

Joint land, air, and sea

Your partner in interoperability

Jc3iedm services – Messaging – Replication – Data links

Coalition Interoperability, The C2/JC3 IEDM Solution

ESRI FEDUC, Jan 10, 2007, 4-5:30pm

J. Mark Stadtmueller

President, Systematic Software Engineering Incorporated

what we do matters

Visit us at www.systematic.us



Interoperability, A very overused word!

- In order for a collection of people to meet and work together, they have to exchange information



Wedding Rehearsal Dinner

Time, Location, Assignments, Dress Code



ESRI FEDUC

Time, Location, Assignments

Registration, Conference Content, Money/Approval



Combined Forces – coalition area of interest

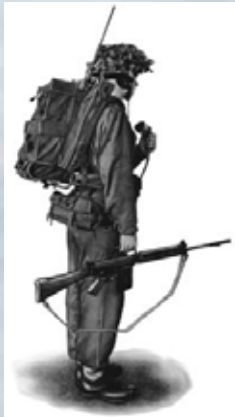
Time, Location, Assignments,

Situational Awareness, Plans, Orders, Holdings,
Order of Battle, Rules of Engagement

How to communicate such information



- Written order delivered via courier
 - Works, but slow
 - Information changes faster than it can be delivered
 - Human processed



- Messages delivered via voice
 - Fast
 - Less detail of information
 - Records management issues
 - Human processed



- Electronic Messaging/Email
 - Quick
 - Must have structure to be Human and Machine parsing
 - Must have common definitions

Interoperability

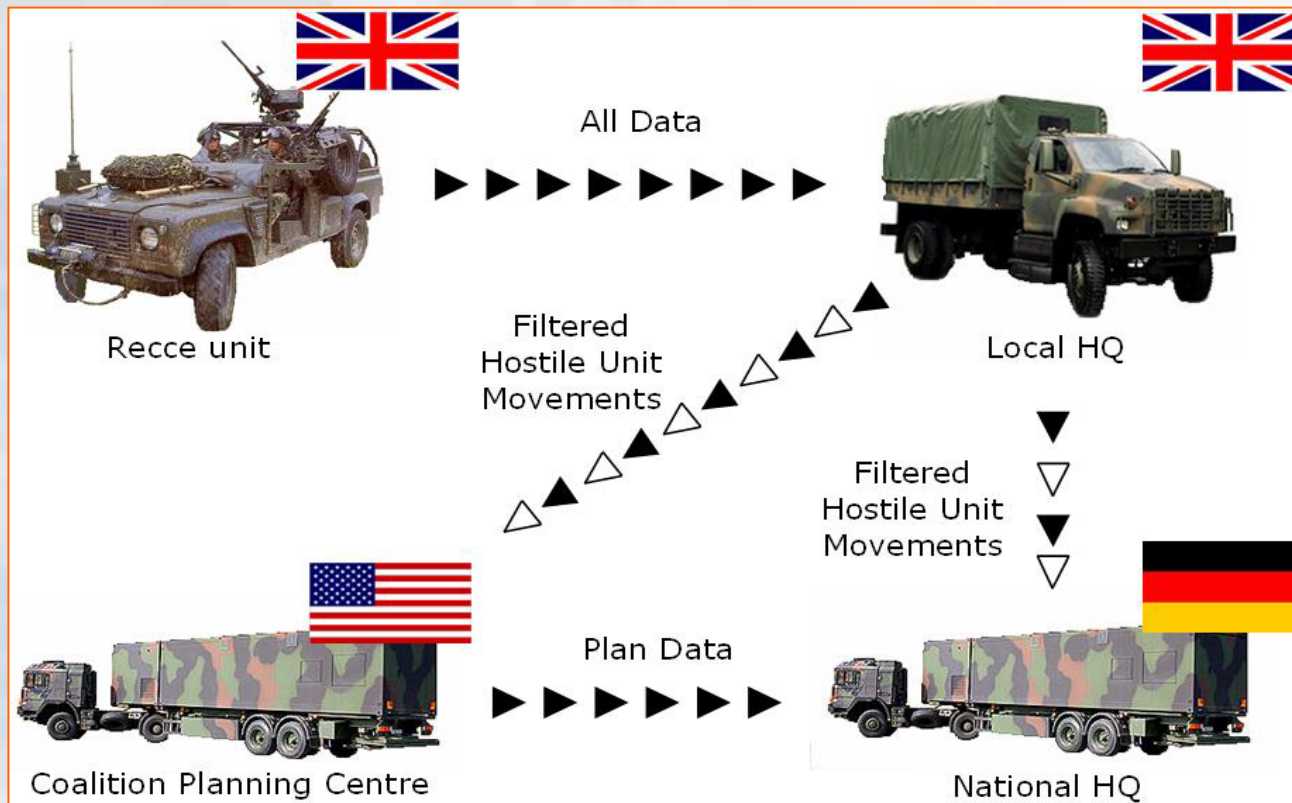


What we are really talking about is making systems be able to talk to each other so that People (Armed Forces) working together (coalition) can exchange the information they need in order to work together.

- “Roughly 30% of C2 development costs are associated with making translations between systems”
- Common data model approach
 - Alleviate these costs burdens
 - Promote information sharing

What is a common data model?

- In Command and Control, it is a common understanding of the set of data that needs to be exchanged in order for coalitions to work together (i.e. all give same definition of a Bridge or Brigade)





Multilateral Interoperability Programme

"... achieving international interoperability of Command and Control Information Systems (C2IS) at all levels".

Last updated on 30th October 2006

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- www.mip-site.org
- Developed a common data model
 - C2IEDM becoming JC3IEDM
- Supported by 24 Countries
- US Army and US Marines directive on adoption
- The MIP Data Model is now NATO's Data Model
- Many non-NATO countries keen to join
- Quickly becoming the international standard for military command & control systems

U.S. Army Acceptance



DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF, G-3/5/7
400 ARMY PENTAGON
WASHINGTON, DC 20310-4000

DAMO-SBB

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Command and Control Information Exchange Data Model

1. The use of the Command and Control Information Exchange Data Model (C2IEDM) is endorsed as the standard for information in Battle Command systems. Multiple assessments have shown that standardized common data models allow for greater flexibility, availability, understandability, usability, and maintainability of data. The C2IEDM represents a "best of breed" information exchange data model that is well suited for Command and Control applications.

2. The C2IEDM's pedigree includes a rigorous development process conducted by the Multilateral Interoperability Program (MIP). The C2IEDM provides interoperability between joint and multinational data. The MIP has been endorsed by stakeholders of 24 nations, including the United States.

3. Increased data interoperability supports the Army's warfighting commanders and enhances our ability to prosecute the Global War on Terrorism.

4. The Deputy Chief of Staff (DCS) G-3/5/7 DAMO-SBB will, in coordination with the CIG-G-6, DCS G-4, TRADOC, and Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA/ALT), develop a C2IEDM transition, implementation and resource plan. This plan will be presented to the Battle Command General Officers Steering Committee no later than December 2005.

5. The G-3/5/7 points of contact are Mr. Edward Gibson, at 703-614-9709, or e-mail: edward.gibson@hqda.army.mil, and Mr. John Matzner, at 703-614-9246, or e-mail: john.matzner@hqsda.army.mil

James J. Lovelace
JAMES J. LOVELACE
Lieutenant General, GS
Deputy Chief of Staff, G-3/5/7

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OFFICE OF THE DEPUTY CHIEF OF STAFF, G-3/5/7
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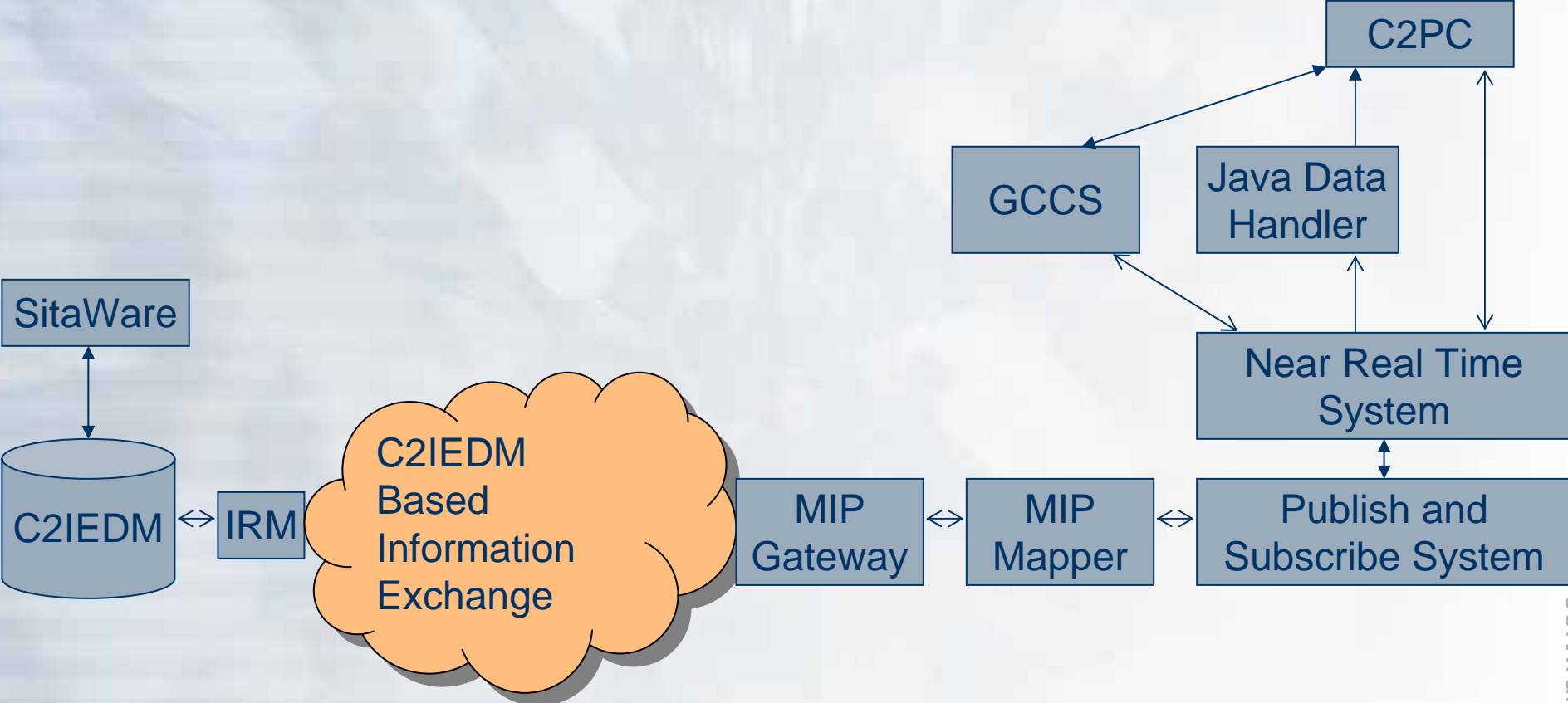
28 September 2005

"The use of the Command and Control Information Exchange Data Model (C2IEDM) is Endorsed as the standard for information in Battle Command systems."

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MIP Communication



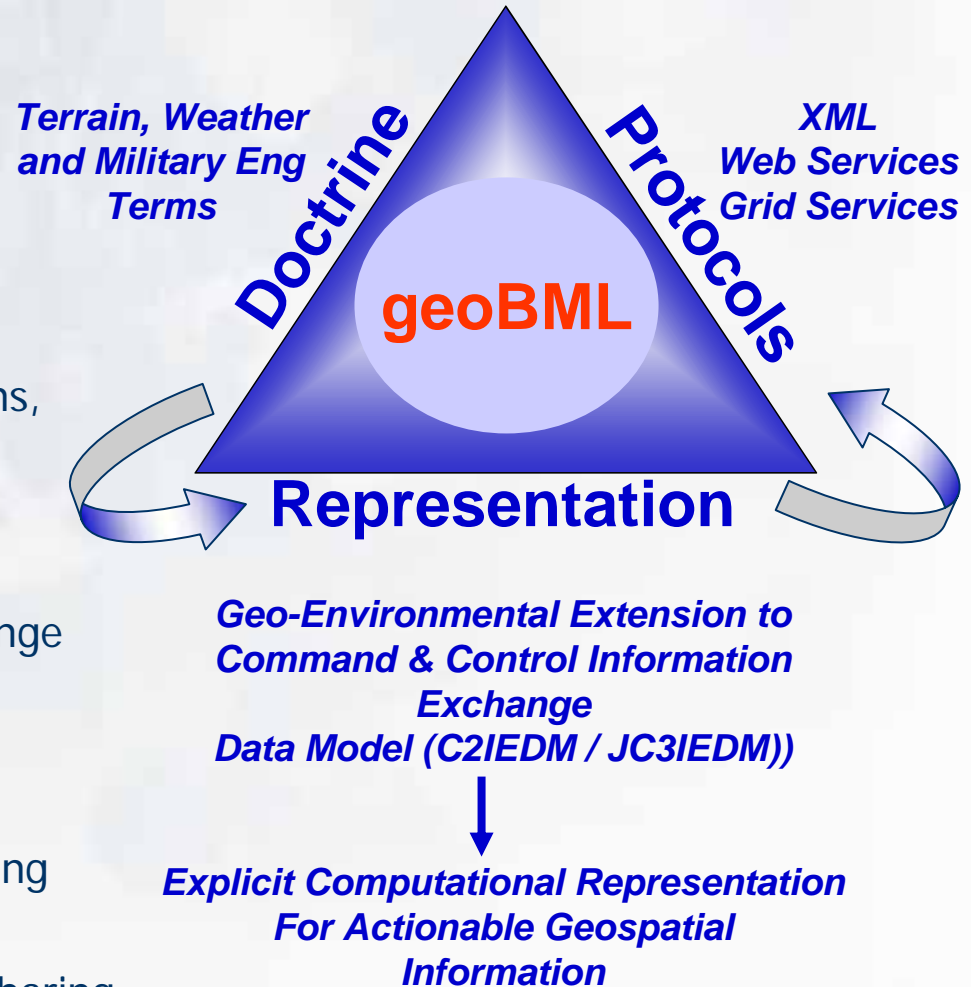
geospatial Battle Management Language (geoBML)

geoBML is an Unambiguous Language

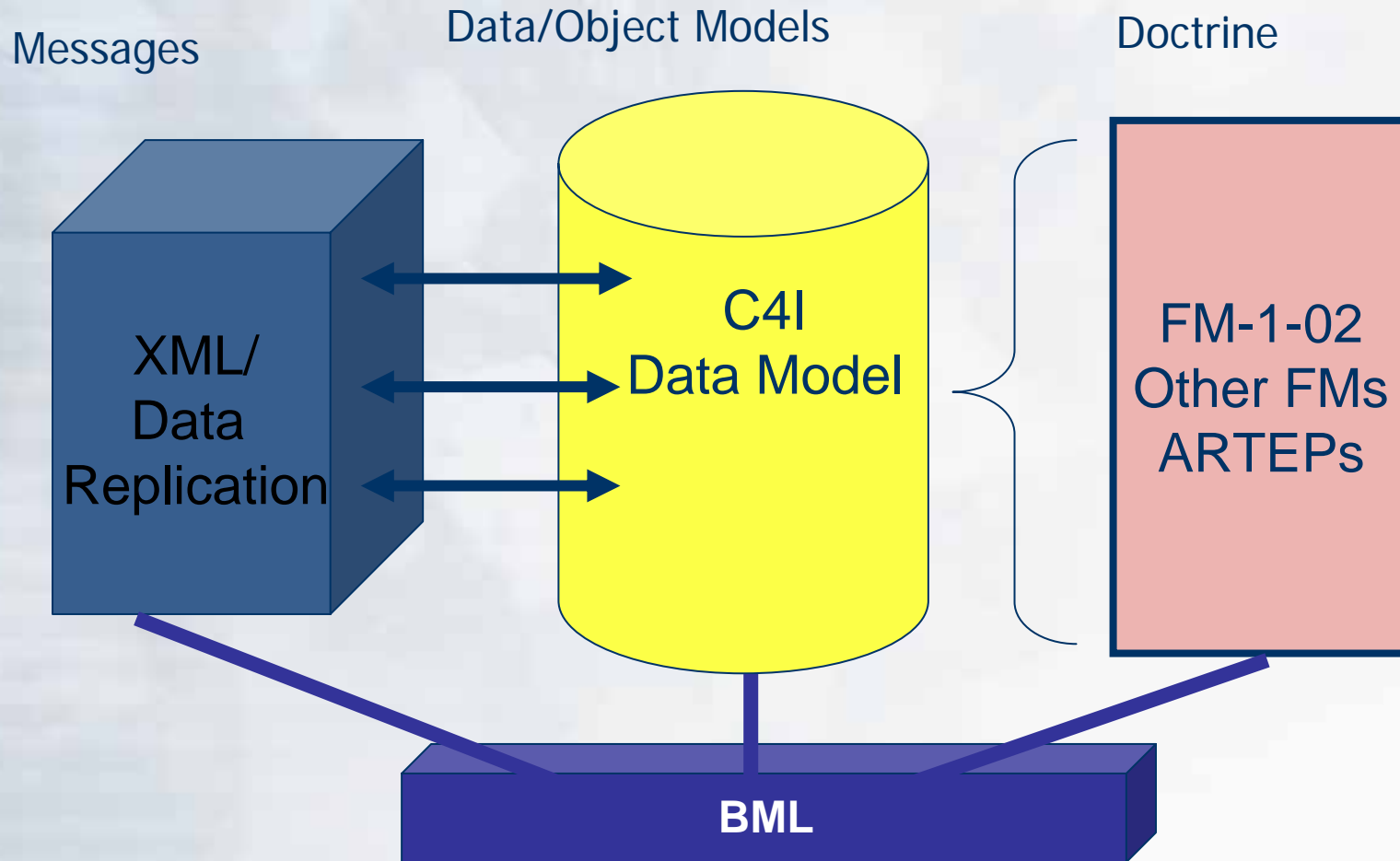
- Defined by the role of actionable geo-information in the C2

Provides Unification...across

- Doctrine and terms
 - Explicit vocabulary and grammar
 - Specific context mapped to operations, missions and tasks
- Explicit Representation (2 tiers)
 - Consistent extension to the C2IEDM
 - Standard framework and exchange model
 - Computational structure
 - Both necessary and sufficient for shared, common understanding
- Protocols
 - Explicit structure for transmission / sharing



BML Concept



COTS Standards Based Capability

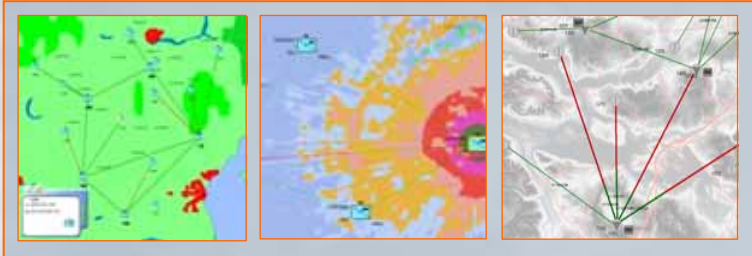
■ Framework for integration

- All core C2 functionality out-of-the-box
- Documented API's
- Integration of custom modules

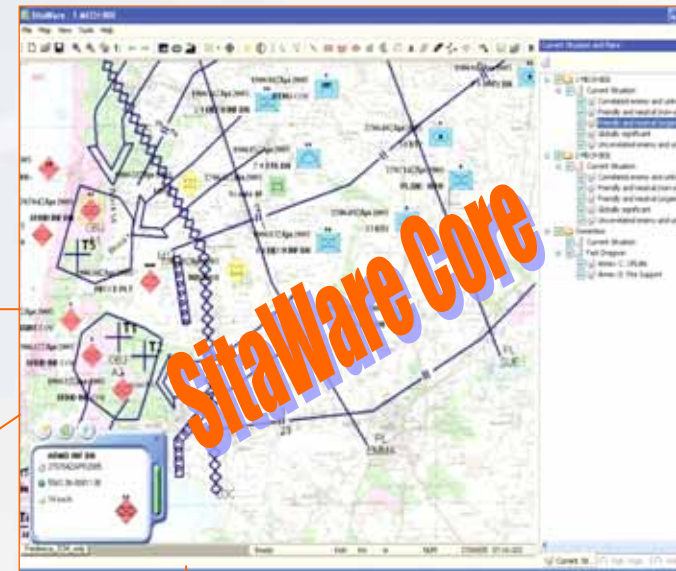
■ Interoperability platform

- Always MIP compliant at all times
- Data model caters for extensions

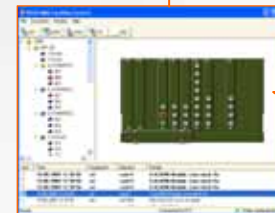
SitaWare as a signals branch tool



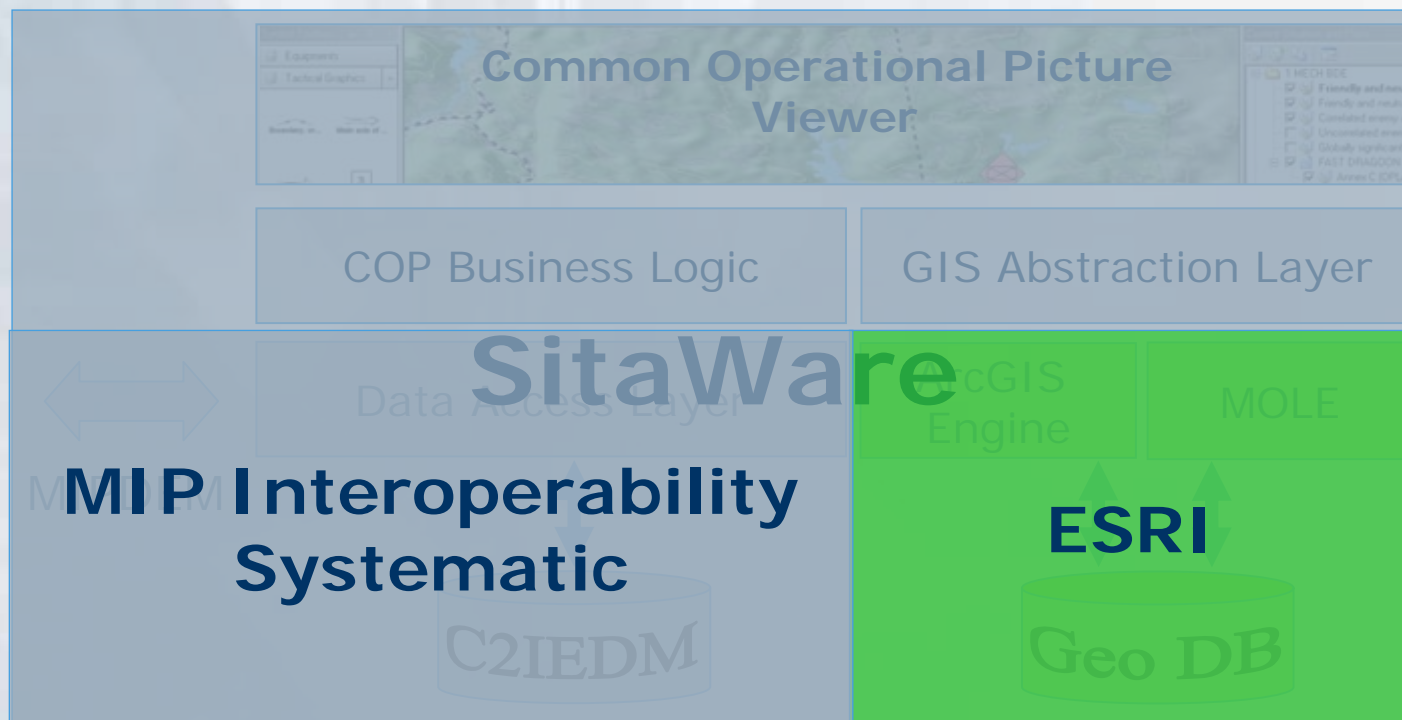
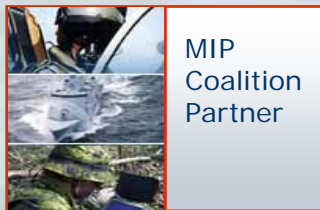
SitaWare as a mobile Battle Management System



Integration with custom hardware



Systematic – ESRI Solution



- ArcGIS Engine 9.2, 3D Analyst Extension, MOLE
- SitaWare 4.5

Thank you



■ General

- Focus on operational needs
- Adherence to C2 standards for interoperability
- Active participation in MIP working groups guarantees interoperability

■ Low Total Cost of Ownership

- Commercial off the shelf products
- Services
- Easy learning curve
- Maintenance ensures support and product updates as technology and standards evolve
- Partnership with local industry

Systematic at a Glance



- International company serving customers in the US and 27 other countries
 - Interoperability: Expertise, Products, Solutions
 - CMMi Level 5 Certified Software Development
 - SSE A/S Denmark, SSEL UK, SSEI USA
-
- Founded 1985, Privately Owned, Profitable, No Outside VC
 - Over 300 people, 80% SW Engineers, Primary Engineering in Aarhus, Denmark
 - Revenue 1/5 Products, 4/5 Solutions
 - Customers: Defense, Public Service, Healthcare
 - SSEI incorporated as a U.S. subsidiary in 1995.
 - Strong U.S. Board of Directors including Chairman VADM Tuttle (ret)
 - DoD Special Security Agreement, FCL and Active Cage Code

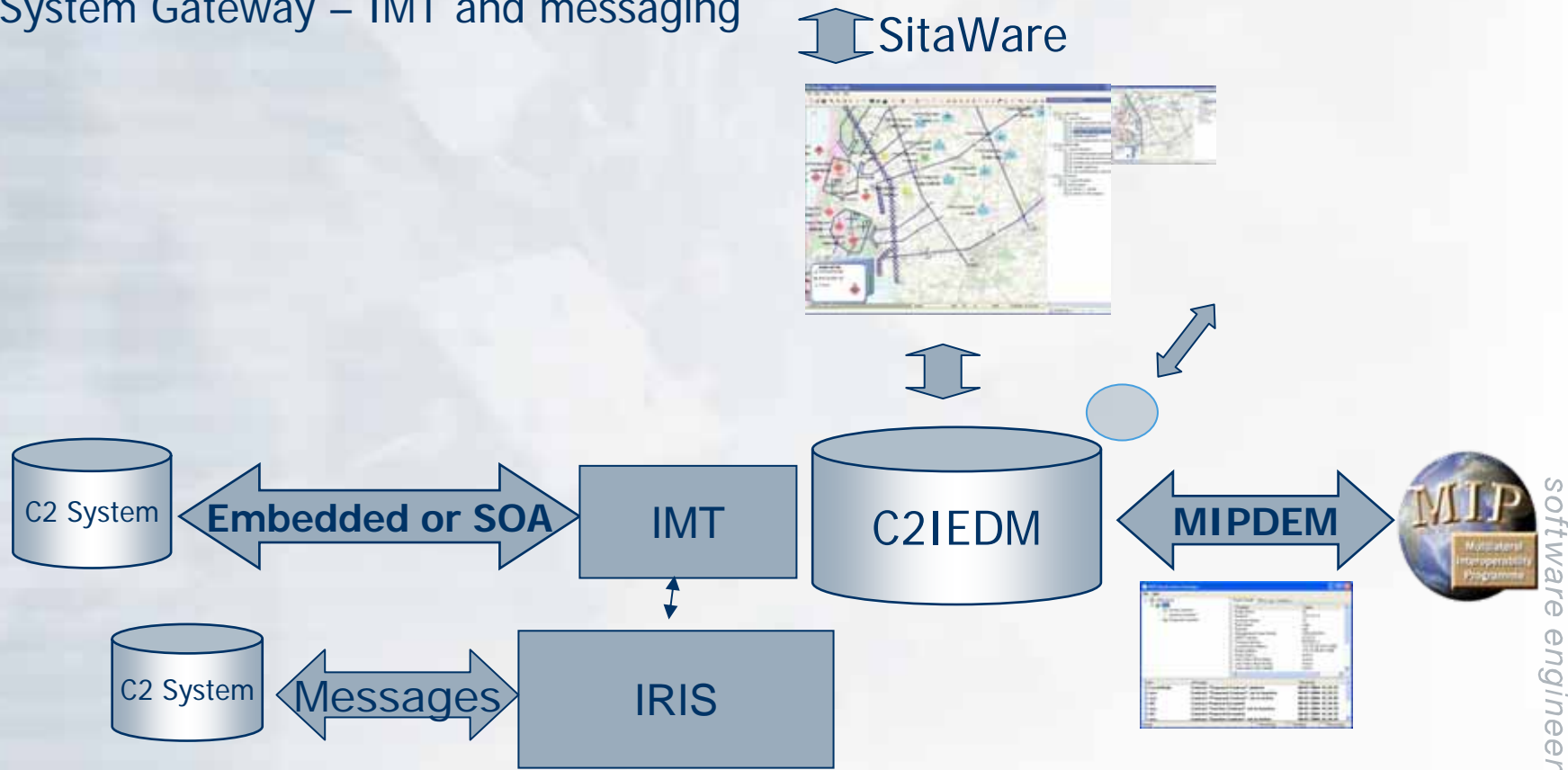
A Commercial C2IEDM toolkit

A CJMTK User: ESRI Integrated C2 System - SitaWare

MIPDEM Compliant Data Exchange – SitaWare Replication Mechanism

Application Integration – Notification Service, Domain Object Layer, SitaWare Framework

Existing System Gateway – IMT and messaging



Revision: 1.10

