System Engineering
for
Rapid Warfighter Response

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Rapid Warfighter Response

The necessary acquisition tasks to rapidly field capabilities needed by the warfighter in response to an Urgent Needs Statements (UNS)

Rapid development will be the balance of urgent needs against performance risk. Procurement, development, operations, and maintenance costs will either be characterized as a wise investment or an acceptable loss. A successful acquisition is based on warfighter satisfaction.

Rapid Development: Tactical Warfighting

Rapid Acquisition: Improvement To Traditional Acquisition

Traditional Acquisition

- Designed to Minimize Risk To Strategic Priorities Of The Services
- Recognizes Design Influence Over Operations And Maintenance Cost
  - 5% of Total Ownership Cost Influences 85%
- Future Needs-Parallel Development With Other Systems For Interoperability
- Risk Mitigation Implemented Through Predictive Analysis
  - Low to Medium Risk Guidance (Nunn-McCurdy)
  - Performance Levels Stressing
  - Predictive Analysis Takes Time & Money
  - Large Complex Project

Rapid vs. Traditional Attributes

Attributes	Rapid Development	Traditional Acquisition
Cost	Non-Optimized Life Cycle Cost Has Little Impact On Budgets	Support & Logistics Cost Minimized To Increase Total Enterprise Capabilities
Performance	Tactical Requirement- Only Impact Of Developmental Failure Is Sunk Cost & Status Quo	Strategic Capability-Failure To Deliver Has Broad Based Impact Across Enterprise
Risk	Current Operational Impact Justifies Risk Acceptance	Threshold Information Required To Accept Risk Requires Time To Develop & Assess
Safety	Current Combat Losses Justify Higher Level Of System Safety Hazards	Reluctance To Accept Inherent System Safety Hazards At Leadership Level
Security	Loss of Information Has Short Term Impact Which Can Be Contained	Loss of Information Has Broad Based Impact Causing Costly Infrastructure Changes

Rapid Development Decision

- Risk vs. Rewards Trade For Tactical Advantage
- Disciplined Process for Project Acceptance
  - Understand Risk In Key Areas
  - Accept The Possibility Of Risk Realization
- Focused or Single Purpose Performance Improvement
- Primary: Technical Risk
  - Performance Threshold Must Be Achievable
  - Performance Failure Will Prevent Fielding of System
- Secondary: Resource Risk
  - Late May Be Good Enough
  - Additional Budget May Be Found If Performance Is Achievable (High Reward vs. Risk Trade)
  - Risk To Ongoing Programs Competing For Personnel, Facilities, and Money

Types Of Rapid Development

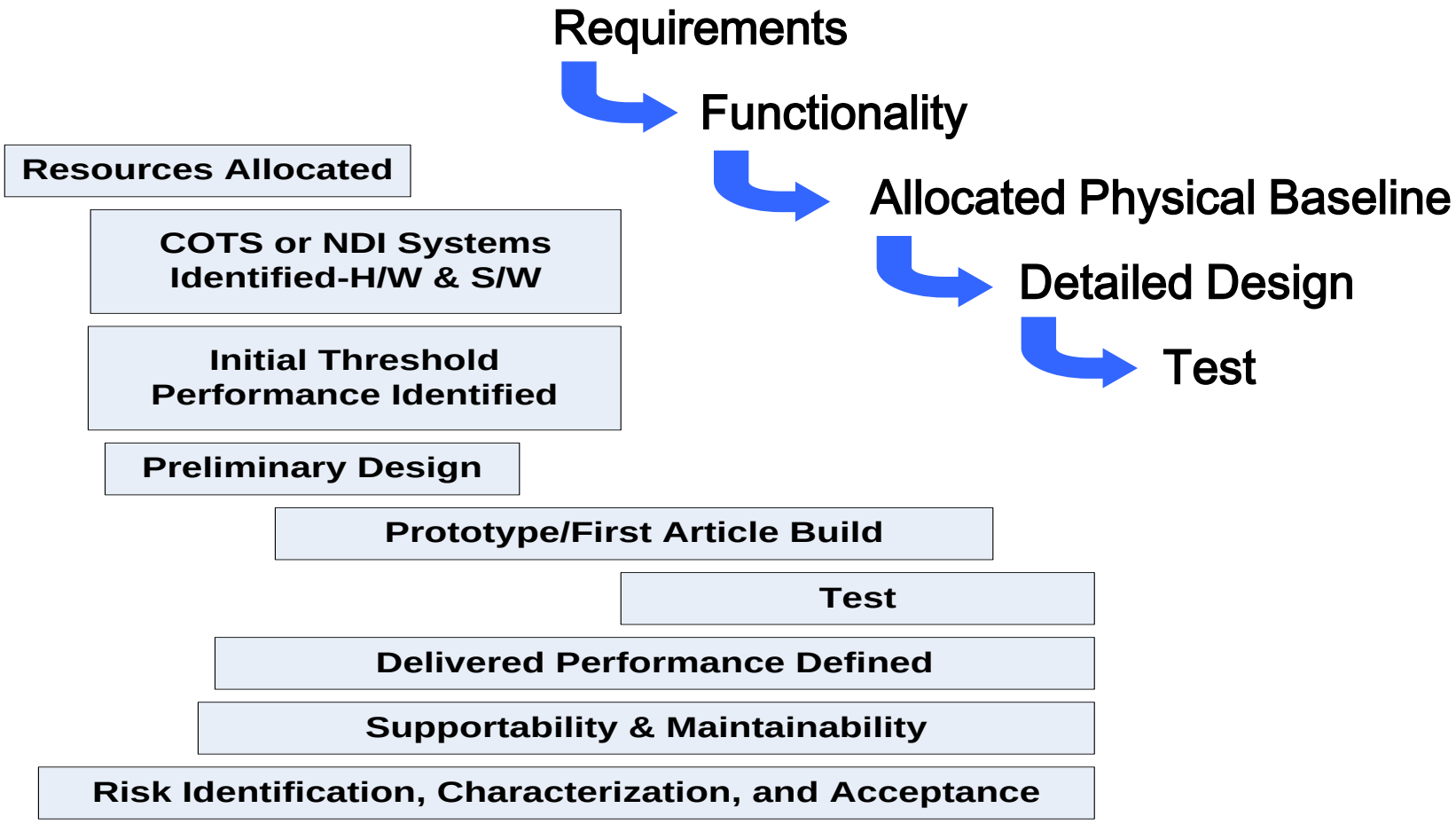
- **Time, Money, and Effort Determine Leadership Authority Required For Risk Acceptance**
- **Time And Money Strongly Correlated**
  - **Small Projects Can Be Absorb At Program Office Level**
  - **Subsystem Integration or Prototyping Already Managed**
    - **Moving New or Upgrade Project Left**
    - **Software Integration Facilities Established**
    - **Acceptance Procedures Understood**
- **Large Technically Complex Projects**
  - **Usually More Than A Year**
  - **Higher Technical Risk**
  - **Must Be Followed With Clean-Up Efforts**

Rapid Development Level Of Effort

	Rapid Integration	Rapid Prototyping	Rapid Acquisition
Scope	Subsystem Integration	Subsystem Prototyping and Integration	System Architecting and Development
Time Period	30 – 90 Day	90 Day – 1 year	> 1 Year
Cost	< $3M	$3M – $20M	> $20M
Size	Small	Small/Medium	Medium/Large
Requirements	Defined	Flexible	Flexible
Risk	Need Outweighs Risk	Need Outweighs Risk	Risk Accepted
Life Cycle	Less than 3 Year	3 to 7 Year	5-10 Year
Testing	Pilot	Prototype/Pilot	Prototype/First Article
Contracting	In-House	Time & Material	Incentivized Performance
Priority	Medium/High	Medium/High	High

System Engineering & Design

Basic Tenets of Engineering Apply-Large Parallel Effort



What Makes It Rapid

- **Focus On Highest Priorities**
  - **Performance, Safety, And Security**
- **Minimize Design Impact Of “ilities”**
  - **Work Analysis In Parallel**
- **Rapid Decision Making**
  - **Old Style Chief Engineer Paradigm**
  - **Prototyping To Support Design**
  - **Establish Clear Lines Of Engagement & Communication**
- **Rapid Risk Acceptance**
  - **Mitigation Opportunities Limited**
  - **User And Leadership Acceptance Of Risk**
- **Rapid Contracting**
  - **A Priori Contract Vehicles Available**

Money Is Not Important

- Money & Accountability Slows The Process
- Commitment To Rapid Development Recognizes Failure & Wasted Dollars
  - Runs Contrary To Basic Financial Management Rules
  - Competition Slows All Procurement Actions
- Must Be Able To Exercise Sole Source Authority
- Smaller Projects-Contracts Already In Place
  - Time & Material Task Order Contracts
  - Support BOAs For Fleet Support
- Government Facilities
  - Depot Modification & Support
  - Fleet Support Teams
  - System Integration Labs-Government SSAs
  - Government Test Facilities

Summary

- Have A Rapid Warfighter Response Culture In Place Before The Need Is Identified
- Established Understanding And Triage For Filtering Request
- Smaller Projects Handled At The Program Level
- Up Front Commitment To Risk Acceptance
  - You May Fail
  - Dollars May Be Wasted
- Engineering Is Still Disciplined
- Rapid Decision Making & Risk Acceptance
- Contracting Still The Largest Hurdle

BACKUP