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Physical AI Technology Strategy

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The Era of Physical AI

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From "Environments Designed for Robots" to "Robots Adapted to Human Environments"

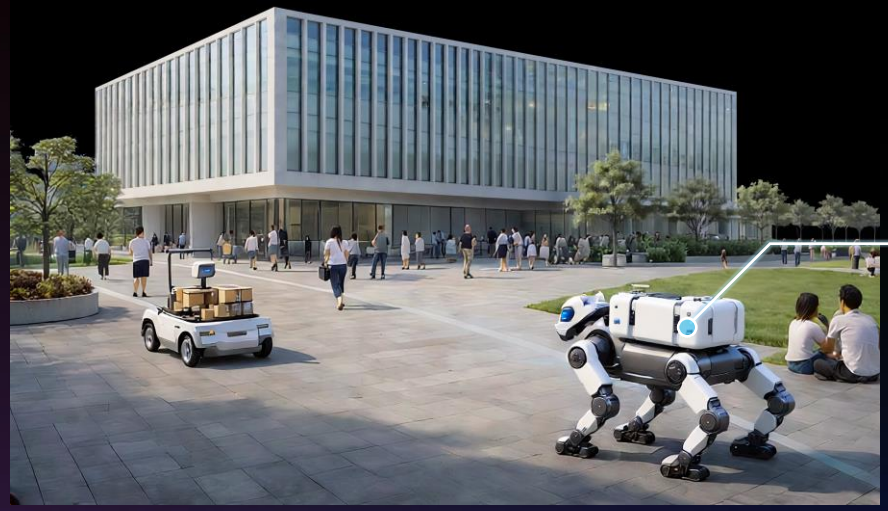
Before

Robots perform predefined tasks in an environment

designed specifically for robots

After

Multi-purpose robots capable of performing tasks in human environments



Embodied AI

From "Thinking AI"
to "Acting and Adapting AI"

Fujitsu's Robotics Research History

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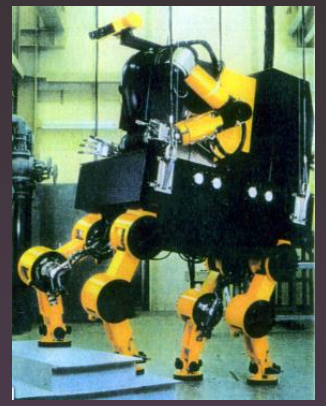
1983~91

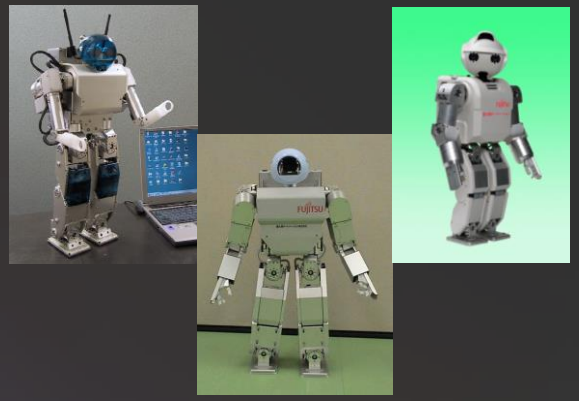


Extreme-environment work robot

1996

Space robot

2001~2005

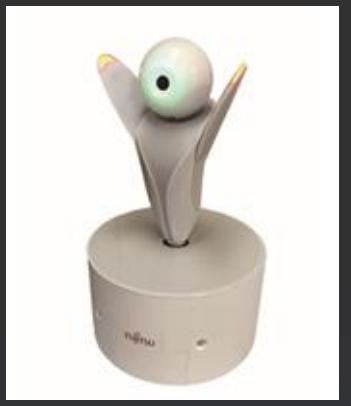


Small humanoid HOAP

2005

Service robot enon

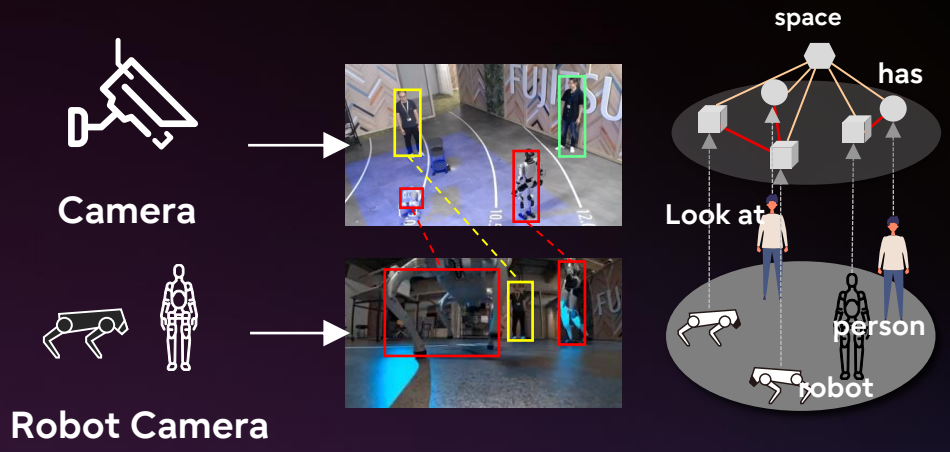
2016

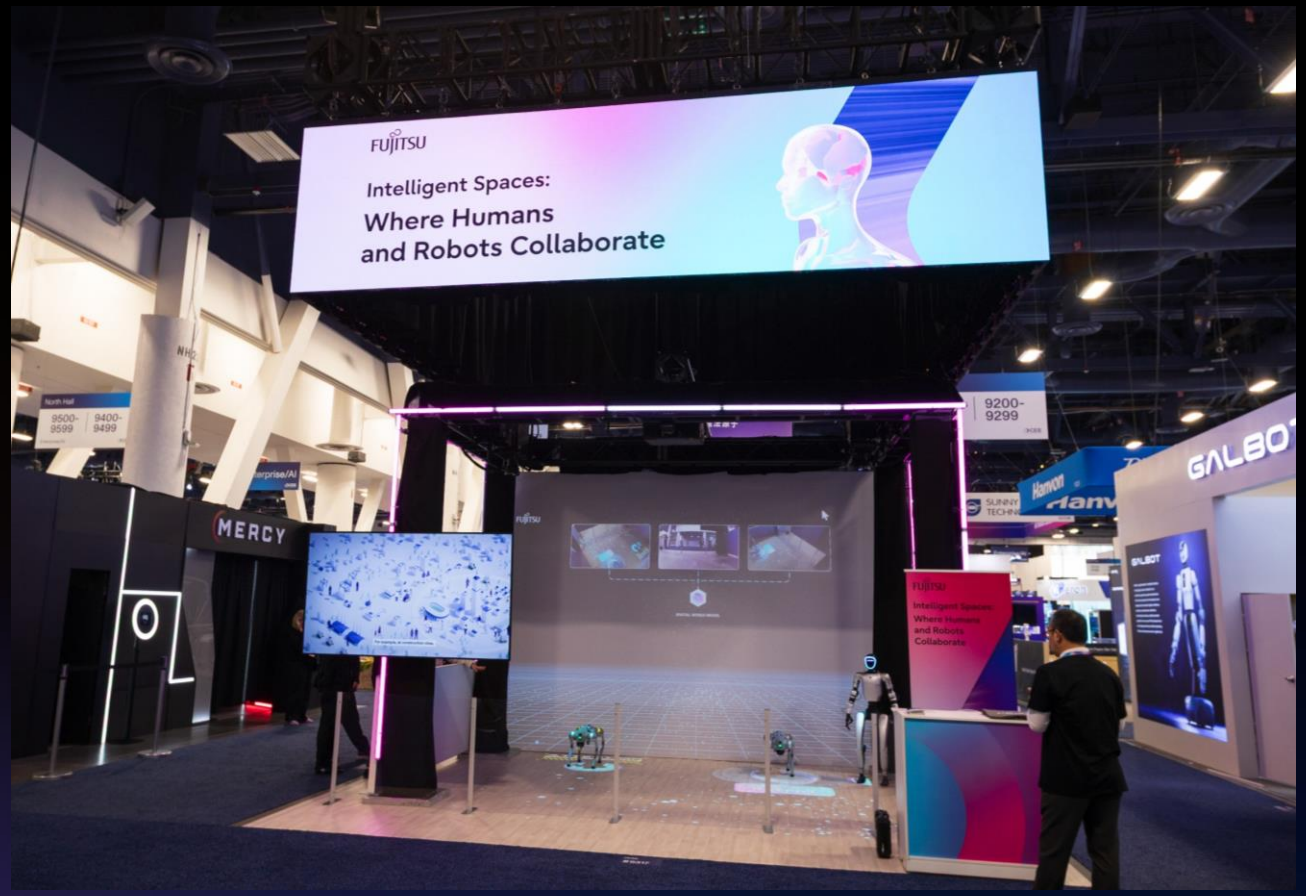


Mediator robot Robopin

International CES 2026

Exhibited spatial world model technology that enables collaboration between humans and robots





Vision

People and a variety of robots coexisting
and collaborating safely in various work environments

Robots evolve through being exposed to human on-site expertise, leading to more advanced collaboration; this knowledge is shared across locations and tasks, contributing to the development of society as a whole

Physical AI Technology Strategy: Fujitsu Kozuchi Physical OS

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Spatial operating system where robots collaborate in a sovereign environment

Fujitsu Kozuchi Physical OS

IT Business Application | AI Agent

User

Input request

Task planning Data linkage

Understands business tasks, generates optimal tasks, and plans robot actions

- Domain-specific Takane
- Robot task generation
- Hetero robot collaboration control
- Robot RAG

Brain intelligence

Improving a robot's ability to adapt to tasks based on past experiences and imitation of humans

- Distributed Memory
- Reinforcement Learning
- Imitation Learning
- Sim2Real

World intelligence

Provides environmental information for safe and accurate robot operation

- Spatial world model
- Socio-physics simulation
- Affordance generation
- Multimodal sensing

Physical AI security

Physical AI safety

Action

Feedback

Robot・Sensor

Robot arm | Humanoid | Quadruped robot | AMR | Camera | Sensor

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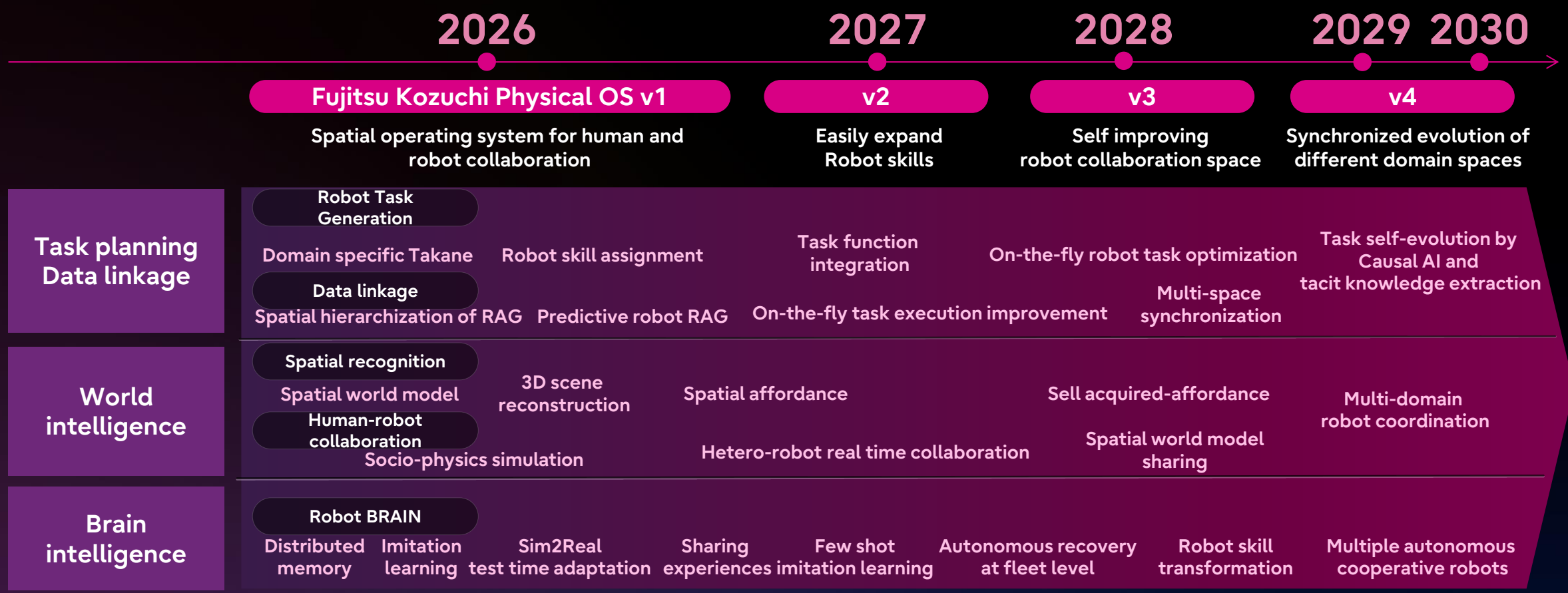
Toward a Future Where Robots and Humans Coexist

Fujitsu Kozuchi Physical OS Roadmap



Today's demo

This room

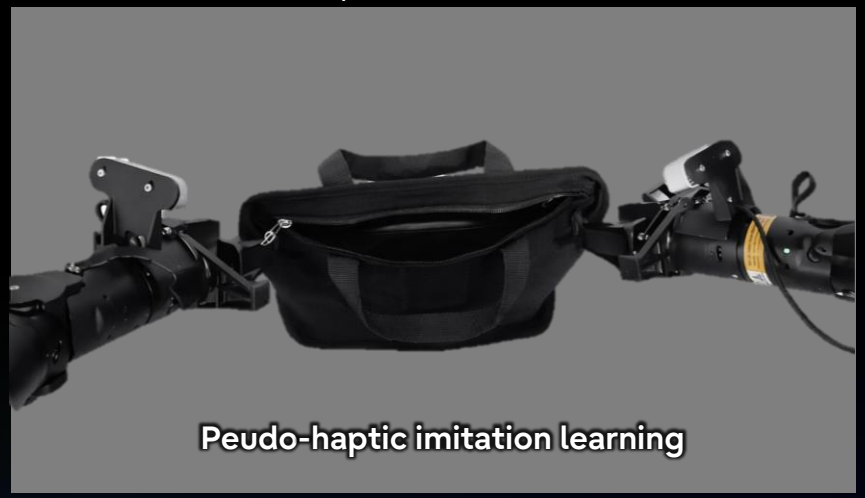
World intelligence

Spatial World Model

Entrance Area

Brain intelligence

Achieving advanced robotic movements without the need for special sensors



Presentation Room

3D scene reconstruction, Domain-specific Takane

New Research Collaboration

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Fujitsu - Carnegie Mellon Physical AI Research Center

Fujitsu and Carnegie Mellon University

Since 1985: Fujitsu staff have been assigned to Carnegie Mellon University as visiting researchers

2018: Fujitsu Research of America Pittsburgh Office opens

Recent Collaborations

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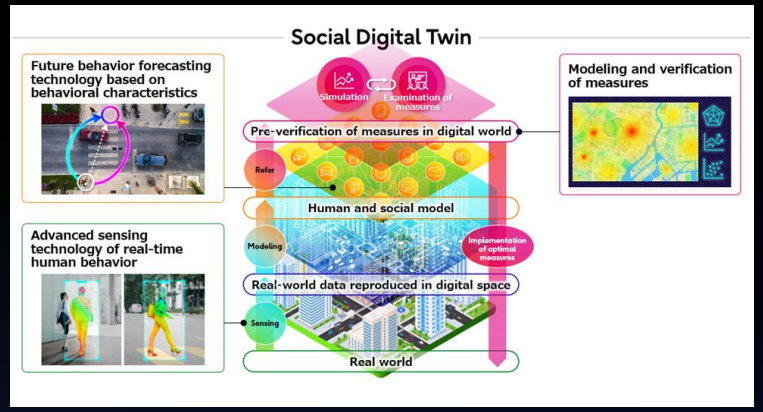
AI	Data & Security	Converging Technologies
Agentic AI	Multi-AI Agent Security	Social Digital Twin



Video Message from Dean of Carnegie Mellon University

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Martial Hebert

Dean and Professor
School of Computer Science

Professors involved in the Research Center

Yonatan Bisk
Assistant Professor
Language Technologies

Fernando de la Torre
Research Professor
Robotics

Tim Dettmers
Assistant Professor
Machine Learning

Laszlo Jeni
Assistant
Research Professor
Robotics

Kris Kitani
Associate
Research Professor
Robotics

David Lindlbauer
Assistant Professor
Human Computer
Interaction

Yorie Nakahira
Assistant Professor
Electrical and
Computer Engineering

Graham Neubig
Associate Professor
Language Technologies

Jean Oh
Associate
Research Professor
Robotics

Sean Qian
Professor
Civil and Environmental
Engineering

Sebastian Scherer
Associate
Research Professor
Robotics

Peter Spirtes
Department Head
and Professor
Philosophy

Kun Zhang
Professor
Philosophy

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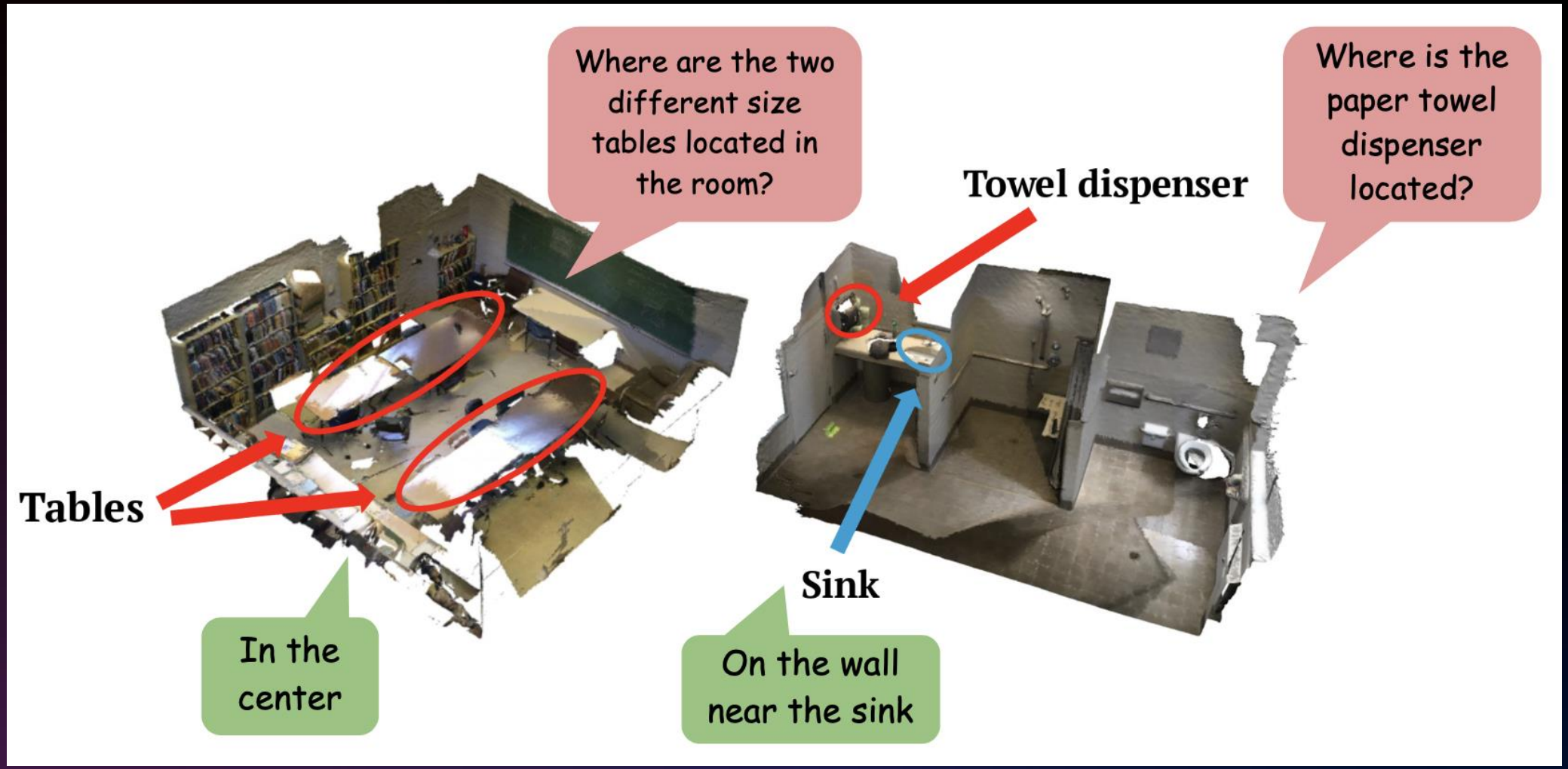

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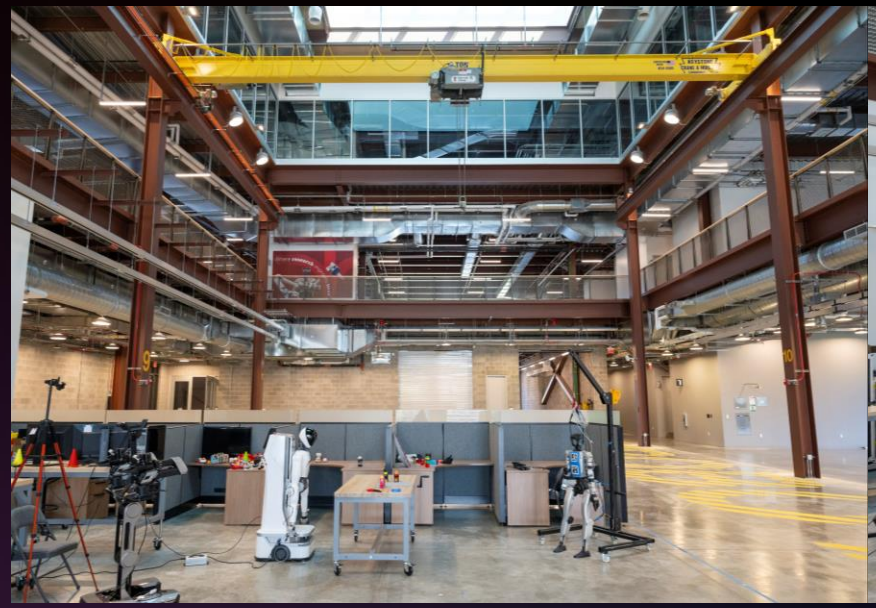

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Carnegie Mellon University Robotics Innovation Center

Core technologies from this joint research center will be integrated into Fujitsu Kozuchi Physical OS to accelerate its early implementation in society and contribute to the creation of a society where humans and robots coexist