



INFORMATION SYSTEMS

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Advanced Planning Briefing to Industry

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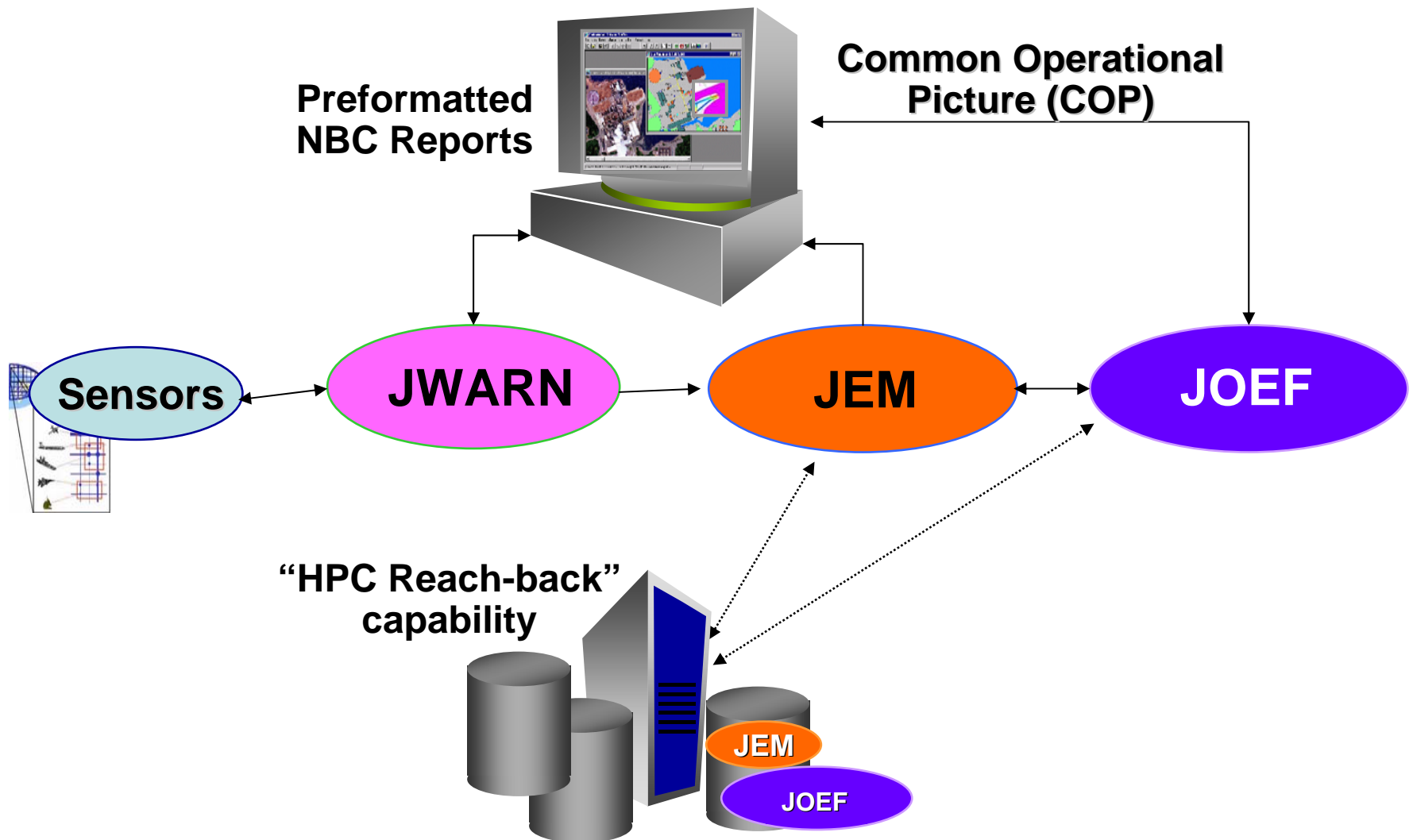
Outline



- **Overview**
- **S&T and Warfighter Needs**
- **Technical Challenges**
- **Acquisition Strategy/ Funding/ Schedule**
- **Upcoming Business Opportunities**
- **Contacts**

Program Overview

End-to-End Capability





Program Overview

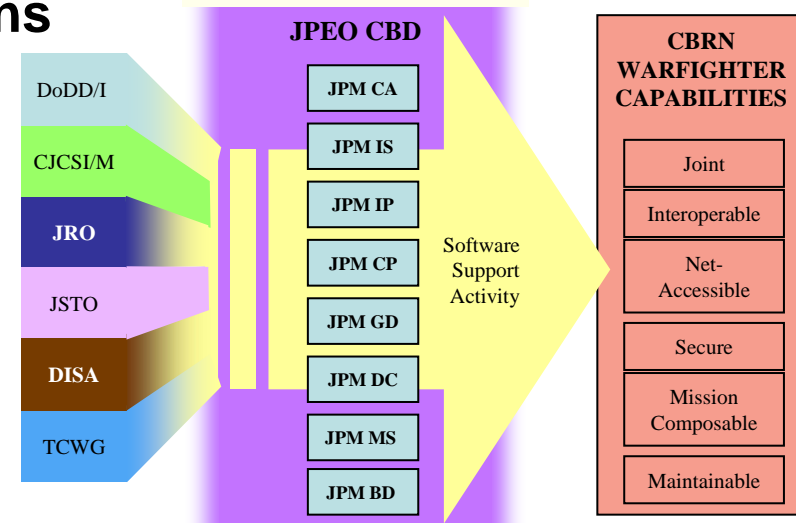


- **Joint Warning and Reporting Network (JWARN), Joint Effects Model (JEM) and Joint Operational Effects Federation (JOEF) are ACAT III information systems applications that network NBC sensors, mission application software tools, and C4ISR systems**
- **JWARN/JEM/JOEF builds on current manual capabilities by fully integrating with COE-based and tactical C4ISR systems**
- **JWARN is an ATP 45 based warning and reporting network**
- **JEM is the single DoD S&T Hazard Prediction model**
- **JOEF is a deliberate and crisis planning tool kit**

Program Overview

Software Support Activity

- **Coordinate support and development of JPEO CBD Information Systems**
- **Creating and leveraging commonality across the Enterprise**
 - Identifying duplication of effort in existing activities
 - Making recommendations to address capabilities gaps
 - Directly develop or employ solutions to fill those gaps
- **Create a reusable Enterprise-wide Services framework that ties together and leverages the Software Support Facilities (SSFs) across JPMs**





Program Overview



Modeling and Simulation/Battlespace

- **Problem:**
 - Currently there are limited algorithms to accurately predict and assess hazards, insufficient focus on data and limited automated planning tools and decision aids
- **Solution:**
 - M&S/B S&T Capability Area will provide information superiority with respect to the CB environment by providing accurate representation of events, rapid assessment of CB on operations and automated decision support for the warfighter
- **Objective:**
 - Overall objective is to develop the science behind the acquisition programs of record, namely JWARN, JEM and JOEF



S & T Needs



- **M&S/B is divided into six thrust areas:**
 - **Battlespace Management**
 - **Hazard Environment Prediction**
 - **CB Sensor Data Fusion (SDF)**
 - **CB Warfare Effects on Operations**
 - **CBDP Decision Support Tools & Methodologies**
 - **CB Test & Evaluation (T&E) Modeling & Simulation**
 - **An additional Thrust Area may be added to cover S&T related bio-medical information technology**



S&T Needs



Battlespace Management

- **Objective: Develop the science behind collaborative information management technologies for insertion into the JWARN acquisition program**
- **Technologies to be developed include configurable battle management modules for:**
 - Data acquisition
 - Sensor integration
 - Early warning and reporting
 - Mission impact
- **Benefit: Improves integrated early warning and provides a common operational picture (COP) for enhanced decision making**



S&T Needs



Hazard Environment Prediction

- **Objective:** Develop the science behind transport, dispersion and deposition technologies for insertion into the JEM acquisition program
- **Technologies needed are analysis tools and modules for:**
 - Dispersion at high altitudes
 - Urban dispersion
 - Coastal and littoral dispersion
 - Waterborne dispersion
- **Benefit:** Improves battlespace analysis by identifying and quantifying environmental hazards for bypass or mitigation by the decision maker



S&T Needs



CB Warfare Effects on Operations

- **Objective:** Develop the science behind the modeling and simulation of operations in a CB environment at fixed facilities as well as mobile operations for insertion into the JOEF acquisition program
- **Technologies needed include the development of tools and modules for modeling operations of:**
 - Airfields
 - Ports
 - Depots
 - Combat units, and
 - Support personnel, e.g. medical and logistics
 - Entire theater of operations
- **Benefit:** Improves battlespace management by providing tools in which decision makers plan, simulate and execute operations



S&T Needs



CB Sensor Data Fusion (SDF)

- **Objective:** Develop the science behind fusing disparate information from multiple inputs and locations as part of a technology “push” effort for JWARN, JEM and other identified acquisition programs of record
- **Technologies needed are the tools and modules for:**
 - Source term determination and location
 - Fusion of local and regional weather, human inputs and sensor data
- **Benefit:** Improves battlespace analysis by identifying source location of environmental hazards and fusing all information into a well-ordered, manageable list of options and capabilities for decision makers



S&T Needs



CBDP Decision Support Tools & Methodologies

- **Objective:** Develop the science behind tools for decision making and human knowledge management across the CB Defense Program. These tools will be maintained as part of JSTO's full suite of capabilities
- **Technologies needed include the development of the tools and modules for:**
 - Investment/portfolio decision support
 - Virtual prototyping
 - Knowledge management
 - Emerging technology exploration
- **Benefit:** Improves the quality of the products, technologies and capabilities supplied to the warfighter at a reasonable cost



S&T Needs



CB Test & Evaluation (TE) M&S

- **Objective:** Develop the science behind the modeling and simulation tools that assist the T&E community in their efforts to evaluate CB technologies
- **Technologies needed** include tools and modules for engineering level models for collective protection, individual protection, detection and decontamination equipment
- **Benefit:** Support quality developmental and operational testing of JPEO end items



Warfighter Needs



JWARN

- **Collect, generate, edit and disseminate NBC reports and plots and provide a means of ensuring all addressees have received a sent message**
- **Application support for FBCB2, C2PC, GCCS-J, GCCS-M, GCCS-A, and GCCS- AF COE Level 7 / DODIIS**
- **Allow NBC reports (NBC-1/NBC-4) to be formatted and transmitted within 2 minutes and allow operator selection of automatic, delayed or on-command sending of NBC reports**
- **Automated sensor interfaces for M8A1, M21, M22, IPDS, ADM 300, AN/VDR2, JBPDS**



Warfighter Needs



JEM

- **Integrate VLSTRACK, HPAC, and D2PUFF capabilities**
- **Model urban effects, coastal & littoral environments**
- **Model high altitude missile intercept effects**
- **Model high altitude weather effects and precipitation**
- **Improve transport and diffusion methodologies**
- **Model waterborne hazards**
- **Model contagious diseases**
- **Model complex structures**
- **Model building interiors**
- **Model human performance degradation**



Warfighter Needs



JOEF

- **Provide a collaborative planning capability through reach back to pre-designated, networked expert support centers and centers of excellence**
- **Predict operational effects and impacts associated with CBRN and TIM hazards to shipboard, aircraft, and mobile (ground) and fixed sites on, as a minimum, personnel, equipment, terrain, casualties, and facilities**
- **Access data (e.g., Force Flow, intelligence, logistics, risk management) automatically in near real time to populate staff estimates and assist development of operational plan annexes involving CBRN and TIM hazards**
- **Interoperate with the following current and evolving COE-compliant C4ISR and other systems: Global Command and Control System (GCCS) Maritime (M), GCCS - Air Force, GCCS – Army, GCCS – Joint, and Joint Command & Control (JC2)**



S&T Technical Challenges



- **Improve basic understanding of atmospheric turbulence in the stable boundary layer (SBL)**
- **Improve source determination methods**
- **Low-altitude weather forecasting**
- **Urban weather modeling**
- **Effects of CB on water supplies**
- **Paucity of data on the behavior of threat agents in the operational environment**
- **Inability to validate models that represent equipment and CONOPS in a live agent environment**



Program Technical Challenges



JWARN

- **Integration of multiple Chem-Bio sensor interfaces (Legacy and Developmental)**
- **Compatibility with multiple Service-specific implementations of C2 systems**
- **Evolving national C2 system architecture(s)**
 - Net Centric Enterprise Services (NCES)
 - JC2
- **Web enablement**
- **Wireless connectivity incorporating Information Assurance (IA) requirements**
- **Integration with JEM and JOEF**



Program Technical Challenges



JEM

- **Service Oriented Architecture (SOA) that complies with NCES**
- **Seamless integration of JEM with other JPM IS products such as JWARN & JOEF**
- **Clustering configurations using JEM web service on various Joint and Service C4I systems**
- **Integration with Joint and Service specific needs**
 - **Weather interfaces (JWIS, MDS, IMETS, VNE-NCS)**
 - **Mapping tools (JMTK, C/JMTK, Falcon View, ARCIMS)**
 - **Hardware configurations (networks and CPU power)**



Program Technical Challenges



JOEF

- **Simulation of Radiological, Nuclear medical effects, secondary biological infection**
- **Elimination of medical resource shortfalls through deliberate planning**
- **Development of Sea Ports of Debarkation (SPOD) model**
 - **CBRN effects on roll-on/roll-off cargo thru-put**
- **Mobile Forces**
 - **Measurement of combat power before/after CBRN attack**
 - **Optimization of logistics, distribution networks, facility location/operation and inventories**
 - **Optimization of Sensor selection and location**
 - **Estimation of engagement results using campaign models**
- **Keeping pace with evolving FCS and NCES technologies**



S&T Capability Strategy



- **Balance between requirements pull:**
 - Align with the Joint Requirements Office (JRO) to address capability needs
 - Align with Joint Program Executive Office (JPEO) programs to address technology gaps
 - Answer critical science questions that support policy, doctrine and requirements decisions
- **... and technology push:**
 - Centralize investment in basic research (6.1)
 - Identify and exploit technology opportunities
 - Identify and respond to new and emerging threats
 - Transition new and innovative technologies with JPEO
 - Maintain a robust technology base: knowledge, research capabilities, and test and evaluation methodologies



Program Acquisition Strategy



JWARN

- **Two Increments of development followed by Pre-Planned Product Improvement**
- **Increment 1 (FY06 – FY09)**
 - **Increment 1 development complete**
 - **Developmental Testing and Operational Assessment in progress**
 - **Milestone “C” - November 06**
- **Increment 2 (FY08 – FY 12)**
 - **Increment 2 design and development FY08 – FY09**
 - **Maintain JWARN Baseline for various C4ISR systems**
 - **Accommodate new C4ISR systems**
 - **Web enabled**
 - **Full integration with JEM & JOEF**
 - **IOC FY10, FOC FY12**



Program Acquisition Strategy



JEM

- **Block 1 (FY06-FY07)**
 - Overarching requirement is to baseline the DOD CBRN Hazard prediction technologies
 - Transition and reuse source code of S&T programs HPAC, VLSTRACK, and D2PUFF to JEM
 - Spiral development, SEI CMM Level 3 processes
 - Flexible and Extendable System Architecture
 - Post Deployment Software Support for all blocks using the consolidated CBRN Software Support Activity (SSA)
- **Block 2 and beyond (FY07-FY09)**
 - Multiple sources for required technologies (Government, Industry, International)
 - Software Development and System Integration contracts
 - Maintain JEM Baseline for various C4I Systems
- **JSTO for science and technology needs**



Program Acquisition Strategy



JOEF

- Utilize spiral development
- Expedite JOEF development, integration, and fielding using JPM IS and JPEO assets
- Minimize software development efforts for transitioning existing mature S&T efforts
 - JSTO for science and technology needs
- Increment 1 (FY06 – FY08)
- Awarded software development BAA contract to Cubic – Feb 06
- Support operational and strategic levels of war for COE/C2PC C4I systems
- Increment 2 and beyond (FY08 – FY11)
- Award software development BAA
- Add tactical level of war and consequence management for military, civilian, and coalition forces
- Add stand-alone capability



S&T Funding



\$(K)	FY06	FY07	FY08	FY09	FY10	FY11	TOTAL
6.1	4,000	4,000	4,000	4,000	4,000	4,000	24,000
6.2	30,257	26,328	28,192	27,888	29,180	27,991	169,836
6.3	7,032	10,147	10,038	10,480	10,497	9,129	57,323
TOTAL	41,289	40,475	42,230	42,368	43,677	41,120	251,159



Program Funding



\$(K)	FY06	FY07	FY08	FY09	FY10	FY11	TOTAL
6.5	80,133	25,838	17,285	8,812	5,537	3,274	140,879
Procurement	7,108	8,602	22,501	21,570	22,752	29,033	111,566
TOTAL	87,241	34,440	39,786	30,382	28,289	32,307	252,445



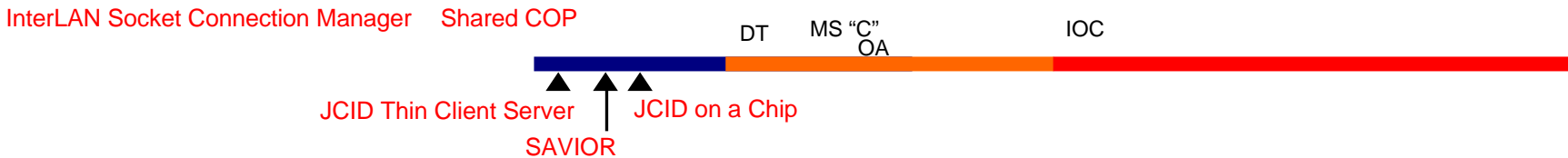
Program Schedule

FY05 FY06 FY07 FY08 FY09 FY10 FY11 FY12 FY13

JWARN
Increment 1



JWARN
Increment 2

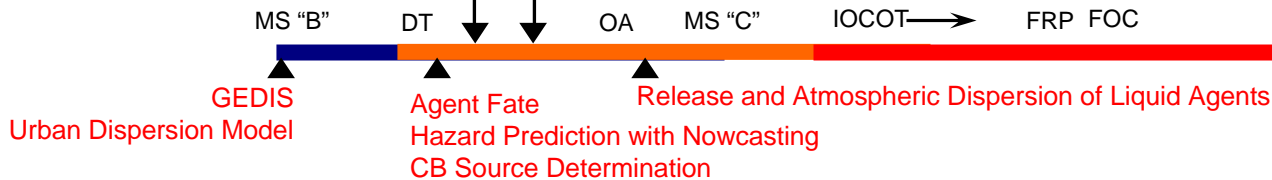


JEM
Block 1



Rapid Wind & Pressure Calcs around Buildings Improving RUSTIC

JEM
Block 2



Next Generation Modeling Internal Modeling for STAFFS

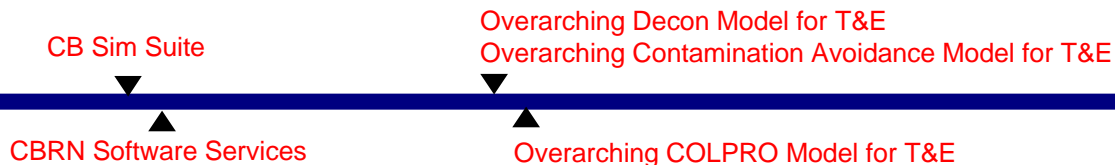
JOEF
Increment 1



JOEF
Increment 2



SSA



▲ = technology insertion



Upcoming Business Opportunities



- | | <u>Time Period</u> |
|---|--|
| <ul style="list-style-type: none">• Physical Science and Technology Broad Agency Announcement (BAA)<ul style="list-style-type: none">– December each year– Other BAA solicitation occurs under the CBDIF program | FY06 & FY07 |
| <ul style="list-style-type: none">• SPAWAR Knowledge Superiority (BAA)<ul style="list-style-type: none">– JPM IS Technology Challenges/S&T Gaps | Open Indefinitely |
| <ul style="list-style-type: none">• JWARN<ul style="list-style-type: none">– JCID production (RFP)– Block 2 Increment 1 Sustainment– Block 2 Increment 2 Design & Development | FY08 – FY12
FY08 and beyond
FY08 – FY09 |
| <ul style="list-style-type: none">• JEM<ul style="list-style-type: none">– JEM Lead Integrator (SEAPORT E)<ul style="list-style-type: none">• Sustain Block I• Integrate S&T Capabilities for Block II & Beyond | FY06 |
| <ul style="list-style-type: none">• JOEF<ul style="list-style-type: none">– JSTO Technology Insertion Increment 1– JSTO Technology Insertion Increment 2– Software Development Increment 2 and beyond | FY06 – FY08
FY06 and beyond
FY08 and beyond |



S&T Points of Contact



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