Use of standardization in Japan (Case Study)

Session : Industry Use of Standards and Success Stories

27 March 2026

Telecommunication Technology Committee

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Telecommunication Technology Committee (TTC)

Telecommunication Technology Committee

Standards for the Next Generation
40th 1985-2025

- **SDO (Standard Development Organization) in Japan**
- **Qualified by the ITU-T as defined in the recommendations A.5 and A.24/25 that can refer to ITU-T recommendations as a standard**
- **Private Nonprofit(Supported by about 100 members)**
- **Established in October 1985**
- **Located in Tokyo, Japan**
- **18 Technical Working Group**

Industry Use of Standards and Success Stories ???

Industry Use of Standards and Failure Case ???

The following WPs are currently active

Study Group on Medical Applications of High-Definition Image Data (ongoing)

- ◆Aiming to standardize color information for medical high-definition images such as 8 K endoscopes (contribution proposal to ITU-T)
- ◆The Medical Innovation Consortium, companies related to endoscopy and imaging, and broadcasters participated. The results of the discussions were proposed and approved as a contribution document on F. 780.6 at SG21 of ITU-T in October.
- ◆7 meetings were held in FY 2025. A seminar will be held in November.

SPE Consortium (ongoing)

- ◆Established in 2024 as a forum for discussion on SPE (Single Pair Ethernet). Held 7 meetings in FY 2025. Seminar scheduled for February 2026.
- ◆Exchanges information, surveys and researches on standardization of SPE and DC power supply systems, examines toward international and domestic standardization, and spreads the results.
- ◆TR-1082 SPE & DC Power Supply Implementation Guidelines established February 2025: Version 5. Revision work is underway this fiscal year. Aim to establish the guidelines within this fiscal year.
- ◆Specifications are being prepared in parallel with the guidelines. Aim to complete the guidelines within this fiscal year.

Cross-industry and technology activities - Medical-

The Medical Innovation Consortium

- Aiming to standardize color information for medical high-definition images such as 8 K endoscopes.
- The Medical Innovation Consortium, companies related to endoscopy and imaging, and broadcasters participated.

TTC Working Party : Study Group on Medical Applications of High-Definition Image Data

The results of the discussions were proposed and approved as a contribution document on F. 780.6 at SG21 of ITU-T in October 2025.
7 meetings were held in FY 2025 and a seminar held in November 2025.

ITU-T SG21:Technologies for multimedia, content delivery and cable television Q2(e-health multimedia applications)

- F. 780.6 (Color Measurement Requirements for UHD Medical Images) ,Version 1 (initial) Approved (SG21 March 2025), Official ITU-T Recommendation
- F. 780.6 revision (F. 780.6 V2),Version 2 (revision)
  Color space definitions, measurement techniques, and evaluation conditions were organized
  Consent achieved (SG21 Oct 2025), Under AAP

Cross-industry and technology activities -Single Pair Ethernet-

Single Pair Ethernet Consortium

- The Single Pair Ethernet Consortium (SPE Consortium) was established to promote the dissemination and standardization of Single Pair Ethernet (SPE), a next-generation communications technology.
- With the participation of telecommunications carriers and equipment manufacturers, the consortium promotes the implementation of SPE in the industrial sector by supporting the formulation of technical standards, promoting the development of compatible products, and conducting public awareness activities.

TTC Working Party : SPE Consortium

- SPE Consortium's activities are carried out through the TTC working party scheme.
- TTC Technical Report TR1082: Implementation guidelines for SPE & DC power supply have been established, and activities are underway to disseminate them by 2030.

ITU-T SG5 Environment, climate change and circular economy Q7 Environmental efficiency of ICT infrastructure

- At the ITU-T SG 5 meeting held from October 29 to November 6, L.Env. TSPC (Resource saving, e-waste reduction and energy saving system methodology using twisted single pair cable) was achieved consent
- Dec 2025: Officially approved as L.1041

Cross-industry and technology activities -Machine Vision-

JIIA (Japan Industrial Imaging Association) International Standards Promotion Committee

JIIA (Japan Industrial Imaging Association) established the International Standards Promotion Committee in 2021.

Multimedia Applications Working Group / Machine Vision SWG

Machine Vision SWG in TTC was established in cooperation with JIIA to respond to the diversification of international standardization activities centering on communications technology and machine vision technology.

ITU-T SG21:Technologies for multimedia, content delivery and cable television Q7: Intelligent visual systems and services

SG21-TD145/WP3 H.IMV-FRM “Framework and requirements of industrial machine vision” was approved as NWI at SG21 meeting held in October 2025.

Cross-industry and technology activities -All Photonics Network-

IOWN Global Forum

Empowered by the evolution of photonic networking technologies and the emergence of Silicon Photonics technologies, the Innovative Optical Wireless Network Global Forum (IOWN GF) aims to develop

TTC IOWN-GF Working Group

- **TTC has established a working group to handle upstream IOWN related work to ITU-T SGs. Target SGs: ITU-T SG5, SG12, SG13*, SG15, SG17 and SG21**
- **Downstream activities for IOWN GF and ITU-T standards in Japan**
- **Planning and implementing study sessions and seminars on use cases and technologies for young researchers**

ITU-T SG13

- **Title: ITU-T Y.L2E2net-frm: “Low-Latency and Energy-Efficient Communications in Integrated Networks”, Start in July 2024.**
- **Y.L2E2net-frm is an active SG13 draft Recommendation under study, with ongoing framework discussions**

Cross-industry and technology activities -Human Augmentation-

Human Augmentation Consortium

Human augmentation is a concept that complements and enhances the inherent capabilities of humans or extends human existence.

The consortium aims to solve social issues by promoting social implementation of human augmentation and expanding of its ecosystem.

TTC ILE（Immersive live experience） Sub Working Group

- TTC ILE Sub Working group to handle upstream Human Augmentation Consortium related work to ITU-T
- Downstream activities for Human Augmentation Consortium and ITU-T standards in Japan

ITU-T SG21 Q8 ILE (Immersive live experience systems and services)

- ITU-T SG21 Q8-ILE (Immersive Live Experience) is developing a standard specifications that can comprehensively support the use cases envisioned by human augmentation consortium.
- H.ILE-FT(An architectural framework for first-person transfer immersive live experience)was achieved consent at SG21 WP4 meeting held in March 2026.

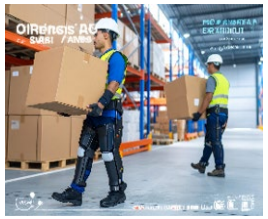
Introduction of the Human Augmentation Consortium

Background of the consortium establishment

Launched in December 2024 in response to growing interest in human augmentation driven by social and technological factors.

https://human-aug.com/en/

Human augmentation is a concept that complements and enhances the inherent capabilities of humans or extends human existence.

Enhancement of physical capabilities	Perceptual enhancement	Cognitive enhancement	Extension of existence
			
Reduction of physical strain	Enhancement of visual and auditory senses	Support for acquiring expertise and skills	Telemedicine

Social factors

Human augmentation can serve as a solution to various societal challenges.

- Labor shortages due to declining birthrates
- Decline of traditional skills
- Depopulation of rural areas, etc.

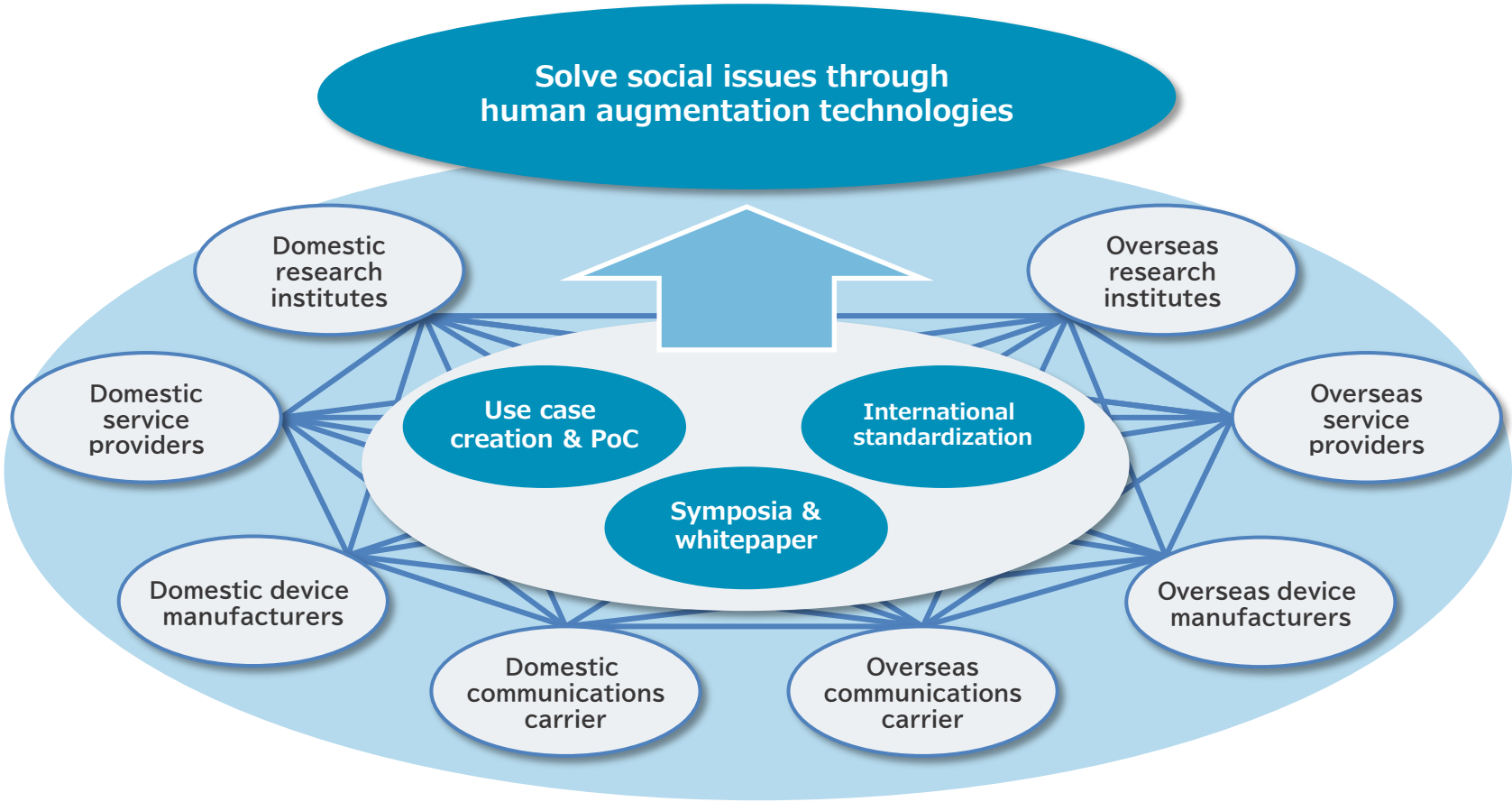
Technological factors

Cutting-edge technologies enabling human augmentation have made strides.

- AI, robotics
- AR/VR
- 5G/6G, All photonics networks, etc.

Objectives and activities

The consortium aims to solve social issues by promoting social implementation of human augmentation and expanding of its ecosystem.
We promote collaboration through cross-industry and industry-government-academia partnerships.



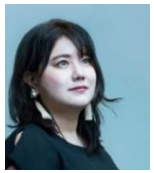
Organizational structure

- Consortium
  - Plenary meeting
  - Executive committee
    - Secretariat
  - 1.Use case and PoC WG
  - 2. Standardization WG
  - 3. Public Relations WG

https://human-aug.com/en/

- Held twice a year,
- Make resolution on the business plan and reports, etc.

Leader :
Masaaki Mochimaru
Program Director of "Virtual Economy," 3rd phase of SIP*1



Sub-leader :
Emi Tamaki
Prof. Univ. of Tokyo
Prof. Ryukyu Univ.

Sub-leader :
Takehiro Nakamura
CSO*2 and Corporate Evangelist, NTT DOCOMO

Established at Mitsubishi Research Institute

* Held monthly or bimonthly

1. Share members' initiatives and challenges
   Create use cases and conduct PoC
2. Promote standardization of human augmentation technologies
3. Hold symposia and publish white papers

*1) Strategic Innovation Promotion Program (SIP), a national project led by the Cabinet Office
*2) Chief Standardization Officer

Members

- **20 organization members from diverse industries and 6 researchers specializing in haptics, taste perception**

Organization members

Communication	Electronics	Chemistry & materials	Printing	Software
NTT DOCOMO	Kyocera Sumitomo Electric Seiko Epson	TORAY NIPPON SHOKUBAI	DNP TOPPAN	Cybernet System Sony CSL FastNeura

Mobility	Sports equipment	Digital input devices	Manufacturing	Others
Toyota Frontier Research Center Honda R&D	Mizuno	Wacom	KOJIMA Industries	The Law Office of MASAYA SEKI Mitsubishi Research Institute

Individual members

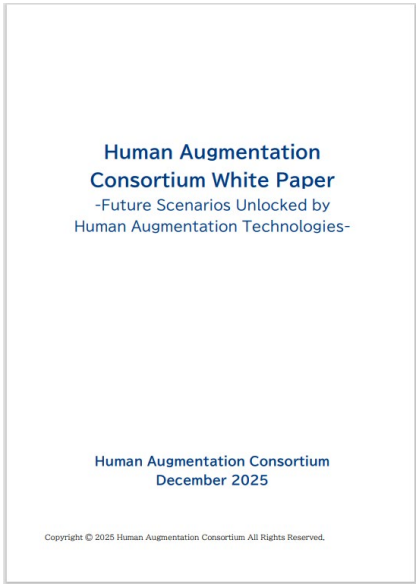
- Professor Nobuo Kawaguchi, Graduate School of Engineering, Nagoya Univ.
- Professor Yuichi Kurita, Graduate School of Advanced Science and Engineering, Hiroshima Univ. and two researchers.
- Professor Hiroyuki Shinoda, Graduate School of Frontier Sciences, The Univ. of Tokyo
- Professor Hidemitsu Furukawa, Graduate School of Science and Engineering, Yamagata Univ.

Human Augmentation Consortium White Paper

Published a whitepaper introducing the consortium's discussion on use cases and technology, along with the members' assets.

The goal is to have shared understanding of human augmentation and promote awareness of both the benefits and risks associated with the changes human augmentation brings to daily life and society.

Available at our website https://human-aug.com/en/publication/



Main Topics

- What is Human Augmentation?
- Use cases
- System architecture
- Members' assets

- Devices
- Cloud applications
- Platforms
- Interfaces and Data

- Standardization on Human Augmentation
- ELSI (Ethical, Legal and Social Issues)

Thank you for your attention

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https://www.ttc.or.jp/

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