Leveraging the campus as a test bed for sustainability: *Catalyzing innovation, Imagination, and Impact.*

Julie Newman, Ph.D.
Director of Sustainability

Lecturer, Dept. Urban Studies and Planning

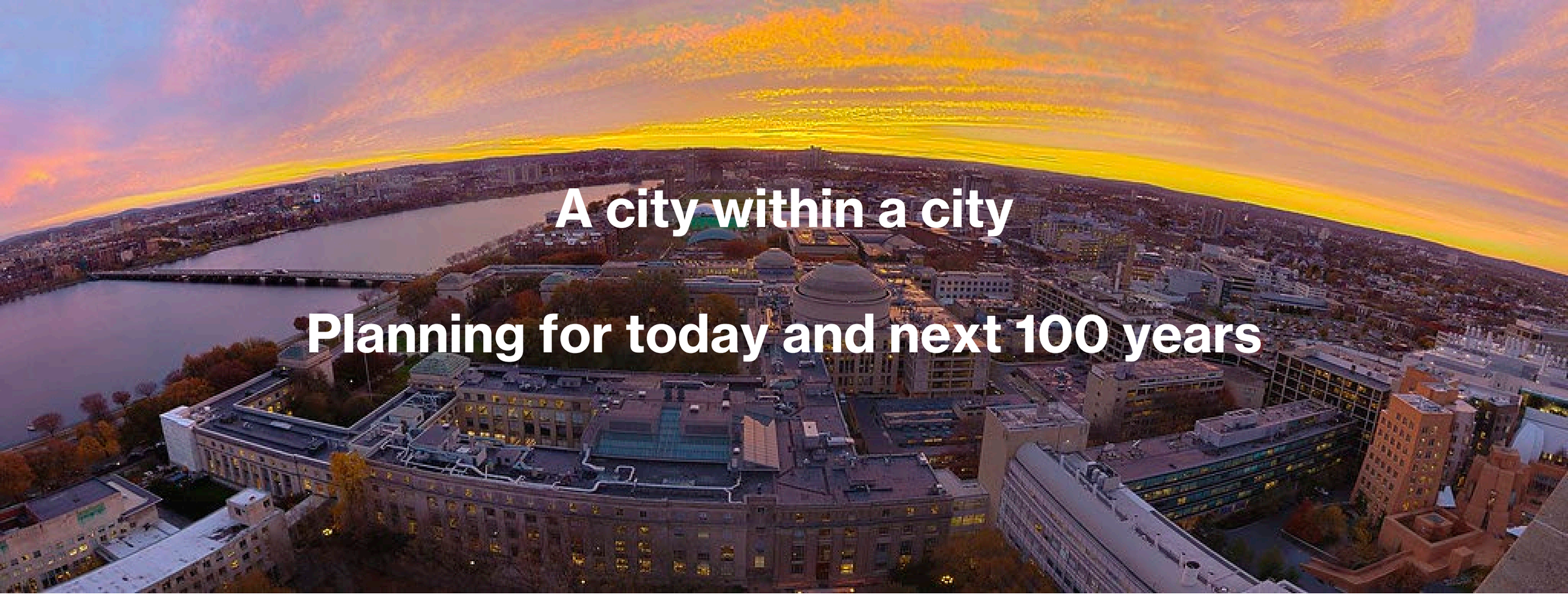
campus climate action

Leveraging the campus as a test bed for sustainability: *Catalyzing innovation, Imagination, and Impact.*

Dr. Julie Newman
Director of Sustainability
Massachusetts Institute of Technology
(Cambridge, MA, USA)

Prof Atsufumi Yokoi (Visiting Scholar at MIT, Feb 2025)
VP of Global Engagement & UNESCO Chair in Research and Education for Sustainable Development
Okayama University (Japan)

campus climate action



A city within a city

Planning for today and next 100 years

168 acres

190 buildings

43,000 spaces

13 million square feet

14,508 offices

5,551 labs

1,319 restrooms

528 classrooms

4,657 undergrads

7,201 graduates

1,080 faculty

15,247 staff

40 MW power plant

17 miles of utilities

400 active projects

70,000 work orders / yr.

What is the organizational structure and behavior that is responsive to, alters, informs, and influences the climate trajectory we are on?

campus climate action

Our Mission

…is to transform MIT into a replicable model that generates just, equitable, applicable, and scalable solutions for responding to the unprecedented challenges of a changing planet.

To achieve our mission, we seek to advance a collaborative process that engages and elevates a diverse set of voices to foster operational excellence, education, research, and innovation on our campus.

Scales of Impact

You **Campus** **City** **State** **Globe**

We start with you to find solutions at the campus level to serve both the institution's needs as well as to incubate new and big ideas.

Seeking solutions to common challenges with the cities of Cambridge, Boston and beyond. We recognize the deep interconnectivity between our urban campus and the city and seek to work across scales.

Making structures, processes, and solutions developed at MIT accessible for reapplication and scaling across the globe.

Office of Sustainability

Areas of Responsibility

Reimagine systems on campus and engage the MIT community to advance the well-being and resilience of people and the environment.

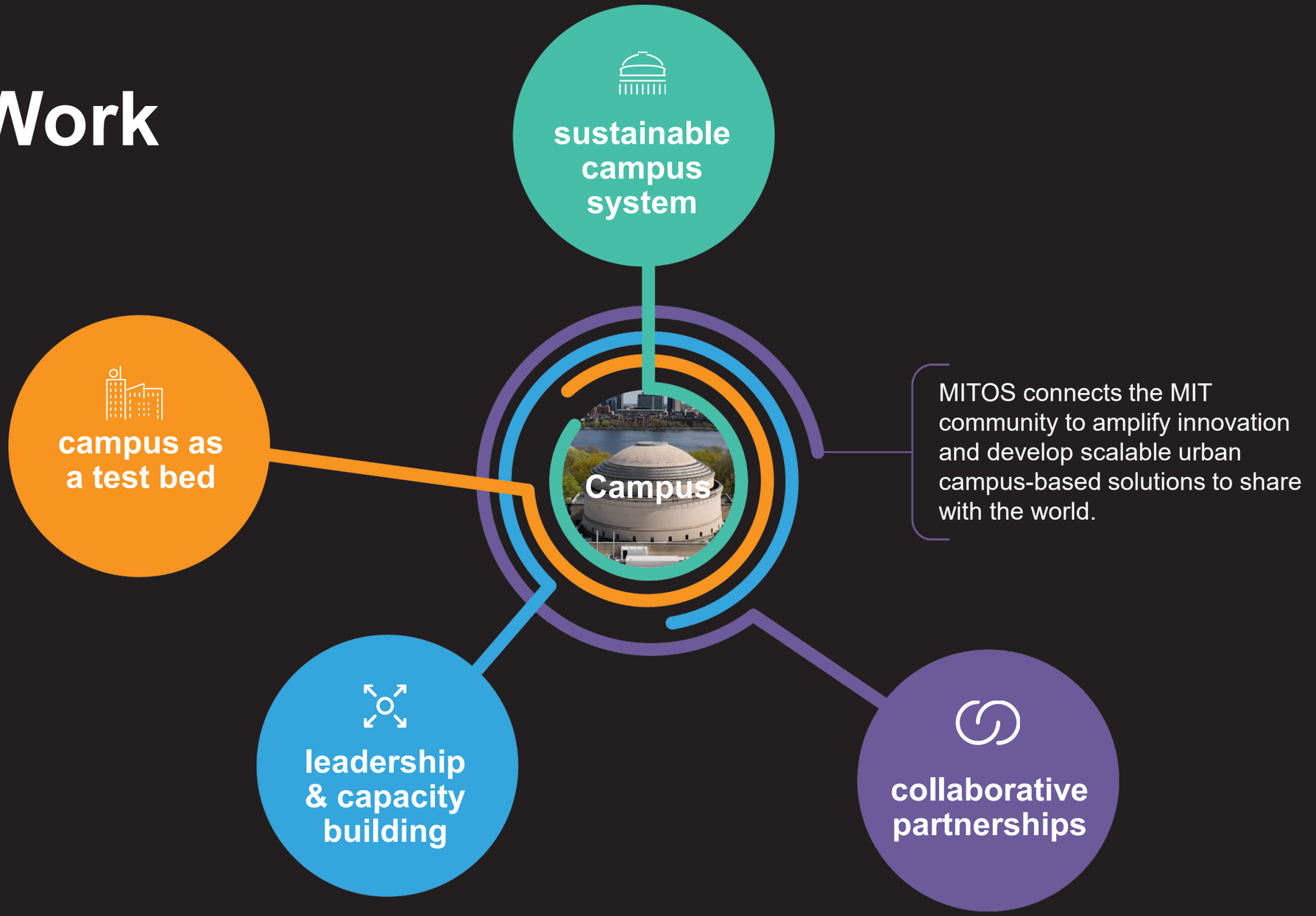
Infuse living laboratory education and research across campus.

Build the internal capacity of the campus community to problem solve, lead, and meet our climate and sustainability objectives.

Harness the collective intelligence of communities to solve shared problems.

Office of Sustainability

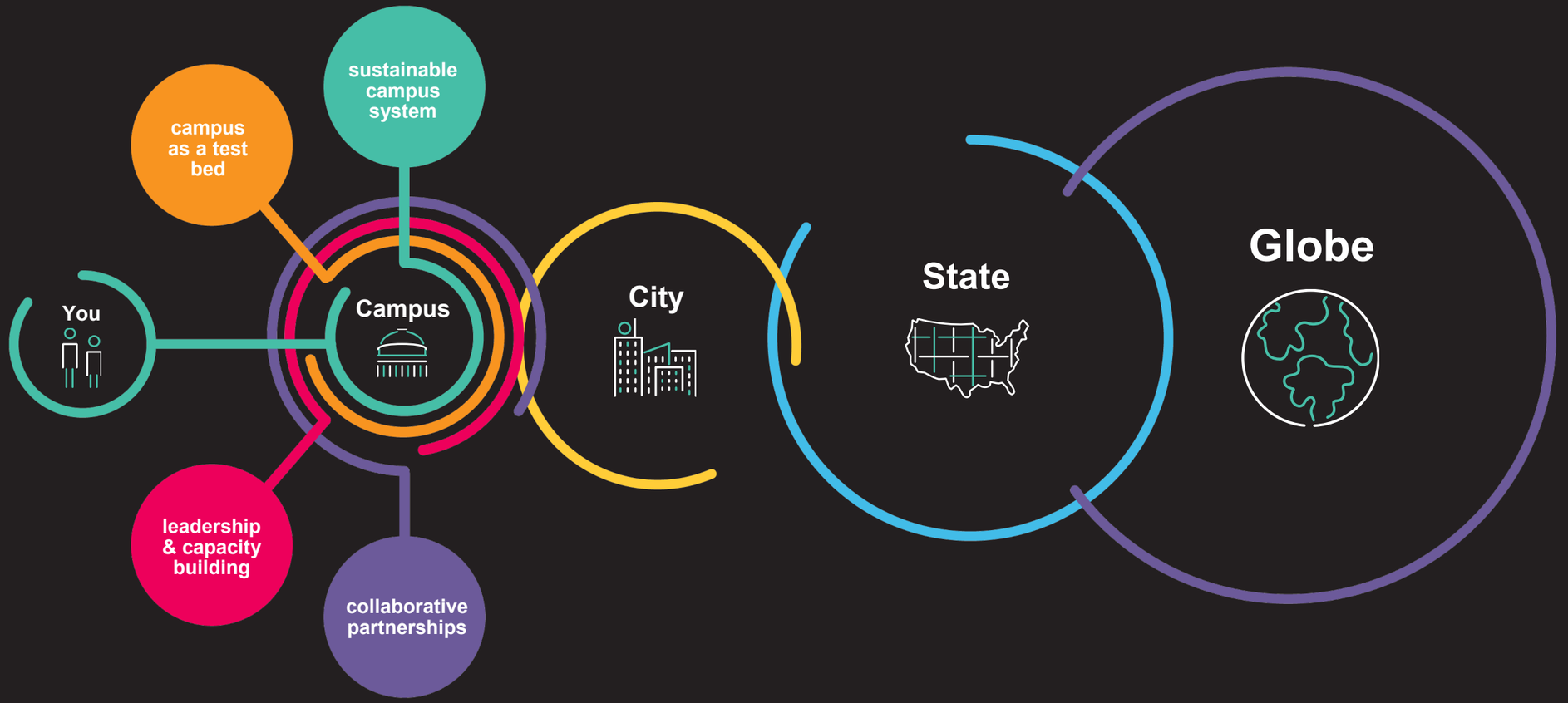
How We Work



MITOS connects the MIT community to amplify innovation and develop scalable urban campus-based solutions to share with the world.

Office of Sustainability

How We Work



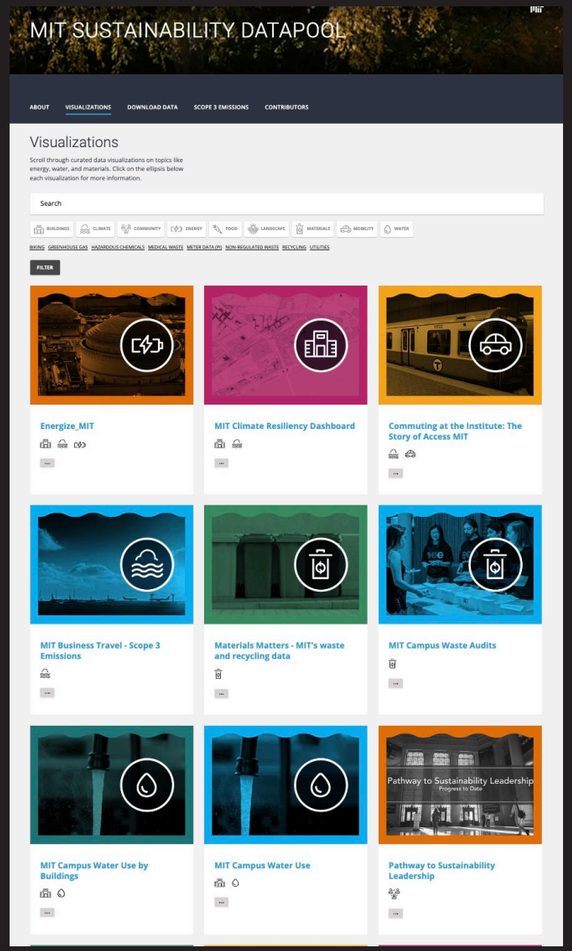
MITOS inspires and enables the continuous generation of breakthrough sustainability solutions to transform our campus, city, state and globe.

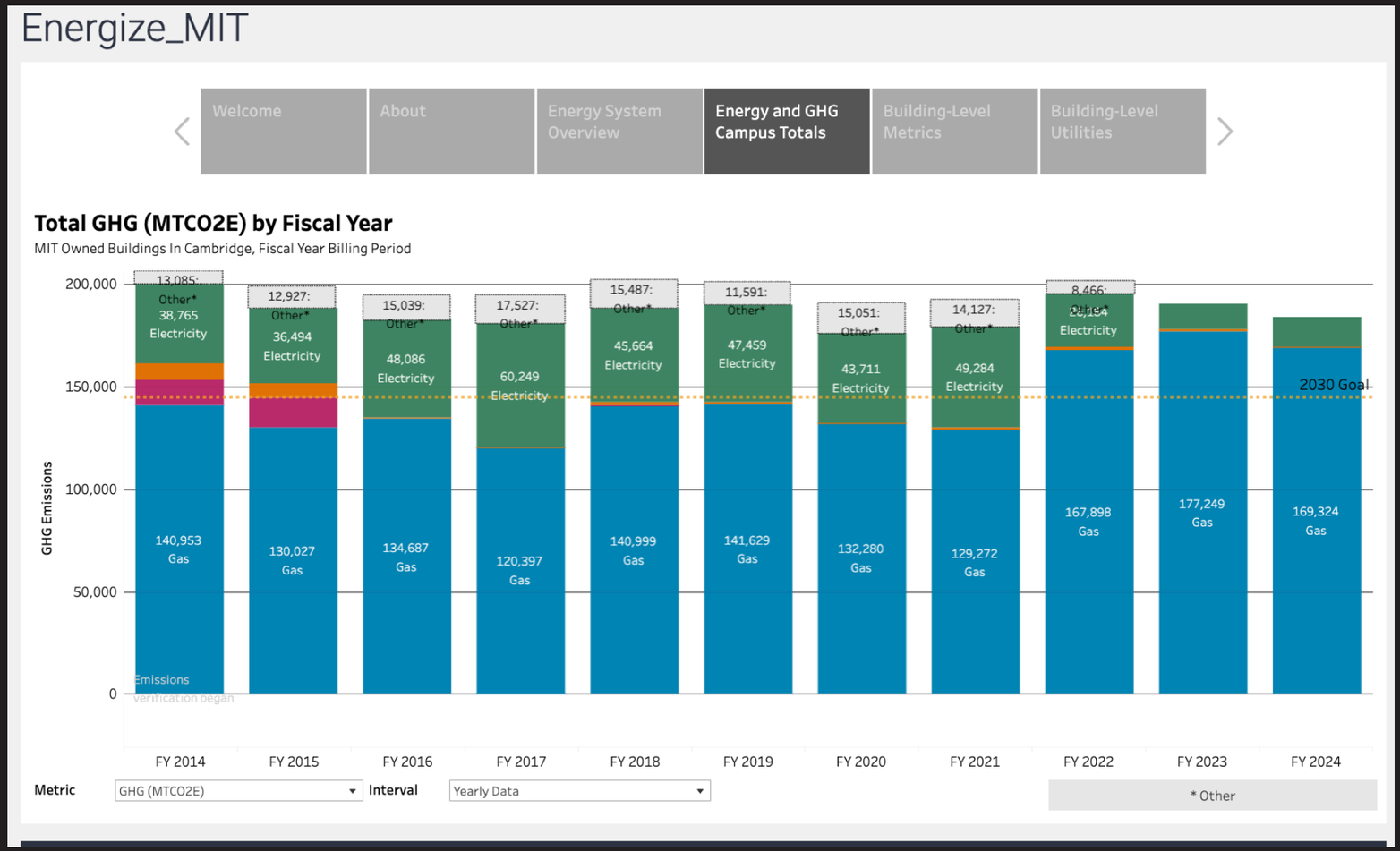
By collaborating with our neighbors in Cambridge and Boston and internationally...

We enable the continuous generation of breakthrough climate and sustainability solutions for today and tomorrow.

Office of Sustainability

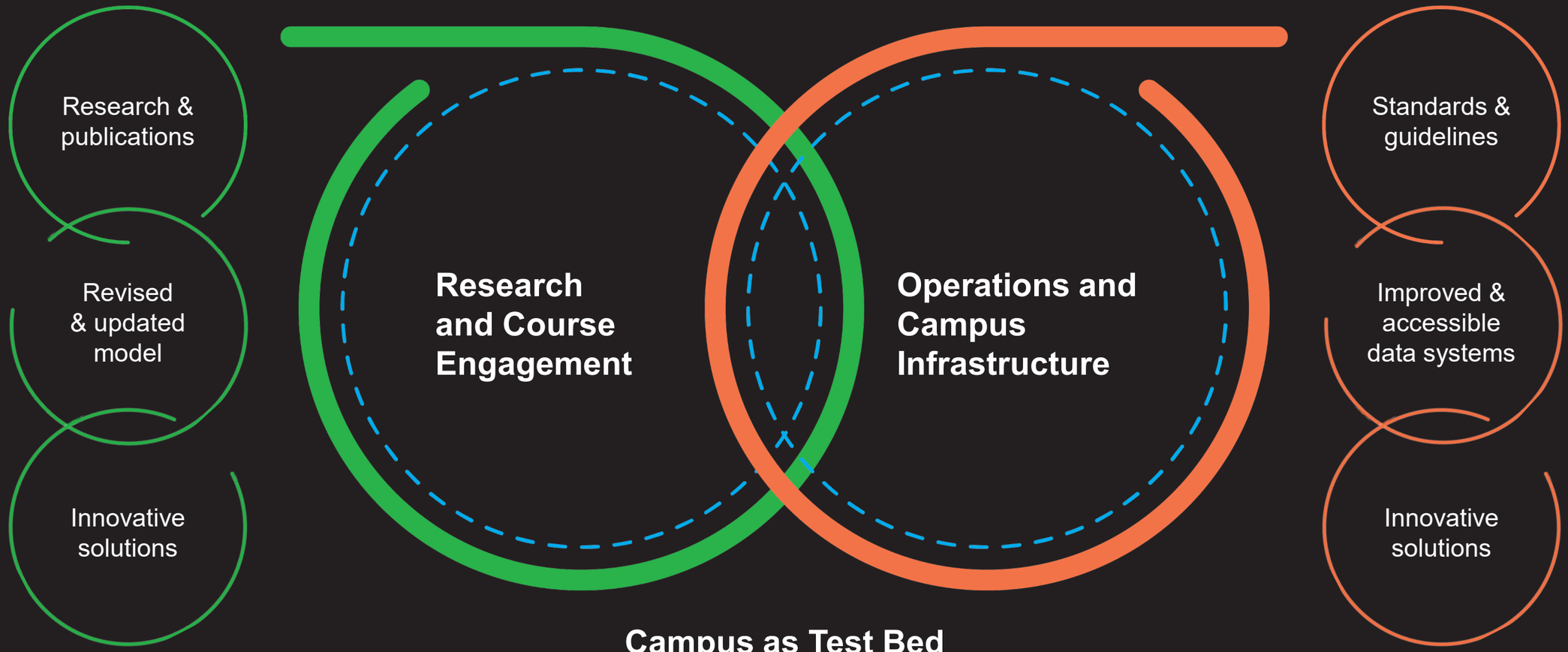
How We Measure





Office of Sustainability

How are we solving for climate and sustainability at MIT?



Office of Sustainability

Campus Climate Commitments:
Activating the campus

MCSC | MIT Climate & Sustainability Consortium

SEARCH LOGIN →

OUR WORK + MEMBERS GET INVOLVED + PEOPLE NEWS & EVENTS + ABOUT US

A NEW KIND OF ACADEMIA-INDUSTRY COLLABORATION

Working together to vastly accelerate the implementation of large-scale, real-world solutions, across sectors, to help meet global climate and sustainability challenges. Helping to lay the groundwork for one critical aspect of MIT's continued and intensified commitment to climate: helping large companies usher in, adapt to, and prosper in a decarbonized world.

Source: MIT: https://impactclimate.mit.edu/

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1.0
Hunting Society

2.0
Agricultural Society

3.0
Industrial Society

4.0
Information Society

It is defined as “**a human-centered society** that balances economic advancement with the resolution of social problems by a system that **highly integrates cyberspace and physical space**.” It was first proposed in 2016 by Japan as the future society it should aspire to be. Furthermore, Society 5.0 was redefined in 2021 as “a sustainable and resilient society that protects **the safety and security** of the people and one that realizes **the well-being of individuals**.” Key to its realization is the advancement of science, technology, and innovation. Incorporating **AI, quantum technology, IoT, and other cutting-edge technologies** in all industries and social activities, and creating new value from innovation, will both achieve economic development and find solutions to social problems in parallel.

Making Great Strides Toward

Society 5.0

Ultra Smart Society

Source: The Government of Japan: https://www.japan.go.jp/kizuna/2022/06/integrated_innovation_strategy.html:

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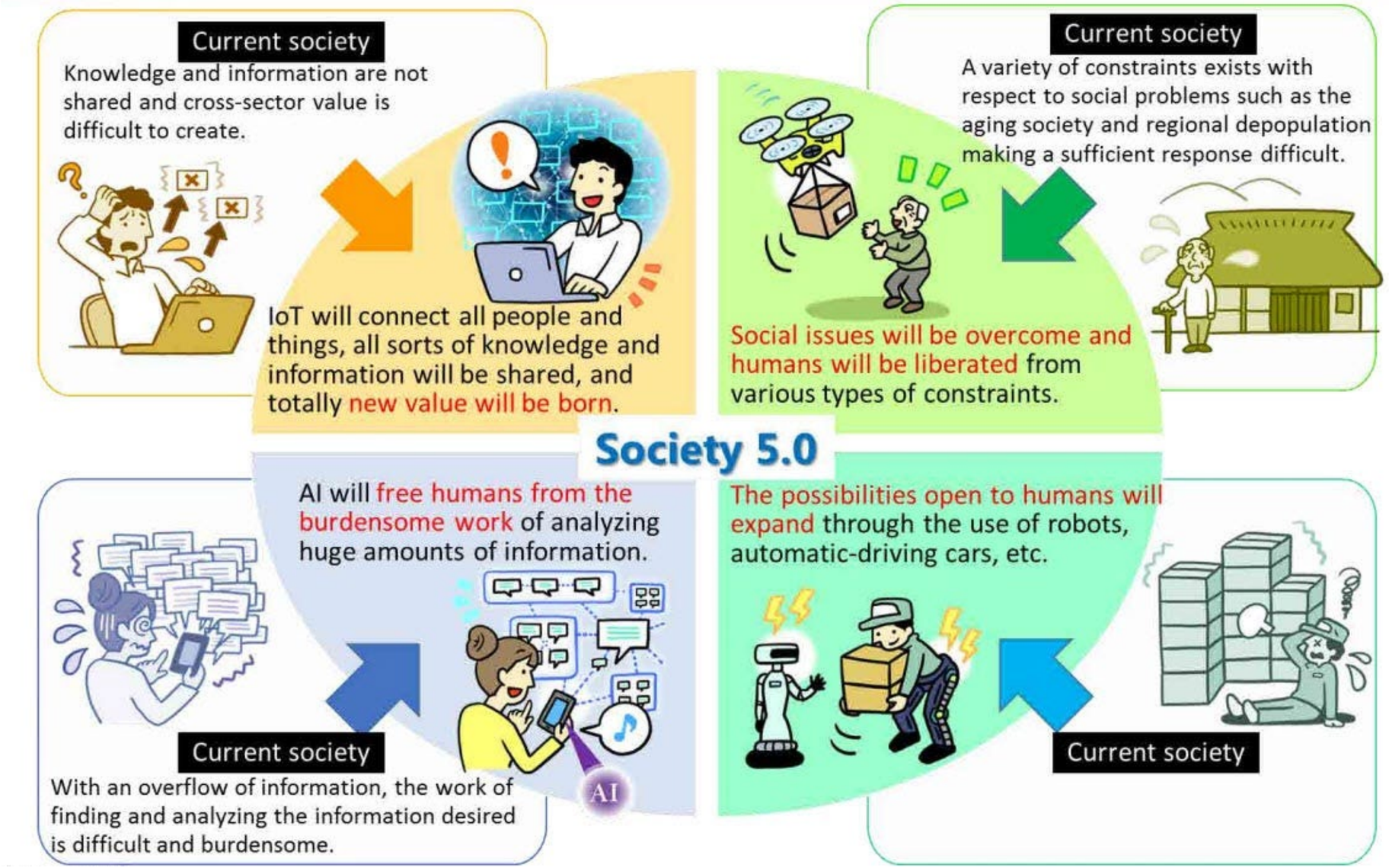
A New Humanism



Source: Cabinet Office, The Government of Japan

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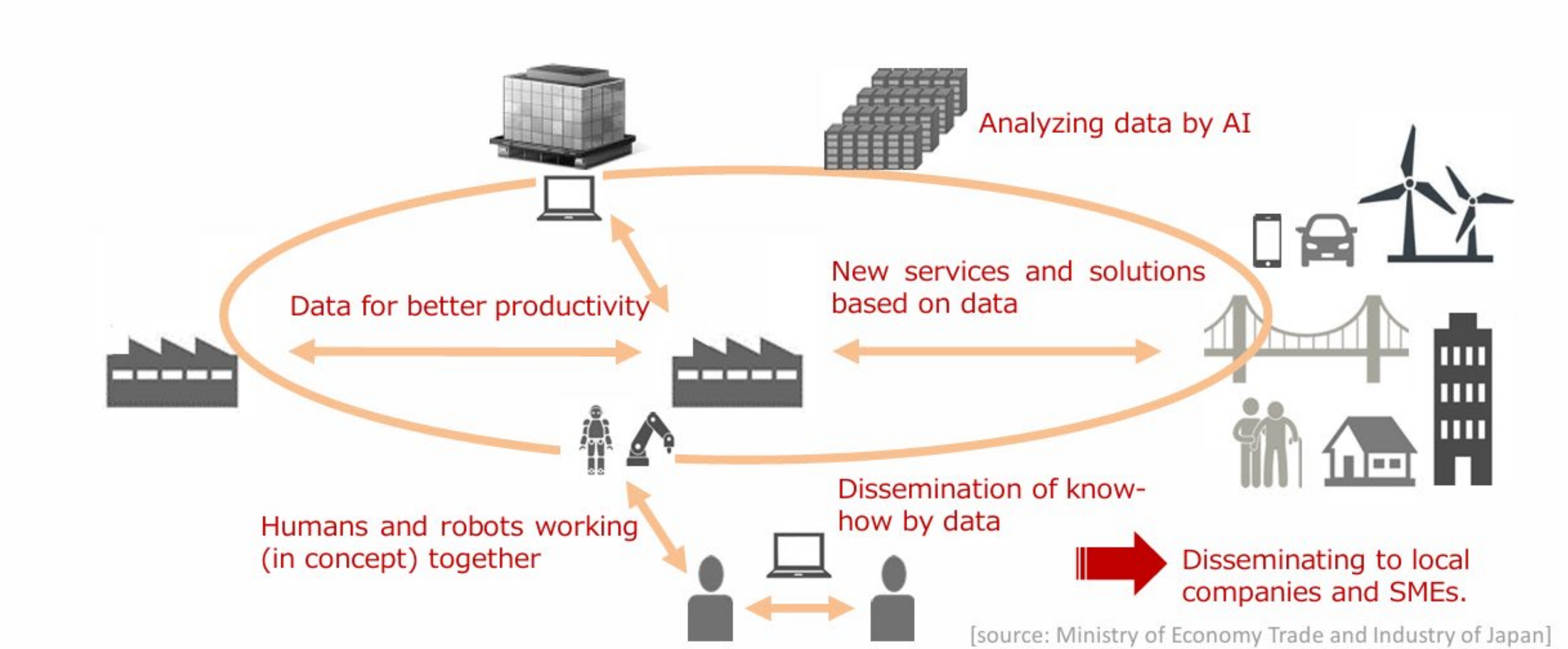
“Connected Industries” is a concept in which a variety of industries, companies, people, machines and other societal elements are connected via **“<u>Real Data</u>”**

- ✓ To create new added value and products/services using AI, IoT and other technologies, and to improve productivity
- ✓ To solve societal challenges, such as **“aging,” “labor shortages,” and “environment and energy restrictions”**



[source: Ministry of Economy Trade and Industry of Japan]

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Super City Initiative

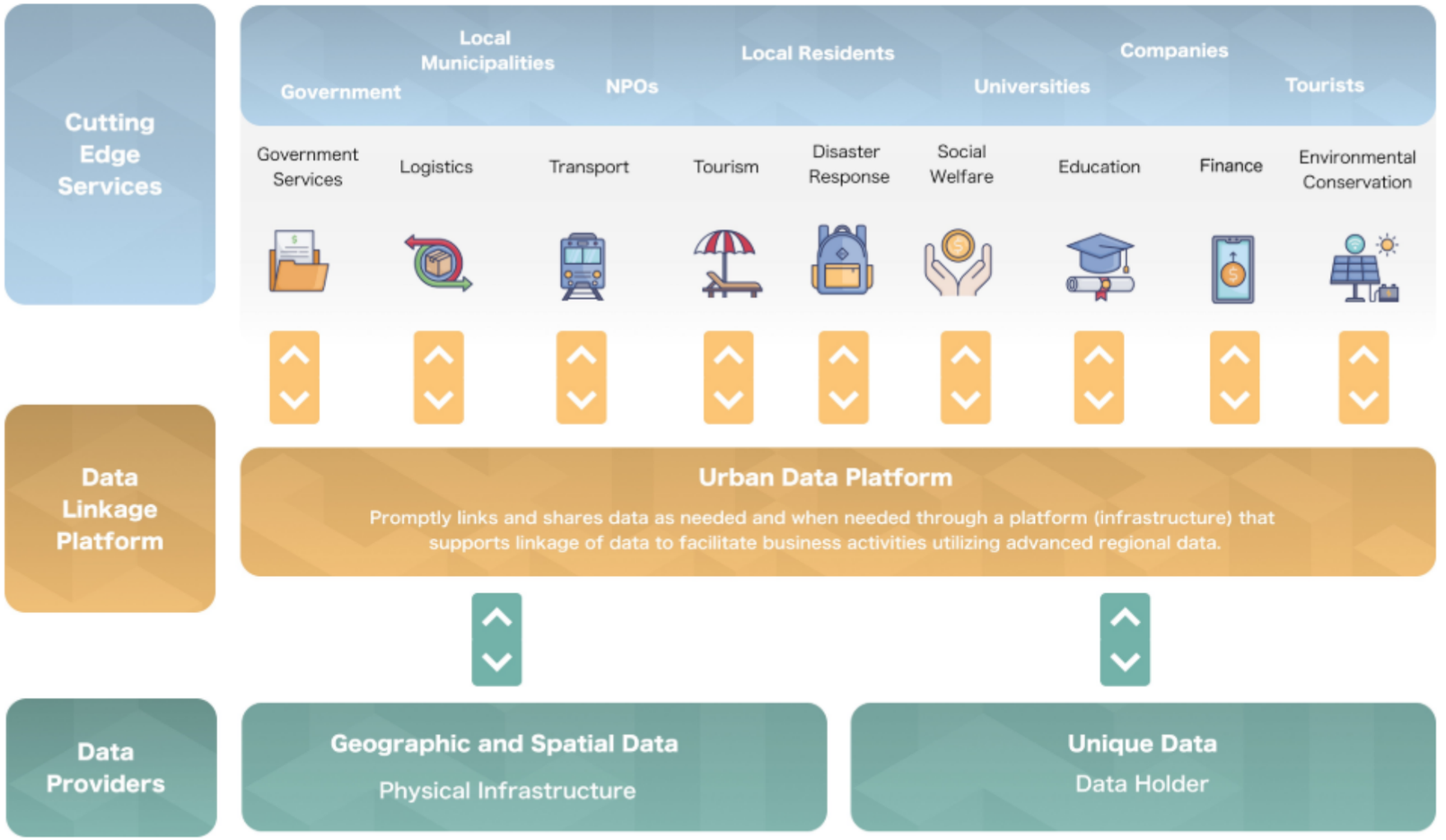
Super Cities & Digital Garden Healthcare Special Zones

Super City aims to realize 2030 future society from citizen's perspectives and with citizen participation by:

1. Providing cutting-edge services with data analysis technologies in a wide range of sectors covering all aspects of citizen life (government services, mobility, healthcare, education, etc.)

2. Developing urban data platforms that allows multi-sectoral data connection and data sharing

3. Promoting comprehensive regulatory reform to enable cutting-edge services



Source: National Strategic Special Zone. Cabinet Office, Government of Japan: https://www.chisou.go.jp/tiiki/kokusentoc/english/super-city/index.html

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Overview of Digital Garden Health Special Zones

Purpose and Objectives

●To utilize the National Strategic Special Zone for Innovative Business Partnerships by designating several local municipalities to use digital technology in solving local health and medical issues.

●To proactively promote local digitization and regulatory reform.

Designated Local Municipalities

The designated municipalities must adhere to the following principles:
●Policies and data-linkage efforts should be expected to produce a positive net result.
●Regarding regulatory reform, there should be at least one item that has been generally agreed upon with the regulatory agency and more than one item that has been proposed and considered feasible enough for discussions with the regulatory agency to proceed.

Outline of Initiatives

Multiple tasks related to health and medical care will be tackled via industry-leading projects in collaboration with local municipalities.

Source: National Strategic Special Zone. Cabinet Office, Government of Japan: https://www.chisou.go.jp/tiiki/kokusentoc/english/super-city/index.html

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Task-shifting in healthcare

- ○ Larger role of EMT in emergency medical care
- ○ Larger role of nurses in home medical care
- ○ Larger role of pharmacists in patient healthcare

Healthcare, medical data space

- ○ Inter-regional healthcare and medical data
- ○ Integrated management of healthcare and medical information by patients and their family (medical data bank)
- ○ Digitization of maternal- and child-health information

Other initiatives, including support for business start-ups

- ○ Support for start-ups in the fields of healthcare and digital technology
- ○ Utilization of My Number system, including the My Number card
- ○ Home remote-monitoring services (Smart Home)

Mobility and Transport

- ○ Hospital transportation service by volunteer drivers, pharmaceuticals delivery by taxi
- ○ Discounts for the elderly on travel fares for hospital visits

Preventive healthcare and AI

- ○ Preventive medical services based on information from antenatal checkups
- ○ Suggestion and advice on medication by AI supported online chat by pharmacist
- ○ Development of advanced rehabilitation equipment and programs

Source: National Strategic Special Zone. Cabinet Office, Government of Japan: https://www.chisou.go.jp/tiiki/kokusentoc/english/super-city/index.html

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Super City

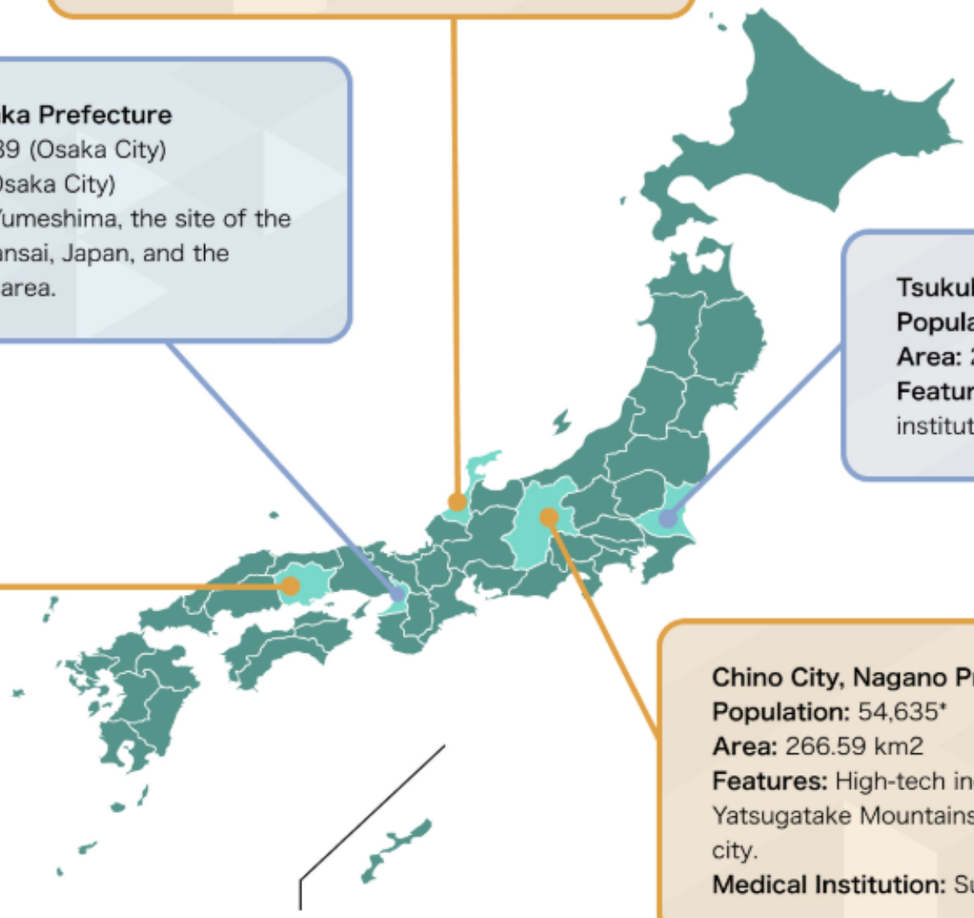
Digital Garden City

Kaga City, Ishikawa Prefecture
Population: 63,461
Area: 305.87 km2
Features: A famous onsen town known for its three types of hot-spring water and its highly regarded traditional crafts industry.
Medical Institution: Kaga Medical Center

Osaka City and Osaka Prefecture
Population: 2,757,289 (Osaka City)
Area: 225.33 km2 (Osaka City)
Features: Home to Yumeshima, the site of the Expo 2025 Osaka, Kansai, Japan, and the Umekita 2nd Project area.

Tsukuba City, Ibaraki Prefecture
Population: 253,490
Area: 283.72 km2
Features: A research hub of leading research institutions and universities.

Kibi-Chuo Town, Okayama Prefecture
Population: 10,507
Area: 268.78 km2
Features: A planned city in the center of Okayama Prefecture (Kibi Kougen City).
Medical Institution: Okayama University Hospital

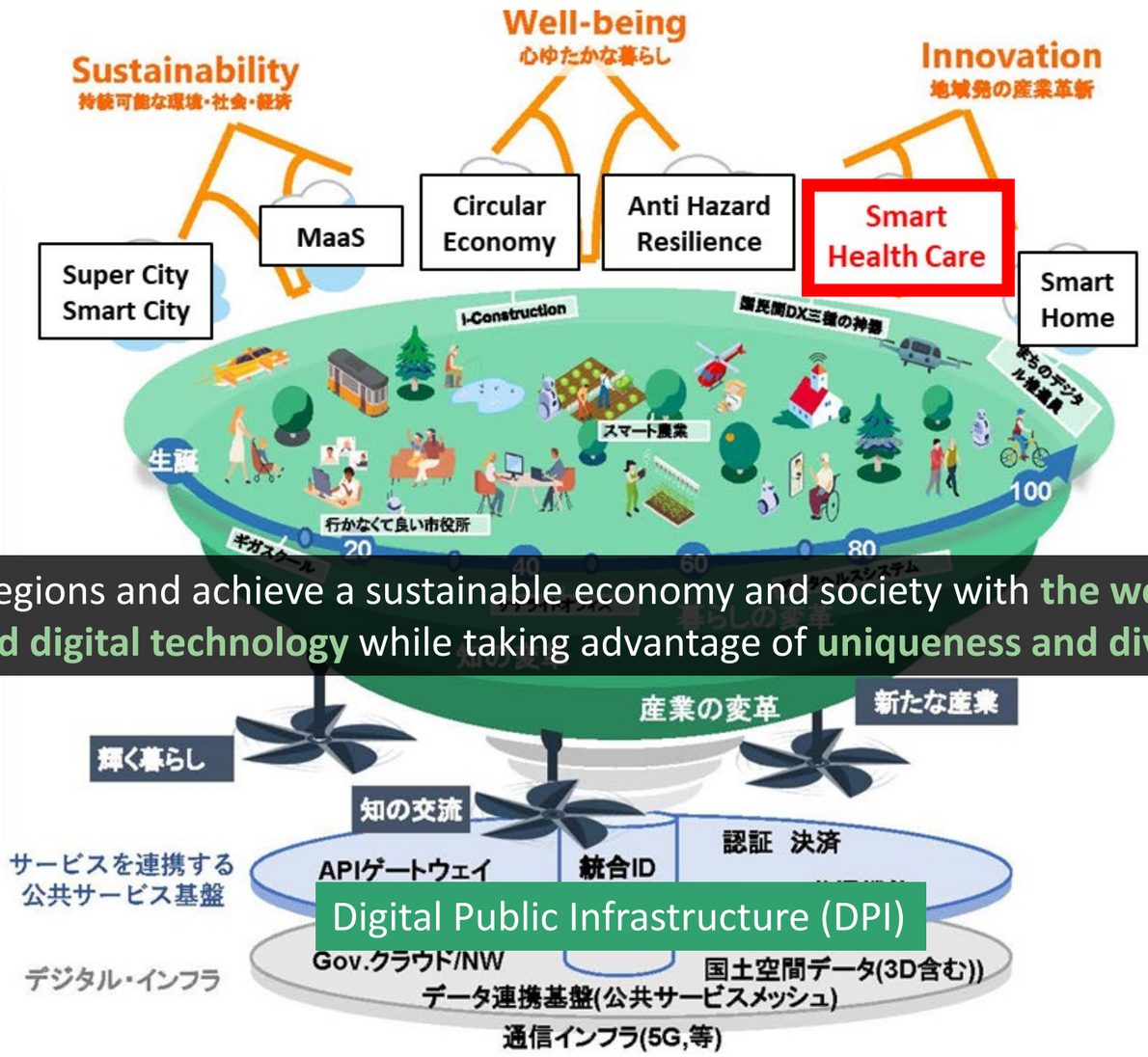


Chino City, Nagano Prefecture
Population: 54,635*
Area: 266.59 km2
Features: High-tech industrial hub near the Yatsugatake Mountains and a highland resort city.
Medical Institution: Suwa Central Hospital**

Source: National Strategic Special Zone. Cabinet Office, Government of Japan: https://www.chisou.go.jp/tiiki/kokusentoc/english/super-city/index.html

Digital Garden City State Initiative (2021-) , Cabinet Office, Japan

Okayama University is a **chief architect** of the one of three selected zones by the Cabinet

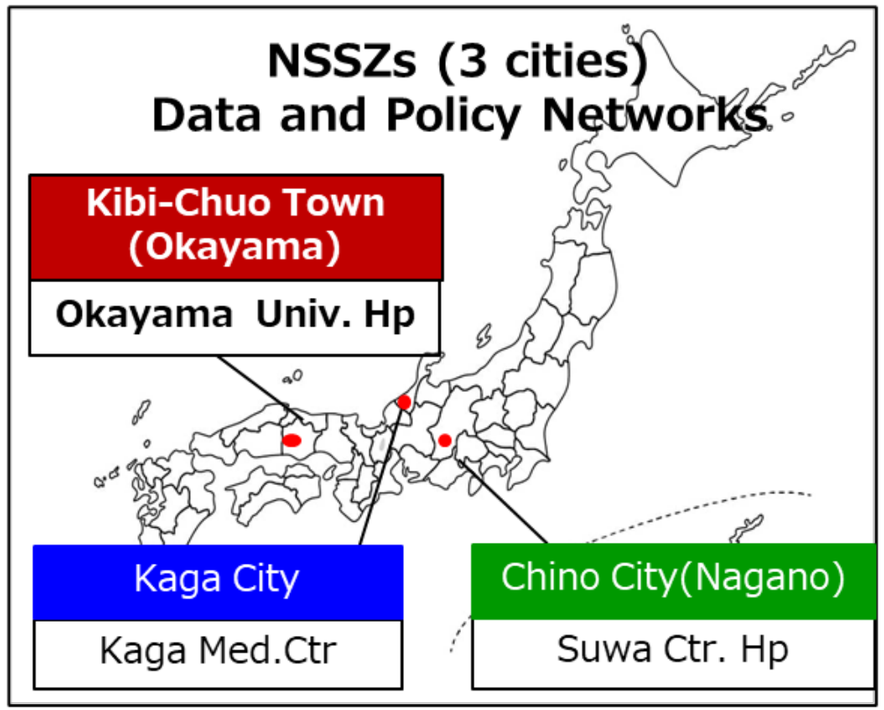


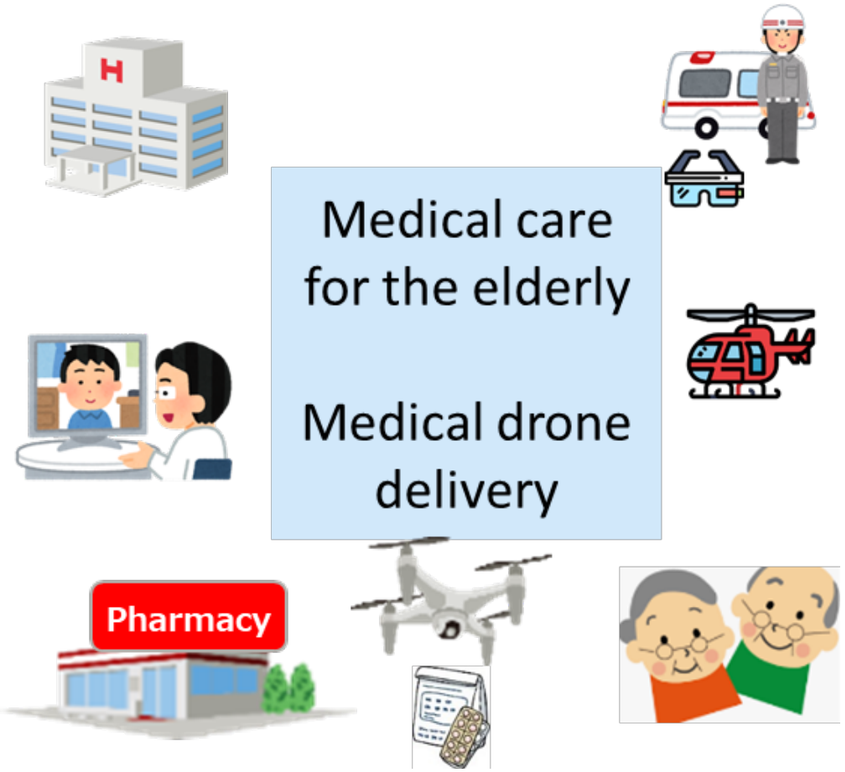
Regenerate regions and achieve a sustainable economy and society with **the well-being of all**
by utilizing **AI and digital technology** while taking advantage of **uniqueness and diversity** of regions.

National Strategic Special Zones (NSSZs)

Smart Health Care: Medical and Wellness in Kibi-Chuo Town, Okayama, Japan

In the medical field, the establishment of a **medical DX infrastructure**, including **telemedicine, online medication instruction, and electronic prescriptions**, will enable each user or patient to receive medical care according to his/her individual situation.



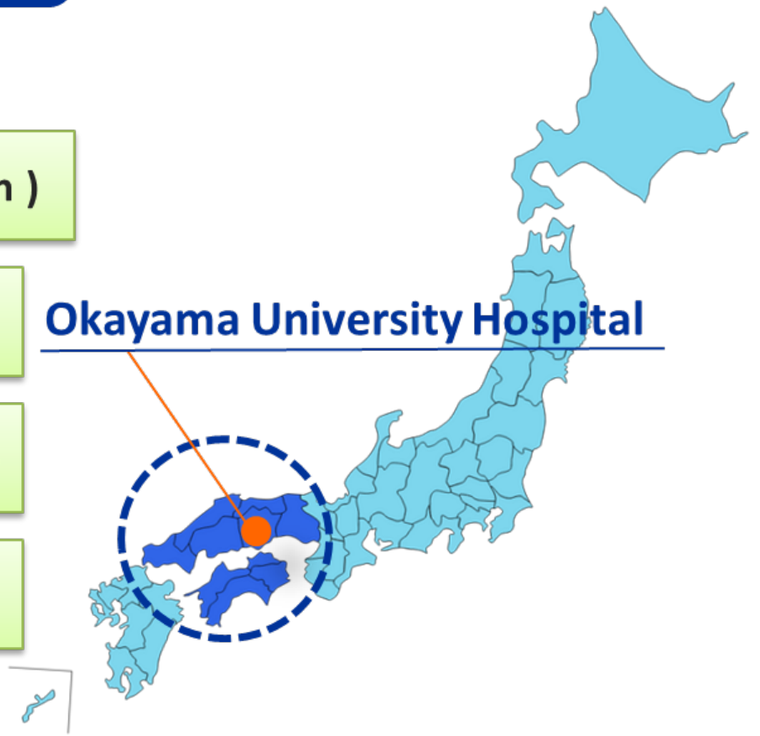


Center of Excellence for Innovative Medical Technology

Okayama University Hospital is one of **the major national medical research institutions**

Basic — Translational — Clinical

- Medical Translational Research Core Hospital (10 in Japan)
- Clinical Study Core Hospital (10)
- Center for Innovative Medical Device as Japan Brands (8)
- Cancer Genome Core Hospital (11)



Okayama University Hospital has been selected for the four core national projects and functions as a research institution that seamlessly links basic research to clinical research.

OKAYAMA UNIVERSITY

2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019

2017: The 10th anniversary of Okayama University as the UNESCO Chair (ESD)

United Nations Educational, Scientific and Cultural Organization

UNESCO Chair on Research and Education for Sustainable Development Japan

OKAYAMA UNIV.

A whole institution's approach towards achieving the SDGs

Apr 2017～

Jun 2005

The first seven "Regional Centers for ESD" (RCE) composed of 250 organization

Apr 2007

Okayama University became Asia's first UNESCO Chair (ESD)

Sep 2016

UNESCO / Japan ESD Award

Jan 2017

UNESCO Learning City Award

Dec 2017

Japan SDGs Award

(Special prize from the Government)

Oct 2014

UNESCO World Conference on ESD

OKAYAMA UNIVERSITY

Human Resource Development Programmes for Africa and ASEAN in collaboration with UNCTAD

Invited to deliver a speech on our joint programmes for STI for SDGs to foster young scientists from Africa and ASEAN

The annual meeting of the Commission on Science and Technology for Development

UNCTAD Office in Palais des Nations, Geneva March 29, 2023

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On January 9, 2020, Okayama University and UNCTAD concluded a memorandum of understanding (MoU) for comprehensive cooperation on the development of human resources in science and technology innovation for the Sustainable Development Goals (SDGs) (STI for SDGs), the first of its kind among universities around the world.

1. UNCTAD Short-term Researcher Acceptance Programme

Young Female Scientist Programme in Japan

"Joint Research and Training Course for Young Female Researchers from Developing Countries"

2. UNCTAD Long-term Program

(At the Graduate School of Environmental and Life Science and Interdisciplinary Science and Engineering in Health Systems)

"Doctoral degree program for young researchers from developing countries"

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Women scientists from developing countries at the forefront of cutting-edge research

09 February 2023

Participants of UNCTAD and Okayama University's Young Female Scientist Programme are breaking the glass ceiling in science, technology, engineering and maths.

Ms. Fresthel Climacosa, the Philippines

“I am exploring sending Filipino graduate students to Okayama University for possible sandwich research programmes to further strengthen the collaboration.”

© **UNCTAD** | Fresthel Climacosa (left) from the Philippines and Menatallah Elserafy from Egypt are working to break the glass ceiling in their scientific fields.

“The programme offered me an opportunity to deeply reflect on addiction issues and drug use disorders in particular,” Ms. Kemme said. “It has enabled me to come up with strong and evidence-based recommendations for addiction management.”

Ms. Marileine Kemme, Cameroon

© **UNCTAD**: https://unctad.org/news/young-women-scientists-explore-sustainable-development-solutions

STI FORUM

Science, Technology & Innovation for the Sustainable Development Goals

© UN: https://www.un.org/nl/file/156327

SHE in STI

Addressing the gender gap in Science, Technology and Innovation:
Select Initiatives from UN system entities

岡山大学
OKAYAMA UNIVERSITY

Young Female Scientist Programme was selected as one of the leading Initiatives by the United Nations!
The report was displayed at the United Nations New York in May 2023

OKAYAMA

The first UNU Regional Centre of Expertise on ESD

Thank you for your attention!

Prof. YOKOI Atsufumi FRSA
Vice President |UNESCO Chair in ESD
OKAYAMA UNIVERSITY