Use of a Systems Information Broker to Aide in the Dynamic Interfacing of C2 Nodes

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Introduction

• Changing World Events Require Changes in Missions for Military Forces
• Accomplishing Mission Requires Resources that C2 Nodes Provide
• Method for Interfacing C2 Nodes into a Enterprise of Systems (EoS) that are Used to Accomplish Mission
Example World Events

- Indian Ocean Tsunami
- Hurricane Katrina
Systems Information Broker (SIB) Architecture and Framework

- Model of Real-time Force Systems
- Model of Non-Real-time Force Systems
- Real-time Force Systems
- Non-Real-time Force Systems
- Systems Information Broker
- Arbitrator
- Profile of Force Systems
- Uniform Interfacing Platform
- Integration Feasibility
- Schedule of System Interactions
- Interoperability of Systems
SIB Constructs
Admission Control Method for EoS

• Two views
  – External View – functional aspects of EoS
  – Internal View – non-functional aspect of EoS

• Dynamic Scheduling Analysis for EoS
  – Dynamic Scheduling Task Model
  – Dynamic Scheduling Precedence Graph
  – Dynamic Scheduling Algorithm
  – Task Degradation Policy
  – Dynamic Scheduling Analysis Algorithm
Modeling Constructs for Interfacing Systems

- System Information Base (SIB)
- Systems
  - Systems in the EoS
  - Systems requesting admission to the EoS
- List of Tasks to Service
- List of Resources Requested
- List of Resources Granted (May be Remote Resources)
- List of Excess Capacity
- List of Resource (Local System Resources)
Assumptions

• Individual systems designed to handle normal local tasks and task loads
• A system’s excess capacity is available for remote systems
# Real-time System Resources Modeled

<table>
<thead>
<tr>
<th>Resource</th>
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<tbody>
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<td>CPU</td>
<td>Lack of CPU cycles to complete a task calculation that will cause a task to miss its deadline.</td>
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<tr>
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## Non-real-time Systems Resources Modeled

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Conclusion

• Admission Control for an Enterprise of Systems Provides a Method for Interfacing C2 Nodes
• Interfaced C2 Nodes Provide Resources
• C2 resources Provide Means to Accomplish a Mission