NATIONAL DEFENSE RESEARCH INSTITUTE

Resourcing a Mosaic Force: Lessons from an Acquisition Wargame

Joel Predd, Jon Schmid, Elizabeth Bartels, Jeff Drezner, Bradley Wilson, Anna Jean Wirth, Liam McLane

May 2022

Project Overview

Motivation

DARPA has an ambitious vision of Mosaic warfare

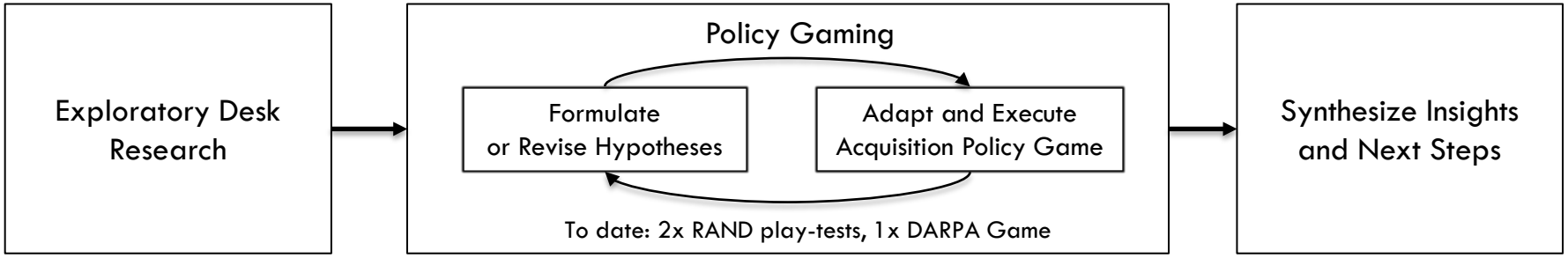
The Mosaic vision

- is conceived by STO leadership as a
  - warfighting concept
  - means to accelerate capability development & fielding
- depends on DARPA advancing multiple technologies
- is inherently more challenging to "transition" than a program

Research Questions

1. Are DoD's existing requirements, resourcing and acquisition system compatible with fielding a Mosaic? Are those management systems compatible with envisioned increases in time-effectiveness?
2. If not, what are viable alternatives to the existing management systems?

Research Approach: Embrace Policy Gaming as Means to Experiment with Acquisition Models



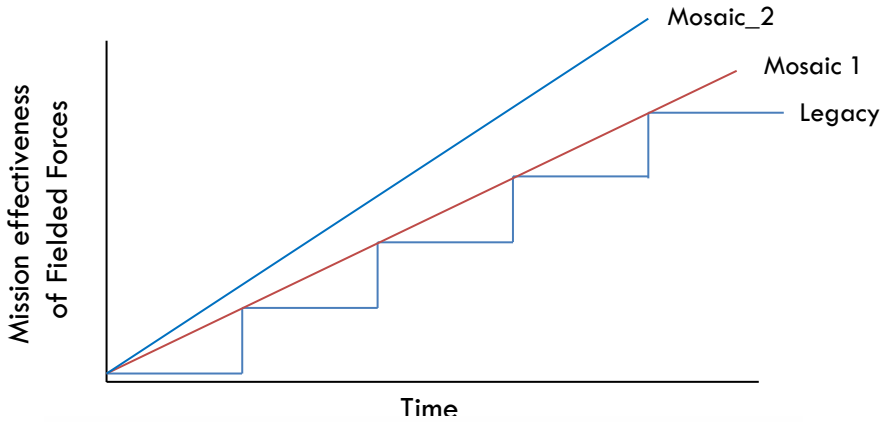
How did we conceptualize Mosaic?

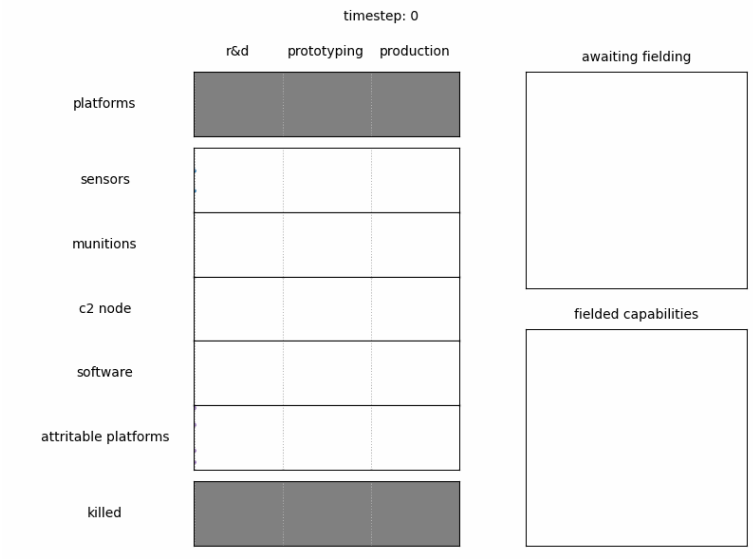
Heterogenous, fractionated capabilities, dynamically composed on tactical timelines

- Heterogenous: more diverse
- Fractionated: functionally simpler
- Composable: architecturally uncommitted to specific kill chains until mission execution

DevOps + Systems of Systems

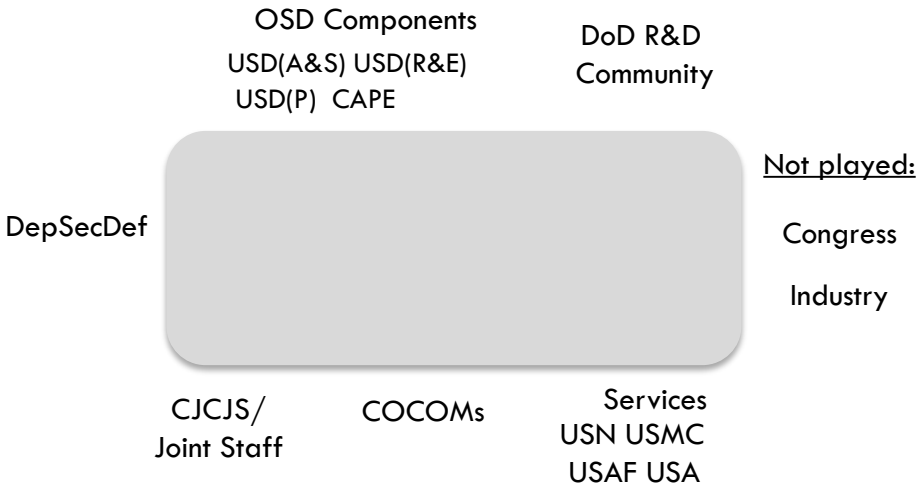
A means to dramatically increase time-effectiveness





Concept: Gain insight by requiring DoD reps to make decisions within, live with consequences of a Mosaic world

Players inhabit the roles of DoD decision-makers



Force Planning Scenario w/in an Acquisition Scenario

Acquisition Scenario

- 2028 to 2032
- Strategic Continuity (DoD committed to priorities of 2018 NDS)
- Overall military competition between U.S. & China is contested
- U.S. has advanced new JWC but remains committed to a post-Cold War force structure
- DARPA in collaboration w/ USAF & USN R&D demo initial ASuW Mosaic
- SecDef and Congress note success, move to institutionalize a Mosaic

Force Planning Scenario
- 2035
- Chinese invasion of Taiwan
- Mission: ASuW

A three half-day virtual event

	Half Day 1: Mosaic in Today's System	Half Days 2&3: Mosaic in an Alternative Model
Goal of exercise	Identify conditions under which today's requirements, resourcing & acquisition systems support a Mosaic model	Exercise an alternative to today's management systems to assess viability & identify improvements
Role of participants	Experienced professionals and analysts	Role playing DoD stakeholders

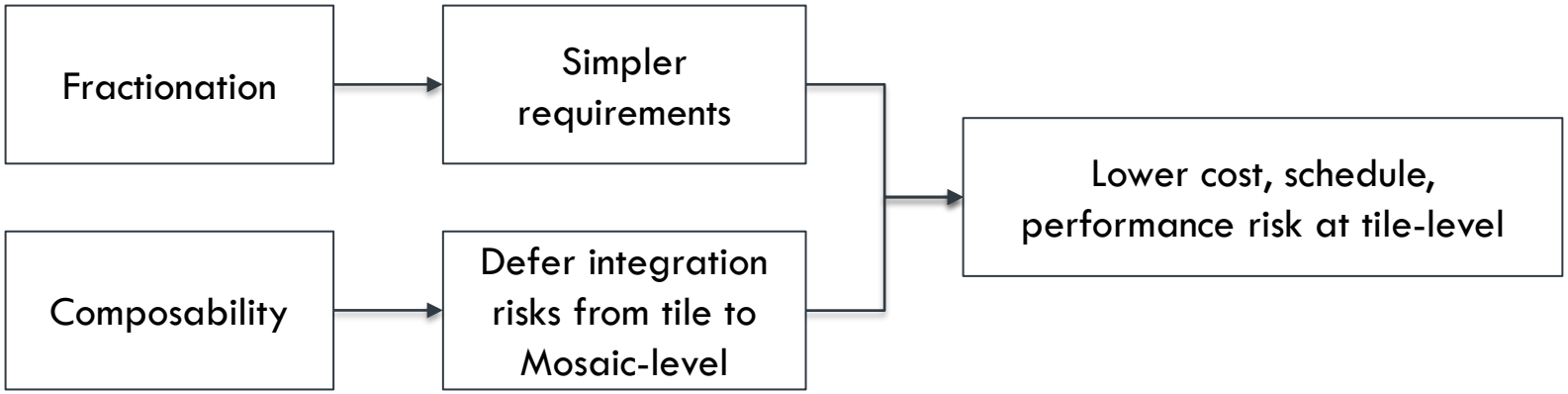
Players' Backgrounds Reflect Assigned Roles

Players in RAND Play-test I and II

Former DoD officials on RAND staff, e.g.
- Retired O6, Navy rep for JCIDS
- Retired Acting Director CAPE
- Former USD(ATL) Staff member
- Former Navy Dir for Analysis, NAVAIR

Players in DARPA Game
- DARPA STO Leadership & Staff
- Retired OPNAV N81
- Former USD(ATL) Staff member
- Senior Advisor to USD(A&S)

"Why not, let's try it": The logic of Mosaic may promote faster, cheaper, more responsive acquisition at the tile-level, regardless of the model



Thus, enabling various virtuous cycles

Faster schedules → more responsive to threat → less requirements creep

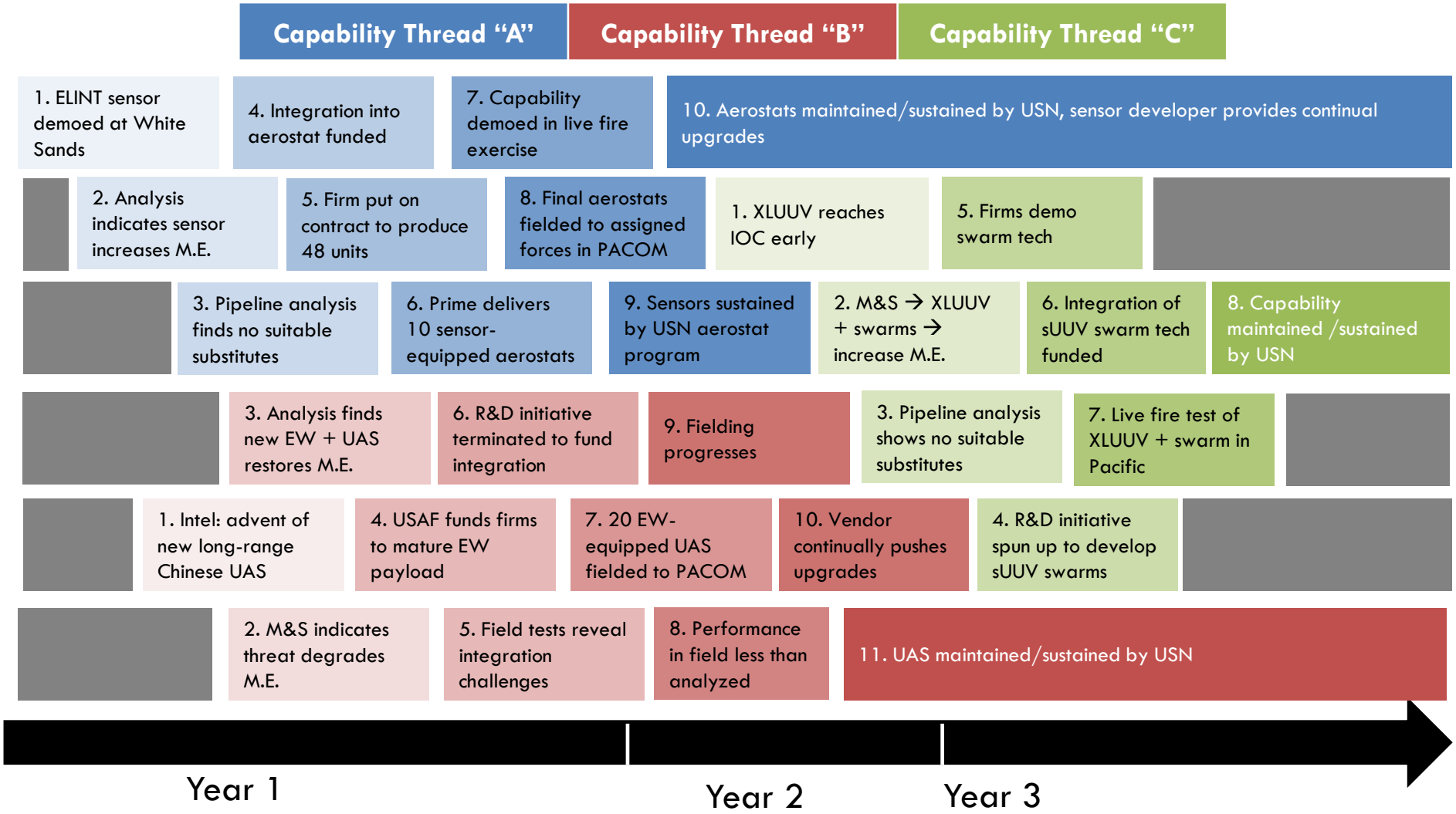
Faster adaptation → shorter services lives → less cost, time to design & build-in sustainability

Lower risks (cost) → less onerous oversight by OSD & Congress → faster schedules

Simpler requirements→ expanded performer base → increased competition, innovation

In game(s), players tended to translate simpler requirements, lower costs into willingness to experiment, take risks

Game Explores A Set of "Vignettes" That Instantiate Mosaic Acquisition



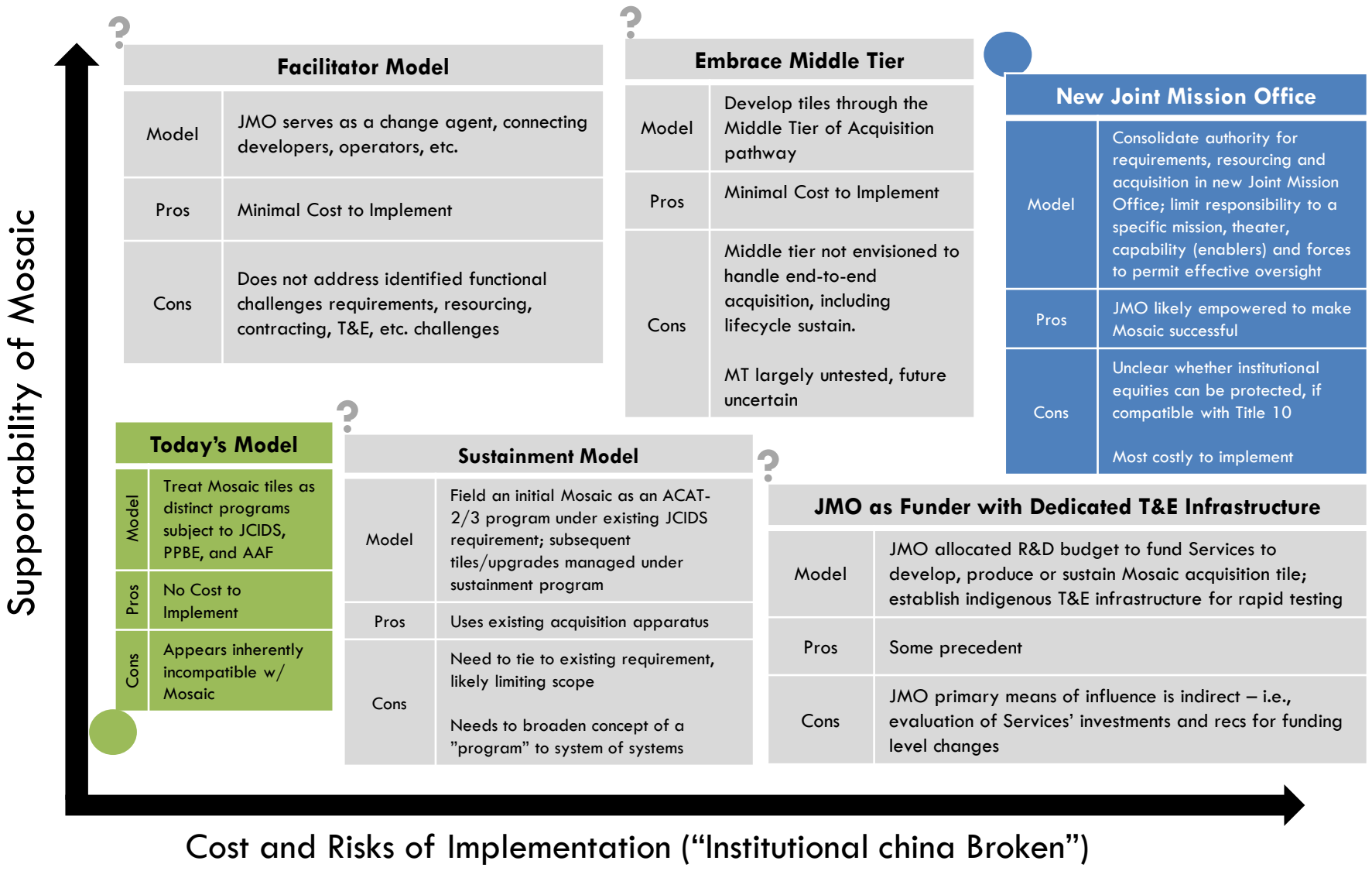
*Placement of steps along time axis for graphical purposes only. No information is conveyed in width or precise placement of individual steps.

PPBE features, consequences, and contrast to Mosaic Warfare

Feature of Current Resourcing System	Consequence	Mosaic Warfare Seeks
PPBE is a calendar-driven process involving a two-year gap between resource allocation and resource availability	Limits ability to respond to unanticipated technology opportunities	Ability to rapidly incorporate new technology into force
	Limits responsiveness to threats	Responsiveness to a dynamic threat environment
	Limits new- and non-traditional firm entry into defense innovation marketplace	A defense innovation system comprised of a greater diversity of contributing organizations
PPBE is inflexible with regard to re-allocating resources	Limits ability to respond to unanticipated technology opportunities and threats	Ability to rapidly incorporate novel technology into force and respond to threats
	Encourages technology lock-in	Ability to rapidly switch technological approaches

NATIONAL DEFENSE RESEARCH INSTITUTE

Choice of Acquisition Model Subject to Trade-offs



Facilitator Model

Model	JMO serves as a change agent, connecting developers, operators, etc.
Pros	Minimal Cost to Implement
Cons	Does not address identified functional challenges requirements, resourcing, contracting, T&E, etc. challenges

Embrace Middle Tier

Model	Develop tiles through the Middle Tier of Acquisition pathway
Pros	Minimal Cost to Implement
Cons	Middle tier not envisioned to handle end-to-end acquisition, including lifecycle sustain. MT largely untested, future uncertain

New Joint Mission Office

Model	Consolidate authority for requirements, resourcing and acquisition in new Joint Mission Office; limit responsibility to a specific mission, theater, capability (enablers) and forces to permit effective oversight
Pros	JMO likely empowered to make Mosaic successful
Cons	Unclear whether institutional equities can be protected, if compatible with Title 10 Most costly to implement

Today's Model

Model	Treat Mosaic tiles as distinct programs subject to JCIDS, PPBE, and AAF
Pros	No Cost to Implement
Cons	Appears inherently incompatible w/ Mosaic

Sustainment Model

Model	Field an initial Mosaic as an ACAT-2/3 program under existing JCIDS requirement; subsequent tiles/upgrades managed under sustainment program
Pros	Uses existing acquisition apparatus
Cons	Need to tie to existing requirement, likely limiting scope Needs to broaden concept of a "program" to system of systems

JMO as Funder with Dedicated T&E Infrastructure

Model	JMO allocated R&D budget to fund Services to develop, produce or sustain Mosaic acquisition tile; establish indigenous T&E infrastructure for rapid testing
Pros	Some precedent
Cons	JMO primary means of influence is indirect – i.e., evaluation of Services' investments and recs for funding level changes