Global Business Services

IBM NHIN Architecture
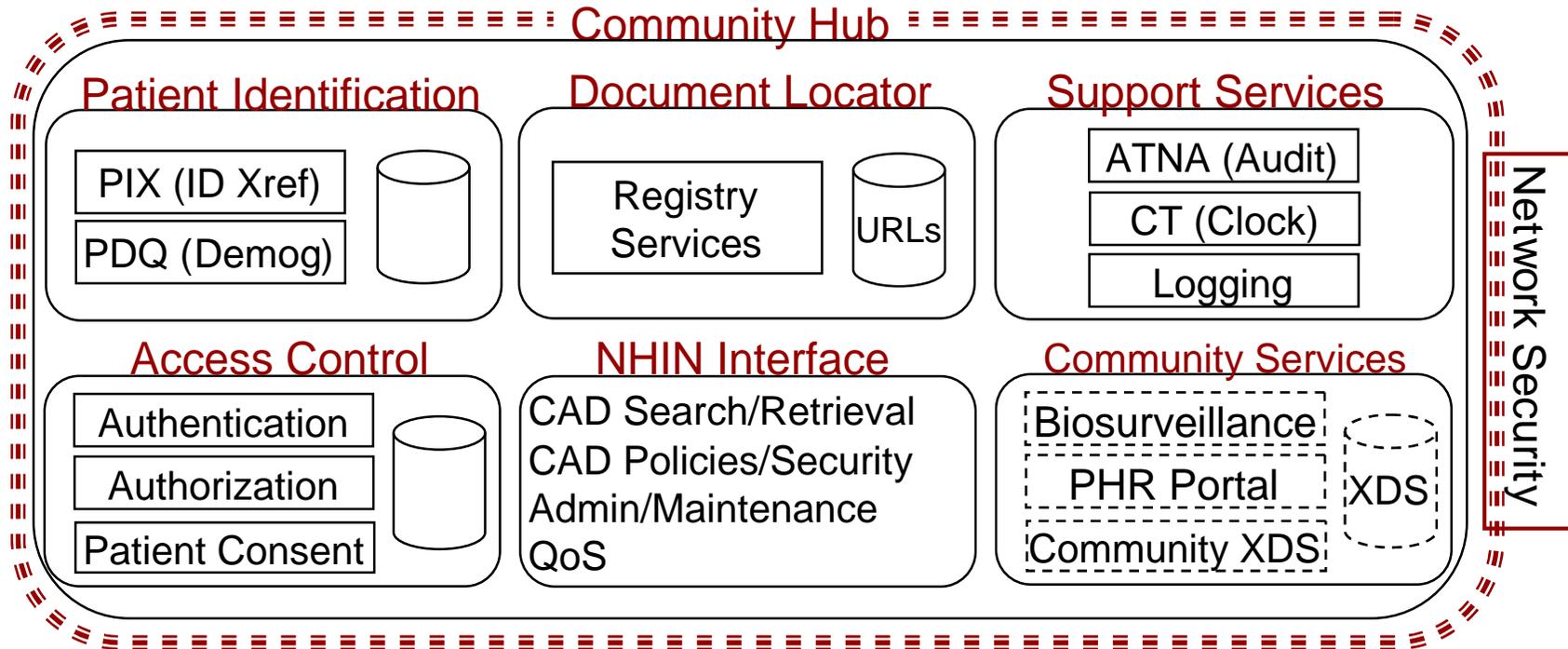
Dave "Casey" Webster

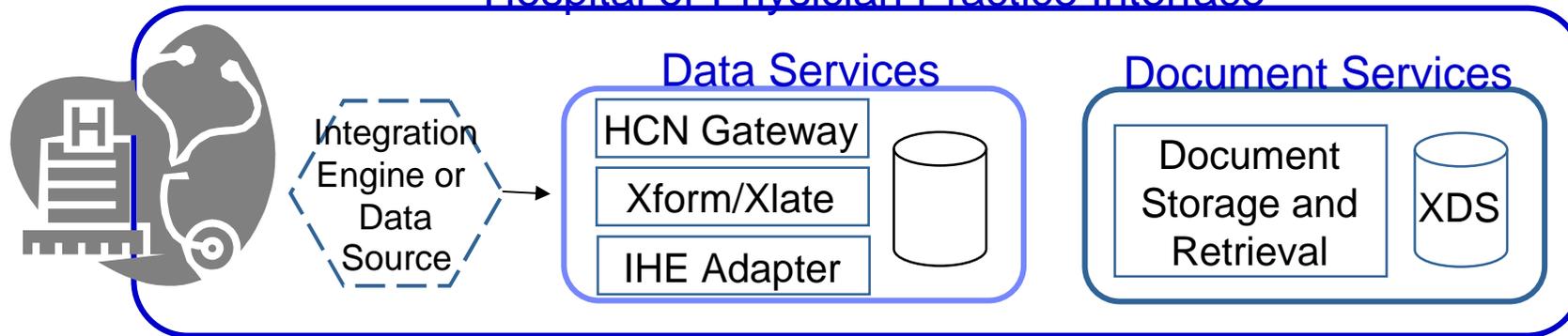**IBM NHIN Chief Architect**

NHIN Forum – June 28, 2006

IBM NHIN Architecture Guiding Principles

- Community-Centric
  - Document repositories normalize and store clinical data within a community
  - Repositories are hosted by individual hospitals/practices and/or shared within the community
  - Community hub provides patient lookup/cross-referencing, document locator, security and support services
  - The community hub is the gateway to other communities
- Drive and conform to standards
  - Instantiation of IHE (www.ihe.net) interoperability framework using Java/J2EE
  - Clinical events stored as HL7 CDA(r2)-compliant documents
- Provide security & privacy w/o sacrificing usability or research value
  - Anonymous/pseudonymous data that can be re-identified where permitted
  - Supports other data views (registries, biosurveillance, outcomes analysis, quality of care)
- Practical
  - Scalable and cost-effective to support every level of practice
  - Point-of-care performance is critical to adoption

NHIN Architecture Project Community Architecture

Community Hub

Patient Identification
- PIX (ID Xref)
- PDQ (Demog)

Document Locator
- Registry Services
- URLs

Support Services
- ATNA (Audit)
- CT (Clock)
- Logging

Access Control
- Authentication
- Authorization
- Patient Consent

NHIN Interface
- CAD Search/Retrieval
- CAD Policies/Security
- Admin/Maintenance
- QoS

Community Services
- Biosurveillance
- PHR Portal
- Community XDS
- XDS

Network Security

Hospital or Physician Practice Interface

Integration Engine or Data Source

Data Services
- HCN Gateway
- Xform/Xlate
- IHE Adapter

Document Services
- Document Storage and Retrieval
- XDS

Cross-Community Interaction

- All cross-community interactions are brokered through the NHIN interface, using other community services as needed

- Authentication and authority uses a federated model, with trust relationships established at the NHIN level

- Cross-community patient lookup is based on directed demographic matching

  - Identity is established by matching demographic data between the local and remote PDQ databases, with a conservative threshold

  - Once a patient has been positively identified in another community, both communities will maintain that relationship

  - Self-training system. Future system could include automated "spiders" that look for matches during non-peak hours

- Once a positive patient match is obtained, document search and retrieval is identical to the intra-community model and transparent to the user

Marketplace Considerations

- Taconic Healthcare Information Network & Community (THINC, Fishkill, NY)

  - Already sharing data via HealthVision

  - Working with HealthVision to emulate IHE profiles

  - Biosurveillance reporting still in early stages

- Research Triangle, NC (NCHICA)

  - Interfacing existing relational database systems (CDRs) to IHE framework

  - NCDetect has been doing biosurveillance reporting of clinical events for several years but very little automated resource data reporting

- Rockingham County, NC and Danville, VA (NCHICA)

  - Rural environment with NC and VA patients