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| Data Access Framework |
| Targeted Data Access Use Case and Functional Requirements |
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# 1.0 Preface and Introduction/Initiative Overview

To fully realize the benefits of health IT, the Office of the National Coordinator for Health Information Technology (ONC), as part of the Standards and Interoperability (S&I) Framework is developing Use Cases that define the interoperability requirements for high priority health care data exchange; maximize efficiency, encourage rapid learning, and protect patients’ privacy in an interoperable environment. These Use Cases address the requirements of a broad range of Communities of Interests including; patients, their significant others and family members, providers, payers, vendors, standards organizations, public health organizations, and Federal agencies.

The Use Case is the foundation for identifying and specifying the standards required to support the data exchange.

*Note - The Data Access Framework initiative includes 2 Use Cases. The first use case was Local Data Access via intra organization queries and the second use case is Targeted Data Access via inter-organization queries. This document outlines the business and functional requirements for the Targeted Data Access use case.*

# 2.0 Initiative Challenge and Value Statement

Health care organizations are rapidly adopting EHR systems to manage patient records. However, providers are often faced with the need to access patient data from multiple health care organizations where the patient may have previously received healthcare services. Accessing patient data from external organizations remains a challenge. The Targeted Data Access use case defines the scenarios, requirements, system interactions, and data requirements to enable standardization of data access between organizations willing to exchange health information.

While EHR and Health IT systems provide many access paths through their pre-defined interactions between a user and the system, they are limited in their support for data queries, APIs, or services to access data sets as needed. Where Health IT systems provide data access, they likely do not use industry standard access methods. Increasing support for data access, using industry standards, would enable providers to access individual patient data across organizations without having to rely on the predefined access paths. Access to patient data from multiple care organizations and their systems would enable better care coordination and reconciliation.

Note that the Targeted Data Access Use Case defines the business requirements for accessing data about an individual patient unlike the Local Data Access Use Case which allowed queries for both an individual patient data and/or population data. This constraint may be relaxed in the future as policies for querying population data from external organizations mature and are implemented.

For current charter, please see the [Charter Wiki Page](http://wiki.siframework.org/Data%2BAccess%2BFramework%2BCharter%2Band%2BMembers).

# 3.0 Targeted Data Access - Use Case Scope

The scope of the Targeted Data Access Use Case is to define the requirements for inter-organizational access to individual patient data. The requirements in this use case will focus on the interchange between applications across two trusted healthcare organizations willing to exchange data. The diagram below illustrates the scope within the larger workflow of a user (e.g. Healthcare Professional) accessing patient data from a trusted external healthcare organization.

Similar to the Local Data Access use case, the use case and functional requirements will enable various types of query mechanisms such as document metadata and data element based queries. Detailed definitions of the data access mechanisms have been posted on the Wiki Page [here](http://wiki.siframework.org/DAF%2BTerminology) for reference.

 

Figure 1: Targeted Use Case Context Diagram

## 3.1 In Scope

*This section indicates what is in scope for the Use Case. For example, it can include the type of transactions, the information/data to be exchanged, and specific aspects that need to be in place to enable the information to be sent, received and understood the same at both ends of the transmission.*

1. Targeted Inter-Organizational Query: Defining requirements to enable, healthcare professionals etc. access to already documented individual patient data from e.g. encounters, admissions, or visits and maintained in systems within trusted external healthcare organizations. In the context of Data Access Framework, a trusted external healthcare organization can be a Covered Entity, a Business Associate or other organization, with permitted access, as defined by HIPAA rules, Patient Safety and Quality Improvement Act or other applicable legal and regulatory requirements.
2. The methods for establishing secure communications and access (user identification, authentication, authorization, patient consents and audits) between trusted organizations.
3. Document Metadata Based Access: Accessing data using the metadata associated with an individual patient’s clinical documents.
4. Data Element Based Access: Accessing data for an individual patient based on information that is part of the patient’s clinical record such as patient demographics, clinical conditions, etc.
5. Define requirements for standardized API’s that allow applications to access individual patient data in a consistent manner across trusted health organizations. The technical workgroup will define the APIs during harmonization phase of this S&I initiative.
6. When the query requestor knows that a patient’s data is managed in multiple trusted organizations, the query requester may send a query to each targeted organization. Outside the scope of the Data Access Framework, it is the responsibility of the query requestor to assemble and reconcile multiple query responses.
7. Defining error responses and messages are in scope for the DAF initiative.

## 3.2 Out of Scope

*This section indicates what is out of scope for the Use Case. These points may highlight dependencies on the feasibility, implementability, and usability that result in limitations of the Use Case.*

1. Defining privacy, security and technical policies and agreements that allow queries to be executed between two trusted organizations is out of scope. This includes establishing trust frameworks and trust policies such as trust bundles and certificates.
2. Defining patient matching algorithms and methods are out of scope. However, patient data necessary for identification in external systems is within scope of data requirements
3. Registry and directory services necessary to discover where known patient data exists.
4. Defining technology implementation details to retrieve information stored in internal databases or other applications used by an organization’s Health IT system.
5. Patient generated queries and access (addressed within Blue Button Initiative).
6. Displaying, consuming, and processing results by the Query Requestor.
7. Capabilities identified in the project charter as being out of scope including: query execution policies, new information models, discovery of query service end points and verifying that requested information is accurate.
8. Reconciling patient identification for data responses is out of scope for DAF.

# 4.0 Use Case Assumptions Section

*The Use Case Assumptions section outlines what needs to be in place to meet or realize the requirements of the Use Case .These points are more functional in nature and state the broad overarching concepts related to the Initiative.*

1. An organization’s Health IT system is comprised of any and all IT systems (i.e. varying EHR systems or other Health IT systems such as Pharmacy and Lab).
2. Federated query within a Health IT system will be handled by the responding organization as required. That is, the internal methods and capabilities for collecting and aggregating query response data from the distributed sources in a federated system is the responsibility of the query responding organization.
3. Information requestor (business user) knows how to query an external Health IT system
4. Actors and systems shall execute queries and return query results based on their established service level agreements (SLAs).
5. Patient data can be queried as long as it has been documented and the external trusted organization’s Health IT system makes it available to be queried against.

# 5.0 Pre-Conditions

*The Pre-Conditions section describes the state of the system, from a technical perspective, that must be true before an operation, process, activity or task can be executed. It lists what needs to be in place* ***before*** *executing the information exchange as described by the Functional Requirements and Dataset requirements.*

1. The Healthcare organization 1 (query requestor) has knowledge about the external healthcare organization 2 (the query responder) end point to send a query
2. The Healthcare organization 1 (the query requestor) and healthcare organization 2 (the query responder) have a common understanding of the shared vocabulary that is used to create the queries and provide the query results
3. The Healthcare organization 1 (the query requestor) knows the patient for whom they wish to request data and external location(s) where the organization wants to send the request for information. The purpose of the query is consistent with HIPAA rules concerning established patient relationship for treatment, payment or operations.
4. The Healthcare organization 2 (the query responder) can provide a query response in the standardized format

# 6.0 Post-Conditions

*The Post Conditions section describes the state of the system, from a technical perspective, that will result after the execution of the operation, process activity or task.*

1. The healthcare organization 1 (the query requestor) has sent a query
2. The healthcare organization 2 (the query responder) has received the query
3. The healthcare organization 2 (the query responder) has sent a response to the query results or error response to healthcare organization 1 (the query requestor)
4. The healthcare organization 1 (the query requestor) has successfully received the query results or error response from healthcare organization 2 (the query responder)
5. Both query requestor and query responder log all query transactions and disclosures

# 7.0 Actors and Roles

*The below table outlines the business actors that are participants in the information exchange requirements. A business actor is a person or organization that directly participates in a scenario.*

| **Actor** | **System** | **Role** |
| --- | --- | --- |
| Healthcare organization 1 (the query requestor)  | Health IT System | 1. Query Request Creator
2. Query Request Sender
3. Query Response Receiver
 |
| Healthcare organization 2 (the query responder) | Health IT System | 1. Query Request Receiver
2. Query Request Processor
3. Query Response Creator
4. Query Response Sender
 |

Table 1: Targeted DAF Actors and Roles

# 8.0 Generic Scenario

A business user in healthcare organization 1 requires individual patient data that is managed across more than one trusted healthcare organizations. The user creates a request from healthcare organization 1 for data through the application they are using. The user’s application generates a query in the appropriate format. The user’s application establishes a secure communication with a trusted healthcare organization 2. Then the user’s application in healthcare organization 1 sends a query request for an individual patient’s data to the trusted healthcare 2 organization. The trusted healthcare organization 2, receiving application evaluates the query and retrieves the data requested. The receiving application in trusted healthcare organization 2 packages the data results into a response and sends it to the querying application in healthcare organization 1. The trusted healthcare organization’s 1 querying application organizes and integrates all responses received from the trusted healthcare organization 2’s responding application and presents the data to the user who requested the data.

## 8.1 User Story

The User Stories represent real world examples of the generic scenario outlined above. This section contains three example user stories to illustrate the specific instances of the Targeted Data Access Framework use case. There are other user stories as examples in Appendix A for your reference. By design the Data Access Framework is expected to support multiple user stories, many now unforeseen, and therefore the use case does not attempt to enumerate all possible uses.

The example user stories provided here all concern patients with diabetes or diabetes with complications.  However, the purpose of Targeted DAF is to support queries for documents and data elements for individual patients across the full spectrum of diseases, diagnoses and conditions.

**Document Metadata based access User Story #1**

**Patient Level Query #1**

**A Provider accesses clinical summary documents on an ad hoc basis for a new diabetic patient with**

**documented, poor glucose control.**

A new patient presents at his Primary Care Provider (PCP), a small family practice in Boston, MA. The PCP sees a 48 year-old male, with Diabetes Mellitus Type I (DM I) diagnosis since age 12. The patient has a history of myocardial infarction (MI) at age 37 and a stroke at age 43. The patient admits that he often forgets to take his medication as prescribed and often forgets to check his blood sugar levels throughout the day. The patient travels for work and has been admitted to different ERs numerous times for acute complications due to elevated blood sugar levels. The physician needs access to the patient’s general clinical summaries including lab values, medications and problem list and must query the various healthcare organizations where the patient received care in the past. ***For today’s visit, the physician’s practice (the query requesting organization) generates an ad-hoc query in preparation for the patient’s arrival using their EHR to access clinical summary documents located externally in other trusted healthcare organizations (query responding organizations), so that he can check if the patient’s HbA1c levels were greater than 7% over the past 5 years. The EHR system sends individual queries to each trusted healthcare organization (query responding organizations) and the query requesting organization retrieves the requested information, which is subsequently presented to the physician for additional review.*** This information provides the physician required context to understand the severity of circumstances that led to the patient’s ER admission, the severity of the patient’s non-adherence to medications and formulate a plan to improve the patient’s lifestyle and adherence to medications to mitigate future ER visits and reduce or prevent the progression of established comorbidities.

**Data Element based access User Story #2**Patient Level Query #1

**A patient is referred to a Gastroenterologist, by their primary care physician. The Gastroenterologist needs access to fasting glucose laboratory results from the patient’s primary care physician’s practice.**

Research indicates that Hepatitis C patients are at increased risk for type II diabetes. In accordance with best practice, a Gastroenterologist wishes to review fasting glucose trends lab tests for a new Hepatitis C patient.  The patient provides the name of her primary care physician. ***The Gastroenterologist sends a query (the query requesting organization) for the patient’s fasting glucose laboratory tests over the past two years to the patient’s PCP’s EHR system (the query responding organization). The primary care physician’s practice is a trusted healthcare organization.*** The patient’s PCP’s EHR system receives the query request from the Gastroenterologist’s organization, finds the patient’s fasting glucose levels over the past two years and returns the requested lab results.

**Document Metadata based access User Story #3**

**Patient Level Query #2**

**A provider needs to access clinical information for a new patient from a different primary care physician.**

A patient has moved from Michigan to Florida for retirement. The patient has diabetes and has also undergone multiple open heart surgeries to correct irregular heartbeats and other ailments related to the heart. The patient arranges an appointment with their new primary care physician in Florida. The new primary care physician’s practice (the query requesting organization) sets up an initial visit with the patient and obtains information about the patient’s previous PCP. ***In preparation for the patient’s initial visit, the practice sends a query (the query requesting organization) to the previous PCP’s system (the query responding organization), requesting all available clinical documents for his new patient. The previous PCP’s system (the query responding organization) receives the query from the patient’s new PCP’s system (the query requesting organization), locates, packages and sends back the requested data to the new primary care physician’s EHR system.*** Now that the new PCP has all necessary records, he can use this information to develop an effective care plan for the patient.

## 8.2 Activity Diagram

*An Activity Diagram is a special form of a state transition diagram in which all or most of the states are activity states or action states. The Activity Diagram illustrates the Use Case flows graphically, and represents the flow of events and information between the actors. It does not show error or exception conditions such as “authentication failed” or “patient not found.” It also displays the main events/actions that are required for the data exchange and the role of each system in supporting the data change. Error conditions and failures to authenticate and authorize will be considered as part of the technical solution, based on underlying standards and protocols.*

******

**Figure 2: Targeted DAF Activity Diagram**

### 8.2.1 Base Flow

*The Base Flow presents the step by step process of the information exchange depicted in the activity diagram (above). It indicates the actor who performs the action, the description of the event/action, and the associated inputs (records/data required to undertake the action) and outputs (records/data produced by actions taken).*

| **Step #** | **Actor** | **Role** | **Event/ Description** | **Inputs** | **Outputs** |
| --- | --- | --- | --- | --- | --- |
| 1 | Query Requestor | Query Request Creator | Gather the necessary information about trusted external endpoints that need to be queried. | ***START –*** Query Responder end points for query. | Structured Query information (i.e. address and security credentials of external query responder) necessary to identify the external Query Responders. |
| 2 | Query Requestor | Query Request Creator | Gather the query parameters to identify the patient and type of document/data requested. | Patient Identification and document/data required  | Structured Query Information necessary to identify patient and documents/data about the patient. |
| 3 | Query Requestor | Query Request Creator | Gather the authentication information necessary to be sent to the external organization.  | Authentication information | Structured Query information necessary to authenticate with external query responder. |
| 4 | Query Requestor | Query Request Creator | Gather the authorization information and any additional patient consent information  | Authorization, consent information and any additional information required. | Structured Query information necessary to assert authorization and patient consent is provided to the external query responder. |
| 5 | Query Requestor | Query Request Creator | Assign Query Request Unique ID  | Query Request ID Unique to the requestor | Structured Query information necessary to uniquely identify the query response when return asynchronously from the external query responder. |
| 6 | Query Requestor | Query Request Creator | Create the overall query conforming to the shared vocabulary and structure. | Query Responder Identification, Patient Identification and information requested Data, Authentication, Authorization, Consent, Unique Query Request ID and additional metadata as required | Structured Query ready to be sent to the external query responder.  |
| 7 | Query Requestor | Query Request Sender | Send the Query (queries) to external query responder(s) securely  | Structured Query | Query successfully transmitted to responder. |
| 8 | Query Responder | Query Request Receiver | Receives query from external query requestor securely  | Structured query | Structured query successfully received |
| 9 | Query Responder | Query Request Processor | Dis-assembles query from external query requestor  | Structured Query | Query requestor identification, Patient Identification and information requested Data, Authentication, Authorization, Consent and additional metadata as required |
| 10 | Query Responder | Query Request Processor | Validate authentication credentials of query requestor, authorization, and consent information | Authentication Information,Authorization Information,Consent Information | Validated authentication of query requestor, verify authorization and consent information to proceed to look for data |
| 11 | Query Responder | Query Request Processor | Match patient identity | Patient identification information | Match patient successfully and identify relevant documents / data from clinical records |
| 12 | Query Responder | Query Request Processor | Assessing authorization for specific patient document/data requested | Patient identity and documents/data requested | Authorization to release patient document/data requested or response that no patient information will be sent |
| 13 | Query Responder | Query Response Creator | Create Query Response conforming to the shared vocabulary and structure and identifying the query request unique ID that is being responded to. | Patient Information, documents/data from clinical records | Structured Query Response to be returned to the external query requestor  |
| 14 | Query Responder | Query Response Sender | Send Query Response securely | Structured Query Response | Structured query response sent successfully to the external query requestor |
| 15 | Query Requestor | Query Response Receiver | Receive Query Response | Structured Query Response | **END** – Structured Query Response received successfully. |

Table 2: Targeted DAF Base Flow

## 8.3 Functional Requirements

*Functional Requirements identify the capabilities a system in a role must have in order to enable interoperable exchange of the healthcare data of interest. They provide a detailed breakdown of the requirements in terms of the intended functional behaviors of the application. The Functional Requirements include Information Interchange Requirements and System Requirements.*

### 8.3.1 Information Interchange Requirements

*The Information Interchange Requirements**define the system’s name and role. They also specify the actions associated with the actual transport of content from the sending system to the receiving system. This use case has two information interchange requirements, as seen below.*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Information Interchange Requirement** | **Initiating System** | **(describes action)** | **Information Interchange Requirement Name** | **(describes action)** | **Receiving System** |
| IIR 01a.  | Query Requesting Application | Sends  | A query which contains authentication, authorization data, unique request ID and structured query using document metadata | Receives | Query Responding Application |
| IIR 01b.  | Query Requesting Application | Sends  | A query which contains authentication data, authorization, unique request ID and structured query using specific clinical data value(s) | Receives | Query Responding Application |
| IIR 02a. | Query Responding Application | Sends  | Response to document metadata based structured query document metadata | Receives | Query Requesting Application  |
| IIR 02b. | Query Responding Application | Sends  | Response to data element based structured query  | Receives | Query Requesting Application  |

Table 3: Targeted DAF Information Interchange Requirements

### 8.3.2 System Requirements

*This section**lists the requirements internal to the system necessary to participate successfully in the transaction. The sending and receiving functionality is excluded from system requirements because this is already included in the information interchange requirements section.*

| **System** | **System Requirement** |
| --- | --- |
| Query Requesting Application | 1. Generate a query for patient data or document
2. Assemble authentication, authorization and consent information
3. Package the request in a specified standardized format
 |
| Query Responding Application | 1. Authenticate requesting application credentials and validate authorization for data access
2. Identify patient data that matches the query
3. Make determination to release patient data
4. Transform queried patient data in a specified standardized format
5. Package the response in a specified standardized format
 |

Table 4: Targeted DAF System Requirements

## 8.4 Sequence Diagram

*A Sequence Diagram is primarily used to show the interactions between objects in the sequential order that they occur. This representation can make it easy to communicate how the exchange works by displaying how the different components interact. The primary use of the diagram is in the transition from requirements expressed as use cases to the next and more formal level of refinement.*

 ******

Figure 3: Targeted DAF Sequence Diagram

# 9.0 Dataset Requirements

*This table lists the data elements and data element sets that will be available within the message or document. Historically, the optional/required nature of each data element is deferred to the discussions during the harmonization phase.*

***Note:*** *The dataset requirements section identifies the data elements based on the use cases and are described at a conceptual level. The descriptions of the data elements are independent of any particular standard and will serve as the starting point for the harmonization activity. During the harmonization activity the data elements will be further refined and if necessary decomposed and will eventually be mapped to candidate standards. As a starting point these data elements have been derived from Meaningful Use Stage 2 common data set plus IHE XDS Metadata definitions.*

|  |  |  |
| --- | --- | --- |
| **Data Set Selection**  | **Generic Data Element[[1]](#footnote-1)** | **Generic Data Element Description** |
| **Time** | Document Creation Time | Date and Time stamp for document creation. |
| Service Start Time | The start time the service being documented took place. |
| Service End Time | The stop time the service being documented took place.  |

|  |  |  |
| --- | --- | --- |
| **Data Set Selection**  | **Generic Data Element** | **Generic Data Element Description** |
| Patient Data | Patient ID | The identifier assigned by a provider or healthcare organization to a patient (example: MRN) |
| Patient Demographics | A set of demographic information about the patient sufficient to perform patient identity matching This information typically includes patient’s first and last name, sex, birth date, race, ethnicity. |
| Additional Patient Identifiers | Additional identifiers for the patient that would aid patient matching.  |

|  |  |  |
| --- | --- | --- |
| **Data Set Selection**  | **Generic Data Element[[2]](#footnote-2)** | **Generic Data Element Description** |
| **Organization Data** | Author institution | Represents a specific healthcare facility where a document was authored. |
| Health Facility Information | Information about the organizational setting in which the clinical encounter was documented and where clinical act occurred. This includes (Name of facility, Type of facility, code of facility, ID of facility) |
| Source Organization Information  | Information about the origin of the document (Name of the Organization, Type of organization Code of organization, ID of the organization ) |
| Practice Setting Information  | Practice setting is the location where clinical care was provided and the document was created. (Name of the practice, Code associated with the type of practice, identifier associated with the type of practice) e.g., Family Practice, Laboratory Department, Radiology Department, Pulmonary Unit, Intensive Care Unit, etc. |
| Document Custodian | Organization legally responsible for the document |

|  |  |  |
| --- | --- | --- |
| **Data Set Selection**  | **Generic Data Element** | **Generic Data Element Description** |
| **Document Level Data** | Document Information | Information about the document where patient information has been recorded (code associated with document type, Name associated with the document type, IDs associated with the document) |
| Comments | Comments associated with the Document, free form text. |

|  |  |  |
| --- | --- | --- |
| **Data Set Selection**  | **Generic Data Element[[3]](#footnote-3)** | **Generic Data Element Description** |
| **Document Author**  | Author Specialty | Represents a specific specialty of the author who created the document. For example, Primary Care Physician, Nurse Practitioner, Anesthesiologist, Cardiologist etc. |
| Author Contact Information | Represents the telecommunications address (e.g. phone, email, name etc.) of the document author, intended to assist with automated routing of other messages intended for the document author. |

|  |  |  |
| --- | --- | --- |
| **Data Set Selection**  | **Generic Data Element** | **Generic Data Element Description** |
| **Authentication and Authorization Information (user, application, system)**  | System Authentication Details | The data element identifies the details that is necessary to authenticate the systems involved in the Targeted DAF. |
| User Details | The data elements that identify the details of the end user who is accessing the data.  |
| Purpose of Use | Identifies the purpose for the transaction so that the responder can make decisions about releasing the data.  |
| Patient Consent Information | Identifies the patient consent information that may be required before data can be accessed.  |
| Query Request ID | Query requesting application assigns a unique identifier for each query request in order to match the response to the original query. |

Table 5: Dataset Requirements for Document Metadata Based Query Request

***Note: The data elements in the following table are also applicable to document metadata query response, data element based query request and data element based query response.***

***Note:*** *This list includes an initial list of data elements and data element sets from MU summary documents exchanged among providers and/or patients. This includes the "Common MU Data Set" plus other elements required in one or more of the summary documents, all of which use C-CDA. There are other MU2 data elements not included in the DAF list that are captured and stored within EHRs for functionality not related to information exchange (e.g., Family Health History, secure messaging information).*

**Legend**

|  |  |
| --- | --- |
| X | Query requests and query responses can include one or more data elements from the list of data elements depending on the context of the query. |

|  |  |  |
| --- | --- | --- |
|  | Query Input Parameter |  |
| Query Type or Name | e.g, multi-patient |  |
| Query Response Format | e.g, table, list |  |
| **Data Elements** | **Request Parameter** | **Response Data Elements** |
| Patient Identification includes attributes necessary to enable effective patient matching to retrieve specific patient records | X  | X  |
| Provider Identification  | X | X |
| **Data Elements** | **Request Parameter** | **Response Data Elements** |
| Facility / Source | X | X |
| Encounter Type | X | X |
| Date (Date Range) | X | X |
| 1. Patient name[[4]](#footnote-4) | X  | X  |
| 2. Sex | X | X |
| 3. Date of birth  | X | X |
| 4. Race\* | X | X |
| 5. Ethnicity\*  | X | X |
| 6. Preferred language\* | X | X |
| 7. Smoking status\*  | X | X |
| 8. Problems\* | X | X |
| 9. Medications\*  | X | X |
| 10. Medication allergies\* | X | X |
| 11. Laboratory test(s)\*  | X | X |
| 12. Laboratory value(s)/result(s)\* | X | X |
| 13. Vital signs (height, weight, BP, BMI)  | X | X |

|  |  |  |
| --- | --- | --- |
| **Data Elements** | **Request Parameter** | **Response Data Elements** |
| 14. Care plan field(s), including goals and instructions | X | X |
| 15. Procedures\*  | X | X |
| 16. Care team members | X | X |
| 17. Immunizations\* | X | X |
| 18. Confidentiality Information | No Confidentiality Code Query Parameter | X |
| 19. Clinical Instructions[[5]](#footnote-5) | X | X |
| 20. Cognitive Status | X | X |
| 21. Date and Location of Visit | X | X |
| 22. Dates and Location of Admission and Discharge- Inpatient Only | X | X |
| 23. Diagnostic Tests Pending | X | X |
| 24. Discharge Instructions- Inpatient Only | X | X |
| 25. Functional Status | X | X |
| 26. Future Appointments  | X | X |
| 27. Future Scheduled Tests | X | X |
| 28. Immunizations Administered during the Visit\* | X | X |
| 29. Medication List \*  | X | X |
| 30. Medications Administered during the Visit\* | X | X |
| 31. Provider Name and Office Contact Information | X | X |
| 32. Reason for Hospitalization- Inpatient Only | X | X |
| 33. Reason for Referral- Ambulatory Only | X | X |
| 34. Reason for Visit | X | X |
| 35. Recommended Patient Decision Aids | X | X |
| 36. Referrals to other Providers | X | X |

Table 8: Dataset Requirements for Document Metadata Based Query Response and Data Element Based Query Request and Response

# Appendices

*The content of this section varies depending on the needs brought forth by the Community. Some Use Cases may have appendices that are specific to their content and issues. The appendices listed below are suggested for inclusion.*

## Appendix A: Additional User Stories

The example user stories provided here all concern patients with diabetes or diabetes with complications.  However, the purpose of Targeted DAF is to support queries for documents and data elements for individual patients across the full spectrum of diseases, diagnoses and conditions.

**Population level Query**

**PCP searches for office visit summaries in local EHR system to further analyze them using 3rd party software system (external to EHR) to understand severity of illness in patient population**

A primary care physician’s patient panel has a significant number of male patients who have cardiovascular disease and diabetes over the past 5 years.  She wants to further analyze the clinical summaries of her male patient population over the past 5 years using a 3rd party analytical application external to the EHR System. She queries her EHR system to retrieve clinical office summary visit documentation for patients over the past 5 years. The results of the query are returned to her in a structured document format for each of the patients fitting those criteria. Once she receives the results, she further analyzes the summaries by using an external 3rd party analytical application to break down cohorts of those patients with mild, moderate, and severe disease to determine who are missing recommended preventive and disease management services such as lab checks and diabetic foot exams.

**Data Element based access**
**Patient Level Query**  **PCP searches for office visit summaries in local EHR system to further analyze them using 3rd party software system (external to EHR) to understand severity of illness in patient population**

A primary care physician’s patient panel has a significant number of male patients who have cardio vascular disease and diabetes over the past 5 years.  She already has a list of male patients and their clinical office visit summary documents that she was able to retrieve through a previous query search in her EHR. She wants to use that list of patients now to drill down within each of these documents to identify patients with cardiovascular disease and diabetes over the past 5 years.  The PCP sends one query to her EHR system for all identified patients to retrieve patients with diagnoses of cardiovascular disease and diabetes over the past 5 years. The query returns a list with associated documents that match the query request. Once she receives the results, she further analyzes the summaries by using an external 3rd party application to break down cohorts of those patients with mild, moderate, and severe disease to determine who is missing recommended preventive and disease management services such as lab checks and diabetic foot exams.

**Patient Level Query**  **PCP querying lab data results over past 12 months for a patient whose HbA1c is >7%**

A Primary Care Provider (PCP) at Virginia Family Medicine Center (VFMC) recently ordered an HbA1c test for a new patient with established Diabetes Type 1 diagnosis. The patient had been to VFMC several times before, but just recently switched her PCP internally at VFMC. The PCP received the test results for a specimen drawn on 7/5/2013 in her EHR system indicating that the patient’s HbA1c was 8.3%. Her PCP would like to determine her patient’s glucose level trend over the past 12 months. The PCP formulates a query in her EHR system to retrieve all HbA1c results where the patient’s levels were above 7% at VMFC. The PCP receives a single response of available results from one or more responding application(s) where this data was documented. The PCP is able to obtain all of the results requested from the responding application(s). Upon receiving the results, the PCP confirms that the patient’s glucose levels have been progressively increasing based on available results for each visit since 7/5/2012. The PCP then schedules a set of diagnostic tests to aid her in developing an effective rehabilitation plan to proactively manage her patient’s health condition.

**Patient Level Query**  **Two applications share data during a hospital visit to coordinate information about diagnoses, medications and treatments and queuing of appropriate patient education and instruction material. (Debbie Foss Submitted on Wednesday September 5th, 2013)**

A patient enters the hospital for pneumonia. During his visit, he is diagnosed with CHF. Patient instruction located in Application X queries the information from Application Y and receives patient demographics and admitting diagnosis, triggering a preliminary list of education topics for introduction to pneumonia and medications for in-hospital teaching. Application X then receives (either via query or as and alert) for the CHF diagnosis, and begins to queue topics for daily teaching on a new diagnosis, new medications and diet. Prior to discharge, Application X queries Application Y -- perhaps seeking a C-CDA in whatever state of completion it's available -- and topics for discharge instructions are triggered for compilation by providers.

**Population level Query**  **Physician conducts ad hoc query to determine percent of Hepatitis C patients for research at an organization under treatment with no fasting glucose lab tests (EHR to CDR)**

A new physician starts working at a health center where many patients with Hepatitis C are treated. The physician is aware of clinical practice guideline that specifies that patients with Hepatitis C diagnosis on active treatment must have fasting glucose test performed at the beginning of treatment and at predefined intervals during the treatment. The physician wants to conduct research on the quality assessment of patients being treated. The physician sets up a query to first identify all patients with a diagnosis of Hepatitis C and currently receiving Hepatitis C treatment that have not had a fasting glucose test since beginning of the therapy. The query is sent from the local EHR system to an identified application(s) (i.e. Clinical Data Repository) to retrieve a list of patient names fitting these criteria. Upon receiving this information back in his EHR system the physician learns that 3% of his Hepatitis C patients currently under treatment have not had their fasting glucose test. The physician then retrieves the list of individual patients who have consented to share their information for purposes of research.

**Patient Level Query
User Story Revised and Submitted by Nicole Antonson September 12th, 2013 Ancillary to EHR Query and Update (Pull and push)**

Dr. Jones admits patient J to the hospital for pneumonia. During patient J’s visit, he is diagnosed with angina. While in the hospital, he is scheduled for angiogram.  During preop, the cardiology nurse begins the data entry process into the cardiology system for the patient (e.g., completes assessment form.)  The nurse selects the patients name and the cardiology system initiates a query to the EHR for demographic and patient profile data (e.g., problems, meds and allergies.) The EHR returns the information, the cardiology system uses this information to populate the assessment form, and the nurse completes any missing information through a patient interview.  (During the assessment process the same information returned is used for decision support and reminders.)  During the angiogram, patient J requires angioplasty.  Medications are administered during the procedure and new ongoing orders are created.  After the procedure is closed, the Cardiology system pushes the administered medications and ongoing medications to the EHR.

## Appendix B: Related Use Cases

* Local DAF Use Case can be found [here](http://wiki.siframework.org/Use%2BCase%2B1%2BLocal%2BData%2BAccess%2BConsensus).

## Appendix C: Previous Work Efforts

* Query Health Initiative, which can be found [here](http://wiki.siframework.org/Query%2BHealth).

## Appendix D: References

Data Access Framework General References can be found [here](http://wiki.siframework.org/Data%2BAccess%2BFramework%2BReferences)

* The following is a list of useful artifacts for the community.
* [Project Charter](http://wiki.siframework.org/Data%2BAccess%2BFramework%2BCharter%2Band%2BMembers): The document describes the overall project charter including the challenge statement, scope, deliverables and timelines.
* [DAF Terminology](http://wiki.siframework.org/DAF%2BTerminology): The document describes the terminology that will be used by the community to discuss DAF standards
* [Initiative Parking Lot](http://wiki.siframework.org/Data%2BAccess%2BFramework%2BInitiative%2BParking%2BLot): This page highlights any items identified as parking lot items at any stage in this initiative. This page will serve as the parking lot for both the Local and Targeted DAF workstreams.

## Appendix E: Glossary Terms

* Data Access Framework Terminology can be found [here](http://wiki.siframework.org/DAF%2BTerminology).
1. **Note:** examples of data elements for document metadata based access can be found in the following types of profiles: [XDS](http://www.ihe.net/Technical_Framework/upload/IHE_ITI_TF_Rev8-0_Vol3_FT_2011-08-19.pdf), CDAR2 [↑](#footnote-ref-1)
2. **Note:** examples of data elements for document metadata based access can be found in the following types of profiles: [XDS](http://www.ihe.net/Technical_Framework/upload/IHE_ITI_TF_Rev8-0_Vol3_FT_2011-08-19.pdf), CDAR2 [↑](#footnote-ref-2)
3. **Note:** examples of data elements for document metadata based access can be found in the following types of profiles: [XDS](http://www.ihe.net/Technical_Framework/upload/IHE_ITI_TF_Rev8-0_Vol3_FT_2011-08-19.pdf), CDAR2 [↑](#footnote-ref-3)
4. **Note:** The initial list of data elements are derived from MU2 data elements whose definitions can be accessed [here](https://www.federalregister.gov/articles/2012/09/04/2012-20982/health-information-technology-standards-implementation-specifications-and-certification-criteria-for#t-2). Data elements 1-18 are from the common MU2 dataset. [↑](#footnote-ref-4)
5. **Note:** Data Elements 19-36 in Blue Text are not in the common MU2 data set, but are required in some MU2 objectives and EHR certification criteria. EHR certification criteria can be found [here](http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=9d44a43faa41627b6ac100e53415884d&rgn=div8&view=text&node=45:1.0.1.4.80.3.27.5&idno=45). [↑](#footnote-ref-5)