# REQUEST FOR INFORMATION

For

# Cloud Services Brokerage

# PROFESSIONAL SERVICES
# RFI # 20-01


**DELAWARE HEALTH INFORMATION NETWORK**

107 Wolf Creek Blvd., Suite 2
Dover, Delaware 19901



**Release Date:** August 30, 2019
**Closing Date:** October 15, 2019

# TABLE OF CONTENTS

# 1 General Information

## 1.1 *Introduction*

The Delaware Health Information Network (DHIN) seeks information from qualified suppliers in preparation for a Cloud Services Brokerage (CSB) Request for Proposals (RFP) and service management engagement.

The DHIN is issuing this Request for Information (RFI) to obtain relevant information from selected CSB suppliers on the various services available to the DHIN. Specifically, the DHIN is looking to contract with a CSB supplier to operationally streamline, integrate, maintain, secure, manage, and support solutions for all or selected DHIN service offerings (as described in the Service Catalog section below).

## 1.2 *Response Timeline and Submission Method*

**Responses to this RFI are sought no later than October 15, 2019 at Noon ET**.

Following receipt of written responses to this RFI, the DHIN will invite a select subset of respondents for deeper discovery. **These further discussions will take place within 60 days following the receipt by DHIN of written responses.**

The DHIN is **not** looking for responses to this RFI that contain solely marketing or promotional material. The questions to be addressed in this RFI are deliberately constructed to avoid the need for lengthy dialogue at this early stage. However, if deemed vital to ensure a relevant response, **questions should be collected and submitted in one batch using the submission method below, by September 15, 2019**.

Submissions must be made electronically using the answer file supplied and sent to:

**Richard Wadman**
**Senior Program Manager**
**Delaware Health Information Network**
**richard.wadman@dhin.org**

Respondents shall bear all costs associated with preparing and submitting responses to this RFI. The DHIN will not be responsible for these costs.

## 1.3 *Treatment of Information*

In the event that access to confidential or non-public information is required in order to complete this RFI, Respondents must execute a confidentiality and non-disclosure agreement in a form to be provided by DHIN prior to receiving such information. DHIN is subject to the State of Delaware's Freedom of Information Act, and Respondents should be aware that their responses to this RFI may be considered "public records" thereunder.

# 2 DHIN Mission and Strategy

DHIN's five primary goals serve as the basis for interoperability among all health care providers in the state of Delaware:

1. To improve the care received by patients served by Delaware's healthcare system and to reduce medical errors associated with the often inaccurate and incomplete information available to providers of medical care.
2. To reduce the time required and financial burdens of exchanging health information among healthcare providers and payers (necessary for patient care), by addressing the currently siloed and unintegrated model of distribution methods and dramatically increasing use of electronic means.
3. To improve communication among healthcare providers and their patients to provide the right care at the right time based on the best available information.
4. To reduce the number of duplicative tests to afford specialists a more comprehensive view of the patient upon referral from his/her primary physician and to expedite the reporting of consultant opinions and tests/treatments between specialists and the referring physicians.
5. To improve the efficiency and value of electronic health records (EHR) in the physician office and to assist those physicians without an EHR to better organize and retrieve test results.

The implementation of a CSB engagement is a key component of the DHIN's current 5-Year strategy as defined by Gartner. The specific CSB-relevant strategies are:

- Initiative #4: Enterprise and Solution Architecture
    - Goal 1.6.4.2 - Implement Cloud Services Brokerage to work with a variety of vendors and technologies to implement and maintain streamlined and integrated services at the level required by the DHIN's customers
- Workstream 4d. Acquire Cloud Services Brokerage as the Foundation for the DHIN's HIE Capabilities and Service Delivery
    - Conduct a robust, disciplined, requirements-driven, open and competitive procurement to acquire the capabilities of a Cloud Services Brokerage vendor to provide the foundation for the management of multiple cloud and remotely hosted solution providers and technologies in delivering highly robust Service Offerings and the implementation of an IT Service Management (ITSM) Framework
- Workstream 5d. Implement Cloud Services Brokerage and IT Service Management Framework Across Solutions
    - Work with the engaged Cloud Services Brokerage (services acquired by procurement in workstream 4d) to implement an IT Services Management Framework across all aspects of the DHIN Enterprise Solution Architecture

## 2.1 *DHIN History and Organization*

Legislative History

The Delaware Health Information Network (DHIN) is a statutory (16 *Del. C.* Ch. 103) not-for-profit instrumentality of the State of Delaware with the rights, obligations, privileges and purpose to promote the design, implementation, operation and maintenance of facilities for public and private use of health care information in the State. DHIN's statutory mission is to develop and operate a state-wide health information network integrating clinical, financial, and patient satisfaction data sources to inform decisions (16 *Del. C.* § 10303). The DHIN is intended by law to be a public-private partnership for the benefit of all citizens of Delaware.

DHIN was statutorily established in 1997, under the direction of the Delaware Health Care Commission. The State committed to partner in capitalizing DHIN over a five-year period, with the stated expectation that DHIN would be financially self-sustaining by the end of that time. The enabling statue was amended in 2010, and effective January 1, 2011, DHIN became a semi-autonomous not-for-profit public instrumentality of the state of Delaware. The State is now a customer of DHIN's services, paying on the same footing as other customers of the same or similar services. Fiscal year 2012 was the last year DHIN received any funds through the Capital Bond Bill.

History of Services Offered

Two core services have made DHIN a ubiquitous and indispensable component of the Delaware healthcare ecosystem.

Clinical Results Delivery -- DHIN went live as the first statewide operational health information exchange in May 2007. The primary service offered in the first two years was electronic results delivery, with particular emphasis on delivery of lab results. Other supported data types include pathology results, radiology reports, transcribed reports, cardiology reports, and admission face sheets (ADTs). The original "data senders" were Christiana Care Health System in New Castle County, Bayhealth (previously known as Kent General Hospital) in Kent County, Beebe Medical Center in Sussex County, and Lab Corp. DHIN delivers results and reports from data senders to the ordering and "copy-to" providers on behalf of the performing organization.

Community Health Record -- In 2009, the addition of more data senders (St Francis Hospital, Doctors Pathology Service, and Quest Diagnostics), and the addition of a record locater service, master person index, and a query portal enabled DHIN to offer a longitudinal Community Health Record (CHR). The CHR aggregates data about each patient across time, geography, and data sources and allows authorized users to query for results and reports they would otherwise not know about nor have access to without time-consuming requests for information from previous healthcare settings.

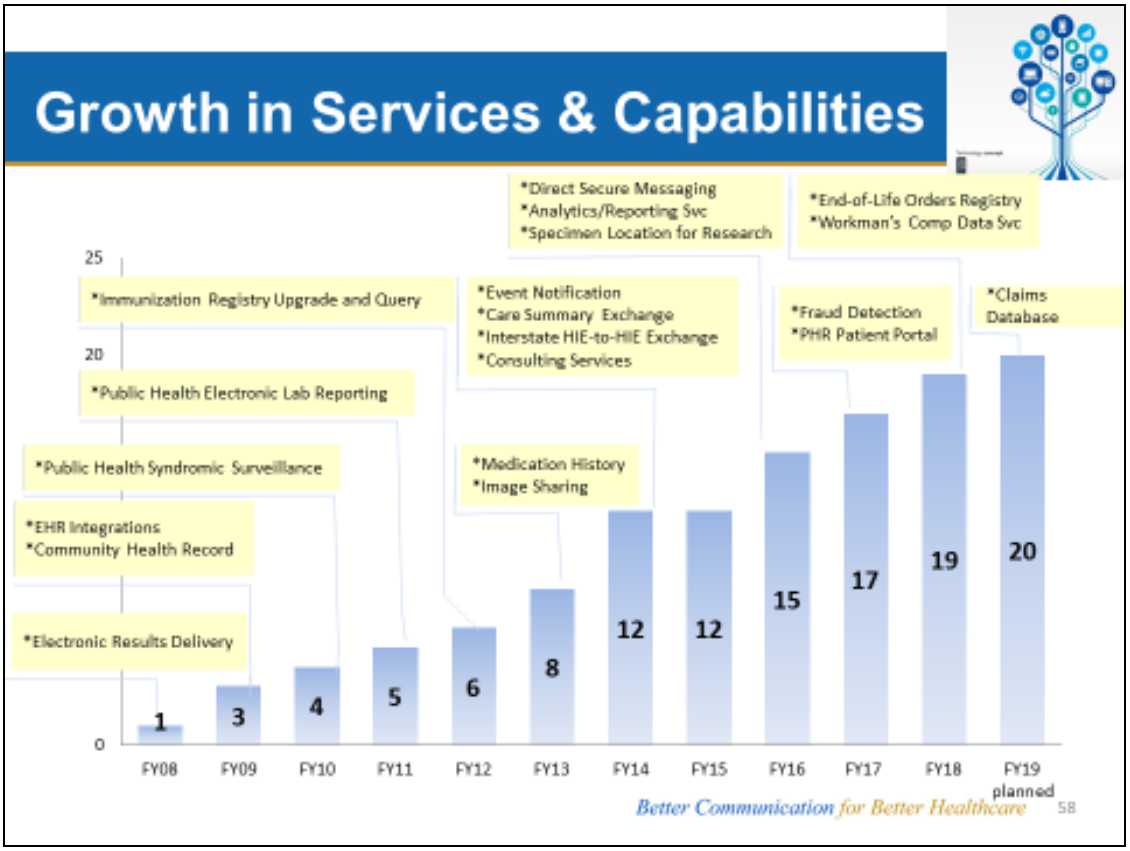
These two core services, results delivery and the Community Health Record, have achieved near 100% adoption in Delaware through a self-reinforcing "virtuous cycle." The more data that is available through the Community Health Record, the more valuable the CHR is to providers and the more of them enroll in DHIN. Conversely, the more end-users in DHIN demand that data of

interest be available through the CHR, the more the labs, hospitals, and imaging centers find a business case for using DHIN as their results delivery channel.

All Delaware acute care hospitals, commercial labs, and over 95% of imaging centers now participate as "data senders." Additionally, three Maryland hospitals near the Delaware-Maryland border also participate. The number of ambulatory providers currently enrolled in DHIN as end users of the Community Health Record actually exceeds the number of practicing providers in Delaware. Providers in contiguous states with an affiliation with one of DHIN's member hospitals use DHIN as the preferred channel for results delivery and query.

In addition to these core services, DHIN has introduced additional services over the years, as illustrated below.

Fig 1.



# 3 Glossary of DHIN Terms

The following is a listing of key DHIN terms and definitions used in this RFI:

| | |
|---|---|
| Acute Care Hospitals | Hospital organizations that treat and provide care for patients during a brief but severe episode of illness. |
| Ambulatory Providers | Primary and outpatient care organizations that provide care for patients typically in an outpatient setting for less severe and same-day episodes of illness. |
| Application Program Interface (API) | Functions, procedures, and protocols for applications to access or exchange data with an operating system, application, or other service. |
| Biospecimens for Clinical Research | Based on patient consent, the utilization of procedure specimens for clinical research. |
| Clinical Care Summary | A summarization of a medical encounter that provides patients with medical and prescriptive care, procedures, treatments, and instructional information. |
| Care Summary Message Exchange | The exchange of Clinical Care Summary documents used for referrals, follow-ups, and a record of the encounter. |
| Claims Data | The clinical, administrative, and financial data typically associated with an encounter for treatment, payment, and operations. |
| Clinical Data | The clinical and administrative data typically associated with an encounter for treatment and operations. |
| Clinical Gateway (G/W) | Incoming clinical data is matched by DHIN to a watch list supplied by a subscribing organization, and is transferred in bulk to an endpoint designated by the recipient. |
| Clinical Research | A DHIN service to provide clinical or aggregated data to subscriber organizations with proper patient consent. |
| Clinical Results Delivery | The delivery of clinical results for a patient to organizations and health care providers with an association to the patient. This is accomplished through three delivery channels – EHR Integrations, Clinical Inbox, or Autofax. |
| Commercial Labs | Organizations that administer the capture and reporting of laboratory results. |
| Community Health Record (CHR) | The CHR is a web-based provider portal, providing patient-centric views of the data. |
| Data Sender | DHIN Data Senders include acute-care hospitals, provider practices, laboratories, radiology firms, skilled nursing facilities, and other HIEs. |
| DHIN Analytics | A DHIN service that provides analytics reporting to subscribers. |

| | |
|---|---|
| DHIN Data Repository | The repository of DHIN's clinical and claims data. |
| DHIN Data | Data from Data Senders includes clinical data (Admission, Discharge, and Transfer messages, laboratory results, radiology reports, pathology results, transcribed reports, and cardiology reports) and claims data (clinical, administrative, and financial data). |
| DMOST End of Life Medical Orders | A medical order agreed to between the health care provider and the patient for medical instructions for end-of-life care. |
| Electronic Health Records (EHRs) | A tool used by providers to capture a patient's or a grouping of patient's medical encounters in a standard data store and/or display. |
| Encounter Notification Service (ENS) Reporting | A DHIN service that provides notifications to organizations, users, or individuals of health events. |
| Enterprise Master Patient Index (EMPI or MPI) | A DHIN repository that includes demographic and other identifiers for patient matching across Data Sender clinical messages. |
| FHIR | HL7 Fast Healthcare Interoperability Resources standard for exchanging healthcare information electronically. |
| Health Check Alert | A DHIN service that allows subscribing patients to receive a text message alert whenever new data is received by DHIN about them, or whenever a user accesses their information in the Community Health Record. |
| Health Check Connect | A DHIN service that provides a user with personal access to his/her data in the DHIN data repository. |
| Health Information Exchanges | Organizations or tools used to facilitate the exchange of health information in standard and secure format across health care organizations. |
| HIPAA | Health Insurance Portability and Accountability Act of 1996 – federal law that ensures data privacy and security provisions for a patient's health data. |
| HITECH | Health Information Technology for Economic and Clinical Health Act is part of the American Recovery and Reinvestment Act of 2009 – federal law that provides incentives for adoption of health care information technology. |
| HITRUST | Health Information Trust Alliance has implemented a certification process that utilizes standards and safeguards for electronic protected health information. |
| HL7 | Health Level Seven – A set of international standards for the exchange of clinical and administrative data. |
| HL7 ADT messages | Admission, Discharge, and Transfer clinical messages in a standard HL7 |

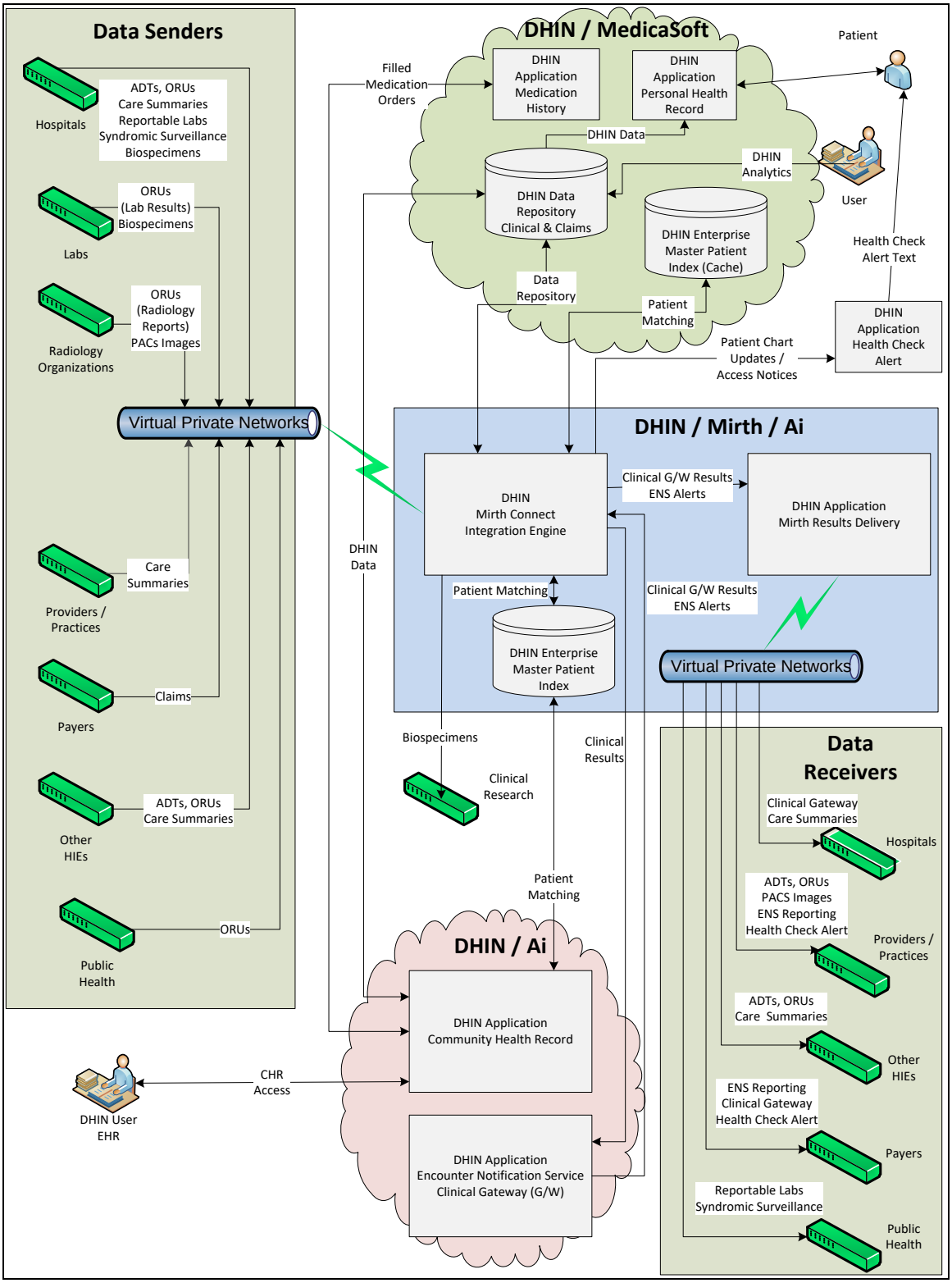
| | |
|---|---|
| | message format. |
| HL7 ORU messages | Observation Result clinical messages in a standard HL7 message format (e.g., laboratory results, radiology reports, pathology results, transcribed reports, and cardiology reports). |
| Hospitals | The DHIN receives clinical data from all six acute care hospitals in Delaware and from three border hospitals in Maryland's eastern shore. |
| IHE Profiles | Integrating for Healthcare Enterprise (IHE) Profiles are communication standards associated with interoperability of healthcare information. |
| Image Sharing | Capture and exchange of radiology, cardiology, and other medical images. |
| Imaging Centers | Organizations that administer the capture of radiology, cardiology, and other medical images. |
| ISO 20000 Certified | International standard for IT service management (ITSM) best practice (and linked with ITIL) that provides organizations with guidance on how to effectively deliver managed services, measure service levels, and assess performance. |
| ITIL / IT Service Management (ITSM) | International standard and approach for the design, delivery, management, and improvement of information technology services and processes. ITIL is formerly the acronym of Information Technology Infrastructure Library. |
| Laboratory Results (Labs) | National reference labs, hospital labs, and local labs contribute clinical laboratory results to the DHIN. |
| Longitudinal Community Health Record (CHR) | Listing of a patient's or a grouping of patient's medical encounters in a standard data store and/or display. |
| Medication History | A DHIN service that provides filled medication orders for a patient to subscribers. |
| National Networks | Organizations that connect users with patient data across health information exchanges and technology platforms. Examples include eHealth Exchange, Carequality, Commonwell, and Care Everywhere. |
| NextGen Mirth Integration Engine | Data exchanged with the DHIN Data Senders, Ambulatory Providers, etc. (incoming and outgoing) is typically delivered through the DHIN's NextGen Mirth Integration Engine. |
| NextGen Mirth Results Delivery | Data received from the data senders is delivered to ordering providers through the DHIN's NextGen Mirth Results Delivery. |
| Organization (Org) | An entity with which DHIN exchanges data or conducts business. |
| Other HIEs | The DHIN connects with other Health Information Exchanges in the Mid-Atlantic region, specifically Maryland's CRISP (covering Maryland, DC, West Virginia, and a single hospital in Ohio), southeastern |

| | |
|---|---|
| | Pennsylvania's HSX, and southern New Jersey's NJSHINE. |
| PACs Images | A DHIN service that provides access to radiology images from subscribing radiology organizations. |
| Patient Chart | The patient's clinical longitudinal record in the DHIN's Community Health Record. |
| Patient Matching | A process that matches patient identifiers in clinical messages from Data Sender organizations. |
| Payers | Organizations that provide funding for clinical health procedures (e.g., employers, insurers, accountable care organizations, Medicare, and Medicaid). |
| Personal Health Information (PHI) | Information relating to an individual's health conditions and medical history. |
| Personal Health Record | The patient's clinical longitudinal record in a subscriber-based service to Delaware citizens. |
| Personally Identifiable Information (PII) | Information identifying a specific individual. |
| Providers / Practices | Primary and outpatient care organizations that provide care for patients typically in an outpatient setting for less severe and same-day episodes of illness. |
| Public Health | The Delaware Division of Public Health (DPH) is Delaware's sole public health reporting organization. DPH receives reportable laboratory results and syndromic surveillance messages from hospitals through the DHIN. DPH submits its laboratory results data to the DHIN. |
| Public Health Reportable Laboratory Results | DHIN connects to the state's public health electronic lab reporting system for real-time delivery of reportable diseases. |
| Public Health Syndromic Surveillance Reporting | DHIN connects to the state's public health bio-surveillance system for real-time delivery of emergency chief complaint data. |
| Radiology Organizations | Hospital radiology departments and local radiology organizations contribute clinical radiology reports messages and possibly radiology images to the DHIN. |
| Supplier | A third-party organization that provides goods and services to the DHIN. |
| Trusted Exchange Framework and Common Agreement (TEFCA) | Draft 2 of the TEFCA provides a common set of principles to facilitate trust between health information networks (HINs) in order to enable widespread exchange of electronic health information. |

| | |
|---|---|
| Vendor | A third-party organization with which the DHIN conducts business. |
| XDS.b | Integrating for Healthcare Enterprise (IHE) Profiles for cross-enterprise document sharing. |

# 4 DHIN's current environment

The following is a high-level schematic of the DHIN's current ecosystem:



The following is a listing of the DHIN's customer-facing services:

1. Results Delivery
    a. EHR Integrations
    b. Clinical Inbox
    c. Autofax
2. Public Health Reporting
    a. Reporting to the Delaware Division of Public Health's Electronic Reporting and Syndromic Surveillance System (DERSS)
3. Specialized Message Delivery (into a system other than an EHR)
4. Community Health Record (CHR)
    a. Interstate data exchange
5. Single Sign-On
6. Event Notification Service (ENS)
    a. Interstate data exchange
7. Clinical Gateway
8. Personal Health Record (PHR) (Health Check Connect)
9. Patient alerting/fraud detection (Health Check Alert)
10. Medication History
11. Patient-directed records transmission to third parties
12. Image Sharing
13. Care Summary creation/download
14. Care Summary Exchange (ambulatory data into DHIN)
15. Direct Secure Messaging
16. Specimen Location for Research
17. Locate clinical trial candidates
18. Analytics/reporting service (clinical)
19. Health Care Claims Database (HCCD)
20. DMOST Registry (end-of-life medical orders)

The following is a listing of the DHIN's internal applications & services:

1. Email
2. Office 365
3. Web portal and applications
4. File sharing
5. Knowledge sharing
6. Project management tracking
7. Sharepoint provider repository
8. Enterprise Master Patient Index (MPI)
9. HL7 FHIR and other APIs
10. Data search, query and analytics tools
11. Data repository and storage
12. Server account management
13. Message integration engine
14. Security and network firewalls

The following is a highlight of the DHIN's current environment:

1. DHIN Data and Users
    a. Data types
        i. Clinical Data – HL7 ADTs, HL7 ORUs, Care Summary Documents
        ii. Claims Data – Payer Clinical, Administrative, and Financial Data
        iii. Event Notifications – Alerts, Notifications
        iv. Registry Data – Public Health Reporting, Medical Orders
    b. Data Senders and users
        i. Hospitals
        ii. Laboratories
        iii. Radiology Organizations
        iv. Ambulatory Practices
        v. Public Health
        vi. Payers
        vii. Other regional Health Information Exchanges
    c. Applications
        i. Community Health Record
        ii. Results Delivery
        iii. Patient Matching
        iv. Analytics
        v. Encounter Alerts and Notifications
        vi. Personal Health Record
2. DHIN Infrastructure
    a. Environment
        i. Open architecture
        ii. Modularized application functionality
    b. Multiple platforms
        i. Hosted applications
        ii. Cloud infrastructure
        iii. Multiple Data Centers
        iv. Virtualized Servers
        v. Physical Servers
3. Performance Metrics Deficiencies and Constraints
    a. Limited performance metrics defined with suppliers (with metrics that are specific to each supplier)
    b. Limited SLA reporting by suppliers
    c. Limited service metrics defined with stakeholders and other users
    d. No SLA reporting with stakeholders
    e. Restrictions under federal guidelines (e.g., HIPAA, HITECH, HITRUST)
    f. Constraints related to use, security, and reporting of Personally Identifiable Information (PII) and Personal Health Information (PHI)

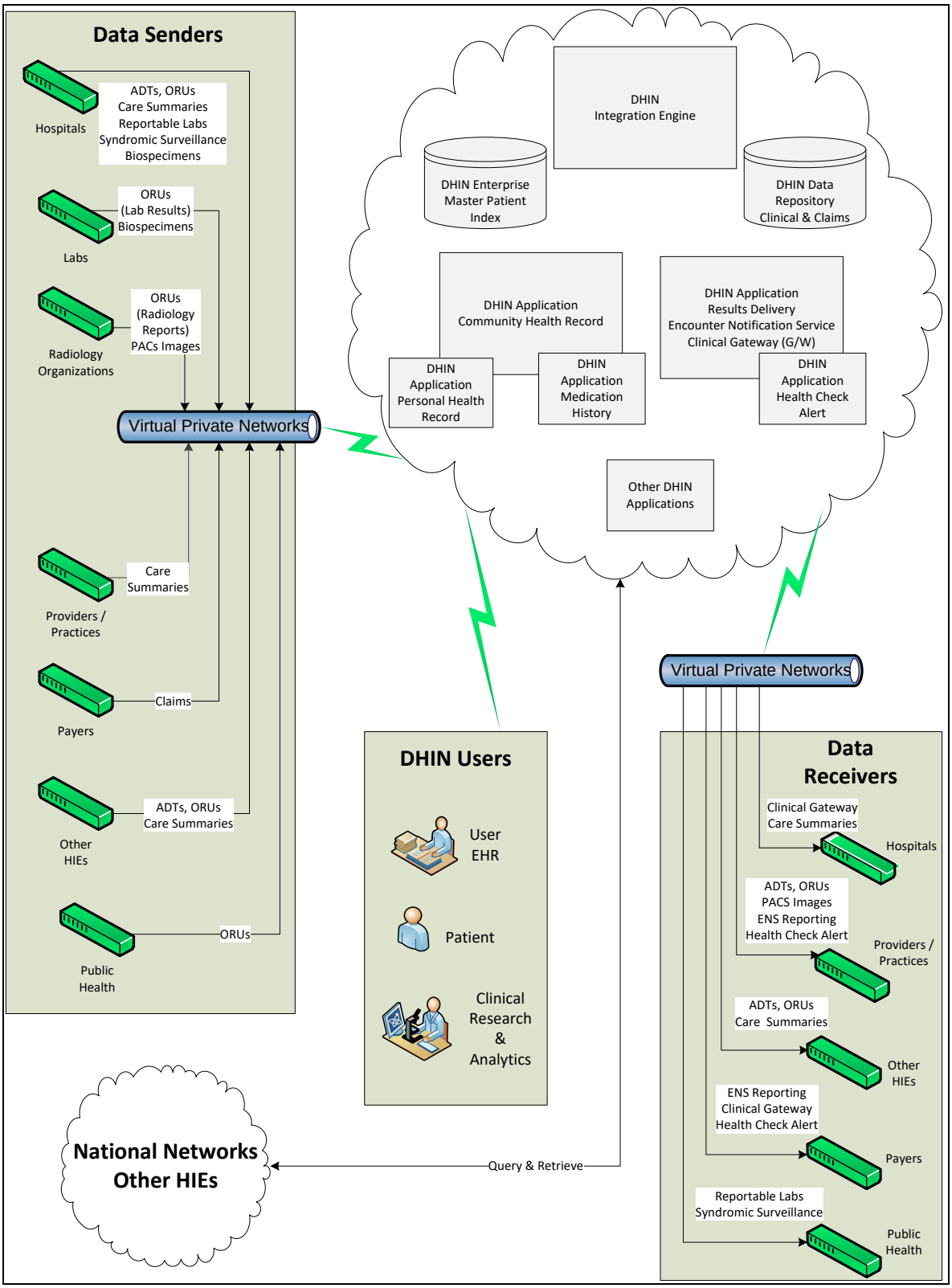
The following is a listing of the DHIN's current business functions, technology and infrastructure platforms, and service suppliers:

| DHIN Services | Infrastructure Technology | Platform | Managed By |
|---|---|---|---|
| DHIN Clinical & Claims Data Platform | - NXT Platform<br>- HL7 FHIR & other APIs<br>- Elastisearch<br>- Query & Analytics Tools | AWS Gov Cloud | MedicaSoft |
| DHIN Clinical & Claims Data Repository | - Non-SQL Couchbase Database | AWS Gov Cloud | MedicaSoft |
| HISP Services | - Direct Secure Messaging | AWS Gov Cloud | MedicaSoft |
| Integration Engine | - NextGen Mirth Connect Integration Engine<br>- HL7 ADT & ORU Messages<br>- IHE Profiles Data Exchange | Expedient Data Center | DHIN and Audacious Inquiry |
| SFTP Data Repository & Storage<br>- Data Sender Account Exchange<br>- Public Health Reporting | - Server-Based Data Repository<br>- Server Account Management<br>- Secure File Transfer Protocol | Contegix Data Center | DHIN and Audacious Inquiry |
| DHIN Results Delivery<br>- EHR Results Delivery<br>- Autofax<br>- Clinical Inbox | - NextGen Mirth Results<br>- NextGen Mirth Connect Integration Engine<br>- TCP/IP over VPN<br>- Fax | AWS Cloud | DHIN, Audacious Inquiry, and Outcome Healthcare |
| NextGen Mirth Connect | - IHE Profiles XDS.b | Expedient Data Center | DHIN |
| Enterprise Master Patient Index (EMPI) | - IBM Initiate Application | Expedient Data Center | DHIN |
| Provider Repository | - Cloud Application | Salesforce.com Cloud | DHIN and Salesforce.com |
| DHIN Web Site | - Web Portal | Contegix Data Center | DHIN |
| DHIN Community Health Record Portal | - Cloud Application | AWS Cloud | Audacious Inquiry |
| Encounter Notification Services<br>- ENS<br>- Clinical Gateway | - TCP/IP over VPN | AWS Cloud | Audacious Inquiry |
| Health Check Connect | - Personal Health Record Portal<br>- Cloud Application | AWS Gov Cloud | MedicaSoft |
| Health Check Alert | - Messaging Application | mPulse Mobile | mPulse |

| | | | |
|---|---|---|---|
| | - SMTP Messaging | Messaging Platform | |
| Radiology Imaging Results | - Vital Vitrea View Application | Vital Vitrea Enterprise Viewer | Vital Images |
| Medication History | - HL7 FHIR API | Surescripts | MedicaSoft |
| End of Life Medical Orders Registry (DMOST) | - Web Application<br>- HL7 FHIR API | AWS East | Vynca |
| Biospecimens for Clinical Research | - Biological Specimen Application<br>- TCP/IP Over VPN | Contegix Data Center | iSpecimen |

# 5 DHIN's projected environment

The following is a high-level schematic of the DHIN's projected ecosystem:



The following is a high order conception of the DHIN's future environment:

1. DHIN Infrastructure
    a. Environment
        i. Open architecture
        ii. Cloud-based platform, applications, and connectivity
        iii. Modularized applications
        iv. Applications developed for cloud services
        v. Single data repository
        vi. Data standardized and normalized
        vii. FHIR APIs
        viii. Encryption of the DHIN's data in rest and in motion
        ix. Security of the DHIN's infrastructure from within and outside
    b. Connectivity with national networks and hubs
    c. Compliance with TEFCA
    d. Adherence to ITIL / IT Service Management standards
    e. Compliance with HIPAA and HITECH
    f. HITRUST certification
    g. ISO 20000 certification

# 6 DHIN's Cloud Services Business Drivers

The following is a listing of the DHIN's business drivers and expected outcomes:

| Business Driver | Business Outcome |
|---|---|
| Achieve improved system responsiveness, performance, and reliability | Select a cloud services management / cloud services brokerage partner to develop, manage, and modify the DHIN's ecosystem (end-to-end), architecture, network, applications, APIs, suppliers, supplier contracts, supplier performance, SLA terms, SLA metrics, etc. based on performance, demand, market conditions, and DHIN requirements<br>Ensure that applications are appropriately designed, configured, and transformed for peak performance in the cloud environment.<br>Review DHIN's data structure and content and ensure adherence to standards across all platforms and applications. |
| Manage, monitor, and maintain DHIN's ecosystem | Manage the DHIN's multi-platform/multi-cloud environment, infrastructure, and organizations.<br>Establish a process to ensure that infrastructure and capacity issues are planned and performance challenges are anticipated and monitored.<br>Where applicable, manage the migration of DHIN services to the cloud.<br>Where applicable, manage the application re-design and transformation to the cloud.<br>Manage compliance with certificates and licenses. |
| Establish and administer a governance structure for DHIN and its stakeholders across the ecosystem | Define and implement a workable governance structure for cloud-based infrastructure across various partners, suppliers, and stakeholders.<br>Address service cost and stakeholder/customer pricing and chargeback.<br>Provide consideration and guidance pertaining to intellectual property and compliance risk.<br>Ensure that the DHIN maintains its HITRUST Certification. |
| Define and enforce privacy and security controls for all infrastructure, platforms, and | Ensure that security and privacy controls are developed, monitored, and maintained. |

| | |
|---|---|
| applications within the DHIN's ecosystem | Ensure that users adhere to DHIN's Business Associate Agreements and Master Service Agreements and abide by HIPAA, HITECH, HITRUST, and DHIN privacy and security policies.<br>Ensure DHIN data and systems are secure and the data is accessible only to those with a need to know.<br>Service access is logged and audited. |
| DHIN cloud-specific resources, skills, and knowledge remain scarce | Augment the small size of the DHIN organization in order for it to re-direct its limited staffing resources to key business drivers.<br>Provide documentation, training, and knowledge transfer of the Cloud infrastructure / platforms / applications across various cloud service providers and supplier solutions. |
| Maintain predictive service delivery performance and cost drivers | Define key performance metrics and monitor and manage SLA performance across a large ecosystem, end-to-end.<br>Monitor and maintain DHIN services across platforms, technologies, and suppliers while maintaining predictive service delivery performance and costs. |
| Identify, manage, and remediate risk | Address risk, and manage risk remediation across multiple cloud services, platforms, and environments. |

# 7 DHIN's Cloud Services RFI/RFP Readiness

The following is a description of the DHIN's RFI requirements, anticipated staging of the RFI and RFP, and a listing of questions for the respondents of this RFI. **Please address all sections in your RFI response to the DHIN no later than October 15, 2019 at Noon ET**:

## 7.1 *DHIN's RFI Requirements*

Through this Request for Information, the DHIN is seeking information and guidance leading to the contracting with an organization to provide cloud services management / cloud services brokerage services and define cloud service functionality, performance metrics, and monitoring as follows:

1. **How might DHIN transform its current environment through the development of a cloud-services evolution strategy and governance structure?**
    a. Provide the foundation for the management of a single or potentially multiple cloud platforms, applications, and remotely hosted solution providers and technologies in delivering highly robust and secure service offerings.
        i. Managing proliferation of solution assets, relationships, and complex interdependencies.
    b. Develop a governance structure for cloud-based infrastructure end-to-end across various partners, suppliers, and stakeholders.
        i. Managing and synchronizing cloud activities and service delivery partners across multiple services, environments, platforms, applications, architectures, modules, etc. based on business needs (cost, ease-of-use, service performance, etc.) and technical capabilities.
    c. Define/establish the capabilities to meet the DHIN's needs identified in Section 5, "DHIN's Cloud Services Business Drivers."

2. **How might DHIN manage its multi-platform/multi-cloud environment, infrastructure, and organizations?**
    a. Manage the DHIN's cloud environment and make changes when needed.

3. **What service performance metrics and service level agreements might DHIN establish to monitor across the ecosystem?**
    a. The DHIN cannot survive without formalized service levels and SLA monitoring. Specific to service performance:
        i. Define, align, track, and report service performance metrics (end-to-end) across solution providers, platforms, and service offerings.
        ii. Create service level agreements with DHIN suppliers, DHIN data senders, and practice stakeholders.

### 7.2 *DHIN's Cloud Service RFI/RFP Staging*

Through this Request for Information, the DHIN is seeking to partner with a vendor that will lead to the definition of scope, requirements, risk, cost, and issuance of a RFP for a Cloud Services Management / Cloud Services Brokerage supplier with a proven record of accomplishment.

1. **Assess DHIN's current environment and evaluate cloud services management offerings.**
    a. Partner with the DHIN to define DHIN's and its stakeholders' level of readiness for cloud services management / brokerage.
    b. Partner with the DHIN to develop cloud services management / cloud services brokerage strategy, scope, and phasing.
        i. What services does DHIN want, when, and how should the services be deployed?
        ii. What impact does cloud services management / cloud services brokerage have on existing DHIN practices, resources, suppliers, and staffing?
        iii. What are the anticipated costs (initial and ongoing) of cloud services management / cloud services brokerage for an organization of the size and breadth of services of the DHIN?
    c. Partner with the DHIN to define cloud services governance structure.
        i. What is DHIN's role?
        ii. What is the role of a cloud services management / cloud services brokerage supplier?
2. **Recommend cloud services management requirements.**
    a. Partner with the DHIN to define and evaluate cloud services management / cloud services brokerage requirements, features, and options based on services offerings, costs, and suppliers capabilities.
    b. Partner with the DHIN to determine the best way to manage the DHIN's cloud services management / cloud services brokerage phasing and implementation.
    c. Partner with the DHIN to identify risks to its current functionality and a risk mitigation strategy as it migrates to a cloud services management / cloud services brokerage supplier relationship.
    d. Within the cloud management setting, develop a framework for acquisition, enhancement, development, and/or procurement of infrastructure, technology, and applications.
3. **Define Cloud services management / cloud services brokerage performance expectations.**
    a. Partner with the DHIN to redefine the DHIN-supplier contracts, service-level metrics, SLA terms, and performance monitoring.
4. **Within 2 months of initiation of the RFI/RFP staging assessment, issue cloud services management / cloud services brokerage RFP.**
    a. Partner with the DHIN to develop a RFP for cloud services management / cloud services brokerage functionality.
    b. For RFP issuance, provide a listing of qualified cloud services management / cloud services brokerage service providers.

c. Review and evaluate cloud services management / cloud services brokerage service RFP response offerings relating to requirements, components, timeline, phases, and costs.
d. Recommend a short-list of recommended cloud services management / cloud services brokerages service providers for in-depth service offering reviews, references, and site-visits.

### 7.3 *RFI Respondent's Response*

Given the information in this RFI, please respond to the following:

1. Advise and recommend enterprise cloud strategy and governance, cloud readiness assessment, cloud design and roadmap planning, architecture and optimization.
2. Describe how cloud services management / cloud services brokerage functionality including anticipated roles and touchpoints with the DHIN can be designed, developed, acquired, and implemented with the DHIN's stakeholders and partners.
3. Describe the cloud services management supplier relationship with the DHIN and its customers.
4. Describe how the DHIN can develop, deliver, and monitor integrated end-to-end services from within and across all cloud-service providers to its stakeholders and customers.
5. Describe how the DHIN should control costs and manage service pricing to its customers.
6. How do you see your organization assisting the DHIN with cloud services management / cloud services broker functionality? Please describe how you will approach a partnership with the DHIN on service oversight, management, and/or performance.
7. What recommendations do you have for requirements in a formal Request for Proposals?

# 8 DHIN's Cloud Readiness Functionality

The following is a listing of the DHIN's anticipated cloud services functionality.

| DHIN Requirement | Requirement Category | Functionality |
|---|---|---|
| Transform the DHIN's current environment | Governance | Acknowledgement that the DHIN and its data sending organizations are the data owners.<br>Assurance that DHIN policies, standards, and processes are followed.<br>Assurance that users adhere to DHIN's Business Associate Agreements and Master Service Agreements and abide by HIPAA, HITECH, HITRUST, and DHIN privacy and security policies.<br>Assurance that the DHIN maintains its HITRUST Certification.<br>Enforcement of DHIN policies pertaining to use and sharing of DHIN and data sender data. |
| Transform the DHIN's current environment | Cloud Federation | Position the DHIN to take advantage of new opportunities in cloud infrastructure, applications, processes, etc.<br>Assess and deploy cloud services capabilities, such as cloud provisioning, consistent view, single sign-on, unified billing, unified management, ease of access, customer support, and SLA management.<br>Manage and monitor services from within and across cloud platforms and environments (end-to-end).<br>Implement and manage changes in people, processes and technologies across platforms. |
| Transform the DHIN's current environment | DHIN Branding | Promote the DHIN brand and maintain a single view across applications, systems, and infrastructure. |
| Manage the DHIN's multi-platform/multi-cloud environment | Management Services | Define and contract for new services that include contract terms, SOW, SLA, etc.<br>Generate, support, and monitor issues identification, resolution, escalation, risk, and risk remediation. |
| Manage the DHIN's multi-platform/multi- | Cloud Management Platform | Provide, manage, and monitor cloud platforms and applications from within and across all cloud services (end-to-end). |

| | | |
|---|---|---|
| cloud environment | | Deploy and monitor interfaces, provision system applications, enable metering and billing, and provide for workload optimization and performance from within and across all cloud services. |
| Manage the DHIN's multi-platform/multi-cloud environment | Open Architecture | Add, update, or change functionality, modules, and system components easily and across vendor source solutions with minimal disruption to the DHIN ecosystem. |
| Manage the DHIN's multi-platform/multi-cloud environment | Hosted Environment | Identify, support, monitor, and secure the source(s) and location(s) of all DHIN data, encrypted in storage and in motion. |
| Manage the DHIN's multi-platform/multi-cloud environment | Migration Services | Migrate DHIN applications, data, user profiles, and other IT assets into and across cloud applications and infrastructure. |
| Manage the DHIN's multi-platform/multi-cloud environment | Integration | Integrate multiple cloud services, endpoints, platforms, and capabilities. |
| Manage the DHIN's multi-platform/multi-cloud environment | API Linkage | Support the mapping to and exchange of clinical messages across the DHIN ecosystem through the HL7 healthcare standards, such as the Fast Healthcare Interoperability Resources (FHIR) standards framework, and the Integrating the Healthcare Enterprise (IHE) Profiles. |
| Manage the DHIN's multi-platform/multi-cloud environment | Security | Ensure security and monitoring of application, data, and infrastructure as defined by HIPAA, HITECH, HITRUST, and state of Delaware policies.<br>Provide prompt reporting of any breaches or unauthorized access.<br>Encrypt, decrypt, exchange, and store encrypted data (at rest and in motion) in and across the DHIN ecosystem. |
| Manage the DHIN's multi-platform/multi-cloud environment | Audit Logs | Capture and generate audit logs, which include dates / times for events, transactions that have processed / not processed, users who have accessed the system, users who have broken glass, users who have tried to access the system but failed, applications accessed, etc. |

| | | |
|---|---|---|
| | | Provide a user access activity report that shows which user accounts have been viewed from a sender (source). |
| Manage the DHIN's multi-platform/multi-cloud environment | Data & Data Quality | Provide periodic master data file quality reviews and cleanup from data sending organizations, and from within and across applications and platforms.<br>Standardize and normalize data where appropriate.<br>Adherence to DHIN's data retention and disposition policies. |
| Manage the DHIN's multi-platform/multi-cloud environment | Authentication, Authorization, and Access Control | Authenticate, authorize, and provide user access from within and across all cloud services and platforms. |
| Manage the DHIN's multi-platform/multi-cloud environment | Service and User Provisioning | Support and monitor DHIN user roles to limit access to authorized users and prohibit access by unauthorized users. |
| Manage the DHIN's multi-platform/multi-cloud environment | Single Sign-On | Assure user authentication across the various systems and applications with a single login/password. |
| Manage the DHIN's multi-platform/multi-cloud environment | Billing, Metering and Chargeback | Define, capture, monitor, aggregate, and summarize service costs and performance metrics for usage, type, account code, etc.<br>Capture, monitor, assess, and maintain costs and cost drivers to prescribed pricing terms and cost indices.<br>Plan and project costs based on changes to service provision. |
| Manage the DHIN's multi-platform/multi-cloud environment | Service Desk, Ticketing and Support | Provide service desk support for all cloud-based and hybrid services. |
| Manage the DHIN's multi-platform/multi-cloud environment | Service Catalog | Provide capability to contract for and transition to a new service, platform, application, etc.<br>Maintain a DHIN library of supported cloud solutions, applications, integrations, licenses, contracts, conditions, certificates, and other functionality. |

| | | |
|---|---|---|
| Manage the DHIN's multi-platform/multi-cloud environment | System Documentation | Generate and maintain a data dictionary, as well as up-to-date system, network, and application documentation. |
| Manage the DHIN's multi-platform/multi-cloud environment | Provision of Self-Service Tools | Provision resources, and set up and maintain services and applications.<br>Provide analytic and diagnostic tools to monitor traffic, usage, performance, operational data, etc. |
| Manage the DHIN's multi-platform/multi-cloud environment | Disaster Recovery/Business Continuity | Meet seamless service recovery and business continuity metrics within and across the DHIN ecosystem.<br>Continue business operations while a business disruption event is occurring.<br>Conduct annual testing of and disaster event failover and recovery within and across the DHIN ecosystem. |
| Establish service performance | Service Monitoring | Monitor and maintain system performance and detect and remediate system fault actions.<br>Generate, support, and monitor regular maintenance windows, service patches, and versioning. |
| Establish service performance | Performance | Capture and display performance metrics.<br>Define, establish, support, monitor, measure, report, and enforce DHIN service metrics (e.g., system performance, service availability, demand and usage, mean time between failures, system uptime and scheduled downtime, deployment quality, etc.).<br>Adjust resources accordingly to meet DHIN baseline service metrics. |
| Establish service performance | SLA Metrics Reporting | Define, review, monitor, and maintain service and operational-level agreements/contracts/subscriptions.<br>Define, capture, validate, monitor, and report on all SLA performance requirements and metrics, including response times (search, query, respond) for data and records within and across the DHIN ecosystem (end-to-end). |
| Establish service performance | Monitoring, Reporting and Auditing | Establish, support and monitor DHIN service coverage, issues escalation and resolution, and performance plans. |