ICEAA Presentation - 2016

Fixing the Flawed Nature of DoD BCA's Industry Focus

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Thesis

The government is not a business that is profit-oriented. Monetary business metrics as a means of determining what items to consume are inherently flawed for the government since metrics such as Return on Investment assume the organization is a provider of the goods or services, not a consumer. A better approach for the government would be to measure the areas that the government most values, i.e. schedule, requirements, and cost. Using those areas as anchors, a best value metric can be developed, pointing the government to smarter acquisition decisions.

Financial Metrics

- **Cash Flow Metrics -** used for evaluating investments and streams of cash flow events
  - net present value (NPV),
  - return on Investment (ROI),
  - internal rate of return (IRR)
- **Financial Statement Metrics –** used for evaluating a company's financial position and financial performance
  - current ratio
  - inventory turns (ITR)
  - earnings per share (EPS) [1]

Financial Metric Definitions #1

- Net Present Value (NPV) - The value today of money that will not be received or paid until sometime in the future; the value today (present value) is discounted below the value the funds will have when the future cash flow actually occurs. [1]
- Return on Investment (ROI) - Return on investment is frequently derived as the "return" (incremental gain) from an action divided by the cost of that action . [1]

$$ROI = \frac{\text{Gain from Investment} - \text{Cost of Investment}}{\text{Cost of Investment}}$$

Financial Metric Definitions #2

- Internal Rate of Return (IRR) - The interest rate that yields a net present value of 0 for a cash flow stream.
- Current Ratio - the ratio of current assets to current liabilities.
- Inventory Turnover Ratio (ITR) - measures the rate at which a company purchases and resells products to customers.
- Earning per Share (EPS) - represents the portion of a company's earnings, net of taxes and preferred stock dividends, that is allocated to each share of common stock . [1]

Arguments against Monetary Metrics for the Government

- Means nothing to the government
  - Government does not have to run at a profit to stay in business
  - Government does not have common stock or pay dividends based on performance
  - Government is a purchaser, not seller
- Does not measure what interests the government
  - Meeting schedule
  - On time delivery of product
  - Meeting performance requirements
  - Meeting cost goals
- Provides no insight or impetus for change

Exploration of More Appropriate Metrics

- What is important to the Government?
  - Schedule (being on time)
  - Requirements (meeting or exceeding performance)
  - Program Cost (meeting or beating cost goals)
- Performance to Government Measurements
  - Not overrunning schedule ($)
  - Not overrunning budget ($)

Definitions

- A **performance metric** is one that determines an organization's behavior and performance. Performance metrics measure an organization's activities and performance.[2]

Metrics Requirements

- Developing performance metrics usually follows a process of:
  - Establishing critical processes/customer requirements
  - Identifying specific, quantifiable outputs of work
  - Establishing targets against which results can be scored [2]
- Successful Metrics Requirements
  - Actionable
  - Less than 5 total
  - Simplicity over Comprehensiveness
  - Presentation Matters
  - Evolve to Goals [3]

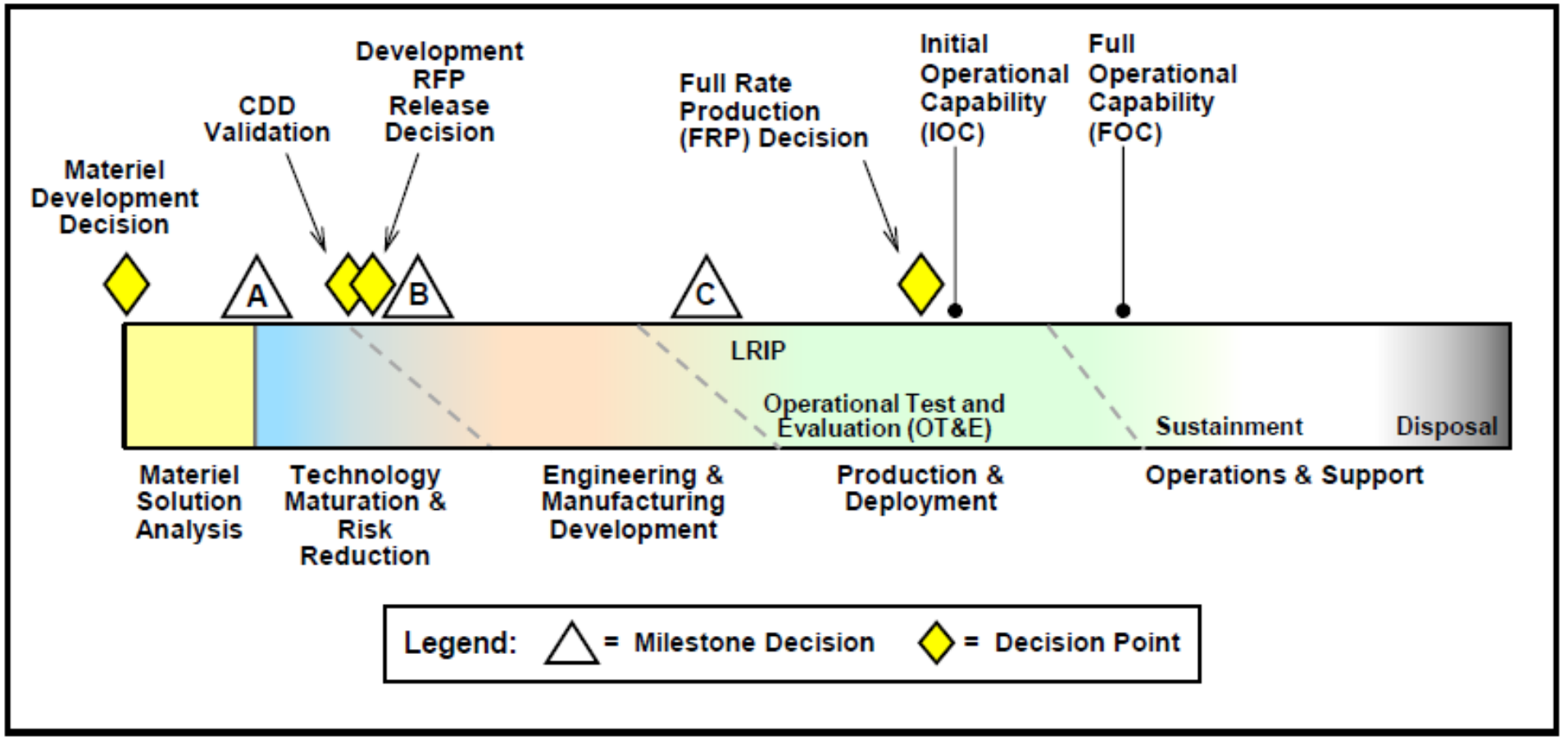
Schedule Metrics

- **Schedule Metrics** refer to a set of verifiable measurement standards by which efficiency, performance, state or quality of a schedule can be identified and assessed. They are used to measure schedules against their baselines to determine any variance and discrepancy. They are measured in quantitative or qualitative terms.
- A system of schedule metrics is a great way to monitor and control schedule change. Such a system allows managers to track variance while capturing schedule performance, making comparisons to baseline measures, and supporting schedule improvement. [4]

Schedule Metrics continued…

- A system of verifiable metrics can be applied to a schedule if this schedule is:
  - *Measurable* so the schedule content can be gauged.
  - *Relevant* to preset goals and expectations.
  - *Controllable* to capture and track the content.
- There are four basic indicators that characterize a schedule and its state:
  - *Variance*, a measure of a schedule's variability from an average (e.g. average duration, average cost).
  - *Performance,* a qualitative indicator that proves how well a given schedule is performed against the expected performance level.
  - *Quality,* a metric that examines schedule conformance to a range of preset values, such as cost and time.
  - *Efficiency*, a general indicator that confirms whether scheduled items are performed in the right way. [4]
- For example:
  - Milestones A, B, & C
  - Earned Value Management

Government Acquisition Program



A Risk Reduction Decision

B Development Contract Award

C Initial Production or Fielding

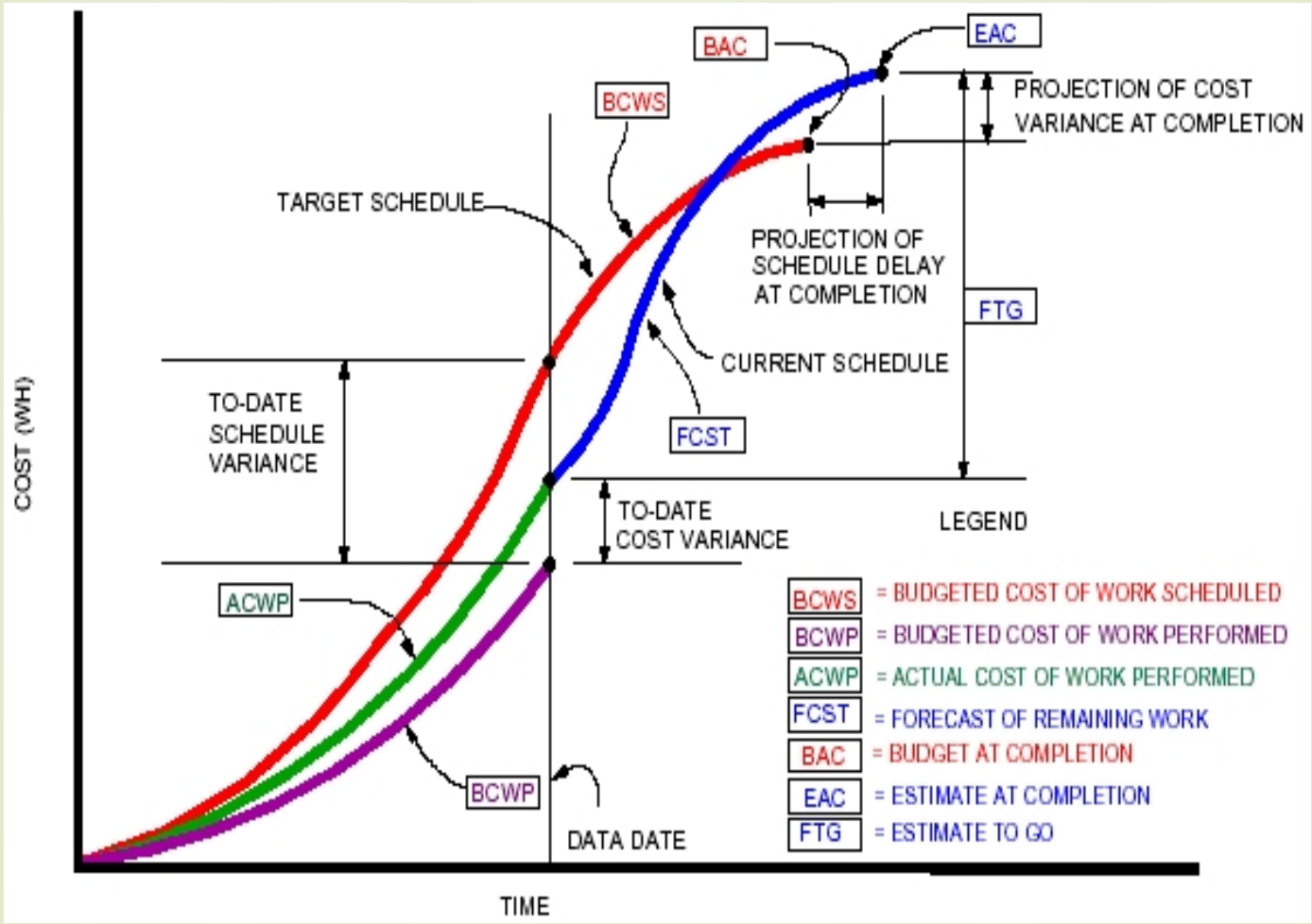
Hardware Intensive Program [5]

Earned Value Management

- Definition – "Earned value management (EVM) … is a project management technique for measuring project performance and progress in an objective manner. Earned value management is a project management technique for measuring project performance and progress."[6]

- Required on government programs under these circumstances:
  - Contract Total Estimated Value of $50M and greater
  - $20M and greater but less than $50M
  - Less than $20M - Optional (at discretion of PM)[7]

Earned Value Management [8]

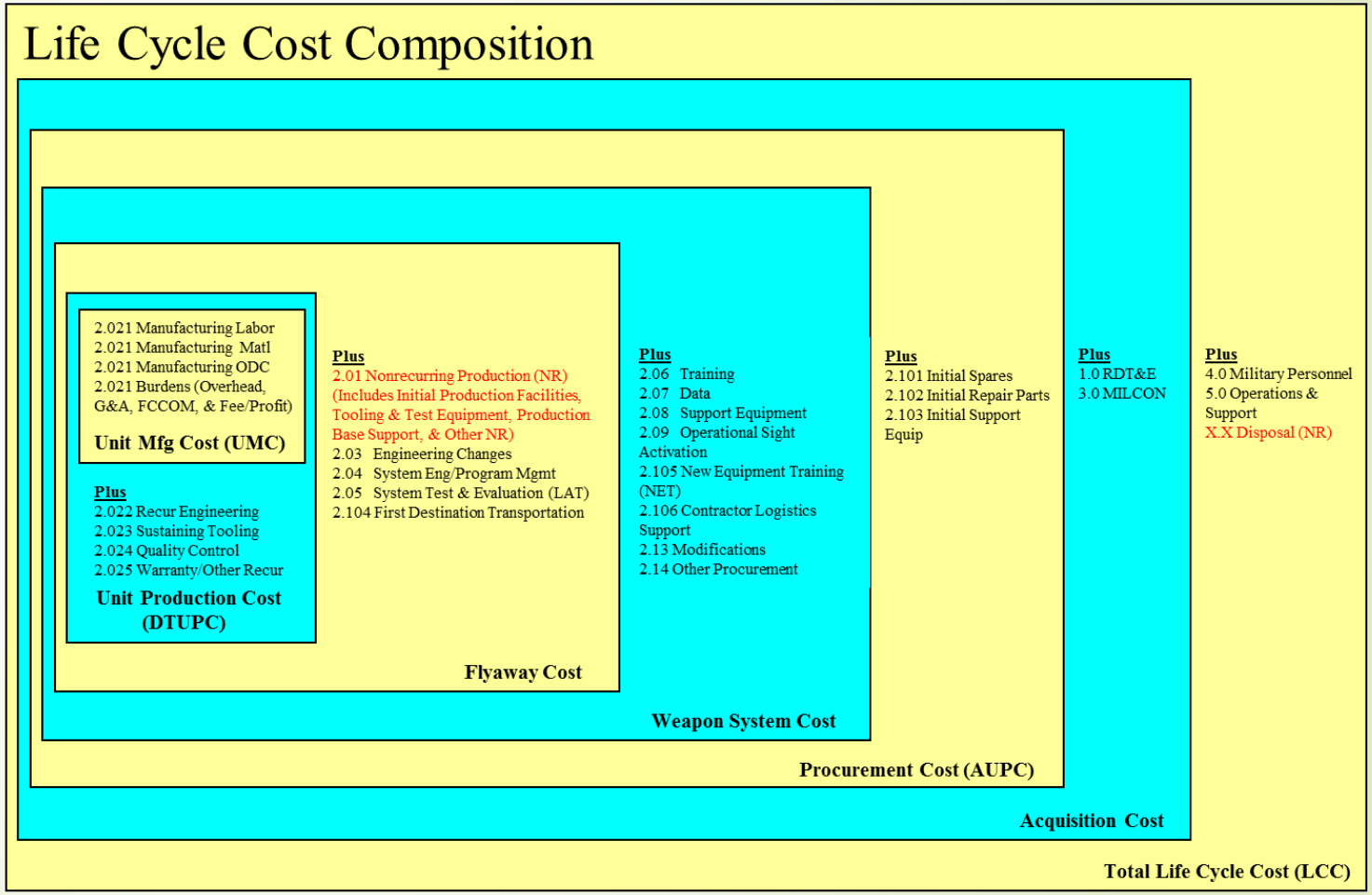


Requirements Metrics

- ensure each requirement is tracked back to a business goal/need
- ensure each requirement is objective and un-ambiguous
- insist that requirements only contain the requirement and not design decisions
- validate the requirements with the business stakeholders
- create prototypes or wire-frames or solution documents that explain how the requirements might be realized by the system and place those in the broader business process => get feedback from the stakeholders.
- List of Requirements
- Achievement of Requirements

Program Cost Metrics

- Predicted & Actual
  - Unit Manufacturing Cost
  - Production Cost
  - Life Cycle Cost
- Cost Target
- Program Management (EVMS)



Source: Department of the Army Cost Analysis Manual - May 2002; Appendix E – Cost Element Structure; Paragraph 2.0 (Pages 125 – 140) & Appendix L –Key Cost Terms (pages 196-198) & DOD 5000.4-M (LCC Layer Compositon.ppt)

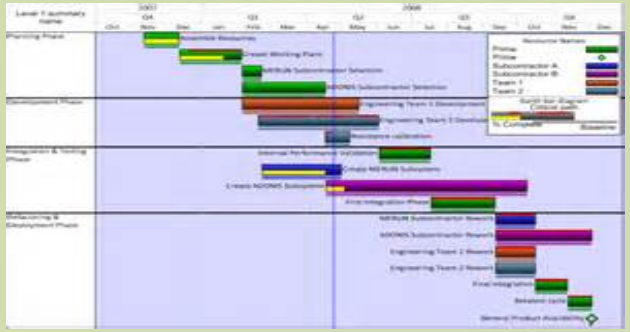
Arguments for New Metrics

- More relevant
- Support decision making & planning
- Identify problem areas early

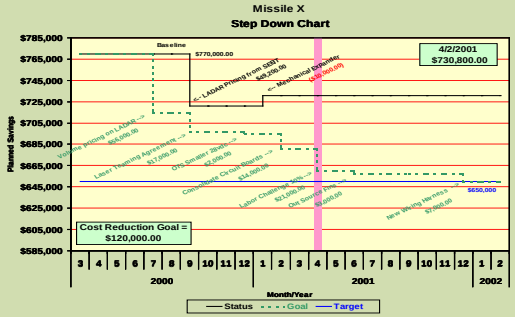
Recommendation

- To address what is important to the government customer develop a dashboard/chart that addresses what the government focuses on.

Schedule



Cost Target

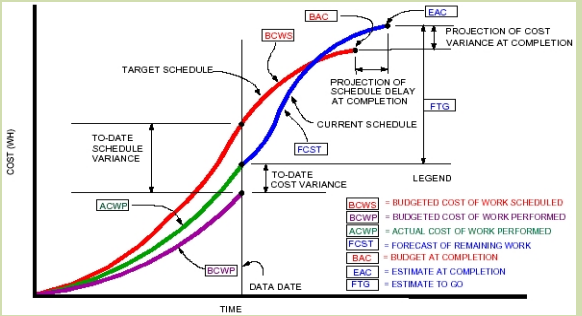


Design Requirements

Design Requirements

Priority	Parameter		Requirement(s)
1	Operating Voltage range:		7-12V DC
2	Strain Gauge Detection range:		100g – 2.5Kg (+/- 10% tolerance)
3	Minimum placement pad dimensions:		12cm x 12cm
4	Maximum user alert time upon an event:		10 minutes
5	Periodic website update of system status (battery level, weight):		60 seconds
6	Wireless connectivity:	Supported standards:	802.11a/b/g
		Supported encryption:	WEP, WPA-PSK, WPA2-PSK
7	Working temperature range:		-30°C to 85°C
8	Minimum external display size:		12 ASCII characters (continuous string)
9	RFID authorisation:	Code size:	32 bit
		Operating frequency:	125kHz
		Mode:	Read only
10	Max compiled program file size:		32KB

Program EVM



Summary

- The best value metrics that the government can use address these three areas:
  - Schedule
  - Requirements
  - Cost

Questions & Observations

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