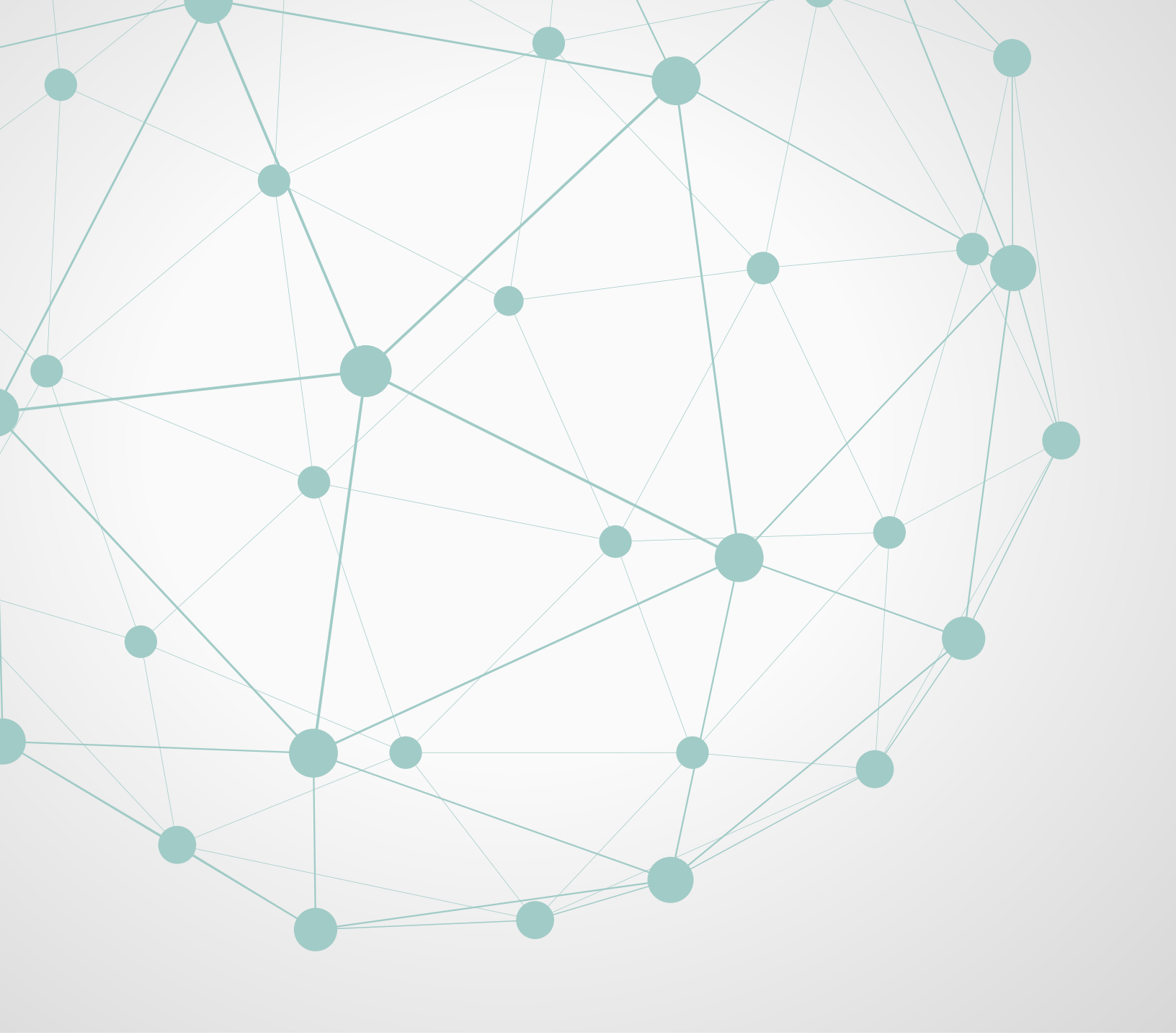

CIHI's Health Data and Information Governance and Capability Framework

Toolkit

Canadian Institute for Health Information
Institut canadien d'information sur la santé

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Introduction

This toolkit is a companion document to *CIHI's Health Data and Information Governance and Capability Framework*. It includes a brief description of the 28 health data and information (HDI) capabilities, a guide for an organization's HDI self-assessment and a network HDI alignment assessment guide. These are supported by appendices that include organizational self-assessment and network alignment templates (Appendix A) and summaries for the HDI core and foundational capabilities (Appendix B).

Users of this toolkit can choose the type of assessment they intend to perform (network alignment or self-assessment) and review the corresponding guide. Where appropriate, they can refer to the capability summaries for the core and foundational HDI capabilities. The complete set of capabilities is available in a supplementary toolkit on request to the Canadian Institute for Health Information (CIHI) at datagovernance@cihi.ca.

Audience, purpose and scenarios for use

The audience for this document is health information organizations in Canada, such as ministries and departments of health, health agencies and authorities, health delivery organizations, and health-related research organizations.

This toolkit provides

- A guide and template for organizations to **self-assess** their most important HDI governance and capabilities, **envision** their evolution and **prioritize** areas for improvement;
- A guide and template for networks of organizations to identify the **need for and extent of alignment** required of their HDI principles, practices and content, where it is beneficial toward achieving common aims; and
- A **common language** for multi-organizational collaboration as a basis for exchange of leading practices and lessons learned in a meaningful and constructive way that fosters improvement and alignment.

The framework and companion toolkit can be used in the following ways to support a health information organization:

- **As a checklist to avoid blind spots** when considering risks, challenges or opportunities;
- **As a tool to identify and prioritize opportunities for broad-based improvement** of data and information governance and capabilities, starting with core and foundational elements;
- **As common language for a network of organizations to identify, prioritize and design** areas where greater alignment across the network is necessary; and
- **As a framework to articulate the necessary foundational elements** to engage in advanced data and information governance and activities such as artificial intelligence.

The framework

Subject areas

CIHI's Health Data and Information Governance and Capability Framework consists of 4 subject areas, each with its own set of capabilities:

- **Strategy and governance** provide the overall direction, accountability and oversight for an effective HDI program. Capabilities in this area include a clearly articulated strategy for the intended outcomes of the strategic use of HDI, governance and accountability models, and processes to monitor and report compliance.
- **Policies and processes** define activities for appropriate collection, processing, analysis and sharing of trusted HDI. Capabilities in this area include data management, quality, conformance, privacy, security, access and partnerships that collectively define the way the organization operates internally and externally to ensure efficiency, effectiveness, integrity and protection.
- **Assets and standards** establish the HDI assets required by the policies and processes to enable strategic and operational outcomes. Capabilities include enterprise data assets, standards, data models and analytics insights that form the collective data foundation of the organization or network.
- **People and knowledge** empower people, from stakeholders to the workforce, to facilitate and evolve policies, processes, designs and governance to be effective and sustained. Capabilities include engagement, education and communication both within and external to the organization.

Capability classification

The 28 capabilities in CIHI's Health Data and Information Governance and Capability Framework are classified as

- **Core:** The central essence of HDI management, covering access, privacy, security, enterprise assets and engagement
- **Foundational:** Together with the core capabilities, these capabilities form a foundation for HDI activities; includes strategy, governance, risk, data standards, data model and insights
- **Supplemental:** Built on top of foundational capabilities to provide added value and options for the organization; covers engagement, policies/processes, program management and compliance
- **Enabling:** Practices/techniques that may help achieve organizational outcomes

Descriptions for the capabilities are provided below. Summaries for **core** and **foundational** capabilities are available in Appendix B. Summaries for all capabilities — including **supplemental** and **enabling** — are included in the supplementary toolkit, which is available on request to CIHI at datagovernance@cihi.ca.

Feedback on all capability summaries is appreciated so that insights can be shared among adopters of CIHI's Health Data and Information Governance and Capability Framework.

Capability descriptions

The following tables contain descriptions of each capability, organized by classification. The associated ID to the left of the capability relates to the subject area:

- SG: Strategy and governance
- PP: Policies and processes
- AS: Assets and standards
- PK: People and knowledge

These can be used to reference the summaries in Appendix B and in the supplementary toolkit containing definitions, practices, artefacts and a rating scale for self-assessment.

Core capabilities

ID	Capability	Description
PP1	HDI privacy policies and processes	Principles, frameworks, policies and processes for compliance with legal and statutory privacy rules; includes legislative authority, governance structures, consent management, compliance, training and incident management
PP2	HDI security policies and processes	Principles, frameworks, policies and processes for security of technology data platforms and data flows, including accountability and requirements, as well as data vulnerability and threat risk assessments
PP3	HDI access and sharing policies and processes	Principles, frameworks, policies and processes for access to HDI; includes data sharing and access across various types of organizations aligned with privacy legislations, mandate and social licence
AS1	Enterprise HDI assets catalogue and content	HDI assets under the custodianship of the organization, including the inventory and data lineage of these data assets, as well as records of incoming/outgoing data flows
PK1	HDI stakeholder engagement plan	Approach, effort and timetable for engaging with stakeholders on the HDI roadmap, governance, policies, processes, assets and standards, and for incorporating their perspectives on managing HDI

Foundational capabilities

ID	Capability	Description
SG1	HDI roadmap	Statement of vision, scope, principles and direction for the organization to realize strategic value from HDI; includes alignment with overall organizational strategy, targets and measures, and high-level roadmap
SG2	Strategic HDI governance model	Structure of HDI governance, including internal and external stakeholders, for strategic direction, oversight, escalation and decision-making to ensure alignment with overall principles and HDI roadmap
SG3	Operational HDI governance model	Accountabilities, roles and responsibilities associated with HDI decision-making authorities, operational activities, education, training and relationship with governance for IT and digital programs
SG4	HDI risk management	Framework defining the HDI risk approach and tolerance level of the organization, processes to assess individual risks, and decision rights to act on the analysis; covers both negative and positive risks and mitigation strategies to manage them
AS2	Enterprise data standards	Suite of data content standards that provide meaning and structure to the organization's data, and of data exchange standards that simplify the flow of data between systems and enable meaningful interaction with business processes

ID	Capability	Description
AS3	Enterprise data model	Enterprise-level conceptual, logical and physical models of health data assets, providing a consistent and meaningful view of the data and their interrelationships; includes diagrams, business data glossary and technical data dictionaries
AS4	Enterprise HDI insights practices	Health data analytic assets of the organization as well as the suite of analytic practices in place to provide trustworthy and ethical decision support, business intelligence, indicators, algorithms and reports produced by the organization

Supplemental capabilities

ID	Capability	Description
SG6	HDI program management	Establishment and operation of a cohesive, enterprise-wide and ethical HDI program that sets priorities, develops and oversees HDI initiatives, orchestrates people change management and reports back to executives
SG7	HDI policies compliance and audit	Framework for the review of compliance with legislation, policies, organization decisions, data standards, quality and privacy rules; includes practices for monitoring, remediation and learning from compliance issues
PP4	Data life cycle policies and processes	Principles, frameworks, policies and processes for managing the full life cycle of health data and records for their use locally and with trusted partners; includes data collection and preparation, linking and aggregation, and ongoing maintenance
PP5	Data standards policies and processes	Principles, frameworks, policies and processes for the adoption and deployment of data content standards, data exchange standards, master data and associated specifications, guidelines, communication and evaluation
PP6	HDI quality policies and processes	Principles, frameworks, policies and processes for asserting the relevance, accuracy, reliability, comparability, coherence, timeliness, punctuality, accessibility and clarity of HDI
PP7	Data anonymization policies and processes	Principles, frameworks, policies and processes for the anonymization, aggregation and de-identification of data to appropriate levels, including open data; considers risks associated with granular data for insight and risk of privacy breaches
PP9	Data change management policies and processes	Principles, frameworks, policies and processes for managing and coordinating changes in data and data flows within and across systems and organizations; includes updates to core data artefacts to retain knowledge
PP10	Vendor-related HDI policies and processes	Principles, frameworks, policies and processes for engaging with vendors, including HDI-related procurement requirements/RFPs, data standards, protection and applicable intellectual property policies; articulates vendor accountability with signed agreements

ID	Capability	Description
PP11	Indigenous populations HDI policies and processes	Principles, frameworks, policies and processes for the treatment of Indigenous populations HDI (First Nations, Inuit and Métis) aligned with their principles for data acquisition, storage, access and use
PK2	HDI internal communication plan	Approach, effort and timetable for communicating internally the HDI roadmap, governance, policies, processes, assets and standards, and for incorporating their perspectives on managing HDI
PK3	HDI workforce plan	Approach, supply/demand assessment and timetable for meeting the organization's needs for HDI capacity to achieve its mandate regarding HDI management, analytics, security, privacy, etc.
PK4	HDI fluency program	Education curriculum, approach and modules to align target audience (e.g., employees, management, board) on key HDI topics including HDI management, privacy, ethics, access, advanced analytics and governance

Enabling capabilities

ID	Capability	Description
SG5	HDI project life cycle	Extension of the standard project life cycle (e.g., software development, vendor software implementation) to integrate with strategic and operational accountability models for HDI
PP8	HDI-related intellectual property policies and processes	Principles, frameworks, policies and processes for management and recognition of HDI-related intellectual property, including publication rights and sharing of value
AS5	Enterprise advanced analytics practices	Application of advanced analytics practices such as machine learning, AI and predictive analytics, and testing for the generation of valuable insights; incorporates ethical considerations associated with the generated insights
PK5	HDI capability improvement program	Establishment and ongoing operation of an HDI capability improvement program that includes periodic self-assessment of capabilities, requirements to meet upcoming business needs, gap analysis and gap closure plan

Assessment guides

Network alignment assessment

This guide intends to help a network of health information organizations determine the need for and extent of alignment necessary to achieve their common aims. It will help identify and prioritize opportunities to improve policies and practices within the network. The outcome of this assessment should provide direction for HDI governance and capability improvement efforts required among the network members, how they will work together and the ongoing oversight to make it happen.

For a given capability, the network alignment level could be

- **Standardized:** Implemented the same way across all members of the network
- **Harmonized:** Implemented with a high degree of orchestration among members
- **Coordinated:** Designed as a cohesive system and implemented independently
- **Autonomous:** Implemented independently from each other

A key step in the network alignment assessment process is the identification of clear objectives and scope of the assessment with the project sponsor(s). The assessment team may want to consider the following guidelines to help achieve desired outcomes:

- **Objectives:** The team specifies the overarching objectives for the network alignment assessment and desired outcomes.
- **Scope of the assessment:**
  - **HDI governance and capabilities:** The team decides which capabilities to include within the scope of the assessment, based on the specified objectives. Depending on the capacity of the network and project team, a suitable starting place could be to focus on only core or core and foundational capabilities.
  - **Member organizations:** The team decides which network members would be requested to participate in the assessment.
- **Expertise:** The team should have the level of expertise required to carry out the network assessment based on the specified objectives and scope. The project lead should be fluent in HDI and familiar with the network organizations.

- **Network alignment level assignment:** The team decides how they will assess the network alignment level of a given HDI capability, and whether they will specify the overall alignment level for that capability or provide more granularity. For example, within an assessment of privacy policies and processes, privacy impact assessment (PIA) templates may be assessed as being "standardized," whereas PIA processes may be assessed as being "coordinated" across the network.

A template for capturing the information during the assessment is available in Appendix A. The information below provides a detailed example of the planning, execution and actioning phases of the assessment process.

Planning phase — example

Objective	To develop and seek approval for the HDI network alignment assessment project terms of reference and associated project plan, participants and resources
Input	• Sponsor (executive or director level) for HDI network alignment assessment • Project lead for HDI network alignment assessment • Previous HDI network alignment assessment (if available)

Process	1. Hold a meeting of sponsor and project lead to determine HDI network alignment assessment project terms of reference covering
	  • Objectives of the HDI network alignment assessment project
	  • Scope of the assessment (member organizations, HDI capabilities)
	  • Assumptions and constraints (e.g., depth of assessment, deadlines)
	  • Assessment facilitator(s) and participants
	  • Overall approach to assessment (e.g., workshop[s], 1:1 interviews)
	  • Report back and follow-ups
	2. Draft HDI network alignment assessment project terms of reference based on meeting outcomes.
	3. Review project terms of reference with sponsor.
	4. Prepare detailed project plan (work breakdown structure [WBS], timetable, participants, etc.).
	5. Seek approval of HDI network alignment assessment project plan by sponsor.

Output	• Approved HDI network alignment assessment project terms of reference • Approved HDI network alignment assessment project plan and budget • Confirmed HDI network alignment assessment facilitator(s) and participants
Additional guidelines	• Scope: An initial assessment may cover a subset of the capabilities (e.g., only core and foundational capabilities). • Process: Conducting the assessment as a group facilitation may be more effective to have the members hear each other's perspective and come to consensus. • Participants: Generally, leaders within the member organizations who have both a deep understanding of their organization and a perspective on the outcomes of the network.

Execution phase — example

Objective	To perform the HDI network alignment assessment project plan in order to profile the network's alignment level for each of the in-scope HDI capabilities and their importance to the network
Input	• Approved HDI network alignment assessment project terms of reference, plan and associated budget • Confirmed HDI network alignment assessment facilitator(s) and participants • Network organizations business plan and/or strategy

Process	1. Schedule workshop(s) and/or 1:1 interviews based on HDI network alignment assessment project plan.
	2. Conduct workshop(s) and/or interviews, using the HDI network alignment assessment template row by row or classification by classification, and determine
	  • Business importance to the network (minimal/none, useful, necessary, essential)
	  • Alignment level (standardized, harmonized, coordinated, autonomous)
	  • Notes/action items associated with the assessment of this HDI network capability (e.g., details on which processes could be harmonized, which organization could lead the item)
	3. Consolidate action items resulting from the assessment session(s).
	4. Circulate draft assessment results and action items to workshop participants for additional feedback.
	5. Finalize HDI network alignment assessment results and action items and send to participants.

Output	• Validated HDI network alignment assessment • List of organizations that could lead standardization or harmonization as identified during the assessment to achieve target state
Additional guidelines	• Network's business plan of strategy: Can be used to assess importance for the network for this HDI capability • Business importance level: Degree the network depends on this HDI capability in order to fulfill its mandate, meet its obligations, execute its strategic priorities and manage its operations • Alignment level: In the comments, include the level for different types of artefacts (e.g., standardize principles, harmonize policies, coordinate processes)

Actioning phase — example

Objective	To address the action items identified during the HDI network alignment assessment's interviews/ workshops, prepare the assessment report and recommendations for sponsor's approval, and communicate outcomes to network
Input	• Completed HDI network alignment assessment template reviewed by participants • List of potential members to lead standardization or harmonization of capability in the network
Process	1. Summarize potential leads for standardization or harmonization activities and identify areas of overlap (multiple members on 1 capability) or underlap (no members identified). 2. Prepare recommendation for potential. 3. Prepare communication plan and associated materials. 4. Review HDI network alignment assessment report, including communications, with sponsor. 5. Present report highlights, conclusions and recommendations to senior management across network for their approval. 6. Execute HDI network alignment assessment communication plan.
Output	• Approved HDI network alignment assessment and communication plan • HDI network alignment assessment outcomes communicated within the network
Additional guidelines	HDI network alignment assessment report should include • Executive summary • Assessment facilitator(s) and participants • Objectives, scope and approach to assessment • Assumptions and constraints • Assessment results for each capability with rationale • Conclusions arising from assessment • Lessons learned for next assessment cycle • Communication strategy

Organizational self-assessment

This guide intends to help a health information organization perform a self-assessment of its HDI governance and capabilities. It will help to identify and prioritize opportunities to improve policies, practices and artefacts within the organization and demonstrate progress in the organization's evolution.

A key step in the self-assessment process is the identification of clear objectives and scope with the project sponsor. In this step, the assessment team may want to consider the following guidelines to help achieve the desired outcomes:

- **Objective:** The team decides the overarching objectives of the project, a time frame for the target state and overall desired outcomes.
- **Time frame:** The team decides the time frame for the desired target state and desired outcomes. The time frame can be self-imposed, based on available funding or based on the time period of an overarching strategic plan for the organization. For example, an objective could be to enable artificial intelligence in the organization within 2 years, or to improve trust and reliability in organizational outputs by strengthening the organization's data foundation within 1 year.
- **Scope of the assessment:**
  - **HDI assets:** The team decides which HDI assets to include in the assessment in order to achieve the desired outcomes. For example, the organization may wish to focus on assets of highest significance to stakeholders.
  - **HDI capabilities:** The team decides which capabilities to include in the scope of the review. This will be based on the objectives and HDI data asset scope. Depending on the capacity of the organization and project team, a suitable starting place could be to focus on only core or core and foundational capabilities.
- **Expertise:** The team should have the level of expertise required to take on the assessment based on the objective and the scope of the assessment. The project lead should be fluent in HDI and also familiar with the organization.
- **Capability level assignment:** The team decides whether they are going to present their assessment of a given HDI capability level as an "average" or "worst case" across the HDI assets within scope. For example, if 1 asset in scope doesn't have a data dictionary defined, does it mean that the overall capability is "basic" (worst case)? Or if the majority of assets are catalogued and defined, then the overall capability could be "proficient" (average).
- **Formality level:** The team should decide how formal the process will be, given the objective. An informal process may be appropriate for an initial assessment to provide a general idea of the capability level and areas of immediate priority. A more formal process may be important if preparing for an audit or policy compliance review. Depending on the situation, some of the in-scope capabilities could be reviewed formally and others informally.

A template for capturing the information during the assessment is available in Appendix A. The information below provides a detailed example of the planning, execution and actioning phases of the assessment process.

Planning phase — example

Objective	To develop and seek approval for the HDI self-assessment project terms of reference and associated project plan, participants and resources
Input	• Sponsor (executive or director level) for HDI self-assessment • Project lead for HDI self-assessment • HDI network alignment assessment (if available) • Previous HDI self-assessment (if available) • Previous HDI target state roadmap (if available)

Process	1. Hold a meeting (sponsor and project lead) to determine HDI self-assessment project terms of reference covering
	  • Objectives of the HDI self-assessment project
	  • Scope of the assessment (organization units, HDI capabilities, data assets)
	  • Assumptions and constraints (e.g., depth of assessment, deadlines)
	  • Assessment facilitator(s) and participants
	  • Overall approach to assessment (e.g., workshop[s], 1:1 interviews)
	  • Report back and follow-ups
	2. Draft HDI self-assessment project terms of reference based on meeting outcomes.
	3. Review project terms of reference with sponsor.
	4. Prepare detailed project plan (work breakdown structure [WBS], timetable, participants, etc.).
	5. Seek approval of HDI self-assessment project plan by sponsor.

Output	• Approved HDI self-assessment project terms of reference • Approved HDI self-assessment project plan and budget • Confirmed HDI self-assessment facilitator(s) and participants
Additional guidelines	• Depth: Either as a "snapshot" assessment to get a general idea of capabilities or a detailed assessment to support an in-depth view across all assets and processes. In general, a snapshot is recommended for an initial assessment with a small group of knowledgeable stakeholders, which can then be used with a broader audience to challenge and finalize. • Participants: Identify the current/potential "owner(s)" of each of the HDI capabilities. They will have primary responsibility in assessing the current and target state of the HDI capabilities in the organization. Also be sure to have business participants who will help define the importance to the business of these HDI capabilities.

Execution phase — example

Objective	To perform the HDI self-assessment project plan in order to profile the organization's current and target levels of maturity and for each of the in-scope HDI capabilities and their importance to the organization
Input	• Approved HDI self-assessment project terms of reference, plan and associated budget • Confirmed HDI self-assessment facilitator(s) and participants • Organization's business and/or HDI operational plan • Organization chart, job descriptions for HDI-related positions

Process	1. Schedule workshop(s) and/or 1:1 interviews based on HDI self-assessment project plan.
	2. Conduct workshop(s) and/or interviews, using the HDI self-assessment template row by row or classification by classification, and determine:
	  • Business importance to the organization (minimal/none, useful, necessary, essential)
	  • Current capability level (none, basic, limited, capable, proficient, expert)
	  • Target capability level (none, basic, limited, capable, proficient, expert)
	  • Target time frame (generally 1 year; however may vary depending on strategic horizon)
	  • Notes/action items associated with the assessment of this HDI capability — primarily what actions would need to evolve to target state
	3. Consolidate action items resulting from the assessment session(s).
	4. Circulate draft assessment results and action items to workshop participants for additional evidence and/or corrections.
	5. Finalize HDI self-assessment results and action items and send to participants.

Output	• Validated HDI self-assessment • List of follow-up action items identified during the assessment to achieve target state
Additional guidelines	• Business and/or HDI operational plan: Can be used to assess importance for the organization for this HDI capability • Importance Level: Degree to which the organization depends on this HDI capability in order to fulfill its mandate, meet its obligations, execute its strategic priorities and manage its daily operation • Think of the story of the capability: How would the assessors describe the journey from current to target state? Or envision where you want to be and what needs to be done to get there.

Actioning phase — example

Objective	To address the action items identified during the HDI self-assessment's interviews/workshops, prepare the assessment report, potential roadmap for improvement of capabilities and recommendations for sponsor's approval, and communicate outcomes to organization
Input	• Completed HDI self-assessment template reviewed by participants • List of potential actions to advance data and information capabilities
Process	1. Summarize action items into tactical for immediate follow-up and strategic for prioritization. 2. Execute/delegate short-term action items. 3. Prioritize actions to advance capabilities by relevant criteria (e.g., largest impact for minimal cost, cultural ability to affect change). 4. Prepare proposed roadmap for senior management. 5. Prepare communication plan and associated materials. 6. Review HDI self-assessment report and communication plan/materials with sponsor. 7. Present HDI self-assessment report highlights, conclusions and recommendations to senior management for their approval. 8. Execute HDI self-assessment communication plan.
Output	• Follow-up completed on tactical action items from HDI capability current state assessment sessions • Approved HDI self-assessment, roadmap and communication plan • HDI self-assessment outcomes communicated within the organization
Additional guidelines	HDI self-assessment report should include • Executive summary • Assessment facilitator(s) and participants • Objectives, scope and approach to assessment • Assumptions and constraints • Assessment results for each capability with rationale • Action items and follow-ups • Conclusions arising from assessment • HDI capability roadmap • Lessons learned for next assessment cycle • Communication strategy

Appendix A: Assessment templates

This section contains templates to support health data and information (HDI) network alignment assessments and organizational self-assessments. The columns of the templates are based on the criteria below, which may be adjusted by the assessment team to reflect the specific context of their organization/network.

Alignment level (for network alignment assessment only)

The network alignment level for each capability can be designated as **standardized**, **harmonized**, **coordinated** or **autonomous** (see Table A1 below). The network alignment level is the requirement for synergy across a network of organizations to achieve common aims.

Table A1 Network alignment levels for capabilities

Alignment level	Description
Standardized	The capability is implemented the same across all members of the network.
Harmonized	The capability is implemented with a high degree of orchestration among members.
Coordinated	The network is a cohesive system, but the capability is implemented independently.
Autonomous	The capability is implemented fully independently.

Business importance of the HDI capability (for both assessments)

The importance of each HDI capability to the business can be ranked on a scale from **minimal/none** to **essential** (see Table A2). This ranking refers to the extent of impact each capability has on the fulfillment and the delivery of the organization's mandate, obligations, strategic priorities and daily operation.

Table A2 Scale of capability's importance to the business

Importance	Description
Minimal/none	No obvious need by the business for this HDI capability to be in place at this time.
Useful	Although there are workarounds, having this HDI capability improves the overall effectiveness/efficiency of the organization.
Necessary	A number of organization projects and/or processes depend on this capability to be in place in order to operate.
Essential	Having this HDI capability in place is linked to an obligation (e.g., for privacy protection) or is core to the organization's operation (e.g., organizational data assets).

HDI capability levels: Current and target (for organizational self-assessment only)

Each HDI capability level, for both current and target states for organizational self-assessment, is ranked on a scale from **none** to **leader**. The assigned level considers the degree of maturity and consistency that an organization has for a given HDI capability.

Table A3 provides generic descriptions of the capability levels as a guide for assessing the current/target level of a given HDI capability within an organization. (See Appendix B for details on core and foundational capabilities.) Specific descriptions for a given HDI capability are provided in the summaries (core and foundational capabilities in Appendix B; entire set of capabilities available on request). Note that "none" and "leader" are not included in the summaries, for readability. "None" implies that little or no work has been undertaken; "leader" implies being proficient in the capability and recognized as a leader by peers.

It may not be necessary for an organization to target the highest level for all capabilities in the long term, depending on its scope. Targets will provide focus for setting priorities and building work plans. Results from the self-assessment can be tracked and periodically reassessed to demonstrate progress within the organization.

Table A3 Capability levels and descriptions

Level	Description
None	Capability has not yet been considered in the organization at the enterprise level.
Basic	Capability has been considered and initial steps have been taken to implement it in the organization.
Limited	Capability is implemented in the organization using leading practices, although it is not coordinated or implemented consistently across assets or audiences.
Capable	Capability is coordinated and implemented consistently across a material portion of data and information assets or audiences.
Proficient	Capability is coordinated and implemented consistently across a substantive set of data and information assets or audiences. Efforts have been started to coordinate/harmonize with key partner organizations.
Leader	Organization is proficient and recognized by peers as a "leading practices" organization for this HDI capability.

Target timeline (for organizational self-assessment only)

The assessment team can capture the proposed timeline for an organization to reach the target level for each HDI capability. The target timeline ranges from **3 months** to **3 years**. If the target timeline is unknown, the assessor can choose **unknown**.

Notes/action items (for both assessments)

The assessment team can record items of note associated with a given HDI capability raised during the assessment. These may include rationale for assessment, actions required to improve from current to target state, accountability for capability (in particular for network assessments) and additional detail to articulate nuances or the overall capability story.

Network alignment assessment template

Subject area	Capability	Business importance				Alignment level				Notes/action items
		Minimal/none	Useful	Necessary	Essential	Standardized	Harmonized	Coordinated	Autonomous	
Strategy and governance	HDI roadmap	○	○	○	○	○	○	○	○	
	Strategic data governance model	○	○	○	○	○	○	○	○	
	Operational data governance model	○	○	○	○	○	○	○	○	
	HDI risk management	○	○	○	○	○	○	○	○	
	HDI project life cycle	○	○	○	○	○	○	○	○	
	HDI program management	○	○	○	○	○	○	○	○	
	HDI policies compliance and audit	○	○	○	○	○	○	○	○	
Policies and processes	HDI privacy policies and processes	○	○	○	○	○	○	○	○	
	HDI security policies and processes	○	○	○	○	○	○	○	○	
	HDI access and sharing policies and processes	○	○	○	○	○	○	○	○	
	Data life cycle policies and processes	○	○	○	○	○	○	○	○	
	Data standards policies and processes	○	○	○	○	○	○	○	○	
	HDI quality policies and processes	○	○	○	○	○	○	○	○	
	Data anonymization policies and processes	○	○	○	○	○	○	○	○	
	HDI-related intellectual property policies and processes	○	○	○	○	○	○	○	○	
	Data change management policies and processes	○	○	○	○	○	○	○	○	
	Vendor-related HDI policies and processes	○	○	○	○	○	○	○	○	
	Indigenous populations data policies and processes	○	○	○	○	○	○	○	○	

Subject area	Capability	Business importance				Alignment level				Notes/action items
		Minimal/none	Useful	Necessary	Essential	Standardized	Harmonized	Coordinated	Autonomous	
Assets and standards	Enterprise HDI assets catalogue and content	◯	◯	◯	◯	◯	◯	◯	◯	
	Enterprise data standards	◯	◯	◯	◯	◯	◯	◯	◯	
	Enterprise data model	◯	◯	◯	◯	◯	◯	◯	◯	
	Enterprise HDI insights practices	◯	◯	◯	◯	◯	◯	◯	◯	
	Enterprise advanced analytics practices	◯	◯	◯	◯	◯	◯	◯	◯	
People and knowledge	HDI stakeholder engagement plan	◯	◯	◯	◯	◯	◯	◯	◯	
	HDI internal communication plan	◯	◯	◯	◯	◯	◯	◯	◯	
	HDI workforce plan	◯	◯	◯	◯	◯	◯	◯	◯	
	HDI fluency program	◯	◯	◯	◯	◯	◯	◯	◯	
	HDI capability improvement program	◯	◯	◯	◯	◯	◯	◯	◯	

Organizational self-assessment template

Subject area	Capability	Business importance				Current level						Target level						Target timeline						Notes/action items
		Minimal/none	Useful	Necessary	Essential	None	Basic	Limited	Capable	Proficient	Leader	None	Basic	Limited	Capable	Proficient	Leader	3 months	6 months	1 year	2 years	3 years	Unknown	
Strategy and governance	HDI roadmap	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	Strategic data governance model	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	Operational data governance model	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	HDI risk management	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	HDI project life cycle	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	HDI program management	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	HDI policies compliance and audit	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
Policies and processes	HDI privacy policies and processes	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	HDI security policies and processes	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	HDI access and sharing policies and processes	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	Data life cycle policies and processes	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	Data standards policies and processes	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

Subject area	Capability	Business importance				Current level						Target level						Target timeline						Notes/action items
		Minimal/none	Useful	Necessary	Essential	None	Basic	Limited	Capable	Proficient	Leader	None	Basic	Limited	Capable	Proficient	Leader	3 months	6 months	1 year	2 years	3 years	Unknown	
Policies and processes (continued)	HDI quality policies and processes	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	
	Data anonymization policies and processes	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	
	HDI-related intellectual property policies and processes	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	
	Data change management policies and processes	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	
	Vendor-related HDI policies and processes	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	
	Indigenous populations data policies and processes	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	
Assets and standards	Enterprise HDI assets catalogue and content	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	
	Enterprise data standards	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	
	Enterprise data model	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	
	Enterprise HDI insights practices	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	
	Enterprise advanced analytics practices	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	

Subject area	Capability	Business importance				Current level						Target level						Target timeline						Notes/action items
		Minimal/none	Useful	Necessary	Essential	None	Basic	Limited	Capable	Proficient	Leader	None	Basic	Limited	Capable	Proficient	Leader	3 months	6 months	1 year	2 years	3 years	Unknown	
People and knowledge	HDI stakeholder engagement plan	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	
	HDI internal communication plan	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	
	HDI workforce plan	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	
	HDI fluency program	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	
	HDI capability improvement program	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	

Appendix B: Health data and information (HDI) governance and capability summaries

Core capabilities

In the following tables, the ID columns refer to the subject areas: strategy and governance (SG), policies and processes (PP), assets and standards (AS) and people and knowledge (PK).

Policies and processes (PP) 1: HDI privacy policies and processes

Capability description — PP1

ID	Capability	Definition	Key practices	Artefacts
PP1	HDI privacy policies and processes	• Principles, frameworks, policies and processes for compliance with legal and statutory privacy rules. • Includes clear understanding of legislative authority and intent, governance and accountability structures, consent management, compliance, training and incident management (identification, notification and remediation). • Also aligns with social licence to collect, store, distribute and use HDI. • Note that HDI privacy policies and processes, HDI security policies and processes and data risk management (DRM) are key elements of HDI capability framework.	• HDI privacy framework and guidelines • Privacy impact assessment guidelines • Privacy incident management guidelines	• HDI privacy policy • Consent management policy • Data commercialization policy • Privacy impact assessment • Privacy incident log

Strategic and operational questions to ask — PP1

Strategic questions to ask	Operational questions to ask
• How are risks managed to achieve both protection (privacy/security) of sensitive health data and enabling access to create impactful insights?	• How are HDI privacy issues identified, communicated, escalated and resolved? • What continuous learning cycles are in place to improve our program?

Capability level descriptions — PP1

Basic	Limited	Capable	Proficient
• HDI privacy policy is formally in place. • Although policy is in place, non-existent or inconsistent processes often require heroic efforts to comply with the policy.	• Key HDI privacy policy supporting processes are defined and used for organizational data repositories and data flows. • Privacy incidents/breaches are investigated, but inconsistently. • Privacy impact assessments are performed, but inconsistently.	• HDI privacy framework has been defined and provides overall direction and guidance on implementing the policy. • Formal processes for the management of personal health information data incidents/ breaches are in place. • Privacy-related processes cover the full life cycle from data sources to data users, sharing, use and archiving. • Data sharing agreements contain provisions for privacy. • HDI privacy audit process is in place.	• HDI privacy policy and processes are coordinated and implemented consistently in accordance with the HDI privacy framework. • A proactive approach to privacy is a core component of the HDI privacy framework (e.g., privacy by design). • Efforts have been started to coordinate/ harmonize HDI privacy framework with key partner organizations associated with the related data sets and data flows. • Compliance to HDI privacy policy and processes is monitored continuously and automated to a large extent.
	• Direct users of sensitive data are familiar with the HDI privacy policy and processes.	• All those who must know about HDI privacy policy and processes are properly informed.	• Data sharing agreements are monitored for compliance with privacy policy. • HDI privacy audit repository and analytics are in place.
	• HDI privacy fluency is limited to those directly involved (e.g., privacy impact assessment, privacy review).	• HDI privacy framework training is in place and available across the organization.	• HDI privacy framework training is in place across the organization attuned to management and staff needs.

Policies and processes (PP) 2: HDI security policies and processes

Capability description — PP2

ID	Capability	Definition	Key practices	Artefacts
PP2	HDI security policies and processes	• Principles, frameworks, policies and processes for security of technology platforms and data flows, including accountability and requirements. Includes data vulnerability (e.g., hackability) and threat risk assessments. • May include security patch management, change of default passwords, periodic penetration tests, audits and remediation. • May span physical and technical security as appropriate. • Note that HDI privacy policies and processes, HDI security policies and processes and DRM are key elements of HDI capability framework.	• HDI security framework and guidelines • Data threat risk assessment guidelines • Data vulnerability assessment guidelines • Data security incident management guidelines	• Data security policy • Data security accountability model • Data vulnerability assessment • Data threat risk assessment • Security incident log

Strategic and operational questions to ask — PP2

Strategic questions to ask	Operational questions to ask
• How are risks managed to achieve both protection (privacy/security) of sensitive health data and enabling access to create impactful insights?	• How are HDI security issues identified, communicated, escalated and resolved? • What continuous learning cycles are in place to improve our program?

Capability level descriptions — PP2

Basic	Limited	Capable	Proficient
• HDI security policy is formally in place. • Although policy is in place, non-existent or inconsistent processes often require heroic efforts to comply with the policy.	• Key HDI security policy supporting processes are defined and used to secure organizational data repositories and associated data flows. • Data security violations are investigated, but inconsistently. • Threat risk assessments are performed, but inconsistently.	• HDI security framework has been defined and provides overall direction and guidance on implementing the policy. • HDI security processes cover the full life cycle from data sources to data users, sharing, use and archiving. • Formal data security breach/ incident management processes are in place. • HDI security audit and periodic penetration testing processes are in place.	• HDI security policy and processes are coordinated and implemented consistently in accordance with the HDI security framework. • A proactive approach to security is a core component of the HDI security framework. • Compliance to HDI security policy and processes is monitored continuously and automated to a large extent. • Efforts have been started to coordinate/ harmonize HDI security framework with key partner organizations associated with the related data sets and data flows. • HDI security audit repository and associated analytics are in place.
	• Direct users of sensitive data are familiar with the HDI security policy and processes. • HDI security policy and processes fluency is limited to those directly involved (e.g., threat risk assessment, security review).	• All those who must know about HDI security policy and processes are properly informed. • HDI security framework training is in place and available across the organization.	• HDI security framework training is in place across the organization attuned to management and staff needs.

Policies and processes (PP) 3: HDI access and sharing policies and processes

Capability description — PP3

ID	Capability	Definition	Key practices	Artefacts
PP3	HDI access and sharing policies and processes	• Principles, frameworks, policies and processes for access to data and information. • Focuses typically on external data access, but could also cover internal access when required by privacy policy. • Access could be passive (e.g., open data) or active (fulfilling data request). Includes data sharing and access purposes (e.g., care, health system use, for-profit, monetization) across various types of organizations (e.g., public sector, researchers, innovators, private sector, open data) aligned with mandate and social licence. • May include processes for third-party queries. Includes consideration of Indigenous data that the organization holds. • Note that data access and sharing (DAS) policies and processes must comply with privacy, security and DRM policies.	• DAS framework, guidelines and pathways • Data request management guidelines • Data sharing agreement guidelines • FOI/media data request response guidelines	• DAS policy • Data sharing agreements (including bilateral and multi-party)

Strategic and operational questions to ask — PP3

Strategic questions to ask	Operational questions to ask
• How are risks managed to achieve both protection (privacy/security) of sensitive health data and enabling access to create impactful insights? • How well are we meeting our information sharing commitments (timeliness, quality)? How can we meet these commitments without inappropriately impacting privacy and security?	• How do we consistently ensure that the appropriate authorities, consent and social licence are in place for the collection, use and disclosure of the data for intended purposes? • What continuous learning cycles are in place to improve our program?

Capability level descriptions — PP3

Basic	Limited	Capable	Proficient
• DAS policy is formally in place. • Although policy is in place, non-existent or inconsistent processes often require heroic efforts to comply with the policy.	• Key DAS processes are defined and used for organizational data repositories and associated data flows. • Data access varies with data sets and is implemented inconsistently. • Data sharing agreements, when used, are implemented inconsistently.	• DAS framework has been defined to implement the policy and provides overall direction and guidance on managing DAS holistically. • A comprehensive set of DAS processes and associated templates and guidelines is in place based on the framework.	• DAS policy and processes are coordinated and implemented consistently in accordance with the DAS framework. • Efforts have been started to coordinate/harmonize DAS processes, technology and standards with key partner organizations.
	• Internal custodians of organizational data sets are familiar with the DAS policies and processes.	• Formal data access violation management process is in place. • Data access audit processes are in place. • DAS framework is used on all organizational/sensitive data sets and data flows.	• Compliance to DAS policy and processes is monitored continuously and automated to a large extent. • DAS audit repository and analytics are in place.
	• DAS fluency is limited to those directly involved (e.g., organizational data sets' internal custodians).	• Internal custodians of organizational data assets are familiar with the DAS framework.	• DAS framework training is in place across the organization attuned to management and staff needs.

Assets and standards (AS) 1: Enterprise HDI assets catalogue and content

Capability description — AS1

ID	Capability	Definition	Key practices	Artefacts
AS1	Enterprise HDI assets catalogue and content	• HDI assets under the custodianship of the organization including the inventory and data lineage of these data assets, as well as records of incoming/outgoing data flows. • Covers both structured and unstructured data assets such as databases, records and documents, as well as reference, master and transactional data. • Explicit classification of these data sets (or elements thereof) for confidentiality and other controls, may also be included. • Note that the definition of the data elements in these data assets, as well as the data/record classification framework are provided in the enterprise data model capability (AS3).	• Enterprise data assets (EDA) management guidelines	• EDA operations guide • Data assets inventory • Linked data assets inventory • Reference data catalogue • Data lineage documentation (asset level) • Data lineage documentation (critical element level)

Strategic and operational questions to ask — AS1

Strategic questions to ask	Operational questions to ask
• How do we adopt and adapt to emerging trends in data and insights? How do we do this in alignment with our scope, strategy and mandate?	• How are the data assets organized in the organization? Is there an easy-to-use organization system, such as a catalogue, across the assets? • What are gaps in our data assets? How do we gain access to close those gaps (virtually or physically)?

Capability level descriptions — AS1

Basic	Limited	Capable	Proficient
• EDA management is emerging as an overarching practice for the organization's data assets.	• Key EDA management practices (e.g., EDA inventory, data lineage, reference data catalogue) are in place.	• EDA management is a formalized practice with defined processes, templates and guidelines.	• EDA management is coordinated and implemented consistently across the organization.
• EDA practices are non-existent, and the data assets are managed inconsistently, often requiring heroic efforts to get it done.	• Contents of data assets inventory, data lineage and reference data catalogue are mostly limited to those of organizational scope.	• EDA artefacts (e.g., data assets inventory, data lineage and reference data catalogue, data assets technical and operation documentation) covering a material portion of the organization data are in place, and are used on all associated programs and projects.	• Efforts have been started to coordinate/ harmonize EDA management with key partner organizations associated with the related data sets and data flows.
	• EDA management practices fluency is limited to organization units directly involved in these activities.	• EDA management practices fluency is available across the organization attuned to staff needs.	• EDA management training is in place across the organization attuned to management and staff needs.

People and knowledge (PK) 1: HDI stakeholder engagement plan

Capability description — PK1

ID	Capability	Definition	Key practices	Artefacts
PK1	HDI stakeholder engagement plan	• Approach, effort and timetable for engaging, informing and sharing with stakeholders, on the contents and status of the organization's HDI roadmap and governance, policies and processes, resources and standards, and to incorporate their perspectives in the use of HDI, including beliefs, requirements and priorities. • Stakeholders include patients, the public, providers, health system planners and administrators, Indigenous and marginalized populations. • May consider use of citizen panels or social media channels. • Requires stakeholder engagement approach to be transparent, to use plain language and to actively acknowledge and incorporate feedback as appropriate.	• HDI stakeholder communication, facilitation and engagement planning guidelines • HDI business relationship management guidelines	• HDI stakeholder engagement plan

Strategic and operational questions to ask — PK1

Strategic questions to ask	Operational questions to ask
• Are we trusted by key stakeholders (e.g., patients) to collect, use and disclose personal health information? Do we have corresponding communication and engagement in place?	• What are stakeholder communication and engagement approaches that address key operational and strategic risks (to build trust) and increase alignment to key organizational, business, IT and HDI objectives? • How do we engage with key stakeholders (based on influence, impact and interest) consistently and effectively?

Capability level descriptions — PK1

Basic	Limited	Capable	Proficient
• The organization recognizes that a stakeholder engagement plan on HDI resources and capabilities is required.	• HDI stakeholder engagement plan is in place related to core HDI resources and capabilities core and foundational to the organization.	• HDI stakeholder engagement plan is in place related to most HDI resources and capabilities core, foundational and supplemental to the organization.	• HDI stakeholder engagement plan is in place with key partner organizations on all relevant HDI resources and HDI core, foundational, supplemental and enabling capabilities.
• HDI-related stakeholder engagement plan is non-existent or inconsistent, often requiring heroic efforts to get it done.	• HDI stakeholder engagement is limited to organization units directly involved in the core HDI resources and capabilities.	• HDI stakeholder engagement is also used for introducing enabling HDI capabilities to stakeholders.	• Stakeholders are involved, where appropriate, in decisions related to HDI activities.

Foundational capabilities

Strategy and governance (SG) 1: HDI roadmap

Capability description — SG1

ID	Capability	Definition	Key practices	Artefacts
SG1	HDI roadmap	• Statement of vision, scope, principles and direction for the organization to realize strategic value from data and information. • Also includes strategic measures and targets (including time frames) to assess and report on progress against strategic plan, realization of benefits and compliance with agreed-upon decisions. • Considers cultural capacity of the organization to adapt and adopt new approaches for data and information management.	• HDI strategic planning methodology • Environmental scanning	• HDI vision and guiding principles • HDI roadmap • HDI roadmap legislative authority review • HDI current and target state • HDI roadmap performance metrics • Ecosystem map

Strategic and operational questions to ask — SG1

Strategic questions to ask	Operational questions to ask
• For our strategy, how can trusted data and information be better used to help achieve our aims? What's in the way and how are those challenges addressed? • How are cohesive evidence-based decisions made from the front line (bedside) to the boardroom and back?	• How do our short- and long-term corporate priorities align with an HDI roadmap? • Is there sufficient funding to develop and improve (foundational) HDI capabilities?

Capability level descriptions — SG1

Basic	Limited	Capable	Proficient
• HDI roadmap is a component of the corporate, business and/or IT strategy.	• An HDI roadmap exists as a separate document with explicit linkages to the corporate, business and IT strategies.	• Focus of HDI roadmap is extended to cover both the enablement of core corporate/business/IT strategic initiatives and HDI-specific initiatives aimed at enabling an integrated insight-driven organization.	• Focus of HDI roadmap expands beyond the organization to include strategic alignment with its key partner organizations.
• Some strategic initiatives of the corporate, business and/or IT strategy are actionable as data/information initiatives or projects with a large data/information focus (e.g.,client/providerregistries, clinical repositories).	• Focus of HDI roadmap is limited to the enablement of core corporate/ business/IT strategic initiatives, creating or perpetuating siloes. • The HDI roadmap is defined and managed within the corporate/ business/IT strategy governance.	• The HDI roadmap implementation and governance are distinct from, but strongly linked to, both their corporate, business and IT counterparts.	• Progress scorecard is in place to assess and report on progress against the HDI roadmap including realization of benefits, tracking of progress, timelines and costs, and compliance with agreed-upon decisions. • HDI roadmap also addresses the HDI capability and capacity resource requirements of the organization to meet its strategic commitments.

Strategy and governance (SG) 2: Strategic HDI governance model

Capability description — SG2

ID	Capability	Definition	Key practices	Artefacts
SG2	Strategic HDI governance model	• Structure of HDI governance, including internal and external stakeholders, for strategic direction, oversight, escalation and decision-making to ensure alignment with overall principles and HDI roadmap. • Oversight ensures alignment with the business's strategic governance, as well as its IT and digital programs, to collaborate on areas of common interest (e.g., IT data policies, architecture, identity management). • Also includes progress monitoring against roadmap and risk exposure. Considers opportunities to reuse existing data assets or capabilities internally and leverage those of trusted partners.	• HDI strategic governance development methodology	• HDI strategic governance accountability model/matrix • HDI strategic governance bodies terms of reference • HDI strategic governance secretariat terms of reference

Strategic and operational questions to ask — SG2

Strategic questions to ask	Operational questions to ask
• How is the corporate strategy aligned to the business, IT, HDI and other strategies and roadmaps? • How does our corporate strategy align with peer organizations to minimize redundancy and unnecessary competition with respect to data and insights?	• How do business, IT, HDI and other strategies and roadmaps align with the corporate strategy? • How are grey areas in mandate between peer organizations resolved to minimize redundancy and unnecessary competition? • Do members of strategic governance bodies have sufficient and broad understanding of the HDI roadmap and related corporate/business/IT objectives to provide the necessary leadership, guidance and oversight?

Capability level descriptions — SG2

Basic	Limited	Capable	Proficient
• HDI strategic governance is articulated, but not as a separate governance.	• HDI strategic governance body exists as an advisory group to the corporate, business and/or IT strategic governance bodies, providing advice and recommendations, but with no formal oversight responsibility.	• HDI strategic governance body is a peer to business and IT strategic governance bodies, all reporting to the corporate strategic governance body. • HDI roadmap governance body has oversight responsibilities on the HDI aspects of core corporate/business/IT strategic initiatives, as well as HDI-specific initiatives aimed at enabling an insight-driven organization.	• HDI strategic governance is supported by a formal secretariat that supports its activities, as well as monitoring and reporting back to the business strategic governance body on progress against the HDI roadmap, including key deliverables, realization of benefits, tracking of timelines and costs, and compliance with agreed-upon decisions. • HDI strategic governance structure expands beyond the organization to include key partner organizations.
• HDI strategic governance is subsumed by the corporate, business and/or IT strategy governance.	• Focus of HDI strategic governance is therefore limited to supporting the core corporate/business/IT strategic initiatives specified by their overarching governance body.	• The HDI strategic governance is accountable for the implementation of the approved HDI roadmap and associated strategic initiatives.	• HDI strategic governance body is responsible for ensuring that the organization's HDI capability and capacity are in place to meet its strategic commitments.

Strategy and governance (SG) 3: Operational HDI governance model

Capability description — SG3

ID	Capability	Definition	Key practices	Artefacts
SG3	Operational HDI governance model	• Accountabilities, roles and responsibilities associated with HDI decision-making authorities, operational activities, education, training and relationship with governance for IT and digital programs to collaborate on areas of common interest (e.g., data security, data flows, analytic tool sets, user experience). • Where practical, should include list of organizational positions associated with roles, updated as required (e.g., chief data officer, data steward, data analyst). • May include practices for business continuity and disaster recovery tests and use of mobile, digital and email technologies.	• HDI operational governance development methodology	• HDI operational governance accountability model/matrix • HDI operational governance bodies terms of reference • HDI position descriptions (e.g., data steward, data custodian) • HDI operational funding model

Strategic and operational questions to ask — SG3

Strategic questions to ask	Operational questions to ask
• Not applicable	• How well is the HDI operational governance aligned with and coupled to its business and IT counterparts? And its strategic counterparts? • Where are the grey/overlapping areas between HDI, business and IT? How are these identified, escalated and resolved? • Is there sufficient funding to sustain (foundational) HDI capabilities?

Capability level descriptions — SG3

Basic	Limited	Capable	Proficient
• HDI operational governance, including accountabilities, roles and responsibilities, is articulated, but not as a separate governance structure.	• HDI operational governance is partially in place, with organization units responsible for specific HDI assets (e.g., operational databases) and HDI capabilities (e.g., privacy policy, data sharing agreements, data standards).	• HDI operational organization units are in place, each with a well-defined mandate, and responsible for a number of HDI assets and/or capabilities. • HDI operational units also have specific responsibilities for addressing HDI aspects of core business/IT operational initiatives, as well as HDI-specific initiatives aimed at enabling an insight-driven organization.	• HDI operational organization units receive guidance from and periodically report back to the HDI strategic governance body on progress against the HDI roadmap, including deliverables, realization of benefits, tracking of timelines and costs, and compliance with agreed-upon decisions. • HDI operational organization units have responsibilities that reach beyond the organization to include key partner organizations (e.g., responsibility for health data standards across ministries and agencies).
• HDI operational governance is subsumed within the existing business and/or IT operational governance model.	• Focus of HDI operational governance is limited to key HDI assets and capabilities critical to the core business/IT operational initiatives.	• These HDI operational organization units are collectively accountable for the implementation of the approved HDI roadmap and associated strategic initiatives.	• HDI operational organization units are also responsible for the HDI workforce capability and capacity required to meet the strategic and operational needs of the organization.

Strategy and governance (SG) 4: HDI risk management

Capability description — SG4

ID	Capability	Definition	Key practices	Artefacts
SG4	HDI risk management	• Framework defining the risk tolerance level of the organization, processes to assess individual risks and decision rights to act on the analysis. Includes consideration of negative risks (e.g., harms resulting from breaches) and positive risks (e.g., failure to realize benefits from sharing HDI), mitigation strategies to maintain those risks within the organization's tolerance level and consideration of ethics (e.g., intended use and unintended consequences). • Covers both HDI security risks (i.e., protection against deliberate threats), HDI safety risks (protection against unintended threats — e.g., loss of HDI from lack of backups, unsupported file formats, encrypted files with lost password). • It also explicitly measures the likelihood and impact of pre- and post-mitigation.	• DRM framework and guidelines	• HDI code of ethics (organization, customers, AI) • Data risk assessments, mitigations and logs • Data risk tolerance statement

Strategic and operational questions to ask — SG4

Strategic questions to ask	Operational questions to ask
• How can using data and information allow us to prevent "fires" (versus fighting them)? • What is the risk to our long-term outcomes of not better using our data and information?	• What is our current exposure to negative risks (e.g., harms resulting from breaches) and what mitigation strategy do we have in place? • What is our exposure to positive risks (e.g., failure to realize benefits from sharing data in a timely manner)? Could we minimize those without increasing the negative risks beyond our risk tolerance?

Capability level descriptions — SG4

Basic	Limited	Capable	Proficient
• An overarching framework for DRM covering data privacy, security, safety, etc., has been defined at a high level. • Links to relevant policies and guidelines are in place where they exist.	• A formal policy is in place to take a holistic approach to DRM. • Data risk assessment is performed by risk domain (privacy, security, safety, etc.) and mostly for more sensitive data assets. • Accountability for DRM oversight is inconsistent, implied or undefined. • Level of data risk tolerance of the organization is not expressed explicitly, and no metrics are in place to rate the data risk level of the organization's data assets.	• DRM framework has been defined to implement the policy and provide overall direction and guidance in managing risks associated with the organization's data sets and data flows. • A formal, integrated data risk assessment and management process and templates covering the various angles of data risk (privacy, security, safety, etc.) is in place. • Accountability for DRM oversight is consistent and explicit. • Level of data risk tolerance of the organization is expressed explicitly, and standardized metrics are in place to track the data risk level of the organization's core and sensitive data assets.	• DRM policy and processes are coordinated and implemented consistently in accordance with the DRM framework. • DRM is managed proactively as an intrinsic part of the data project life cycle. • Where relevant, efforts have been started to coordinate/harmonize the DRM framework with key partner organizations. • Compliance to DRM policy and processes for privacy, security, etc., is monitored and automated to a large extent. • Audit repository and analytics are in place to support DRM.
	• DRM fluency is limited to those directly involved in the process.	• All those who must know about the DRM framework are properly informed.	• DRM framework training is in place across the organization attuned to management and staff needs.

Assets and standards (AS) 2: Enterprise data standards

Capability description — AS2

ID	Capability	Definition	Key practices	Artefacts
AS2	Enterprise data standards (EDS)	• Suite of data standards that provides meaning and structure of the organization's data assets contents (data content standards), simplifies the exchange of data between systems (data exchange standards) and enables meaningful interaction of data with business processes. • Initial focus may be on minimum data sets — key data elements for analysis. • Includes the use of widely recognized data content standards (e.g., ICD-10, SNOMED-CT) and data exchange standards (e.g., HL7 FHIR). • Also includes specifications for implementation of these standards for the transmission, translation and transformation, when moving data between platforms. • Includes consideration of natural language processing and transformation between data standards.	• EDS management guidelines	• Data content standards and associated specifications • Data exchange standards and associated specifications

Strategic and operational questions to ask — AS2

Strategic questions to ask	Operational questions to ask
• Not applicable	• How do we use data standards as an enabler to share and integrate data, both internally and with our stakeholders? • How do we ensure that standards that we administer continue to be fit-for-purpose and value-for-money?

Capability level descriptions — AS2

Basic	Limited	Capable	Proficient
• EDS management is emerging as an overarching practice of the organization's data standards and associated specifications.	• Key EDS practices (e.g., data standards and specifications inventory, mapping to data flows/sets) and associated guidelines are in place.	• EDS has a formalized practice with defined processes and associated templates and guidelines to guide the production of EDS artefacts.	• EDS are managed and implemented consistently across the organization's data sets and data flows.
• EDS practices are non-existent or inconsistent, often requiring heroic efforts to get it done.	• Contents of data standards and specifications inventory, and mapping to data flows/sets, are mostly limited to those of corporate scope.	• EDS artefacts (e.g., data standards and specifications inventory, mapping to data flows/sets, data standards and specifications assessments) rule a material portion of the organization's data sets/flows in place and are used on all associated programs and projects.	• Efforts have been started to coordinate/ harmonize the EDS with key partner organizations associated with the related data sets and data flows.
	• EDS management practices fluency is limited to organization units directly involved in these activities.	• EDS training is in place across the organization attuned to staff needs.	• EDS training is in place across the organization attuned to management and staff needs.

Assets and standards (AS) 3: Enterprise data model

Capability description — AS3

ID	Capability	Definition	Key practices	Artefacts
AS3	Enterprise data model (EDM)	• Enterprise-level conceptual, logical and physical models of the health data assets managed by the enterprise, providing a common, consistent view of data across the enterprise and of their interrelationships. • Includes diagrams (e.g., entity/relationship diagrams, class diagrams), business data glossary and technical data dictionaries, as well as classification frameworks for data sets and electronic records (e.g., related to confidentiality).	• Enterprise information architecture framework and guidelines • Enterprise data modelling guidelines • Master data management framework and guidelines • Reference data management framework and guidelines • Electronic record classification framework and guidelines	• Enterprise information architecture • Conceptual data model • Logical data model • Physical data models • Business data glossary • Technical data dictionaries • Metadata and reference data dictionaries

Strategic and operational questions to ask — AS3

Strategic questions to ask	Operational questions to ask
• Not applicable	• How do we use the EDM to enable a sustainable increase in timeliness of quality linked data to deliver our corporate, business and IT objectives?

Capability level descriptions — AS3

Basic	Limited	Capable	Proficient
• Data modelling is emerging as a practice with a program or project perspective. • Data models (conceptual, logical and/or physical) may be generated within the context of specific information system or data analytics projects, not enterprise level.	• Key data modelling practices (e.g., related to data modelling standards, methods and repositories, data/data set classification schemes) and associated guidelines are in place. • Technical data dictionaries are in place for critical data assets.	• EDM is part of a formal enterprise architecture framework covering business, information, application, technology and security architectures.	• EDM is coordinated and implemented consistently across the organization in accordance with the enterprise architecture (EA) framework.
• Data models are often non-existent, incomplete or out of date, often requiring reverse engineering from the data assets.	• An overarching EDM (conceptual, logical and physical) is slowly emerging from consolidating the data models, mostly those of corporate scope critical to the organization.	• An EDM covering a material portion of the organization's data is in place and used on associated programs and projects.	• Efforts have been started to coordinate/ harmonize the EDM with key partner organizations associated with the related data sets and data flows.
	• Data modelling practices fluency is limited to organization units directly involved in these activities.	• EDM practices training is being coordinated for all those directly involved in these activities.	• EDM training is in place across the organization attuned to management and staff needs.

Assets and standards (AS) 4: Enterprise HDI insights practices

Capability description — AS4

ID	Capability	Definition	Key practices	Artefacts
AS4	Enterprise HDI insights practices	• Health data analytics assets of the organization (e.g., analytics platforms, data warehouses), as well as the suite of analytics practices in place to provide trustworthy decision support, business intelligence (including data visualization). • Also includes the generation of indicators, metrics, algorithms and reports as required by the organization. • Incorporates considerations for ethics in the interpretability, bias and impact of generated insights. • Note that enterprise HDI insights must comply with privacy, security and DRM policies.	• Enterprise data analytics framework and guidelines • Analytics preparation guidelines • Data visualization guidelines • Analytics release guidelines	• Indicator inventory • Algorithms inventory

Strategic and operational questions to ask — AS4

Strategic questions to ask	Operational questions to ask
• How do we adopt and adapt to emerging trends in insights in alignment with our scope, strategy and mandate?	• How do we manage the total cost/benefit of maintaining and developing insights? • What are gaps in our analytic capability to achieve our mandate? How do we gain access to close those gaps (virtually or physically)? • How do we facilitate creation of insights for our organization through improved self-service based on EDA? How do we extend this appropriately to partners seeking access?

Capability level descriptions — AS4

Basic	Limited	Capable	Proficient
• The organization recognizes that insights from data analytics are essential to the organization and should be managed at the enterprise level.	• Key data analytics practices are in place.	• An enterprise data insights (EDI) framework is in place integrating enterprise-level data analytics methods and covering the full analytics life cycle (requirements, collection, preparation, integration, analysis, visualization/ reporting, insights).	• Enterprise data analytics activities are coordinated and implemented consistently across the organization in accordance with the EDI framework.
• Data analytics practices are non-existent or performed inconsistently, often requiring heroic efforts to get it done.	• Data analytics activities are mostly limited to data from core corporate data sets.	• EDI artefacts (e.g., study frameworks, linked analytics data sets, algorithms, data visualization, reports, indicators) are being generated and cover a material portion of the organization data, and are used on all associated programs and projects.	• Efforts have been started to coordinate/harmonize EDI with key partner organizations associated with and/or impacted by the enterprise data analytics activities.
	• Data analytics fluency is limited to organization units directly involved in these activities.	• EDI training is in place across the organization attuned to staff needs.	• EDI training is in place across the organization attuned to management and staff needs.

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