Health Benefits and Health Record Mobile Solution (Virtual Clipboard Initiative)

Pilot Solution Definition & Design Document

Pilot Design and Adoption Workgroup

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2 REVISION HISTORY

Name	Date	Description	Version
HighPoint Solutions	4-9-2015	Updated to version 1.3	1.3
HighPoint Solutions	4-27-2015	Applied additional updates	1.4
HighPoint Solutions	5-20-2015	Applied minor changes	1.4.1

3 DOCUMENT PURPOSE

The purpose of this document is to support an approach for developing a pilot of a Health Benefits and Health Record Mobile Solution (or Virtual Clipboard), sponsored by The Sullivan Institute for Healthcare Innovation, and jointly supported by the Workgroup for Electronic Data Interchange (WEDI), the Healthcare Information and Management Systems Society (HIMSS) and the Medical Group Management Association (MGMA).

In order to achieve the desired outcomes of a pilot, it's imperative that clear expectations and definitions are set, as well as specific user functionality is well defined.   To design a pilot program that can quickly develop and vet standards for mobile application solutions, distinct definitions of scope (what will be included and not included) are needed.   This document will focus specifically on pilot functionality, while defining or documenting more strategic design considerations that are discovered.   While more strategic design considerations will be captured and documented as uncovered, they are not the specific focus of this document and will not be decomposed into specific business workflows or design specifications.

4 DEFINITION OF THE INITIATIVE

4.1 THE VIRTUAL CLIPBOARD INITIATIVE

This initiative is being launched to define a set of industry standards for exchanging and securing healthcare information within mobile applications used by patients and / or their advocates. The initiative has been named the Health Benefits and Health Record Mobile Solution or Virtual Clipboard. The expected outcome of this mobile and portal application is to improve healthcare efficiency, improve quality of care and empower consumers with healthcare decision making.

As background, patients present at healthcare settings with a paper or plastic card that typically does not have machine-readability and contains only minimal information. As a result, considerable resources are expended to accurately identify the patient, capture the demographic and insurance-related information, launch administrative transactions with the health plan, and resubmit claims as a result of manual keystroke errors. In addition, patients are required to fill out demographic and health-related information manually—most typically requiring use of a "clipboard." Frequently, patients cannot remember, incorrectly recall important health data points or do not have the required information at the time of service. Thus, incomplete and inaccurate information often becomes part of the patient's medical record. Accordingly, the long term goal of the initiative will be to provide real-time health information, create administrative efficiencies, and reduce record errors while effectively protecting patient privacy.

The initial intent is to build out a workable "pilot" solution that can be validated within several different types of care settings, verifying applicability of new mobile technologies. The first phase of the pilot will be focused on connecting a patient with their provider, who in turn engages a payer, to share information that is found on the traditional hard-token insurance ID card. While initially focused on automatically capturing the same information that would be contained on a typical insurance care, leading to facilitated eligibility processing, the broader goal is to pilot the concepts of one or more mobile applications and prove out the use and integration of technology. Subsequent iterations of the application, and its defined standards, will continue to increase the amount of functionality available in the application, and the benefit to patients that utilize the application to interact with their care providers.

4.2 INITIATIVE GOALS

Automating the engagement model between patients, providers and payers offers notable business value to all. To maximize the value proposition to patients and other healthcare constituents, the initiative has the following goals:

- Define and pilot a set of standards, interfaces and integration criteria for mobile solutions to prove out the concepts of a platform independent virtual clipboard application.
- Identify barriers and issues with implementing new automated processes and workflows between patients and providers, providers and payers and patients and payers.
- Demonstrate the use of one or more mobile technologies to replace the manual "clipboard" process used by providers to gather or update patient information.
- Define the strategy for a mobile application solution as a set of standardized approaches, interfaces and integration points that any application developer, organization or vendor could utilize to create an application.
- In the first Phase of the pilot, the goal is to automate the capturing and transmission of the data typically found on a hard-token insurance ID card and exhibit the use and/or validation of eligibility processing between the provider and payer.
- In subsequent phases of the pilot, additional goals will be outlined to enhance the capture and transmission of additional clinical and administrative data to enhance patient's interaction with healthcare providers and payers.
- Establish security and privacy standards for safe guarding patient, physician and payer information
- Define an approach and framework for a sustainable voluntary based Governance structure
- Identify additional innovation opportunities to improve business workflows and stakeholder interactions
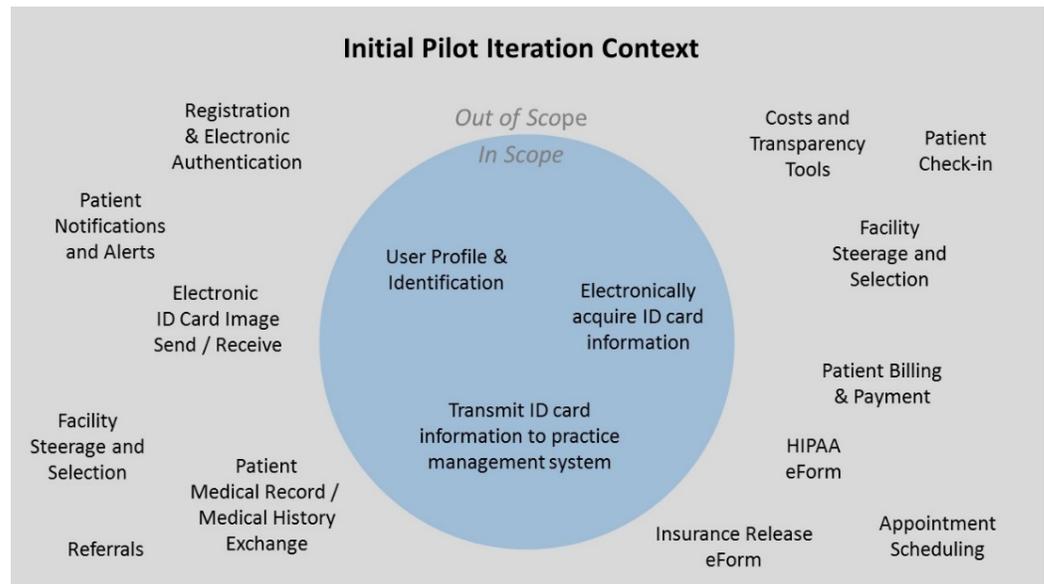
4.3 INITIATIVE PRINCIPLES

Improving patient engagement and their overall experience is one of the driving principles for this effort, as well as eliminating manual processes and paper based exchanges of information. Improving the overall electronic exchange of information, while eliminating redundant manual processes will improve the accuracy of data and simplify the patient engagement with providers and payers.

Specific principles to help guide the scope, design and utilization of this effort include:

- The patient should be able to use their preferred mobile application(s) for interfacing with multiple providers, payers or other health services organizations.
- One access ID should work for every patient-care provider and patient-carrier interaction, and any mobile application solution that adheres to defined solution standards.
- A virtual clipboard solution should eliminate, where possible, redundant manual processes, forms and interactions to drive value to the clinician, office staff and patient.
- The solution will make use of existing published standards when / where available.

4.4 SCOPE OF PILOT INITIATIVE

The first iteration of the pilot will be focused solely on the exchange of information needed for a mobile application to provide patient insurance data to the medical office staff. The data for the first phase will encompass the data typically found on a printed insurance ID card, providing the pertinent information needed to perform an electronic verification of insurance eligibility, replacing much of the manual exchange of information that occurs with a printed insurance ID card.

Initial Pilot Iteration Context

Out of Scope / In Scope

In Scope:
- User Profile & Identification
- Electronically acquire ID card information
- Transmit ID card information to practice management system

Out of Scope:
- Registration & Electronic Authentication
- Patient Notifications and Alerts
- Electronic ID Card Image Send / Receive
- Facility Steerage and Selection
- Patient Medical Record / Medical History Exchange
- Referrals
- Costs and Transparency Tools
- Patient Check-in
- Facility Steerage and Selection
- Patient Billing & Payment
- HIPAA eForm
- Insurance Release eForm
- Appointment Scheduling

It is expected that subsequent phases of the pilot will add additional information to the application standards, such as providing eligibility information back to the patient, enabling the exchange of health and prescription information, exchanging clinical summary forms and exchanging HIPAA privacy notification/acknowledgement forms. Throughout the design and definition phases of the pilot, additional innovations, ideas and future-state functionality is being captured and recorded for potential use.

4.5 FUTURE STATE FEATURES/FUNCTIONS

While it is expected that there will be a number of additional opportunities to increase patient engagement and automation, the initial pilot will be limited to the content outlined in section 4.4. In order to look ahead at additional design considerations the next section outlines potential functionality for future releases of mobile application and system integration functions and standards. The intent of this information is to help define an overall vision for application standards in the future, so any technical design considerations can be factored into solution designs.

The following table depicts *potential* functionality for subsequent versions of the application. Future phases of this initiative will work to define the set of standards for these functions. This in turn could bring a level of consistency to patient mobile-based applications and the integration points needed for cross-industry interoperability.

Functional Area	Function	Possible Phases		
		1	2	3
User Profile / Registration	Maintain user data	✓	✓	✓
	Notification preferences	✓		
	Medical information options / preferences		✓	
	Prescription options / preferences		✓	
	Security options		✓	✓
	Authentication of user identity		✓	
Insurance Information	Active carrier profile and information	✓		
	Historical coverage / carrier information		✓	
	Benefits information on active carrier(s)		✓	✓
Physicians / Medical Care Providers	Active / engaged provider inventory		✓	
	Historical provider inventory			✓
Medical History	Consolidated medical history		✓	
Medical Record	Current medical / disease conditions		✓	
	Lab results		✓	✓
	Medical imaging inventory			
Prescription Management	Active prescription list		✓	
	Prescription history		✓	
	Links to additional Rx information			✓
	Prescription co-pays, co-insurance tier data		✓	
	Carrier prescription formulary information		✓	
Notification / Alerting	Patient / user notifications & alerts (receive)		✓	
	Patient / user notifications & alerts (send)		✓	
	Messaging / email		✓	
	Information sent/received event notification		✓	
	Appointment reminder alert		✓	
	Fraud detection / verification alerts		✓	
Emergency Access	Medical profile for emergency workers		✓	
Appointment Scheduling	View/Schedule/Change Appointments			✓
	Prompt patient for information needed for visit			
TeleHealth / TeleMedicine	Provide electronic telehealth services			✓
	Video/audio capabilities (call, record call)			

5 APPLICATION STANDARDS

The intent of this initiative is to work across the healthcare industry to define and evolve a set of application and technology standards that can provide a consistent user-experience for a patient while supporting cross-industry interoperability and security.

For the initial phase of the pilot existing technologies and mobile application solutions from across multiple constituents and/or vendors will be explored. This approach allows for a timelier pilot implementation without starting a development effort from scratch. It also supports innovative approaches and ideas, to make the application standards development process as meaningful as possible.

Several project workgroups have spent time identifying industry standards for interoperability and security. While specific standards will be defined by the program in the future, there are several standards that will likely be considered as future-state requirements.

The directional standards for inter-application integration are expected to include the Fast Healthcare Interoperability Resources (FHIR) specification from HL7. In addition to FHIR for providing a rigorous mechanism for exchanging data between healthcare applications, it's probable that project workgroups will leverage industry defined standards for security and security services as well. OpenID Connect is likely to be the set of standards to be used for security, with close attention being given the outcomes of the OpenID HEART initiative for healthcare security standards.

Over a period of time the definition of standards will evolve and specific criteria will be defined to enable a certification process to be implemented. The eventual certification of mobile applications will create consistency and interoperability for patient-based mobile applications. The workgroups anticipate utilizing an industry certification process and/or organization, such as the Electronic Healthcare Network Accreditation Commission (EHNAC) for evaluating and certifying mobile applications.

6 CURRENT STATE BUSINESS WORKFLOWS

6.1 PRE-CONDITIONS
Patient experiences a back injury and seeks medical care.

6.2 CURRENT STATE / NORMAL BUSINESS FLOWS
Note: work flows defined for both current state and future are specific to the scope in the first iteration of the pilot.

1. Patient visits the Urgent Care center located a few miles away, owned and operated by a Hospital Medical Group operating in his area.
2. Patient goes to the reception desk, and is asked for his/her insurance ID card and valid identification.

3. He/she is given a clipboard of paper forms and is asked to fill them out and sign them. The three forms are 1) Medical History Form, 2) Insurance and Financial Responsibility Form, 3) HIPAA Privacy and Compliance Form and 4) Reason for Visit to Urgent Care Form
4. While he/she is filling out his paperwork, the office staff takes his/her Insurance ID card and identification card and photo copies them, creating a folder containing all his/her information.
5. In addition, the office staff enters a new patient profile (although incomplete) into their registration / practice management system and assigns an examination room.
6. Patient completes as much of the forms as he/she can and submits them back to the reception area.
7. Reception area takes forms, updates their system with patient information, and initializes an electronic transaction with the specified carrier to verify eligibility.

7 DESIRED FUTURE STATE BUSINESS WORKFLOWS (PILOT)

7.1 SUPPORTING ACTORS

There are several actors for this scenario. The first actor is the patient, the second actor is the mobile application, the third actor is the medical office receptionist, with the fourth actor being the practice management system, and the last actor being the payer.

7.2 PRE-CONDITIONS

- The patient has an active account already established with the provider.
- The facility's practice management system and/or EMR/EHR system(s) have been updated with interfaces and integration points that support the defined workflows, functions and data exchanges.

7.3 POST-CONDITIONS

- None at this time.

7.4 TRIGGERING EVENTS

- The triggering event for this process is a patient visit to a medical office for care.
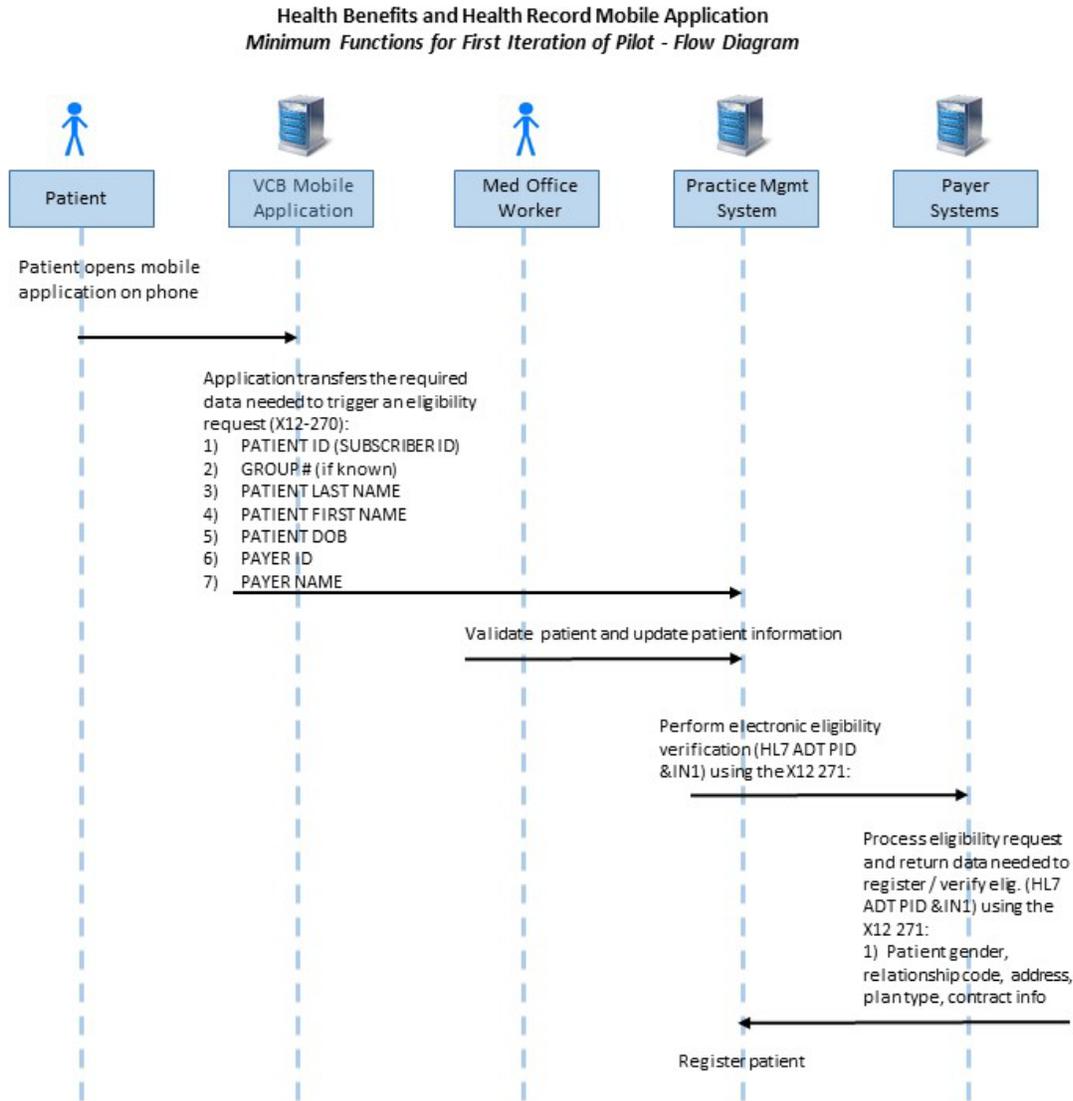
7.5 SPECIAL CONDITIONS

- None at this time.

7.6 DESIRED FUTURE STATE BUSINESS PROCESS/WORKFLOW FOR PILOT PHASE I

1. Prior to, or upon arriving at the facility, the user logs into their mobile application and begins an electronic check-in process.
2. The user identifies and selects the facility electronically, and personal insurance information / demographics are released to the facility/practice management system.

3. The practice management system utilizes the information to perform electronic eligibility checks (utilizes existing HIPAA transactional capabilities).

7.7 FLOW DIAGRAM

For the pilot, the minimum supported functionality and data flow is defined in the following diagram:

Health Benefits and Health Record Mobile Application
Minimum Functions for First Iteration of Pilot - Flow Diagram

7.7.1 Data Element / Sources

Supporting the initial iteration of the pilot requires a core set of data elements. These data elements are utilized in three separate yet overlapping business functions. These three business functions include Patient Identification, Registration and Eligibility.

The set of data elements required are defined in the following table:

DATA FIELD	PATIENT ID	REG	ELIG
Patient First Name	✓	✓	✓
Patient Last Name	✓	✓	✓
Patient MI or Middle Name	✓	✓	
Patient Suffix	✓	✓	
Patient DOB	✓	✓	✓
Patient Gender	✓	✓	
Patient Relationship to Insured			✓
Plan Type			✓
Patient/Guarantor Current Address	✓	✓	
Patient/Guarantor Historical Address	✓		
Patient/Guarantor Phone	✓	✓	
Payer ID/Payer Name		✓	✓
Member First Name (if patient no subscriber)		✓	✓
Member Last name (if patient is not subscriber)		✓	✓
Patient/member Insurance ID#		✓	✓
Patient/member Insurance Group # (if known)			✓
Payer Contact Details			✓

8   TECHNICAL SOLUTION

To enable the continued innovation through technology, and existing application solutions in the industry, specific technology standards or components are not being defined at this time. There are several technical components that can be applied to create a robust mobile application. Over a period of time it is expected that both FHIR and OpenID Connect standards will be adopted as integration standards.
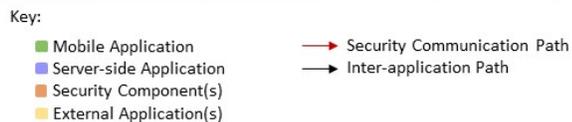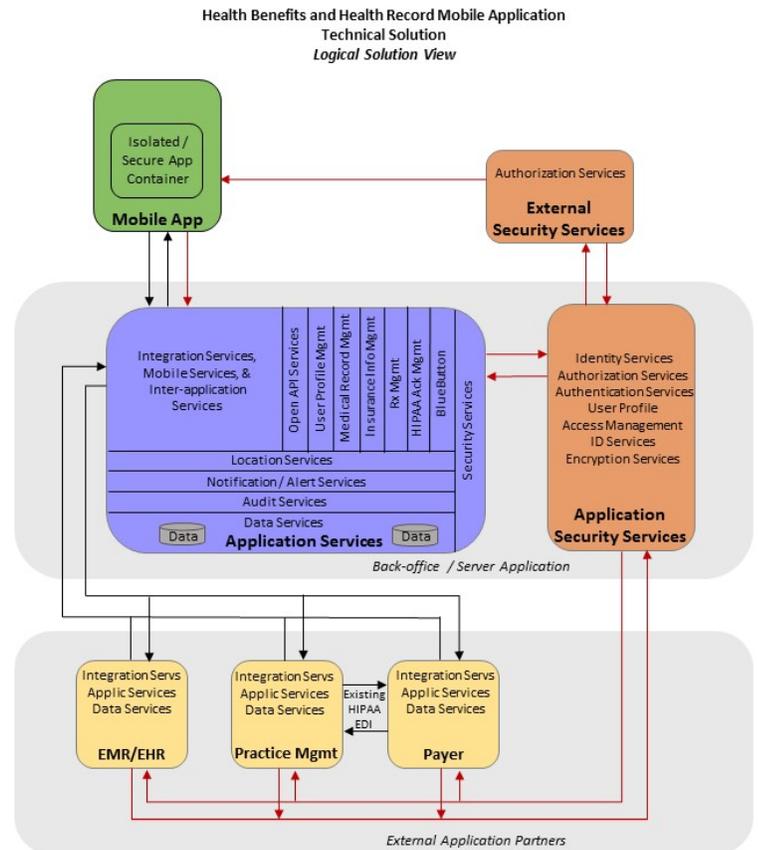
For the initial pilot existing application solutions, or new application solution currently being developed, will be utilized to perform interactions between healthcare constituents.

8.1 TECHNOLOGY AND INTEGRATION STANDARDS

There are several different design patterns that can be applied to implement a mobile healthcare application for patients. The adjacent diagram depicts a logical application design view, as an example of how technology could be applied to develop an application solution.

Technology standards will be developed for the integration points between patients, providers and payers, with a focus on adherence to industry standards and the content/use of data between participants of an application. Future standards should enable any application to connect and interact with any other component, such as practice management systems, registration and scheduling systems, electronic medical records, and enrollment/eligibility systems.

To enable any-to-any inter-operability, there will be a need to define some standard application services, with security services being a key element required for open electronic interactions. To this end, its expected that a more detailed security standard will be defined, based on the definitions and work in the OpenID Connect model.

Health Benefits and Health Record Mobile Application
Technical Solution
Logical Solution View

9   SECURITY AND PRIVACY

9.1 SECURITY AND PRIVACY PRINCIPLES

For the initial pilot, existing security practices and application components will be utilized by participating vendors/partners. Over a period of time, additional data integration and security standards will be defined. To set the stage for the future definition and use of security standards to safeguard patient information, while enabling cross-constituent integration, a set of security and privacy principles were developed by the Security and Privacy Workgroup. Those principles are as follows:

- Identification – must have a means for users to appropriately identify themselves

- Authentication – must have means to authenticate that the user is who they say they are
- Non-repudiation – must assure that any access or action is indisputably attributed to a single individual
- Authorization – must have means to authorize users to perform selected tasks
- Auditing – must provide audit trails of access, flow and usage or modification of information
- Privacy – must provide for protecting sensitive information from unauthorized access, use or disclosure
- Patient Control – must provide patients with the capability to control use and sharing of information
- Scalability – must have capability to be used on a variety of platforms and in a variety of care settings
- Availability – must maximize ability to use anytime and in any care setting
- Integrity – must assure data cannot be altered or damaged except by approved actions
- Usability – must be easy to use regardless of patient technological knowledge
- Patient choice – must allow patients to select their preferred usage methods
- Flexibility – must allow for multiple means of use, depending on the situation
- Compliance – solution must be in compliance with related Federal and state requirements

9.2 SECURITY REQUIREMENTS

There are several documented security requirement definitions available in the industry, including NIST standards and Department of Defense (DoD) Security Technical Implementation Guides (STIGs). While specific security requirements will need further definition from the Security and Privacy workgroup, there is a need to be prudent about securing patient health information that is coupled with the need to create a simple, intuitive user experience for the patient / end-user. Care must be taken to impose security requirements that meet both of these criteria.

9.3 SECURITY ARCHITECTURE AND STANDARDS

OpenID Connect is being evaluated as the directional security standard for patient mobile applications.   OpenID Connect provides a wide range of security options and features, enabling industry accepted standards and cross-application integration with other OpenID participants (Google+, Facebook, etc.)

As defined in the OpenID website, "*OpenID Connect 1.0 is a simple identity layer on top of the OAuth 2.0 protocol. It allows Clients to verify the identity of the End-User based on the authentication performed by an Authorization Server, as well as to obtain basic profile information about the End-User in an interoperable and REST-like manner.*

OpenID Connect allows clients of all types, including Web-based, mobile, and JavaScript clients, to request and receive information about authenticated sessions and end-users. The specification suite is extensible, allowing participants to use optional features such as encryption of identity data, discovery of OpenID Providers, and session management, when it makes sense for them."

OpenID Connect Process/Protocol Flow
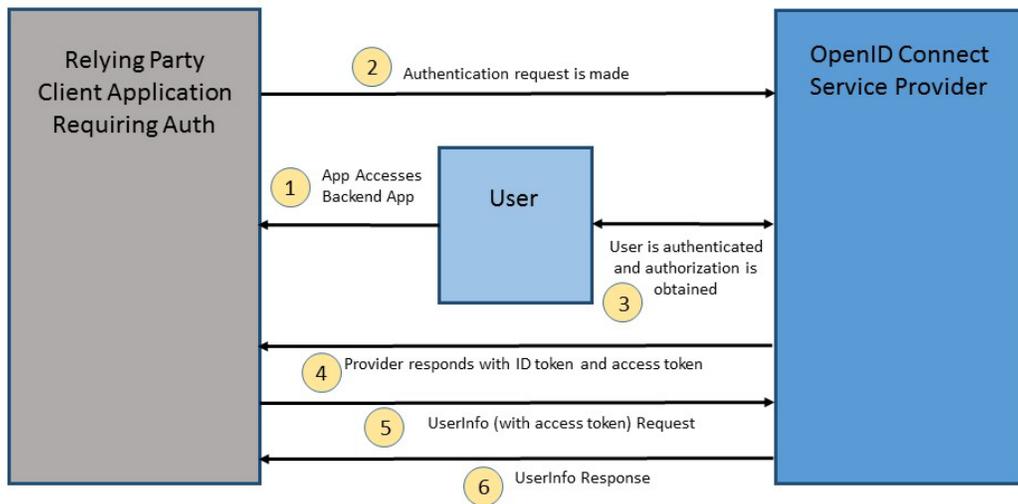
10 PILOT PARTICIPANTS

The initial Phase of the pilot will engage a limited number of vendors/partners that are representative of the business entities that engage in the workflows and interactions associated with patient care. A number of practice management solution vendors, patient access solution vendors, provider care settings and payers are being considered for the initial pilot. Inclusion in the initial pilot will be on a voluntary basis, with organizations performing due diligence on their current capabilities to determine if they can commit to participating in the initial phase of the pilot.

11 PILOT GOVERNANCE & IMPLEMENTATION

The Technical Services Workgroup (TSW) will work with those partners who have volunteered to participate in the initial pilot. Pilot participants will be asked to demonstrate that, at a minimum, they can provide the services and support the business data flow defined in section 7.7.

The Technical Services Workgroup will also solicit patients and providers to determine their interest and use in mobile-based healthcare applications, and the types of functions and features they would deem most important to have.

At the end of the third quarter, it is expected that the Technical Solution Workgroup will solicit lessons learned from pilot participants, and develop a report-out on the results of the pilot. This report out is expected to help define a prioritization list for defining future standards and developing certification approaches and programs.

The pilot is expected to enlist 6-12 mobile application providers (vendors, payers, providers, etc.) for participation, with the prospect of getting representation from across a wide range of solutions from across the industry.

12 ONGOING INITIATIVE GOVERNANCE

It is expected that there will be an ongoing voluntary-based governance structure for the continued definition and evolution of standards and integration technologies for patient-based mobile healthcare applications. The ongoing governance structure will include:

Patient Mobile Healthcare Application Standards Council

This Council will be the primary leadership body governing the WEDI standards for patient mobile applications. The Council will have no fewer than 12 members, and no more than 18. At least one representative will be from the from the original stakeholder organizations. Other Council members will come from across different industry disciplines and businesses, with representation to include:

- Providers (inpatient, outpatient, specialty and other care settings)
- Pharmacy organization(s)/PBM Provider(s)
- Clinical/EMR/EHR Vendor(s)
- Patient Access / Registration system Vendor(s)
- Payer Organization(s)
- Practice Management / Medical Office Automation Vendor(s)
- Patient Representative(s) / Advocate(s)
- Standards Organization(s)
- Mobile Technology Organization(s)
- Medical Device Manufacturer(s)
- Federal Government (e.g., CMS, ONC, AHRQ)
- Security Solution/Services Vendor(s)
- Healthcare IT Services Organization(s)

Responsibilities:

The Council will be responsible for the definition and oversight of a standards development life-cycle to define, plan, publish and certify mobile healthcare application standards. Meeting monthly, it will also oversee the work efforts of defined workgroups, publishing quarterly updates through WEDI.

Council work products may include:

- Council Charter and By-laws
- 24-month Standards Roadmap and Plan (Updated and Published Quarterly)
- Inventory and publication of identified Mobile Applications that meet the stated requirements

While the Council serves as the overall Governance body, it is expected that the following workgroups will also be established:

Standards Workgroup -responsible for executing the standards life-cycle processes to define and maintain mobile application standards.

Technology and Innovation Workgroup – responsible for working across industries and companies to apply new advances of technical capabilities and informing other workgroups of upcoming technology capabilities, opportunities and innovations.

Each workgroup is expected to have representation from the same organizations defined for the Council. It is expected that each workgroup will define its charter and by-laws, and at a minimum be responsible for the following work products:

Standards Workgroup: Standards Definitions, Standards Release Process, Standards Release Schedule

Certification Workgroup: Certification life-cycle process, Qualifications for Certification Providers, List of Approved Certification Partners

Technology and Innovation Workgroup: Technology Development/Release Report (Quarterly)

13 SUMMARY

Bringing together stakeholders and constituents, including patients and caregivers, from across the healthcare services industries to focus on patient engagement is a bold and important step in creating meaningful, easy-to-use mobile solutions that will meet patient needs and expectations and simplify the interactions of patients and/or their advocates and the providers and payers they interact with.

Proactively working together with representatives from across the healthcare continuum to define standards for mobile healthcare applications will make things easier for the patient, while at the same providing important up-to-date information for medical clinicians and care providers. Consistent standards, integration points and security will add value to the entire healthcare delivery system, increasing the quality of care, improving patient safety, and reducing administrative costs.

A multi-phase pilot approach and the eventual evolution of mobile healthcare application standards will enable immediate progress in increasing interoperability within the healthcare industry. As this initiative transitions from defining initial scope and piloting of functions, to a self-sustaining standards governance body, the business value and return will continue to grow.

It is recommended that the new governing bodies be defined and stood up over the next 30-60 days, with the goal to publish the first iteration of a standards roadmap by the end of the year.

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