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#HITTrendsKC



#### @Missouri\_HIMA



Linda Van Horn Founder and CEO iShare Medical



#### Ready, Direct, Triple Aim, FHIR

Linda Van Horn, MBA September 14, 2016

#### Ready, Direct, Triple Aim, FHIR Agenda (continued)

- Ready: Direct and FHIR
  - ONC Roadmap October 5, 2016
  - 2017 Standards Advisory Task Force
  - 2017 Draft Interoperability Standards
  - Identity and Authenication
- Direct
  - Direct Adoption
  - RA, CA, and HISP

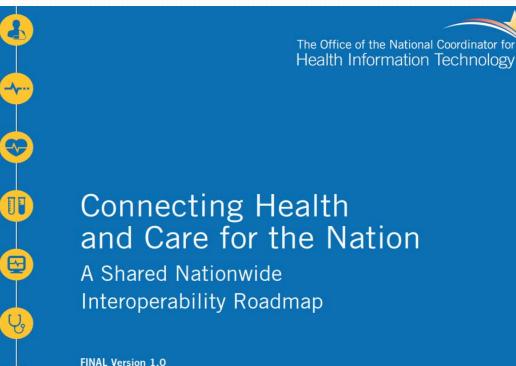
#### Ready, Direct, Triple Aim, FHIR Agenda

- Triple Aim
- FHIR
  - Direct
  - Identity

### ONC Definition of Interoperability

Interoperability is defined as the ability of a system to <u>exchange</u> electronic health information and <u>use</u> electronic health information from other systems <u>without</u> <u>special effort on the part of the user</u>

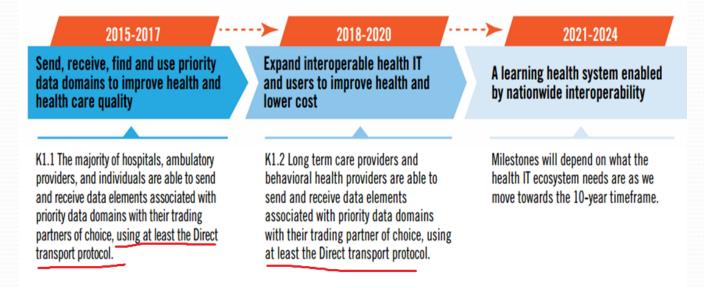
#### A Learning Health System October 5, 2015



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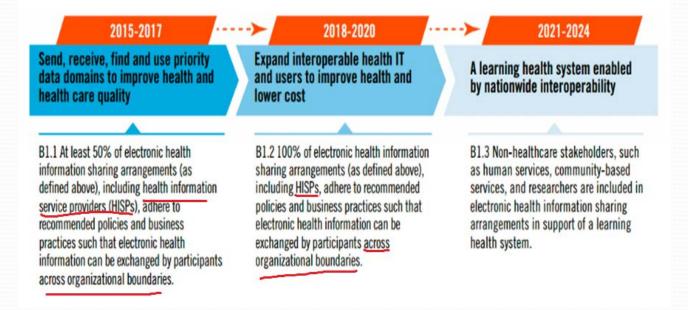
#### Must Use at Least the Direct Protocol

#### Milestones for Consistent, Secure Transport Techniques



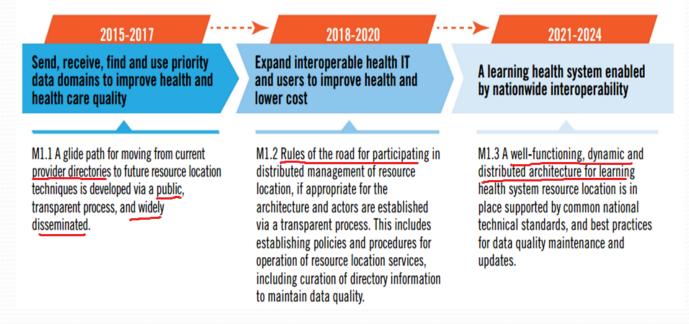
#### Share Across Organizational Boundaries

#### Milestones for Shared Decision-Making, Rules of Engagement and Accountability



### Widely Available Public Provider Directories

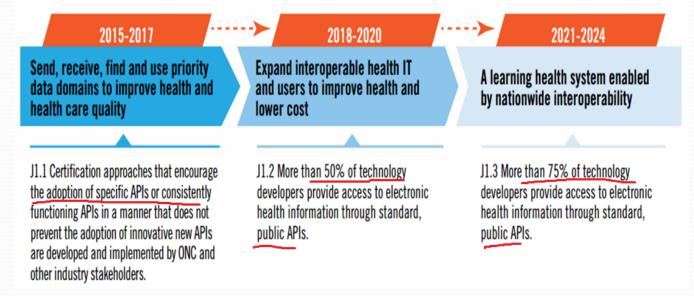
#### Milestones for Health Care Directories and Resource Location



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# **Use Public RESTful API's**

#### Milestones for Secure, Standard Services



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#### **Adopt Authentication and Authorization**





### ONC Identity Management and Authorization Concepts

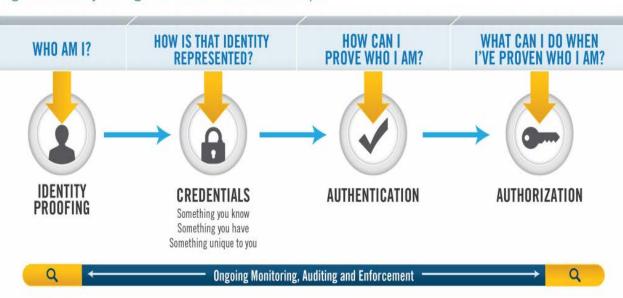


Figure 5: Identity Management & Authorization Concepts

#### Level of Assurance 3 (LoA3) NIST 800-63-2

**NIST Special Publication 800-63-2** 

#### Electronic Authentication Guideline



National Institute of Standards and Technology U.S. Department of Commerce

#### Federal Bridge Certification Authority



#### X.509 Certificate Policy

#### For The

#### Federal Bridge Certification Authority (FBCA)

		Blog	Consumer Toolkit Contact	Get Email Updates	M E 🖷
Health IT.go	OV	Reports & Data 👻 To	ols & Resources 👻 Multimedia	a Newsroom -	
Providers & Profession	onals	Patients & Families	Policy Resea	archers & Imple	menters
Policymaking, Regulation, & Strategy	Research & Innovation	Privacy & Security Policy	ONC Health IT Certification Program	Interoperability	HITI Adv

HealthIT.gov > For Policy Researchers & Implementers > Interoperability > Federal Health Architecture (FHA) > Federal Partners

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# Federal Health Architecture (FHA)

Draft Interoperability Roadmap

#### **Federal Partners**



#### Health IT Standards Committee

A Public Advisory Body on Health Information Technology to the National Coordinator for Health IT

#### 2017 Interoperability Standards Advisory Task Force

Kim Nolen, co-chair Richard Elmore, co-chair

July 27, 2016



Health IT.gov		Reports & Data - Tools & Resources - Multimedia Newsroom -			Ø	
Providers & Professionals		Patients & Families Policy Researchers & Implementers				
Policymaking, Regulation, & Strategy	Research & Innovation	Privacy & Security Policy	ONC Health IT Certification Program	Interoperability	HITECH Programs & Advisory Committees	
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Draft 2017	Intero	perability	Standard	s Adviso	ory	

#### Comment Period ends October 24, 2016

COMMENT ON THIS SECTION

- Draft 2017 Interoperability Standards Advisory
- Introduction

- Section I: Vocabulary/Code Set/Terminology Standards and Implementation Specifications
- Section II: Content/Structure Standards and Implementation Specifications
- Section III: Standards and Implementation Specifications for Services
- Section IV: Questions and Requests for Stakeholder Feedback
- Appendix I Sources of Security Standards and Security Patterns
- Appendix II Revision History
- Appendix III Responses to Comments Requiring Additional Consideration

Section I	Section II	Section		
I-A: Aller	gies		► I-B: Encounter Diagnosis	→ I-C: Family Health History
► I-D: Functional Status/Disability		isability	→ I-E: Health Care Provider	
I-G: Imm	unizations		▶ I-H: Industry and Occupation	I-I: Lab Tests
► I-J: Medications			I-K: Numerical References & Values	► I-L: Nursing
I-M: Patie	ent Clinical "Pro ons)	oblems"	I-N: Preferred Language	+ I-O: Procedures
► I-P: Race and Ethnicity			► I-Q: Research	► I-R: Sexual Orientation and Gender Identity
► I-S: Social Determinants		5	► I-T: Tobacco Use	► I-U: Unique Device Identification
I-V: Vital	Signs			

#### Interoperability Standards for "Push" Destination Systems

	Blog	Consumer Toolkit   Contact	Get Email Updates 🔰 🔝	🖪 🛗 S 🖬 👥	
Health IT.gov					
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Providers & Professionals	Patients & Families	Policy Research Policy Research	archers & Implem	enters	
Policymaking, Regulation, Research & Strategy Innovation		ONC Health IT Certification Program	Interoperability	HITECH Programs & Advisory Committees	
HealthIT.gov				🗏 Print   🗉 🕂 Share	
Interoperability Need: An Unsolicited "Push" of					
Clinical Health Information to a Known Destination					
Between Individ	luals and S	Systems			

### First Three Federal Agencies Joining DirectTrust



# **MU 2 Direct Protocol**



# FEDERAL REGISTER

The Daily Journal of the United States Government

RIN 0991-AB93

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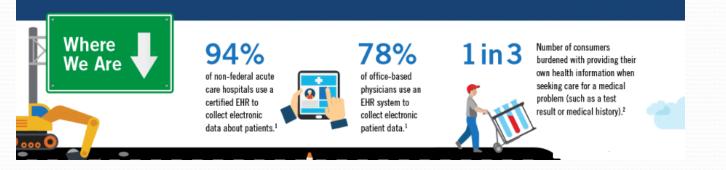
purposes of meeting the second form of transmission, the Direct protocol is an encouraged and viable method, especially since health IT developers have already been certified to this functionality for the purposes of 2014 Edition certification, and will also be certified to this functionality as part of 2015 Edition certification to support transitions of care requirements

#### Direct Protocol Widely Adopted



#### Shared Nationwide Interoperability Roadmap: The Journey to Better Health and Care

The nation relies on Health IT to securely, efficiently and effectively share electronic health information with patient consent to achieve better care, smarter spending and healthier people. Interoperability will transform our health system from a static one to a learning health system that improves individual, community and population health.

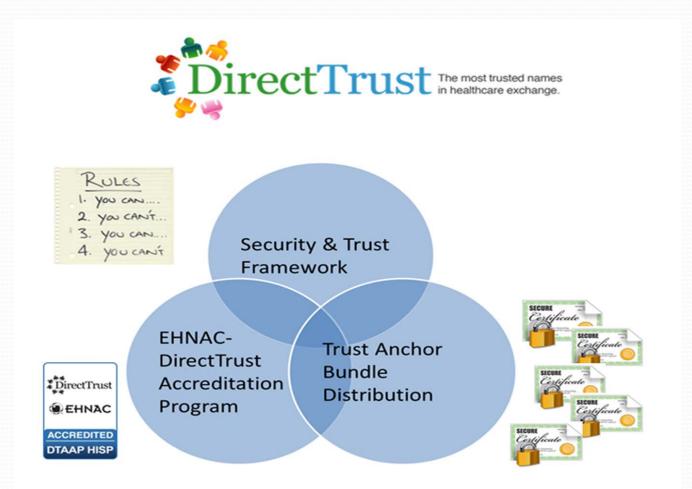


### **Direct Protocol**

- Can be used to meeting View, Download and Transmit
- Used to communicate between providers or from provider to patient
- "Push" out from provider to provider or from provider to patient
- Does not support "Pull" or query
- Looks like email, but is no email system
- Any attachment that you can attach to an email can be attached in a Direct Message
- Commonly used to exchange C-CDA documents

# DirectTrust

- Established by Grant from ONC
- Established a Nationwide Trust Network
  - Security and Trust Standards
  - Policies and Procedures
- 40 Trust Anchors Accredited by EHNAC
  - Audited for HIPAA compliance with security and privacy
  - Proven Interoperability Through Testing



#### 3 Components of Interoperability Using Direct Protocol

- Registration Authority (RA)
- Certificate Authority (CA)
- Health Information Services Provider (HISP)

### Registration Authority (RA) ID Proofing



NIST Special Publication 800-63-2 Level of Assurance 3 (LoA3)



FBCA Medium



### **Certificate Authority (CA)**

- Certificates have two parts
  - Public key is like a street address on a house visible to all
  - Private key is like a house key that is only held by the owner
- Each private key contains two single use certificates:
  - one for encryption
  - one for signing

#### **Certificate Authority (CA) Public Certificate Example**

Serial Number	0A:B2:D5:6C:DD:50:2C:B6:DC:71:E0:88:6B:D4:33:23					
Subject	C=US, ST=Missouri, L=Kansas City, O=iShare Medical LLC, CN=isharemedicalrecords.com					
Subject Alternative Name	DNS : isharemedicalrecords.com					
Certificate Policy	1.3.6.1.4.1.41179.0.1.2 Certificate Policy V1.2   1.3.6.1.4.1.41179.1.3 DT.org LoA 3   2.16.840.1.114412.4.3.2 Digicert FBCA Medium Assurance   1.3.6.1.4.1.41179.2.2 DT.org BA (Business Associate)					
Valid Date	2015-03-03 06:00:00 CST TO 2016-03-07 06:00:00 CST					
Key Usage	Key Encipherment					
Authority Information Acc	CA-Issuer : http://cacerts.digicert.com/iShareMedicalDirectIntermediateCA.crt View Openssl Text OCSP : http://ocsp.digicert.com Check Certificate with OCSP Responder					
CRL Distribution Points	CRL : http://crl3.digicert.com/iShareMedicalDirectIntermediateCA.crl View CRL Response Check Certificate with CRL CRL : http://crl4.digicert.com/iShareMedicalDirectIntermediateCA.crl View CRL Response Check Certificate with CRL					
Certificate and CAs Max-Depth 10	<b>CERT Subject:</b> : C=US, ST=Missouri, L=Kansas City, O=iShare Medical LLC, CN=isharemedicalrecords.com Issuer: C=US, O=iShare Medical, CN=iShare Medical Direct Intermediate CA <b>CA-Issuer</b> : http://cacerts.digicert.com/iShareMedicalDirectIntermediateCA.crt View OpenssI Text					

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### **How a HISP Works**



# How a HISP Works

### HISP

- Validates senders credentials for LoA3 or FBCA Medium
- Denies invalid / unauthorized certificates
- Encrypts message

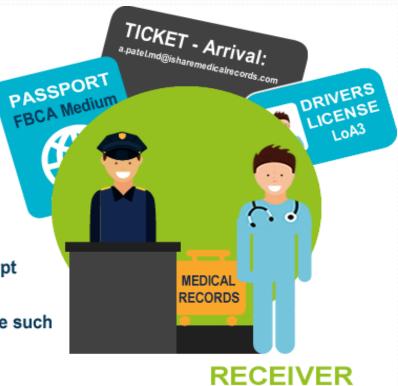


- Transports the message over secure network
- Validates receiver credentials for LoA3 or FBCA Medium
- Delivers to validated end point / address
- Sends message delivery notification to sender

## **How a HISP Works**

#### Baggage Claim

- Authenticates receiver
- Validates credential at LoA3 or FBCA Medium
- Uses Private Key to decrypt message
- Opens and reads message such as C-CDA viewer



### **2008 Institute for Healthcare Improvement (IHI) Triple Aim**

- Improving the experience of care for individuals
- Improving the health of Populations
- Reducing per capita healthcare costs





#### **FHIR Overview**

- Fast Health Interoperable Resource (FHIR)
- Pronounced "Fire"
- HL7 Standard
- Uses agreed upon terminology
- In FHIR, every resource can (should) have a humanreadable expression
- Synchronous Communications





### FHIR is Developer Friendly

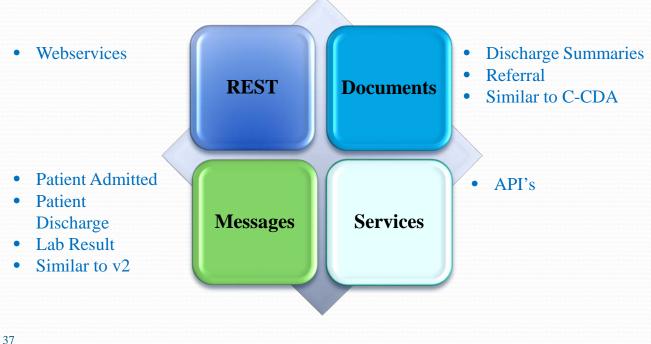
- Uses software concepts widely used "App Store Approach" for exchanging data
- Uses web calls just like Google, Twitter, and Facebook
- Relies on HTTPS
- FHIR makes no assumptions regarding the architecture
- This approach should drive down the cost of development and integration

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# FHIR Organized in 5 Sections



### FHIR Supports 4 **Interoperability Paradigms**



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### FHIR

- Faster to develop because it uses
  - Cross-industry IT standards XML, JSON
  - Well supported by tools RESTful API's
  - Easily understood by developers webservices
- Resources account for 80% of commonly needed data exchange then uses custom extensions
- Uses Standards and Structured Data
- Resources can be put together into profile

## CAUTION! Don't Get Burnt!



#### • FHIR is

- Being rapidly developed
- Expected to be used in applications, especially mobile, soon
- A promising standard for the future
- Still in STU2 (Standard for Trial Use 2)
- On a path to become "Normative", which is necessary to be commercially ready / viable
- Useful for some things, but be careful using for mission critical applications



#### INNOVATING THE FUTURE OF HEALTHCARE

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