

Interoperability

Persistent Challenges, Emerging Opportunities

Agenda

- About Apex
 - Medication Reconciliation at the VA - A Case Study
 - Persistent Challenges
 - Emerging Opportunities

About Apex Data Solutions, LLC

- Founded in 2013
- Emerged from a VAI2 annual employee innovation on technology-enabled digital documentation (voted by VA employees in #20 of 3841 ideas)
 - Innovation wiki: <https://vacloud.us/groups/5021/>
 - Paper: <http://repository.edm-forum.org/egems/vol3/iss2/11/>
- Our technologies are full-stack and aimed at improving documentation at the point-of-service by
 - Telling the patient (veterans) story
 - Filling in knowledge gaps
 - Baking usability in from the ground up
 - Generating workflow-driven user experiences focused on effectiveness and efficiency

Medication Reconciliation at the VA - A Case Study

- Aside from being driven by “meaningful use” medication/allergy reconciliation is important as a case study for two reasons:
 - It’s a microcosm of the bigger interoperability problem
 - Illustrates the need for an *architecture* that supports interoperability
- What is needed to “tell the story” of a patient’s medication history?
 - You need to know which systems know about the patient
 - You need to consider their relationship to both problems and allergies
 - You need a way to pull the data together on demand and display it in a way that is cognitively helpful
 - The patient and the veteran have very different cognitive requirements!
- What is needed to “fill in knowledge gaps”?
 - Providers need to make lots of subjective judgements at the point of care
 - You need to be able to write back to the systems of record!

Persistent Challenges

- Data standardization complicated even when semantics not an issue
 - Recent 2 year project at the VA to clean up local VistA customizations (across 130+ instances) to the point a common data set could be extracted consistently into the Clinical Data Warehouse (CDW). We found out in retrospect how much this helped us on Med Rec!
- Semantics are a challenge even when built on the same database
 - RPMS is centered around the encounter, whereas VistA is centered around departments
 - Both are built in FileMan written in MUMPS, and share some code, but aren't semantically equivalent
- Most databases lack the conceptual tools needed to “tell the story” from existing data and help in any meaningful way with “filling in knowledge gaps”
 - SQL vs. NoSQL - doesn't matter, both are based on the same premises of data mutability
- Policy obstacles to interoperability driven by orthogonal concerns (security!)

Emerging Opportunities

- VistA Services Assembler (VSA) and VistA.js show the value of a layered architecture, which is essential to interoperability
 - Also shows what can be achieved when “business” and “IT” collaborate to solve big problems
- Recent advances in multicore programming and semantic technologies point to a revolutionary new approach to databasing that is transformative
 - How can we enhance our information model to facilitate “story telling”?
 - What can be done to ensure that critical data is never lost?
 - Need to deal directly with the fact of disparate “perspectives” of multiple “databases of record”
- As public and political pressure to interoperate mounts, the policy decisions required to break the logjam need to be made *thoughtfully*, because the concerns over security and privacy are real and valid.