



Future Fleet Architecture



Office of Force Transformation

...The Logic

...The Dynamic

- *Strategic Imperative*
- *Fiscal Contradictions*
- *Technology Opportunities*
- *New Logic and Metrics*
- *Alternative Architectures*



Some Key Questions



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- Can there be a fleet relevant to the breadth of the strategic imperatives?
 - Are either/or choices forced on us?*
- Can fleet force building and fleet operations be made coherent?
 - Can the Navy be made to scale?*
- Can the fleet leverage new and emerging technologies and compete on cycle time?
 - How are the technologies used to suppress cost and cycle time?*
- How do relevant metrics create a more relevant fleet?
- How long does it really take?
 - Can this be a choice, not a fact?*



Security Environment

... Four Challenges



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VULNERABILITY

Irregular

Higher

Those seeking to erode American influence and power by employing unconventional or irregular methods (e.g., terrorism, insurgency, civil war and emerging concepts like “unrestricted warfare”)

Likelihood: very high; strategy of the weak
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Catastrophic

Those seeking to paralyze American leadership & power by employing WMD or WMD-like effects in unwarned attacks on symbolic, critical or other high-value targets (e.g., 9/11, terrorist use of WMD, rogue missile attack)

Likelihood: moderate and increasing
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Lower

Traditional

Those seeking to challenge American power by instigating traditional military operations with legacy and advanced military capabilities (e.g., conventional air, sea and land forces and nuclear forces of established nuclear powers)

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Disruptive

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Likelihood: Low, but time works against U.S.
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LIKELIHOOD

No hard boundaries distinguishing one category from another



Capabilities Balance

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**Domain of
Cooperative
Engagement**

**Domain of
Political Victory**

Winning / Maintaining the Peace
All Sources of Power

Strategic Advantage:

The Commons

High Seas & Air Above
Space
Cyberspace

Intervention:

Decisive Operations

Land
Littorals
Low Altitude

Global Stability

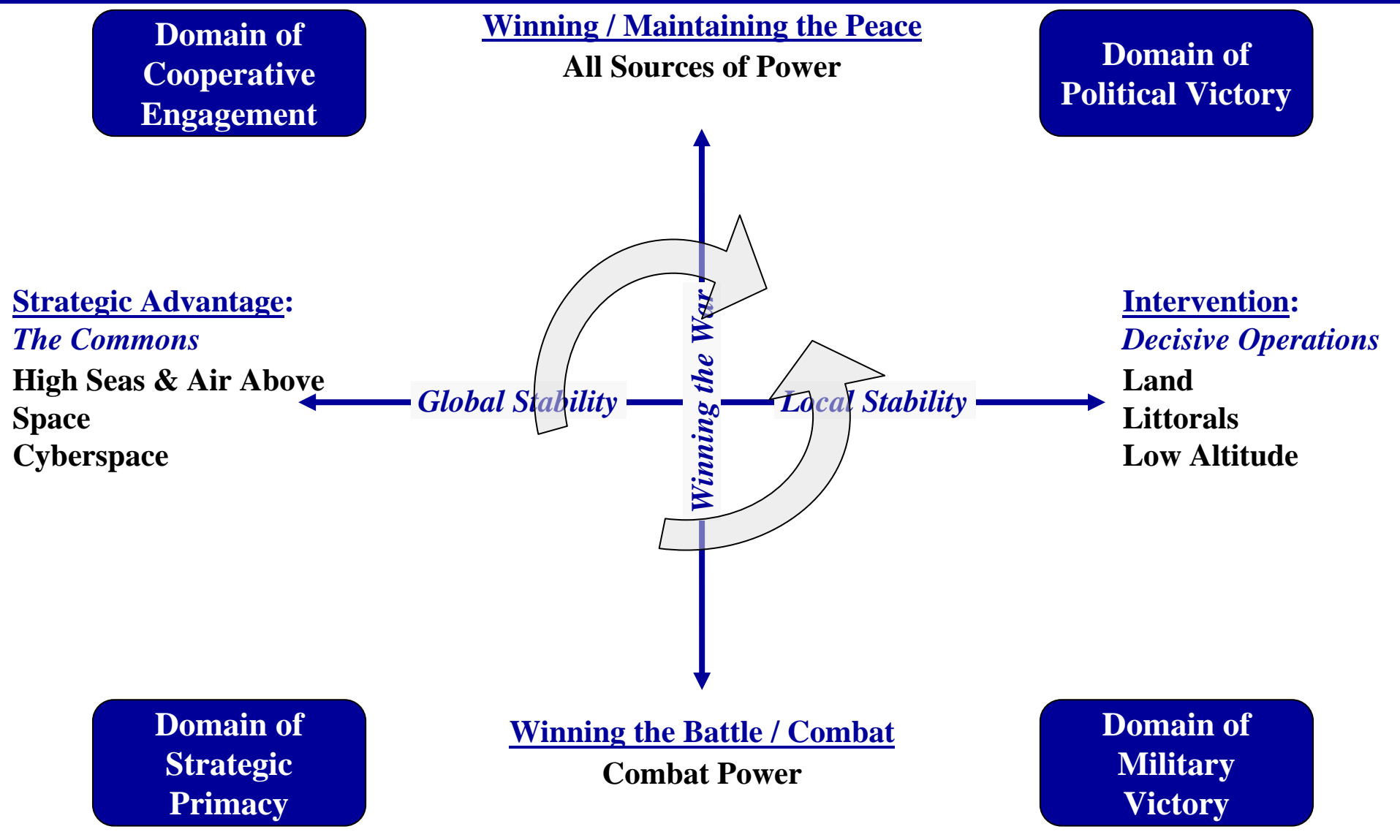
Local Stability

Winning the War

Winning the Battle / Combat
Combat Power

**Domain of
Strategic
Primacy**

**Domain of
Military
Victory**

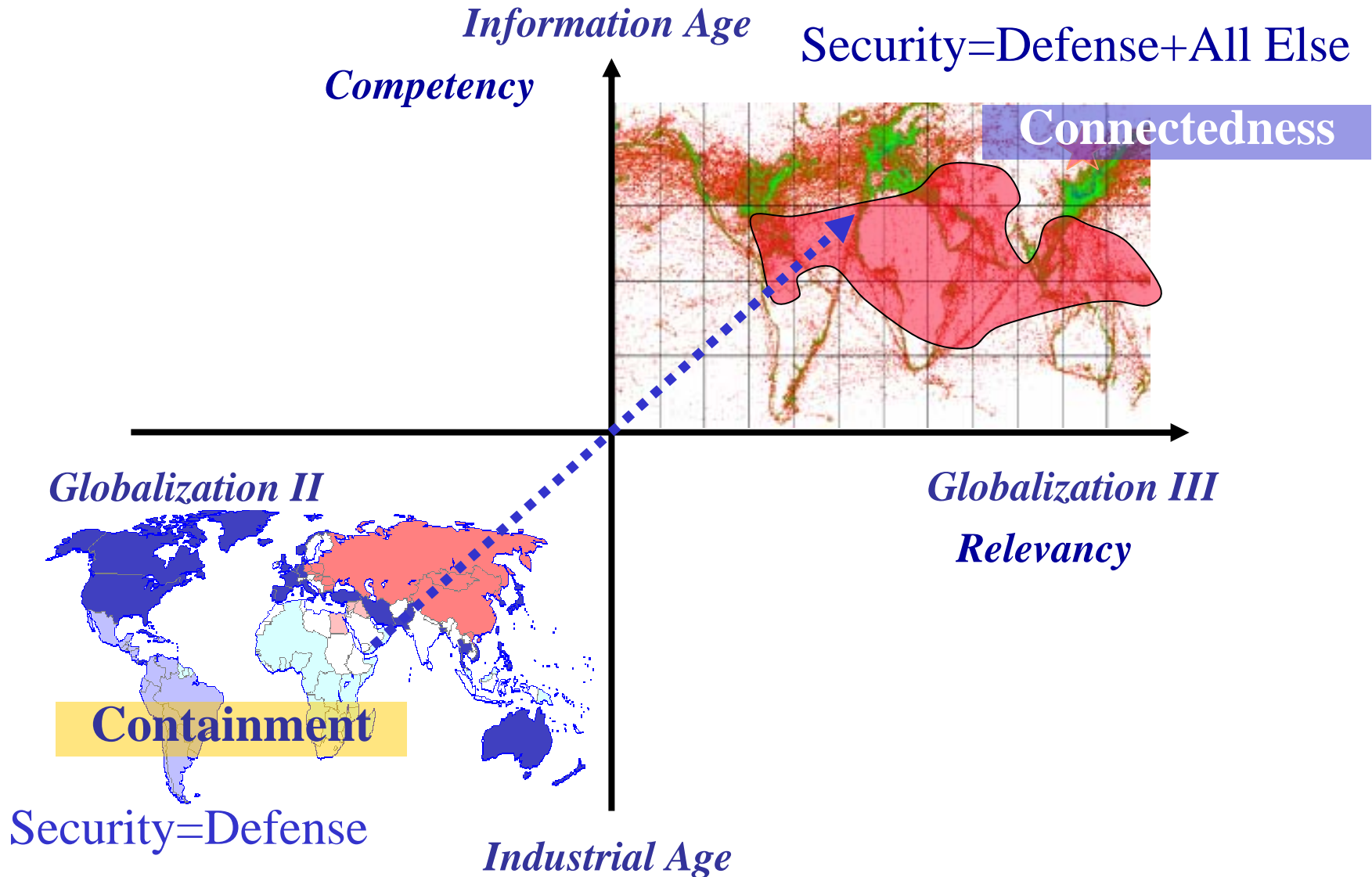




Shifting Strategic Imperatives



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Navy Rule Set

...Competent and Relevant



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Cede no maritime areas

Grant no sanctuaries

The littoral must not be a barrier

Respond jointly with speed

Combined Arms

Sea - based

Self - deployed

Interoperable and interdependent

Serve the full range of national needs

A full service Navy

Develop and communicate
knowledge of forces and
situation

Control Operational domain
Bring joint forces to bear where
needed promptly

Fight from the sea

Sustain joint forces

Deny enemy ability to hold
homeland at risk



Force Building Imperatives



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- **Strategic Advantage**

- Maintain the dominance the US Navy has established in the ocean commons

- Ensure that no adversary can deny the fleet the freedom to operate anywhere

- **Intervention in the “gap”**

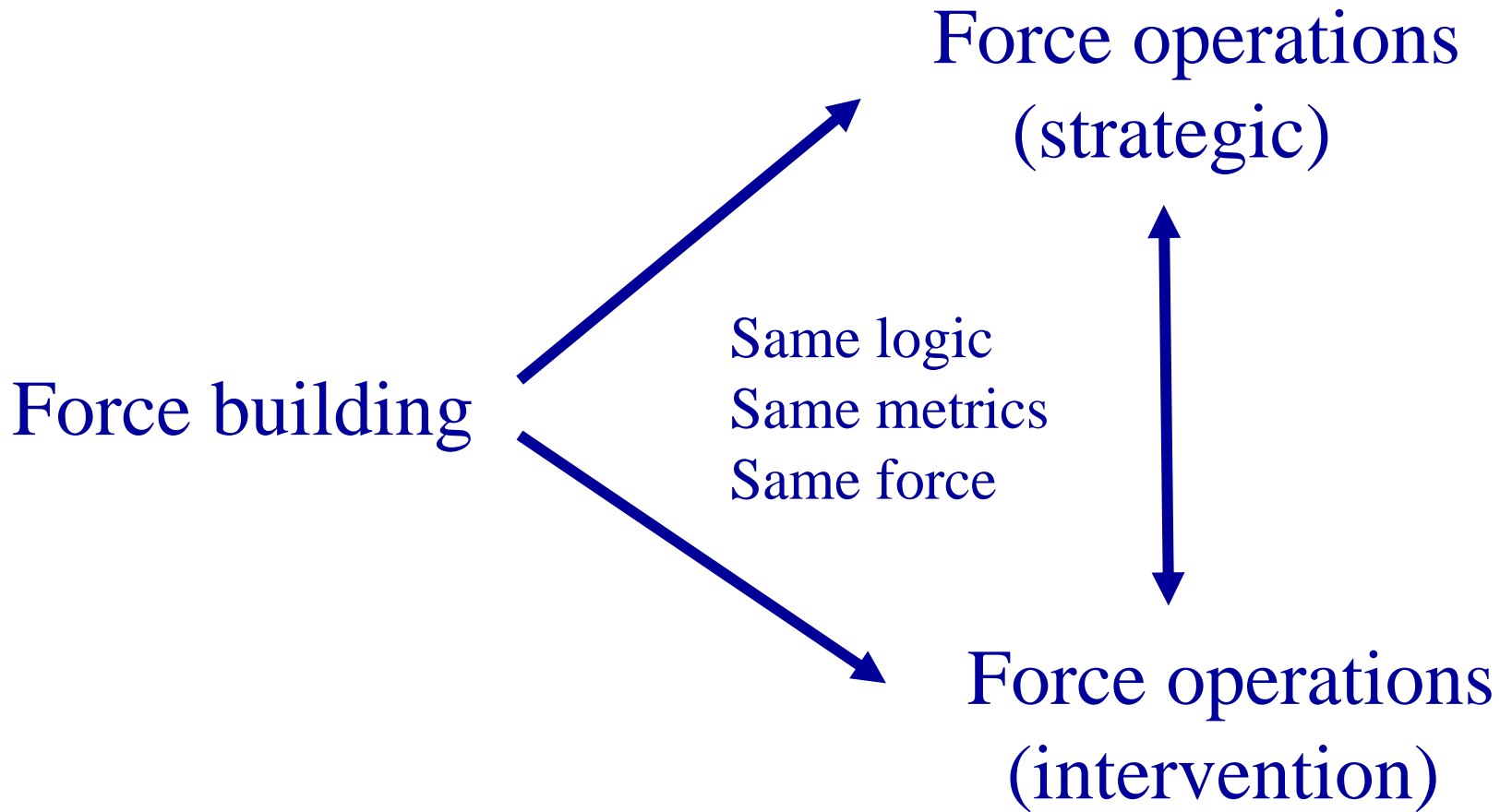
- Continuation of policy of projecting and inserting military power

- Vigorous response to hostile actors or crises



Achieving Coherence

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Fiscal Contradictions

...The Five "Miracles"



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- DoD budget topline continues to grow at the planned rate that translates into real growth in DoD's procurement budgets
- Congressional supplementals continue to fully fund the wars in Iraq and Afghanistan as well as other current contingencies.
- The Navy continues to receive its share of DoD's overall budgets and procurement budgets envisioned by its shipbuilding plan.
- The Navy can restrain its O&M costs as tightly as its plans project
- The Navy succeeds in controlling the costs of its new ships despite cutbacks in Navy's RDT&E budget



Strategic Approach to Cost



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Key Elements

- Decrease operational costs
- Achieve better ROI for less
- Broaden the capabilities base
- Create and preserve future options
- Manage divestiture
- Transform non-discretionary areas
- Impose cost to adversary
- Develop counter-cost imposing strategies

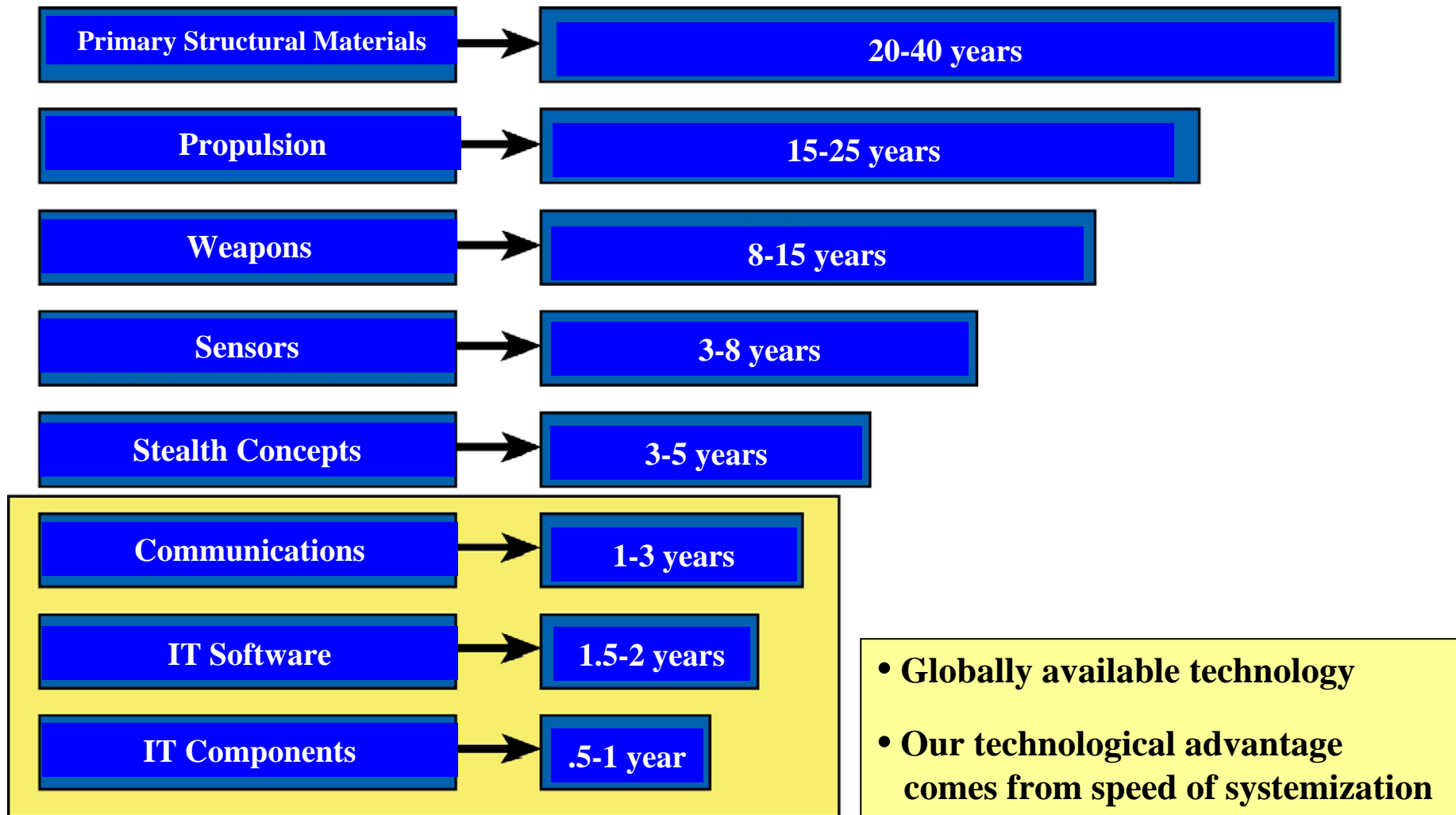
New metrics create opportunities for new cost dynamics!



Technology Trends and Cycles



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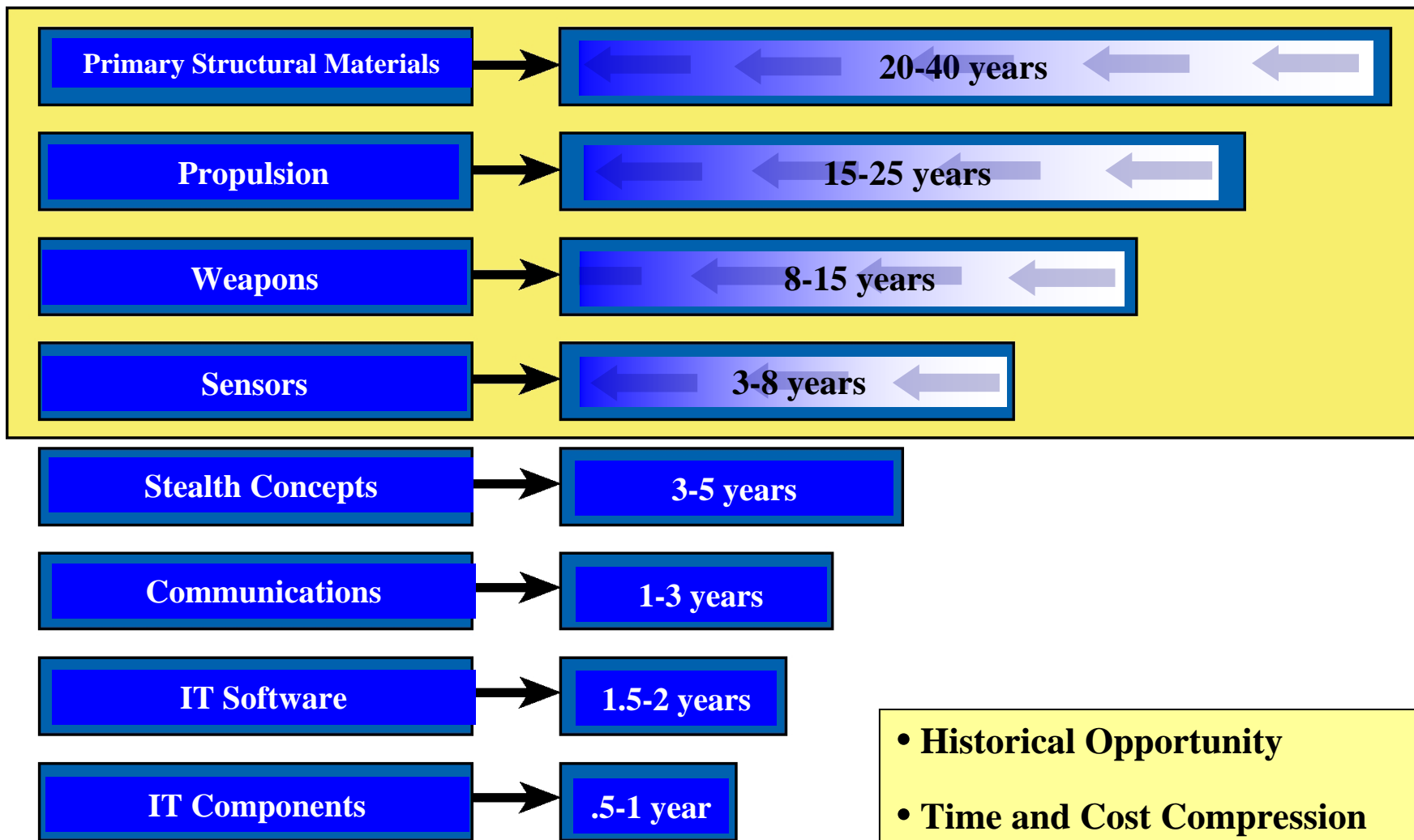


Technology Trends and Cycles

...New Opportunities



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Technology

...Opportunities and Payoff



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Composites Materials

Innovative designs

Networking

Information for mass

Distributed capabilities

Proximate netted sensors

Directed and redirected energy

Robotics

Increased

Speed

Survivability

Sea keeping

Payload fraction

Dispersion

Shared awareness

Lethality

Decreased

Life cycle cost

Procurement cost

Vulnerability

Manning

Structural mass

Infrastructure

Tactical instability



New Logic and Metrics

...Competence



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- **Access**

The ability to use military assets, both information and physical, at the best points of effect in hard-to-reach locations even when denial strategies are employed by the enemy;

- **Speed**

Minimization of response time from deliberate operational (or strategic) maneuver to stunning tactical swiftness;

- **Distribution**

The extent to which firepower, sensors, and other systems are spread over a diverse and geographically dispersed set of assets/platforms;

- **Sensing**

The ability to provide information with accuracy, timeliness and relevance, and especially to locate and track fleeting targets;

- **Mobility**

The ease and promptness by which military assets can be shifted from one physical location to another; and

- **Networking**

The extent to which military assets are connected together through information technology that assures shared awareness and information access.



New Logic and Metrics

...Relevancy



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- Create and preserve options

Technology on-ramps

Broaden capabilities base

Mass customization

- Employ higher transaction rates

Faster cycle times

Speed of information and operational mobility

- Achieve higher learning rates

Co-evolve concepts, capabilities and processes

Continuous adaptive acquisition and experimentation

- Create overmatching complexity

Scalable

The small the fast and the many

Develop high rates of change



Alternative Architectures

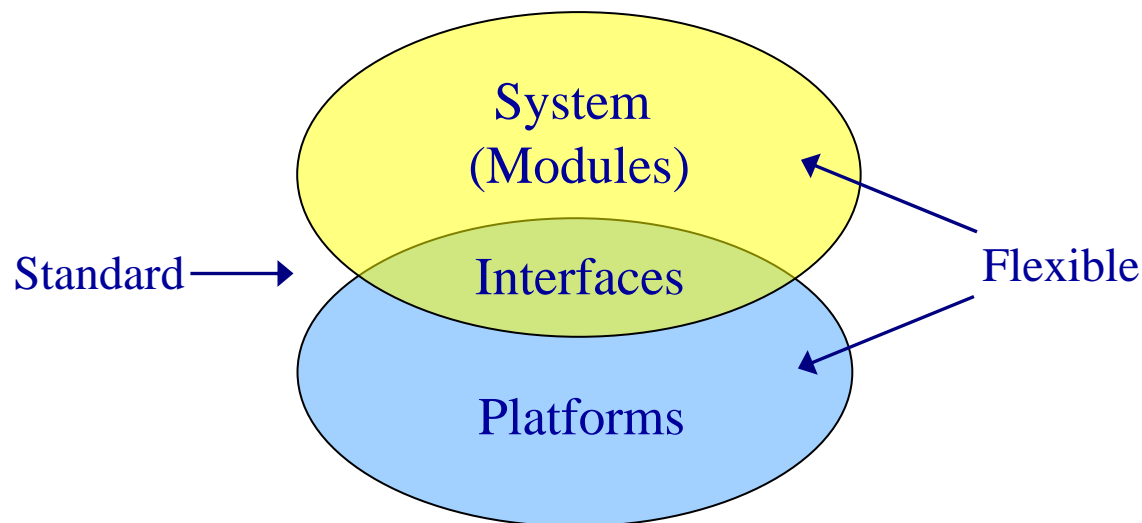
...*Characteristics*



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Focus in designing alternative fleet:

- Low unit cost
- Modularity
- Numbers
- Speed
- Networking
- Sensing
- Innovative designs



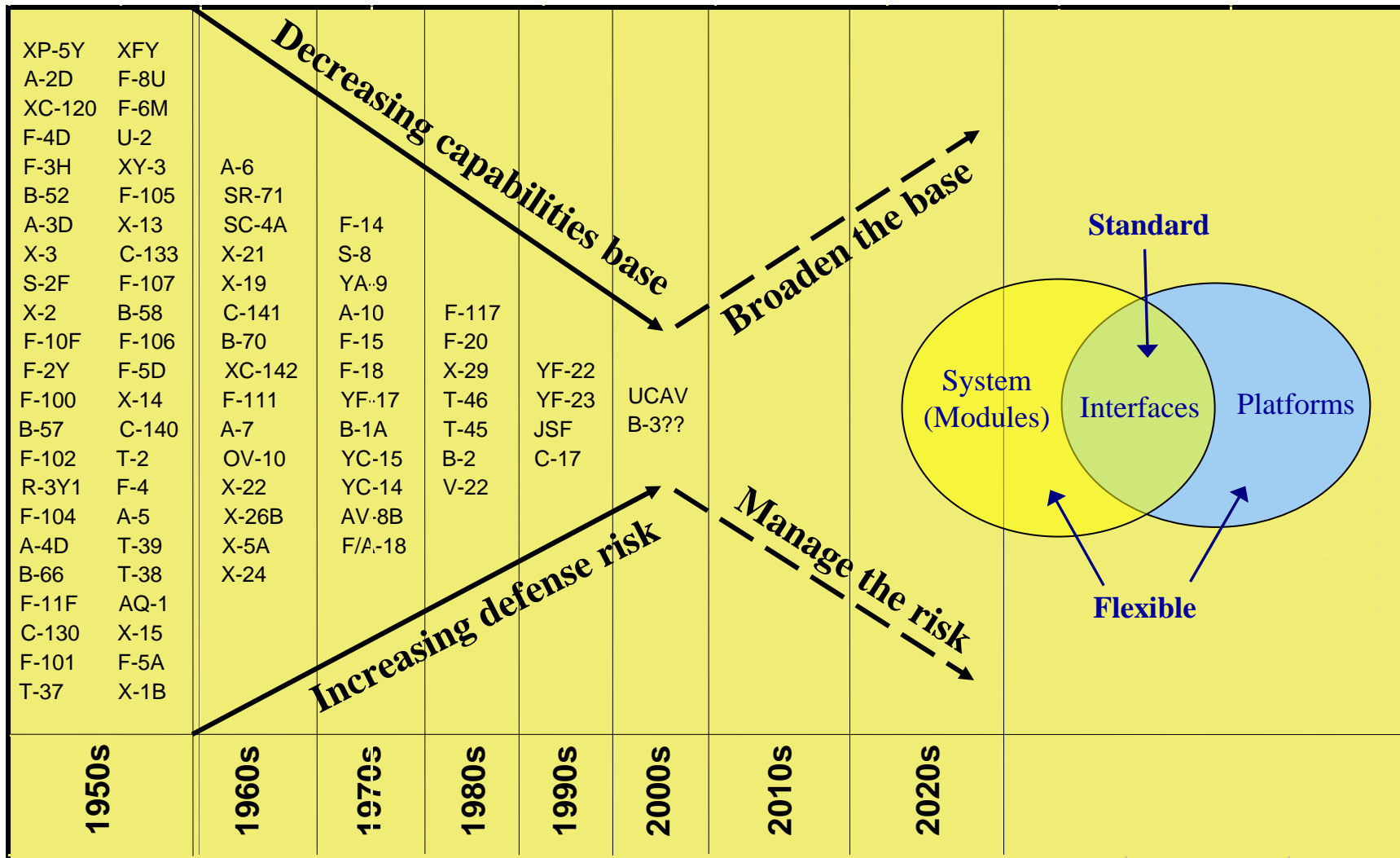
Preserve U.S. Strategic Advantage: innovation & the breadth, depth and diversity of the industrial base



Aircraft Program Trends



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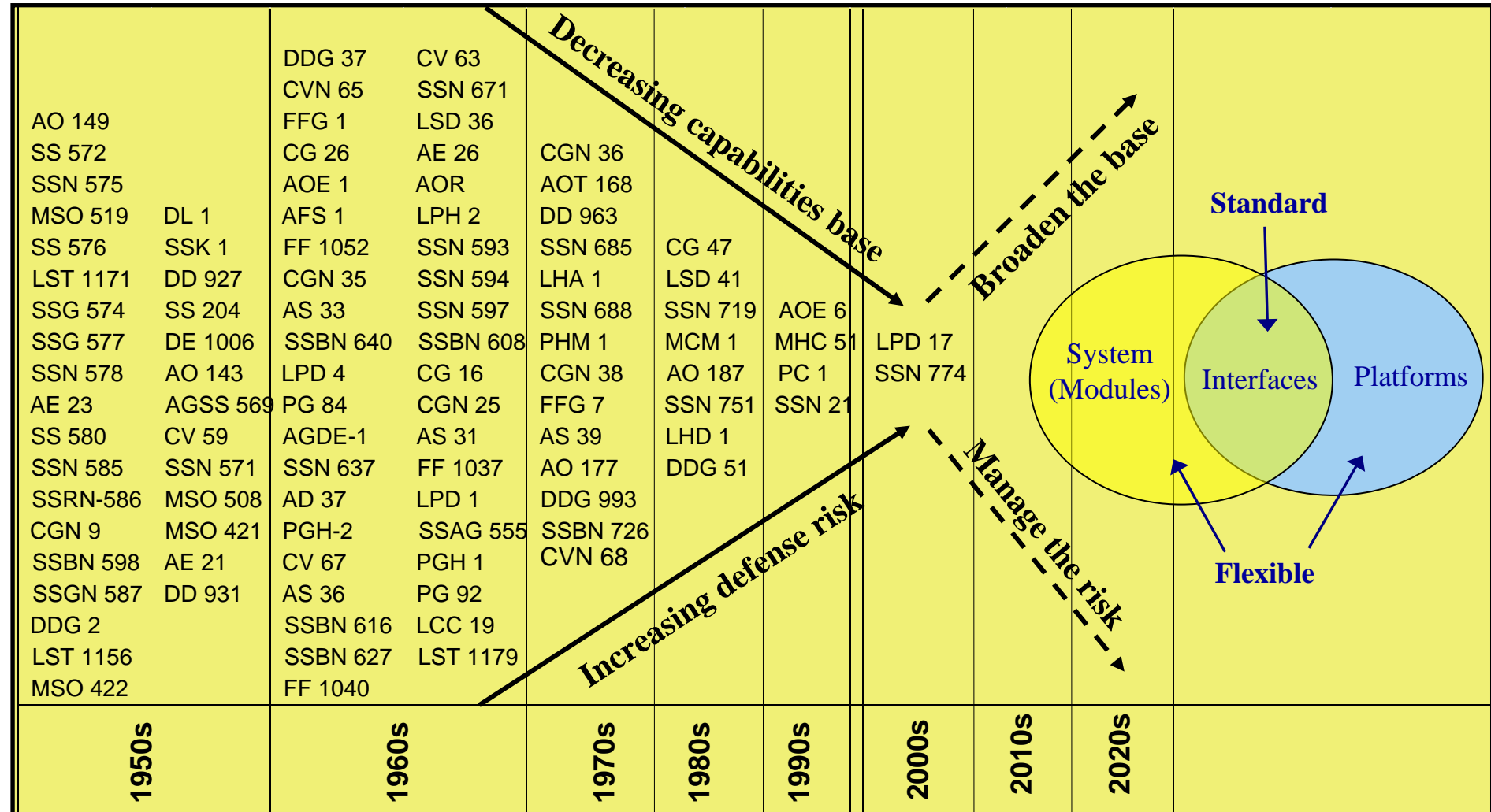




Navy Program Trends



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Based on date first ship in class was launched



Alternative Architectures



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Formation Type	Number Formations in Fleet	Number Surface and Subsurface Combatants			
		Programmed	Alternative Fleets		
			A	B	C
Carrier Strike Group	12	96	288	396	468
Expeditionary Strike Group	12	120	216	324	324
Surface Strike Group	9	27	54	54	54
Total Number Combatants		243	558	774	846
Total Number UVs		None programmed	1,368	1,368	1,560



Conclusions

...Finding the Way



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- 1) Achieve coherence in force building and operations
 - Both intervention and strategic advantage
 - Manage risk with broadened base
 - Defer regret
- 2) Build a large, more broadly capable Navy
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 - Option generation rate
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 - Networking modules
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 - Standard interfaces



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Back Up



Conclusions

...Losing the Way



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- 1) Choosing a narrow or irrelevant competitive space
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New Design Principles



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- Capabilities of the fleet are decoupled from platform
- Power and survivability of a fleet have been decoupled from size
- Information has been substituted for mass
- Mass customization delivers greater value than mass production
- Networked components outperform integrated systems.



Alternative Architectures



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Programmed Carrier Strike Group (CSG)		Alternative A Aviation Strike Group	
Platform Type	12 Formations	Platform Type	12 Formations
	Number Vessels in each Formation		Number Vessels in each Formation
CVN	1	X-AVN	2
Aircraft	60 JSF(CV) and 12 MV-22	Aircraft	60 JSF(CV/STOL) and 12 MV- 22
CGX	3	X-WPS	1
LCS	2	SSC-1000	16
		UVs	3 UAV, 3 USV, 18 UUV On each X-AVN and X-WPS
SSN	1	AIP	4
T-AOE	1	T-AOE	1



Alternative Architectures



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Programmed Expeditionary Strike Group (ESG)		Alternative A Expeditionary Strike Group	
Platform Type	12 Formations	Platform Type	12 Formations
	Number Vessels in each Formation		Number Vessels in each Formation
LHD, LPD and LSD	1 each	T-AKX (MPF(F))	2
Aircraft	6 JSF(STOL) and 24 MV-22	Aircraft	6 JSF(STOL) 18 MV-22 3 Gyrocopter Heavy Lift
CGX	2	X-WPS	1
DDX	1		
		UVs	3 UAV, 3 USV, 18 UUV On X-WPS
LCS	3	SSC-1000	15
SSN	1		



Alternative Architectures



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Programmed Surface Strike Group (SSG)		Alternative A Surface Strike Group	
Platform Type	9 Formations	Platform Type	9 Formations
	Number Vessels in each Formation		Number Vessels in each Formation
CGX	3	X-WPS	1
		UVs	3 UAV, 3 USV, 18 UUV On X-WPS
		SSC-1000	5



Alternative Architectures



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Programmed Carrier Strike Group (CSG)		Alternative B Aviation Strike Group	
Platform Type	12 Formations	Platform Type	12 Formations
	Number Vessels in each Formation		Number Vessels in each Formation
CVN	1	X-AVN	2
Aircraft	60 JSF(CV) and 12 MV-22	Aircraft	60 JSF(CV/STOL) and 12 MV-22
CGX	3	X-WPS	1
LCS	2	VSC-100	24
		X-SPT	1
		UVs	3 UAV, 3 USV, 18 UUV On each X-AVN and X-WPS
SSN	1	AIP	4
T-AOE	1	T-AOE	1



Alternative Architectures



Office of Force Transformation

Programmed Expeditionary Strike Group (ESG)		Alternative B Expeditionary Strike Group	
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CGX	2	X-WPS	1
DDX	1	UVs	3 UAV, 3 USV, 18 UUV On X-WPS
		X-SPT	1
LCS	3	VSC-100	23
SSN	1		



Alternative Architectures



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Programmed Surface Strike Group (SSG)		Alternative B Surface Strike Group	
Platform Type	9 Formations	Platform Type	9 Formations
	Number Vessels in each Formation		Number Vessels in each Formation
CGX	3	X-WPS	1
		UVs	3 UAV, 3 USV, 18 UUV On X-WPS
		VSC-100	5



Alternative Architectures



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Programmed Carrier Strike Group (CSG)		Alternative C Aviation Strike Group	
Platform Type	12 Formations	Platform Type	12 Formations
	Number Vessels in each Formation		Number Vessels in each Formation
CVN	1	X-CRS	8
		UVs	3 UAV, 3 USV, 18 UUV On X-WPS and on 4 X-CRS
Aircraft	60 JSF(CV) and 12 MV-22	Aircraft	60 JSF(STOL) and 12 MV-22
CGX	3	X-WPS	1
LCS	2	VSC-100	24
		X-SPT	1
SSN	1	AIP	4
T-AOE	1	T-AOE	1



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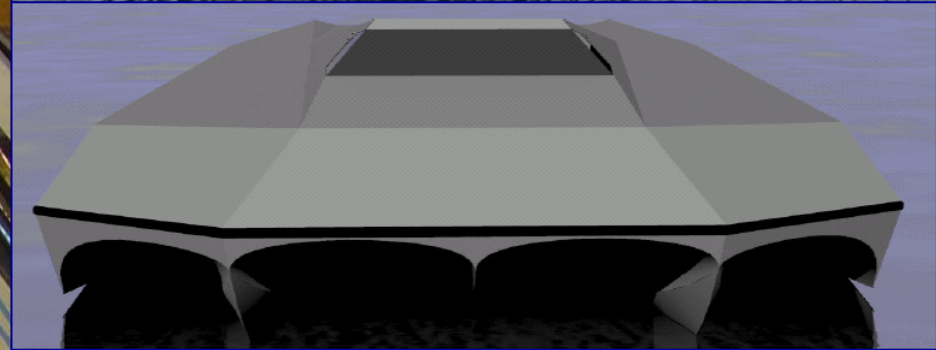
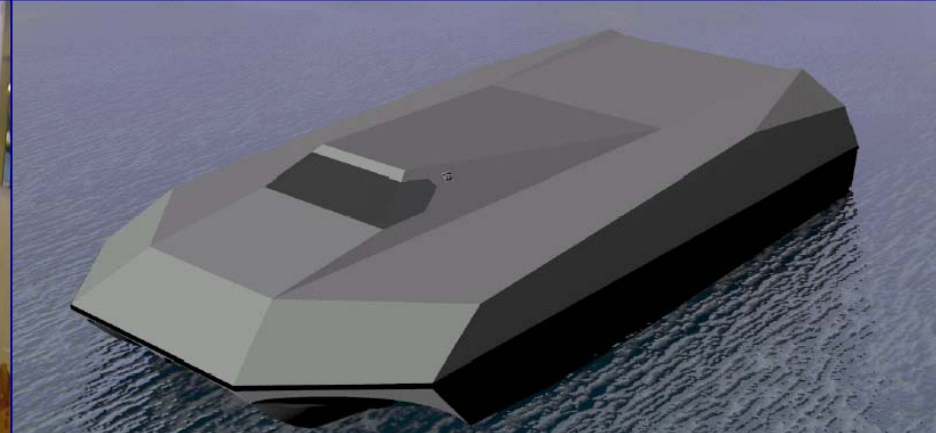
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High Speed at Sea



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Sea-Basing

...Evolve the Concept



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- The Sea-base is the sea not the things on it.
- It's a verb...the dynamics of operational maneuver...exploiting the exterior advantage
- Don't carry the vulnerabilities of forward garrison (eg. WMD)
- It is not amphibious assault.
- It is joint, multinational and scalable.
- It's value varies inversely with cost.
- It breaks down the land/sea boundary

The need to replace old amphibious and MPF ships does not justify sea-basing programatics



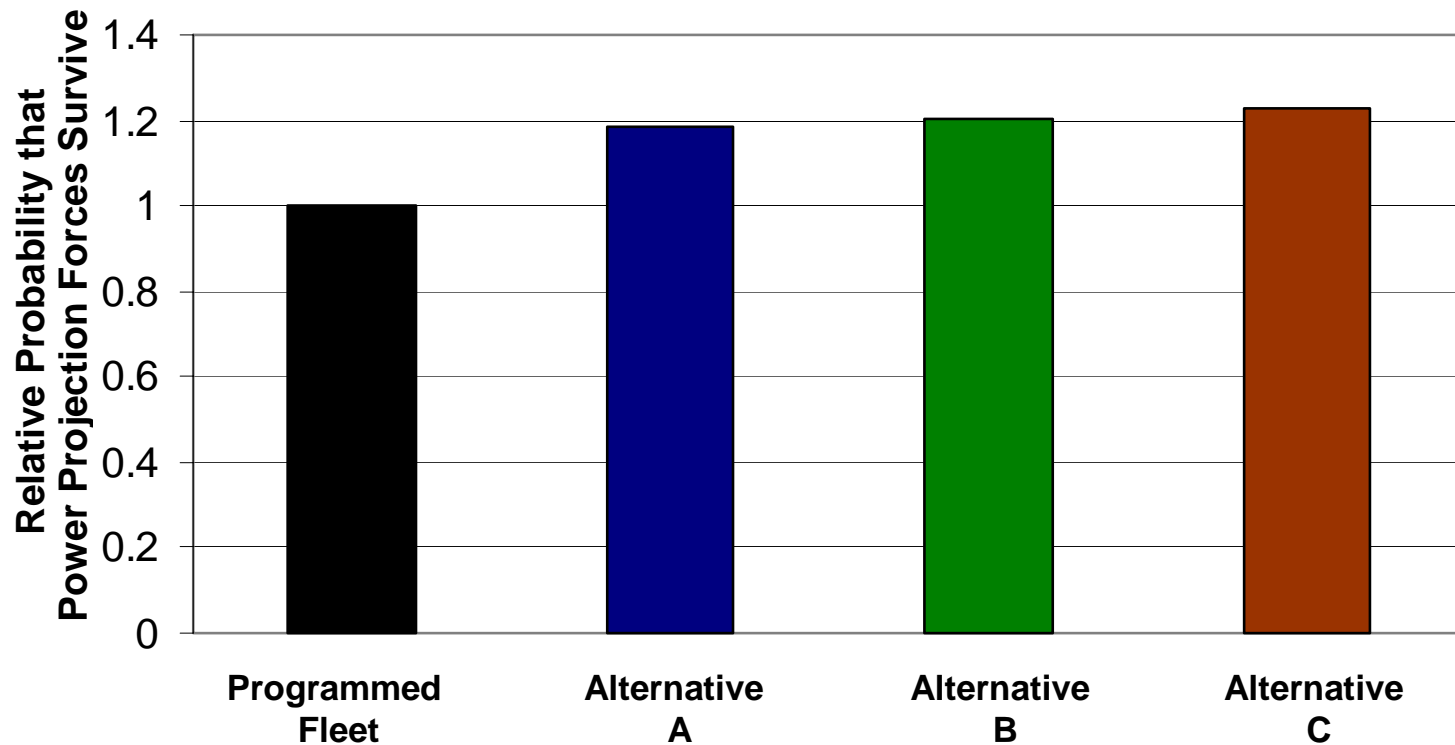
Alternative Architectures



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Comparison of Alternative Fleets Ability to Control Operational Domain

Intervention Setting, Asymmetric Enemy
Incorporating Technical and Relevancy Benefits Aspects of Networking





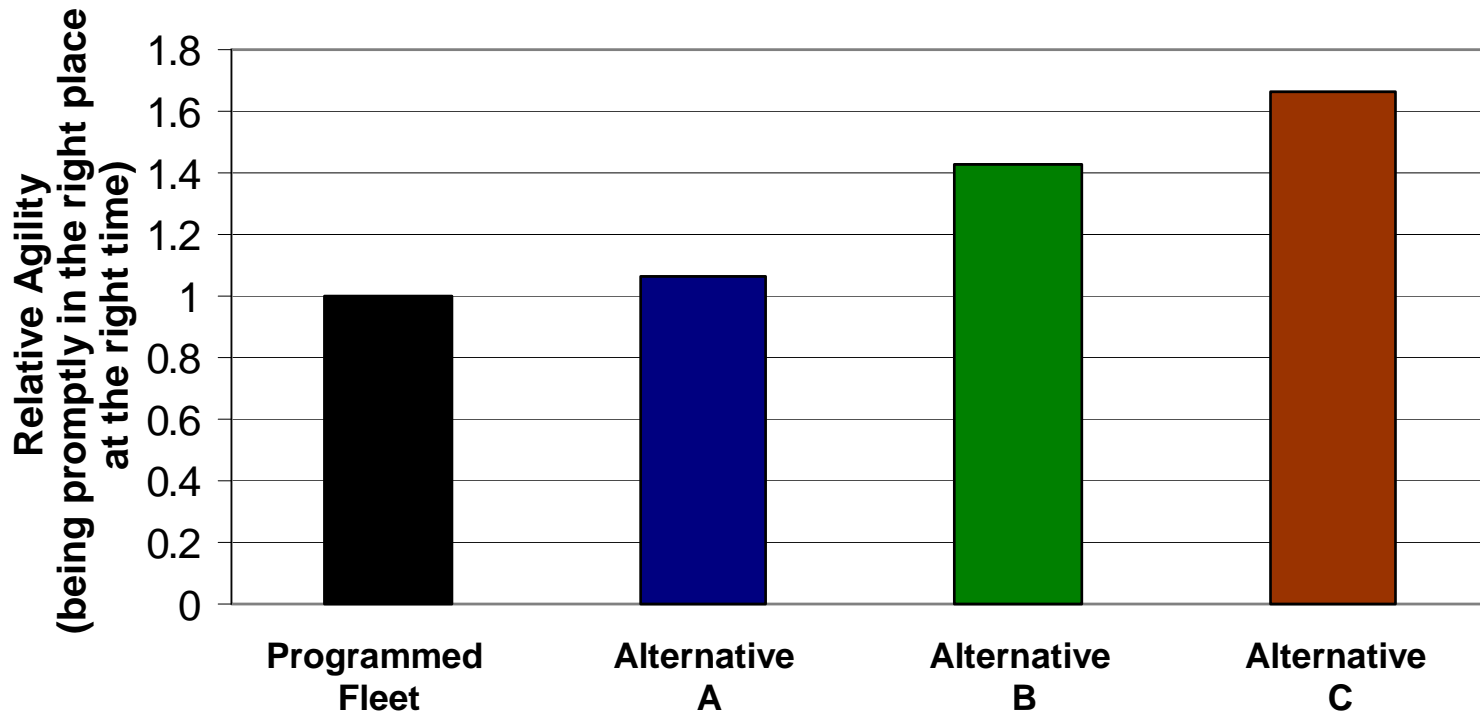
Alternative Architectures



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Comparison of Alternative Fleets Ability to Promptly Bring Forces to Bear

Intervention Setting, Asymmetric Enemy
Incorporating Technical and Relevancy Benefits of Networking





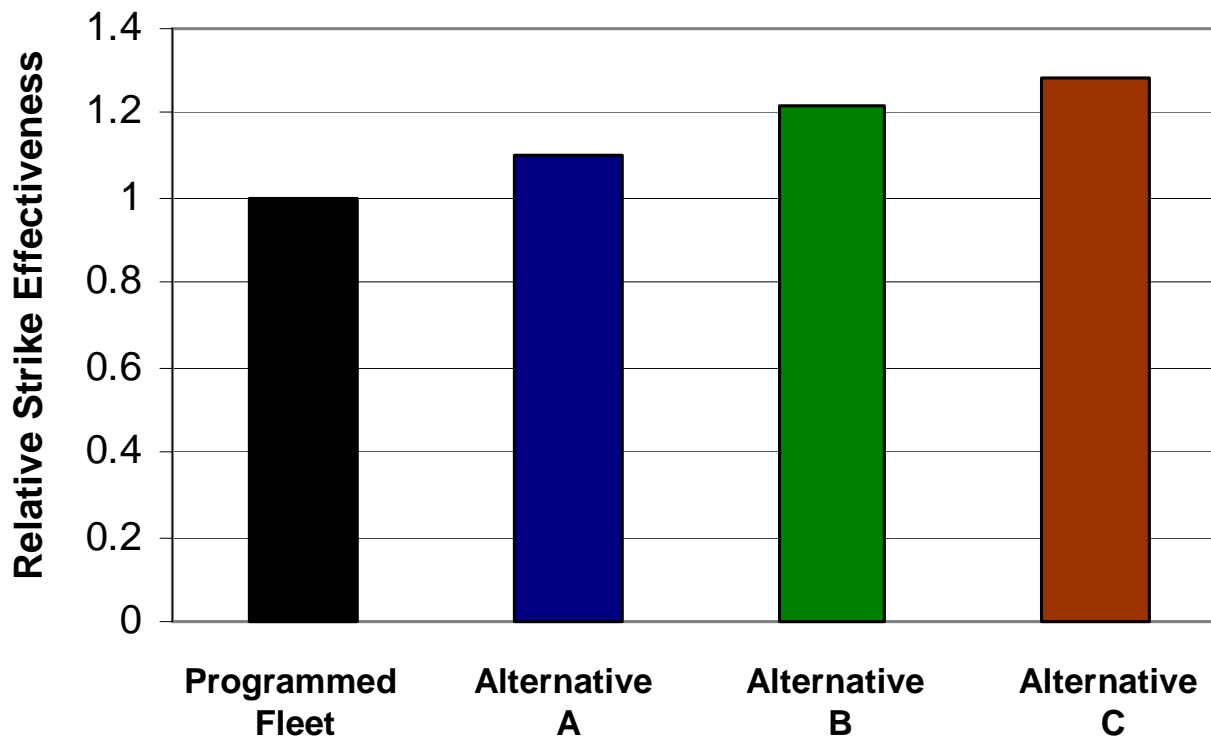
Alternative Architectures



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Comparison of Alternative Fleets Ability to *Fight from the Sea*

Intervention Setting, Asymmetric Enemy
Incorporating Technical and Relevancy Benefits of Networking



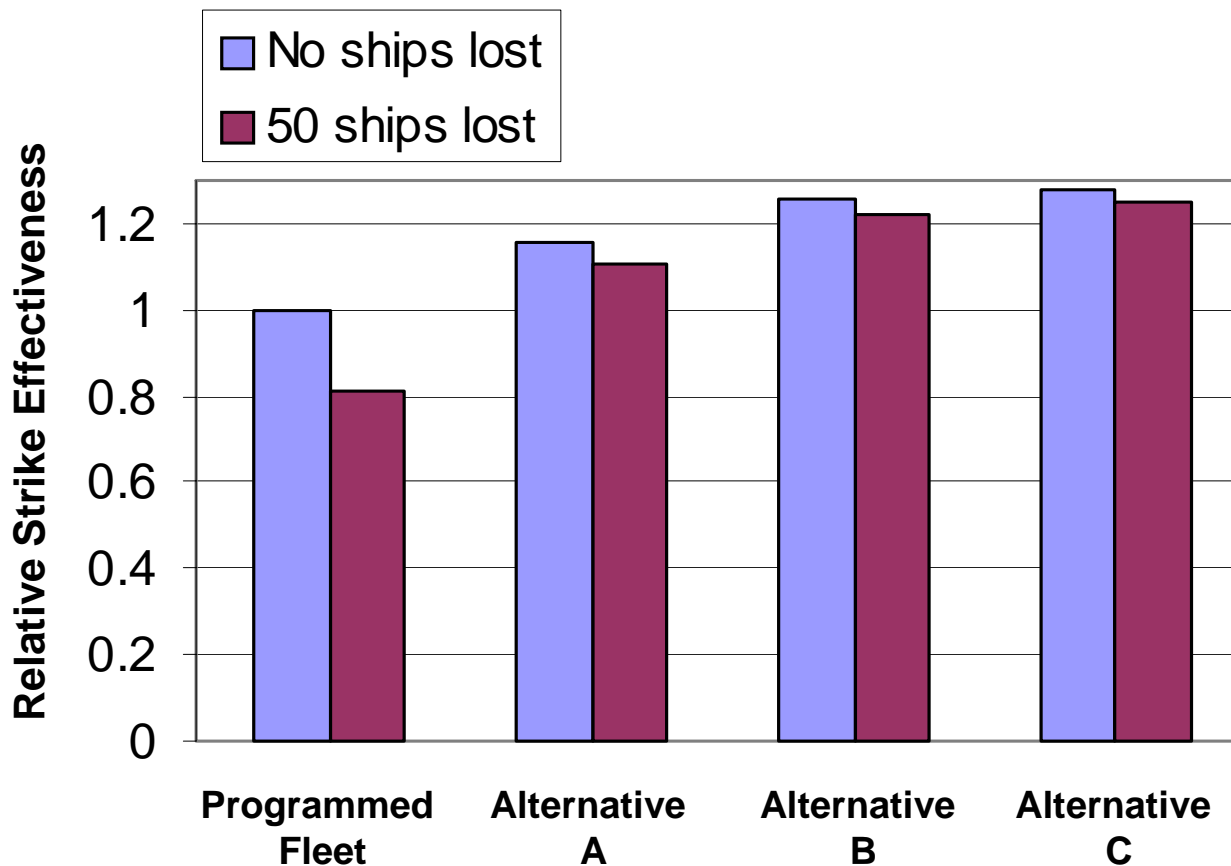


Alternative Architectures



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Comparison of Alternative Fleets Ability to *Fight from the Sea* (Intervention Setting, Non-traditional Enemy)





Fiscal Contradictions

... Challenges/Opportunities



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The current plan ship building plan:

Goal: 375 ship Navy by 2022

Replacement and expansion: 2006-2022, 207 new ships

The LCS imperative...

- 56 LCS
- Total cost 14-16B
- 15% of fleet
- 6% of SCN
- New DD, CG, SSN: 71% SCN, 41% of fleet

Pay for capability not the “standby” cost of defense



Strategic Approach to Cost



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Key Elements

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