EVOLUTIONARY SERVICE-ORIENTED ARCHITECTURE

e-SOA in the Military Health System

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A {NOT SO} UNIQUE PROBLEM

Creating a service framework around monolithic legacy systems presents unique challenges:

- Proprietary, closed architectures
- Users expectation of continuity
- Mature, functioning systems
- Previously developed point to point interfaces
- Enterprise in motion-dynamic
AGENDA

- The SOA Revolution
- Why e-SOA
  - The Decoupling Challenge
  - The Cohesion Challenge
  - The Evolution Requirement
- Understanding the Military Health System (MHS) Enterprise
  - System(s) Architecture
  - Information Exchange
  - The Dilemma
  - The COTS Approach
  - The Current Approach
- From Concept to Implementation
  - Choosing the tool(s)
  - E-SOA Business Drivers
- Question and Answer
THE SOA REVOLUTION
Sometimes I lie awake at night, and I ask, 'Where have I gone wrong?' Then a voice says to me, 'This is going to take more than one night.'

-Mr. Charles Brown
SOA - THE TECHNOLOGY PART

The technical implementation of services is **NOT** the biggest challenge facing established enterprises...
WHY E-SOA
THE DECOUPLING CHALLENGE

- Migrate from disparate systems or traditional enterprise architectures
- Separate components and code without breaking the system
- Create new, sensible, extensible, reusable components
THE COHESION CHALLENGE

- Maintain the semblance of one system
- Infinite sub-services create a single system interaction experience for the end user
- New components must blend seamlessly with legacy components
THE “EVOLUTION” REQUIREMENT

- Decades old legacy system
- Ongoing system changes
- Irreplaceable business rules
- Continuity of operations
- Regulatory/legal compliance
- Other systems in flux:
  - Longitudinal Health Record (AHLTA)
  - Procurements

—Synonyms 1. unfolding, change, progression, metamorphosis.
—Antonyms 1. stasis, inactivity, changelessness.
The delta between the ideal and the actual path is determined by:

- Technology restrictions
- Budget constraints
- Risk tolerance
- Timeline requirements
UNDERSTANDING THE MHS ENTERPRISE
MHS SYSTEMS OVERVIEW

CHCS
{Ancillary Services}

AHLTA
{Clinical Mgmt}

TOL
{Portal}

DINPACS
{Imaging}

TPOCS
{Billing}

DBSS
{Blood Mgmt}

...
Historical ‘one-off’ development

Hundreds of point-to-point interfaces

Extreme coupling

Expensive maintenance and sustainment
MHS INFORMATION EXCHANGE-GOAL

- Single unified service engine based on JSR 208
- Service enablement
- Service orchestration
- Message normalization
- Guaranteed delivery
- Binding specifications
MHS INFORMATION EXCHANGE-REALITY

- Composite HealthCare System (CHCS)
  - Dominates the MHS landscape
  - A system of systems
  - Developed over 15 years
  - Digital Standard MUMPS
  - Built in interfacing (HL7 and EDI)
MHS SOA - THE DILEMMA

How to evolve from monolithic legacy to open SOA

- Dominant master system
- Highly coupled
- Legacy language (DSM)
- Closed architecture
- Federated, stand-alone instances
THE COTS APPROACH

- Modularize the legacy system
- Replace modules incrementally
- Integrate COTS modules
- Evolve legacy to obsolescence and retirement
THE COTS CHASM

- Requirements gap
  - Commercial practices and government requirements
  - Mature, accepted, and adopted business rules
  - Regulations, policies, and instructions
- Configuration costs
  - Customization of code
  - Customization of interfaces (integration and user)
  - Total Cost of Ownership during modular transition
THE CURRENT APPROACH

Keys to success
- Migrate to standards-based, open-architecture
- Decouple functionality within the core system
- Service enable core functionality

Architectural decisions
- Service interrelations and orchestration
- Common files and functions (the plumbing)
- Modular decomposition
STANDARDS-BASED OPEN ARCHITECTURE

- 3,300+ Caché Classes:
- 3,300+ SQL Table
- 3,300+ Caché Objects
- 45,500+ SQL/Object Triggers
- 150,000+ Data Elements

- 3,300+ Fileman Files
- 45,500+ Triggers
- 80+ DSM Globals
- 150,000+ Data Elements
Decoupling functionality

- Segregation of modules may not be absolute
- Orchestration of services is key
- Avoid service redundancies
SERVICE ENABLEMENT OF LEGACY

Service Enable Core Functionality
NEXT EVOLUTIONARY STEP

- Service orchestration
- UDDI
- Interoperability
- Extending the enterprise
FROM CONCEPT TO IMPLEMENTATION
E-SOA TOOLS SELECTION

- Agile
  + Able to change course frequently with little adverse impact to cost/risk/schedule

- Technology absorption
  + Readily integrated into YOUR technology enterprise
  + Extensibility/interoperability/trainability/maintainable

- Rapid Application Development
  + Able to deliver phased, deployable results
  + Empowers long term vision
  + Lowers project risk
E-SOA BUSINESS DRIVERS

- Require the cost, speed, scalability, flexibility benefits of SOA
- Cost, schedule, and risk restrictions requiring compromise
- System usability required during implementation
- Each evolution:
  - Marginally closer to the end state architecture
  - Offers value commensurate with cost
  - Achievable/pragmatic
  - Lowest risk critical path
QUESTIONS?