# **Software Solutions Symposium** 2017 March 20–23, 2017

# Toward Successfully Navigating Large-Scale IT Modernization Efforts

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DM-0004436

# Outline

- Why modernization matters to government
- Key characteristics
- Challenges
- Improvement strategy
- Monitoring progress
- Closing thoughts
- Q&A

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# Why Modernization Matters to Government

- All large-scale IT organizations have a common challenge... continuous modernization of IT infrastructure to enable business success
- Unlike hardware, we must evolve software because the environment in which it lives is continuously evolving
- Deficiencies in IT modernization strategy (technical and nontechnical aspects) can result in
  - unsecure and/or unreliable systems
  - inefficient execution of business processes
  - increasing cost and complexity

# **Key Characteristics**

- Case study example from a large-scale organization
- The organization is decentralized; we are working with one of the mission-critical sectors in the organization
- There are many systems supporting business operations within the sector
- Most of the systems are Oracle-based applications
- The organization wants to move toward digitization, cloud, and improved user experience

# **Customer Challenges**

- Difficult to retire legacy applications
- High development costs due to repeatedly implementing data connections
- No shared data access, resulting in data integrity issues (e.g., copying)
- Difficulty innovating with new UI, mobile, cloud, etc.
- Hard to support new regulations or capabilities
- Not able to keep pace with increasing need to share data

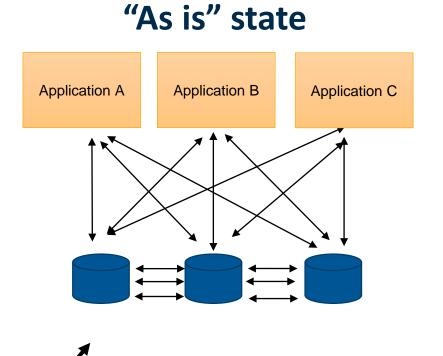
# Many IT organizations struggle with the same types of challenges



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#### **Current State**

Coupling anti-pattern drives higher maintenance cost due to



- increased analysis time/effort to reason about change
- time/effort spent on unanticipated consequences of change
- limited opportunity for reuse (developers reinvent the wheel)

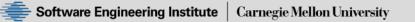
Connections are a mix of direct database link, file transfer protocol, web service, and others

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## **Example Business Goals**

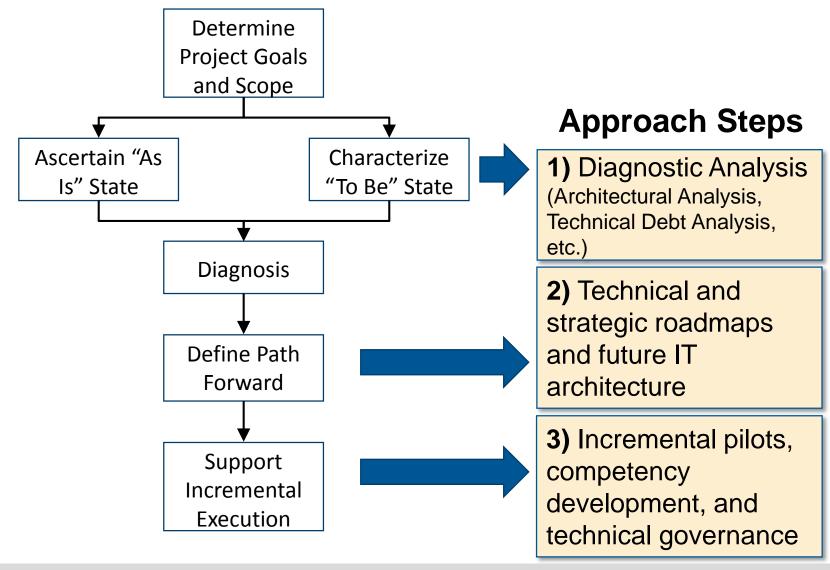
Below are example enterprise business goals which can be impeded or enabled by technical decisions

| # | Related Goals/Objectives   |
|---|--|
| 1 | Advance ongoing business process optimization efforts.   |
| 2 | Enhance and improve business operations and organization.  |
| 3 | Integrate processes with ongoing business initiatives.   |
| 4 | Build a <b>toolbox</b> to drive compliance and quality.  |
| 5 | Enhance the way the organization does business by ensuring <b>efficient processes</b> and <b>quality systems</b> . |
| 6 | Strengthen relationships with partners.  |
| 7 | Develop infrastructure to enable tracking of the budget by program.  |
| 8 | Optimize IT systems and improve data integration.  |



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#### **Overview of Infrastructure Modernization Approach**

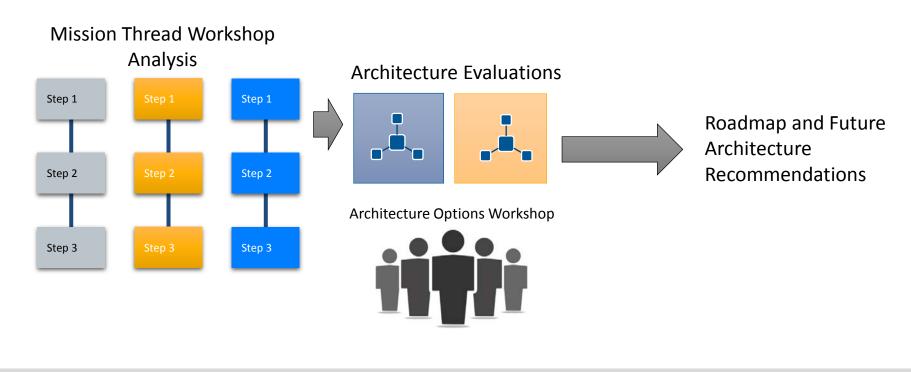


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# **Architecture Approaches**

The breadth and complexity of large-scale IT organizational environments require connecting several architecture analysis approaches and running multiple instances in parallel

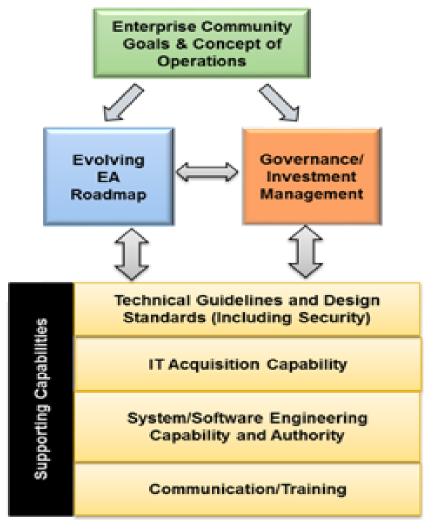


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## **Challenges Landscape**

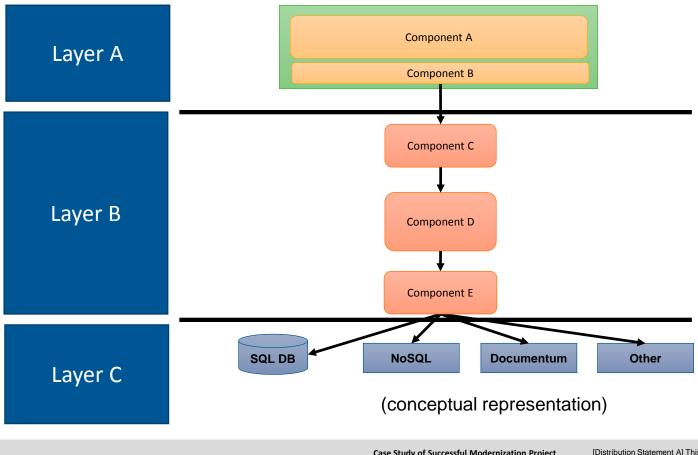
Large-scale IT organizations must concurrently deal with technical and nontechnical challenges



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# **Future Architecture Vision**

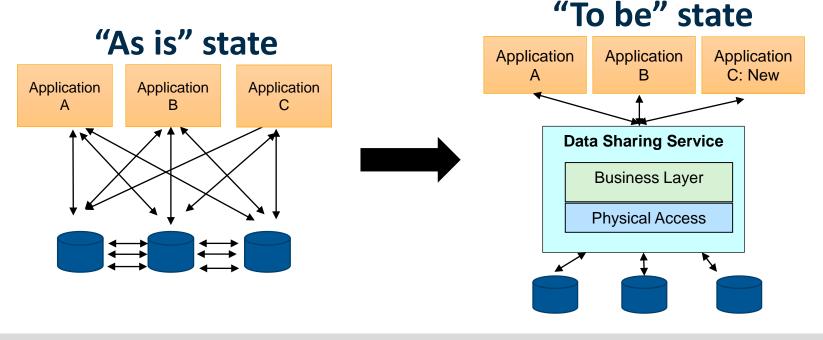
Using these methods, we developed an initial future architecture vision

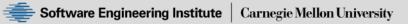


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# Benefits

- Reduces costly point-to-point connections
- Separates physical databases, enabling retirement of legacy applications
- Supports incremental migration (can use both old and new approaches)





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#### Roadmaps

We develop two types of roadmaps:

- 1. The **technical roadmap** focuses on future IT architecture design
- 2. The strategic roadmap focuses on non-technical aspects

Technical roadmaps cover aspects such as

- hardware and infrastructure procurement
- developing software components
- test environment setup and execution

Strategic roadmaps cover aspects such as

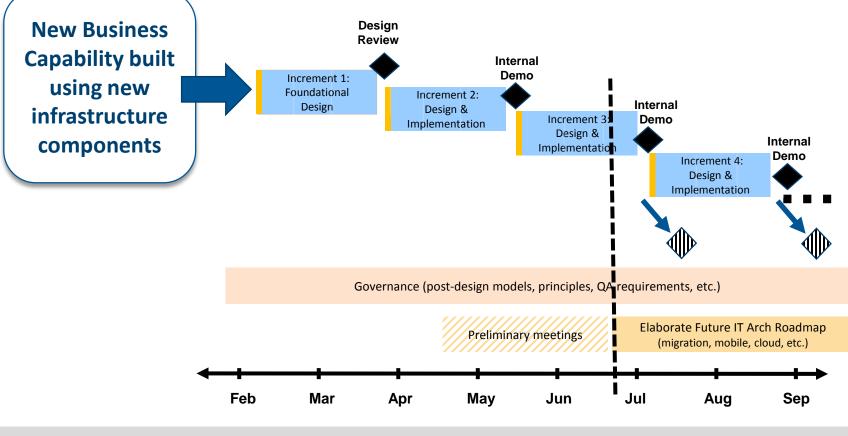
- funding plan for infrastructure components
- acquisition strategy for common components
- technical governance



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### **Incremental Execution**

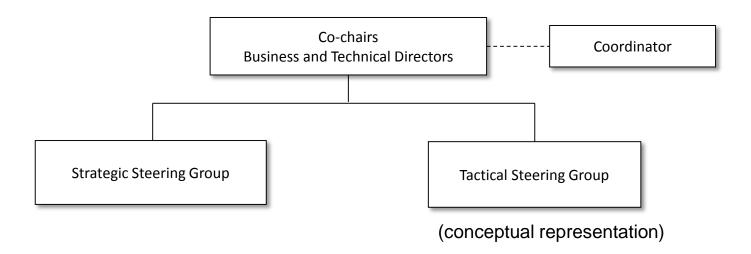
- Pilot with incremental architecture practices (blue boxes)
- Governance and future IT architecture work (red/orange)



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# **Monitoring Progress and Risk**

- Technical and strategic roadmaps are used to monitor and evaluate progress
  - Significant progress against planned tasks
- Technical steering groups are in place to identify, mitigate, and manage roadmap risks
  - Also responsible for developing technical standards, approving technology stack and integration approaches, etc.





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# **Closing Thoughts**

- We observe the same modernization issues and patterns across large-scale organizations
- Big-bang strategies for modernization are high cost and high risk
- We presented a multi-pronged approach for incremental modernization improvement
- The approach applied in this example, and in other organizations of similar size and scope, allows for delivering business value <u>while</u> modernizing infrastructure

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17

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