

Decision Analysis to Counter Cyber Attacks (DACCA)

Dale M. Johnson, Ph.D.

(703) 983-3668 • djohnson@mitre.org

LouAnna Notargiacomo

(703) 983-1046 • lnotargiacomo@mitre.org

Air Force MOIE

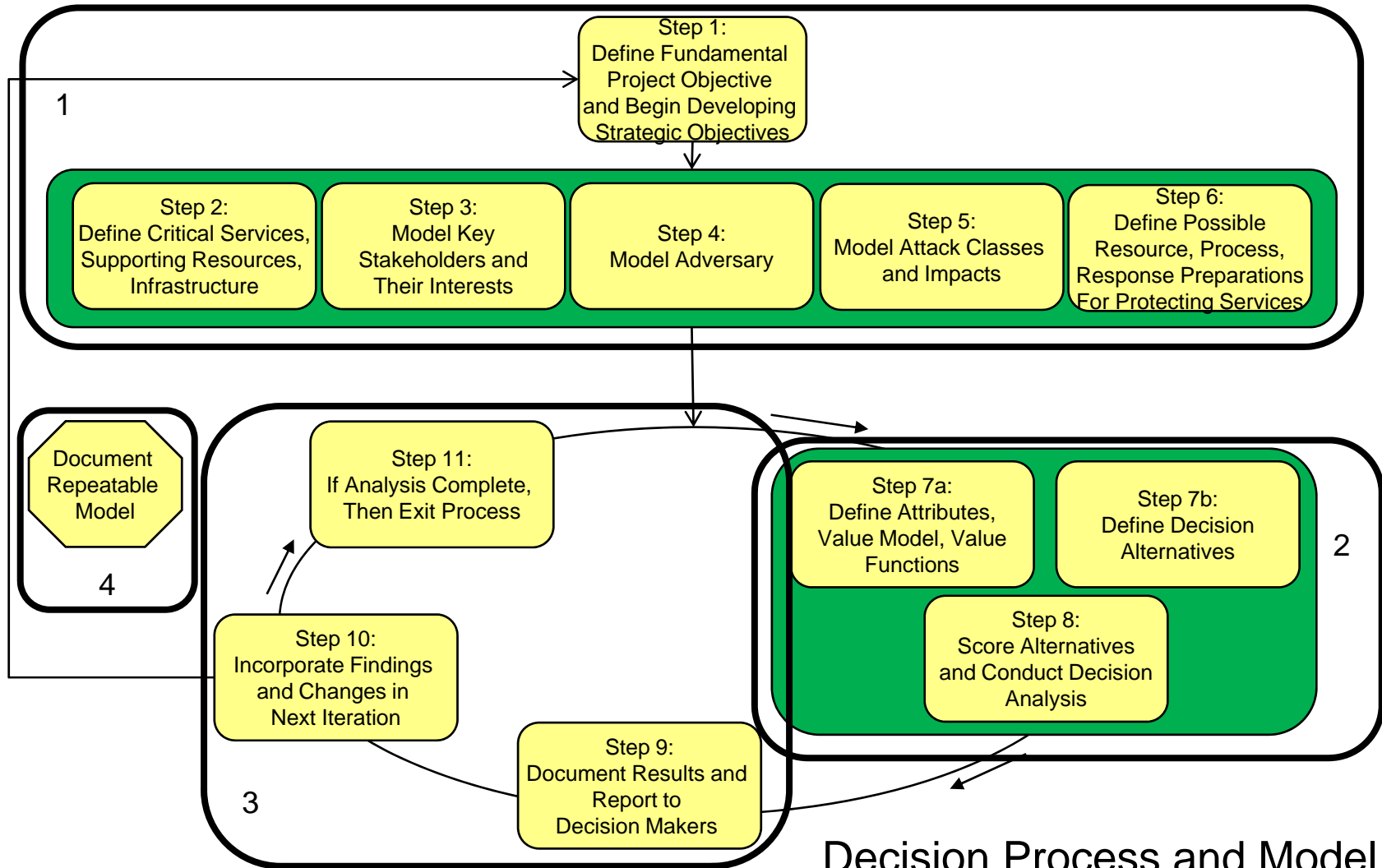


Problem



- **A *Cyber Attack* is underway**
 - **Decision makers must be prepared to act rapidly, choosing the best alternative to control damage and minimize impact on the mission**
- **Goal: Sustain essential operations during attack, while allowing time for analysis and recovery**
- **Sustainment of essential operations requires preparation of the battlefield—placement of processes and technology in advance of the attack**

Background



Decision Process and Model

Objective



- **Develop decision analysis process and model for Air Force and other systems planning for cyber attack response preparation using multiple objective decision analysis (MODA)**
- **Demonstrate effectiveness of MODA using MITRE email system as a critical example**
- **Create repeatable model that could be used to strengthen cyber attack posture of Air Force and other systems**
- **Demonstrate that methods of decision analysis can help decision makers choose an optimal cyber attack preparation course of action**

Activities



- **Develop architectural software and hardware view of system for analysis, such as email system**
- **Develop model of stakeholders and stakeholder values**
- **Model types of adversary**
- **Model attack classes and impact with attractiveness of attack classes to adversaries**
- **Develop working decision analysis model**
- **Use decision analysis model to determine alternatives for stakeholders to decide among for courses of action**

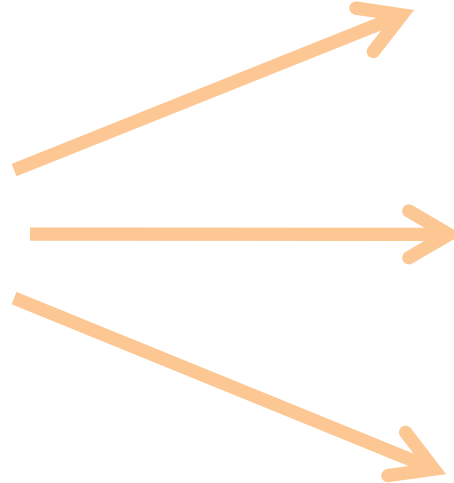
Highlight

Decision Analysis helps to evaluate alternatives for stakeholders to decide among courses of action in response to cyber attacks

Initial architecture



Microsoft

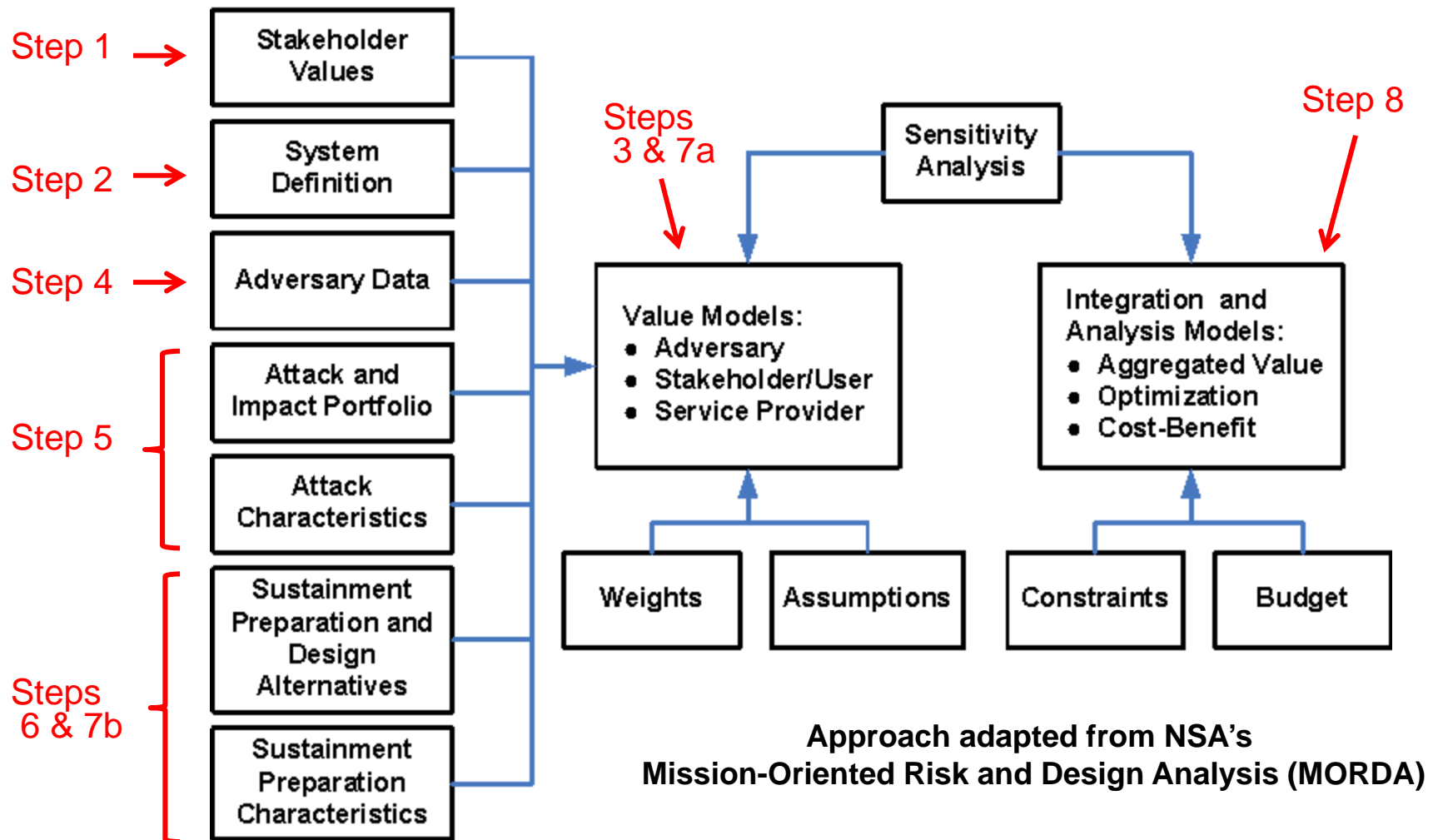


Alternative architectures



Highlight

Components of DACCA Process Model

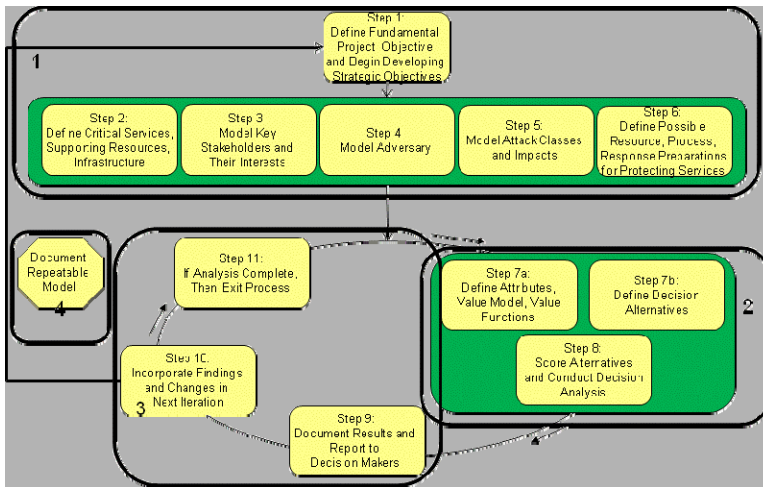


Impacts



- **MITRE mission-critical operations**
- **Sponsor operational mission**

Future Plans



Automate Process in Decision Analysis Tool

