



Live-Synthetic Enterprise Architecture for US Army Training and Test & Evaluation

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Acknowledgement

The authors would like to acknowledge and express their thanks to LTC Gary Evans of the Army Modeling & Simulation Office (AMSO) for his support and sponsorship of the LS TTE EA project.



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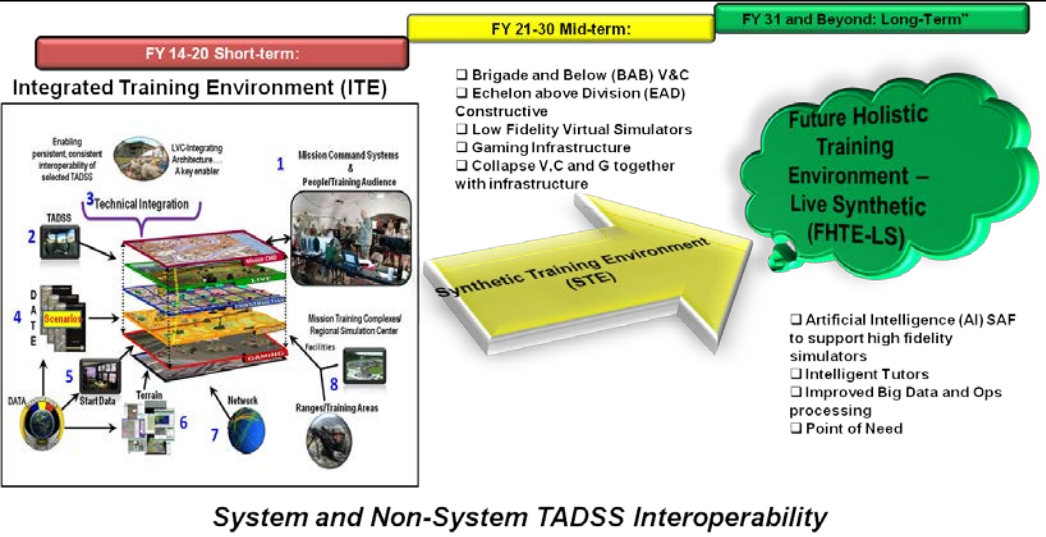


Motivation

- Live and Synthetic (gaming, virtual and constructive) tools and architectures are essential capabilities in T&E and Training
 - Significant commonality in needs, yet each community has historically taken its own path in designing, and producing the capabilities
- The maturation of information technologies
 - Enable a fundamentally different approach for developing, delivering, and evolving Live and Synthetic capabilities
- Budget realities demand the development of more affordable and collaborative solutions
 - Enable the agile leveraging of each other's investments in scale and realism (training) and tactical systems integration and simulation (testing).
- Cross-community approach will reduce the risk
 - Risk of accepting warfighting systems that should have failed during testing
 - Risk of not having mature Live and Synthetic tools to train the force when those systems are fielded

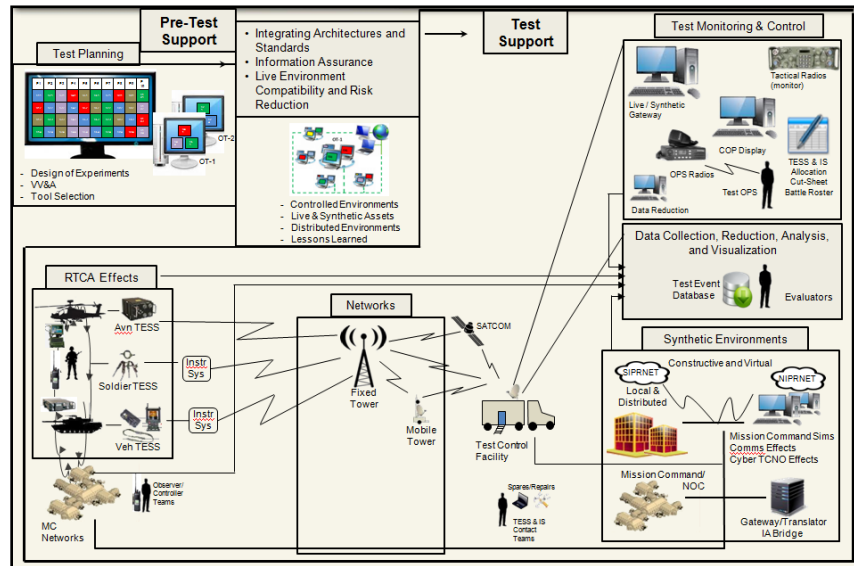


Relationship to Other Initiatives



Army Training M&S Community

Army T&E M&S Community



LS TTE EA Provides Common Architectural Structures and Risk Reduction for the Army's Live-Synthetic Enterprise

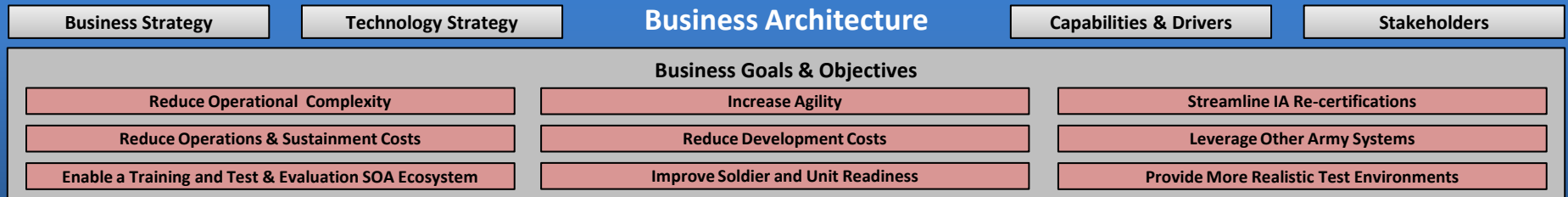


Project Overview and Organizations Involved

- Research & Development project to explore common Live-Synthetic solutions technical and governance approaches for Training and Operational T&E
- Sponsors:
 - US Army PEO STRI, PM ConSim, PM ITTS and PM TRADE
 - US Army OTC
 - Army Modeling & Simulation Office
- R&D organizations
 - JHU/APL
 - MITRE

Live-Synthetic Training, Test and Evaluation Enterprise Architecture (LS TT&E EA)

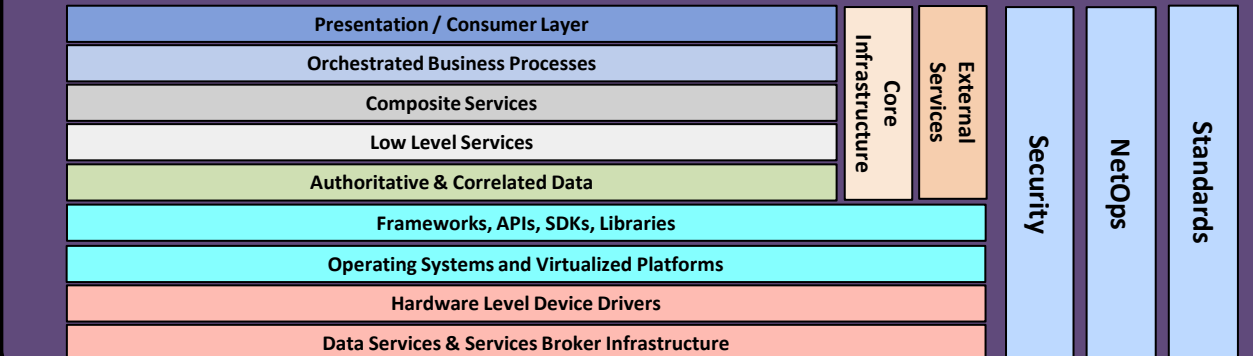
Vision



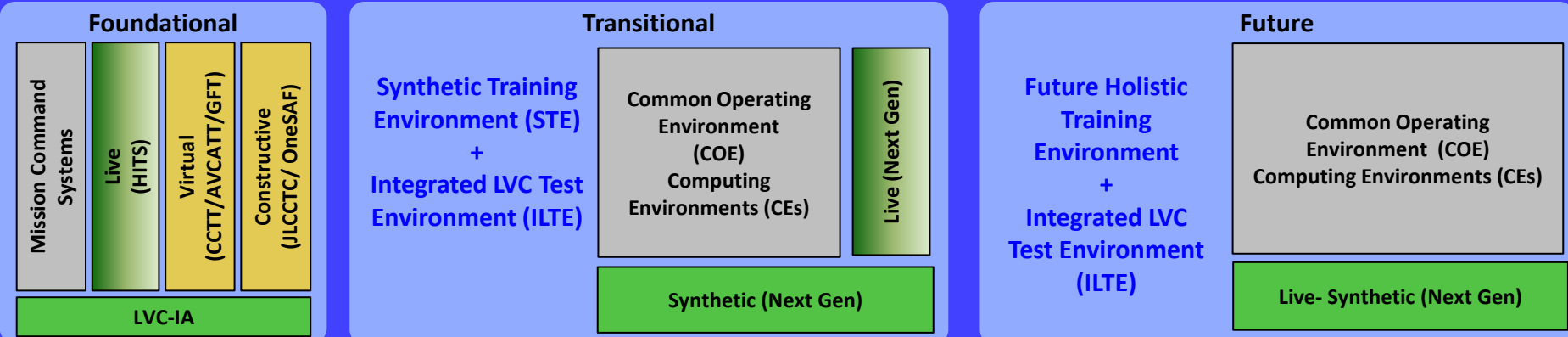
Governance



Reference Architecture



Solution Architecture – Integrated Testing and Training Environment





EA Framework Description

1. Taxonomy

Vision:

Contains the doctrine-based objectives that drive technical and engineering decisions

Business Architecture:

Contains the engineering trade-offs needed to meet the economic, quality, and schedule requirements of LS TTE EA

Governance:

Contains the human- and automated-driven policy activities

Reference Architecture:

Defines a architectural template for managing, developing, and executing on-going to future programs

Solution Architecture:

Contains the programs and architectures that will fulfill the Vision and Business Architecture goals

2. Layered

Vision

drives

Business

drives

Governance &

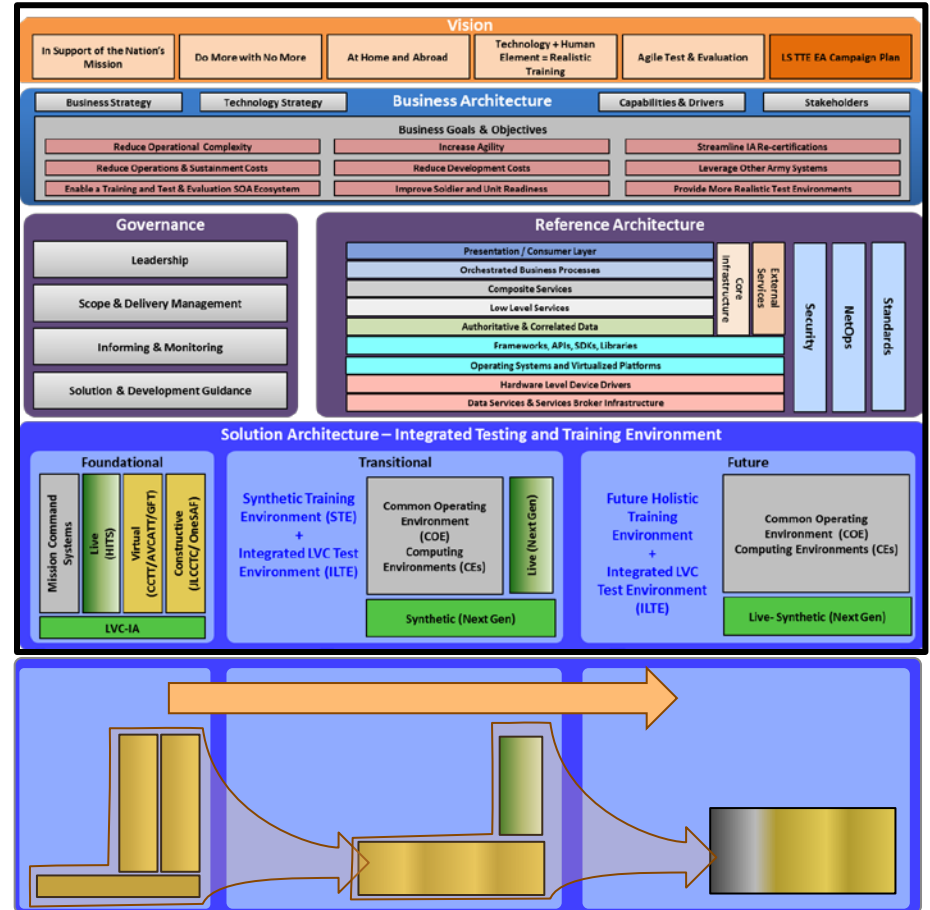
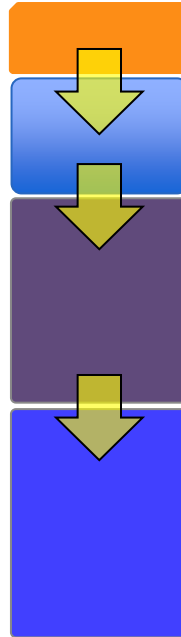
Reference

Architecture

drives

Solution

Architecture



3. Consolidation of Components Evolves a Solution Architecture

4. The Future of the Solution Architecture

The **Vision** layer, the **Business Architecture**, the **Governance**, & the **Reference Architecture** guide the evolution from the **Foundational** systems, through the **Transitional** systems, and finally to the **Future systems**; while consolidating the common components

While utilizing the Live-Synthetic components of Next Gen, a layered architecture will support the **Common Operating Environment** and each of the program specific components



Supporting Detail In DoDAF Views

CV-1
CV-2
CV-3
CV-4
CV-5
CV-6
CV-7

OV-1
OV-2
OV-4
OV-5a
OV-5b

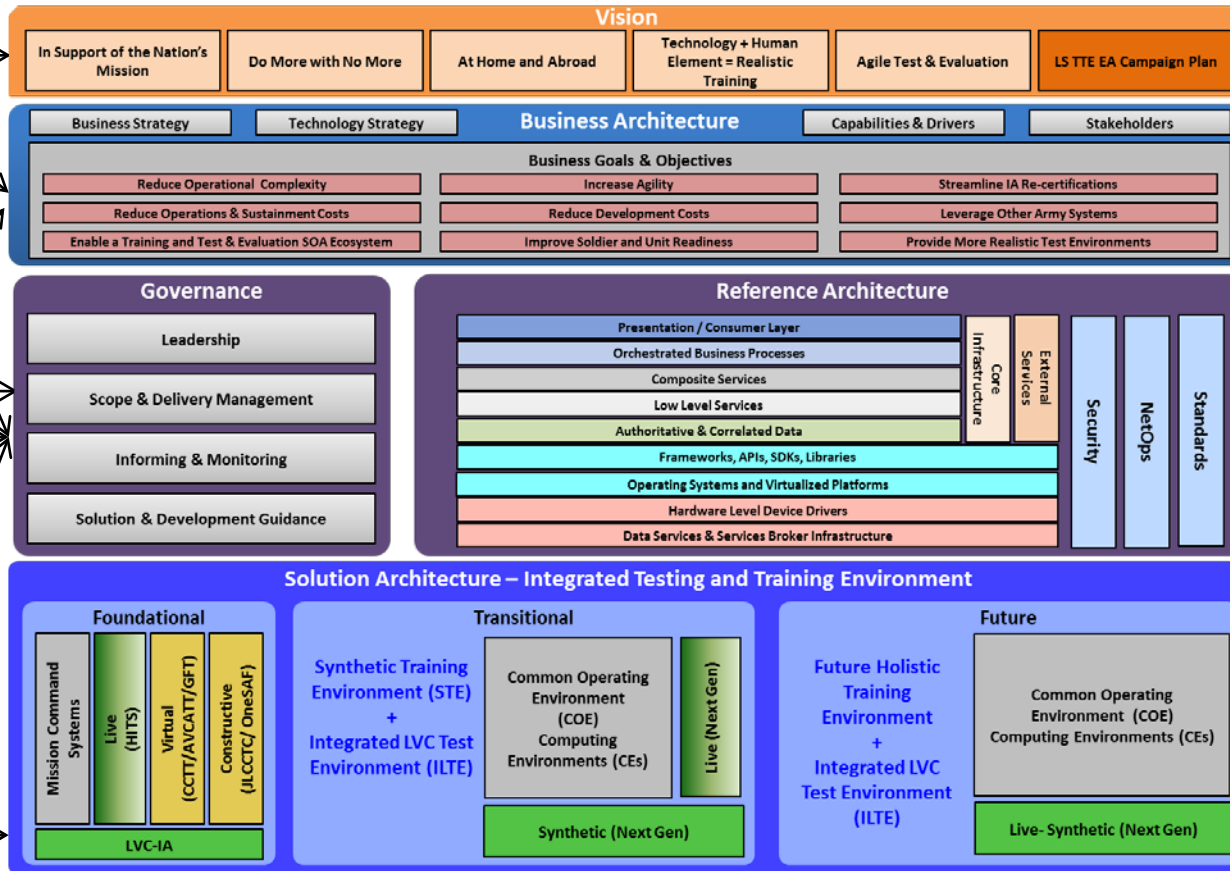
StdV-1
StdV-2

PV-1
PV-2
PV-3

AV-1
AV-2

SvcV-1
SvcV-2
SvcV-3a
SvcV-3b
SvcV-4
SvcV-5
SvcV-8

SV-1
SV-2
SV-3
SV-4
SV-5a
SV-5b
SV-8





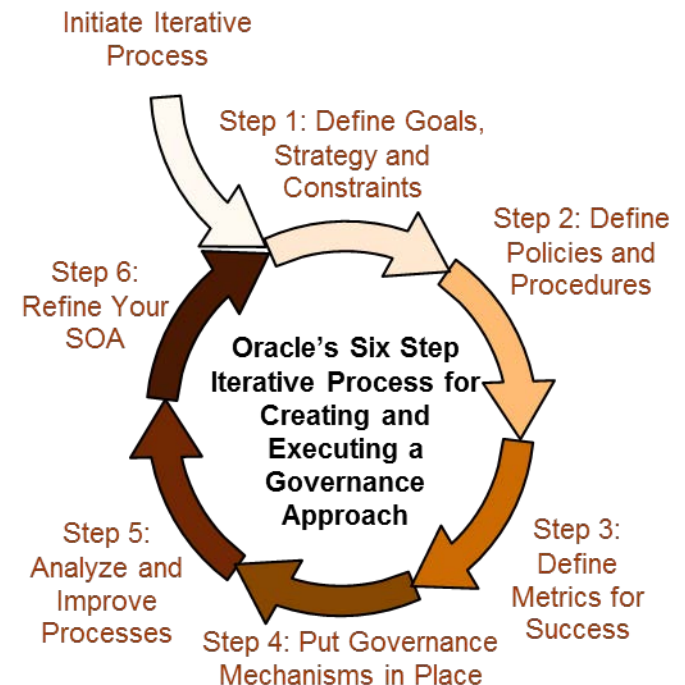
Governance (1 of 2)

- Provides a formalized alignment of organizations and services that create a useful and sustainable SOA through agreed upon policies of interaction
 - Includes how these policies can evolve over time, keeping the policies relevant to the SOA and the needs of the stakeholders
- Focus areas:
 - Updating current services and developing new services
 - Service lifecycle management and change management
 - Policies and standards
 - Implementing and supporting service security
 - Software rights, data rights, and distribution mechanisms
 - Ensuring the quality of services
 - Managing how the services are used and who uses them
 - Managing how the services are deployed and who pays for them



Governance (2 of 2)

- Reviewed existing governance approaches:
 - Army COE governance
 - FAA’s System Wide Information Management (SWIM)
- Performing initial process steps to support execution of initial Governance approach in FY15 prototyping efforts
 - Initial draft under review





Business Architecture Decomposition (1 of 2)

Vision

In Support of the Nation's Mission

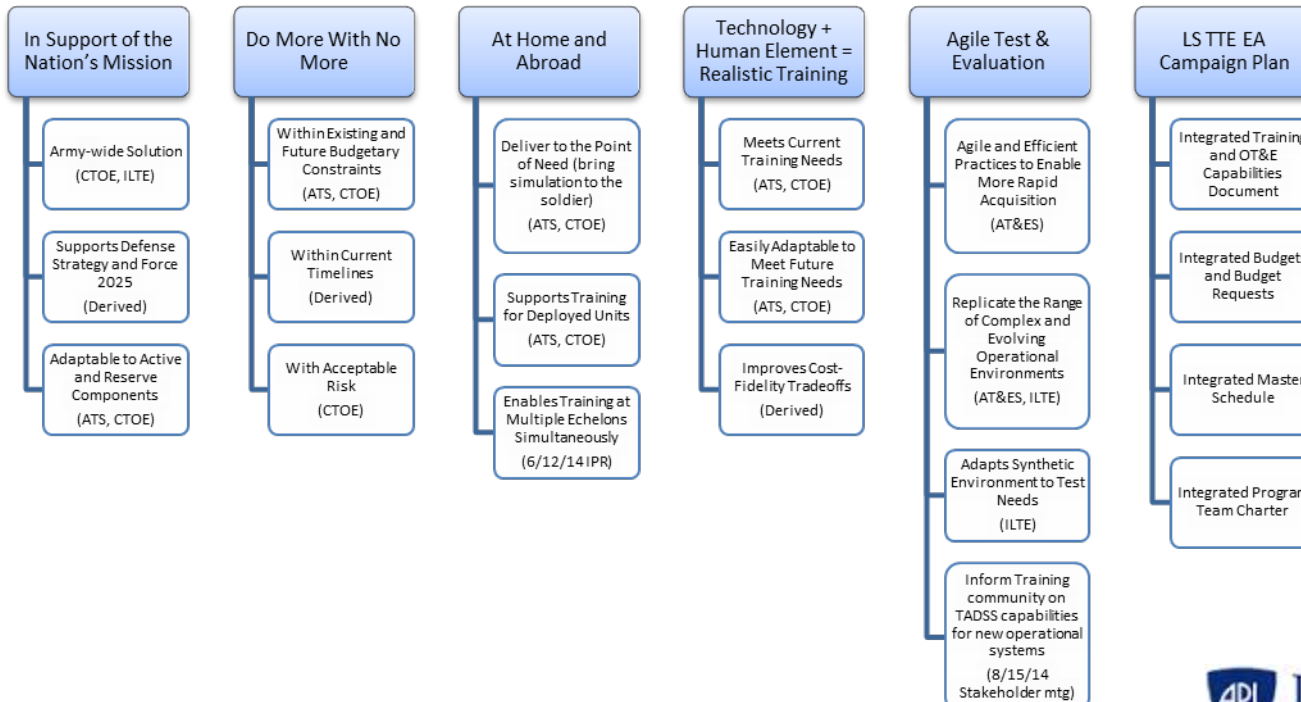
Do More with No More

At Home and Abroad

Technology + Human Element = Realistic Training

Agile Test & Evaluation

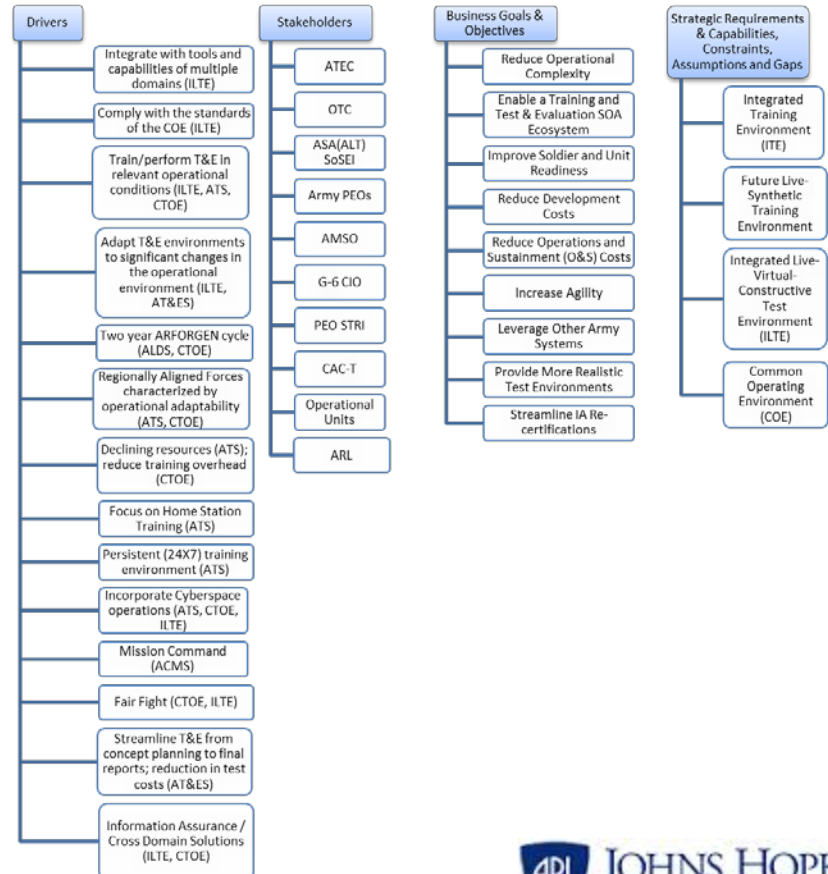
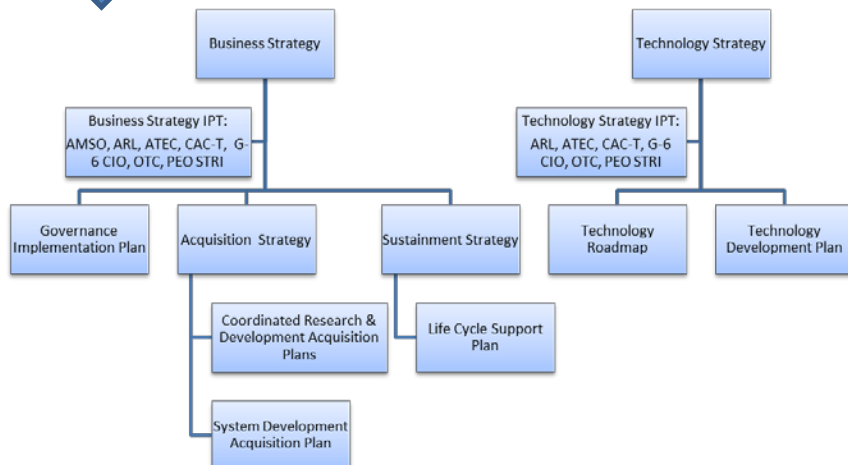
LS TTE EA Campaign Plan



Distribution A: Approved for public release, distribution is unlimited.



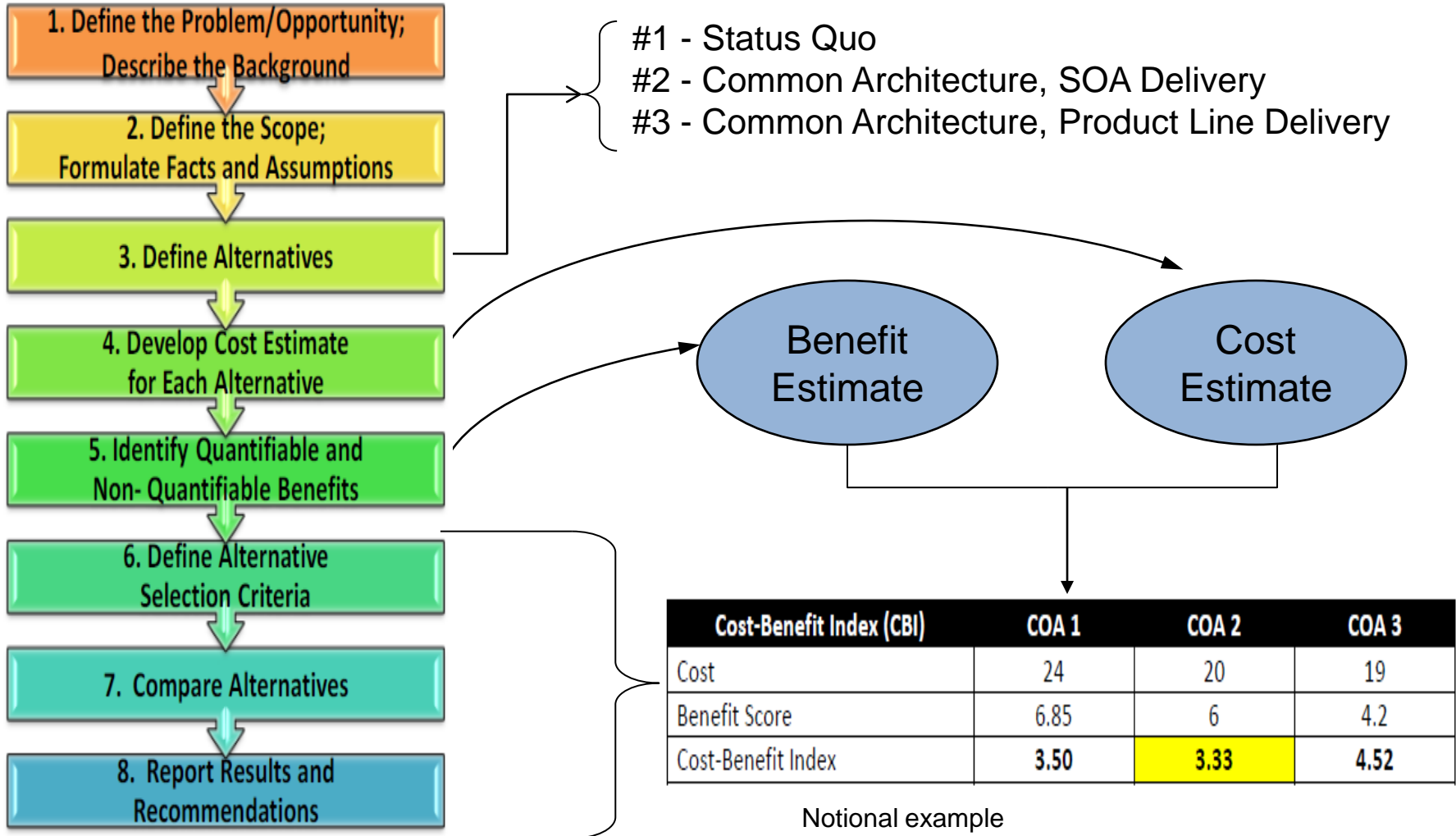
Business Architecture Decomposition (2 of 2)



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Cost Benefit Analysis



Notional example

U.S. Army Cost Benefit Analysis Guide, 24 April 2013

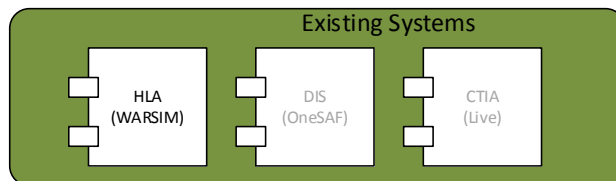
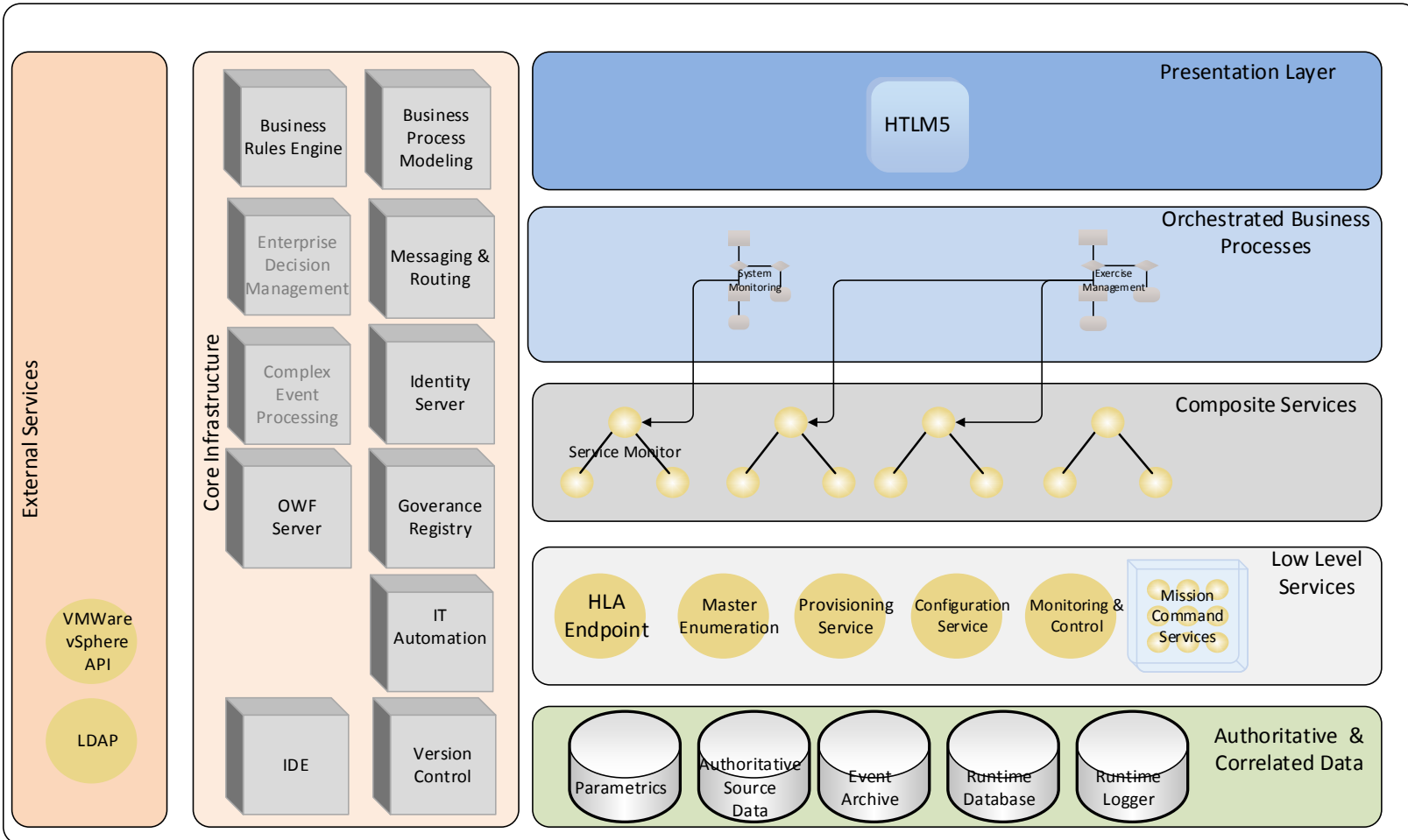


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Initial Implementation of the Reference Architecture



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Near and Long Term Plans

- Near Term Plans (1-2 Years)
 - Artifacts support development of the STE CDD
 - Exercise initial Governance approach in developing FY15 prototype
 - EA provides key building blocks for future LVC-IA architecture technology insertions
- Long Term Plans (Beyond 2 Years)
 - EA supports ILTE Increments 1 and 2
 - EA and Governance approach provide:
 - Architecture framework basis for ILTE, STE and FHTE-LS
 - Enterprise convergence of Training and OT&E



Summary

- Project focuses the needs and funding of AMSO, Army OTC, and PEO STRI to research technical and governance approaches for common Live-Synthetic solutions
- Intent is to leverage project results and artifacts to support an evolutionary path to a common solution
- Will build upon initial results in an FY15 R&D project to gain further insights