



***Joint Operational Effects Federation***  
***(JOEF)***  
***Program Overview***

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# Background

## **PROGRAM SUMMARY:**

**Enables warfighters and planners to assess CBRN effects on operations, personnel, and equipment and to recommend COAs to minimize or eliminate threat.**

## **HOST C4I SYSTEMS:**

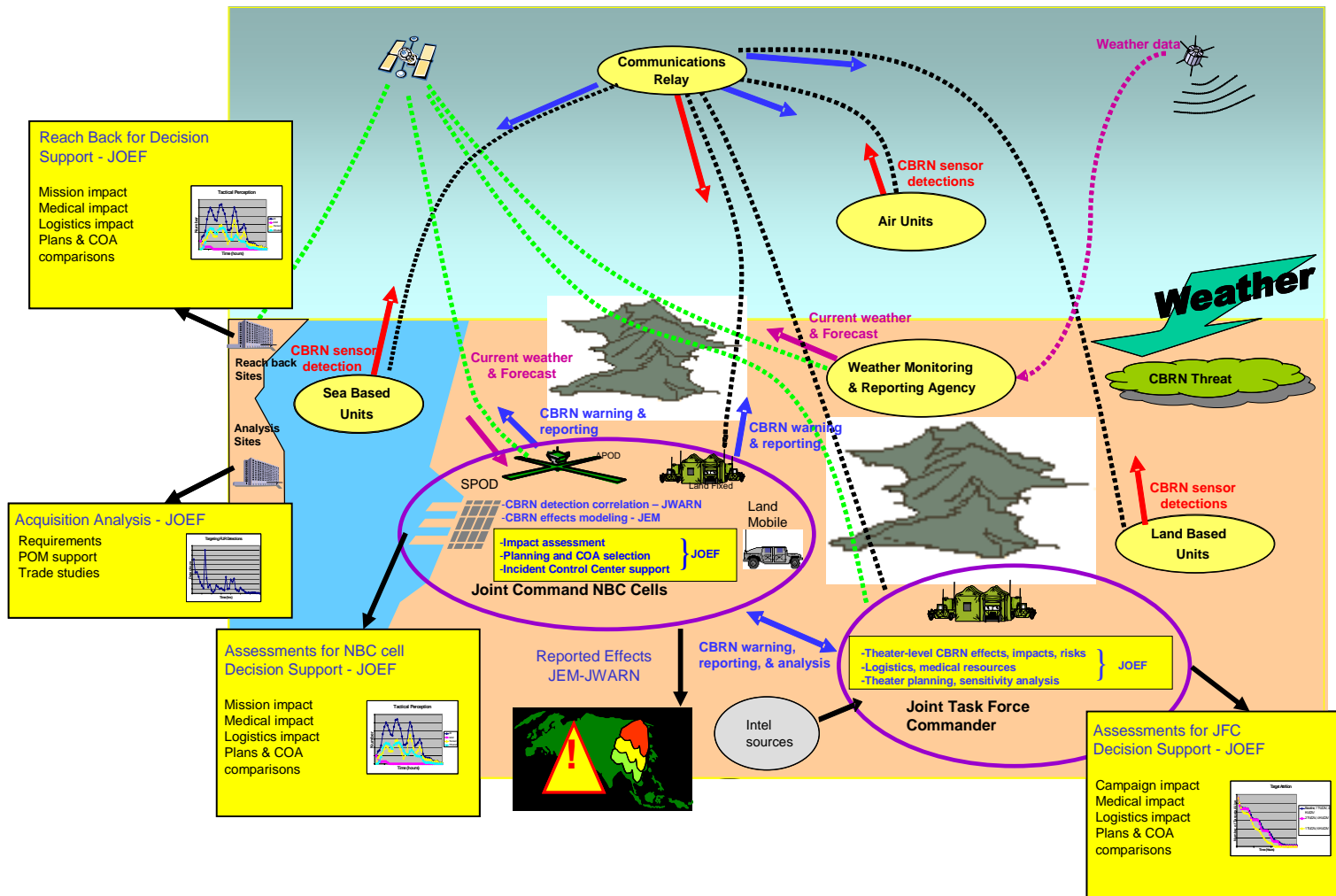
**GCCS-J, GCCS-M, GCCS-A, GCCS-AF, GCCS-K, JC2, TBMCS, C2PC**

## **USERS:**

**Strategic and Operational Planners, Joint Commanders & Staff, NBC Command Center**



# Operational View (OV-1)



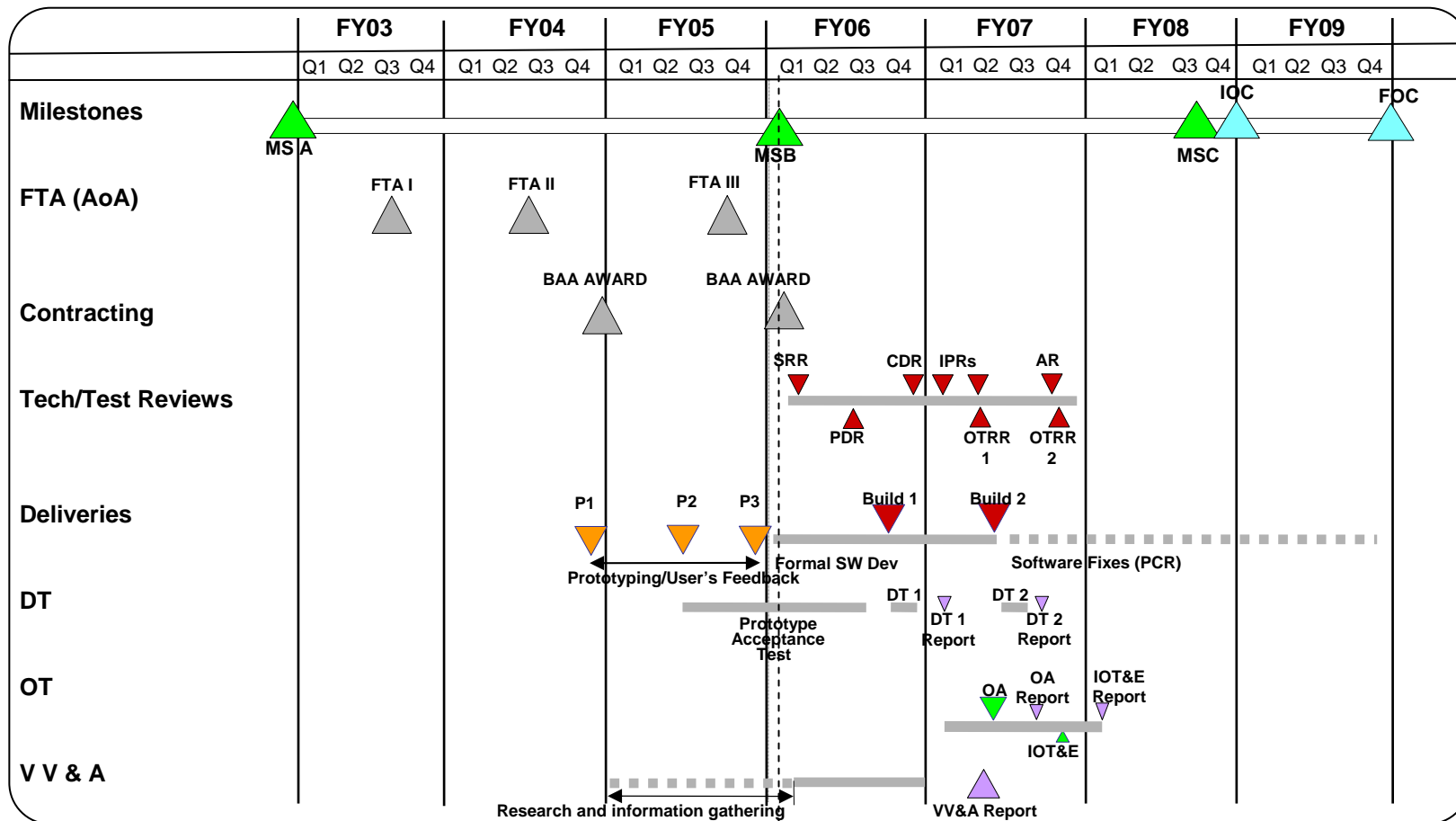


# JOEF Core Capabilities

- 1) Provide a Deliberate/Crisis planning tool**
- 2) Provide an Operational Effects Prediction tool**
- 3) Access Data in Near Real Time**
- 4) Be interoperable with current (and evolving) COE-compliant C4ISR and other systems**
  - GCCS- M / AF / A /J, JC2, and JEM**
- 5) Be Net-Ready**



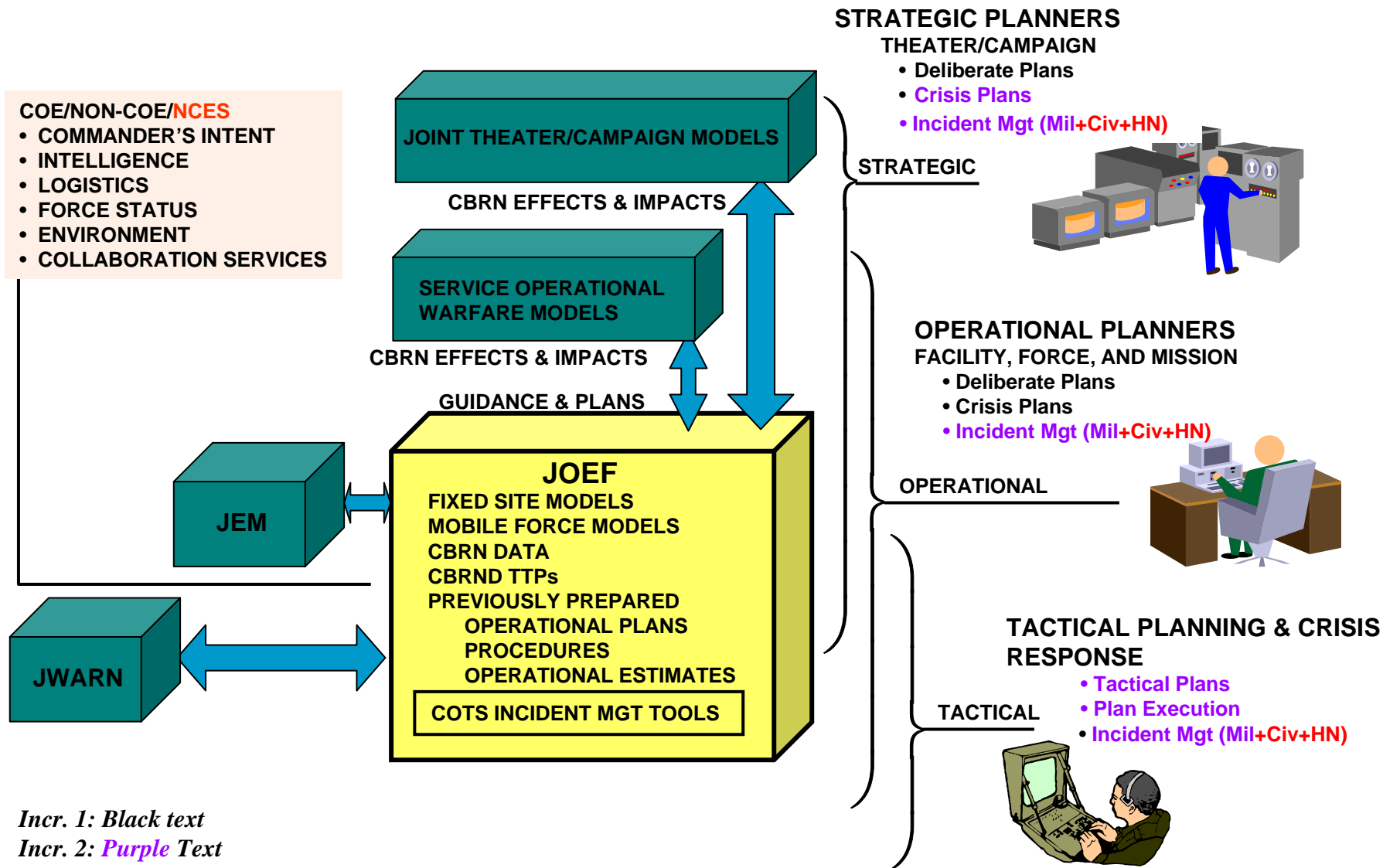
# JOEF Schedule – Increment I



- |                                       |   |  |  |
|---------------------------------------|---|--|--|
| <b>AoA:</b> Analysis of Alternatives  | <b>FOC:</b> Full Operational Capability                 | <b>IPR:</b> In-Process Review                          | <b>P:</b> Prototype  |
| <b>AR:</b> Accreditation Review       | <b>FTA:</b> Focused Technology Assessment               | <b>IV&amp;V:</b> Independent Validation & Verification | <b>PCR:</b> Program Change Request                           |
| <b>BAA:</b> Broad Agency Announcement | <b>IA:</b> Information Assurance                        | <b>MS:</b> Milestone                                   | <b>PDR:</b> Preliminary Design Review                        |
| <b>CDR:</b> Critical Design Review    | <b>IOC:</b> Initial Operational Capability              | <b>OA:</b> Operational Assessment                      | <b>SRR:</b> SW Requirements Review                           |
| <b>DT:</b> Developmental Testing      | <b>IOT&amp;E:</b> Initial Operational Test & Evaluation | <b>OT:</b> Operational Test                            | <b>SW:</b> Software  |
|                                       |   | <b>OTRR:</b> Operational Test Readiness Review         | <b>V V &amp; A:</b> Verification, Validation & Accreditation |



# Initial JOEF Concept



Incr. 1: Black text

Incr. 2: Purple Text

Incr. 3: Red Text



# JOEF Spiral Development Increment I

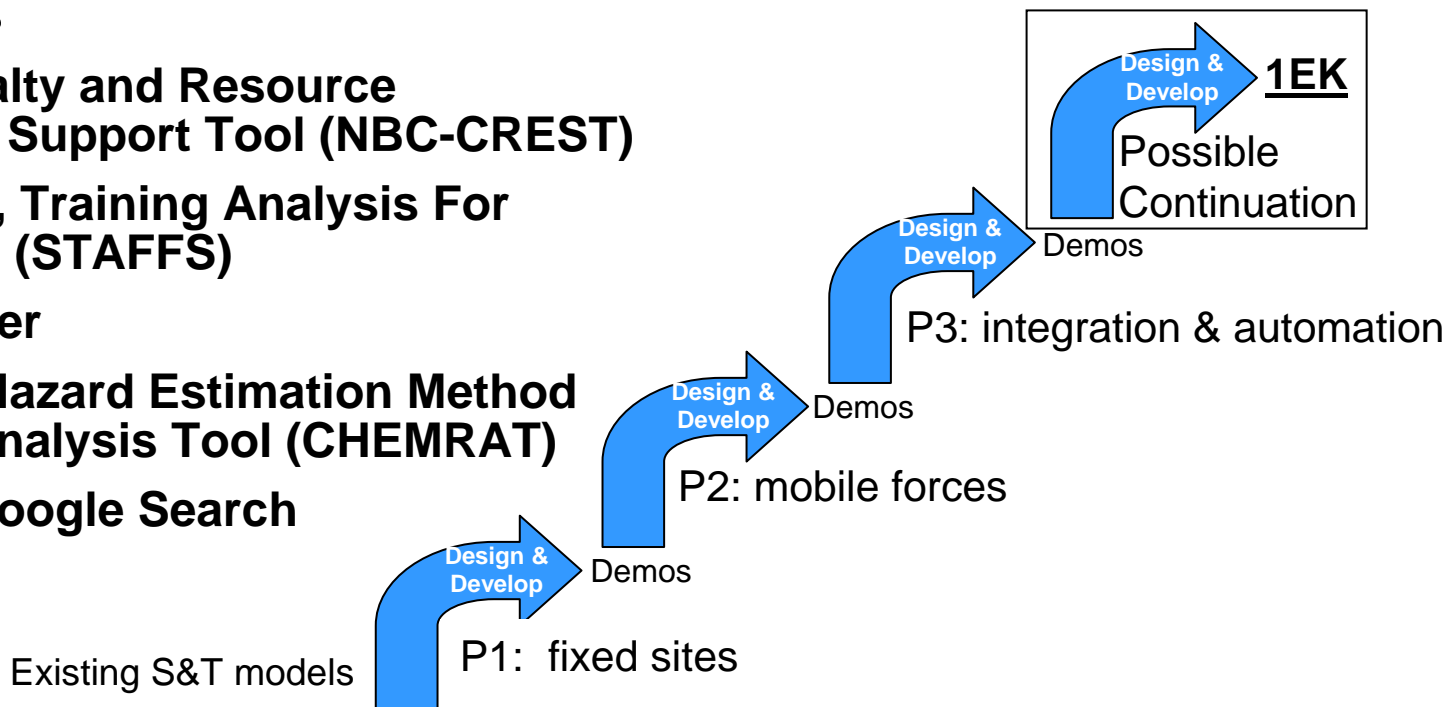
## Prototype development – 3 cycles completed

- Objectives

- Explore technologies
- Demonstrate concepts
- Solicit Feedback / Clarify User requirements

- Components

- NBC Casualty and Resource Estimation Support Tool (NBC-CREST)
- Simulation, Training Analysis For Fixed Sites (STAFFS)
- NBC Planner
- Chemical Hazard Estimation Method and Risk Analysis Tool (CHEMRAT)
- Bonita & Google Search





# JOEF Prototype Demonstrations

- **Purpose**

- Introduce concept and stimulate user community
- Solicit feedback and service-unique processes
- Clarify user requirements

- **Demonstrations:**

## Operational Commands

DEMONSTRATIONS			
CENTCOM	I-Corps	NORTHCOM	PACAF
PACOM	TRANSCOM	USARPAC	3 <sup>rd</sup> Fleet
SDDC			
PLANNED			
EUCOM	PACFLT	STRATCOM	USFK

## Conferences

DEMONSTRATIONS			
AUSA	CBIS	FPED	HPAC
I/ITSEC	SOCOM	WWCC	





# JOEF Spiral Development

## SDD: 3 Increments with multi builds in each increment

JOEF Inc	User Level	Deliberate Planning	Crisis Planning	Incident Response & Consequence Management	
		C4ISR Environment	C4ISR Environment	Site	C4ISR Environment
I	Strategic	COE/C2PC			
	Operational	COE/C2PC	COE/C2PC		
	Tactical				
II	Strategic	Standalone	COE/C2PC Standalone	Military	COE/Standalone
	Operational	Standalone	Standalone		
	Tactical	COE/C2PC Standalone	COE/C2PC Standalone		
III	Strategic			Civilian	COE/Standalone
	Operational				
	Tactical				



# Open Systems Architecture

- **Separates the application layer from the services and engine layers**
- **Allows modification of GUI, JWARN, JEM without requiring updates to other parts of the JOEF software**
- **Allows modification of models without “breaking” the interfaces to the application layer**
- **Use CBRN Data Model and DISA Metadata Registry**



# Technology Transition

- **PMO working closely with Chuck Fromer, Joint Science and Technology Office (JSTO)**
- **PMO monitoring S&T offerings for potential sources of technology transition**
- **JOEF Open Architecture will allow easy insertion of new capability**
- **JPM IS Programs of Record are the DoD acquisition path for JSTO**



# JOEF Technology Challenges

- **Optimization Algorithms**
  - Robust sensor placement tool for CBRN staff users
  - Extend to other resource allocation and placement
- **Mobile Forces**
  - Capture CBRN effects on “combat power”
  - Operational Models & Calculators
- **Operational Impact Data Collection & Simplification**
  - Survey and characterize sources
  - Identify essential elements and resolution/detail
  - Collection, certification, and maintenance methodology
- **Campaign/Theater Models**
  - Federate detailed CBRN mission-level models with theater/campaign-level warfare models (JICM, JWARS, etc)



# JOEF Technology Challenges

- **Integrate additional effects**
  - Radiological
  - Nuclear
- **Medical Resource Limitation Effects**
  - Effective treatment policies
  - Casualty/resource trades for mass casualty operations
- **Secondary Infection Models**
  - Communicable diseases
  - Sensitive to defensive plans/policies
    - Vaccination, quarantine, etc.



# JOEF Technology Challenges

- **Task Automation for CBRN Staff**
  - **Examples**
    - Vulnerability and risk analysis
    - Identification and ranking of threats
  - **Methodology and tools to generate decision support checklists and templates**
- **Agent Fate**
  - Exposure risk vs. time and protection in all environments
  - TIC/TIM models
- **Innovative Embedded Training**



# JOEF Status

- **On track for entry to Software Development and Demonstration (SDD) phase**
- **SDD contract process on track – Award expected Nov 05**
- **Continued dialog with warfighters to gather user requirements/feedback**

**Visit us at the JPM IS booth to see the latest JOEF prototype**