Information Brokers for Delivering Net Centric Capabilities

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The Net Centric "Ecosystem"

- Driven by the Internet and NCW conceptual models
  - Being implemented in DoD via the Global Information Grid (GIG)
- Program "Stovepipes" become more "porous" and "GIG-aware"
  - Their <u>relationship</u> with other stovepipes becomes more important
  - The <u>scope</u> of that relationship becomes more <u>dynamic</u>, driven by <u>operational objectives</u> more than by static charter or doctrine
- Current programs are now challenged with supporting dynamic relationships and dynamic capability scope (and "load")
  - Hard to do under current budgeting paradigm
  - Creates resource allocation tension across stovepipes
  - Runs afoul of predictable requirements and acquisition regs
- Some programs/systems are natural COI and capability focal points

Static and predictable environments are increasingly rare

A Net Centric Ecosystem Model

Programs focus on Capabilities (JCIDS)

Capabilities cut across system and COI boundaries

Systems support multiple COIs and Capabilities via services

Services are valued based on how well they support multiple & new capabilities

Programs are valued based on how well they create capabilities from multiple services and how flexible the capabilities are
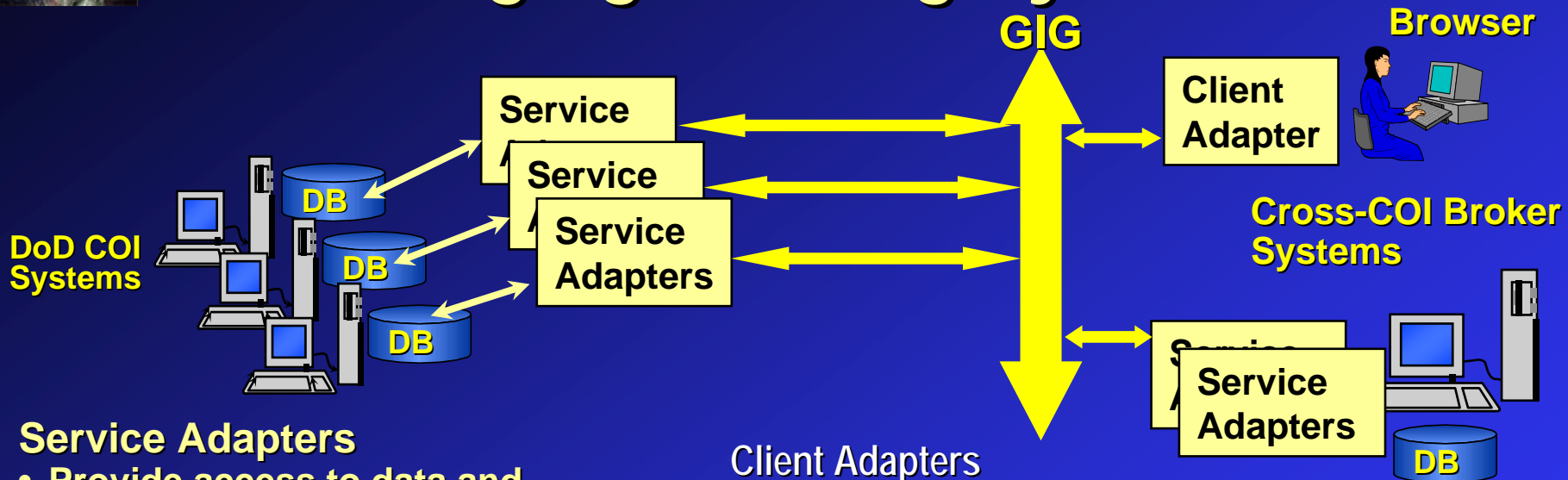

GIG/Net

Enterprise Services

COI Services

COI "A"

COI "B"

COI "C"

System 1
System 2
System 3
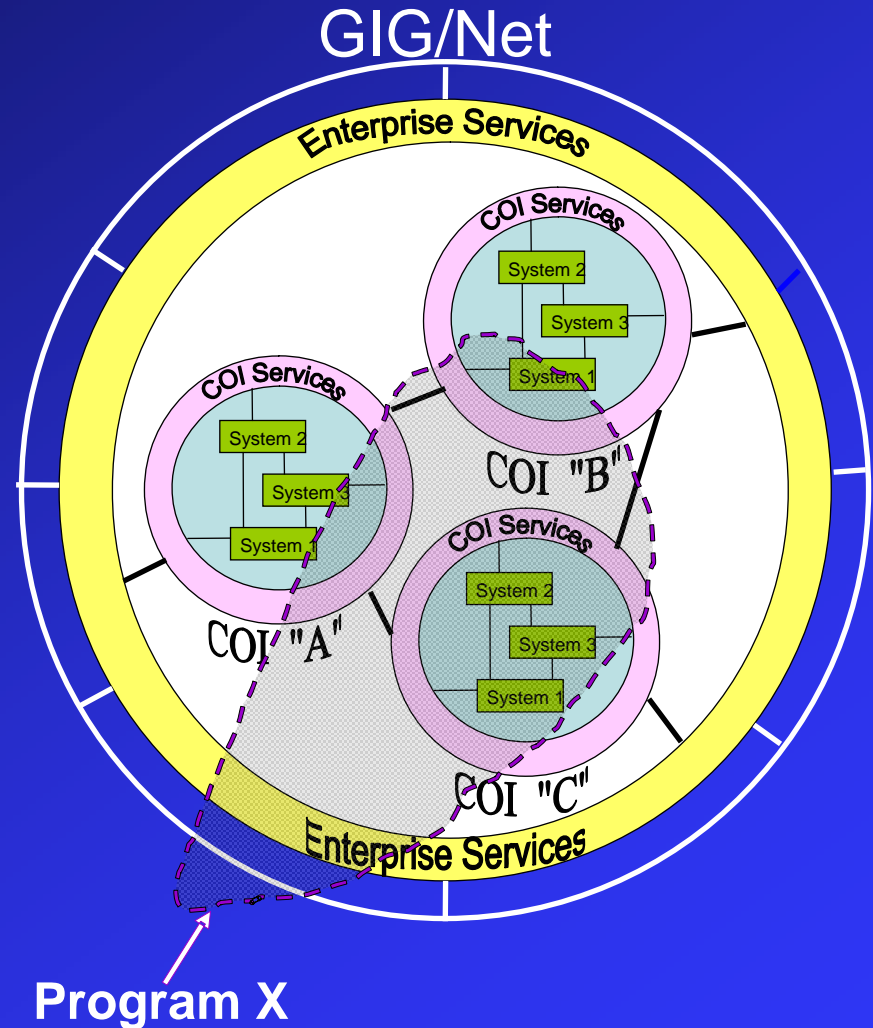
Program X

Data Model Barriers to Net Centricity

- Programs have a "local" frame of reference for their information model and associated data
- DoD focus on COIs for the net-centric data strategy helps to broaden – but not eliminate - this local frame of reference
- Capabilities often require systems in multiple COI's to interact
  - These systems describe the battlespace differently and from a different frame of reference (e.g., ops, logistics, intel, acquisition, Air Force, etc)
  - It's not reasonable or cost-effective to have every system fully understand every other system's data model and frame of reference
  - There is no "universal" data model and frame of reference
- Current DoD focus on COIs not yet addressing the cross-COI data model and namespace mapping problem
  - Getting convergence within COIs difficult enough for now

Discourages net centric capabilities across stovepipes

Leveraging Existing Systems

GIG

Browser

DoD COI Systems

Service
Service
Service Adapters

Client Adapter

Cross-COI Broker Systems

DB
DB
DB

Service Adapters

DB

Service Adapters

- **Provide access to data and applications through standard interfaces (e.g., web services)**
- **Isolate service users from server design and implementation decisions**
- **Provide a cost effective approach to modifying legacy systems**

Client Adapters
- Integrate data and services provided by service adapters
- Client COI-specific formatting, data source access

Cross-COI Broker Systems
- Provide domain-specific look-up services
- Fuse information from multiple COIs for capabilities
- Bridge information model and frame of reference gaps

Multiple Commercial Technologies

Web Services	XML, OWL	.Net, J2EE
Data Mediation	Portals	Replication
Intelligent Agents	Java, Ajax	ESB, UDDI

Sample Broker Candidates

- C2 Capabilities
  - TBMCS/AOC assuming a "GOC" role
  - GCCS migrating to NECC
- Logistics Capabilities
  - GTN for force movement and distribution logistics capabilities
  - GCSS for asset visibility and combat support capabilities
  - DLA IDE for consumables and spares inventory management
- Intelligence Capabilities
  - DCGS for current intelligence fusion and data access capabilities
  - GeoScout for geospatial intelligence capabilities
- All of these systems have extensive COI data sources and reference tables; most have started making these available as services

These systems are logical touch points for their COIs

Portfolio Management & COIs

- Logical focal point for characterizing service types offered by a "stovepipe" or system to other stovepipes/systems
- Services that support more than one program or capability or enterprise would be managed at this level
  - Sponsor acquisition of such services (e.g. information broker services)
  - Adjudicate information model and service discovery and QOS issues within COI and between COIs
- Manage and facilitate feedback from service consumers and collection of service consumer unmet needs
- Work with industry to establish service QOS management mechanisms
- Work with the acquisition community and industry to establish service provisioning incentive mechanisms

DoD has already initiated some of these elements

Summary

- Net Centricity exposes a plethora of information models and frames of reference (COIs) to each other on the GIG

- A single information model and entity namespace is not possible

- It's expensive for systems to understand each other's information model

- Some form of information broker and name-space mapping service is needed to reduce the cost to individual systems

- Existing systems core to a COI are logical candidates for providing such services

- Many have already begun to provide such services

- DoD facilitation of this natural process will accelerate availability of greater near-term net centric capability

- AFEI and NCOIC are industry initiatives to help this process

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