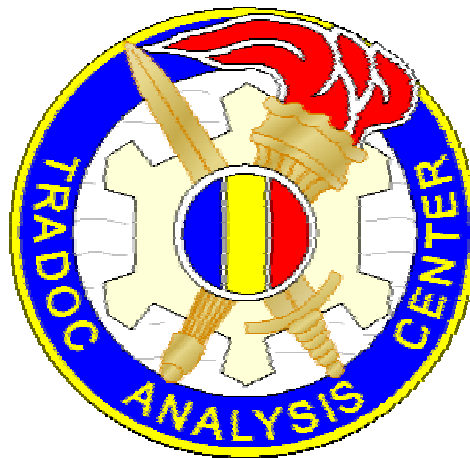


DMSO Industry Days 2000



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24 May 2000

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Analysis Mission



**Provide relevant, credible analysis
to inform decisionmaking**



Changing Environment

- 1. Military problem set is different, complicated by an *asymmetric and adaptive adversary*.**
- 2. Military solution set leverages IT, thereby placing more emphasis on *human dimension*.**
- 3. Pace of development of new military concepts requires greater investment of *intellectual capital*.**



Unprecedented Collaboration
Leaders--Warriors--Industry--Developers--Testers



The *Calculus* of Operations Analysis

3rd Order Conclusions based on strongly predictive methodologies

- ✓ Full experimental design
- ✓ Controlled variables
- ✓ Certified model algorithms and data, classified if necessary
- ✓ Statistical confidence limits

1st Order Insights based on quantitative and qualitative analysis

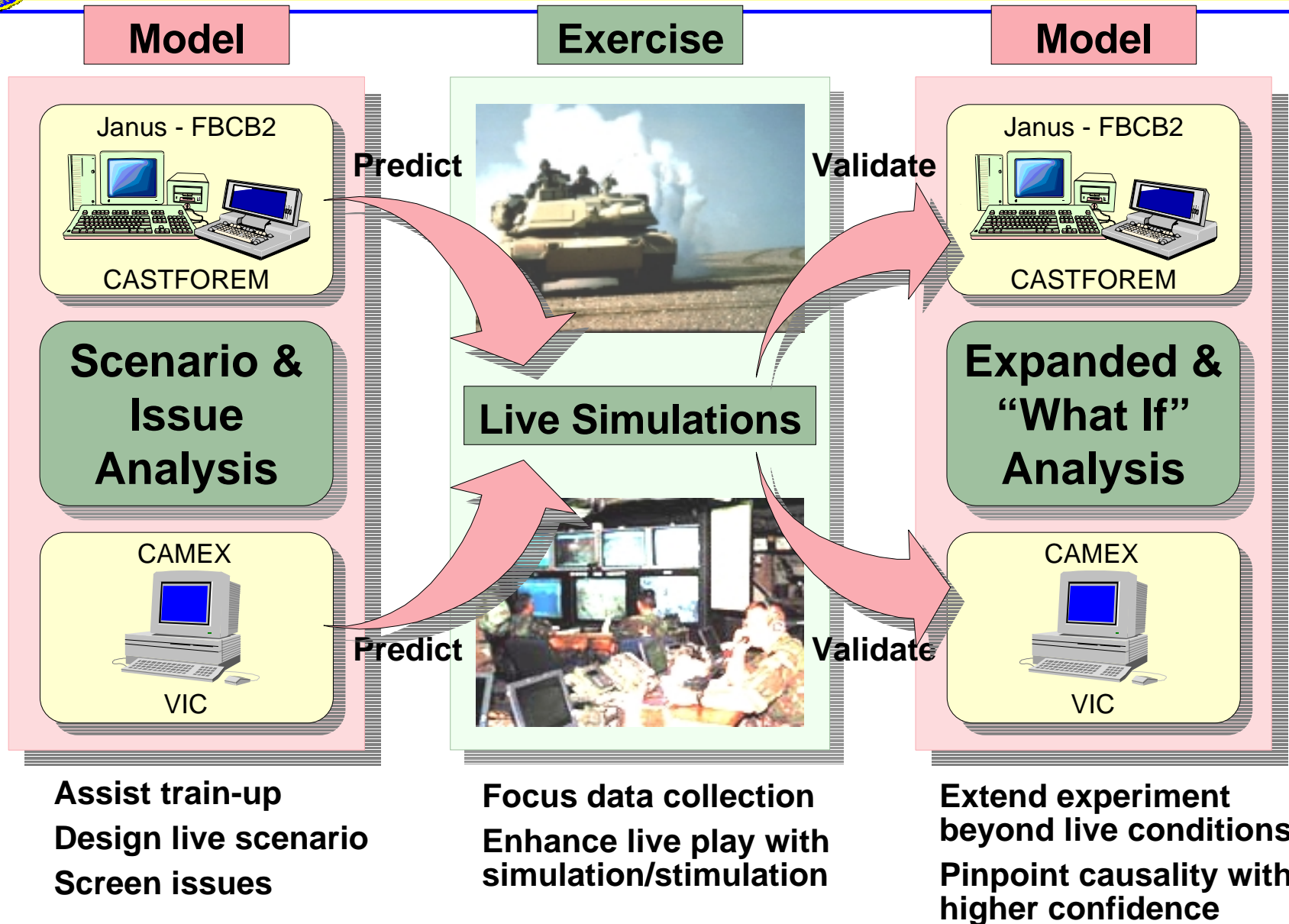
- ✓ Incomplete experimental design
- ✓ Surrogated data
- ✓ Structured exercise AARs and soldier-in-loop simulation results
- ✓ Inferred causality

PMJ Professional Military Judgement of SMEs

- ✓ Relevant military experience
- ✓ Operations lessons learned
- ✓ Historical precedent
- ✓ Training AARs

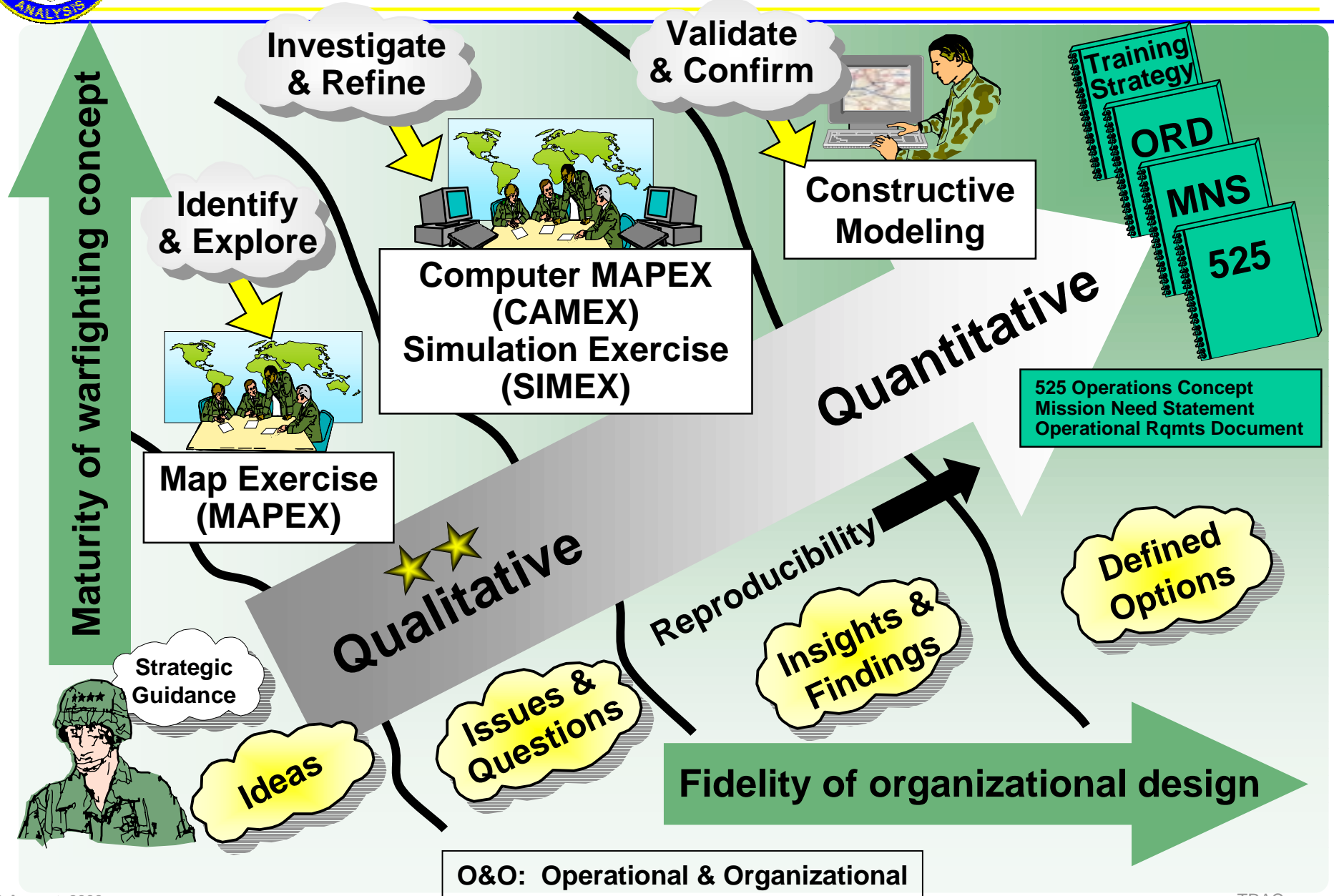


Experiment M-E-M Protocol





Concept-to-Requirements

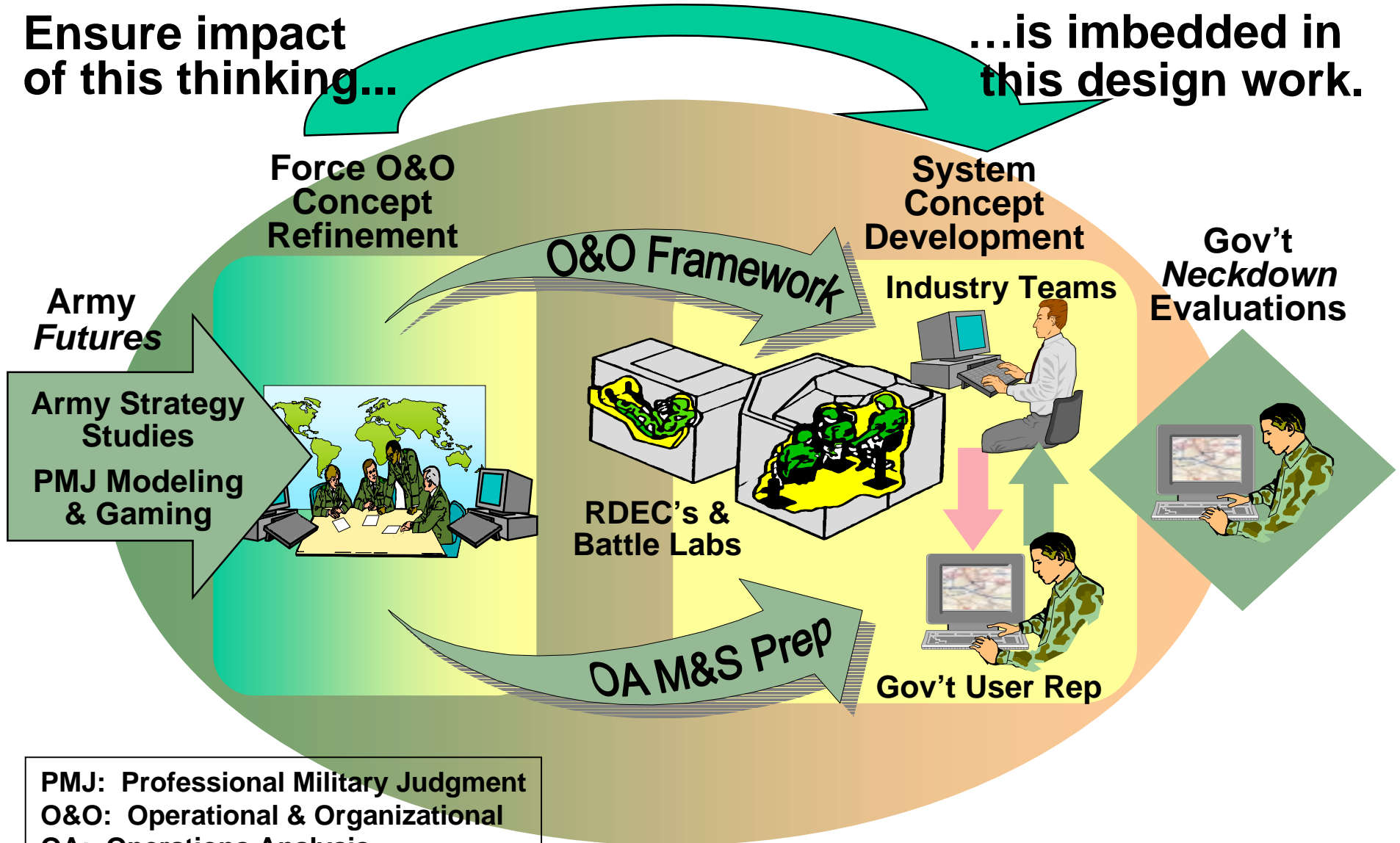




Future Combat System Collaboration

Ensure impact
of this thinking...

...is imbedded in
this design work.



PMJ: Professional Military Judgment
O&O: Operational & Organizational
OA: Operations Analysis



FCS Ops Analysis & M&S Collaboration

Concept Development Phase

Gov't Assessment Phase

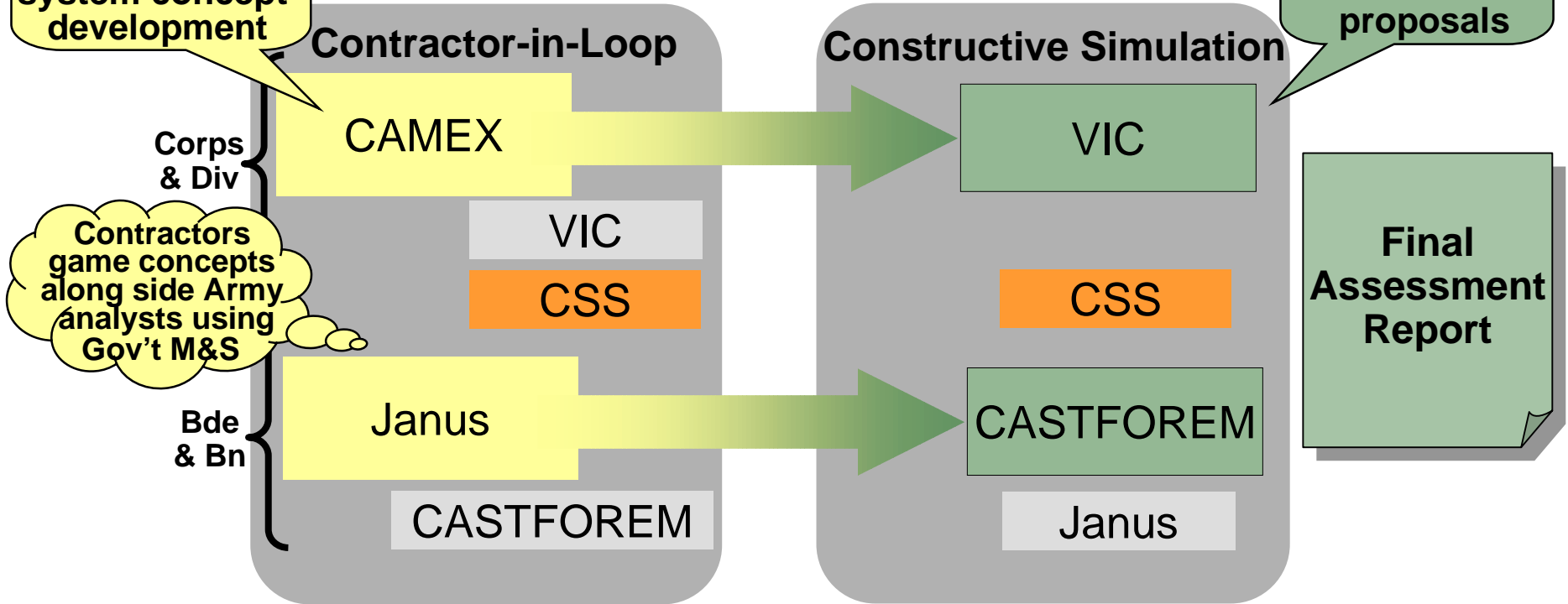
Technical M&S Support & Analysis

Gov't Technical Analysis

Operational M&S Support & Analysis

Gov't support to contractor system concept development

Gov't-only assessment of contractor proposals





Modeling Challenges

- ✓ **Insufficient knowledge base to accurately model operations in urban and complex terrain.**
 - Target acquisition and identification.**
 - Adjudication of fires.**
 - Tactical communication.**
 - Human behavior (all sides).**
- ✓ **Lack of human behavior models (especially for command decision making).**
- ✓ **Some headway made, but still largely a work-in-progress on methods to model and measure value of information in military ops.**



Infrastructure Roadblocks

✓ Unable to share sensitive data necessary to create collaborative simulation environments.

Proprietary system data

Intelligence data (basis of scenarios)

✓ Inadequate life cycle management of data for M&S to serve DoD-wide needs.

Data generation: Expansion and leverage of JTCG-ME is promising.

Data management: JDS has potential.

Data standards: “Data dictionary” is DOA.

**Big Impediments to Collaboration
Necessary for SBA & SMART**