



Joint Warfare System (JWARS)

Update to

DMSO Industry Days

June 4, 1999

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Agenda

- **Background**
- **Development Process**
- **Technical Overview**
- **Schedule**



Background



Background

May 95 - Deputy Secretary of Defense initiated Joint Warfare System (JWARS) development as one component of Joint Analytic Model Improvement Program (JAMIP).

Sep 95 - May 97 - JWARS Office developed prototype to demonstrate feasibility and refine software development process .

Aug 98 - Joint Requirements Oversight Council (JROC) approved JWARS Operational Requirements Document (ORD).



JWARS Mission

Mission: Develop a state-of-the-art, constructive simulation that will:

- **Provide a multi-sided and balanced representation of joint theater warfare**
- **Be able to assess current and future operational concepts to include JV 2010's:**

Dominant Maneuver, Precision Engagement, Focused Logistics, and Full-Dimension Protection

- **Use C4 and ISR as the foundation for how objects perceive and interact with one another**

Users

- **Joint Staff**
- **Services**
- **CINCs**
- **OSD**
- **JTFs**
- **Other DoD org's**
- **Industry**



Applications

- 1. Force assessment**
- 2. Planning and execution**
 - **Deliberate planning**
 - **Crisis action planning**
- 3. System effectiveness and trade off analysis**
- 4. Concept and doctrine development and assessment**



Warfare Functionality - Summary

- **Release 1 (Limited IOC)**
 - Include C4, ISR, logistics, and essential functionality in legacy simulations TACWAR and MIDAS.
 - Be capable of replacing TACWAR for force assessment application.
- **Release 2 (Full IOC)**
 - Provide balanced warfare representation, including C4, ISR, logistics.
 - Be capable of supporting the applications--
 1. Force assessment.
 2. Planning and execution.
 - Be capable of replacing TACWAR and MIDAS.
- **Release 3 (FOC)**
 - Provide balanced warfare representation, including C4, ISR, logistics.
 - Be capable of supporting the applications--
 1. Force assessment.
 2. Planning and execution.
 3. System effectiveness and trade-off analysis.
 4. Concept and doctrine development and assessment.
 - Be capable of replacing legacy simulations CEM, Thunder, ITEM, and SUMMITS.

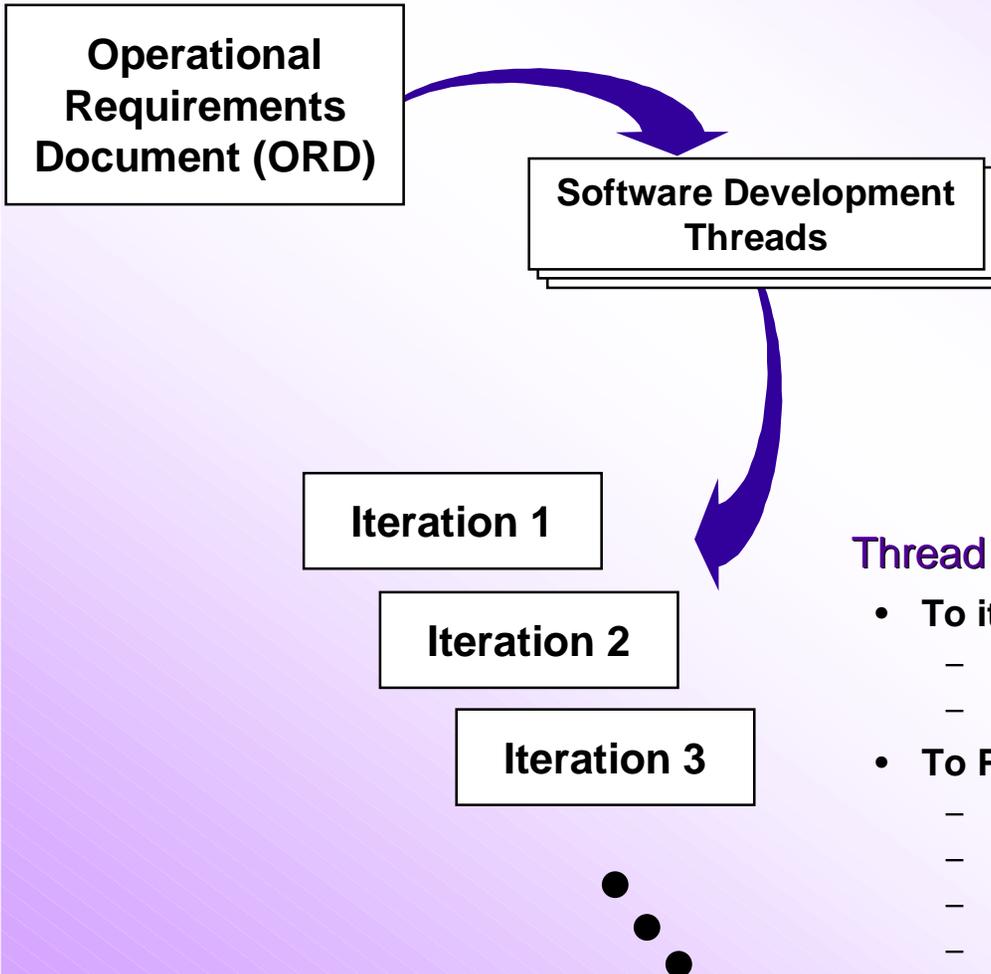


Software Development Process



Warfare Functionality Development Process

(slide 1 of 2)



Threads

- Refine warfare functionality
- Functional area-related
- Resource-constrained
- ORD Release 1 threshold: *51 threads*
- ORD Release 2 threshold: *72½ threads*
- Example thread:
“Conduct Defensive Land Operations”

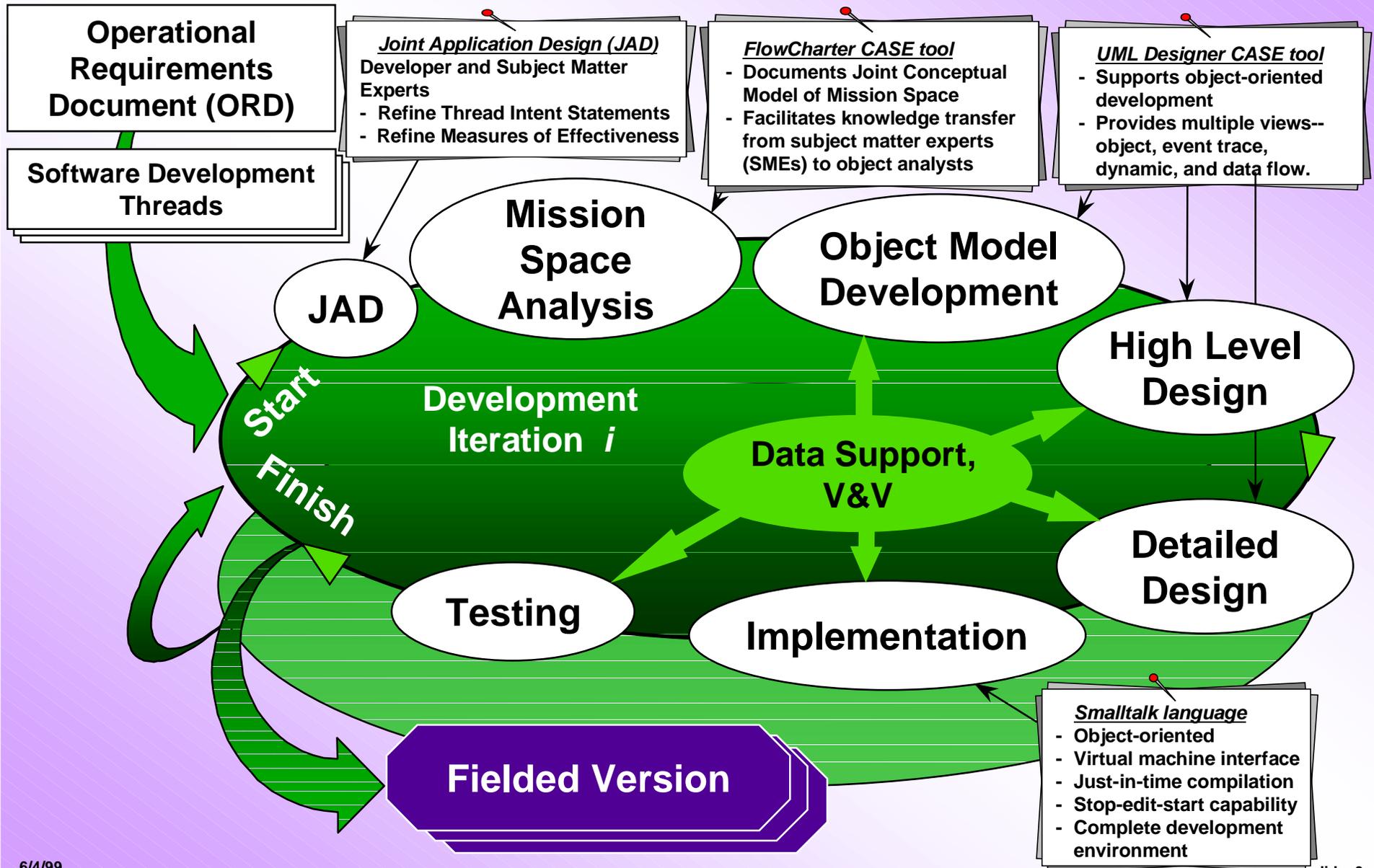
Thread assignments

- To iterations
 - Release 1: 5 iterations
 - Release 2: 3 additional iterations
- To Problem Domain Integrated Product Teams (IPTs)
 - C4ISR
 - Air and Space
 - Land
 - Maritime
 - Logistics
- Generally 2 threads / IPT / iteration



Warfare Functionality Development Process

(slide 2 of 2)





Collaborative Development Process

- **Activities**
 - Requirements definition and refinement
 - Design and implementation
 - Data development
 - Verification and validation
 - Test and evaluation -- formal and informal
 - Training and installation

- **Participants**
 - JWARS Office
 - Joint Data Support
 - Joint Staff
 - OSD
 - Services
 - CINCs



Coordination via Internet

- **JWARS Primary Web Site**
 - **Site address:** <http://www.dtic.mil/jwars/>
 - **Access control:** unlimited
 - **Purpose:** General information and publications
 - **E-mail address for comments:** jwars@osd.pentagon.mil
- **JWARS Users' Group Web Site**
 - **Site address:** <https://ca.dtic.mil/j-u-g96/>
 - **Access control:** user ID and password
 - **Purposes**
 - Coordination with users and subject matter experts
 - Help Desk support
- **JWARS Working IPT Web Site**
 - **Site address:** <https://ca.dtic.mil/vvte.html>
 - **Access control:** user ID and password
 - **Purpose:** Coordination with V&V and T&E oversight group

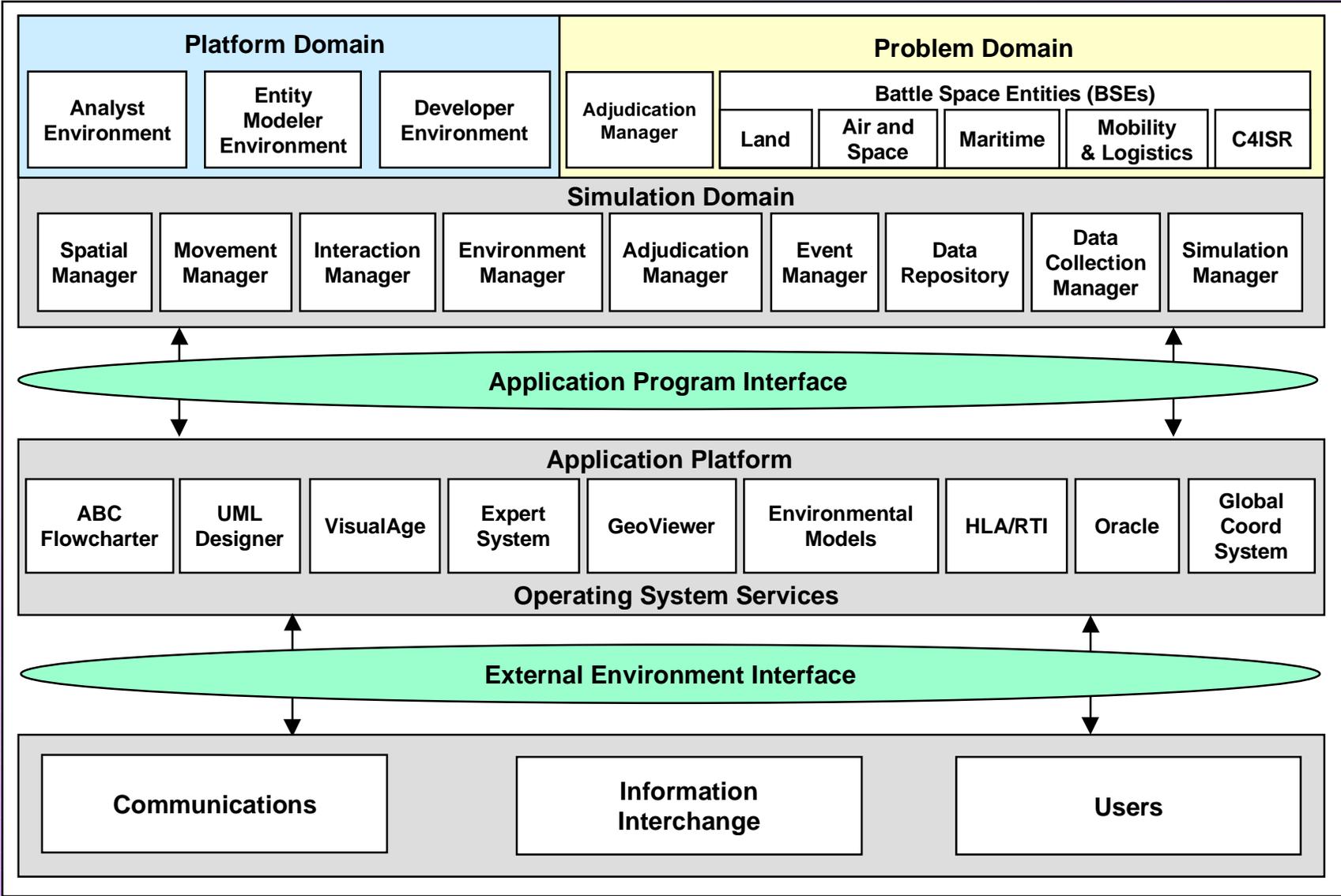


Technical Overview



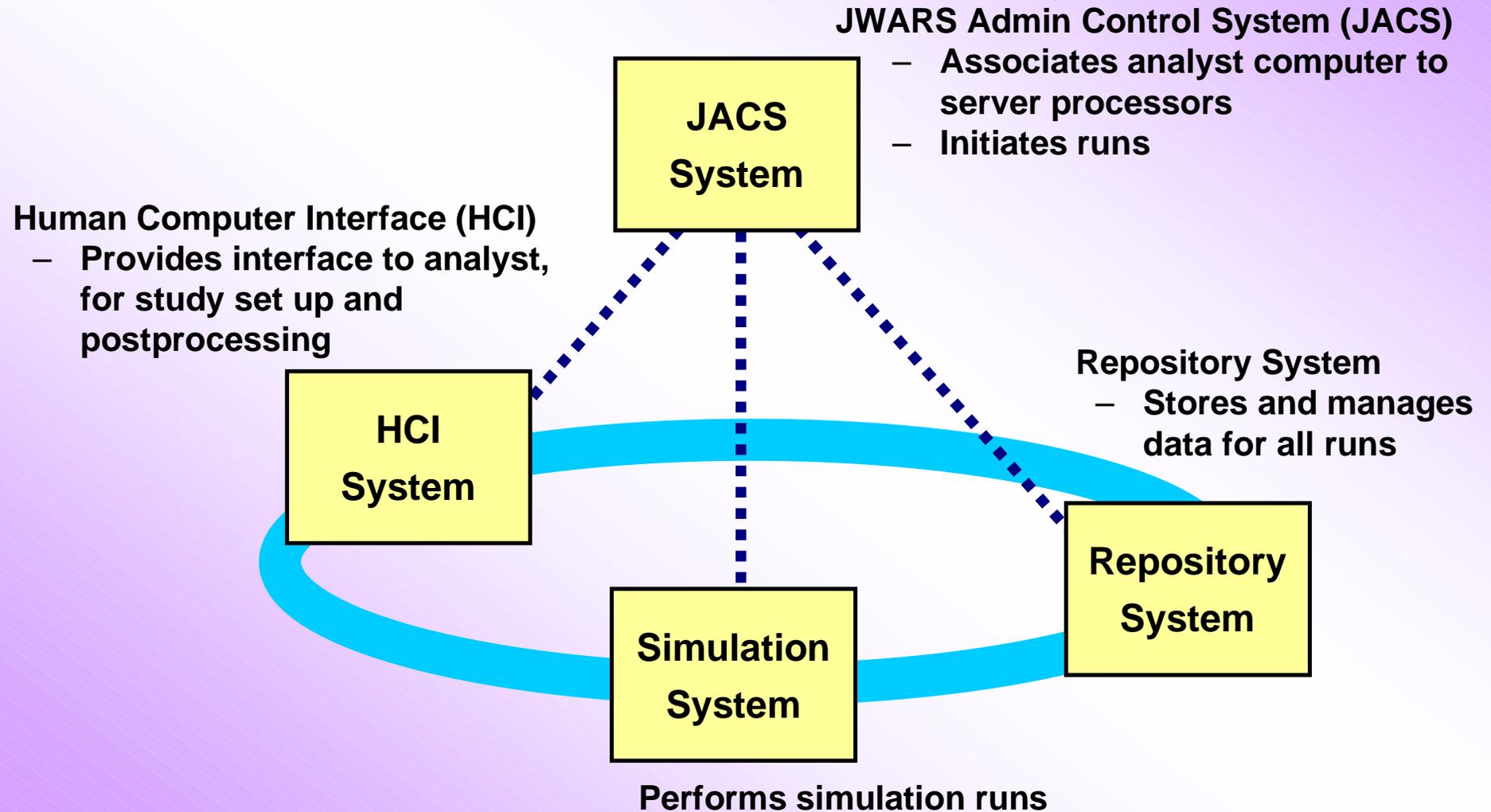
JWARS Architecture

Joint Technical Architecture (JTA) View





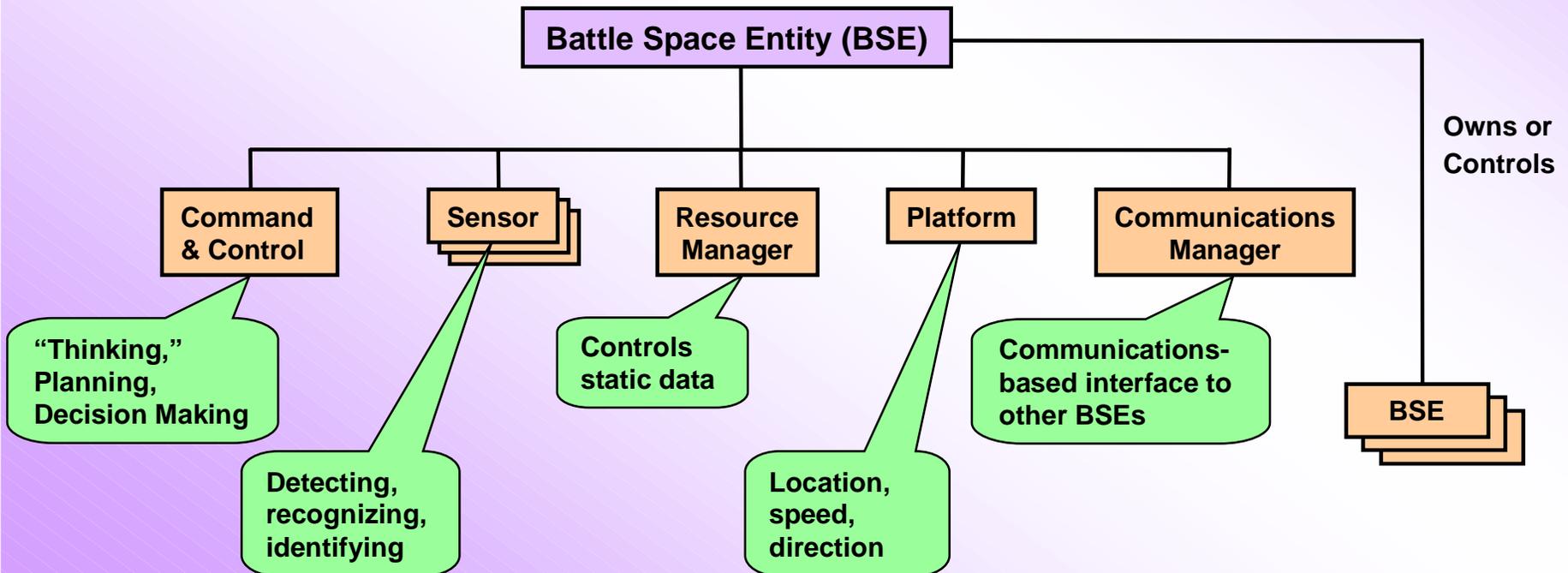
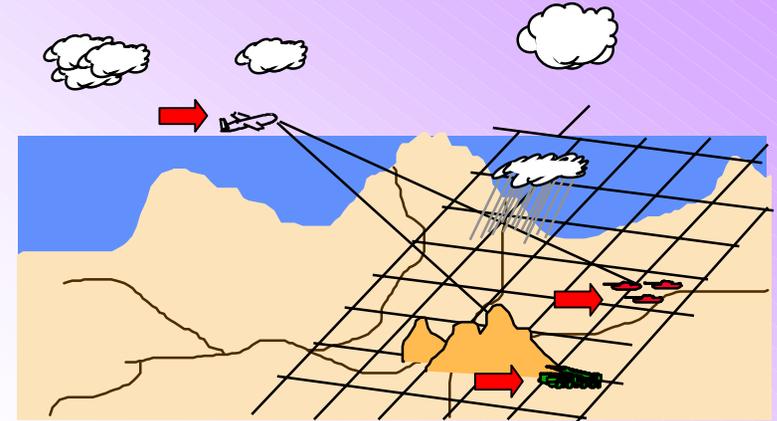
Distributed System Design (Process View)





Fundamental Problem Domain Component -- Battle Space Entity (BSE)

- BSE -- friendly unit, enemy unit, or major system operating in the battle space
- Top-level decomposition





Major BSE Types

Coalition Headquarters

Coalition Component Headquarters

Operational Headquarters

- **Army Corps, Division, or Brigade**
- **USMC MEF Forward**
- **Air Expeditionary Force**
- **Air Flight Group**
- **Carrier Battle Group**
- **Surface Warfare Commander**
- **Surface Action Group**

...

Mobility Forces

- **Strategic Mobility Aircraft**
- **Strategic Mobility Ship**

Operating Forces

- **Land: Maneuver Battalion**
- **Air: Air Mission Element**
- **Space: Sensor Satellite**
- **Maritime: Ship, Submarine**

Support Forces

- **Ground Combat Support and Combat Service Support Organization**
- **Airbase Support Organization**

Stationary Entities

- **Air Installation**
- **Seaport Installation**
- **Depot**

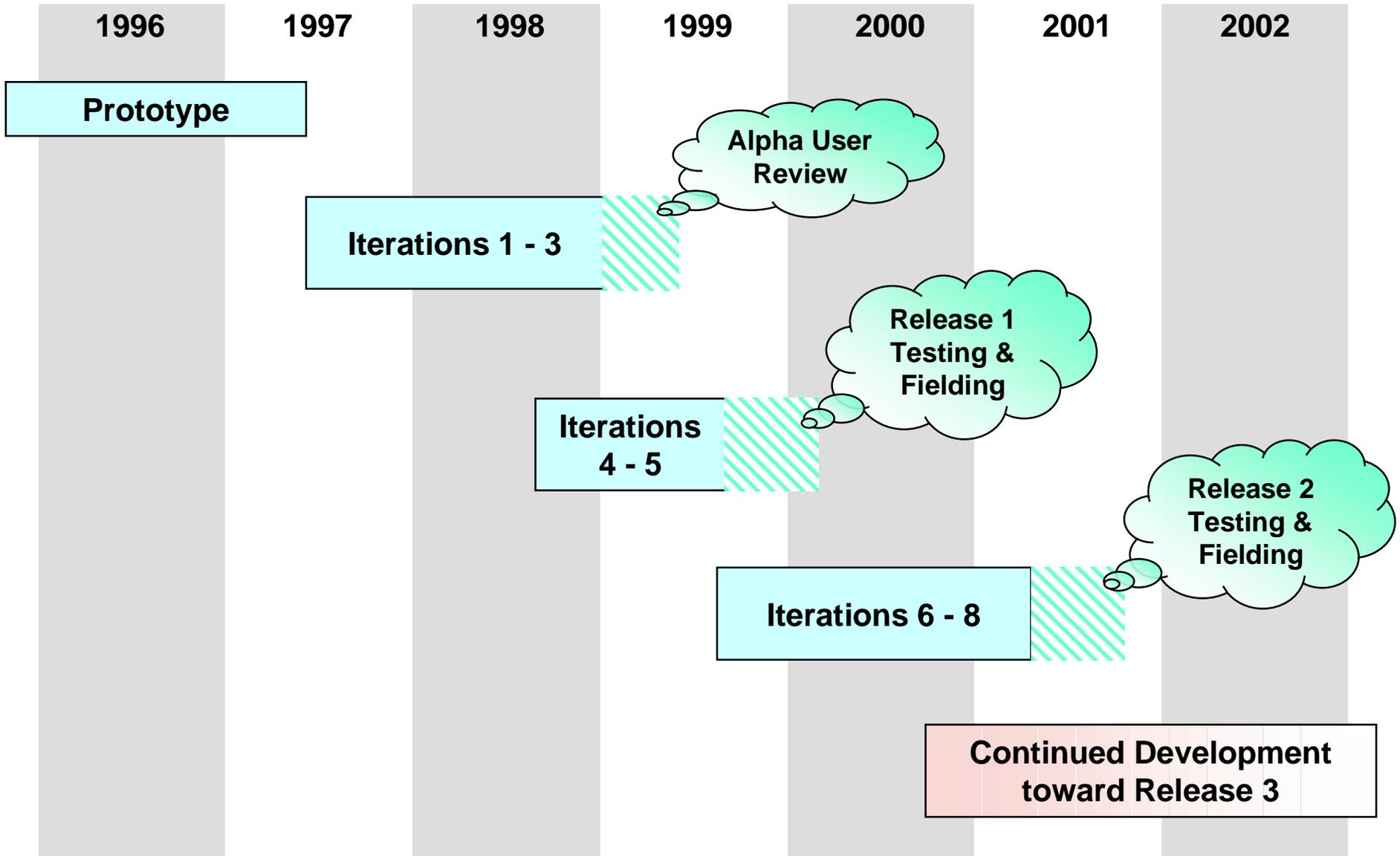
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Schedule



Schedule





JWARS Release 1 (Limited IOC)

(55 Threads)

Warfare functionality

- **Strategic Logistics -- MIDAS(-)**
 - Strategic flow from POE to POD
 - Strategic network
 - Simplified APOD and SPOD representations
- **Theater Logistics -- Links strategic logistics to theater operations**
 - Detailed theater network
 - Detailed logistics distribution
- **Perception -- ISR**
 - Provide intelligence information
 - Assess operational situation
- **Operations -- Core TACWAR**
 - Air, land, and sea operations (-)
 - Chemical defensive operations
 - Naval blockade
 - Air, land, and sea C4
 - Detailed Air Tasking Order (ATO)
 - Forcible entry operations (air, land, sea)
 - Theater Missile Defense



JWARS Release 2 (Full IOC)

(72½ Threads *)

Warfare functionality (expressed as enhancements to 55 threads)

- **Strategic Logistics -- MIDAS(+)**
 - Improved APOD and SPOD representations
 - Logistics C2
- **Theater Logistics -- Links strategic logistics to theater operations**
 - Restore unit combat capability
 - Allocate sustainment stocks
 - Operational service support
 - Intratheater aerial refueling
- **Perception -- ISR**
 - Completed at 55 threads
- **Operations -- TACWAR(+)**
 - Operational mobility/counter mobility -- land and sea
 - Integrated aerospace defense
 - Raids -- land-based and amphibious
 - Effects of attacks on strategic targets
 - Electronic attack

* Release 2
Threshold in ORD



Release 1 Test and Evaluation

Objective

- Ensure that ORD requirements are satisfied

Process

- Beta testing by user test sites, followed by ...
- Operational testing by user test sites, overseen by Services' Operational Test Agencies (Army lead)

Participating user sites

ODPA&E (SAC)	JS (J-8)	USAF (AFSAA)	USA (CAA)
USN (N81)	USMC (MCCDC)	USCENTCOM	USSOCOM
USTRANSCOM	USPACOM	USFK	

Schedule

- September 1999 - March 2000



Summary

- **Development process is effective.**
- **Major contributions are being made by users and subject matter experts.**
- **Release 1 will begin test and evaluation in September 1999.**