Asset-Based PBL for Navy Warships - A case study for LCS Class Ships

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Mike Mahon

Topics

- ***Definitions/PBL scaling***
- ***LCS Overview***
- ***Asset-Based PBL Key questions***
- ***Asset-Based PBL challenges/Obstacles***
- ***Asset-Based PBL - keys to success***
- ***Path ahead***

Definitions

What is PBL?

- ***any contract where the primary requirement is to provide products & services based on a pre-determined performance metric.***
- ***The performance metric should in some way be a contributing factor to Operational Availability (Ao).***

The Navy today boasts of 150+ PBL contracts; most of these are supply-oriented PBLs issued by NAVICP

- ***Most are lower level component based PBLs***

Definitions (cont.)

What is Asset-based?

Component Level

Tires

System/Eqpt Level

Asset Level

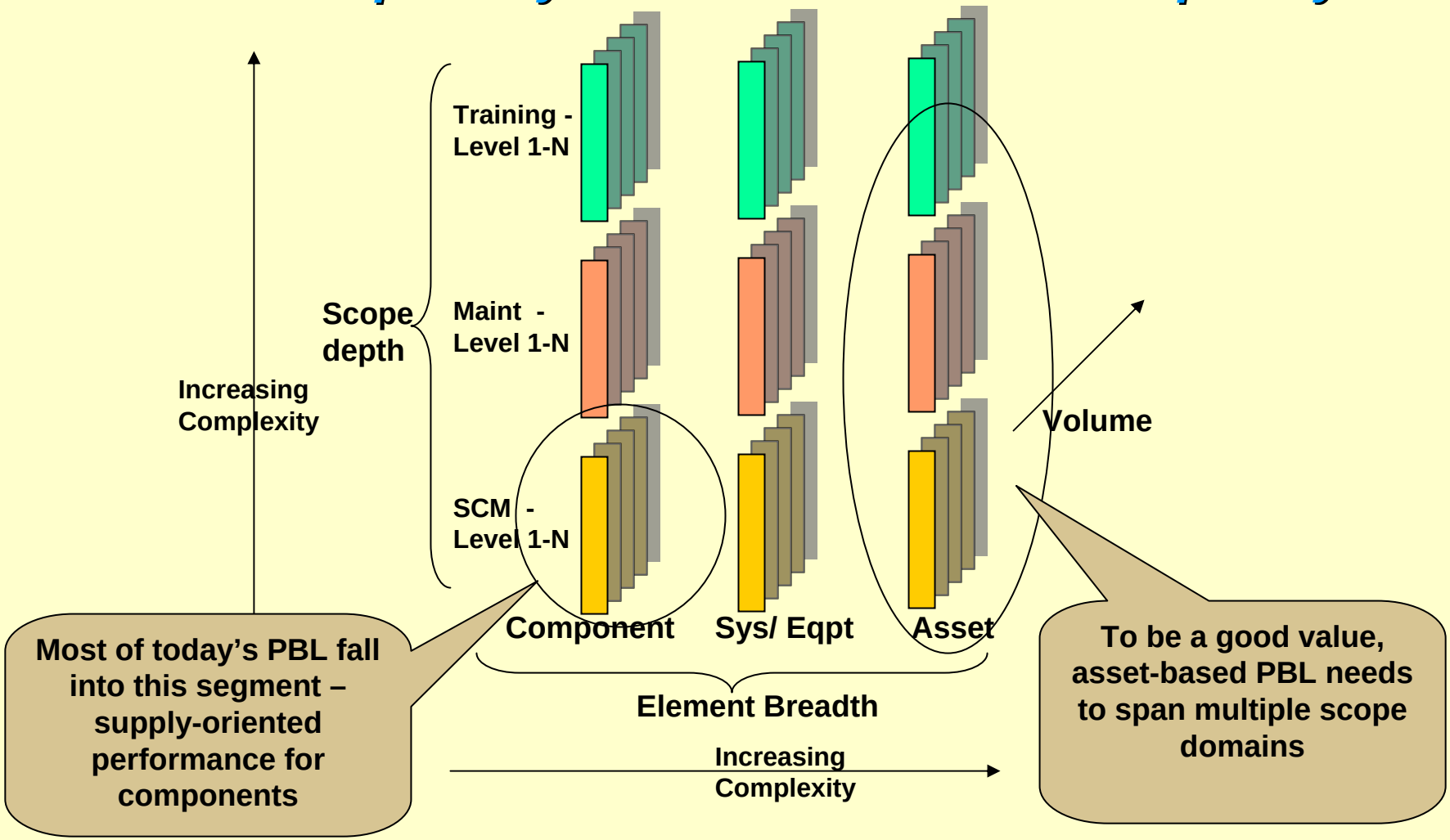
Not all assets are equal in terms of achieving asset-based PBL

Easier — ***Harder***

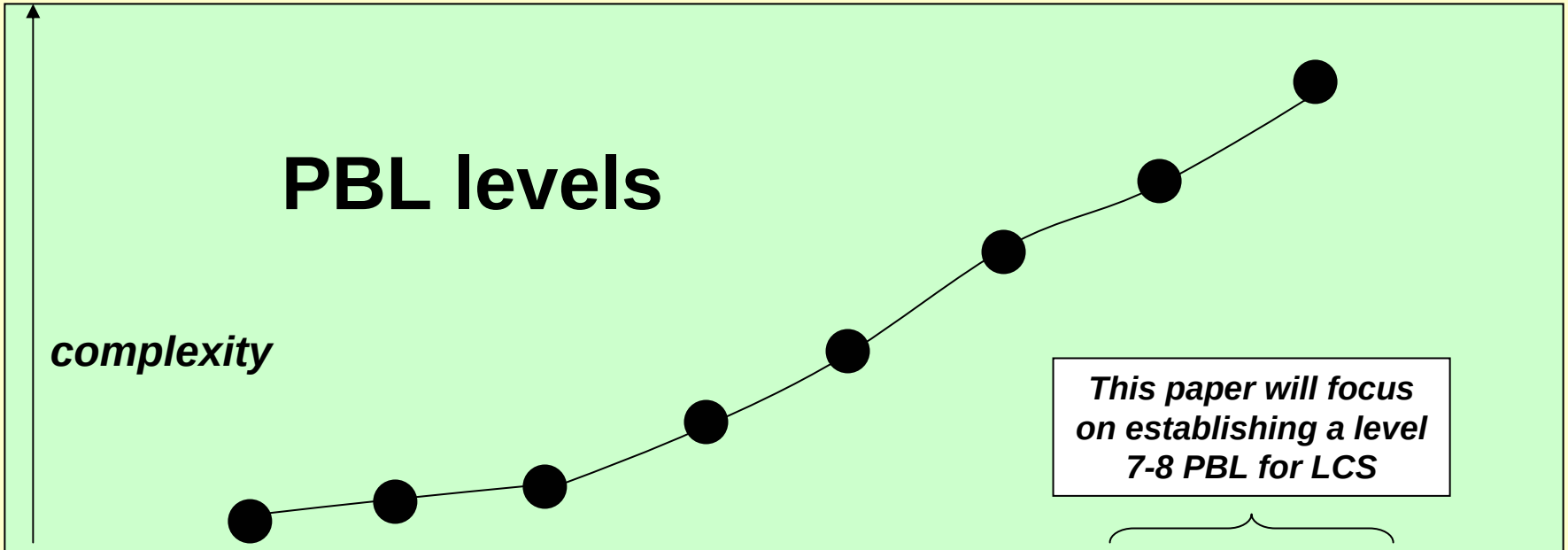
Complexity is based of number of systems within asset

PBL Complexity

There are two primary dimensions to PBL complexity.



PBL Complexity Scaling

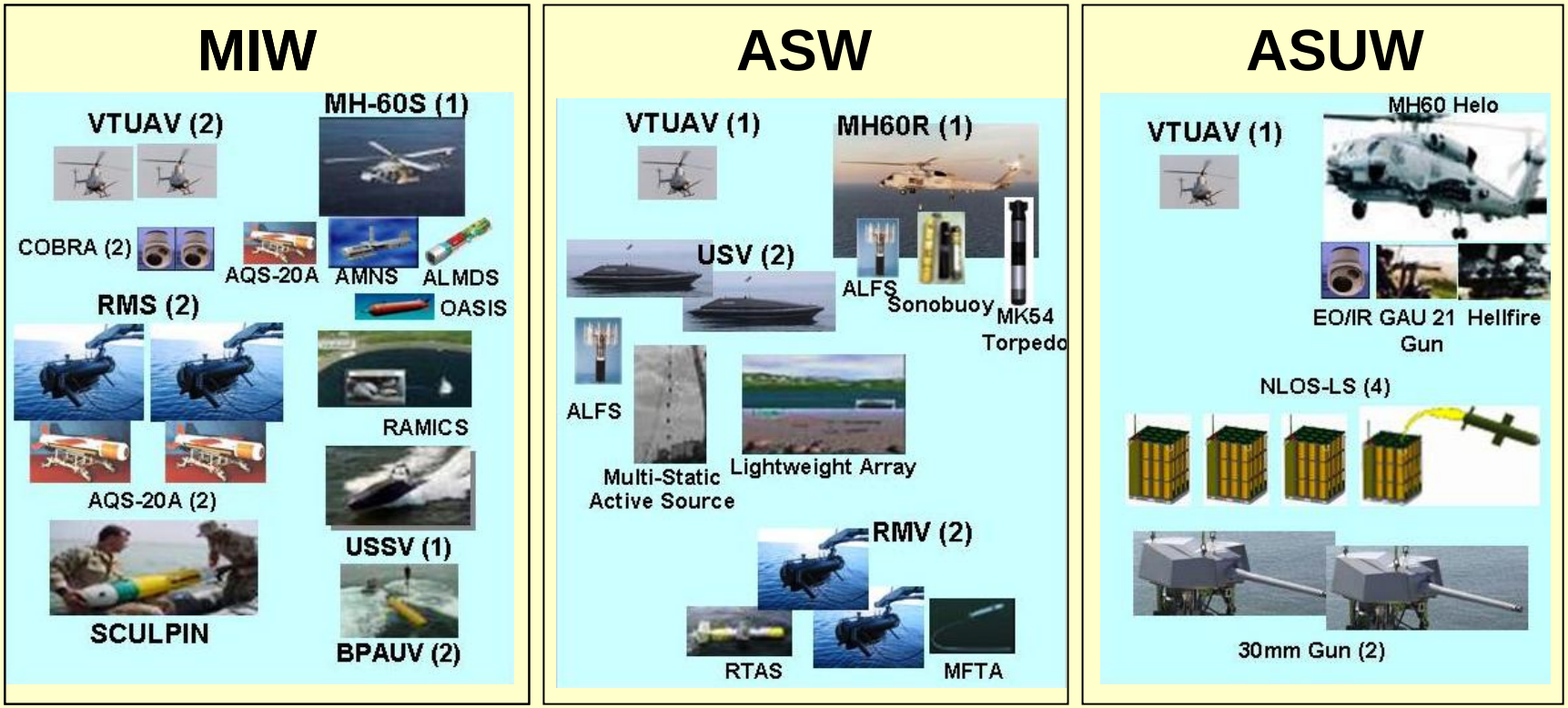


Level	1	2	3	4	5	6	7	8	9
System depth	component	System/ eqpt	component	System/ eqpt	System/ eqpt	Asset-based	Asset-based	Asset-based	Asset based
Domain depth	Supply only	Supply only	Supply only	Supply only	Supply +Maint	Supply only	Supply +Maint	Supply +Maint + Mods	Leased or other special
Element depth	Single element	Single element	Multiple elements	Multiple elements	Multiple elements	Multiple elements	Multiple elements	Multiple elements	

Note: this scale is Mahon developed and not an industry accepted/certified rating system for PBLs

LCS System of Systems

LCS consists of core seaframes designed to host mission packages. Three MP are initially planned.



LCS Original Requirements

Requirements	THRESHOLD	OBJECTIVE
Sprint Speed (kts)	40	50
Mission Package Payload (mt)	180	210
Range @ Transit Speed (nm)	3500	4300
Navigational Draft (ft)	20	10
Core Crew manning	50	15

Two Years **$220M**

Any Mission Package / Any Ship / Any Time

- Non-traditional hull forms
- Non-traditional materials
- Non-traditional Propulsion
  - CODAG + Waterjet drive (x4)
- Non-traditional construction practices
- Non-traditional system suppliers
- Modular Open Systems Approach
- Open Computing Architecture
- Automation

LCS Breaks thru many Traditional Paradigms

LCS Flight 0 Acquisition Strategy

6 Industry Concepts
(06 Feb 03)

3 Preliminary Designs
(19 Jul 03)

2 Final Designs
(Contracts Awarded 27 May 04)

FLT 0 Lockheed Martin
(15 Dec 04)

FLT 0 General Dynamics
(14 Oct 05)

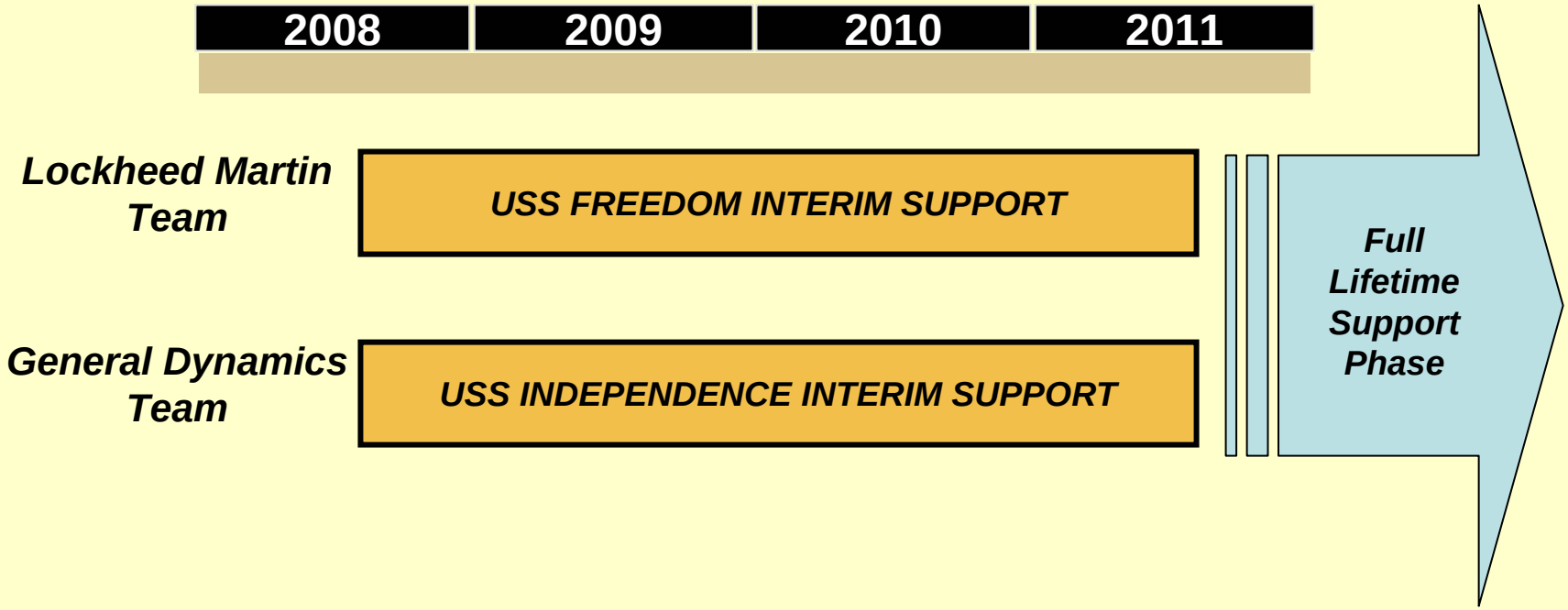
February 2003	July 2003	May 2004	December 2004	October 2005

First Ships Delivers in Summer 2008

LCS Flight 0 Sustainment Strategy

The US Navy approach for LCS sustainment is to establish the lead shipbuilding teams as lead for sustainment for an interim 36-month period.

- ***Concept is to leverage knowledge for design/construction for risk mitigation in initial sustainment phase***



Asset-based PBL – Key Questions

1. ***Will it work? Just because it works at lower levels doesn't mean it's a good thing at a higher level?***

2. ***Will it save money and if so, how much?***

3. ***Can we really put such heavy responsibility for our nations defense in the hands of Industry?***

4. ***What is the fallback if it doesn't work?***

5. ***What will happen to the existing infrastructure that is still required for other ship classes?***

Asset-based PBL – Challenges/Obstacles

1. ***Jobs/responsibilities – see attached***
2. ***Risk – all dimensions of risk must be identified and mitigation plans established and funded***
3. ***Colors-of-money (RDT&E, SCN, O&M, etc.)***
   - ***it is difficult securing an extra SCN dollar to save two dollars of OM&N***
4. ***Cost/Business case analyses (BCA)***
   - ***Most transformational concepts require a BCA, yet establishing a baseline for today's warships is difficult at best***
5. ***Interaction with other existing PBLs***
   - ***Need to ensure that upper level, asset-based PBLs can work in harmony with existing, established PBLs***
6. ***Patience (or lack of it)***
   - ***Initial performance will be bumpy/full of glitches – all parties need to be prepared for this and work through it.***

Asset-based PBL – Keys to Success

1. ***Support from DoD/Customer community***
2. ***A Good approach that manages Risk***
   - ***'stair-step' approach that progresses to full asset-based PBL incrementally***
   - ***Initially costs more to have parallel paths in case of failure***
   - ***Integrated industry-Govt processes***
3. ***Solid team Structure***
   - ***Embraces/uses competition for optimal value***
4. ***Good performance metrics***

Path Ahead

1. ***Build the team and the processes for the three year Interim Sustainment timeframe.***
2. ***Establish initial metric set***
3. ***Do NOT accept PBL from initial suppliers - risk/cost will be too high. Instead use the 3yr period to understand the ship and operational caps and lims – measure everything!***
4. ***Build alternate suppliers – keep competitive environment***
5. ***Establish transition plan for full life-time support***

   (Also build plan to fallback to traditional approach if reqd)

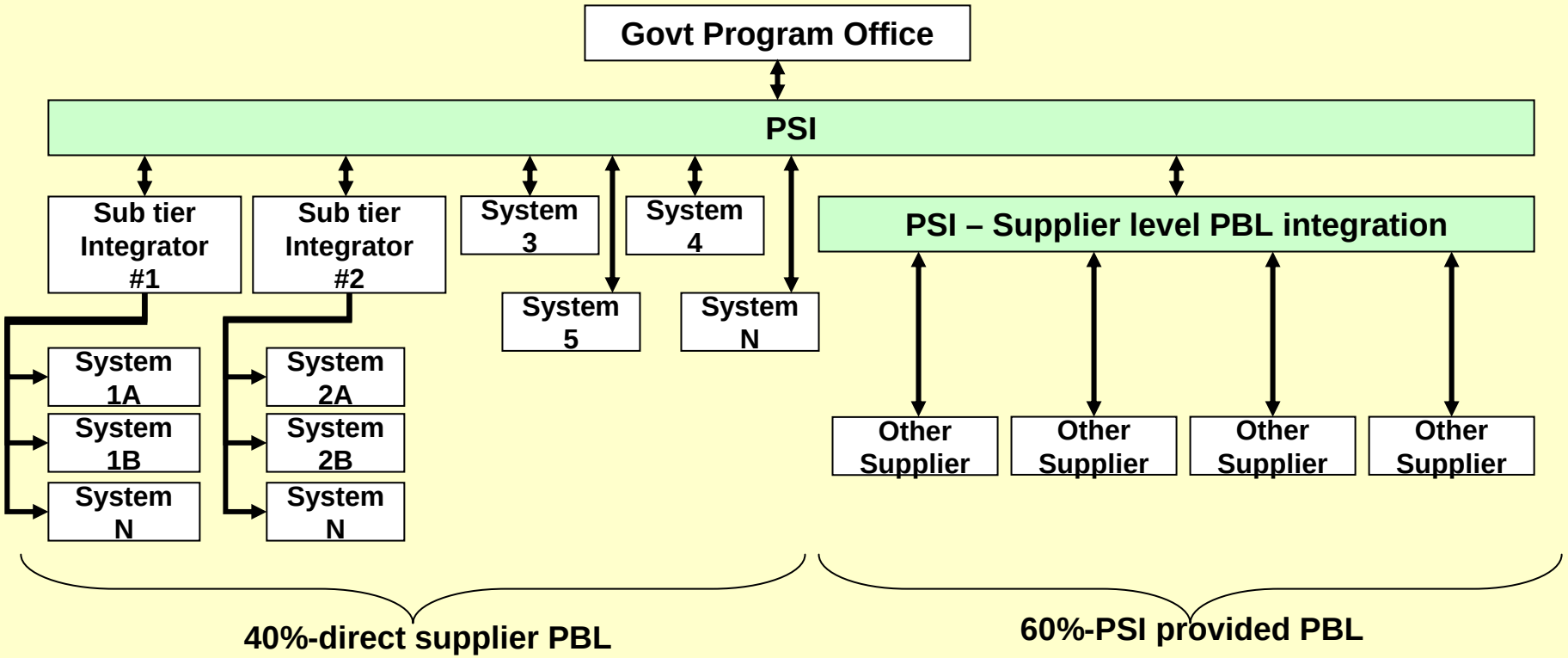
Back-ups

Job/Responsibilities

- ***The biggest obstacle to asset-based PBL (or FSC or CLS) will be from the organic support infrastructure who's very livelihood is threatened by this initiative***
- ***Unlike component based PBL (which never shifted <u>who</u> did the work but <u>how</u> it was contracted), asset-based PBL transitions organic responsibility to industry***
- ***And yet, industry must work with these very same organic activities to develop and operate the Asset-based PBL***
- ***Many people/organizations will be very happy to see asset-based PBL fail and may even work to help it fail.***

Asset-Based PBL - Org structure

- *The business structure of an asset-based PBL for a warship can be very complex. It consists of many suppliers and varying levels*



Performance Metrics

- *Measuring performance is critical*
- *Samples metrics include:*

SCM	Maintenance	Training
•Inventory management	•Casualty response time	•Train-to-qualify (T2Q)
•Demand forecasting	•Remote monitoring	•Embedded training
•Transportation	•Condition-based Maint.	•Initial& replenishment crew training
•Requisition processing	•Distance support	•Computer based training & sim
•Parts Repair	•'O' level maint. PM/CM	•Trainer site ops
•Parts replenishment	•'I' level Maint. PM/CM	•Team training
•SCM management	•'D' level Maint	•Training management
	•Maintenance Mgt	

- *To achieve asset-based PBL – in time metric quantity lessens but the metric 'quality' grows*