

DEFENSE THREAT REDUCTION AGENCY



Making the World Safer

***Making the World Safer:
The Defense Threat Reduction Agency***

***WMD Assessment & Analysis Center
(WMDAAC)***

Al Graziano

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Outline

- Introduction to DTRA
- WMD Assessment and Analysis Center
 - Weapons of Mass Effect (WME) Battle Lab
- Transformation Planning Guidance
- Distributed Continuous Experimentation Environment (DCEE)
- Joint Operational Effects Federation (JOEF)



Making the World Safer

The Strategic Challenge of the New Millennium

*To reduce the threat
of weapons of mass destruction
as complex security issues
continue to challenge our nation*

**“The Defense Threat Reduction Agency
safeguards America and its friends from weapons
of mass destruction by reducing the present threat
and preparing for the future threat.”**



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Full spectrum of tools to reduce the present threat and prepare for future threats

Arms Control:

Inspecting threats and stopping them at national borders

Threat Reduction:

*Dismantling the former Soviet nuclear arsenal in place and
eliminating Iraqi weapons of mass destruction*

Technology Development:

Developing, testing, fielding offensive/defensive technologies

Chemical and Biological Defense:

Assuring operations in hostile environments

Combat Support:

Assessing vulnerabilities, assuring the nuclear deterrent

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TD's WMD Assessment and Analysis Center (WMDAAC)

Bridge WMD modeling & simulation technology to user needs, emphasizing physics-based weapon effects.



Educate customers on policy, doctrinal and operational issues related to WMD.



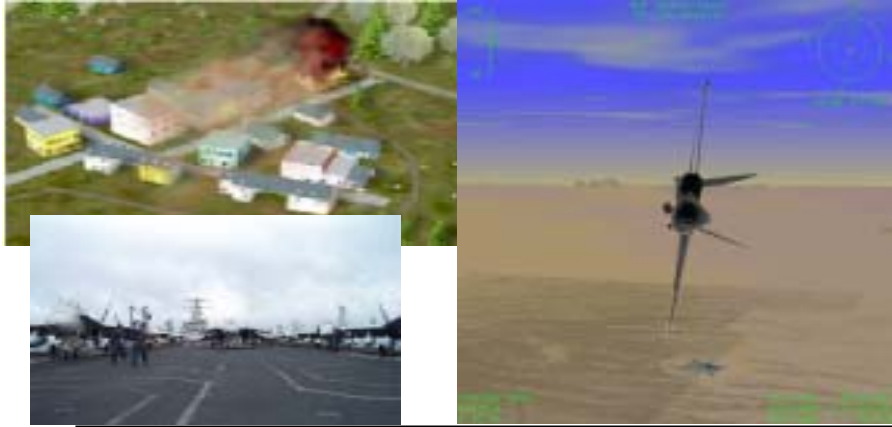
Enable the warfighter with WMD analysis & assessment technology in education, training, exercises and live operations.



Guide the development of WMD modeling technology to best support the DoD M&S Master Plan regarding analysis, training & system acquisition (test & evaluation).



Project **Operational Support Technology**



Approach

- Exploit new collaboration technologies for projection of DTRA tools
- Establish a WME-focused operations research/analysis and weapons effects M&S capability in the WME Battle Lab
- Develop robust CBRN/E M&S infrastructure for optimization of effects-based strategies to defeat WMD
- Validate, verify, and certify physics based simulations for C4ISR systems

Objectives

- Project DTRA support to warfighter and homeland defense community
 - Provide WME consequence prediction & analysis tools
 - Convey critical info to decision-makers through distributed interactive systems
 - Participate in appropriate ACTDs e.g. CINC 21, C-CINC 21, HLS C2 ACTD

Deliverables

- WME Knowledge Layer Subsystem (KLSS)
- Weapons Analysis Lethality Tool Set (WALTS)
- CBRNE Federation Object Model
- Homeland Security C2 ACTD Services
- Exercise Support (white cell/experimentation) to Ulchi Focus Lens, Millennium Challenge Series 02-07, Unified Defense, and Determined Promise
- Redundant alternate ops/analysis support center enabling



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WMD Assessment and Analysis Center (WMDAAC) ***aka DTRA/TDOA***

Mission: Bridge WMD modeling & simulation technology to customer needs, with physics-based weapon effects

➤ Provide Reachback Technology

- **Combatant Commanders, Services, Agencies, First Responders**
- **Secure, Web based Internet Connectivity**
- **Websites, Links & Data Repositories**
- **WE Models, Consequence Management Tools**
- **Subject Matter Experts**
- **Common Operational Picture**

➤ WME Battle Lab

- **Collaborative Ops Research**
- **Wargaming**
- **Technical Engineering**
- **Testing & Training**
- **Facilitate M&S Development & Standards**



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Center for Special Weapons Effects, NBC Threats, Technology, Transfer, and Resources

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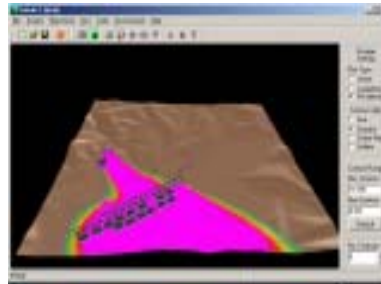


[Collaboration Center](#)



WALTs

**Weapons Analysis Lethality
Tool Set**



IMPACT

**Integrated Modeling Platform for Advanced
Computational Technologies**



DCTS

Defense Collaboration Tool Set



CNTTR

**Center for Special Weapons
Effects, NBC Threats, Technical
Transfer and Resources**



CoBRA

**Chemical and Biological
Response Aid**

WMD Assessment and Analysis Center- Activities/Projects

- Evaluate the application of emerging technologies and concepts to enhance warfighter capabilities against WMD threats
- Provide analytical support to ACTDs, military exercises, experiments, and demonstrations.
- Evaluate CONOPS and identify methods to mitigate effects of the use of CBRNE
- Support analysis of alternatives for acquisition programs, and conduct cost benefit/other studies



COP

Common Operational Picture



ASOCC

**Area Security Operations
Command and Control**



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Area Security Operations Command and Control (ASOCC)

Information Push

Situational Awareness

Information Pull



Integrated View

Tactical Imagery

Data Fusion

Deployment Data

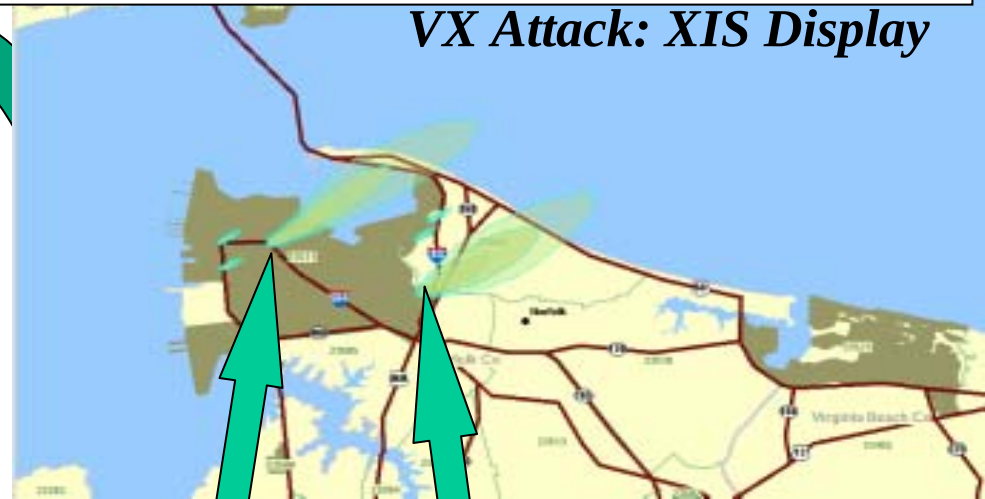
Real-time Logging



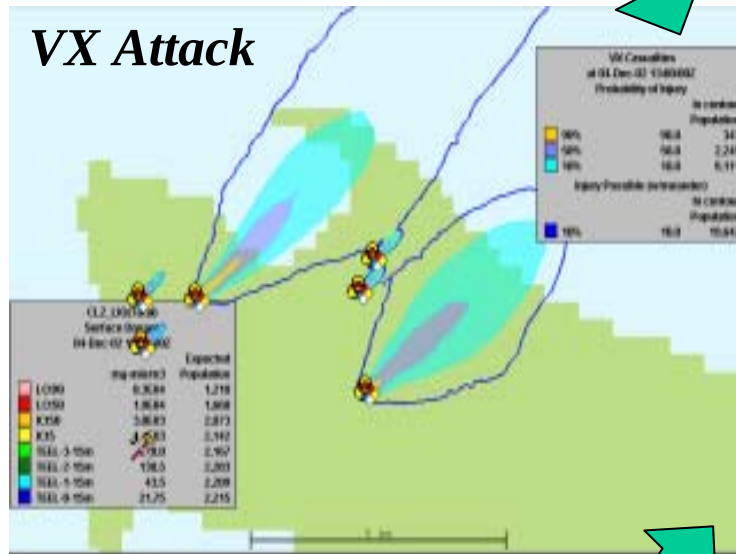
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Common Operating Picture (COP) Today (DTRA products are compatible in GCCS)

VX Attack: XIS Display



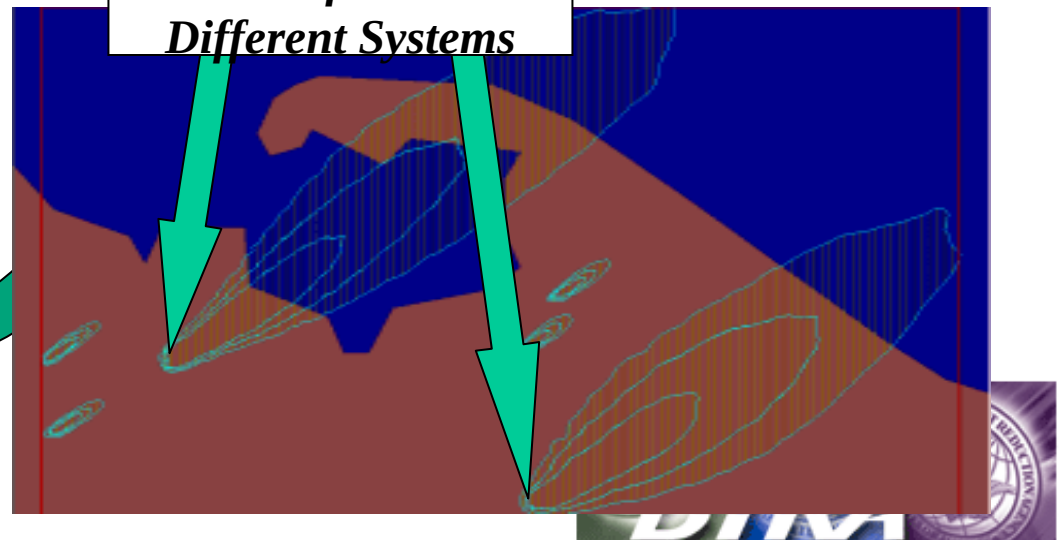
VX Attack



***Today: Use HPAC
Display to merge GCCs
and GIS information***

Example: VX Attack

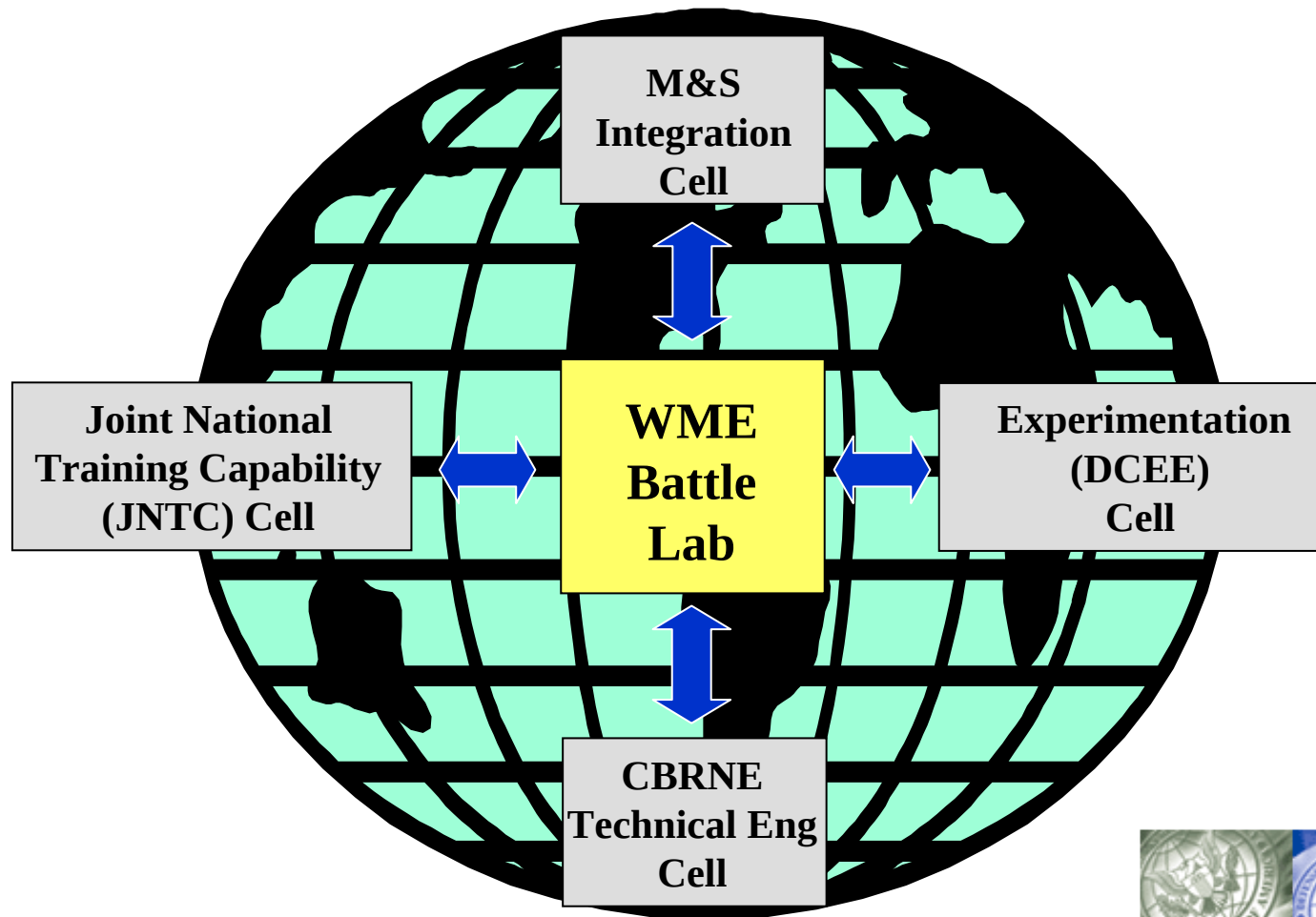
***Same Information
Different Systems***



VX Attack: GCCS, C2PC Display

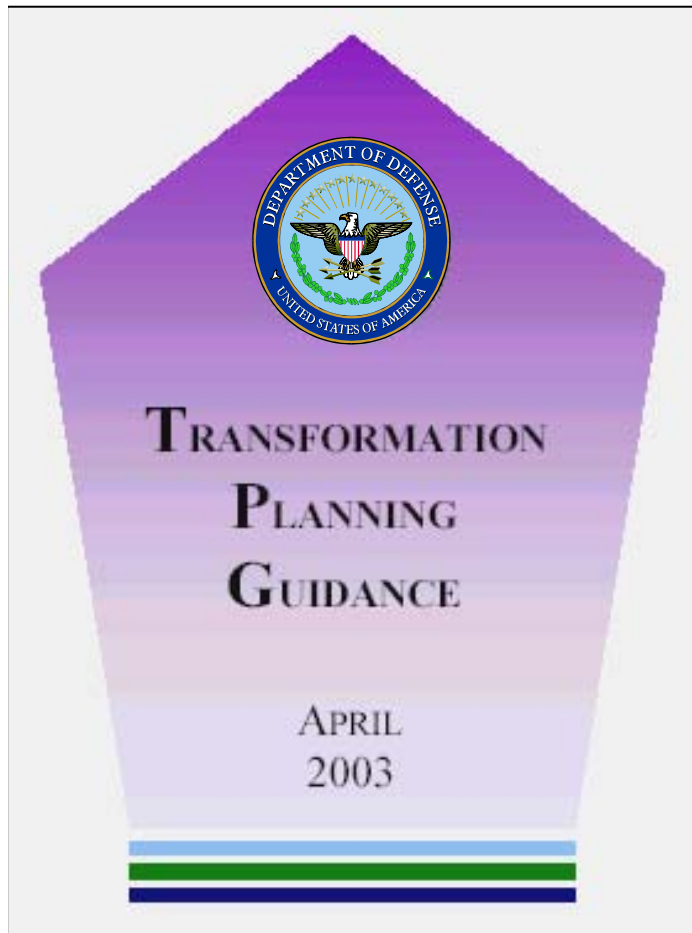
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DTRA WME Battle Lab Will Support the JNTC and Experimentation



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Transformation Pillar Three: Joint Concept Development and Experimentation (CDE)



Joint Concept Development and Experimentation Progress Assessments

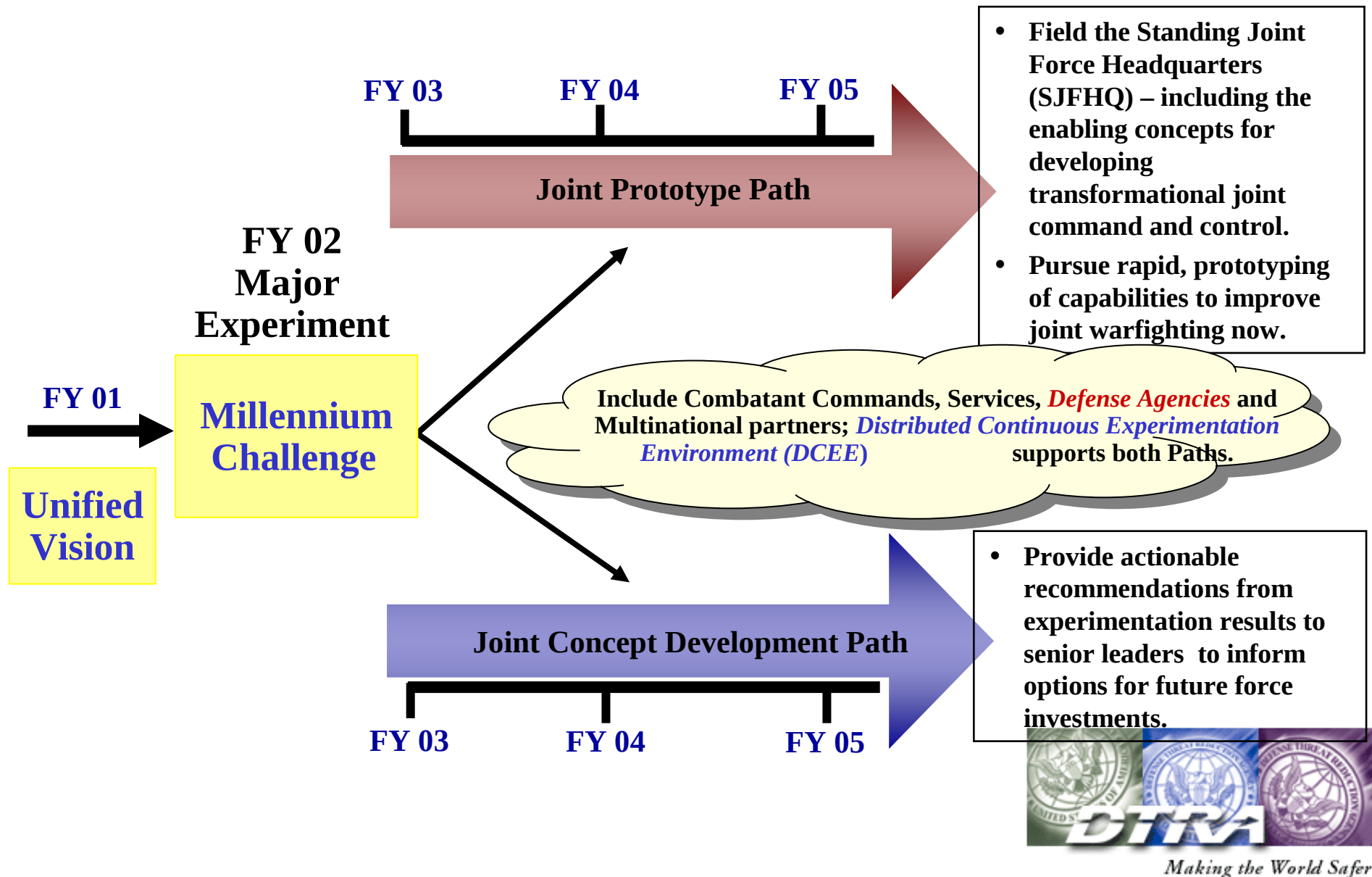
Commander Joint Forces Command (JFCOM) report annually to the SecDef on progress in priority **experimentation areas and adequacy of the following dedicated **experimentation** infrastructures:**

- **War Gaming.**
- **Modeling and Simulation (M&S).**
- **Joint National Training Capability.**
- **Operational Lessons Learned.**



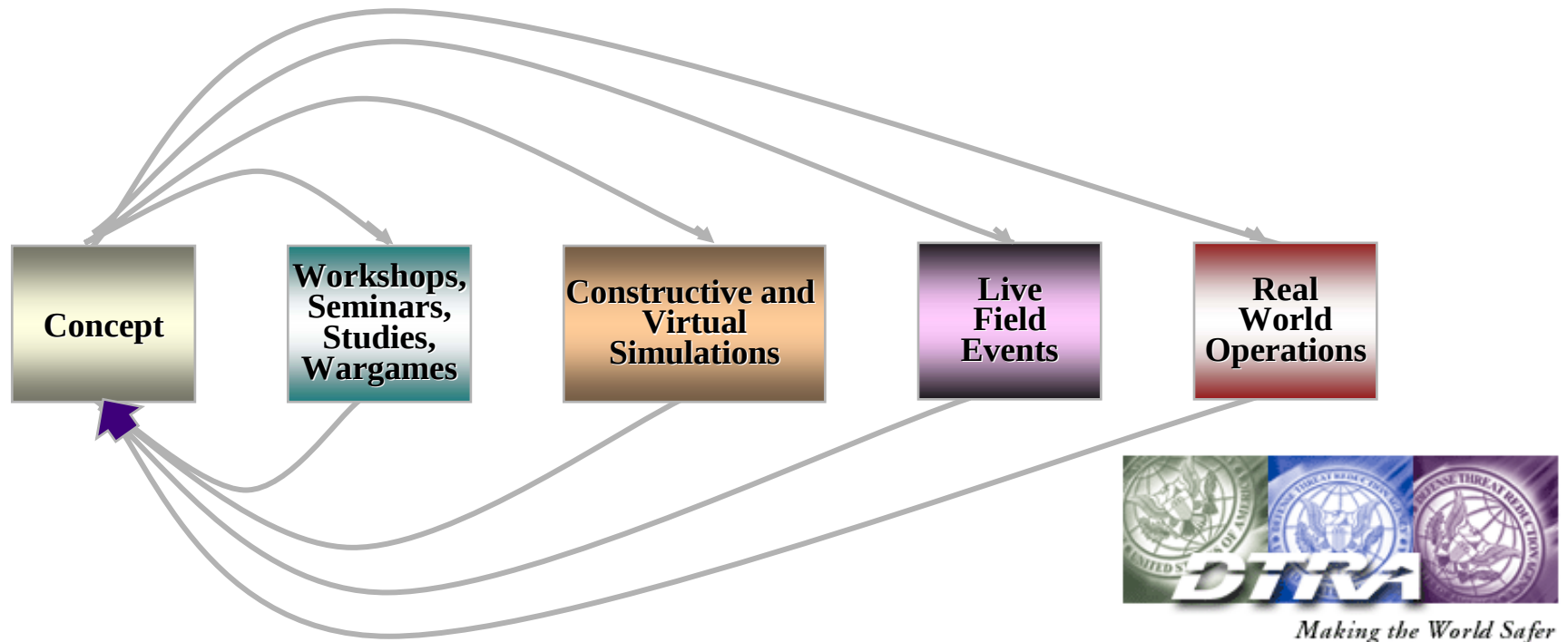
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JFCOM: Joint Concept Development and Experimentation Strategy

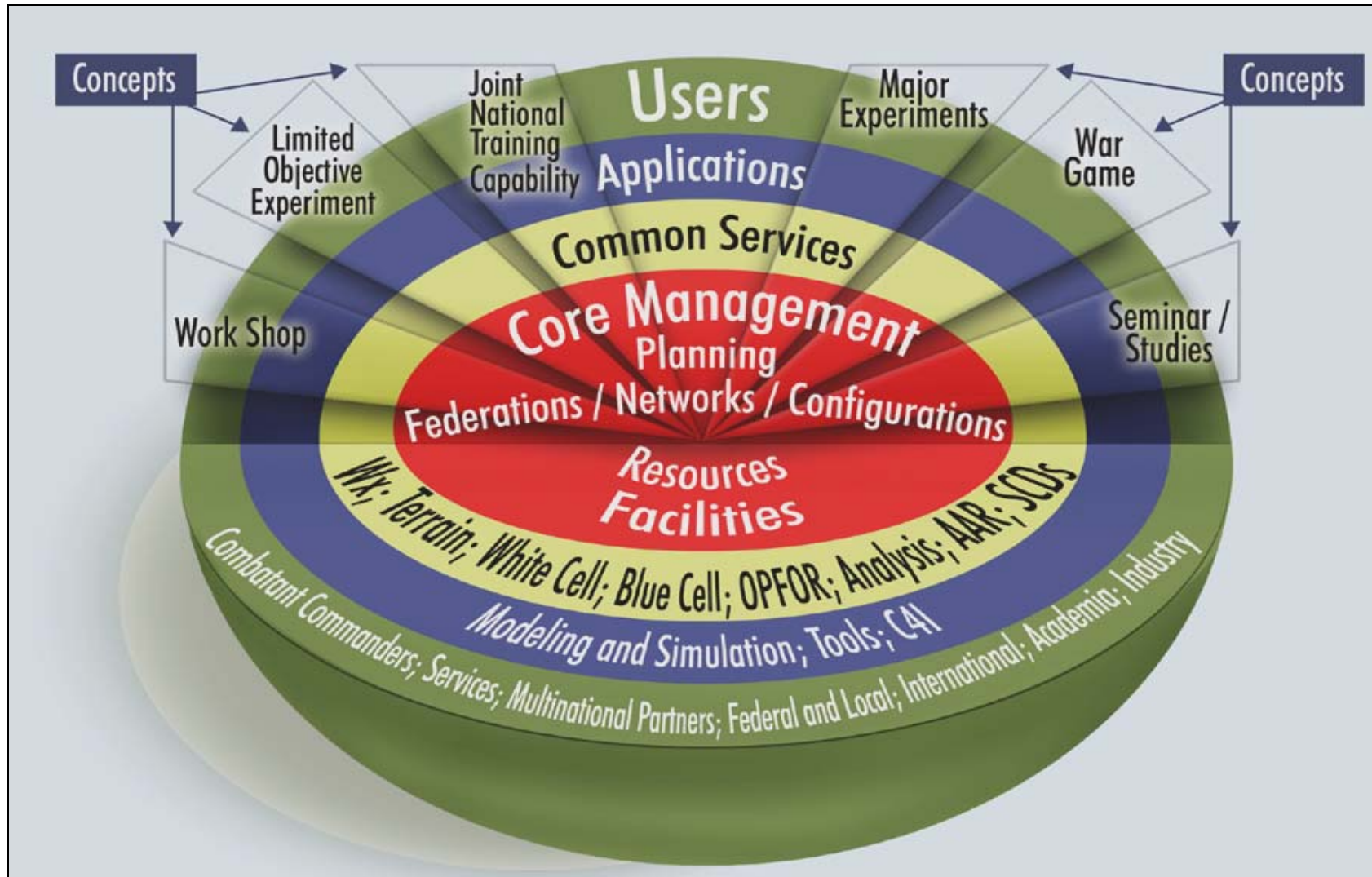


JFCOM: Mission of the DCEE

Provide a continuous, flexible and credible environment to develop, refine and evaluate concepts and technologies in support of transformational activities.

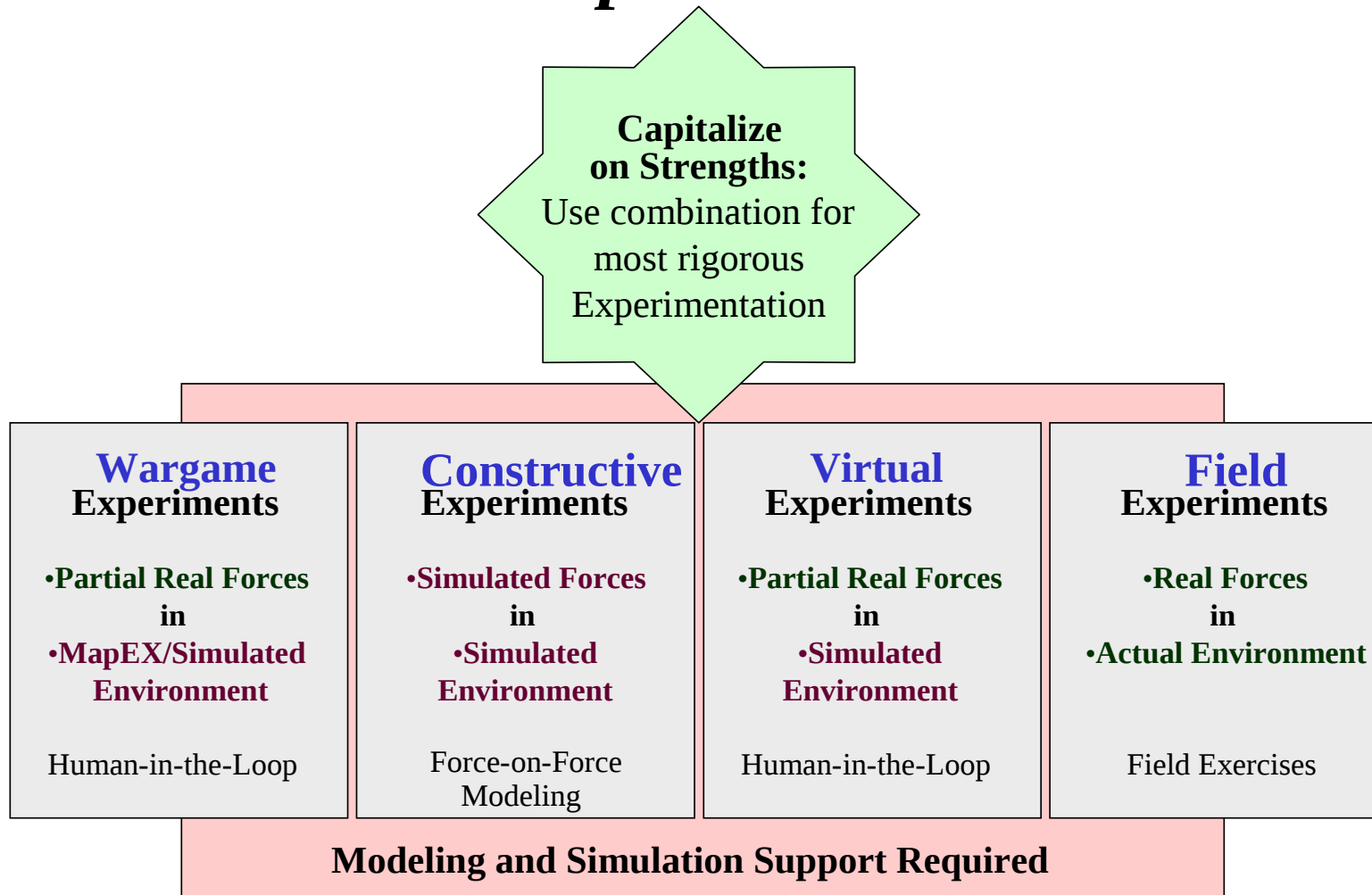


JFCOM: DCEE – Adaptable Environment



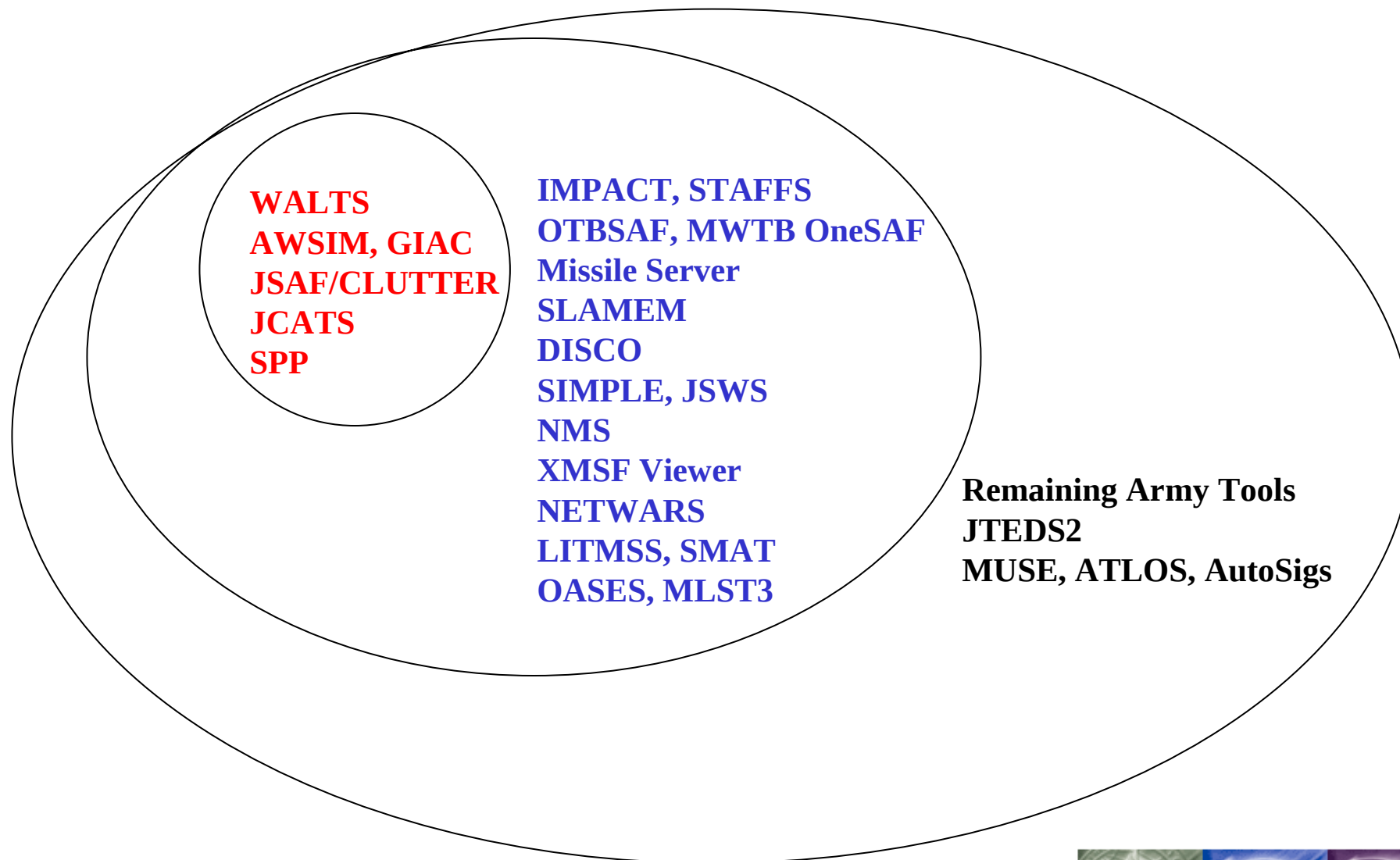
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DTRA WME Battle Lab Will Support All JFCOM Joint Experimentation Methods



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Simulation Priority for Initial Connectivity Test



CORE Sims/Tools

Supporting Sims/Tools

All Others



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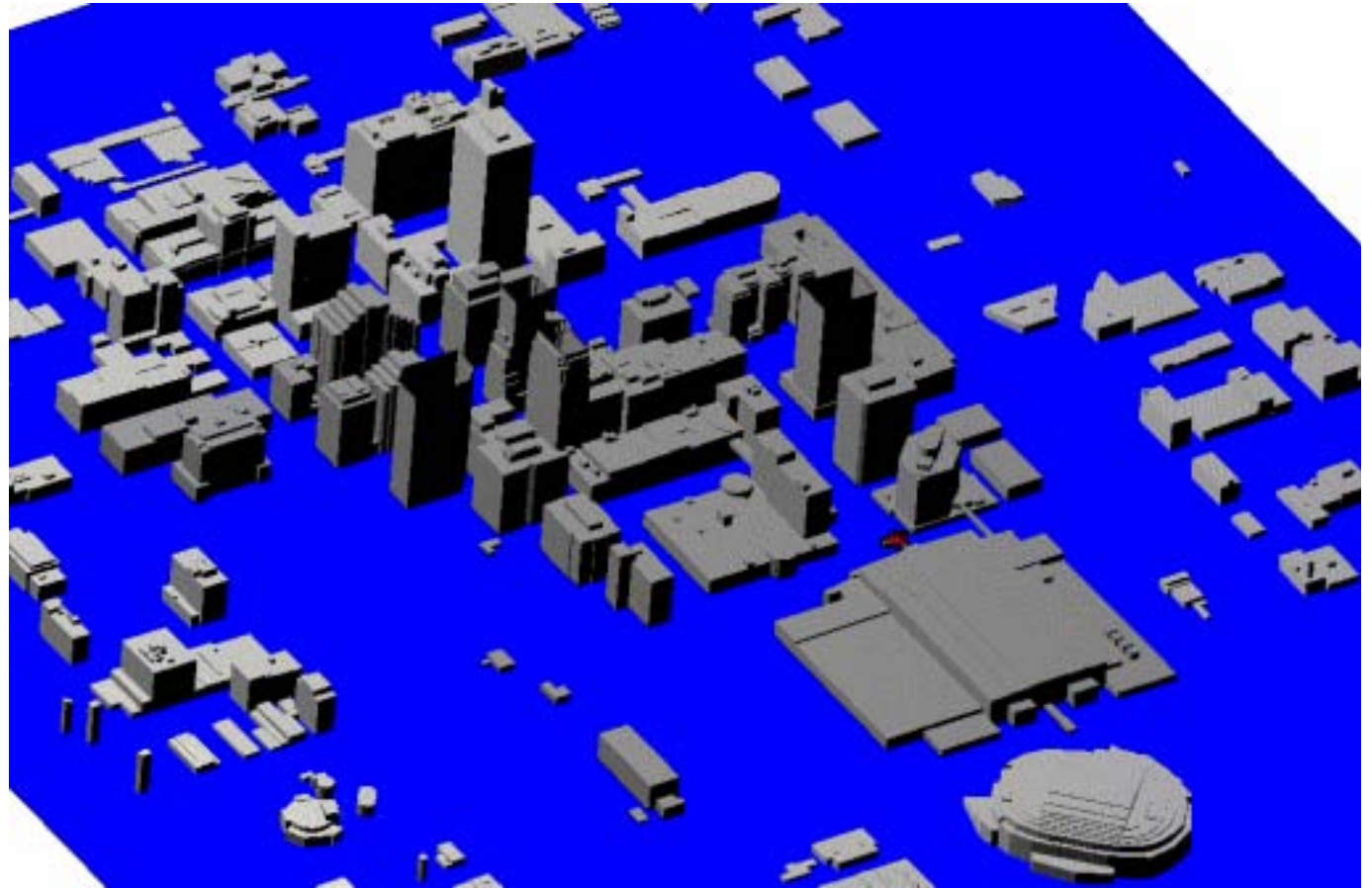
DTRA & DOE Field Trials for Urban Modeling

Small Scale Testing

- **UK - Wind Tunnel and Field Trials**
- **Canada - Water Flumes**
- **Dugway – Mock Urban Setting Test**

Full Scale Testing

- **Salt Lake City – 2000**
- **Joint Urban – Oklahoma City 2003**

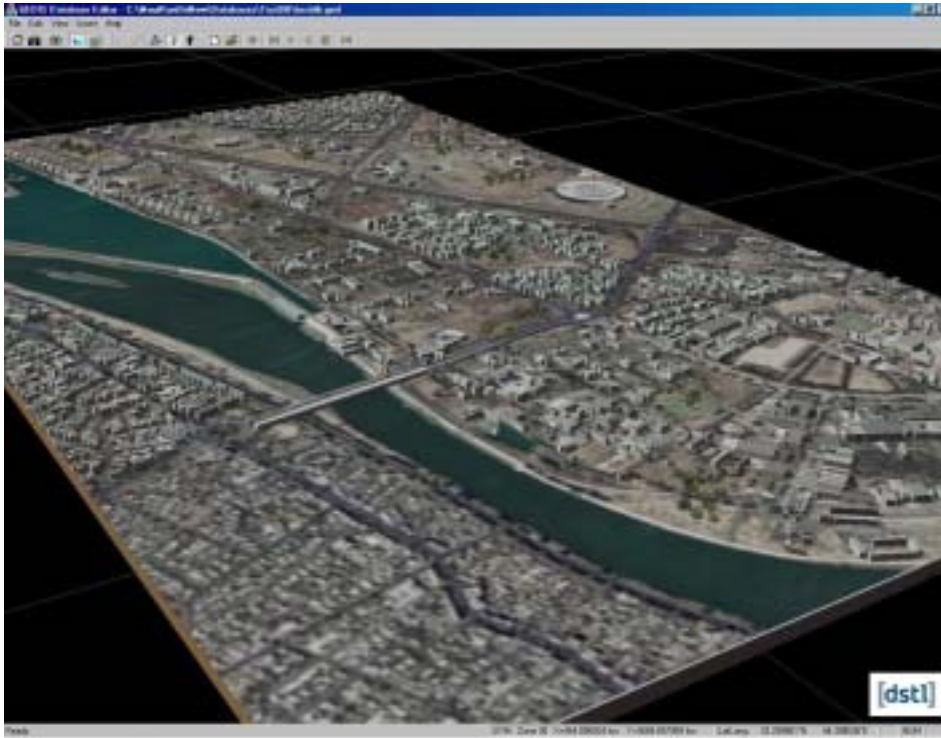


Joint Urban 2003 CFD Calculation

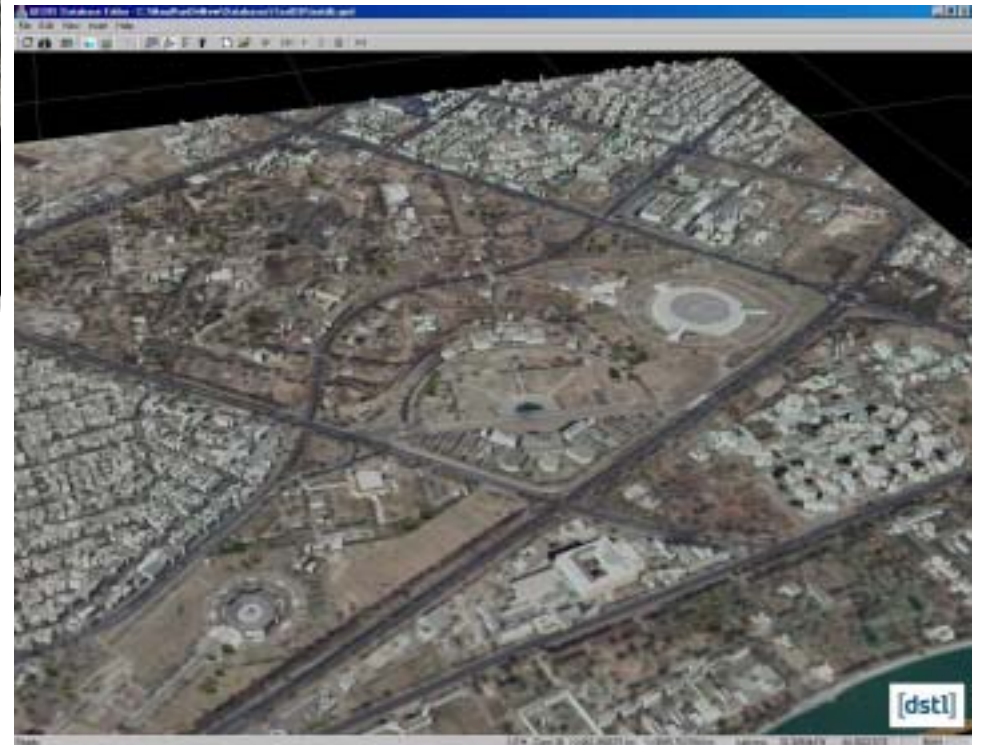


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Weapons Analysis & Lethality Tool Set (WALTS) Future

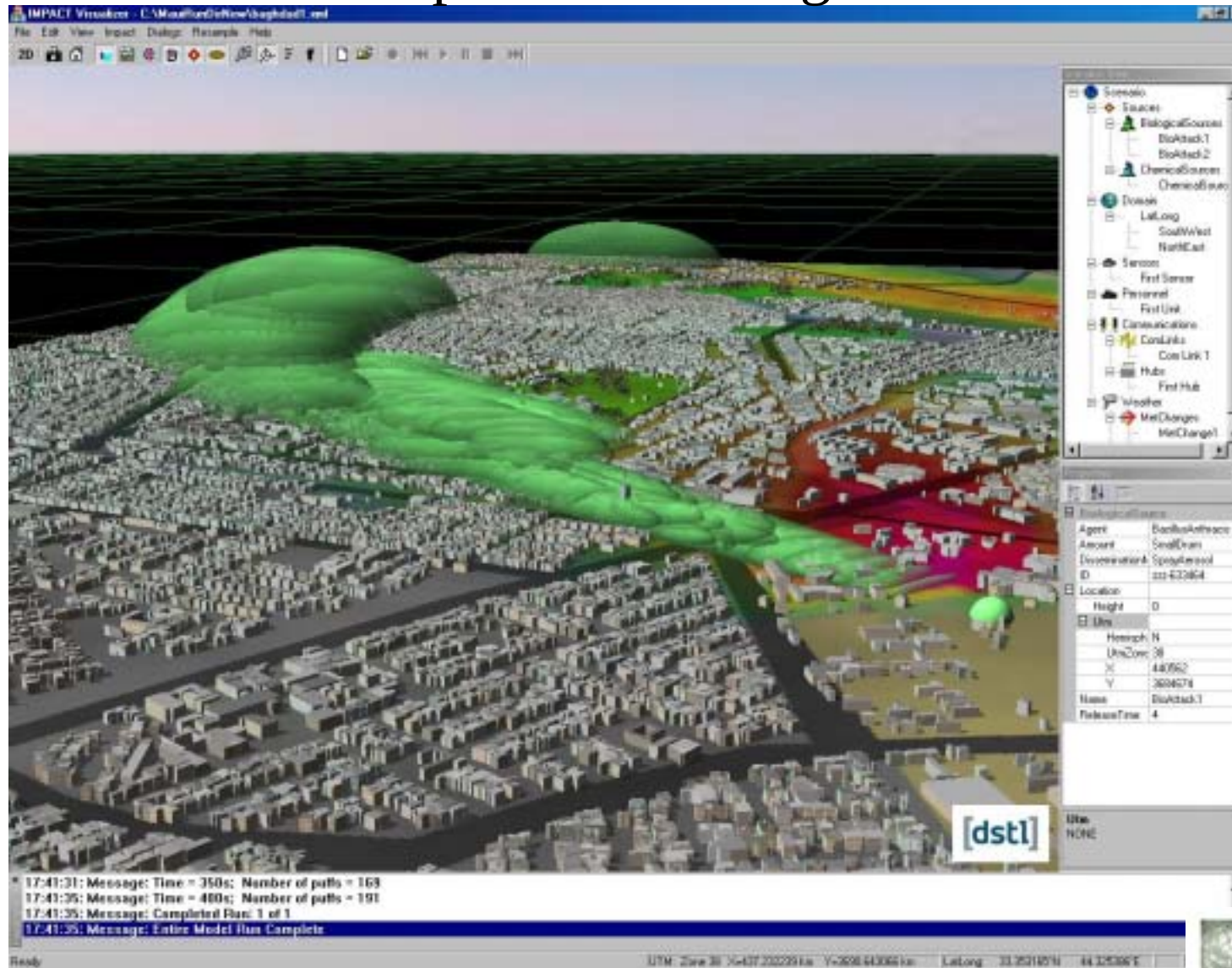


Sample 3-D views of
buildings, trees, and imagery
draped over terrain



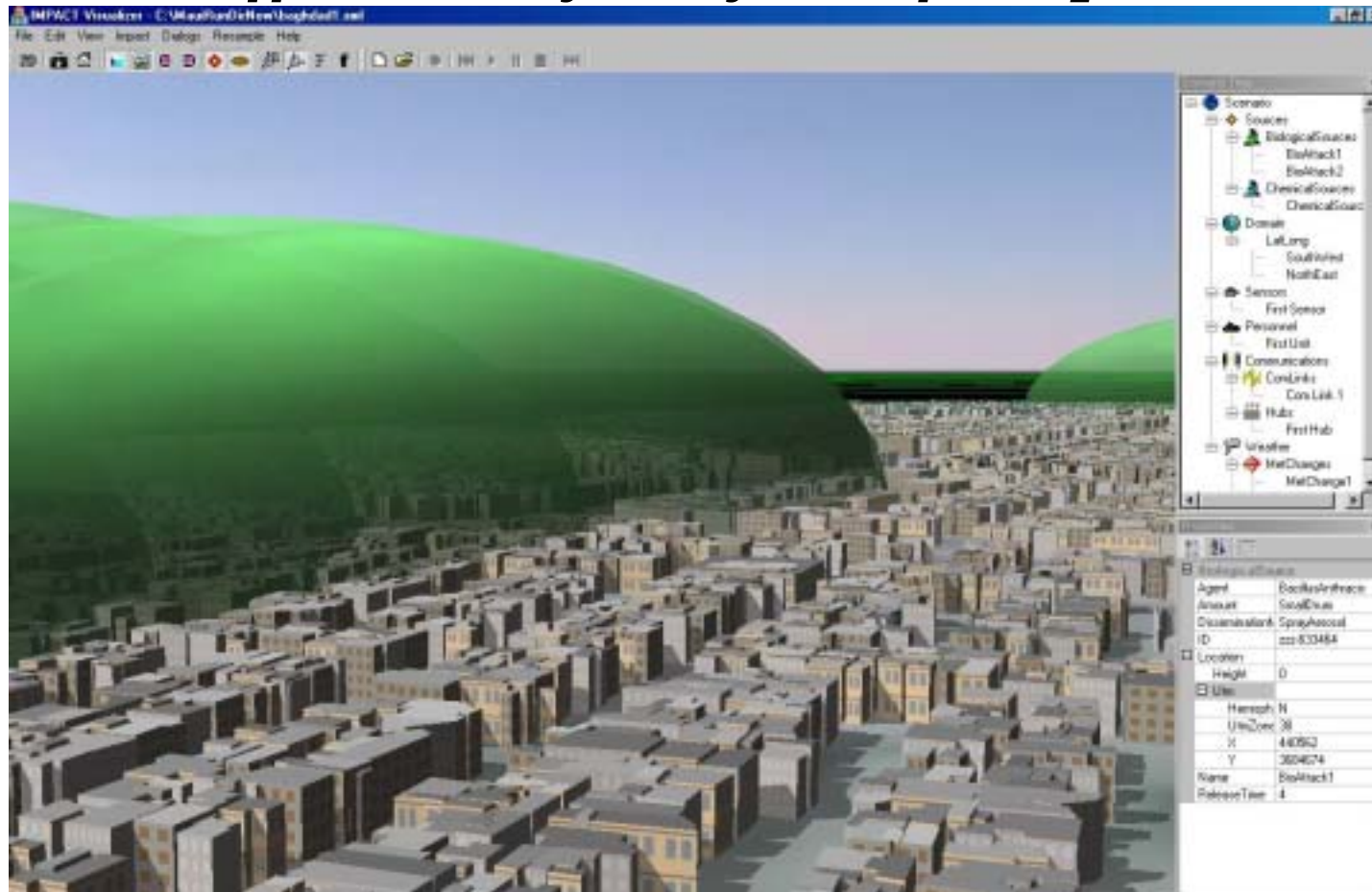
WALTS Future

Closer 3-D view of puffs and dosage around buildings



R&D Initiatives: REASON

Response & Effects Analysis System for Operational Needs



Close up view of plume in urban area

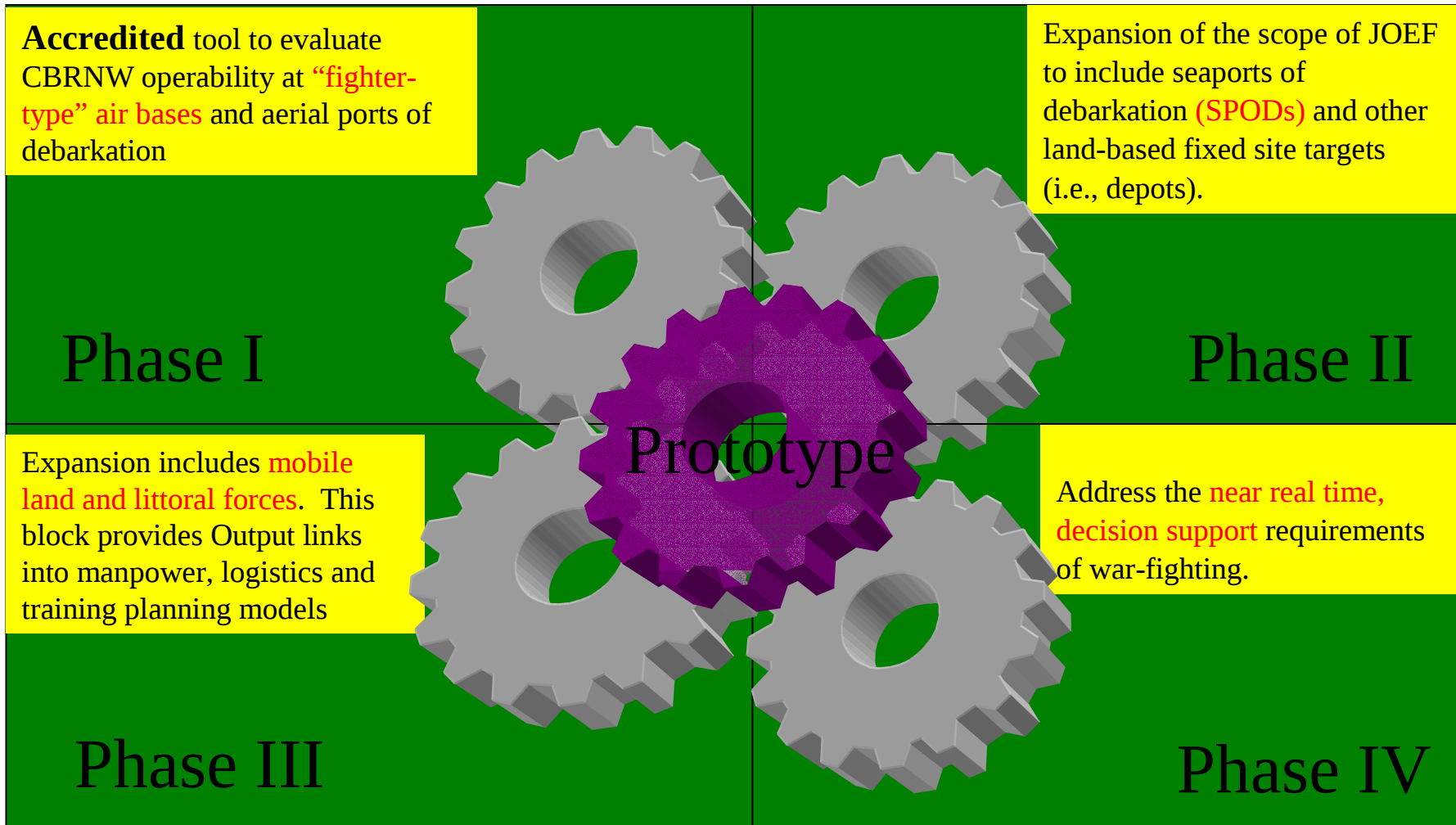


R&D Initiatives:



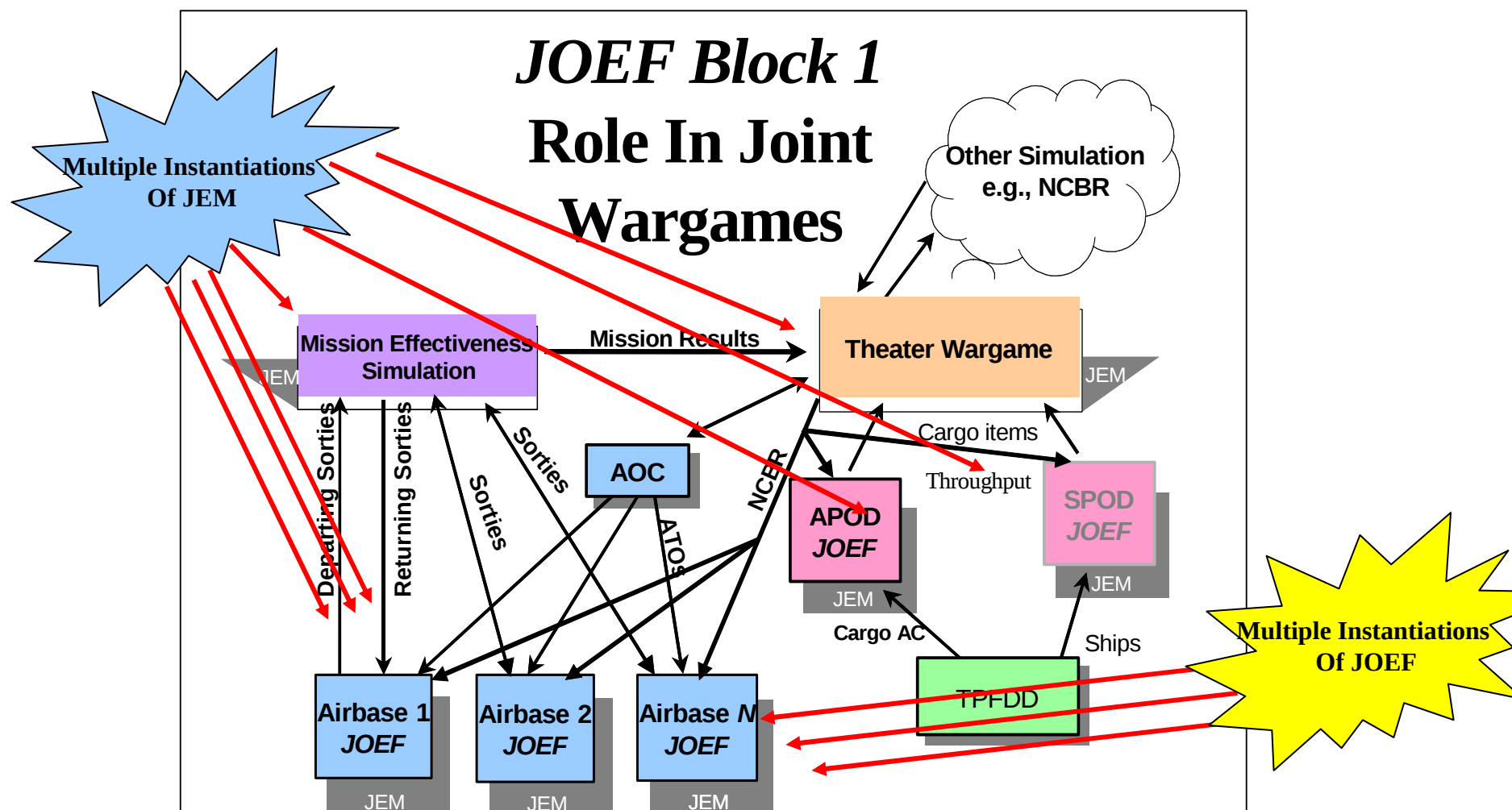
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JOEF Phases



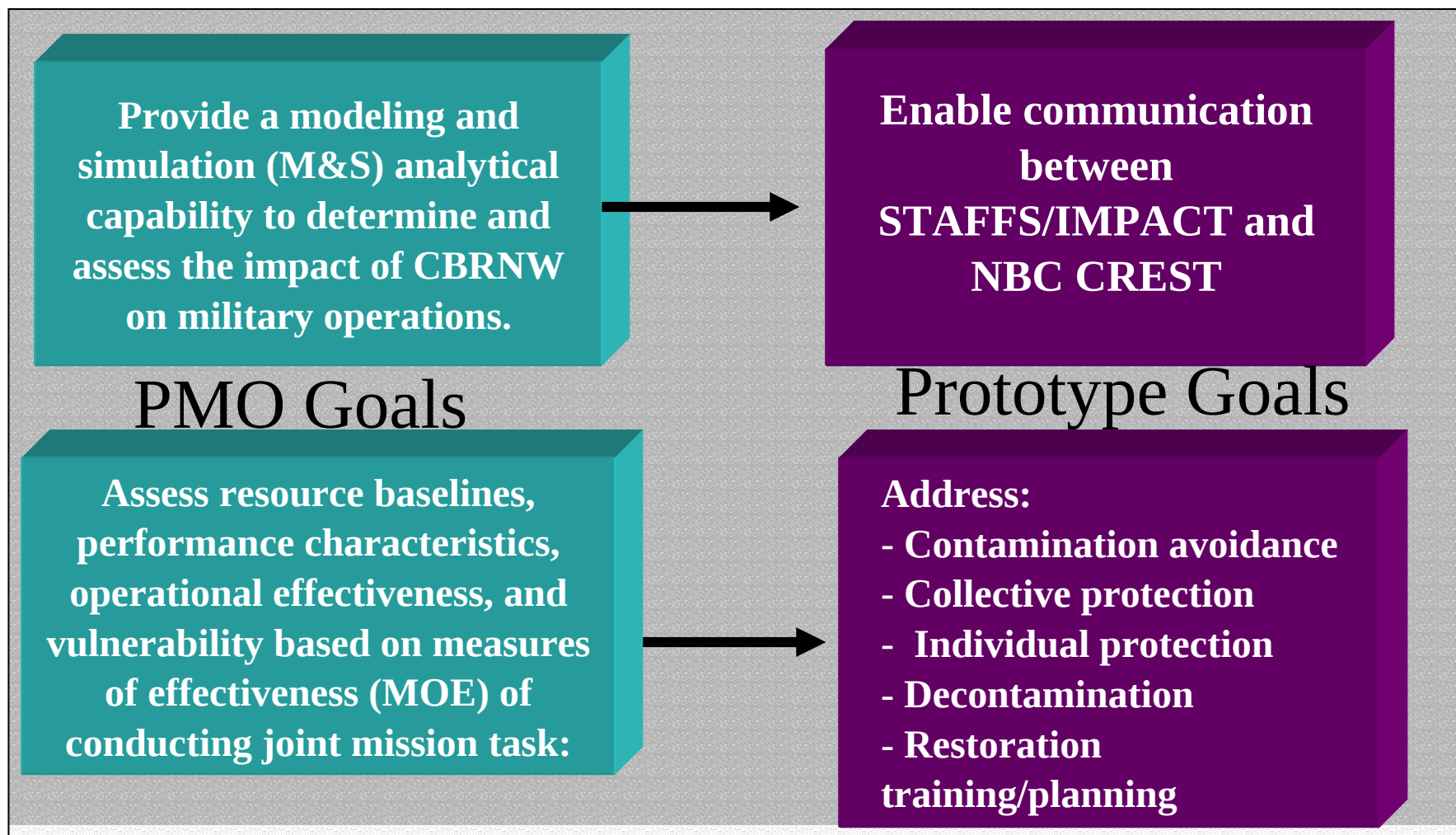
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Basic Concept of JOEF Capability



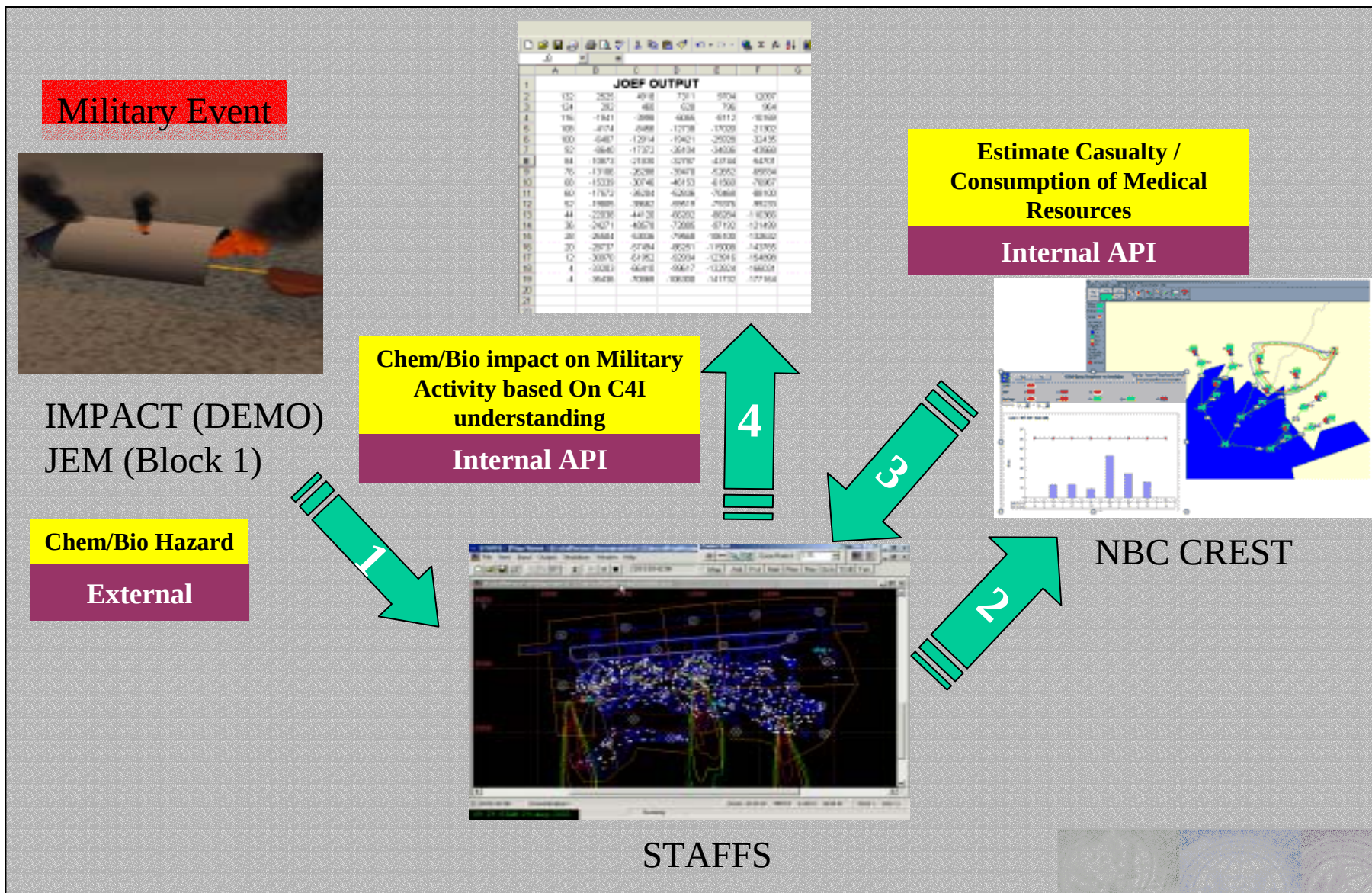
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Primary Tasks for JOEF Demonstration



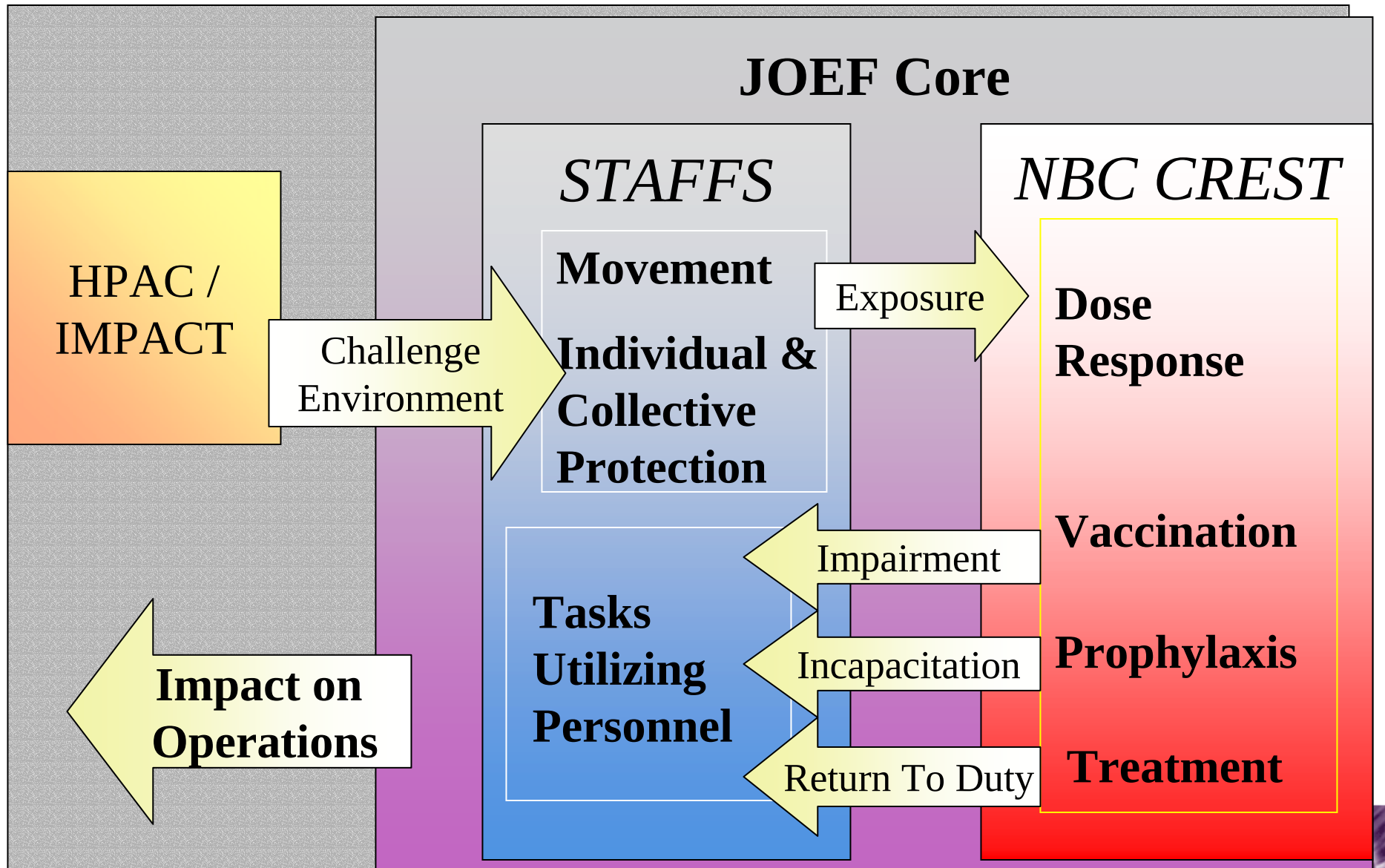
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Information Flow from Target to Output



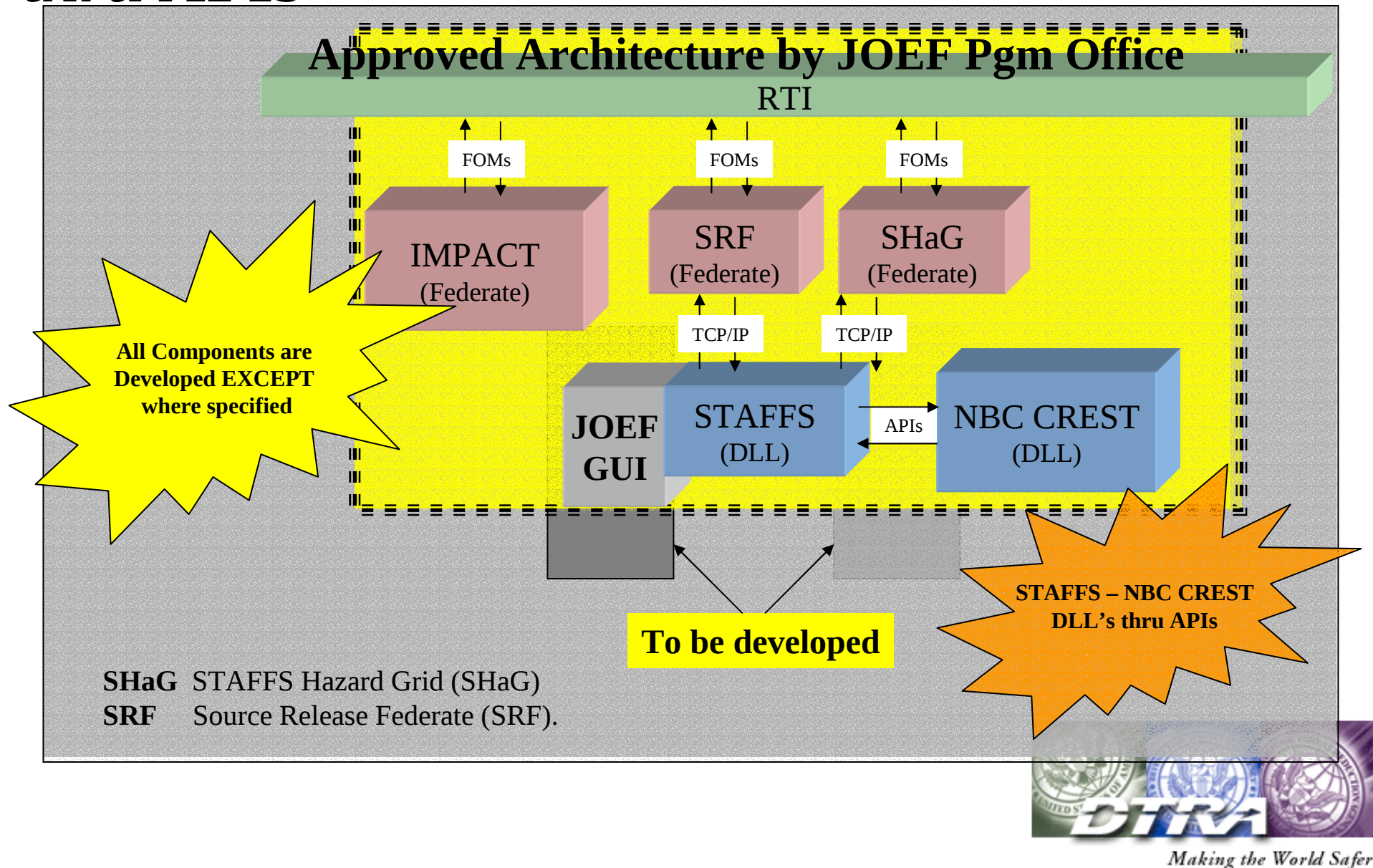
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Chem-Bio Functions Integration

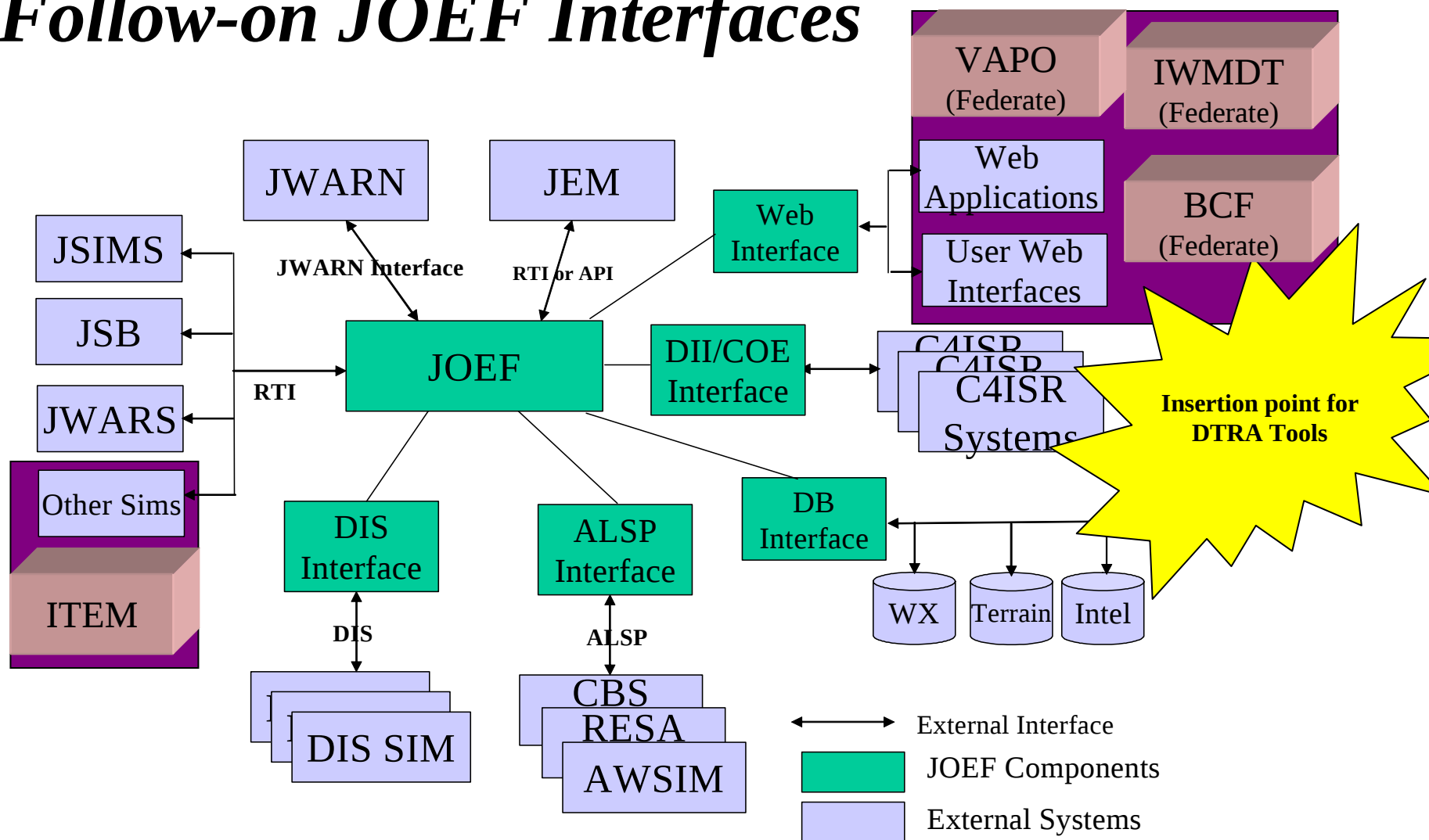


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Demonstration: Combination RTI / DLLs thru APIs



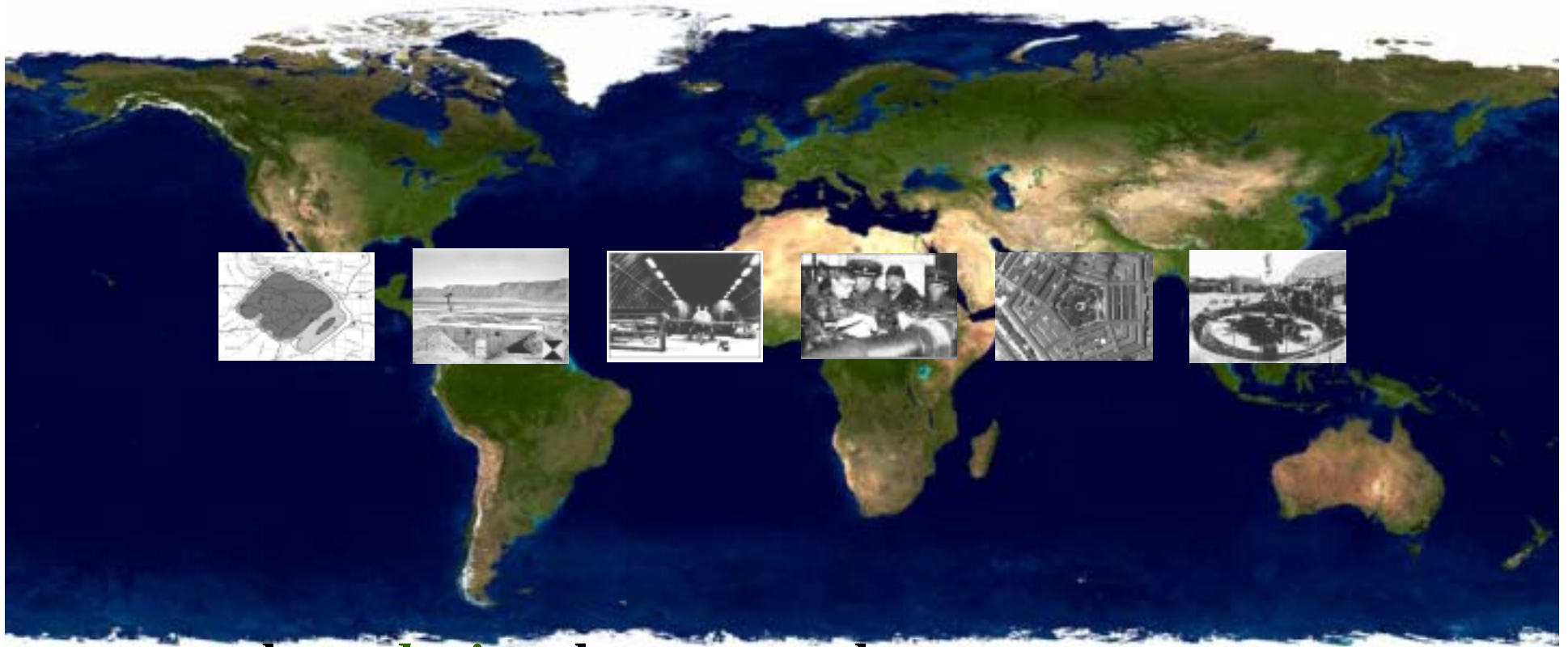
Follow-on JOEF Interfaces



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...by *reducing* the present threat
and *preparing* for future threats



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