



Akita International
University



TAMKANG CLEMENT AND CARRIE CHAIR LECTURE 2024
Hsu Shou-Chien International Conference Center, Tamkang University

The Value of Sound Scholarship

Shaping the Future with Hope, Creativity and Honor

Monte Cassim
Akita International University

Tamsui, New Taipei, 4 November 2024

PART ONE

SOUND SCHOLARSHIP

HUMANITY'S HOPE FOR THE FUTURE

The future

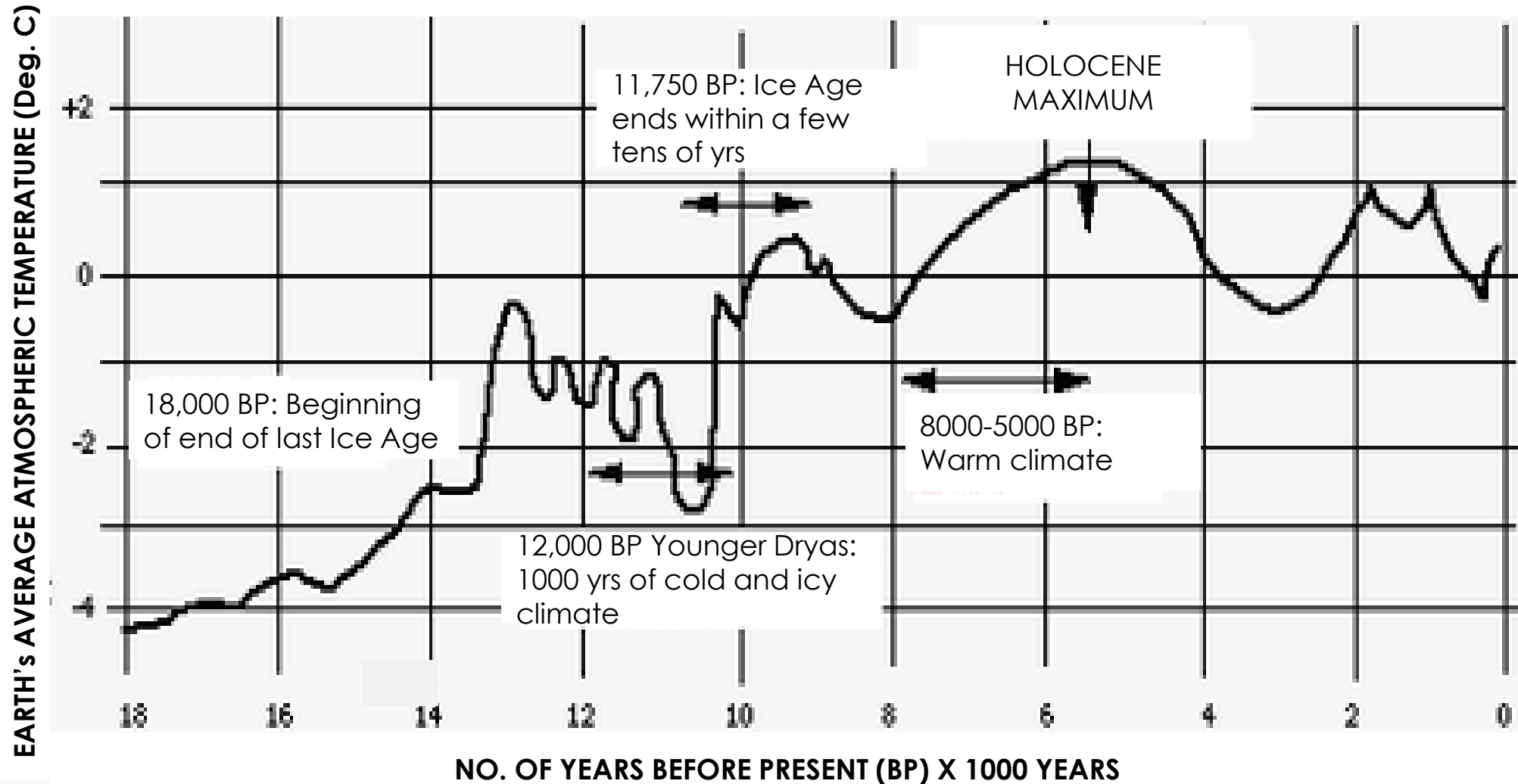
transborder challenges, localized impacts

- **Environmental disequilibrium:**
 - global challenges and local impacts
- **Technological transformation:**
 - exponential speed of change
- **Geopolitical instability:**
 - transformation in the world order



GLOBAL CLIMATE CHANGE

Environmental disequilibrium:
global challenges and local impacts



Average global atmospheric temperature change

Late Pleistocene → Holocene (ca. 11,700 BP) → Anthropocene

RISE OF HOMO SAPIENS

Environmental disequilibrium:
global challenges and local impacts



CONSEQUENCES



Anthropocene: from when?

Recent geological
evidence from ice
core analysis of past
snowfall points to
atmospheric fossil
fuel spikes in the
1950s, 1960s and
1970s, the 1st, 2nd
and 3rd UN
Development
Decades



Late Pleistocene → Holocene →
Anthropocene



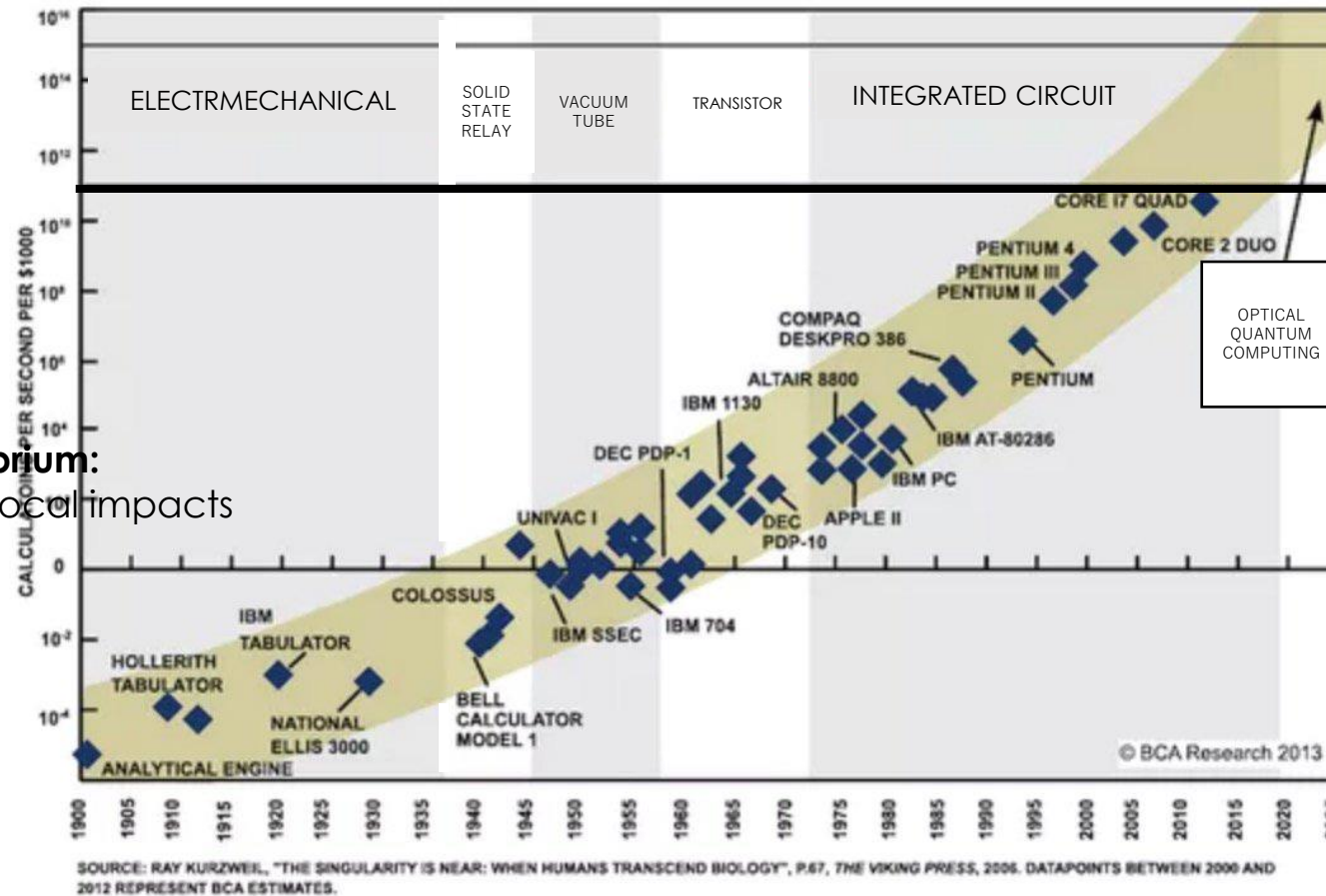
Who were the winners?
Who will be the losers?

AI/IOT and humanity's future

Human-Intelligent Machine Coexistence

Technological transformation:
Exponential speed of change

Environmental disequilibrium:
global challenges and local impacts



Human brain

Mouse brain

Science & technology transformations, digital transformation for human purpose, emerging world of bio-machine integration, rise of intelligent machines, the future of humanism & humanity

Human-machine coexistence

Technological transformation:
Exponential speed of change



**Boston Dynamics
Ltd**

Robot cop meets
head of
German Police

**Should robots
be
weaponized?**

Zaporizhzhya: Europe's largest nuclear power plant

Risks being caught in the crossfires of the war in Ukraine



Consider the impact of one of the world's largest grain supplying regions being subject to nuclear radiation fallout

SRI LANKA - No fuel for transport during FOREX debt crisis



**1.2 million vehicles in a nation
of 22 million people**

**Supports the livelihoods and
lives of 5 to 6 million people**

**Fossil fuel imports consume
50% of nation's annual FOREX
earnings with transport sector
requiring half of this**

**Pollutant emissions, noise
pollution and many injuries
from accidents**

**BUT
most ubiquitous, convenient
and affordable**

PART TWO

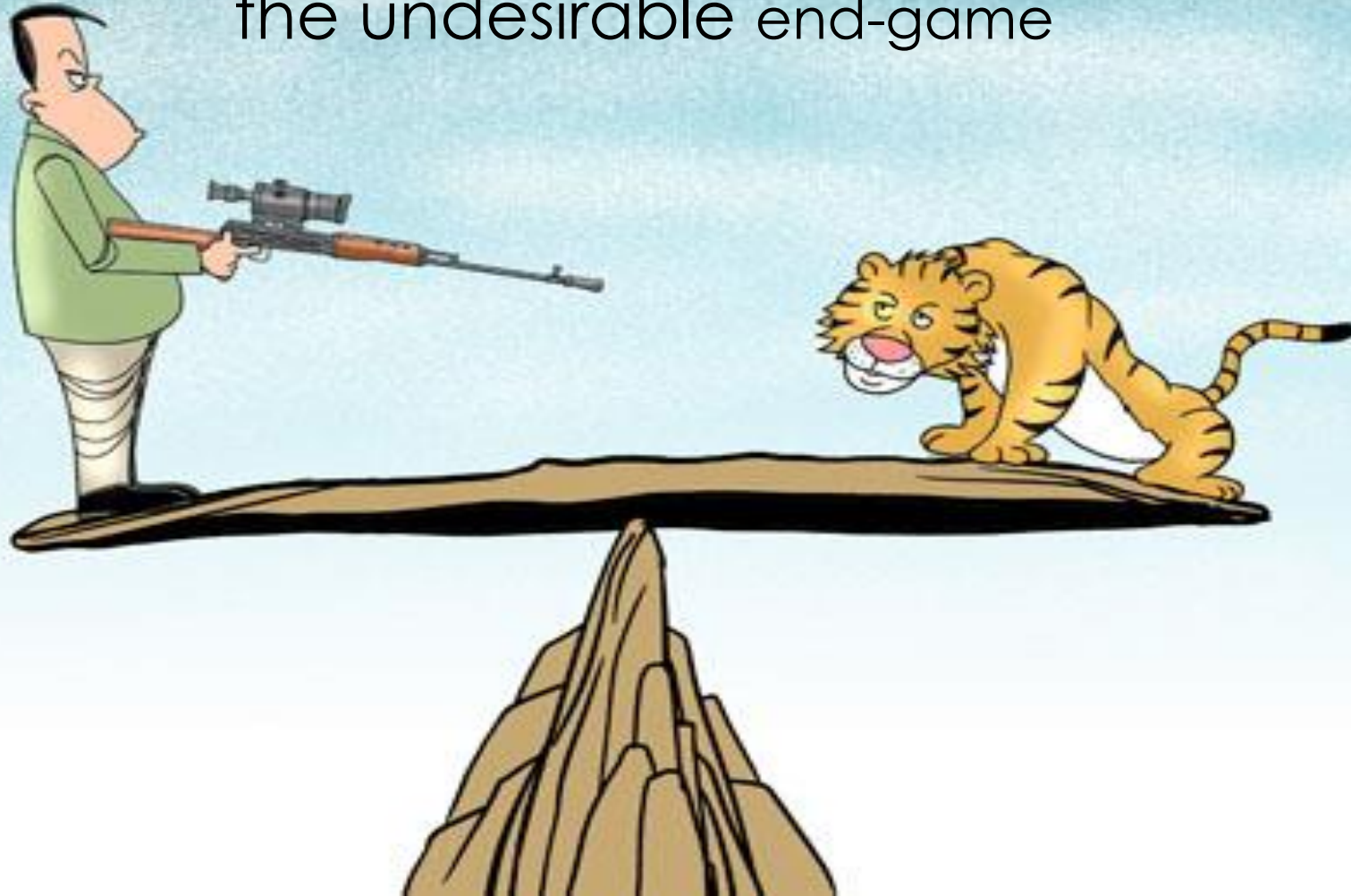
TRANS-DISCIPLINARITY

SOLVING COMPLEX PROBLEMS, CREATING NEW VALUE

why is biodiversity loss important?

JOE

the undesirable end-game



ecological equilibrium is a delicate balance

biodiversity helps to maintain it

BIODIVERSITY LOSS AND DISEASE ECOLOGY

Does biodiversity loss increase the risk of pandemics?



The works of disease ecologists Rick Ostfeld and Felicia Keesing discuss the Interplay of biodiversity loss and the incidence of pandemics

Felicia Keesing:

Winner of the **2022 International Cosmos Prize** for evidence of the mechanism by which **biodiversity loss leads to the wide spread of zoonotic pathogens.**

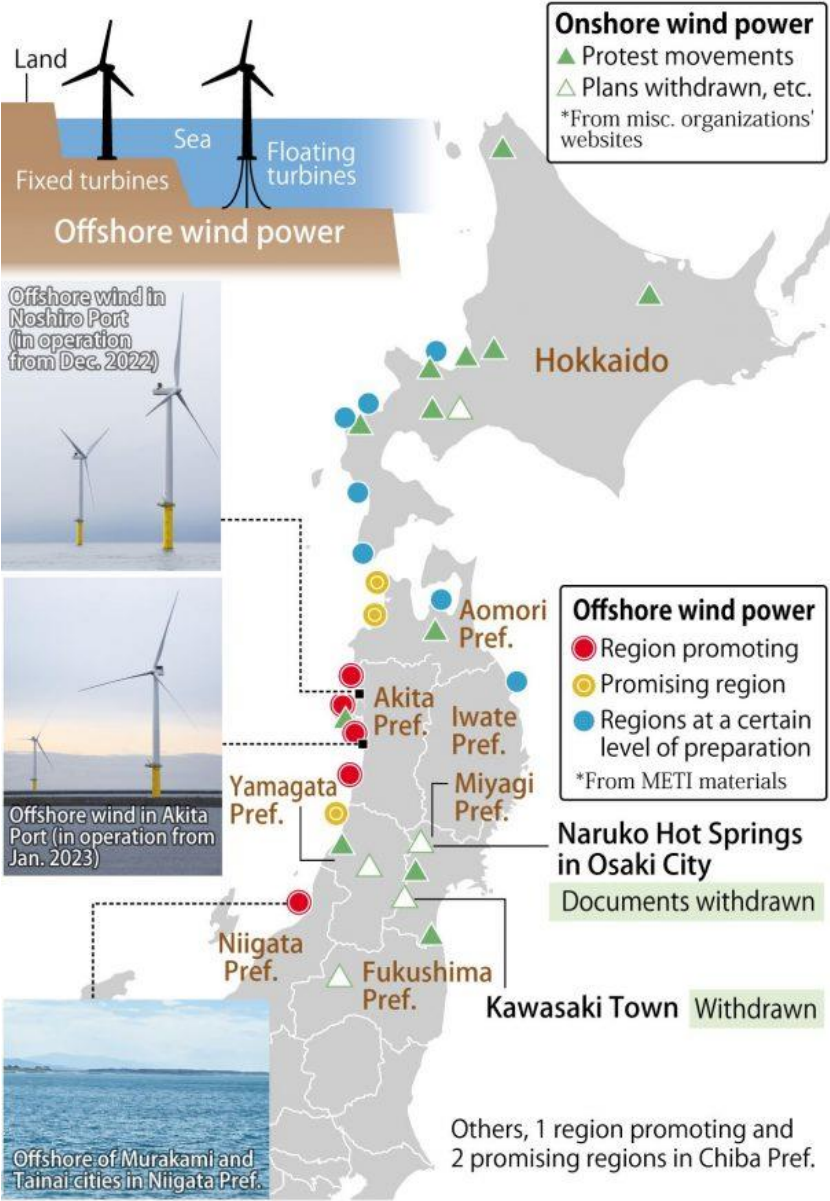
PATHOGENIC “DILUTION” EFFECT: Although biodiversity might appear to increase pathogen counts, the prevalence of less/non-harmful pathogens coupled with greater pathogen retentivity in large animal hosts appears to “dilute” the threat of pathogen transmission beyond the original habitat.

LARGE ANIMAL LOSS AND ZONOTIC PATHOGENS: Loss of large animals in an ecological habitat leads to zoonotic pathogens transferring to small animals which proliferate more rapidly and whose incursions into human habitats lead to raising the risk of pathogenic transfer from animal to human hosts.

Her work predicted the emergence of pandemics like COVID-19 over a decade before it occurred.

Can we solve complex problems like the COVID-19 pandemic with a disciplinary focus alone?
SPEED OF VACCINE DEVELOPMENT vs CONSEQUENCES OF SLOW DELIVERY

Major onshore wind power plans facing opposition in eastern Japan and regions promoting offshore wind power

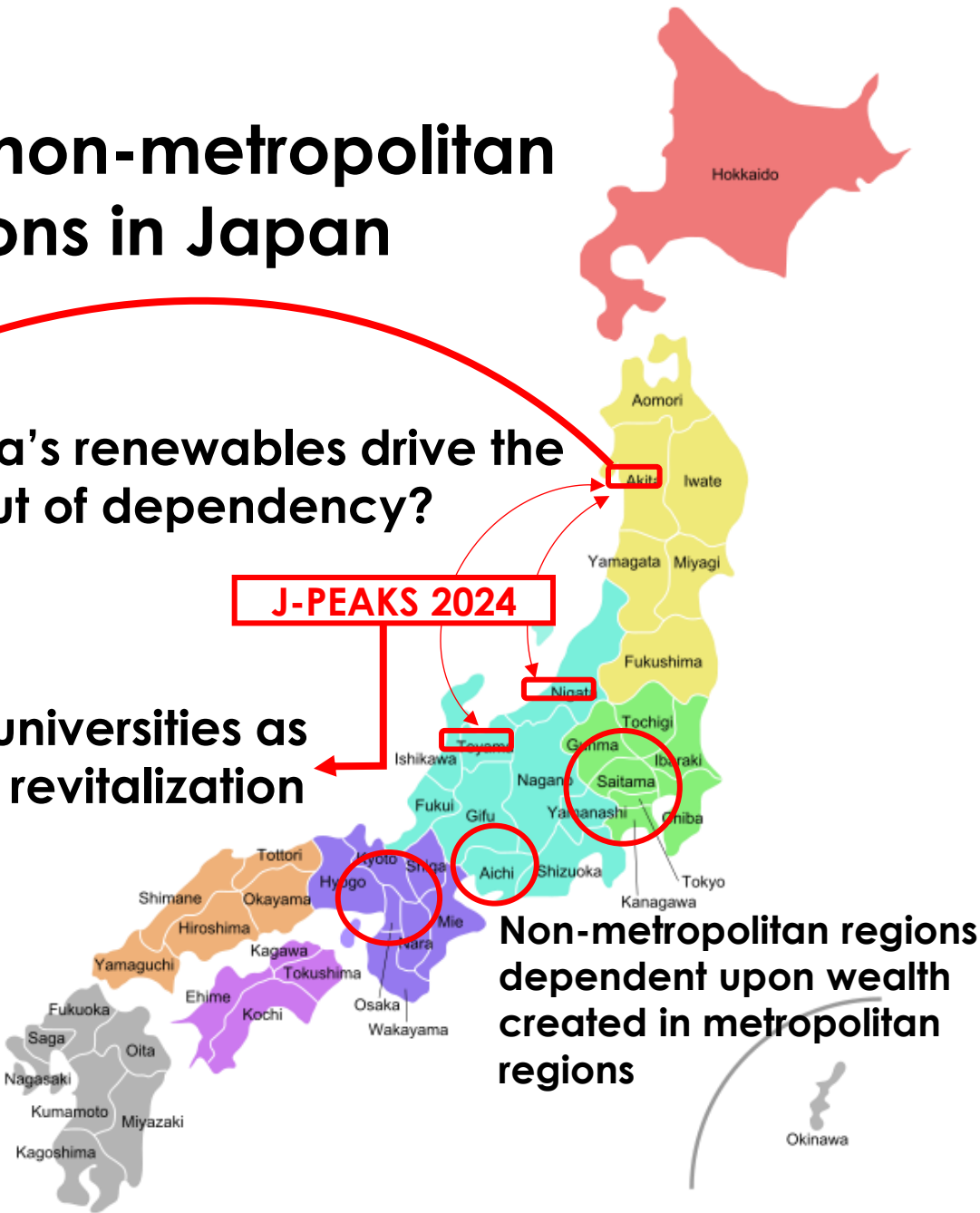


Future of non-metropolitan regions in Japan

Can Akita's renewables drive the region out of dependency?

GoJ investing in universities as hubs for regional revitalization

J-PEAKS 2024



AIU's RESEARCH FOCUS

8 GLOBALLY RELEVANT CRITICAL ISSUES FACING AKITA PREFECTURE

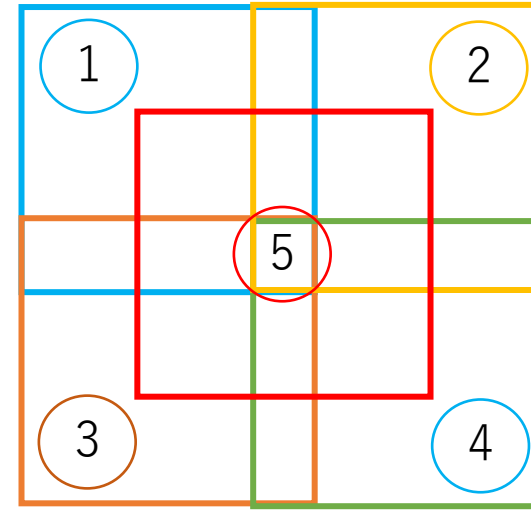
Based on the concept of Applied International Liberal Arts, **AILA**

AILA Institute established to promote pedagogy based on integrating profound thought and decisive action

AILA Institute has **3 Centers**, each with its own directorate, viz: (1) Active Learning Center (**ALC**); (2) Creative Design and Data Science Center (**CreDDS**); and (3) Center for Collaborative Research and Outreach (**CCRO**)

The activities of the three centers are integrated by the AILA Institute's **Executive Directorate**

J-PEAKS is driven by CreDDS & CCRO



1	Field, Forest & Marine Resources
2	Health & Human Well-being
3	Language, Culture & Communication
4	Lifelines, Transport & Settlement Systems
5	Digital Transformation Fundamentals

Below: 8 ISSUES where students can join faculty to conduct their graduation research

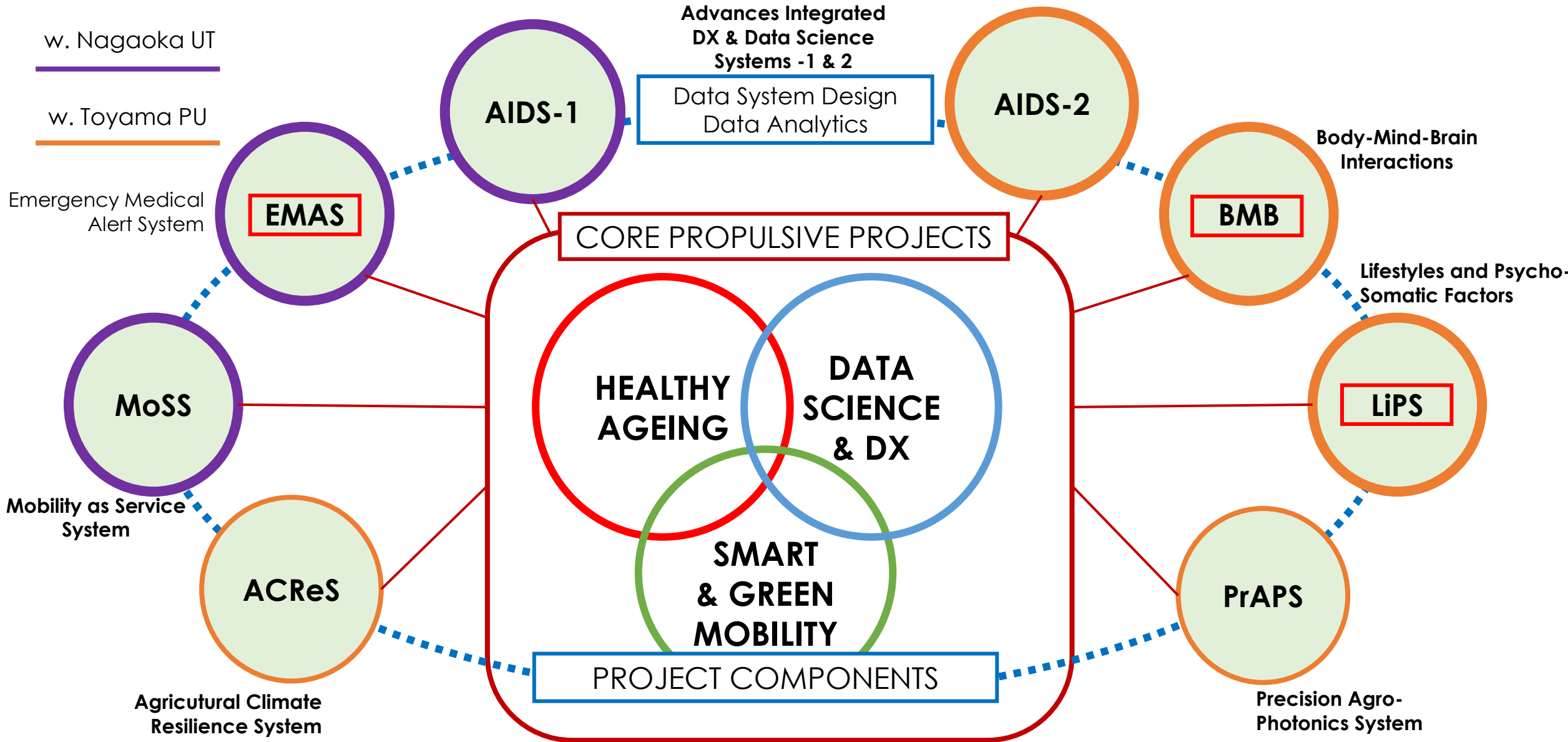
ISSUES IN AKITA ADDRESSED @ AIU → NEW VALUE CREATION (FY 2022-2027) Note: color coded as in ① to ⑤ above

- 1. Renewable energy
- 2. **HEALTHY AGEING**
- 3. Climate resilient agriculture
- 4. **Forest resources value addition**
- 5. **SMART & GREEN MOBILITY**
- 6. Culture & heritage archives
- 7. Inclusion, diversity & conviviality in local communities
- 8. **DATA SCIENCE & DIGITAL TRANSFORMATION**

PROPULSIVE PROJECTS
(In caps at left)

CONCEPT DIAGRAM OF AIU's J-PEAKS 2024

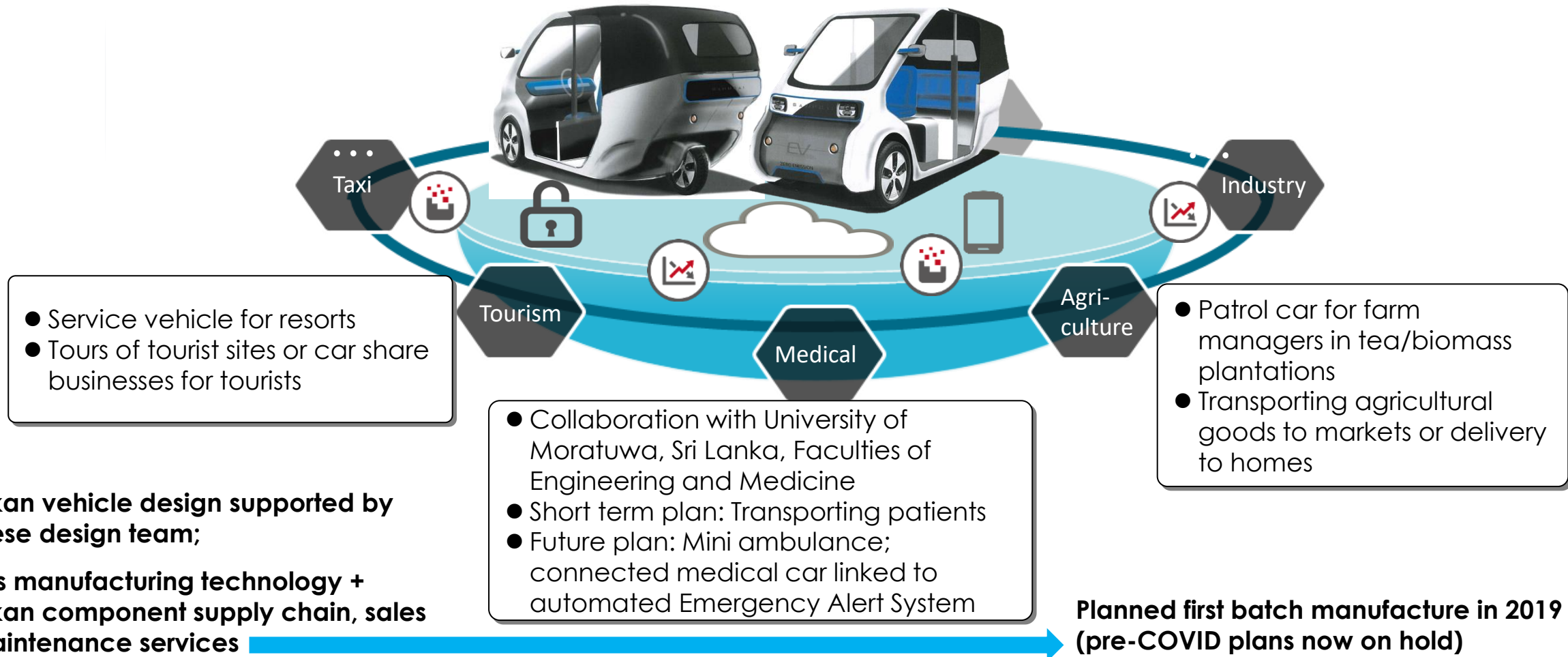
TRANSDISCIPLINARY INTEGRATION AROUND DESIGN, TECHNOLOGY AND DATA SCIENCE



GREEN AND SMART MOBILITY

New value propositions through market-based commercialization ENVIRONMENTAL. SOCIAL AND ECONOMIC VALUE

- New mobility for supporting growing businesses as well as major businesses such as tourism, agriculture and medicine, promotes entrepreneurship for women and youth, and delivers safe, ecological and smart value.



MOBILITY REDEFINED: BEYOND TRANSPORT

new services to counter isolation in ageing communities

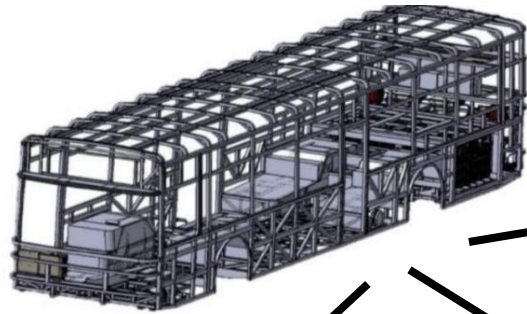
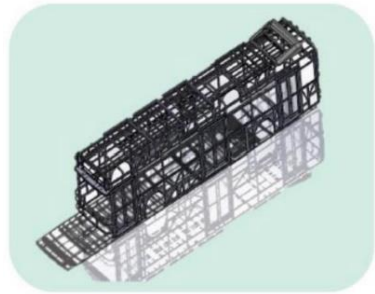
NICHINAN CORPORATION, TECHNOPLAN GLOBAL LTD. → DESIGN TO ENRICH LIFESTYLES

CREATIVE DESIGN +
INNOVATIVE ENGINEERING



AIU DESIGN LAB Ver 2.0

Mobile Cinema



Mobile Convenience Store



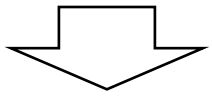
Mobile Pop-up Shop



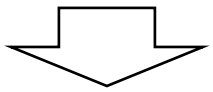
PERSONAL MOBILITY REDEFINED

CYBERDYNE LTD.

**Design of empowering
wearable robotics
applications**



Post-stroke rehabilitation
Supporting health workers
Assisting the frail to walk
Aiding socialization
Helping snow clearance



**ENABLING AND INCLUSIVE
INNOVATION TO GIVE PURPOSE
AND MEANING TO LIFE**



Hybrid Assisted Limb, HAL

PART THREE

THE LIBERAL ARTS

FOUNDATION FOR CREATIVITY AND HONOR

Human-machine coexistence



Beyond avatars

Humanoid Robots

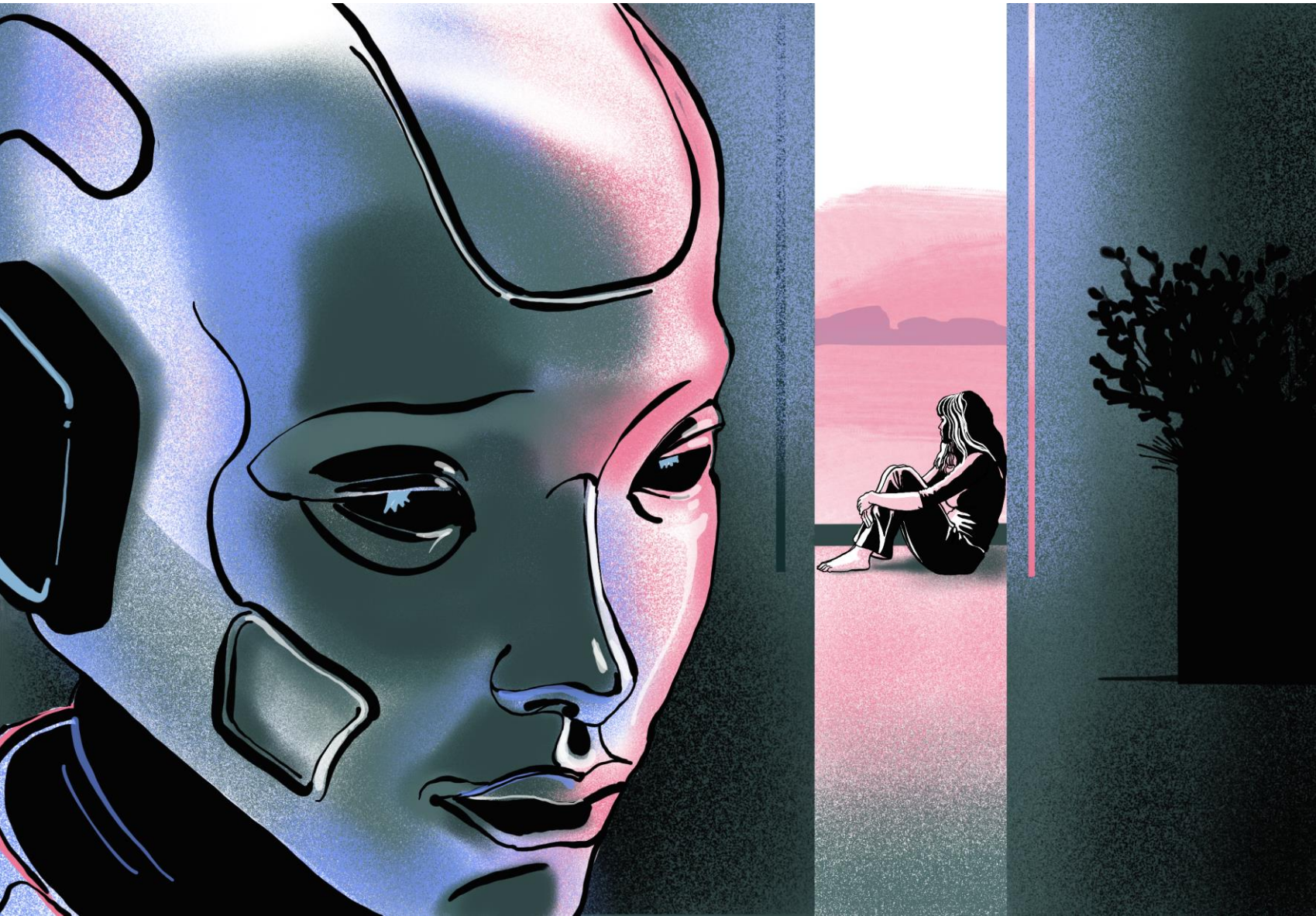
Companionship?

Hiroshi Ishiguro

Osaka University

Human-machine coexistence

Value of a liberal arts education



**Celebrating
Imperfection**

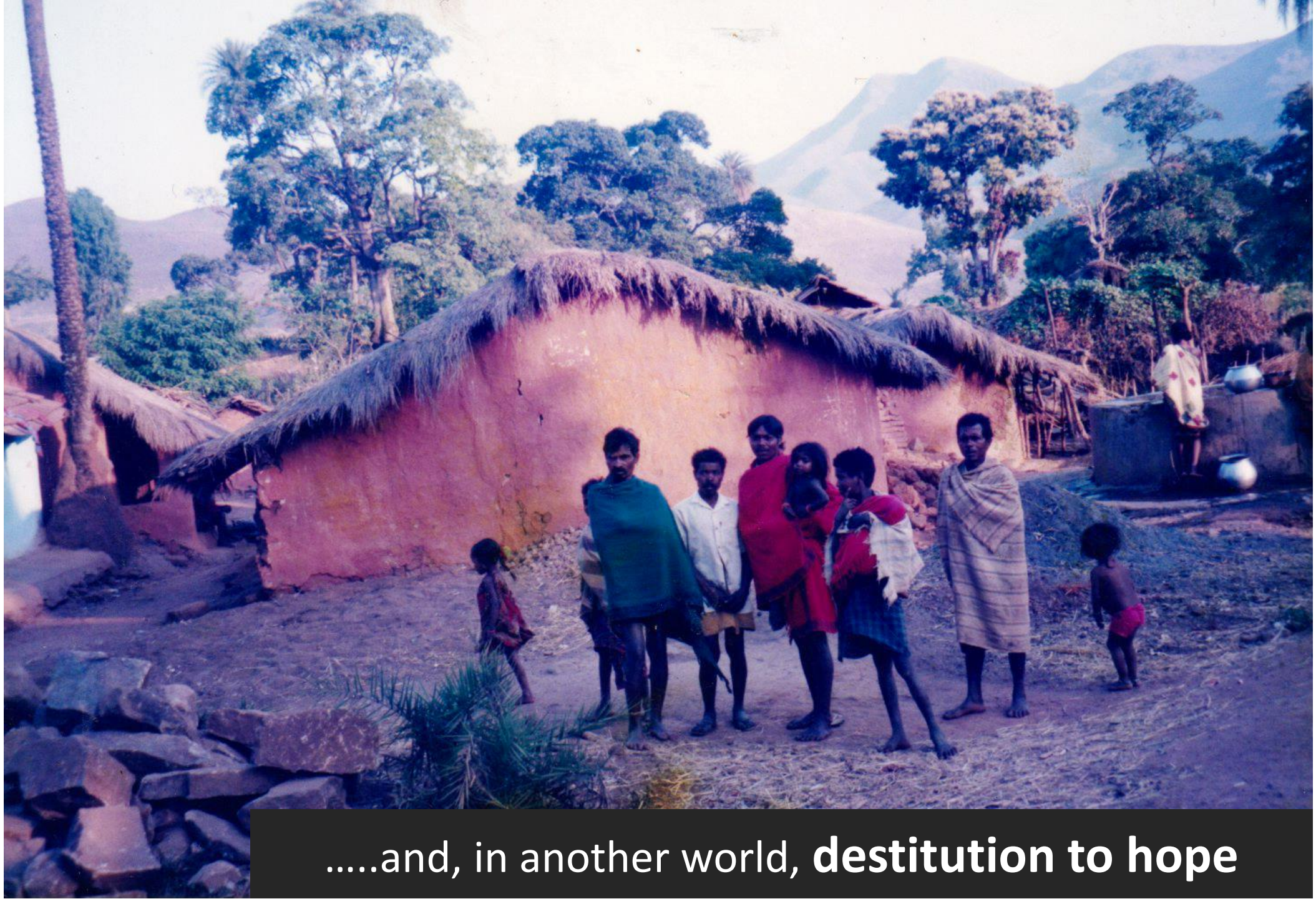


THE FUTURE

Transforming Gen Z's anger to hope...



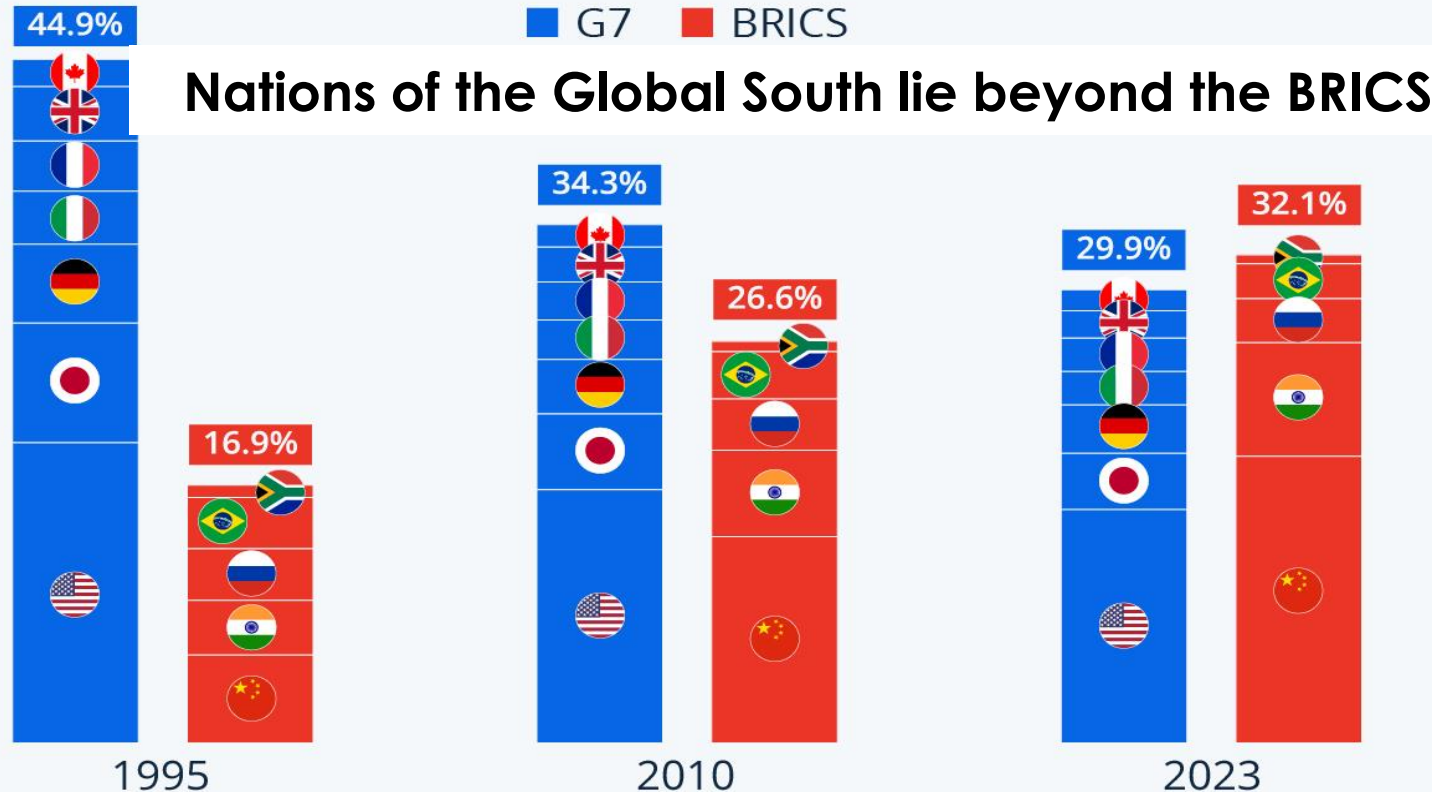
Accessed on 12 Feb 2022 from: <https://www.straitstimes.com/world/europe/climate-activist-greta-thunberg-says-cop26-unlikely-to-lead-to-big-changes>



.....and, in another world, **destitution to hope**

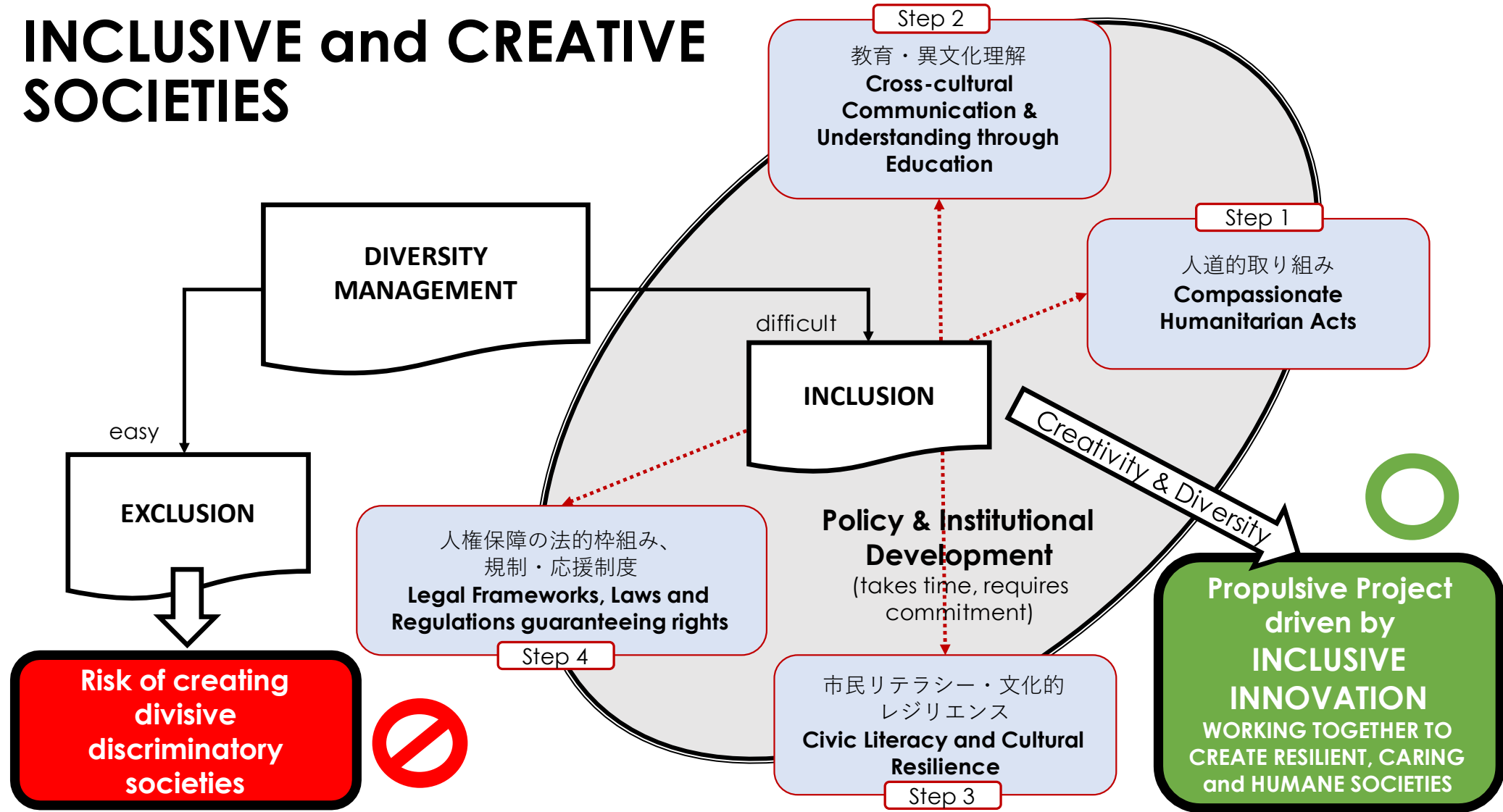
Rise of the BRICS nations

G7 and BRICS countries' share of global GDP at purchasing power parity



CREATING
SHARING
AND
CARING
SOCIETIES

INCLUSIVE and CREATIVE SOCIETIES



AIU's CoRE-CResT INITIATIVE (2024)

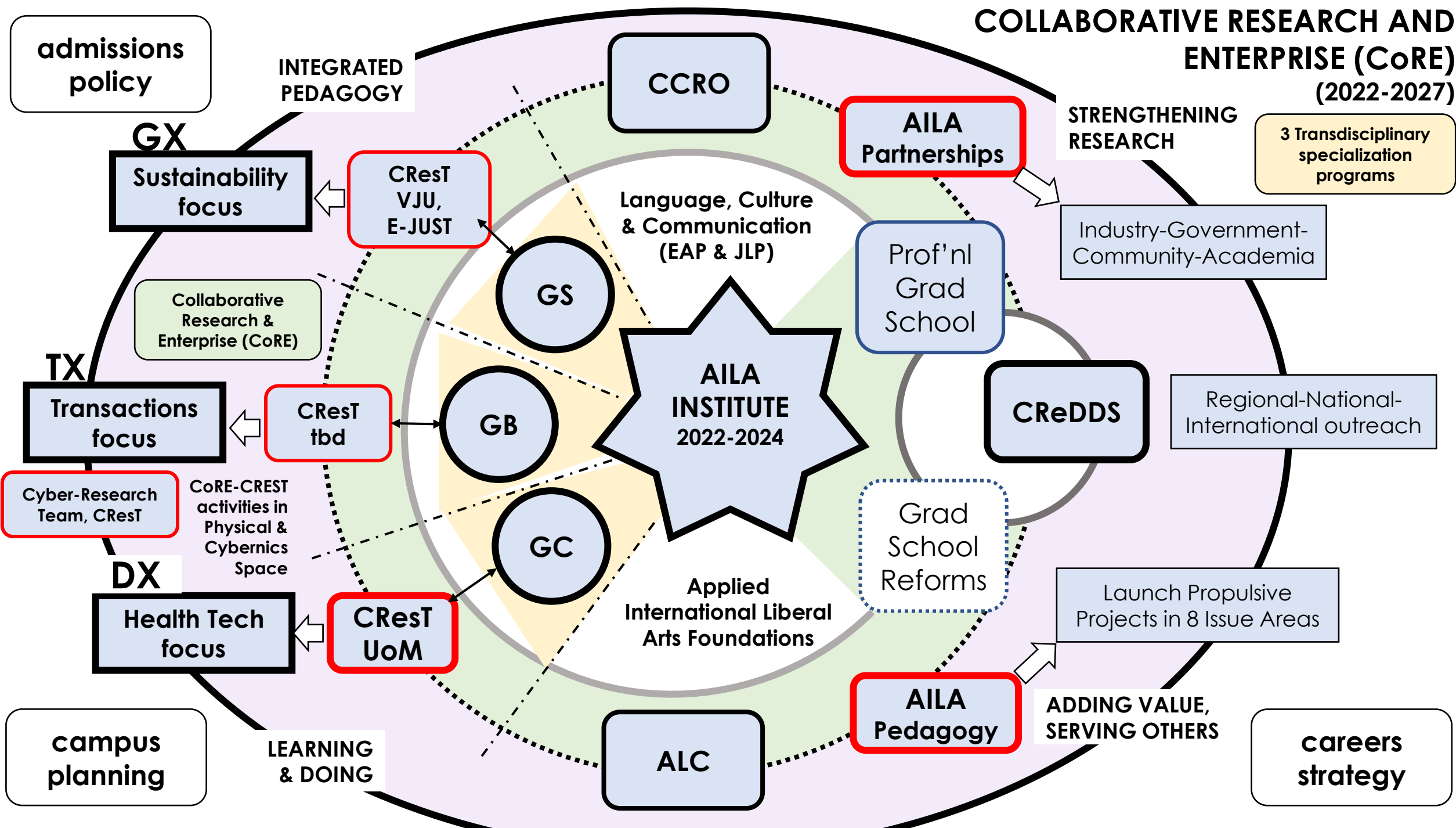
1. COLLABORATIVE RESEARCH AND ENTERPRISE (CoRE)

- a. **Concept and Purpose:** Translational Research, adding new knowledge and value to communities, society and the environment, through engagement with partners from Japan and the Global South (NOTE: Taiwan can be a partner in this)
- b. **Strategic Overseas Partners:** SRI LANKA (UoM); VIETNAM (VJU); EGYPT (E-JUST)
- c. **Thematic Focus:** Selected from Akita's 8 Issue Areas (see previous slide no.14)

2. CYBER RESEARCH TEAMS (CResT)

- a. **Concept:** Globally located research project teams, linked by regular online research meetings, on research themes in one or more of the 8 Issue Areas (slide no.14). They will aspire to meet offline, once or several times a year, depending on the availability of funding.
- b. **Purpose:** The intent is to foster a multi-generational, multinational community of scholars, driven by curiosity and bound by friendship, trust and commitment to the purpose of the project, viz: to serve humanity and the earth's environment

NOTE: See next slide (no.27) for location of CoRE-CResT initiative in AIU's pedagogic system



IN CONCLUSION

TAMKANG UNIVERSITY- AIU PARTNERSHIP

SCHOLARSHIP AND ENTERPRISE IN SHAPING A NEW WORLD ORDER

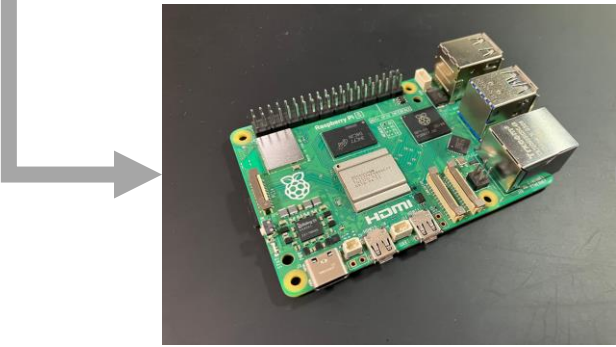
AIU-Murakumo

DX-Data Science Masters

Training Workshop

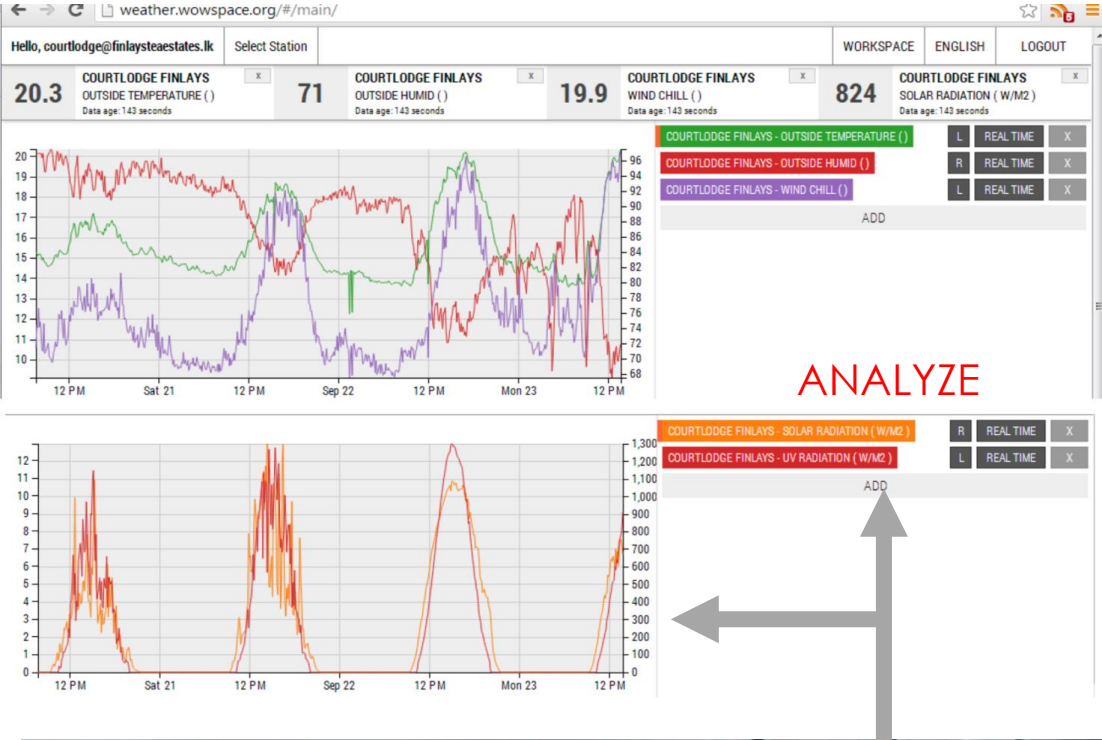


ASSEMBLE



DATA
INPUT

PROGRAM



GUI to VISUALIZE

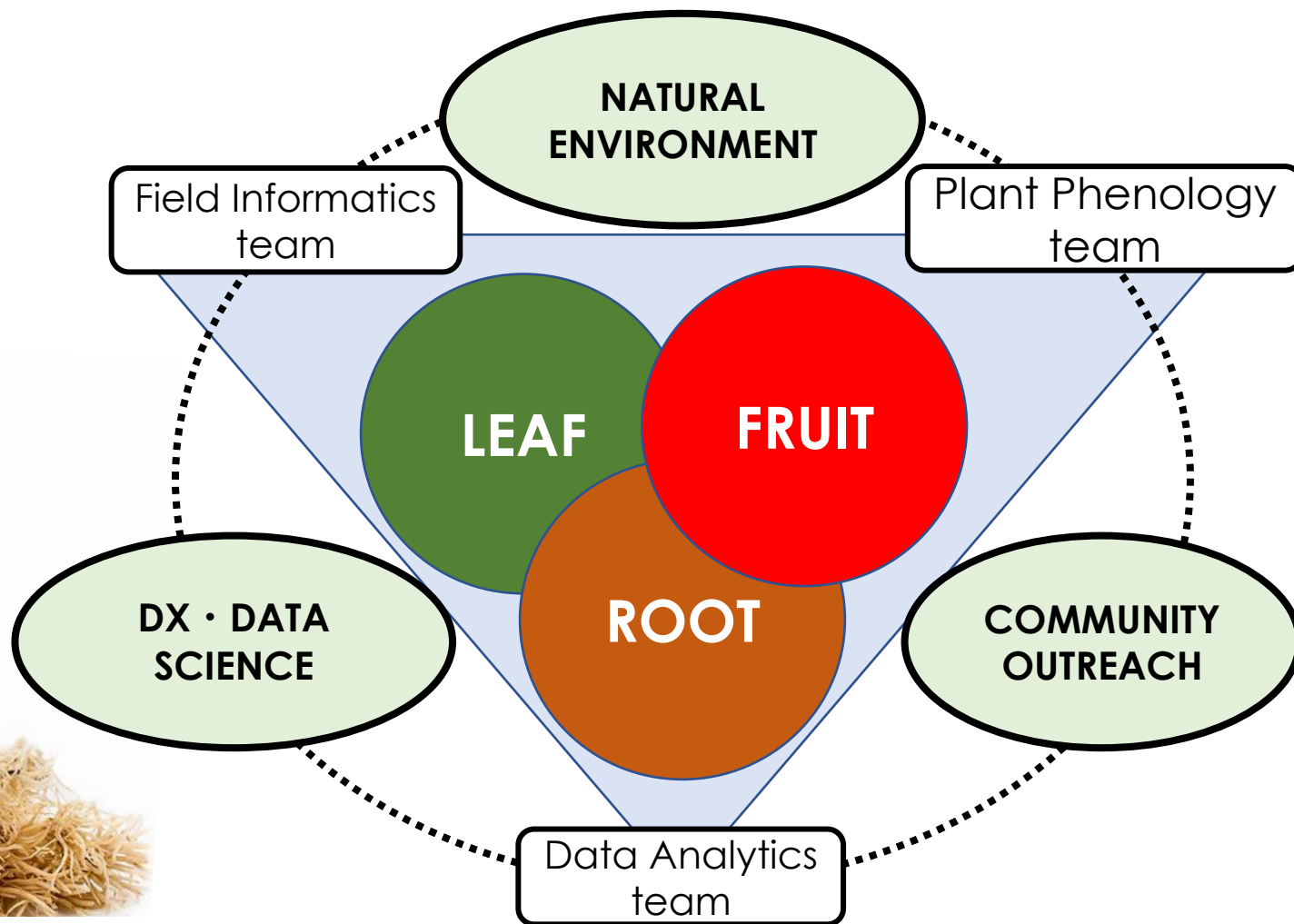


白神ネギラーメン



白神ネギ

FOOD & HEALTH



AGROCLIMATIC RESILIENCE

The background of the slide features two large, abstract images. The top image shows a rectangular object, possibly a piece of artificial diamond or a semiconductor, with a bright blue and purple iridescent sheen. The bottom image shows a dark, textured, and somewhat jagged object, likely a carbon super-semiconductor, with a yellowish-orange glow at its base. The overall aesthetic is high-tech and futuristic.

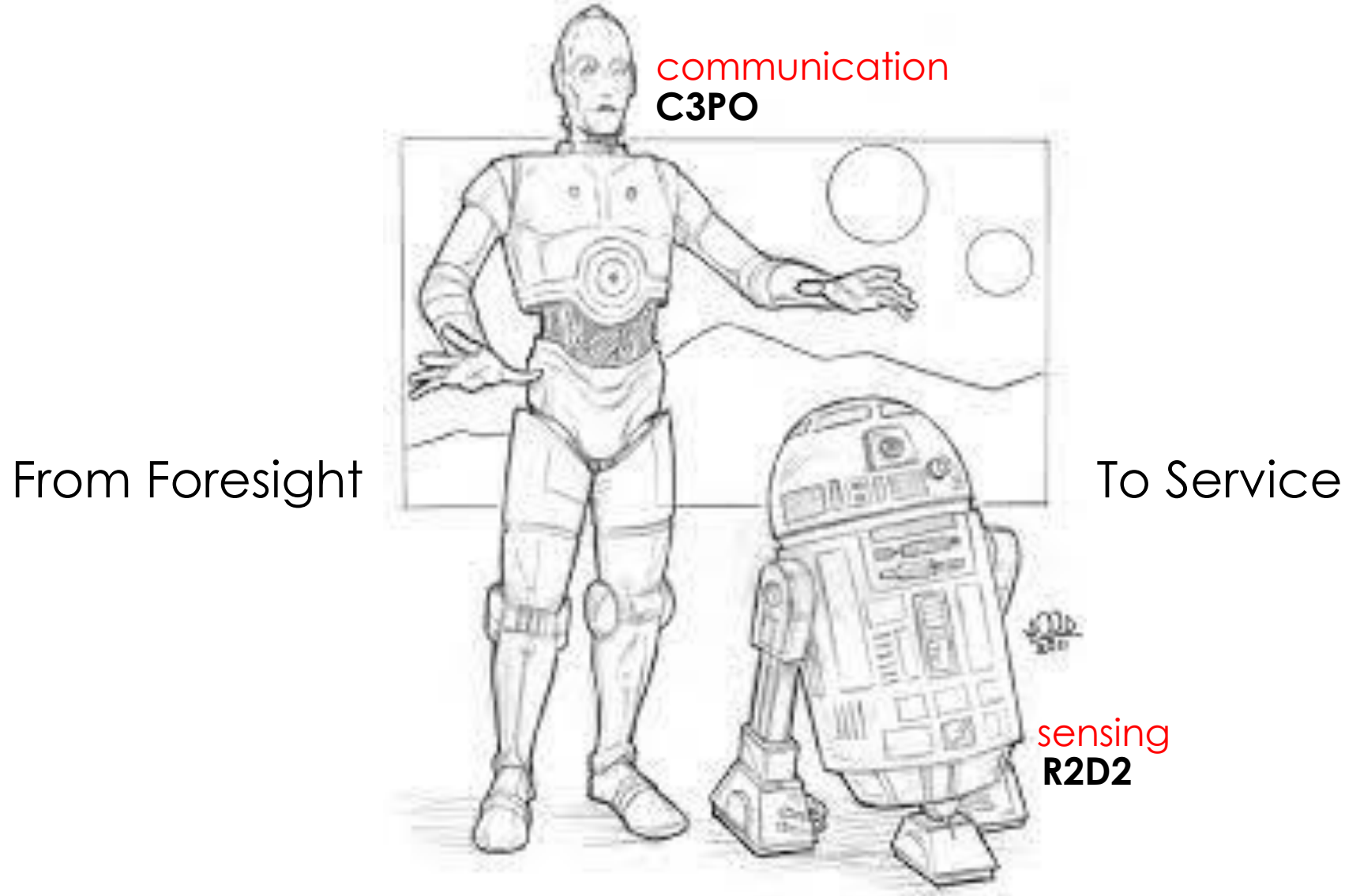
ORBRAY-AIU COLLABORATION CREATING A GLOBAL INNOVATION HUB

ORBRAY HAS MADE THE LARGEST ARTIFICIAL
DIAMOND IN THE WORLD

IT WILL BE THE BASIS FOR THE NEXT
GENERATION OF CARBON SUPER-
SEMICONDUCTORS

MIGHT BE THE SEEDS OF A NEW TRANS-
BORDER PARTNERSHIP BETWEEN JAPAN,
TAIWAN AND SRI LANKA

cross-cultural sensitivity x communication skills x liberal arts x trans-disciplinarity x
problem solving ability x new value creation x transborder engagement =
the learning experience @ AIU → global leadership

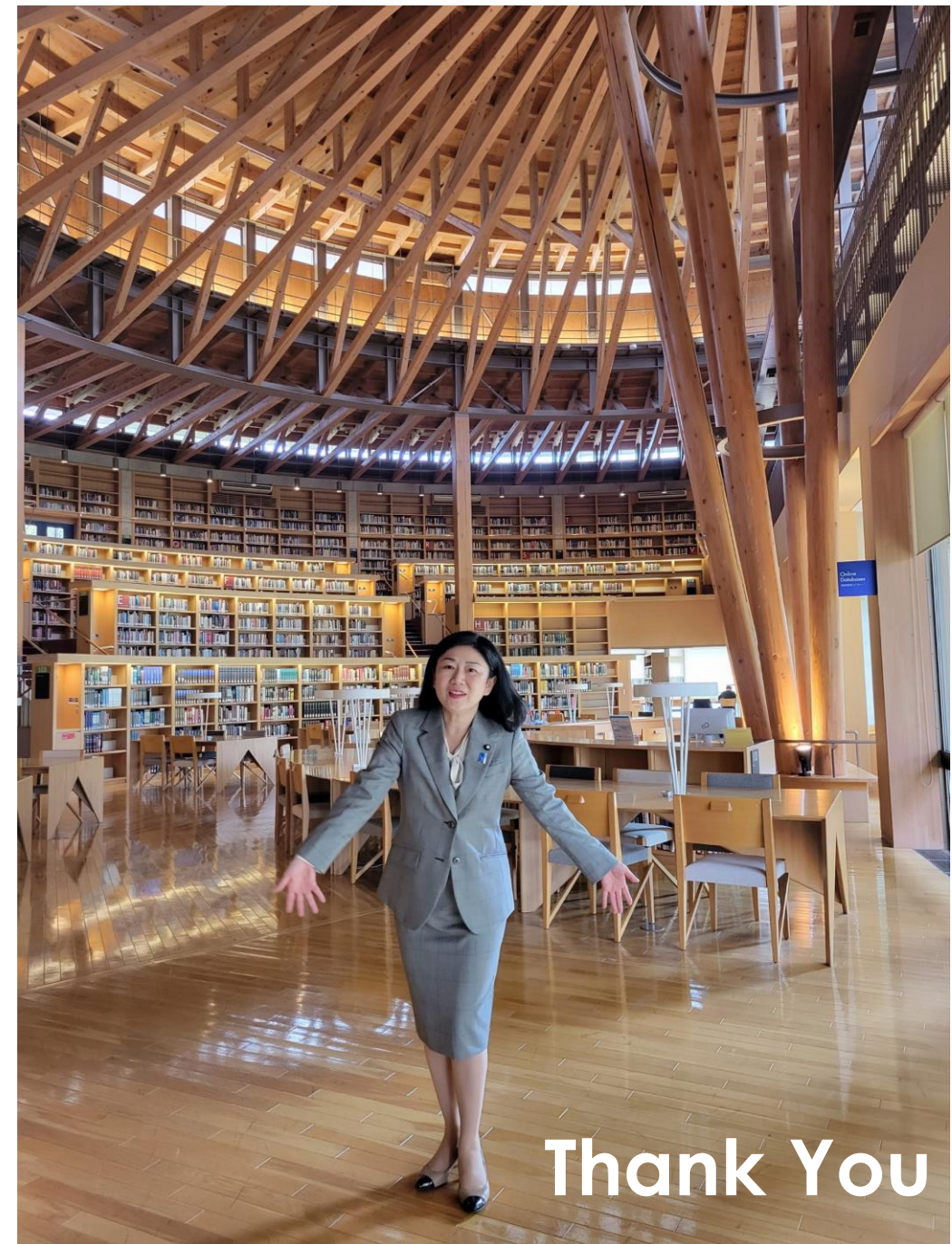




Akita International
University

FUTURE PARTNERSHIPS

Creating spaces for shaping the future
Integrating the local and the global
Inspiring hearts and minds
Serving society and nature



Thank You