JST Strategic Basic Research Program

(Social Technology Research and Development)

2019 Research and Development

Implementation Report

"Human-Information Technology Ecosystem"

Research and Development Focus Area

"Emotional AI in Cities: Cross Cultural Lessons from UK and Japan on

Designing for An Ethical Life"

Peter Mantello

(Ritsumeikan Asia Pacifc University, Professor)

CONTENTS

1. R&D Project Name

Emotional AI in Cities: Cross Cultural Lessons from UK and Japan on Designing for An Ethical Life

2. Specific Details of Research and Development Conducted

2-1. Research and Development Goals

Understand what it means to live ethically and well with EAI in cities, by understanding the emergence of EAI in cities; its social, spatial and temporal implications; and engaging with diverse EAI and smart city stakeholders in UK-Japan. (This goal is currently in process however because of COVID-19 restrictions we are doing this from tele-working).).

· Raise awareness of UK-Japanese stakeholders (technology industry, policymakers, NGOs, security services, urban planners, media outlets, citizens) on how to live ethically and well with EAI in cities. (This goal is currently in process however because of COVID-19 restrictions we are doing this from tele-working).

· Advance collaboration between UK-Japan academics, disciplines and stakeholders in EAI. (This goal is currently in process – however because of COVID-19 restrictions we are doing this from tele-working).

· Undertake comparative cross-cultural UK-Japan analysis on how EAI impacts commercial, security and civic contexts. (This goal is currently in process – however, because of COVID-19 restrictions we are doing this from tele-working).

· Understand commercial activities, intentions and ethical implications regarding EAI in cities via interviews with industry, case studies and analysis of patents in UK-Japan. (This goal is in process - however because of COVID-19 restrictions we are doing this from tele-working).

· Ascertain how EAI may impact security stakeholders and organizations in the new media ecology via interviews with these stakeholders and case studies in UK-Japan. (This goal is currently in process- however, because of COVID-19 restrictions we are doing this from tele-working).

· Formulate governance approaches for collection and use of intimate data about emotions in public spaces (e.g. privacy laws, ethics frameworks, technology standards, design-led regulation) to understand how these guide EAI developments, in order to build a repository of best practice on EAI in cities. (This goal is currently in process- however because of COVID-19 restrictions we are doing this from tele-working).

· Advance novel scientific insights across surveillance studies, new media, information technology law, security & policing studies, science & technology studies, affective computing. To date our team member has published one article,

· We are in the initial stages of constructing an online think tank to provide impartial ethical advice on EAI and cross-cultural issues to diverse stakeholders during and after the project. (This goal is currently in process however because of COVID-19 restrictions we are doing this from tele-working).)

2-2. Implementation and Results of the Research and Development
 (1) Schedule

Our first period of the project from January, 1st, 2020 to March 31st, 2020 was based primarily on literature review, identifying potential interviewees and

mapping the ecology of EAI stakeholders in Japan through desktop analysis. We started off the year at the beginning of January with a UK/Japan meeting in Tokyo. The entire UK team met with our Japan counterparts for an intensive four day meeting at Ritsumeikan Tokyo Campus located in Sapia Tower. The goal of this UK/Japan meet up was to organize the three year project, familiarize the team players as well as draw up a list of goals and responsibilities for each team members of this three year research project. In late January with warnings of the Coronavirus coming from government sources our team efforts became restricted to primarily literature review and desk top analysis. This meant that much of our travel budget and initiatives had to be put on hold.

We have started to map state of the art in emotional AI in Japan: Led by myself our team has begun to map emergent emotional AI technologies. We began by identifying stakeholders and are now in the process of setting up interviews developing and working with emotional AI Japan. Most of our work to date has been through desk-based analysis. Depending on the Coronavirus situation and cancellations of many events such as attending industry expos. Such events are key for they will help us build a regional analysis of companies and organizations operating in emotional AI that impact on Japanese smart cities, how they connect and collaborate, and what their interest is in civic life. I have also started work on a paper dealing with empirical approaches to emotional decision making biases in predictive software. Our efforts however, have been hampered by the Coronavirus and restrictions placed on us by the State of Emergency.

We have started to study commercial activities/intentions of emotional AI companies & ethical implications. Led myself, my team is currently identifying commercial stakeholders who we hope to conduct interviews with in the near future. Some of the perspective companies (e.g. Softbank, IBM, NEC Robo-ken,

Toyota). We are now looking at interesting case studies; analyze patents. We also hope to attend proof of concept demos of emerging emotional AI technologies developed by industry (e.g. Hitachi, Sony, NEC, Toyota). Of course this all depends on the state of the virus epidemic and whether or not companies are willing to meet with us at this very serious and historically inopportune time.

Myself and Hiromi Tanaka are currently investigating how emotional AI impacts security & digital media sectors. We are in the process of identifying security and policing stakeholders. Moreover, we are assessing interesting case studies for the rise of 'fake news' and 'deep-fakes'.

Hiroshi Miyashita is currently researching emotional AI governance approaches: Professor Miyashita is in the processes of exploring issues in Japan surrounding AI and governance, particularly collection and use of intimate data about emotions. Similar to other team members the current health situation has limited his efforts to mainly desk analysis of data protection and privacy laws, organizational norms and codes, ethics frameworks from Japan.

We intend by the end of this fiscal year to have the initial foundation for a repository of concerning design practices and ethical best practices to create emotional AI for cities. This repository will be used as criteria for living well and ethically with emotional AI into debate on design and governance of these systems. Our progress as previously mentioned has been hampered by COVID19

Besides his literature review, Professor Nader Ghotbi is looking at EAI through the lens of diversity, age, health & ethics. Professor Ghotbi currently looking at case examples where EAI is being used in conjunction with ageing and health as well as ethical implications of the technology. Moreover, Professor Ghotbi is in constant communication with the team regarding our research as it pertains to

diversity issues such as about gender, sexuality, race, ethnicity, class, [dis]ability, age, health and ethics.

(2) Implementation details

We are mapping the ecology of EAI stakeholders in Japan. Performing literature review and desktop analysis of commercial/security field. We are performing data Collection for AI for Bio-ethics and public health. Data Collection for AI for Policy. Literature review and desktop analysis of diversity and social media. However, due to Covid-19 our plans to attend symposiums, workshops and trade exhibitions as well as field research have been curtailed.

Implementation item (1)-1: Our first period of the project from January, 1st, 2020 to March 31st, 2020 was based primarily on literature review, identifying potential interviewees and mapping the ecology of EAI stakeholders in Japan through desktop analysis. We started off the year at the beginning of January with a UK/Japan meeting in Tokyo. The entire UK team met with our Japan counterparts for an intensive four day meeting at Ritsumeikan Tokyo Campus located in Sapia Tower. The goal of this UK/Japan meet up was to organize the three year project, familiarize the team players as well as draw up a list of goals and responsibilities for each team members of this three year research project. In late January with warnings of the Coronavirus coming from government sources our team efforts became restricted to primarily literature review and desk top analysis. This meant that much of our travel budget and initiatives had to be put on hold. For these reasons we have to carry over a large percentage of our budget to 2020.

Implementation item (1)-2: We have started to map state of the art in emotional AI in Japan: Led by myself our team has begun to map emergent emotional AI

technologies. We began by identifying stakeholders and are now in the process of setting up interviews developing and working with emotional AI Japan. Most of our work to date has been through desk-based analysis. Depending on the Coronavirus situation and cancellations of many events such as attending industry expos. Such events are key for they will help us build a regional analysis of companies and organizations operating in emotional AI that impact on Japanese smart cities, how they connect and collaborate, and what their interest is in civic life. I have also started work on a paper dealing with empirical approaches to emotional decision making biases in predictive software.

Implementation item (1)-3: We have started to study commercial activities/intentions of emotional AI companies & ethical implications. Led myself, my team is currently identifying commercial stakeholders who we hope to conduct interviews with in the near future. Some of the perspective companies (e.g. Softbank, IBM, NEC Robo-ken, Toyota). We are now looking at interesting case studies; analyze patents. We also hope to attend proof of concept demos of emerging emotional AI technologies developed by industry (e.g. Hitachi, Sony, NEC, Toyota). Of course this all depends on the state of the virus epidemic and whether or not companies are willing to meet with us at this very serious and historically inopportune time.

Implementation item (1)-4: Myself and Hiromi Tanaka are currently investigating how emotional AI impacts security & digital media sectors., We are in the process of identifying security and policing stakeholders. Moreover, we are assessing interesting case studies for the rise of 'fake news' and 'deep-fakes'.

Implementation item (1)-5: Hiroshi Miyashita is currently researching emotional AI governance approaches: Professor Miyashita is in the processes of exploring

issues in Japan surrounding AI and governance, particularly collection and use of intimate data about emotions. Similar to other team members the current health situation has limited his efforts to mainly desk analysis of data protection and privacy laws, organizational norms and codes, ethics frameworks from Japan. We intend by the end of this fiscal year to have the initial foundation for a repository of concerning design practices and ethical best practices to create emotional AI for cities. This repository will be used as criteria for living well and ethically with emotional AI into debate on design and governance of these systems.

Implementation item (1)-6: Besides his literature review, Professor Nader Ghotbi is looking at EAI through the lens of diversity, age, health & ethics. Professor Ghotbi currently looking at case examples where EAI is being used in conjunction with ageing and health as well as ethical implications of the technology. Moreover, Professor Ghotbi is in constant communication with the team regarding our research as it pertains to diversity issues such as about gender, sexuality, race, ethnicity, class, [dis]ability, age, health and ethics.

Main Schedule of R&D

Implemented Items	2019 年度 (2020.1～ 2020.3)	2020 年度 (2020.4～ 2021.3)	2021 年度 (2021.4～ 2022.3)	2022 年度 (2022.4～ 2022.12)
Stage 1 - Map emotional AI sector	▬	▬		
Stage 2 - Collect data on commerce	▬	▬		
Stage 3 - Collect data on security & media	▬	▬		
Stage 4 - Collect data on governance	▬	▬		

Stage 5 – Complete surveys.			→	
Stage 6 – Complete Citizen Workshops.			→	
Stage 7 – Complete application of cross-cutting themes.		→		
Stage 8 – Complete Policy Workshops				→
Stage 9 – Complete all academic and impact outputs.		→		

———— Signifies limitations put on research efforts due to Coronavirus contagion and State of Emergency

Stage Signifies in Progress

- **PI Mantello**, APU (currently researching EAI pertaining to commercial sector dataveillance, predictive policing) as well as managing Japan team, coordinating with UK team; doing empirical work in Japan/international (at present involved in stage 1, 2, 3,).

- **Co-I Tanaka**, Meiji Univ. (expert on digital media & gender) & **Co-I Ghotbi**, APU (expert on health, aging, cross-cultural ethics & AI) currently doing empirical work in Japan/international (at present involved in stage 1, 2, 3,

- **Co-I Miyashita**, Chuo Univ.) (expert on AI & data privacy) currently doing empirical work in Japan/international. (at present involved in stage 1, 2, 3)

- **RA – Tung Manh Ho** (2,320hrs) currently doing archival/indexing and empirical work. (at present involved in stage 1, 2, 3)

(3) Outcomes

Our outcomes so far have been two publications by Hiroshi Miyashita.

1- Hiroshi Miyashita, EU-Japan Mutual Adequacy Decision, in The EU-Japan

Relationship, ed. by Olivia Tambou (Collection Open Access Book,

Blogdroiteuropeen, 2020). ISBN will be available once the book is coming out.

2- Hiroshi Miyashita, Human-centric Data Protection Laws and Policies: A Lesson from Japan, Computer Law and Security Review, vol. - No. - pp.- -. (awaiting publication)

PI Mantello, from APU continuing his literature review and desktop analysis of dataveillance, predictive policing. Currently he is managing the Japan team management and conducting weekly meetings. He is also coordinating with UK team. Besides this, he is undertaking desktop empirical work in Japan and on an international level researching EAI pertaining to commercial and security sectors. Co-I Tanaka, from Meiji University - is undertaking desktop empirical work digital media & gender in Japan and on an international level. Co-I Ghotbi, from APUis currently doing desktop empirical work on health, aging, cross-cultural ethics & AI in Japan and on an international level. Co-I Miyashita, from Chuo University is currently doing empirical work on AI & data privacy in Japan and on an international level. Our research assistant, Tung Manh Ho is currently busy doing archival/indexing and empirical work.

(4) Summary of results for the year in question / Issues for the next year
JST REPORT

We have outlined two different journal articles. The first paper seeks to understand the responses of Japanese media to the COVID-19 pandemics from the perspective of emotional AI and empathic media. The second paper is about

students' attitude and concern regarding the future of AI. We will briefly describe the research problems and methodology for each problems below.

State of Ambiguity: Mapping Public Emotions to Government Responses to Covid19 through
Peter Mantello, Nader Ghotbi, Hiroshi Miyashita, Hiromi Tanaka and Tung Ho Manh

First, regarding the article on Japanese media's responses to the COVID-19 pandemics, it seeks to understand the following research topics: i) providing a broad overview of the Japanese media's coverage of the COVID-19 pandemics; ii) understanding the social media sentiment regarding COVID-19 pandemics; iii) understanding what constitute viral news and viral social media posts in Japan related to the COVID-19 pandemics and their emotional/cognitive aspects. We build our analysis based on the current discourse on the emotional AI, emphatic media (McStay, 2016, 2019, 2020), algorithmic governance (Coglianese & Lehr, 2019; Latzer, & Festic, 2019), emotional contagion in social network (Del Vicario et al., 2016; Rosenbusch, Evans, & Zeelenberg, 2019) ; an understanding of the contemporary Japanese media landscape and politics (Darling-Wolf, 2018); and the utilization of modern communication analysis tools such as webscraper (https://webscraper.io/tutorials),facepager(CITE https://github.com/strohne/Facepager), and sentiment analysis (Feldman, 2013). The paper will be structured roughly into three sections. First, a review of the current literature on relevant media theories, influences of social media on the traditional media landscape will be presented. This section will highlight the gap in the literature this paper seeks to fill in. Second, a detailed description of data collection methods and data analysis methods will be presented. The third part presents the results of the data analysis and finally, implications of the results for the literature and policy-making process will be discussed.

The attitude of college students towards ethical issues of artificial intelligence at an
international university in Japan
Nader Ghotbi, Peter Mantello and Tung Ho Manh

To understand the ethical dimension of artificial intelligence (AI) systems, we examined the attitude of 228 college students (63 Japanese and 165 non-Japanese) towards AI in an international university in Japan. The students had to decide which would be the most significant ethical issue of AI in the future from a list of nine ethical issues suggested by the World Economic Forum, and to explain why it was such an important issue. The response of students to the survey question, especially their attitude towards AI and the ethical issues

arising from it, was studied in detail. The majority of students (n=149, 65%) believed that unemployment would be the major ethical issue related to AI. However, the second largest group of students (n=29, 13%) was concerned with ethical issues related to emotional AI, including the impact of AI on human behavior and emotion, and robots' rights and emotions. The results indicate that the educated youth is mainly concerned with the possible impact of AI on their future employment; and then, among a list of potential ethical issues arising from AI, the emotional impact of AI is the second most significant concern of the youth. The paper discusses the results in detail and concludes that while business entrepreneurs need to consider how to ameliorate the impact of AI on employment, AI engineers need to attend to the emotional aspects of AI in their research. The paper will seek to understand what are the major concerns of college students on emotional AI, and how higher education institutions can prepare them for a future in which we will live with increasingly advanced emotion sensing technologies. The paper will deploy the following methodologies: i) Bayesian network modelling of how socio-demographic factors (gender, school year, APM vs APS, country regions, etc.) influence different attitudes; ii) sentiment analysis of students' answers.

Bibliography

Coglianese, C., & Lehr, D. (2019). Transparency and algorithmic governance. *Admin. L. Rev.*, *71*, 1-4.

Darling-Wolf, F. (Ed.). (2018). *Routledge Handbook of Japanese Media*. Routledge, NY.

Del Vicario, M., Vivaldo, G., Bessi, A., Zollo, F., Scala, A., Caldarelli, G., & Quattrociocchi, W. (2016). Echo chambers: Emotional contagion and group polarization on facebook. *Scientific Reports*, *6*, 37825.

Feldman, R. (2013). Techniques and applications for sentiment analysis. *Communications of the ACM*, *56*(4), 82-89.

Latzer, M., & Festic, N. (2019). A guideline for understanding and measuring algorithmic governance in everyday life. *Internet Policy Review*, *8*(2).

McStay, A. (2016). Empathic media and advertising: Industry, policy, legal and citizen perspectives (the case for intimacy). *Big Data & society*, *3*(2), 2053951716666868.

McStay, A. (2019). Emotional AI and EdTech: serving the public good?. *Learning, Media and Technology*, 1-14.

McStay, A. (2020). Emotional AI, soft biometrics and the surveillance of emotional life: An unusual consensus on privacy. Big Data & Society, 7(1), 2053951720904386.

Rosenbusch, H., Evans, A. M., & Zeelenberg, M. (2019). Multilevel emotion transfer on YouTube: Disentangling the effects of emotional contagion and

homophily on video audiences. *Social Psychological and Personality Science*, *10*(8), 1028-1035.

2-3. Meetings and Other Activities

Date	Name	Location	Summary
Jan. 4-8	Japan-UK Team Workshop Tokyo	Ritsumeikan Tokyo Campus	The goal of this UK/Japan meet up was to organize the three year project, familiarize the team players as well as draw up a list of goals and responsibilities for each team members of this three year research project.
Feb. 24	Japan-UK Meet Up	Zoom	The goal of this UK/Japan meet up was to organize our working response to restrictions placed on the project by Covid-19.
March 24	Japan-UK Meet Up Japan Team Meeting	Zoom	The goal of this UK/Japan meet up was to discuss our work in progress related to various papers we are all working on in relational to EAI. As well we discuss strategies to deal with restrictions placed on the project by Covid-19.
April 24	Japan Team Meeting	Zoom	Follow up meeting to discuss work in progress on several ongoing papers by the Japan Team.

3. Application and Deployment Status of Research and Development Outcomes

- ○

4. Research and Development Implementation Framework

Organization Chart for R&D Implementation
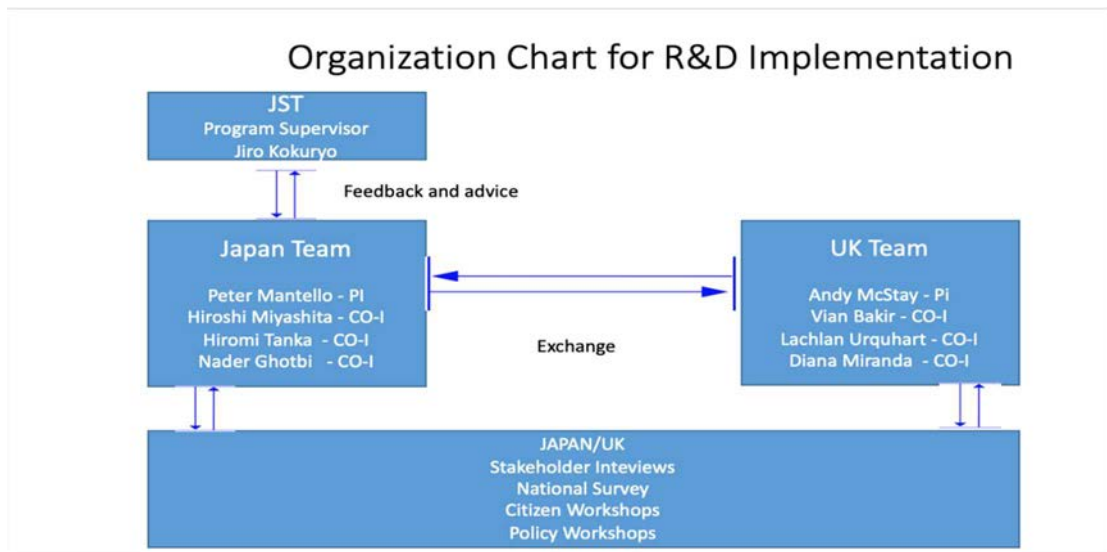
Timeline	2020			2021			2022		
Month	0-4	5-8	9-12	13-16	17-20	21-24	25-28	29-32	33-36
Stage 1	Lit Review; Map emotional AI								
Stage 2		Collect data: commerce							
Stage 3		Collect data: security/media							
Stage 4		Collect data: governance							
Stage 5					Surveys				
Stage 6					Citizen WS				
Stage 7	Cross-cutting themes for data collection, analysis & dissemination: diversity, age, health, ethics								
Stage 8						Policy Workshops			
Stage 9	Dissemination/ Impact activities incl. setting up think tank								

- **PI Mantello**, APU (expert on dataveillance, predictive policing); currently Japan team management; coordinating with UK team; do empirical work in Japan/international researching EAI pertaining to commercial sector and presently involved in stage 1, 2, 3,).

- **Co-I Tanaka**, Meiji Univ. (expert on digital media & gender) & **Co-I Ghotbi**, APU (expert on health, aging, cross-cultural ethics & AI) currently doing empirical work in Japan/international.

- **Co-I Miyashita**, Chuo Univ. (expert on AI & data privacy) currently doing empirical work in Japan/international.

- **RA – Tung Manh Ho** (2,320hrs) currently doing archival/indexing and empirical work.

5. Participants in the Research and Development

 Group

Name	Phonetic reading (kana)	Affiliated institution	Affiliated department	Post (Status)
Peter Mantello		APU	APS	
Nader Ghotbi		APU	APS	
Hiroshi Miyashita		Chuo University	Policy Studies	
Hiromi Tanka		Meiji University	Digital Media And Gender	
Tung Manh Ho		APU	APS	

6. Presentation and Communication Status of R&D Outcomes, Outreach Activities, etc.

○ Our outcomes so far have been two publications by Hiroshi Miyashita.

1- Hiroshi Miyashita, EU-Japan Mutual Adequacy Decision, in The EU-Japan Relationship, ed. by Olivia Tambou (Collection Open Access Book, Blogdroiteuropeen, 2020). ISBN will be available once the book is coming out.

2- Hiroshi Miyashita, Human-centric Data Protection Laws and Policies: A Lesson from Japan, Computer Law and Security Review, vol. - No. - pp.- -. (awaiting publication)

6-1. Symposiums, etc.

6-2. Communication with the Public, Outreach Activities, etc.
Because of Covid-19 we have not been able to do any communication with the Public and Outreach Activities.
(1) Publications such as books, booklets, DVDs, etc.

(2) Establishment and operation of web media
http://emotionalai.bangor.ac.uk/workshops.php.en

(3) Invited lectures at symposiums etc. other than academic conferences (see 6-4.)
Because of Covid-19 all academic conferences and symposiums were cancelled.

6-3. Paper Publications

(1)Peer reviewed (____2__ articles)
  ●Domestic journals (_____ articles)
  ●International journals (_____ articles)

Our outcomes so far have been two publications by Hiroshi Miyashita.

Hiroshi Miyashita, EU-Japan Mutual Adequacy Decision, in The EU-Japan
Relationship, ed. by Olivia Tambou (Collection Open Access Book,
Blogdroiteuropeen, 2020). ISBN will be available once the book is coming out.

Hiroshi Miyashita, Human-centric Data Protection Laws and Policies: A Lesson
from Japan, Computer Law and Security Review, vol. - No. - pp.--. (awaiting
publication)

(2) Non peer-reviewed (___0____ articles)

6-4. Oral Presentations (presentations at international conferences and major domestic conferences)

(1) Invited lectures (Domestic conferences ___0____ times,
    International conferences ____0___ times)

(2) Oral presentations (Domestic conferences _____0 times,
                        International conferences ___0____ times)

(3) Poster presentations (Domestic conferences _____0___ times,
    International conferences _____1___ times)

European Commission (EDPS), AI and Facial Recognition workshop, 13 February 2020

6-5. Newspaper/TV Coverage, Posting, Awards, etc.

(1) Newspaper coverage / posting (___10____ times
    1. NHK TV, "Cashless New Era" January 6, 2020
    2. Asahi Shimbun "Defense and Defense over Protection and Use Of
       Personal Information", February 9, 2020, 4
    3. Kanagawa Shimbun , "The Surprise and Pros and Cons of The Unusual
       Response to The Lock of the New City Hall Office in Yokohama
       City", March 1, 2020, Page 17
    4. Hebei Shinpo , "New Corona Infected Person Son Survey Secret
       Protection and Compatibility Issues", March 23, 2020, 22
    5. Nihon Keizai Shimbun "Digital Surveillance of Corona Evil, Concern
       sustenance of personal information accumulation" online April 9,
       2020

6. Mainichi Shimbun "Preparation of new Corona Government Leave Guidelines" April 24, 2020 2nd page
7. Yomiuri Shimbun "Hyogo Prefecture Leave Instruction Cross-Border Pachinko Crisis Crisis" May 2, 2020 Page 25
8. Mlex, Japan's contact-tracing app for Covid-19 to be operated by health ministry, 11 May 2020
9. Asahi Shimbun "Privacy "Anxiety" 73% utilization of big data" May 15, 2020 25
10. Asahi Shimbun "Communication data, corona evil stoido individual concerns by local governments" Online May 19, 2020

(2) Awards (0   times)

(3) Other (0   times)

6-6. Intellectual Property Applications

 (1) Domestic applications (0   applications)
 (2) Applications made abroad (0   applications)