

Capabilities-Based Planning:
A Methodology for Deciphering Commander's Intent

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Abstract:

The nature of being a commander requires a strategic vision or plan that dictates what an organization can, must, and will do to achieve its goals. Frequently, subordinates have a difficult time making concrete policies or providing solutions because vision statements as expressed in strategic plans are often high level, terse, and broad. These strategic plans can be rendered more useful by using the methodology of Capabilities-based planning to provide granularity and the needed stepping stones for attaining the commander's vision. In this paper, we present a Capabilities-based planning methodology that provides much needed content and clarity to a commander's strategic vision. Capabilities-based planning is an analytic methodology that enhances the quality of information available to decision makers by adding structure to the commander's vision and subsequently decomposing the vision into actionable capabilities. These generated capabilities define the future effects needed for agencies to meet their mission and transform into a more agile and adaptable force. The paper will describe a Capabilities-based Planning methodology as opposed to threat-based approaches, delineate the drivers for future strategic planning initiatives, and provide context for this methodology with regards to Department of Defense transformation.

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“Planning, under uncertainty, to provide capabilities suitable for a wide range of modern-day challenges and circumstances while working within an economic framework that necessitates choice.”¹

Capabilities-based planning (CBP) is an analytic methodology that enhances the quality of information available to decision makers by adding structure to the commander’s vision and by decomposing the vision into actionable capabilities. These generated capabilities define the future effects needed for agencies to meet their mission and transform into a more agile and adaptable force. CBP planning initiatives are being implemented rather than the traditional threat-based analysis because they start by asking the question: “*what do we need to do* rather than *what equipment are we replacing?*”² By focusing primarily on end states as opposed to material solutions, CBP has the power to create an agency that can better adjust to new threats, eliminate stove pipes, and increase both inter and intra-agency information sharing.

In this paper, I describe a Capabilities-based planning methodology that the Evidence Based Research team generated for a major component of the US intelligence community. The CBP planning methodology was used to add structure and depth to objectives found in strategic plans. The paper will outline the analytic process, explain the inputs for the process, and describe how this methodology was augmented to best represent the client’s needs. This will include:

1. Explanation of the analytic process:
 - a. Collection of mandates and subsequent grouping by sub-segment
 - b. Populating database with mandates and objectives extracted from the strategic plan
 - c. Examining the potential effects of transformation needs in four domains: physical, information, cognitive, and social. These domains were used to understand the expectations in all areas of the enterprise and create capabilities in a broader than just information technology.
 - d. Creating expectations for the capabilities: Expectations were derived from best practices, federal mandates, strategic goals, strategic objectives, and EBR expertise. The expectations answer the question: “when we achieve this objective we will have:”
 - e. Capabilities development: After creating expectations, the team then inferred capabilities in the four domains. The capabilities created in each domain inherited influences from other domains. For example, physical capabilities were influenced by information needs, cognitive expectations of the future workforce, and expectations of social networks.
 - f. Gap analysis: after creating capabilities, the client then compared these capabilities to an As-Is baseline to determine gaps in the current and programmed baseline.

¹ Davis, P.K., *Analytic Architecture for Capabilities-Based Planning, Mission System Analysis, and Transformation*, RAND MR-1513-OSD, 2002.

² Joint Systems and Analysis Group, Technical Panel 3, “Guide to Capabilities-based Planning.” *MORS Workshop, 19-21 October 2004*. TR-JSA-TP3-2-2004

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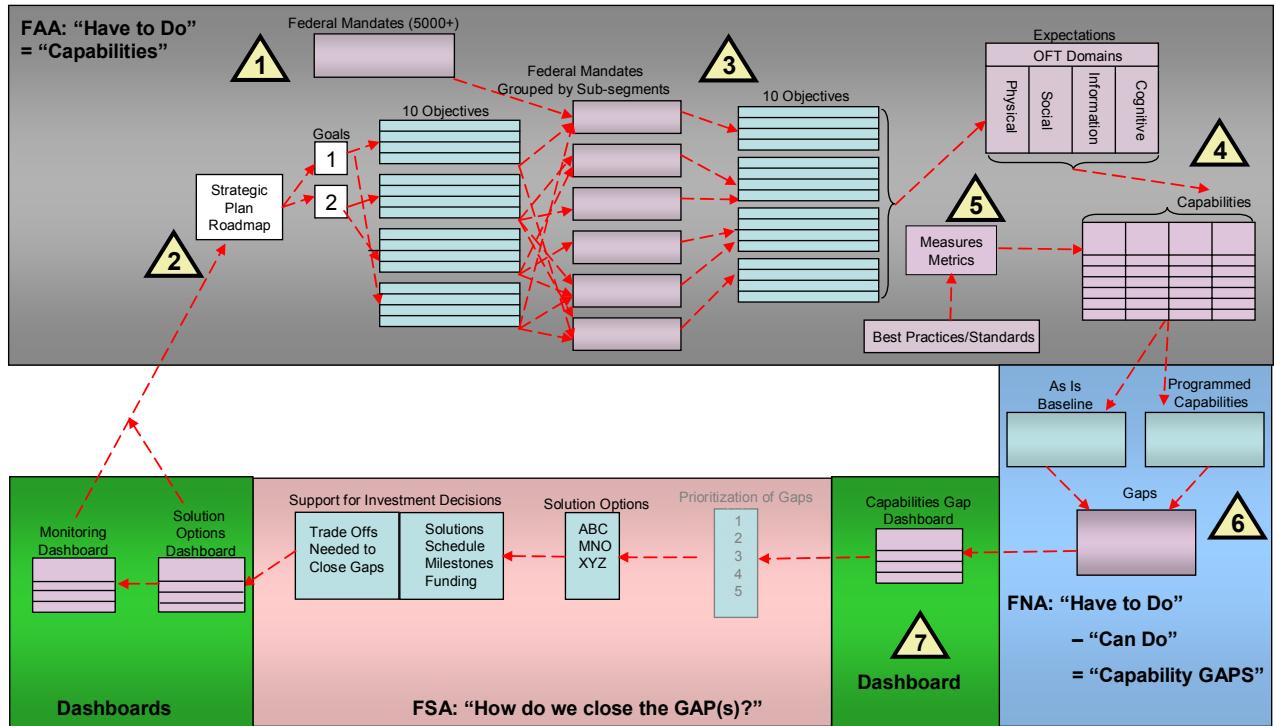
- g. Dashboard: A strategic dashboard was created to give executive level decision makers a top level view of gaps in each objective. The dashboard is populated with icons that are easy to read and intuitive to allow the decision maker to make quick judgments.
- 2. Implication for future strategic planning initiatives
 - a. Creating a Capabilities-based planning methodology provides granularity and traceability for a strategic plan.

Analytic Process:

The team at EBR developed a systematic and analytical CBP model. In devising our process, we analyzed several CBP models and found them to be helpful in framing our methodology, but we noticed that they did not incorporate inputs at the level which we desired. To construct our model, we defined several requirements with the three most important being that the process is repeatable, driven by federal mandates, and compliant with the Joint Capability Integration and Development System (JCIDS). Our CBP methodology was designed to be repeatable so that not only we but also the client could verify the results of our analysis. In addition, the team wanted to give the client the option of using the process to replicate, create, or modify capabilities.

The second requirement defined by the team was that it must be driven by federal mandates. We wanted to implement a bottoms-up approach with the federal mandates at the base of the methodology. The main driver for any government agency is the future capability of the agency to meet customer needs while being compliant with government mandates. For that reason we found it crucial that our analysis be driven by federal mandates. Figure 1 illustrates the whole process and each step will be broken down to provide the inputs and to explain its relationship with the rest of the process.

Figure 1:
Analysis Process and Information Flow



Steps 1 – 3: Creation of Database

The first step in our process was to create a database that would house all the information we needed to generate the capabilities. A common repository was necessary to provide a medium for linking inferred capabilities to mandates and strategic objectives. The fields of the database are (each will be described in subsequent sections):

- Federal Mandates
- Strategic Objectives
- Effects
- Inferred Capabilities

Step 1: A. Federal Mandates:

The first field we populated was the federal mandate section. The EBR team compiled mandates that related to six key areas: Supply chain, Infrastructure protection, human resources, financial management, strategic planning, and technology assurance. These six categories were based on similar categories put forth by the Department of Defense's Business Management and Modernization Program (BMMMP). The six categories were used to organize the mandates and provide traceability. After amassing the federal mandates, the team used an automated process to extract text from the document. The primary documents

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used are listed below and we currently have approximately 5000 elements of these federal mandates.

Mandate Documents:

OMB Circular A-11, A-123	FFMSR-7, 32
JFMIP SR-01-01	GAO Title 2
Health Insurance Portability and Accountability Act	DoD BEA
IRS Publication 15: Circular E - Employer's Tax Guide	NSTIISP No. 11
IRS Publication 3: Armed Forces' Tax Guide	GAO Title 2 I10 Imputed Interest
The Controlled Substances Act	Federal Acquisition Regulation
5 USC: Organization & Employees	Prompt Payment Act
10 USC: Armed Forces	Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)
29 USC: Labor	Clean Water Act (CWA)
38 USC: Veterans' Benefits	Computer Security Act PL 100-235
SFFAS 8.79	FAR

Step 2: B. Strategic Plan Elements

The next step in our process was to extract the strategic goals and objectives from the respective agency's strategic plan. Each objective's text was extracted and assigned a number based on the overarching goal. This data was then fed into the database for subsequent linking to other objects.

C. Effects

The third field in our database was an effects section. The effects were extracted from a Department of Defense BMMP Transition Plan document³ which described goals and targets for each of the augmented sub-segments (Supply chain, Infrastructure protection, human resources, financial management, strategic planning, and technology assurance). An example of an effect is:

“Establish common business practices across DoD – improved capability to share and use data across the enterprise”

These effects proved invaluable when the team began linking the strategic plan object to our inferred capabilities because they gave some granularity to federal mandates that were often very difficult to understand and quite verbose. Also, the effects answered the hypothetical question:

“what would be the effect or result of achieving the mandate?”

By asking and then attempting to answer this question it allowed members of the team to better align our inferred capabilities and strategic objectives with the federal mandates.

³ Department of Defense, *BMMP Transition Plan V1.1-Appendix D – Capability Goals / Targets (V1.1)*, 2003.

D. Capabilities

The final field of the database was inferred capabilities. The team inferred these capabilities and the exact process for capability development will be explained in the next section.

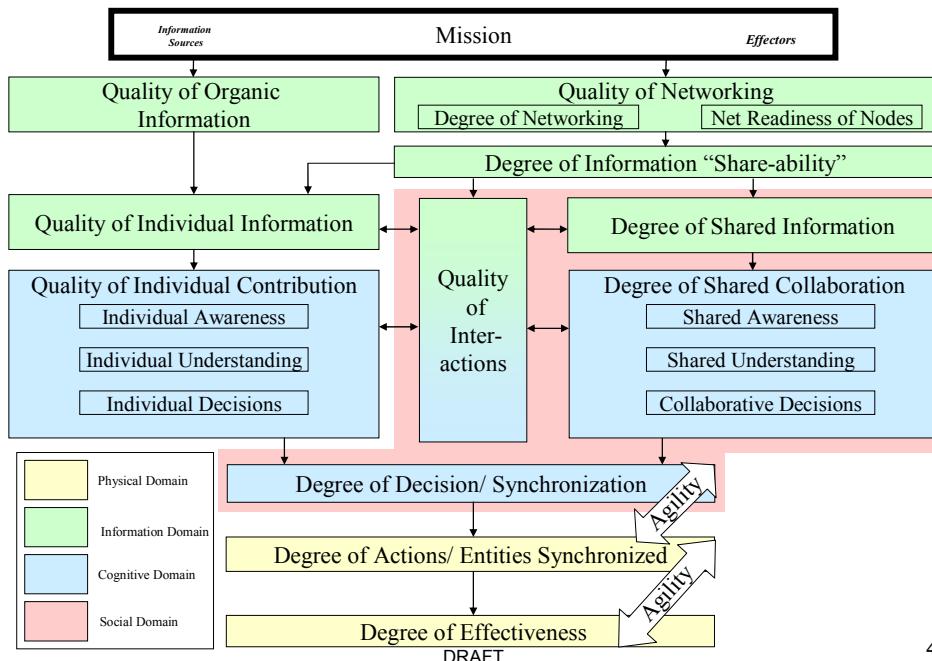
Step 4: Capability Generation

The EBR team inferred capabilities by using a model that EBR developed for the Department of Defense's Office of Force Transformation. The conceptual framework was created to develop a set of metrics to assess the tenets of Network Centric Warfare. In order to develop metrics for the tenets, the team identified "top-level" representation of Network Centric Operations (NCO) concepts and their relations. Once the important concepts and their relations are identified, one can then "drill down" and identify attributes and metrics for each concept. The "NCO Conceptual Framework" was the result of that process. While it provides a means to evaluate NCO hypotheses, it also clarifies and illuminates important aspects of NCO theory that were only implicit in the original tenets.⁴

Figure 2 describes the OFT process and the different inputs. For creating the CBP model, the team used the framework's domain organization: (physical, information, cognitive, and social).

Figure 2:

Domain Metrics



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⁴ Alberts, David S. and John J. Garstka. Network Centric Operations Conceptual Framework (Version 2.0) Report. Washington, DC: Office of Force Transformation and Office of Assistant Secretary of Defense (Networks and Information Integration). June 2004.

A. Domains

The OFT model enabled the team to decompose strategic plan objectives into four domains: physical, information, social, and cognitive. The physical domain includes devices, tools, and networks that enable information to be distributed to permit interaction with information. The information domain includes documents and databases that contain the information that enables people to understand what they need to understand. The social domain includes organizational culture that motivates and enables people to share information. Lastly, the cognitive domain includes the knowledge in people's heads that allows them to carry out the tasks needed to achieve goals, including knowing what information needs to be shared. These four domains provided more structure to the analysis and allowed the team to develop capabilities that were not focused on information technology solutions.

After defining the domains, the next step was to develop some simple metrics to better define the domains. Figure 3 lists the metrics for each respective domain. These metrics were compiled using EBR expertise and were written to be straightforward and understandable.

Figure 3:
OFT Domain Definitions

Office of Force Transformation (OFT) domains (Physical, Information, Cognitive, and Social) that provide structure for analysis

DEFINITIONS

PHYSICAL	INFORMATION	COGNITIVE	SOCIAL
Devices, tools, and networks that enable information to be distributed to permit interaction with information	Documents and databases that contain the information that enables people to understand what they need to understand	The knowledge in people's heads that allows them to carry out the tasks needed to achieve goals, including knowing what information needs to be shared	Organizational culture that motivates and enables people to share information

METRICS

Extent to which the network and tools enable people to get and use information they need	Completeness and intelligibility of information to support cognitive needs	Extent to which people know what they need to know	Extent to which people are able and willing to share information
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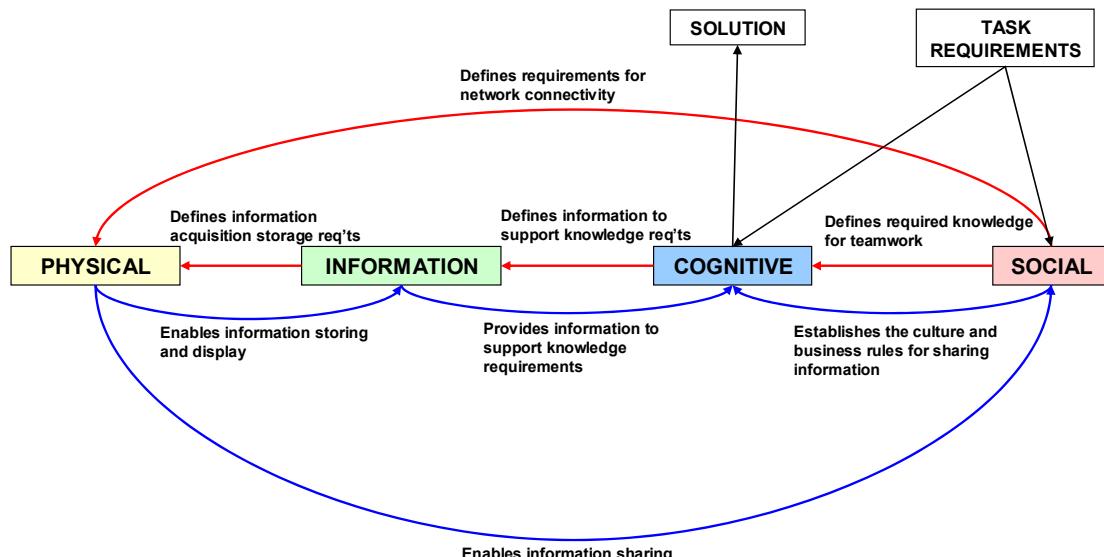
B. Domain Dependencies

Once we defined and provided metrics for the domains, the team mapped dependencies between the domains. Figure 4 depicts the interaction and influence that one domain has on another. To best understand the interaction, let us look at a sample capability:

“Network enabled sharing of information and expertise among executives to plan & prioritize investments.”

Because this capability is a system it is classified as a physical capability, but the information and social domains also play a role in this capability. A network shares information therefore the information domain is included because it is essential to the operation of a network. In addition to the information domain, the social domain is important in creating this system because it incorporates the processes already in place within the organization. The dependencies will be addressed further in the capabilities generation section.

Figure 4:
DOMAIN DEPENDENCIES



C. Expectations

After developing these domain definitions, metrics, and interdependencies, the next step of our analytic methodology was to develop some expectations for each objective from the strategic plan. The objectives were tersely worded and often the managers responsible for the objective did not know the commander’s intent. Our team found that by creating expectations that answered the question:

“When we achieve the objective we will be/have:”
it would allow us to decipher a commander’s intent and would be integral for generating capabilities for a specific objective. Figure 5 depicts an example of some of the expectations that were created. For the example in Figure 5, the strategic plan objective was to: “Integrate budgeting with performance management.”

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To decompose the objective, we created expectations for the four domains. To explain the logic behind this, sample statements will be listed for each of the domains. For the physical domain, we would expect that we would be able to access financial and performance data and use tools to visualize that data and track the progress of integration. For the information domain, we would expect that we have accurate financial data that is standardized and complies with DoD and OMB regulations. For the cognitive domain, we would expect that the staff is knowledgeable of business management processes and collaborative strategies. Lastly, for the social domain we would expect that we will have members of teams that share information and expertise.

Figure 5:

Expectations by OFT domains

OBJECTIVE 2: Integrate budgeting with performance management

When we achieve the objective we will be/have:

PHYSICAL	INFORMATION	COGNITIVE	SOCIAL
<ul style="list-style-type: none">-Able to access verifiable, trusted financial data-Using a suite of visualization tools that enable planning for and tracking the development of essential capabilities-Able to collaborate within the agency and within the DoD community.-Comply with OMB and DOD Reporting requirementsAutomatically.	<ul style="list-style-type: none">-Produce timely and accurate financial information-Data in standard format-Monthly CFO reports tracking investment performance and disclosing full cost-DoD and OMB policies, guidance, and procedures.-Data for visualizations to include; programs, expenditure center-level objectives Integrated Master Schedule.-Mission accomplishment objectives	<ul style="list-style-type: none">Knowledgeable of:<ul style="list-style-type: none">-effective business management processes-Standardized capabilities implementation and tracking methods-Procedures to implement expenditure center-level objectives-teamwork and collaboration enabling strategies-Mission support needs-managing new alliance risks in a complex collaborative environment	<ul style="list-style-type: none">-Managing the change process at organization and employee levels-Members of integrated teams sharing information and expertise-Managing the risk associated with new internal and external alliances.

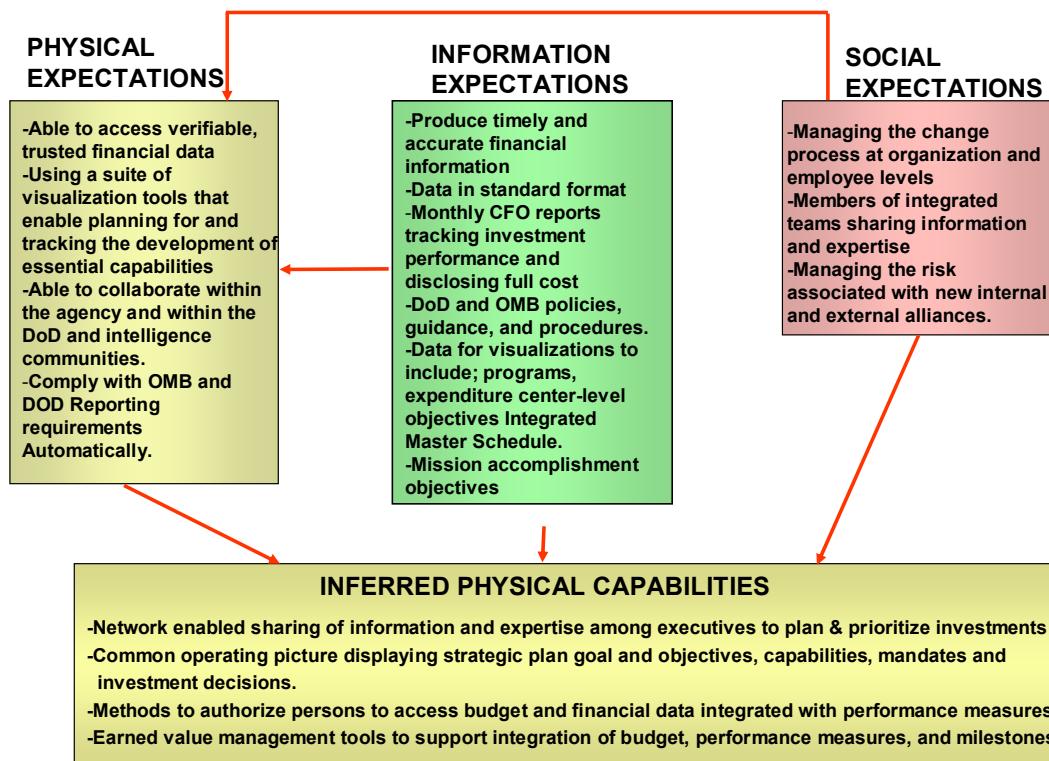
D. Capabilities

After generating expectations, the next step was to infer capabilities for each objective. Figure 6 depicts the capabilities that the EBR team inferred for Objective 2. Capabilities were developed for each domain (physical, information, cognitive, and social) and were derived using the expectations, effects, federal mandates, best practices, and EBR expertise. Figure 6 depicts an example of physical capabilities for the Objective “integrate budgeting with performance management.”

One of the keys to inferring the capabilities was answering the question: “In order to achieve our expectations, then we must have: (*said capability*)” To better explain this, take for example the first capability “network enabled sharing of information and expertise among executives to plan and prioritize investments.” For this physical capability there are three sets of expectations that drive the capability. Because this is a physical capability the first expectation is also physical. The second set of expectations is from the information domain. As explained in the interdependency section, to have a networked system there must be underlying data hence the need for information expectations. The third set is the social expectations and this set is an input because the social expectation

defines a process that currently exists and must exist for the network to have organizational buy-in. Therefore, to have a physical capability such as this one it needs to fulfill the physical, information, and social expectations.

Figure 6:
Develop Capabilities



Step 5: E. Capability Vetting

After the team generated capabilities, we then put them through a quality control process. The capabilities were rigorously tested using three categories: defined metrics, best practices, and scenarios. Metrics were created to validate the capabilities had the right scope and that implementing such a capability could be measured. Figure 7 displays some of these metrics. For this example, the figure lists metrics for determining the effectiveness of collaboration.

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Figure 7

Examples of Metrics for Collaboration Effectiveness

- Adequacy of knowledge to support effective collaboration
 - Completeness of team member knowledge of the plan
 - Correctness of team member knowledge of information sharing requirements
 - Correctness of understanding team goals
- Effectiveness of collaborative behaviors
 - Frequency at which team members needed to ask for information from others
 - Frequency at which team members ask team members to redo work
 - Frequency that team tasks are late
- Quality and Cost Effectiveness of Team Products
 - Quality of team product as rated by team client
 - Person hours required to create team product
 - Timeliness of team product

Secondly, best practices were extracted from industry and government case studies. The examples were used to ground the capabilities in reality, add credibility, and apply some lesson learned from other agencies and firms. Figure 8 lists a case study about the Belgian Post group and their transformation from disparate system and outdated processes to a collaborative culture networked through new systems.⁵

Figure 8



Case Study: Belgian Post Group

- Belgian Post Group is one of the largest civilian employers in Belgium.
- It provides postal, courier, direct marketing, banking, insurance, and electronic services in European market.
- Transformation project affected more than 800 post offices and more than 3,000 users

Problem: The Group needed to transform culture and business processes to coordinate activities, reduce cost, and increase operational effectiveness

Implementation:

The project had two phases:

- 1st Phase: Prepare Belgian Postal Group for change, and redefine the required processes, systems, and organization. This was implemented through a large number of workshops that were held to identify the improvement potential and determine vision.
- 2nd Phase: Actual implementation of IT applications. This functionality included financial modules, costing and reporting as well as logistics, order management, and purchasing. Implementation was done using a conference room pilot approach, where a representative model was built. After testing, the model was gradually migrated in a phased approach to day-to-day operations. Extensive training of project members, product managers, and users was used to support a smooth roll-out. The training team was responsible for:
 - Communication and change leadership
 - Documentation management
 - Project team training and coaching
 - End-user training coordination and development
 - Post-implementation support and helpdesk
 - Final knowledge and ownership transfer

Benefits:

- Reduced cost and increased operational performance.
- Greater transparency and elimination of 'walls' between the various entities
- Introduction of a fully integrated (absolute) budgetary control system, from requisition to GL-entry of the 'actuals'
- End of Month reporting out of a consolidated set of books, replacing Excel based reporting
- Integrated Procure to Pay cycle
- Centralization of +/- 21 physical data entry locations (AP departments) to one
- Introduction of catalogue based internet procurement for office supplies
- Electronic payment of invoices
- Single supplier database.

Source: IBM Business Consulting Case Studies

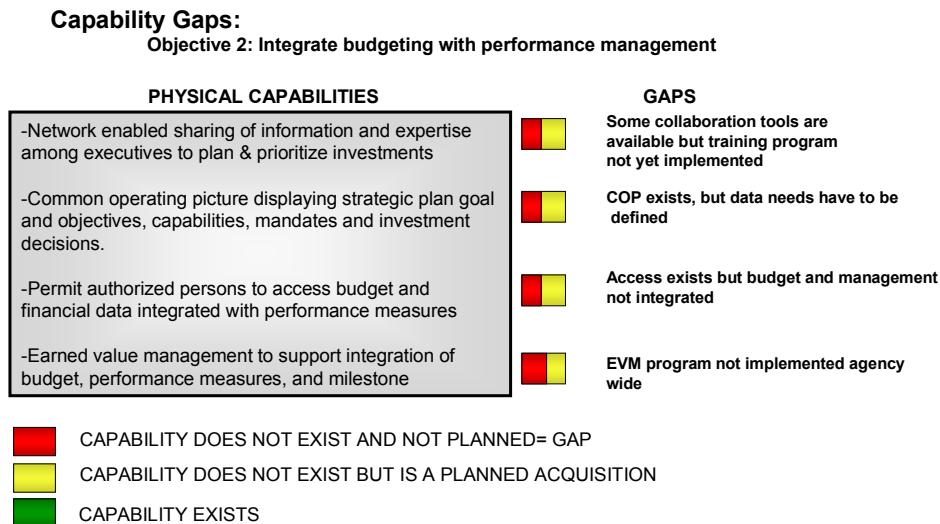
⁵IBM Business Consulting Services, "Belgian Post Group: iPromis – Business Transformation." IBM United Kingdom Limited, UK, 2004. Obtained from web address: <http://www-1.ibm.com/services/us/bcs/pdf/bcce01058-belgian-post.pdf>

The final test for the capabilities was running them through the agency provided scenarios. The scenarios depict everyday life within the agency and attempt to forecast future needs. This was an excellent way to verify that the capabilities were within the scope of the agency and whether the capability equipped the agency with the means to address future threats. Of all the tests, this was the most important for it enabled the team to modify and adjust the capabilities to fit within the agency's scope.

Step 6: Capability gaps

After vetting the capabilities, the next step was to compare them to the As-Is baseline. The As-Is baseline describes the agency's current capabilities for each objective. By aligning the capabilities inferred by the team to the capabilities in the As-Is baseline, capability gaps were derived. The gaps' status was represented using stoplight colors: red, yellow, and green. After determining the capability gaps and determining their status, each objective's data was compiled and displayed in a strategic dashboard.

Figure 9:



Step 7: Dashboard

Figure 9 displays a strategic dashboard that was designed to allow navigation through the underlying information. The left hand side of the display contains a control panel that displays at-a-glance status of the objective and allows the user to drill down for more information on a specific objective. The objective's status is color coded red, yellow, or green. Red signifies that a capability does not exist and is not planned- there is a gap, yellow denotes that a capability does not exist but is a planned acquisition, and green denotes that a capability exists. Once a user has selected an objective, the display is populated with tabs that display an objective's data. There are six fields of interest:

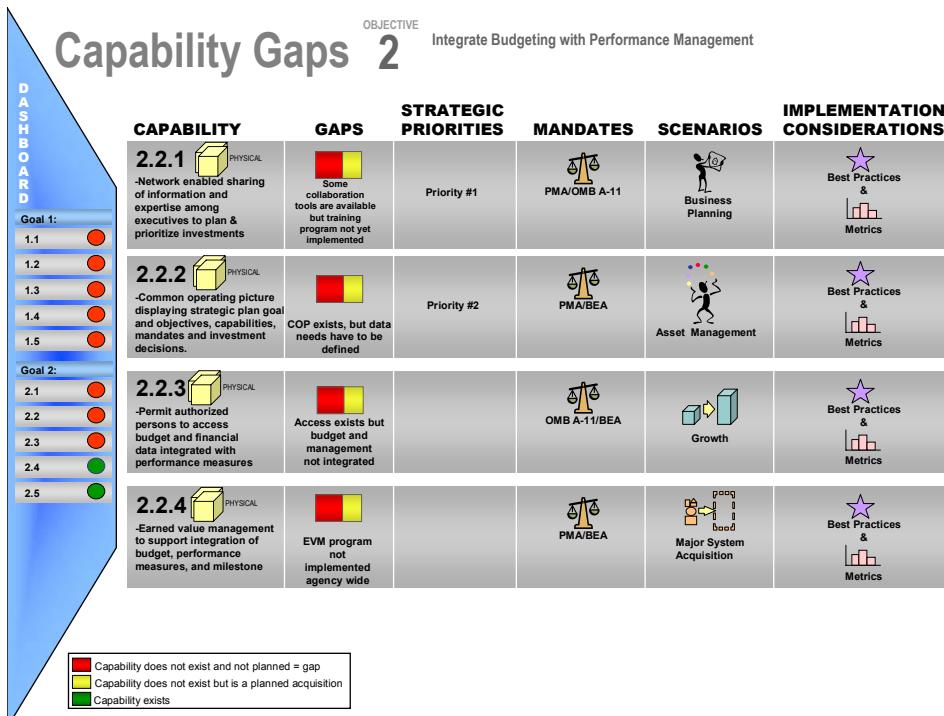
- Capability
- Gap
- Strategic Priorities

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- Mandates
- Scenarios
- Implementation Considerations

An icon in each field provides key information and the status of the capability in relation to a respective field. The user can then click on an icon and drill down into that area to learn more. Once in the drill downs, the control panel remains on the left hand side of the screen to allow the user to navigate to other objectives.

Figure 9:



Implications for Future Capabilities-based planning initiatives:

Current trends in information technology and strategic planning have provided government agencies with the expectation that their internal processes can be more efficient, less costly, and more customer-centric by improving the agency's response time and accuracy. Many agencies face the difficult task of transforming while maintaining their current level of production and staying within budget. The task is further complicated by new visions for government performance and capabilities that are abstract and theoretical.

The Capabilities-based planning methodology outlined in this paper defines capabilities and effects that allow the commander's staff to perform their duty and to achieve the visionary goal. Our methodology produces a process that is repeatable, traceable, and can be incorporated into a visual strategic dashboard to make sense of the large amounts of data.

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One of these new visions is the Department of Defense's Business Management Modernization Program. The aim of this program is to improve oversight and accountability of DoD expenditures and to transform business operations. The BMMP is the largest business transformation effort in the public or private sector. The DoD published several statistics regarding the size of the undertaking:

- 5.4 Million employees, service members, and beneficiaries
- \$400 Billion+/year
- 700 Billion+ in assets
- 600,000 Buildings at 6,000 locations in 146 countries
- 1,312 major Weapons Systems
- 150+ Federal Source Laws and Regulations
- 4,000 systems . . . and counting⁶

With such a large undertaking, commanders and subordinates must know what an agency must do and how an agency will complete its mission. The EBR team believes that the Capabilities-Based Planning methodology developed and explained in this paper provides government executives with the means to decipher a commander's intent and achieve visionary goals.

⁶ Department of Defense's Business Management and Modernization Program website:
(<http://www.dod.mil/comptroller/bmmp/pages/>)