Activity Report (Summary)

Japan AI Safety Institute
Business Demonstration Working Group
Data Quality Sub-Working Group

April 15, 2026

AISI Japan AI Safety Institute

Objectives of the Data Quality SWG

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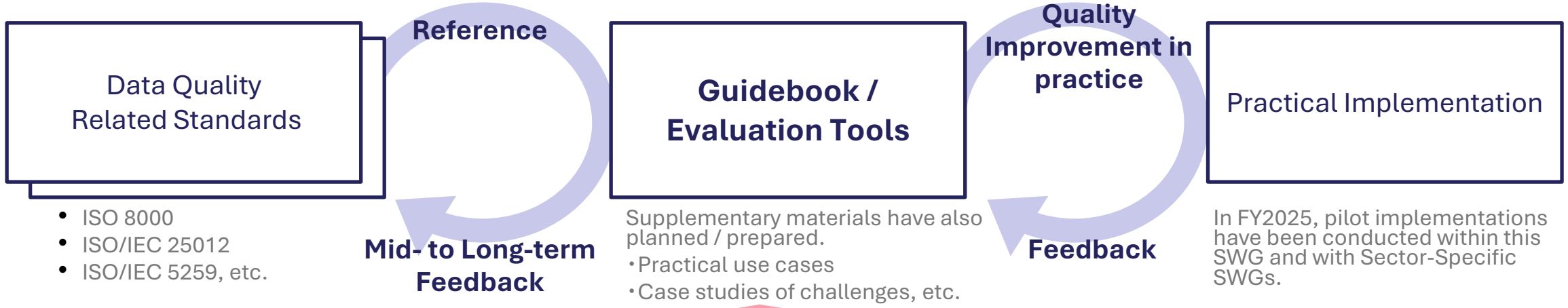
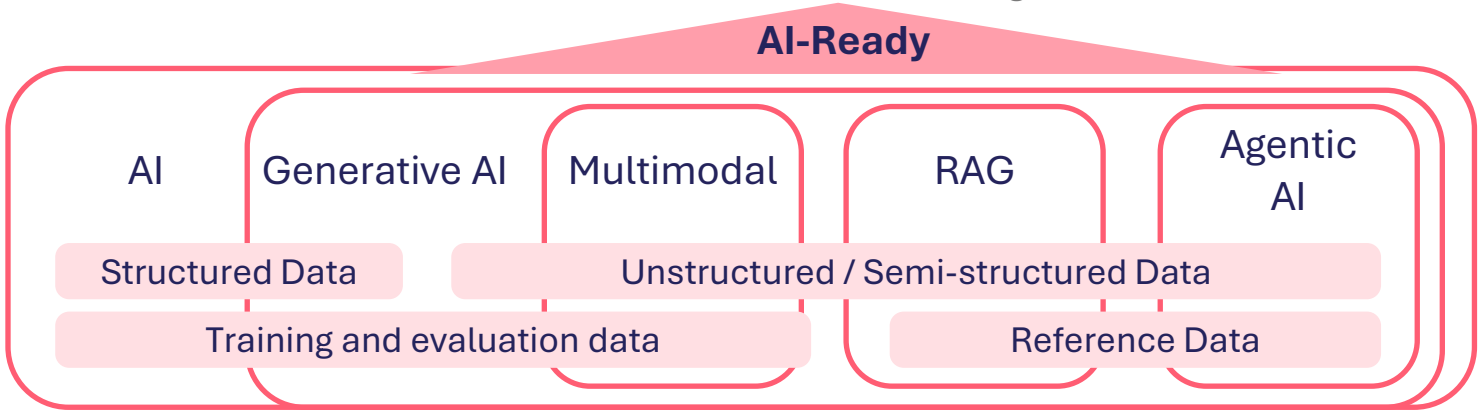
- As the saying goes, "Garbage in, Garbage out," data quality is essential to AI performance and safety.
- Common guides for data quality management are necessary in an era where data circulates widely within and across organizations.
- Practical guides and tools are required to bridge the gap between standards and real-world practice.



- ISO 8000
- ISO/IEC 25012
- ISO/IEC 5259, etc.

Supplementary materials have also planned / prepared.
- Practical use cases
- Case studies of challenges, etc.

In FY2025, pilot implementations have been conducted within this SWG and with Sector-Specific SWGs.



- Bias and fairness
- Annotation quality
- Accuracy of unstructured data
- Quality management of office documents
- Provenance and transparency
- Timeliness of external data
- Machine readability, etc.

"Data quality" is listed as one of the 10 evaluation perspectives for AI safety in the Guide to Evaluation Perspectives on AI Safety (AISI).

Summary of FY2025 Activities

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- Revised the Data Quality Management Guidebook published by AISI, developed a Data Quality Management Checklist, and validated its application in practice.
- This activity report summarizes these activities, including market trends, and future directions.
- The deliverables are primarily intended for practitioners involved in the design and operation of AI and data, but are also broadly intended for government officials, researchers, and others.

Review and Minor Revisions to the Data Quality Management Guidebook

Identification of issues and areas of interest

- Gap between standards and practice
- Difficulty of considering comprehensive data quality management
- Dependence of data quality on use cases
- Low interest in data quality
- Challenges of data quality management in the AI era

(Reference) SWG Meeting Status

- A total of 8 meetings were held starting in August 2025
- Hybrid format (in-person and online)
- Shared the latest trends regarding data quality from within and outside the SWG

Creation and Validation of the Data Quality Management Checklist

Application in / Feedback from Sector-Specific SWGs

Application to Official Gazette Operations

Organization of Use Cases

Verification of Data Quality Levels and AI Output Quality

Activity Report

Data Quality Management Guidebook

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- This guidebook provides a multifaceted approach to evaluating data quality from the perspectives of process, gateway, and governance.
- It consolidates a wide range of international data quality standards into a practical, easy-to-apply framework.
- In FY2025, minor revisions were made based on the review conducted by the Data Quality SWG.
- Future improvements under consideration include the creation of an explanatory manual, practical examples of use case applications, and the incorporation of the latest discussions on AI.

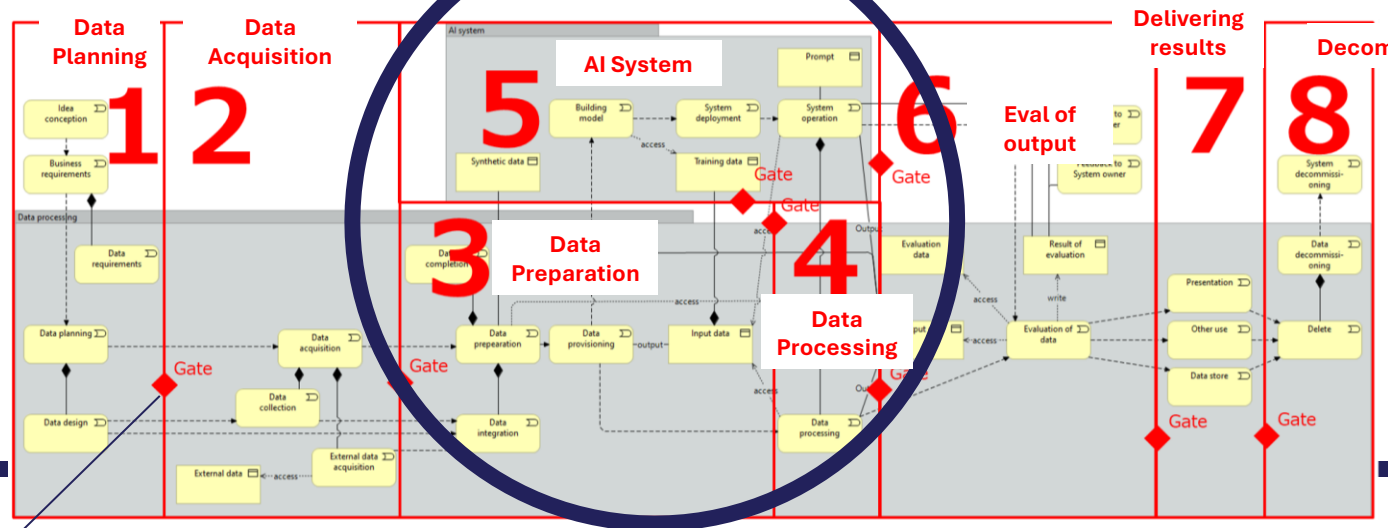
Data Quality Management Guidebook
2025-3-31
AISI IPA

Governance View

Ensuring a sustainable organizational structure
(Ref) ISO 8000-61, ISO/IEC 38505-1, etc.

Process View

Evaluate the implementation status of data quality management across the data life cycle
(Ref) ISO/IEC 25024, ISO/IEC 8183, ISO/IEC 5259-1, etc.



Gateway View (Quality Characteristics)

Define quality criteria at key decision points
(Ref) ISO/IEC 25012, ISO/IEC 5259, etc.

Key Issues Surrounding Data Quality

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- Based on the discussions of the Data Quality SWG, the issues surrounding data quality were organized into five key issues.
- In FY2025, three activities were carried out based on these issues.
  - Creation and validation of “Data Quality Management Checklist”, Organization of Use Cases, Verification of Data Quality Levels and AI Output Quality
- These three activities alone cannot resolve all issues. Continued efforts and new initiatives will still be necessary going forward.

Key Issues	Description	Example
Gap between standards and practice	While international standards and systematic frameworks are in place, the concepts have not been translated into practical implementation.	The framework makes it clear that metadata management is important, but it is unclear what kind of management approach should be used.
Difficulty of considering comprehensive data quality management	There are many possible data quality initiatives to consider, but they cannot be organized systematically, resulting in ad hoc responses.	Organizations end up considering only technical measures for risks specific to their AI systems, while overlooking organizational and operational perspectives.
Dependence of data quality on use cases	Important data quality characteristics vary by use case, and appropriate measures are not consistently implemented.	Consistency of aggregate values is a particularly important quality characteristic for management dashboards, but uniform data quality standards are applied to all use cases.
Low interest in data quality	The impact of improved data quality on sales and business outcomes is difficult to quantify, resulting in investment in data quality management being postponed.	There was no major issue within individual systems, but when systems were integrated, data inconsistencies became apparent, and correction costs grew.
Challenges of data quality management in the AI era	Data quality management is not keeping pace with the new risks arising from evolving AI technologies.	New risks are emerging in RAG, AI agents, and Physical AI, but responses have not kept pace.

Data Quality Management Checklist

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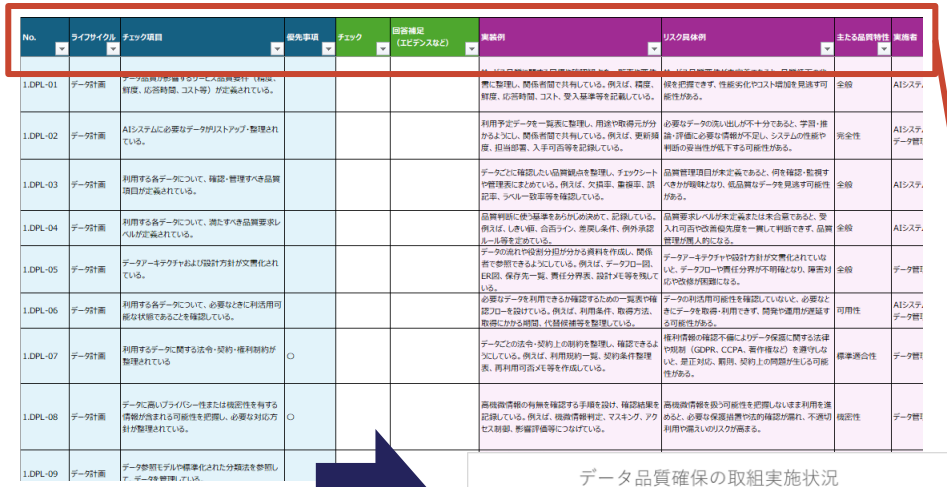
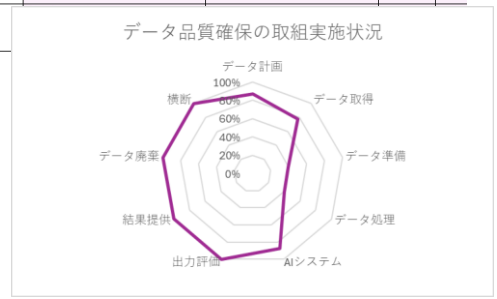
- Based on the process across data life cycle, a checklist was developed as a tool to enable organizations to comprehensively and easily self-assess the status of their data quality management.
- To enhance usability, reference information such as priority action items, implementation examples, risk examples, and key data quality characteristics was included.

Guidebook

Checklist



No.	ライフサイクル	チェック項目	優先事項	チェック	回答補足（エビデンスなど）	実装例	リスク具体例	主たる品質特性	実施者
1.DPL-01	データ計画	データ品質が影響するサービス品質要件（精度、鮮度、応答時間、コスト等）が定義されている。				関係者間で共有している。例えば、精度、鮮度、応答時間、コスト、受入基準等を記載している。	傾を把握できず、性能劣化やコスト増加を見逃す可能性がある。	全般	AIシステム
1.DPL-02	データ計画	AIシステムに必要なデータがリストアップ・整理されている。				利用予定データを一覧表に整理し、用途や取得元が分かるようにし、関係者間で共有している。例えば、更新頻度、担当部署、入手可否等を記載している。	必要なデータの洗い出しが不十分であると、学習・推論・評価にの要な情報が不足し、システムの性能や判断の妥当性が低下する可能性がある。	完全性	AIシステム、データ管理
1.DPL-03	データ計画	利用する各データについて、確認・管理すべき品質項目が定義されている。				データごとに確認したい品質観点を整理し、チェックシートや管理表にまとめている。例えば、欠損率、重複率、誤記率、ラベル一致率等を確認している。	品質管理項目が未定義であると、何を確認・監視すべきかが曖昧となり、低品質なデータを見逃す可能性がある。	全般	AIシステム
1.DPL-04	データ計画	利用する各データについて、満たすべき品質要求レベルが定義されている。				品質判断に使う基準をあらかじめ決めて、記録している。例えば、しきい値、合否ライン、差異し条件、例外承認ルール等を定めている。	品質要求レベルが未定義または未合意であると、受入れ可否や改善優先度を一貫して判断できず、品質管理が属人的になる。	全般	AIシステム
1.DPL-05	データ計画	データアーキテクチャおよび設計方針が文書化されている。				データの流れや役割分担が分かる資料を作成し、関係者で参照できるようにしている。例えば、データフロー図、ER図、保存先一覧、責任分界表、設計メモ等を残している。	データアーキテクチャや設計方針が文書化されていないと、データフローや責任分界が不明確となり、障害対応や改修が困難になる。	全般	データ管理
1.DPL-06	データ計画	利用する各データについて、必要なときに利活用可能な状態であることを確認している。				必要なデータを利用できるか確認するための一覧表や確認フローを設けている。例えば、利用条件、取得方法、取得にかかる期間、代替候補等を整理している。	データの利活用可能性を確認していないと、必要なときにデータを取得・利用できず、開発や運用が遅延する可能性がある。	可用性	AIシステム、データ管理
1.DPL-07	データ計画	利用するデータに関する法令・契約・権利制約が整理されている	○			データごとの法令・契約上の制約を整理し、確認できるようにしている。例えば、利用規約一覧、契約条件整理表、再利用可否メモ等を作成している。	権利情報の確認不備によりデータ保護に関する法律や規則（GDPR、CCPA、著作権など）を遵守しないと、是正対応、期間、契約上の問題が生じる可能性がある。	標準適合性	データ管理
1.DPL-08	データ計画	データに高いプライバシー性または機密性を有する情報が含まれる可能性を把握し、必要な対応方針が整理されている。	○			高機微情報の有無を確認する手順を設け、確認結果を記録している。例えば、機微情報判定、マスキング、アクセス制御、影響評価等につなげている。	高機微情報を扱う可能性を把握しないまま利用を進めると、必要な保護措置や法的確認が漏れ、不適切利用や漏えいのリスクが高まる。	機密性	データ管理
1.DPL-09	データ計画	データ参照モデルや標準化された分類法を参照し、データを管理している。							



- No.
- Data Life Cycle Stage
- Checklist Item
- Priority Item
- Check
- Evidence
- Implementation Example
- Risk Example
- Typical Quality Characteristic
- Role
- Target Data
- Relevant EU AI Act Article
- Relevant Sections of the AISI AI Safety Evaluation Tool
- Remarks

- Spreadsheet-based
- Over 70 checklist items covering the key points of data quality management
- Results are visualized for reference using radar charts categorized by life cycle
- Not intended to ensure full adherence, but rather to raise awareness and support practitioners

Organization of Use Cases

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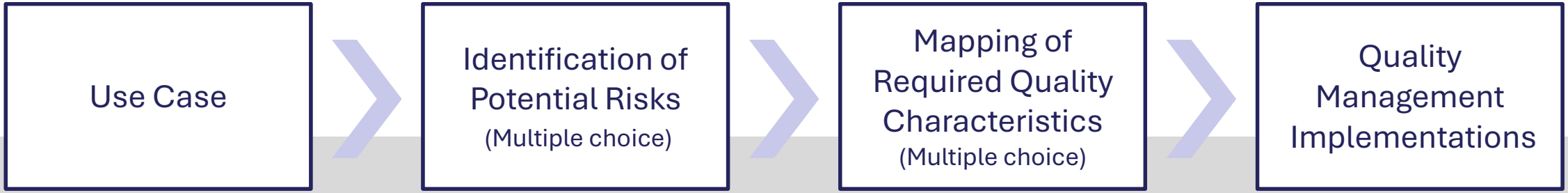
- Since data quality depends on its intended use, quality management needs to be organized according to the use case.
- Use cases were organized using a two-step framework that links risk identification with quality characteristics.
- Actual quality management implementations were also documented for each use case.

Approaches to Organizing Use Cases



Three case studies were included in the report following this approach

- Synthetic data generation for AI simulation
- Supply chain management in the retail (demand forecasting AI)
- AI for predicting automobile accidents

Next Steps

- From a practical perspective, there are still challenges in selecting risk types and quality characteristics, so further refinement is planned.
- Identifying patterns through the accumulation of case studies will make it easier to guide practical application.

Overview of Evaluation Activities

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- Validation of the checklist for general data quality management was conducted with the cooperation of the Sector-Specific SWGs and the National Printing Bureau.
- For specific data quality issues, data quality levels and AI output quality were verified for an AI system that extracts legal amendments.

Purpose	Validation of the Checklist		Verification of Data Quality Level and AI Output Quality
Target	Sector-Specific SWGs	Official Gazette Data	
Background / Aim	• Collect feedback from real-world system development sites • Identify domain-specific differences	• Public information infrastructure that requires high accuracy and completeness • The current official gazette was designed for paper and web browsing, and still presents challenges for AI use, including structuring, machine readability, and metadata preparation	
Activities	Gap analysis of the checklist and validation of its practical applicability in sector-specific AI system development	Gap analysis of the checklist and validation of its practical applicability in official gazette data quality management	Step-by-step evaluation of data quality levels and AI output quality for legal amendments contained in official gazette data
Participants	Companies participating in Sector-Specific SWG	National Printing Bureau	National Printing Bureau, SAS, IPA

Validation Results of the Checklist

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- Following validation by the Sector-Specific SWGs and the National Printing Bureau, feedback was received on both the positive findings of the checklist and areas for improvement.
- The objective of the checklist as a tool that enables organizations to comprehensively yet easily self-assess their data quality efforts appears to have been achieved to a certain extent.
- At the same time, areas for improvement were also identified, such as refining the explanatory elements and considering maturity levels.

Positive Findings

- It was possible to comprehensively check the organization's data quality initiatives.
- Among the explanatory elements for each checklist item, the "Implementation Example," "Role" and "Target Data" sections were particularly helpful in guiding responses to each checklist item.
- The "How to Use" sheet helped clarify how to work with the checklist.
- The checklist items for the "Data Planning" stage provided new insights.

Areas for Improvement

- The "Risk Example" need to be refined to adequately demonstrate the necessity of each checklist item.
- Since the respondents' answers to the checklist items may vary, it would be useful to consider maturity levels that reflect the degree of implementation.
- The definitions of "Role" and "Typical Quality Characteristic" should be refined to serve as clearer guidance for respondents and improve usability.
- Given the large number of technical terms, a glossary will likely be necessary in the future.

Verification of Data Quality Levels and AI Output Quality

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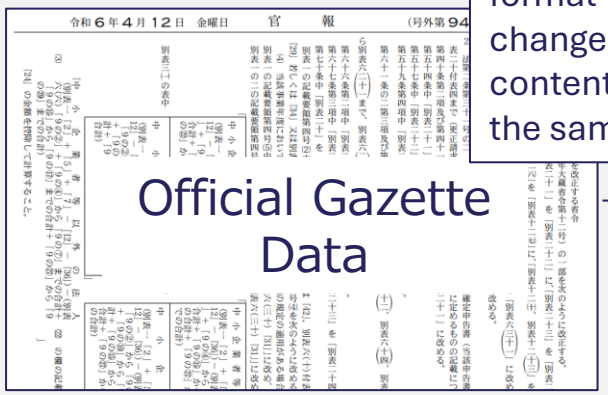
- Verification of data quality and AI output quality was conducted using Official Gazette data.
- The results confirmed that AI output quality varied across the four defined levels of data structuring.
- Differences were observed in recall, with Levels 2 and 4—both incorporating structural information—showing relatively high and comparable performance.

Scenario



Only the data format was changed, while the content remained the same.

User: “Which law was amended?”

AI: AI response

Result

Data Structure Level	Precision	Recall
1: PDF	0.799	0.453
2: HTML A mixture of meaningful and non-meaningful tags	0.825	0.664
3: HTML Cleansing Uniform removal of HTML tags	0.835	0.562
4: HTML Cleansing Tagging Simple tagging at the article level, etc.	0.833	0.643

Values range from 0 to 1, with values closer to 1 being better.

Overview of the Verification Setup

- 16 Official Gazette documents with the relevant legal provisions extracted in advance were used.
- Ground-truth data were prepared manually.
- Whether the AI could correctly extract the articles subject to amendment in the amended law was evaluated.
- To assess the impact of data quality, prompt design and instructions were kept to the minimum necessary.

Summary of FY2025 activities and identified issues

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- The four activities conducted in FY2025 yielded a range of insights and areas for improvement.
- Based on these areas of improvements, four issues for future consideration emerged.
- Based on the issues identified, further activities will be undertaken in FY2026 and beyond.

Main Activities in FY2025	Insights and Areas of Improvements
Creation and Validation of the Data Quality Management Checklist	There is room for improvement, including how items are organized, the scope and number of items, the operational burden, and the level of detail.
Verification of Data Quality Levels and AI Output Quality	Both the Data Quality Management Guidebook and the Checklist need to be adapted for practical implementation. A more detailed understanding of the impact of data quality management on AI could help inform decisions on implementing data quality initiatives.
Organization of Use Cases	Establishing patterns for organizing use cases could support the practical application.
Review and Minor Updates of the Data Quality Management Guidebook	Further revision of the Data Quality Management Guidebook itself will lead to improved usability and broader utilization.

Issues

- **Gap between comprehensiveness and specificity**
- **Prioritization of use cases**
- **Enhancing practical effectiveness**
- **Reorganization and expansion of evaluation layers**

Directions for FY2026

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Building on the results from FY2025, a continuous improvement will be promoted while enhancing practical applicability and adapting to New Forms of Use.

- Promoting Application
  - Building on the results of FY2025, practical validation will be promoted both within and outside the SWG.
- Adapting to New Forms of Use
  - Data quality management will be addressed in response to expanding forms of use such as multimodal AI, agentic AI, and physical AI.
- Clarification of Use Cases
  - Work on specific use cases, such as quality labeling during data circulation and quality management of synthetic data.
- Development of practical support tools
  - In addition to document-based tools, the development of software-based tools will be planned.
- Keeping the document up-to-date as a living document
  - In conjunction with SWG activities, the Guidebook and related materials will be updated, and a channel for feedback will be established.

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