From Trusted Asset Data to Public Value: A Conceptual Roadmap for Public Immovable Asset Management

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ABSTRACT

Asset information that supports inventory reporting may be insufficient for a maintenance or renewal appraisal. The resulting implementation problem concerns how its adequacy is assessed and its use authorised when records pass between functions or are reused for another decision. This conceptual paper develops a roadmap connecting data governance, fitness for use and organisational capability to accountable decisions in public immovable asset management. A purposive documentary comparison examines nine official materials from six source families spanning public-sector data strategy, data quality, asset management, artificial intelligence risk management and health-data interventions. Recommendations are mapped to seven implementation dimensions and assessed for contextual transfer. Source observations are distinguished from interpretation and asset-specific adaptation; coherence checks examine decision relevance, acceptance responsibility and feedback. The synthesis elaborates a provisional five-stage sequence through three qualifications: assurance depends on the intended decision; governance continues across activities; and use can require revision of information requirements as well as records. These relationships inform five connected activities: Govern, Standardise, Assure, Integrate, and Utilise and Optimise. Each links responsible functions to information products and evidence supporting progression, while integration preserves provenance and accepted limitations. People, process and technology capabilities sustain the activities. The contribution is an operational account of purpose-specific acceptance at information handovers: a record's suitability remains conditional on its assessed use and requires reconsideration when the decision context changes. A hypothetical pump-replacement appraisal illustrates how these relationships operate. The roadmap distinguishes information adequacy, decision justification, implementation and service consequences as levels for subsequent evaluation. The proposal remains conceptual; evaluation must examine the technical basis of acceptance judgements, implementation effort and effects on service continuity, resource stewardship and accountability.

Keywords: public immovable assets, data governance, data quality, immovable asset strategic management

INTRODUCTION

A pump may be correctly identified in a government building's asset register while the evidence needed for a repair-or-replacement appraisal remains uncertain. A maintenance entry may refer to proposed work, a condition observation may concern an earlier component, and a cost record may omit installation. This constructed situation illustrates the problem addressed here: bringing records together leaves a further judgement about what they can support. For public immovable assets, that judgement needs to be connected to asset-management objectives and the services the assets enable. ISO 55013:2024 provides an objective-linked basis for managing asset data, while the OECD (2019) connects public-sector data use with planning, delivery and evaluation (International Organization for Standardization [ISO], 2024).

Data quality is understood in relation to the task for which information is used. Wang and Strong (1996) extend assessment beyond accuracy through intrinsic, contextual, representational and accessibility dimensions. Applied to asset management, this directs attention to condition evidence, maintenance histories and supporting documentation, as well as the ability to retrieve and interpret them. In this paper, trusted asset data means information whose sources, relevant quality attributes and limitations are sufficiently understood to

support a defined use. The definition makes trust conditional on that use and the grounds available for assessing it.

Governance determines how the resulting judgements are authorised. Abraham et al. (2019) place authority and control over data management at the centre of data governance. An asset-information pathway must therefore identify who defines requirements, who examines technical evidence, who resolves discrepancies and who accepts the remaining limitations. These functions can be allocated within existing organisational arrangements, but their relationships need to remain clear when information passes between project delivery, facilities operation and asset planning.

Malaysian research supplies a relevant starting point. Subri et al. (2025) examine data governance and digital transformation in public immovable asset management, emphasising people, process and technology. Subri et al. (2026) address data-quality dimensions for lifecycle costing and identify recording difficulties, fragmented systems and limited historical access. The present paper takes those concerns into an implementation question: how are requirements, review responsibilities and information products connected when records are prepared for a subsequent asset decision? Earlier findings are used as context; their datasets are not reanalysed here.

The implementation problem concerns the dependencies between governing, defining, reviewing, exchanging and using information. Definitions influence what can be checked; integration can expose a discrepancy; appraisal can reveal that an original requirement was incomplete. A staged roadmap needs to explain these dependencies and the returns they create. The research question is: how can established data-governance, data-quality and data-use principles be operationalised through a staged roadmap for public immovable asset management?

The paper develops a conceptual model through purposive comparison of published institutional guidance. Nine materials from six source families are examined using seven shared dimensions: accountability, standardisation, assurance, integration, implementation structure, feedback and outcome orientation. Strategies, frameworks, a guidance standard and an intervention package retain their original purposes in the comparison. The documented principles are then interpreted for asset-information production, handover and decision use. This design follows Jaakkola's (2020) emphasis on making the use of existing knowledge and the reasoning of a conceptual article explicit.

Five connected activities are proposed: Govern, Standardise, Assure, Integrate, and Utilise and Optimise. Their contribution lies in the responsibilities, information products and evidence for progression that connect them. Governance and assurance continue across the activities, with findings from use able to revise earlier requirements. AI is considered a possible application with additional assessment needs. The pathway is directed towards service continuity, resource stewardship and accountability; its effects on those outcomes remain questions for subsequent evaluation. The following sections develop its foundations, comparison, operational elaboration and implications.

CONCEPTUAL FOUNDATIONS

2.1 Fitness for use in asset decisions

An inventory and a renewal appraisal can draw on the same records while requiring different evidence. The appraisal may depend on current condition observations, repair history, operating requirements and cost assumptions. Wang and Strong's (1996) intrinsic, contextual, representational and accessibility categories make this difference intelligible: quality includes appropriateness to a task and the conditions under which a user can understand and obtain the information. For an asset decision, the relevant assessment therefore begins with what needs to be established and how the supporting evidence was produced.

Fitness for use also requires choices about the relative importance of quality attributes. The Government Data Quality Framework acknowledges that user requirements can involve trade-offs between dimensions such as timeliness and completeness (Government Data Quality Hub, 2020). Applied to asset decisions, an urgent maintenance response may have to proceed with partial information, while a renewal appraisal may justify further investigation of missing historical records. The relevant question is how much uncertainty the particular

decision can reasonably accommodate. Quality requirements would consequently need to reflect the decision's purpose, consequences and time horizon.

ISO 55013:2024 links data management to asset-management and organisational objectives (ISO, 2024). This orientation also helps interpret the historical-access and recording difficulties discussed by Subri et al. (2026). A record documenting a completed repair may require further qualification before it supports an estimate of future renewal needs. The grounds for accepting it should identify the source, the relevant checks and any remaining uncertainty. A change in use brings those grounds back into consideration.

2.2 Governance across the asset lifecycle

Relating quality to use brings decision authority into view. Khatri and Brown (2010) distinguish decisions concerning data from the allocation of accountability for them; Abraham et al. (2019) examine the exercise of authority and control over data management. Together, these accounts inform the approval of requirements, acceptance of quality limitations and resolution of disagreement. Here, an information handover includes reuse by another function or for another purpose, within or across organisational units. Custody, technical review and acceptance for use are distinct functions even where one officer performs several of them.

Consider a condition record passing from a project team to a facilities operator and later to a portfolio planner. The receiving team may be able to retrieve it while lacking the authority or resources to commission an updated assessment. If refurbishment has intervened, the available record may concern a state that no longer supports the appraisal. Allocating custody leaves further questions about who can obtain new evidence, verify it and approve its use. Those questions define the governance work required at the handover.

Brous et al. (2016) treat asset-management data infrastructures as socio-technical networks of interacting actors and technical arrangements. Their emphasis on institutionalising governance provides an asset-specific reference for sustaining coordination. Within the proposed roadmap, responsibility must remain workable as records move between functions. Requirements, technical queries, corrections and accepted limitations each need an authority and a route through which action can be taken.

2.3 Organizational capability and the use of data

Pang et al. (2014) propose that organisational capabilities mediate the relationship between IT resources and public-sector performance. For asset management, this directs attention to the work through which information becomes usable: interpreting condition evidence, reconciling records and carrying findings into an appraisal. The proposed roadmap places competence, operating arrangements and resources within that relationship. They determine what the organisation is equipped to do with the information available.

The people, process and technology (PPT) perspective emphasised by Subri et al. (2025) becomes useful when examined through a particular task. Suppose a validation rule flags an implausible equipment capacity. Resolving the issue may require an engineer to consult an authoritative drawing, a procedure for approving the correction and a system that retains the revised value and its source. These capabilities meet in the same activity. Their adequacy can be examined through an agency's ability to investigate, resolve and communicate the discrepancy.

2.4 From asset decisions to public value

The intended value of this work requires a further distinction between improving the basis of a decision and improving a public service. The OECD (2019) identifies anticipation and planning, delivery, and evaluation and monitoring as connected areas in which public-sector data can generate value. These activities provide a useful orientation for asset planning and maintenance, while leaving the relationship between information and outcomes to be examined. A well-supported renewal decision still depends on funding, procurement and implementation before it can affect the performance of a facility.

Public value also requires attention to whose needs the decision serves. Stoker's (2006) account of public value management places dialogue, relationships and shared learning within networked governance. Applied to

immovable assets, this perspective encourages scrutiny of the service objectives used to judge a proposed intervention and the interests affected by it. For example, an operating-cost reduction may be attractive within an asset budget, yet its acceptability also depends on the implications for service availability and users. Asset information can inform that judgement; the priorities against which it is made require an accountable decision process.

Service continuity, resource stewardship and accountability are used here as three areas of intended public value. They concern the availability of facilities for required functions, the justification and review of lifecycle expenditure, and the ability to explain a decision's evidence, assumptions and authorisation. They provide a starting point for local specification. Examination of the pathway needs to distinguish information improvement, decision use, implementation and service consequences, including the resources connecting those levels.

2.5 Conceptual basis of the roadmap

The conceptual basis is a relationship between fitness for use, accountable judgement and capability to act. Information products become relevant through the decisions they are intended to support. Shared meanings allow review on an agreed basis; review records the grounds and limits of acceptance; and integration makes related evidence available while retaining those qualifications. The roadmap organises the work needed to maintain these relationships.

Use can reveal a requirement that was not apparent during collection. A maintenance record may describe an intervention while omitting the failure circumstances needed for a renewal appraisal. Such a finding can prompt both further assurance and a change in what is recorded. The OECD's (2019) iterative account of public-sector data use provides a basis for this feedback. Governance allocates authority for revision, and organisational capability sustains the response.

METHODOLOGY

3.1 Conceptual research design

This study adopts conceptual model development supported by purposive comparison of institutional guidance. The design makes explicit how selected concepts inform the relationships between responsibilities, information requirements, assessment and use, following Jaakkola (2020). Fitness for use, accountable judgement, organisational capability and intended public value supply the interpretive basis for the comparison.

The author's seminar proposal supplies the provisional five-stage sequence. It precedes the comparison, allowing the accessed guidance to elaborate its activities and qualify its assumptions. Document analysis follows Bowen's (2009) treatment of published documents as research material, with attention to their purposes and evidential limits. The study develops a conceptual argument and generates no new participant data or observations of organisational performance.

3.2 Source selection and evidential scope

The corpus was assembled purposively from official institutional publication pages and linked explanations. Eligibility required an identifiable institution, title and date or edition; accessible primary material or an official explanation; and relevance to at least one implementation function. Selection also sought a distinct context or analytical emphasis. This approach supports comparison across public-sector strategy, quality, asset management, AI risk and health-data implementation. It establishes a bounded set of guidance rather than estimating the frequency of practices across the literature.

Six related source families form the comparative material. Canada’s 2018 Data Strategy Roadmap and its 2023–2026 renewal are considered together for their treatment of public-service responsibilities, capability and implementation (Government of Canada, 2018, 2023). The OECD (2019) provides a broader account of public-sector governance and the connection between data use and public value. The UK Government Data Quality Framework offers more focused guidance on assessing and communicating fitness for purpose

(Government Data Quality Hub, 2020). These sources establish a public-sector reference point for the comparison.

Three specialist families extend that reference point. ISO 55013:2024 provides the asset-management orientation, represented here by its public scope and the official ISO/TC 251 overview (ISO, 2024; ISO/TC 251, n.d.). The NIST AI Risk Management Framework is included to examine responsibilities and assessment where an AI application is contemplated (Tabassi, 2023). WHO's SCORE material provides a contrasting example of relating interventions to actions and assessment indicators (World Health Organization [WHO], 2020a, 2020b). Its value for this paper lies in that relationship; the health-specific measures remain outside the asset-management adaptation.

Appendix A identifies the nine materials grouped within the six source families, including their type, accessed content, relevant locations and transfer limits. Access notes were consolidated on 6 October 2026. ISO observations are restricted to the public scope and committee overview; the complete licensed standard was not read. WHO observations are restricted to the publication overview and official Q&A; the complete technical package was not read. Related documents are treated within one family, preserving the distinction between materials consulted and comparators.

3.3 Comparative analytical framework

An implementation function or recommendation within the accessed text is the unit of comparison. Each material is considered in its original setting before transfer is assessed. A national strategy, quality framework, asset-management standard, AI risk framework and health-data intervention package organise different objects at different levels. The seven dimensions in Table 1 provide common implementation questions while preserving those differences.

Table 1: Dimensions used to compare published guidance

Dimension	Evidence sought in the accessed material
Accountability	Authority to approve requirements and use; ownership or stewardship; responsibilities for review, correction and escalation.
Standardisation	Shared definitions, identifiers, classifications, units, metadata and information requirements.
Assurance	Purpose-specific quality assessment, verification, acceptance decisions, corrective action and communication of limitations.
Integration	Arrangements for linking or exchanging information, preserving meaning and provenance, and managing access and protection.
Implementation structure	Organisation into stages, pillars, functions or interventions; dependencies, outputs, resourcing and progression arrangements.
Feedback	Monitoring, review, revision and routes through which use or changing requirements prompt corrective action.
Outcome orientation	Connections to decisions, services, accountability and intended value, distinguishing proposed benefits from reported outcomes.

The working analytical record separates the documented feature and its location from the interpretation and asset adaptation. A feature may inform several dimensions: metadata can contribute to shared meaning, quality assessment and exchange. Where the accessed text does not establish a feature, that limit is retained in the comparison. The dimensions organise the narrative analysis and are not combined into framework rankings.

3.4 Synthesis and roadmap development

Transfer is assessed through the principle's relevance to asset-information production, handover, technical assessment or decision use. For example, NIST's continuing governance function informs responsibilities across implementation; an asset-specific acceptance record is a design addition developed in this paper. This distinction preserves the source's contribution while making the contextual reasoning open to examination.

Each activity is elaborated through its purpose, responsible functions, information products and evidence supporting progression. A transition must explain why a preceding product is relevant to the next activity and which limitations accompany it. Continuing governance, assurance and PPT capabilities are examined alongside the staged sequence. Guidance on iteration and overlapping functions is used to reconsider dependencies that would otherwise appear strictly sequential.

Three checks guide this elaboration: relevance to an identified decision requirement; explicit responsibility for producing and accepting the output; and a route through which later use can trigger correction or revised requirements. A transition lacking one of these relationships requires clarification within the proposal. Constructed asset examples expose the reasoning behind those checks and provide no evidence of effectiveness in practice.

3.5 Analytical rigour and limitations

The analytical record makes source locations, access limits and interpretive additions visible. Because the seminar sequence preceded the comparison, confirmation remains a potential influence on selection and interpretation. Differences in purpose, iteration and continuing functions are examined where they qualify the initial sequence. Agreement between materials supports conceptual alignment; its relevance still has to be explained for the asset context.

The corpus is selective and includes materials with partial access. Institutional guidance describes intended arrangements, leaving their execution under local authority, contractual responsibilities, skills and resource constraints to be examined. The study's claims concern the coherence and traceability of the proposed relationships. Practical sequencing and effects on public value require subsequent organisational evaluation.

COMPARATIVE ANALYSIS

The comparison examines how the accessed guidance connects responsibility, information and use. It first makes the analytical procedure explicit, then considers shared principles and differences relevant to asset-management adaptation. Table 3 consolidates the observations and resulting proposals.

4.1 Analytical procedure and synthesis

Five activities structure the analysis: document analysis, mapping to predefined dimensions, cross-framework comparison, contextual synthesis and logical coherence checks. Bowen (2009) provides the documentary basis, while Jaakkola (2020) informs the visibility of the conceptual reasoning. Table 2 specifies their application and contribution.

Table 2: Analytical activities, their application and contribution

Analytical activity	Application in this study	Contribution to the analysis
Qualitative document analysis	Extracted functions and recommendations from official materials, recording purpose, location and access limits.	Established the documented basis for interpretation.
Framework-guided mapping	Organised features under seven predefined dimensions; a feature could inform several dimensions.	Enabled comparison through shared implementation questions.
Cross-framework comparison	Examined common principles, differences in structure and conditions for transfer.	Qualified an interpretation of governance as a completed first stage.
Conceptual synthesis and contextual adaptation	Related documented principles to asset-information handovers, responsibilities and outputs.	Specified implications for asset-specific acceptance and progression evidence.
Logical coherence checks	Examined decision relevance, responsibility for accepting outputs and routes for feedback.	Clarified overlapping functions, use-dependent assurance and revision of requirements.

Recommendations were organised under the seven dimensions defined in Table 1 and interpreted alongside each material's original purpose and access limits. These shared questions permitted comparison without treating every source as a staged roadmap.

Cross-framework comparison examined whether similar functions entailed comparable responsibilities or different implementation assumptions. NIST's AI RMF Core, sections 5 and 5.1, provides a worked example: it treats governance as continuing across risk-management functions (Tabassi, 2023). Reading that observation against the initial five-stage proposal qualified a one-off interpretation of Govern. The adaptation is to retain governance throughout the asset-data pathway. Asset-specific approval and escalation arrangements are additions developed here. The reasoning thus proceeds from an identifiable source observation, through interpretation, to a contextual proposal.

Contextual synthesis related the documented principles to information production, handover, assessment and use. Coherence checks then examined decision relevance, responsibility for accepting outputs and routes for feedback. Figure 1 shows this process, including reconsideration of an adaptation where its proposed relationships require clarification.

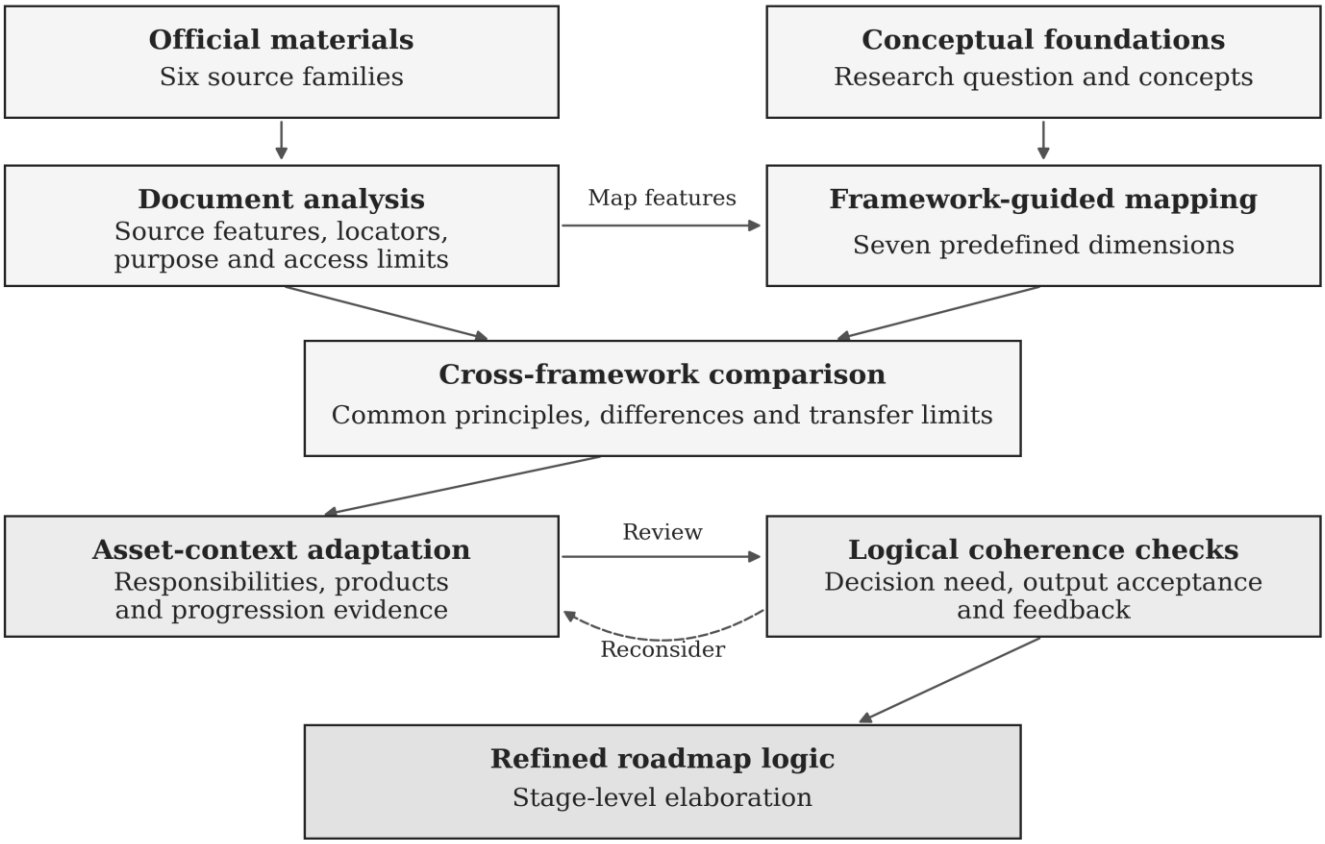


Figure 1: Analytical process linking documentary evidence to the proposed roadmap

4.2 Accountability and organisational capacity

Canada's 2018 roadmap assigns implementation responsibilities across government and departments. Its 2023–2026 renewal connects accountability with early data planning, resources, stewardship and reporting (Government of Canada, 2018, 2023). The related editions are treated as one source family. For the comparison, they locate responsibility within an organisational programme of implementation.

For asset information, responsibility needs to reach the handover. A project team may supply installation records, a maintenance unit update the register and a technical officer investigate discrepancies. Acceptance for a later appraisal adds a judgement about the sufficiency of that evidence. The adaptation therefore distinguishes custody, technical review and authority to accept a use. Several functions may be combined,

provided unresolved questions and the authority to act remain visible. Competence, time and escalation arrangements are conditions for exercising those responsibilities.

4.3 Standardisation, assurance and integration

The distinction between standardisation and assurance becomes consequential when records are reused for another decision. Canada's 2018 roadmap promotes common definitions, reference data and metadata to support interoperability. The UK framework directs quality assessment towards user needs and makes provision for communicating quality limitations and trade-offs (Government of Canada, 2018; Government Data Quality Hub, 2020). These emphases are complementary: shared definitions support consistent interpretation, while assurance examines whether the available evidence is adequate for its intended purpose.

ISO 55013's public scope relates data management to asset-management and organisational objectives; its committee overview addresses registers, histories and the data lifecycle (ISO, 2024; ISO/TC 251, n.d.). This anchors the comparison in the management purpose of the information. The proposed adaptation determines the intended decision before settling required fields and exchange arrangements.

The constructed pump example illustrates the distinction. A common identifier may join register and maintenance entries while leaving unclear whether replacement was proposed or completed and what the reported cost includes. A capital appraisal may also require current condition evidence and service implications. Integration consequently needs to preserve sources, dates and quality qualifications alongside linkage. Acceptance for inventory reporting leaves a separate question about adequacy for expenditure appraisal.

4.4 Implementation structure and progression

The comparators organise implementation around different objects. Canada's renewed strategy arranges actions under four missions and three enabling pillars. WHO's official SCORE descriptions relate health-data interventions to underlying elements, indicators and examples of action. NIST's AI RMF organises risk management through Govern, Map, Measure and Manage, with governance spanning the other functions and iteration explicitly permitted (Government of Canada, 2023; WHO, 2020a, 2020b; Tabassi, 2023). The comparison therefore qualifies any assumption that a useful implementation framework must prescribe one fixed sequence.

For the proposed roadmap, the sequence represents dependencies between products and uses. Review may precede exchange, while reconciliation can reveal discrepancies requiring renewed assurance. Assessment criteria depend on the intended decision established through governance. The activities can therefore overlap, with their practical order determined by existing records, decision needs and organisational capacity.

SCORE's intervention-to-evidence relationship informs a reviewable account of progression. The asset adaptation associates each activity with an observable product and responsibility for accepting it. An agreed definition or reconciled record can demonstrate work undertaken; locally specified criteria are needed to establish whether it supports the next use. Counting corrections leaves that judgement unresolved.

4.5 Feedback and outcome orientation

Feedback can reveal a defect in a record or a limitation in the requirements under which it was produced. The OECD's data value cycle allows decision use to alter subsequent data collection, while the UK framework supports lifecycle review and attention to the causes of quality problems (OECD, 2019; Government Data Quality Hub, 2020). Applied to an asset register, an accurately identified component may still lack information about its service criticality. If that information becomes necessary for prioritising expenditure, the response reaches beyond correcting existing values: requirements, review responsibilities and collection practices may need revision. Feedback therefore needs a route back to Govern and Standardise, as well as to Assure.

The OECD (2019) connects data use with planning, delivery and evaluation. Applied here, those activities distinguish an improved record, a documented appraisal and the implementation through which a service

consequence might follow. Funding, operational capacity and timing can intervene along that pathway. This separation informs the candidate evaluation evidence developed in the discussion.

Table 3: Comparative observations and proposed roadmap adaptations

Dimension	Observation from the accessed guidance	Proposed asset-management adaptation
Accountability	Canada assigns implementation responsibilities; NIST treats governance as a continuing function.	Identify custody, verification, acceptance and escalation responsibilities at information handovers.
Standardisation	Canada connects common definitions, reference data and metadata with interoperability.	Define identifiers, units and field meanings in relation to intended asset decisions.
Assurance	The UK emphasises fitness for purpose, quality trade-offs and communication of limitations.	Specify use-dependent checks and retain qualifications when records are reused.
Integration	Canada addresses interoperable sharing; ISO's committee overview discusses interoperability and the data lifecycle.	Preserve identity, meaning, provenance and appropriate access when linking records.
Implementation structure	Canada uses missions and pillars; NIST uses iterative functions; WHO links interventions, actions and indicators.	Use outputs and dependencies to make progression reviewable, allowing activities to overlap.
Feedback	The OECD links use with revised data collection; the UK addresses lifecycle review and causes of quality problems.	Route findings from use back to requirements, records and review responsibilities.
Outcome orientation	The OECD connects data use with planning, delivery and evaluation; ISO's published scope anchors it in management objectives.	Distinguish information quality, decision justification, implementation and service consequences.

4.6 Implications for the proposed roadmap

The synthesis centres the asset adaptation on a defined requirement, a qualified information product and an authorised judgement about use. These relationships make the established principles operational at handovers. The activity labels acquire meaning through their products, dependencies and feedback. Their elaboration follows in the proposed roadmap.

Where AI is contemplated, the comparison also identifies a boundary around data assurance. The UK framework concentrates on input-data quality, whereas NIST requires attention to application context, system performance, human oversight and potential impacts (Government Data Quality Hub, 2020; Tabassi, 2023). An AI-supported maintenance or investment recommendation would therefore require assessment of the application alongside the underlying records. AI is a possible use of the roadmap's information products, with additional responsibilities determined by the application.

The comparison thus qualifies the initial sequence through purpose-specific requirements, continuing governance and assurance, and feedback from use. PPT capabilities sustain these functions as information is produced, linked and brought into decisions.

5.0 THE PROPOSED ROADMAP

The roadmap organises the work of preparing asset information for decisions and revising it through use. Itretains Govern, Standardise, Assure, Integrate, and Utilise and Optimise as connected activities.

5.1 Conceptual logic and architecture

A defined decision sets the information requirement. Maintenance prioritisation, component replacement and portfolio planning may require different evidence from the same register. The objective-linked scope of ISO

55013:2024 provides the asset-management reference for this relationship (ISO, 2024).

The activities describe dependencies and allow overlap. Intended use is considered in Govern; integration can expose a need for reassessment; and appraisal can change an earlier requirement. Figure 2 represents this adaptation of the iterative relationship between data production and use described by the OECD (2019). Governance and assurance continue throughout.

The functions named in Table 4 can be allocated within an agency's existing authority and handover arrangements. The asset decision owner denotes the function authorised to make the intended decision; the data steward maintains agreed requirements and definitions. Technical reviewers examine evidence, while custodians maintain records or systems. Several functions may be combined. Their allocation needs to preserve responsibility for producing, checking and accepting information.

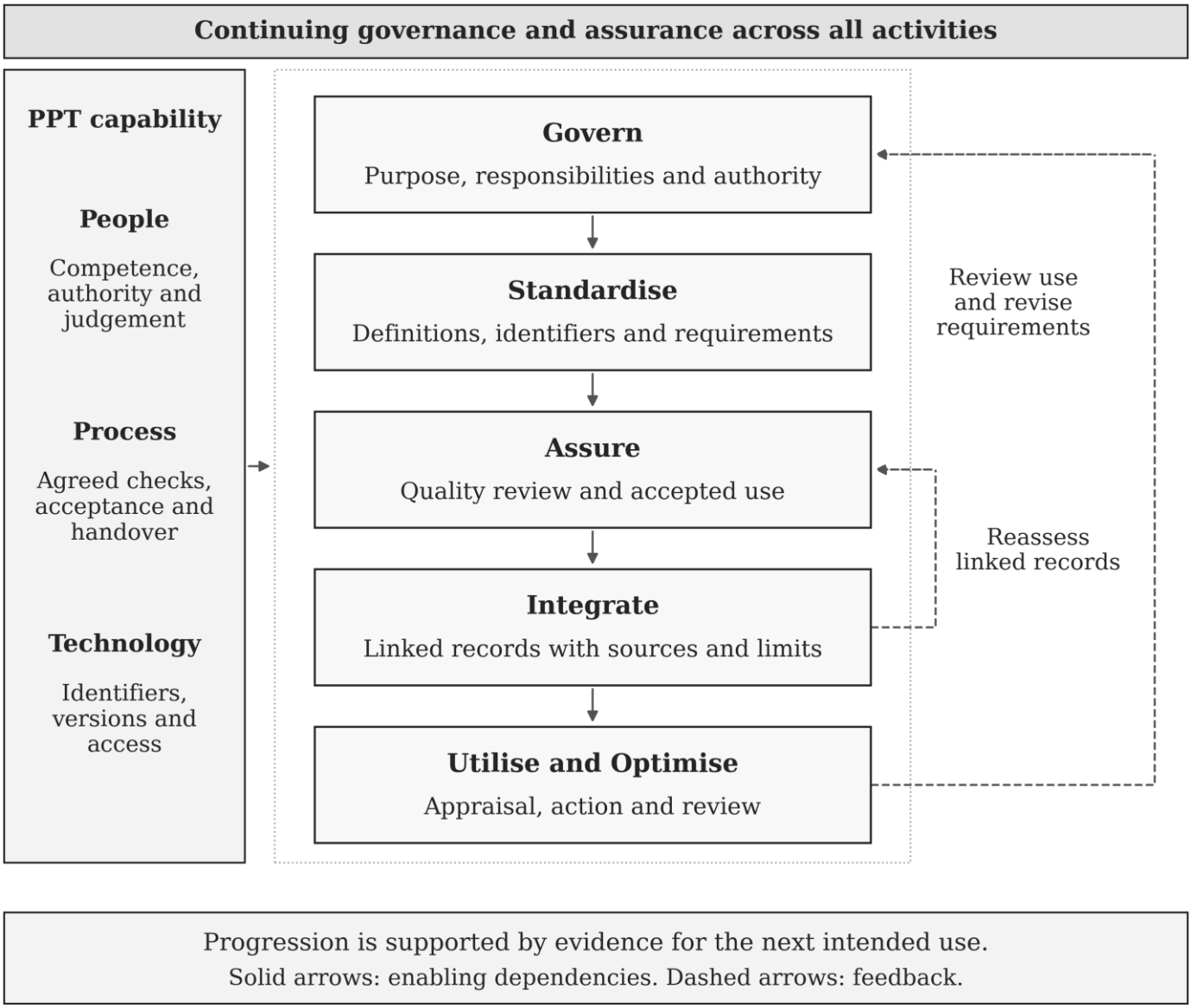


Figure 2: Proposed roadmap for public immovable asset data

5.2 Govern: establish purpose, authority and responsibility

Govern establishes what the information must support and who can decide that it is sufficient. Canada's renewed data strategy connects early consideration of data needs with accountabilities and resourcing (Government of Canada, 2023). Applied here, the decision owner and relevant technical users identify the asset decision, the minimum evidence required and the consequences of unresolved information gaps. A

replacement appraisal, for example, may require condition evidence and service implications beyond the fields needed to identify the installed component.

Govern produces an agreed record of requirements, responsibilities, resources and escalation arrangements. It assigns the supply of records, resolution of technical queries and acceptance for the intended use. Progression is supported when those requirements and authorities are agreed. Changes in decision purpose, providers or authority prompt revision.

5.3 Standardise: establish shared meaning

Standardisation translates the agreed requirements into definitions that record providers and users can apply consistently. Canada's strategy associates common standards and stewardship with data sharing and reuse (Government of Canada, 2023). The proposed asset adaptation includes identifiers, component relationships, classifications, units, date conventions and the meaning of status fields. A data dictionary should also distinguish an unknown value from a field awaiting verification, since those states call for different responses.

For the pump appraisal, work status needs to distinguish a proposal from completed installation. Cost requires a defined scope, and condition needs an assessment date and interpretive basis. The data steward develops these definitions with providers and technical users, mapping existing fields where necessary. Their practical application supports progression; ambiguity exposed through later use prompts revision.

5.4 Assure: establish grounds for the intended use

Assure examines the evidence against the requirements agreed for a particular decision. The UK framework's emphasis on user needs, quality trade-offs and communicating limitations provides the governing principle (Government Data Quality Hub, 2020). The checks proposed here address the relevant records and their context. Automated checks may identify missing identifiers or inconsistent dates. Technical review examines whether the recorded information corresponds to the component, whether its source is credible and whether its currency is adequate for the decision.

Assure records the checks, sources, limitations, unresolved issues and uses accepted by the authorised function. Inventory acceptance may be limited to identification while a replacement appraisal requires further condition evidence. Outstanding issues retain an owner and an agreed response. Acceptance is reconsidered when the asset changes, additional evidence emerges or a proposed use extends beyond the assessment.

5.5 Integrate: preserve meaning and qualifications during reuse

Integration makes relevant records available together while preserving what they represent and how they were assessed. The ISO/TC 251 public overview discusses asset histories, data lifecycle management and interoperability (ISO/TC 251, n.d.). The proposed adaptation joins register, maintenance, inspection and project information through agreed identifiers and explicit relationships. Custodians retain the source, relevant dates, version and quality qualifications, so that a receiving user can examine the basis on which a record is being reused.

Custodians and technical reviewers reconcile conflicts revealed by the links. Successive pumps may require an explicit component relationship to preserve history; joining by room alone could associate work on different items. Such findings return to Standardise or Assure. Progression is supported by reconciled identity and meaning, visible qualifications and checked access arrangements.

5.6 Utilize and optimize: connect evidence, action and review

The final stage brings accepted information into an appraisal, maintenance plan or investment decision. The OECD (2019) relates data use to planning, delivery and evaluation. For the proposed roadmap, the decision owner records how the information informed the alternatives considered, the assumptions adopted and the resulting judgement. Data qualifications remain relevant to that reasoning. An unresolved condition estimate, for example, should remain visible when it materially affects the grounds for recommending replacement.

Optimisation denotes review and revision of the decision process and its information requirements. Experience of implementation can reveal an insufficient requirement, an assumption needing revision or a changed maintenance priority. Findings are assigned to the function able to respond. The resulting product includes the appraisal, authorisation, follow-up responsibilities and review findings. Evidence of the work delivered and its service consequences remains distinguishable from the evidence supporting the recommendation.

Where an AI application supports prediction or prioritisation, the additional assessment follows the application. NIST's AI RMF calls for attention to deployment context, system performance, human oversight and impacts (Tabassi, 2023). The roadmap's accepted records provide part of that assessment. The agency also needs grounds for using the system's outputs in the relevant decision, with responsibilities for review and response when its performance or context changes.

5.7 Progression, continuing capability and public value

Table 4 specifies products and evidence supporting progression against the next intended use. WHO's official SCORE descriptions inform the structural relationship between interventions and assessment evidence (WHO, 2020a, 2020b). The asset responsibilities and products are proposed here for local specification.

Table 4: Proposed stage responsibilities, products and progression evidence

Stage	Responsible functions	Proposed information products	Evidence supporting progression
Govern	Asset decision owner; data steward	Agreed decision requirements, responsibilities, resources and escalation arrangements.	Intended use and minimum evidence requirements are authorised; production and acceptance responsibilities are assigned.
Standardise	Data steward; record providers; technical users	Data dictionary, identifier rules and mapping of existing fields.	Providers and users can apply agreed meanings, units and required fields consistently.
Assure	Technical reviewer; decision owner	Quality review, recorded limitations and acceptance for specified uses.	Review supports the accepted use; outstanding issues have an owner and an agreed response.
Integrate	Data and systems custodians; technical reviewer	Linked records with source, version and reconciliation information.	Identity and meaning are preserved; qualifications remain visible and access arrangements are checked.
Utilise and Optimise	Asset decision owner; delivery and review functions	Documented appraisal, authorised decision, follow-up actions and review findings.	Rationale and action responsibilities are recorded; findings are assigned for correction or revised requirements.

Progression depends on the authorised scope of use and the evidence available for it. Partial information may support a limited use while further evidence is sought for a more demanding appraisal. Local criteria need to reflect the decision and the consequences of inadequacy. An initial application can concentrate on one asset group and decision to examine whether these arrangements can be exercised.

PPT capabilities meet in the same work: competent staff need time and authority to examine a discrepancy, a process for resolving and accepting it, and technology that retains identities, sources and revisions. Governance assigns these responsibilities and resources. Assurance is renewed as records are produced, linked and reused.

DISCUSSION AND CONCLUSION

The proposed relationships between requirements, evidence and acceptance direct attention to the handover at which information becomes usable for a decision. Their contribution is considered here through an illustration, agency implications and the conditions for subsequent evaluation.

6.1 Conceptual contribution

Brous et al. (2016) locate asset-management data infrastructures in networks of actors and technical arrangements. The present synthesis develops that orientation at a particular point of work: the handover of information for an asset decision. Three questions connect the activities—what the information must support, who examines its adequacy and who can accept its limitations. Associating those questions with a dictionary, review record or appraisal makes the proposed relationships open to examination in practice.

Purpose-specific acceptance gives operational form to the task-dependent quality account of Wang and Strong (1996) and the UK framework's attention to differing user needs (Government Data Quality Hub, 2020). Under the proposed logic, a receiving user should be able to retrieve both the record and the grounds for its accepted use. A new appraisal can then identify what further evidence is required. The arrangement is intended to reduce unexamined reuse of qualifications that have become inappropriate; this mechanism remains to be assessed.

Progression also acquires a different object of review: whether an information product supports its next intended use. Feedback can alter the requirement under which that product was prepared, consistent with the OECD's (2019) iterative treatment of data use. Jaakkola's (2020) account of conceptual development supports making such relationships and conditions explicit. An acceptance record needs an examinable technical basis. Where review criteria are unclear or the reviewer cannot obtain relevant evidence, a completed document may leave the underlying adequacy unresolved. Evaluation should therefore examine the judgement exercised as well as the presence of outputs.

6.2 Illustrative application to a pump appraisal

Table 5 develops the pump example as a constructed replacement appraisal for a government building. Assume that the register and maintenance system contain a replacement entry, but its status and cost scope are unclear; the available condition observation also predates the reported work. These assumptions are used to examine the roadmap’s reasoning. They do not describe an observed facility, and no intervention or performance result is reported.

Table 5: Constructed pump appraisal: information issues, responses and decision implications

Issue in the constructed scenario	Proposed roadmap response	Implication for the appraisal
Replacement entry has an unclear status.	Standardise defines work status; Assure examines the supporting work and installation records.	Confirm what work occurred before accepting the entry as a completed replacement.
Condition observation predates the reported work.	Integrate relates the observation to the correct component and date; Assure considers whether further inspection is required.	The observation may describe the previous pump and be insufficient for the current appraisal.
Recorded replacement cost has an unclear scope.	Standardise defines included cost elements; Assure checks the recorded amount against its source.	Record unresolved cost assumptions or obtain further evidence before comparing options.
Consequences of interruption are unspecified.	Govern clarifies the service requirement; Standardise and Assure address the information needed to assess it.	A priority recommendation needs a stated basis for judging service consequences.
An appraisal is prepared, with action still pending.	Utilise and Optimise records the recommendation, authorisation and follow-up responsibilities; review findings inform earlier activities.	The appraisal documents the reasoning; implementation and service evidence are still required.

The example shows how a discrepancy generates further work within the roadmap. An engineer may need to establish whether the observation concerns the installed pump before interpreting its condition. The decision owner must then determine whether the available evidence supports the appraisal or whether further inspection is needed. Recording that disposition preserves the reason for proceeding, qualifying the use or seeking

additional evidence. The proposed sequence accommodates such returns to earlier activities while keeping the intended decision visible.

6.3 Implications for agency practice

An agency could begin with a recurring maintenance or replacement appraisal and map the handovers on which it depends. Requirements, production, technical review and acceptance functions would be allocated within existing arrangements. The initial application could then examine workload, unresolved issues and whether the proposed products reach the people making the decision. Expansion would depend on what this experience reveals about the work required.

The capability question is practical: can the responsible function obtain technical evidence and act on it? Pang et al. (2014) provide the broader link between IT resources, capabilities and public-sector value. In this application, a flagged inconsistency becomes useful when staff can investigate it and an authorised route permits correction or qualified acceptance. Resources and escalation arrangements consequently belong within the implementation assessment.

Assurance also requires proportionate effort. The UK framework recognises quality trade-offs and prioritisation according to user needs (Government Data Quality Hub, 2020). The proposed asset application would consequently consider the significance of an information gap, the urgency of the decision and the cost of obtaining further evidence. A limited authorised use may be justified while another use remains conditional on investigation. Those judgements require local criteria and explicit authority; they cannot be settled by a universal completeness threshold.

6.4 Public value and responsible data use

The three proposed outcome areas—service continuity, resource stewardship and accountability—provide a starting point for defining what the information is intended to achieve. Their interpretation needs agreement with those responsible for the service and those affected by the asset decision. Stoker's (2006) account of public value management emphasises dialogue, relationships and shared learning. Applied to this roadmap, it suggests that a technically defensible appraisal must also be considered against the service priorities it is meant to support. Expenditure and service consequences need to remain visible together in that judgement.

Table 6 proposes evidence at the information, decision, implementation and service levels, informed by the OECD's (2019) planning–delivery–evaluation relationship. A correction establishes a change in the record; an appraisal can document how information was used. Service continuity requires follow-up on the intervention and its operating conditions. Interpretation would need to account for resources, procurement, maintenance capacity and demand alongside the proposed information controls.

Table 6: Candidate evidence for examining the roadmap and intended public value

Level of examination	Candidate evidence	Interpretation and limits
Information adequacy	Review records linking required fields, sources, dates, corrections and unresolved issues to the intended use.	Can document the grounds for acceptance and changes in the records; does not establish better decisions.
Decision use and accountability	Appraisals linking evidence, limitations, assumptions and alternatives to an authorised judgement.	Can show documented use and justification; traceability alone does not establish the merits of the chosen action.
Implementation and stewardship	Work completion records, expenditure, follow-up actions and explanations of departures from the authorised plan.	Can show what was delivered and how resources were used; the appraisal's contribution still needs examination.
Service consequences	Documented interruption events, duration, affected service functions and operating conditions before and after the intervention.	Can support examination of service continuity; attribution requires attention to asset condition, resources, demand and other changes.

An AI application adds a system assessment to this pathway. NIST's AI RMF addresses deployment context, performance, oversight and impacts (Tabassi, 2023). Accepted asset records supply part of the evidence, while the recommendation and its qualifications require an appropriate review for the decision. Those responsibilities would be specified for the application; conventional technical appraisal remains within the roadmap's scope.

6.5 Limitations and future evaluation

The corpus is purposive and varies in purpose and level of access. The ISO and WHO limitations specified in the methodology restrict the detail available for comparison. The synthesis establishes neither exhaustive coverage nor clause-level conformity with the licensed standard. Proposed responsibilities, products and acceptance criteria have not been examined in organisational practice.

The seminar sequence's prior existence may have favoured interpretations that supported its structure. Separating source observations from adaptation exposes the reasoning and leaves alternative arrangements open to consideration. Practical operation under divided authority, workload and incomplete records remains unresolved. Transfer to other portfolios requires examination of their service obligations and implementation conditions.

Subsequent evaluation could first examine the clarity and feasibility of responsibilities and acceptance criteria with asset managers, technical officers, custodians and service representatives. A bounded application could then follow appraisal episodes, recording how requirements were agreed, evidence assessed, discrepancies handled and information used. Baseline or comparable existing procedures would help examine additional effort and changes in decision practice. Follow-up could assess implementation and service consequences through Table 6, including alternative explanations for observed changes. This programme would investigate the model's assumptions alongside its usefulness.

CONCLUSION

This paper has developed a conceptual roadmap for organising the work through which asset records become usable in public immovable asset decisions. The comparison of institutional guidance elaborates five connected activities—Govern, Standardise, Assure, Integrate, and Utilise and Optimise—and clarifies the responsibilities, information products and evidence connecting them. The roadmap treats progression as acceptance of an information product for a defined use, requiring a technical basis for assessing adequacy and an identified authority to accept its limitations. Governance, assurance and people, process and technology capabilities sustain the activities as requirements and uses change.

The contribution lies in giving purpose-specific acceptance an operational role at information handovers. A record accepted for inventory reporting may need additional condition, cost or service evidence before it supports a renewal appraisal. Preserving provenance and qualifications allows a receiving user to examine that difference; explicit roles establish who must investigate a gap or accept a proposed use. Feedback reaches the requirements under which information was produced, so use can lead to revised definitions and collection practices as well as corrected entries. These relationships connect fitness for use with accountable judgement and make the proposed arrangements open to examination.

For agencies, the practical starting point is a defined asset decision and the handovers on which it depends. A bounded application to one asset group could examine whether staff can obtain the necessary evidence, resolve discrepancies and exercise acceptance responsibilities within available resources. Progress should be assessed through the technical basis of those judgements and their use in appraisal and authorisation. Changes in records, decision justification, delivery and service performance remain separate objects of examination; funding, procurement and operating capacity influence the connections between them.

The roadmap remains a conceptual proposal. The purposive corpus and partial access to ISO and WHO materials limit the comparison, while the constructed pump example illustrates the reasoning. Subsequent research should examine the clarity and feasibility of the arrangements with asset and service practitioners, then follow their application to actual appraisal episodes. Evaluation should consider additional effort and changes in decision practice, alongside implementation and service consequences, with attention to alternative

explanations. The roadmap's practical value depends on whether its acceptance arrangements improve the basis of decisions and, through implementation, support service continuity, resource stewardship and accountability.

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APPENDIX A: DOCUMENTARY SOURCE AND ACCESS REGISTER

The nine materials below constitute six related comparator families: Canada, OECD, the United Kingdom, ISO, NIST and WHO. They are distinguished from the peer-reviewed conceptual and contextual literature cited elsewhere. Access notes were consolidated on 6 October 2026.

Table A1: Consulted materials, analytical locations and access limits

Material and family	Text actually examined	Locations used	Scope and transfer limit
Canada: Government of Canada (2018). Public-service roadmap.	Official HTML roadmap; selected governance and implementation sections.	Governance; Next steps; Driving progress; whole-of-government implementation.	Responsibilities and capability inform asset adaptation. Intended strategy actions do not establish results in the proposed roadmap.
Canada: Government of Canada (2023). Renewed data strategy.	Official HTML strategy, missions and implementation arrangements.	Missions 1, 2 and 4; Implementation; stewardship and common practices.	Early requirements, resources and stewardship inform the proposal. Related to the 2018 material; later annual-report results are outside scope.
OECD (2019). Public-sector data report.	Official chapters on governance and application of data for public value.	Chapters 2 and 3; data value cycle; planning, delivery and evaluation.	Provides broad public-sector relationships. Asset acceptance criteria and service effects are additions for local examination.
United Kingdom: Government Data Quality Hub (2020).	Official framework HTML and its explanations of supporting quality practices.	Quality principles; data lifecycle; user needs and trade-offs; quality dimensions.	Supports fitness for purpose and continuing review. Input-data quality remains distinct from assessment of analytical outputs.
ISO: International Organization for Standardization (2024).	Public abstract, scope and edition information for ISO 55013:2024.	Abstract; General information. Edition 1, July 2024.	Complete licensed text was not accessed. Supports objective alignment, with no clause-level conformity or whole-standard absence claims.
ISO: ISO/TC 251 (n.d.). Official overview.	Public technical-committee explanation of ISO 55013.	Asset registers and histories; data lifecycle; decision support; interoperability.	An official explanation of intended relationships. It does not substitute for the licensed standard in a conformity assessment.
NIST: Tabassi (2023). AI RMF 1.0.	Official publication record and published AI RMF Core text.	AI RMF Core, section 5; section 5.1, Govern.	Iteration and continuing governance inform the roadmap. Application-specific AI assessment remains additional to asset-data assurance.
WHO (2020a). Official SCORE Q&A.	Published Q&A describing the package and constituent resources.	What comprises the SCORE technical package? Essential interventions and assessment resources.	Transfers the structural relationship between intervention and evidence. Health indicators, scores and country outcomes are not transferred.
WHO (2020b). SCORE publication overview.	Official publication overview and bibliographic metadata.	Overview; publication date; ISBN 9789240009837.	The complete technical package was not read. Only the accessed description of interventions, tools and intended uses informs the comparison.