

Cross Cutting Thread

Net Centric Operations and Integration



The ESC Strategic Technical Plan provides a technical vision that will guide programs in implementing a wide variety of C4ISR systems to achieve the promises of netcentric operations. MITRE's technology program provides a vehicle for discovery and discussion of innovative capabilities in collaboration with our sponsors to achieve the net centric vision. The NCOI Wing has identified three key "net centric" themes:

Get Connected ***Share Information*** ***Protect the Network***

Although there are many interesting research projects underway this year, we have highlighted a few here in this tour that are key to achieve the net centric operations vision. These research projects enable MITRE and its sponsors to understand technology needed for the future. A **one-hour guided tour** (starting at Thread Central at **11:30 am** and repeated at **1:30 pm**) provides an overall orientation of the work being done in each technical area plus in-depth presentations by four projects. Please visit the remaining projects using the map provided on the reverse.

Get Connected

The heart of netcentric capabilities is the connectivity and robustness of the underlying network. The C2 Enterprise network will use the IP protocol as the unifying point of convergence to integrate the many different datalink technologies as well as the existing networks that often are islands of connectivity. The projects in this area include research in the area of wireless, airborne, space networks.

Tour **CS-02 Extending Enterprise Services to the Tactical Edge** is analyzing the impact of unreliable, low bandwidth networks and computational limitations on the delivery of information services.

CN-05 Mobility Support for C2 Systems is evaluating emerging mobility support protocols, such as the Network Mobility (NEMO) Basic Support Protocol and the Host Identity Protocol (HIP), and to provide guidance as to how and when they should be used.

CN-06 Policy-Based Management for Predictable and Sustainable Airborne Networking is developing a policy-based network management approach to provide a uniform, consistent, management strategy for the airborne network.

CN-07 SATCOM/Wireless Interference Excision is developing algorithms that can mitigate the effects of interference in satellite communication systems to increase robustness of these communications systems.

CN-09 Advanced Tactical Network, is developing an alternative wireless paradigm for quality of service in wireless ad hoc networks using synchronous signaling and node states to enable feasible and scalable solutions to wireless ad hoc networking's challenges: quality of service, multicasting, spectrum efficiency, network management, and security.

Share Information

Information is an essential enabler of network centric operations -- Information must be visible, accessible, and understandable to any potential user. The C2 Enterprise will leverage Web Technologies such as XML, RDF and OWL to facilitate the sharing and understating of information. The World Wide Web Consortium (W3C) has applied Service Oriented Architecture (SOA) to the Web environment through its web services standards. Web services expose data and functions from applications in a loosely coupled manner. The projects in this area include:

Tour **EA-02 Node Information Services** is continuing its research in the area of Information Services and will identify a set of design patterns based on priority operational needs (e.g., disconnected operations) and deliver a catalogue of patterns that will enable interoperable solutions across C2 nodes (e.g., air operations center, Distributed Common Ground System, Multisensor C2 Aircraft).

EA-03 Enterprise Transformation to SOA Architectures is developing an integrated framework to guide the transformation to an SOA from case studies of 10 large enterprises and their attempts at transformation. The framework will integrate the most important components of the transformation: economics, governance, architecture, portfolio, risk, change management, and technology management.

Tour **IM-01 Semantic Integration of the C2 Enterprise** is demonstrating that ontologies are enabling technologies to integrate disparate systems by mapping the ontology to a database schema to integrate new data sources and by mapping WSDL to the ontology to integrate Web services.

IM-04 Net Centric Data Sharing aims to provide data visibility, understanding, and interoperability beyond traditional stovepipes by developing a linguistically intelligent schema matcher and scalable techniques for specifying and supporting data sharing agreements between data producers and consumers.

Protect the Network

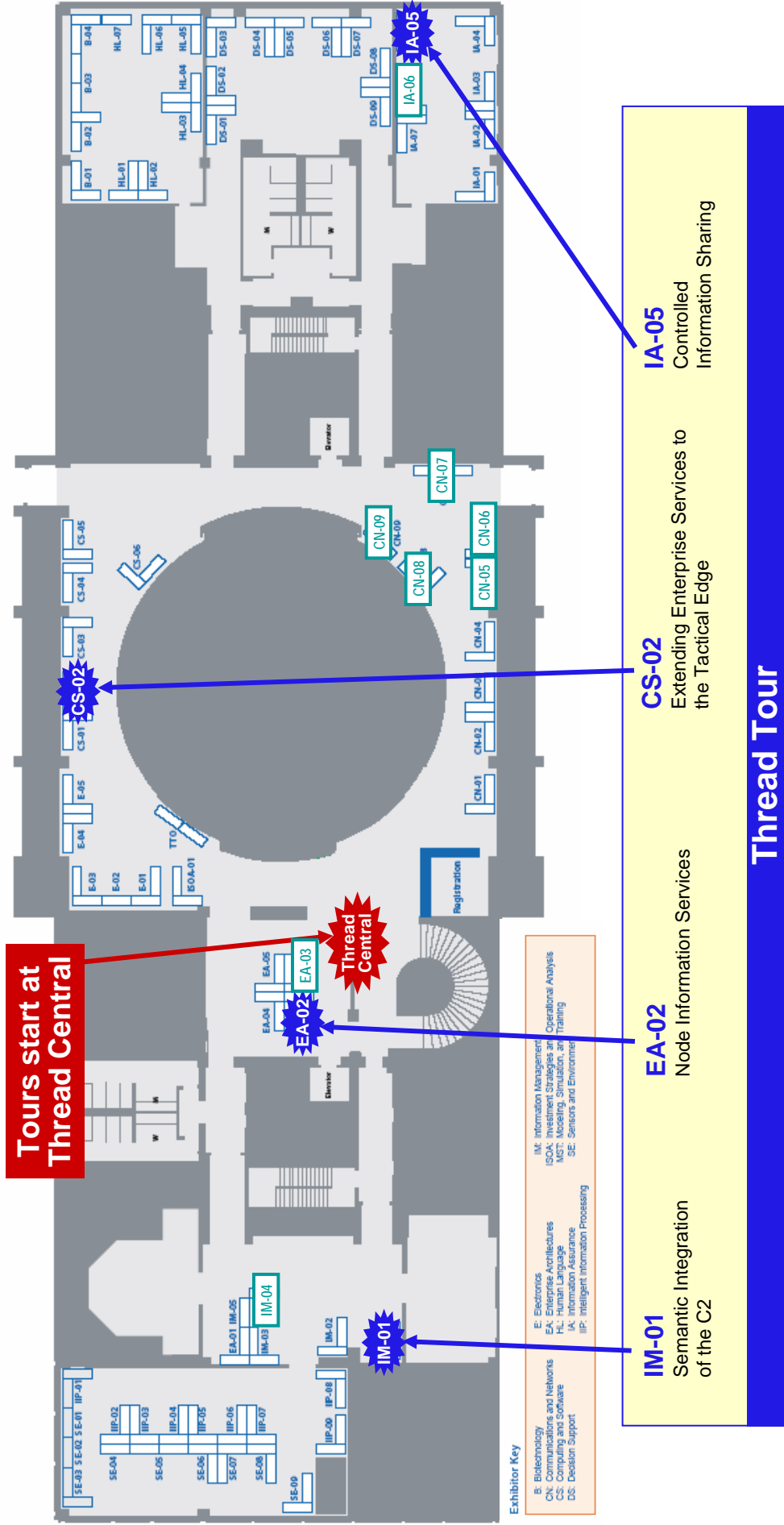
In a netcentric world warfighters, applications, and data will need to be interconnected in unprecedented ways, exposing systems to new risks. Four IA capability cornerstones mitigate netcentric risks while supporting net centric operations -- these include assured information sharing, high availability, and assured management and control. The projects in this area include:

Tour **IA-05 Controlled Information Sharing** is addressing information sharing and content in net-centric, cross-domain environments. They will explore architectures and solutions using technologies in "Digital Rights Management" (DRM) in an effort to offer new information-sharing approaches for business operations, support, and combat operations.

IA-06 Access Control Services for SOA will explore prototypes and systems engineering guidance for Access Control Services (ACSs) based on Web Services standards. The guidance will assist MITRE's customers and influence products and standards.

CN-08 HAIPE Augmentation, Routing, and Integration Technology Concepts investigates development protocols and networking architectures with the near-term HAIPE devices (2.x) and beyond. This MOIE will influence encryption architectures and overall routing design with HAIPE devices.

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Exhibitor Key

B: Biotechnology
 CN: Communications and Networks
 E: Electronics
 EA: Enterprise Architectures
 IM: Information Management
 IP: Intelligent Information Processing
 IS: Information Systems
 IA: Information Assurance
 SE: Sensors and Effectors

Please also visit

CN-05 Mobility Support for C2 Systems

CN-06 Policy-Based Management for Predictable and Sustainable Airborne Networking

CN-07 SATCOM/Wireless Interference Excision

CN-08 HAIPE Augmentation, Routing, and Integration Technology

CN-09 Advanced Tactical Network

EA-03 Enterprise Transformation to SOA

IM-04 Net Centric Data Sharing

IA-06 Access Control Services for SOA