



# NHIN Messaging Recommendations

EHI Connecting Communities Forum  
April 10, 2006

Don Grodecki  
Browsersoft, Inc.

# Messaging Design Goals

- Minimum Necessary to achieve the Maximum Benefit
  - Don't make the cost of entry so high that few will participate
- Don't adopt emerging standards too early
- Don't get ahead of the implementation tools
- Use Web Services, SOAP, XML, SSL
- Platform Neutral

# Only Two Messages

- <NHINQuery>
- <NHINResponse>
  - Web Services are normally Query/Response
  - Allow for generic payloads so that new data types will not affect the basic Messaging Standards
  - Attachments can carry media types

# XML Namespaces

- Namespaces are globally unique prefixes attached to XML tags to guarantee the uniqueness of the prefix:tag combination
  - `<http://www.nhin.gov/messaging:NHINQuery>`
- An alias is often defined for a Namespace
  - `xmlns:nhinWsa`  
= "http://www.nhin.gov/addressing"
  - `<nhinWsa:ReplyTo>`

# XML Default Namespaces

- A Default Namespace can be declared
  - `<QBP_Z01 xmlns="urn:hl7-org:v2xml">`
- The Default holds unless overridden with a specific prefix
- The Default holds until redefined by another default

# Requestor Identification - “SAML like”

- `<SOAP-ENV:Header>`
  - `<Security`
    - `xmlns="http://www.nhin.gov/messaging">`
    - `<QueryRequestor>`
      - `<hl7:XCEN.1>johnh@mashare.org</hl7:XCEN.1>`
      - `<hl7:XCEN.2>John</hl7:XCEN.2>`
      - `<hl7:XCEN.3>Halamka</hl7:XCEN.3>`
      - `...`
    - `</QueryRequestor>`

# <NHINQuery> Settings

- <SOAP-ENV:Body>  
  <NHINQuery  
    xmlns="http://www.nhin.gov/messaging">  
      <EvaluationSettings>  
        <MaxResponseInterval>  
          10  
        </MaxResponseInterval>  
        <IdentifyPatient>yes</IdentifyPatient>  
      </EvaluationSettings>

# <NHINQuery> Query

- <NHINQuery

xmlns="http://www.nhin.gov/messaging">

...

<Query format="HL7" version="2.4">

<QBP\_Z01 xmlns="urn:hl7-org:v2xml">

<MSH>where from</MSH>

<QPD>query parameters</QPD>

<PID>patient ID</PID>

<RCP>response control</RCP>

# <NHINResponse>

- <NHINResponse  
 xmlns="http://www.nhin.gov/messaging">
 <Response format="HL7" version="2.4">
 <RSP\_Z01 xmlns="urn:hl7-org:v2xml">
 <MSH>where from</MSH>
 . . . the rest if HL7 response
  - Always the <Response> with <MSH>
  - Additional <Response> elements for non-HL7 results, such as NCDPDP Scripts 8.1

# Variations on HL7 v2.4

- ELINCS-HIE
  - For Laboratory results
    - supports other's observations
  - HL-7 V2.4
  - Minor variation on California Healthcare Foundation's ELINCS implementation guides for results
  - sub-set of labs are LOINC coded
- <http://www.chcf.org/topics/chronicdisease/index.cfm?itemID=111047>

# Recommendations Beyond HL7 v2.4

- NCPDP SCRIPT Standard
  - For Medication History
  - consistent with RxHUB and SureScripts formats
  - Version 8.1
  - <http://www.ncpdp.org/>

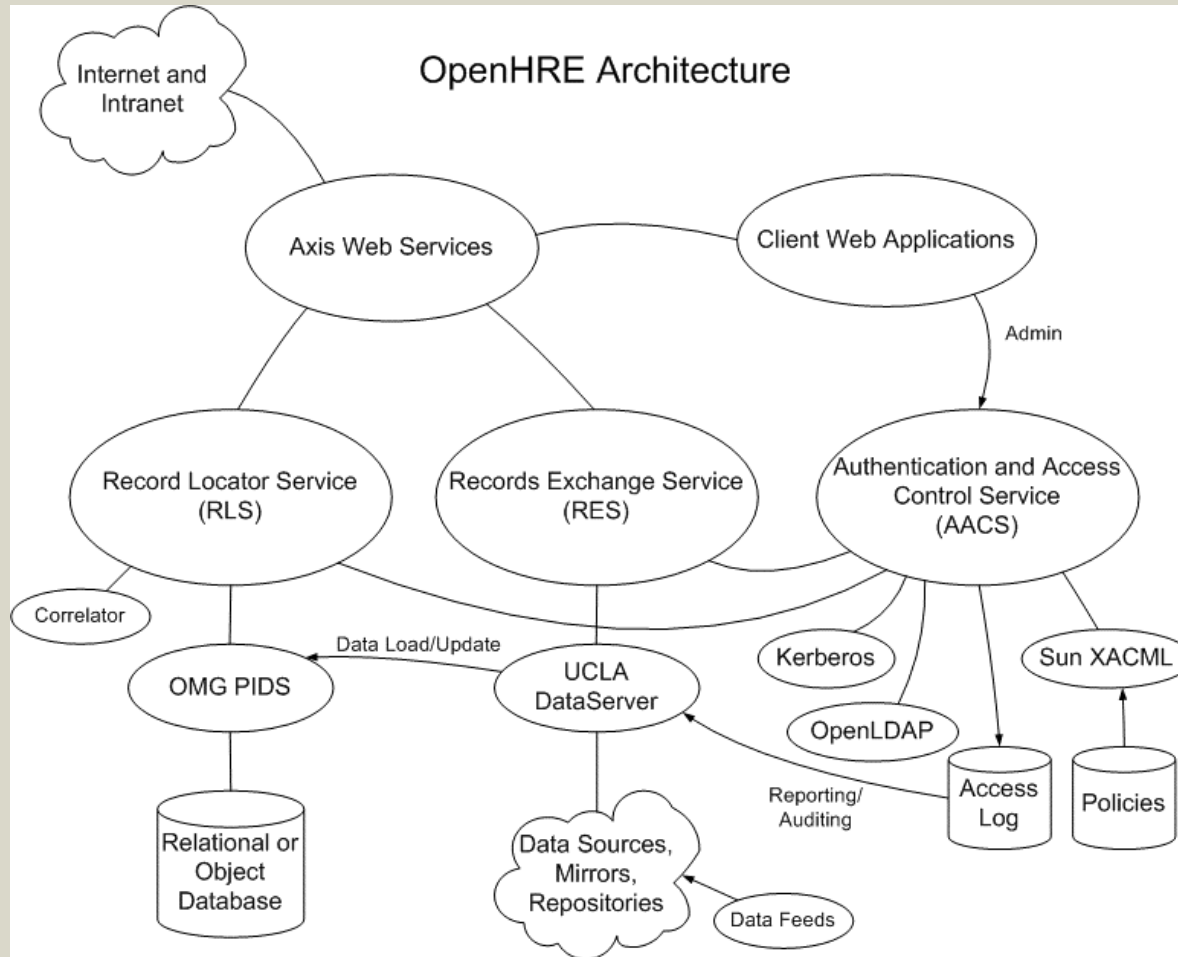
# Asynchronous Pattern

- ISB <-> ISB communications is always Asynchronous
  - Response to NHINQuery is always simple ACK
    - <RCP.1>Deferred<RCP.1> indicates Async
  - NHINResponse is posted to supplied ReplyTo URL, after possible delay
  - Response post is answered by simple ACK
  - Responses are matched to Queries by MessageID

## ReplyTo - “WS-Addressing like”

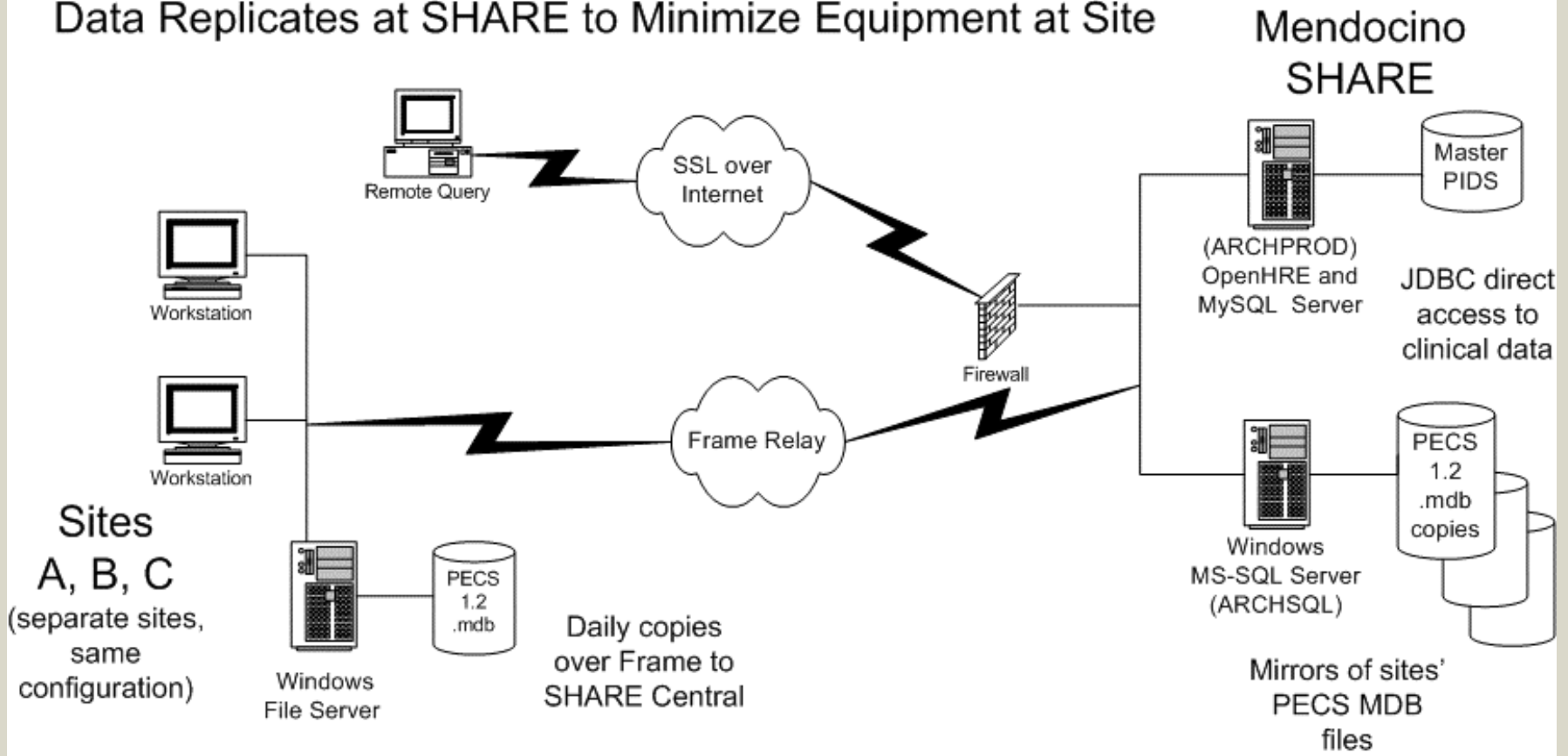
- `<SOAP-ENV:Header  
xmlns:nhinWsa="http://www.nhin.gov/addressing">  
 <nhinWsa:MessageID>  
 12345  
 </nhinWsa:MessageID>  
 <nhinWsa:ReplyTo>  
 <nhinWsa:Address>  
 http://markle.regenstrief.org/services/NHINQuery  
 </nhinWsa:Address>  
 </nhinWsa:ReplyTo>`

# Mendocino Adoption - Architecture



# Current Mendocino Implementation

Data Replicates at SHARE to Minimize Equipment at Site



# Resources

- [www.openhre.org](http://www.openhre.org)
  - News on Open Source and Health Records Exchange
  - Downloads, for Papers and Software
  - Web Links, for Demonstrations
- [www.openhre.com](http://www.openhre.com)
- [www.mendocinohre.org](http://www.mendocinohre.org)
- [info@browsersoft.com](mailto:info@browsersoft.com)