

2022 White Paper on Information and Communications in Japan

Table of Contents

Part 1

Special Topic: 50 years since the publication of the first Information and Communications White Paper – changes in ICT and digital economy

Introduction

Developments of ICT Since 1973, the Year of First Publication of White Paper on Information and Communications 2

1. Advancement of ICT and Diversification of Services 2
2. Penetration of ICT Use in Social and Economic Activities 3

Chapter 1

Review of Changes Over the Past 50 Years in Chronological Order 5

Section 1 1973 to 1985: Age of Analog Communications and Broadcasting 5

1. International Events and Trends 5
2. Trends in Japan's ICT sector 6

Section 2 1985 to 1995: Development of Communications and Broadcasting Markets and Appearance of New Services 8

1. International Situation and the Trends Outside of Japan 8
2. Trends in the ICT sector of Japan 8

Section 3 1995 to 2005: Spread of Internet and Mobile Phones 11

1. International Situation and Trends Outside of Japan 11
2. Trends in the ICT sector of Japan 12

Section 4 2005 to 2015: Rapid Penetration of ICT - Expansion of Broadband and Mobile Phone Utilization 14

1. International Situation and Trends Outside of Japan 14
2. Trends in the ICT sector of Japan 15

Section 5 From 2015: Establishment of ICT as a Social and Economic Infrastructure 17

1. International Situation and Trends Outside of Japan 17
2. Trends in the ICT sector of Japan 19

Chapter 2

Future Prospects for Japanese Society 21

Section 1 Prospects for the Role of ICT in Future Japanese Society 21

1. Prospects for Japanese society in the future 21
2. Prospect for the roles to be fulfilled by ICT 22

Section 2 Responses to Already Apparent Challenges 24

1. Response to risks involved in changes in the international environment 24
2. Current state of data governance 26
3. Response to illegal/harmful information 27

Column 1 Past 50 years of mail and correspondence delivery 29

1. 1973 to 1985 29
2. 1985 to 1995 30
3. 1995 to 2005 30

4. 2005 to 2015	31
5. From 2015 to present day	31

Part 2

Current Status and Challenges for Information and Communications

Chapter 3

Trends in the ICT Market	34
Section 1 Trends in ICT Industry	34
1. Size of the ICT market	34
2. Gross Domestic Product (GDP) of the information and telecommunications industry	35
3. IT investments	37
4. Exports and imports in the ICT field	38
5. Trend of R&D in the ICT field	39
Section 2 Trends in the Telecommunication Sector	40
1. Trends of the domestic and overseas communications markets	40
2. Current status of telecommunications in Japan	42
3. New technology development	46
Section 3 Trends in the Broadcasting and Content Sectors	47
1. Broadcasting	47
2. Content market	53
Section 4 Trends of Radio Spectrum Use in Japan	58
1. Principal use by spectrum	58
2. Changes in the number of radio stations	59
3. Satellites	59
4. Radio wave monitoring to eliminate obstruction of important radio communications, etc.	60
Section 5 Trends Related to Equipment and Terminals	62
1. Trends in the Information Terminals Market	62
2. Trends in the network equipment market	62
3. Trends in the semiconductor market	63
4. Changes in exports/imports of ICT equipment	64
5. Global and Japanese market share by business operator	64
Section 6 Trends of Services and Applications	66
1. Platform trends	66
2. Social media	67
3. EC	68
4. Electronic payment	68
5. Search services	68
6. Video distribution, music distribution and e-books	68
7. Trends in the data center market	69
8. Trends in the cloud service market	70
9. AI	70
10. Virtual space, etc.	72
Section 7 Cyber Security Trends	73
1. Overall condition of the global market	73
2. Present state of cyber security in Japan	74
Section 8 Digital Usage Trends	77

1. Digital usage trends in the daily life of the public	77
2. Trends in utilization in corporate activities	82
3. Trends in regard to digital usage in administration	85
Section 9 Trends in Postal Service and Correspondence Delivery Business	87
1. Postal service	87
2. Correspondence delivery service	90

Chapter 4

Status of ICT Policy at MIC	92
--	-----------

Section 1 Promotion of Comprehensive ICT Policies	92
--	-----------

1. Current State and Challenges	92
2. Initiatives for Promotion of Comprehensive ICT Policies	93

Column 2 "Recommendations on Information and Communication Administration from Young Administrators— a Roadmap to MIC 2.0"	95
---	-----------

1. Information distribution/cross-cutting field	95
2. Technology/international affairs	95
3. Communications/radio waves	95
4. Broadcasting	95
5. Postal Affairs	96
6. Organizational culture/ways to proceed with work	96

Section 2 Trends in Telecommunication Policy	97
---	-----------

1. Summary	97
2. Development of a Fair Competitive Environment	97
3. Development and Maintenance of Digital Infrastructure	99
4. Ensuring Safe and Reliable Telecommunications Infrastructure	100
5. Developing Safe and Secure Environments for Use of Telecommunications Services	101
6. Mediation and arbitration by the Telecommunications Dispute Settlement Commission	105

Section 3 Radio Policy Trends	106
--	------------

1. Summary	106
2. Consideration of Promotion of Effective Radio Utilization in the Age of Digital Transformation	106
3. Spread/development of 5G/B5G	107
4. Promotion of advanced radio use systems	109
5. Promoting Overseas Deployment of Radio Wave Systems	110
6. Establishment of Radio Usage Environments	110

Section 4 Trends in Broadcasting Policy	112
--	------------

1. Summary	112
2. Desirable state of public broadcasting	112
3. Desirable state of restrictions on foreign investment	113
4. Strengthening the Foundation of Broadcasting Businesses	113
5. Promoting Broadcast Content Circulation	115
6. Promoting the spread of broadcasting for the visually challenged and those with hearing impairments	116
7. Improving the Resilience of Broadcast Networks and Enhancing Their Disaster Resistance	116

Section 5 Trends in Cybersecurity Policy	118
---	------------

1. Summary	118
2. Securing safety and reliability of information and communications networks	118
3. Initiatives related to Telework Security	119
4. Initiatives related to Trust Services	119
5. Initiatives related to wireless LAN security	121
6. Initiatives related to ensuring safety of cloud services	121
7. Initiatives for development of security human resources	121

8. Constructing the integrated cybersecurity knowledge/human resource development foundation (CYNEX)	122
9. Promoting formulation of security communities rooted in the area (regional SECURITY)	122
10. Initiatives related to international cooperation	122
Section 6 Promoting ICT Usage	123
1. Summary	123
2. Promoting ICT usage that will contribute to solving social/economic problems	123
3. Promoting data distribution/use and new businesses	126
4. Creating Environments Where Everyone Can Enjoy the Convenience of ICT	127
Column 3 Promoting support for digital usage by the elderly	129
1. Current state of digital divide among the elderly	129
2. “Project on Digital Utilization Support for Users”	129
3. Future prospects of “Project on Digital Utilization Support for Users”	129
Section 7 ICT Technology Policies	130
1. Summary	130
2. Beyond 5G	131
3. Quantum technology	133
4. AI technologies	134
5. Remote sensing technologies	134
6. Space ICT	135
Section 8 Promoting International Strategies for ICT	136
1. Summary	136
2. Overseas deployment of digital infrastructure, etc.	136
3. Contribution to establishment of international rules on the digital economy	138
4. Securing economic security in the digital field	139
5. International cooperation in multilateral frameworks	139
6. International cooperation in bilateral relationships	142
Section 9 Promoting Postal Service Administration	144
1. Summary	144
2. Promoting post office administration	144
3. Promoting postal administration in the international field	146
4. Trends of correspondence delivery	146

Appendix

ADDITIONAL NOTES	148
REFERENCES	149