



U.S. ARMY TEST AND EVALUATION COMMAND

In-Stride Operational Assessments

Prepared for the 33rd Annual National Test and Evaluation Conference

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Observations

- Operational Testing is Lengthy
- Systems Not Ready for Initial Operational Test and Evaluation
- Call to “Integrate” and “Streamline” Testing

I plan to update existing DOT&E guidance to incorporate an integrated testing philosophy. In my independent assessments, I intend to use all credible information to provide the warfighter and the Congress a complete understanding of how the systems the Department acquires will improve the readiness and lethality of our military forces. (FY2017 Annual Report)

- Robert F Behler

Director, Operational Test and Evaluation

In-Stride Operational Assessments

- Continuous Evaluation of Critical Capabilities
- Phased Planning and Execution by PM, FORSCOM, ATEC
- Phased Reporting at Key Programmatic Decision Points
- Benefits:
 - More efficient use of all available data.
 - Enables planning for and visibility of risk reduction during development.
 - Increases probability of successful IOT.
 - Reduces the impact on the operational force.

Create understanding of the maturity of a system continuously in order to increase the system's chance of passing and reduce the scope (schedule) of IOT.

Overarching Purpose and Steps

Ends: create understanding of the maturity of a system continuously throughout it's developmental life cycle in order to increase the system's chance of passing and to reduce the scope (schedule) of IOT ...

Ways: by planning, conducting and reporting the progress of system development against one or more critical capabilities and creating a phased DT/OT approach ...

Means: through use of an aggregation evaluation methodology and all available data (contractor testing, developmental testing, operational testing, M&S, etc.) and integrate Soldiers into early testing.

- Steps:
1. Determine Critical Capabilities
 2. Determine Key Evaluation Metrics
 3. Develop Aggregation Methodology
 4. Develop Evaluation Schedule
 5. Execution and Reporting

1. Determine Critical Capabilities

You know when you are done...when you have a list of capabilities that are critical to Soldiers and are the purpose for the acquisition of this system.

Sources:

- R-/P-Forms
- Critical Operational Issues
- Capability Gaps

Advanced Integrated Air and Missile Defense

1. Dynamic Force Tailoring
2. Joint Engagements
3. Extended Battlespace
4. Flexible Interceptor Selection
5. Reliability
6. Enhanced EA Defense

Thoughts: best when...

- described as operational capabilities, i.e. Soldier task outcome,
- can be linked to performance (operational or technical) that will be testing during CT, DT, etc., and
- limited in number.

2. Determine Key Evaluation Metrics

You know when you are done...when you have a list of key metrics that will be analyzed using data from test, M&S, etc., and are linked to the critical capabilities.

Sources:

- Requirements Documents
- System Evaluation Plan
- Developmental Evaluation Framework

Thoughts: best when...

- limited in number for each critical capability, and
- data will be available throughout development.

AIAMD Example

- Extended Battlespace Critical Capability
1. MOE: # of engagements using fused sensor data
 2. MOP: % of remote tracks presented
 3. MOP: Slant range of engagements

3. Develop Aggregation Methodology

You know when you are done...when you have normalized and developed a method to aggregate the key metrics into progress towards meeting the Critical Capability.

Sources:

- None (you have to figure it out)

Thoughts: best when...

- shows progress towards desired capability at IOT.

AIAMD Example

- Extended Battlespace Critical Capability

$$= \sum_{i=1}^n \frac{MOE/Pn}{n \times 100}$$

Where each MOE/MOP is normalized.
i.e. Slant Range requirement 5 to 50 km is normalized to 5 = 0% and 50 = 100%.

4. Develop Evaluation Schedule

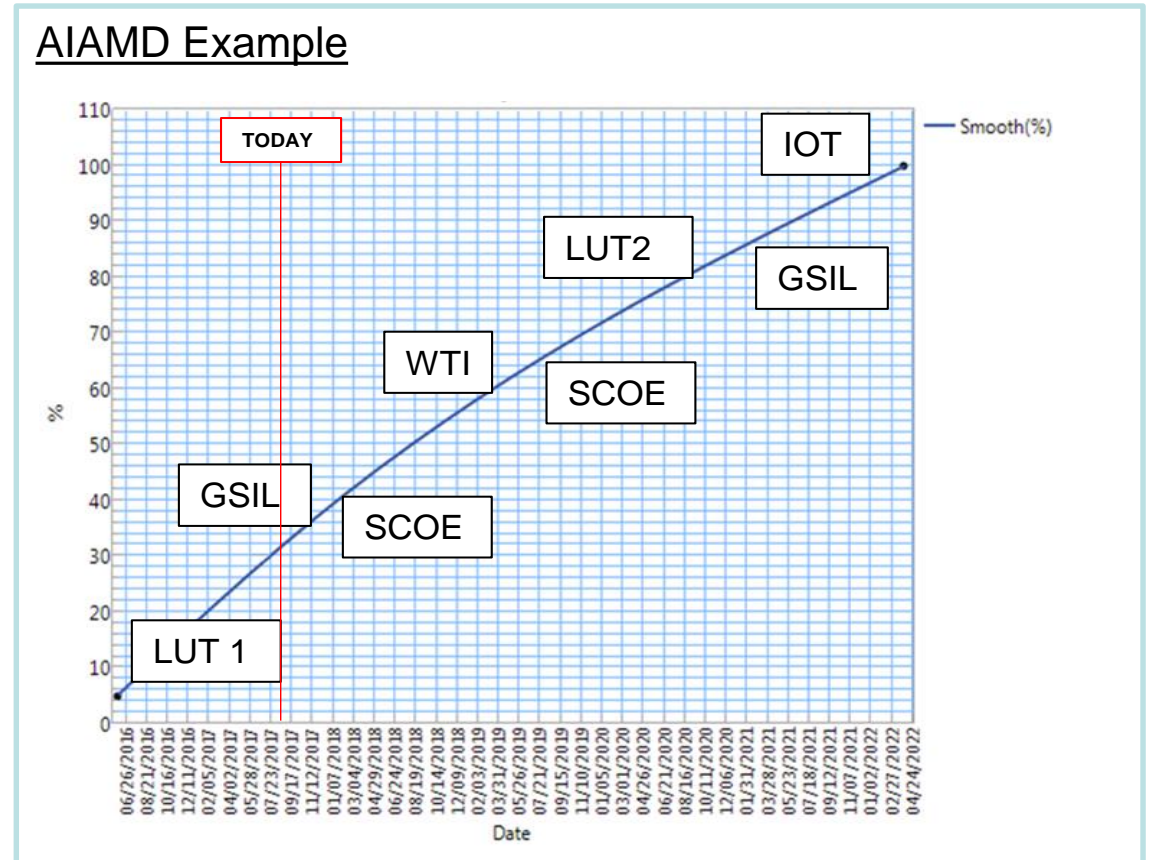
You know when you are done... when you have an outline graph for each capability that shows expected performance growth and data sources scheduled.

Sources:

- Systems Engineering Plan
- PM, Contractor

Thoughts: best when...

- critical capabilities show continuous improvement throughout schedule.



LUT: Limited User Test

GSIL: Government System Integration Lab

WTI: Weapons Tactics Instruction

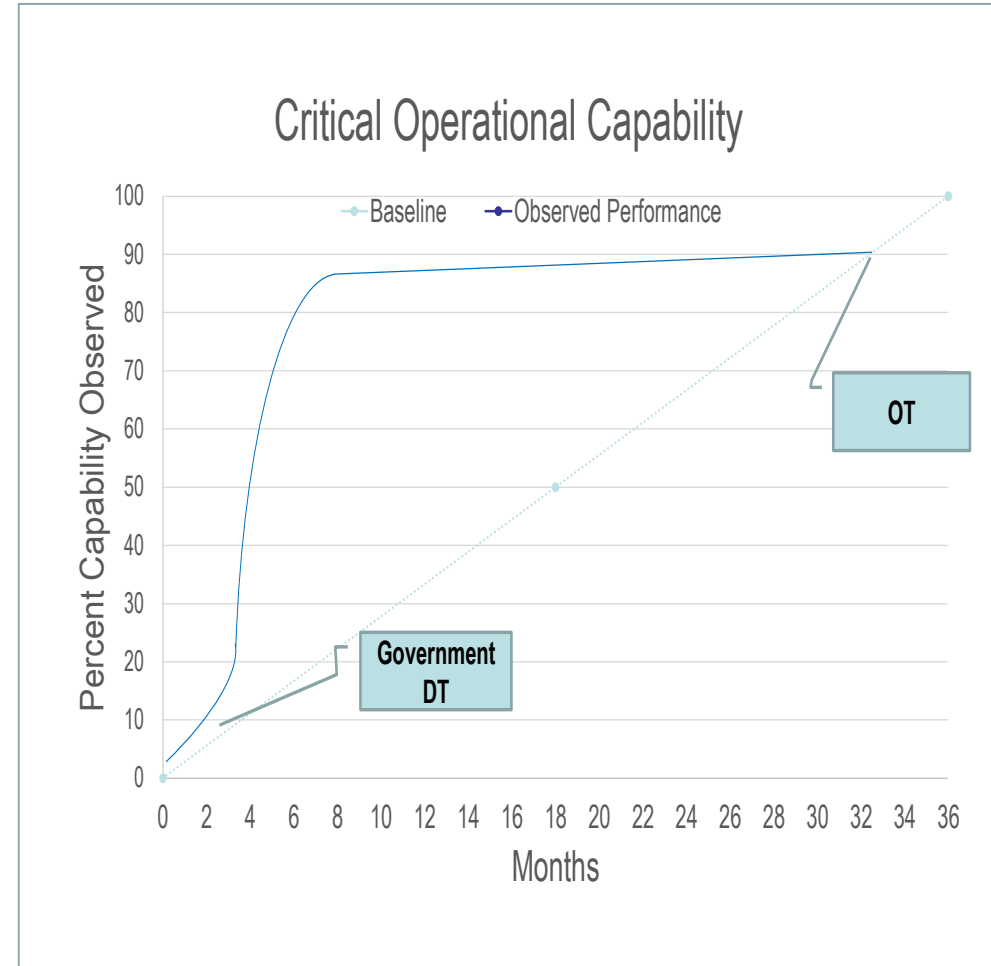
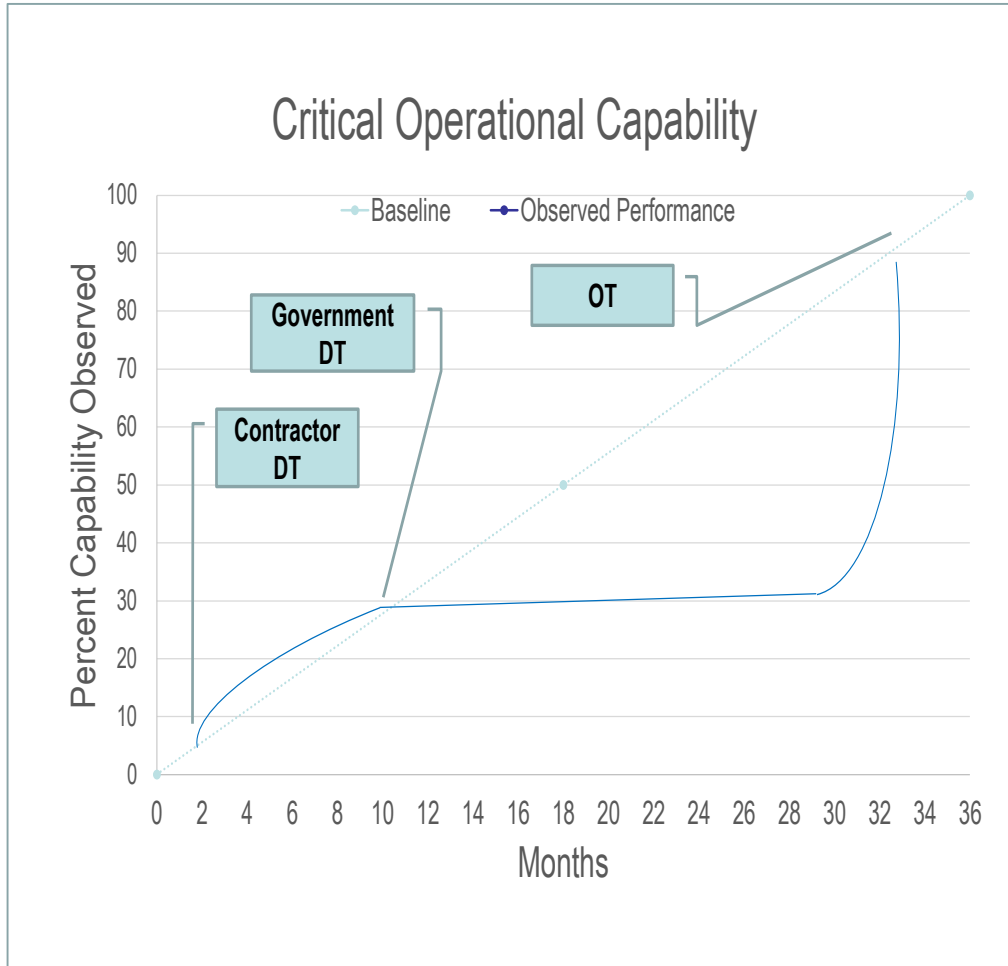
SCOE: Soldier Checkout Event

IOT: Initial Operational Test

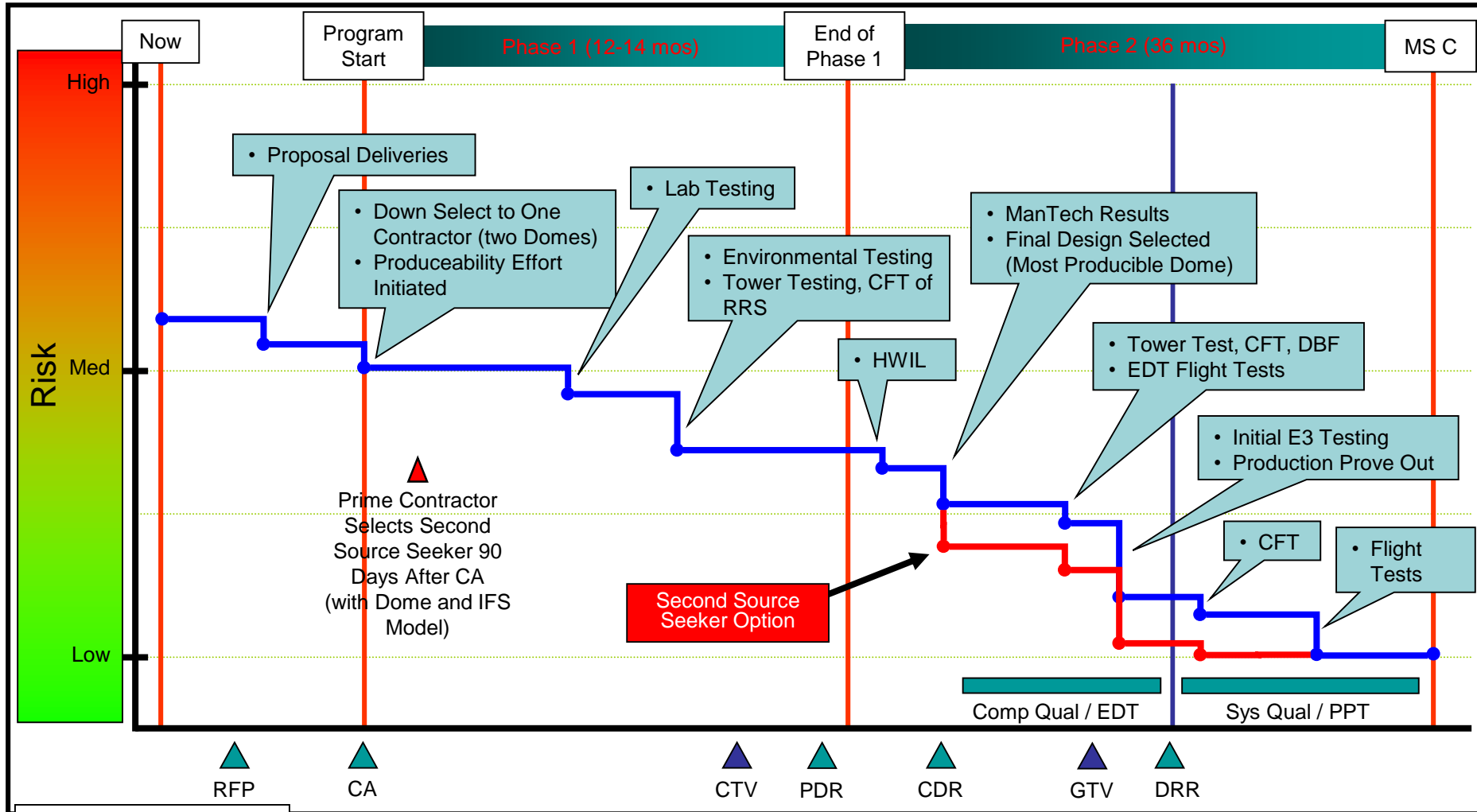
Example: Shape of the solution...

And then a miracle happens...

That was easy...



Example: Risk Mitigation vs. Capability



Eventline Not to Scale

RFP: Request for Proposal
 CA: Contract Award
 CTV: Captive Test Vehicle
 CDR: Critical Design Review

PDR: Preliminary Design Review
 DRR: Design Readiness Review
 PPT: Production Prove out Testing
 EDT: Engineering Design Test

5. Execution and Reporting

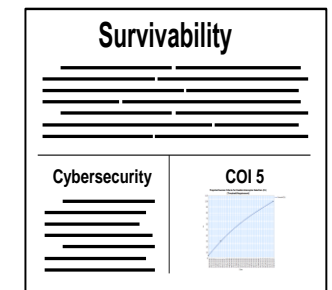
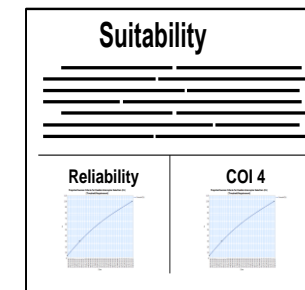
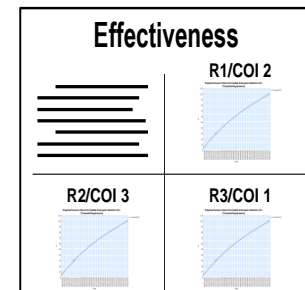
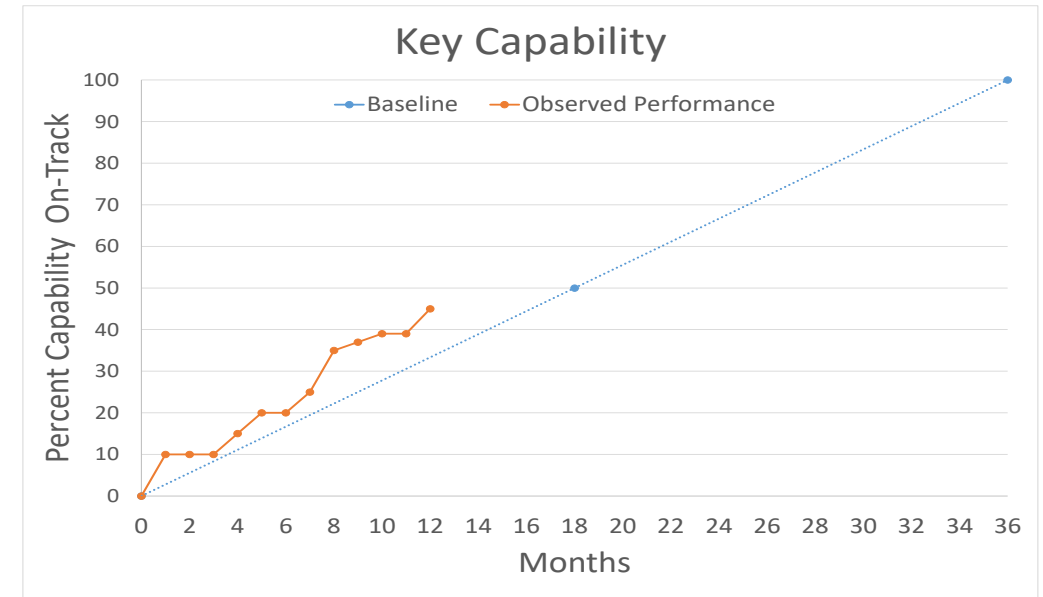
You know when you are done...when you have an graph that shows progress towards meeting the critical capabilities and can be summarized in effectiveness, suitability and survivability.

Sources:

- All previous information
- DT data and analysis

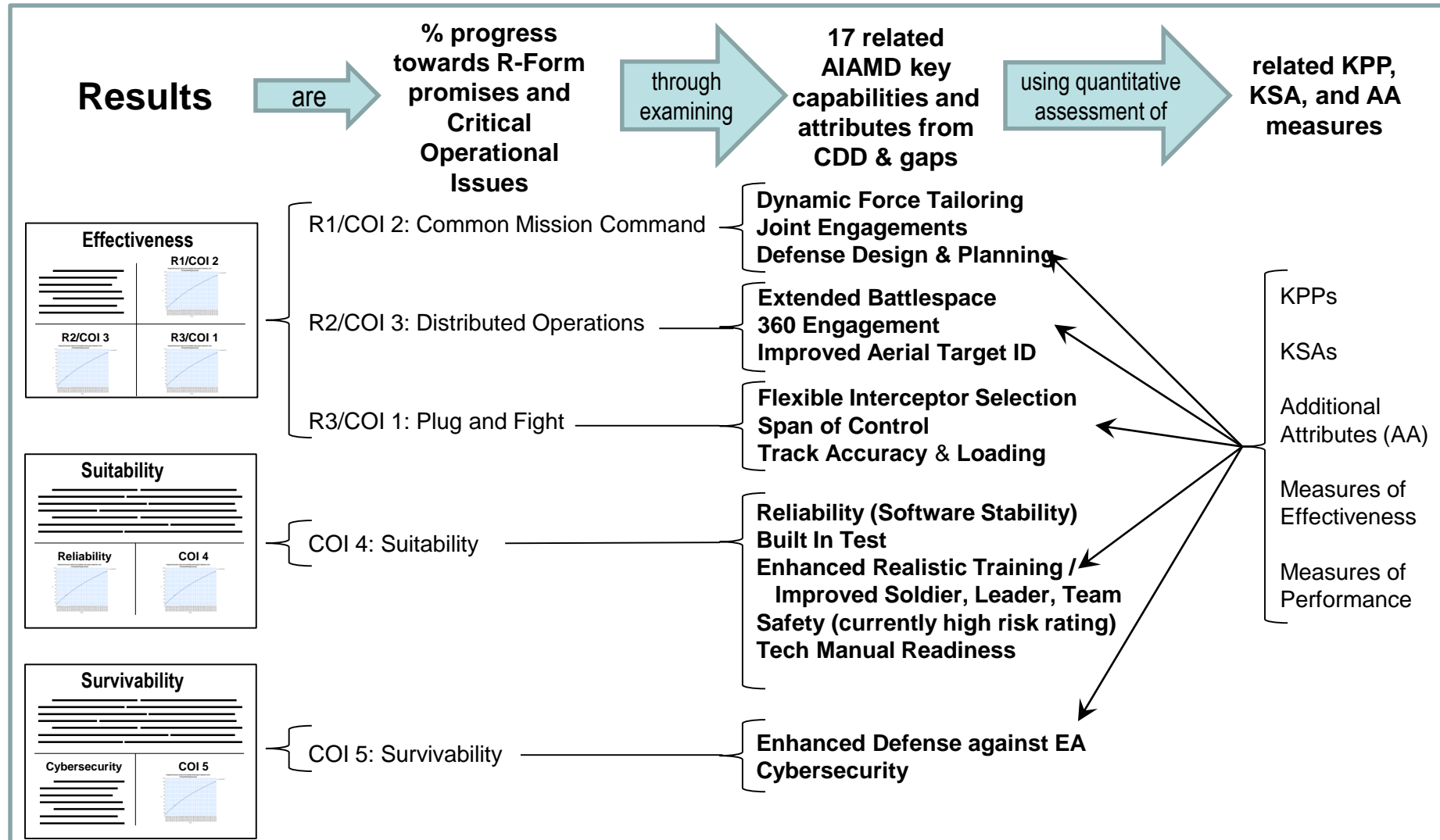
Thoughts: best when...

- progress is related to the overall desired effectiveness, suitability and survivability.



Example: AIAMD

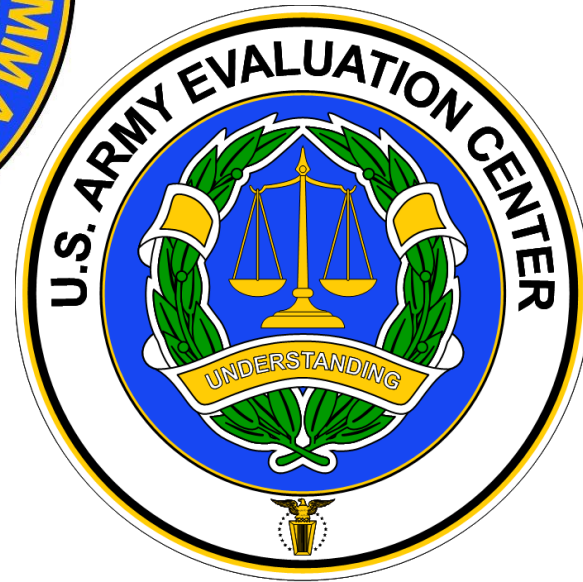
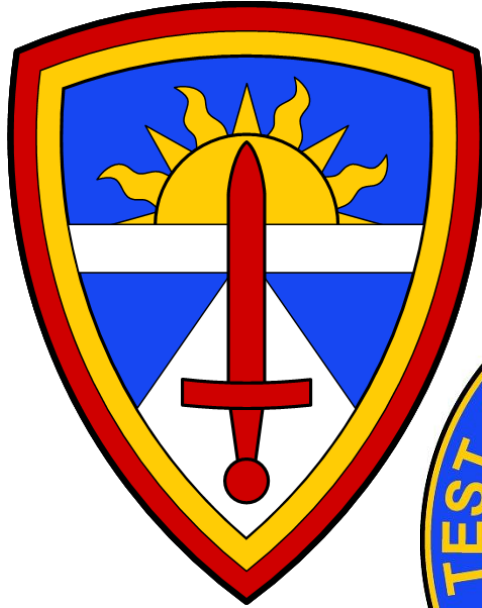
- ATEC will assess progress against key AIAMD capabilities and system performance after each test event and summarize results yearly.



In-Stride Operational Assessments

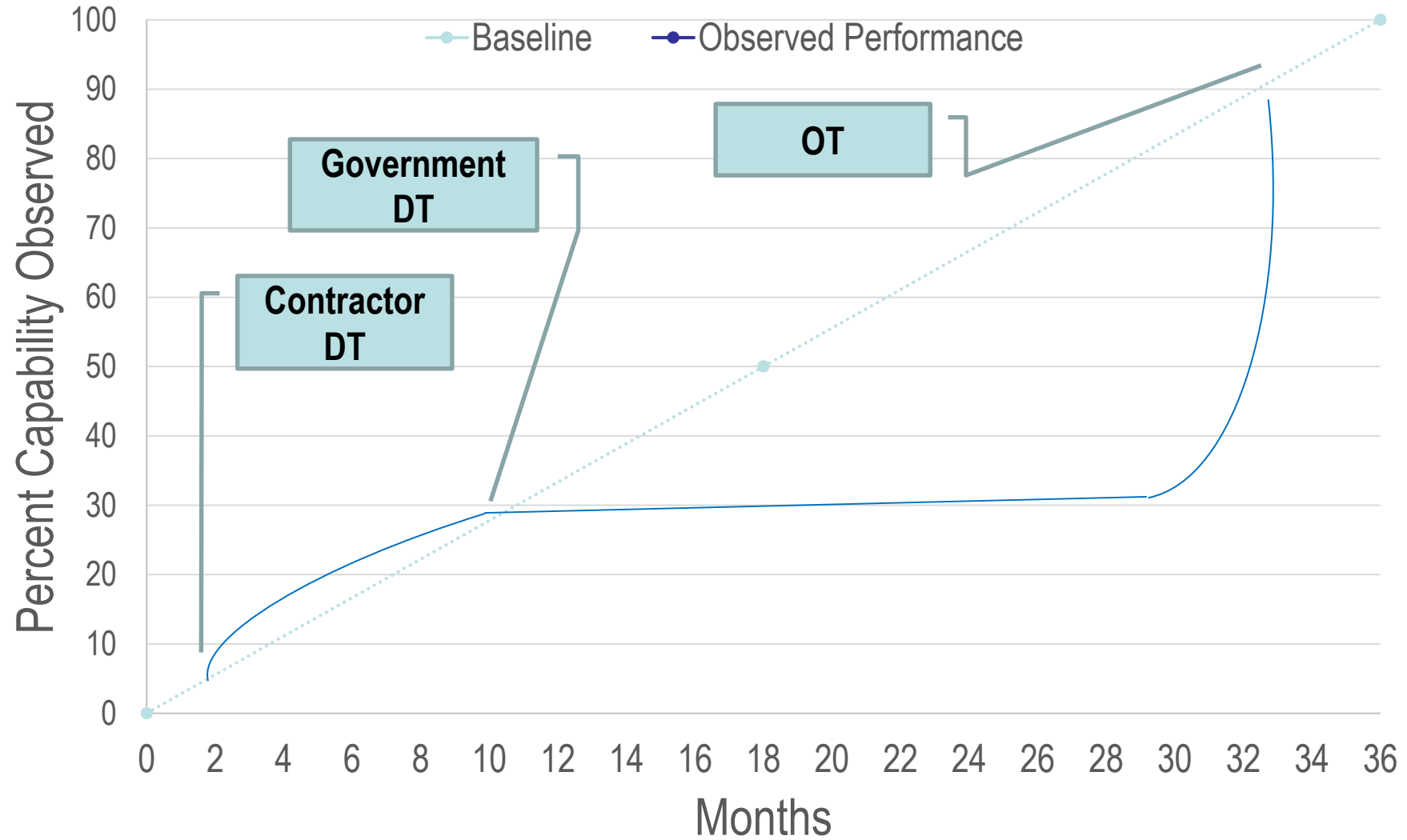
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Critical Operational Capability



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