Advancing Systems Engineering Through Use of Collaborative Space

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Overview

- **Our Challenge**
- **Current Environment**
- **Desired Future State**
- **Research Findings**
- **Proposed Way Ahead**

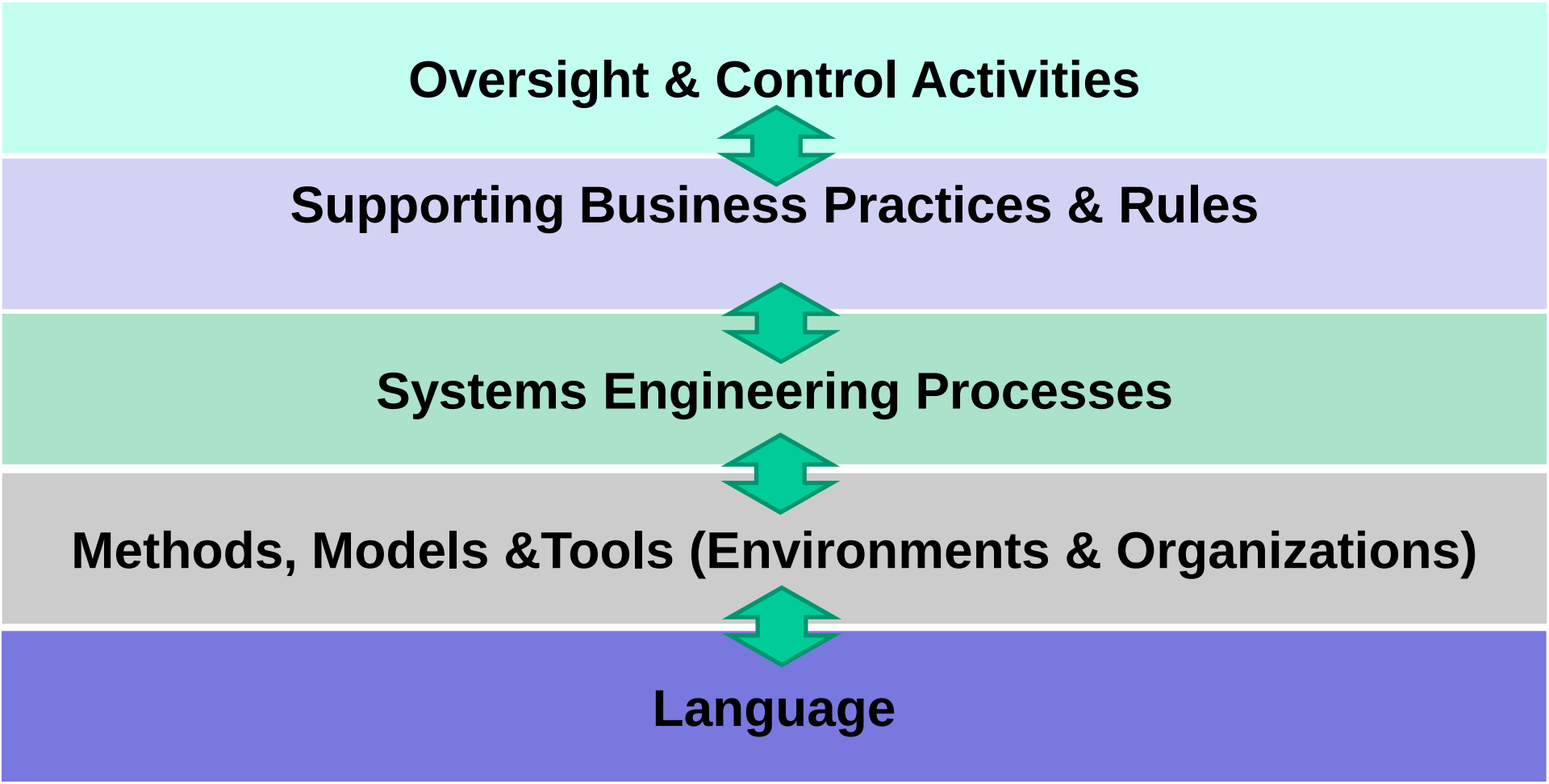
Our Challenge

- **There is a growing need for inter-organizational collaboration in Development Planning**
  - Weapon systems have become more and more complex, demanding expertise from multiple Product Centers
  - Congress and OSD have increased their focus on DP activities in continued attempts to improve the acquisition process

- **Capabilities to facilitate such collaboration are lacking**

Potential Enabler:
A Collaborative Systems Engineering Environment

Layered Framework



Investigation of Collaborative Capabilities in Product Centers

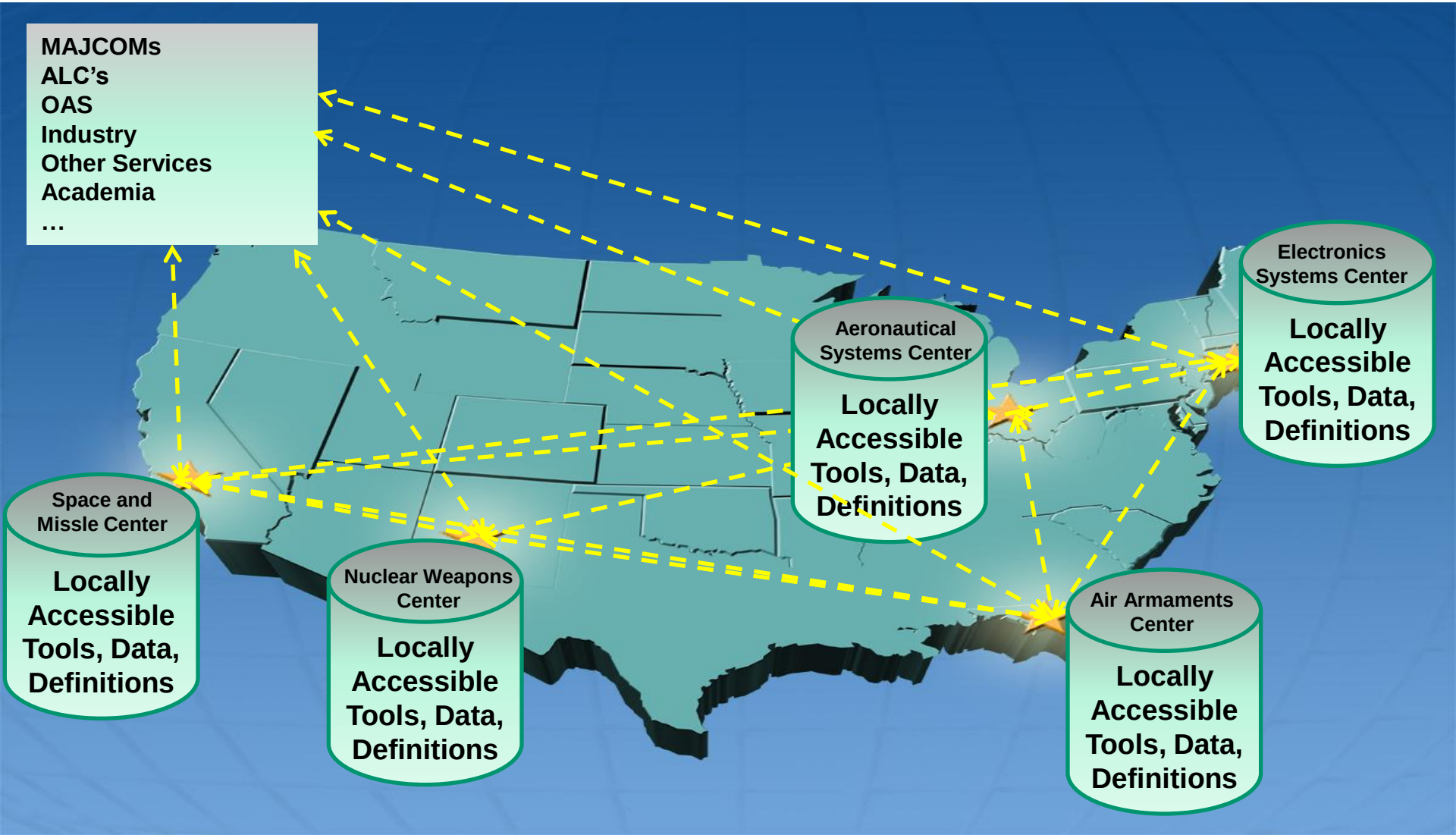
- Researchers from the Air Force Institute of Technology and the Air Force Center for Systems Engineering investigated Acquisition Product Centers to assess their needs for support of collaborative early systems engineering
- Both on site and paper investigation techniques were used

Research Findings

- People in the Centers are working very hard to address early systems engineering efforts, but they are working largely independently of each other
- This isolation tends to create a lack of commonality in understanding and implementation of early systems engineering
  - They use different
    - Processes
    - Standards
    - Nomenclature
    - Tools

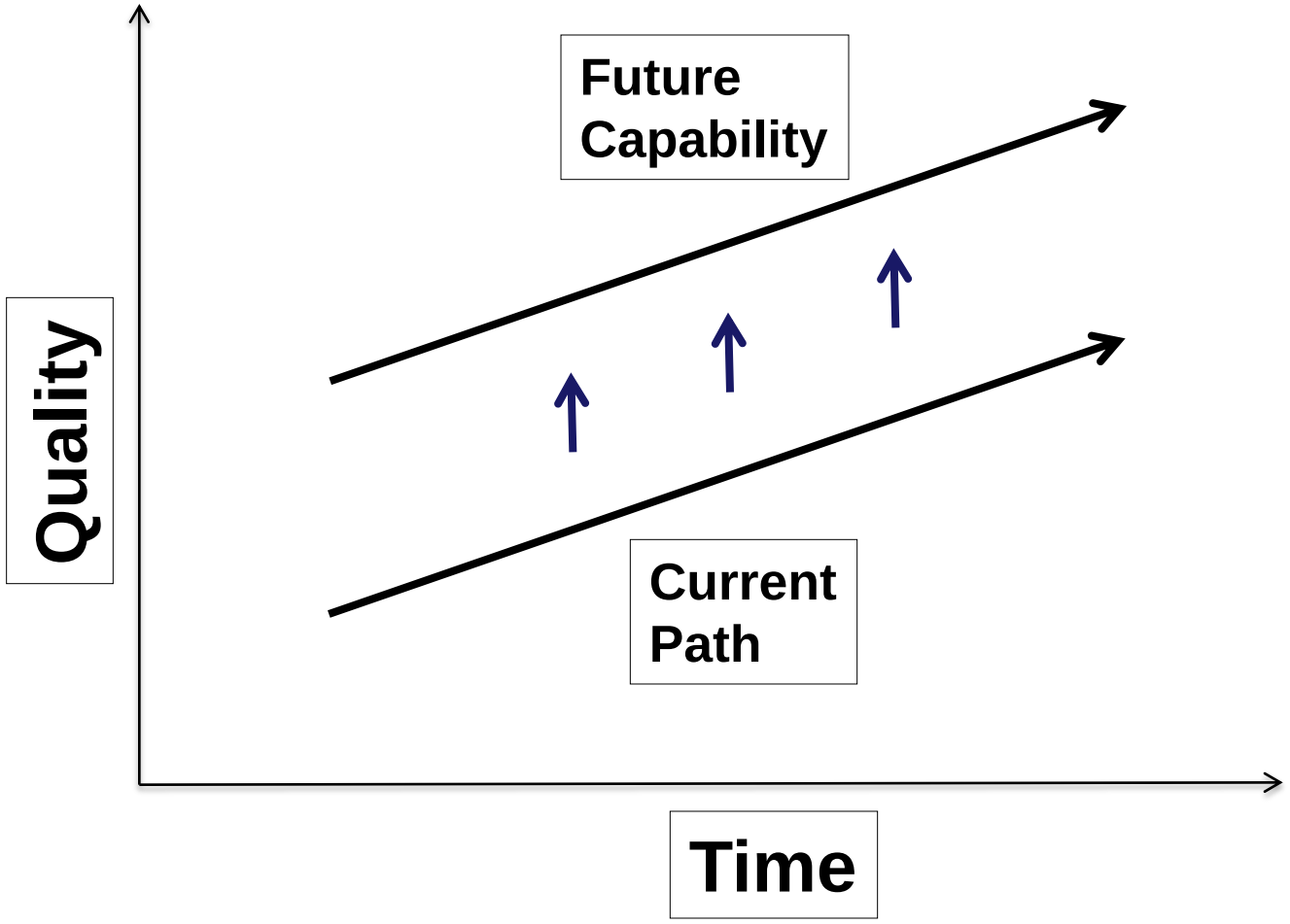
Current Environment

The AFIT of Today is the Air Force of Tomorrow.



Future Capabilities

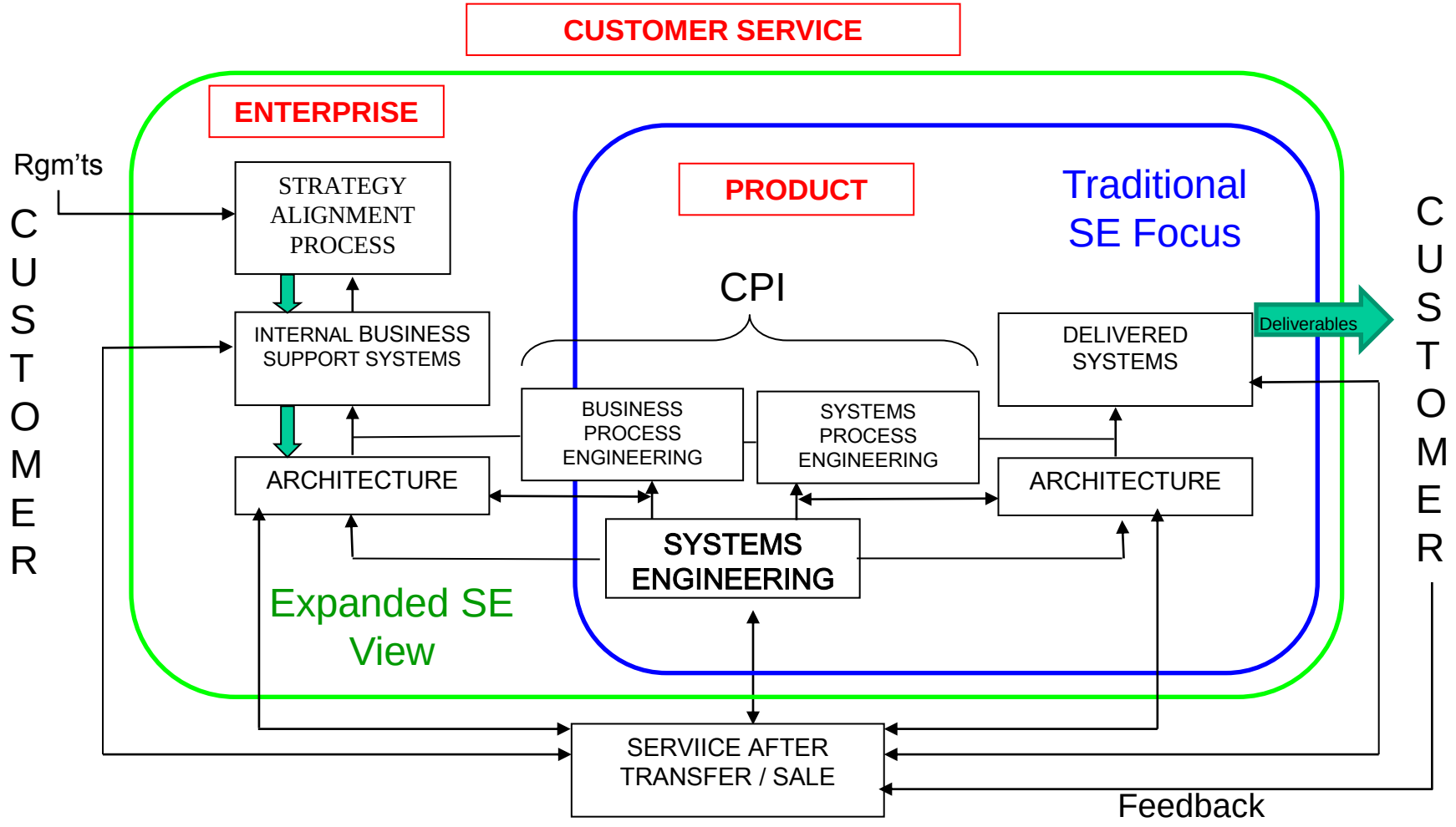
The AFIT of Today is the Air Force of Tomorrow.



INTEGRATING SYSTEMS ENGINEERING

PRODUCT, ENTERPRISE & CUSTOMER SERVICE VIEWS

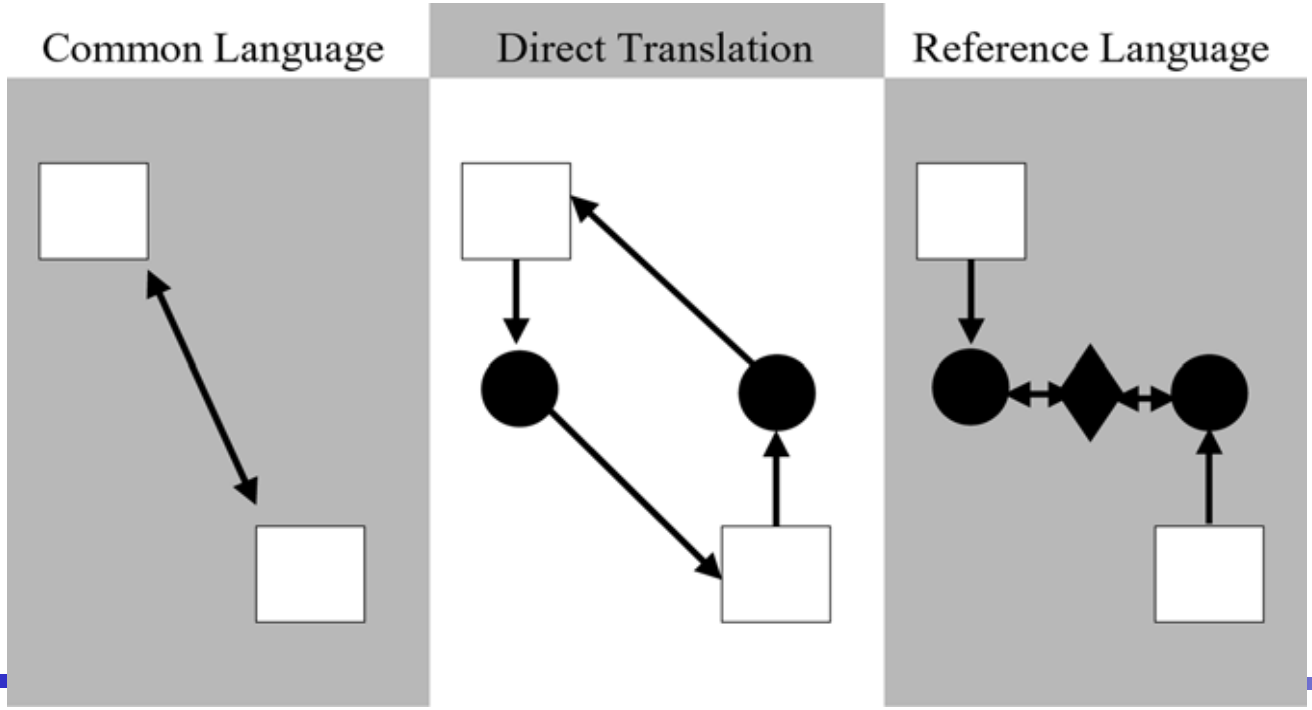
The AFIT of Today is the Air Force of Tomorrow.



Integrated Systems Engineering: Looking Beyond Traditional Realms

Interoperability

- In order for two entities to be interoperable, there must be clear communication of information from one entity to another.
- The product centers must use a common language to facilitate direct communication among each other



Desired Future State

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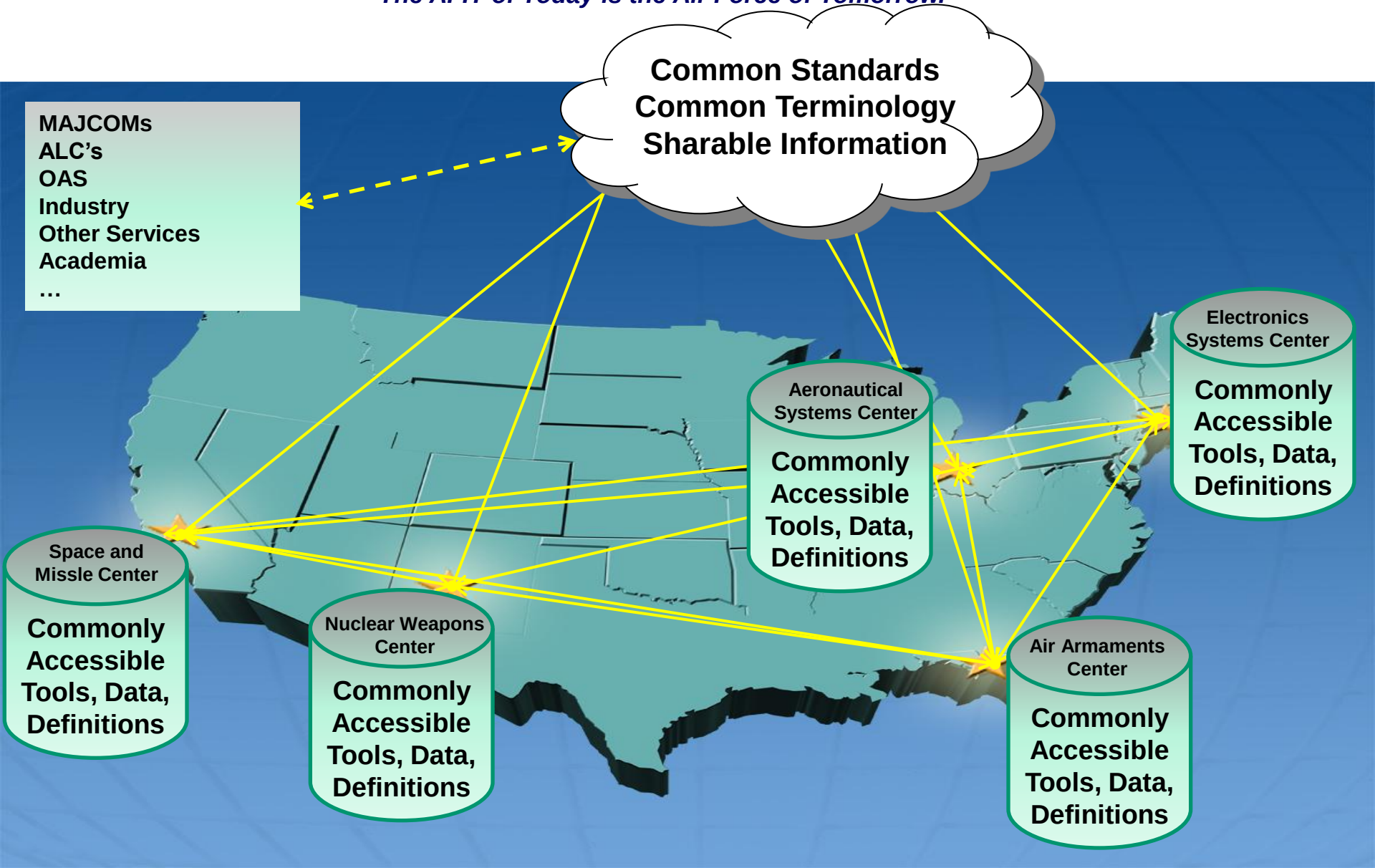
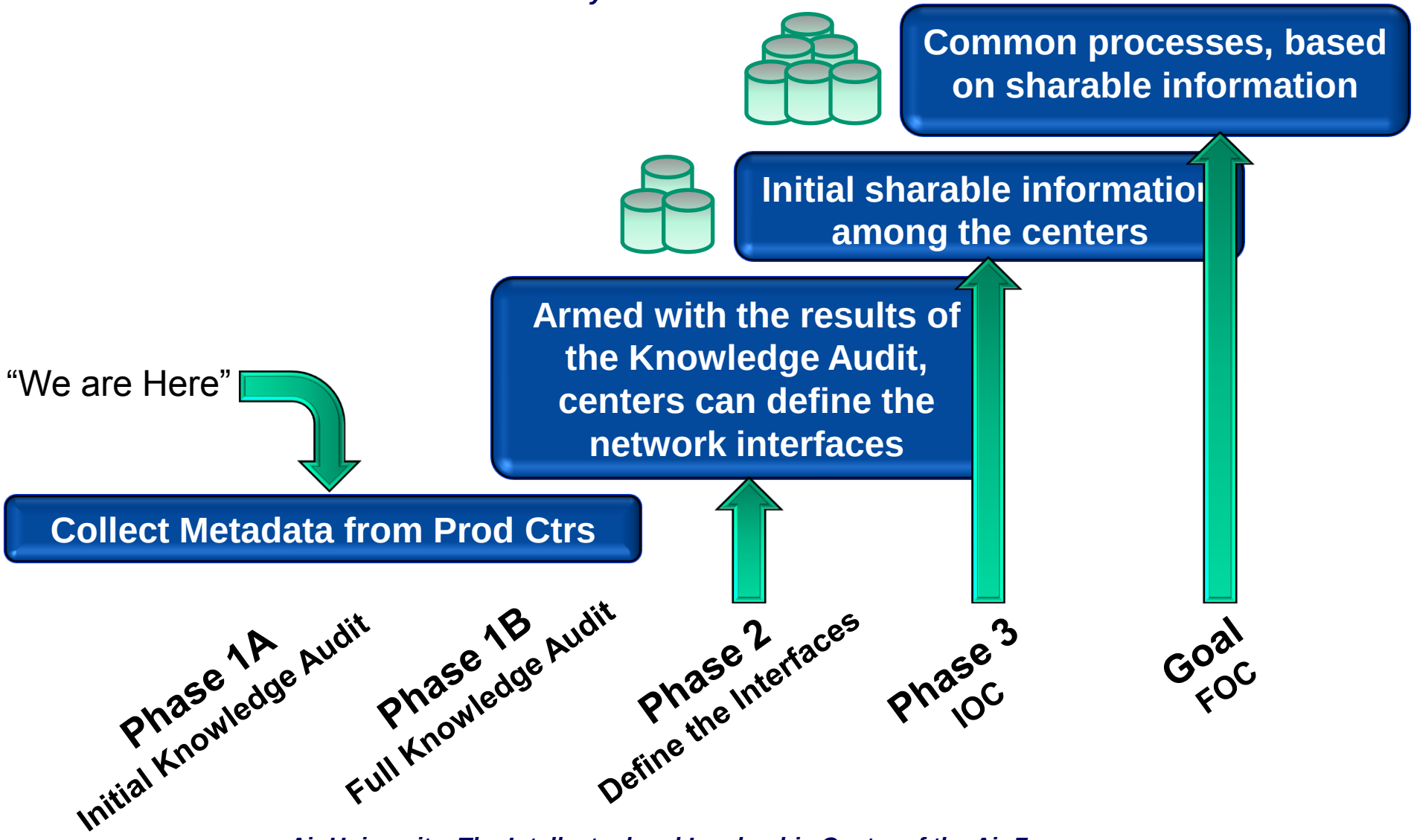


Proposed Way Ahead



Proposed Path Ahead

- **Phase 1B**
  - Inventory of available DP products and processes at Product Center DP organizations
  - Deliverable: Basis for establishing “as-is” architecture
- **Phase 2**
  - Define “to-be” architecture
  - Deliverable: network interfaces; proposed data solution
- **Phase 3**
  - Build/web enable relevant databases, building on common interfaces and data models
  - Deliverable: Information sharing capability
- **Goal**
  - Information sharing across product centers to support development of future weapons systems

What's Next

- CSE to facilitate work with Centers' XRs to develop formalized inter-center collaboration leading to:
  - Common terminology
  - Common processes & practices
  - Common tools & training
  - Collaborative mindset

AIR FORCE CENTER FOR SYSTEMS ENGINEERING
AIR FORCE INSTITUTE OF TECHNOLOGY

QUESTIONS ?