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Healthcare Service-Oriented Architecture Workshop:
Regional Health Information Organization (RHIO) Simulation

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Session Agenda

- Welcome and Introductions

- Context and Background

- This session is not…

- Exercises

  – Exercise One: Identity validation scenario (black-box)

  – Exercise One (b): Identity validation scenario (white-box)

  – Exercise Two: Patient scheduling scenario(s)

  – Exercise Three: Current medications scenario

- Outbrief, Discussion, Lessons Learned

- Introduction of HL7/OMG Service Standards work

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Session Objectives

- To demonstrate how a SOA works and can impact healthcare interoperability

- To simulate a Regional Health Information Organization (RHIO) and some of its design challenges

- To learn how to identify functionality well suited to service-orientation

- Take the fear out of SOA

- To familiarize attendees with core principles of service architecture: encapsulation, delegation, and choreography

- To differentiate SOA from code-sharing/code libraries

- To familiarize attendees with key components of VHA's SOA and their functions

- To provide an opportunity to "interact" with a service architecture and interact with peers and subject matter experts

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This session is not...

- ...for the passive participant. Get involved!

- ...going to explain "why services"

- ...about a specific implementation technology or platform

- ...a "talking head" presentation about services

- ...impossibly simple. Approaches presented are simplified, but viable, scalable, and applicable to real-world needs.

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Workshop Approach

- The entire workshop is interactive and informal

- We will divide into small groups (~6-8 people per group)

- An overview of each exercise will be presented *en masse*
  - This will include a walkthrough of a business scenario
  - A set of cards will be distributed containing "roles" for people within groups
  - Blank cards will be available to extend the scenario to address your specific areas of interest or concern
  - Mentors will be available and circulating to help out.

- For each exercise…
  - Each person in the group will have a role.
    - Some will be people-roles (i.e., subject matter experts, users, etc.)
    - Some roles will be software services or components
  - "Act out" the scenario within the group
  - Everyone should keep to their role during roleplay
  - If you are having difficulty ask a mentor

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Session Roles

- Subject Matter Experts (SME):
  - Simulated business community member to create and clarify requirements. For ambiguities in the exercise, the SME can create requirements. The exercise is best when a SME brings "day-job" experience to the scenario.

- Flow Choreographer
  - During the example, services will need to interact to perform the tasks requested. The flow choreographer has responsibility to track the execution of the scenario between and across services.

- Service Instances
  - People holding these roles will be simulating the software (and performing the functions that it would perform in a system).

- Scribe
  - The scribe will capture lessons-learned and questions raised during the exercise

- Mentor
  - These people are experts and will circulate to assist with questions

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Session "Tools"

- Scenario
  - A business example that forms the basis for each exercise

- Responsibility cards
  - Identifies each of the roles and the responsibilities of that role for the exercise. Groups may add roles or add responsibilities to existing roles as the exercise is carried out.

- Tokens to represent Payload & Exception passing
  - Passed among users and services, these tokens represent data passing, software invocations, and user prompts

Exercise 1a: Patient Identification across Orgs (Black-box version)

- A patient Jo Smith presents at Anywhere Community Hospital (ACH) for care

- Ms. Smith is asked to provide identifying information, specifically
    - Full name
    - Date of Birth
    - Mother's maiden name
    - Complete Mailing Address
    - Gender

- A lookup from the Patient Registration system at ACH is conducted and two candidate identities are returned
    - There is a candidate match identity with Anywhere HMO
    - There is a candidate match identity with South Anywhere Medical Center (SAMC)

    >> Registration System calls ACH Person Id Service to identify Jo based on traits
    >> ACH Person Id Service returns a RHIO-based identity with two local identity matches

- The identities are displayed to the Registration Clerk and verified with Jo. She confirms that the findings are, in fact, her.

Exercise 1b: Patient Identification across Orgs (White-box version)

- A patient Jo Smith presents at Anywhere Community Hospital (ACH) for care

- Ms. Smith is asked to provide identifying information, specifically
  - Full name
  - Date of Birth
  - Mother's maiden name
  - Complete Mailing Address
  - Gender

- A lookup from the Patient Registration system at ACH is conducted and Jo is unknown

  >> Registration System calls ACH Person Id Service to identify Jo based on traits

  >> ACH Person Id Service checks internally and finds no matches

- A lookup within the community for Jo is conducted and Jo is known (and her identities returned)
  - There is a candidate match identity with Anywhere HMO
  - There is a candidate match identity with South Anywhere Medical Center (SAMC)

  >> ACH Person Id Service forwards query request to Anywhere RHIO Federated ID Service

  >> Anywhere RHIO Federated ID Service checks internally and finds two candidate matches

  >> Anywhere RHIO Federated ID Service returns a correlated identity with two matches

  >> Candidate matches are returned to the calling service (e.g., the ACH Person ID Service)

  >> ACH Person ID Service returns candidates to Registration System

- The identities are displayed to the Registration Clerk and verified with Jo. She confirms that the findings are, in fact, her.

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Exercise 2: Appointment Scheduling Scenario

- Scenario. Jo Smith (from Exercise 1) was admitted and diagnosed with a cardiac arrythmia. Prior to discharge, the attending requested that a follow-up appointment with a cardiologist be scheduled. Jo goes to the registration desk to make arrangements for this follow-up visit.

- Context: A new policy has been put into place requiring your organization to be able to both make and accommodate automated appointment scheduling requests within the RHIO.

  - You must accept schedule appointments from other RHIO orgs

  - You must be able to schedule appointments with other RHIO orgs

  - You must be able to offer organizational and schedule alternatives for a clinical specialty need

  - Ignore detail differences between "interfaces" and "implementations"

- If you finish early

  - How will you deal with cancellations?

  - How will you manage notifications and appointment confirmations?

  - How will you support patient self-scheduling?

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Exercise 3: Retrieval of current medication list

- Scenario: One week has passed, and Jo arrives at her scheduled appointment at Southern Anywhere Medical Center to meet with her (new) cardiologist. In the initial discussion, Dr. Corozon asks Jo what medications she is taking. She can't remember. An inquiry is made into SAMC's EHR system to retrieve a current medication list for Jo based upon her known patient identifier (which is available from her scheduled appointment record). SAMC's EHR, integrated with the RHIO, will retrieve this information from available RHIO resources.

- Contextual information:
  - You may assume that business policies have been adopted to address sharing of this information among covered entities
  - You may assume that this activity is limited to patients that have granted consent
  - Services should not overlap in responsibilites

- If you have time…
  - Jo has indicated that she is also maintains a personal health record where she captures the over-the-counter medicines she takes with regularity.   Include the PHR retrieval in your solution.

Discussion and Takeaways...

- What did you discover?

- How did the 'black box' scenario differ from the 'white box'

- When you created your own services, were they narrow or broad in scope? Why?

Healthcare Services Specification Project Overview

- An effort to create common "service interface specifications" tractable within Health IT

- A joint standards development project involving Health Level 7 (HL7) and the Object Management Group (OMG)

- Its objectives are:
  - To create useful, usable healthcare standards that address functions, semantics and technologies
  - To complement existing work and leverage existing standards
  - To focus on practical needs and not perfection
  - To capitalize on industry talent through open community participation

- Support and involvement from 15+ organizations of all types (vendor, payer, provider, integrator, etc.)

- Specifications are under development for
  - Record Locator and Access Service
  - Entity ID Service (to support MPI, Provider Index, etc.)
  - Terminology Service
  - Patient Evaluation Service (clinical decision support focus)

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    - Josh Oh, Consultant Architect, EDS
      (http://www.eds.com)

    - Keith Cox, Program Manager, Veterans Health Administration
      (http://www.va.gov)

- For more information, see:

    - http://healthcare.omg.org

    - http://www.hl7.org/Special/committees/servicesbof/index.cfm

    - http://groups.yahoo.com/ServicesSpec

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