Telelogic

ENTERPRISE ARCHITECTURE: A FRAMEWORK FOR C2 METRICS

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Agenda

- Introduction
- What is Enterprise Architecture?
- Architecture and Metrics
- Frameworks and Standards
- Metrics in a C2 Environment

Industry Perspective

My Background

- Founder & CEO of Popkin Software for 18 years
- Developer of System Architect enterprise architecture & modeling tools
- Technical background in IT and systems integration
- 70,000 users worldwide

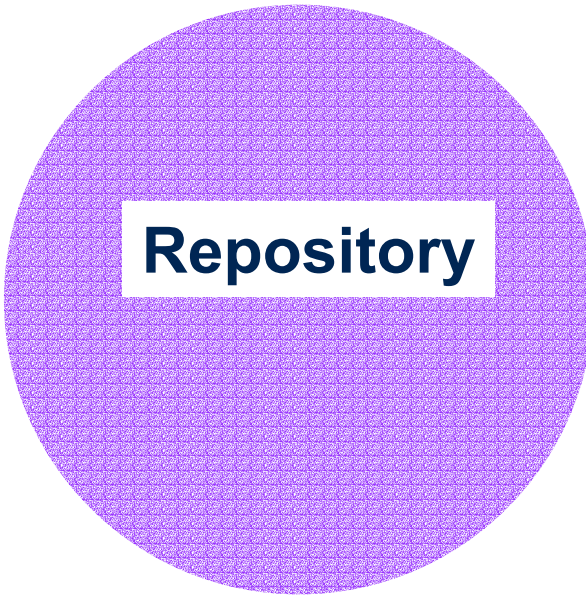
Today's Landscape

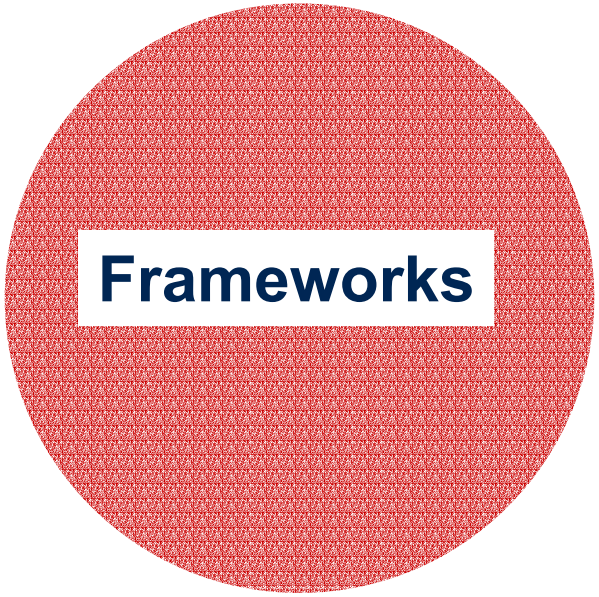
- Metrics for measuring the success of modeling and analysis has always been a challenge, especially in real-world C2 environments
- Ongoing Challenges
  - Lack of standards in metrics
  - Custom metrics for each project
  - Must be adapted to changing C2 environment

Enterprise Architecture & Metrics

- Enterprise architecture is a well-developed platform
- Architecture serves as a framework for the central collection and dissemination of information
  - Business processes, data flows, applications and systems
  - Relationships to mission and capabilities as well as strategies
- EA is method to collect and disseminate traceable, factual information that can be analyzed and measured
- Different sets of metrics can be applied dynamically following data collection
  - Supports meaningful analysis over time
  - Repeatable process
  - Adaptable to change
- Supports streamlined dissemination of measurements to key stakeholder groups

Platform for Metrics





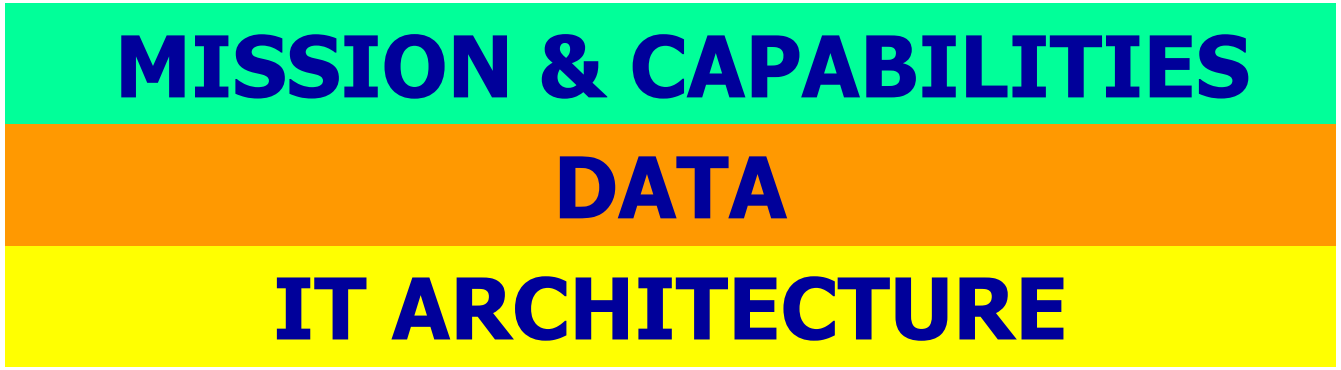
What is Enterprise Architecture?

Architecture Blueprint

- Architecture is the “road map” to tie together multi-vendor, multi-platform environment
- Can no longer build and deploy; must take into account emerging technologies
- Architecture documents a future mission and technology environment
  - Strategic: Investment strategy, interoperability
  - Operational: Mission and Capabilities
  - Technical: Deployment
- Deliver roadmaps that give organizations access to information to be responsive to new operating realities

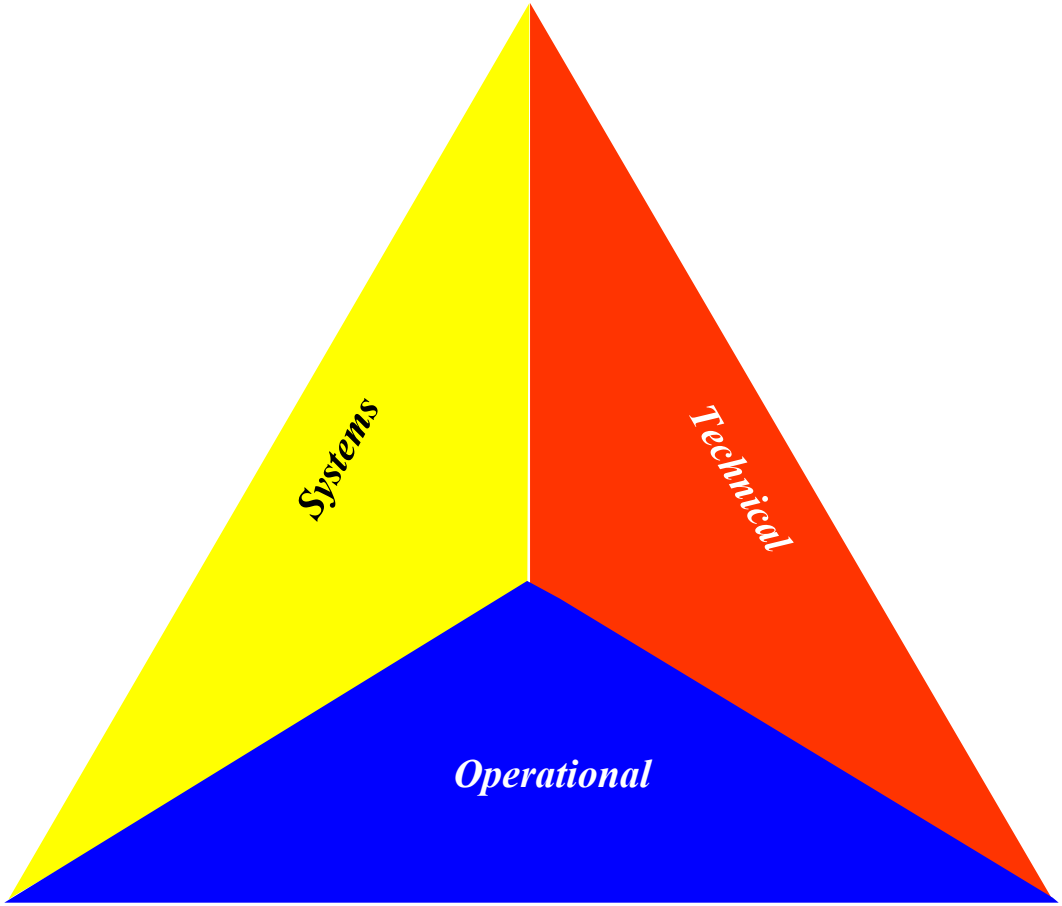
Enterprise Architecture

Architecture is designed to help organizations understand relationships among missions/capabilities, business processes, data and IT infrastructure.



Enterprise Architecture

- More closely align IT to missions and capabilities
  - Critical in the C2 environment of real-world scenarios
- Agencies are placing increasing value on architecture
  - Method for gathering and distributing valuable information to internal groups so they can take action.
  - Incorporate best practices and experiences into decisions about technology investments, e-government and emerging technologies
- Architecture has a direct impact on the ability to manage resources in a time of shrinking IT budgets and increasing technological complexity

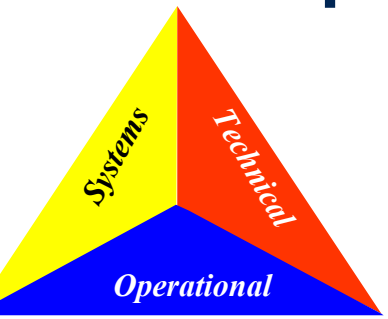


Frameworks and Standards

Frameworks

- Provides a complete checklist of the people, systems, processes and internal and external factors that contribute to making an organization function
- Serves as a basis for a common vocabulary and a common format for information capture and dissemination.
- Offers a standard approach and perspective and a similar set of work products
- Helps simplify the architecture development process into discrete, understandable pieces
- Most popular defense frameworks are the C4ISR framework and its newest evolution, the Dept. of Defense Architecture Framework (DoDAF)

Dept. of Defense Architecture Framework



Operational View

People,Relationships, Data

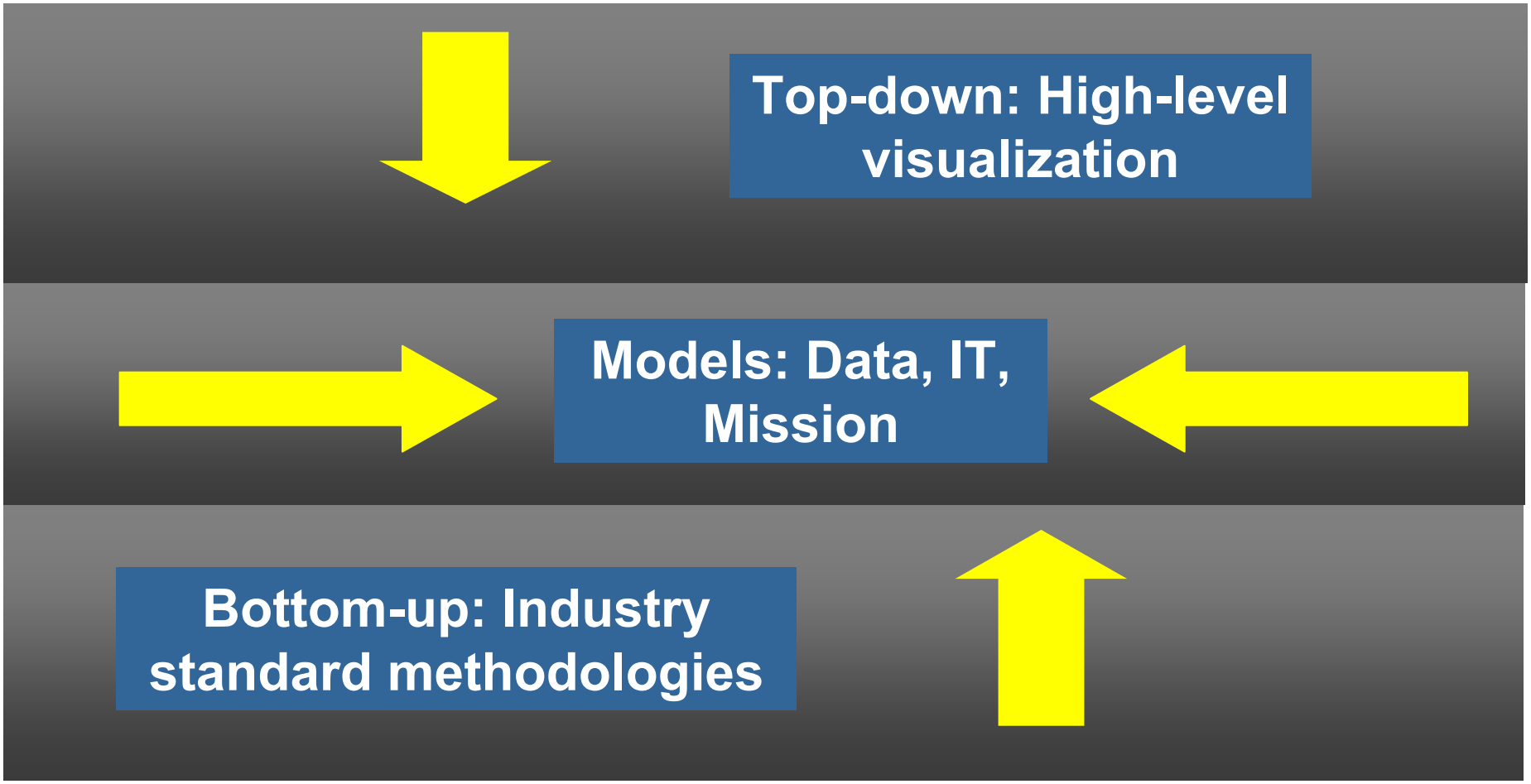
Systems View

Capabilities, Characteristics

Technical View

Standards, Conventions

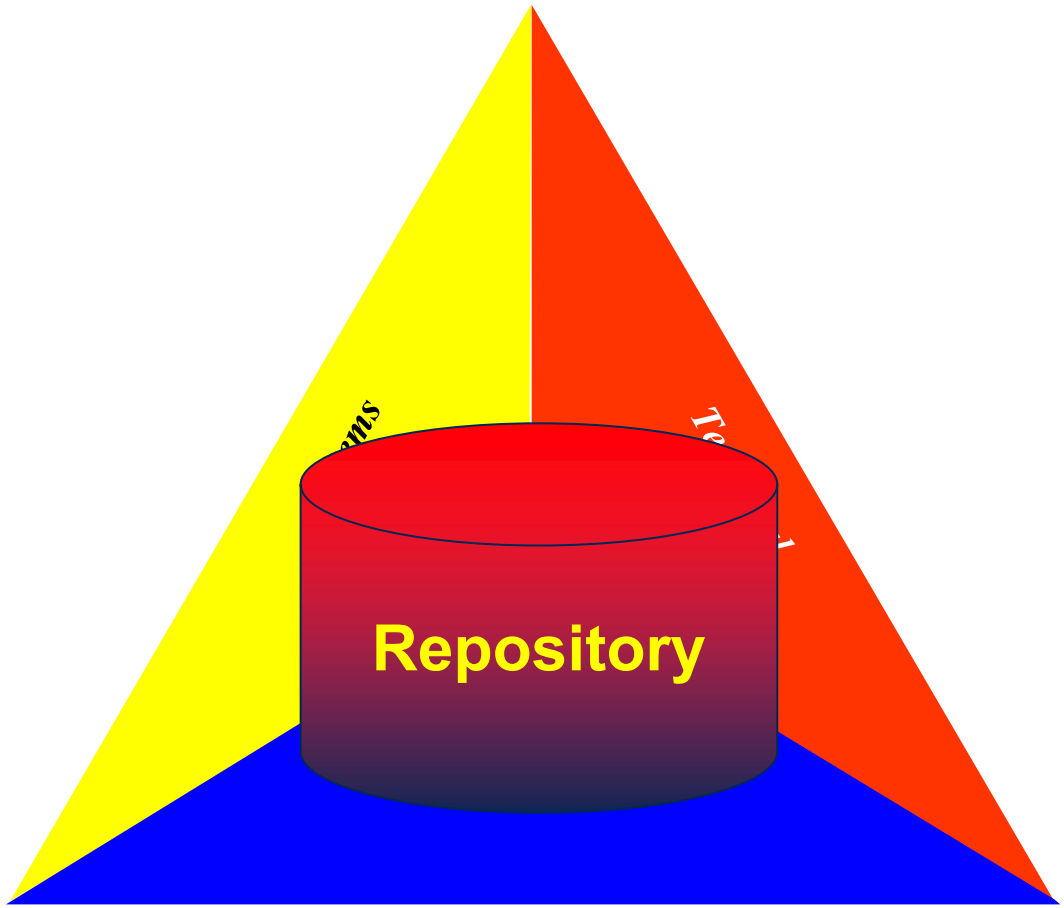
Integrated View of DoDAF



Frameworks: Guiding Development

- Enables organizations to determine which systems and applications are tied to missions and capabilities
- Helps IT groups to understand how their processes and systems fit within the broader organization
- Frameworks are a key part of architecture design and metrics
  - Guide the technically complex process of integrating heterogeneous, multi-vendor architectures and models
- Platform for supporting development of metrics that are repeatable and can be used over time by many different groups.

Repository View of DoDAF



Repository

- Enables the gathering of all the data pieces in one place
  - Links to source documents for traceability
  - Separates the measurement from the raw data
  - Makes the relationship between the two dynamic
- Users can dynamically generate metrics that are relevant to the best practices of the organization
- Measures real-world scenarios
- Standards ensure data can be shared across the agency
- Measurements can be adjusted without affecting how the raw data is captured
- Supports dynamic framework that allows measurements to be generated and modified over time
  - Current approach is resource-intensive and static

Open Standards

- Open standards
  - Support higher degrees of interoperability and sharing
  - Offer clients across industries a broad choice of hardware and software
  - Created a "marketplace" to attract independent investment and innovation
  - Wide acceptance last 5-10 years (DoDAF, UML, BPMN)
- Net-centricity and information sharing improve enterprise wide communication and interoperability
- Part of evolution from tightly coupled applications to network-based functionality

Architecture and Metrics

Metrics in a C2 Environment

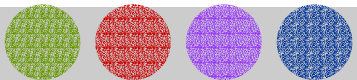
- 'One-time' measurements evolve into measurements that are repeatable, dynamic and able to be validated and visualized
- Metrics should provide a historical perspective and show movement over time.
  - Enable dynamic measurements based on mission, capabilities, or organizational structures
- Metrics applied against a repository of information captured over time are the most valuable.
  - Enables users to compare what has happened in the past to what may happen in the future.
  - Can measure impacts of change in 'what if' scenarios that can be applied historically to see evolution.
  - Enables metrics to evolve based on mission or capabilities changes.

Architecture and Metrics

- Enterprise architecture enables the development of a repository of information, from which raw data can be taken for measurement purposes.
- Organizations can view and analyze different aspects of a projects metrics to make more informed decisions about adapting to change.
- Metrics require a rigorous science as a basis
  - Based on a framework from which a set of standard measurements can be generated.

Metrics Provide Validation

- Metrics must also be validated against the real world.
- Data points need to be studied over time to verify the accuracy and depth of the metrics.
  - Ensures that the metrics are measuring what they are designed to measure.
- By correlating measurement to the real world, organizations can to see what has been successful and examine the reasons for success.
  - Apply current set of metrics to validate their accuracy and completeness.
- Architecture-based metrics make this possible.
  - Information is drawn from the raw data collected according to structured guidelines of the framework.



First Step is Repository

- Metrics require a set of standard measurements
- Repository of information is **first** step in measurement because it enables
  - Collection of raw data for measurement
  - Dynamic and repeatable process
  - Process and metrics can be validated
  - Traceable sources
  - Adaptable framework
- This is both a physical ‘thing’ and conceptual process.

Metrics & Stakeholder Groups

- Different people in the organization have different perspectives on the metrics and how they should be acted upon.
- Communication of information to key stakeholder groups is critical. Must be able to disseminate and visualize the information and its meaning and impact to various stakeholder groups.
- Publishing the is a key part of the collaboration process and fosters feedback from within and outside IT.
- Enterprise architecture establishes a common platform for analysis and collaboration.

Stakeholders

Architecture-based Metrics

- Architecture-based metrics can be easily tailored to different C2 audiences.
- Examples
  - Help IT teams develop a strategic plan that outlines future missions and capabilities
  - Assist CIOs and senior management in assessing costs for budgeting purposes.
  - Enable war-fighting projects to examine the success of current real-world scenarios against mission and capabilities.

Future of Metrics

- Next evolution of metrics: development of a standardized process for the collection and dissemination of metrics that can be:
  - Tied directly to modeled and real-time data
  - Can be easily shared throughout the organization.
- Enterprise architecture provides a framework for the collection and dissemination of information over time, using standards.
  - Helps users pinpoint changes and validate them using a dynamic, repeatable structure
- Primary benefit is the integration of measurement systems into existing architecture processes and the adoption of a more flexible, adaptable methodology for measuring and improving the success of C2 projects

Thank you.

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