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“Supporting Agile C2 with an Agile and Adaptive IT Ecosystem”

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MITRE

Based on public released documents
12-0212,12-1273

Drivers

Need to address adaptability, timeliness, cost, alignment

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DoD/CIO Campaign Plan, Oct 2011

- "…Therefore, the DoD CIO must address this challenge by providing the advocacy and guidance necessary to facilitate agile, rapid delivery of effective, secure information capabilities across all missions and functions."

Joint C2 Capability AoA Conclusions and Recommendations, March 2011

"Sustainment costs of current C2 capabilities dominate"

"A joint C2 Modernization Strategy that comprehensively addresses both capability improvements and the transformation / migration of legacy capabilities is needed"

No single program (e.g. NECC), rather a federated "Joint C2 Family-of-Programs"

Critical function - C2 Enterprise-Wide Architecture Development & System Engineering

"Mission Command", GEN Martin Dempsey, Army Magazine, Jan 2011

"Confronting hybrid threats—combinations of regular, irregular, terrorist and criminal groups—in such an environment requires leaders who not only accept but seek and embrace adaptability as an imperative."

Based on public released documents
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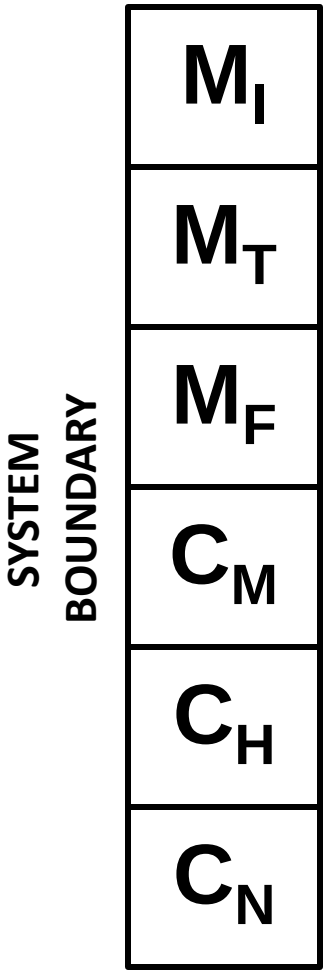
Classic Standalone System Baselines



Type	Description
M_I	Mission information
M_T	Mission thread
M_F	Mission functionality
C_M	Core middleware
C_H	Core hardware
C_N	Core network

Current Methods

Deliver against a complete set of requirements, delivered over a long period of time as a singular tested, accredited capability

Challenges

Requirements are not well known in advance

Large capabilities have long delivery times

Capabilities difficult to modify in the field

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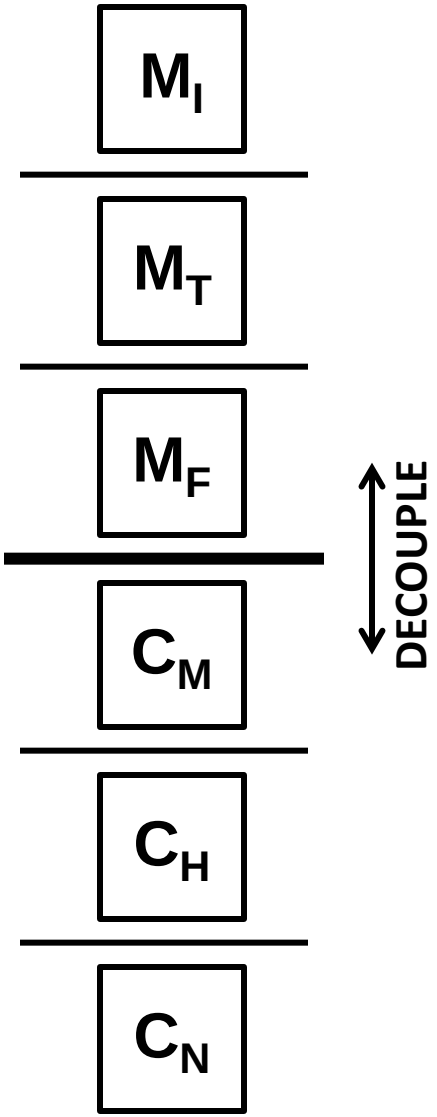
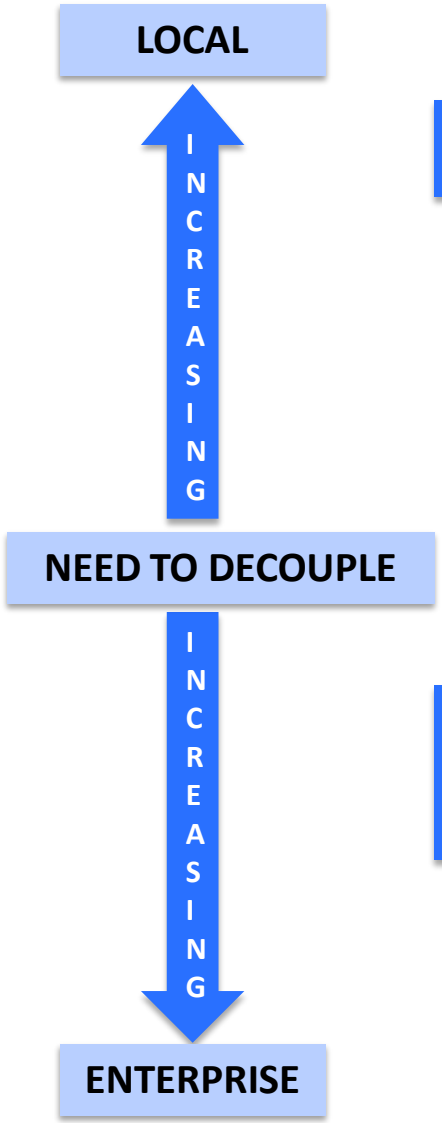
Decouple into Components





Mission Unique

- High need to address specific mission needs
- High need to tailor in the field

Shared Infrastructure

- High need to share across missions
- High need to consolidate

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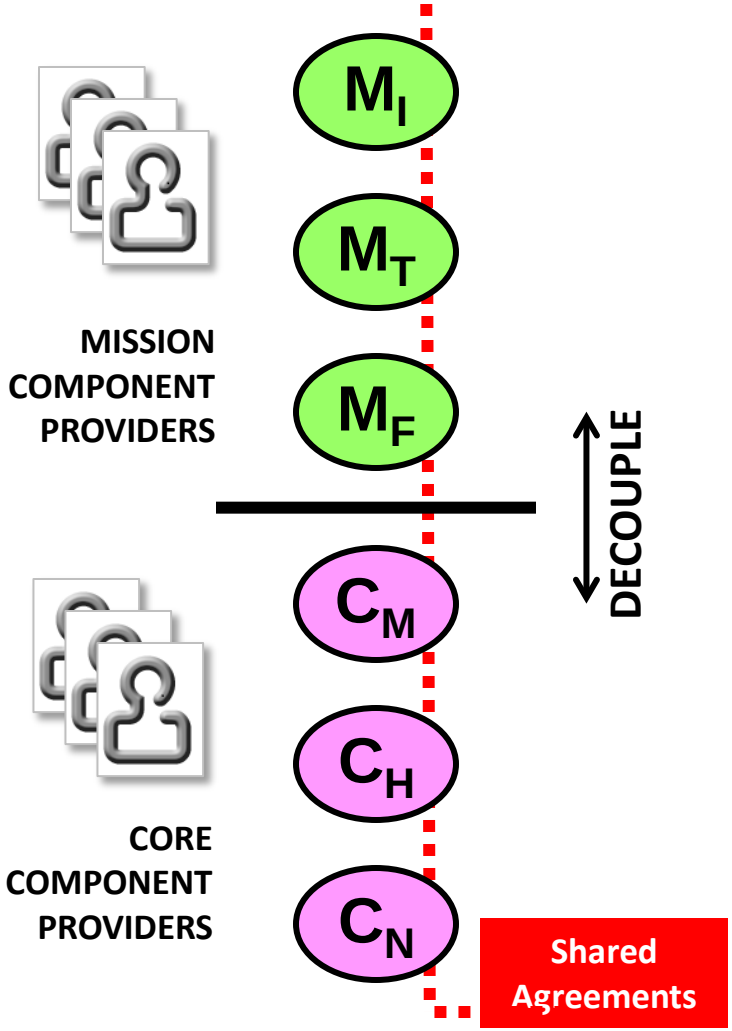
Multiple Component Providers



Independent Component Development

Large number of mission specific component producers

Smaller number of core component producers

Core components can be reused

Shared Agreements assure components can be assembled

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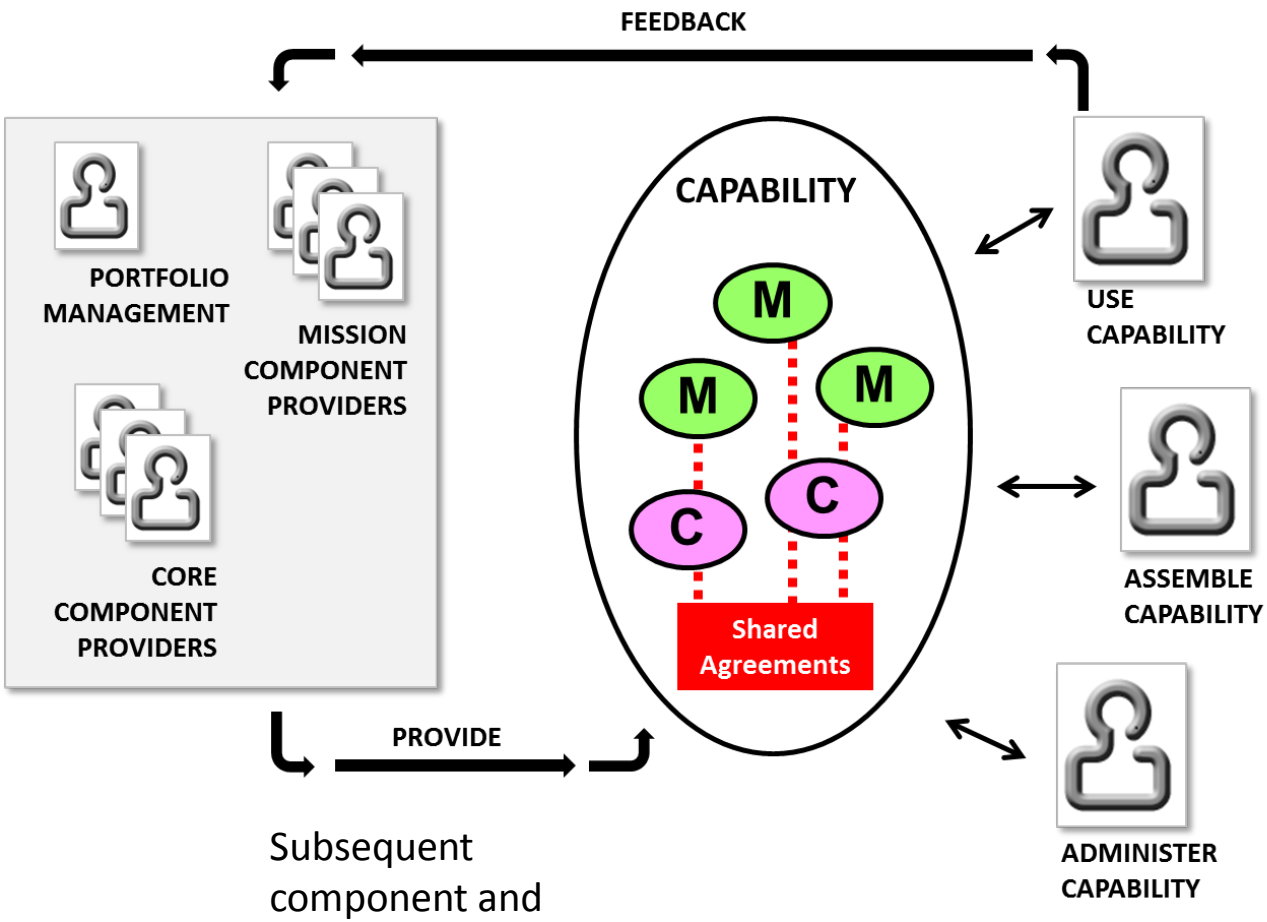
Assemble Capabilities



Subsequent component and shared agreement versions

Independent Capability Assembly

- Capabilities assembled using independently produced components
  - Enabled by Shared Agreements
- Components are a mix of core and mission specific
- Feedback from end user to component producers
- Capability adaptation in field is enabled

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Multi-Party Engineering – Tenets

Tenet #1 – Provide Small Components

- Short timeframes
- Version-able
- Suitable for iterations as requirements evolve

Tenet #2 – Certify Components to Shared Agreements

- Shared Agreements constrain usage to assure ability to assemble later
- Shared Agreements cover security, accreditation, testing, data semantics, etc.

Tenet #3 – Offer Components in Markets

- Markets enable component production and capability assembly to be decoupled in time, yet have integrity (via Shared Agreements) in the final assembly

Tenet #4 – Assemble Capabilities

- Capabilities are assembled from components which are certified to applicable shared agreements

Tenet #5 – Feedback Loops

- End users give direct feedback to the markets and component producers
- The feedback is made available to the component providers, captured in the markets, and drive future component development

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Components, Shared Agreements, and Governance

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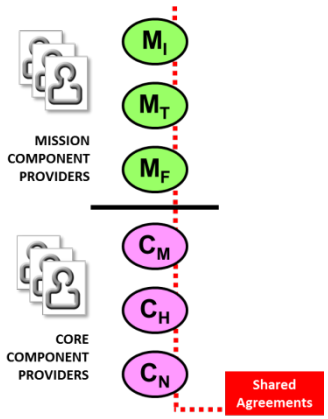

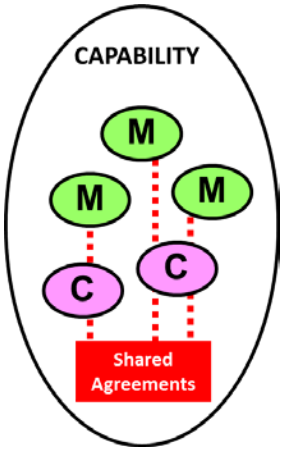

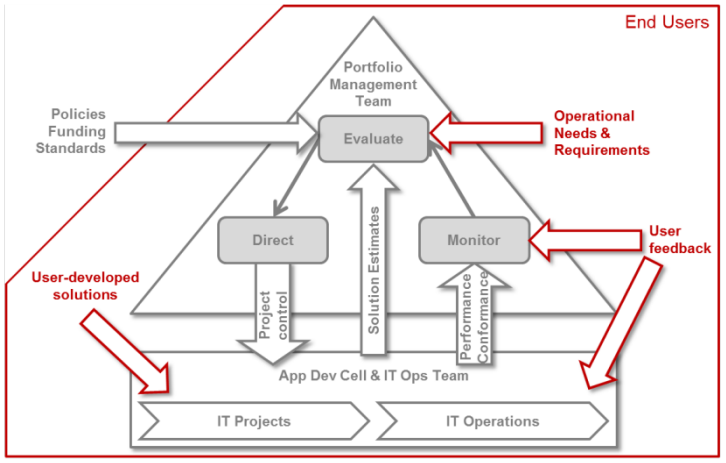

Source: ISO/IEC 38500, Corporate governance of information technology

DECOUPLE – PRODUCE COMPONENTS

ASSEMBLE CAPABILITIES WITH SHARED AGREEMENTS

GOVERNANCE FRAMEWORK FOR COMPONENTS, SHARED AGREEMENTS AND CAPABILTIES

Independent Capability Assembly

- Capabilities assembled using independently produced components
- Components are a mix of core and mission specific
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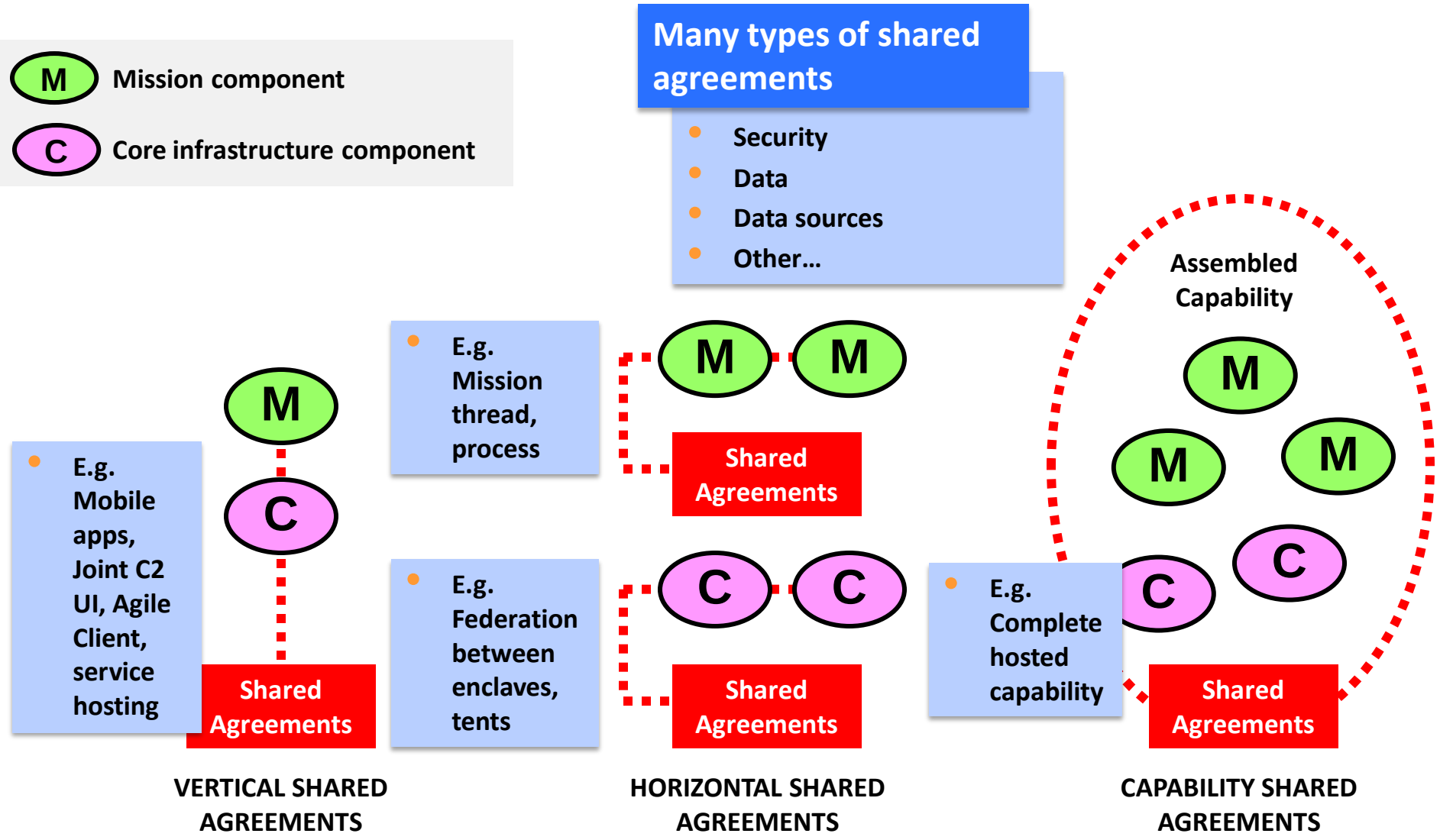
- Capability adaptation in field is enabled

Multi-Modal Shared Agreements

- Shared agreements bind mission with core components, as well bind mission components in a workflow
- Shared agreements used at development time for components, as well as for run time, as in SLAs.

Types of Shared Agreements



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Agile and Adaptive IT Ecosystem (AAE)

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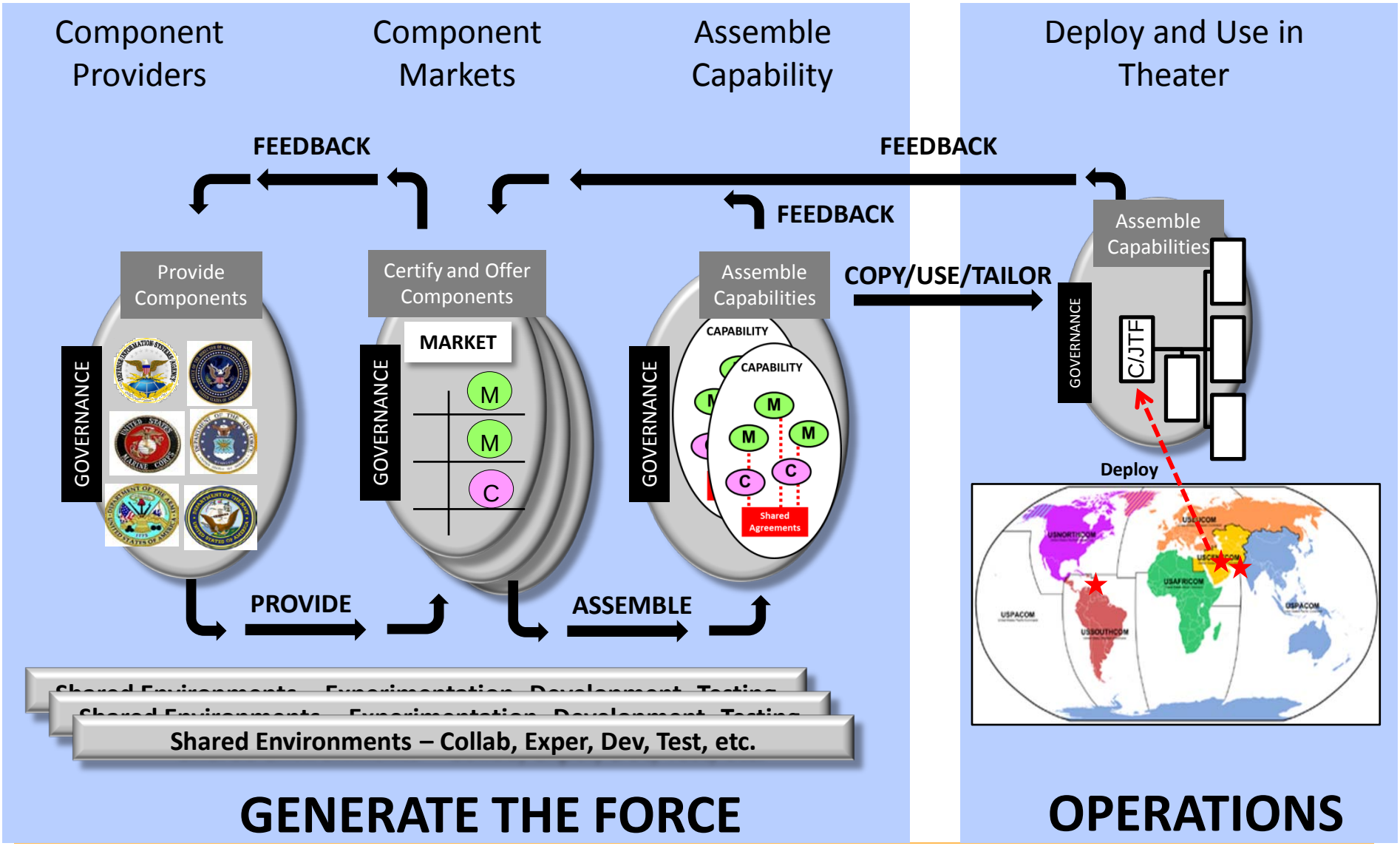

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EXAMPLE
Generic “Pluggable UI” Marketplace Relationships
Mobile, Widget, Plug-in…

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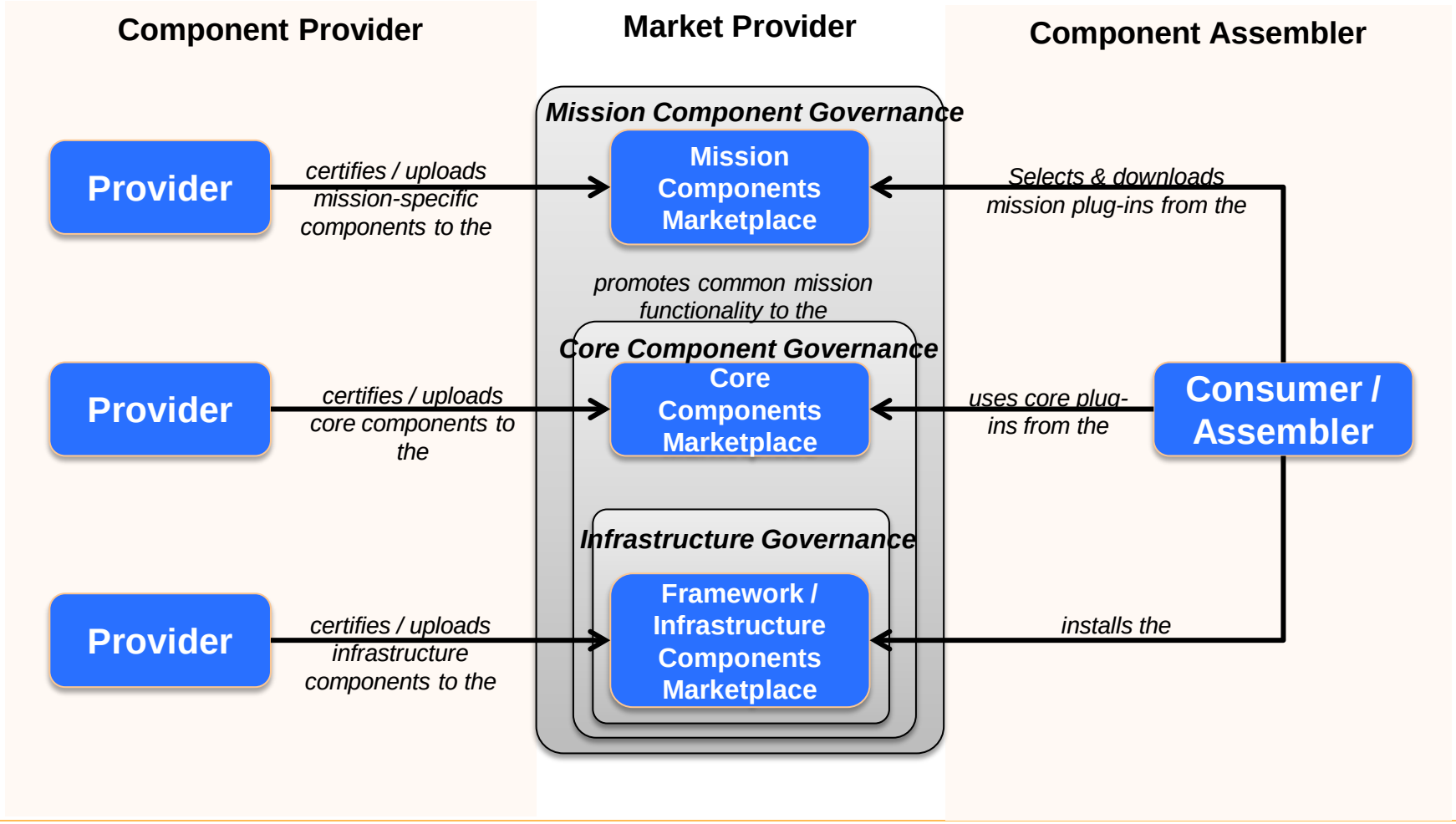

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Migration Concepts

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Joint C2 Migration includes

- Modernization
- Deprecation
- New

Joint C2 Migration assumes

- Based on Joint C2 Objective Architecture
- Incremental approach, no big bang

Modernization

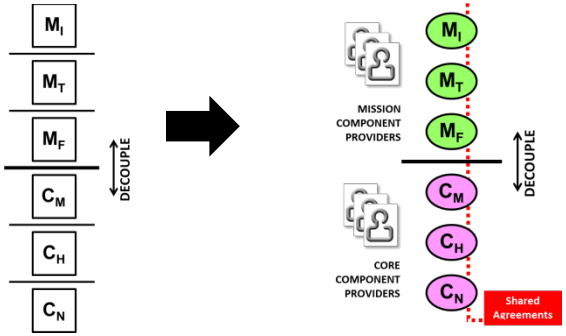
- Deconstruct baseline
- Harvest future components
- Create applicable shared agreements
- Add to agile and adaptive ecosystem

Agile and Adaptive Ecosystem

- Grown over time
- Evolves
- No single complete specification

New development, e.g.:

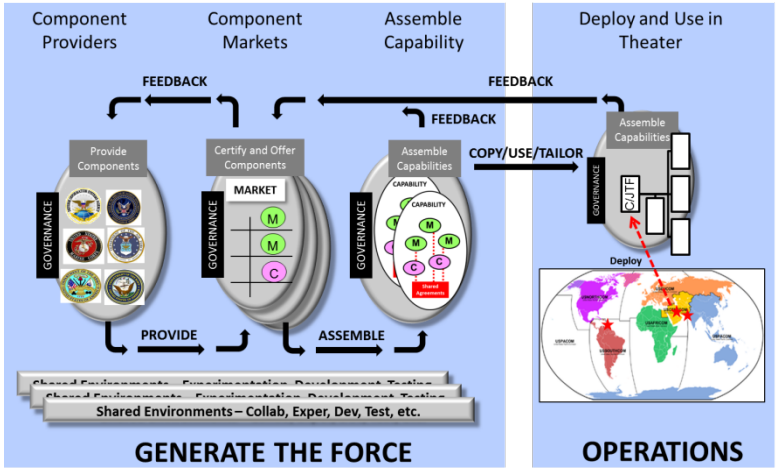
- Mobile Apps
- Agile Client Plugins
- Ozone Widgets
- Information Services
- Infrastructure



Modernization, e.g.:

- Deconstruct legacy baseline
- Deprecate
- Rehab

Agile and Adaptive Ecosystem



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Questions?

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