AI Governance Ecosystem

Trusted AI with Industrial Structure

July, 2021

Japan Deep Learning Association
Study Group on “AI Governance and its Evaluation”

Japan
Deep Learning
Association

Preface: Towards building the AI Governance Ecosystem

"Principles to Practices" is one of the main themes of recent discussions on AI. In Japan, the "Social Principles of Human-Centric AI" have been adopted as the basic principles for AI development and utilization. While most people tend to focus on the Basic Philosophy in Section 2 and the Seven Principles in Section 4, there is a section on "Governance" in Section 3[1] between them. And this word "governance" is the key word in the process of putting the principles into practice.

The term "technology governance" has been used by the chair of this study group to refer to the "totality of the roles of various actors in social impact assessment, decision and policy-making, and implementation for a given technology."[2] However, in discussing AI with international and interdisciplinary colleagues, I realized that the term "AI governance" was originally used in a limited sense to describe the internal governance within one organization or company.

Strengthening organizational governance is indeed important in AI technology. On the other hand, as described in this report, in Japan, where the industrial structure of AI services has a very long supply chain that includes developers, service providers and operators, and users, it is important to consider governance mechanisms that transcend organizations. This study group was established with such an awareness of the issues.

Through discussions with the topical presenters, researchers, and observers who are already working on various initiatives, we have come to the conclusion that it is important to consider how AI services should be provided not only by one organization, but also with various other organizations and actors, such as external contexts and evaluation organizations. In other words, we believe that it is important to build an "ecosystem" in a country with a unique industrial structure like Japan, and this report proposes the establishment of an "AI governance ecosystem." Together with the database, which is a collection of primary documents, I hope that this report will expand the number of participants in the debate on AI governance in Japan and abroad, and lead to more diverse and practical discussions.

The Japan Deep Learning Association
Study Group on "AI Governance and its Evaluation"
Chair, Arisa Ema

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[1] In the "Social Principles for Human-Centric AI," the section on governance states that it is always necessary to continue to update the content and defined purposes to be discussed in line with social changes and technological development. For that reason, it also states that it is necessary to have a system that can be implemented and in place for various stakeholders, including government, industry, universities, research institutions, and the general public to work together on such matters as identifying issues, evaluating impacts, and making decisions on regulatory governance including rules, systems, standardization and codes of conduct. (https://www.cas.go.jp/jp/seisaku/jinkouchinou/pdf/humancentricai.pdf)

[2] Arisa Ema and Hideaki Shiroyama, Vol.3, Chapter 2, "AI Governance," in Artificial Intelligence, Humanity and Society (Keiso Shobo, 2020). An English version of this chapter is available in the Report of the Ad hoc Committee on Artificial Intelligence (CAHAI) of the Council of Europe (https://rm.coe.int/prems-107320-gbr-2018-compli-cahai-couv-texte-a4-bat-web/1680a0c17a)

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Executive Summary

As the social implementation of artificial intelligence (AI) progresses, principles related to AI safety, fairness, privacy, and transparency are being released by international organizations, governments, companies, and non-profit organizations. In order to put these principles into practice, best practices and tool kits to ensure fairness and safety are being utilized.
While the principles and practices are useful, there are several perspectives that have been overlooked. Based on discussions at the “AI Governance and its Evaluation” study group established under the Japan Deep Learning Association (JDLA), this report proposes three perspectives that related organizations and companies should address in future AI principles and practices.

Recommendation 1: An AI governance ecosystem should be established
AI governance generally refers to the establishment of principles to ensure the safety, reliability, and transparency of AI within a company or organization, and the management of its development and utilization. Most of the principles and practices of AI governance have been formed mainly by giant IT companies, and it is difficult for small and medium-sized companies and start-ups with few resources to practice similar governance. Therefore, the concept of AI governance should be extended, and principles and practices should be developed with a view to establishing an “AI governance ecosystem” that works with external contexts such as auditing, insurance, standardization, third-party committees.

Recommendation 2: Reliability of AI should be ensured by taking into account the industrial structure
Many of the principles and practices of AI governance have been shaped mainly by giant IT companies and platformers. Most of these companies are Business-to-Customer (B2C) companies that can see the faces of their service users. However, Japan has many Business-to-Business (B2B) companies, and data collection, AI model development, and AI service provision are often done by different companies and organizations. This makes the issues of where the responsibility lies during AI development, utilization, and when incidents occur more complex. Therefore, the principles and practices of AI governance should also be considered from the perspective of a long supply chain that includes B2B companies.

Recommendation 3: Practical examples of Japan's unique challenges and issues should be disseminated
Japan has contributed to the formation of discussions on international principles for AI governance by publishing the Ministry of Internal Affairs and Communications' R&D guidelines and other documents. Having said that, in the process of putting principles such as ethics and fairness into practice, it is necessary to have discussions that are tailored to the circumstancesof each field or region. We should organize cultural and policy issues and debates as a country, Japan, and disseminate practical examples to the international community.

The recommendations and discussions in this report are preliminary. However, we hope that this report will point out what has been lacking in the existing debate on AI systems and services, and provi industry, academia, and government of domestic and international more diverse and inclusive.

1 Introduction

1-1 Background of the Issues

As artificial intelligence (AI) is increasingly implemented in society, international organizations, governments, companies, and non-profit organizations are releasing principles and guidelines for AI services and products. The principles are being categorized into several items, including fairness, transparency, accountability, privacy, security, safety, and human-centric.[3]

In order to put these principles into practice, it is essential to establish an appropriate management mechanism (governance). However, due to the differences in policies, values, and industrial structures in each country and region, the state of governance is not uniformly determined. While respect for diverse values is important, overly fragmented governance frameworks not only hinder innovation, but may also lead to regulatory arbitrage [4].[5] Therefore, there is a need for research and study on the state of governance that is appropriate for each country, region, and field,[6] as well as the establishment of international standard AI governance.[7]

1-2 Scope and Limitations of AI Governance

AI governance refers to the development of principles to ensure the safety and reliability of AI within a company or organization, and the implementation of controls in the development and utilization of AI. IT governance, which is the base for AI governance, requires a framework for accountability and transparency of technology based on self-regulation of companies and organizations. Currently, standardization of organizational governance for AI is being discussed as ISO 37000, which requires the development of principles that take into account the characteristics of AI and a management system that establishes the credibility of the managers who implement them.[8]

For this reason, large companies have established their own ethics committees separately.[9] Yet for small and medium-sized companies and start-ups with limited resources, it is often technically and economically difficult to implement similar governance.[10] In recent years, and local governments

[3] 2nd Study Group, “AI Ethics Guidelines,” p.1-3

[4] Regulatory arbitrage is a concept used in financial regulation, which refers to a practice of a global company shifting activities from heavy regulated financial sector to unregulated or lightly regulated sector in order to circumvent unfavorable regulations.

[5] 14th Study Group, “Practices of Companies: Part 2,” p.2

[6] 8th Study Group, “Policy and social system: Part 1,” p.5

[7] 14th Study Group, “Practices of Companies: Part 2,” p.2-3

[8] 5th Study Group, “Standardization,” p.6-7

[9] 13th Study Group, “Practices of Companies: Part 1,” p.5

[10] 1st Study Group, “Trend of AI governance,” p.1

have begun to require AI and data governance as a conditionfor procuring AI services, which is expected to serve as an incentive for companies to strengthen their AI governance.[11] Conversely, for small and medium-sized companies and start-ups, the high demands of AI governance are becoming an economic barrier to industry. In addition, many of the principles and practices of AI governance are being led by Business-to-Customer (B2C) companies that can see the faces of their service users. Companies that are able to collect data, design and develop AI models, and provide and operate services in-house are more likely to take prompt action and clarify responsibilities when problems such as accidents or incidents occur by developing comprehensive AI governance. However, Business-to-Business (B2B) transactions in Japan tend to have a B2B2C (Business-to-Business-to-Consumer) structure, where the parties involved in AI services are made up of multiple business entities. In a long supply chain, the principles of AI development and utilization are not always shared by downstream companies, and in the event of an accident or incident at a downstream company, the extent to which the responsibility can be traced back to the upstream company becomes unclear. As such, it is difficult for a single company or organization to address all risks, so it is necessary to build a governance structure that includes AI governance for B2B companies (Figure 1).[12]

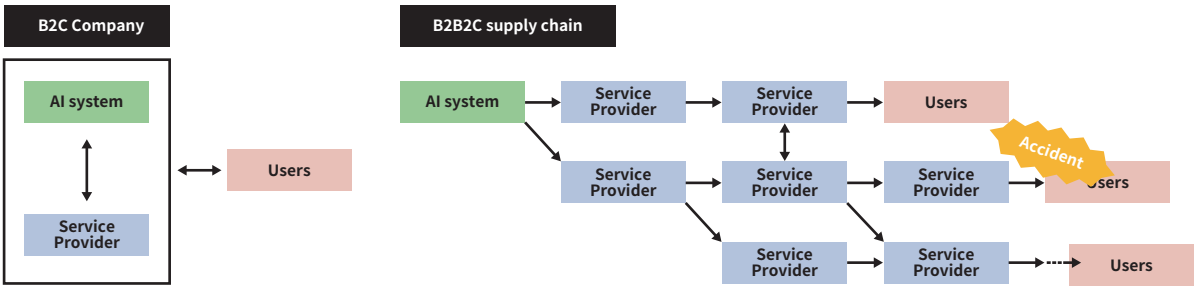

Figure 1: Industrial Structure & Responsibilities for AI Incident Occurrence

1-3 Scope and Purpose of this Report

This report defines "governance" as the nature of the system of management and evaluation by various actors. It examines what forms of AI governance are possible, points out what seems to be lacking in the current debate on AI governance, and makes three recommendations that should be addressed by all concerned.

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[11] 8th Study Group, "Policy and social system: Part 1," p.11

[12] 1st Study Group, "Trend of AI governance," p.3

[13] Please refer to the footnotes of this report for the page numbers of the abstracts of each study group session.

This report is the reconstruction of a year-long discussion[13] at the Japan Deep Learning Association[14] (hereinafter JDLA)'s “AI Governance and Evaluation” study group[15], which was established in July 2020.

It is our hope that this report will help to clarify the issues not only for companies and organizations aiming to establish governance systems for AI systems and services, but also for external organizations such as audit firms, insurance companies, and standardization organizations, as well as for those involved in related ministries and agencies that are preparing the policy environment for AI. Although this report mainly deals with discussions based on the unique circumstances of Japan, there are some topics that are common to other countries, such as industrial structure. We hope that this report will contribute to international discuss ions on AI governance as well.

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[14] The JDLA is a general incorporated association founded in 2017 by companies whose core business is deep learning technology, and many of its members are start-ups in Japan.

[15] Study group on “AI Governance and its evaluation”

https://www.jdla.org/about/studygroup/sg01/ (in Japanese), https://www.jdla.org/en/en-about/en-studygroup/en-sg01/(in English)

2 Recommendations

2-1 An AI Governance Ecosystem should be Established

This report proposes to build an "AI governance ecosystem" that is extended and restructured to include not only a single company or organization, but also public and private sectors (Figure 2). In order to consider the participation of small and medium-sized companies and start-ups in AI governance, as well as risk response and responsibility in long supply chains, including B2B companies, it is necessary to focus on relationships among diverse stakeholders.[16]

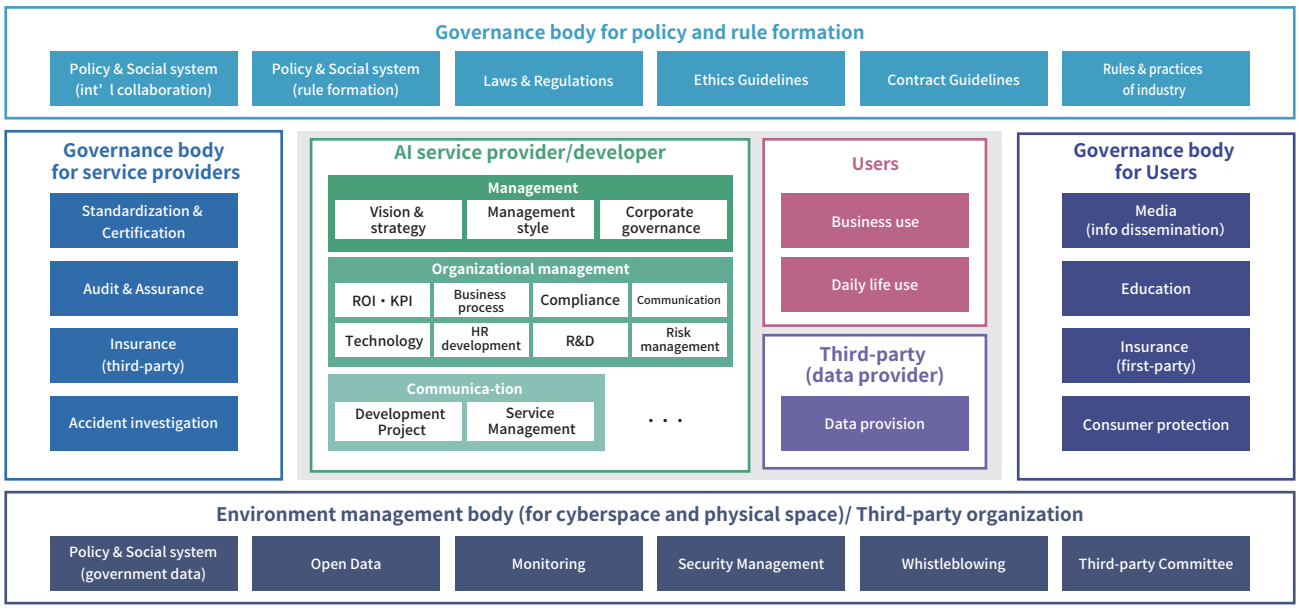

Figure 2: AI Governance Ecosystem

In Figure 2, the "AI service provider/developer" , the AI governance entity in the organization, is placed at the center left. For the development, provision and operation of AI services, each company needs to develop principles that match their management vision and style, and incorporate them into each business process and organizational risk management. AI services are provided by companies to users, whether for business use (vendors) or for daily life use (end users). When companies acquire data, they need to take into account their relationships with third-party data providers.

Surrounding this basic form of AI governance are (1) a "governance body for service providers" that provides service providers with the indicators and standards when theyneed to develop AI governance, (2) a "governance body for users" that provides users with protection and assurance in the event of AI-related problems or incidents, (3) an "environment

[16] 2nd Study Group, "AI Ethics Guidelines," p.4

management body" that monitors the data and algorithms required for AI services and provides a security environment, and a "third-party organization" that responds to incidents, and (4) a "governance body for policy and rule formation" , which formulates principles and develops practices related to AI.

When developing and utilizing AI services, in addition to building a cross-industry, multi-stakeholder AI governance ecosystem that includes these external conditions, a more "agile" governance can be built by introducing principles and management systems for each actor, such as data providers/acquirers, AI developers, AI service providers, and users.[17] In Society 5.0[18], as envisioned by the Japanese government, the environment, technologies, and goals to be pursued will constantly change.[19] Therefore, the content and elements of the external conditions will not be fixed, but will interact and change with the social environment, technologies, corporate governance objectives, and the vision of the society to be achieved.

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[17] 8th Study Group, "Policy and social system: Part 1," p.4 & 9th Study Group, "Policy and social system: Part 2," p.2-4 & 14th Study Group, "Practices of Companies: Part 2," p.4

[18] A human-centered society that balances economic advancement with the resolution of social problems by a system that highly integrates cyberspace and physical space

[19] 9th Study Group, "Policy and social system: Part 2," p.2-4

[20] 2nd Study Group, "AI Ethics Guidelines," p.3

2-2 Reliability of AI should be Ensured by Taking into Account the Industrial Structure

When forming an industrial structure with a long supply chain such as B2B2C, it is useful to sort out the AI governance ecosystem by phase, as the external organizations involved change during the development of AI services, utilization, and when incidents occur.[20]

2-2-1 Development Phase

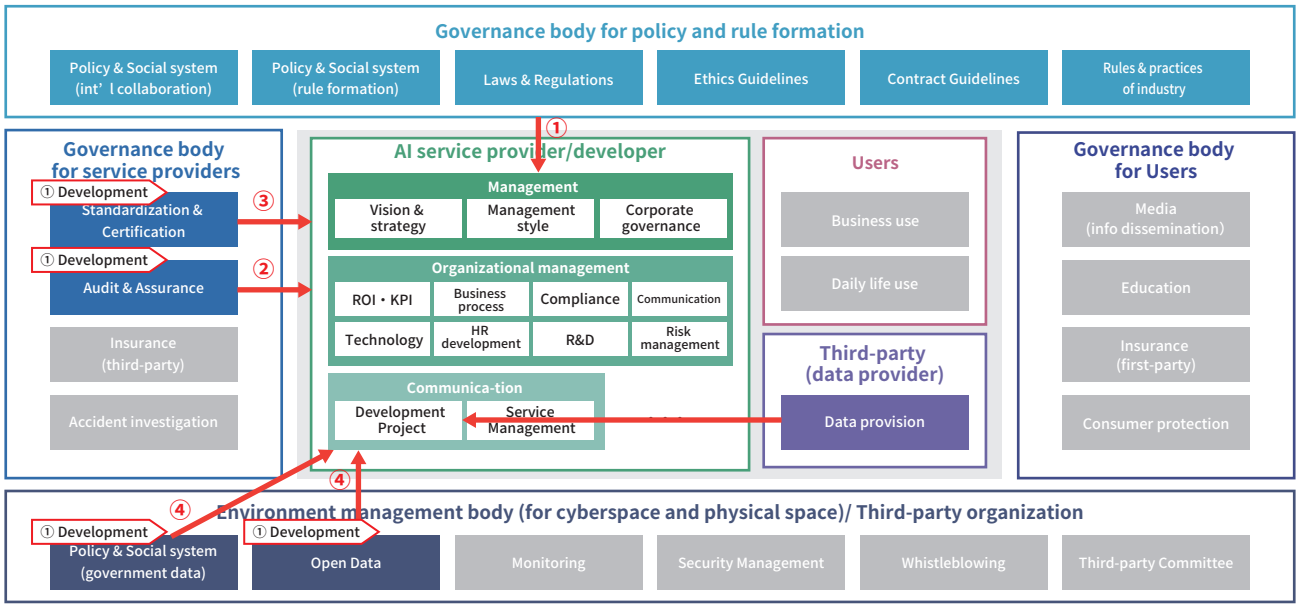

Figure 3: AI Governance Ecosystem during the Development Phase

① AI service development companies/organizations develop governance principles and management systems within their organizations, referring to legal systems and guidelines, and establish their own governance structure. For example, some companies assign external expert members or set up internal ethics committees.[21] In the long supply chain of data collection, AI model development, and operation, they are required to pay attention to the rules of each relevant industry.[22]

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[20] 2nd Study Group, "AI Ethics Guidelines," p.3

[21] 13th Study Group, "Practices of Companies: Part 1," p.5 & 14th Study Group, "Practices of Companies: Part 2," p.6

[22] When developing AI services that automatically collect learning data from the Web, there is a risk that data collection may lead to ad-fraud (disguising the number of clicks on advertisements by automatic programs such as Bot), and the related industries have been warning about ad-fraud as a quality issue in digital advertising. (10th Study Group, "Monitoring/ Advertising")

② There are no clear standards or guidelines for internal audits of AI services at this moment, but there are some examples of internal audit practices that refer to various guidelines.[23] AI services often require relearning and continuous learning after release. Therefore, it is difficult to guarantee quality using the same concept as that of conventional software.[24] For this reason, "consideration and planning of implementation value and verification of hypothesis formulation" of AI itself is needed before the conventional system audit (actual inspection).[25] However, since the departments to be audited differ in each phase of AI system development, it is important for internal auditors to conduct audit while staying close to each department, such as management, development department, and business department.[26]

③ Discussions on standardization of terminology and various standards related to AI and machine learning are also taking place in external organizations such as ISO and IEEE. In particular, ISO/IEC JTC1 plays a cross-cutting role as a forum for discussing international de jure standards for AI.[27] AI governance standards target organizational governance within companies, but it is conceivable that AI governance beyond the boundaries of companies will become necessary in the future.[28] The development of international standards and certification systems will also help to reduce the cost of AI development. [29]

④ When acquiring data from third parties, it is essential for companies to establish a data governance system based on the Act on the Protection of Personal Information (APPI), from the perspective of maximizing the benefits of data utilization while taking privacy into consideration.[30] It is also important to have data reliability that the quality and management of the data is appropriate, and data provider reliability that the data provider is trustworthy, in the contract for the provision of data for AI use.[31]
Additionally, although there is no effective way to prevent the misuse of open data, it is important for organizations and companies that provide open data to establish a system that does not allow its use for unrestricted purposes, and to promote the use of open data.[32]

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[23] 3rd Study Group, "Audit and assurance for AI system," p.1-4

[24] Discussions focusing on AI quality assurance at the time of contract execution has been taking place at the JDLA study group on "Quality assurance for AI systems on business contracts" . (https://www.jdla.org/en/en-about/en-studygroup/en-sg02/)

[25] 3rd Study Group, "Audit and assurance for AI system," p.2

[26] 3rd Study Group, "Audit and assurance for AI system," p.6-7

[27] 5th Study Group, "Standardization," p.1-4

[28] 5th Study Group, "Standardization," p.8

[29] 14th Study Group, "Practices of Companies: Part 2," p.9

[30] 8th Study Group, "Policy and social system: Part 1," p.6-7

[31] 8th Study Group, "Policy and social system: Part 1," p.9-10

[32] 11th Study Group, "Open Data," p.4

2-2-2 Utilization Phase

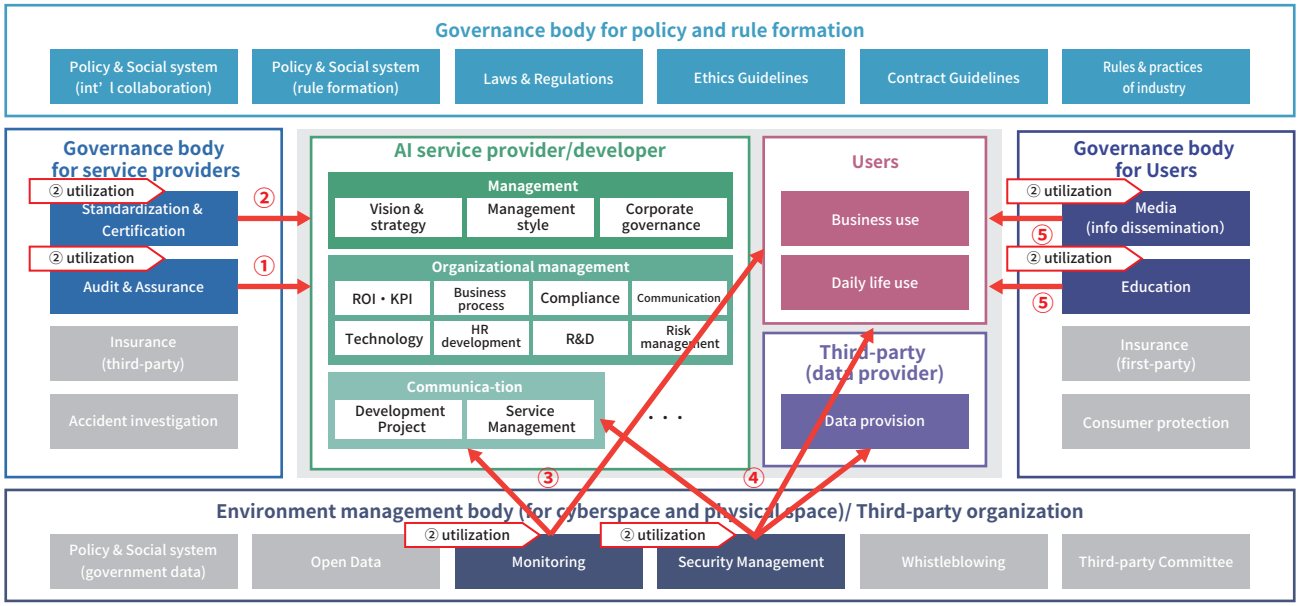

Figure 4: AI Governance Ecosystem during the Utilization Phase

① In the case of AI services that require continuous learning, continuous follow-up monitoring including internal operation and maintenance by internal audits is necessary even after release.[33] At the same time, in order to assure the AI service through external audits, it is necessary to set the expected assurance level appropriately among the parties involved. Currently, there are no assurance standards for AI services, and one of the reasons for this is the difficulty of evaluation timing. Companies are not able to respond to issues with the collection and bias of training data after the service is released. Therefore, a new scheme such as cooperation between internal and external audits is likely to be necessary.[34]

② Under the revised Act on Promotion of Information Processing enacted in 2020, the Information-technology Promotion Agency, Japan (IPA) plays the role of an accredited entity, certifying companies that are promoting digital transformation and assessing the safety of cloud services in government procurement. It is necessary to create an external monitoring base for digitalization and safety assessment and a mechanism to prevent it from becoming a skeleton to ensure reliability and transparency.[35]

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[33] 3rd Study Group, "Audit and assurance for AI system," p.3

[34] 3rd Study Group, "Audit and assurance for AI system," p.6

[35] 8th Study Group, "Policy and social system: Part 1," p.11

③ In the development of AI services, when information obtained from the Web or SNS is used as training data, there is a risk that misinformation or disinformation may be mixed in the training data, leading to wrong decisions. In addition, when generative AI services automatically deliver information to the Web, there is a risk that the information from the AI service may contain misinformation, which may be detrimental to the consumers who receive the information. Therefore, platformers and SNS providers are expected to promote fact-checking activities in order to ensure the reliability of information.[36]

④ As an example of attacks on AI services, adversarial examples are known to cause misclassification to an AI model by adding minute noises.[37] In addition to that, AI systems are always exposed to security risks due to unauthorized access. Therefore, it is important to operate AI systems with the concept of cyber resilience, which is to build a strong barrier based on the assumption that all systems will be hacked (zero trust).[38] Although when the pursuit of profit is prioritized as a corporate value and security measures tend to take a back seat,[39] responding the risk of zero-day attacks, it is recommended to test for vulnerabilities from the development phase, and open source frameworks have been published for detecting, responding to, and repairing attacks on machine learning systems.[40]

⑤ In industrial structures with long supply chains, separate organizations are often responsible for AI development (B2B) and service provision (B2C). In such cases, B2B companies develop according to the requirements of B2C companies and end users, while B2C companies that do not develop in-house have different corporate values that they focus on for each individual customer, making it difficult to abstract and share knowledge.[41] In addition, B2C companies and users may lack an understanding of the ethics and risks of AI, so it is necessary to communicate AI-related issues to the general public outside of AI specialists.[42]
The Consumer Affairs Agency is collecting data from relevant ministries, agencies, and local governments on incidents involving the lives and bodies of consumers caused by AI services, and is conducting education and awareness-raising activities related to measures to prevent accidents from occurring.[43] It is also expected that the mass media will disseminate information on AI-related incidents in order to improve consumer literacy.

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[36] 10th Study Group, “Monitoring/ Advertising,” p.4

[37] 12th Study Group, “Security,” p.3

[38] 12th Study Group, “Security,” p.5

[39] 12th Study Group, “Security,” p.10

[40] 12th Study Group, “Security,” p.5-6

[41] 14th Study Group, “Practices of Companies: Part 2,” p.9

[42] 9th Study Group, “Policy and social system: Part 2,” p.8

[43] 6th Study Group, “Internal whistleblowing system/Consumer protection,” p.8-9, 15-16

2-2-3 Response to Incidents and Feedback to Governance

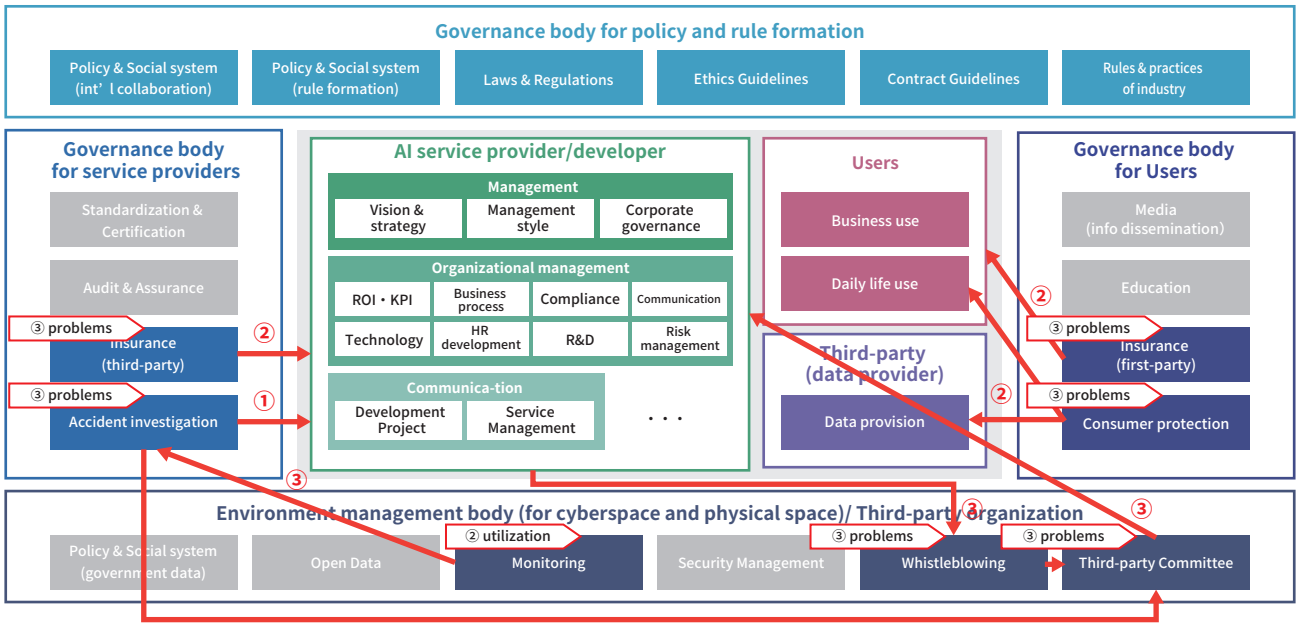

Figure 5: AI Governance Ecosystem Responding to Incidents

① When an AI-related incident occurs, prompt investigation is required as well as information gathering. An Investigation Committee is formed with internal personnel to investigate the cause of the accident and examine measures to prevent the recurrence of similar accidents.[44]

② There are three types of insurance: one that covers the insured (first-party insurance), one that covers the insured in the event that they become the aggressor (third-party insurance), and combination of the two. Incidents caused by AI services are covered by third-party insurance.[45] Damage caused by cyber-attacks or leakage of personal information is covered by cyber insurance. Also, if a product incorporating AI is found to be defective, it will be covered by the Product Liability Law (PL insurance). However, since AI itself is intangible, it is not subject to the PL Law, and it is difficult to determine whether the uncertain and opaque nature of AI is a defect. It is also hard to verify where and when the defect occurred when learning continues after the product is provided, and existing insurance policies will not be able to deal with it.[46]

In order to provide prompt relief to victims under such circumstances, a framework has been developed in automobile insurance to compensate victims according to a contract

[44] 7th Study Group, "Accident investigation/ Third party committee," p.1-3

[45] 4th Study Group, "Insurance for AI services," p.4

[46] 4th Study Group, "Insurance for AI services," p.2-3

predetermined by the business user, regardless of whether the business user is legally responsible or not.[47] If quality standards for AI are established in the future, it is expected to be used as reference information for accident assessment in the insurance industry.[48] However, since the risks associated with AI are highly individualized, it is difficult to design insurance with high versatility.[49]

③ When there are scandals or irregularities in data acquisition or operation during AI development, transparency cannot be ensured if the company insiders cover it up. Therefore, it is necessary to enhance the whistleblowing system and the plea bargaining system, and enact the Whistleblower Protection Act[50] to design a sanctioning system that reduces the risk of information disclosure rather than the risk of cover-up, in conjunction with corporate governance.[51] In addition, as a form of governance that does not rely on reporting, attempts to detect signs of bribery and cartels by monitoring employee e-mails, chats, and other forms of communication have begun. But having said that, there is a concern that electronic information may be tampered with.[52]
When misconduct or fraud is discovered through internal or external reporting, a third-party committee is usually formed. Although third-party committees in Japan do not have legally enforceable directives, the practice exists that a third-party committee is set up in the event of misconduct to formulate measures to prevent recurrence.[53] While disclosure of all AI technical specifications would increase security risks, some information may need to be disclosed to a third-party committee to determine the cause of the incident. [54]

2-3 Japan's Unique Challenges and Issues should be Recognized

2-3-1 Designing Incentives for the Formation of Governance Ecosystems

In Japan, it has been pointed out that the laws may not be able to cope with the speed of social change and the complexity of society, including AI utilization. For this reason, in AI development and utilization, it is considered necessary to have not only legally binding regulations (hard law) but also regulations that include soft law such as legally non-binding guidelines and standards. Additionally, how to design incentives for companies to adopt non-binding guidelines is considered to be an issue. [55]

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[47] 4th Study Group, “Insurance for AI services,” p.4

[48] 5th Study Group, “Standardization,” p.9-10

[49] 4th Study Group, “Insurance for AI services,” p.5

[50] 6th Study Group, “Internal whistleblowing system/ Consumer protection,” p.1-2,10

[51] 9th Study Group, “Policy and social system: Part2,” p.7

[52] 6th Study Group, “Internal whistleblowing system/ Consumer protection,” p.9

[53] 7th Study Group, “Accident investigation/ Third party committee,” p.8

[54] 14th Study Group, “Practices of Companies: Part 2,” p.9

[55] 9th Study Group, “Policy and social system: Part2,” p.5-7

One example of incentive design could be the use of quality assurance liability insurance, and the role of audit institutions and third-party accreditation bodies will be important in determining the standards.[56] If incentives to provide information on AI-related incidents to third parties can be successfully incorporated, it can be reflected in quality standards, which in turn will improve the safety of AI services.[57] Reporting for companies that do not have a system in place to accept complaints of accidents or incidents, such as start-ups, or for individual app developers who do not have a reporting system themselves, will be done under the Consumer Safety Act.[58] In order to establish an AI governance ecosystem, it is essential to design incentives and create a system that encourages the use of guidelines and standards as well as the provision of case studies such as incident information.

2-3-2 AI Governance Ecosystem from a Perspective of Start-ups

In Japan, in order for a new initiative to spread to the private sector, it is necessary for government agencies to actively encourage it, so companies are currently promoting governance within their organizations based on checklists provided by government agencies such as the Ministry of Internal Affairs and Communications (MIC), the Ministry of Economy, Trade and Industry (METI), and the Cabinet Office.[59] For start-ups with limited resources, it would be desirable to have standards and guidelines that take into account both large domestic and foreign companies as well as start-ups, led by government agencies, and returned to the industry.[60]

Organizational form is also an issue in the formation of AI and data governance. Some companies have already established a system to evaluate each phase of planning, development, and operation, as well as each risk of AI services. This will clarify where responsibility lies in the event of an incident and enable the application of consistent principles to the business entity as a whole.[61] On the other hand, Japan is characterized not only by its large number of B2B companies, but also by its large number of vertically-integrated companies. If a governance system is established for each business unit, it will be difficult to establish a company-wide governance system for data and AI.[62] Therefore, it is important to clarify evaluations and responsibilities at each division and development phase, and at the same time, develop human resources responsible for intra-company

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[56] 4th Study Group, “Insurance for AI services,” p.3,7

[57] 4th Study Group, “Insurance for AI services,” p.7

[58] 6th Study Group, “Whistleblowing system/ Consumer protection,” p.15

[59] 8th Study Group, Policy and social system: Part 1,” p.10 & 9th Study Group, “Policy and social system: Part 2,” p.8-9

[60] 8th Study Group, “Policy and social system: Part 1,” p.10-11

[61] 13th Study Group, “Practices of Companies: Part 1,” p.5 & 14th Study Group, “Practices of Companies: Part 2,” p.14

[62] 8th Study Group, “Policy and social system: Part 1,” p.10-11

collaboration and AI governance, and share and disseminate information within the company.[63]

In contrast, start-ups are small and have limited resources in terms of personnel and funds, but they are also able to share implicit values and respond flexibly and quickly. As a result, some start-ups are able to educate and raise awareness about AI governance without falling into a vertical division by department.[64]

2-3-3 Cultural and Policy Responses to Fairness

In Japan, among several principles related to AI, B2C companies and users, who are in the position of clients, are highly aware of privacy related to data collection, but the discussion of fairness is not so apparent. As it is difficult to envision specific usage scenarios from the standpoint of B2B companies, it is necessary to raise awareness among B2C companies.[65]

In addition, in Japan, bullying due to peer pressure and other factors is more of a problem as a violation of human rights than problems caused by statistical discrimination such as race and gender as in the West. Japan's Product Liability Act is designed to address the property and physical damage, and does not cover psychological damage. It is difficult to grasp the reality of accidents and incidents because damage caused by deep fakes is not reported as a consumer accident if there is no physical damage.[66] Although it is not desirable for misinformation itself to be directly regulated, anything that constitutes defamation or violation of personal rights will be legally regulated, which will serve as a deterrent to slander and libel.[67]

Cases of violation of personal rights, such as leakage of personal information and invasion of privacy, can be partially covered by conventional insurance such as cyber insurance. As mentioned above, the Civil Code has been flexibly interpreted to deal with psychological damage at this moment.[68] However, fairness risk issues such as unfair discrimination caused by AI-specific processing are generally not covered. [69]

Similarly, from an auditing perspective, it is difficult to determine evaluation criteria for assurance because of the diversity of levels and definitions of fairness and ethics differ from country to country. Therefore, it would also be difficult for audit firms to give an assurance that there will be no discrimination by AI systems and services. [70]

Now that incidents and accidents involving personality infringement and fairness risks caused by AI are occurring overseas, it is necessary for Japan to consider the definition of the issues and consumer protection including warranty and insurance for businesses as well.

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[63] 13th Study Group, “Practices of Companies: Part 1,” p.5-6 & 15th Study Group, “AI Governance Survey 2020,” p.5

[64] 14th Study Group, “Practices of Companies: Part 2,” p.8

[65] 14th Study Group, “Practices of Companies: Part 2,” p.9

[66] 6th Study Group, “Whistleblowing system/ Consumer protection,” p.14

[67] 10th Study Group, “Monitoring/ Advertising,” p.5

[68] 6th Study Group, “Whistleblowing system/ Consumer protection,” p.13

[69] 4th Study Group, “Insurance for AI services,” p.2,6

[70] 3rd Study Group, “Audit and assurance for AI system,” p.7

Now that incidents and accidents involving personality infringement and fairness risks caused by AI are occurring overseas, it is necessary for Japan to consider the definition of the issues and consumer protection including warranty and insurance for businesses as well.

3 Issues and Future Perspectives

3-1 The Future of the AI Governance Ecosystem

The AI governance ecosystem presented in this report is tentative, and there are still perspectives that need to be considered. For example, there was a reference to the role of judicial institutions in the discussion of the study group. In Japan, the judiciary is often driven by indirect approaches in line with the demands of the public and society, rather than direct approaches from legislative and administrative bodies.[71] In the meantime, court precedents are expected to be used as standards for insurance and auditing.

Also, while this report focuses mainly on the importance of AI governance in B2B companies, AI services can also take the form of C2B (Customer to Business) and C2C (Customer to Customer), where users provide data and allow it to be learned. Governance against misuse by users needs to be considered in the supply chain.[72] Other guidelines by education and industry groups have been raised as items but not explored in depth, and we plan to update the AI governance ecosystem based on future research and studies.

3-2 An Open Database of AI Governance Ecosystem

The appendix of this report contains a summary of each session of the study group. A webpage has been created for reference in the form of a database for the materials developed by each of the sessions.[73] The accumulation of case studies based on the materials will be important for future collaboration among related parties and for the establishment of an AI governance ecosystem.

3-3 Promotion of International Collaboration

AI governance needs to be considered within an ecosystem that includes the external conditions, and the institutions and culture of each country and region cannot be ignored. At the same time, each related organization in the framework of AI governance ecosystem also collaborates with international organizations, and since AI services are also borderless, international collaboration is required. In the future, we plan to broaden our perspective on the state of the international AI governance ecosystem by comparing and collaborating with other regions and countries.

The recommendations and discussions in this report are preliminary. However, we hope that this report will point out what has been lacking in the existing debate on AI systems and services, including deep learning, and provide a new agenda to address, making the guidelines and practices of indus try, academia, and government in both domestic and international more diverse and inclusive.

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[71] 8th Study Group, "Policy and social system: Part 1," p.10

[72] For example, users allowing chatbots to learn hate speech has become an international issue. In recent years, the supply chain is not limited to companies and consumers, and it is important to consider G2B (Government to Business) and B2G (Business to Government) forms as the government promotes digital transformation. (Arisa Ema, AI and Society, Gijutsu Hyoronsha, 2021, p. 158-163)

[73] AI Governance Ecosystem Database (https://www.jdla.org/en/en-document/en-ai-governance-eco-system/)

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In addition, observers from related ministries, agencies, and companies participated in the study group and took part in the discussions. For reasons of space, we are unable to list the names of all participants, but a total of 110 people from a wide range of fields and interests participated in the discussions.

This study group was established as a research group under the Japan Deep Learning Association, and this report was written with the contribution of group members consisted with the Board of Directors, regular and support member companies, and expert members. The recommendations in this report are based on the discussions of the group members, including the topical presenters and chairpersons. They do not represent the views of any particular company or organization, nor do they reflect the views of the organizations to which the presenters or group members belong.

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