

# **Quality**

## ***And Lack Thereof***



**Michael F. Bauman**

**Briefing to Work Force at TRAC-WSMR (30 Sep 06),  
TRAC-LEE (5 Oct 06) and TRAC-FLVN (11-12 Oct 06)**

# Agenda

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- **Introduction to Quality**
- **Three quality problem areas:**
  - **Constraints, Limitations & Assumptions**
  - **Methodology**
  - **Results Presentation**
- **Closing**

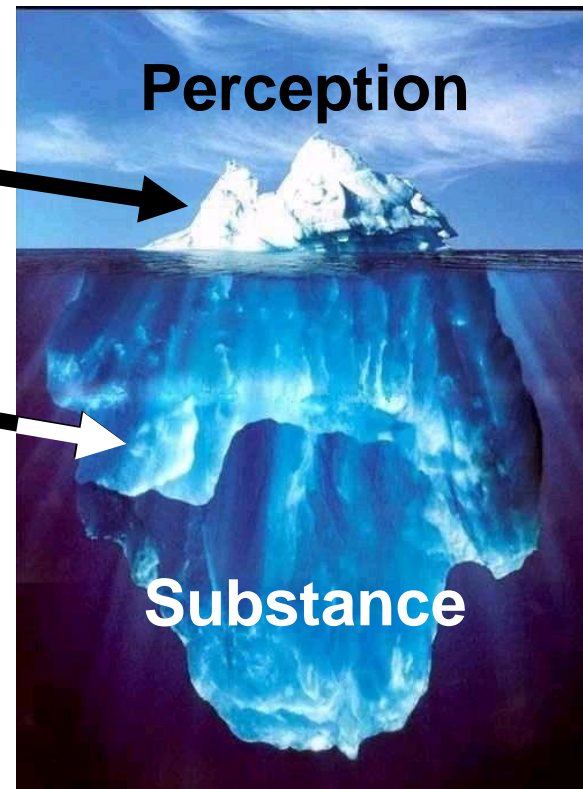
- Analytical quality has many components, for example:
  - *Relevant*, applicable, significant.
  - *Accurate*, exact, precise.
  - *Thorough*, comprehensive, attention to detail.
  - *Objective*, unbiased, independent.
  - *Clear*, understandable, lucid.
- Quality must be *built into* a product by its producer, not added after-the-fact by others.
- The *analyst is responsible* for quality.

- What constitutes quality is not an intangible or simply a personal opinion; *acceptable quality is defined* by standards and codes of best practice.
- Learning and achieving quality is promoted by honest, frank, critical review and discussion.
- Like it or not, our customers judge the quality of your work based on *what you report to them*.

**Quality is judged by the consumer based on what he/she perceives.**

**The focus of today's briefing is about this...**

**...and how it relates to this.**



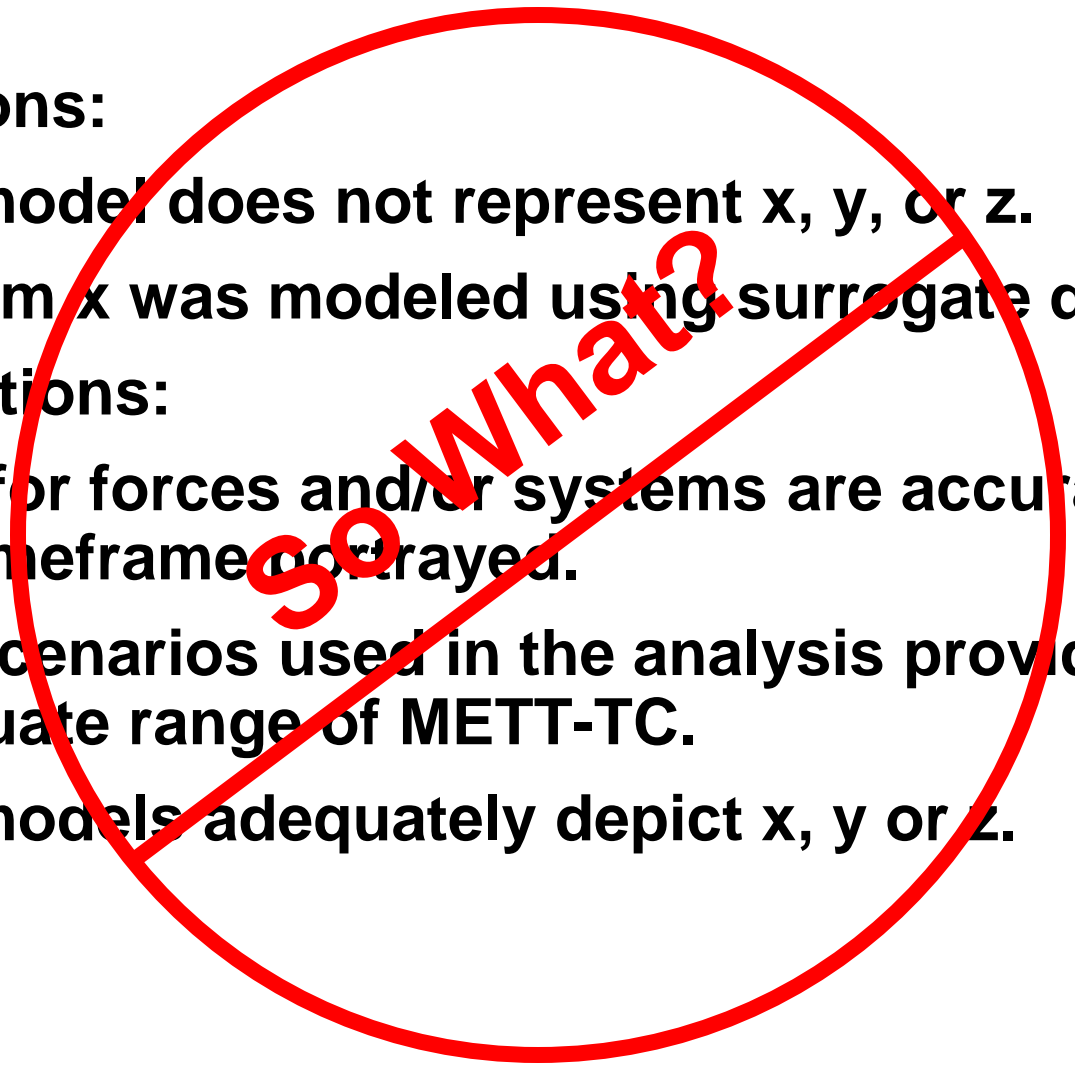
# Constraints, Limitations & Assumptions

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- **TRAC Code of Best Practice (COBP), titled “Constraints, Limitations and Assumptions Guide” dated May 2005.**
- **Definitions:**
  - ***Constraint***: A restriction imposed by the study sponsor that limits the study team’s options to conduct the study.
  - ***Limitation***: An inability of the study team to fully meet the study objectives or fully investigate the study issues.
  - ***Assumption***: A statement that is taken as true in the absence of facts, often to accommodate a limitation.
- **Consists of a *full set* (analyst-to-analyst) and a *key set* (analyst-to-customer or stakeholder).**
- **Why important to the analysis:**
  - Necessary precursor upon which to ***base the methodology***.
  - Vital to ***properly interpret*** and use the study results.
  - An important contributor to and ***indicator of quality***.

# Not Quality CLA

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- **Limitations:**
    - The model does not represent x, y, or z.
    - System x was modeled using surrogate data.
  - **Assumptions:**
    - Data for forces and/or systems are accurate for the timeframe portrayed.
    - The scenarios used in the analysis provide adequate range of METT-TC.
    - The models adequately depict x, y or z.
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# Constraints, Limitations, Assumptions

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- Constraints

- Deliver Excalibur Milestone C Spin-Off Analysis by 30 Jun 05.
- Conduct analysis IAW Current (FY08) and Future Force (FY14) O&Os.\*

- Limitations

- PMMA considered combinations of Army precision munitions for the HBCT and FCS BCT force designs; schedule and resources precluded analysis of the IBCT and SBCT force designs.
- PMMA mix affordability is limited to comparing mix program costs and precision munitions funding levels.
- The suite of PMMA scenarios enabled an explicit simulation treatment of 65% of the 187 mission profiles; the remainder were investigated by other means.
- Consideration of collateral damage relied upon the use of the “risk estimated distance” pertaining to limited personnel profiles (not structures).

- Assumptions

- The set of scenarios, to include CS 20.0 (Full BCT Offense) and NEA 5.1 (Corps/Division Offense), is adequate to address operational shaping by the mixes.
- Representation of critical battle command functions, including BDA, C2 of networked fires and fusion, are adequate reflections of future force concepts.

\*The United States Army Future Force Operational and Organizational Plan Maneuver Unit of Action (DRAFT) 30 July 2004 & Army Comprehensive Guide to Modularity Volume I Version 1.0 October 2004.

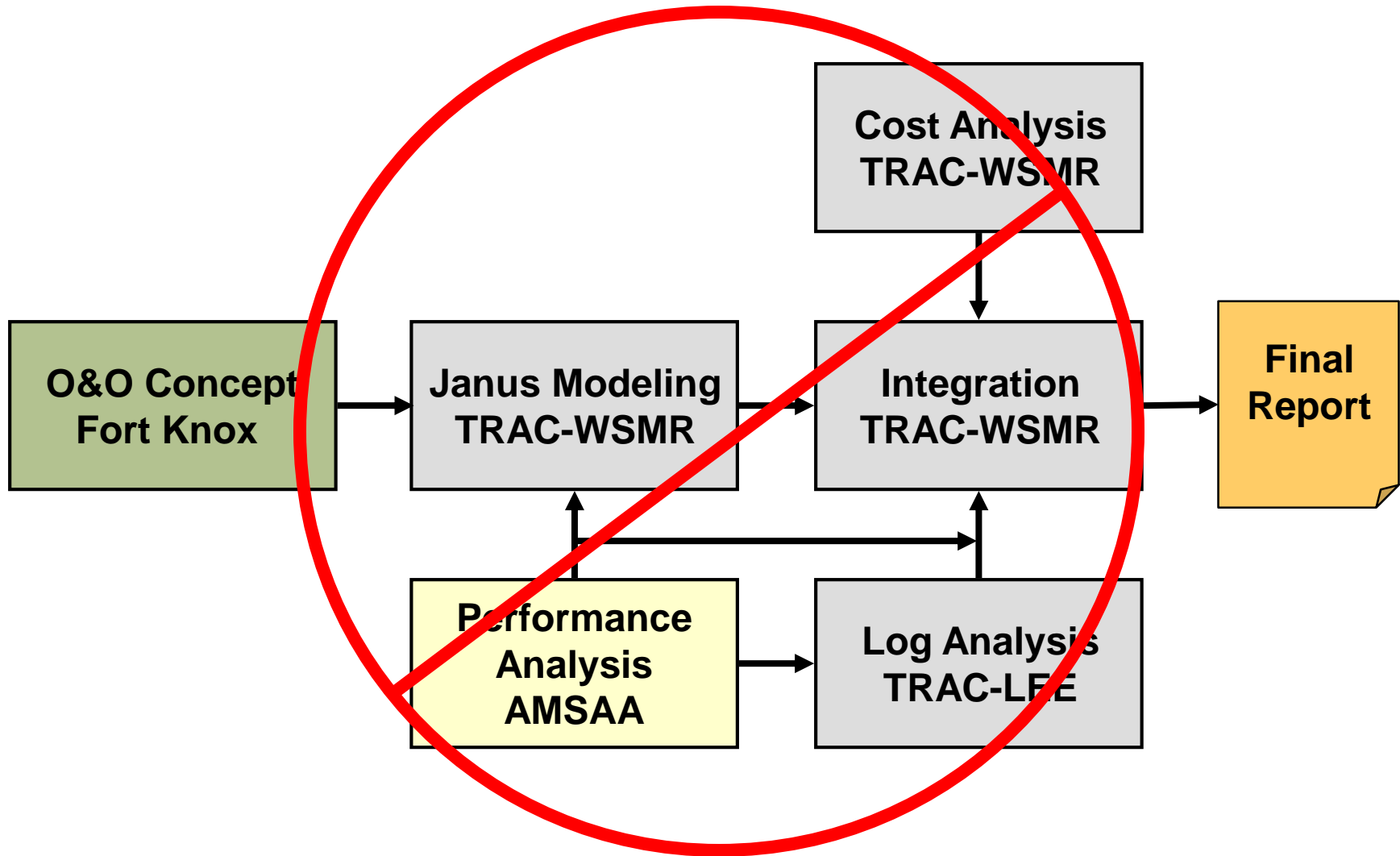


# Methodology

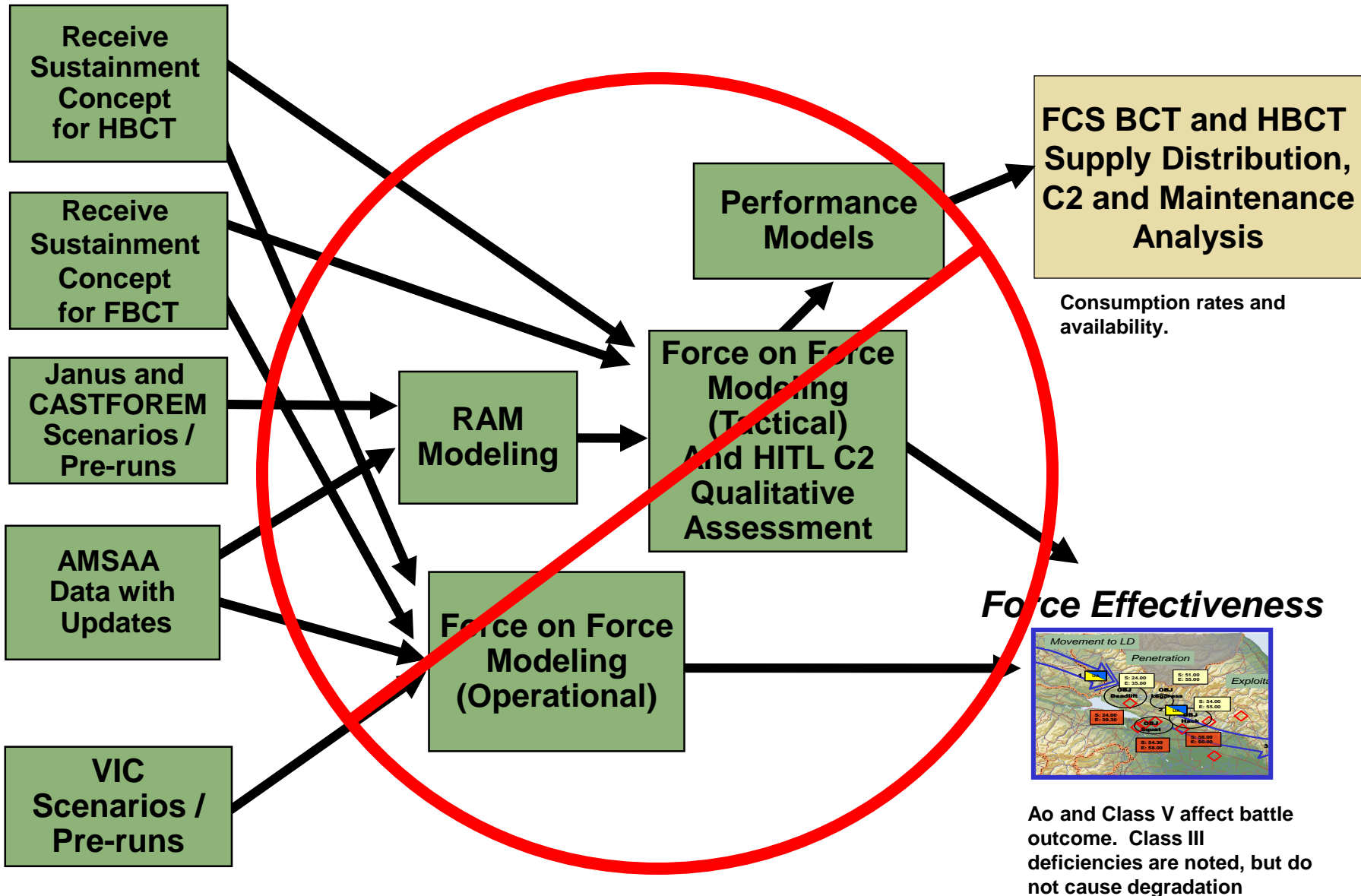
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- **TRAC COBP in working draft, available for use.**
- **There is more than one good way to diagram a methodology.**
- **There may be more than one diagram version of the same methodology, depending upon intended audience.**
- **A high quality methodology diagram:**
  - Conveys the *logical flow* of a process using its constituent building block components.
  - Identifies pertinent *input and output* for a component.
  - Identifies the *tool or means* used for a component.
  - May introduce extra information particularly relevant to the intended audience (e.g., timeline dates, agencies, # model runs).
  - May sparingly use embedded clip art or graphics.
- **Why important to the analysis:**
  - Necessary to gain customer confidence; *helps sell the analysis.*
  - An important *indicator of quality.*

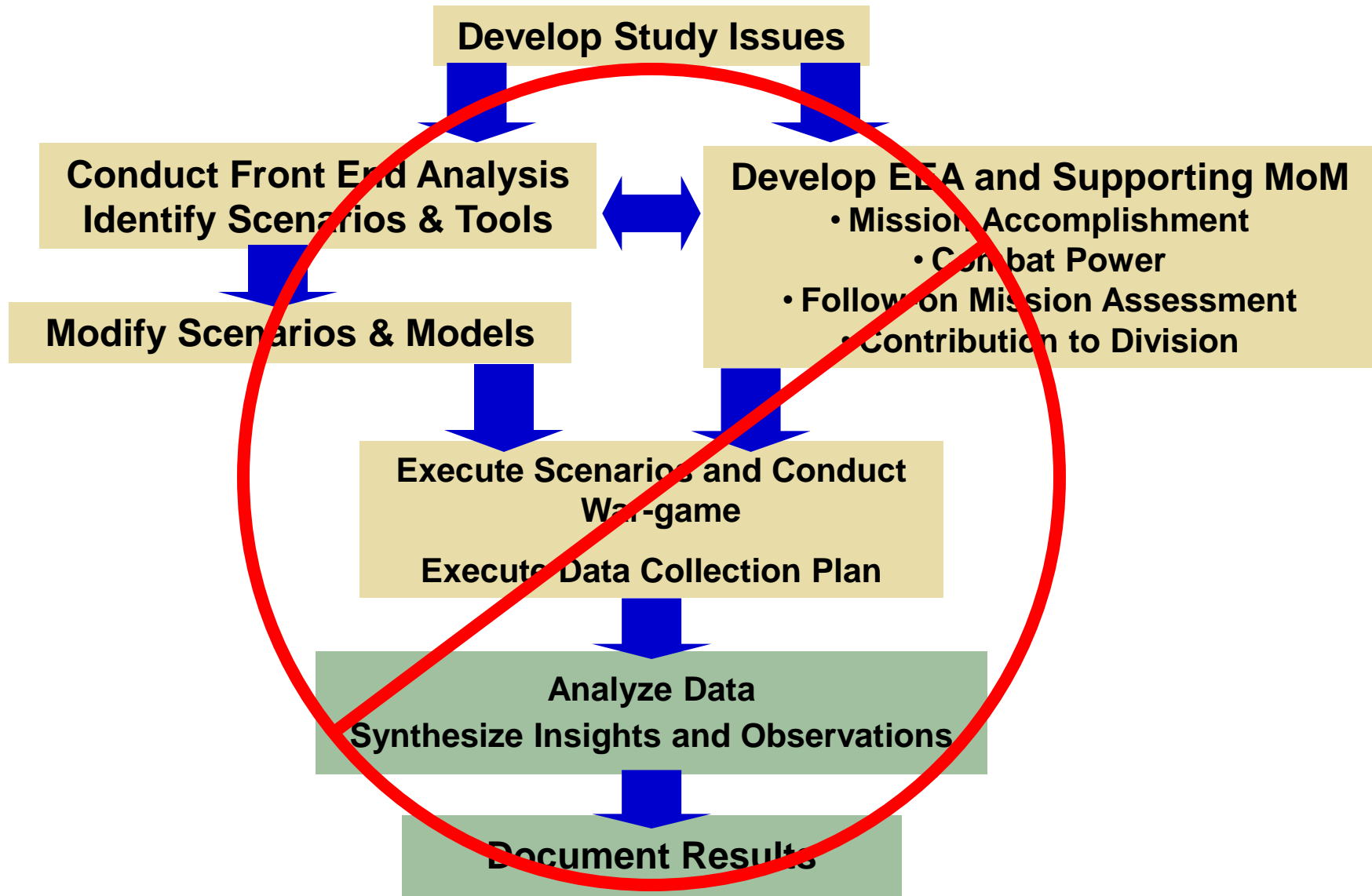
# Not a Quality Methodology Diagram



# Not a Quality Methodology Diagram



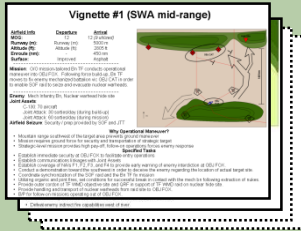
# Not a Quality Methodology Diagram



# OM Analysis Methodology

Warfighting

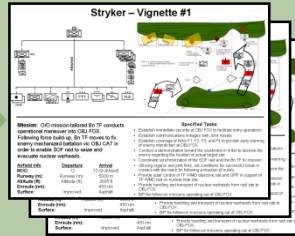
## Vignette Development



DPS & Actual Ops

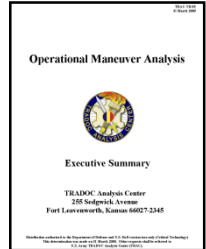
Mission Analysis

## Wargaming



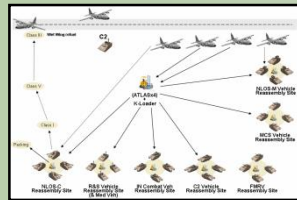
FCS & Stryker Forces

## Operations Assessment



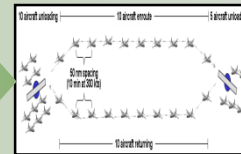
Operational Maneuver

## OM Process Development



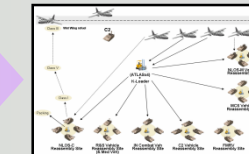
Overlay OM Process & TTP on Operations

## Deployment Modeling



CDR's OBJs  
CDR's Plan (Lift)

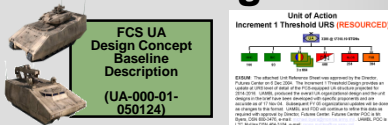
## OM Process Modeling



ECC to FCC Build-Up

Design Concept

## Systems & Unit Designs



## OM Data Base

Task ID	Task Name	Task Type	Task Status	Task Priority	Task Assigned To	Task Assigned Date	Task Assigned Time	Task Assigned Location	Task Assigned Altitude	Task Assigned Speed	Task Assigned Heading	Task Assigned Roll	Task Assigned Pitch	Task Assigned Yaw	Task Assigned Roll Rate	Task Assigned Pitch Rate	Task Assigned Yaw Rate	Task Assigned Roll Accel	Task Assigned Pitch Accel	Task Assigned Yaw Accel
1	Task 1	Task Type 1	Task Status 1	Task Priority 1	Task Assigned To 1	Task Assigned Date 1	Task Assigned Time 1	Task Assigned Location 1	Task Assigned Altitude 1	Task Assigned Speed 1	Task Assigned Heading 1	Task Assigned Roll 1	Task Assigned Pitch 1	Task Assigned Yaw 1	Task Assigned Roll Rate 1	Task Assigned Pitch Rate 1	Task Assigned Yaw Rate 1	Task Assigned Roll Accel 1	Task Assigned Pitch Accel 1	Task Assigned Yaw Accel 1

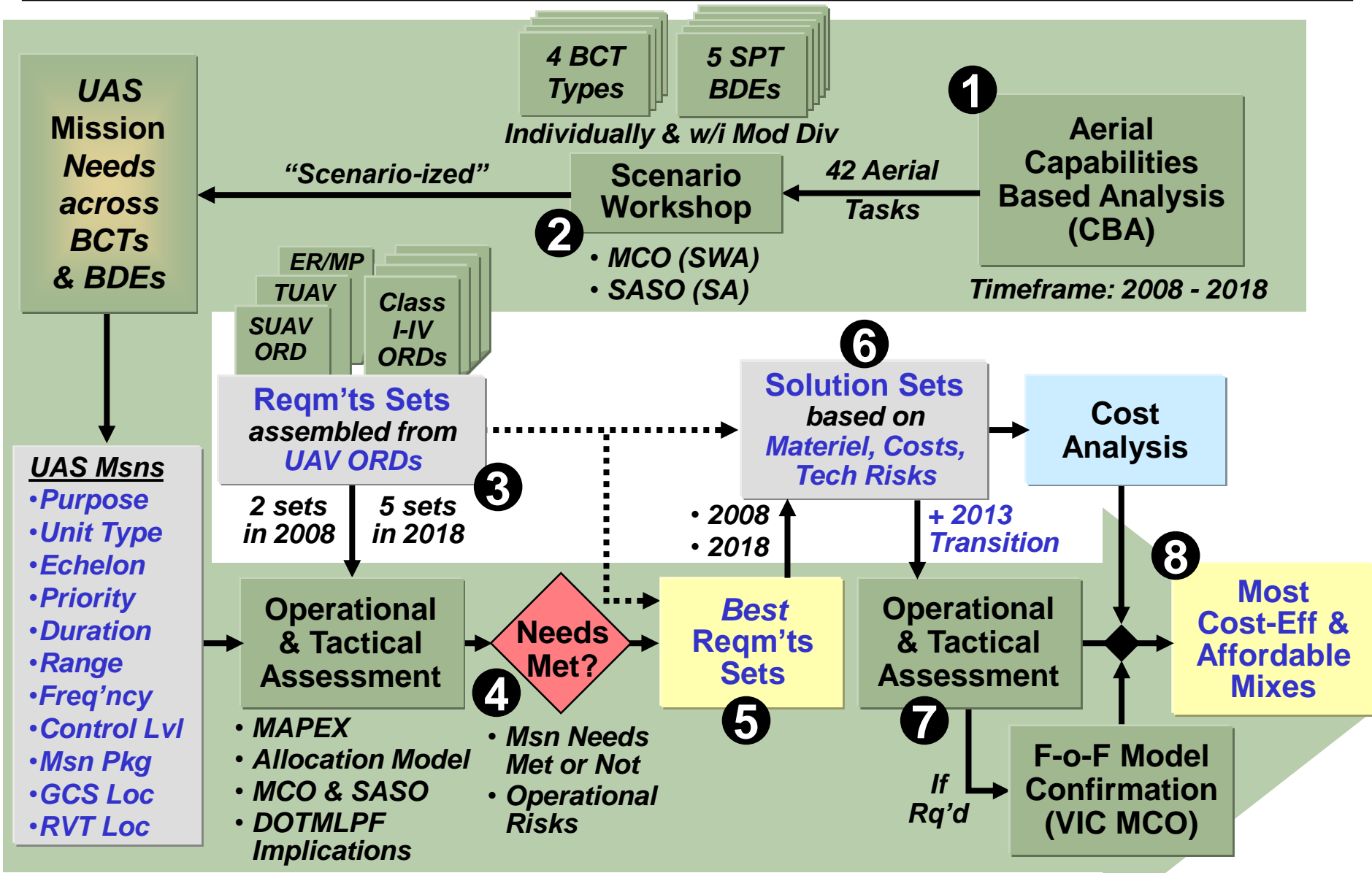
Vehicles & Pallets  
Vol & Weight  
Task Times

Aircraft Flow

## Key Participants

- TRAC
- UAMBL
- ADCSINT
- CASCOM
- LSI
- PM UA
- TSM FCS
- TSM Stryker
- USAF SMEs

# UAS Mix Methodology

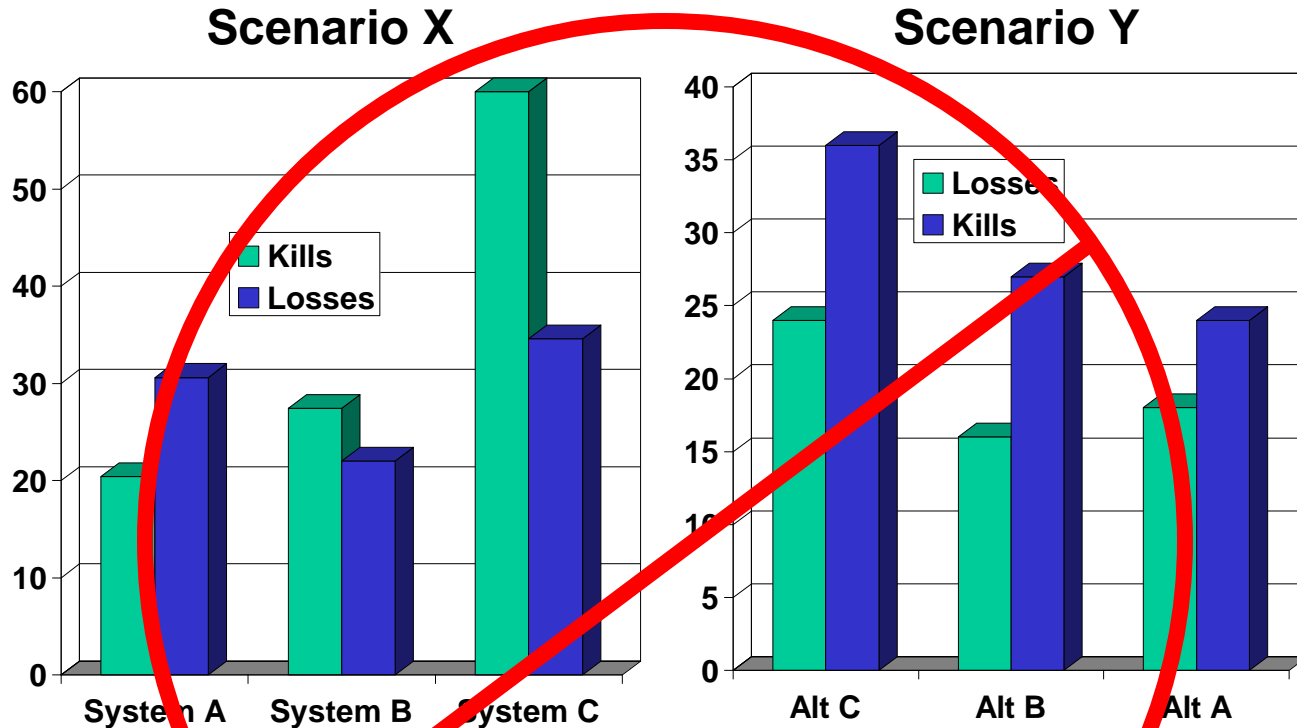


# Presentation of Results

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- **TRAC Standard, titled “Slide Format & Standards,” subtitled, “PowerPoint for Analysts,” dated July 2003.**
- **TRAC Standard, titled, “Documentation,” September 2006.**
- **Each slide should convey important piece of larger message; woven together, a briefing should tell a compelling story.**
- **Each slide should stand on its own merit.**
- **Be consistent throughout in terminology, format, layout, etc.!!**
- **Be concise.**
- **Use embedded pictures/images sparingly; avoid “eyewash,” cartoon art, sound, etc. Be very conservative with animation.**
- **Use black as default for text, bullets, lines, box borders; and use colors sparingly and only for special purposes.**
- **Ensure file properties content is accurate and up to date.**
- **Why important to the analysis: *It delivers the analysis!!***

# Not a Quality Presentation of Results



- **System C kills more than Systems A and B.**
- **System B survives better than Systems A and C.**

This slide has 6 common “code violations.” Can you find them?



# Closing

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*TRAC's identity and relevance is determined by the quality of your work!*

- You will learn what constitutes quality.
- You will conform to quality standards.
- **You and your chain of command will be evaluated on the quality of your work**, and that track record of quality will strongly influence whether you:
  - Receive an award.
  - Receive a bonus.
  - Receive a pay raise.
  - Are promoted.

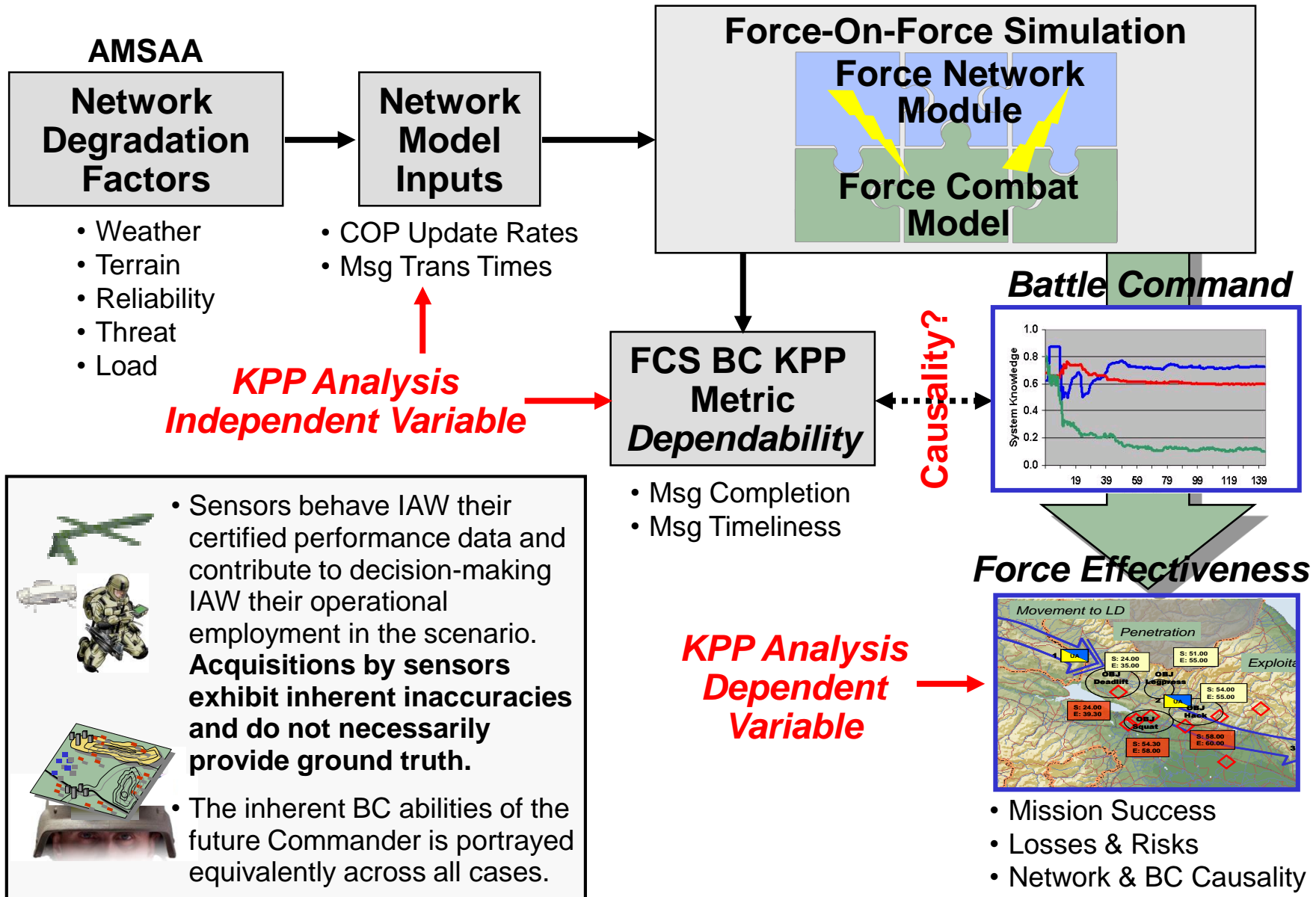
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**Questions?**

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# Back-Up

# Battle Command KPP Methodology



# PMMA Methodology

## Front End Analysis

### Operational Framework & Requirements

MCO's

- Mission Profiles
- Capability Packages
- Targets
- Weapons
- Ranked Pairings

Screening Goal Program  
**Potential Mixes**

Screening Results  
**12 Versatile Munitions**

Versatile: The ability to achieve effects across the spectrum of the Threat target sets using diverse tactical selection criteria.

A methodology to screen, explore, and develop mixes of Army precision munitions through iterative analysis and integration of results from goal programming, force on force, and resource analysis.

## Mix Analysis

Metrics  
MOE / MOP

Force on Force Simulation (BN+)  
CASTFOREM

MCOs

Initial Combinations

Objective Goal Program  
**Preferred Mixes**

Sensitivity Analysis  
CASTFOREM

F-o-F Simulation (BCT & DIV)  
CASTFOREM / VIC

MCOs

Resource Analysis

- Cost
- Logistic Impact
- Affordability

Analysis Integration