



Remarks to Eighth Annual State of Modeling and Simulation

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- Role of experimentation in transformation
- M&S challenges
- Joint Advanced Warfare Program at the Institute for Defense Analyses (IDA)



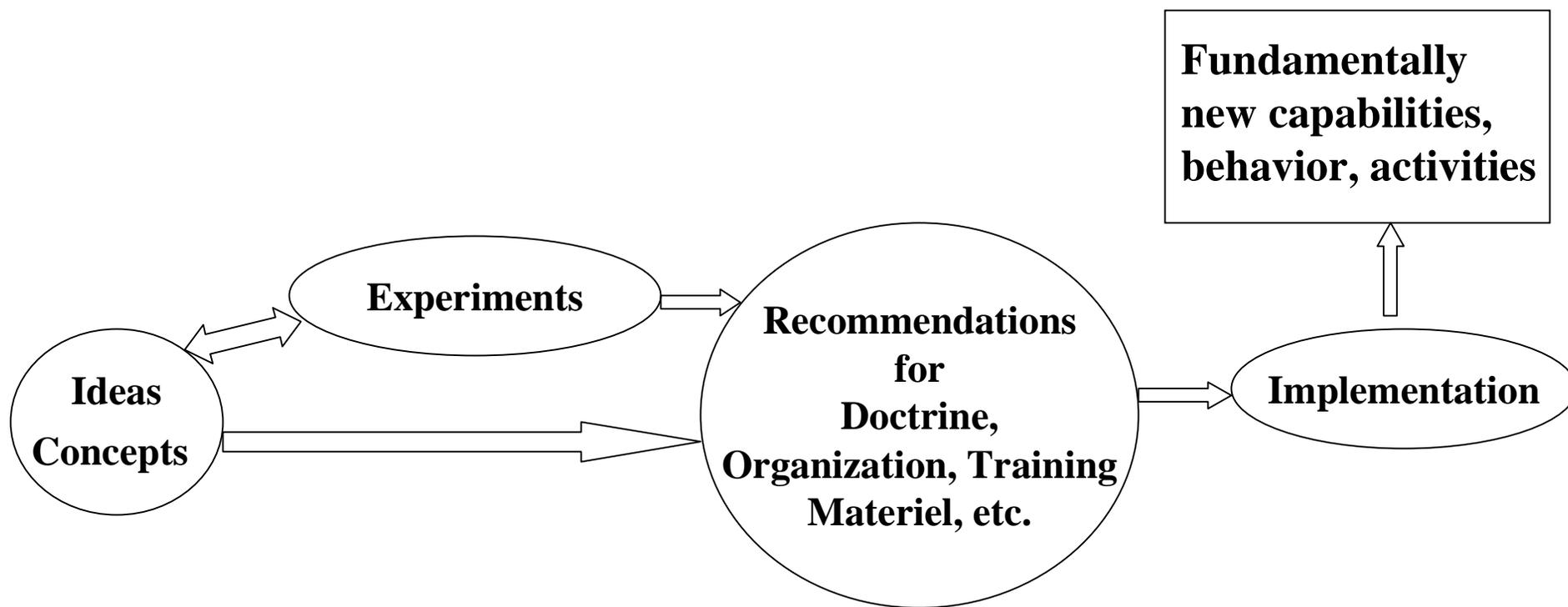
There are Calls for “Revolutions”

- “The military challenges of the 21st century ... require a fundamental transformation of our military forces”
- “We must transform our forces by exploiting the Revolution in Military Affairs (RMA)”
- Pursuit of the RMA involves ... “bringing about fundamental change in the capabilities of the armed forces, including new doctrines, operational concepts, and organizational structures”
- “Also requires fundamental reengineering of our infrastructure and streamlining of our support structures through the Revolution in Business Affairs (RBA)”
- “The RMA and RBA are interlocking revolutions” ... both needed to “ensure that US forces continue to have unchallenged superiority in the 21st century”

Why Transform?

- **New geo-strategic environment**
- **Capability gaps (rapid, decisive combined force projection)**
- **Commercialization and globalization of technology & industrial bases**
- **Technology revolutions -- information, bio,**
 - **may be driving profound societal change on global scale**

Role of Experiments in Transformation Process



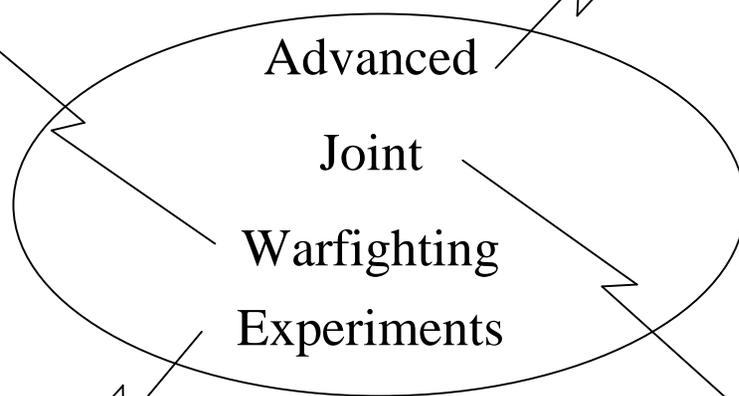
All the above should be guided by a vision, driven by a strategy, supported by keen analyses with progress gauged by relevant metrics



What Are Advanced Joint Warfighting Experiments & How Do They Differ From Other Activities?

**Human behavior
in stressful environments:
doctrine, organization, training
as well as materiel**

**Search for
“RMAs”
discontinuous change**



**Discovery vice Verification
Tolerance for Surprise
Free play Red Team
Iterative Process
Push to failure**

**Deconfliction,
Seams,
Interoperability,
Integration &
Synergies**

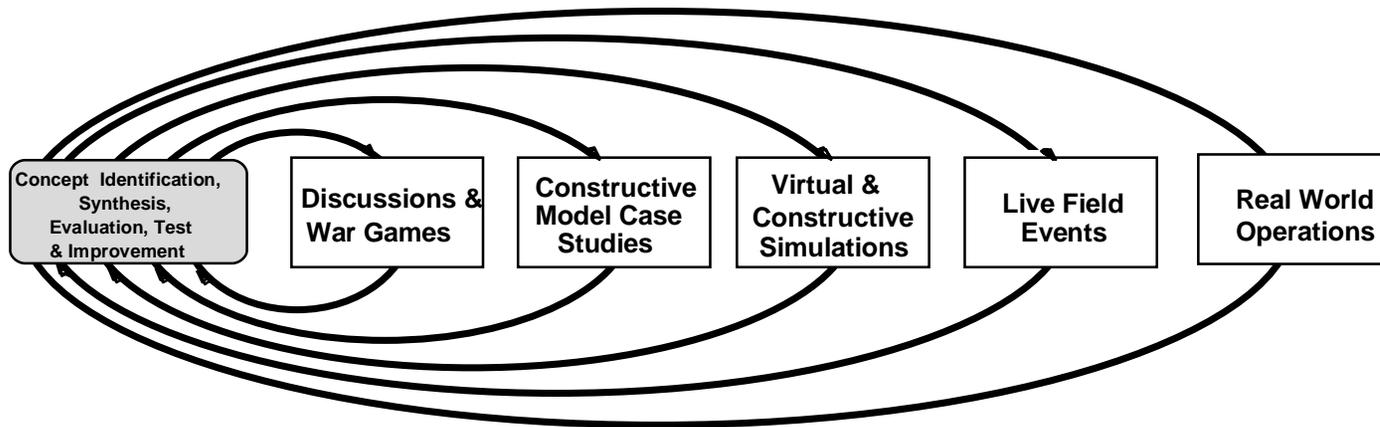
A Dozen Attributes of an Effective Joint Warfighting Experimentation Process

- Creative vice evaluative
- “Campaigns” vice events
- Early immersion in future
- Extensive Red Teaming
- Persuasive to stakeholders
- Tolerance for surprise/failure
- Prepared to exploit successes
- Learn from past experiments
- Not taking 2010 literally as end point
- Integrates and influences Service efforts
- Process protected from ... but not from criticism
- Some early success, but recognize tension with other attributes

*If objective is to
learn how to
foster big
change*

The Experimentation Process

Everything short of combat is simulation, however even actual combat may provide wrong lessons for tomorrow



- Process is:
 - concept-based
 - iterative
- Concepts can “fail”
 - experiments fail only when nothing is learned
- Not all experiments must proceed to live events



Joint Concept Development & Experimentation: Challenges for Modeling, Simulation & Analysis

- **Account for responsive & innovative future adversaries**
- **Address**
 - **C2 issues & human dimensions**
 - **relationships among & between JV-2010 concepts**
- **Develop measures & tools relevant to**
 - **JV-2010, Information Ops, Network Centric Warfare ...**
 - **non-linear, non-attrition, coercive warfare**
- **Provide**
 - **Adaptability/flexibility**
 - **Accessibility, particularly to key stakeholders**



M&S Challenges for the Joint Attack Ops Experiment

- **Simulating the environment**
 - **Running battles long enough to permit adaptive Red/Blue tactics**
 - **realistic levels of ground “clutter” ($> 10^4$ moving objects)**
- **Modeling the concept**
 - **Identifying appropriate range of future system performance**
 - **future C2 cells -- sensor management/exploitation functions**
- **Establishing the process**
 - **Focusing on “discovery”**
 - **Tight schedule**

Three Big Challenges

- A culture intolerant of surprise and failure
- M&S customers generally more interested in advocacy than discovery
- An aversion to the really new



Joint Advanced Warfighting Program (JAWP)

- Created at IDA in 1998 by OSD and JCS leadership to serve as a catalyst for breakthrough changes in military capabilities by helping:
 - elaborate new concepts/capabilities
 - conduct joint experiments
 - integrate related activities & prepare for implementation
- Works for OSD, Joint Staff & USACOM
 - also with other CINCs, Services, Defense Agencies, others
- Will be staffed by ~ 30 professionals
 - civilians & active duty military (three from each Service on Joint assignments)
 - located in Alexandria and Norfolk



Joint Concept Development & Experimentation: Challenges for Modeling, Simulation & Analysis

- **Account for responsive & innovative future adversaries**
 - free play, adaptive strategies and tactics by professional red teams
- **Address C2 issues & human dimensions**
 - distributed, joint, coalition, interagency forces
 - segmented vs. seamless, centralized/empowered; self synchronization
- **Address relationships among & between JV-2010 concepts**
 - e.g., fires and maneuver; logistics and fires
- **Develop measures & tools relevant to**
 - JV-2010, Information Ops, Network Centric Warfare ...
 - non-linear, non-attrition, coercive warfare
- **Value adaptability/flexibility over fidelity**
 - rapidly changeable scenarios, conops, forces, technologies, ...
- **Provide accessibility, particularly to key stakeholders**
 - allow them to take concepts for “test drives”
 - address all aspects of “DOTMLP”, not just materiel