Strategies of Digital Architecture Design Center to achieve Society 5.0

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President, Digital Architecture Design Center (DADC)
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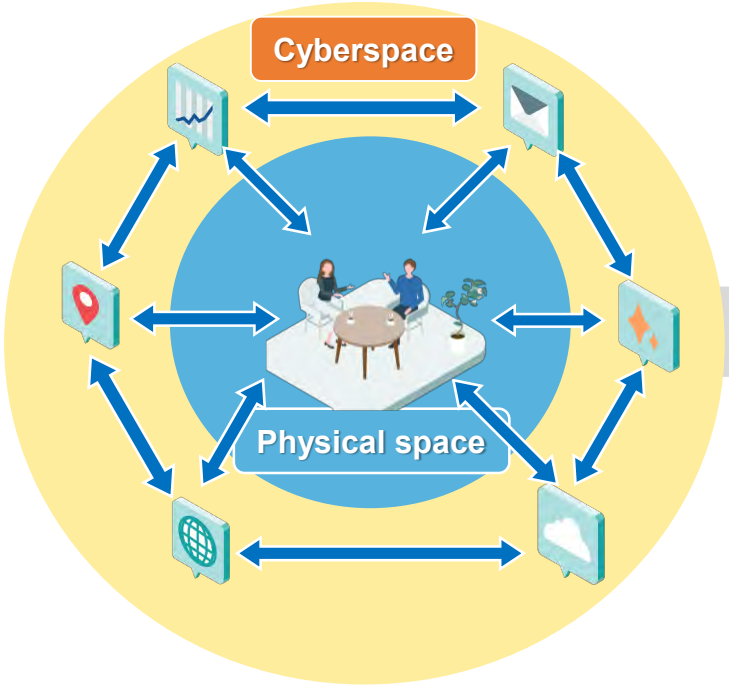
What is Society 5.0?

It is a human-centric society that helps to develop the economy and solve social issues at the same time using systems that enable a high degree of integration of cyber (virtual) and physical (real world) spaces

CPS: Cyber-physical system, a system that combines cyber and physical spaces

CPS-based human-centric society

A society where interpersonal, person-service, and inter-service connections are made online

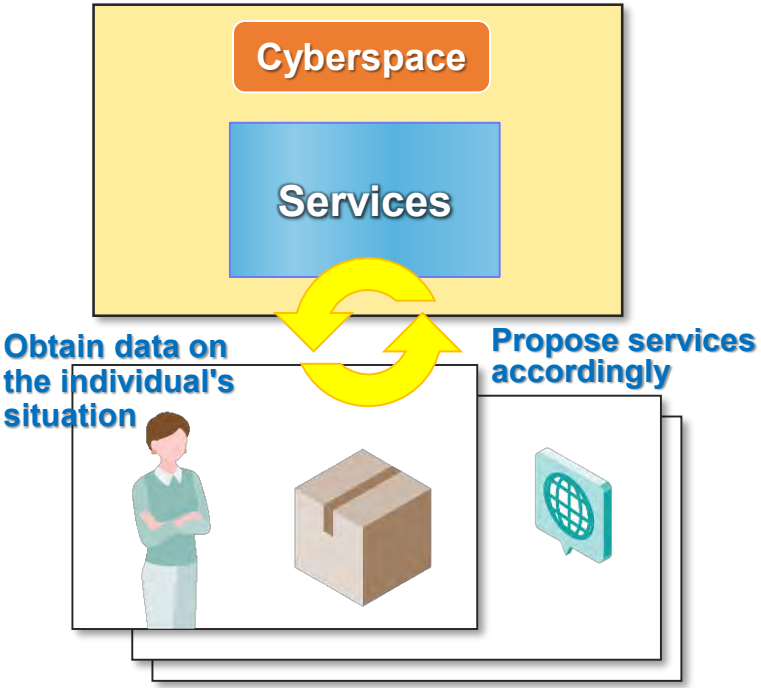


Provide optimal user experiences (UX) on a real-time basis in accordance with the user's intent and the situation

To provide optimal experiences

Leading to improvements in human creativity and productivity, through the use of user experience (UX) services

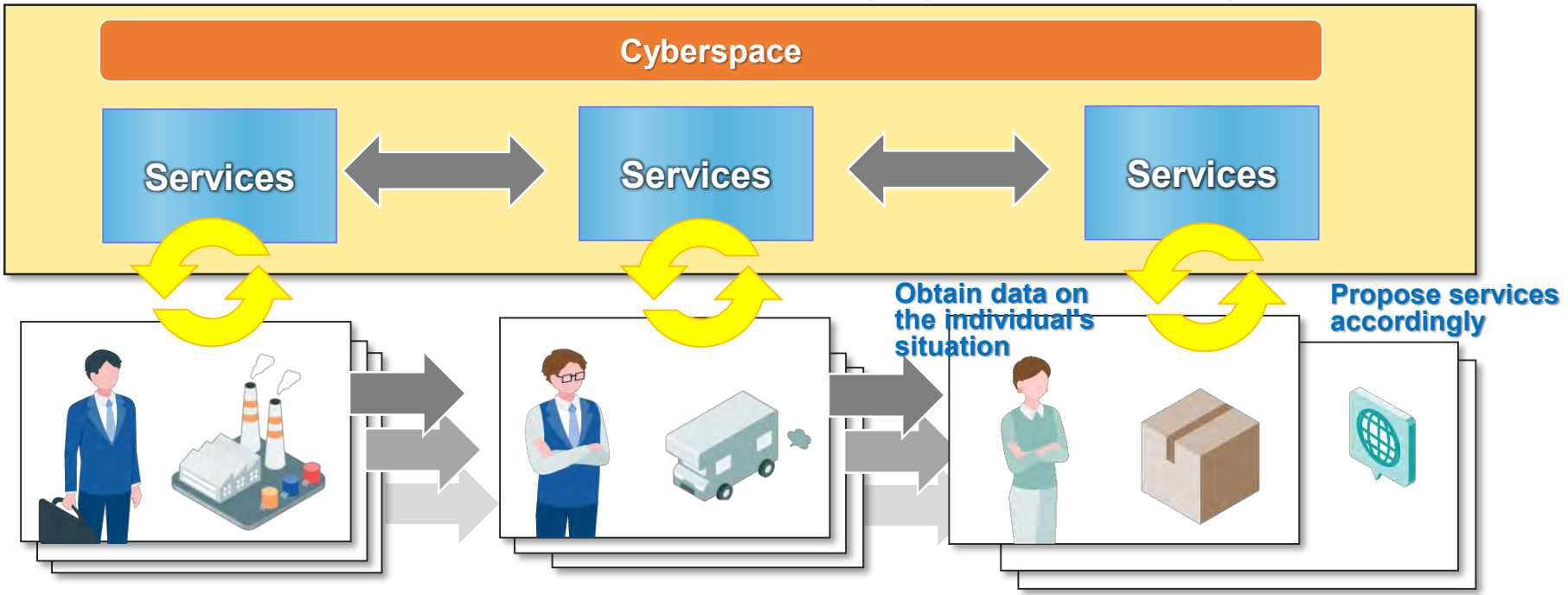
Businesses use data to understand personal situations and make proposals at the best points of contact



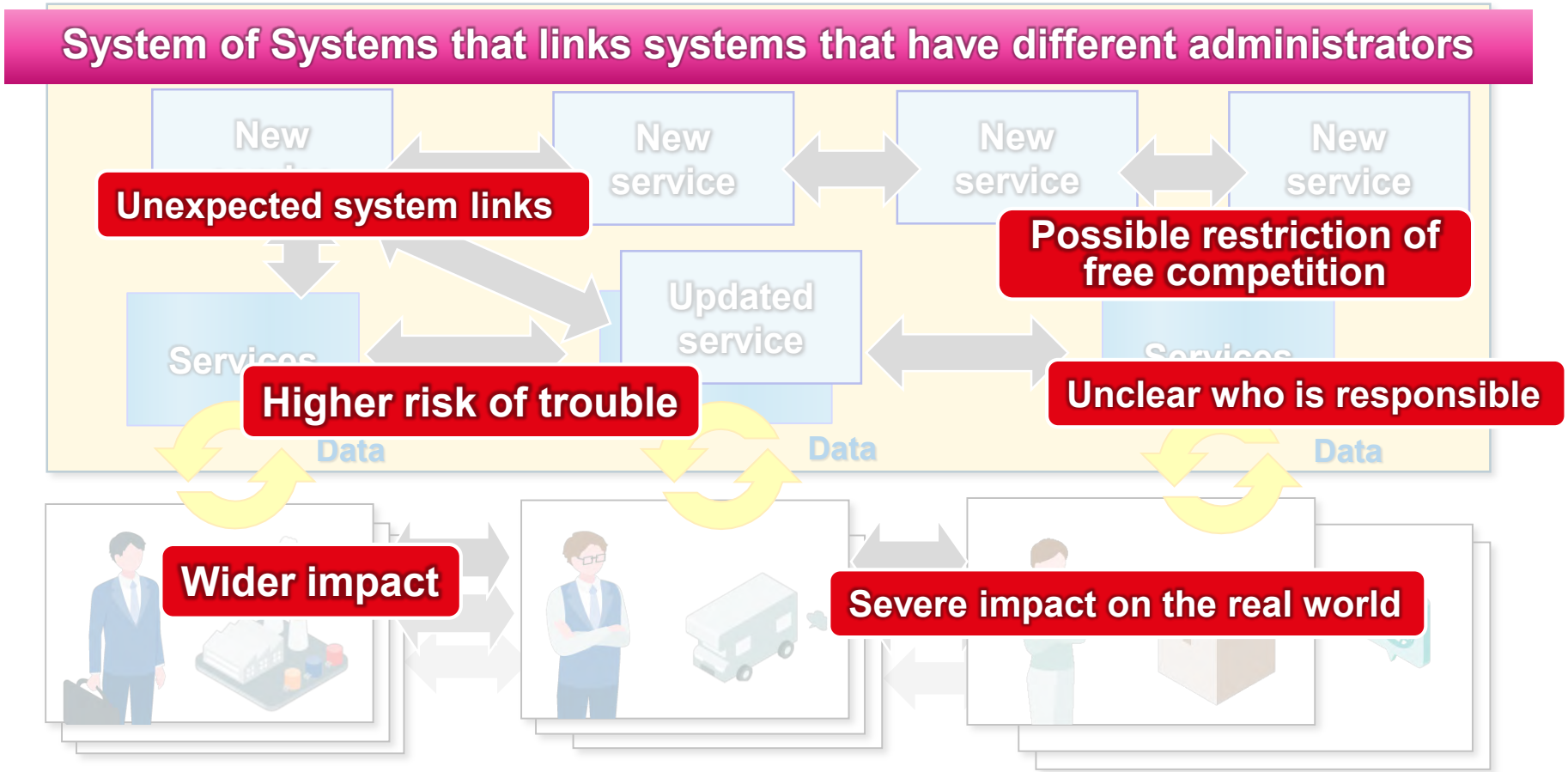
Human-centric CPSs will change the entire social structure

In some cases, new business structures will emerge through establishing the concept of cooperative and competitive domains and devising common platforms for digital society

Businesses use data to understand personal situations and make proposals at the best points of contact



Need to be aware of the System of Systems that links different systems



Architecture for realizing Society 5.0

Architecture as a blueprint is effective as a way to facilitate **consensus formation among diverse stakeholders** and realize a Society 5.0 where **multiple areas and layers are aligned with one another.**

* Architecture: Fundamental concepts or properties of a system in its environment that are embodied in its elements, relationships, and in the principles of its design and evolution (ISO/IEC/IEEE 42010:2011)

Fundamental concepts or designs as to how the whole achieves objectives

Domain of DADC

Architecture that targets the design of not only hardware and software, but also of rules and regulations

Digital Architecture Design Center

Why the Digital Architecture Design Center?

Digital Architecture Design Center

Designing architecture and realizing visions require a neutral place to collect opinions from a range of business and administrative stakeholders

Establishing DADC as a transparent, neutral place to aggregate diverse knowledge of industry, government, and academia

Key points of a Society 5.0 that DADC envisions

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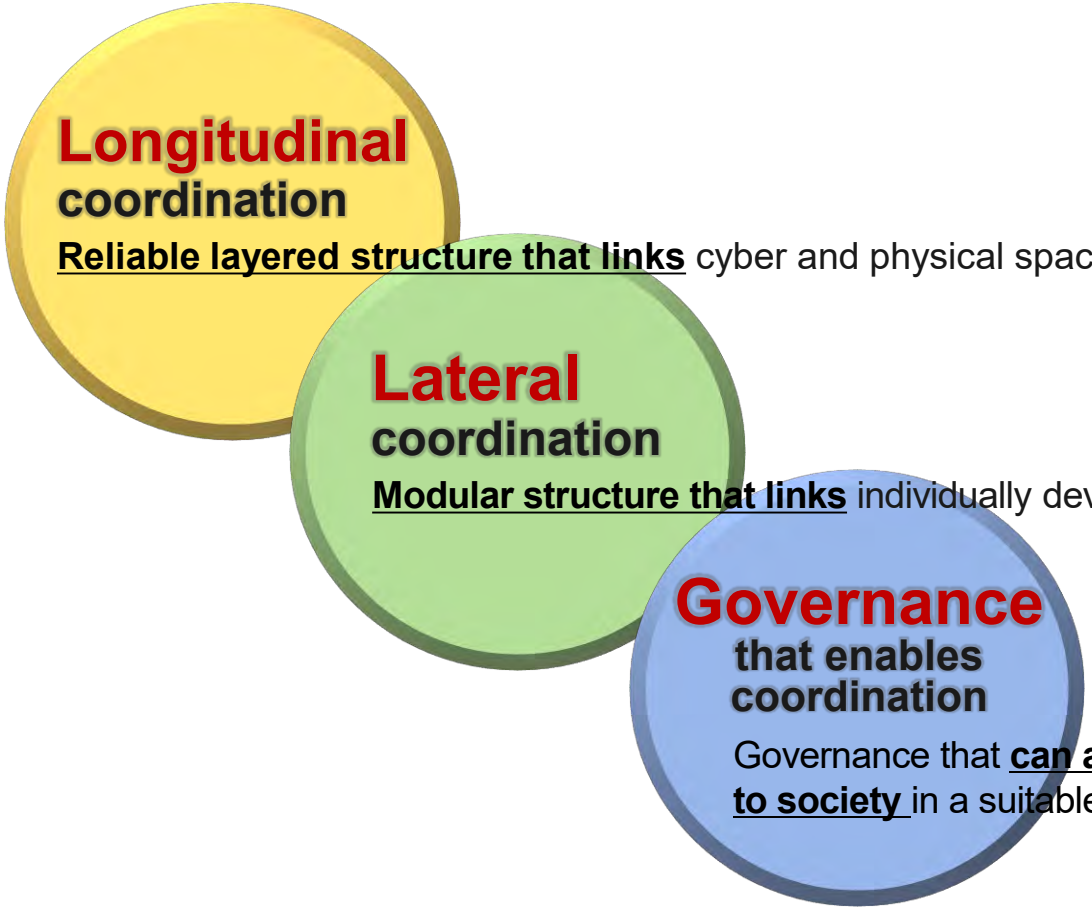

Longitudinal coordination

Reliable layered structure that links cyber and physical spaces **securely and efficiently**

Lateral coordination

Modular structure that links individually developed dispersed services **with one another**

Governance that enables coordination

Governance that **can apply** longitudinal and lateral coordination **to society** in a suitable way

Three aspects of DADC's proposed Society 5.0 architecture

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Governance architecture

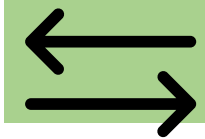
to realize diverse forms of coordination safely

- Governance that maximizes the liberalization that innovation brings about while controlling technological risks of combining cyber and physical spaces

Social infrastructure architecture

commonly required in layers that ensure the reliability and efficiency of CPSs

- Facilitates governance required for CPSs and the DX of governance, thereby ensuring the reliability of CPSs
- Lowering society-wide costs through common development instead of individual development in the public and private sectors or in government ministries



Architecture that enhances interoperability

so that modular services can be linked

- Defines an architecture that helps link modular services in order to ensure the interoperability of services developed by various companies, making it easier to launch services
- An increased diversity of services provides a greater range of options to users

Current initiatives

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Architecting of three working groups is underway.
Each working group **requires all aspects**, but the **primary focus is on the following aspects this fiscal year**:

Governance architecture

to realize diverse forms of coordination safely and securely

Smart Safety

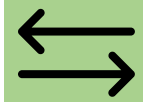
Start by designing governance for plant maintenance that utilizes the safety of connected systems and the advantages of Japan

Social infrastructure architecture

commonly required in layers that ensure the reliability and efficiency of CPSs

Autonomous mobile robots

Start by designing an infrastructure for drones that enables the appropriate use of autonomous mobile robots



Architecture that enhances interoperability

so that modular services can be linked

MaaS for sustainable community

Design systems for interregional mobility that are free from conventional industries and platforms so as to realize sustainable services

Current initiatives

Digital Architecture Design Center

Three themes adopted for the first Incubation Lab

Initiated in October 2020!

01 Designing a governance model to ensure security and safety for **broader use of service robots** and architecture to realize a business ecosystem that includes related industries

02 Design architecture to realizes **health management and prevention services that utilize Personal Generated Data** from general-purpose home-life devices

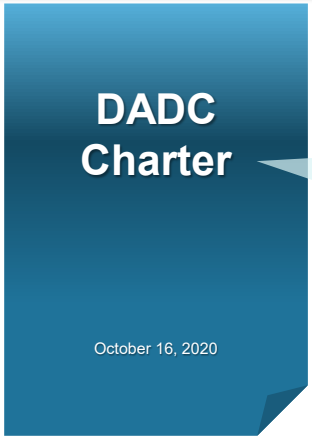
03 Design architecture that makes it possible to **distribute and utilize data across a diverse range of fields** while ensuring reliability through Third-party Data Exchange Functions

DADC management policies set as a charter

Digital Architecture Design Center

DADC **boldly operates free from precedents** in order to fulfill its functions.

* Established as the DADC Charter on October 16, 2020 and confirmed at the Council on Development of Infrastructures for Digital Markets for Realization of Society 5.0



* The full text is available on the DADC website
https://www.ipa.go.jp/dadc

1. Vision and issues to realize Society 5.0

2. What is needed for realizing the vision

3. Missions and objectives of the Center

4. Five roles and things what the Center take and do

5. Seven management policies

(1) **Hold discussions from a futuristic, constructive, and broad perspective**
Futuristic, constructive and wide-perspective

(2) **Hold transparent and neutral discussions**
Transparent and neutral

(3) **Create user-friendly deliverables to be used**
User-friendly and sustainable communication

(4) **Ensure the open and flexible participation of a diverse range of people**
Open member and Engagement

(5) **Continuously accumulate design-related knowledge**
Intelligence development

(6) **Ensure clear and global communication**
Clear and global communication

(7) **Secure a digitized working environment**
Digitalized working environment for flexibility and resilience

Toward realizing Society 5.0

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Digital technology | **Life and society** | **Rules and systems**

Only making **"connections"** may lead to
unexpected situations in an ever-changing society

Need for architecture to create a **human-centric society** by maximizing the liberalization that CPS-based innovation brings about

Let's create a new era together with DADC

Council on Development of Infrastructures for Digital Markets for Realization of Society 5.0

(in Japanese alphabetical order)

Digital Architecture Design Center

President, National Institute of Advanced Industrial Science and Technology
Ishimura Kazuhiko

Chairman of the Board, NEC Corporation
Endo Nobuhiro

Chairperson, The Japan Research Institute, Limited
Okina Yuri

Chairman and President, Group CEO Future Corporation
Kanemaru Yasufumi

President and Representative Director, Z Holdings Corporation and Yahoo Japan Corporation
Kawabe Kentaro

Chairman, Member of the Board, Mitsubishi Chemical Holdings Corporation
Chairman, Regulatory Reform Promotion Council
Kobayashi Yoshimitsu

Chairman of the Board, Nippon Telegraph and Telephone Corporation
Shinohara Hiromichi

Chairman, Industrial Growth Platform, Inc. (IGPI)
Toyama Kazuhiko

Chairman, Hitachi, Ltd.
Chairman, Keidanren
Nakanishi Hiroaki

Professor, Center for Engineering, Research into Artifacts, The University of Tokyo
Yutaka Matsuo

Professor, Keio University
Murai Jun

Governor of Hiroshima Prefecture
Yuzaki Hidehiko

Fellow, Japan Science and Technology Agency
Yoshikawa Hiroyuki

Advisory board members

(in Japanese alphabetical order)

Digital Architecture Design Center

*** Advisory board**: Council of experts who provide technical and expert advice on specific directions for architecture designs

Associate Professor, Graduate School of Law, Kyoto University
Inatani Tatsuhiko

CEO, PKSHA Technology Inc.
Uenoyama Katsuya

Professor, School of Engineering, Tokyo University
Umeda Yasushi

Vice-President, TRI-AD Business Development and Strategy
Saijo Hiroshi

Professor, Graduate School of System Design and Management, Keio University
Shirasaka Seiko

CEO, Kiduki Architect Co., Ltd. / Senior Advisor, Roland Berger Holding GmbH
Nagashima Satoshi

CIO, Assistant CDXO, Corporate Executive Officer, Fujitsu Limited
Fukuda Yuzuru

Representative Director, Senior Managing Director, and CTO, Senior General Manager of Innovation Exploring Initiative HQ, OMRON Corporation
Miyata Kiichiro

Founder and General Partner, Scrum Ventures
Miyata Takuya

(Observer)
Member of the Board and Chief Strategy Officer, Japan Investment Corporation
Fukumoto Takuya

Effects on human resource development resulting from joining DADC

Digital Architecture Design Center

DADC also develops human resources through architecting.

To businesspeople

Utilizing as a place for investing in and intensively training junior personnel

DADC contributes to training next-generation leaders who will design unprecedented value in the age of VUCA and create the future.
It transforms perspectives by providing experience in cooperating with people in a diverse range of positions through projects.
It also strengthens structuralization and visualization based on objective-oriented thinking and from overhead and multi-view perspectives.

To those who want to enter new business fields, launch new ventures, and become social leaders

Helps with growth into key players that create/implement new value and influence national policies

Architecturing is an important skill for companies to develop new lines of business and create new value.
Experiences acquired through DADC will help form foundations to think from broad perspectives, such as at managerial and social levels.
It is crucial ability to move national-level policies toward a desired society.

Announcement: Architect training seminar

Digital Architecture Design Center

Crash-course seminar to learn architecture

[Details]
- Architecture overview
- Examples of use
- Concrete design exercises

Scheduled to take place in **mid-January 2021**
(Place: Tokyo, Attendance fee: free)

Planning now underway!
Details will be available on the DADC official website and SNS!

Special lecturer

Massachusetts Institute of Technology
Engineering Systems Lab
Dr. Olivier de Weck
Pioneer in Engineering Systems
(complex technological society engineering)

Strengthening the design of architecture to realize Society 5.0 through cross-organizational coordination

Digital Architecture Design Center

Announcement of coordination between DADC-DAPC and DADC-SIC to increase synergy and design high-quality architecture

Digital Architecture Promotion Center (DAPC)

- Promoting research and development and standardization based on discussions about architecture designing
- Rapidly promoting forum and de jure standards required for interoperability and quality assurance
- Coordinating with academic and research institutions in Japan and overseas

SHARING CHALLENGES

PROVIDING KNOWLEDGE ON STUDIES AND STANDARDS

Digital Architecture Design Center

- Architecture designing that promotes cross-industrial coordination in response to requests from governments and business operators
- Training experts who can lead architecture designing
- Exploring areas/domains that require architecture and coordinating with related organizations in Japan and overseas

SHARING CHALLENGES

PROVIDING KNOWLEDGE ON SYSTEMATIZATION

Systems Innovation Center

- Utilizing knowledge of systematization of businesses and society in academy and industry for architecture designing, leading to high-quality dialogs and co-creation
- Expanding human resource development in coordination with related universities and businesses through case studies on system innovation

END of Documents

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Let's create a new era together with DADC

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