

## **Special session proposal**

### **1. Title of the Special Session**

Hyper distributed in-network computing on integrated power and digital Infrastructure

### **2. General information of organizers**

Tetsuya Yokotani, Professor at Kanazawa Institute of Technology

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Tetsuya Yokotani received B.S., M.S, and Ph.D. degrees on information science from the Tokyo University of Science in 1985, 1987, and 1997, respectively. He joined the Mitsubishi Electric Corporation in 1987. Since then, he has researched high-speed data communication, optical access systems, home network and performance evaluation technologies of networks mainly in the Information Technology R&D Center. In 2015, he moved to the Kanazawa Institute of Technology as a professor of the College of engineering. Since then, he has been engaging in research and education on networks for various IoT services and has proposed standardization in these related areas. He has held several outstanding positions of academic societies and conferences including ICFCC. Currently, he is an advisory board member in the technical committee on Communication Quality (CQR) in IEEE ComSoc. He has also participated in the standardization activities on ITU-T SG15, SG20 and ISO/IEC JTC1, and established several international standards in optical access networks, home networks, and IoT technologies. He obtained several awards on these activities. He is a fellow and a distinguished lecturer of IEICE. He is a member of IEEE ComSoc, IPSJ and IEICE.

### **3. Brief description of special session**

Recently, environmental problems including energy consumption are worldwide concerns. Particularly, in the ICT field, the increasing power consumption driven by popularization of distributed processing and AI has emerged as a significant challenge. This special session covers architectures and technologies to optimize resource allocation between networking and computing in order to achieve lower power consumption. Additionally, as this problem will require active international standardization efforts in the near future, this special session aims to popularize the proposed architectures through international standardization activities. Furthermore, outstanding proposals by young researchers who will become the next generation of leaders will be prioritized.

#### **4. Scope and topics of the special session**

Scope and topics in this special session are included as follows.

(1) Architecture

- Distributed processing including edge computing, fog computing, etc.
- Disaggregated computing
- In-network computing
- Strategic plan for international standardization

(2) Technology and implementation

- Data analysis including resource monitoring and control, etc.
- Lightweight communication including Information Centric Network and related protocols
- Security and safety
- Implementation of PoC
- Operation

(3) Use cases and requirements

- Data center
- Industrial fields
- Smart city
- Others

#### **5. Organization and potential speakers**

**TPC chair:** Prof. Hidehiro Kanemitsu, Waseda University

**TPC members:** Prof. Hidenori Nakazato, Waseda University

Prof. Chikara Ohta, Kobe University

Prof. Midori Sugaya, Shibaura Institute of Technology

Prof. Masaki Hanada, Tokyo University of Information Sciences

**Keynote speaker:**

Dr. Atsuko Yokotani, "Future direction of international standard for cooperative operations on power and digital Infrastructure," TTC and Kanazawa Institute of Technology

**Potential speakers:**

Tsuruyoshi Ryu et al., "Distribution transparency mechanism for hyper-ubiquitous computing environment"

Mahiro Toujou et al., "Performance Prediction of Web Assembly Programs in Heterogenous Edge Computing Environments"

Hiroto Washio et al., "Semantic communication over ICN for Energy-Efficient Distributed Data Centers"

Yuki Ishida, et al., “Analysis of Interest Flooding Attacks in NDN Using Statistical Characteristics of Internet DoS Attacks”