

# **Additional notes**

# Annotation 1: Research and study on the advancement of digital technologies and their utilization

# Questionnaire to the general public

This survey of the general public in Japan, the U.S., Germany, the UK and China was conducted to ascertain the experience or intention of use of and images of digital technologies such as AI, metaverse, robot and fully autonomous driving.

Items	Overview	Overview						
Survey method	Internet quest	Internet questionnaire survey						
Survey period	January to Fe	January to February 2024						
Target area	Japan, the U.	Japan, the U.S., Germany, the UK and China						
Selection method		Selected by age group (20s, 30s, 40s, 50s, 60s and older) and gender (male and female) from among questionnaire survey company monitors.						
Valid response	A total of 1,000 samples were collected in each country, with 100 each by age (20s, 3 40s, 50s, 60s and older) and sex (male and female). The number collected in each co try is as follows. <japan></japan>							
	Age	Male	Female					
	20-29	103	103					
	30-39	103	103					
	40-49	103	103					
	50-59	103	103					
	60-	103	103					
		515	515					
	Total	1,030						
	<the ge<="" td="" u.s.,=""><td></td><td>1</td></the>		1					
	Age	Male	Female					
	20-29	52	52					
	30-39	52	52					
	40-49	52	52					
	50-59	52	52					
	60-	52	52					
	Total	260	260					
	Total	520						
Main survey items	income) [2] Understa speaker reasons [3] Thought it at hor policies [4] thoughts of it at w [5] Whether robot an [6] Whether	<ul> <li>income)</li> <li>[2] Understanding of the terms of generative AI, metaverse, digital twins, NFT, smart speaker and fully autonomous driving, experiences of use of those services, and reasons why not to use them.</li> <li>[3] Thoughts to generative AI, thoughts to the proliferation of it, thoughts to the use of it at home and in entertainment, images to generative AI, and the promotion of policies to develop and help forward AI and generative AI</li> <li>[4] thoughts to the use of metaverse at home and in entertainment, thought to the use of it at work, and image to metaverse</li> <li>[5] Whether to use robots at home or not, thoughts to the introduction of home-use robot and thoughts to the proliferation of robot at home</li> </ul>						
Notes	The survey targeted monitors registered with the questionnaire survey company. Factors such as the small number of registered monitors may have biased the characteristics of the subjects and their responses, depending on the country, gender or age group.							

Annotation 2: Research and study on the latest trends in information and communication technology research and development, as well as digital utilization, both domestically and internationally (1) Survey research on the use of digital technologies domestically and internationally

### a. Questionnaire to the general public

This survey of the general public in Japan, the U.S., Germany and China was conducted to ascertain the state of digital utilization in working style, private services and public services.

Items	Overview							
Survey method	Internet questionnaire survey							
Survey period	December 2023 to January 2024							
Target area	Selected without age bias from among questionnaire survey company monitor							
Valid response		20s	30s	40s	50s	60s	Total	
	Japan	206	206	206	206	206	1030	
	The U.S.	104	104	104	104	104	520	
	Germany	104	104	104	104	104	520	
	China	104	104	104	104	104	520	
	Total	518	518	518	518	518	2590	
	* Individuals under 20 and over 70 were excluded from this questionnaire.							
Main survey items	Basic attributes (age)     Usage of digital service for work such as remote work     Usage of interactive entertainment services in virtual space     Usage of digital administrative services     Expectations and concerns about the digitalization in various services     Literacy in and thoughts on digital usage							

### b. Questionnaire to company

This survey of companies in Japan, the U.S., Germany and China on digital usage was conducted from the perspectives of technology/data, organization and human resources.

Items	Overview	Overview						
Survey method	Internet qu	Internet questionnaire survey						
Survey period	January 20	January 2024 to February 2024						
Target area	Selected v	Selected without age bias from among questionnaire survey company monitor						
Valid response		Large enterprises	Small-to-medium-sized enterprises	Total				
	Japan	361	154	515				
	The U.S.	233	76	309				
	Germany	213	96	309				
	China	286	23	309				
	Total	1093	349	1442				
Main survey items	<ul><li>Data an</li><li>Effects o</li><li>Organiz</li><li>Shortag</li></ul>	Basic attributes (industry, number of employees) Data and technology used in efforts to switch to digital Effects of efforts to switch to digital Organized efforts to promote the switch to digital Shortage of digital human resources and efforts to secure them Challenges in promoting the switch to digital						

# (2) Survey on the use of the digital technologies in the 2024 Noto Peninsula Earthquake

# Questionnaire to the general public

This survey of the general public in Japan (not limited to disaster areas) was conducted to ascertain the use of the media in the 2024 Noto Peninsula Earthquake.

Items	Overview							
Survey method	Internet questionnaire survey							
Survey period	March 2024							
Target area	Selected without age bias from among questionnaire survey company monitor							
Valid response		20s	30s	40s	50s	60s	Total	
	Japan	412	412	412	412	412	2060	
	* Individuals under 20 and over 70 were excluded from this questionnaire.							
Main survey items	<ul> <li>Basic attributes (age)</li> <li>Whether to do the confirmation of safety or not and tools to do so</li> <li>Media to use as a tool for information gathering after the earthquake</li> <li>Information gathering and distribution on social media related to the earthquake</li> <li>Status to encounter unverified information</li> </ul>							

# References

#### Part 1

#### Chapter1

- Cabinet Office Recovery and Reconstruction Support Headquarters (2nd meeting) (February 16, 2024), (3rd meeting) (March 1, 2024) handouts
- NTT West "Support and Guidance for Customers Affected and Evacuated due to the Effects of the 2024 Noto Peninsula Earthquake"
- Visual Communications Journal "Ishikawa Prefecture's Commercial Broadcasters and NHK: Relay Station Affected by Noto Peninsula Earthquake" (January 22, 2024)
- Nikkan Dempa Shimbun "Noto Peninsula Earthquake: the Regional Bureau of Telecommunications etc. including the One in Kinki Support CATV Stations" (February 15, 2024)
- NHK Broadcasting Culture Research Institute NHK Bunken Blog "Noto Peninsula Earthquake: What is the Situation
  of Local Media? ~ "Radio Nanao", Nanao City, Ishikawa Prefecture ~ [Researcher's Perspective] #527" (February
  22, 2024)
- MIC "Roundtable on Information and Communications Infrastructure and its Utilization for the Realization of Vibrant Local Communities, Working Group on the Usage Environment of Digital Infrastructure to Support the Utilization of Digital Technology in Local Communities" materials
- NTT DOCOMO, KDDI "Regarding the Implementation of "Shipboard Base Station" Operations in Response to the 2024 Noto Peninsula Earthquake" (January 6, 2024)
- Softbank "We Want to Quickly Deliver Peace of Mind to Disaster-stricken Areas. The Current Situation in Noto and the Path to Early Recovery of the Communication Network as Seen by the Person in Charge" (January 12, 2024)
- ITmedia Mobile "Four Carriers Explained the Status of Area Restoration After the Noto Peninsula Earthquake: What Are the Factors that Are Making "Full-scale Restoration" Difficult?" (January 19, 2024)
- Ministry of Finance "Concerning the Use of Contingency Funds Based on the Package to Support the Lives and Livelihoods of Victims of the 2024 Noto Peninsula Earthquake"

#### **Chapter 2**

- Digital Agency "Summary of Press Conference by Minister for Digital Transformation KONO" (January 26, 2024)
- Axel Globe "The 2024 Noto Peninsula Earthquake Special Page"
- QPS Research Institute "Providing Satellite Images of the 2024 Noto Peninsula Earthquake Area"
- National Research Institute for Earth Science and Disaster Prevention "Disaster Prevention Cross-view on the 2024 Noto Peninsula Earthquake"
- Geospatial Information Authority of Japan "Crustal movement accompanied with the 2024 Noto Peninsula Earthquake by analyzing observed data of "Daichi 2" (updated on January 19, 2024)
- Tokyo Metropolitan Government "Visualization of the damage situation of the Noto Peninsula Earthquake using the Tokyo Digital Twin 3D Viewer" (February 2, 2024)
- National Research Institute for Earth Science and Disaster Resilience "FY2023 4th Disaster Resilience Co-Creation Research Meeting "2024 Noto Peninsula Earthquake" Reporting meeting" (March 5, 2024)
- MIC "Survey on the status of ICT utilization during the Kumamoto Earthquake" (March 2017)
- Blue Innovation, Liberaware, ACSL, Aeronext, NEXT DELIVERY "Regarding the initial disaster support activities of five drone-related companies related to the 2024 Noto Peninsula Earthquake"

#### **Chapter 3**

- "BIZ DRIVE" KAMEDA Kenji, Why did the third Al boom occur? (Part 1) (February 28, 2018), (Part 3) (April 16, 2018)
- SEQUOIA, "Generative AI's Act Two" (September 20, 2023)
- Center for Research and Development Strategy in Japan Science and Technology Agency "New Trends in Artificial Intelligence Research 2" (July 2023)
- SHIOZAKI Junichi "The Future Landscape Changed by Generative AI", "Nomura Research Institute" (December 2023)
- · MIC "Report on Research and Study on the Impact of ICT Evolution on Employment and Work Styles" (March 2016)
- NIKKEI Tech Foresight, "Infrastructure models will be multimodal and integrated with robots: 24-year outlook," "Nihon Keizai Shimbun Inc." (January 24, 2024)
- SHINDO Tomonori "Editor-in-Chief's Outlook for 2024 (No. 11) Will Robots Change with Large-Scale Language Models? - Robots and AI in 2024 -," "Nikkei xTECH" (January 19, 2024)
- NEC "Examples of Al technology used in automobiles, such as autonomous driving, and future challenges"
- · Jidounten LAB, "Autonomous Driving and AI (2023 Latest Edition)" (July 7, 2023)

#### Chapter 4

- Data provided by Statista
- National Institute of Advanced Industrial Science and Technology press release "Development of world-class generative AI begins using AIST's computing resource ABCI AIST, Tokyo Institute of Technology, and LLM-jp (hosted by the National Institute of Informatics) cooperate" (October 17, 2023)
- NICT, "Prototype of a large-scale language model (generative AI) specialized for Japanese ~ Developing a 40 billion parameter generative large-scale language model trained only on Japanese web data ~" (July 4, 2023)
- CyberAgent, "CyberAgent releases Japanese LLM (Large-Scale Language Model) with up to 6.8 billion parameters to the public - Providing commercially usable models trained with open data -" (May 17, 2023)
- CyberAgent, "Version 2 of our unique Japanese LLM (large-scale language model) released to the public Providing a commercially available chat model with 32,000 tokens -" (November 2, 2023)

- NTT, "NTT's commercial service using its unique large-scale language model "tsuzumi" will begin in March 2024" (November 1, 2023)
- Yomiuri Shimbun Online "Fake video of Prime Minister KISHIDA spread on social media using generative Al...NTV's logo misused: "We cannot forgive this,"" (November 4, 2023)
- Nikkei Online Edition "Fake video of Noto Peninsula Earthquake spread on social media, also soliciting remittances" (January 2, 2024)
- Nikkei Online Edition "European 5G base station destruction, the shadow culprit is the hoax of "spreading coronavirus"" (April 25, 2020)
- World Economic Forum "How to navigate an era of disruption, disinformation, and division" (January 15, 2024)
- "US companies agree to develop AI video identification system; President Biden announces, 'Measures to be takeni", "NHK News" (July 22, 2023 issue)
  MIC "Study Group on Ensuring the Healthiness of Information Circulation in the Digital Space"
- "About the Concept of Al and Copyright," the Legal System Session, Copyright Subcommittee, Cultural Affairs Council (March 15, 2024)
- · Ministry of Foreign Affairs, "G7 Leaders' Statement on the Hiroshima Al Process"
- · MIC "Publication of Report by Al Network Society Promotion Council in 2017"
- MIC "Publication of Report by Al Network Society Promotion Council in 2019"
- Cabinet Office Integrated Innovation Strategy Promotion Council Decision, "Social Principles of Human-Centric Al"
- METI, "Governance Guidelines for the Implementation of Al Principles ver. 1.1"
- Cabinet Office Al Strategic Council "Tentative Summary of Al Issues"
- · MIC "Study Group Report on Utilization of Metaverse toward the Web3 Era"
- · MIC "Study Group on Realizing a Safe and Secure Metaverse"

- MIC (2024) "Research and study on the advancement of digital technologies and their utilization"
- MEXT, "Survey on the actual situation regarding "Teacher Shortage" (January 2023)

#### Chapter 6

 Tokyo Institute of Technology "Regarding development of large-scale language model distributed parallel learning method for supercomputer "Fugaku" policy response framework" (May 22, 2023)

#### Part 2

#### **Chapter 1**

- Data provided by Statista
- MIC (2024) "Survey on Economic Analysis of ICT in FY2023"
- MIC "ICT Inter-Industry Table" (for each FY)
  MIC "2023 Survey of Research and Development"
- · MIC "Survey of Research and Development" for each FY
- Japan Science and Technology Agency, Research and Development Strategy Center "Overview of Research and Development Report (2023)"
- National Institute of Science and Technology Policy in the MEXT "Science and Technology Indicators 2023"
- NTT (2023) "IOWN Technology Report 2023"
- · MIC "2023 Basic Survey on the Information and Communications Industry"
- · MIC "Information and Communications Statistics Database"
- MIC "Survey on Broadband Infrastructure Coverage Rate at End of FY2022"
- **OECD Broadband statistics**
- MIC (2024) "Results of Aggregating Internet Traffic in Japan (for November 2023)"
- MIC "Publication of Quarterly Data on the Number of Subscriptions and Share of Telecommunications Services (Q3 of FY2023 (End of December))'
- MIC "FY2023 Survey on Domestic-Overseas Price Difference of Telecommunication Service"
- MIC "Voice Communication Usage in Japan by Communication Volume (FY2022)"
- MIC "Accidents in Telecommunications Services (FY2022)"
- · MIC "Regular Monitoring Meetings on the Implementation Status of Consumer Protection Rules" Material
- MIC "Income and Expenditures of Private Broadcasters" and NHK "Financial Statements" for each FY
- · Dentsu "Advertising Costs in Japan"
- MIC "Income and Expenditures of Private Broadcasters"
- · MIC "Current State of Cable Television"
- Japan Electronics and Information Technology Industries Association, Japan Cable Laboratories, and NHK, and the MIC "Current State of Satellite Broadcasting" and "Current State of Cable Television"
- MIC "State of the Occurrence of Broadcasting Suspension Accidents" (FY2022)
- · MIC Institute for Information and Communications Policy "Survey on Media/Software Production and Distribution"
- Dentsu Group "Global Advertisement Spend Growth Rate Forecast (2023-2026)"
- MIC "Analysis of the Current Status of Overseas Expansion of Broadcasting Content" (for each FY)
- · Data provided by Omdia
- METI "Production Dynamics statistical Survey, Machinery Statistics Edition"
- Yano Research Institute Ltd., "Global Research on the Number of Mobile Phone Service Subscriptions and Shipment Volume of Smartphones" (2023) (published on March 27, 2024)
  Yano Research Institute Ltd., "The Market of HMDs (Head Mounted Displays) for XR (VR/AR/MR) and Smart
- Grasses (2023)" (published in July 5, 2023)
- CIAJ "Medium-term Demand Forecast for Communications Devices [FY2023-DY2028]

- · JEITA "Domestic Shipments of Consumer Electronic Devices"
- UNCTAD "UNCTAD STAT"
- · Wright Investors' Service, Inc "Corporate Information"
- · GEM Partners "Video Streaming (VOD) Market Forecast for Five Years (2024-2028) Report"
- · Recording Industry Association of Japan "Japan's Recording Industry 2024"
- Research Institute for Publications (2024) "Publishing Monthly Reports"
- Japan Alternative Data Accelerator Association "Alternative Data FACTBOOK" (Overview)
- Yano Research Institute Ltd., "Metaverse Market Survey in Japan (2023)" (published on August 30, 2023)
- IDC Japan, July 2023 "Domestic Data Center Service Market Prediction 2023-2027" (JPJ49897923)
- Synergy "Cloud Market Gets its Mojo Back; Al Helps Push Q4 increase in Cloud Spending to New Highs"
- IDC "Investment in Edge Computing in the Domestic Market is Predicted to Reach 16 trillion yen in 2024 ~the Forecast for the Domestic Edge Infrastructure Market is Announced~" (March 22, 2024)
- MIC "Communications Usage Trend Survey"
- IDC Worldwide Edge Spending Guide-Forecast 2024 | Feb (V1 2024)
- Deloitte Tohmatsu MIC Research Institute "Reality and Future Prospects of Edge AI Computing Market in FY2023
- IDC "Announced Market Prediction of Domestic Al System in 2024" (April 25, 2024)
- Stanford University "Artificial Intelligence Index Report 2024"
- Canalys prediction
- IDC Japan, August 2023 "Japan IT Security Products Market Shares, 2022: Progress of Security Platform" (JPJ49213223)
- NICT "NICTER Observation Report 2023"
- National Police Agency, MIC and METI "Status of Unauthorized Access Activities and Research and Development of Access Control Technology"
- MIC (2024) "Research and study on the latest trends in information and communication technology research and development, as well as digital utilization, both domestically and internationally"
- MIC "Survey on Household Income and Expenditures" (total households)
- MIC Institute for Information and Communications Policy "Survey on Usage Time of Information and Communications Media and Information Behavior"
- MIC "Survey Result of Teleworking Security in FY2023"
- **UN e-Government Surveys**
- Institute of Digital Government in Waseda University "World Digital Government Ranking"
- MIC "Overview of Promotion of DX and Use of Information by Local Governments: Summary of FY2023 Survey on Promotion of Use of Administrative Information by Local Governments"
- MIC "The Status of Issuance of My Number Card"
- · Digital Agency "Dashboard on the proliferation of My Number Card"
- MIC "Promotion of Utilization of AI and RPA in Local Governments"
- MIC "Survey on Remote Work Initiatives by Local Governments"
- Japan Post Group "Financial Results for the Period Ending March 2024"
- Japan Post Group "Disclosure Report"
- Japan Post "Overview of Financial Results"
- Japan Post "Information on Number of Post Offices <open data>"
- Japan Post "Number of Accepted Postal Items" for each FY
- Japan Post Bank Securities Report
- Japan Post Insurance Securities Report

- Partial recommendation of Information and Communications Council regarding "Technical conditions for telecommunications equipment that respond to the diversification and complexity of networks due to advances in virtualization technology, etc." (September 16, 2022)
- Results of soliciting opinions regarding partial revisions to the Ordinance for Enforcement of Telecommunications Business Act, etc. and recommendation of the Information and Communications Administration and Postal Administration Council (January 20, 2023)
- Partial recommendation of Information and Communications Council regarding "Technical conditions for telecommunications equipment that respond to the diversification and complexity of networks due to advances in virtualization technology, etc." (February 24, 2023)
- MIC (2022) "Summary of the Future Vision and Ideal State of Broadcasting in the Digital Age"
  MIC (2023) "Summary of the Future Vision and Ideal State of Broadcasting in the Digital Age (Second Summary)"
  MIC (2023) "Summary of Public Broadcasting Working Group"
- MIC (2024) "Summary of Public Broadcasting Working Group (Second Summary)"
- National center of Incident readiness and Strategy for Cybersecurity "Cybersecurity Strategy" (2021)
- National center of Incident readiness and Strategy for Cybersecurity, Cybersecurity Strategic Headquarters (2022) "The Cybersecurity Policy for Critical Infrastructure Protection"
- Digital Agency (2022) "Sub-working Group for Trust-Assured Digital Transformation" Report
- · MIC (2024) "Final Report of Study Group on e-Seal"