The Plan vs. The Reality:
Navigating SOA Challenges in Federal Healthcare

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Session Objectives

Evaluate big-bang SOA vs. an evolutionary approach through Federal Healthcare examples

- ✓ Setting Scope for SOA Efforts (SOA in Context)
- ✓ Success vs. Failure
- ✓ Evolutionary Approach
- ✓ Support for Evolution
- ✓ Examples
- ✓ Best Practices
- ✓ Q&A

Always the Goal…But How to Get There?

Today's state

- Single purpose-built apps
- Brittle, monolithic, proprietary
- Focused on initial reqs not pliable
- Costly to maintain and hard to scale

Desired state

Order & Agility

Agile internal or externally provided shared services / Compositions

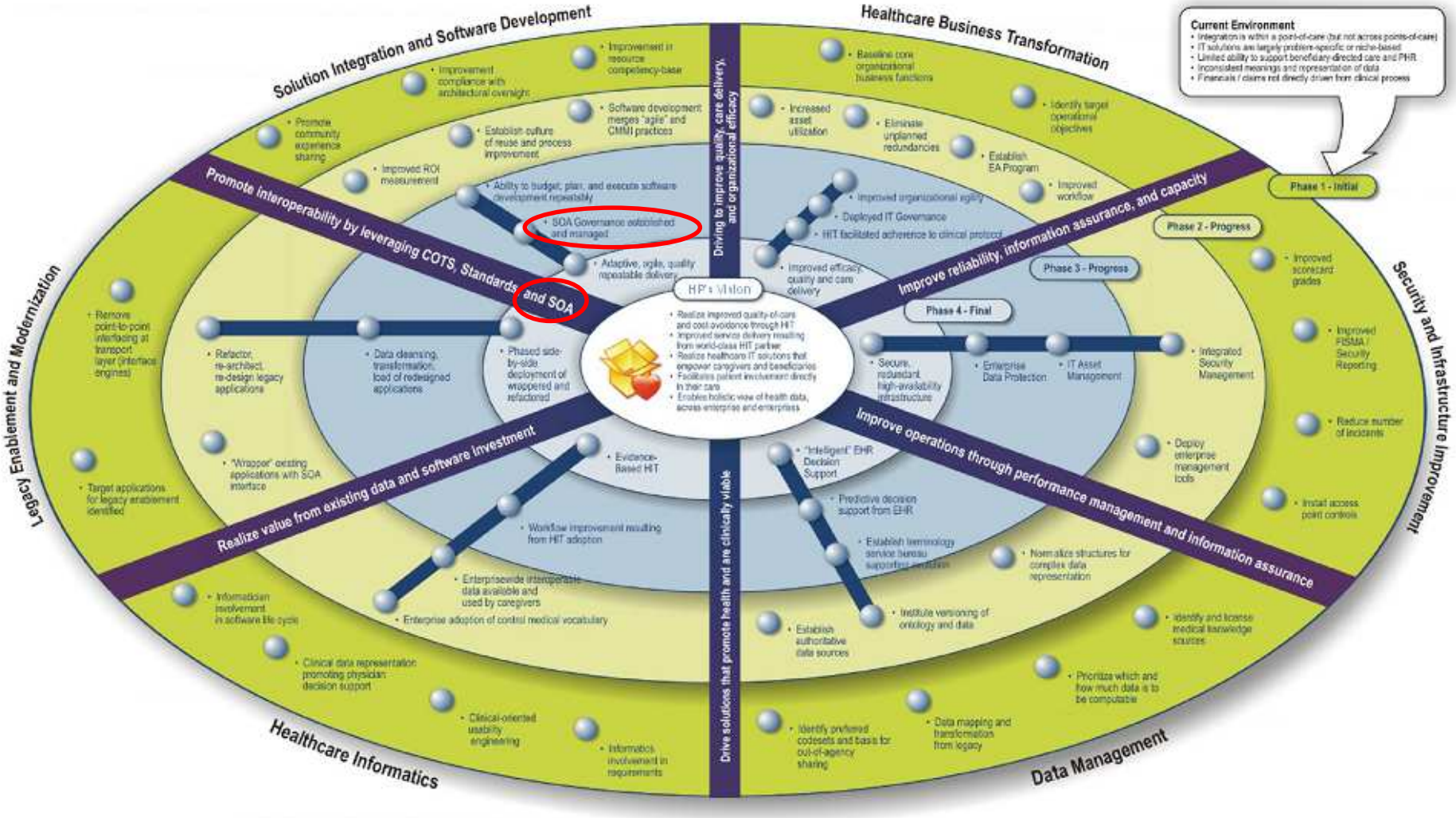
- Pliable – modular, loosely coupled
- Built for sharing, interoperable
- Standards-based
- Support orchestrated business processes

Setting Scope for SOA Efforts

- Numerous SOA efforts are scoped at the “Enterprise” level – in other words, massive, overhaul programs that attempt to change the organizational landscape through adherence to a defined to-be state
- Dangers of setting scope too big
  - Likely to result in “failure” in the largest of organizations
  - Acquisition, program, governance, and execution challenges for “grand” SOA
  - Progress ends up being measured in units the business community could care less about
- What to do instead
  - General target and goal setting – have a target architecture in mind (at least service layers), evaluate against it as you go, but expect it to evolve
  - Incremental, user-facing milestones
- Remember the Big Picture – where a SOA initiative fits within the overall context of business transformation

Remember the “Big Picture”

Keep SOA in perspective within the overall transformation



HP Enterprise Services’ Healthcare IT Transformational Vision

Success vs. Failure

– Success Attributes
  - Actually adds noticeable value (incrementally) to the business
  - Justification for investment is easy to recognize
  - Business is openly (and behind closed doors) appreciative of IT

– Failure Attributes
  - “Blaming” SOA
  - Business/Clinical communities growing distrust of IT
  - Constant requests for program/project justification

An Alternative – Evolutionary Approach

- Business
  - Focus on those services that provide visible value to the business
- Culture
  - Services as first-class artifacts/projects
  - Overcoming not-invented-here; do not re-invent
  - Share responsibility based on dependency
- Process
  - Iterative development *with* incremental deployment
  - Don't be (too) afraid of JBoWS (Just A Bunch of Web Services) – just find the right ones – value for the business
  - Mix Top Down and Bottom Up Service discovery/creation
- Architecture
  - Still need that vision and an evolving agile plan to get there
  - Working through technical debt (SOA architecture) in a manner that has visible value to the end-user community – this will keep the "faith" in SOA

Support for Evolution

– Some of the largest healthcare IT programs in the world moving to evolutionary model

U.S. Department of Veterans Affairs	U.S. Department of Defense Military Health System
153 hospitals	59 hospitals
956 outpatient clinics	364 health clinics
8 million beneficiaries	9.6 million beneficiaries
200,000+ encounters documented daily in EHR	140,000+ encounters documented daily in EHR
250 million prescriptions per year	122 million prescriptions per year

– Both the VistA (VA) and AHLTA (DoD) programs have and are benefiting from evolutionary based SOA

Source(s) – VA-DoD Sharing – Yesterday Today and Tomorrow, Dr's Stephen Ondra and Pawan Goyal; http://dhims.health.mil/userSupport/ahlta/about.aspx

Support for Evolution

– U.S. Federal Chief Information Officers Council guidance pushes evolution as way of “Enabling the Mission” for all U.S. federal agencies

– “Practical Guide to Federal SOA”

- Treat SOA Adoption as Organizational Change
  - Requires both top-down (Enterprise) visioning, sponsorship, and support as well as alignment with bottom-up activities that are naturally occurring within the organization; *neither alone are sufficient*
- Use a Service-Based SDLC with Incremental Development Practices
  - “SOA” should not be thought of as a traditional acquisition in and of itself with a single deliverable (i.e. the Enterprise SOA) and a firm deadline
  - More akin to lifecycle maintenance model that is continually innovating on itself and a constantly evolving refresh cycle
- Leverage Legacy Assets to Enable Evolutionary Progress
  - Wrap legacy transactions as services along side of modernization activity to incrementally advance the business

Support for Evolution

– U.S. Department of Defense Military Health System
  - Believes that stabilization and advancement of its EHR will come from **successive** service-based abstracting of capability/function from its current ecosystem
  - Execution model for this is an **incremental, step-wise approach** (inclusive of SOA as an underlying architectural principle)

– U.S. Department of Veterans Affairs
  - All IT projects coming under the Program Management Accountability System (PMAS) banner which dictates **iterative and incremental advancement** of all IT programs (inclusive of transition to service-based infrastructure)

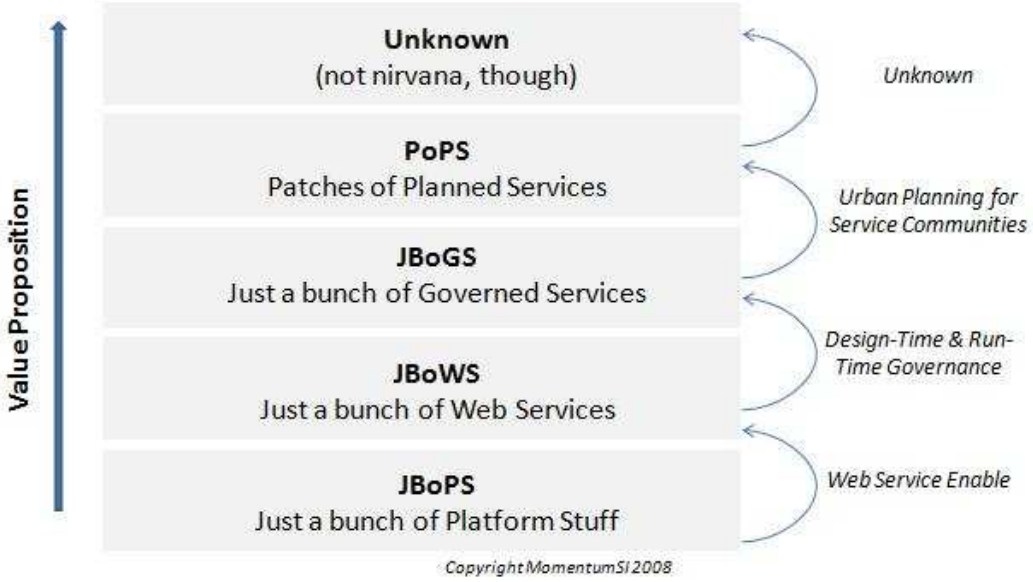
– U.S. Centers for Medicare & Medicaid Services (CMS)
  - CMS' SOA approach includes an understanding that value from SOA is more of a long-term item, but **targets incremental improvements** to justify investment

– U.S. National Cancer Institute
  - Leverages a **business driven incremental approach** to developing a SOA based Clinical Trials Suite

Support for Evolution

– Don’t be (too) afraid of JBoWS (Just A Bunch of Web Services) – just find the right ones – value for the business
  - Jeff Schneider, CEO of Momentum SI characterizes JBoWS as “a natural step that organizations take on the path to service orientation….not right or wrong, it’s just a stepping stone”

– Steps along this path might not yet be what purists will call SOA, but anything that it moving the needle in that direction **AND** adds demonstrable value and agility to the business is still good



Examples – Incremental Services Adding Value to Federal Healthcare Organizations

Department of Veterans Affairs

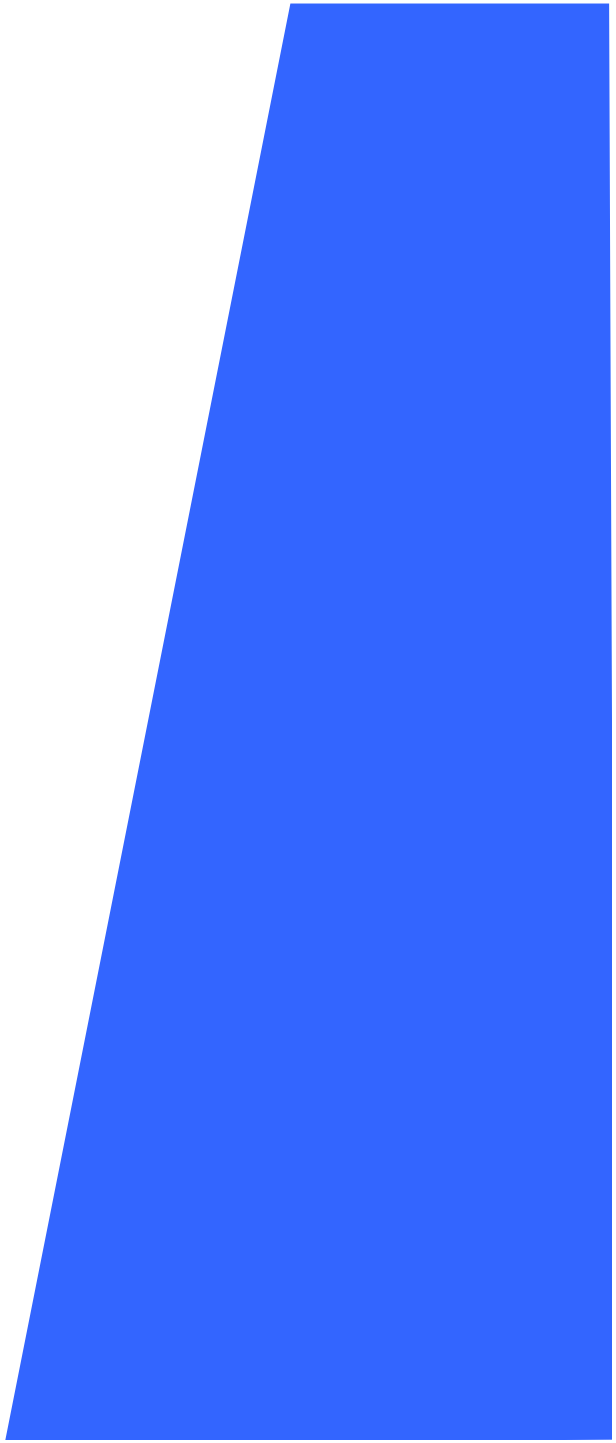
- **Person Service(s)** - Foundation of the re-engineered Master Patient Index for VHA; creates/maintains identity of patients and non-patients across the enterprise
- **Clinical Data Service** - Provides the run-time interface to all clinical patient records persisted in the Health Data Repository (HDR).
- **Standard Data Service** - Supports nationally controlled reference tables by providing a service for storing, accessing, and managing all standard administrative data.
- **Eligibility Summary Service** - Allows clients to synchronously retrieve the Eligibility and Enrollment Summary for a Person
- **Clinical Information Support System Services** - Portal/Portlet services that allow participating applications to share common services such as Electronic Signature
- **Enterprise Terminology Service** – Enterprise support for concept lookups, concept synonym and coding translations (e.g., translating from the SNOMED code to the internal VHA representation of a concept) and concept semantic and knowledge lookups (e.g., what 'drug' concepts are effective for 'problem' concepts
- **NHIN Services** – Adapter services to enable sharing of VA-maintained patient data with other NHIN nodes (e.g. private sector, DoD)

Department of Defense Military Health System

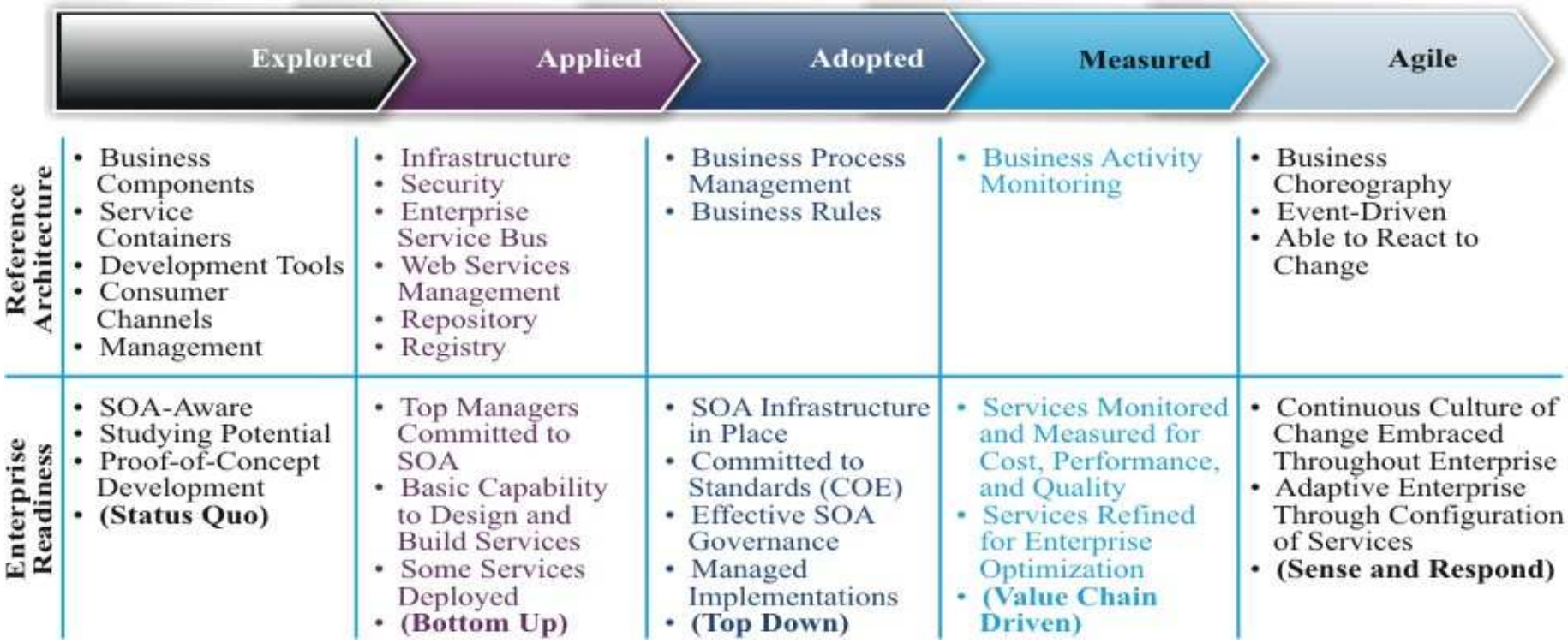
- **Bi-Directional Health Information Exchange (BHIE)** - Services used to on-demand share labs, problems, encounters, radiological exams, prescriptions, and allergies for a given patient between VA and DoD systems of record
- **Patient Inquiry/Update** - Enterprise-wide ability to find/retrieve/update unique patients within MHS
- **Appointment/Referral Service –** Enterprise-wide ability to retrieve appointment and referral information for a given patient
- **Enterprise Single Sign-On Services –** Enterprise-wide services for password management across multiple applications simplifying user experience
- **Materiel Service –** Provides consumers with logistical information on Materiel Sets, Materiel Details, Materiel End Items, and Support Items
- **Task, Time, and Treater Service –** Provides consumers with information on a specific Treatment Brief (logistical tasks, and materiel associated to the treatment of a specific patient condition)
- **NHIN Services –** Adapter services to enable sharing of DoD-maintained patient data with other NHIN nodes (e.g. private sector, VA)

Best Practices

1. Understand your as-is organizational and architectural maturity and plan to take the “next step” without obsessing over the “ultimate” vision
2. Establish a general to-be architectural vision incorporating at least the various service taxonomy layers you’re considering
3. – Some early governance
   - Services Portfolio Plan (through Top-Down and Bottom-Up discovery/creation) coupled with granularity governance
   - Consider a registry/repository
   - Leverage standards to increase chances of success (e.g. HL7/OMG HSSP)
4. – Focus increments on creating business value



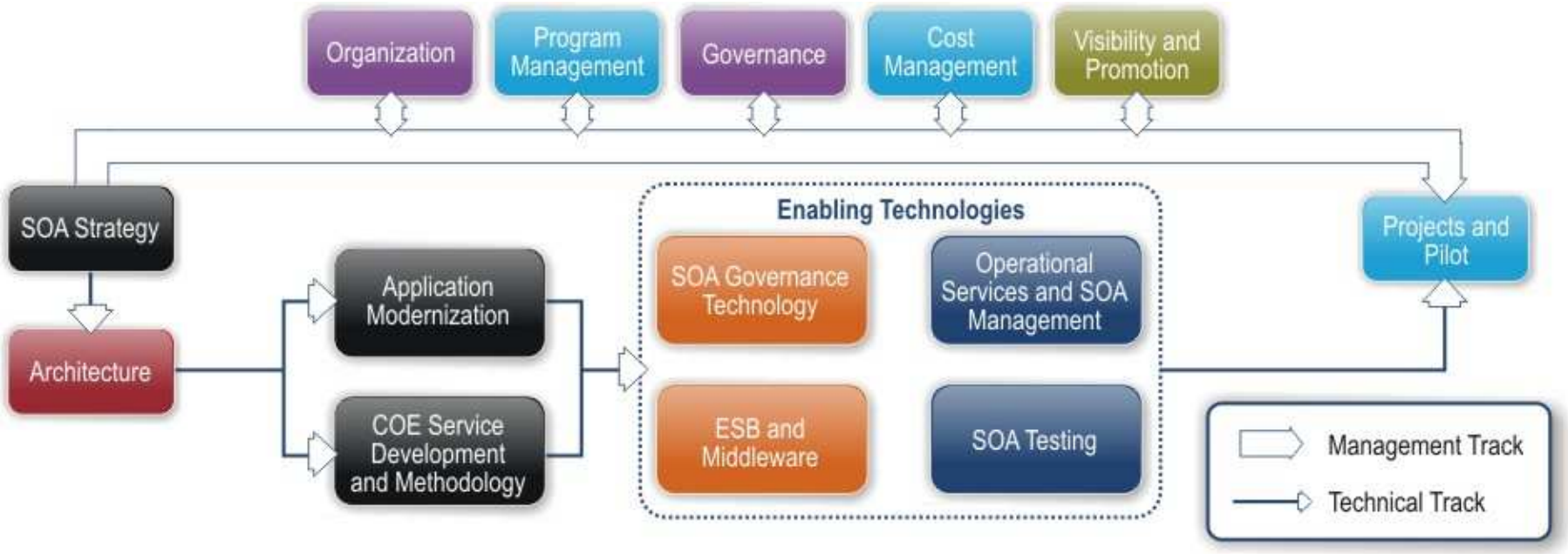
Evolving Through SOA Maturity Levels



– The enterprise culture and architecture can (and should) evolve together through the process

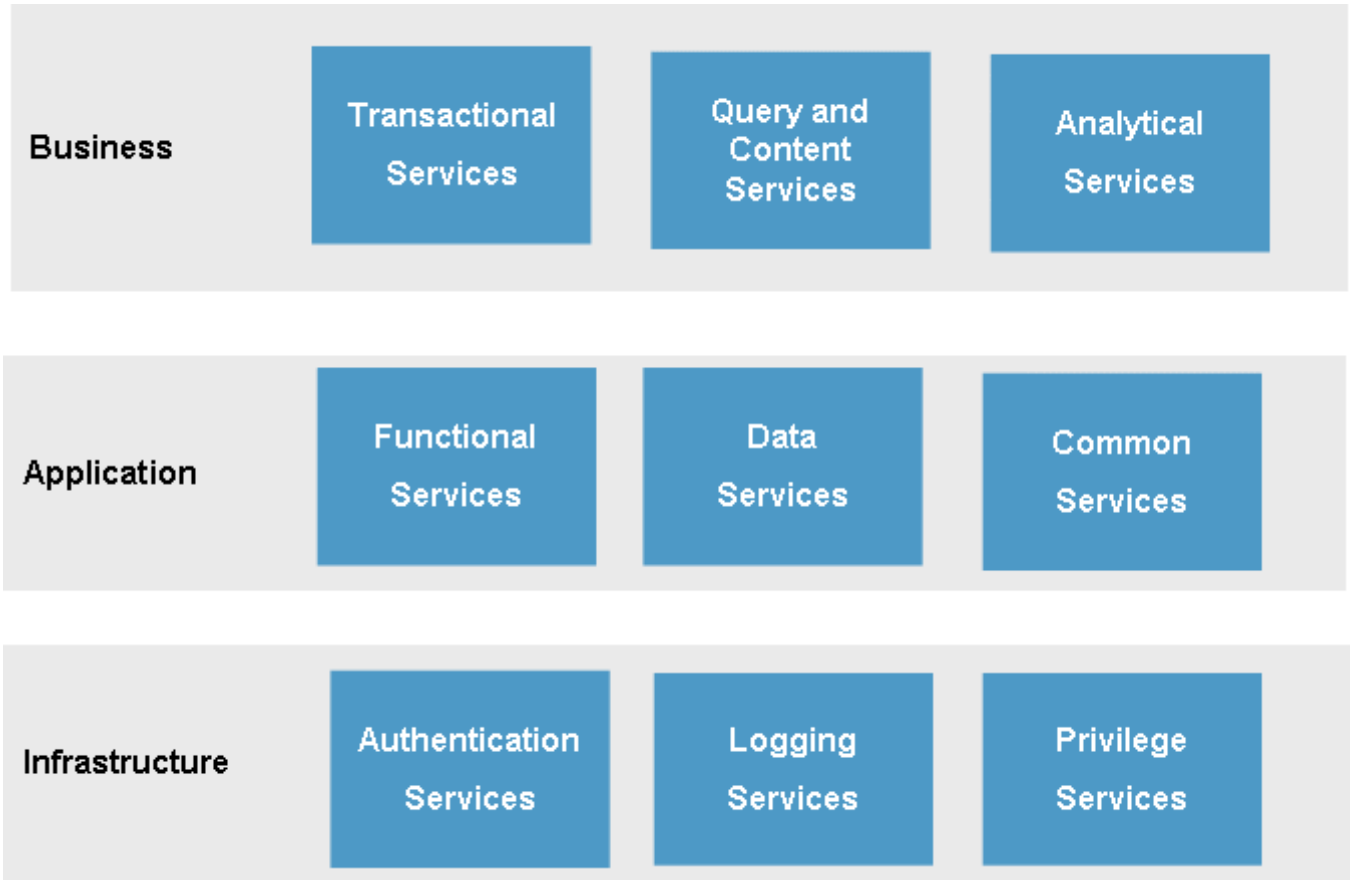
– Not being "high maturity" from Day 1 isn't the end of the world

SOA Roadmaps as Tools



- Various changes occur during SOA transition, both management and technical
- Use of Roadmaps can help you understand areas to attack and sequencing of your "next steps"
- Take snapshots (6 months is good rule of thumb) along the way to re-assess where you are, value gained, and where you're going

Consideration for a Service Taxonomy



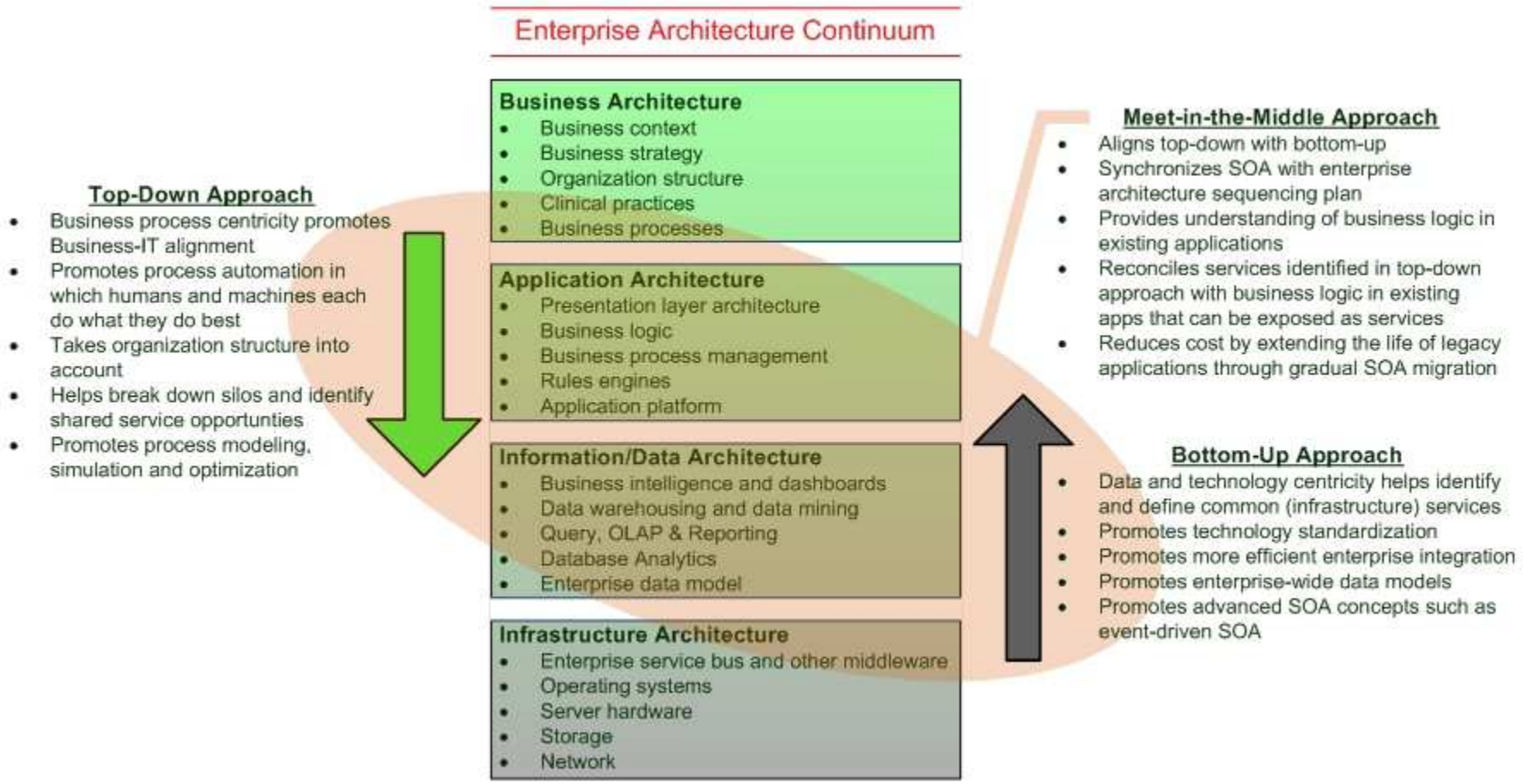
- **Business Unit of work**
- **Orchestrated and elemental**

- **Application Integration & Shared**

- **Technical Utility Functions**
- **Logging, Security, Authorization, Conversion, Standard Tables, QoS Guarantee**

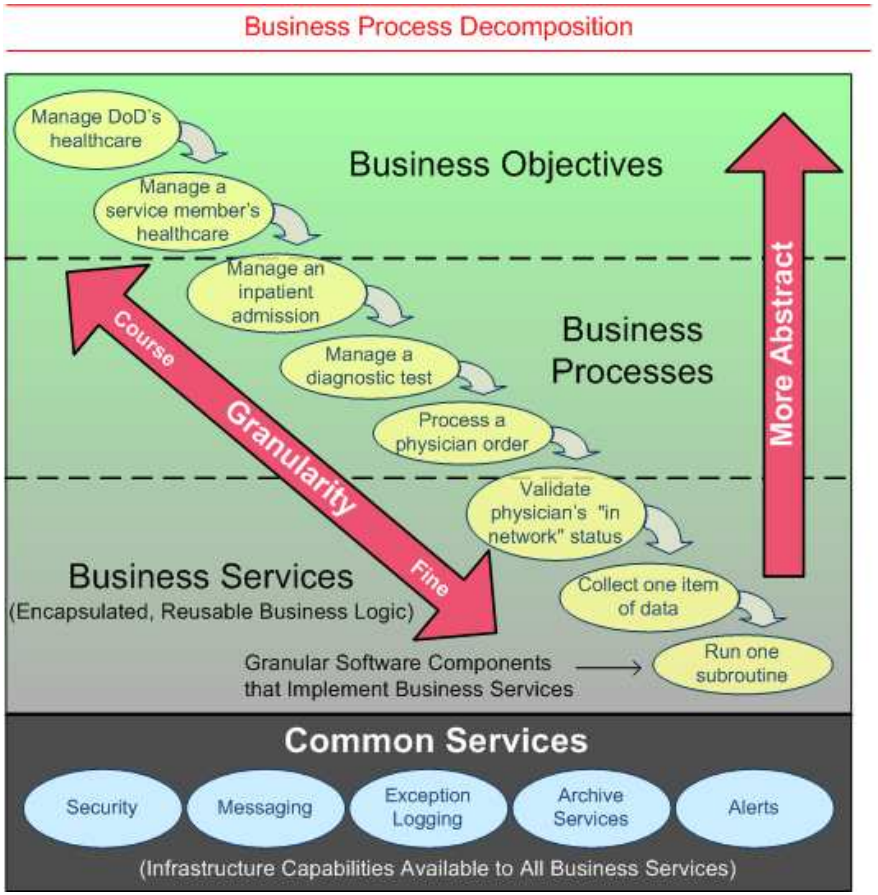
Source: Forrester Research, inc

Early Governance – Service Portfolio Planning



Early Governance – Service Granularity

– Base service granularity on careful analysis
  - Achieve the right level of service granularity and reuse is enhanced
  - Choose the wrong granularity and reuse suffers and redundancy results



Levels of Business Process Abstraction

Service granularity is the cornerstone of reuse. Getting it right should be considered an important architectural decision, not simply left to individual developers' discretion

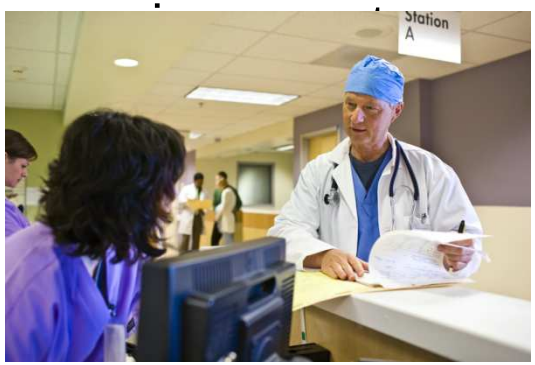
Create Business Value

– Involve the end-user community in sequencing service creation (it's even better if the end-user community "owns" the sequencing – think Agile)

– Whether newly created, or legacy-wrapped, the closer released services are to business processes, the more likely they are to be used and accepted

  • Find interesting ways to orchestrate whatever services you have into previously unforseen value for the business

– The value of your SOA initiative will ultimately be determined by the business/clinical/end-user community, so focus on adding visible value




Q&A