Mission-Vision-Commitments-Goals

Research System Strengthening Plan for Universities for International Research Excellence (Outline)

Institute of SCIENCE TOKYO

Mission	**Advancing science and human wellbeing to create value for and with society**
Vision	• **Game Change**: While leveraging the momentum of university integration, Science Tokyo will promote fundamental reforms that transcend the boundaries of research fields, organizations, and positions, and innovate its research and education systems to lead the times. • **Big Bang**: Science Tokyo itself will become an ecosystem hub, co-create with global partners, and significantly expand the scope of university activities while creating societal impact. • **World-Class University**: Through responsible governance and strategic resource allocation, Science Tokyo will achieve financial autonomy and world-leading research and education, becoming a "world-class university" that creates a better, brighter future through societal impact.

Commitment I

Vision-driven research and education

Break down boundaries, allow Vision-driven researchers to advance science, provide new learning opportunities, and create societal impact.

Goals-Strategies I

I-A Create world-leading research and societal impact through Visionary Initiatives (VIs)

I-A-1 Shift to Vision-driven research and education with single graduate school

I-A-2 Implement people strategy to raise VI research capabilities to world-leading levels

I-A-3 Facilitate environment for expanding and upgrading VI activities

I-B Nurture innovators through interdisciplinary education

I-B-1 Shift to Vision-driven graduate education through VIs

I-B-2 Advance toward world-class educational environment

Commitment II

Hospital as innovation hub

Develop hospital into research hub open to public, pioneer medical-engineering innovations, and lead creation of "tomorrow's healthcare."

Goals-Strategies II

II-A Create tomorrow's healthcare through Institute of Biomedical Engineering (BME)

II-A-1 Establish environment where clinical faculty can focus on medical-engineering co-creation

II-A-2 Construct new system that utilizes hospital to promote cross-disciplinary research between the medical and dental sciences and science and engineering

II-B Create medical innovation via Institute of Biomedical Engineering

II-B-1 Lead Science Tokyo-born healthcare network

II-B-2 Co-create value through collaboration with overseas ecosystems

Commitment III

Global co-creation ecosystem

Ensure "responsible openness" through Vision-driven collaboration with universities and companies globally, lead ecosystem for a better, brighter future.

Goals-Strategies III

III-A Create societal impact through open alliances

III-A-1 Build global Hub & Spoke structure aligned with VI visions

III-A-2 Serve as innovation platform transforming science into societal value

III-A-3 Create system for developing unique innovation ecosystem talent

III-B Build trust as global partner

III-B-1 Develop global campus where diverse talents gather to study together and collaborate

III-B-2 Co-create cutting-edge science and technology in line with global trends

Commitment IV

Governance for a positive cycle of growth

Implement growth strategies, realize commitments, and ensure financial autonomy through strategic resource allocation and sophisticated financial controls that incorporate external perspectives.

Goals-Strategies IV

IV-A Ensure governance structure to support sound and sustainable growth

IV-A-1 Lead new era of university governance changing the relationship between universities and society

IV-A-2 Establish organization for resource allocation to support growth strategy

IV-B Build endowment for sustainable growth

IV-B-1 Expand engagement based on expectations and outcomes

IV-B-2 Develop advanced endowment fund management for financial autonomy and growth

Key KPIs

Phase I FY 2026-2031 (6 years), Phase II FY 2032-2040 (9 years), Phase III FY 2041-2050 (10 years)

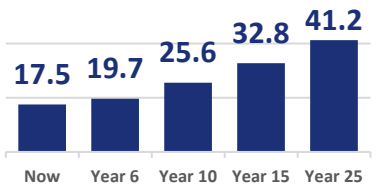
(Red text indicates distinctive KPIs of this initiative)

Institute of SCIENCE TOKYO

[Indicator Definitions]
- Publication counts: The latest 5 years
- All monetary amounts: Figures for the relevant fiscal year
- Full-time faculty, Admin/Research/Technical Staff : Actual headcount as of the reference date in the relevant fiscal year
- Cumulative values are marked with "cumulative"
- Notes shown in parentheses below graphs if needed.

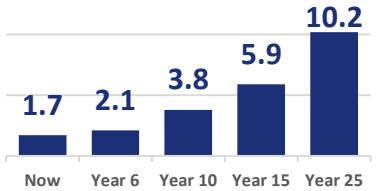
Commitment I. Vision-driven research and education

Number of Publications per Full-Time Faculty Member



【International benchmark MIT: 32.2】

Number of Top 10% Papers per Full-Time Faculty Member

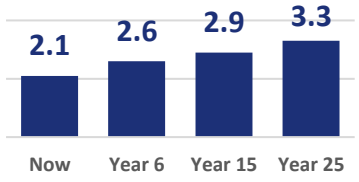


【International benchmark MIT:8.61】

Growth Rate of Top 10% Papers in Interdisciplinary Research per Faculty Member (×)

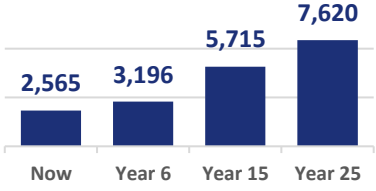
(Baseline set at 1.0 for current status)

Number of Admin/Research/Technical Staff per Full-Time Faculty Member (people)



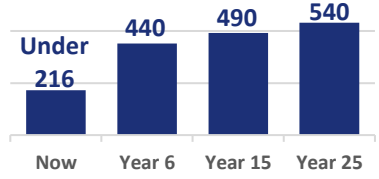
【International Benchmarks MIT:7.4】

Number of Doctoral Students (people)



(Based on enrollment capacity for FY2026)

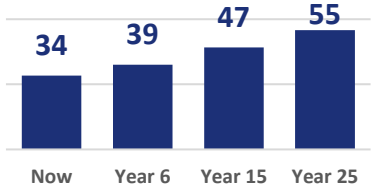
Average Financial Support per Doctoral Student (JPY 10,000)



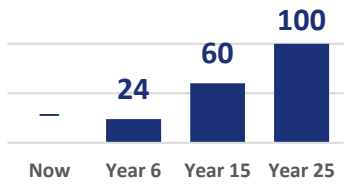
(Including tuition waiver (≈JPY 600,000))

Commitment II. Hospital as innovation hub

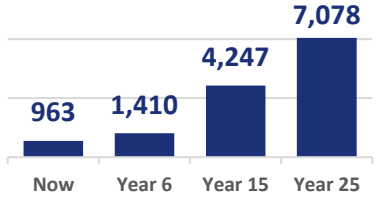
Research Effort Ratio of Medical and Dental Researchers (%)



Number of PIs among Asst. Profs. in Medicine/Dentistry

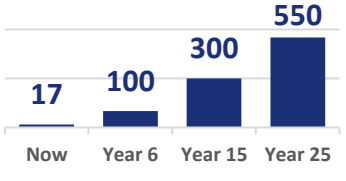


Number of Publications in Medical-Engineering Collaborative Research



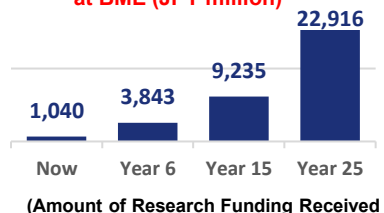
(Number of publications under Commitment I)

Number of startups from BME (cumulative)



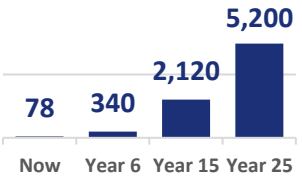
(Includes non-faculty related startups)

Amount of Research Funding Received from Private Companies at BME (JPY million)



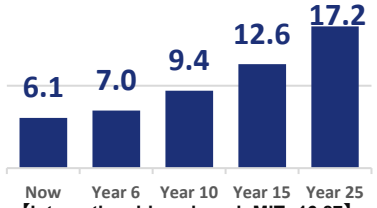
(Amount of Research Funding Received from Private Companies under Commitment III)

Revenue from Intellectual Asset Utilization via Open-Hub Hospitals (JPY million)



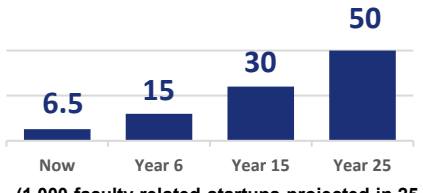
Commitment III. Global co-creation ecosystem

Number of International Co-authored Papers per Full-Time Faculty Member



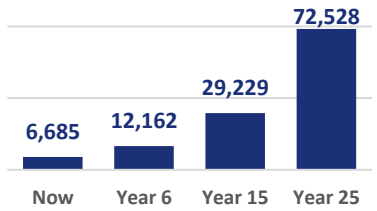
【International benchmark MIT: 16.87】

Percentage of Full-Time Faculty Involved in Startups (%)

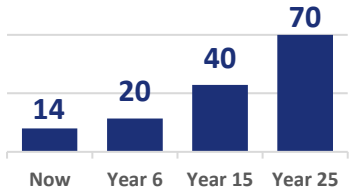


(1,000 faculty-related startups projected in 25 years (cumulative))

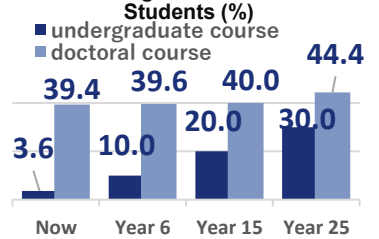
Amount of Research Funding Received from Private Companies (JPY million)



Number of Consortia Established with Private Companies (cumulative)

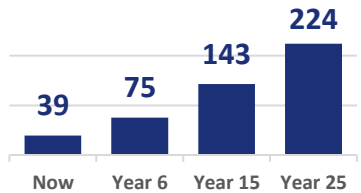


Percentage of International Students (%)



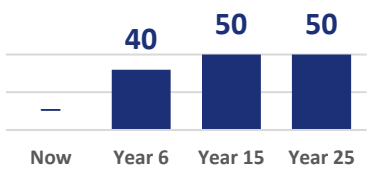
(Undergraduate: Ratio of international students among entrants)

Number of Organizationally Partnered Companies (cumulative)

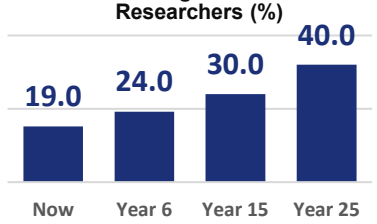


Commitment IV. Governance for a positive cycle of growth

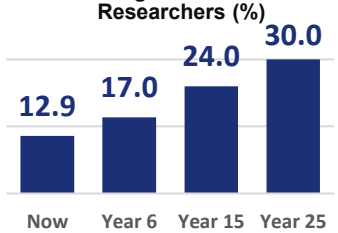
Percentage of Female Members on Search Committees (%)



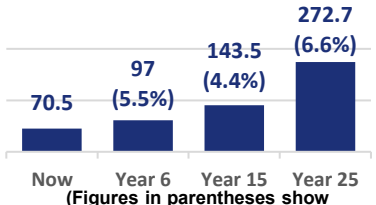
Percentage of Female Researchers (%)



Percentage of International Researchers (%)

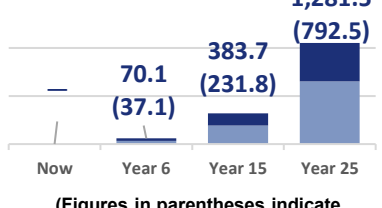


Annual Operating Budget (Business scale) (JPY billion)



(Figures in parentheses show average growth rate)

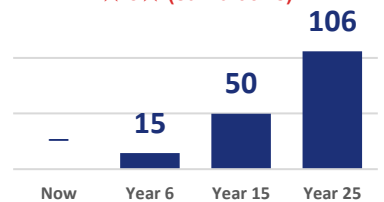
Endowment Fund Size (cumulative, JPY billion)



(Figures in parentheses indicate university fund grant amounts)

KGI

Number of Peer-Reviewed Reports Equivalent to UK REF 4★/3★ (cumulative)



Realization of University 4.0
～Science Tokyo orchestrates the ecosystem～

Institute of SCIENCE TOKYO

Science Tokyo revitalizing Japan with Science

- As an open system, Science Tokyo will integrate domestic and international knowledge to address complex societal issues and create a better, brighter future.
- Science Tokyo aims to realize the shared goals of government, industry, and academia, as represented by the Science, Technology and Innovation Basic Plan.
- Transforming the entire university organization into a Vision-driven research and education system through the Visionary Initiatives.
- Global crises such as climate change and pandemics are intensifying in the 21st century.
- After 30 years of stagnation, Japan urgently needs cross-sectoral transformation.

Critically ill Covid-19 patients hospitalized
No. 1 in Tokyo
FY 2022

THE Japan University ranking
(Educational Resources)
No. 1 in Japan
April 2025

QS ranking by subject (Dental)
No. 4 in the world
March 2025

Grants-in-Aid for Scientific Research recipients (Percentage of women)
No. 2 in Japan
2023
Top 50 Institutions

Supercomputer TSUBAME4.0
No.2 in Japan
June 2024

Japan's 1st large-scale quota for women in entrance exam
2024

Grants-in-Aid for Scientific Research Amount Accepted
(per researcher)
No. 1 in Japan
2023

THE Japan University ranking
No.2 in Japan
April 2025

Japan's 1st female Bachelor of Engineering

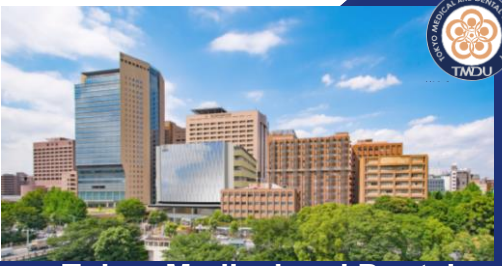
Sada Orihara, 1934

Amount of Joint Research Grants Received from Private Sector
(per researcher)
No. 1 in Japan
2024

Top 10% of papers
(per full-time faculty member)
No.2 in Japan
2018-2022
National Universities

Esprit — Creation of New Industries and Medical Treatments — Education through Advanced Research — Proactive Attitude when facing Crises — **Essence**

2024 Two predecessor universities merge to form National University Corporation Institute of Science Tokyo on Oct. 1. Three new research institutes launched: Institute of Integrated Research, Institute of Future Science, Institute of New Industry Incubation
2023 Successful clinical application of Saroa, world's first surgical support robot system with tactile sensation
2016 Yoshinori Ohsumi awarded Nobel Prize in Physiology or Medicine for his discoveries of mechanisms for autophagy
2003 Hideo Hosono invents IGZO thin film transistor → Global standard
2000 Hideki Shirakawa awarded Nobel Prize in Chemistry for discovery and development of conductive polymers
1970s Kenichi Iga invents vertical cavity surface emitting laser (VCSEL) → Global standard
1970s Nobuo Nakabayashi invents dental adhesive resins → Global standard
1960s Yasuharu Suematsu conducts world's first optical fiber communication experiment → Global standard
1960s Akio Suzuki succeeds in surgery on patient with severe valvular disease
1930s Yogoro Kato and Takeshi Takei invent ferrite → Global standard → TDK Corporation
1930s: Issac Koga invents temperature-insensitive quartz crystal → Global standard
1920s: Kenjiro Takayanagi invents cathode ray tube television → Global standard



Tokyo Medical and Dental University founded in 1928

Critically ill Covid-19 patients hospitalized
No.1 in Tokyo FY 2022

Technological contribution to decommissioning of Fukushima Daiichi Nuclear Power Plant

Tokyo Institute of Technology founded in 1881

Executive summary

Commitment Ⅰ Vision-driven research and education

- Leverage the momentum from the university integration and achieve radical university reform within the plan's first six years.
- Establish the Visionary Initiative (VI) framework: With a vision of a “better, brighter future,” a diverse group of researchers, regardless of their academic field, will collaborate to transform Science Tokyo’s structure into numerous VIs, each of which is a cross-disciplinary research organization responsible for research and graduate education. All faculty members participate in the VIs, which aim to create societal impact for wellbeing in addition to the advancement of research and education. With this action, Science Tokyo will revitalize Japanese society and industries.
- Launch eight VIs (currently six), each ultimately involving approximately 200 PIs and approximately 1,000 researchers (including doctoral research associates). At least 30% of these members will be international (including distinguished faculty) researchers, and 40% will be female researchers.
- Integrate graduate schools into one organization and start Vision-driven graduate education, strengthen international ecosystem for enhanced impact.
- Increase admin/research staff and education-focused faculty (1.9-fold), significantly increase total research hours (approximately 3-fold).
- Introduce International Undergraduate Excellence Program, aim for 30% int’l undergraduate students, 40% int’l doctoral students by 2050.
- Foster impactful research via orientation by I4C* and enhanced collaborative activities under VIs, boost publication of papers (2.7-fold) and top-10% papers (6.8-fold).

*I4C: Investigation with Integrity, Innovation for Impact Collective

Commitment Ⅱ Hospital as innovation hub

- Create a research-focused environment for clinical faculty and transform the university hospital into an innovation hub through the Institute of Biomedical Engineering (increase medical and dental researchers’ effort from 34% to 55%, number of medical-engineering papers from 1,000 to 7,000).
- Establish the Innovation Design School (IDS) to train 100 ecosystem leaders annually to support startups, science and technology strategy, and university management.

Commitment Ⅲ Global co-creation ecosystem

- Facilitate global collaboration by VIs, creating a global ecosystem (establish 70+ consortia with private companies, increase internationally co-authored papers 3.3-fold).
- Establish startup hubs at Tamachi (deep tech) and Yushima (healthcare) Campuses (create 1,000 faculty-related startups, involve 50% of full-time faculty in startups).
- Strengthen international industry-academia collaboration at Yokohama & Chiba International Campuses (provide secure closed areas, boost private revenue 10-fold).

Commitment Ⅳ Governance for a positive cycle of growth

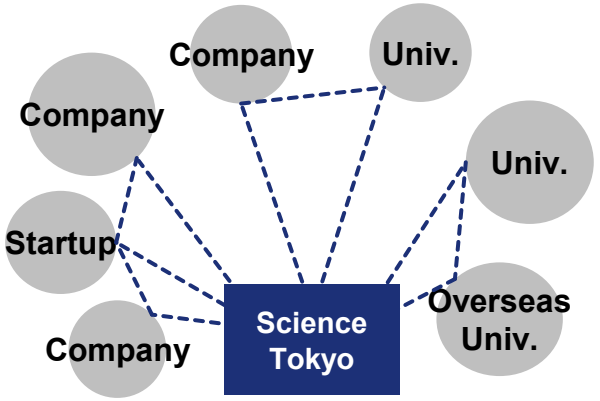
- Achieve sustainable growth through positive cycles of talent, knowledge, and funding, supported by advanced fund management (5.6% annual investment growth, achieve JPY 1.2 trillion endowment fund in 2050).
- Introduce a panel peer review system for societal impact, achieve 106 evaluations rated equivalent to Research Excellence Framework (REF) 4★/3★ evaluations for UK universities in Phase III.
- Establish status as a World-Class University on par with Massachusetts Institute of Technology (MIT) and Imperial College London (Imperial) by 2050.

Game Change

With the passion and spirit of university integration, Science Tokyo will break boundaries, transform minds, and change the game.

The present state

Rigid divisions and limited external engagement characterized past universities



Rigid boundaries formed along academic disciplines and administrative functions

Limited agility in responding to evolving societal expectations

Language and cultural gaps hindering collaboration and co-creation

Learning from past experiences...

- WPI functioned as a "detached island" but produced internationally recognized interdisciplinary research.
- Simply creating fusion organizations does not generate large-scale momentum.
- Student involvement accelerates interdisciplinary research.

Bold reforms executed in the first three years

Transforming the entire university into a Vision-driven open system based on an envisioned "better, brighter future"

Key Reforms in Phase I

Regarding progress since the previous University for International Research Excellence application, based on comments stating that 'the pre-integration plan had not been developed sufficiently and was not yet at a stage where its feasibility could be assessed,' Science Tokyo formulated measures to accurately identify challenges that may arise during the implementation phase, and to concretize and maximize university integration synergies in a short period.

⇒ Other measures (in red)

- **Transform Science Tokyo into a Vision-driven institution through the Visionary Initiatives, engaging all faculty and students**
  ⇒ Further develop previously well-received initiatives to challenge the closed and hierarchical culture of Japanese national universities
- **Unify graduate schools into a single system**
- **Centralize resources under executive leadership**
- **Strengthen support to secure research time**
- **Promote international co-learning and enforce DEI across campuses**
  ⇒ Further develop previously well-received initiatives to foster a free and flat environment and adopt English as an official language
- **Establish a global ecosystem platform, including the Institute of Biomedical Engineering and the Innovation Design School**
- **Establish a nationally leading economic security platform (I4C, Chiba International Campus)**

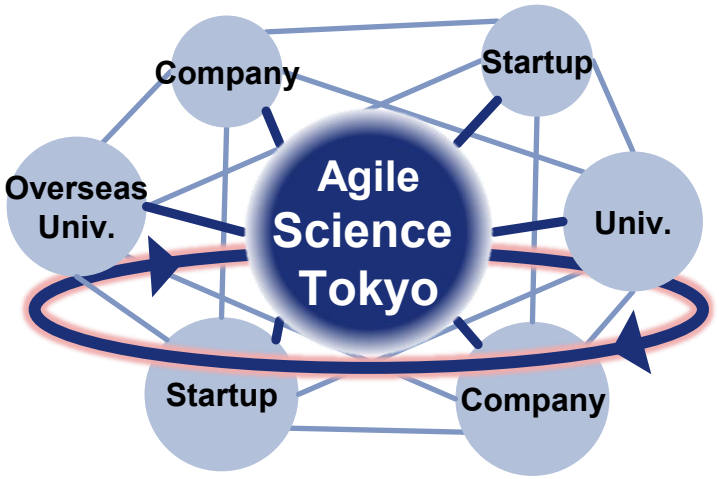
Consensus Status

- The Institute held **eight official meetings**, **16 individual discussions, and a symposium with student speakers**. Town Hall Meetings, held 15 times, facilitated dialogue with all members, including students.
- President & CEO, president & CAO led engagement with **top executives from 27 major global companies**, **27 leading international academic institutions (e.g., Imperial, MIT)**, and **over 20 global experts** — gaining broad support for the VI concept from academia and industry.

Science Tokyo in 25 Years

Visionary collaboration

Science Tokyo, driven by its vision, connects with society and the world, co-creating unparalleled research excellence and societal impact to lead the global ecosystem.



- Research Capability — A Vision-driven system that expands science and co-creates societal impact — Impact
- Global Leader-ship — Agile and strategic resource allocation, systemic reform, and internal-external collaboration — External Funding
- Diversity — Free and inclusive academic environment where individuals thrive regardless of language, profession, or gender — Organi-zational Strength

Big Bang

Into the future: Science Tokyo's intended direction

- The Visionary Initiatives (VIs) will lead cross-disciplinary research, enhance research capabilities, and pioneer new scientific frontiers.
- I4C* will drive innovation through advanced technology analysis in global partnerships. *I4C: Investigation with Integrity, Innovation for Impact Collective
- Science Tokyo will become a world-class university on par with MIT and Imperial through excellence in research, innovation, and societal impact.

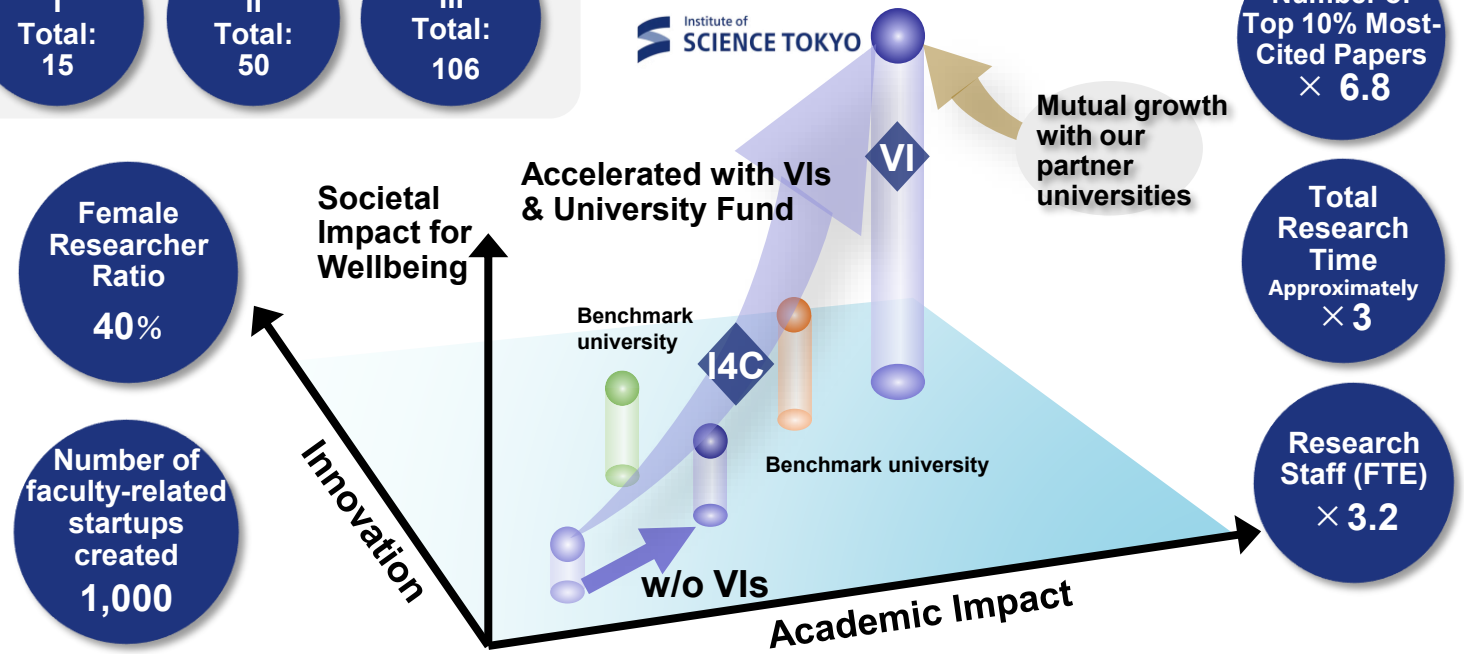
The Big Bang of Integration

Guided by a vision of a better, brighter future, Science Tokyo will leverage integration momentum and utilize I4C's recommendations to grow faster and larger than any other institution within three years.

KGI Number of reports rated equivalent to UK REF 4★ / 3★ through peer review

- Phase I Total: 15
- Phase II Total: 50
- Phase III Total: 106

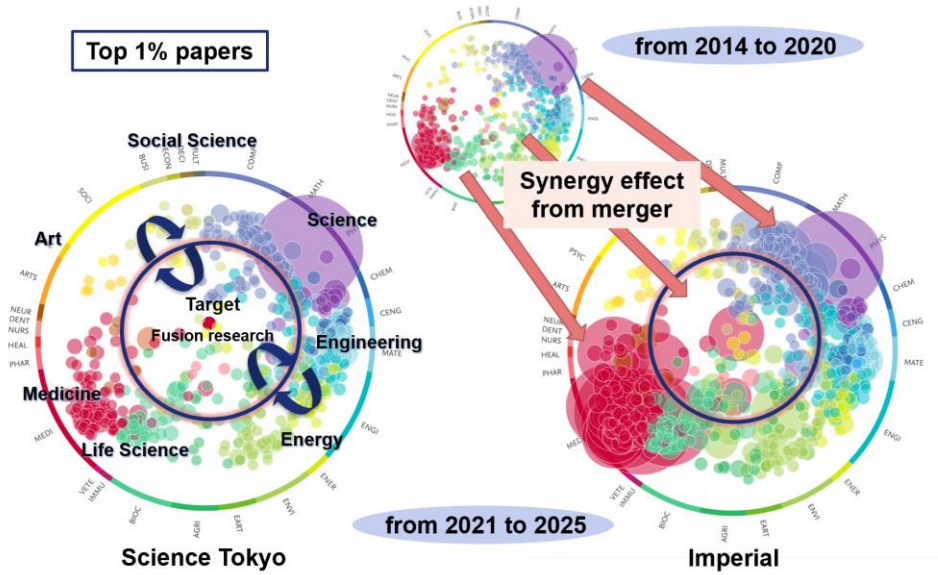
Shifting from a linear model (basic → applied → development) to a co-creation model boosts all three axes through synergistic effects



Enhancing Research Strengths

Interdisciplinary research by boundary-free researchers expands fields including basic science, fueling a positive cycle that further advances interdisciplinary research.

Imperial's integration of medicine and science/engineering colleges in the 1990s strengthened both integrated (center area of circle below) and disciplinary domains (peripheral area of circle). Science Tokyo also aims to achieve disciplinary expansion through the growth of interdisciplinary research, particularly in the area of medical-engineering collaboration.



Data source: Scopus®, powered by SciVal®

Ecosystem shaped by VIs

Visionary Initiatives (VIs): Cross-disciplinary research and education framework united by the vision of a "better, brighter future"

I⁴Collective (I4C)

Leverage Science Tokyo's institutional strengths to propose long-term visions to the executive team. Independently conduct research on emerging and critical technologies, including from the perspective of economic security, perform risk assessments, and offer strategic recommendations both within and beyond the Institute, while fostering next generation of policy and research talent.

Research & analysis

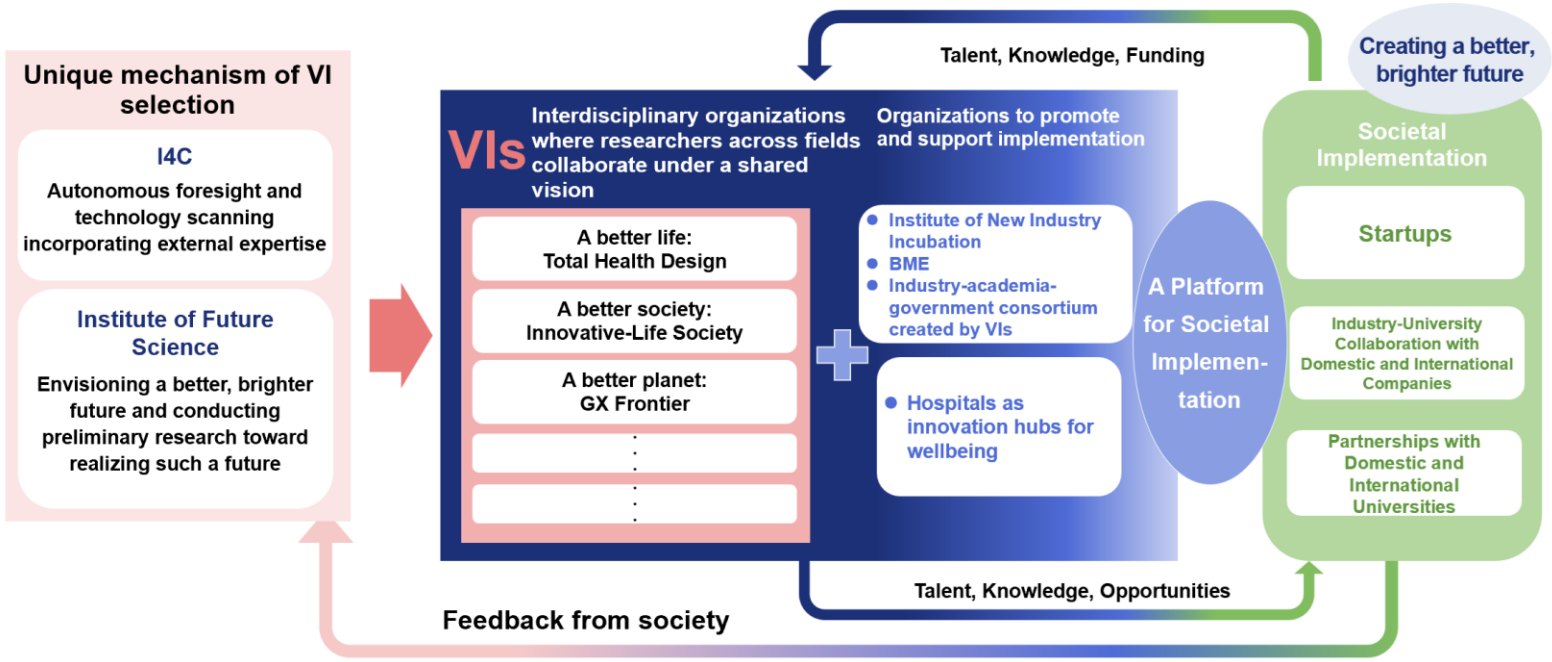
- Draw on internal expertise to generate evidence for VI development and to design strategies for the timely societal application of emerging technologies, including VI outcomes.
- In parallel, analyze geopolitical risks and benefits from the perspective of economic security, and develop measures to ensure research integrity.

Fostering highly skilled talent

Cultivate talent capable of conducting theoretical and empirical research in strategy and policy, with an integrated understanding of industrial structures, economic security, and geopolitical risks. In addition, IDS will offer the "Science and Technology Strategy Design Course" as a graduate degree program.

Three strategic pillars driving the virtuous cycle of talent, knowledge, and funding

1. Identifying strategic research areas through the Institute of Future Science
2. Promoting Vision-driven research and education through cross-disciplinary VIs
3. Advancing a global innovation ecosystem by translating VI outcomes into societal impact via the Institute of New Industry Incubation and the Institute of Biomedical Engineering, in collaboration with domestic and international stakeholders



Suggestion

Science Tokyo executives

- ✓Creating VIs for a better, brighter future that people desire
- ✓Evidence-based strength-oriented institutional management
- ✓ Appropriate open–closed strategy to ensure responsible openness

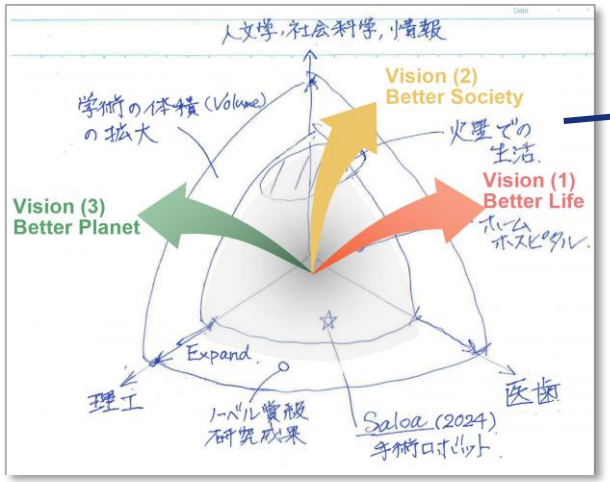
Ecosystem Builders create global innovation ecosystems

- **Appoint Ecosystem Builders** to manage VI research activities and build ecosystems through networks among academia, industry, and government, both domestically and internationally.
- **Establish the Global Vision Coordination Center**, where experts in research, industry collaboration, healthcare, and technology co-manage VIs.
- **Strategic placement of 90 Technical Conductors (TCs) across VIs by 2050.**

TCカレッジ TECHNICAL CONDUCTOR **Development of Advanced TC: Science Tokyo TC college (All-Japan training system)**

Realizing a better, brighter future through the VIs

- In April 2025, **the Visionary Initiatives (VIs) – cross-disciplinary research and education organizations** aimed at realizing a "better, brighter future" – were established by upgrading existing interdisciplinary research organizations. (**currently 6 VIs, to expand to 8 in FY 2025**)
- The VI framework will involve **approximately 200 faculty members and approximately 1,000 researchers** (incl. doctoral students as doctoral research associates) per VI by the final phase.
- Over 80 distinguished faculty members (mainly international); **at least 30% of all researchers will be international and at least 40% will be women**.
- **Promoting interdisciplinary research that spans a diverse range of disciplines and stages (basic, applied, development).**
- Science Tokyo will extend its interdisciplinary graduate education system, including multi-domain courses and excellence programs, across all Schools and Faculties. **The VIs will offer graduate courses that integrate research and education**.
- To ensure that VIs remain agile organizations aligned with evolving visions, **existing Schools and graduate-level Faculties will be consolidated into a single graduate school (tentatively named the Graduate School of Convergence Science).**



Conceptual diagram on the first day of the framework's conception

The VIs drive **cross-disciplinary research across a spatial domain** defined by **three scientific pillars** — medical and dental sciences, science and engineering, and the humanities and social sciences — to enhance research from basic to applied levels and realize their vision through solutions to societal challenges.

6 VIs as of 2025

*All full-time researchers will participate in one of the 8 VIs by FY2028.

Space Innovation
Developing space life zones

PD:Yasuhito Sekine
(Science and engineering)

GX Frontier
Realizing cutting-edge science and technology to make green transformation a reality

PD: Mika Goto
(Science and engineering)

Innovative-Life Society
Cyber-physical spaces opening up new areas of life

PD:Kei Sakaguchi
(Science and engineering)

Resilience-Tech Society
Achieving a society resilient to disasters and pandemics

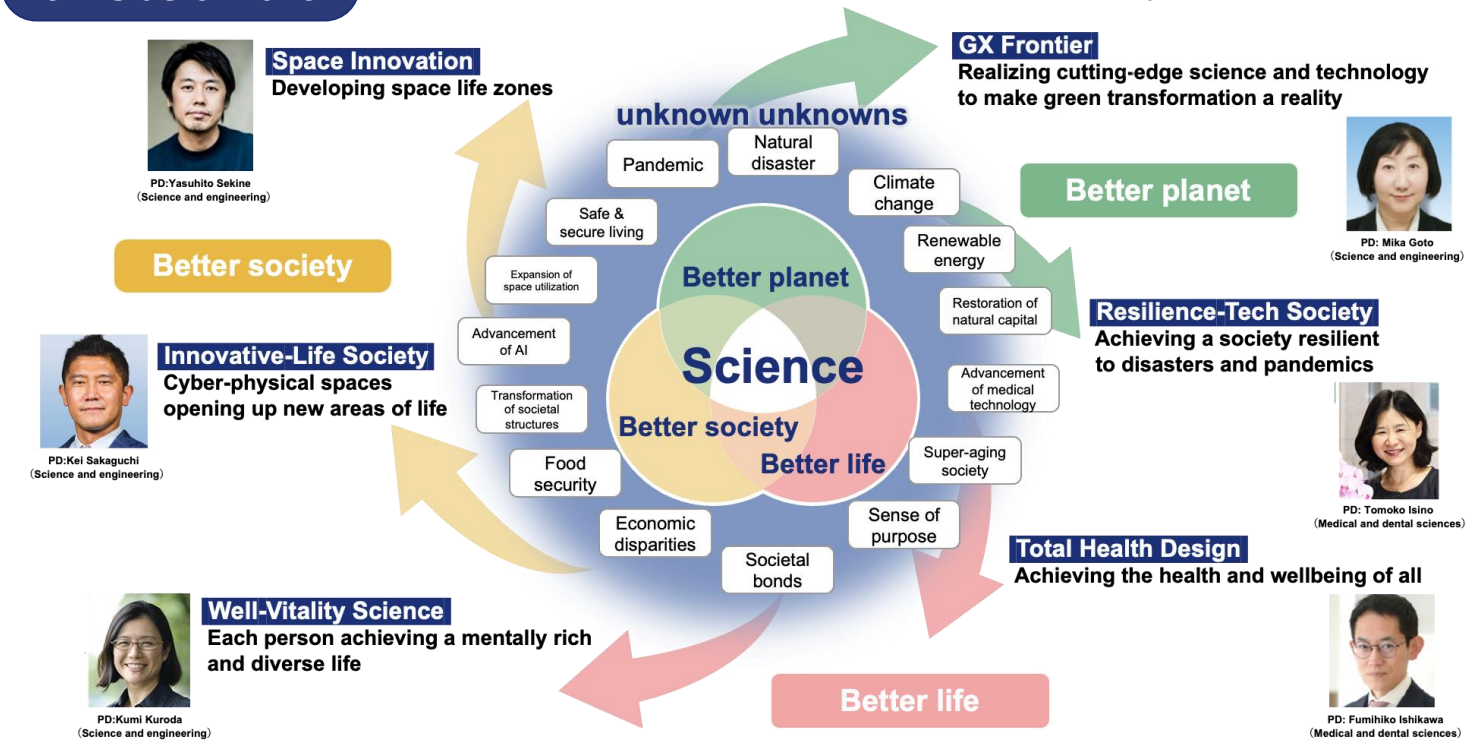
PD: Tomoko Isino
(Medical and dental sciences)

Total Health Design
Achieving the health and wellbeing of all

Well-Vitality Science
Each person achieving a mentally rich and diverse life

PD:Kumi Kuroda
(Science and engineering)

PD: Fumihiko Ishikawa
(Medical and dental sciences)



Leading VIs: Better Life, Better Society, Better Planet

Setting the sub-vision

- Discussion at the Institute of Future Science and foresight analysis by I4C
- Autonomous evolution driven by researchers and students

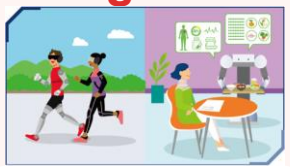
Composition of principal investigators

- Diversity across disciplines and research stages from basic to applied research
- Co-creation involving researchers and companies from around the world who share a vision

Total Health Design

Effortless health management

Sub-Vision



A life without knowing the anxiety of illness

Sub-Vision

Achieving the health and wellbeing of all

Sub-Vision

Creating and providing rapid, optimal medical care driven by AI

Sub-Vision

Protecting overall health via oral science

PD: Prof. Fumihiko Ishikawa

PIs at Science Tokyo: 54 at time of launch

Innovative-Life Society

Future of co-creation with AI and robots: industry, healthcare, and welfare

Sub-Vision

Stable food supply and healthy, abundant food culture creation

Sub-Vision

Cyber-physical spaces opening up new areas of life

Sub-Vision

Building healthy, safe and comfortable future cities

Sub-Vision

Future of society supported by next-generation healthcare

PD: Prof. Kei Sakaguchi

PIs at Science Tokyo: 53 at time of launch

GX Frontier

Mitigation of climate change

Sub-Vision

Finding optimal solutions through Earth monitoring

Sub-Vision

Realizing cutting-edge science and technology to make green transformation a reality

Sub-Vision

Finding new energy sources and resources

Sub-Vision

Realization of nature positive

PD: Prof. Mika Goto

PIs at Science Tokyo: 49 at time of launch

Numerous researchers from other universities, including overseas institutions, are participating in each of the VIs

HR strategy to maximize research excellence at VIs

Robust support system for advancing research

- **Distinguished Faculty** 0 → 80
- **Education-focused Faculty** 0 → 90
- **Management Faculty** 13 → 340 (×26)
- **URAs** 83 → 300 (×3.6)
- **Technical Staff** 309 →470 (×1.5)
- **Administrative Staff** 1,918 → 2,350 (× 1.2)

Professional and Administrative Staff: 2,323 → Approximately 3,460 (×1.5 increase)

- **PhD Students** 2,565 →7,620 (×3)
- **Research Fellows** 389 → 2,040 (×5.2)
- **Research Staff（FTE）** 676 → 2,190(×3.2)
  [Research Fellows and Specially Appointed Faculty, etc.]

Strategic investment in researchers and experts

Approximately 80% of support comes from University Fund

Faculty Research Effort 44%→60%

Total Research Time approximately ×3

Research Strength approximately ×7

HR strategy by People Strategy (PS) Section to strengthen support system

★: Partially implemented and scheduled for expansion

Recruitment

Strategic posts for vision

- Scouting of distinguished profs. based on I4C analysis by Search Committee (gender balance of the committee: 50% male/female)
- HR committee hearings on departmental staffing plans★
- Distinguished Faculty: 20 Distinguished Profs. + 60 Distinguished Assoc. Profs., team-based hiring, global-standard salaries, flexible terms
- Appointment of education-focused faculty and next-generation management ★
- Promotion of Diversity, Equity & Inclusion through women's advancement programs and "flexible full-time equivalent (FTE)" system ★

Full-scale talent exchange

- Establishing new career pathways through domestic and international mobility and cross-functional transfers★
  (Enabling career progression from research and technical staff to academic management roles)

Talent Development

Career advancement opportunities for all members

- Center for Career and Talent Development: A unified and structured development system
- Technical Conductor (TC) College: Advanced technical personnel training – now expanded nationwide★
- Innovation Design School (Graduate Program): Cultivating startup talent

Career paths shaping the future of young researchers

- Tenure-track system covering approximately 80% of assistant professors (includes support for research staff employment costs and overseas training support after tenure, etc)★
- Principal Investigator (PI) system allowing assistant professors to serve as primary supervisors★
- Doctoral research associate positions for PhD students with annual compensation of JPY 4.2M–6.6M, including a tuition waiver (approx. JPY 600k).

Personnel Evaluation

Fair evaluation and diverse incentives based on societal impact

- Faculty are evaluated in each VI based on outcomes combining research achievements and impact generation.
- Evaluations are conducted by multiple reviewers within each VI.

Vision-driven graduate education through VIs

Education that empowers diverse students to realize their dreams through VIs, inspired by Science Tokyo's vision of "a better, brighter future" ~A global hub for students driven to solve societal challenges~

The current Schools will be consolidated into a single graduate school, with a major shift toward Vision-driven graduate education.

Graduate Programs

TRACK: Discipline-based learning offerings

Mechanical Track | Electrical Track | Chemistry Track | Biology Track

Students take TRACK and VI classes based on each VI curriculum.

Innovative Life Society

Total Health Design

VI Courses（Interdisciplinary Courses）

○○Course

△△Course, etc.

GX Frontier

・・・

Balancing discipline and Interdisciplinarity

Undergrad. Programs

Enroll-ment

Admis-sions

Undergrad.-to-graduate transition based on specialization

8 Schools

Graduate School of Convergence Science (tentative)

- **Interdisciplinary Courses**
  Each VI offers multiple interdisciplinary courses, and **all graduate students** will belong to one that fits their research.
- **Supervisory Committee (SC) System**
  PhD research is guided by both an advisor and the interdisciplinary Supervisory Committee (SC).
- **Industry-Academia Consortium Collaborative Education**
  Mentoring, salary support, and job offers through corporate programs

Previous achievements

Leverage the educational design and operational know-how of eight interdisciplinary courses already established in former Tokyo Institute of Technology.

Successful industry-academia collaborative education in WISE program (two centers received an "S" rating)

Mandatory industry-collaborative problem-solving projects

VI-driven education ecosystem

Only world-leading research can empower students to rise to the top of the global stage.

Vision-driven education

- Adaptive to complex societal challenges
- Active across industries and global organizations
- Source of sustained motivation through research
- Industry-linked problem-solving projects and robust entrepreneurship education

Fostering talent capable of creating new academic fields and societal value

Outstanding PhD talent driving societal change

An ecosystem where PhD graduates thrive across society, realizing a better life, a better society, and a better planet — fostering the growth of both society and the Institute.

Toward world-class educational environment

Strengthening international co-learning and doctoral support to realize an outstanding educational environment as a world-class university

PhD Support JPY 2M → JPY 5.4M

Educational achievements

Global Scientists and Engineers Program (GSEP)
120 students enrolled to date; all undergraduate classes are taught in English.

Science Tokyo - Tsinghua Joint Graduate Program
Japan's first dual-degree program with 20 years of history and 200+ graduates

Imperial MD-iBSc Double Degree Program
Asia's only dispatch to a UK medical elite program, backed by 20 years of exchange and 150+ students

All graduate courses in English
Over 93% of graduate STEM courses taught in English

#1 in Educational Resources
THE Japan University Rankings
Apr. 2025

#2 in Japan
THE Global Employability University Rankings
Oct. 2025

Transforming education to lead the world

Undergrad. int'l and interdisciplinary learning

International co-learning education
Expanding GSEP into an Institute-wide "International Undergraduate Excellence Program" of co-learning. Full implementation and stronger Japanese education to support 30% international undergraduates in 2050.

Undergraduate sub-major program
Sub-majors will be available in all Schools and Faculties, and will be mandatory for the students in the International Undergraduate Excellence Program. After medical/dental sciences undergraduates complete the first four years of study, a newly designed program offers them a pathway to a master's program in science and engineering.

Maximizing online education with AI+VR
On-demand multilingual content in international co-learning programs, combined with in-person learning and global collaboration via an international education consortium

Comprehensive PhD support system

Doctoral research associate positions
All students will receive an annual stipend of JPY 4.2–6.6 million (avg. JPY 5.4 million), equivalent to a working adult's salary and including a tuition waiver (approx. JPY 600,000). In addition, the President's Special Scholarship — up to JPY 10 million per year — is awarded to approximately the top 1% of doctoral students with outstanding research achievements.
Support for international experience includes travel grants and internship opportunities abroad through consortia.

Changing education through int'l co-learning

Transition from online education to AI+VR-integrated education
AI + VR education development via Center for Educational Innovation (while globally promoting this new educational system from Science Tokyo)

Reforming undergraduate admissions to attract global talent

Holistic global admissions launched to meet international standards (in FY 2030)
Implemented Institute-wide, not limited to specific Schools, Faculties, or Departments (initial target: 100 students). Utilizes online English lectures and is also envisioned as a system to accommodate early university entrants.

Admissions platform (Admissions Center established in FY 2024)
Attracting top international students via global alumni networks and diverse admissions including **pre-arrival entry** (SAT/IB/IGCSE), online prep courses, and **regional alumni-based selection**.

Support system for international students and researchers to live securely
International dormitories, English as the common academic language, bilingual administrative support

Developing talent

Developing globally minded, cross-disciplinary leaders committed to building a better, brighter future

Innovative doctoral talent shaped by the VIs

Medically-informed engineers and engineering-literate medical professionals

Active beyond academia in a wide range of fields

Industry
Doctors and nurses
Government agencies
Overseas universities
International organizations

Career paths of graduates

Science Tokyo's PhD talent drives societal change by creating new knowledge and societal value.

BME: A bold strategy for transforming hospitals into open innovation platforms

Key issues identified through international benchmarking

- Maximizing the use of hospitals for co-creation and implementation is essential to driving innovation in medical-engineering collaboration.
- Pressing need exists for spaces where researchers in medical/dental sciences and science/engineering fields can collaborate from the earliest stages of research – within the same physical environment.
- Clinical faculty at Japanese universities have significantly less time for research compared to other disciplines.

Opening up time

HR system reform to secure research time and empower early-career clinical faculty

Independent research by early-career investigators

Assistant professors who pass an internal review are designated as **PIs**, serving as role models who lead autonomous research and inspire other young healthcare professionals.

Increasing research effort

Research time for clinical faculty is secured by increasing research-focused staff and streamlining clinical operations through tools such as AI.

Programmed Activity system

Transparency and rigor in research time is ensured by pre-contracting research effort and strictly allocating responsibilities through the Programmed Activity system.

Opening up space

Transforming closed clinical environments and assets into open platforms for co-creation and demonstration

HealthTech Design Program

Hospitals are **fully opened** to companies and startups, offering customized access to clinical settings incl. OR, ER/ICU wards, surgical robots, sterilization systems, and storage management, **based on individual requests.**

Utilization of medical big data

Clinical data – incl. EMRs and imaging – from > 60,000 patients is made available to companies through collaborative research.

Opening up knowledge – Institute of Biomedical Engineering (BME)

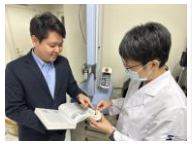
Establishing a shared research environment where clinical and engineering researchers collaborate from the outset

BME realizes integration of biomedical and engineering knowledge

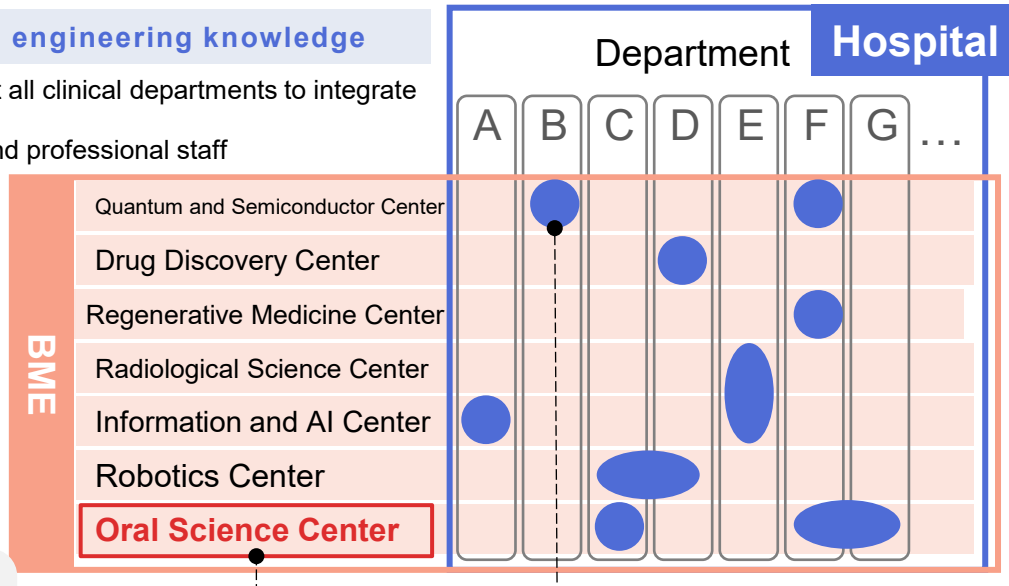
- **Cross-disciplinary centers** (in the figure) connect all clinical departments to integrate diverse domains of knowledge.
- Composed of **approx. 200 PIs**, > 30 administrative and professional staff
- Approximately 1,000 PhD students will participate.

Strengthening paired research between medical/dental and engineering PIs

- Engineering researchers are appointed to posts within clinical departments to foster interdisciplinary collaboration.
- Interdisciplinary research emerges **autonomously** from intersections between clinical departments and the cross-disciplinary centers (in the diagram).

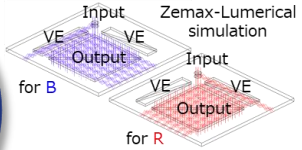


Approx. 30 faculty members from medical/dental and engineering fields conduct research at a shared 2,000-m^2 facility. The Center engages in collaborative projects nationally and internationally.



World's first AR glasses for medical use built on semiconductor platform

– Single-layer AR lens using metasurface technology (Patent 2024-179482)



In-room demonstration

OR demonstration

Number of medical-engineering collaboration publications
1,000 → 7,000

Assistant professors (medical/dental) serving as PIs
0 → 100

Research effort among medical/dental faculty
34% → 55%

BME endeavor: Cultivating knowledge and creating value with the world

Value creation driven by Science Tokyo's healthcare network

tip

A combined physical and programmatic hub connecting healthcare startups and researchers from Science Tokyo

Registered members: 445

Lab occupancy rate: 98%

Greater Tokyo Biocommunity

A bio-startup community centered on Science Tokyo, spanning the Hongo, Ochanomizu, and Tokyo Station sites

medU-net

A national medical academia-industry-government co-creation network initiated from Science Tokyo

Members: 1,200

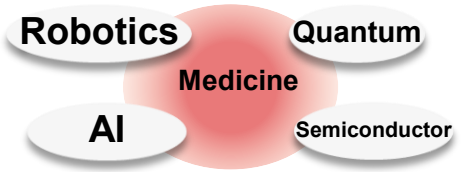
Quantum sensor core hub

Collaborative network with Science Tokyo's quantum materials and device research

BME

Healthcare-focused quantum, semiconductor, AI, and robotics technologies converging on a single clinical challenge

A central engine for med-tech collaboration in the open-hub hospital



Pioneering technology innovation – from medicine to engineering – through the convergence of medical/dental, and science/engineering

Painless, real-time detection of disease markers using quantum sensors

→ **Reducing patient and cost burden**

Early detection of rare cancers via small-data AI

→ **Lowering mortality rates**

Digital-twin modelling powered by the next-generation supercomputer TSUBAME

→ **Easing clinician workload**

Precise lesion resection with the world's first haptic-enabled surgical robot (in operation)

→ **Ensuring patient safety and confidence**

Advanced, precision post-operative management in the ICU using the on-premises LLM "Swallow"

Amount of research funding received by BME from private companies
JPY 22B

Revenue from utilization of intellectual assets based on the open hub hospital model
JPY 5B

Startups launched through BME
550

Fostering talent and co-creating value through global ecosystem partnerships

Imperial College London

- Vice Provost who led White City innovation ecosystem joined Science Tokyo Management Committee
- MOU with White City focusing on talent exchange and development through Schools of Convergence Science

RWTH

- Science Tokyo selected as RWTH's 4th strategic partner university
- Joint research and talent exchange in medical-engineering collaboration through TransMedMat Profile Area

Boston

- MOU for advancing healthcare and health innovation in Harvard Innovation Tokyo Lab
- Collaboration in operating a medical device development program based on Brigham & Women's Hospital model
- Partnership with MIT iMES

Transforming medical-engineering education

- Signed MOU with University of Illinois Urbana-Champaign, the lead institution of a global consortium on medical-engineering education spanning 27 universities across 10 countries
- Science Tokyo is Japan's only institution serving as Executive Council Member
- Co-hosting Innovation Grand Challenge

Building a global ecosystem for solving societal challenges

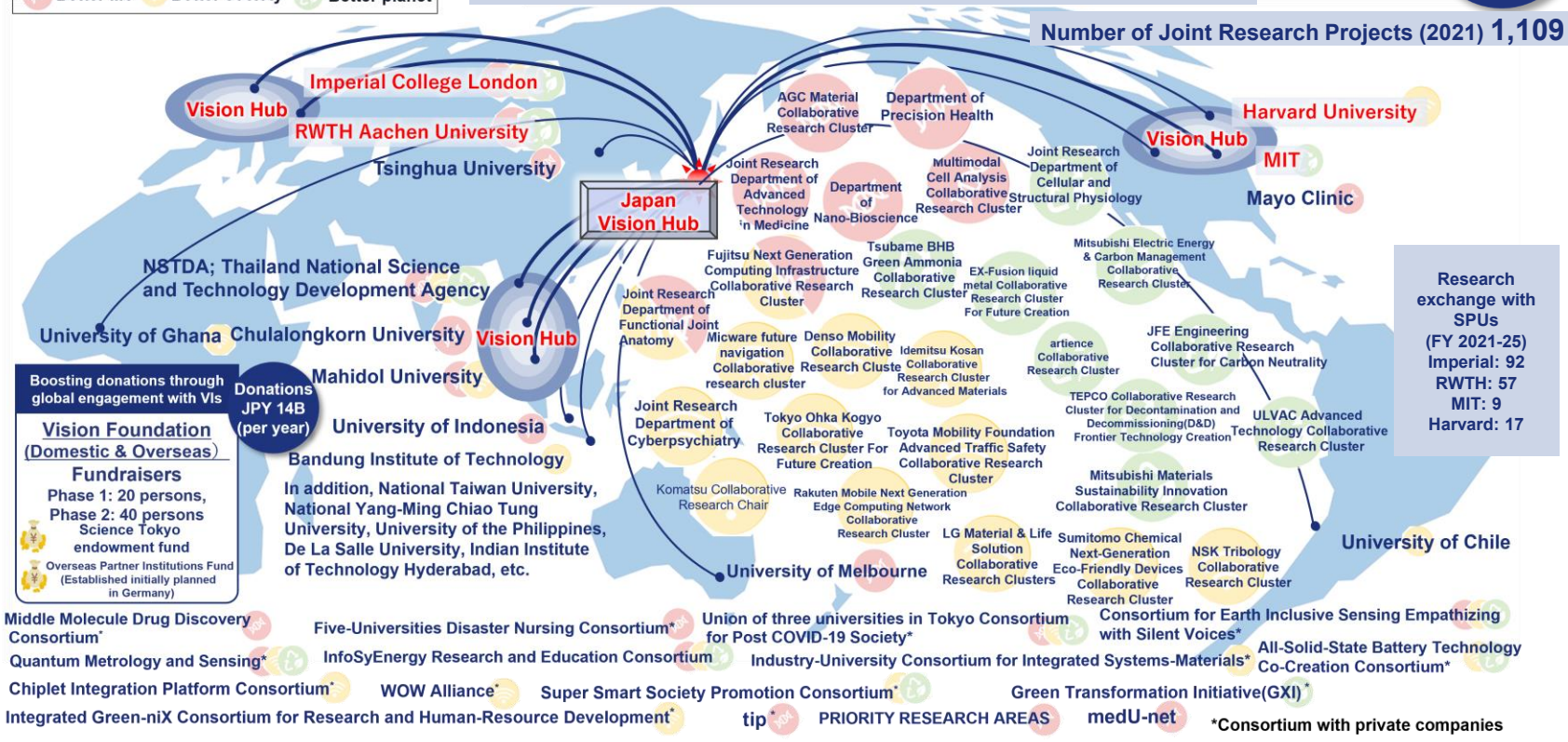
Each VI is a collaboration anchor in the Hub & Spoke network, driving a global ecosystem with international partners.

Number of International Co-authored Papers 6,500 per year

Better life Better society Better planet

Number of Partner Universities under International Agreements: 372

Number of Joint Research Projects (2021) 1,109



Research exchange with SPUs (FY 2021-25)
Imperial: 92
RWTH: 57
MIT: 9
Harvard: 17

Boosting donations through global engagement with VIs

Donations JPY 14B (per year)

Vision Foundation (Domestic & Overseas)

Fundraisers
Phase 1: 20 persons,
Phase 2: 40 persons

Science Tokyo endowment fund

Overseas Partner Institutions Fund (Established initially planned in Germany)

- Anticipating the future growth of the Global South, Science Tokyo leverages its robust alumni network to enhance global talent acquisition.
- **Vision Hub**: Satellite laboratories, Collaborative Research Clusters, societal implementation consortia, and student recruiting are established in collaboration with international partners. These hubs are strategically located across global regions to address global challenges, promote international researcher exchange, and attract diverse talent.
- **Vision Foundation**: Dedicated fundraisers are assigned to each VI to fundamentally enhance fundraising and grant acquisition functions. Science Tokyo also develops strategic approaches to overseas foundations and philanthropists through initiatives aimed at solving societal issues addressed by each VI.

Wilert Puriwat, Dean of Chulalongkorn University: ***"International cooperation is at the center of a better life, society, and planet."***

Science Tokyo's International Collaboration Strategy

- **Science Tokyo will strengthen two categories of international hubs: Strategic Partnership Universities (SPUs), our highest-priority partners, and Vision Alliance Universities (VAUs) in strategically important regions such as Asia**
- **Science Tokyo will promote the reciprocal circulation of people, knowledge, and funding by collaborating with hub institutions through researcher recruitment, student exchange, industry-academia partnerships, and startup creation**

SPUs

Imperial
RWTH
MIT
Harvard

- **Advance research, talent exchange, industry-academia collaboration, and startup creation** grounded in the **VIs**.
- Collaborate with Imperial's Schools of Convergence Science and RWTH's Profile Areas for research, industry-academia collaboration, and graduate education
- Collaborate with MIT (SDM) for startup creation
- Collaborate with Harvard (incl. affiliated hospitals) in medical education, medical-engineering, and quantum collaboration

VAUs

Southeast Asia
Thailand, the Philippines, Indonesia, and Malaysia

South Asia
India

Other parts of Asia
Tsinghua University (China)
National Yang Ming Chiao Tung University (Taiwan)

- Develop Thailand – where Science Tokyo has built strong collaborative ties over many years - as a regional hub in Southeast Asia. For example, Thailand will serve as a base for research and education through partnerships with the National Science and Technology Development Agency, Chulalongkorn University, and Mahidol University, while also engaging in joint efforts to address societal issues.
- In India, significantly expand researcher and student exchanges by establishing hubs at the Indian Institute of Science, the Indian Institute of Technology Madras, and the Indian Institute of Technology Hyderabad.

・Partnering with International Organizations to Address Global Challenges

United Nations University

Japan's first **United Nations University Hub** will be established by the end of 2026 to strengthen international policy recommendations and outreach efforts toward Agenda 2030.

Science Tokyo leading a new dimension of collaboration

A new dimension of collaboration in research and education - bringing institutions of deep expertise to generate impactful outcomes and cultivate talent to lead in the VUCA era

Strategic collaborations to expand VI activities

Hitotsubashi University

Tokyo University of Foreign Studies

Ochanomizu University

Tokyo University of the Arts

[Background of the collaboration]

In the 21st century, the pace of scientific and technological advancement has accelerated to the point where individuals and societies struggle to keep pace. In this context, Japan's future depends on individuals who not only possess deep expertise, but also demonstrate well-balanced versatility – leaders capable of addressing global challenges.

By bridging the widening gap between people, society, and science and technology, **articulating a vision for the future, and advancing collaborative research**, **Science Tokyo aims to revitalize Japan**. Cultivating such talent is made possible through collaboration among universities that possess distinct and advanced disciplinary strengths.

Research

- **Deepen insights into a "better, brighter future" through VIs, including cultural and societal perspectives**
- **Foster collaboration within the VI-linked startup ecosystem**
- **Develop research strategists with diverse global perspectives**
- **Implement joint research and educational projects that contribute to cultural advancement**

Education

- **Expand joint undergraduate programs and launch new graduate courses integrating science and the arts**
- **Promote campus internationalization through enhanced education for international students**
- **Collaborate with Ochanomizu University and Tokyo University of the Arts in education at our affiliated schools (junior high and high school) to develop new talents with broad capabilities leading to new educational programs at each university**

- **Key research achievement of the Union of the Three Universities* in Tokyo (formerly four universities): A published study revealing that a sense of loneliness was the main reason for Covid-19 vaccine hesitancy among students of the four universities**
- **Educational achievement of the Union of the Three Universities* in Tokyo: In FY 2024, 942 students were enrolled in multidisciplinary courses across the three universities, including 657 from Science Tokyo.**

*Currently Future Leading Innovation Partnership (FLIP)

Discussion with Imperial: Although Imperial does not have dedicated faculties for the humanities and social sciences, it is able to mobilize relevant experts in these fields as needed, enabling agile and close collaboration on societal challenges.

National Institute of Advanced Industrial Science and Technology, National Institute for Materials Science, Institute of Physical and Chemical Research, National Agriculture and Food Research Organization, National Institutes for Quantum Science and Technology (partially under consideration)

(Three Univ. Agreement)

National R&D Agency

Muroran Tech.

Kyushu Tech.

(Xnics partners)

Hiroshima Univ.

Toyohashi Tech.

Collaborations for science and technology policy through I4C, etc.

National Graduate Institute for Policy Studies

Hokkaido University

- **Analyze trends in critical technologies based on global economic security and geopolitical risks**
- **Foster talent for EBPM/EIPM**
- **Provide concrete recommendations to policymakers**
- **Promote "Japan-born advanced technology standards" globally through international administrative officer students**

Addressing critical national issues × Collaboration to connect regional partners nationwide to the global ecosystem

- **Advance research and cultivate talent in nationally critical areas such as quantum technology, AI, semiconductors, space, healthcare, and food security**
- **Train healthcare professionals for large-scale disasters**
- **Jointly develop skilled technical staff to support research infrastructure (e.g., TC College)**

Defense Medical College

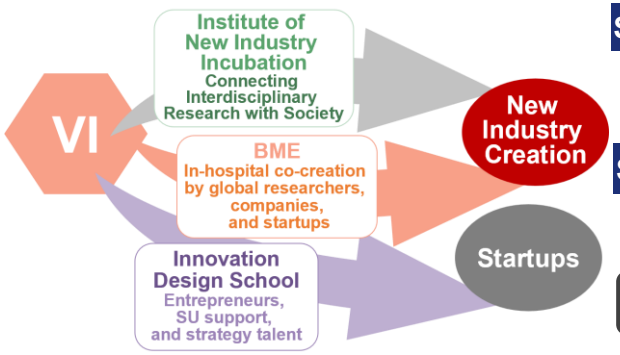
Yamaguchi Univ.

Okayama Univ.

Nagaoka Tech.

Creation of new industries from VI outcomes

Institute of New Industry Incubation



Strategies for creating new industries from VIs

Strategy 1 **Global expansion through Collaborative Research Clusters with global corporations**

- Global research collaboration: **Establishing Vision Hubs** and engaging local advisors abroad
- Active promotion at **international events** (e.g., CES 2025 participation)

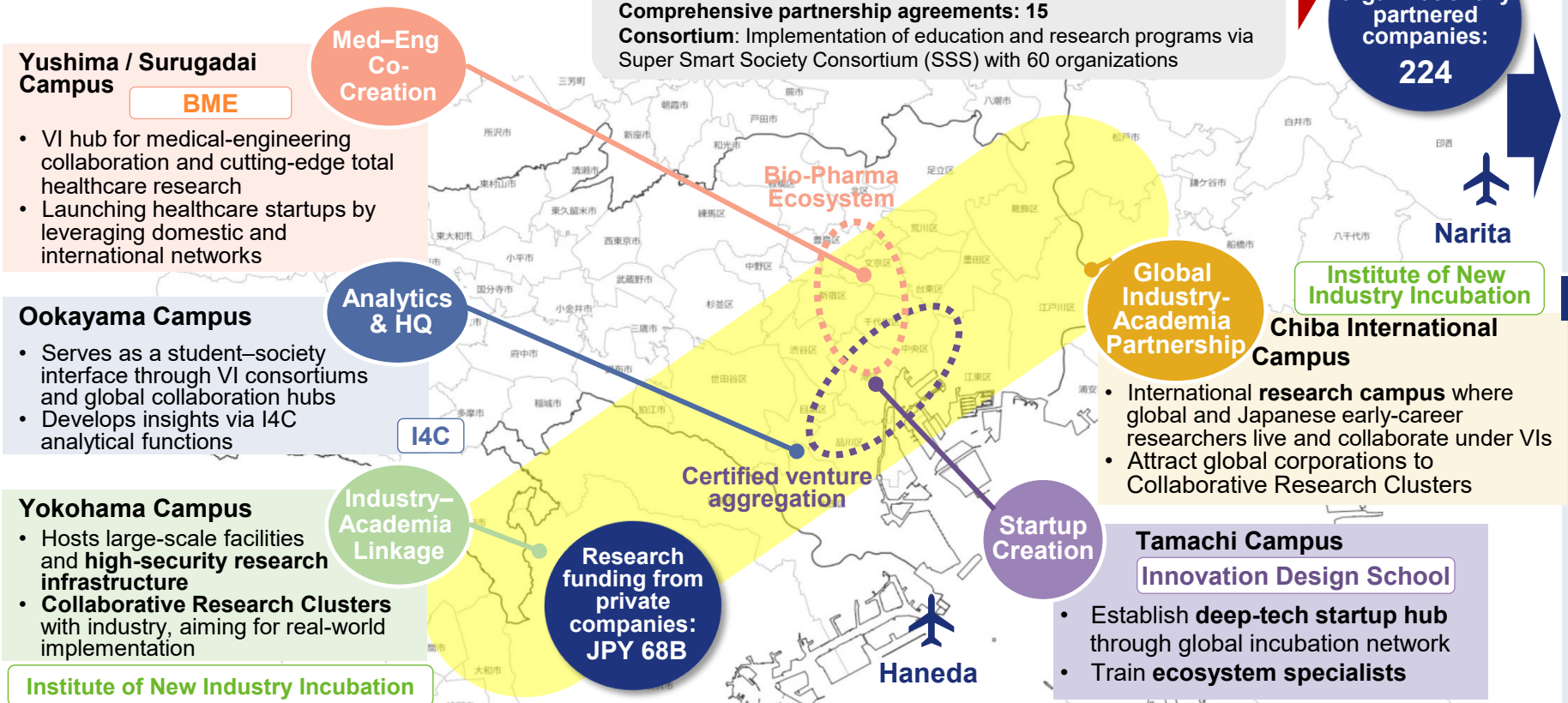
Strategy 2 **IP-driven societal implementation strategy**

- **Global IP** strategy and commercialization support for VI outcomes
- Strategic support activities with a view toward **international standardization**

Examples

Collaborative Research Clusters: 24 established to date
Organizational-level large-scale projects
Comprehensive partnership agreements: 15
Consortium: Implementation of education and research programs via Super Smart Society Consortium (SSS) with 60 organizations

Number of organizationally partnered companies: 224



Yushima / Surugadai Campus

BME

- VI hub for medical-engineering collaboration and cutting-edge total healthcare research
- Launching healthcare startups by leveraging domestic and international networks

Ookayama Campus

- Serves as a student–society interface through VI consortiums and global collaboration hubs
- Develops insights via I4C analytical functions

Yokohama Campus

- Hosts large-scale facilities and **high-security research infrastructure**
- **Collaborative Research Clusters** with industry, aiming for real-world implementation

Institute of New Industry Incubation

Chiba International Campus

- International **research campus** where global and Japanese early-career researchers live and collaborate under VIs
- Attract global corporations to Collaborative Research Clusters

Tamachi Campus

Innovation Design School

- Establish **deep-tech startup hub** through global incubation network
- Train **ecosystem specialists**

Economic security-focused campus

Chiba International Campus redevelopment

- A **new closed research building** will be established by the Institute of New Industry Incubation to support sensitive projects such as space resilience and confidential corporate R&D.
- By balancing open and closed research environments, Science Tokyo will **attract global corporation to Collaborative Research Clusters**.

(conceptual drawing)

Secure and open research environments

- **High-level security systems** will be introduced at the Yokohama and Chiba International Campuses to control access to people and information.
- **I4C analysis** will guide research activities within the **secured facilities** at these campuses.

Japan hub for the startup ecosystem

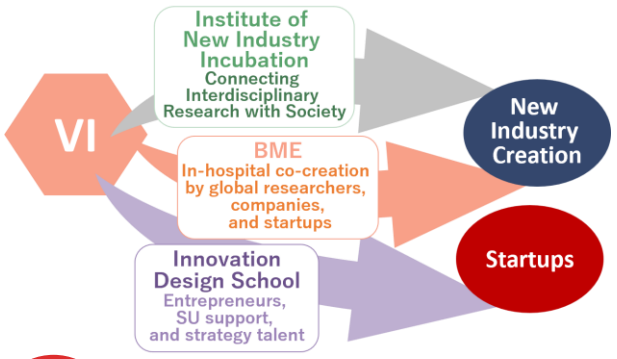
Tamachi Campus redevelopment

Est. FY 2031

- **Large-scale incubation facility development**: Designed to attract global partners including venture capitals and academic institutions
- **Innovation Design School**
  New initiatives to train specialized support personnel to promote and grow Vision-driven startups
- **Joint ventures** will be formed through collaboration with corporate innovation divisions located within the office complex.

Startup ecosystem leveraging VI outcomes

Startup creation driven by goal-oriented design to realize the VI vision, rather than simply a seeds-out approach



Three strategies to launch world-changing startups from VIs

Strategy 1	Build the ecosystem necessary for the growth of the startups created	Space development, international collaboration, rule formation, promotion of joint ventures
Strategy 2	Create Vision-driven startups that aim to realize VI's vision rather than simply seeding out	Implement a new **support system to drive venture creation** aligned with the vision
Strategy 3	Participate in the supply of talent currently missing from the startup ecosystem	Launch the **Innovation Design School** to train globally competent professionals

1,000 faculty-involved startups created

100 ecosystem specialists trained annually

50% of full-time faculty involved in startups

Do-mestic Collabo-ration — Building a nationwide network — Strategy 1

National & Tokyo HQ: Science Tokyo

Connecting the nine national startup creation platforms (9PF) to drive initiatives in Japan and abroad

Partnered with the Tokyo Metropolitan Government to advance the initiative

Global Partner-ship — Enhanced ties with the Boston startup ecosystem — Strategy 1

MIT

Partnering with MIT System Design Management Program

- Prof. Michael A. Cusumano (MIT) joins process to launch Innovation Design School

Harvard

- MOU with Harvard Tokyo Hub
- Medical collaboration in Tokyo for device development
- Ecosystem building via Boston network

Startup community

Overseas venture capitals · Deep tech startups · Overseas companies

Tamachi Campus: Large-scale incubation facility

Chiba International Campus

Entrepreneurs · Major companies · Overseas startups · Overseas universities

Regu-latory Reform — New support framework — Strategy 2

Internal deregulation: Faculty system reform (evaluation metrics, startup leave), enhanced research environment access
Expanded internal support: Gap fund expansion, startup support personnel, visiting entrepreneurs
Strengthened VC collaboration: Investment in venture capital funds, partnerships with overseas venture capital firms

Faculty startup participation: 15% → 30% → 50% (Phases I to III)

HR Develop-ment — Establishment of the Innovation Design School — Strategy 3

- **Science and Technology Strategy Design Course**
- **Startup Design Course, etc.**

Train specialized master's graduates to lead an ecosystem for solving societal challenges, including experts in advanced science and technology policy, startup professionals, and institutional or medical research management, etc.

Expansion of management of technology and medical administration programs

Future Leading Innovation Partnership (FLIP) with Hitotsubashi Univ., Tokyo Univ. of Foreign Studies, Ochanomizu Univ.

Achieve-ments — Industry joint venture initiatives — Strategy 1

Pioneering joint venture by national university

A new company has been established through joint investment with ALSOK and NJI to conduct R&D and human resource development in the fields of nursing and caregiving.

Academically grounded, long-term innovation in nursing and caregiving services

Governance for University for International Research Excellence

Appropriately allocate the responsibilities of top management in the President and CEO-President and Chief Academic Officer (CAO) system, with resource allocation centralized under management. Committees with diverse and independent members strengthen implementation and monitoring of the plan

Governance for Universities for International Research Excellence

- Dedication by President and CEO to medium- **to long-term growth strategy**
- Societal value creation is optimized with managerial commitment
- **System Strengthening and Management Office** and **Endowment Office** is established under control of President and CEO

President and CEO

Decision-making monitoring ← **Management Committee**

Enforcement monitoring

Strategic Resource Allocation Committee

- **Optimize both growth investments and fund building** based on I4C analysis and evaluations of VI activities
- **Strengthen monitoring of resource execution** with participation from external members of the Science Tokyo Management Committee

Ratings monitoring

Independent Evaluation Committee

- **KPI Progress, Societal Impact, DEI Evaluation**
- Assess VI progress and link to resource allocation
- Report to Presidential Selection and Supervision Committee and Management Committee

Advice, monitoring

Advisory Panel for a Better, Brighter Future

- Discussing the role of science in shaping a “better, brighter future". Committee composed of diverse experts, citizens, and students from Japan and abroad.
- Forum for overarching discussions on VIs and the direction of research.

Allocation of responsibility to enhance governance

University Management

- The President and CAO maximizes the value of the Institute from the perspective of education and research.
- Participates in corporate management

President and CAO

advice ← **Human Resources Committee**

Search Committee

- **All authority over faculty appointments will be transferred to a university-level committee, creating a single, centralized personnel system.**
- **All tenured position allocation are made through HR committee hearings on VIs and TRACKs.**
- **Search committee controls search and recruitment.**

Search Committee Female members: 50%

Researchers Women: 40% International: 30%

Instruction and monitoring

Instruction and Monitoring

Corporate Financial Management

- Maximizing the corporate value and assets under management of the endowment fund
- Sophistication of a three-line risk management system (by the end of 2026)

Business scale: JPY 270 billion

Endowment Fund: JPY 1.2 trillion

Monitoring and advice ← **CFO: Former President of the Nippon Finance Association**
CIO: Experience as CEO in three global asset management companies
CPO: Top quant in Japan

Fund Management Committee

- Majority of external experts and stakeholder representatives
- **Chairperson of committee: External expert**
- **Asset management based on Asset Owner Principles**

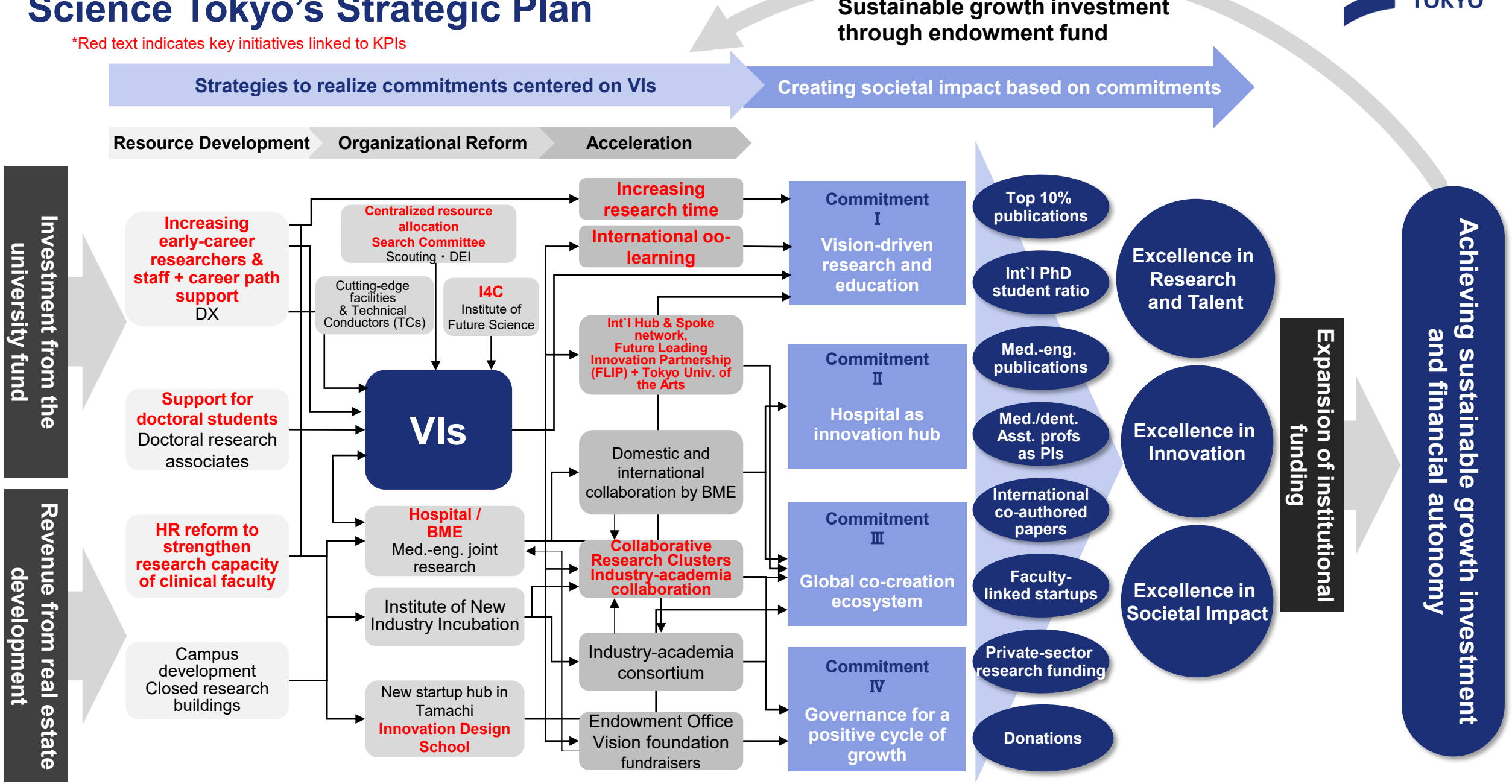
Mechanism for participation of university members (already in place)

Planning and Coordination Council

- Roundtable discussion on important issues between executive and faculty representatives.

Town Hall Meetings

- Promote understanding of management and strategy of the institution and full participation through direct dialogue between the executive team and all members (held at each campus, organization, etc.)

Logic tree of Science Tokyo's Strategic Plan

*Red text indicates key initiatives linked to KPIs