

The Office of the National Coordinator for
Health Information Technology



Creating Scalable Trust for Direct

Paul M. Tuten, PhD

Senior Consultant, ONC

Leader, Implementation Geographies Workgroup, Direct Project

Putting the **I** in Health **IT** 
www.HealthIT.gov

Direct is about more than a technical specification!



To engage in meaningful exchange—especially across STAs/HISPs—requires coordination.

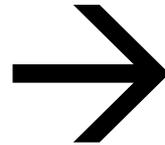
To avoid this



and this



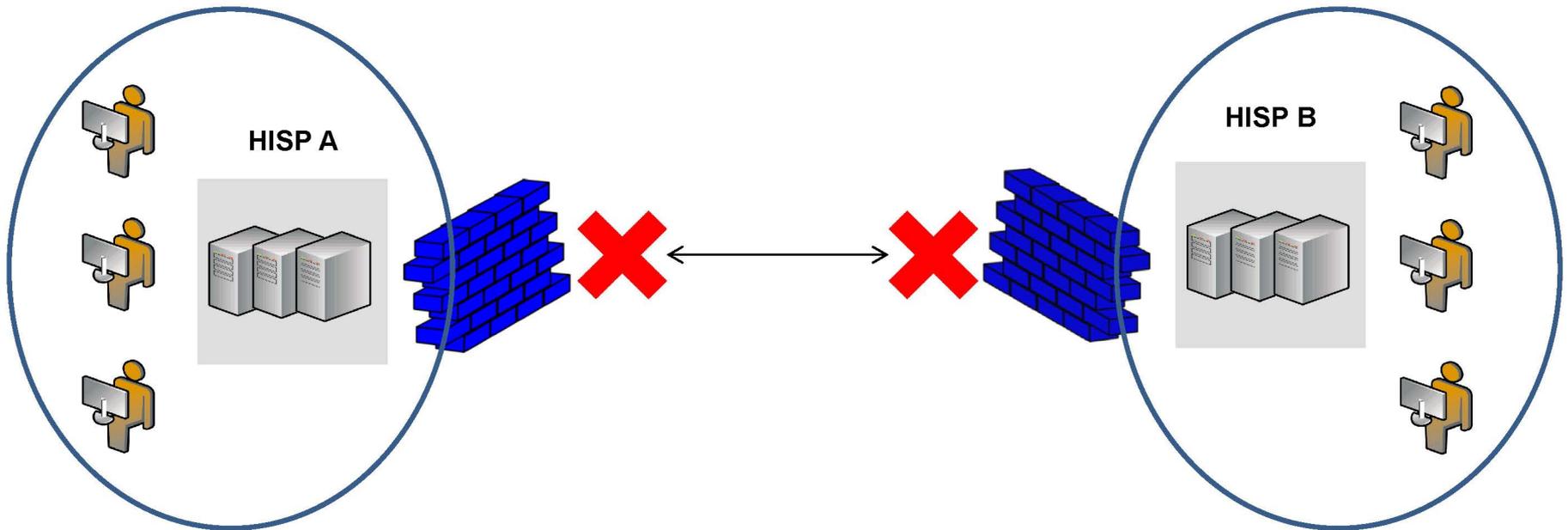
we'll need:



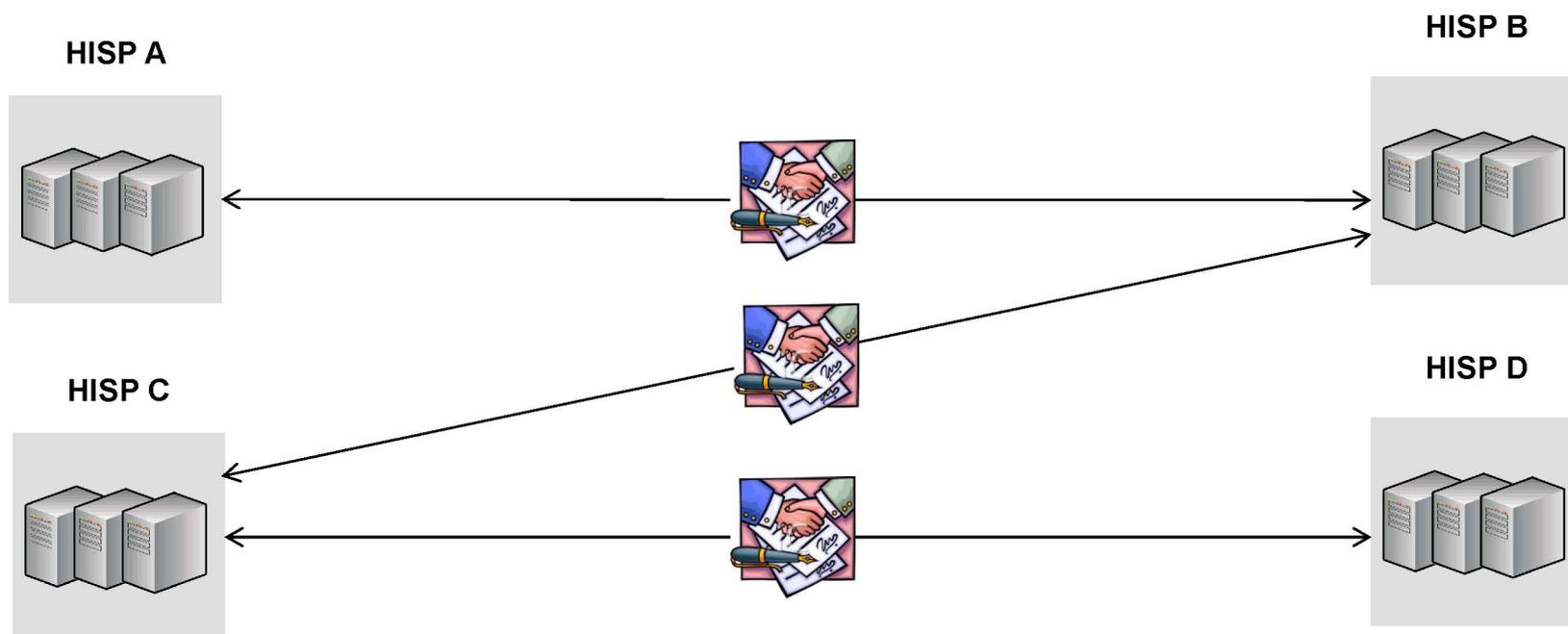
“Interoperability Through Scalable Trust”

- Trust in directed exchange is between the sender and receiver
 - Someone must assert their will to send a message
 - Someone must assert their will to accept a message
- Trust in information exchange involves two separate issues:
 - Confidence in the integrity of the delivery address and mechanism
 - Confidence in the integrity of whom I’m sharing information with
- HISP-to-HISP “trust” is about addressing the first issue
 - Do I believe that the letter will safely and securely get to Paul?
 - Am I confident this is Paul’s address?
 - Whether or not to send the letter to Paul is a question beyond the scope of the integrity of the delivery mechanism (be it the US Postal Service or Direct)
 - Conflating these issues impedes progress...

- Many implementations are currently “Islands of Automation” and/or “Walled Gardens”
 - Exchange only occurring within subscribers of a single HISP



- To address this problem...
 - Some HISPs creating one-off, peer to peer agreements



- Networks become incomplete and fragmented

- Policy
 - Lack of Common Policies/Practices
 - Registration Authorities – Identity Vetting Assurance
 - Certificate Authorities – Certificate Practices
 - HISP Practices and Operations
 - Direct compliance
 - Edge protocols
 - BAAs usage
 - Cryptographic key protection
 - Legal Liabilities
- Technical
 - Exchange of Trust Anchors

- Scalable Trust is a strategy for enabling Direct exchange between a large number of endpoints
 - Trust should happen “quickly” and uniformly
 - Forms a “complete” network
 - Complexity of establishing a network does not increase as more nodes are added to the network
 - Value of the network increases as more nodes are added

- Trust Communities
 - Organizations electing to follow a common set of policies and processes related to information exchange. Examples of these policies are identity proofing policies, certificate management policies, HIPAA compliance processes etc.
 - Likely require some form of certification/accreditation/audit to ensure compliance with community standards
 - Examples include DirectTrust.org, Western States Consortium, etc.
- Federated Trust Agreements
 - An agreement between an accredited HISP and the trust community, whereby the accredited HISP attests that it has implemented and will abide by the provisions of accreditation, as well as other terms and conditions associated with participation in the trust community
 - Ideally will eliminate the need for Peer to Peer agreements

- Trust Bundle
 - A collection of trust anchors within a trust community that conform to a common set of policies and procedures.
 - All anchors in a bundle meet the same minimum set of requirements
 - Trust anchor are included in a bundle in accordance to the community's policies and governance
 - Bundles are cumulative
 - Tangible manifestation of a trust community.
 - Packaged using cryptographic message syntax (CMS) standard
 - Distributed over public URLs
 - HTTP(s)
 - Consumed by HISPs via the published URL

- Trust Communities are scalable
 - Each HISP only required to sign federated trust agreement
 - All HISPs signing the same agreement “trust” each other
 - Trust bundle distribution is cumulative, secure, and systemic
 - Trust bundle URL is configured **once**, updates are automatic
 - Distribution uses a hub and spoke model allowing distribution to be centralized
 - Networks within a community are “complete”

As an EHR vendor, what should I do?

If you plan to be a HISP...

- Join one (or more) trust communities
 - At least gain familiarity with participation / accreditation requirements
- Stay informed -- participate in the Direct Project
 - Implementation Geographies Sub Workgroups on Scaling Trust
 - “In The Meantime” – HISP Registry
 - Trust Anchor Bundle Distribution
 - Scalable Trust Community Framework
- Enable support for Trust Anchor Bundle Consumption



Even if you don't plan to be a HISP, it's vital to ensure that your HISP partners are actively engaged in these scalable trust activities. Failure to do so may result in your provider clients being unable to exchange with other providers in support of meaningful use.

- On December 20, 2012 ONC released the Exemplar HIE Governance Program Cooperative Agreements Funding Opportunity Announcement (FOA).
- The FOA will fund cooperative agreements with selected existing governance organizations to collaborate with ONC to achieve HIE governance goals. Work includes:
 - 1) The development of implementation policies, interoperability requirements and business practice requirements that will facilitate directed “push” and/or query-based exchange and address operational challenges that are slowing adoption and use of either model of exchange.
 - 2) The identification of potential opportunities to incorporate these solutions in national policy through certification of electronic health records, nationally adopted standards, incorporation into federal policy or additional governance activities.

- **ONC recently made awards and will work closely the awardees and their partners to:**
 - develop and adopt policies, interoperability requirements and business practices that align with national priorities
 - overcome interoperability challenges
 - reduce implementation costs and
 - assure the privacy and security of health information
- **Awards are for one year with an option year based on performance and availability of funds**

Recipient	Award
DirectTrust.org, Inc.	\$280,205
New York eHealth Collaborative, Inc.	\$200,000

- As part of the awards, these organizations will:
 - [DirectTrust](#) will continue and expand their work to establish security and trust rules of the road for Directed exchange and advance adoption of these rules through their trusted agent accreditation program. DirectTrust's critical work will facilitate and enable vendor to vendor and provider to provider exchange for Meaningful Use Stage 2.
 - The [EHR | HIE Interoperability Workgroup](#) will address some of the stickiest implementation challenges facing the exchange of health information including patient matching, querying provider directories and applying good governance principles for both query-based and directed exchange.

The Office of the National Coordinator for
Health Information Technology



DirectTrust

Accreditation and Scalable Trust

David C. Kibbe, MD MBA

Putting the **I** in Health**IT**
www.HealthIT.gov



©Cartoonbank.com



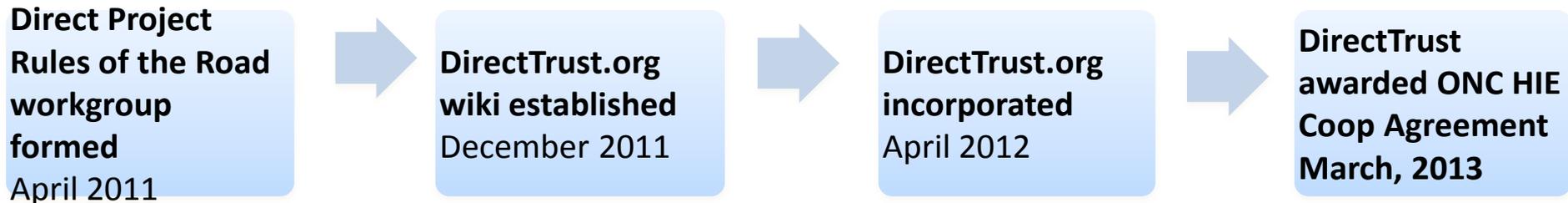
"Before DirectTrust.org, no one knew I was a dog."

- Introduction to DirectTrust
- Accreditation as means to achieve “Scalable” Trust
- Update on EHNAC-DirectTrust accreditation program for HISPs, CAs, and RAs
- Questions

- Mission and Goals
 - DirectTrust.org, Inc. (DirectTrust) is a voluntary, self-governing, non-profit trade alliance dedicated to the support of Directed exchange of health information, and to the growth of Directed exchange at national scale, through the establishment of policies, interoperability requirements, and business practice requirements that will enhance public confidence in privacy, security, and trust in identity. The latter, taken together, will create a Security and Trust Framework for the purpose of bridging multiple communities of trust.

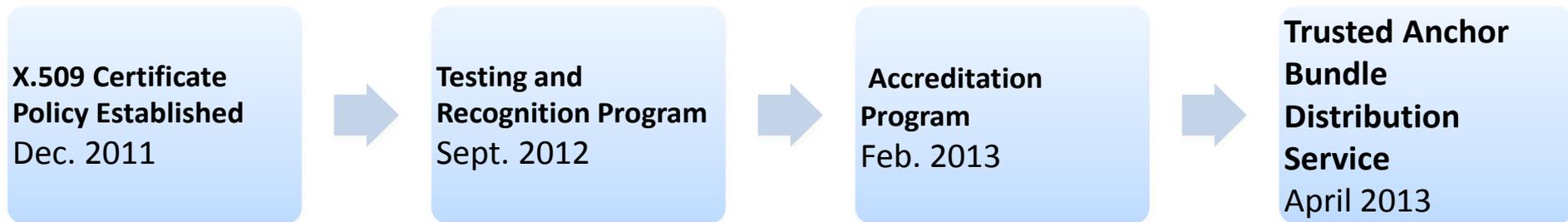
Evolution

"A Security and Trust Framework is a set of technical, business, and legal standards, expressed as policies and best practice recommendations, that members of a trust community agree to follow, uphold, and enforce."



- A “do-ocracy” inherited from Direct Project
- Openness, consensus, transparency, and choice key principles
- Strong belief in public-private sector collaboration
- Problems usually not technological, so more than technological solutions are needed

- **Assets**



- An experienced Board of Directors motivated to bring DirectTrust into service
- Substantial industry expertise and experience around user requirements, technology, interoperability, and ICAM
- Funded by dues from a very diverse, growing membership

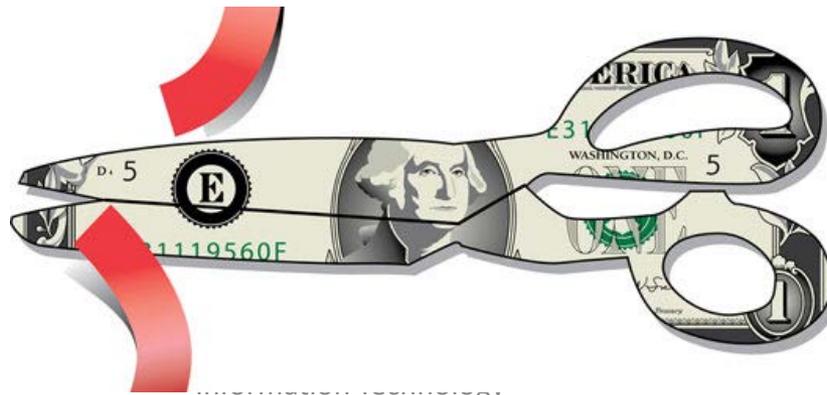
Building Network Via Bi-directional Contracts Is Unworkable

- If HISPs have to forge one-off contracts with each other, the cost of Directed exchange *goes UP* with each new user group, each new contract, and thus the value decreases. Complex. Rate limiting step.



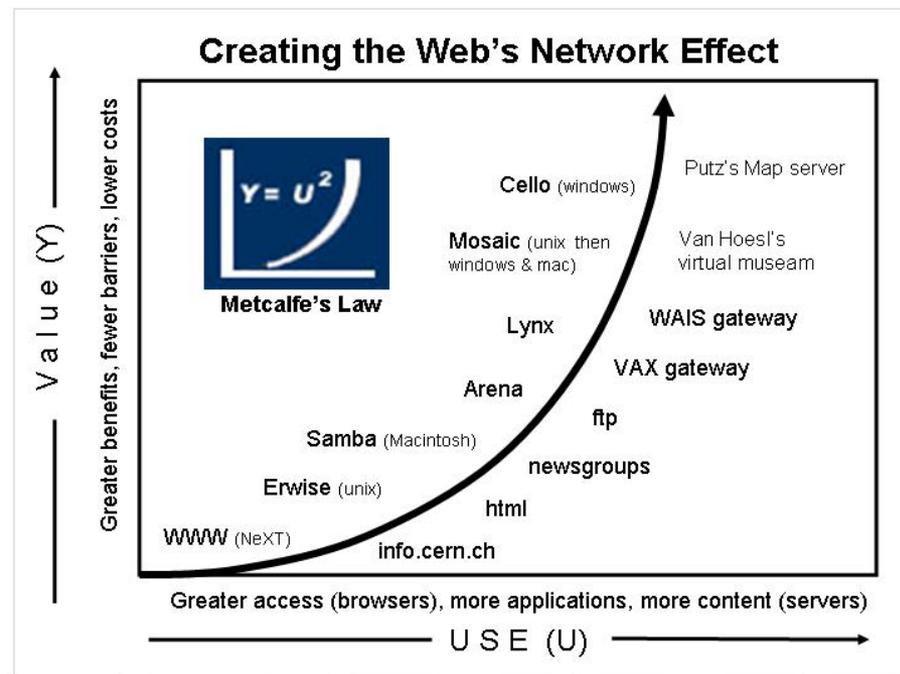
Scalable Trust

- Scalable Trust is a strategy for enabling Directed exchange between a large number of endpoints, in this case HISPs and their users/subscribers.
- If “scalable,”
 - Trust should happen “quickly” and uniformly.
 - A “complete” network will be formed voluntarily.
 - Complexity and cost of establishing a network will decrease, while the value of the network itself will increase, as more nodes are added.
 - This “network effect” will be a by-product of making trust scalable.



Getting to the Network Effect

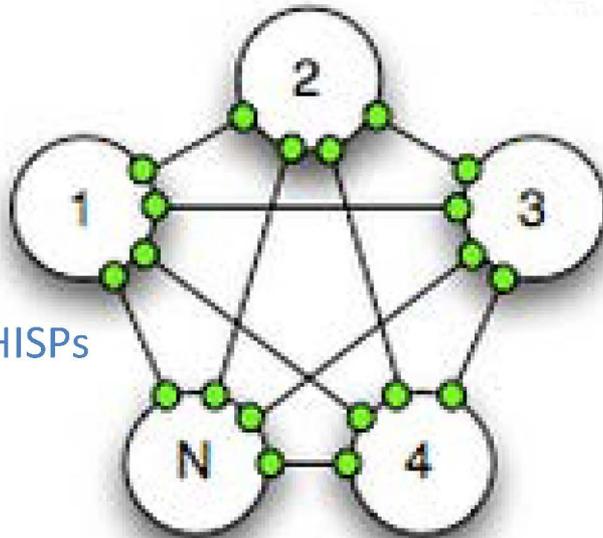
- The “network effect” is present when the value of a product or service increases as the number of others using it increases (or the cost of using it decreases as the numbers of users increases).



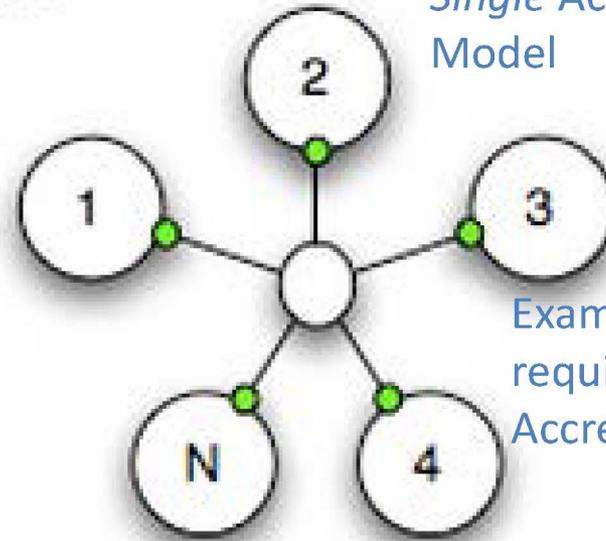
The $n(n-1)$ Connection Problem, Also Known as the N Squared Problem

Bi-directional
Contracts
Model

N Squared



Single Accreditation
Model



Example: 8 HISPs
requires 28
Contracts
{ $N(n-1)/2$ }

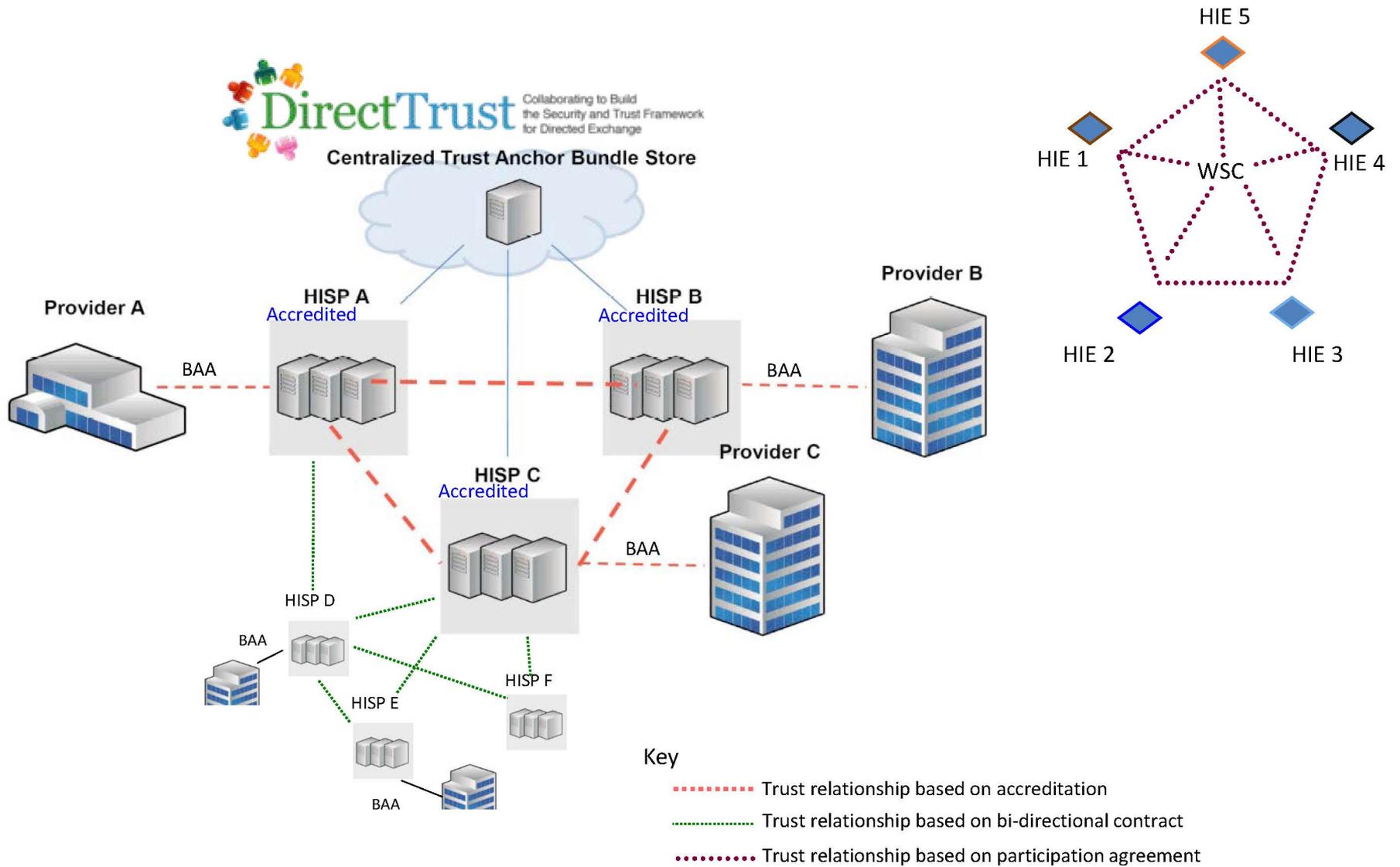
Example: 8 HISPs
requires 8
Accreditations

When N is large, # Interfaces $\sim N^2$

Interfaces = N

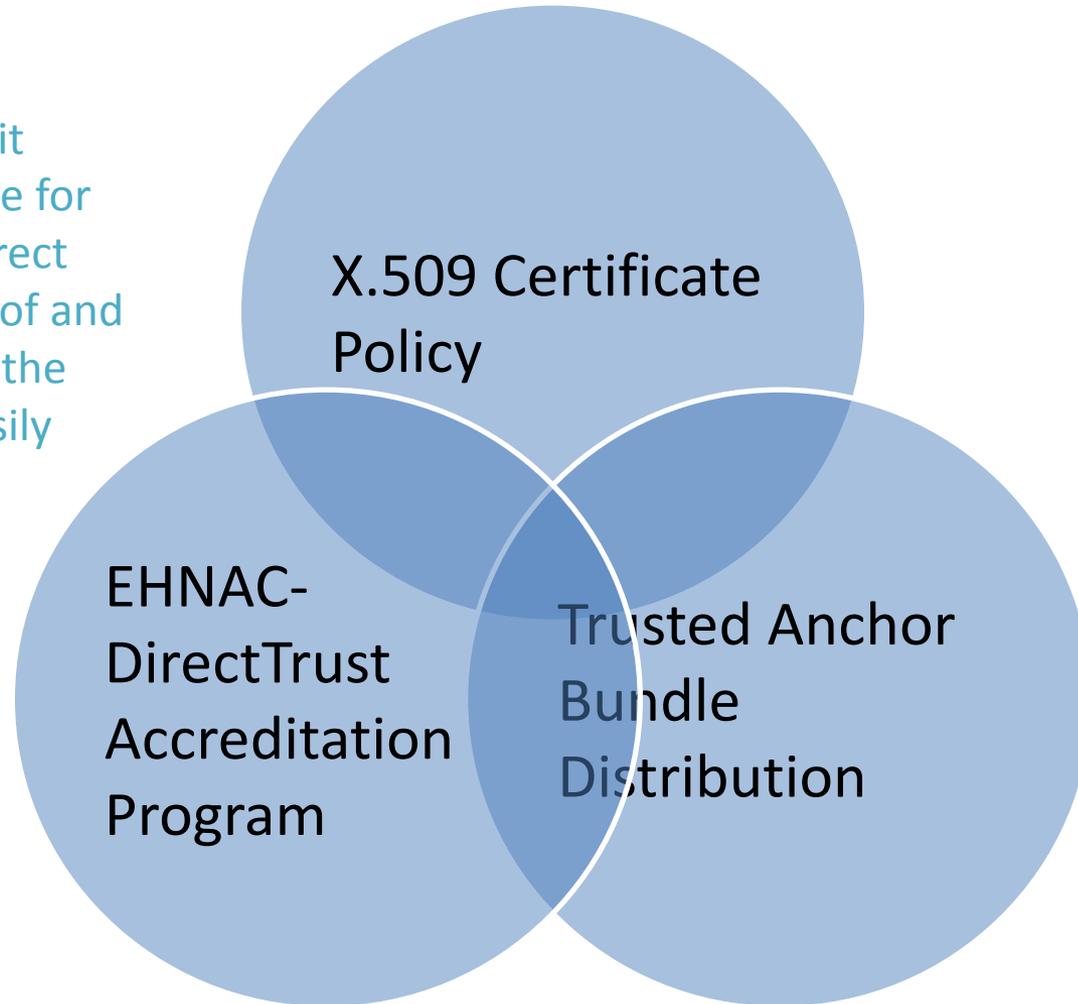
Each 2 interfaces requires a contract

The Real World



DirectTrust Framework

The goal is to make it easy and inexpensive for trusted agents in Direct to voluntarily know of and follow the “rules of the road” while also easily and inexpensively knowing who else is following them.



DirectTrust Summary

- Non-profit, competitively neutral, self-regulatory entity created by and for Direct community participants.
- Establishing and maintaining a national Security and Trust Framework (“DirectTrust Framework”) in support of Directed exchange.
 - A set of technical, legal, and business standards for Directed exchange
 - Expressed as policies and best practices recommendations, which members of DirectTrust agree to follow, uphold, and enforce.
 - Setting the “rules of the road” for scalable trust.
- Leveraging the DirectTrust Framework for a Direct Trusted Agent Accreditation Program, DTAAP, with EHNAC, for HISPs, CAs, and RAs.
- Distributing trusted anchor bundles to accredited HISPs, CAs, and RAs for federation within the “circle of trust.”
- Complementary and subject to, as well as supportive of, the governance rules, regulations, and best practices for the Direct Project and the NwHIN, promulgated by HHS and ONC, and the mandates of the HITECH act.

The Office of the National Coordinator for
Health Information Technology



Scalable Trust Q&A

Putting the **I** in **HealthIT**
www.HealthIT.gov

