



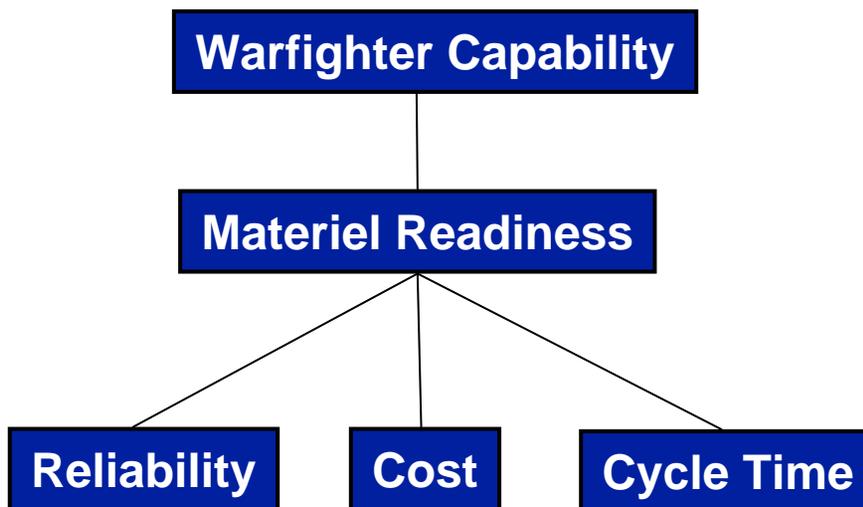
DoD
CPI Transformation Review
Observations and Recommendations
25 October 2005



Task Requirement

“North Star” 

Identify a strategic approach to achieve and sustain optimal end-to-end materiel readiness to support the warfighter





OSD Guidelines

- Conduct a broad-based, multi-functional assessment – not one that reflects the perspective of a single company or discipline
- Complement/assist Service CPI initiatives – not “audit” or “redirect” them
- Build on performance improvements Services have already achieved – not conduct a “zero-base” assessment
- Identify/assess overall strengths, opportunities and impediments – not just ways to improve specific processes or value streams
- Determine requirements for establishing formal DoD policy on CPI



Study Objectives

- Understand end-to-end weapon system value streams and how the processes/transactions in those value streams affect materiel readiness
- Identify key leverage points within Service-chosen selected value streams
 - Air Force F-15 aircraft
 - Navy F/A-18 aircraft
 - Army HMMWVs and H-60 helicopters
 - USMC HMMWVs and other tactical vehicles (BIC & MCB)
- Identify and communicate CPI principles, tools and techniques that can be most effectively employed in DoD materiel readiness value streams



CPI SME Working Group

- DoD Representatives:
 - Col “Maq” Maquet (USAF)
 - Col Sarah Smith (OSD)
- LMI Facilitators
 - Jerry Bapst
 - Rob Jordan
- CPI practitioners:
 - John Allen (TSD)
 - Bill Barkau (VSE)
 - Paul Harker (USC Consulting)
 - Harry Jackson (VSE)
 - Ken Kirby (University of Tennessee)
 - John Maxey (George Group)
 - Tom Phelps (Altarum)
 - Mike Schooler (DRC)



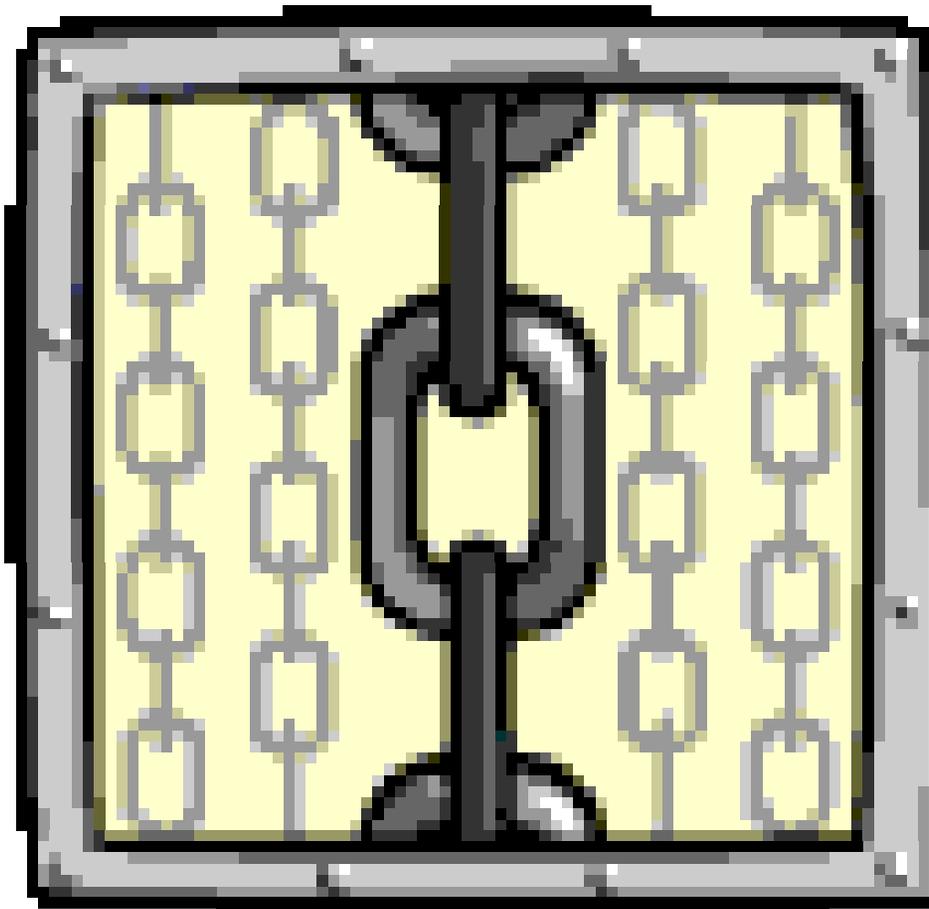
CPI Executive Steering Group

- ❖ Chairperson: Jay Kappmeier (Boeing)
- Members:
 - Dennis Carlson (Carlson Technologies)
 - Fletcher Davidson (Toyota)
 - Doug Beck (McKinsey)
 - Lissa Hollenbeck (Boeing)
 - Earl Jones (GE)
 - Mike Jones (BAH)
 - ❖ Alex Miller (Univ of Tenn)



Leverage Points

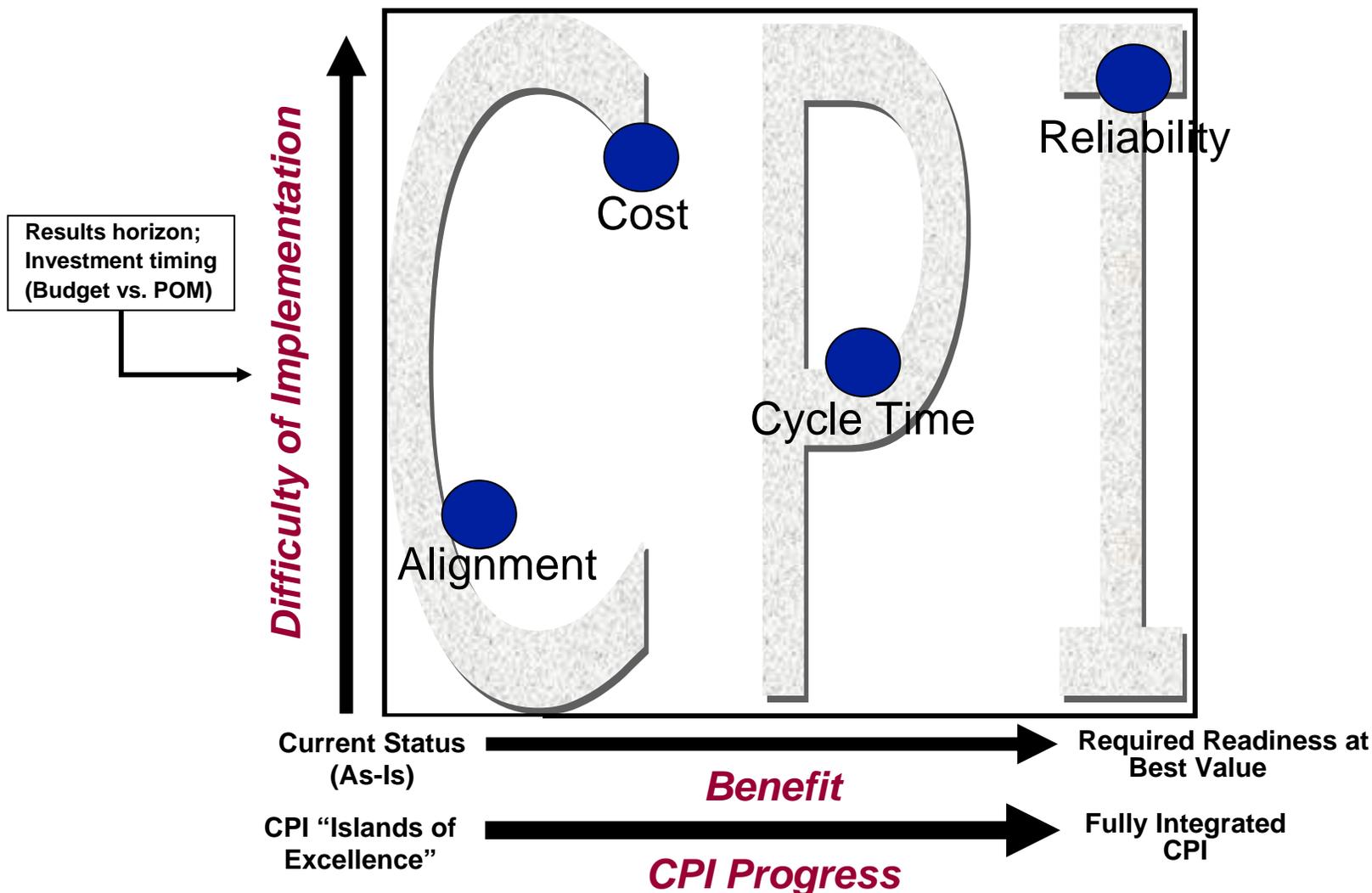
There are leverage points within weapon system value streams that drive overall materiel readiness



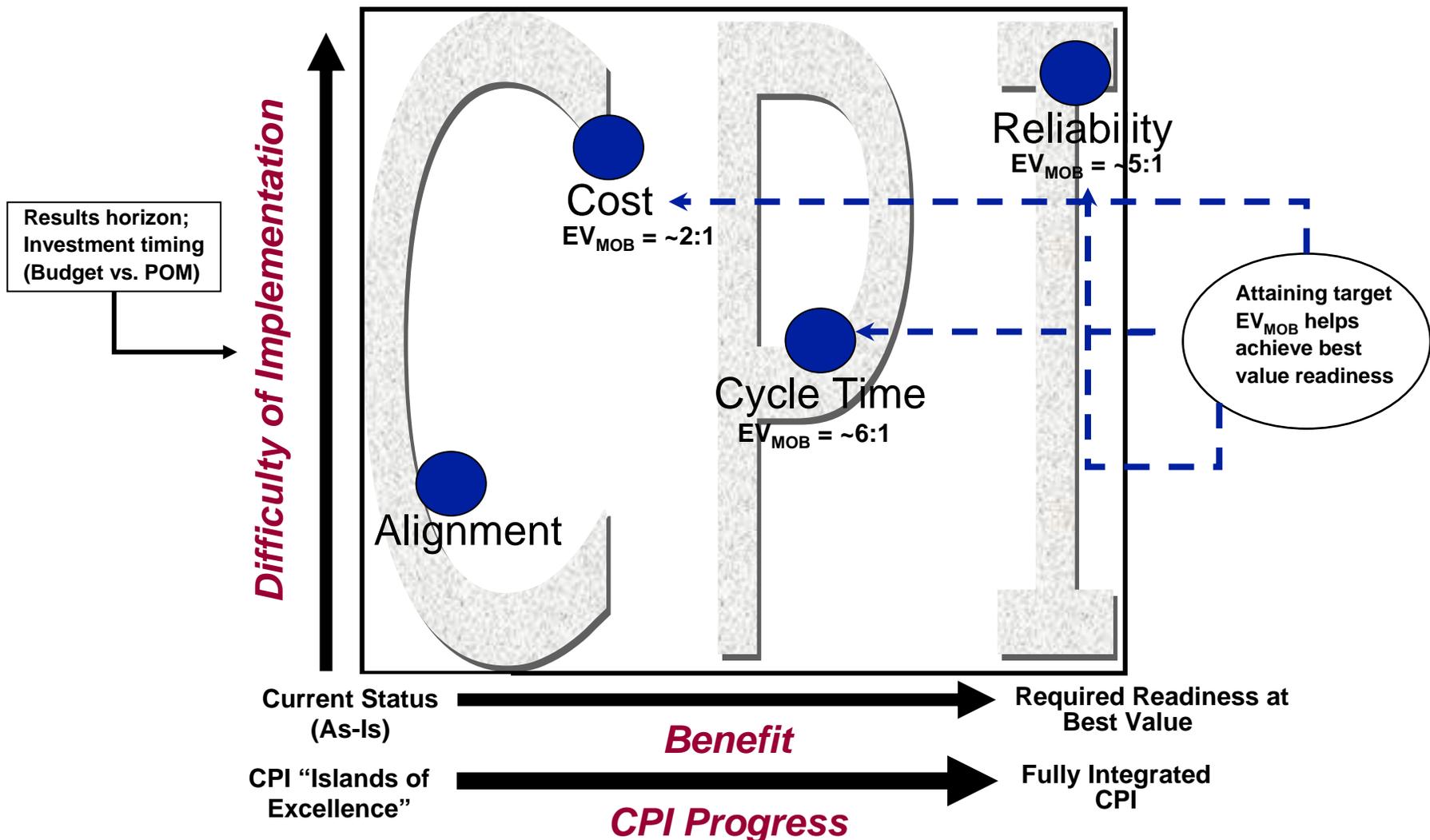
Leverage point: the points at which attention and/or application of resources would result in tangible improvements/benefits to the entire end-to-end materiel readiness value stream



DoD leverage points fall into four areas



DoD Leverage Points: Applying CPI in each area in an integrated manner achieves maximum benefits



EV_{MOB} = Expected value for magnitude of benefit

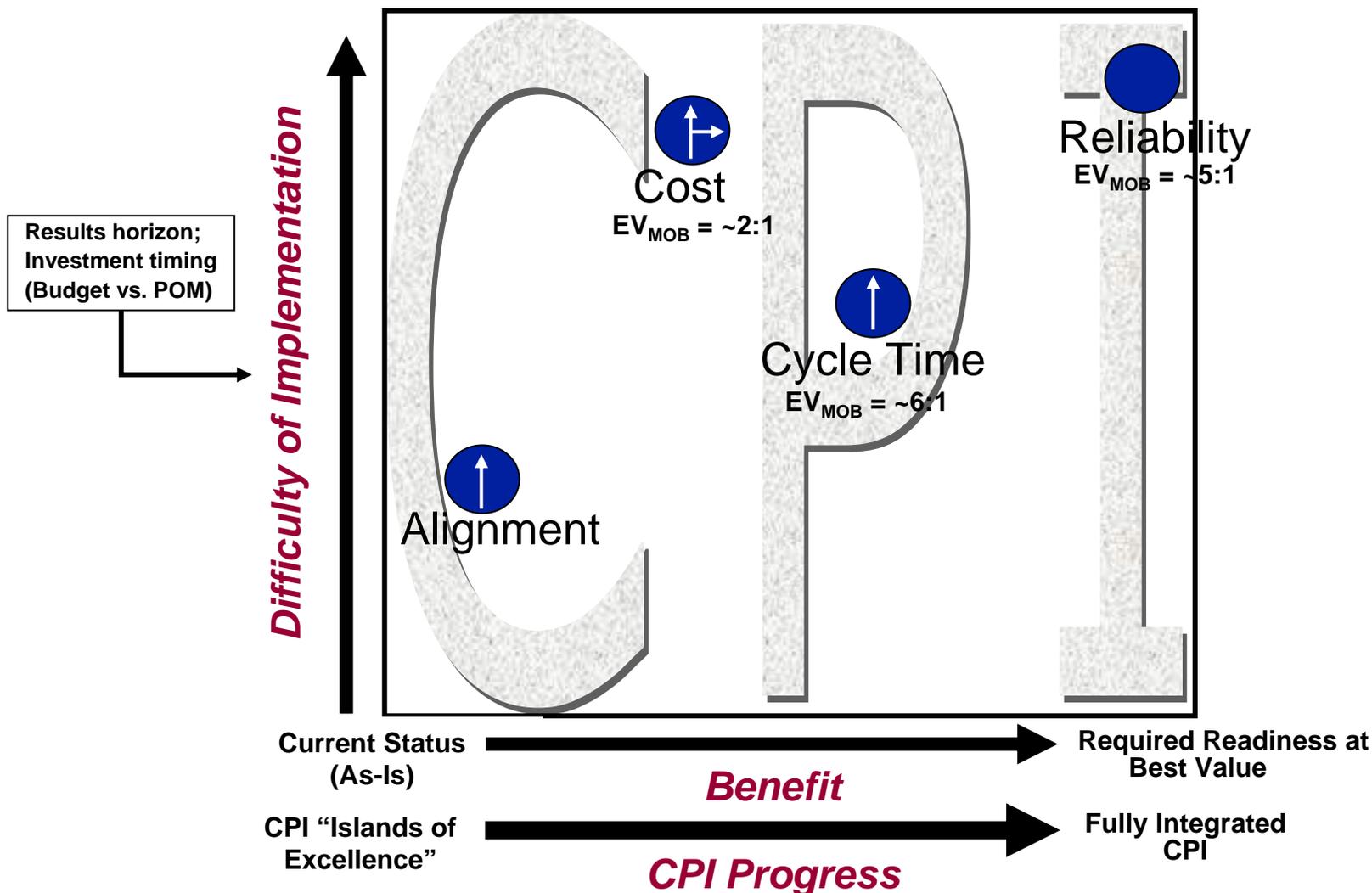


Army leverage points – key observations and recommendations

- **Cost**
 - Lack of ability to optimize resource application and usage
 - Difficulty in tracking investments to readiness impact/improvements
- **Cycle Time**
 - Performance not monitored nor tracked by end-to-end value stream
 - Lack of data and effective programming adversely affects readiness
 - Lead time for parts do not support mission readiness
- **Reliability**
 - Lack of data collection at lowest repair level to drive reliability
 - No process to address repair equipment maintenance (RCM)
 - Lack of funding for weapon system and repair equipment reliability analysis
- **Alignment**
 - Performance metrics not aligned for managing the weapon system value stream
 - Metrics not tracked consistently
 - Local optimization vice value stream optimization; work-arounds and isolated areas of CPI (e.g., cycle time) improvement
 - CPI implementation not yet integrated, consistent, or standardized. Progress not yet commensurate with resources applied
- **Recommendations**
 - Develop and manage to process metrics across all levels and individual/integrated weapon system value streams
 - Increase priority on reliability (weapon system and support equipment) and provide adequate funds
 - Establish responsive, flexible, and agile parts management and support
 - Formalize and standardize deployment of CPI



Army leverage point areas



EV_{MOB} = Expected value for magnitude of benefit

Note: Arrows inside of leverage point area circles indicate change in relationship to DoD benefit potential

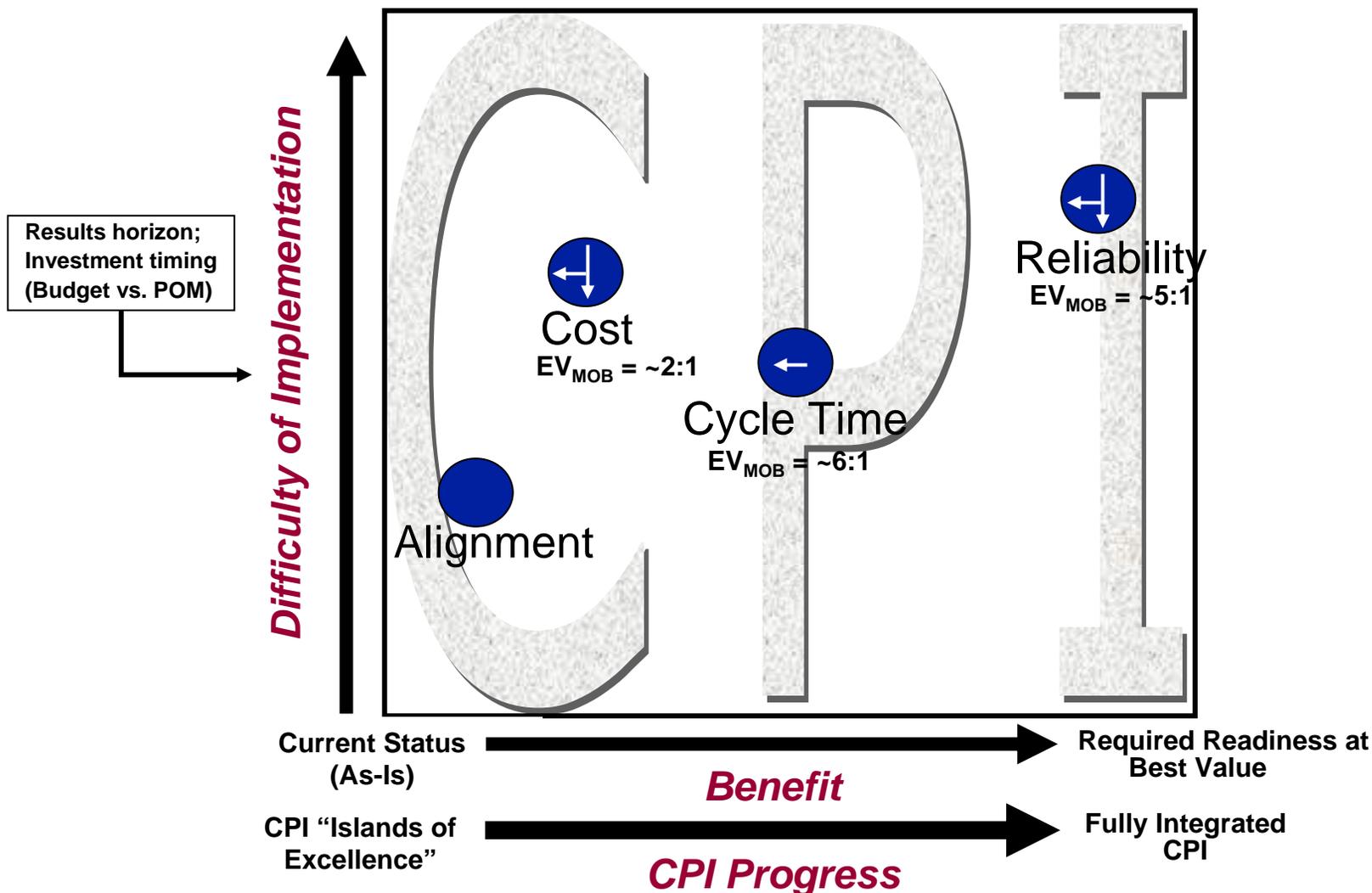


Air Force leverage points – key observations & recommendations

- **Cost**
 - Capturing true (total) costs at such high level (e.g., an ALC) that understanding impact of change at local level on cost is lost
 - Ultimately, cost is an outcome, but it is necessary to fully understand it to track it
- **Cycle Time**
 - Sites setting cycle time to customer demand were successful but cycle time not addressed across the board or end-to-end; cycle time expectations set too low based on perceived parts shortages
- **Reliability**
 - No evidence of a comprehensive reliability program, with only a limited effort seen at the PM office
- **Alignment**
 - No evidence of intentional alignment of metrics up and down the value stream
 - Opportunities are far larger that we can currently understand (due to lack of data), in reliability, understanding cost, and improving cycle time
 - All parts of the Air Force need to be part of a comprehensive improvement process
 - Only isolated islands of excellence were seen, with no apparent alignment among them
- **Recommendations**
 - Alignment and commitment of leadership are the necessary first steps to address all of the potential opportunities
 - Need to bring in the stakeholders to achieve commitment
 - Leadership must be willing to set uncomfortable targets (train the way you fight)
 - Need to establish Sensei organization that understands the potential and is willing drive for the results
 - All processes and systems (including financial systems) need to be aligned to the value stream



Air Force leverage point areas



EV_{MOB} = Expected value for magnitude of benefit

Note: Arrows inside of leverage point area circles indicate change in relationship to DoD benefit potential

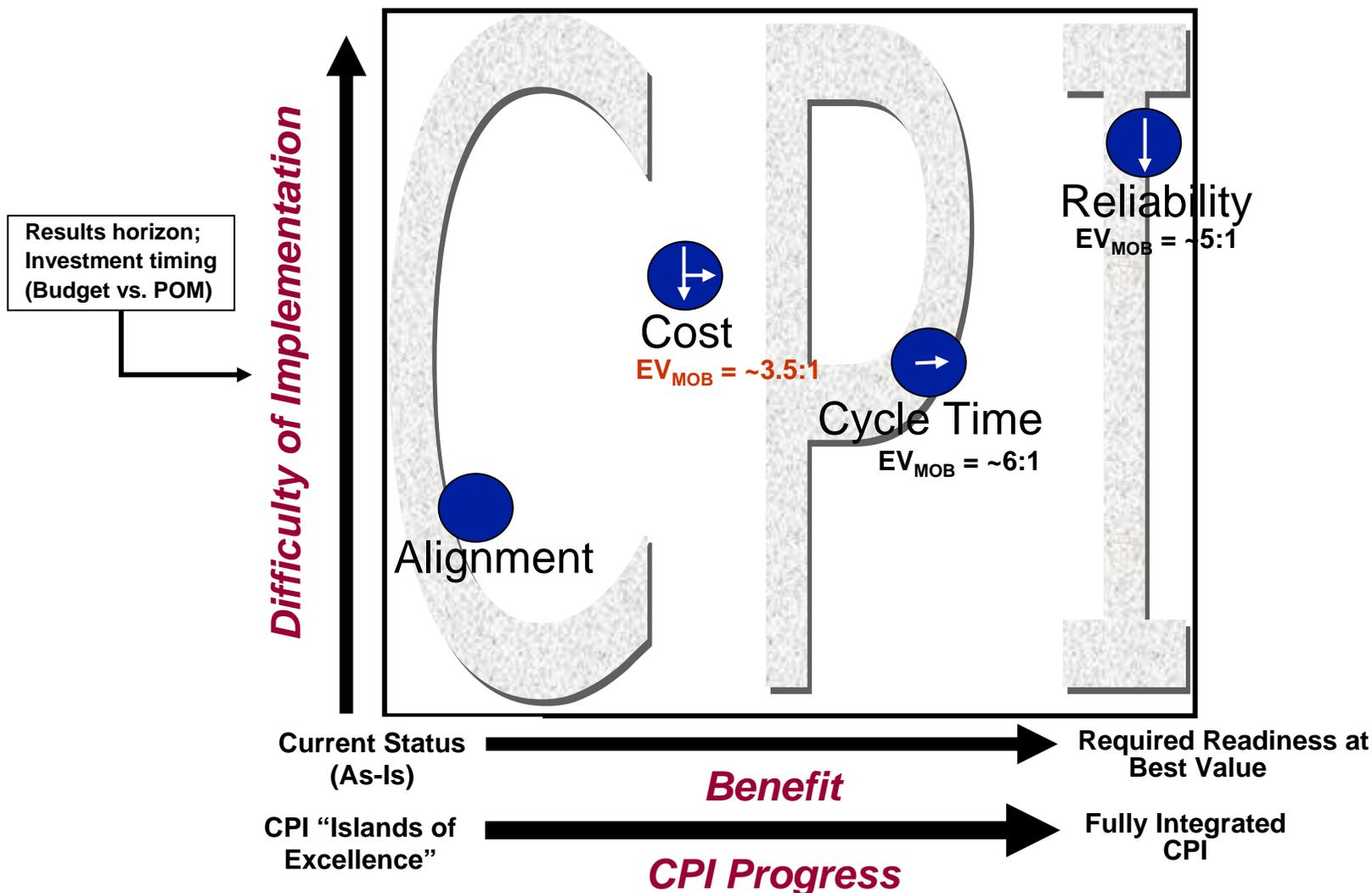


Navy leverage points – key observations & recommendations

- **Cost**
 - AFAST mechanism provides excellent foundation for actively managing material cost, but labor cost associated with repairs is not explicitly managed
 - More explicit understanding of cost can improve decision making and readiness
- **Cycle Time**
 - Waste driven into system – supply of reparable/components not tightly synchronized with demand
- **Reliability**
 - Limited understanding/focus on reliability exists – needs to be expanded, institutionalized, funded, and supported with better data
 - Reliability improvement efforts are limited by lack of actionable data and by limited knowledge-base of reliability principles and best practices
 - No process to address repair (support) equipment maintenance (RCM)
- **Alignment**
 - Flight hour management and supply system operations need alignment
 - Application of resources can be better coordinated to optimize impact on materiel readiness
- **Recommendations**
 - Enhance CPI implementation methodology to integrate systemic changes with behavior and, ultimately, cultural changes
 - Design a system that unifies the timing and rate of supply with the timing and rate of usage
 - Link Ready For Tasking and the daily performance of maintenance and supply activities
 - Standardize reliability improvement and support with consistent, protracted funding.
 - Emphasize life cycle costs; communicate and track aggressive, realistic cost improvement goals



Navy leverage point areas



EV_{MOB} = Expected value for magnitude of benefit, cost is in red to indicate higher potential EV_{MOB}

Note: Arrows inside of leverage point area circles indicate change in relationship to DoD benefit potential

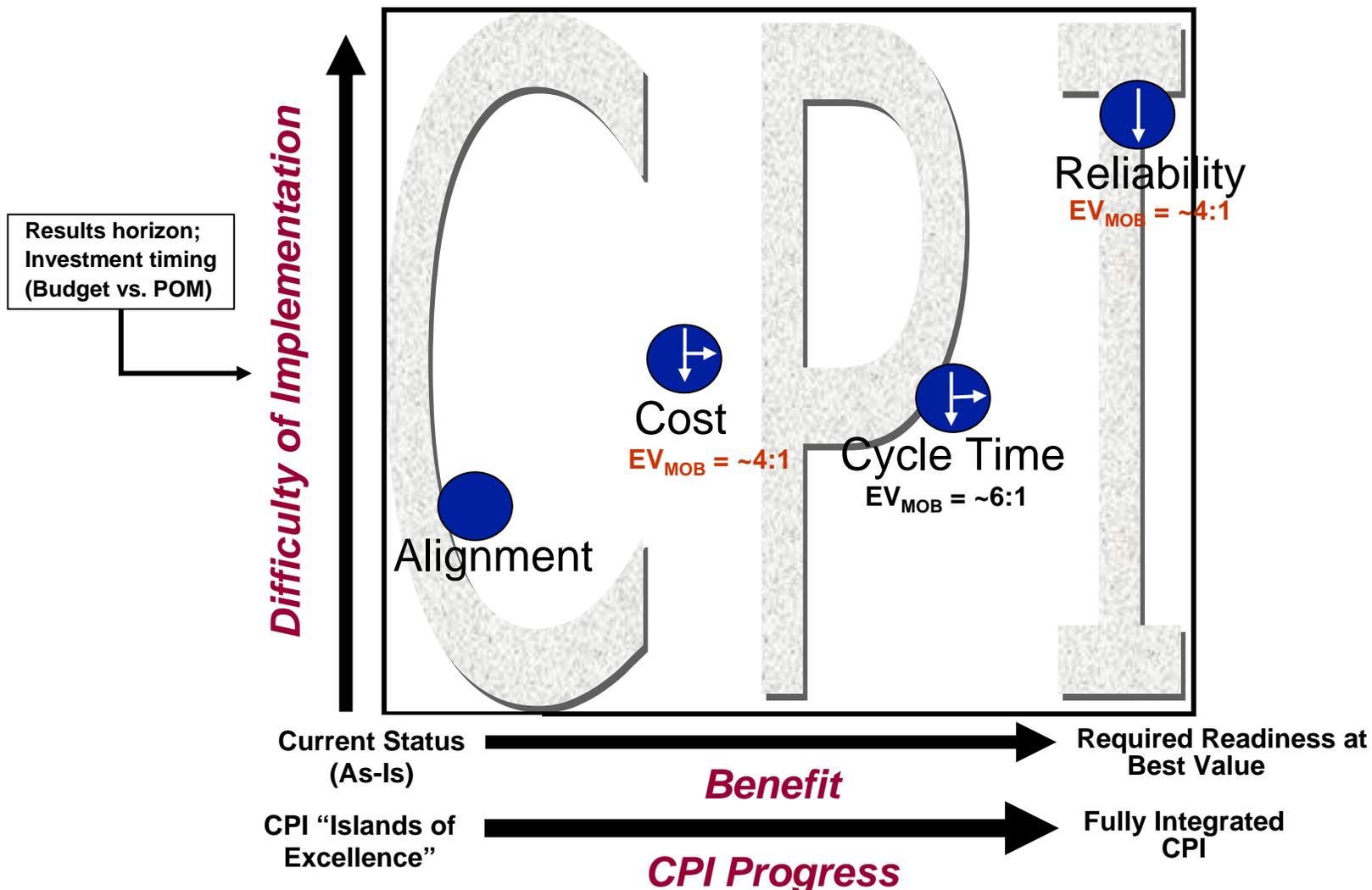
Marine Corps leverage points – key observations & recommendations



- **Cost**
 - CPI initiatives are project oriented, often led by contractors, and not always properly focused
 - Significant opportunity at BIC to maintain throughput (readiness) while reducing cycle time and cost
- **Cycle Time**
 - Volume, mix, work content, and material requirements all vary in the Marine maintenance environment
 - Long lead times from external suppliers exacerbate problems
- **Reliability**
 - Reliability improvement efforts limited by data and limited knowledge of principles/best practices
 - Item reliability needs improvement; data for effective reliability improvement not being captured
 - RCM II reliability initiative commenced at MARSYSCOM, but not yet been implemented at the sites
- **Alignment**
 - There is a need to incorporate and communicate simple, 'near real-time' status indicators to which all stakeholders can effectively respond
 - Application of resources can be better coordinated to optimize impact on materiel readiness
- **Recommendations**
 - Build towards comprehensive CPI application; integrate systemic changes with behavior and, ultimately, cultural changes
 - Create clear connection between readiness and the daily performance of maintenance activities
 - Take advantage of commonality that exists - build equipment layouts around customers/product types
 - Pursue RCM II at MARSYSCOM across the Marine end-to-end sustainment value stream
 - Activate, or build, reliability data collection mechanisms and provide consistent, protracted funding
 - Communicate, and track aggressive and realistic cost improvement goals



Marine Corps leverage point areas



EV_{MOB} = Expected value for magnitude of benefit, cost and reliability are in red to indicate higher potential EV_{MOB}

Note: Arrows inside of leverage point area circles indicate change in relationship to DoD benefit potential



QUESTIONS?