



Fujitsu is a member of the system research team represented by RIKEN R-CCS

**MEXT** Ministry of Education, Culture, Sports, Science and Technology

Program Director Conference

Advisor · User WG

Steering Committee

**System Research Team**

RIKEN R-CCS 

- Architecture
- System Software / Library
- Application

**System Research Team**

Kobe University

**New Computing Paradigm Research Team**

Keio University

- Quantum / Neuromorphic Computing

**Operation Technology Research Team**

The University of Tokyo

- Infrastructure / Software Management
- Security

Only name of representative institute for each research team are written. (Detail: [https://www.mext.go.jp/b\\_menu/boshu/detail/mext\\_00229.html](https://www.mext.go.jp/b_menu/boshu/detail/mext_00229.html))



- To propose goals and priorities of system evaluation items
- To evaluate options of system architecture by target applications

## The architectural concepts envisioned by Fujitsu

### Performance



High performance in  
scientific computing  
and AI area

### Eco-system



Compatibility with  
existing eco-system

### Heterogeneous system



Heterogeneous systems  
connected by  
high bandwidth network

## Architecture: Processor, Accelerator, Memory, Storage, I/O, etc.

- Emerging high-density packaging technologies
- Energy-efficient and high-performance acceleration technologies
- Low latency and high bandwidth memory
- High-bandwidth interconnection over heterogeneous systems

## System Software: OS, Compiler, Filesystem, Library, Framework, etc.

- High productivity and versatility
- High parallel performance and reliability
- Seamless use of heterogeneous systems

## Application: AI, Data Science, Digital Twin, etc.

- Scientific applications for contribution to SDGs
- Data analysis and AI applications for Society 5.0 era



# Fujitsu's Schedule

		FY2022			FY2023			
		2Q	3Q	4Q	1Q	2Q	3Q	4Q
Architecture								
		packaging technologies, accelerator study	accelerator detailing structure/power/cost, interconnect study	accelerator feasibility, I/O, heterogeneous system study	node/system architecture, accelerator details study		node/system architecture, accelerator refinement	
System Software								
					Open source/ISV, software requirement study	software technology detailing		
Application								
		science computing, data analysis, AI application selection	science computing, data analysis, AI application specification detailing		science computing, data analysis, AI application performance evaluation			

# Fujitsu's challenges for the future

Contribution to the resolution of social issues

Continuous development of next-generation technology



**Thank you**

