APEX DATA SOLUTIONS

5401 West Kennedy Blvd., Suite 890, Tampa, FL 33609

Pragmatic Interoperability:

NIST Recommendations Applied at the Point of Care

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NIST, Red Auditorium, Gaithersburg, MD

Bob Calco Chief Architect - Apex Data Solutions

National Institute of Standards and Technology (NIST), Office of the National Coordinator for Health Information Technology (ONC), and Association for the Advancement of Medical Instrumentation (AAMI)

Who are we & what did we do?

- Founders
  - Greg Matton – CEO
  - Dr. Greg Shorr, M.D. - CMIO
  - Bob Calco - Chief Architect & Lead Developer ← That's me
  - Lea Anthony - Senior Infrastructure Architect
- VAi2 Innovation #5021 - "Technology Enabled Digital Documentation"
  - Wiki: https://vacloud.us/groups/5021/
  - Paper: http://repository.edm-forum.org/egems/vol3/iss2/11/
- Medication Reconciliation work at the VA
  - New approach to metrics capture for usability, clinical efficiency, clinical effectiveness, etc.
- VistA Services Assembler / VistA.js

What did we learn?

- Focus on the point of care - i.e., *usability* - *first!* Begin with the end in mind.

  - In healthcare, the "interoperability" that matters most is between patient and provider.

  - This can be generalized to any service-oriented vertical.

  - What really matters is not absolute; it is scenario-specific.

  - "Tell the story; fill in knowledge gaps" → ***We need a new information model!***

- Solve interoperability *pragmatics*, and the *semantics* will follow organically from workflow. Workflow must be malleable, not prescriptive.

  - Biggest blockers are actually the mundane things: identity resolution, access & security management, write-back to disparate data sources (and policy barriers thereto)

- NIST recommendations are about better outcomes; implementing them is about thinking holistically about user experience in the context of clinical care (i.e., patient & provider experience are deeply intertwined!).

What are we up to now?

Apex Unify!™

Architectural Layer	Apex Unify!™ Component	What it does
Data	Apex ForeverDB™	"Know the whole story about a given entity from all points of view."
SOA	Apex Synchronicity™	"Share the story about that entity with each system of record (SOR) according to its point of view"
Businesses Logic	Apex Team Collaborate™	"Distill the story to its scenario-specific essence for each member of the care team based on their role."
Application Logic	Apex DocuMentor™	"Render the story to a given team member in a manner conducive to knowledge gap resolution."
User Experience	Apex Odyssey™	"As unobtrusively as possible, tell the relevant portions of the story to the current team member; simplify filling in knowledge gaps regardless of modality of input."

Focus on ForeverDB™

- **What is it?**

  - A New Database Management Platform (optionally, as a service)

- **What value does it bring? What makes it different?**

  - A new information model for long-term data storage and analytics that guarantees:

    - Information is 100% lossless (because data is *immutable*)

    - You can look at our data at different points in time and see what was true at that time

  - A *generative* operational model designed to enhance ROI on existing "big data" investments (e.g., for short-term BI processing or ad hoc caching for production systems)

  - Scalability "out of the box" - flips traditional client-server model upside down

  - *Identity* management "out of the box" - and at a deeper level than you might think

    - Integrates nicely with almost any modern IAM system - but transcends it

    - Deals head-on with the fragmented nature of "the story" for a given entity and provides ways to pull it together into a narrative (this is the job of Team Collaborate™)

How does all this relate to risk prevention/mitigation?

- Lessons from our Medication Reconciliation work

    - UX should be scenario-specific and capture state change and interactions faithfully.

    - Unobtrusive metrics capture that is not hard-coded in the UX can inform new methods for evidence-based usability, better clinical efficiency, and overall better patient-provider interaction at the point of care.

    - Interoperability must serve a purpose… that purpose IS the subject of this workshop!

"Simple solutions seldom are. It takes a very unusual mind to undertake analysis of the obvious."

Alfred North Whitehead

THANK YOU

Bob Calco Chief Architect - Apex Data Solutions, LLC

Email: bob@apexdatasolutions.net