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BRAC 2005 Infrastructure Steering Group (ISG)

Meeting Minutes of February 17, 2004

The Acting Under Secretary of Defense (Acquisition, Technology, and Logistics), Mr. Michael W. Wynne chaired this meeting. The list of attendees is attached.

Mr. Wynne opened the meeting and asked Mr. Peter Potochney, the Director of the OSD BRAC Office, to provide an update on the BRAC process to date. Mr. Potochney used the attached slides to review the overall BRAC schedule.

Mr. Potochney highlighted upcoming briefings and hearings to Congress and the nominal timeframe for the next data call. He stated that the first data call allocated 90 days (60 for the field and 30 for headquarters) but believed the next data call will likely only require 60 days total. The ISG then discussed the overall process for approving the JCSGs' military value approach. The ISG agreed that the JCSGs would receive preliminary guidance at their briefing and additional guidance from ISG members as appropriate shortly after the meeting. The OSD BRAC office will be responsible for consolidating the guidance and providing it to the JCSGs to incorporate into their final report. The final JCSG report will be formally coordinated with the ISG members. The ISG also agreed to hold a meeting in March to discuss the integration of the JCSGs approaches to military value. At this meeting, there might be additional adjustments to the JCSGs military value approach.

Mr. Potochney then turned the meeting over to Dr. Ron Sega, the Chair of the Technical JCSG (TJCSG). Dr. Sega briefed the ISG on his JCSG's approach using the attached slides. He opened his briefing by noting that not all of the questions contained in the report were final. He then described the TJCSG's organization structure. He stated that there are four subgroups that are assessing capacity and military value: Command, Control, Communications, Computers Intelligence, Surveillance, and Reconnaissance (C4ISR); Land, Sea, Air and Space Systems; Weapons and Armaments; and Enabling Technology. Three groups serve as "honest brokers" for the process: the Capability Integration Team, the Innovative Systems Working Group, and the Analytical Team. The Capability Integration Team also synthesizes the approach and analysis of the working groups.

Dr. Sega described the working relationship with other JCSGs whose functions overlap with the TJCSG. He noted that the Medical JCSG and TJCSG each have a working level representative on the other's team and that relations with the Headquarters and Support Activities JCSG are good. He stated that the interface with the Intelligence JCSG is new and is working well. He then described the working relationship with the Education and Training JCSG on range issues as a matter of sorting out how to develop an integrated approach that overcomes the institutional, cultural differences between the test and evaluation and training range communities. He said that he would be meeting with Mr. Abell in March to discuss the working relationship.

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In response to Dr. Sega's description of the range issue, the ISG discussed whether more than one JCSG could assess the military value of ranges and whether there should be more than one set of military value questions sent to the field. The ISG agreed that there should be only one set of data questions and that there could more than one score for military value of the ranges—one for the training function and one for the test and evaluation function. The ISG also agreed that only one group would be responsible for conducting the analysis of the ranges.

Dr. Sega then highlighted the process the TJCSG went through to develop the military value-scoring plan. He detailed how the TJCSG chose to use the construct of the 13 Defense Technology Area Plans to organize the technology areas that the technical infrastructure must support currently and in the future. The construct enables the TJCSG to compare "like facilities" in 39 categories, (13 technology areas arrayed by the three technical functions of Research, Development and Acquisition, and Test and Evaluation). The ISG and Dr. Sega discussed the extent to which the TJCSG will examine the use of facilities not under DoD control (e.g. the Nevada Test site controlled by the Department of Energy or the National Aeronautical and Space Administration's wind tunnels). The ISG agreed that the analysis of non-DoD facilities would be conducted during the scenario process.

Next, Dr. Sega described the attributes and metrics the TJCSG developed and how their weighting scheme will be applied. A number of the ISG members commented that intellectual capital of the workforce and the local community must be factored into the analysis. Dr. Sega pointed out the approach to intellectual capital was factored into their proposed analysis, but agreed to more explicitly explain the approach in the report.

The ISG also discussed the need to ensure that the workload focus metric adequately balance work performed at a facility and that contracted out or managed by a facility. Dr. Sega described how the weighting scheme was developed to ensure that facilities would be compared properly. For example, he noted that the weighting for workload performed at a facility vice that contracted out would be weighted differently depending on whether the facility primarily does research, acquisition, or test and evaluation. He added that concerns about how a facility that manages a few large dollar value projects versus one that manages many smaller value projects will be balanced through other measures such as Full Time Equivalents and other metrics that focus on output (e.g. patents granted). Dr. Sega also agreed that the TJCSG would conduct some sensitivity analysis on the metrics they developed to ensure that they are viable.

The ISG meeting concluded with the ISG chair thanking the TJCSG for organizing the complicated task of developing metrics to measure the military value of the technical infrastructure.

Approved: _____
Michael W. Wynne
Acting USD(Acquisition Technology and Logistics)
Chairman, Infrastructure Steering Group

Attachments:
1. List of Attendees
2. Briefing slides entitled "BRAC 2005 Issues" dated February 17, 2004
3. Briefing slides entitled "Technical Joint Cross Service Group Approach to Assessing Military Value" February 17, 2004

Infrastructure Steering Group Meeting
February 17, 2004

Attendees

Members:

- Mr. Michael W. Wynne Acting Under Secretary of Defense (Acquisition, Technology and Logistics)
- Mr. Raymond DuBois, Deputy Under Secretary of Defense (I&E)
- Hon. H.T. Johnson, Assistant Secretary of the Navy (I&E)
- Mr. Geoffrey Prosch, for Acting Assistant Secretary of the Army (I&E)
- General Michael Mosley, Vice Chief of Staff of the Air Force
- Admiral William Mullen, Vice Chief of Naval Operations
- Hon. Nelson Gibbs, Assistant Secretary of the Air Force (IE&L)
- General George Casey, Vice Chief of Staff, Army

Alternates:

- Lieutenant General James Cartwright, Director, Force Structure, Resources and Assessment, Joint Staff for General Peter Pace, Vice Chairman, Joint Chiefs of Staff
- Lt Gen Richard Kelly, Deputy Commandant Installations & Logistics for General William Nyland, Assistant Commandant of the Marine Corps

Technical JCSG

- Dr. Ronald Sega, Director, Defense Research and Engineering
- Mr. John Erb, Deputy Director for Strategic Logistics, J-4
- Dr. John Foulkes, Director, Army Test & Evaluation Management Agency
- Mr. George Ryan, Deputy Director of Naval Research
- Dr. J. Daniel Stewart, Executive Director, Air Force Material Command
- Dr. Barry Dillon, Deputy Commander, Marine Corps Systems Command

Medical JCSG

- Vice Admiral Michael Cowan Surgeon General of the Navy

Headquarters and Support Activities JCSG

- Mr. Michael Rhodes, Assistant Deputy Commandant, Manpower and Reserve Affairs

Supply and Storage

Vice Admiral Gordon Holder, Director Logistics, Joint Staff

Education and Training JCSG

- Hon. Michael Dominguez Assistant Secretary of the Air Force, Manpower and Reserve Affairs

Others:

- Major General Gary W. Heckman, Assistant Deputy Chief of Staff of the Air Force for Plans and Programs
- Dr. Craig College, Deputy Assistant of the Army (I&A)
- Ms. Anne Davis, Deputy Assistant Secretary of the Navy (I&A)
- Mr. Phil Grone, Principal Assistant Deputy Under Secretary (Installations and Environment)
- Mr. Al Shaffer, Director Plans and Program, Office of the Director, Defense Research and Engineering
- Mr. Pete Potochney, Director, OSD BRAC
- Mrs. Nicole Bayert, Associate General Counsel, Environment and Installations, DoD
- Captain Gene Porter, Senior Military Assistant for the Under Secretary of Defense (AT&L)
- Ms. Deborah Culp, Program Director, Contract Management Directorate, Office of the Inspector General
- Mr. Andrew Porth, Assistant Director, OSD BRAC
- Commander John Lathroum, Force Integration Branch Officer, Forces Division, J-8

BRAC 2005 JCSG Approach to Military Value

Briefing to the

Infrastructure Steering Group

February 17, 2004

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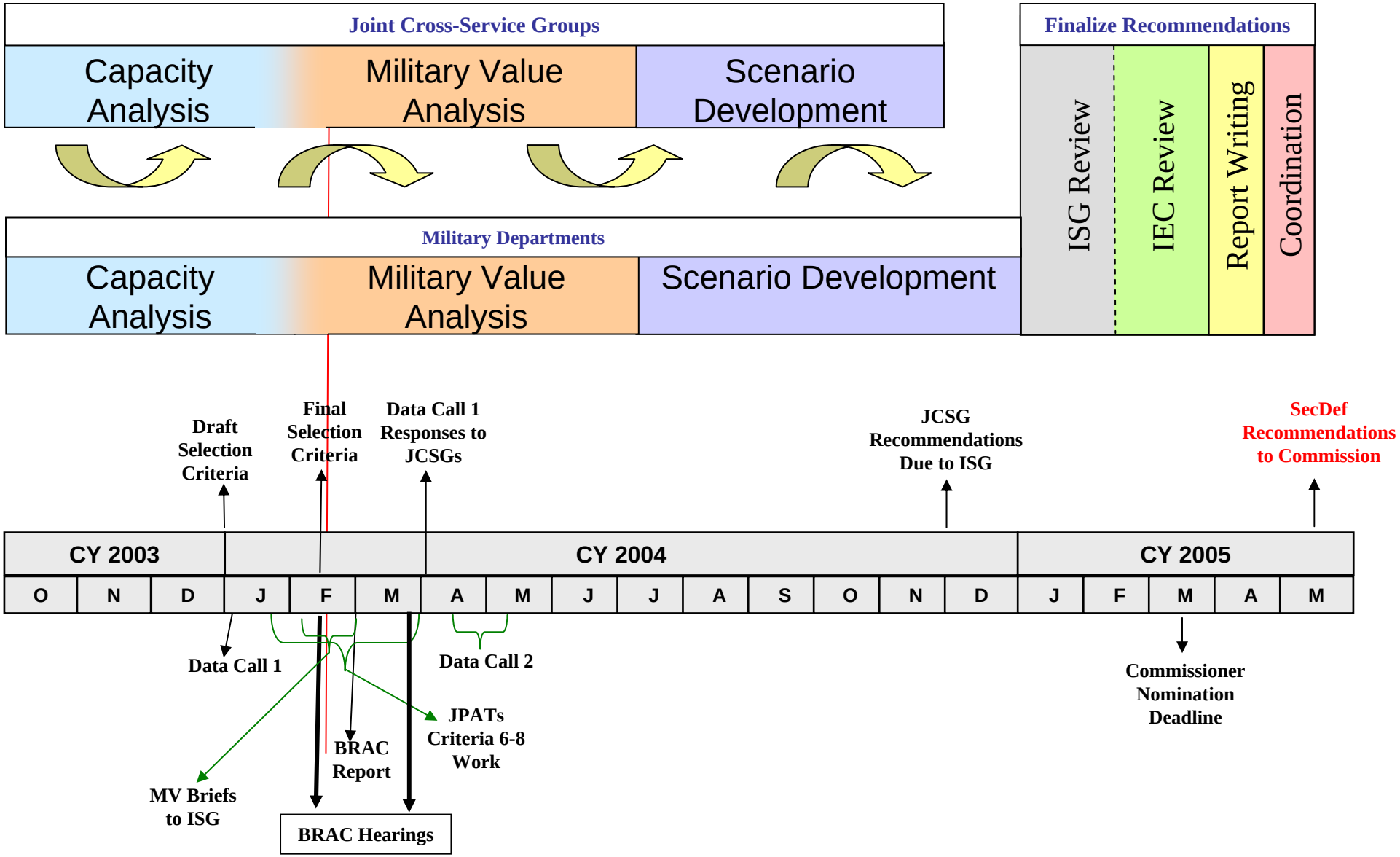
Process Overview



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JCSG Military Value Briefing Schedule

- Schedule for Military Value briefings
  - Feb 17 @ 14:00-15:00 Technical
  - Feb 19 @ 10:00-11:00 Medical
  - Feb 20 @ 14:30-15:30 Supply & Storage
  - Feb 23 @ 09:00-10:00 Industrial (from Feb 12)
  - Feb 23 @ 13:00-14:00 H&SA
  - Feb 24 @ 11:00-12:00 Education & Training
  - Mar TBD Intelligence
  - Mar TBD JCSG MV Integration

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Technical Joint Cross Service Group

Approach to Assessing Military Value

Briefing to the Infrastructure Steering Group (ISG)

Dr. Ron Sega

Chairman, Technical Joint Cross Service Group

February 17, 2004

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Purpose

Seek Infrastructure Steering Group (ISG) approval of Technical Joint Cross Service Group (TJCSG) military value framework

Presentation Overview

- **OSD Guidance**
- **Military Value Framework**
  - **Organization**
  - **Scope & Challenge**
  - **Methodology**
  - **Results**
    - **Military Value Equation**
    - **Attributes, Metrics, Weights, Scoring**
    - **Questions in draft**
- **Review & Decision**
- **Issue for ISG Consideration**
- **Closing Remarks**

Military Value Report

(Published separately)

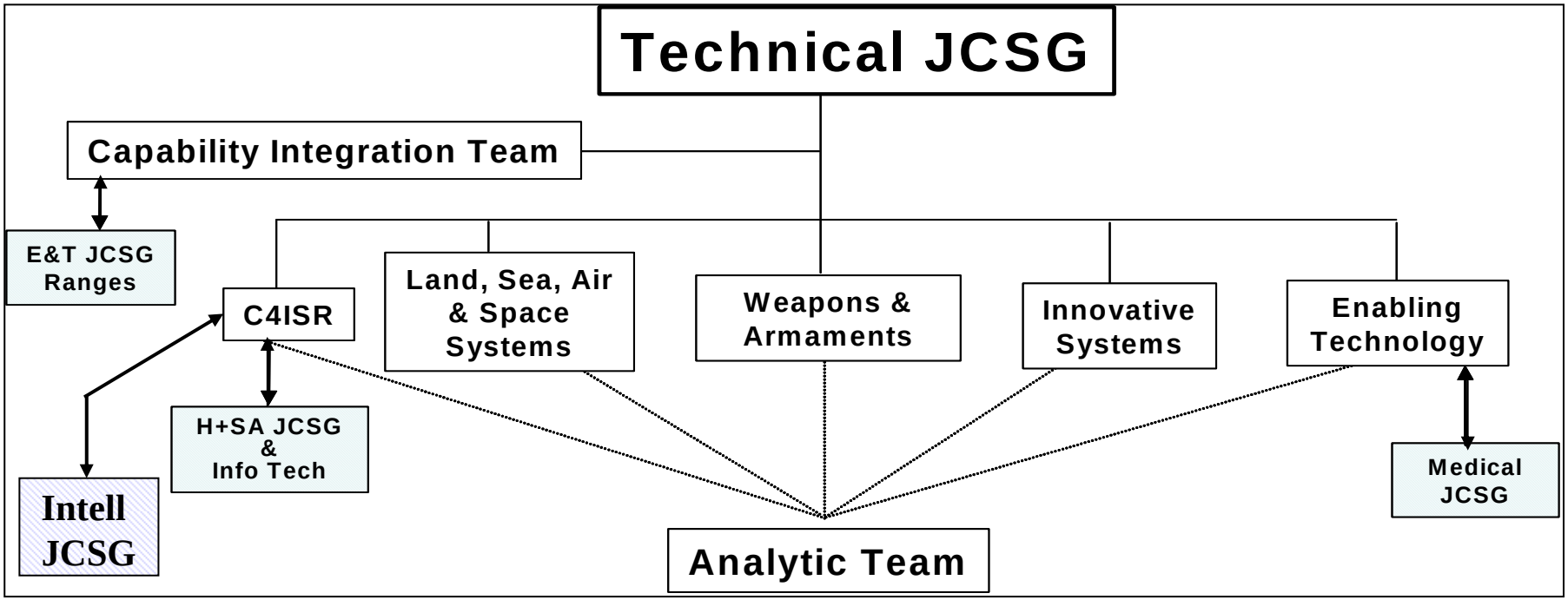
OSD Guidance

Produce:

- **Military Value Assessment Equation**
- **Attribute Identification and Definition**
- **Metric Definition**
- **Assigned Weights**
- **Approach to Scoring**
- **Data Call Questions**

TJCSG Military Value Report
(published separately)

TJCSG Organization



- Draft agreements for lines of responsibilities with other cross-JCSG groups
  - T&E Open-air Ranges (Education &Training JCSG)
  - Medical Research (Medical JCSG)
  - Information Technology (Headquarters & Support Activities JCSG)
  - C4ISR Information sharing with Intelligence JCSG
- Technical JCSG provides military value assessment of technical infrastructure

TJCSG Scope of Effort

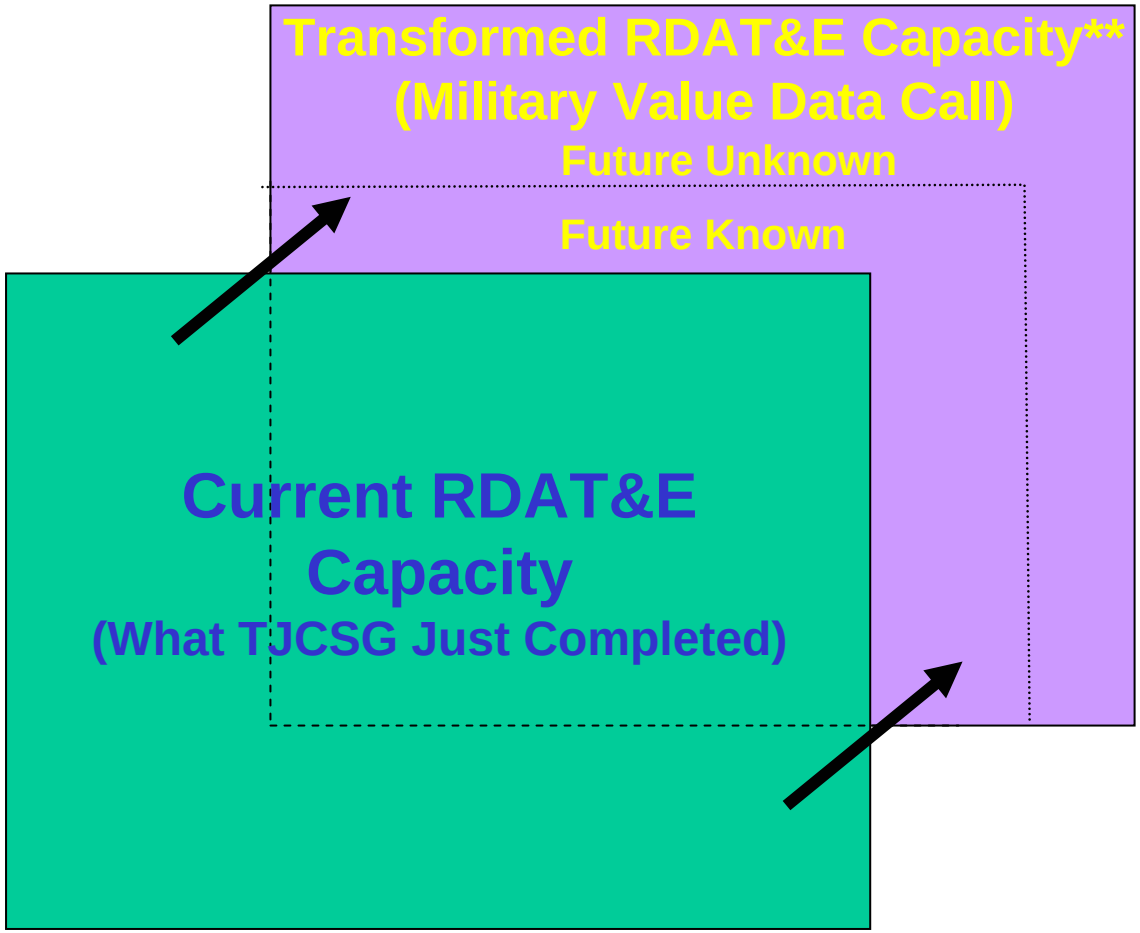
- **3 Functions:**
  - **Research (S&T)**
  - **Development & Acquisition (D&A)**
  - **Test & Evaluation (T&E)**

- **7 Subgroups**
  - **4 Technical Capability Product (Output) Focused**
  - **3 Process (Integration, Analysis, and Innovative) Focused**

- **13 Technical Capability Areas**
  - **Based on the Defense Technology Area Plan (DTAP, February 2003)**
  - **Aligns 100% of DoD Technology Investment**
  - **Subgroups generally responsible for One or More Technical Capability Areas**
  - **Supports QDR transformation operational goals**

Military Value Assessment Challenge —

What is Different from Capacity Assessment



**** Includes assessing Technology Transformation Drivers and New Capabilities Required**

RDATE = research, development, acquisition, test & evaluation

TJCSG Methodology

- Define framework
  - Define technical capability products (subgroups)
  - Compare only like facilities
  - Common attribute and metric definitions
- Breadth of functions necessitates more than single equation
  - Criteria/attribute weights – same for all Subgroups
  - Metric weights may vary – assigned by Subgroups
- Capabilities Integration Team worked with Subgroups to create a common schema

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TJCSG Results

Results: 12 equations to assess research (Res), Development and Acquisition (D&A), and Test and Evaluation (T&E) across technology capability areas Mapped into product subgroups

	Air Platforms	Ground Vehicles	Sea Vehicles	Space Platforms	Weapons	Nuclear Technology	Materials and Processes	Biomedical	Human Systems	Battlespace Environments	Chemical & Bio Def	Sensors, Electronics	Info Systems
T&E	(Equation Set 1)				(Eq. Set 4)		(Equation Set 7)					(Eq. Set 10)	
D&A	(Equation Set 2)				(Eq. Set 5)		(Equation Set 8)					(Eq. Set 11)	
Res	(Equation Set 3)				(Eq. Set 6)		(Equation Set 9)					(Eq. Set 12)	
	Air, Land, Sea Space				Weapons Armament		Enabling Technology					C4ISR	

Results: Attributes, Metrics, and Questions

Assigned Criteria

By DoD BRAC

1 Readiness
2 Infrastructure
3 Agility
4 Manpower & Cost

Common Attributes

- People
- Physical Environment
- Physical Structures and Equipment
- Operational Impact
- Synergy

Metrics and Questions

- Metrics With scoring method
- (Draft) Questions

Contained in Military Value Equation

Equation, Definitions and Weights Follow

Military Value Equation for Technical Facilities

Military Value is calculated as a summation of weighted criteria times a summation of weighted attributes times a summation of weighted metrics

Mathematically:

$$MV = \sum^{4} W_c \left(\sum^{5} w_A \left(\sum^{\text{Metrics}} \omega_m s_m\right)\right)$$

Where: W_c , w_A, ω_m Are the Weights of the Criteria, Attributes, and Metrics, respectively

s_p are the normalized values of the scored data

Criteria review, Attributes, Metrics, Weights & Scoring Follow

Selection CRITERIA

#1 – READINESS -- Current and future mission capabilities and impact on operational readiness of the Department of Defense's total force, including the impact on joint warfighting, training, and readiness.

#2 – INFRASTRUCTURE – The availability and condition of land, facilities and associated airspace (including training areas suitable for maneuver by ground, naval, or air forces throughout a diversity of climate and terrain areas and staging areas for the use of the Armed Forces in homeland defense missions) at both existing and potentially receiving locations.

#3 – AGILITY - The ability to accommodate contingency, mobilization, and future total force requirements at both existing and potential receiving locations to support operations and training.

#4 – COST & MANPOWER - The cost of operations and the manpower implications.

Note: TJCSG clarifications in backup

Attributes

TJCSG identified 5 common attributes:

- *People*: Measures Intellectual Capital and experience
- *Operational Impact*: Measures Output of the RDAT&E functions
- *Physical Environment*: Measures Available Space, Climatic Variables, terrain, encroachment
- *Physical Structures and Equipment*: Measures Existing and planned Infrastructure
- *Synergy*: Measures factors like proximity to customer, jointness, workforce base.

Common Metrics (1 of 2)

- *People* Attribute
  - Education
  - Experience
  - Certification
  - Patents, Pubs & Awards
- *Physical Environment Attribute*
  - Range Dimensions
  - Special Features
  - Terrain
  - Climate
  - Encroachment
- *Physical Structures & Equipment Attribute*
  - Uniqueness
  - Bounding Parameters
  - Depth of Application
  - Building Condition
- *Synergy Attribute*
  - Multiple Functions/Capability areas
  - Jointness
  - Proximity
  - Dual Use Capacity

Metrics (2 of 2)

- *Operational Impacts Attribute (D&A)*
  - Systems Fielded
  - Major Modifications
  - Workload Focus
  - Future Military Value
- *Operational Impacts Attribute (T&E)*
  - Direct Warfighter Support
  - Urgent Material Release
  - Workload Focus
  - Future Military Value
- *Operational Impacts Attribute (Research - S&T)*
  - Technology Transition
  - Advanced Tech Demos
  - Rapid Response
  - Workload Focus
  - Future Military Value

Metric Definition and Scoring Method - *People*

Attribute	Metric	Definition	Scoring Method	
People	Education – S(edu)	Educational level of the workforce expressed in terms of highest degree attained (Associates, Bachelors Degree, Masters, PhD., Post Doctoral).	Weighted Summation of percent of workforce with degrees with PhD 3 times Bachelors, MS 2 times, etc	
	Experience – S(exp)	Experience level of the professional/technical workforce expressed in terms of years, measured in years since first degree attained, or from service computation date for those without degrees.	Weighted summation of number of years in technical workforce, audited from personnel records	
	Certification – S(cert)	Professional workforce who hold special professional certifications (including DAWIA, Test Pilot School graduate, Software Engineering Certification, Professional Engineer).	Weighted summation of percent of people with formal professional certification	
	Patents, Publication, Awards – S(ppa)	Number of patents granted, patents licensed, software licenses awarded, publications (expressed as books, book chapters, articles in refereed journals), number of national and international awards, invited presentations (at a national or international technical society conferences) .	Weighted summation of the normalized number of patents, publications, etc. The key is the per work force number	

Weight Assignments – Introduction
High Level Results Summary

- **Criteria Weights**
  - **Identical for Research (Res) and Development and Acquisition (D&A)**
  - **Different for Test and Evaluation (T&E)**
    - **T&E weight for Criteria 2 (Available Space) higher than Res and D&A**
  - **TJCSG weights Criteria 1 most heavily—ability to meet military mission, then Criteria 2 and 3 about the same, Criteria 4 (cost and manpower implications) has lowest weight**

- **Attribute Weights**
  - **Vary for each function**
  - **Research (S&T) more heavily weights people (intellectual capital)**
  - **D&A more heavily weights operational impact (number of systems in formal acquisition process**
  - **T&E more heavily weights available space**

Criteria Weighting

	Criteria 1: Readiness / Capability to meet known missions	Criteria 2: Availability and Condition of Infrastructure	Criteria 3: Flexibility to Support Surge (Unknown)	Criteria 4: Cost and Manpower
Research, Dev and Acquisition	.53	.12	.25	.10
Test and Evaluation	.48	.23	.19	.10

Attribute Weighting

ATTRIBUTE	Criteria 1: Readiness / Capability to meet known missions	Criteria 2: Availability and Condition of Infrastructure	Criteria 3: Flexibility to Support Surge (Unknown)	Criteria 4: Cost and Manpower
People (.30 / .21 / .16)	.17 / .13 / .11	0 / 0 / 0	.10 / .05 / .02	.03 / .03 / .03
Physical Environment (.07 / .12 / .26)	.02 / .05 / .07	.04 / .06 / .16	.01 / .01 / .03	0 / 0 / 0
Physical Str & Equipment (.23 / .17 / .20)	.07 / .04 / .05	.08 / .06 / .07	.05 / .04 / .05	.03 / .03 / .03
Operational Impact (.21 / .32/ .26)	.15 / .21 / .17	0 / 0 / 0	.03 / .09 / .07	.02 / .02 / .02
Synergy (.21 / .18 / .12)	.12 / .10 / .08	0 / 0 / 0	.06 / .06 / .02	.02 / .02 / .02

Key: number/number/number = represents Research/ Development & Acquisition /Test and Eval weights

Sample Attribute - People

Education – S(edu): Educational level of the workforce expressed in terms of highest degree attained (Associates, Bachelors Degree, Masters, PhD).

- **S(edu) = Σ (scoring factor x measured parameter) / Maximum score of Σ (scoring factor x measured parameter) for all like facilities**

- **Sort Facility professional and technical workforce by highest degree attained**

Degree	Scoring Factor	x	Measured Parameter (% technical workforce with)
– AA	½		
– BA/BS	1		% of workforce with each degree
– MS	2		
– PhD/MD/ *DVM/JD/etc*	3		

- ***Question - What percentage of the facility professional and technical workforce has the following as the highest academic degree awarded - Associates Degree, BS, MS, … PhD?*** ***(Excludes clerical/admin and other support personnel).***

S(edu) = score for education metric

Military Value of Metric Education
--Example for Air Vehicle Research--

Question: What is the Military Value for education level of two sample air vehicle research facilities?

Facility 1	**10 % PHD**	**Facility 2**	**50% PHD**
	30% MS		**20% MS**
	20% BS		**10% BS**

1. Use TJCSG Weights to Calculate the scoring factor for the Metric Education (S(edu))

- **Score Facility 1: (3 X 10) + (2 X 30) + (1 X 20) = 110, Normalized Score = .55**
- **Score Facility 2: (3 X 50) + (2 X 20) + (1 X 10) = 200, Normalized Score = 1**

2. Use Weights for Attribute *People* Associated and the four Criteria to compute MV_{Edu}:

$$\text{Mil Value Edu} = MV_{Education} = \sum_{c=1}^{4} W_c \left(w_{A=People}\, \omega_m s(edu) \right)$$

End Result

$MV_{education}$ of Facility 1 = .066

$MV_{education}$ of Facility 2 = .120

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Review

- ✓ Military Value Assessment Equation
- ✓ Attribute Identification and Definition
- ✓ Metric Definition
- ✓ Assigned Weights
- ✓ Approach to Scoring
- ✓ Data Call Questions, in draft

TJCSG Military Value Report
(published separately)

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Summary

- Recommend the Infrastructure Steering Group Approve TJCSG Framework
- TJCSG to finalize the Military Value Report By 26 Feb

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Issues for ISG Consideration

- Policy Imperatives – what is the process for policy imperative integration across JCSGs and Service Groups?

Issue resolution will help streamline Scenario development work effort

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Closing Remarks

- Executed and Completed OSD Guidelines
- Attributes, Metrics defined--linked to military value criteria
- Schema presented puts premium on existing unique facilities, operational impact, and intellectual capital

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Thank you

Sample Metrics Weights

Criteria 2: Facilities Attribute: Physical Environment		Innovative	Weapon	Enabling	Air-Land-Sea-Space	C4ISR
Research	Range Dimension	0	32	20	25	20
	Special Features	100	17	40	25	10
	Terrain	0	19	20	20	25
	Climate	0	16	10	20	25
	Encroachment	0	16	10	10	20
D&A	Range Dimension	20	32	20	25	20
	Special Features	30	17	40	25	10
	Terrain	20	19	15	20	25
	Climate	20	16	15	20	25
	Encroachment	10	16	10	10	20
T&E	Range Dimension	30	32	40	30	25
	Special Features	35	17	20	20	10
	Terrain	10	19	10	20	25
	Climate	10	16	10	20	20
	Encroachment	15	16	20	10	20

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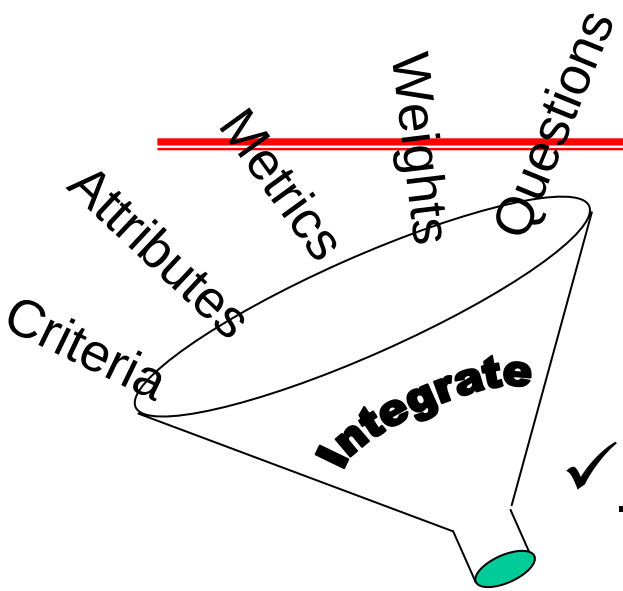
Military Value Equation



✓ Elements of the equation defined

Military Value is calculated as a summation of weighted criteria times a summation of weighted attributes times a summation of weighted metrics

Mathematically:

$$MV = \sum^{4} W_c \left(\sum^{5} w_A \left(\sum^{\#\ Metrics} \omega_m s_m\right)\right)$$

Where: W_c , w_A, ω_m Are the Weights of the Criteria, Attributes, and Metrics, respectively

s_p are the normalized values of the scored data

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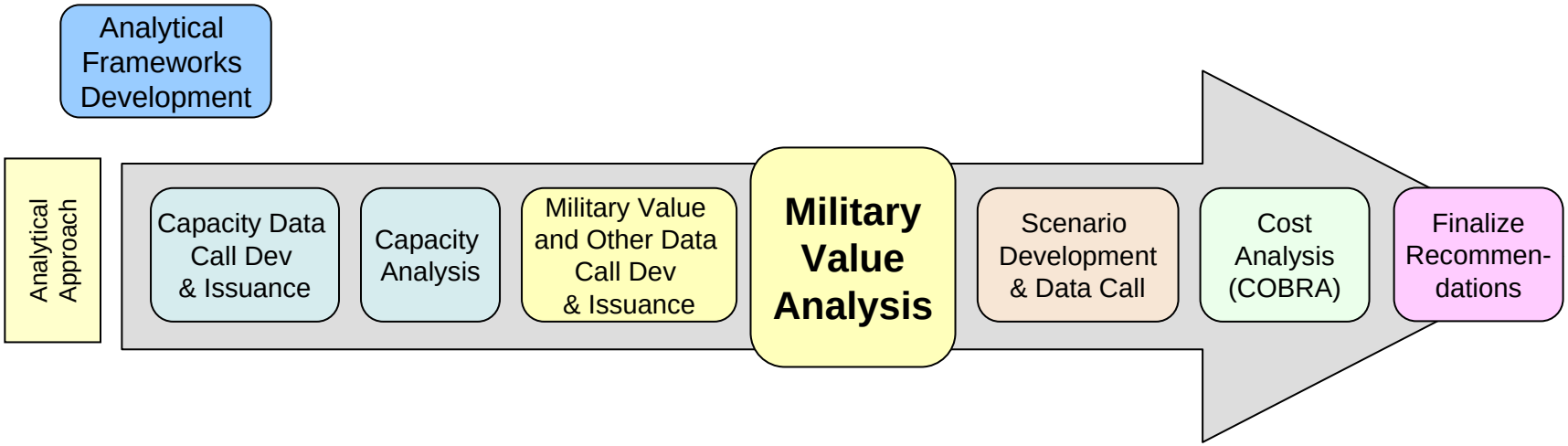
Overall BRAC Process & Timeline



Key Dates

Dec 2003

- Draft Selection criteria published

Mid-Feb 2004

- Certify need for BRAC
- Final selection criteria to Congress
- Force structure plan

16 May 2005

- Recommendations to Commission

Assumptions (1 of 2)

- TJCSG will use approach to compare military value of "like" facilities
  - Definition of Technical Facility:
    - ***A collection of people and physical infrastructure that performs a technical function(s) in a specific technical capability area at a specific installation.***
- Collect high value Essential Elements of Information for decision purposes
- Technical JCSG Breadth (both Functional and Capability Areas) Necessitates More than Single Set of Weights
  - For instance, weights for assessing Military Value of Weapons Test Facility Different than Sensor and Electronics Research Facility
  - Definitions of Attributes and Metrics consistent across all Subgroups

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Assumptions (2 of 2)

- Criteria Weights will be the same for all Subgroups, can vary by function
- Attribute Weights will be the same for all Subgroups, can vary by function
- Metric Weights will be allowed to vary by technical subgroup and function
  - Variations due to differences in relative importance of metric to the technical area allowed, must be explained
- All Military Value Data Are Normalized

Process Summary

- **Top Down Approach**
  - **Integrate criteria, attributes, and metrics by technical area and function**
- **Bottom up Assessment**
  - **Standardize attributes and metrics, and customize weights as required**
- **Combination of Professional, quantitative, qualitative, judgments using subject matter expertise**

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TJCSG Interpretation of Criteria (1 of 2)

#1 – Readiness - The ability to meet current and future mission requirements and the impact on operational readiness of the DoD's total force, *including impacts on joint warfighting*, technical capabilities, *training, and readiness.*

Rationale: Technical capabilities are needed to produce the weapon systems to meet mission requirements to ensure operational readiness

#2 – Infrastructure – The availability and condition of land, technical and support facilities, and associated *air, land, sea, and space ranges; including training* areas *suitable for maneuver by ground, naval, or air forces throughout a diversity of climate and terrain areas and staging areas for the use of the Armed Forces in homeland defense missions* in support of the national military strategy, at both existing and potential receiving locations.

Rationale: Calls out technical facilities as a unique class of DoD facilities that have military value. "Homeland defense missions" connotes the weapons systems that provide the mission capabilities.

Underlined word = TJCSG interpretation

TJCSG Interpretation of Criteria (2 of 2)

#3 – Surge - The ability to accommodate contingency, mobilization, and future total force requirements at both existing and potential receiving locations *to support operations, training,* and technical contingency response.

Interpretation: "To support military operations" once they are in progress for technical infrastructure has historically been to provide rapid response to deficiencies experienced in the field.

#4 – Cost & Manpower - The cost and manpower implications (including inherent cost of operations or staffing implications for conducting technical mission activities at a specific technical "facility" location)

Rationale: Some areas have a greater potential to host specific technical missions than other areas.

Underlined word = TJCSG interpretation