



Earned Value Management Practitioners Forum 2018

# Aligning Technical Requirements with Performance Metrics

Gordon M. Kranz  
Enlightened Integrated Program Management, LLC  
[gmkranz@eipm-llc.com](mailto:gmkranz@eipm-llc.com)  
571 268 8168

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# Learning Objectives

- Technical Requirement Decomposition and Implementation is the Core of Every Program
- Cost, Schedule, Regulations, Culture, bound the implementation choices.
- Aligning technical achievement with performance metrics (cost and schedule) is critical to joint situational awareness.

# Technical – EVM Integration

- PM Statements
  - Technical Status does not align with EVM Metrics.
  - Earned Value metrics are backward looking.
  - Earned Value Report is too late (6 weeks).
- EVM Analysts
  - Technical progress inflated.
  - Negative progress is taken.
  - Rework not accounted for.

# Considerations

- PM considerations
  - Earned Value plan is the technical plan
  - Earned Value progress must be directly related to technical accomplishment
  - Technical information exchange must be part of daily course of business (real-time) status
    - Technical Interchanges
    - IPT meetings
    - Program Management Reviews
- EVM Analyst considerations
  - EVM must model real world
  - Technical implementation is a discovery process
  - Be careful to baseline EVM at the implementation level

# Agenda

Technical Requirements

Programmatic Constraints

Performance Metrics

Integrated Joint Situational Awareness

Summary

# Technical Requirements

- Define System behavior, physical characteristics, and performance attributes
  - Behavior – What the system will do
  - Physical Characteristics – What the system will look, feel, sound, etc, like.
  - Performance attributes – How well will the system do its job
- USG provides initial definition and contractor further refines the definition into implementable pieces
- Cost (Budget), Integrated Master Schedule, Risk Management, Technical Performance Measures, are all models of the program based on estimates.

Technical definition is the foundation of all program planning and execution.

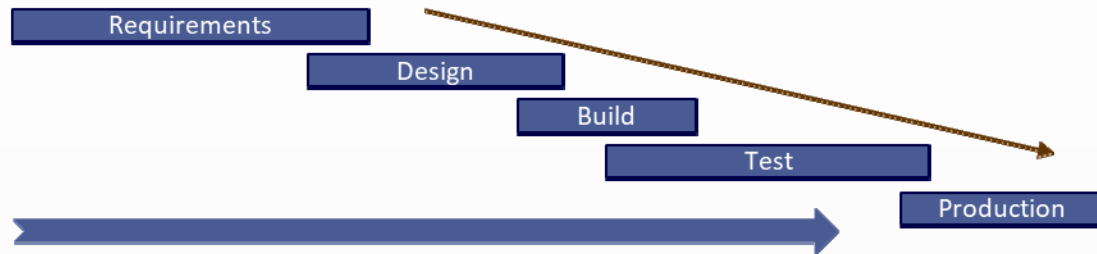
# Technical Progress Examples

- Requirements decomposition and allocation
- Design Maturity
- Implementation Status (Build)
- Test
- Delivery

## A typical Waterfall process

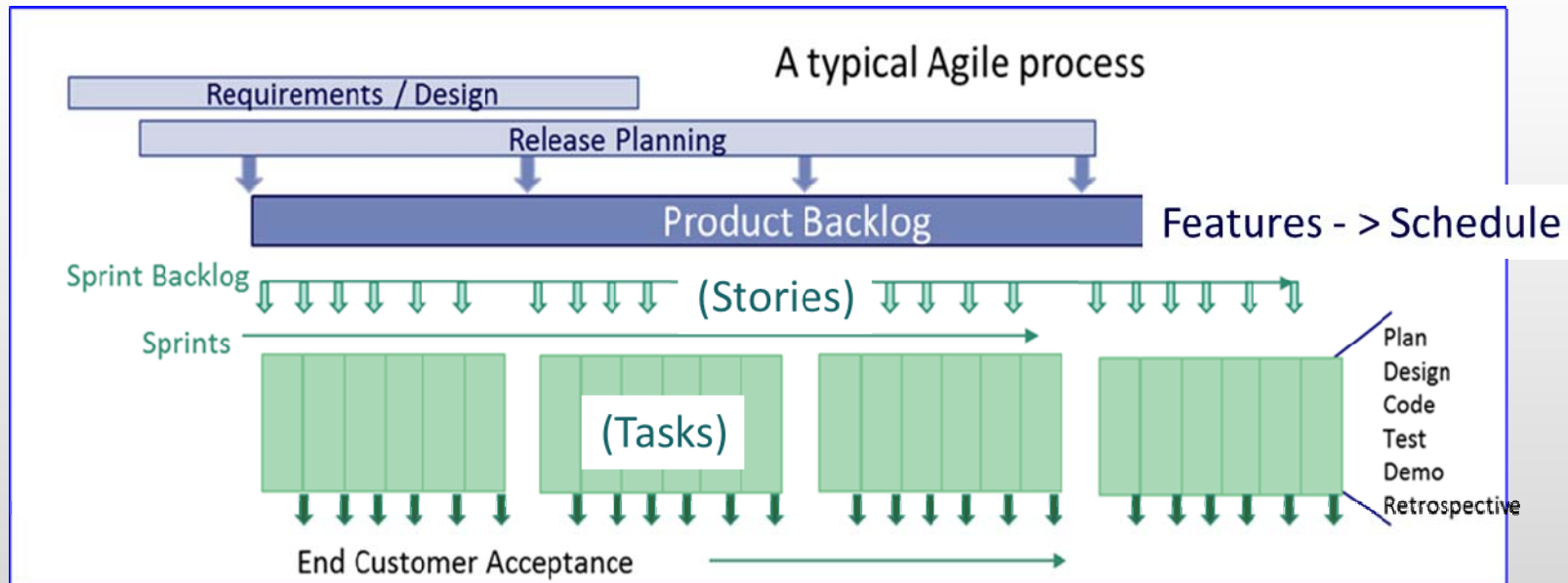
### SOW, WBS, Specs, IMP

| 1.3 Work Breakdown Structure Level: Electronic Systems |       |            |      |  |              |   |
|--|-------|------------|------|--|--------------|---|
| WBS#   | Level | SBS        | COM  | Title  | Budget (\$M) | WBS Dictionary  |
| 111  | WBS   |            |      | Mission Computer/General Purpose Processor                         | 5            | Processor, test, and integration of the Intel i80386 processor, DRs, ROMS, etc. |
| 1111   | CA    | Electrical | Prod | General Purpose Processor Hardware                                 | 5            | Processor of the Intel Processor lab  |
| 11111  | MP    | Systems    |      | General Purpose Processor Hardware Requirements Development        | 0.25         | Establish CDR baseline  |
| 111111   | MP    | Mechanical |      | General Purpose Processor Hardware Design                          | 0.15         | Define the cardboard pins   |
| 1111111  | PT    |            |      | General Purpose Processor Hardware Build                           | 0.1          | Build   |
| 11111111   | PP    | Quality    |      | General Purpose Processor Inspection                               | 0.05         | Acceptance Test   |
| 111111111  | PP    | Test       |      | General Purpose Processor Test                                     | 0.05         | Test  |
| 11112  | CA    | Software   | Inte | General Purpose Processor Software                                 | 0.05         | Develop OS, and Middleware  |
| 111121   | CA    | Test       | Inte | General Purpose Processor Integration Assembly, Test, and Checkout | 0.05         | Integration and Test  |



**Event Based Planning Allows for Top Down Incremental Program Planning and Execution**

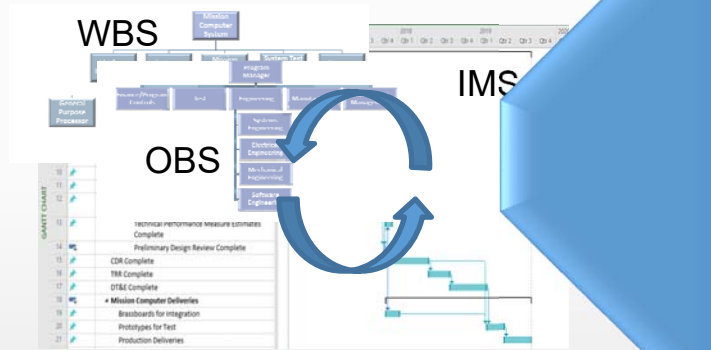
## A typical Agile process





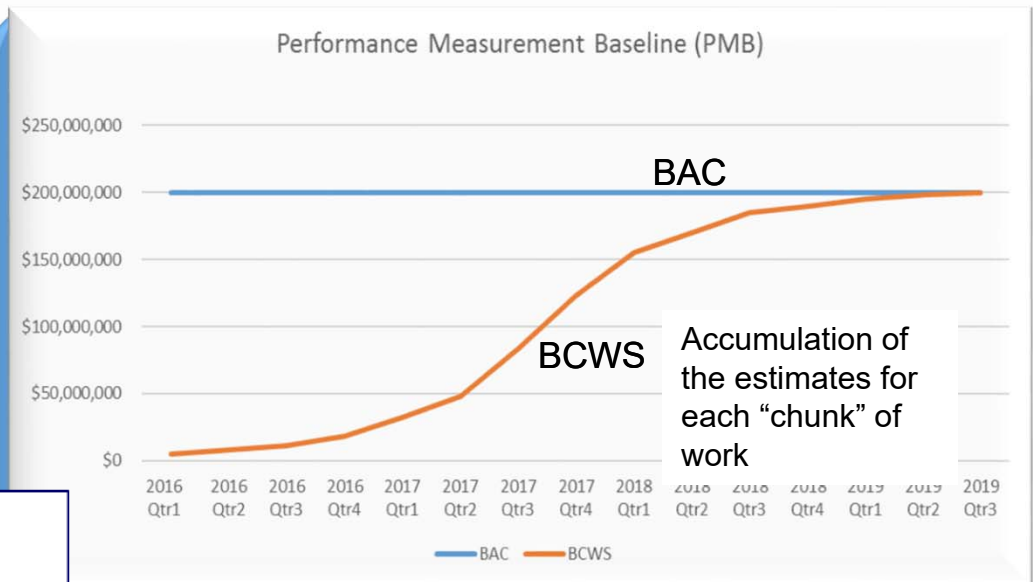
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## Planning and Estimation



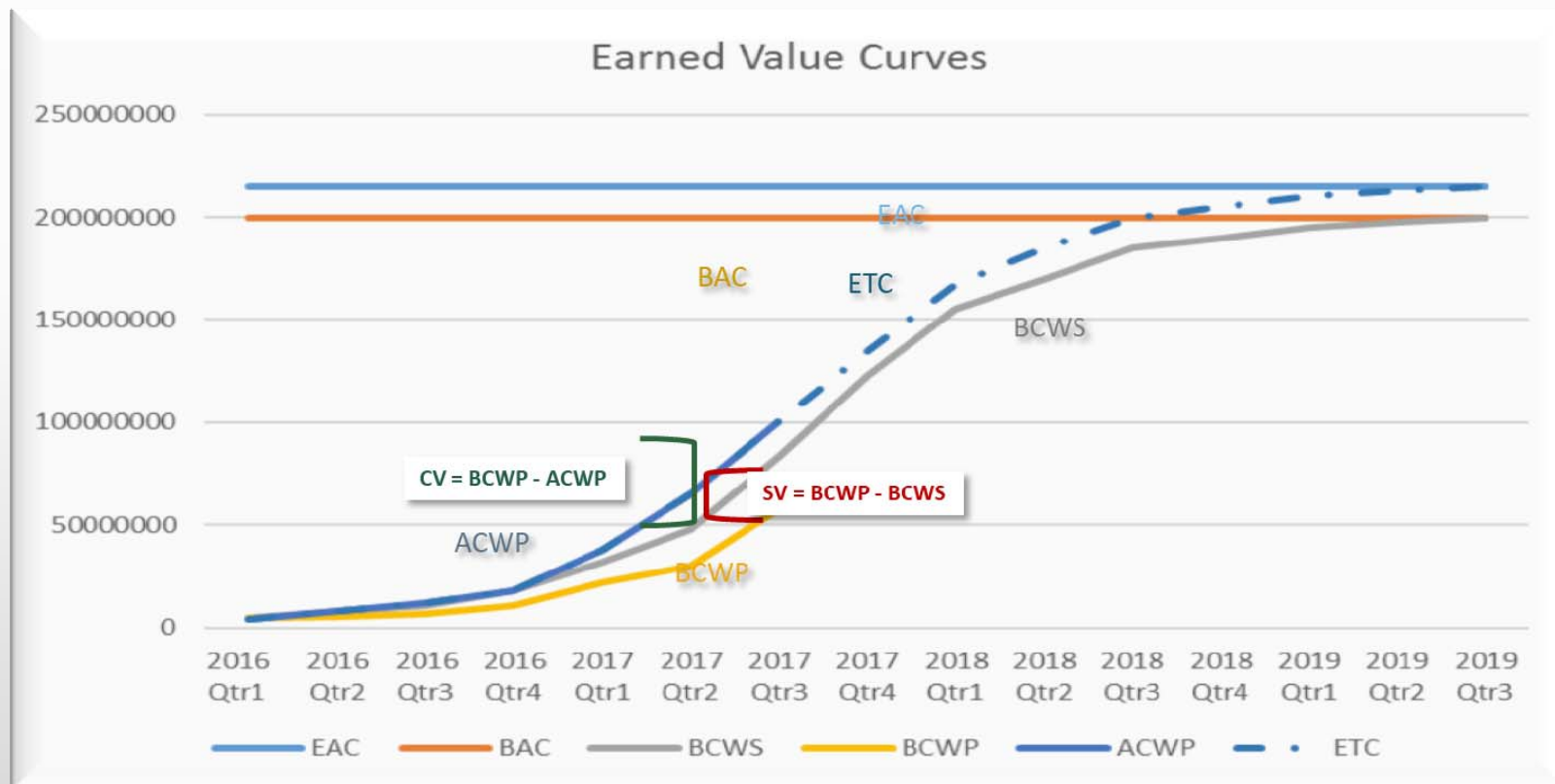
### Technical Planning, Scheduling and Cost Estimation

- Distribution of technical task create the time phased budget
- Progress on tasks must relate to cost baseline

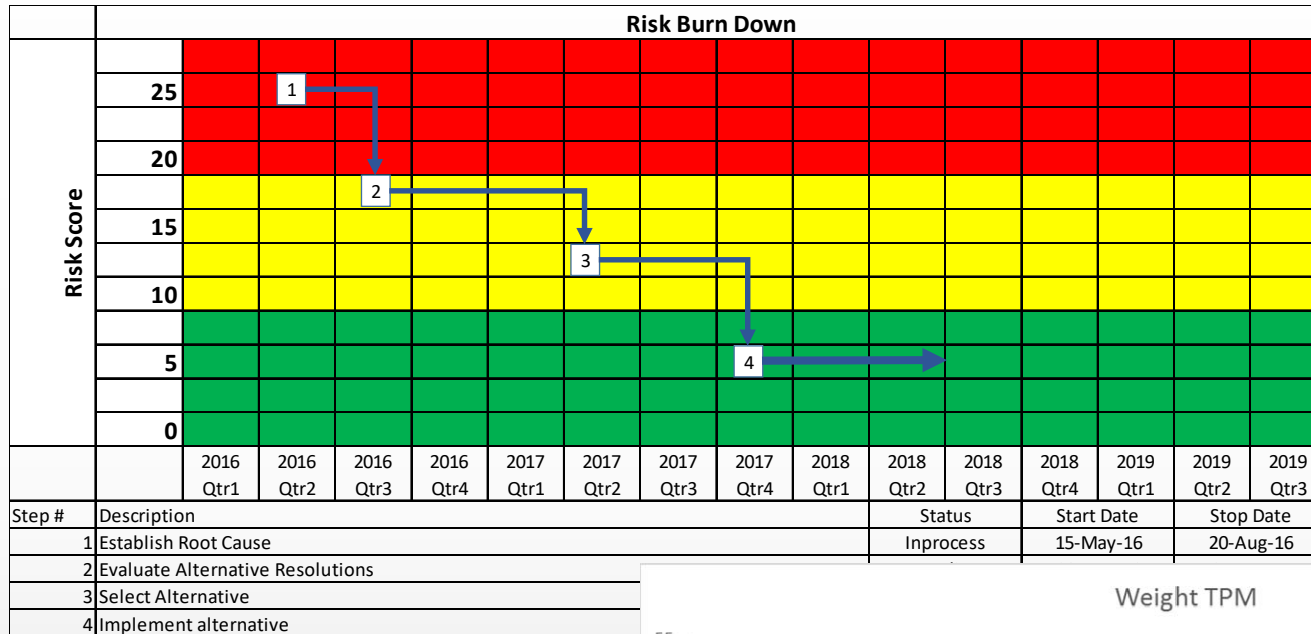


This part of the process occurs for all contracts and work scope types

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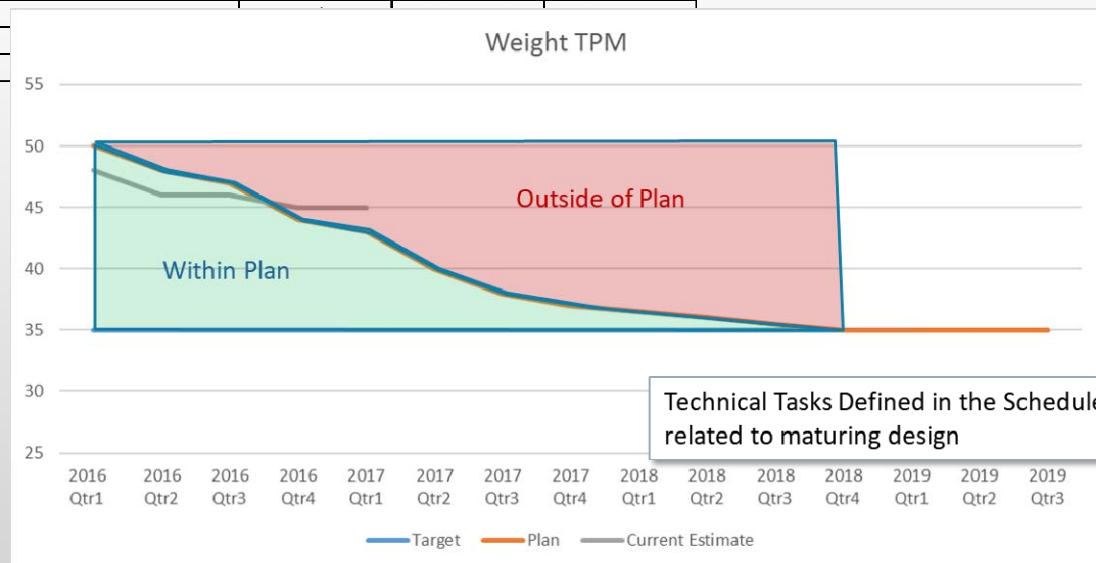


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## Risk Burn Down

## TPM Design Maturity



# Discussion

- What are some technical measures for each of the examples on the following page?
- How do they / could they relate to forecasted cost and schedule?

# Technical Characteristics Examples

- Services
  - Quantity
  - Quality
- Sustainment
  - Availability
  - Repair Time
- Production
  - Manufacturing Tolerances
  - Parts Availability Status
- Development (Example technical measures)
  - Hardware (Size, Power, Weight, Ruggedization, Performance, Standards)
  - Software (Size, Deficiencies, Testing, etc)
  - Systems (Size, Weight, Design Maturity, Interoperability, Delivery)

# Summary

- Technical Requirement Decomposition and Implementation is the Core of Every Program
- Formal EVM baselining should occur above the technical implementation discovery
- Aligning technical achievement with performance metrics (cost and schedule) is critical to joint situational awareness.
- Future thoughts
  - Electronic integration of cost and schedule
  - BIM is a good example



# Questions?

Gordon M. Kranz

[gmkranz@eipm-llc.com](mailto:gmkranz@eipm-llc.com)

571-268-8168