Centers for Disease Control & Prevention (CDC)

Public Health System Inventory Tool

User Guide

Version 4.0

12/05/2022

VERSION HISTORY

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason

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INTRODUCTION

Purpose of the Public Health System Inventory Tool

The Public Health System Inventory Tool will guide jurisdictions through documenting their internal IT systems. The expectation is that a staff member with knowledge of the technical landscape within the jurisdiction's bureau will use this as another instrument towards completing the Data Modernization Initiative (DMI) assessments to a reasonable extent.

Steps to Complete the Public Health System Inventory Tool

This tool is designed to gather information about any of the IT systems in your location. Although completing the Public Health System Inventory Tool is not required, it highly recommended that it be used, as it will guide you through documenting all aspects of your technical environment. You will find that the more information you provide, the more useful this tool will be towards a thorough DMI assessment.

Here are some key points about using the Public Health System Inventory Tool:

- To open and run the inventory tool, please use Excel (xlsx or xls).
- The Public Health System Inventory Tool covers information for a selected IT system. Please fill out a separate version for each IT system in use in your jurisdiction.
- Respondents can add or delete questions according to the specific configuration of each system within your office.
- Each section of the Public Health System Inventory Tool is described in this user guide. However, not every question within each section is listed. You will find additional detail only for those questions that needed some additional clarification.
- Data Types found in this tool.
    - Text Box: An area within a form that accepts input of any alphanumeric characters. Any limitations of the number of characters will be specified with the space where text is being typed.
    - Checkbox: User should select option(s) from the list presented. Can be single-select or multi-select.
    - Drop Down: Indicated by a downward facing arrow. When selected a list of allowable options will be presented. Only one option can be selected.
- The difference between a system and a tool
    - Systems help the CDC function properly and keep the business operations running smoothly. Systems are the core element that users often look for and expect core functionality. Often, these systems reside within different departments or function groups like marketing, customer service, technology, finance, and other business operations. *(Refers to section: Operation and Maintenance, question #15)*
    - Tools are the parts that are needed in order to implement the process within the system. The tools include but are not limited to software, apps, websites, platforms, equipment. *(Refers to section: Operation and Maintenance, question #16)*

1. MAIN SECTION

This section is intended to capture the name of the jurisdiction for which this tool is being completed, and the individual IT system(s) being assessed in this inventory tool.

2. ADMINISTRATIVE

ADMINISTRATIVE CONTACTS

This section in intended to capture the contact information for the jurisdiction Bureau, Division, the primary Point of Contact, and the alternate Point of Contact." The System Owner is identified as the Data Stewart."

TECHNICAL POINT OF CONTACT

This section is intended to capture the contact information for the technical Point of Contact for the individual IT system being assessed in this inventory tool. This could be your Chief Technology Officer (CTO), Subject Mater Expert (SME) or a system architect. Include the contact information for any alternate Point of Contact. "The Technical Point of contact is identified as the Data SME"

FUNDING OVERVIEW

This section captures a high-level overview of the status of the funding for maintenance of this system. Please provide the details of the amount funded and the source of funding. Multiple selections can be made for the source. If "Other" is selected as a source, please specify the details in the space provided.

3. OPERATIONS AND MAINTENANCE

Status	Description
Fully Operational and Implemented	The system has been implemented with all the required features and functionalities and is 100% operational. System is enhanced and maintained on a routine basis.
Partially Operational and Implemented	The system is currently operational and has been implemented with some features or for specific conditions. The jurisdiction is working on adding the remaining functionalities, implementing with additional conditions, or running in parallel while a new, more modern system is being implemented
Under Development, Not Yet Operational	The system has been approved and is under development by the jurisdiction.

Planned for Future Development	An evaluation has been done and a system has been proposed, based on the jurisdiction's initiative.
Scheduled for Sunset/End of Life	The system has been identified as one that cannot be upgraded or enhanced with new functionalities. Include the estimated date for end of life.
Retired	The system has been retired and is no longer operational. Please include the date the system was retired.

In this section, describe the status of the operation and maintenance of the system. Please provide a high-level explanation of the **business functionality** of the system and how it is fulfilling the needs of the jurisdiction's initiative for which it was implemented.

Below you will find further explanation for several of the questions in this section:

- **Provide a concise description of the system and its use.**
  - This should capture the **business functionality** of the system.
- **Select the status of the system**.
  - Indicate the current operational status of the system (choose from these options)
- **Describe the Operations and Maintenance schedule for the system.**
  - List all maintenance activities and the schedule. For example, back-ups and software updates are two different maintenance activities and are performed on different schedules, so they should both be specified.
- **Provide all data sources you use to collect, store, transform, and forward data to other jurisdictions.**
- **Is there a comprehensive user guide available for end users or the operations team?**
  - If the answer is (Yes) please provide the URL for any electronic version of the user guide or the physical location of any hard copy.
- **Is there a process that guides health department quality improvement efforts across the department?**
  - A quality improvement plan serves as a roadmap to establish shared goals across the health department to foster a **culture of quality**. Please see Measure 9.1.4A in Standards & Measures for Initial Accreditation for detailed descriptions of processes. Standards-Measures-Initial-Accreditation-Version-2022.pdf (phaboard.org)
- **What cost-controlling methods does the system employ?**
  - Examples include server virtualization and management, software trials and verification, **data storage techniques and transformation,** and general time valuation.
- **What quality-of-service metrics are used in the system?**
  - Examples include management, hardware, and software, user, or client (QA) quality assurance.
- **Describe the schedule(s) of downtime for the system.**
  - Scheduled downtime is when the system is brought down for maintenance such as system upgrades, installation of patches, etc.

- **What is the impact on the day-to-day operations during the system's downtime or if there is an unscheduled disruption?**
    - Indicate the impact caused due to downtime or non-availability of the system. You can use the below categories to gauge the degree of impact:
        - Low - The disruption of access to or non-availability of a system can be expected to have a limited effect on organizational operations, organizational assets, or individuals.
        - Medium - The disruption of access to or non-availability of a system can be expected to have a serious effect on organizational operations, organizational assets, or individuals.
        - High - The disruption of access to or non-availability of a system can be expected to have a severe or catastrophic effect on organizational operations, organizational assets, or individuals.
- **Select the internal and external systems on which the system is dependent.**
    - Does your system depend on other systems – internal or external – for any purpose? Do any other systems provide data feeds, or services of any kind? Does your system provide support for a different one? This is a multi-select entry. Please check all choices that apply. You may add other systems if yours is not listed here.
    - What is a system? Systems help the CDC function properly and keep the business operations running smoothly. Systems are the core element that users often look for and expect core functionality. Often, these systems reside within different departments or function groups like marketing, customer service, technology, finance, and other business operations.
- **Indicate the tools on which this system relies**
    - Identify the tools that this system relies on. This is necessary especially in the event of an unexpected disruption or at times when the system is taken down for maintenance. This is a multi-select entry. Please check all choices that apply. You may add other systems if yours is not listed here.
    - What is a tool? Tools are the parts that are needed in order to implement the processes within the system. The tools include but are not limited to software, apps, websites, platforms, and equipment.

4. DISASTER RECOVERY & BACK UP

- **Is there a backup system available in the event of a disruption to the primary system?**
  - Indicate if the primary system is backed up or a secondary system available when there is service interruption
- **Is the Disaster Recovery data stored locally onsite, at a remote site, or both?**
  - Indicate how the **Disaster Recovery data** is stored. This is a multi-select entry. Please check all choices that apply.

5. LOGISTICAL INFORMATION

- **Select whether the system was developed in-house or purchased from a vendor.?**
  - Indicate if you have developed your own system, have purchased one, or there is a combination of systems utilizing both implementations.
- **How is the system maintained?**
  - Indicate how the system is maintained from the options provided:
  - Maintenance contract with original vendor
  - Maintenance contract with separate vendor
  - Either FTE or Contractors
  - Other
- **If you work with local legacy data, what processes and methods do you employ to bring your system up to date?**
  - Indicate the methods you employ to improve system and data quality as it relates to users, 3rd party recipient, and effective reporting. Legacy data can include data stored in older systems, older code vocabularies, or data element formatting that should be updated.
- **What is the earliest year that the system can pull data for analysis and reporting?**
  - Indicate the earliest year your data was complete enough to perform useful or effective reporting.
- **Geographic Area Covered**
  - Indicate the geographic areas covered by your systems as they related to standards identifying them. This is a multi-select entry. Please check all choices that apply.
- **Geographic Information Captured**
  - Indicate any data associated with your geographic area coverage as it relates to GIS data elements as required by the form. This is a multi-select entry. Please check all choices that apply.
- **What security considerations are required for your organization? (Access control, firewall, etc.)**
  - Indicate the overall security profile you have implemented and the policies that govern them. This will relate to physical access, network access, system user privileges, firewall restrictions, change control, etc.
- **Select other internal and external offices and agencies that have access to this system.**
- **Describe the security compliance rules that external agencies and offices must follow before gaining access to this system.**

ROLES AND ACCESS PRIVILEGES

- **Who are the main users or subscribers to your system?**
  - What are the primary roles or responsibilities of the people who are primary users of this system?
- **How many concurrent users can the system support?**
  - How many users can log in to this system at the same time?
- **How are your user roles and groups assigned and how is access controlled?**
  - Please describe the process used to determine the appropriate user role or group for an employee. In addition, describe how the access to the roles and/or groups is controlled.
- **Is the system configured for Single-Sign-On?**
  - Are users able to use a single log in to the network and gain access to this system without having to enter any additional authentication information?
- **Does the system use Identity Management System?**
  - Does the jurisdiction use a system that includes the principle of least privilege, which gives users only the access needed to fulfill their roles?

6. SYSTEM CAPABILITIES

This section provides space for describing any data providers and listing organizations with whom data is exchanged. It also asks questions about any data availability offered to others, as well as the types and frequency of reporting provided by the system.

- **Select applicable public health subdomain(s) serviced or handled by this system.**
  - This is a multi-select entry. Please check all choices that apply.
- **Select the specific population for which the system is used to collect data.**
  - This is a multi-select entry. Please check all choices that apply.
- **Is the system set up to collect health equity data elements (SOGI - e.g., Sexual Orientation and Gender Identity, race/ethnicity, behavioral elements, occupation)?**
- **Select whether the system ingests messages from systems external to the health department that are considered legacy or do not adhere to the standards adopted to improve this system.**
  - If yes, enter the data streams that do not comply with or meet the standards set forth by the jurisdiction?
  - Why don't the data streams listed above comply with or meet the standards set forth by the jurisdiction?)
- **Does the system include uniquely identified patient-level data to support an authorized public health investigation?**
- **Select the capabilities/results that are available through system processing.**
  - This is a multi-select entry. Please check all choices that apply.
- **Select the formats that are acceptable and processed by the system.**
  - This is a multi-select entry. Please check all choices that apply.
- **Select the formats that are created by this system.**
  - This is a multi-select entry. Please check all choices that apply.

7. SYSTEM INFORMATION

- **Operating System**
  - This question is intended to identify which Operating System is used by this system.
- **Database Platform**
  - This question is intended to identify which database platform(s) does the system use? This is a multi-select entry. Please check all choices that apply.
- **Commercial Off the Shelf (COTS)**
  - Describe any Commercial off the Shelf (COTS) product used by the system.
- **User Access**
  - Specify how a user accesses the system? This is a multi-select entry. Please check all choices that apply.
- **Internal Interfaces**
  - Specify the internal interfaces (Examples - HL7, ELR etc.) to the system.
- **External Interfaces**
  - Specify the **external interfaces** to the system.
- **Software Stack**
  - Describe the software stack used by the system.
- **Version Control Processes**
  - Indicate any version control processes actively being used for managing the source code of the system. This is a multi-select entry. Please check all choices that apply.
- **Configuration Management**
  - Describe the **Configuration Management** and **Release Management plan** for the system.
- **System 508 Compliancy**
  - This question is intended to identify system **508 compliancy**?
- **Virtualization Technologies**
  - Does the system use any virtualization technologies?
- **Dedicated Reporting Server**
  - Identify if the system uses a dedicated reporting server.
- **Describe the Software Stack Used by the System.**
- **Engineering Artifacts**
  - This question is intended to identify which **engineering artifacts** are available for this system. (Examples include Architecture and System Engineering documents and Workflow diagrams). This is a multi-select entry. Please check all choices that apply.
- **Current Hardware Configuration**
  - Describe the current hardware configuration of the system.
- **Systems Hosted**
  - Identify where the system is hosted.
- **System Hosting Environment**
  - This question is intended to identify if this system in a cloud-based/hosted environment?

8. INTEROPERABILITY AND SECURITY

- **Internal and External Application Integrations Mechanisms.**
  - Select the **internal application integration** and **external application integration** and **interoperability mechanisms** that the system relies on. Please check all choices that apply.
- **Data Integration Approaches and Strategies Used by System**
  - Select the best option(s) for integration approaches and strategies the system uses to support business processes.
- **Identify Management Framework Used by System**
  - Select the best options that best describe how the framework for identification, authentication, SSO and authorization for anyone with access to applications, systems, or networks across the enterprise.

9. DATA INTERFACES

INBOUND DATA INTERFACES

- **Select the Organizations that Provide Data Electronically to this System.**
  - Electronically is defined as not requiring manual intervention for the processing of data received. This is a multi-select entry. Please check all choices that apply.
- **Select the Organizations that Provide Data Manually to this System.**
  - Manually is defined as hand-keyed data entry or paper-based (e.g., fax, e-fax, mail). This is a multi-select entry. Please check all choices that apply.

OUTBOUND DATA INTERFACES

- **Select the Organizations to Which the System Sends Data Manually.**
  - Manually is defined as hand-keyed data entry or paper-based (e.g., fax, e-fax, mail). This is a multi-select entry. Please check all choices that apply.
- **Select the Organizations to Which the System Sends Data Electronically.**
  - Electronically is defined as not requiring manual intervention for the processing of data received. This is a multi-select entry. Please check all choices that apply.

10. DATA AVAILABILITY & REPORTING

DATA AVAILABILITY

- **Identify if the System Generates a Public Use Data Set.**
- **If a Public Use Data Set is Generated, Indicate How Often Does the System Update the Public Use Set.**
  - Select time-standard fill-ins.
- **Identify if a Restricted Use Data Set is Generated by this System.**
  - Select time-standard fill-ins.

- **If a Restricted Use Data Set is Generated, Indicate How Often Does the System Update the Restricted Use Data Set.**
- **Identify How Long the Systems Takes to Make Data Sets Available for Analysis.**
- **Identify Where the Analysis of the Data Set is Performed.**
    - This is a multi-select entry. Please check all choices that apply.

REPORTING SECTION

- **Identify the Tools Used by the System for Reporting.**
    - This is a multi-select entry. Please check all choices that apply.
- **Identify if the Reports Produced on a Predefined Schedule.**
    - If yes, Indicate the frequency of your scheduled reports that run on a regular basis. This is a multi-select entry. Please check all choices that apply.

11. STATUTORY/REGULATORY REQUIREMENTS

- **Select the Broadly Accepted Standards or Code Sets (e.g., Public Health Information Network {PHIN}, Health Information Technology Standards Panel {HITSP}) that the System Follows or Complies With. Select All That Apply.**
    - This is a multi-select entry. Please check all choices that apply.

- **Describe the Current HIPAA Compliance Programs.**

    - The question is intended to identify any current HIPAA program training and certification, general rules, organization processes.

PUBLIC HEALTH SYSTEM INVENTORY TOOL ACCEPTANCE

This Public Health System Inventory Tool has been completed to the best of my knowledge.

Signature: _____ Date: _____

Print Name: _____

Title: _____

Role: _____

Signature: _____ Date: _____

Print Name: _____

Title: _____

Role: _____

APPENDIX A: DATA DICTIONARY

BUSINESS FUNCTIONALITY:

"Business functions are **the activities carried out by an enterprise**; they can be divided into core functions and support functions. Core business functions are activities of an enterprise yielding income: the production of final goods or services intended for the market or for third parties."

CULTURE OF QUALITY:

"A culture of quality **requires employees to apply skills and make decisions in highly ambiguous but critical areas while leading them toward deeper reflection about the risks and payoffs of their actions**."

DATA STORAGE TECHNIQUES:

"Data storage refers to **the use of recording media to retain data using computers or other devices**. The most prevalent forms/techniques of data storage are file storage, block storage, and object storage, with each being ideal for different purposes."

DATA TRANSFORMATION TECHNIQUES:

"Data transformation is the process of changing the format, structure, or values of data. For data analytics projects, data may be transformed at two stages of the data pipeline. Organizations that use on-premises data warehouses generally use an ETL (**extract, transform, load**) process, in which **data transformation is the middle step**. Today, most organizations use cloud-based data warehouses, which can scale compute and storage resources with latency measured in seconds or minutes. The scalability of the cloud platform lets organizations skip preload transformations and load raw data into the data warehouse, then transform it at query time — a model called ELT (**extract, load, transform)**."

DATA STORED LOCALLY ONSITE:

Local storage is **the process of storing digital data on physical storage devices**, such as hard disc drives (HDDs), solid-state drives (SSDs), or external storage devices. Having somewhere to store your data from video surveillance and other important information is a necessity

DATA STORED AT A REMOTE SITE:

Remote storage, alternatively referred to as cloud storage, is a description of **storage accessed over a network (remotely)**. For example, a networked computer may utilize remote storage

to hold video files that take up a lot of disk space. Remote storage may also be used as a place for offsite backup

DISASTER RECOVERY DATA:

Data backup is the process of replicating files to be stored at a designated location. Disaster recovery is a system that helps restore those files following a catastrophe.

SECURITY COMPLIANCE:

Security compliance management is **the set of processes for continuous monitoring and evaluation of systems**. These processes include the communication, documentation, and automation of information security compliance controls and procedures

SINGLE-SIGN-ON (SSO):

Single sign-on is an authentication scheme that allows a user to log in with a single ID to any of several related, yet independent, software systems. True single sign-on allows the user to log in once and access services without re-entering authentication factors.

IDENTITY MANAGEMENT SYSTEM:

An identity management system prevents unauthorized access to systems and resources, helps prevent exfiltration of enterprise or protected data, and raises alerts and alarms when access attempts are made by unauthorized personnel or programs, whether from inside or outside the enterprise perimeter.

SYSTEM INGEST MESSAGES:

Data ingestion is the process of obtaining and importing data for immediate use or storage in a database. To ingest something is to take something in or absorb something. Data can be streamed in real time or ingested in batches.

EXTERNAL INTERFACE:

The external interface is **the interface that connects to the Internet or a Wide Area Network (WAN)**. The external interface must have an IP address to operate correctly. You can assign a static or dynamic IP address to the external interface.

CONFIGURATION MANAGEMENT:

Configuration management (**CM**) is a process for establishing and maintaining consistency of a product's performance, functional, and physical attributes with its requirements, design, and operational information throughout its life.[1][2] The CM process is widely used by military engineering organizations to manage changes throughout the system lifecycle of complex systems, such as weapon systems, military vehicles, and information systems. Outside the military, the CM process is also used with IT service management as defined by ITIL, and with other domain

models in the civil engineering and other industrial engineering segments such as roads, bridges, canals, dams, and buildings.

RELEASE MANAGEMENT PLAN:

Release management refers to **the process of planning, designing, scheduling, testing, deploying, and controlling software releases**. It ensures that release teams efficiently deliver the applications and upgrades required by the business while maintaining the integrity of the existing production environment.

508 COMPLIANCY:

Section 508 of the Rehabilitation Act (29 U.S.C. § 794d), as amended by the Workforce Investment Act of 1998 (P.L. 105-220) requires federal agencies to develop, procure, maintain and use information and communications technology (ICT) that is accessible to people with disabilities - regardless of whether or not they work for the federal government. The US Access Board established the Section 508 standards that implement the law and provides the requirements for accessibility.

SOFTWARE STACK:

In computing, a solution stack or software stack is a set of software subsystems or components needed to create a complete platform such that no additional software is needed to support applications. Applications are said to "run on" or "run on top of" the resulting platform

ENGINEERING ARTIFACTS:

An artifact is **a byproduct of software development that helps describe the architecture, design and function of software**. Artifacts are like roadmaps that software developers can use to trace the entire software development process. Artifacts might be databases, data models, printed documents or scripts.

INTERNAL APPLICATION INTEGRATION:

This means **seamlessly connecting a variety of on-premise and cloud apps to transform and orchestrate the data required for business workflows**. These applications address several business needs and can be anything from CRM and e-commerce platforms to finance and ERP systems.

EXTERNAL APPLICATION INTEGRATION:

The problem of **automating and integrating business processes and interactions between companies** is known by different names: external IS integration, B2B integration, e-business integration, trading partner integration, etc. Numerous case studies and theories show the benefits B2B integration can bring to businesses.

INTEROPERABILITY MECHANISMS:

Interoperability (pronounced IHN- tuhr -AHP- uhr -uh-BIHL- ih -tee) is **the ability of different systems, devices, applications or products to connect and communicate in a coordinated way, without effort from the end user**.

DATA INTEGRATION APPROACHES AND STRATEGIES:

The ability to create massive amounts of data is mind-blowing. If only the ability to harness insights from this data kept pace with the ability to create it. Now, with exciting advancements in data integration, that gap is narrowing.

But how is data integration helping companies generate business intelligence? We'll answer that question by explaining the five types of data integration, listed below, and how cloud computing is impacting this growing field.

1. Manual data integration: Data managers must manually conduct all phases of the integration, from retrieval to presentation.
2. Middleware data integration: Middleware, a type of software, facilitates communication between legacy systems and updated ones to expedite integration.
3. Application-based integration: Software applications locate, retrieve, and integrate data by making data from different sources and systems compatible with one another.
4. Uniform access integration: A technique that retrieves and uniformly displays data, but leaves it in its original source.
5. Common storage integration: An approach that retrieves and uniformly displays the data, but also makes a copy of the data and stores it.