HIT Standards Committee
Data Provenance Task Force

Gary L. Dickinson

CentriHealth

17 January 2015

Brief Bio – Gary Dickinson

- Active in EHR/HIT industry since 1972
- Active in SDOs and Standards Development since 1989
- Currently:
  - Director, Healthcare Standards, CentriHealth
  - Co-Chair, HL7 EHR Work Group
  - Co-Facilitator, HL7 EHR Interoperability Work Group
  - Member/US Expert, US Technical Advisory Group to ISO TC215, Health Informatics
- Lead or Co-Lead
  - ISO 21089, Trusted End-to-End Information Flows (2004, 2015 revision)
  - ISO/HL7 10781, EHR System Functional Model (2014)
  - ISO/HL7 16527, PHR System Functional Model (2014)
  - S&I Simplification Work Group
- Previously:
  - Director, Healthcare Standards
    - Health Data Sciences (1983-1995)
    - Per-Se Technologies (1995-2003)
    - Misys Healthcare (2003)
  - Director, Clinical Information Systems, Loma Linda University Medical Center (1972-1983)
  - Member, HIT Advisory Panel, Joint Commission (2005-2010)

Testimony to HITSC - Data Provenance
Task Force

Questions

1. Did the Data Provenance Initiative community miss something that's potentially more impactful?

2. Where in the Use Case should we start in terms of evaluating standards to meet Use Case requirements?

3. Are there any architecture or technology specific issues for the community to consider?

1) Miss Something Impactful?

- Data provenance is about truth (authenticity) and trust (assurance).

- Data provenance represents (embodies) the source of truth – the point of data/record origination.

- Data provenance, if properly captured, retained, managed and conveyed from the point of origination forward ensures trust to all downstream users and for all purposes to which health information may be applied.

Testimony to HITSC - Data Provenance Task Force

1) Miss Something Impactful?

- The Basics are Missing
  - Basic data/record lifespan with lifecycle events occurring during the course of the lifespan
  - Identification of discrete Data Provenance Events
    - Starting explicitly at point of origination and
    - Including verification, amendment, attestation, translation to/from exchange artifacts and other events which originate or update data/record content
  - End-to-end data/record flows: point of origination to each ultimate point of access/use
  - Binding of Data and Provenance as Indivisible, Immutable DP PAIRS (starting at at the point of origination, preserved and managed thereafter)
  - Resulting in End-to-End Chain of Trust

Testimony to HITSC - Data Provenance
Task Force

1) Miss Something Impactful?

- Instead DPROV leadership demanded:
  - Focus on Point of Exchange
  - Assemblers and Composers as Actors and a primary focus of Use Case User Stories and Scenarios
  - Development of CDA R2 DP Implementation Guide (ahead of and not based on DPROV Use Case requirements)

2) Where to Start

- This is the question with the most obvious answer but one that has been the focus of ongoing struggles within the DPROV Initiative
- At the outset, DPROV leadership insisted on point of exchange as the starting point
- It took 6 weeks before the Community was able to prevail and ensure that the DPROV Charter was explicit that the place to start is the point of data/record origination
- Although the Charter was approved by consensus, DPROV leadership was apparently not satisfied and continued to demand focus on point of exchange
- To see this clearly, look at the final set of DPROV User Stories, Activity Diagrams, Scenarios and Base Flows and the fundamental absence of point of origination

2) Where to Start

- Start at the 1st data provenance (DP) event – point of origination – the 1st binding of data and provenance into an indivisible, immutable pair
- Continue at the next DP event – be it point of verification, amendment, attestation or translation to an interchange artifact – and again bind the data and provenance pair
- (Each DP event anchors a chain of trust)
- Retain each DP pair in source system
- Exchange each DP pair when sharing
- Retain DP pair in receiving system
- Provide access to DP pair in user views of source and/or transformed data/records

Testimony to HITSC - Data Provenance Task Force

3) Specific Issues

- Software Architecture must be designed
  - To manage data/record throughout its lifespan and at each lifecycle event therein
  - To capture and manage DP pairs from each Data Provenance event
  - To share DP pairs at outbound exchange
  - To capture DP pairs at inbound exchange
  - To provide access to DP pairs to end users

3) Specific Issues

- Software Architecture must be based on US and International Standards oriented to manage data/record lifespan, lifecycle and data provenance
- There are applicable Standards, not yet widely adopted
  - ISO 21089, Trusted End-to-End Information Flows
  - HL7 EHR Record Lifecycle Model DSTU
  - ISO/HL7 10781, EHR System Functional Model Release 2

Testimony to HITSC - Data Provenance
Task Force

3) Specific Issues

- Why so little uptake?
  - I believe that it's continued focus (by ONC, HITSC, HL7, ISO, et al) primarily on standards
    - At the back-end (for so-called interoperability), rather than
    - At the front-end to ensure data/record integrity and measurable quality: authenticity, source authentication, accuracy, consistency, completeness, non-alteration, including data provenance

Contact

- Gary L. Dickinson
    - Director, Healthcare Standards, CentriHealth
    - Co-Chair, HL7 EHR Work Group
    - Co-Facilitator, HL7 EHR Interoperability Work Group
    - Lead, US Standards and Interoperability (S&I) Framework – Simplification Work Group
    - (+1) 951-536-7010
    - gary.dickinson@ehr-standards.com