

Command & Control in the Joint Task Force Enterprise

Jay Bayne

Meta Command Systems, Inc.
(Formerly Echelon 4 Corporation)
1045 W. Glen Oaks Lane, Ste 202
Mequon, WI 53092-3477
+1.262.240.2956
jay.bayne@metacomsys.com

Point of Contact

Donald Diggs

OASD/NII
Director C2 Policy
Arlington, VA 22202-4302
+1.703.607.0654
donald.diggs@osd.mil



1. Effective governance of large-scale federated enterprise systems (e.g., JTF) and their capabilities requires formalized scalable service-centric *policy-based intra- and inter-enterprise C2*
2. Effective *enterprise C2* (EC2) in federated (collaborative, interoperable, interactive) systems requires *greater degrees of automation* of traditional social and typically *ad hoc* governance activities
3. Automation of sharable C2 services requires a *standardized EC2 model* and an associated set of network-centric services supporting *real-time capabilities management*
4. Shared EC2 services include policy-sensitive
 - *Situation Assessment*
 - *Plan Generation*
 - *Plan Execution*

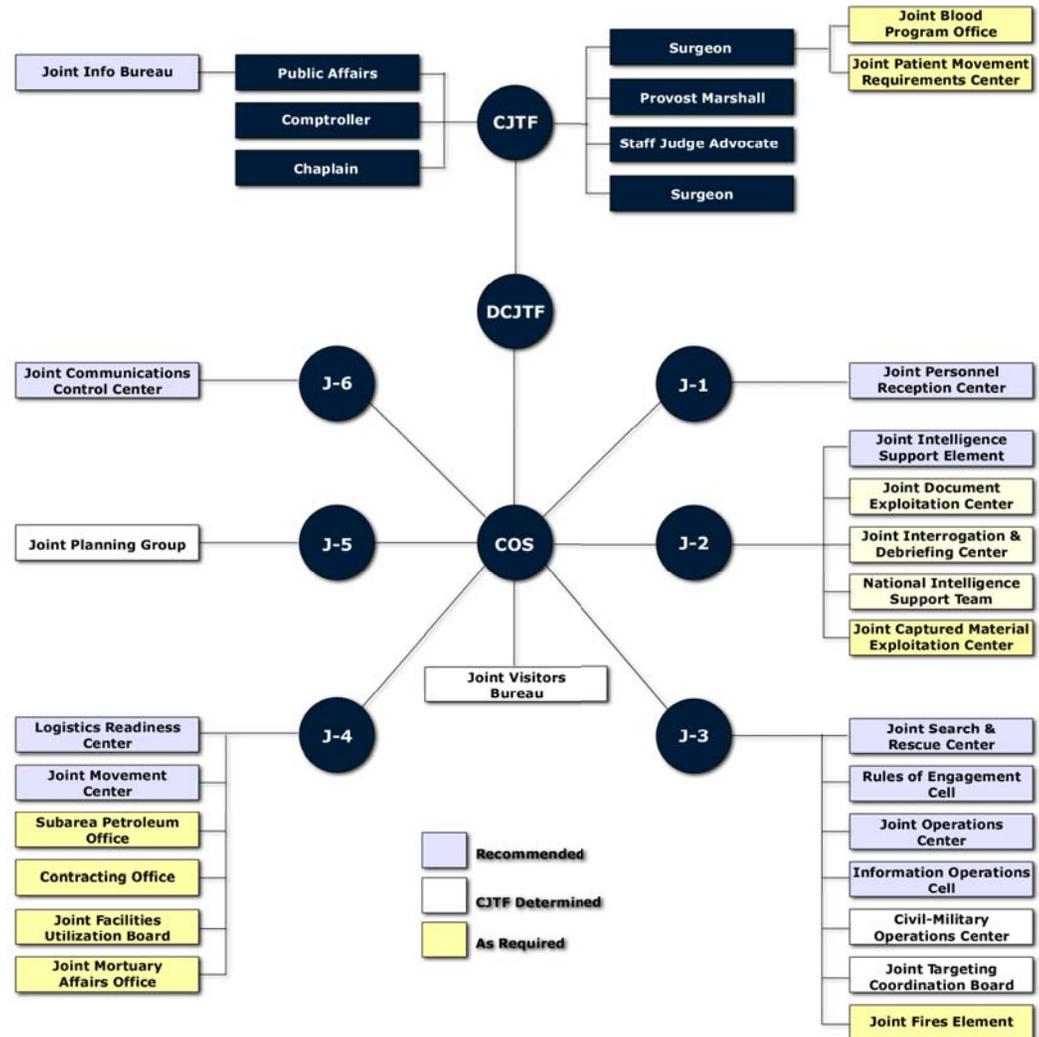
JTF Command Structure



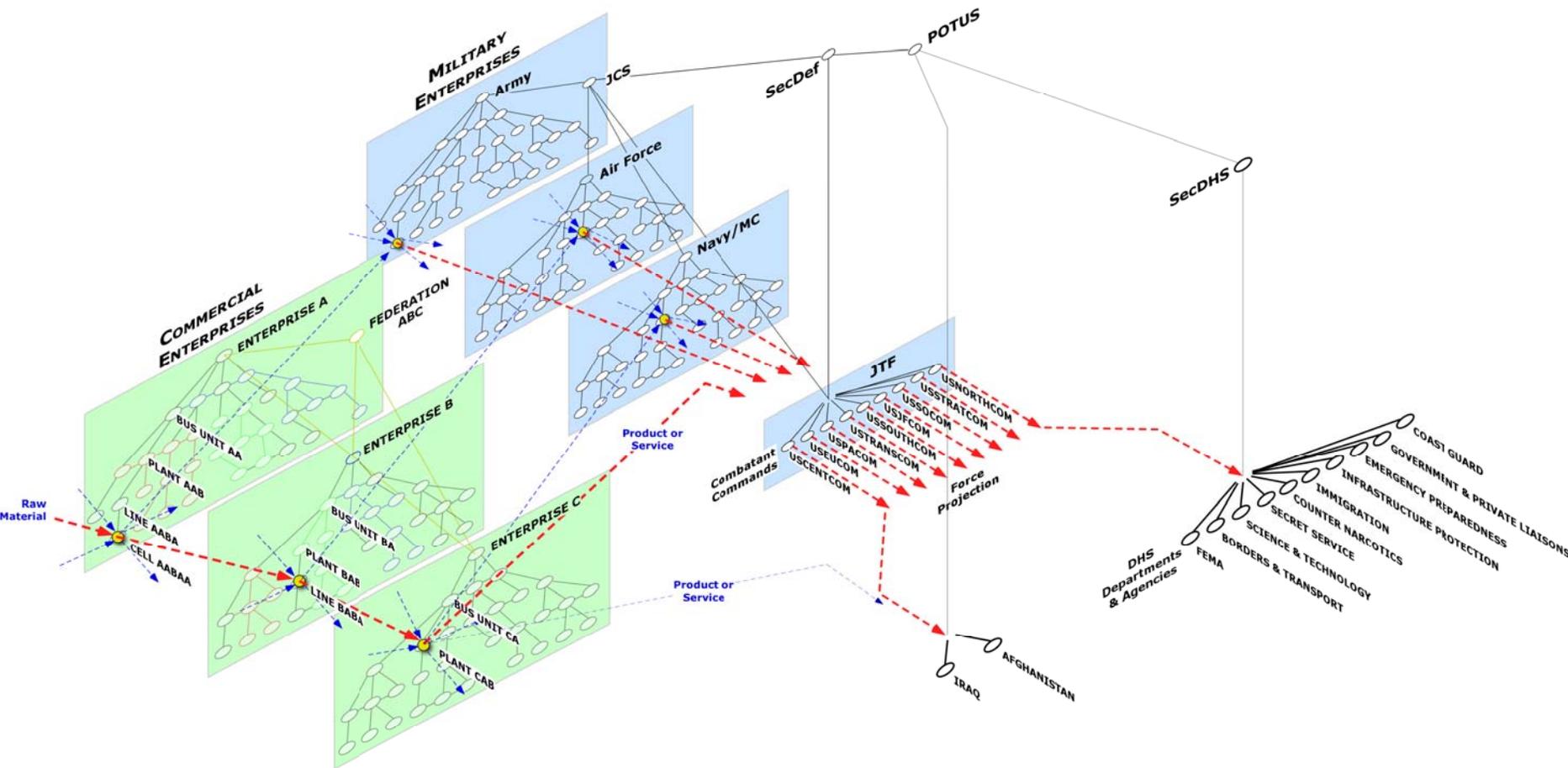
As defined in Joint Publication 5-00.2, there are two complementary JTF command structures

- a Superior, or "establishing authority"
- a Subordinate, or "established authority"

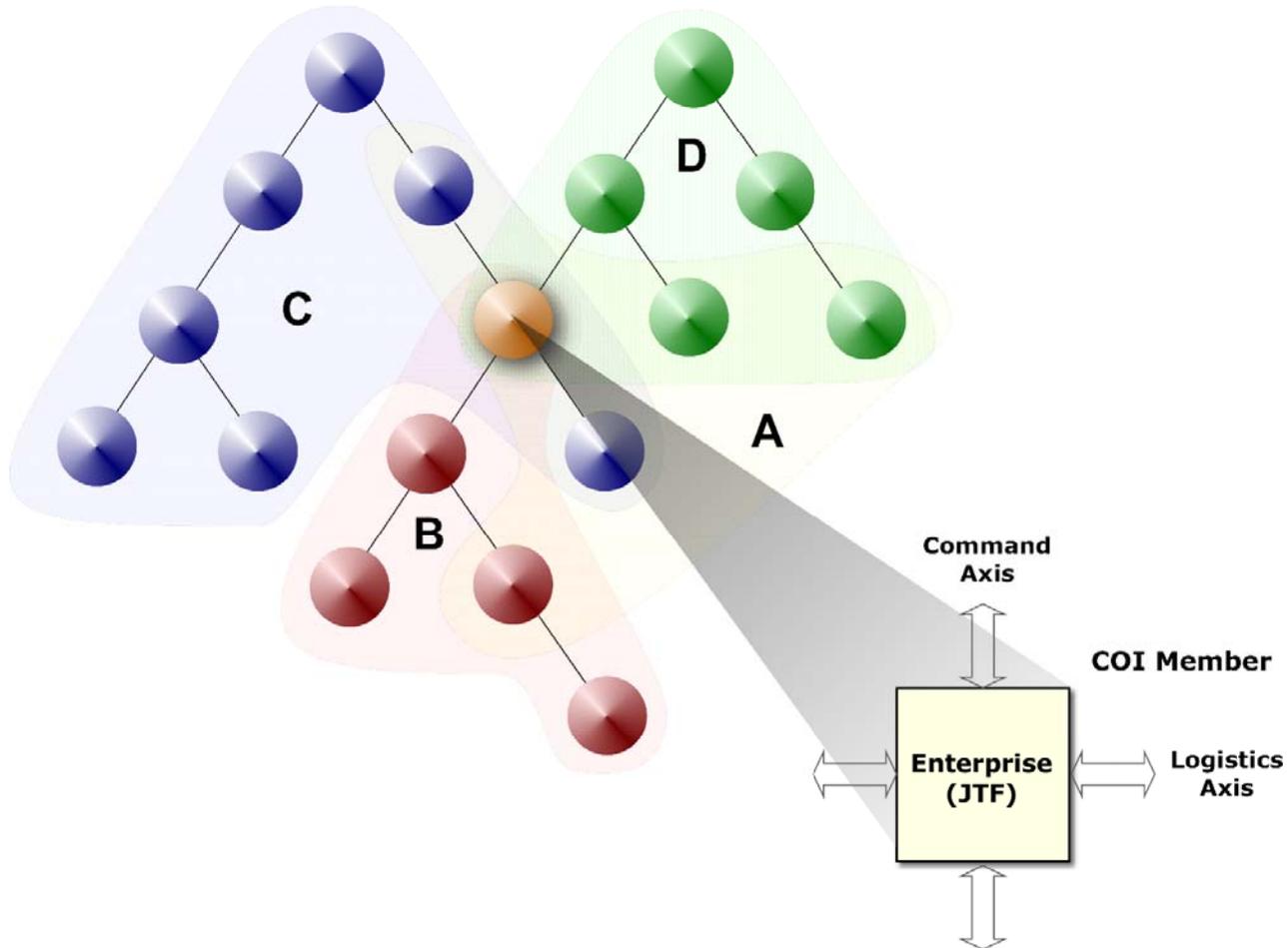
=> JTFs define an "accountability hierarchy"



Net-Centric Capabilities Mgmt



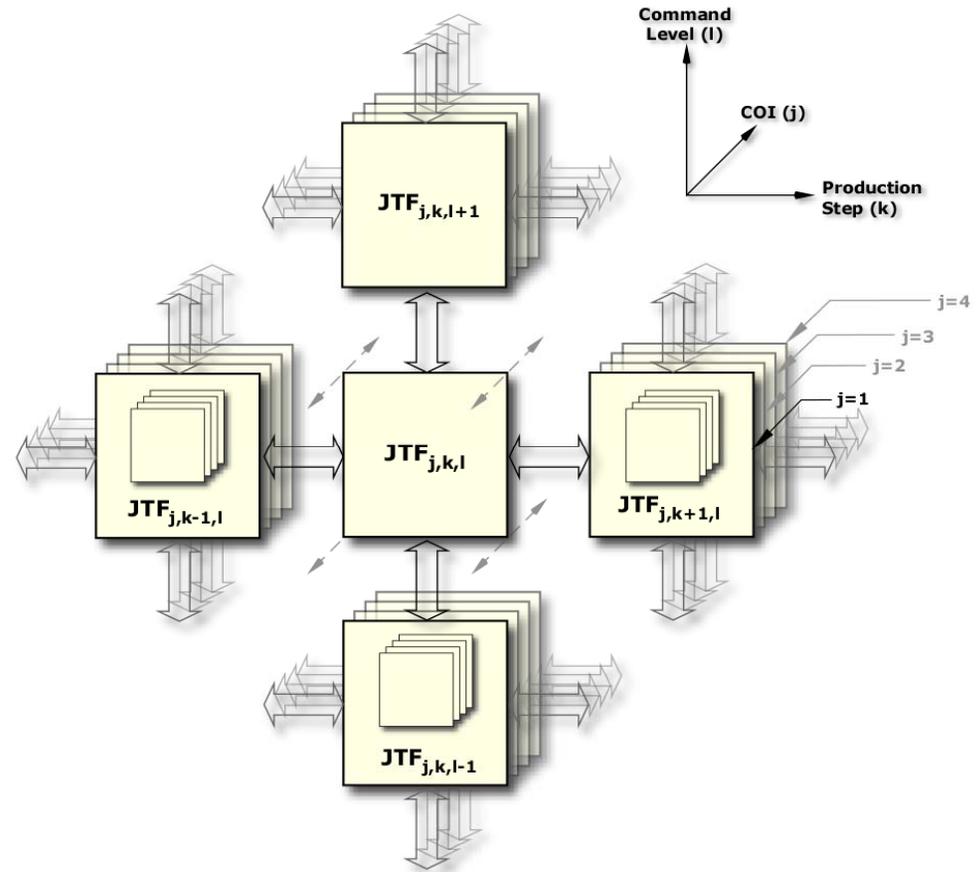
Communities of Interest (A Federation of Collaborating Systems)



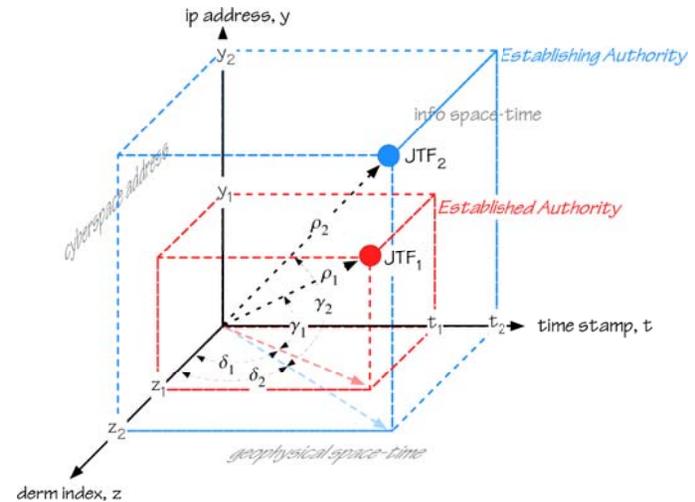
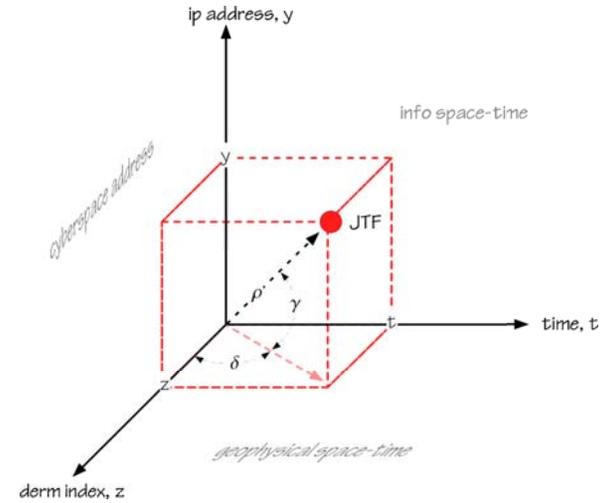
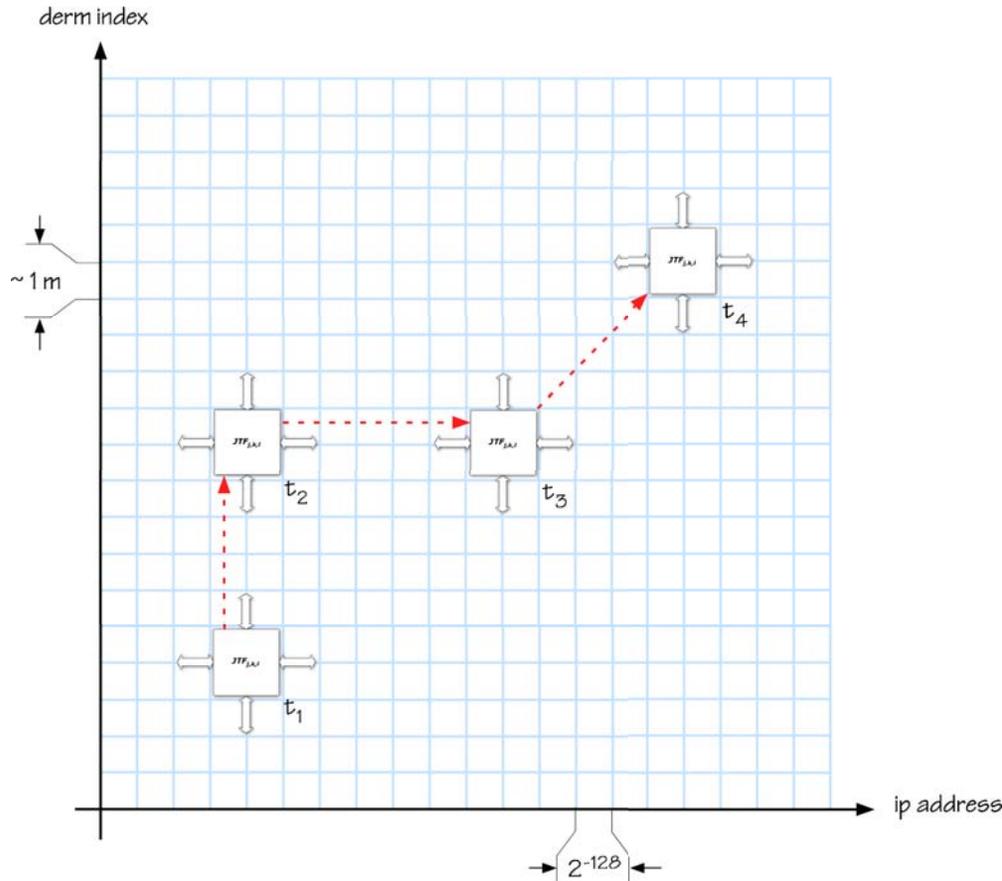
Enterprise C2 Space

3 Dimensional EC2 space

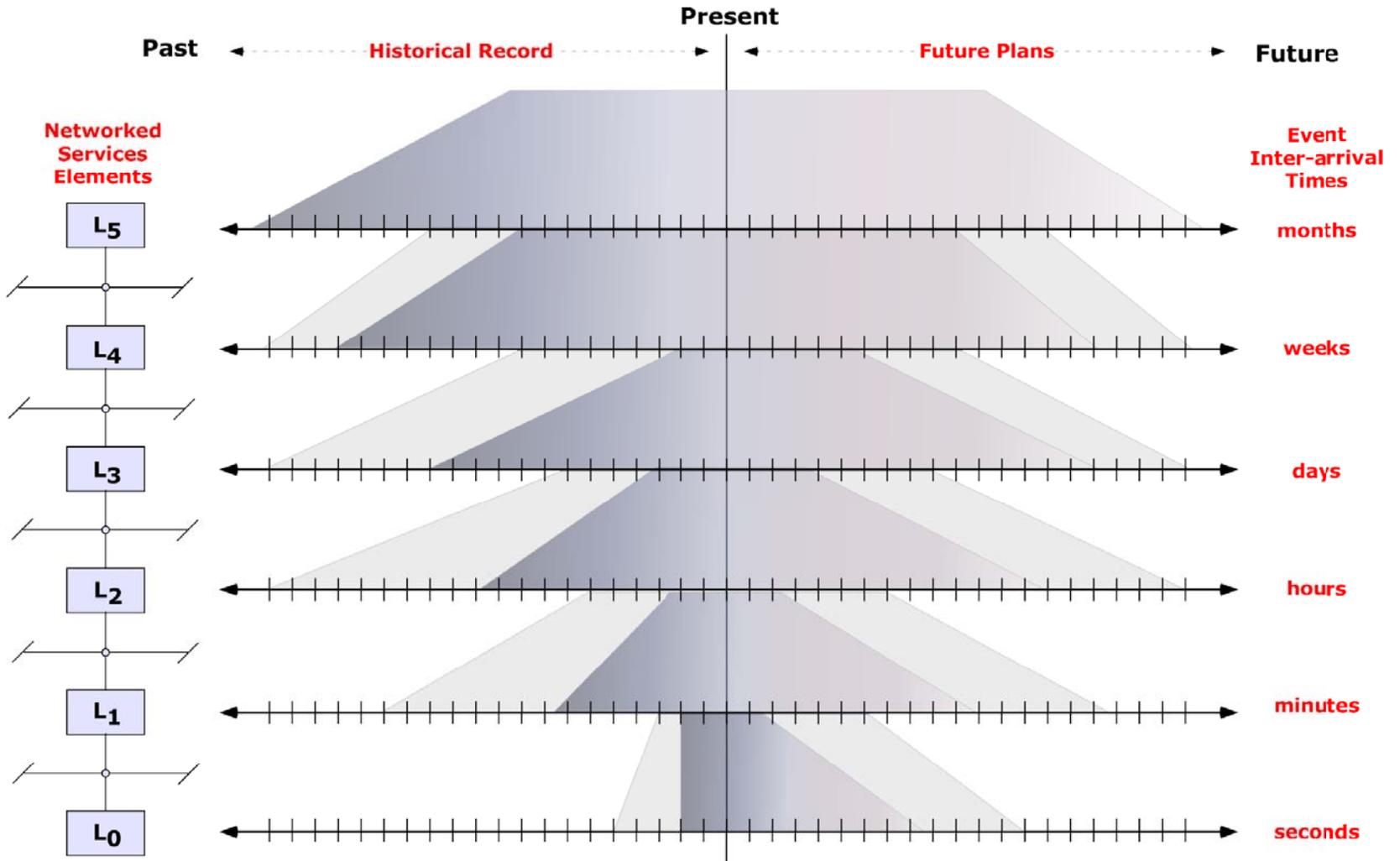
1. Vertical Command Axis:
Accountability Hierarchy
(l-axis)
2. Horizontal Production Axis:
Logistics Chain (k-axis)
3. Lateral Federation Axis:
Communities of Interest
(j-axis)



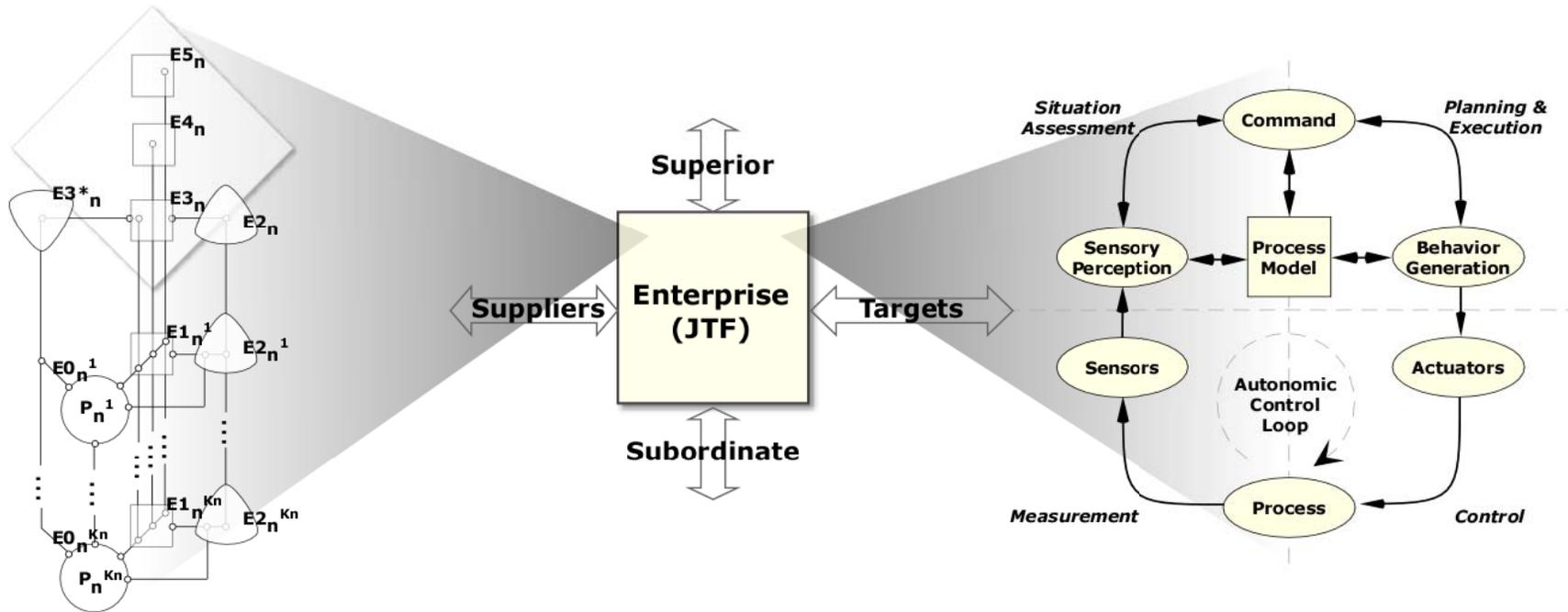
JTF Cyberspatial References



Operations Planning Horizons



JTF Governance Services

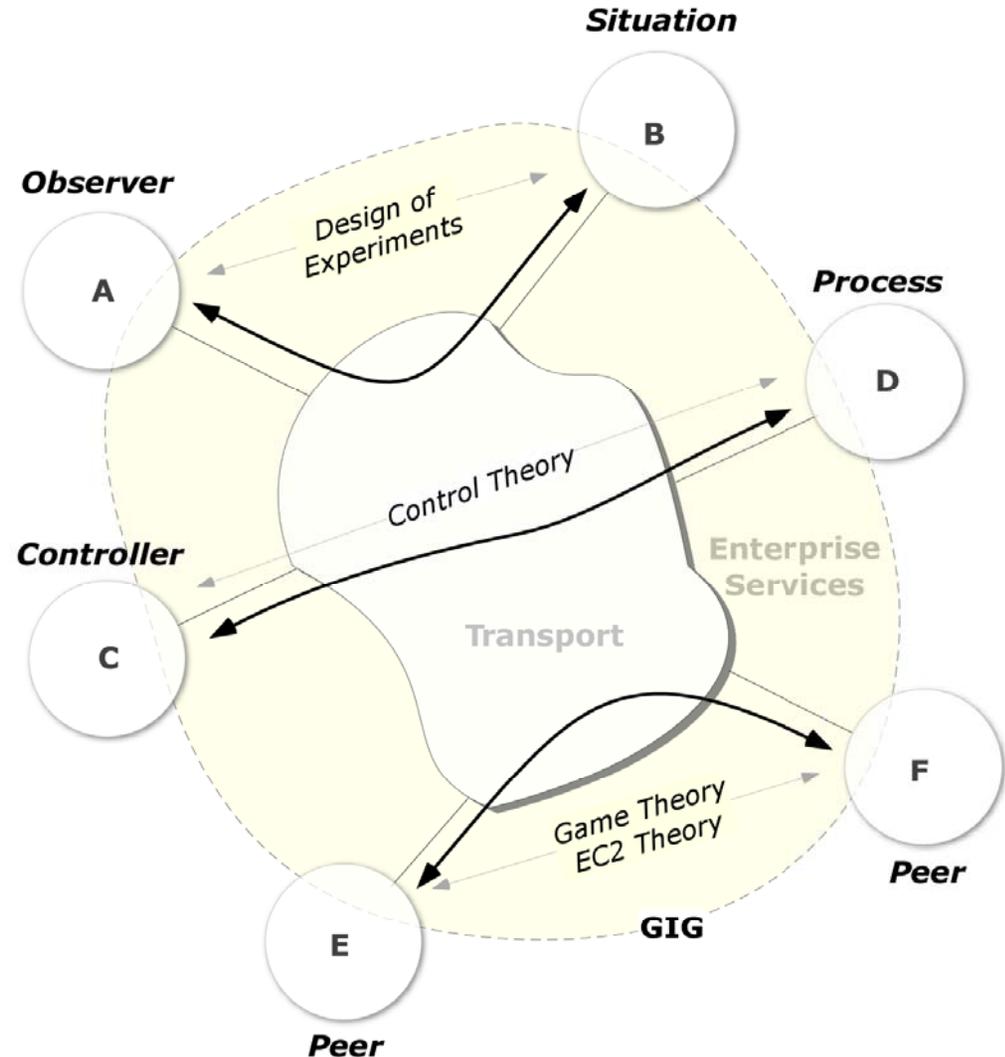


Command Services



Control Services

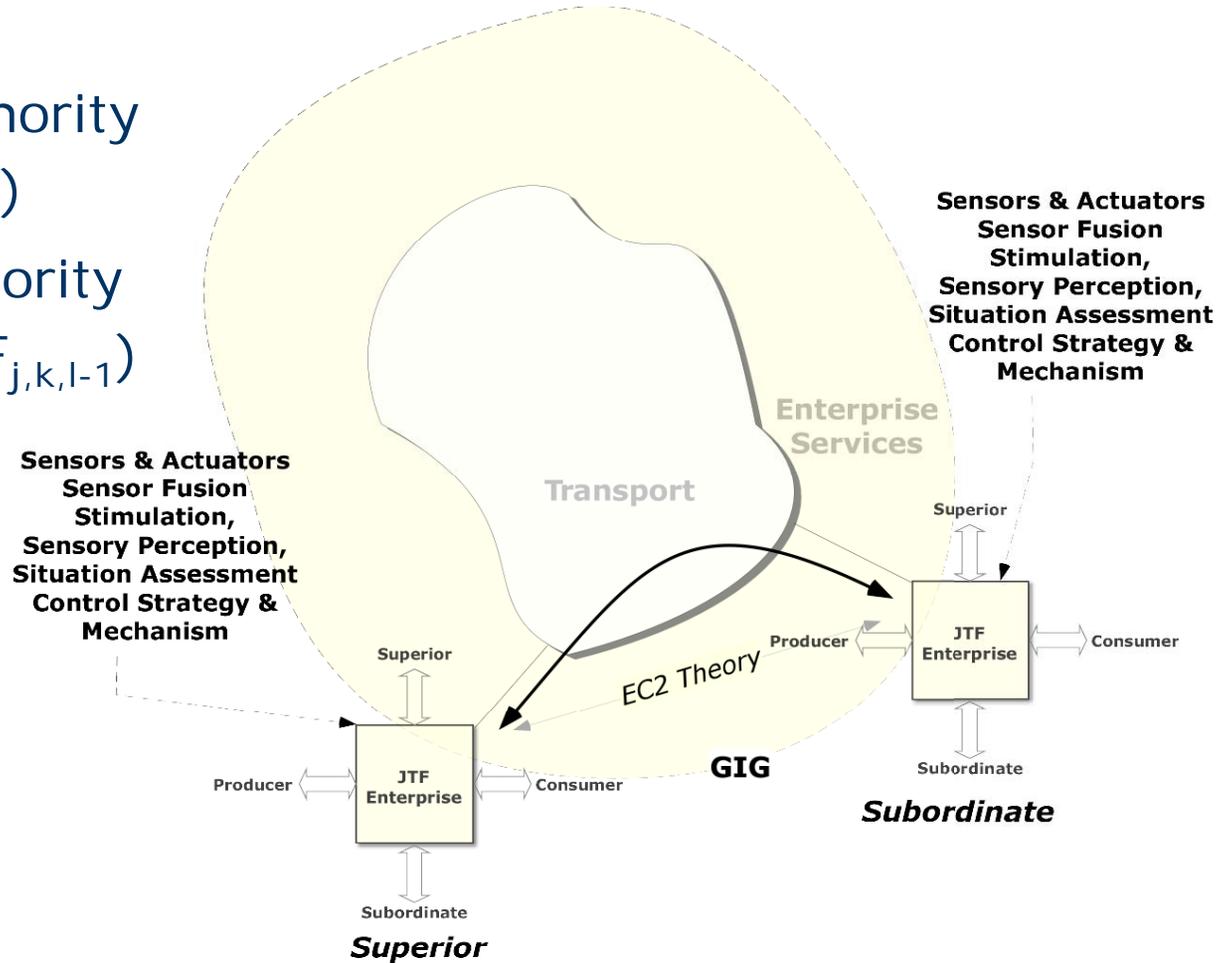
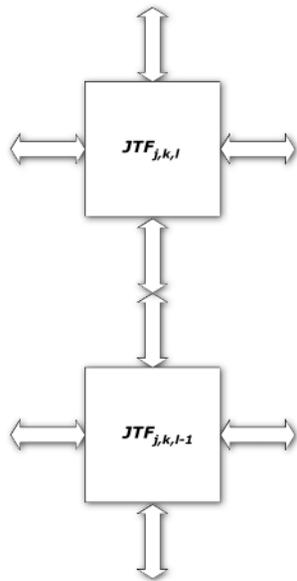
- JTF End-Point Roles
 - Passive Observer (A-B)
 - Active Controller (C-D)
 - Peer/Competitor (E-F)
- Theoretical Frameworks
 - Design of Experiments
 - Control Theory (Cybernetics)
 - Game Theory
 - Theory of EC2
- GIG Infrastructure
 - Transport
 - Enterprise Services



JTF Accountability Structure



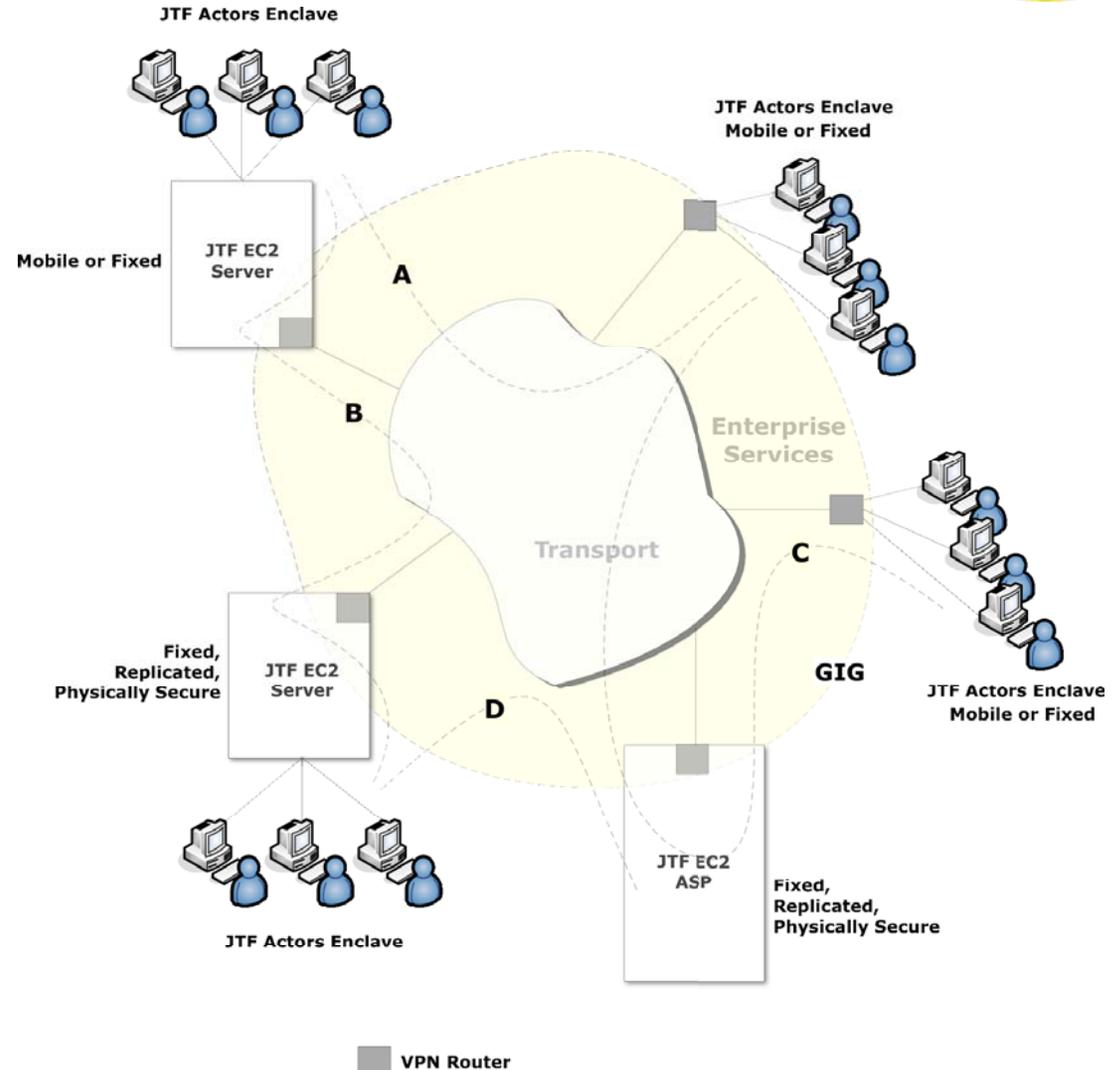
- Establishing Authority (Superior $JTF_{j,k,l}$)
- Established Authority (Subordinate $JTF_{j,k,l-1}$)



JTF EC2 Service Provisioning



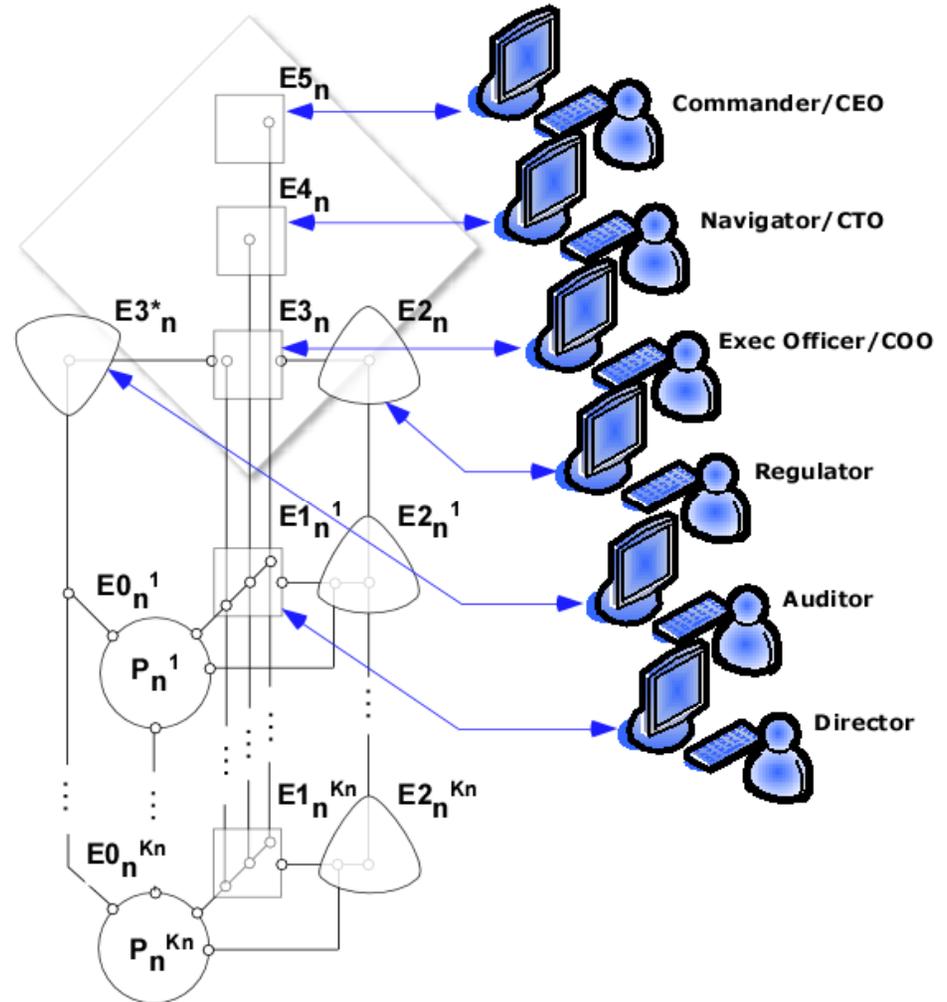
- Fixed v. Mobile Command Enclaves
- Dedicated v. Shared EC2 Services



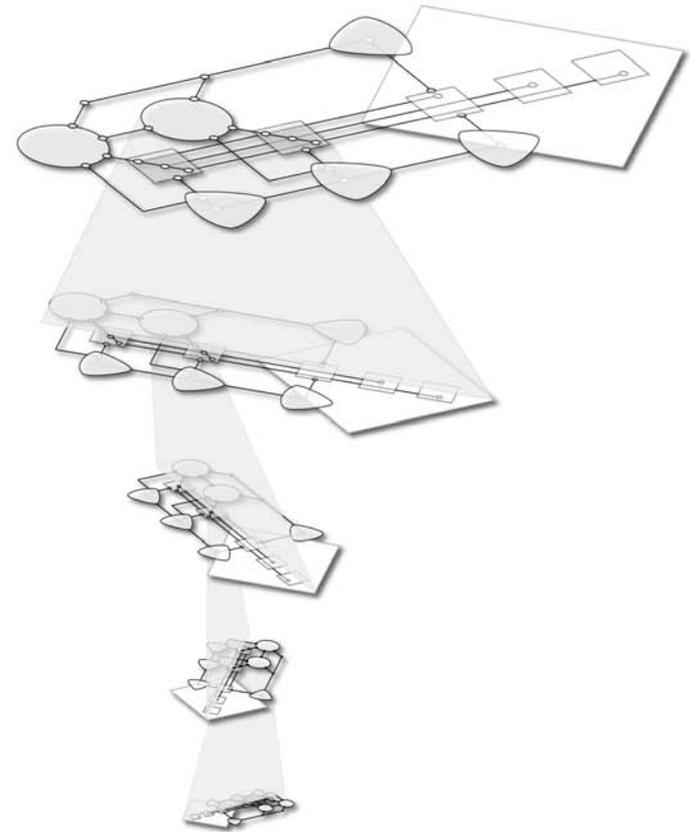
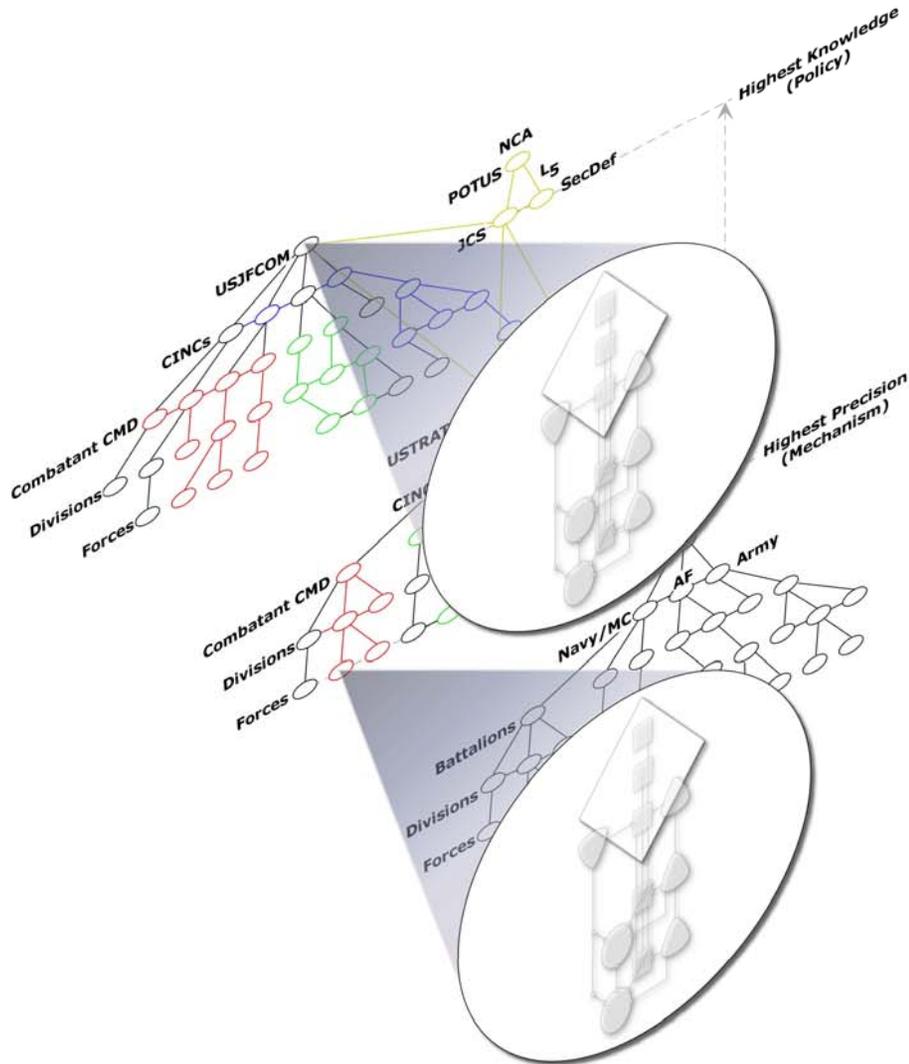
Enterprise Command Model



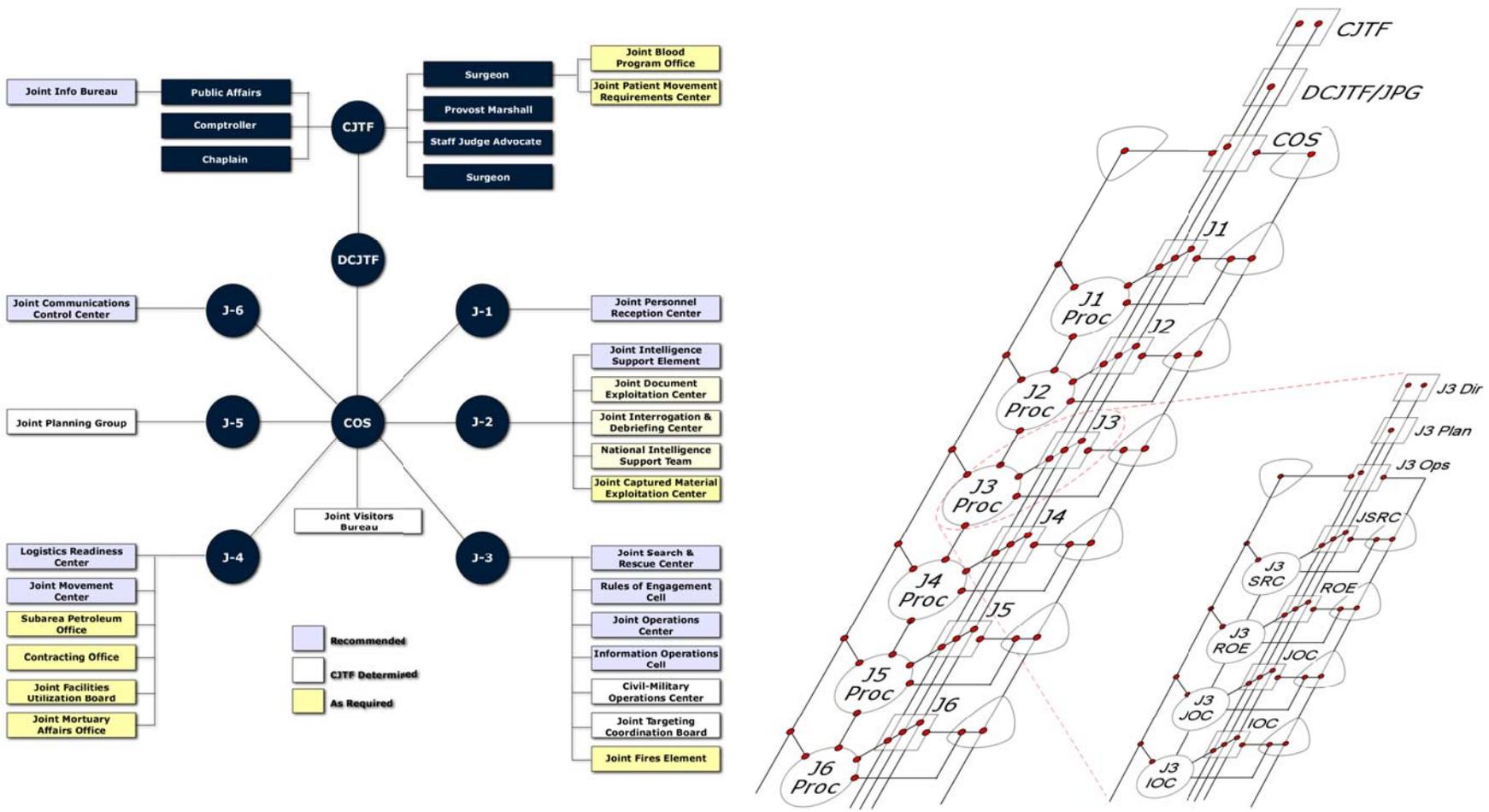
- E5 Commander
- E4 Planner/Analyst
- E3 Operator
- E3* Auditor
- E2 Regulator
- E1 Director
- E0 Process (Capability)



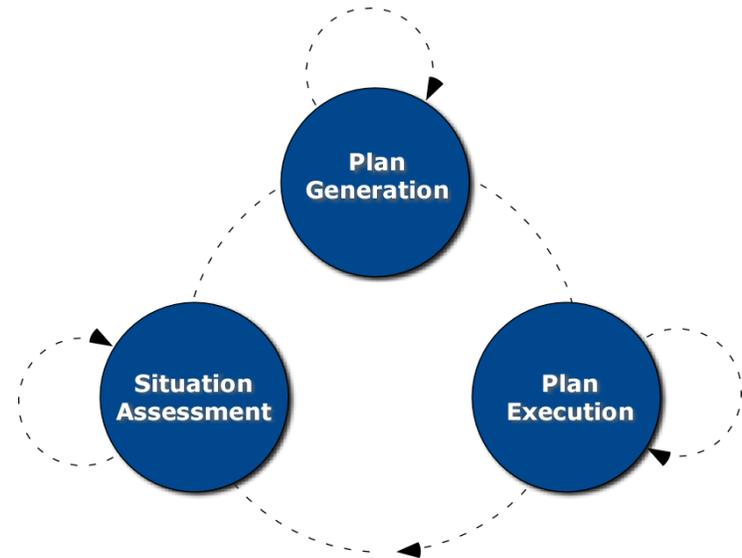
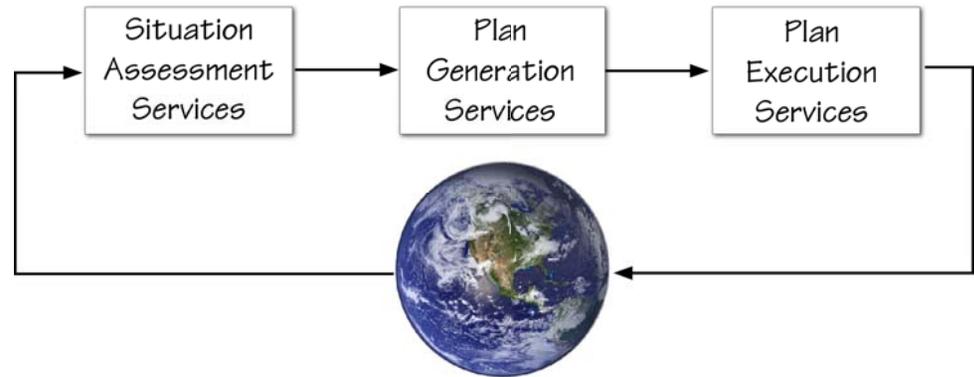
Nested (Recursive) Command



JTF Command Structure



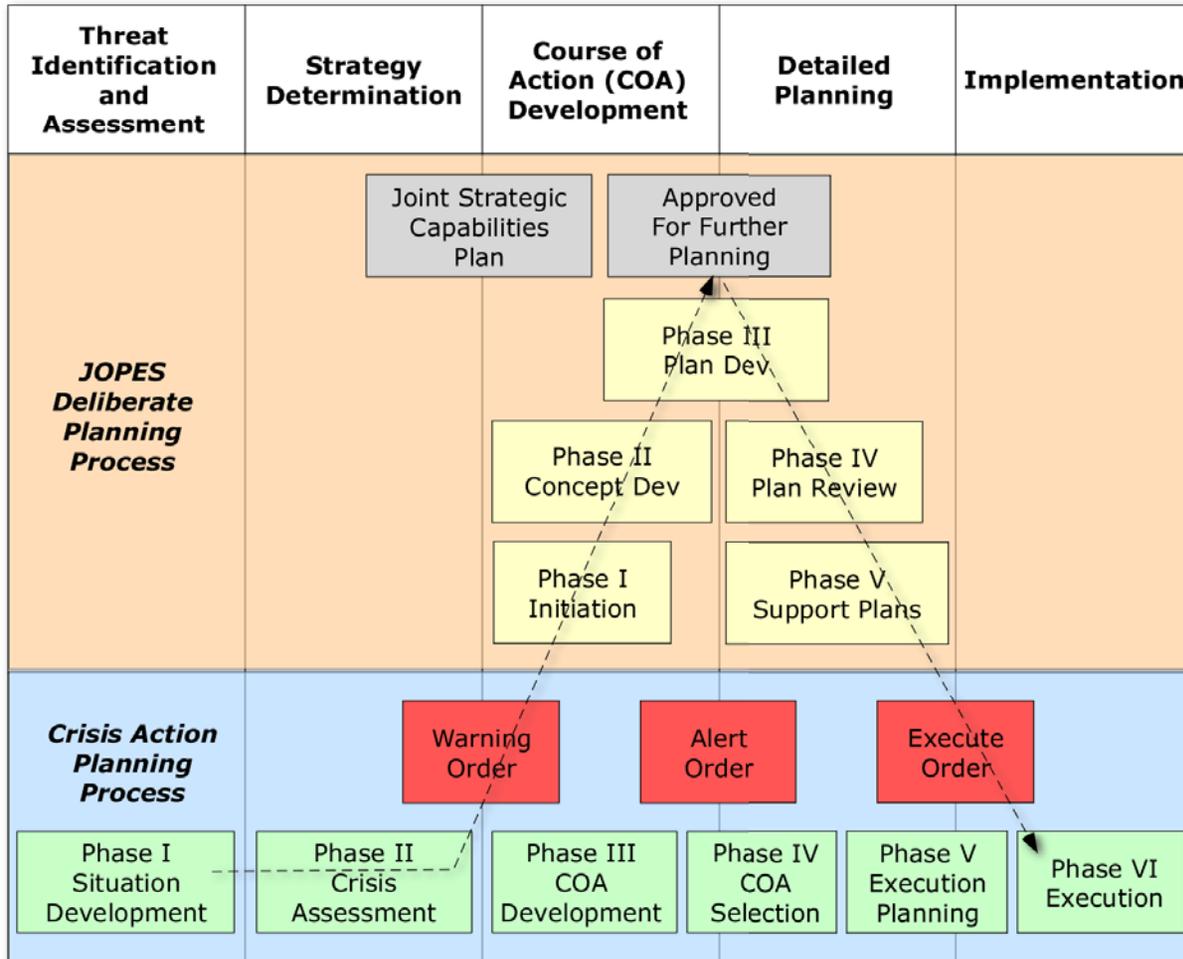
- Situation Assessment
 - Subscriptions
 - Filtering for Events
 - Triage for Situations
 - Analysis for COA
- Plan Generation
 - Policy Management
 - Resource (Capabilities) Management
- Plan Execution
 - Scheduling
 - Authorization
 - Synchronization
 - Performance Management



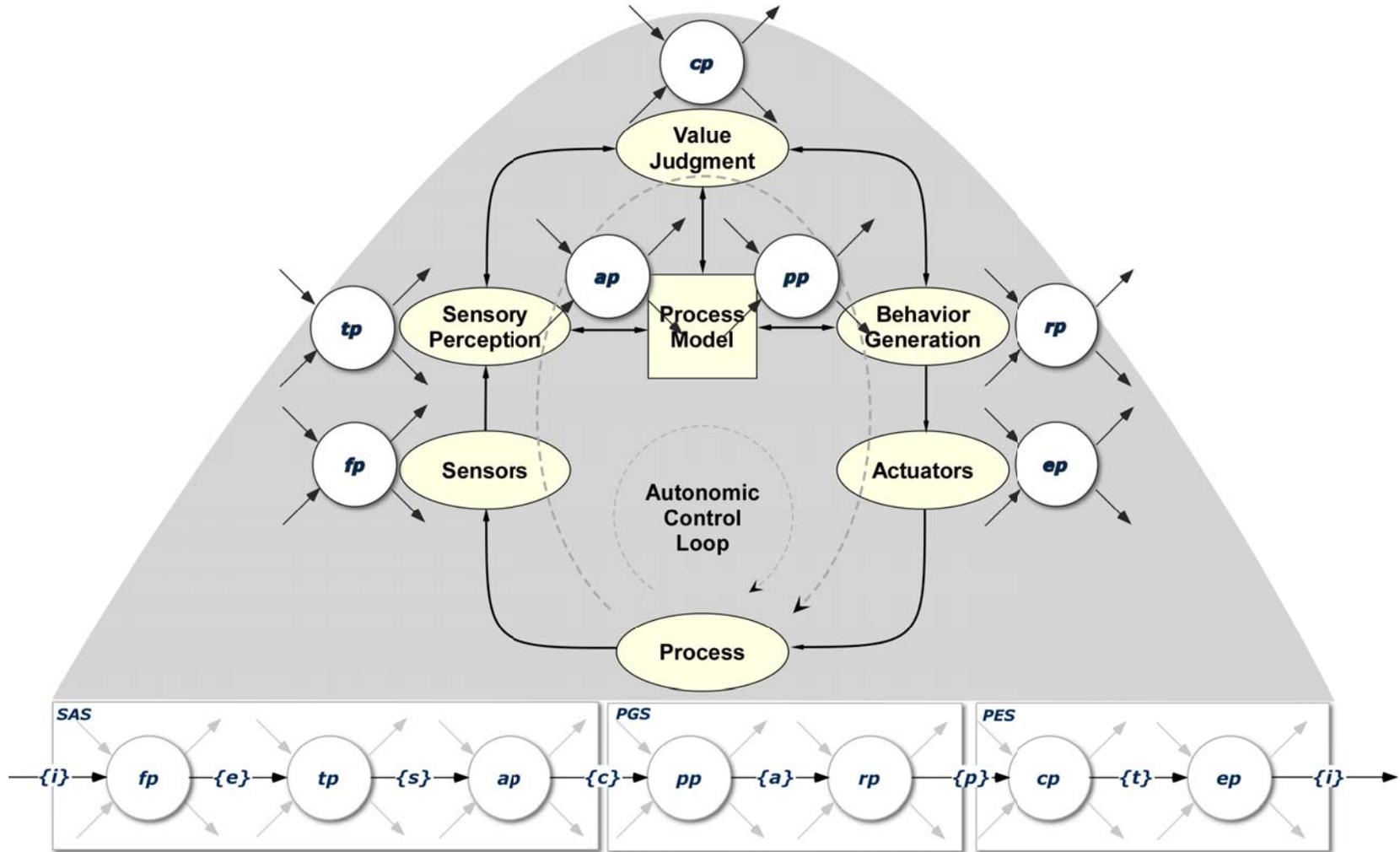
JOPES vs. CAP Process



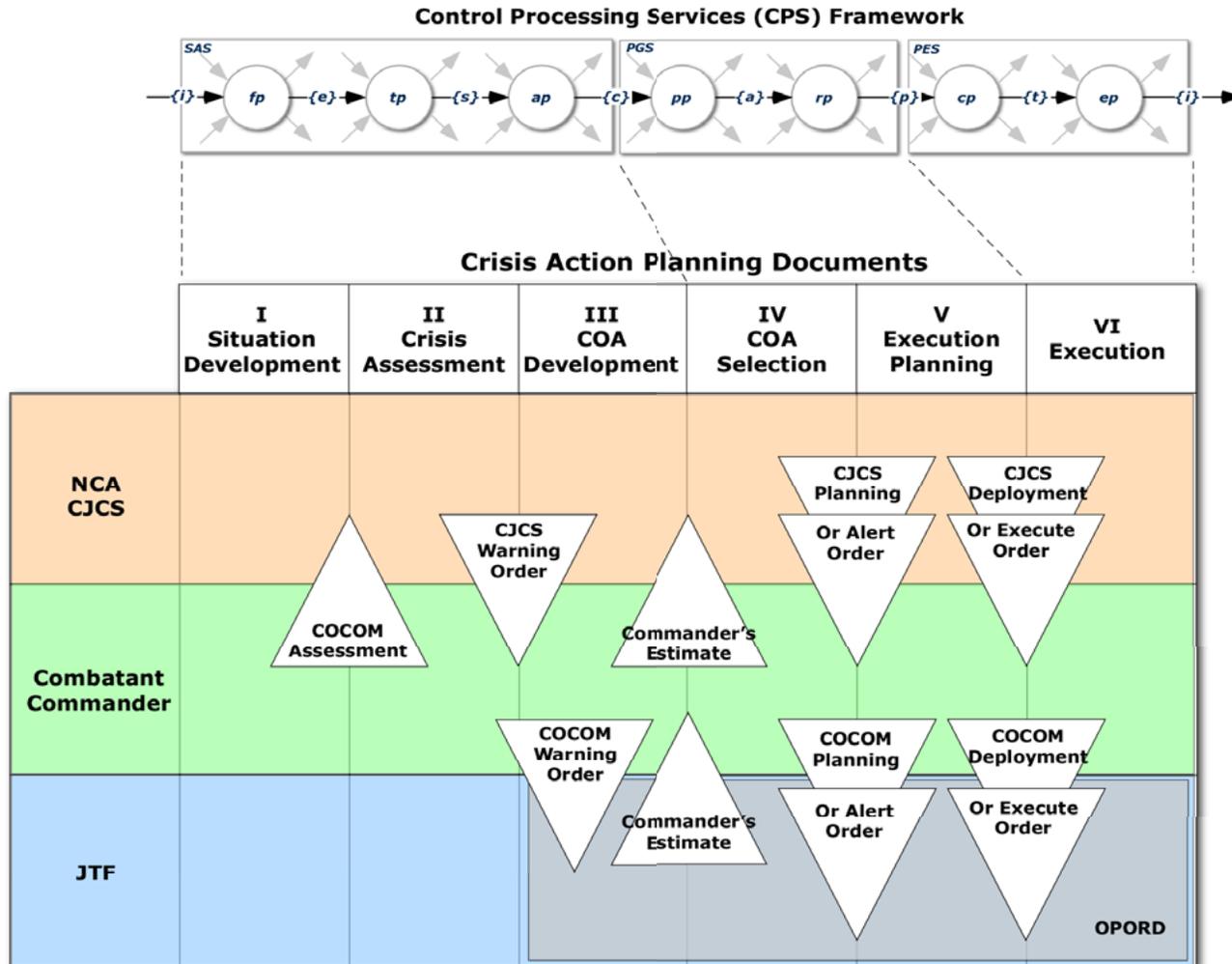
**JOPES Deliberate Planning Process and
Crisis Action Planning Process Functional Alignment**



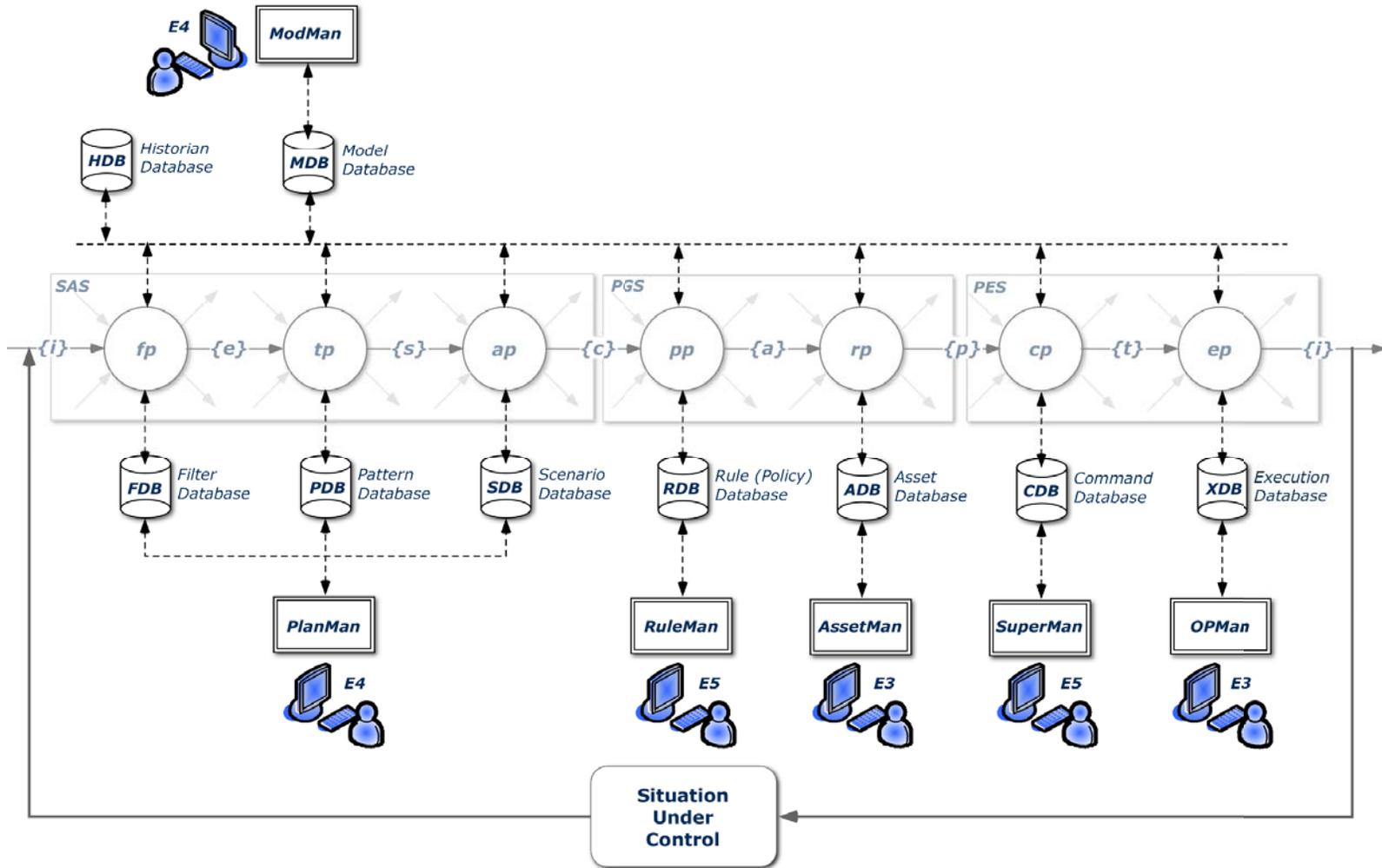
Control Processing Services



Crisis Action Planning (CAP)



Command Interaction Points

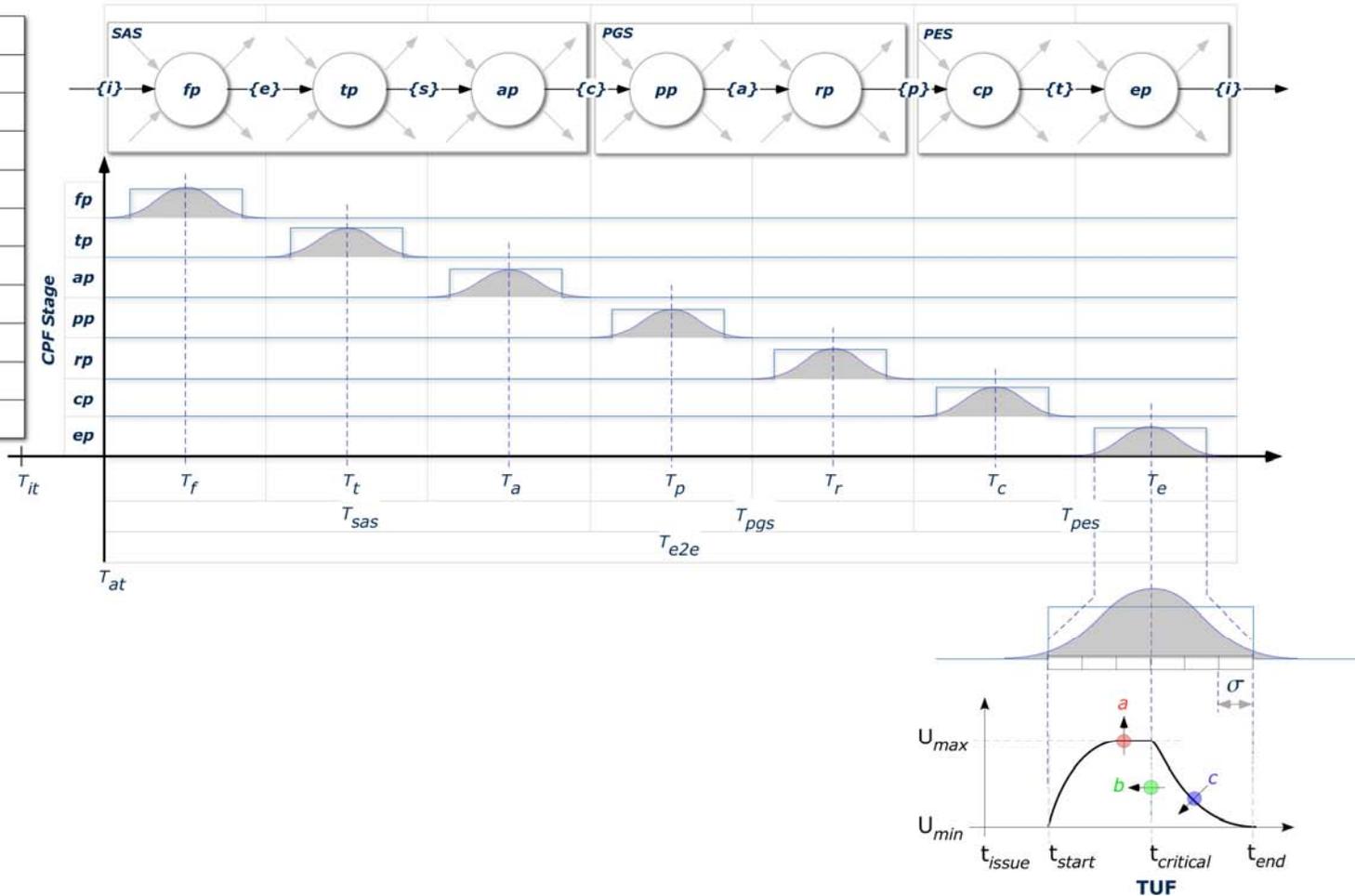


Control Timing Considerations

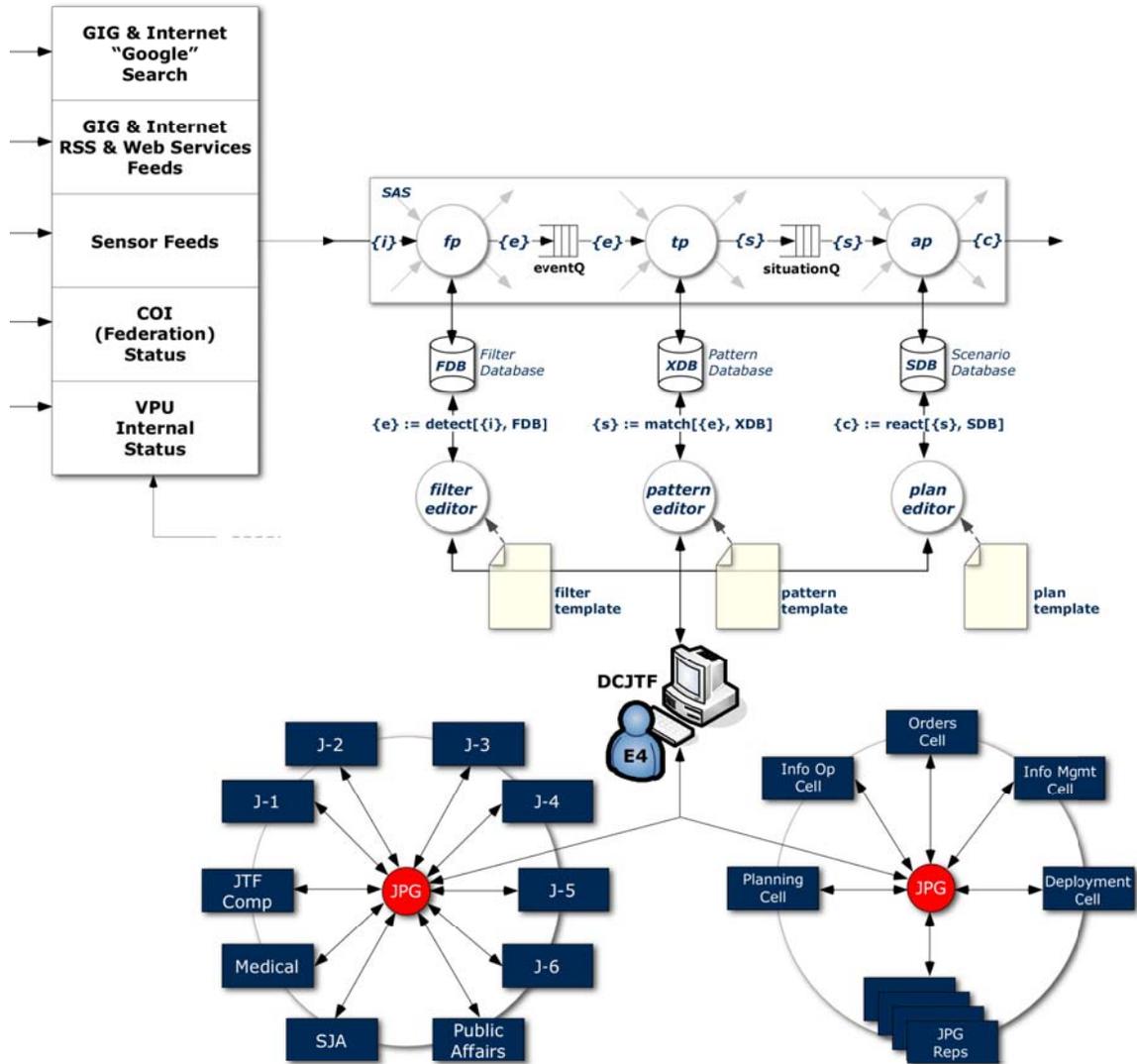


Control Services Timing

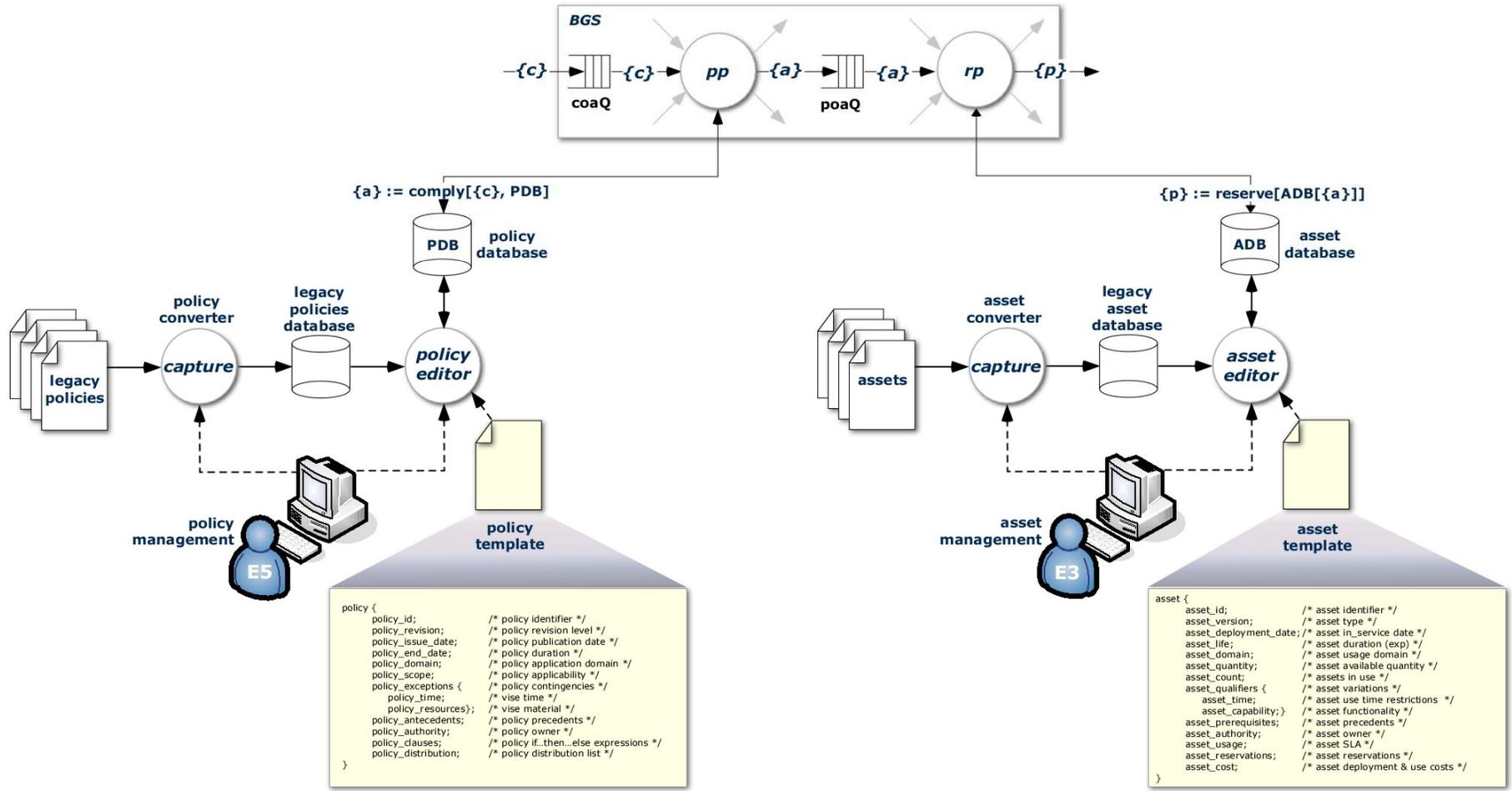
t_{it}	tasking order issue time
t_{at}	tasking order arrival time
t_{est}	earliest start time
t_{ect}	earliest completion time
t_{oct}	optimal completion time
t_{lct}	latest completion time
u_{max}	maximum utility
u_{min}	minimum utility
a	utility function parameter
b	utility function parameter
c	utility function parameter



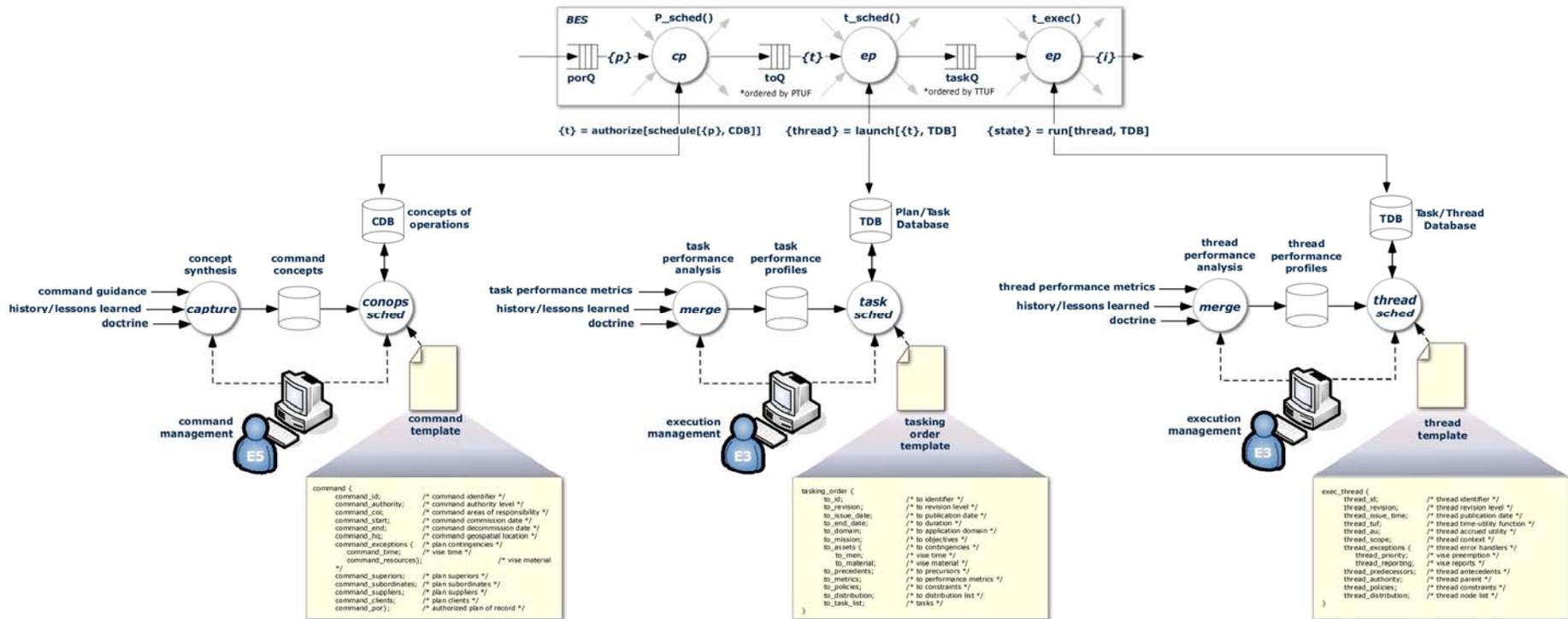
Situation Assessment



Plan Generation



Plan Execution



Thank You For Your Attention!

Are there any questions?