INSTITUTE FOR DEFENSE ANALYSES

Defense Governance and Management: Improving the Defense Management Capabilities of Foreign Defense Institutions

Part 1: Program Budgeting
Part 2: Program Analysis Seminar

Aaron C Taliaferro
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James L. Wilson
Thomas J. Wallace
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Executive Summary

This paper was sponsored by the Office of the United States Deputy Assistant Secretary of Defense for Security Cooperation. Its intent is to assist United States (U.S.) government representatives in advising defense institutions that seek to improve their defense management capabilities. By defense institutions, we mean ministries of defense and the headquarters staffs of the armed forces and/or military services as well as other national-level institutions responsible for planning and managing the development and employment of armed forces. Part 1, the formal paper, presents good practices in a specific area of defense management, specifically how to formulate a defense budget for a defense institution. Part 2, the accompanying seminar material, is to familiarize officials within defense institutions with program budgeting and analysis. Neither the paper nor the accompanying seminar material is the last word on these topics. Management is a dynamic field and improvements are always possible. Furthermore, all nations have unique characteristics that require any advisor to tailor the methodology to fit the national context of the advised organization.

In much of the world, conditions for achieving good practice are not present. A lack of human capital capacity, transparency, or security makes improvements in existing defense management practices either implausible or unfeasible. Even in nations where implementing good practice is feasible, actual practice may diverge significantly from good practice. Given such tangible problems, one may question the relevance of this paper, which presents concepts considered by many to be too difficult or time consuming. The response is that the description of good practice, in the words of a fellow defense analyst and advisor, "provides a clear vision of the objectives of policy reform" through a capacity-building effort.[1] Without a description of good practice, "it is impossible to develop either a strategy for reaching ultimate objectives or benchmarks to measure progress along the way, [or] to determine where the problems lie within existing policy and practice."[2]

To improve the formulation of a defense budget, we assert that good practices should point a defense institution to accomplishing four inter-related goals by virtue of its budget formulation process. These four goals are

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1 Nicole Ball and Len le Roux, "Model for Good Practice in Budgeting for the Military Sector in Budgeting for the Military Sector in Africa," in *The Processes and Mechanisms of Control*, edited by Wuyi Omitoogun and Eboe Hutchful (Oxford, UK: Oxford University Press, 2006), 15.

2 Ball and le Roux, 15–16.

- identify the needs and key objectives of the security sector as a whole, the specific missions that the armed forces will be asked to undertake, and the capabilities needed to meet those objectives;
- determine what is affordable;
- allocate resources according to policy priorities and fiscal constraints; and
- ensure the efficient and effective use of defense resources.[3]

This paper asserts that the best method for achieving all four goals is the adoption of a program budgeting system. A program budget presents organizational leaders with options to achieve (1) policy objectives and (2) the tradeoffs and costs associated with each option. It directly links budgeting to strategy through planning and programming. Programming, the unique feature of program budgeting that distinguishes it from other budget processes, systematically organizes the resource inputs necessary to create the desired output – defense capability – within a fiscal constraint. Capability is the output of a defense-program budget process because capability is required to achieve policy objectives given to the defense sector.

Part 1, the formal paper, describes the components of a program budgeting system. Part 2 provides seminar materials meant to familiarize and build the skills of members of defense institutions who are ready to adopt program budgeting with the techniques needed to do program analysis. We focus on program analysis because it is a skill needed by technical staff to accomplish a critical step in the programming process, "program formulation and recommendations," which is described in the formal paper.

[3] Nicole Ball and Malcolm Holmes, *Integrating Defense into Public Expenditure Work*, commissioned by the United Kingdom's Department for International Development (Washington, DC: Center for International Policy, January 11, 2002), http://www.ciponline.org/research/entry/integrating-defense-into-public-expenditure-work.

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1. Introduction

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4 Nicole Ball and Len le Roux, op. cit., 15.

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6 Nicole Ball and Malcolm Holmes, *Integrating Defense into Public Expenditure Work*, commissioned by the United Kingdom's Department for International Development (Washington, DC: Center for

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Through programming, a program budget aligns fiscal constraints with policy priorities. The US Department of Defense (DOD) first used the practice within the defense sector in the early 1960s. This was a response to the limitations of existing line item budgets and less robust performance or output-based budget systems. Former US Army Chief of Staff General Maxwell Taylor summarized the problem. He wrote that when each military service produces its budget in isolation from the others the service budgets are not put side by side and an appraisal made of the combined capabilities of the aggregate military forces supported by the budget."[7] The result is a defense budget that cannot align fiscal emphasis with defense priority. At best, it aligns according to the parochial interests of the individual military services.

As we use the term in this paper, *program budgeting* is a resource allocation schema that includes planning, programming, and budgeting, although it is the latter two steps that are the focus of this paper. These processes exist to overcome difficulties that defense institutions have in effectively linking policy, strategy and planning to budgets. Program budgeting links policy and strategy to budgeting through the deliberately planned allocation of available resources over a four- to six-year period.[8] Collectively, the resource inputs produce defense capabilities (the outputs) necessary to achieve policy objectives.

The innovation that sets a program budget system apart from other methods of formulating a budget request is *programming*. Programming explicitly presents different options, constrained by a known fiscal limit, on how to arrange the inputs to a budget (e.g., personnel, equipment, training, maintenance) to achieve priority policy objectives agreed to during planning.

International Policy, January 11, 2002), http://www.ciponline.org/research/entry/integrating-defense-into-public-expenditure-work.

7 Maxwell D. Taylor, *The Uncertain Trumpet* (New York: Harper and Brothers, 1959), 136–139.

8 4-6 years is the standard because less than four years is not enough time to sufficiently model the impact of resource allocation changes on the force structure and more than six years into the future will exceed existing national forecasts of earned revenue and estimated budget allotment.

Used in its purest form, program budgeting has six fundamental tenets, first articulated by Alain Enthoven and K. Wayne Smith, that are still relevant today:

1. Decisions should be based on explicit criteria of national interest, not on compromises among institutional forces.
2. Needs and costs should be considered simultaneously.
3. Major decisions should be made by choices among explicit, balanced, and feasible alternatives.
4. The minister of defense should have an active analytic staff to provide relevant data and unbiased perspectives.
5. A multiyear force and financial plan should project the consequences of present decisions into the future.
6. Open and explicit analysis, available to all parties, should form the basis for major decisions.[9]

Regardless of how it is fashioned, a budget represents some compromise of institutional forces. However, a program budget process forces all stakeholders in the budget process to consider the national interest even as they advocate for their specific interests. In doing so, a program budget makes policy objectives, rather than budget accounts, the variables used to allocate financial resources.

Before proceeding to the central focus of this paper (i.e., program-budgeting), students of the history of budgeting theory and defense resource management may need to have some concepts and terminology clarified. Each of the concepts clarified are different manifestations of program budgeting. They are not different budgeting techniques. They are simply evolutions of the same technique.

In the *Planning Programming Budgeting System* (PPBS) implemented by Secretary of Defense Robert McNamara, the planning phase of the PPBS workflow involved the specification of policy priorities and the formulation of program guidance, which specified capability objectives.[10]

In the 1980s, capability-based planning (CBP) emerged, particularly in the United Kingdom, Australia, and Canada. In CBP, the specification of capability targets tend to be treated as the first phase of a more extended "programming" process than in McNamara's PPBS.[11]

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9 Alain C. Enthoven and K. V. Smith, *How Much is Enough? Shaping the Defense Program 1961–1969* (Santa Monica, CA: RAND, 2005), http://www.rand.org/pubs/commercial_books/CB403.html.

10 See C. Vance Gordon and Wade P. Hinkle, *Best Practices in Defense Resource Management,* IDA Document D-4137 (Alexandria, VA: Institute for Defense Analyses, January 2011).

11 On British and Australian practice, see Patrick A. Goodman, et al., *Observations on the Republic of Korea Force Requirements Verification System,* IDA Document D-5044 (Alexandria, VA: Institute for

In the 1990s, the U.S. Defense Department began assisting foreign partners who needed to improve their defense resource planning and management abilities. The U.S. practitioners involved in that assistance found that neither the classic PPBS nor the CBP conceptualization fully matched the practices often encountered in partner nations. In part, this was true because most partner nations used a national budget development process that bound the defense ministry to answer to a central ministry (e.g. a national ministry of finance). This restrained the ability of the defense ministry to reform its own budget practices based on existing U.S. defense models. Furthermore, as advocated by the Word Bank in many cases, nations separated the formulation of their investment or development budget from their operating budget.[12] A reason for this was too centralize the planning and execution of a very limited source of funds so it could be focused on the nation's highest priority objectives.

This is still program budgeting. However, it creates a challenge for defense sectors, which usually need to maintain large fleets of capital equipment relative to the rest of the ministries in their government. In the defense sector, when the investment budget (used to buy capital equipment) is planned independent of the operating budget, the result is a structural deficit where operating funds are not sufficient to sustain capital equipment. The impact is armed forces not capable of fulfilling their responsibility to their nation.

So, U.S. practitioners needed to find a program budget conceptualization capable of presenting budget proposals that adhered to standard World Bank practice where necessary (i.e., a separate investment budget) but which also ensured investment was considered during planning alongside resource requirements for personnel, maintenance, training, services, and consumable expenses.[13] Generally speaking, this can be accomplished by completing capability planning first (to identify which gaps in capability can be closed without capital investment), conducting a round of acquisition planning to determine affordable and cost-effective investment, and then integrating those acquisition plans into program-budget development. Table 1 shows this idea graphically and compares it to classic PPBS and CBP.

Defense Analyses, October 2013). For a more extended explanation of capability-based planning, See Mark E. Tillman, et al., *Defense Resource Management Studies: Introduction to Capability and Acquisition Planning Processes*, IDA Document D-4021 (Alexandria, VA: Institute for Defense Analyses, August 2010).

12 International Bank for Reconstruction and Development, *Public Expenditure Management Handbook* (Washington: World bank, 1998).

13 On the concept of "acquisition planning" as a separate step in defense resource management, see Tillman, et al. op. cit. For an example of how the entire management construct shown in the lst row of Figure 1 has been implemented in a host nation, see William Fedorochko, Jr., et al., *The Defense System of Management (DSOM) in the Republic of the Philippines*, IDA Document D-4785 (Alexandria, VA: Institute for Defense Analyses, February 2013).

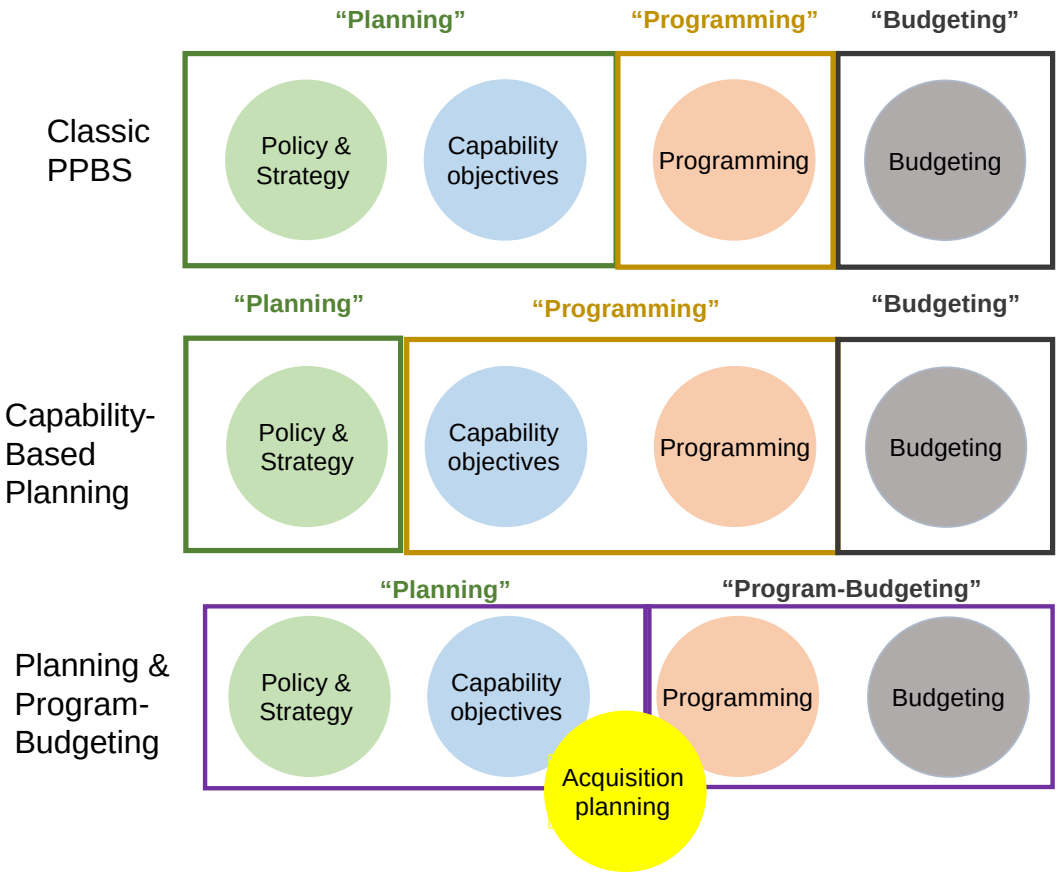

Figure 1. Evolution of Program Budgeting

The last two circles in the bottom row are the focus of this paper. The preparation of policy and strategy is treated by IDA paper NS-P 5350, March 1, 2017. Another work on capability based planning is in work at this time.

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2. Why Program Budgeting?

Testifying to the U.S. Congress in 1960, General Maxwell Taylor, who had just retired as Chief of Staff of the U.S. Army, gave a succinct explanation of why program budgeting is necessary:

> If we are called upon to fight, we will not be interested in the [military] services as such. We will be interested rather in task forces, those combinations of Army, Navy, and Air Forces, which are functional in nature, such as Continental Air Defense… But we do not keep our budget in these terms. Hence, it is not an exaggeration to say that we do not know what kind and how much defense we are trying to buy with any specific budget.[14]

Taylor's testimony illustrates the limitations of line item and annual budget processes that only report numbers by budget accounts. They focus on resource inputs and are useful for accounting and auditing. However, they do not provide means for understanding output, namely, the types and capabilities of the forces created with the public's money. Programming is a planning innovation to solve this limitation.

Programming concepts were first utilized for defense reasons during World War II by the U.S. War Production Board (WPB). At that time, raw materials such as copper, steel, and aluminum, rather than money to purchase them, were the scarce resources. Accordingly, President Franklin D. Roosevelt charged the WPB with rationing and allocating scarce raw materials (the inputs) towards war production of critical items such as tanks and airplanes (the outputs) to serve U.S. strategy in the conduct of the war.[15] These are the same principles in program budgeting today whereby money (the scarce resource) is allocated toward those inputs that produce outputs tied to objectives established in strategy.

Shortly after General Taylor's testimony, the Defense Department (then under the leadership of Robert McNamara) introduced programming principles into its budget process. Since that time, many other nations, including Canada, the United Kingdom, Australia, New Zealand, Singapore, South Korea, the Philippines, and Colombia, have all

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[14] Charles J. Hitch, *Decision Making for Defense* (Berkeley, CA: University of California Press, 1965).

[15] David Novick, *The Origin and History of Program Budgeting* (Santa Monica, CA: RAND, October 1966), http://www.dtic.mil/dtic/tr/fulltext/u2/641442.pdf.

introduced similar reforms to their national or defense budget process and organized their budgets according to the intended outcomes of spending.

Defense institutions are responsible for providing armed forces able to meet the security challenges faced by a nation, including armed aggression from an external force, internal insurgency, and natural disasters that destroy infrastructure and displace people. The composition and severity of these challenges are diverse and subject to change over time. Similarly, the policy goals and priorities set by national leadership also change. Additionally, the technology available to the defense sector and to the nation's enemies changes as well. Despite this constant churn of policy and technology, the complex and capital-intensive nature of most defense capabilities dictates that they are planned and phased into service over many years. Budget programming is a recurring process that provides the ability to adapt systematically to changes in the security environment without being captive to the relatively inflexible annual budget process that ultimately provides money for defense.

Because programming is conducted with less detail than budgeting (the goal is to have sufficient detail to choose from among multiple options), it is possible to identify the alternatives available to decision makers and provide perspective on the potential consequences (including tradeoffs and risks) of their choices. A well-designed programming process is conducted in ways that make the basis for decisions transparent, and provides stakeholders an opportunity to explain their points of view. Done properly, the results of the decisions made during the programming process are documented and shared. When this is done, the entire organization has a more clear understanding of the approved plans over the mid-term planning period, which is generally four to six years into the future. With a better understanding of the decisions, each part of the defense organization can better execute its role in accomplishing the approved plan and avoid wasting effort on unapproved activities.

The output of the programming process is a multi-year defense program of record and referred to as the Total Defense Program.[16] The first year of the defense program provides the basis for defining the next year's budget. Because the Total Defense Program extends four to six years into the future and is organized into subprograms, the program provides insight into the future effects of today's decisions. This approach allows analysts to examine whether the introduction of new capabilities (expressed as subprograms within the program budget) is feasible, given the financial and personnel resources projected to be available. If the defense program is not affordable, defense leaders can adjust the introduction of new programs or offset (reduce) existing programs in accordance with priorities so the Total Defense Program is affordable.

[16] The Total Defense Program is the aggregate sum of all individual defense programs.

Capabilities and resources are inseparable but their interrelationship is not obvious within the planning or budgeting environments. Programming links capabilities to resources to give senior leaders a more complete understanding of how capability decisions drive resource allocation and how resource increases or decreases affect capability. In doing so, the introduction of a programming perspective to the overall defense resource management process will improve the quality of the defense decision process in several ways.

First, programming contributes to the orderly time-phased transition from the current force to the force envisioned to meet future defense needs. Second, programming closes the gap between planning and acquisition on the one hand with the commodity-centered fiduciary nature of budgeting. Planning typically identifies capabilities needed at some future point to meet a need, but seldom identifies the resources required. Furthermore, planning tends to focus on a limited portion of the overall defense establishment. Likewise, procurement or investment plans tend to focus on acquisition or capital investment costs rather than the broader costs and implications for integrating new equipment within the existing force structure.

On the other hand, budgets typically have a one-year time horizon and do not attempt to consider the future resource effects of present decisions. Further, budget processes do not provide insight into whether present decisions are fiscally or operationally sustainable. To overcome the limited perspectives of the planning and budgeting process, programming establishes a decision process for time phasing the implementation of approved capability and procurement plans in a way that produces a fiscally feasible, integrated, and multi-year plan. Accordingly, a primary benefit of program budgeting is that it enables the defense institution to understand how investment decisions will affect future investment and the operating budgets. This reduces the risk of creating structural deficits in which future budgets cannot afford to maintain equipment inventories leading to significant equipment readiness problems.

Figure 1 is a depiction of the effect investment can have on operating accounts when new equipment is added to the defense inventory. In years one, two, and three, new equipment paid for by investment accounts increases defense equipment inventories. As new equipment is added, the cost of payroll, unit operations and equipment use all rise rapidly. By year four, the total budget outlay in the operating accounts is projected to be more than 200% higher than what it was in year one, when new equipment first started to arrive in the inventory. A program budgeting system requires defense leaders to report the total budgetary impact of investment decisions and alerts decision makers to the potential of creating a structural deficit. A structural deficit degrades existing military capability because operating accounts are not sufficient to pay for the future cost of operating and maintaining equipment.

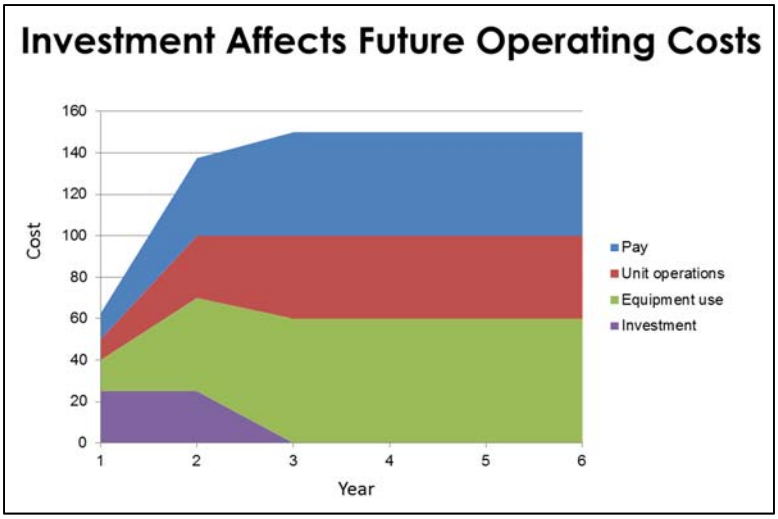


Figure 1. How Investments Affect Future Operating Costs

Though the figure is drawn with a dramatic rise in operating costs in order to communicate the principle, it is our experience that dramatic increases in unplanned operating costs can seriously degrade military effectiveness. This is a common phenomenon, especially in nations that want to upgrade or modernize their equipment. As a result, some nations make purchases well beyond their means to sustain the operation of the equipment. The situation is particularly common in nations benefiting from grants or loans from donor nations that have a robust defense industry. The grant or loan covers the cost of procuring the new equipment as well as the initial operating costs; however, sustained operating costs are not paid for by the donor nation and the recipient nation cannot afford them.

To prevent the problem of structural deficits, programming dictates that defense-spending decisions be constrained by financial limits imposed on the defense institution by the national government. Therefore, if defense leaders want to increase defense capabilities in one area, a tradeoff or an offset from another capability will probably be required. Since programming has a multiyear perspective and deals with the entire defense program, it helps defense leaders to avoid making unaffordable choices. Affordability cannot be a near-term calculus only—an affordable capability is affordable in the near term and it is affordable (or more accurately stated, sustainable) over the long term.

Knowing the total budgetary and human-resource effect of ongoing activities, as well as proposed changes, allows senior leaders to make better decisions with regard to the increase, drawdown, or elimination of existing programs, and the introduction of new programs. By putting all resource requirements together at one time in one force and financial plan, decision makers cannot avoid the fact that resources available to defense are limited. Thus, without a budget increase, decisions to increase spending in existing or

new programs must be offset by decisions to reduce resources in other programs. To summarize, programming helps decision makers answer the question, "What is the best mix of capabilities that meets defense objectives within available resource limits both now and in the near future?"

The remainder of this chapter describes the basic concepts of a program and a program structure that underlies the programming process, the organization and management processes used for programming, and the skills and tools programming requires.

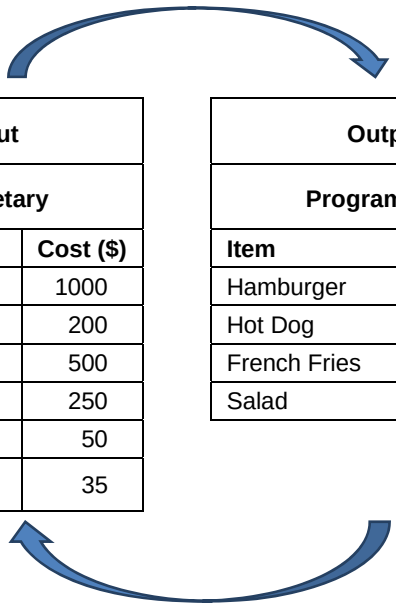
A. What is a Program?

Programs are the building blocks of the defense force. They describe the force in terms that can be quantified by cost (the inputs) and capabilities (the outputs). They enable defense leaders to manage both cost and performance.

It is difficult to manage any organization solely by controlling the inputs, that is, the amounts to be spent on specific categories of materials and services. It is much easier to make decisions when one understands the outputs intended and their projected costs.

Table 1 illustrates this point. A restaurant's profits are based on the sale of what it produces (the outputs), not on what it buys (the inputs). It is true that a good manager must control costs (labor, materiel, and services); however, the larger goal is to deliver satisfying food (output) for the customer at an acceptable cost.

Table 1. Programming: Managing Based on Outputs (Restaurant Example)



Input	
Budgetary	
Item	**Cost ($)**
Rent	1000
Utilities	200
Salaries	500
Meat	250
Vegetables	50
Taxes	35

Output	
Programmatic	
Item	**Cost ($)**
Hamburger	5.00
Hot Dog	3.50
French Fries	1.75
Salad	1.50

Similarly, defense leaders cannot manage armed forces based on inputs alone. Though it is rarely stated explicitly, the citizens of a country expect their defense forces to provide capability in accordance with national objectives at an acceptable cost. If a nation is not able to provide relief and basic services to its people following a natural disaster, control or limit illegal incursions into its territory, defend against attacks from enemies, or respond to a call for help from a national ally, then defense leadership is not doing its job well. No citizen is going to give its defense leaders high marks for managing costs if the defense forces are not capable of providing service to the nation in accordance with its national security interests.

Every defense capability, whether a combat, combat support, or general administrative function, can be described as a program. The actual capabilities of that program are a function of the resources allocated to it. Thus, *defining programs is the foundation of programming*. A programming process enables this benefit because the program structure provides information on the resources required for each defense program over the mid-term planning period, which is typically four to six years into the future.

The program structure provides the capability to analyze collectively the impact of all capability or planning proposals considered by the defense enterprise and provides decision makers with increased assurance that plans and procurements they approve will be executed.

Earlier, we said a program describes the force in terms of cost and capability. To provide a more specific definition, a program is the combination of assets, activities, and services along with the financial inputs they require to produce a capability. Generally, the more budget available to pay for program resources (personnel, equipment, installations, or services), then the more capability will be produced.

An infantry brigade, a frigate, a fighter aircraft squadron, a munitions factory, and a central headquarters are examples of specific programs. These are also known as *program elements*. A program element is an individual program within the total defense program that represents a combination of assets, activities, and services along with the financial inputs required to produce a specific capability. As such, the program element is the smallest level of decomposition within a program structure. This will be described in more detail later in the paper.

Table 2. Illustrative Mechanized Infantry Brigade Program

	Base Year	PY1	PY2	PY3	PY4	PY5
Funding (Base Year $)						
Military Pay	115,350	—	127,275	127,275	127,275	127,275
Operations	67,500	68,000	70,000	73,500	78,000	82,000
Construction	—	200	—	—	—	—
Procurement	800	800	—	—	—	—
Total Funding (2014$)	183,650	189,700	197,275	200,775	205,275	209,275
Personnel						
Officers	345	360	375	375	375	375
Enlisted	4,300	4,500	4,750	4,750	4,750	4,750
Civilians	31	32	34	34	34	34
Total Personnel	4,676	4,892	5,159	5,159	5,159	5,159
Equipment						
Troop Carriers	126	126	126	126	126	126
Tanks	58	58	58	58	58	58
Howitzers	8	16	24	24	24	24
Operating Tempo						
Kilometers Driven/ Armor Personnel Carrier	500	500	500	500	500	500
Kilometers Driven/Tank	250	275	275	275	275	275
Rounds Fired/Howitzer	50	100	150	150	150	150

In Table 2, the brigade is expanding its artillery assets from a single howitzer battery to three batteries by PY2 (note the number of howitzers increases from 8 to 16 to 24). This requires additional procurement funds to purchase the howitzers as well as construction for additional billeting. It also requires personnel increases to operate the new batteries. Funding for military pay grows because of the additional personnel. Operations funding also increases to account for the increased equipment maintenance (a function of the amount of equipment and operating tempo) and the additional ammunition needed for the new howitzers. With this information, decision makers can see what the future cost of the brigade will be and better understand the effect on future budgets of the decision to field 16 additional howitzers.

B. Programs, Program Elements, and Program Structure

Being able to describe the entire defense establishment in terms of a program structure that subdivides the defense program budget into smaller programs and eventually program elements allows the senior defense leadership to more easily and

effectively manage and allocate the defense budget. A program structure depicts how resources are used by each organization or service in the defense establishment and/or by each mission area. The nature of a program structure is that it is flexible. Its design is according to how defense leaders wish to manage defense resources. In turn, this flexibility allows defense leaders to prepare policy and fiscal guidance, and to review and approve requests for resources based on the capabilities needed to achieve defense objectives. The capabilities relate to the program structure and the program structure relates to the budget, thus connecting policy and strategy to the budget.

The defense enterprise has a reason for its existence—it has a set of national security objectives to achieve. Therefore, the defense enterprise itself is the highest level of program in the program structure. Earlier, we referred to this as the Total Defense Program. At the lowest level of the program structure is the program element, an individual program that represents a combination of assets, activities, and services along with the financial inputs required to produce a specific capability. Related program elements can be bundled into larger groups also called programs where a common theme ties the program elements together. These intermediate aggregations are subprograms of the overall defense program. As defined in the glossary (Appendix F), a program is any grouping of resources that accounts for all the resources (e.g., money, personnel, equipment, supplies, and facilities) and integrates those resources into a plan for producing a specific operational or support capability that has a distinguishable output.

For example, Table 3 depicts the 10th Infantry Brigade as a program element. Though not depicted, there could be other program elements for related combat and support activities. The 10th Infantry Brigade and other program elements may be grouped together and treated as a subprogram called the Northern Territorial Land Defense Forces program. The Northern, Southern, and Western Territorial Land Defense programs may then be grouped together to form the Territorial Land Defense Forces program. The Territorial Land Defense Forces program may be grouped with air defense and naval coastal defense programs at a very high level to form the Territorial Defense Forces.

In all respects, the programs at each level of this hierarchy are still programs because they represent a combination of assets, activities, and services along with the financial inputs required to produce a specific capability. The Territorial Defense Forces program can be grouped with all other major force and support programs to form what would be called the National Defense Program. The buildup from the lowest level (the program elements) to the National Defense Program is the program structure. Table 3 is an example of a partial program structure.

Table 3. Example Program Structure

Program Number	Program Structure
10000	National Defense Program
11000	Territorial Defense Forces (Major Defense Program)
11100	Territorial Land Defense Forces (Subprogram)
11110	Northern Territorial Land Defense Forces (Subprogram)
11111	10th Infantry Brigade (Program Element)
11112	12th Infantry Brigade (Program Element)
11120	South Territorial Land Defense Forces
11130	Western Territorial Land Defense Forces
11200	Territorial Naval Coastal Defense Forces
11300	Territorial Air Defense Forces
11310	Territorial Missile Air Defense Forces
11311	5th Air Defense Battalion

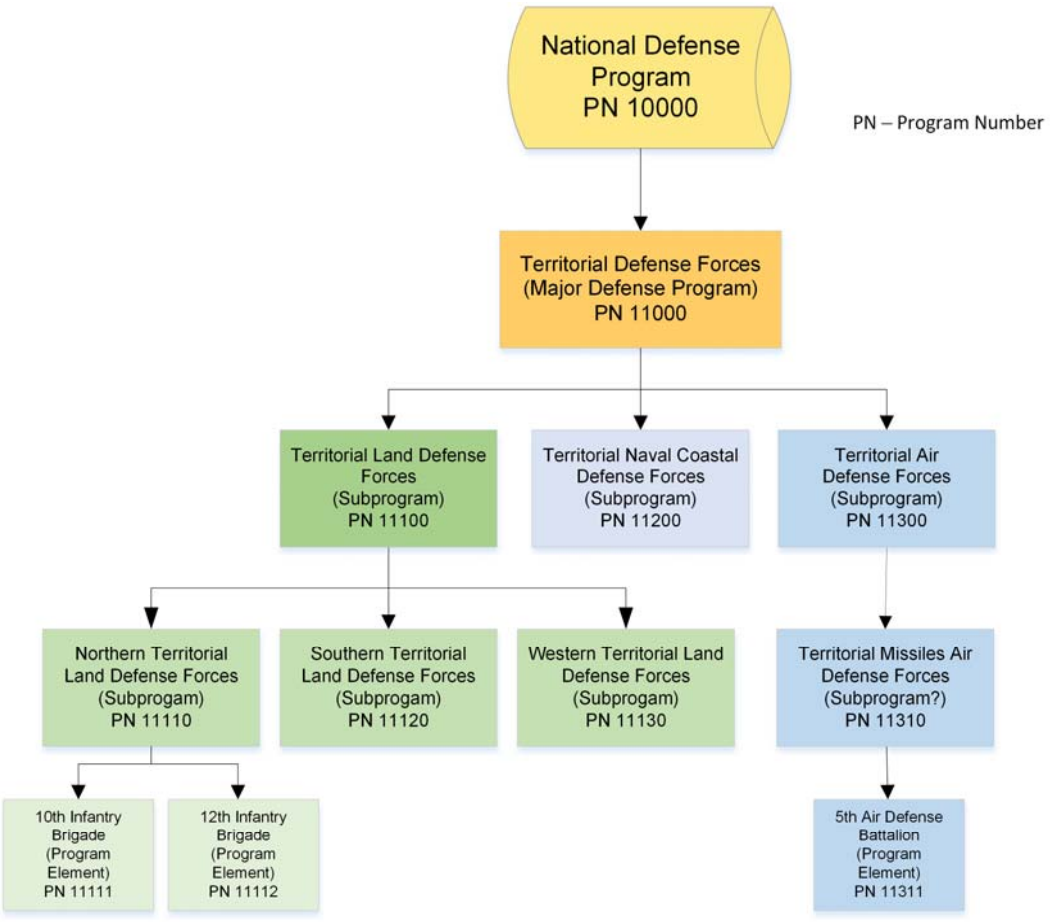
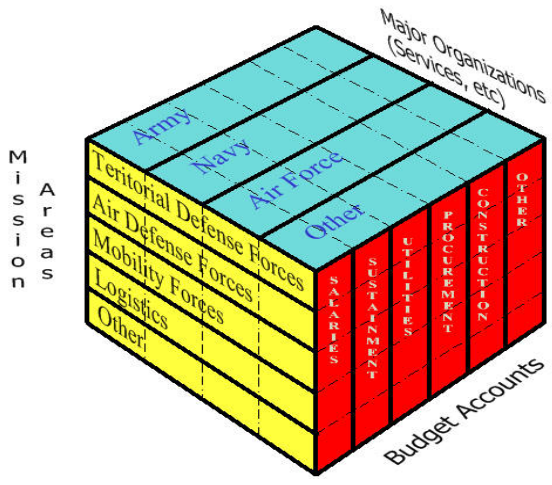


Figure 2. Example Program Structure – Graphical

Ultimately, the defense program depicts the mix of equipment, human capital, training, infrastructure, supplies, and other inputs for all the capabilities and activities of the defense establishment over a program period, usually between four to six years. A cost estimate of the defense program is prepared so the program can be evaluated based on affordability. Further, cost estimates of each subprogram within the total defense program allows program analysts to identify tradeoffs between capabilities and costs for the units associated with the accomplishment of defense objectives.

Frequently, the program structure follows the administrative organization of the defense institution so that program management responsibilities align with the authority that comes from the administrative or command position in the organization. The next section of this paper provides more information on how to organize a program structure. The main principle is that every identified program needs to be paired with an individual or office of primary responsibility.

Identifying program elements with defined, specific capabilities allows them to be grouped together in ways that provide additional and useful management insights. For example, one way is to use a program structure is to associate each program element with the primary mission area it supports. Appropriate tools, such as a relational database, to manipulate the data allow senior managers to see all efforts that contribute to each mission area along with the resources allocated to each mission area over the program's life cycle. With this basic arrangement of information according to organization, mission area, and budget account, the defense program is more effectively managed. Figure 3 is a multi-dimensional view of a defense program oriented by mission area and service.



Budget Accounts (*left, ascending*): Salaries, Sustainment, Utilities, Procurement, Construction, Other.

Figure 3. Multiple Dimensions of a Defense Program

Figure 4 provides a view of a notional Coast Guard program structure organized by capability and activity. On the left are the capability programs representing all the capabilities the Coast Guard provides to the nation. Each capability program is composed of five activity programs (in green). These represent the sum of all Coast Guard activities that collectively enable each capability. In yellow are the budget accounts for equipment, fuel, supplies and material, utilities, travel, and payroll.

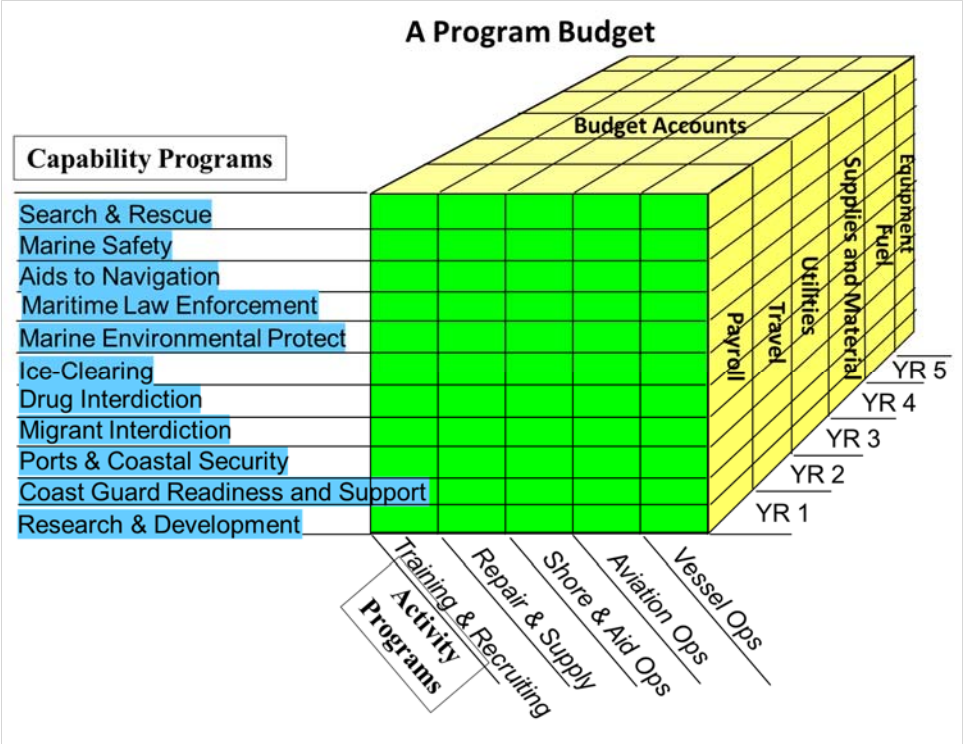


Figure 4. Notional Program Structure Organized by Capability and Activity

As a practical matter, it is nearly impossible to organize and analyze information on programs and resources without some form of electronic data repository. As technology has improved, these data are typically stored in a purpose-built database that serves as a management information system documenting program proposals. Eventually all details of an approved program will be stored, ideally, in a relational database. Relational program databases provide a powerful crosswalk between organizations, mission areas, capabilities, activities, budget accounts, or any combination of modeled categories within a defense enterprise's program database. Such a database or information system should facilitate reviews of program proposals and analyses of various program components, and enable defense planners to translate the program of record directly into annual budget requests[17].

[17] The role of relational databases in planning and programming is explained in IDA Paper NS-P 5361

Referring back to Figure 4, a relational database can easily compare payroll spending by capability or activity. The database could also compare the resources programmed for vessel operations in the marine safety program compared to the ports and coastal security program. The breadth and depth of the modeled program structure, the capability of the database being used, and the computing power available are the limits to the possible combinations.

Having an official program database that describes the approved defense program with detail down to individual program elements enhances transparency and understanding of what has been approved and is being executed. Furthermore, the approved defense program provides a common plan for all defense organizations to use. Also, if the program database is controlled in such a way to ensure the data are stable and not subject to unauthorized changes, it serves as the defense institution's baseline for the detailed staff work needed to implement the defense program. The existence of this common planning baseline contributes to both the effectiveness and efficiency of the entire defense effort. Finally, the baseline has its greatest effect when shared widely, which is generally much easier when electronic means are available.

Deciding how to model the entire defense program in terms of subprograms and program elements is an important early step in creating a new programming system. The model is referred to as the program structure. An assumption in many situations is that individual organizations or military units are the basic building blocks of defense. Organizations or units are where resources are integrated to produce capability. It is common to use individual units or organizations as the basis for defining program elements, the lowest level of the program structure. The challenge then is to determine what groupings of program elements provide capabilities that are most useful in representing the entire defense institution. The challenge of defining a program structure is a design choice of the defense institution. The typical choices and their comparative advantages and disadvantages will be discussed in the next section of this paper.

Another benefit of associating units or organizations with program elements is that there is a clear basis for assessing performance. Each unit or organization has been allocated specific resources by the defense program to accomplish its tasks and achieve its objectives. The defense program is a plan to produce capability within units. Further, the intended level of capability will enable intended outcomes. With that in mind, future performance (actual outcome) can be evaluated against the intended outcomes and then resources are adjusted up or down accordingly.

Another result from this process is that programming, combined with reporting and evaluation, may point to flaws in the assumptions made during an earlier round of planning or during strategy and policy formulation. For example, defense policy may set a ceiling for total compensation of personnel. The ceiling is set with the assumption that recruiting, training, and assignment capabilities are adequate to entice a sufficient number

of people to join or remain in the defense force. Capability assessments may reveal that no level of programmed resources will enable the unit or organization to realize its intended capability level because of a chronic inability to resource the unit with sufficient personnel. Therefore, we assume that the problem must be one that programming cannot address—and this points to a potential flaw in policy.

C. Designing a Program Structure

Typically, there are four ways to organize a program structure. These are by military service and/or major defense organization, major mission areas, functional areas, or types of forces.

The choice is depicted by dividing the defense program into major defense programs, which bring together all operational and support functions associated with the delivery of a general set of interrelated missions. Each of these four ways has advantages and disadvantages. In designing a program structure, decision makers must make compromises between what is desirable and what is most practical. Because the program structure is indicative of how data will be captured and measured, it can be controversial. A structure that creates consensus among the major stakeholders within the defense enterprise is more important than what may be the best structure for data analysis. Also, the program structure must be organized so the data required can be recorded, which means the data requirements cannot exceed the ability of the institution to collect it. Ultimately, the objective of a design choice is to be able to meet the specific needs of defense; thus, it is a decision that should be considered carefully. Each way of organizing a program structure is discussed in the following sections.

1. Military Service and/or Major Defense Organization

For nations that are adopting a program budgeting framework for the defense institution, this structure is the easiest to initiate. Budget accounts are usually organized by major organizations like the Air Force or the Army or the Defense General Purchasing Directorate. By making the organizational entity the major force program, it is easier to relate programming to budgeting. Also, this does not require the defense enterprise to change existing organizational structures oriented to budget preparation, execution, and monitoring. However, for nations seeking to reform and modernize its military in accordance with strategy or policy goals or to improve the efficiency of military operations, this structure is the least effective at accomplishing these goals. This is because it is a decentralized structure, which may allow the ministry of defense or the joint/general headquarters staff less ability than other program structures to either implement or direct changes to the defense program. Positively, it does not require large staff increases upon initiation, as it tends to rely on existing budget staff.

2. Major Mission Areas

This structure fits well with how a nation's leaders tend to think about military forces. For example, the mission given to the military by national leaders may be to provide continental air defense or to provide humanitarian assistance following a disaster. As a result, a mission based program structure is the easiest to relate to national strategy and policy and makes it easy to utilize for explaining the logic of a budget proposal to finance or planning ministries and legislatures. However, a mission based program structure is organizationally disruptive as military services tend not to be organized on a mission basis. Further, the management of the program structure is complex and requires a lot of staff capacity both in raw numbers and in analytic talent at the ministry of defense and/or joint/general defense headquarters. This complexity is because many defense organizations will contribute to a mission and most military units (the program elements) are able to contribute to multiple missions simultaneously.

A mission-based structure requires data from multiple organizations simultaneously, each of which is likely to have different ways and means for collecting, recording, and reporting data. It also requires agreement on the main mission any unit is assigned to within the program structure. This agreement may be very difficult to reach, especially for multi-mission units such as ships or aircraft squadrons. Finally, a mission-based structure implies the defense program manager is a central figure, either the minister of defense or the chief of the defense staff, as opposed to other program structures, which are less centralized.

3. Functional Areas

A functional based structure designates items such as personnel, training, central administration, or logistics and support as the major force programs in the program structure. This orientation tends to easily relate to the structure of the military headquarters staff and the headquarters staff of the individual military services. Typically, functional structure also relates easily to an existing budget account structure. Unlike a mission area structure, it can be decentralized and managed by each military service.

However, a functional structure makes it very hard to relate the effect of changes in one program to the budget requirements of other programs and like a mission area structure; it still requires a robust data collection and analysis capacity. This is because military units tend to contain all of the elements of a functional structure. Therefore, to report on a purely functional basis, the number of personnel, and levels of supply, communications equipment, etc., must be culled from each unit in order to make a purely functional based program structure useable. Another drawback is that a purely functional structure would tend to place modernization or investment expenses in its own program.

By isolating the investment expenses from the operating expenses, balancing the total program between an ideal mix of investment, personnel, and readiness is very difficult.

4. Types of Forces

A force-based structure (e.g. land forces, aerospace forces, special forces, or maritime forces) tends to fit well with how military services are organized, and this makes program and budget execution easier to relate to one another and monitor. This structure also makes it easier than a functional or service based structure to calculate the cost of specific capabilities and to propose trades within or between major force programs in order to balance personnel, investment, and readiness. However, because a military service will tend to have elements of each kind of force (e.g., a Navy may have ships, ground force marine infantry, and aerospace assets), the program structure must be centrally administered by the joint/general headquarters staff or the ministry of defense and this places a staff, data, and analytic burden on those central agencies. Table 4 summarizes the pros and cons for each of the four choices above.

Table 4. Pros and Cons of Different Program Structures

Program Structure	Program Mangers	Pros	Cons
Service or organization based	The chief of staff for each military service; organizational leaders for defense agencies	Direct relationship to military service structure; generally easy to translate into a budget and spending plan	Most difficult to relate to policy guidance
Mission based	Ministry of defense and/or general/joint military HQ staff	Easily relates policy to resources	Complex management Organizationally disruptive for multi-military service defense structures
Functionally based	General/joint military HQ for military service programs; organizational leaders for non-military service programs	Relates well to existing structure (e.g., personnel, logistics, communications)	Very difficult to balance between structure, investment, and readiness as it is difficult to relate equipment purchases to a function
Force based	Military services for force programs, general/joint HQ for joint operational and support capabilities, ministry of defense or general/joint HQ for national assets	Relates well to military service structure Easy to relate the cost of specific forces to their capabilities	Somewhat complex to manage central administration program as military services tend to have more than one type of force within their structure

Most defense institutions will find they ultimately arrive at a hybrid structure that reflects two or more of the choices list above. For example, DOD currently has 11 major defense programs:

1 – Strategic Forces
2 – General Purpose Forces
3 – Intelligence and Communications
4 – Airlift and Sealift
5 – Guard and Reserve Forces
6 – Research and Development
7 – Central Supply and Maintenance
8 – Training, Medical, and Other General Personnel Activities
9 – Administrative and Associated Activities
10 – Support to Other Nations
11 – Special Operations Forces

The list of 11 programs reflects at least two of the four choices as pictured in Table 5. A forces-based choice is reflected in programs 1, 2, 5, and 11. A functional-based choice is seen in programs 3, 4, 7, 8, and 9. Programs 6 and 10 may be considered a functional-based choice or a mission-based choice if research and development or support to other nations were considered to be a major mission area of DOD. As the major defense programs are divided into subprograms and eventually program elements, the structure will also reflect a service- or organizational-based structure because each military service and each major defense organization in DOD has responsibility to do its own programming before submitting the results to the Office of the Secretary of Defense.

Table 5. The 11 Major Defense Programs by Choice

Forces-based Choice	Functional-based Choice	Mission-based Choice	Service-based Structure	Organizational-based Structure
1 – Strategic Forces	3 – Intelligence and Communications	*6 – Research and Development	TBD	TBD
2 – General Purpose Forces	4 – Airlift and Sealift	*10 – Support to Other Nations		
5 – Guard and Reserve Forces	*6 – Research and Development			
11 – Special Operations Forces	7 – Central Supply and Maintenance			
	8 – Training, Medical, and Other General Personnel Activities			
	9 – Administrative and Associated Activities			
	*10 – Support to Other Nations			

* Programs 6 and 10 may be considered function-based or a mission-based choices; see preceding paragraph.

Table 6 is an abbreviated notional example of a hybrid program structure that combines design elements of a force, a function, a service, and a mission-based program structure. Strategic, tactical, and missile forces are force design. Army, Navy, and Air Force missile units are service design. Command and control, peacekeeping, and homeland defense reflect a mission design. Common support and training are examples of a functional structure.

Table 6. Notional Example of a Hybrid Program Structure

1 Strategic forces	1.1 Command and control	1.1.1 Command
		1.1.2 Control
	1.2 Missile forces	1.2.1 Army missile units
		1.2.2 Navy missile units
		1.2.3 Air Force missile units
2 Tactical forces	2.1 Command and control	2.1.1 Command
	2.2 Rapid reaction	2.1.2 Control
	2.3 Homeland defense	
	2.4 Peacekeeping	
3 Common support	3.1 Depots	
	3.2 Training	
	3.3 Bases and facilities	

To conclude, there is not a perfect program structure. The program structure is a design choice of the institution responsible to manage the defense enterprise. The best structure is the one that works in accordance with the institution's goals, existing culture, and its limitations and abilities.

D. Program and Functional Managers

Program managers are a critical component for maintaining accountability within the defense establishment. Just as program structures should encompass all defense activities, program managers should be designated so that one program manager is responsible for each program. Regardless of where program managers are assigned, they are the individuals responsible for translating program guidance into specific program plans, which they recommend and defend to the senior leaders above them. Program managers adjust their proposed plans to comply with senior leader decisions and are responsible for implementing the approved program plan.

In addition, while not essential, it is normally the case that program managers are designated with responsibility for a significant portion of the total Defense Program. The best practice is to designate the major defense stakeholders as the program managers for

that stake (e.g., the Air Force Program Manager) and then subdivide the major defense program into smaller, more manageable subprograms. Program managers are typically the commanders or chiefs of the military services and the directors or leaders of independent departments and agencies. Regardless of who is assigned as a program manager, what is important is that the program manager is held responsible for the results of the programs they manage.

Table 7 is an example of a two-tier program structure in which a major defense program is subdivided into smaller programs. Further subdivisions beyond what is depicted may be useful and necessary. Given the design of the program structure listed, this configuration would only be possible in nations that have already chosen to organize their force structure in the way depicted by Table 7. For example, if there is not a designated commander of the Territorial Defense Forces, then the program manager may need to be the chief of staff of the Army or the chief of defense. Alternatively, the program structure may need to change to better relate to the defense organization. Like designing a program structure, designating a program manager is a choice that should be made primarily based on the goals of the programming process and on what will work, given the national context.

Table 7. Example Program Manager Structure

Program Manager	Program	Subprogram	Responsibility
Commander	Territorial Defense Forces	—	Program and budget for all subordinate elements not assigned to Land, Naval Coastal, or Air Defense Forces
Commander	—	Territorial Land Defense Forces	Program and budget for all subordinate elements
Commander	—	Territorial Naval Coastal Defense Forces	Program and budget for all subordinate elements
Commander	—	Territorial Air Defense Forces	Program and budget for all subordinate elements

To the extent possible, program managers should have authority over the budget planning and spending that supports their program. However, many support functions are managed by their own program manager because they support many programs. For example, there is often one staff organization at either the ministry of defense and/or the military service headquarters level responsible for all aspects of personnel management. Likewise, there tends to be a central functional manager for logistics and often a central functional manager for training if training and personnel are managed separately. To some degree, all programs rely on personnel, training, and logistics. All of these are scarce resources. They are not available in an unlimited amount. For this reason,

functional managers typically centralize management of their resources to ensure they are allocated to the highest priority programs.

The role of program managers in planning and budgeting for centrally managed resources can vary, but the most effective relationship is to allow all the program managers that produce defense capabilities to state their requirements for centrally managed resources as part of the programming process. The functional managers responsible for centrally managed resources (e.g., personnel, training, and logistics) are then aware of all the requirements of all program managers. Once the program is approved either at the Defense-wide level or at a Military Service level, the functional managers can use the approved program to generate and justify detailed budget requests for centrally managed resources. The budget for centrally managed resources is then used to procure, store, distribute, and mange logistics resources or recruit, train, assign, and mange personnel resources.

Additionally, functional mangers also must manage that part of the defense institution that generates centrally managed resources. Therefore, functional managers are often assigned responsibility as the program manager for centrally managed resources (see discussion above on a functional-based program structure). As such, they must be able to describe the total program requirement to generate all of the resources that other programs depend upon.

As an example, consider fuel, a commodity often purchased centrally and distributed to the forces as required and based on some established criteria. Virtually every program needs fuel to operate vehicles, airplanes, ships, generators, or other equipment. The amount of fuel depends on the amount of equipment and its usage rate. Program managers for individual programs describe the type and quantity of fuel they plan to use within their program plans based on the training and operating objectives required to comply with defense guidance. The planned kilometers driven and the flying and steaming hours expended lead to a requirement for fuel to support planned training and operations. The amount of fuel and its cost determines how much money each program manager will allocate to fuel. Assuming all program managers comply with their fiscal guidance when building their program request, there will be enough money in the budget to buy all of the fuel the program plans call for even if all of that money is eventually spent by the central logistics support organization on their behalf. Failure to buy and deliver the planned amount of fuel will prevent the program manager from being able to complete all of the activities listed in his or her plan. The same principle applies to food, supplies, uniforms, ammunition, and a whole list of other commodities as well as to quantities and types of personnel.

To summarize, program managers establish requirements and describe how a program will utilize its resources. For centrally managed resources, functional managers build the budget plan and justify its use to purchase, acquire, recruit, or train those

resources and then distribute them in accordance with program managers' requirements. Figure 5 depicts these relationships.

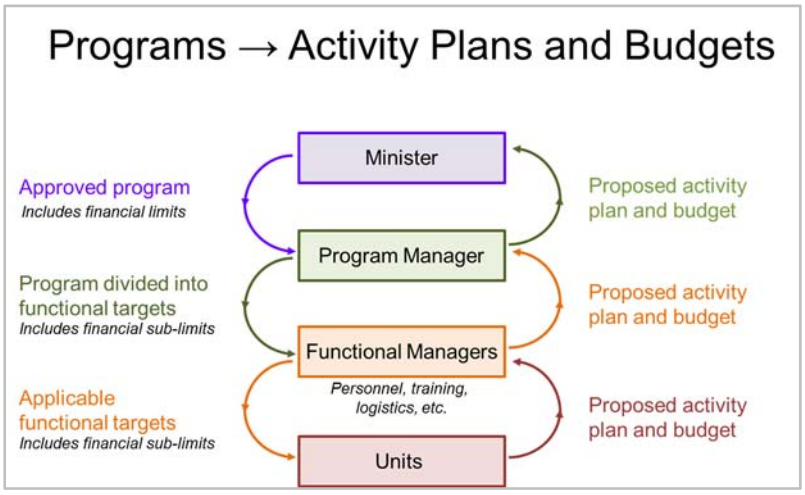


Figure 5. The Relationships between Programs and Functional Targets

3. Program Development Process

Program Development has three main phases: Phase 1, Program and Fiscal Guidance; Phase 2, Program Formulation and Recommendation; and Phase 3, Program Review. Each phase is addressed in its own section.

Although programming takes place simultaneously at several levels in the defense establishment, only the interaction at the ministry and military headquarters service levels is addressed in this paper.

A. Phase I, Program and Fiscal Guidance

Defense Program Guidance is prepared early in the programming process by the senior policy or planning staff and approved by the minister of defense or equivalent in nations where defense forces are not organized under a ministry of defense. Defense Program Guidance provides priorities for force development to include readiness targets, procurement objectives and as well as descriptions of acceptable program risk. Program guidance is based on national security and defense policies in whatever forms they are provided to the defense ministry. Program guidance translates the normally general statements of national security policy into more specific direction that describe the capabilities required to accomplish goals or objectives established at the national level. National-level guidance becomes the basis for joint military planning that produces specific courses of action and identifies requirements for forces and acquisitions that describe how gaps in capabilities can be corrected. Results of the approved capability and acquisition plans are consolidated and become the basis for program guidance. An example of Defense Program Guidance structure is shown in Appendix A.

Defense Program Guidance does not address all aspects of the defense program. Its focus should on the issues of most importance to senior defense leaders, and limited to describing a feasible set of goals that may be met within the resource constraints of the defense enterprise. The Program Guidance should also provide technical guidance on the program development schedule and special instructions on formats and information that must be provided. Finally, the guidance should be focused on the changes required to the existing program of record.

Fiscal guidance to inform defense program preparation is generally done by the senior programming and budgeting staff and approved by the minister of defense following the release of the Defense Program Guidance. The fiscal guidance conforms to

spending and policy constraints provided by the president or prime minister and the legislature. It communicates the fiscal constraints and restraints subordinates must comply with in developing their program proposals over the programming period. Often the fiscal guidance is divided solely along the lines of the major budget holders—typically the military services and independent defense agencies. Fiscal guidance can also be broken out among the major missions and functions, depending on the circumstances and the type of program structure adopted. The minister may also withhold some of the projected funding provided by the national government to use at his or her discretion during the program review process.

B. Phase II, Program Formulation and Recommendation

Once Program Guidance has been issued, program managers are charged with preparing a defense program that implements the guidance and serves as the basis for budget preparation. The starting point for programming efforts is the previously approved defense program, also known as the program of record. For those initiating a programming process, establishing a baseline, program of record is essential. A way to do this is to take the existing approved budget, assume no changes in force structure, and extend the budget four to six years, based on an inflation factor. Once a baseline is established and program guidance provided, efforts are then organized by program managers to prepare a coherent program plan.

Program formulation requires a dedicated programming staff to draw out and integrate information from a range of subordinate organizations to create a consistent set of recommendations compliant with program guidance and other inputs from leadership. Given that different people from a range of subordinate organizations are involved in the programming process, senior leadership of the effort is a requirement. This leadership is exercised in the form of policies, regulations, or directives that describe the process and the responsibilities of the various stakeholders in the process. Leadership will also be required to make decisions about controversial issues and to settle differences of perspective among the stakeholders in the process.

Generally, step one in program formulation is to incorporate all fact-of-life changes that have occurred into the existing program of record. Fact-of-life changes are things that were not previously accounted for and so must be accounted for before a new program proposal can be developed. Fact-of-life changes include statutory mandates, delays in implementing previously approved acquisition programs, cost-growth in ongoing projects, and changes in cost factors used to estimate the costs of commodities such as fuel, as well as revised inflation figures.

Once fact-of-life changes have been incorporated into the program baseline, subordinate organizations propose changes in their subprograms to comply with program

guidance, to implement changes in how their portion of the program will operate in the coming years, or to incorporate other approved actions. At the same time, support staff may propose other initiatives to improve program performance or efficiency, or even to start new types of activities.

How program proposals are formulated, reviewed, and integrated is a major design choice in the program development process. Remember though, a determinant of this choice will be the type of program structure utilized (see Table 4). An approach adopted in some large defense organizations is to have each military service or other large defense support organization (e.g., a central logistics agency) conduct its own programming effort in accordance with the program guidance provided by the ministry of defense. This choice is based on an assumption that military services and major defense agencies are the institutions responsible to deliver capabilities and best understand what is required to organize, train, equip, and sustain its units and organization to achieve the objectives of defense strategy.

Once program formulation is complete, the defense program is recommended to the major stakeholders and ultimately to the defense minister for review and approval. Depending on the laws and regulations of each country, the point of submission can vary. The program recommendation should satisfy all the goals transmitted by the program guidance within resource limits prescribed by fiscal guidance. If the program cannot satisfy all the goals within the resource limit then the shortfalls should be identified as part of the submission along with an explanation. Program recommendations are typically accompanied by formal presentations in which the submitting organization explains the major aspects of their proposal. This must include the risks associated with various alternatives, and a justification of the choices made. The program proposals and any identified shortfalls are referred to senior defense officials as topics of discussion during the program review.

In smaller defense institutions, the process of formulating and recommending the Total Defense Program may be simplified. Instead of having each of the major program managers for operations and support programs prepare his or her own program recommendations, a central staff in the military headquarters assembles the program following each program manager’s guidance. A baseline is established from the last program of record, fact-of-life changes are made to create a new baseline for new decisions, and then inputs are solicited from the subordinate organizations. The central programming staff acts as the integrator of the inputs, providing feedback to the major program managers when their portion of the program proposal exceeds fiscal limits. The central programming staff manages all the data and provides feedback to staffs within each major program manager’s organization. Since this approach is most often applicable in small defense institutions, the workloads are comparable to those experienced by the individual staffs when the work is done on a decentralized basis.

It is also possible to have a mixture of decentralized and centralized programming processes. This is a useful approach when there are a few large programs (e.g., in the military services) and several smaller programs whose needs must be represented. In these types of cases, the major program manager's staffs may prepare program proposals for their own organizations while a central programming staff may formulate the program recommendation for a number of smaller organizations.

C. Phase III, Program Review

Programs formulated and recommended by program managers are focused on their portion of the Total Defense Program. A program review evaluates program manager proposals to ensure they comply with program and fiscal guidance. The defense ministry staff and perhaps the staff of the joint military commander or the chief of defense (CHOD), review the program proposals for compliance with guidance and for consistency with other program plans where there are interactions. For example, do the air force and navy programs provide sufficient air and sealift for expeditionary land forces that will be deployed in a coalition peacekeeping operation? On an exceptional basis, the senior staffs then identify proposed adjustments to the proposals to improve cost effectiveness, reduce risk, or close capability shortfalls that were not adequately addressed. These issues, once accepted by the minister for consideration, are addressed in the program review.

There are numerous ways to conduct these reviews. In circumstances where the defense program is relatively large with many interacting elements, a formal process is used that systematically considers the program proposals. In this process, the topics of review are divided among small work groups to investigate each decision issue and develop feasible alternatives for senior leader decisions. These decision packages are then presented to the senior leadership for discussion and decision. Smaller defense programs may utilize a less formal, more streamlined process; however, senior staff offices still review the program proposals and the results are ultimately presented to the minister.

During a formal and structured review process, the minister's staff identifies issues for consideration by the minister in the form of short issue papers. An issue paper poses a question about a particular aspect of the program plan and offers alternatives to the proposed plan. The issue papers briefly describe the advantages and disadvantages of the alternatives, their risks, and the resources required (or saved). The minister, supported by his or her senior staff, considers each issue as well as the rationale of the program manager's initial recommendation before making a decision. The issue paper process is only for significant topics. Less important minor issues are addressed at lower levels, often through the office of the responsible senior staff member. An example issue paper format is shown in Appendix B.

During program review, the resources required are not represented with the same degree of granularity or precision as in a budget. The reason for this is twofold:

- First, senior decision makers are not subject matter experts on most of the issues they must decide. It is important not to overwhelm them with superfluous data and information not critical to making a decision.
- Second, gathering budget-level detail is time consuming and generally does nothing to differentiate between alternatives or clearly highlight the pros and cons of a particular issue.

To use our earlier Mechanized Infantry Brigade example (Table 2), we saw that a decision was taken to increase the artillery assets of the brigade by an additional eight howitzers in the first program budget year (PB1) and eight more in PB2. The issue paper that produced this decision could have been titled "Should Fire Support for the 10th Mechanized Infantry Brigade be Increased?" An issue paper may have provided alternatives to increasing the brigades artillery assets such as increasing the number of mortars vice howitzers in the brigade, creating an attack helicopter unit in the Army, or increasing the number of close air support aircraft in the air force to support 10th Mechanized Infantry Brigade operations.

Some of the minister's decisions may actually increase funding in individual programs to meet high priority requirements. Left unaddressed, these decisions would increase the Total Defense Program; therefore, this process must also include a process to select areas of the defense program that can be reduced. These reductions are referred to as trade-offs or offsets. Tradeoffs (or offsets) must be identified to pay for the additions because the defense program must remain within the forecast level of funding included in the fiscal guidance for each of the program years.

One other aspect of program review is the ex post facto program review. This review considers the historical record and analyzes the degree to which the defense program, as executed in the previous year's budget, accomplished what it was supposed to accomplish. Ideally, the review takes place at a time when the programming staff is not consumed with program review and preparation, and its results inform the next programming cycle.

D. Program Decision Documentation

Once all issues during program review are adjudicated, the decisions of the minister of defense are formally documented and the adjusted defense program becomes the new defense program baseline. The new baseline becomes the basis for the defense budget and a source of justification for budget requests, especially for investment accounts that usually require documented justification. In each subsequent cycle of the programming process, each approved defense program stands as the defense program plan for the

coming years until the next programming cycle, when it then becomes the baseline for future program planning. Consistent with the need to document the program review, the specific decisions and updated baseline should be widely distributed to defense stakeholders. This transparency lends credibility to future iterations of the process, and it allows all stakeholders to have a record of the decisions of the defense minister.

Figure 6 is a visual depiction of the program development process. As previously mentioned, centralization and structure of the program review are design choices that a defense institution's leadership must make. These choices, like any choices related to organizational design, should be based on the existing human capital, culture, size, and objectives of the institution. Also depicted in Figure 6 and as previously discussed is a database that serves as the database of record. The database of record enables program analysis during program formulation and review, and is an essential enabler of the program development process.

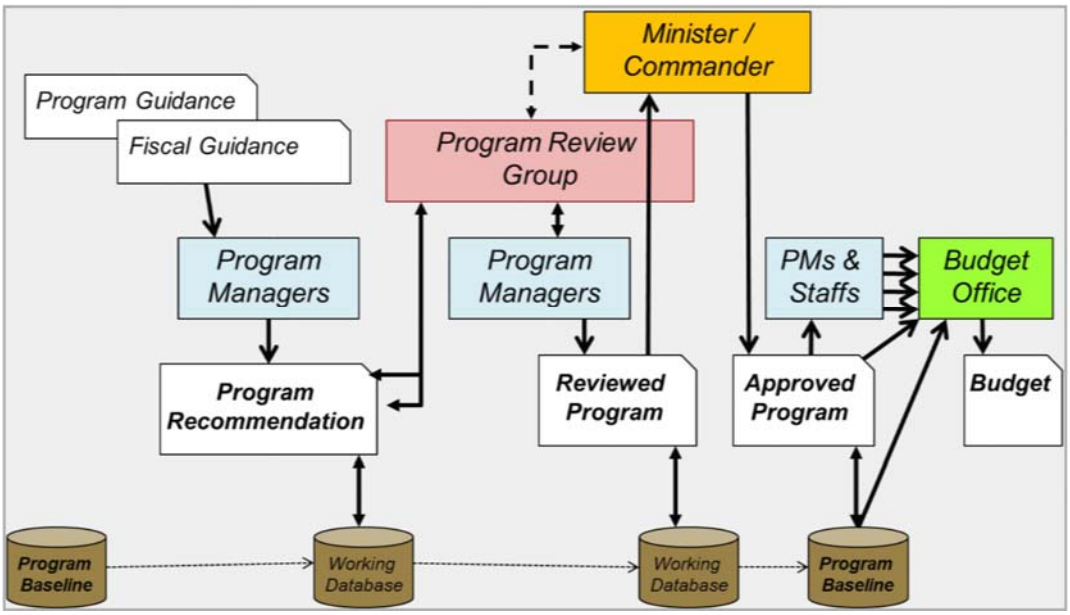


Figure 6. The Program Development Process

4. Support to the Program Budgeting Process

Program Budgeting relies on supporting capabilities and analytic staff capacity. Two supporting capabilities of particular importance to the process are cost estimating and information systems.

A. Cost Estimating

Program budgeting has value because it considers needs and cost simultaneously, and it produces a multiyear force structure and financial plan that projects the consequences of present decisions into the future. Accordingly, programming needs timely and accurate cost estimates. However, cost estimating is not simply extending current budgets into the future based on inflation or changes in the price of commodities or labor rates. Rather, good cost estimating depends both on estimating the continuing cost of current activities and on forecasting the costs of new requirements.

If the program plan envisions a new force structure and/or operating tempo, then cost estimates must be prepared so defense leaders can consider the requirements and the costs simultaneously. Good cost estimation is both an art and a science, based on logically supported analytic models. Also, cost estimating is a management exercise. It requires all stakeholders agree on assumptions critical to cost estimates. For example, estimating the future costs of operating and support requirements relies upon agreed to ground rules and assumptions regarding things such as the price of fuel, the number of training miles driven or flying training hours flown, and the consumption rate for supplies to ensure all program mangers' plans are costed on a consistent basis with all other plans. These ground rules and assumptions need to be documented and made available to all stakeholders to ensure transparency. Estimating the future costs of personnel that may be a mix of uniformed members of the armed service (both active-duty and reserve), government civilians, and contractors may also need a set of ground rules and assumptions to avoid controversy and arguments once the cost estimates are prepared. Once there are agreed ground rules and assumptions, an operation and support cost methodology or a labor cost methodology for the defense institution arises.

Good cost estimation is a mixture of routine data collection, scientific analysis, and judgment. It requires training and attention to detail. Best practice requires rigorous standards of documentation. Not everyone will have this skill. Cost estimating develops with experience. Individuals with these skills need to be recruited, developed, and managed. Individuals with a finance or economics background typically have the

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prerequisites, but those with other quantitatively intensive educations can often pick up the necessary skills. Cost estimating is seldom the basis for a full career. Therefore, individuals with cost estimating skills may need to move into and out of complimentary assignments. A very simple defense enterprise that does not acquire its own services or equipment and has a stable force structure from year to year may only require the ability to project the cost of current activities into the future. However, this is not the case for defense enterprises that employ significant numbers of personnel, have high capital expenditures, and a high operating tempo. Another option is to seek support outside the organization for the cost estimating function if the defense institution does not have the time or the resources to develop the capability internally.

One very subtle challenge is the existence and use of validated standards for costs. Many decisions pivot on an understanding of how the allocated resources compare with the level of resources needed for individual programs (often units and collections of units) to be fully capable of performing their assigned tasks. Unless senior leaders have a sense of how much is needed to be fully capable, there is not a solid basis for allocating resources and deciding how much is enough to have the desired capabilities. Information on historically spending is always a starting point for good cost analysis. It is also necessary to augment this with a practical understanding of the degree to which the amounts spent met the actual needs. When historical spending is not adequate, it is essential to pair cost analysts with subject matter experts who can work together to define cost factors that represent what is required. Once the required funding levels are known, it then becomes a policy decision with respect to how much of the total requirement will be funded. This requires the cost analysts to communicate, through clear documentation, the assumptions embedded in their estimates.

B. Information Systems

Programming is dependent on timely access to accurate, multi-dimensional data. Programming records costs and quantities (e.g., personnel, equipment, flying hours, kilometers, etc.), spans multiple years, and is organized in a program structure that allows analysts to make comparisons among a large number of data combinations. This approach requires a relational database that will support program analysis. Depending on the sophistication of an institution's existing data systems or data collection and recording processes, a programming database may use data from already existing finance and accounting, equipment inventory, personnel, readiness reporting, or logistics information systems. Finance and accounting systems typically provide data on the cost of assets, supplies, and services. Inventory systems provide information on the quantity of material on hand, on order, and routinely required. Personnel systems record number and type of personnel, duty location (e.g., unit), and often include individual training records. Readiness reporting focuses at the unit or organizational level and will record all

or some of the indicators of readiness (e.g., personnel fill rate, equipment fill rate, equipment maintenance rate, facility rate, and training rate). Other logistics systems may report on flying hours, steaming hours, equipment miles traveled, or rounds of ammunition expended.

If there are no existing data systems, or data collection and storage standards are inaccurate or non-existent, then developing a standardized and agreed set of data is critical. This process should include standards of data collection and reporting for the entire defense institution if a defense institution desires to institute program budgeting.

The programming database may draw data from other information systems. However, the actual programming database must exist as a stand-alone, fully integrated data set because it is a record of program proposals and final decisions. It is not a system to reflect changes in day-to-day conditions. It is an analytic database, not a reporting, status, or monitoring and evaluation system. Creating and maintaining a program database and updating it to reflect decisions made during program development and program review are essential to sustaining a programming process.

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5. Design and Management of the Programming Process

A. Design Choices

The size and complexity of a country's total defense program, its existing organizational structure, existing law, and the desired objectives for using a program budget process are all factors that influence process design. A country's institutional and societal tradition, as well as the defense sector's capacity to staff the effort, will also influence process design. Since programming is adopted to enhance senior leader decision-making, the process needs to be consistent with the decision-making preferences of the senior leaders. There is no one correct way to institutionalize a programming process, but there are principles, derived from experience and practices of good governance, that identify what needs to be accomplished.

A critical, early step in designing and implementing a programming process is getting the entire institution agreed to the terminology the programming process is going to use. A standardized taxonomy facilitates information exchange and communication across all the stakeholders in the process. Furthermore, it helps avoid arguments over the definition of terms during process design and implementation.

As an example, the word programming may not be the correct term for a given defense ministry and its armed forces. In Colombia, the Spanish word for programming is a term that is already defined as a national process to determine the government's investment budget. Therefore, the defense ministry of Colombia has agreed to avoid the term programming so the Colombian national finance ministry and the national planning directorate are not confused by the defense ministry's "*programming*" actions.

Two other characteristics crucial to successful implementation are transparency and prioritization. There are other design choices but only these two will be covered.

Transparency: Whether programming is a centralized, internal process of the defense ministry or a decentralized process given to the military services, it is important that all relevant defense stakeholders be aware of the rules and procedures of the process. In particular, all stakeholders must understand how the organization will be informed of the decisions of the programming process. This will not only improve the quality of the decisions, as experienced professionals have the opportunity to contribute ideas, but it will also foster understanding of the rationale behind program decisions. This lends itself broader acceptance and implementation of the decisions.

Prioritization: The programming process, by necessity, must address every activity that uses resources at some level of the organization. That does not mean that every detail needs to be reviewed by every level of the organization. Senior leadership's time and the senior staff's capacity to provide analytical support are limited. To avoid overloading the process and to ensure adequate time is available to address priority issues, it is important to focus attention on the most critical fiscal and policy issues facing the ministry. The issues that are most important vary from country to country and change over time. The programming process needs to be designed so that senior leaders can effectively communicate the issues of most concern to them.

An adversarial—where two parties advocate different positions on a particular issue—programming process may be appropriate in some countries but may not work well in others. Often the adversarial nature is nothing more than the natural commitment of the leader of a major stakeholder (e.g., a military service chief) acting as the program manager for that organization, reflecting his or her own commitment to the organization. There are choices that need to be made in how authority, responsibility, initiative, and review are distributed among the ministry, joint staff or joint military command organization, and the individual military services. Some countries may divide responsibilities along strictly administrative or organizational lines, and others may adopt more of a mission and function orientation. One approach is not universally better than another is. For these reasons, it is important to consider what will work best in each country.

B. Managing the Programming Process

Managing the day-to-day programming process requires a permanent staff section with unique skills. From its origins in the early 1960s in the United States, an impediment to successfully implementing a program budgeting process has been a failure to understand the skills and characteristics needed in a programming staff followed closely by an inability to recruit the right people.[18] Speaking to an audience of government leaders, David Novick, one of the founding fathers of program budgeting processes, said

> Recruiting and training analysts and building an analytical capability has been the largest single problem in applying program analysis… A point that cannot be emphasized too much is the fact that [program] analysis is truly interdisciplinary in nature. No single academic discipline has a lock on [it]. No one from any presently existing discipline can be a good [program] analyst unless he has acquired insights and skills from other surrounding disciplines. Knowledge that should be possessed by the ideal analyst is in the fields of mathematics and statistics. I do not mean

[18] David Novick, *Program Analysis Revisited* (Santa Monica, CA: RAND Corporation, 1971), http://www.rand.org/pubs/papers/P4690.

> anything very profound in either subject. Some of the more useful tools seem to lie in the field of vectors and matrices, some idea of basic notation, sampling techniques, probability, and simulation modeling…In addition, [the program analyst] must have a practical knowledge of the area in which he is working. He either must have this to start with, or he must gain it. It is not true that analysis can be applied in some sort of pure fashion to an area of public endeavor about which the analyst has no real insight or useful experience. He must also know something about budgeting; the way that budgets are constructed and the whole process of budget analysis, presentation, and approval. He must know something about accounting from the standpoint of information on the handling of accounts and how this information is aggregated and presented to management. He must know something about the management process en toto. He should have some insight into how large-scale enterprises are organized and managed. [The program analyst] does not really need great depth in any of these areas. There is no particular advantage in his being a recognized expert in one or more of these fields, but he must have a rock-hard grasp of the fundamentals in each area.[19]

Initially, the process may be staffed with people borrowed or reassigned from other offices, but it is critical that a long-term organizational and human resource solution be implemented as soon as possible. As Novick said, the programming office should include analysts who possess some specific mathematical skills as well as broad experience and expertise in key functional areas that directly relate to the area under management. Thus, in the case of a defense institution, fields such as military comptrollership, military personnel management, defense logistics and acquisition, defense intelligence, and land, air, and maritime operations are the career fields to find good program analysts. Where a professional civilian staff exists, analysts should be a mix of military and civilian personnel. The military staff members should rotate from their primary military specialties so they can bring current knowledge to the programming process yet remain on a career track with full potential for advancement. Military analysts provide insight as to the nature and conduct of military operations. Civilian analysts, since they are not reassigned as often, provide critical continuity in managing the process and generally possess the greater academic credentials. Although the office's focus is resource management, the office should not be subordinate to the budget department. Their responsibilities are different and programming can only make its contribution if its independence is maintained. To ensure the office is an honest broker and responsive to the ministry's analytic needs, it is important that the programming office have a direct link to the minister.

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[19] Novick, *Program Analysis Revisited*, 8–9.

The appointment of a senior staff member that oversees the programming process is a critical choice. This person in many ways represents the senior program manager—perhaps the chief of the military service—in the day-to-day work of the programming process. This person needs access to senior staff throughout the ministry and joint staff or military command as well as his or her programming counterparts within the defense enterprise. The senior programmer at each echelon must carry some of the authority of the program manager he represents when working with his fellow staff members. It is a difficult task and the individual selected should be among the most capable in the organization.

Implementing a programming process is challenging, and discipline in executing the process is critical to its becoming institutionalized. The critical resource is time. Much must be accomplished; and, although some overlap is possible, the planning, programming, and budgeting process must be sequenced so all work can be completed on time. The date for submission of budgets usually cannot be slipped, so planning and programming must precede budget development. However, it is not a given that every process (except for the budget process) must run every year.

Planning processes cannot be allowed to consume a disproportionate amount of time thereby squeezing the time available to complete the programming process. Likewise, a program process must finish in time to influence budget development or it is essentially useless. This responsibility ultimately rests with the minister. Resource management processes exist to support senior decision-making. If programming decisions are not made, the budget process will proceed anyway without the information that should come from the program of record. Programming cannot be delayed to the point where there is inadequate time for the senior decision makers to have time to deliberate the choices. To ensure that there is time for making considered decisions, programming schedules must be met.

Although programming can reduce the amount of uncertainty that decision makers must contend with by a fuller discussion of risk, uncertainty cannot be eliminated. The complexity of the defense environment and difficulty of forecasting future events still require timely decisions on the best information available. This will permit the ministry to take advantage of emerging opportunities and avoid being forced to react to events.

Finally, it is important that key programmatic resource decisions are adjudicated within the programming process. If important decisions are decided outside the process, its credibility will be compromised and decisions will no longer be fact based and subject to a fully transparent discussion of all alternatives.

6. Conclusion

In his 1971 RAND report on revisiting program analysis, David Novick writes

> [t]he primary reason for program budgeting is to provide an improved method for making decisions on the major policy issues an organization faces so that it can better determine the allocation of its limited resources.[20]

It does this with skilled analysts who have access to reliable and regularly reported data. Programming, the innovation within a program budget process that sets it apart from other means of preparing a budget, provides the critical linkage between the planning and budgeting functions:

- it relates resources to the mission areas and capabilities they support,
- it provides information for senior decision makers to review resource requests, and
- it allows decision-makers to balance current and future needs in accordance with fiscal limits.

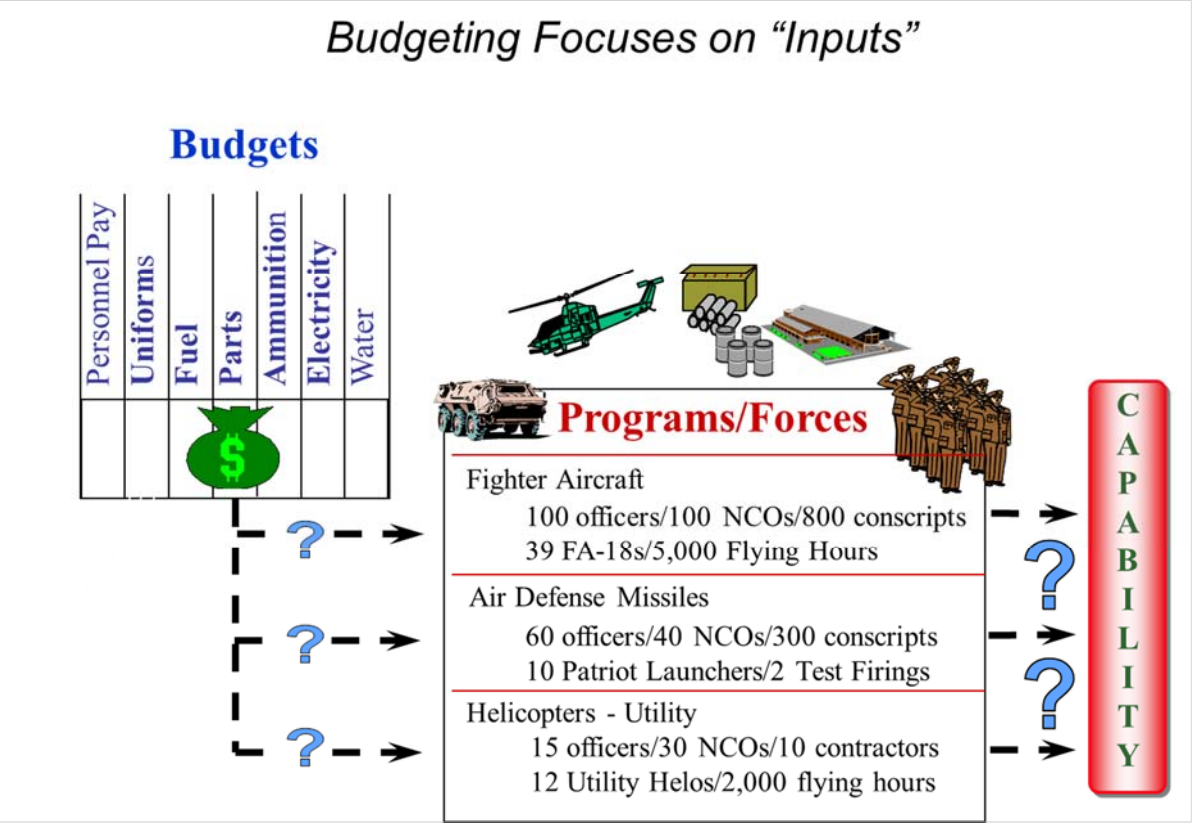
Once completed, the first year of the approved defense program is the basis for budget development. As such, strategy, through planning and programming, drives the budget as opposed to an annual budget process driving strategy because it is disconnected from planning.

Budgets are facts-of-life for all governments and defense institutions. They are a necessary tool for tracking and maintaining accountability of expenditures. However, a budget is an inadequate planning tool when expressed in terms of accounts that only list the inputs to the creation of capability—and capability is the desired output of a defense budget. Figures 7 and 8 graphically depict the point. Defense institutions limited by an annual budget process that only considers how much they may or can spend in a given budget account cannot possibly know how much capability their spending will produce. Figure 7 depicts a nation that sets its budget without first considering what capabilities it needs and estimating the necessary resource mix over time required to produce those capabilities. Thus, the budget is disconnected from planning and it cannot link to strategy.

However, those institutions that have implemented a program budgeting process and, accordingly, take a program perspective are able to quantify the requirements of

[20] Novick, *Program Analysis Revisited*, 2.

creating a capable force (the outputs) and understand how much the capability will cost (the inputs). Thus, a program budget allows for decision makers to match policy objectives with budgetary choices that lay within established fiscal constraints. It also enables decision makers to understand the risks they assume as a result of the choices they do not make. Figure 8 depicts the process in which a budget is formulated based on the capabilities required.



NCO – noncommissioned officer

Figure 7. A Budget Perspective

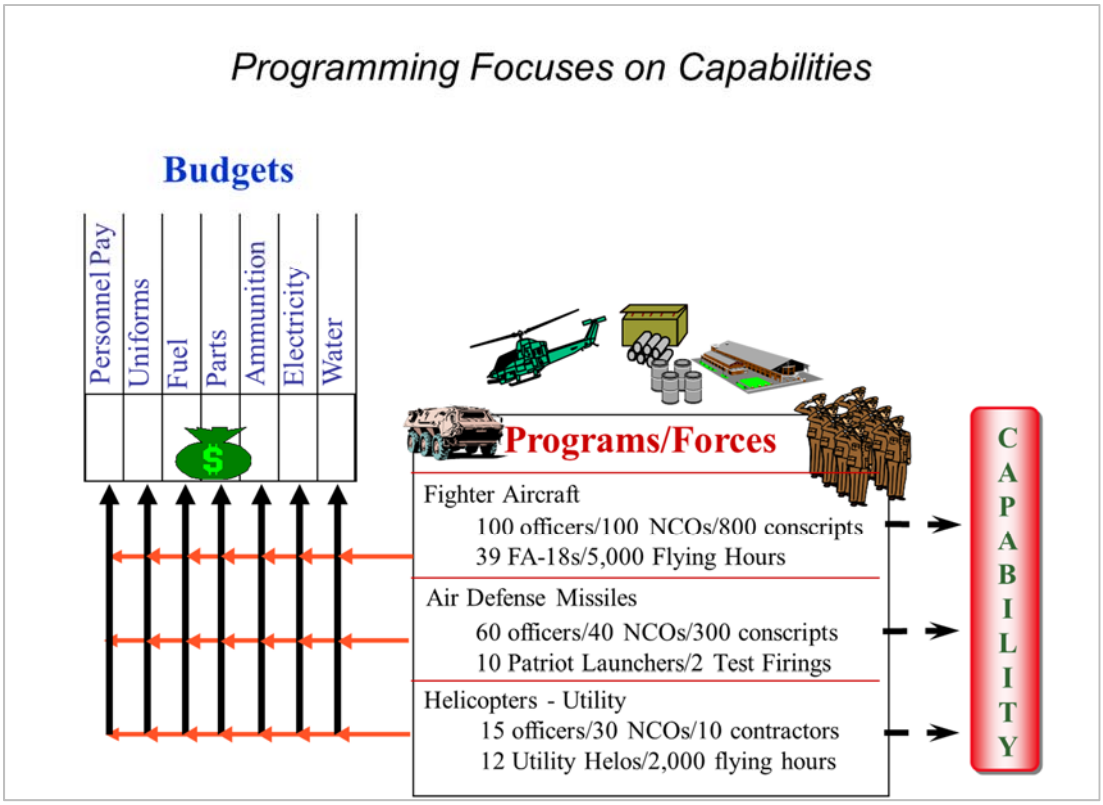


Figure 8. A Program Perspective

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Appendixes

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Appendix A
Example Defense Program Guidance Format

Part I: Program Priorities

Part II: Defense Strategy

- Strategic Tenets and Defense Policy Goals
- Force Planning Assumptions
- Risk Assessment

Part III: Forces, Organization, and Doctrine

- Transformation/Reform Goals
- Force Sizing (Active and Reserve)
- End Strength
- Organization and Special Warfighting Capabilities (Peacekeeping, Cyber)

Part IV: Logistics, Personnel, and Training Readiness

- Logistics (Material, Depot Maintenance, Field Maintenance)
- Personnel (Military and Civilian Recruiting, Retention, Separation, Personnel, Operating Tempo, Education, Quality of Life, Medical)
- Training and Exercises (Individual, Collective, Joint, and Combined)

Part V: Equipment

- Research and Development
- Procurement (Army, Navy and Marines, Air Force and Air Defense, Special Operations Forces)
- Interoperability

Part VI: Infrastructure

- Installations (Construction and Housing)
- Training and Exercise Ranges (Ground, Air, Maritime)

Part VII: Technical Instructions

- Schedule (Program, Program Review, Budget, and Budget Review)
- Program Proposal Format

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Appendix B
Issue Paper Format

Issue Title: A short descriptive title of the program or issue to be addressed stated as a question.

Organizational Priority: Organizational priority [#] of [#]. Identify who submitted the issue and its priority if they have submitted more than one issue.

Summary: Provide a brief description, no more than two paragraphs, of the issues involved in the issue paper. It should describe the capability shortfall and why it should be addressed. For example, is it a compliance issue where the military service did not adequately respond to the planning guidance?

Risk: What are the implications and/or potential consequences if the issue is not addressed?

Current Program: Describe the capability of the current program and the fiscal and personnel resources associated with it. (It is understood the current program is one of the potential alternatives the decision maker may select.)

Program Enhancements: Identify the enhancements that should be considered to address the issue. Each alternative would be described in the same level of detail as the description of the current program but would also include the relative pros and cons of the alternative.

Summary of Proposed Enhancements: This is a table summarizing the title of each alternative, including the current program, the fiscal and personnel resources required for several future years (typically five but usually not less than four or more six), and the quantity of equipment to be purchased if it is a procurement issue.

Offset: What current program(s) can be reduced or eliminated to pay for the enhancement?

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Appendix C
Other Types of Budget Systems and a Comparison to Program Budgeting

As a best practice, program budgeting is recommended as the ideal means for any nation's defense institution to organize its resource inputs to create armed forces capability. Specifically, capability is the output that budgeting should produce, based on deliberate planning that ties the budget to strategy within a fiscal constraint. Through the use of a program budget, a defense ministry is able to control its resources on a line item or cost account basis, and plan for the future allocation and management of resources based on cost data that provides budgetary choices among competing policy options. However, the defense ministry of a nation may have to comply with a pre-existing budget process other than program budgeting.

Thus, a defense advisor will have to determine whether the incorporation of program budgeting principles is even possible; and if so, to what degree. It may also be possible for a national budgetary system or the defense institution's budgetary system to be so basic in its structure that program budgeting is beyond the capability of the partner nation's budget and analytic processes. This appendix describes budgetary practices other than program budgeting so defense advisors are familiar with the terminology and principles that underlie what is described in the following sections.

To begin with, for an extensive treatment of how to assess and recommend reforms to budget practices in general, the World Bank's *Public Expenditure Management Handbook*, though nearly 20 years old, is still a comprehensive guide applicable to any government institution.[21] The handbook is an excellent primer on the topic of budget systems and public expenditure management.

As mentioned in the opening paragraph, a program budget system serves two purposes:

- First, a budget should control and account for allocated financial resources.
- Second, a budget is a plan for the future allocation and management of resources.

[21] World Bank, *Public Expenditure Management Handbook* (Washington, DC: World Bank, June 1998), http://documents.worldbank.org/curated/en/1998/06/693508/public-expenditure-management-handbook.

To explain the first purpose, a budget system should impose an aggregate fiscal discipline on the government. This means the government

- knows where its revenues come from,
- collects those revenues,
- allocates those revenues to expense accounts with a purpose,
- monitors whether government revenues are spent in accordance with the intended purpose, and
- enforces discipline on government agencies that do not comply with fiscal rules or laws.

A budget system that can do these things but little else may be referred to as a line-item budget or a control budget. In essence, a line-item budget system is a control measure. The line-item budget is discussed in more detail in section A.

A. Line-Item Budget or Control Budget

A nation without fiscal control measures in place is subject to significant corruption risk in basic processes such as the collection, allocation, and expenditure of public revenues. A line-item budget system seeks to install controls to mitigate the risks of corruption and to instill aggregate fiscal discipline on the government. However, a line-item budget provides no insight into why the budget is allocated the way it is, and it cannot be measured for efficiency or effectiveness in expenditures. It only allows government managers and oversight agencies the ability to know whether public funds were spent in the way they were intended to be spent.

1. Attributes of a Line-Item Budget

- Detailed list of planned expenditures by line-item, cost, or budget accounts.
  - The detailed list specifies how much money a particular government agency, organization, sub-unit, etc., may spend on personnel, travel, fringe benefits, equipment, etc.
- Usually includes procedures to limit or prevent overspending.
- Simple to prepare based on historical revenue and expenditure precedents.

2. Limitations of a Line-Item Budget

- Provides no information as to why money is spent—expenditures cannot be linked to strategy and policy objectives.

- Usually associated with a short time-horizon leading to failure to consider longer-term costs.
  - Encourages incremental thinking.
  - Promotes the creation of a structural deficit.
- Perpetuates status quo incrementally, especially when budgets are prepared solely based on historical expenditures and revenues.
- Provides little useful information to decision makers on the functions and activities of organizational units.

According to the World Bank handbook, line-item budgeting is a reform, "born of a concern that the lack of adequate spending controls was contributing to an environment where there was increasing danger of substantial corruption." [22] Thus, line-item budgeting promoted accountability over the detailed use of resources and effective control of budget accounts. In the 1940s and 1950s, academics such as Peter Drucker[23] as well as intergovernmental efforts, emphasized results or outputs over the control of inputs as the basis for managerial and spending decisions. The change in focus increased the responsibility of budget officers, from merely accounting and auditing, to managers able to use the budget formulation process to manage for efficiency and objectivity.

A well-known early use of these techniques comes from the Organization for European Economic Cooperation or OOEC (the predecessor to the Organization for Economic Cooperation and Development). Based on the stipulations for receiving aid delineated in the United States' Economic Cooperation Act of 1948 the OOEC's 18 member countries were collectively responsible for preparing the post-World War II European Recovery Program to justify the expenditure of financial assistance provided by the U.S. Economic Cooperation Act of 1948, i.e., the Marshall Plan.

The OOEC divided its responsibility among economic sectors (e.g., transportation, utilities, manufacturing, mineral extraction, labor force development) to organize requests for assistance along the parameters stipulated in the Marshall Plan.[24] On the U.S. side, the Economic Cooperation Administration (ECA) was established to administer the aid. The ECA director was appointed by the U.S. president and, according to the law, was responsible to review, appraise, and approve projects submitted to the ECA director by

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22 World Bank, 11.

23 See Drucker Institute, http://www.druckerinstitute.com/.

24 "Organisation for European Economic Co-operation," http://www.oecd.org/general/organisationforeuropeaneconomicco-operation.htm.

OOEC member nations.[25] Performance-based budgeting provided a technique for complying with U.S. law and rationalizing the allocation of aid (inputs) so it was focused on achieving performance goals (outputs).

B. Performance-Based Budgeting

At times, performance-based budgeting is referred to as activity-based budgeting, for reasons you will see shortly.

The most basic form of performance-based budgeting aims to ensure that key decision makers systematically take into account the results to be achieved by expenditure when formulating the budget. Performance-based budgeting has two essential requirements:

- Information about the objectives and results of government expenditure, in the form of key performance indicators and a simple form of program evaluation; and
- A budget preparation process designed to facilitate the use of this information in funding decisions, including simple expenditure review processes.[26]

Performance-based budgeting usually categorizes proposed expenditures into activity accounts that estimate all the resource inputs necessary to carry out an annual or recurring activity such as performing fleet maintenance on government vehicles. It can also be applied to long-term projects such as road or school construction. A key goal is to ensure efficiency of spending. To do this, the outputs of an activity or project are described in terms of a performance measure that relates an activity or project to its total costs. A program budget also has these attributes. Therefore, it can be argued that a program budget is a more advanced performance budget, which classifies expenditures into groups of similar activities or projects (i.e., programs) with similar objectives to help decision makers compare the costs and benefits of expenditure options.

1. Attributes of a Performance Budget

- Does not lose any of the positive attributes of a control budget.
- Uses the budget as a means of tracking and measuring efficiency in spending.

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25 *United States Government Manual*, "Economic Cooperation Administration" (Washington, DC: US Government Printing Office, [1948]); http://marshallfoundation.org/library/wp-content/uploads/sites/16/2014/05/Economic_Cooperation_Administration_1948.pdf.

26 Marc Robinson and Duncan Last, *A Basic Model of Performance-Based Budgeting, Technical Notes and Manuals* [series] (Washington, DC: International Monetary Fund, Public Financial Management Blog, 2009), http://blog-pfm.imf.org/files/fad-technical-manual-1.pdf.

- Relates the purpose (the outputs or the objectives) of an organizational unit or activity to its inputs.
- Useful for activities that are routine in nature (e.g., accounts payable) or discretely measurable (e.g., vehicle maintenance or school construction).

2. Limitations of a Performance Budget

- Not structured to enable policy makers to evaluate the appropriateness of a funded activity (or program). It does not enable analysts to easily offer budgetary choices among various policy options.
  - Efficiency, a main historical reason for performance-based budgeting reforms, is not a sufficient criterion for allocation of government resources.
- Still subject to short-term focus because of the discrete nature of activities and their performance measures.
- Like program budgeting, performance or results-based budgeting requires a trained analytic staff, access to reliable future and historic cost and budget data, and a transparent decision-making process.
  - Not likely to be successful where political and/or bureaucratic leadership is corrupt or rent-seeking.[27]

Another form of performance budgeting that has gained a constituency over the past two to three decades is referred to as results-based budgeting or RBB. As described by the Council of Europe, RBB is a budget process that revolves around a set of pre-defined objectives and expected results that justify the resource requirements. These are derived from and linked to the outputs required to achieve such results.[28] Performance in achieving results is measured by objective performance indicators. The main idea of RBB is to connect an activity's means with its ends.[29] RBB itself is a subset of a broader practice referred to as results-based management.

The United Nations Educational, Scientific, and Cultural Organization (UNESCO) defines RBM as

> results-based management is a participatory and team-based approach to programme planning and focuses on achieving defined and measurable

[27] When a company, organization or individual uses its resources to obtain an economic gain from others without reciprocating any benefits back to society. (See Appendix F, Glossary, for the definition.)

[28] The Council of Europe was established to promote the rule of law in Europe, http://www.coe.int/t/budgetcommittee/Source/RBB_SEMINAR/ RBB_Manual_en.pdf, 4.

[29] Presentation by Virginie Besrest, "Seminar on Results Based Budgeting: Objectives, Expected Results and Performance Indicators (Strasbourg, France: Council of Europe, 24 September 2012), http://www.focusintl.com/RBM062-RBB(2012)4_en.pdf.

> results and impact. It is designed to improve programme delivery and strengthen management effectiveness, efficiency, and accountability. RBM helps to move the focus of programming, managing, and decision-making from inputs and processes to the objectives to be met. At the planning stage, it ensures that there is a necessary and sufficient sum of the interventions to achieve an expected result. During the implementation stage, RBM helps to ensure and monitor that all available financial and human resources continue to support the intended results. To maximize relevance, the RBM approach must be applied, without exceptions, to all organizational units and programmes. Each is expected to define anticipated results for its own work, which in an aggregative manner contributes to the achievement of the overall or high-level expected outcomes for the organization as a whole, irrespective of the scale, volume, or complexity involved.

Upon cursory inspection, there appears to be little to no significant difference between program budgeting and RBB. In fact, it may be possible to introduce program budgeting reforms within a defense institution that exists in a nation with a results-based budgeting public expenditure framework and encounter no difficulty as program budgeting would also help to ensure that all available financial and human resources (the inputs) support desired results (outputs). Further, a program budget approach would agree that the Total Defense Program should be an aggregate accounting of the overall expected outcomes for the organization as a whole.

Difficulties may arise if the central financial ministries in a nation (e.g., the ministry of finance or the ministry of planning) require the defense ministry to justify its proposed expenditures with measurable results, that is, on the basis of how expenditures serve the public. In these cases, the defense ministry may either try to justify defense spending on the basis of secondary missions such as national development and disaster relief or it will attempt to prove a negative to justify its expenditures. The negative result used to justify spending would be something like “no attacks on commercial ships at sea,” or “no incursions by adversarial actors in sovereign land or airspace.” These statements are not results—they are objective statements on the primary purpose of armed forces, which is to defend and secure a nation and its people.

If a national results-based budget and public expenditure management system is in place and the defense ministry is allowed no deviation on how it justifies expenditures when compared to a transportation or education ministry, then a course of action for the defense ministry is to organize its budget programmatically and based on capability. However, it will still need to report results to its finance ministry on a unit or organizational basis with unit- or organizational-level performance measures.

C. Zero-Based Budgeting

The last budget process to be mentioned in this appendix is zero-based budgeting. Zero-based budgeting was a 1970s-era reform that proposed to prepare a national budget by evaluating all expenditures in the budget each year. For example, in zero-based budgeting, questions such as "What if we eliminated the Navy" or "What if Defense had only 75% of the funds it had last year?" or "What if defined-benefit contribution systems were eliminated from government workers' compensation packages and were instead the starting points for budget formulation?"

While the ideas had some constituents, the practice proved overwhelming and politically impossible to carry out. (No government has the staff capacity to completely evaluate everything every year.) However, a zero-based budgeting approach is still used in some nations on a one-off basis to evaluate a specific government program or organization.

D. Summary

To conclude, a line-item budget is a control measure and focuses only on inputs, not outputs. Consequently, it cannot provide insight into how efficient or how effective government expenditures are. Performance, results, and program budgets consider outputs. For a defense ministry, the outputs should be focused on capability. An output-focused budget process requires some prerequisites, which the World Bank accurately summarizes:

> Regardless of the output considered, what can be said is that where budgeting systems and processes are performance [output] oriented it is because the institutional framework both encourages and demands performance. Such a framework embodies incentives for ministers [or vice-ministers and the senior armed forces leadership within a defense ministry] to cooperate on key strategic decisions; for individuals [major force program managers] to be given authority over program decisions and to be held accountable for living within their budgets; and for managers to manage, but the framework demands that they manage well.[30]

[30] World Bank, 16.

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Appendix D
Illustrations

Figures

Tables

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Appendix E
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Appendix F
Glossary

Term	Definition
defense program	A multi-year plan spanning four to six years for acquiring, operating, and sustaining the capabilities needed to accomplish the objectives or carry out the missions assigned to the forces under the control of a nation's defense institution (e.g., the ministry of defense).
major defense program	A subcategory under the defense program that accounts for all the resources (e.g., money, personnel, equipment, supplies, facilities) within the category. Major defense programs can be defined by military service, by major functional categories, by mission areas, or a combination of these. The major defense program brings together all operational and support functions associated with the delivery of a general set of interrelated missions.
program	A subcategory of a major defense program that accounts for all the resources (e.g., money, personnel, equipment, supplies, facilities) within the category and integrates those resources into a plan for producing a specific operational or support capability that has a distinguishable output.
program activity	An activity that consists of creating, costing, and comparing program options for implementing program guidance within the limits imposed by fiscal guidance. Program analysis occurs during program formulation and review.
program budgeting	A type of budgeting that relates all the costs of an organization's inputs (e.g., salary and benefits, supplies, and material, investment, research and development, construction, maintenance, rent, utilities, etc.) to the outputs an organization intends to achieve over a multi-year period normally spanning between four to six years.
program element	The lowest level of a program structure; a further subdivision underneath a program. A program element must be definable by the resources it consumes (the inputs) and the specific outputs the resource inputs are intended to create.
program guidance	Prepared by the senior policy or planning staff of a ministry of defense and/or the joint/general headquarters staff and approved by the

Term	Definition
	minister of defense or equivalent in nations where defense forces are not organized under a ministry of defense. States policy priorities for forces, readiness, procurement, construction, etc. as well as risk, and is based on national security and defense policies in whatever forms they are provided to the defense ministry. Translates the general statements of national security policy into more specific direction that describe the capabilities required to accomplish goals or objectives established at the national level.
program manager	Within a centralized programming process, the program manager is the senior official responsible for developing the defense program and then implementing the approved program. In a decentralized program, the program managers are the senior defense officials responsible to the minister of defense or the chief of defense for developing and implementing their portion of the defense program.
program review	A process led by either the ministry of defense or the chief of defense staff which evaluates program manager proposals to ensure they comply with Program and Fiscal Guidance.
program structure	A necessary design choice in any institution the desires to implement a program budgeting system and which organizes resource data in a multi-year, relational structure that enables programming.
programming	The process within an overall planning, programming and budgeting (or program budgeting) system that links strategy and planning to budgeting through a deliberately planned allocation of available resources. Programming should explicitly present different options to achieve policy objectives within a resource constraint.
rent seeking	When a company, organization or individual uses their resources to obtain an economic gain from others without reciprocating any benefits back to society.
structural deficit	A budget deficit that results from an habitual imbalance in government receipts and expenditures as opposed to a cyclical deficit which is based on one-off or short-term factors. A structural deficit between defense investment and defense operating accounts exists when the operating budget is chronically or habitually unable to pay for the operating and sustainment costs of equipment delivered to the force by way of a government purchase or through equipment grants or donations from a foreign partner.

Appendix G
Abbreviations

CHOD	chief of defense
DFARS	Defense Federal Acquisition Regulation Supplement
DOD	Department of Defense
ECA	Economic Cooperation Administration
EEOC	European Economic Cooperation
HQ	headquarters
IDA	Institute for Defense Analyses
KM	kilometers
NCO	noncommissioned officer
OECD	Organization for Economic Cooperation and Development
OOEC	Organization for European Economic Cooperation
OPTEMPO	Operating Tempo
POC	point of contact
POL	petroleum, oils, and lubricants
PY	program year
RBB	results-based budgeting
RBM	results-based management
UNESCO	United Nations Educational, Scientific, and Cultural Organization
U.S.	United States
VA	Virginia
WPB	War Production Board

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Part 2.
Defense Governance and Management: Program Analysis Seminar

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Part 2. Contents

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Lesson Plan for the Seminar Leader

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Contents

1 Introduction

Part 2 constitutes a complete lesson plan for conducting a seminar with members of foreign defense establishments on the topic of program analysis. The seminar material contains a PowerPoint slide deck with annotations for the seminar leader, a student learning progress sheet, two training exercises with paper handouts, and a Force Oriented Cost Information System (FOCIS) database for student use in the seminar exercises. When fully implemented, the lesson plan requires approximately 16 hours of instruction time; four half-days of instruction works well. Facilitators are encouraged to modify the lesson plan as needed for maximum effectiveness in a particular country. The following sections describe the lesson plan's overarching purpose, specific learning goals, content and organizational structure, pedagogic approach, and recommendations for use and modification.

Managing defense, its armed forces and various agencies and organizations, is a complex endeavor. A capable and effective defense carries high recurring costs for personnel and recurring operations as well as a high requirement for capital expenditures. Modeling the structure of the defense sector, estimating and forecasting its costs, and conducting analyses of the relationship between structure and cost requires a relational database. Succinctly put, program budgeting requires a relational database to conduct program analysis. FOCIS is a program budget analysis tool developed by the Institute for Defense Analyses (IDA) for program analysts. It is a relational database that can estimate and forecast the cost of a user-defined force structure, and model how changes in force structure affect cost. This is an aid to defense leaders who are required to produce a capable defense sector within a budget limit.

Given all defense leaders must produce a capable defense within a budget limit, FOCIS has historically proven to be a very effective tool to demonstrate the relationship between force structure and cost during Department of Defense security cooperation efforts at the institutional level; with foreign ministries of defense and armed forces' staff. It is also an effective tool to use during defense seminars designed to familiarize audiences with principles of program analysis.

This seminar is designed to be used with FOCIS. Its target audience is those people who have (1) limited experience with program budgeting and (2) no established technical means to help them implement program budgeting principles. However, the seminar is not an introduction to FOCIS. So, it requires some familiarity among seminar attendees with FOCIS. If this seminar were to be used in a nation that has no prior experience with FOCIS, the seminar lead will need to modify the delivery of the seminar prior to its use. This document provides suggestions for how to modify the seminar in section 6.

2 Purpose

The purpose of this lesson plan is to familiarize seminar attendees with the skills needed to conduct program analysis. It is *not* a comprehensive guide to the topic of program budgeting. Here, we distinguish between the two areas:

- Program analysis is a narrow activity that consists of creating, costing, and comparing multi-year, fiscally constrained programmatic options for implementing capability proposals.
- Program budgeting is the broader framework of bureaucratic design and decision processes in which program analysis occurs, as explained in part 1.

We stress the distinction because the seminar material focuses on imparting an analytic methodology and technical skill using FOCIS. To the extent program budgeting is discussed it is only introductory. For a full explanation of program budgeting, refer to part 1 as well as the following IDA documents:

- Gordon, C. Vance, and Wade P. Hinkle. 2011. *Best Practices in Defense Resource Management*. IDA Document D-4137. Alexandria, VA: Institute for Defense Analyses, January. Approved for pubic release, distribution is unlimited.
- Tillman, Mark E., Alfred H. Gollwitzer, Gregory H. Parlier, Charles V. Fletcher, and Wade P. Hinkle. 2010. *Defense Resource Management Studies: Introduction to Capability and Acquisition Planning Processes*. IDA Document D-4021. Alexandria, VA: Institute for Defense Analyses, August. Approved for pubic release, distribution is unlimited.
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Note: When approved for public release and unlimited distribution, IDA documents are available through the central repository of the U.S. Government, the National Technical Information Service (NTIS), www.ntis.gov.

3 Specific Learning Goals

The institutional ability to conduct program analysis requires personnel with a broad range of skills such as

- a *conceptual* understanding of program budgeting and its role in relation to other aspects of defense management.
- *technical* skills such as mastery of advanced relational database (i.e., FOCIS) functions and quantitative analytical techniques, and
- *procedural* knowledge, the ability to conduct program analysis as a series of explicitly defined steps that allow for institutionalization.

To achieve these skills, this lesson plan includes 31 specific learning goals, organized into eight (8) modules. The goals and modules and are listed in Part 2, "Materials Provided" and "Modules and Lessons Cheat Sheet." The learning goals relate to students demonstrating mastery of a particular conceptual, technical, or procedural skill required for program analysis. The majority of these goals consist of students becoming able to answer correctly in their own words questions such as, "What is the purpose of program budgeting?" or "What is a FOCIS analytic model?" Other goals consist of students successfully completing hands-on exercises in which they use their newly acquired skills to conduct real program analysis on a fictional force structure.

Student progress towards these goals is tracked in Part 2, "Student Learning Progress – Handout." This lists the 31 learning goals, on which students write answers to the learning goals (stated as questions) as they gain knowledge during the seminar. It can be thought of as an untimed, ungraded test: it serves as an assessment mechanism by which the instructor can gauge student comprehension and modify lessons accordingly (e.g., spend more time on a question that students have trouble answering). An instructor's answer key to the Student Learning Progress sheet is also provided in Part 2, "Student Learning Progress – Instructor's Key."

4 Pedagogic Approach

Defense seminars are fundamentally an exercise in adult education. Thus, they profit from adoption of pedagogic best practices. There is consensus that quality of teaching is one of the most powerful determinants of student learning outcomes (Barber and Mourshed 2007). As for what constitutes 'good teaching', academic research has empirically demonstrated that some teaching methods result in greater student learning than others. This lesson plan is implicitly designed to incorporate these methods, which are listed below, and the PowerPoint presentation has notes for the instructor on how to best implement them.

Outcome orientation refers to the idea that teachers should explicitly identify desired learning outcomes, and tailor educational plans towards their achievement. Though definition of desired outcomes can be controversial, there is little doubt that good teaching starts with identifying what students should learn. This lesson plan incorporates outcome orientation in multiple ways.

First, every seminar module starts with an overview of what the student should learn by the end, and all content within the module is explicitly tied to achievement of these goals. Students individually track their progress using the Student Learning Progress Sheet. Note that this emphasis on outcomes is *not* a synonym for "drill and kill" rote memorization. Seminar goals include open-ended, higher-order thinking such as the ability to expound on the overall purpose of program budgeting; outcome orientation is simply a way to ensure this and all other relevant topics receive their due attention.

Second, *scaffolding* calls for giving students large amounts of support and structure when first learning new material, and gradually decreasing the amount of support as they acquire competence, eventually leading to independent command of the material (Rosentine and Meister 1992). In the context of this lesson plan, trainees first receive a lecture on program analysis, then undergo a simplified pen-and-paper exercise, then conduct a structured FOCIS exercise. Each module is progressively more complex and has less teacher support. A goal is that by the last two modules, seminar attendees will be able to autonomously conduct program analysis in response to open-ended prompts. Seminar leaders are advised to tailor their verbal presentation in a similar manner: high specificity and structure in the beginning, and gradually transition to less support as students gain competence and confidence.

Third, *mixed-methods instruction* refers to the research finding that there is no "magic bullet" educational method, and that teachers should employ a range of techniques to accommodate students' diverse learning styles (Muijs and Reynolds 2010). This lesson plan includes lecture, teacher-guided whole-class work, and small group work. The latter two methods rely on student participation. This may be difficult to achieve, particularly in countries

where culture inhibits participation. A common barrier is the fear of being publicly wrong and hence losing social status or "face." Another one is the reluctance to speak in a way that may appear to challenge the instructor because it is considered disrespectful. The instructor should stress that this is a learning exercise in which it is acceptable and even desirable to publicly grapple with complex, unfamiliar topics. If possible, seminar attendees should be of roughly similar bureaucratic rank in order to prevent status-conscious subordinates from deferring to their superiors.

Fourth, *assessment* calls for teachers to use feedback mechanisms that force students to demonstrate comprehension of a particular point before the lesson continues (Hattie and Timperly, The Power of Feedback 2007). This allows teachers to benchmark student performance in relation to learning goals so that adjustments can be made as needed (Hattie, Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement 2008). Almost all sub-modules in this lesson plan incorporate some assessment mechanism: for example, students must accurately describe Zed's[1] force structure using FOCIS before they are allowed to conduct a program analysis exercise with FOCIS. Instructors are advised to hold firm on these requirements. If students do not fully comprehend the foundational skills taught in earlier modules, they will struggle in later modules, blunting the lesson's effectiveness.

Finally, *higher order thinking* refers to the amount of time teachers devote to specific, practical "low-order" questions (e.g., what button to press in FOCIS for a merge command) versus general, conceptual high-order questions (e.g., what is the purpose of program budgeting?) (Bloom 1956; Anderson, Krathwohl and Airasian 2000). Research indicates that a combination of the two results in the greatest student learning (Cotton 1988). The lesson plan is designed to provide both. Modules with very high-order subject material have low-order feedback mechanisms: for example, the section explaining the overall purpose of program budgeting (high order) requires the students to list six specific steps within it (low order).

[1] Zed is a mythical nation introduced during the seminar.

5 Host-Nation Assumptions

This seminar is optimized for a target audience with preexisting knowledge of defense planning, programming, and budgeting, the nature and necessity of relational databases, and familiarity with FOCIS. These assumptions may not hold true for all countries in which a user desires to use this material. Host-nations with resources and analytical capacity exceeding this lesson plan's design may find it unchallenging and uninformative, while less-resourced nations may find it overwhelming. In either case, a prospective user can and should modify this lesson plan to make it relevant, but this requires understanding of the lesson plan's core assumptions.

This lesson plan assumes seminar participants have already received instruction on or are familiar with defense planning, programming and budgeting because it freely uses terms like, capability planning, which is trade language jargon. If the trade language is not familiar, the lesson plan as written is probably not comprehensible. Although the lesson plan does provide detailed instruction on some advanced FOCIS functions, it assumes that students are familiar with the FOCIS program's layout and basic operations (e.g. adding and deleting units and creating cost factors) and provides no instruction on these points.

It is worth unpacking why FOCIS is needed at all. Theoretically, one could learn program analysis without any computer assistance. After all, the original program budgeting system on which much of this lesson plan is based was created in an era of slide rules and carbon copies. However, in order to conduct program analysis, the analyst must simultaneously juggle the two balls of force structure and cost. Or said another way, capability and budget. An analyst must describe all relevant costs of the defense enterprise over a multi-year time period, *and* describe the actual defense capability bought given those costs. Performing a cross-walk between these two is difficult without some sort of computer database that integrates the information in a single place. FOCIS performs this function.

This lesson plan assumes attendees have a medium to high level of literacy, mathematical skills, and computer literacy. Students are required to digest large amounts of written material and produce their own. Students are expected to independently conduct quantitative analysis, and so need roughly a U.S. middle school level of mathematical sophistication. Finally, students are assumed to have basic computer skills: e.g., understanding how to move the cursor, save and retrieve files, and the like.

Lastly, the lesson plan assumes a dedicated conference room, an instructor's computer, a projector, a white board or other visible writing surface, and multiple student laptops with FOCIS installed are available. A student to laptop ratio of two to one is ideal, but students can work in larger teams if there are not enough laptops available. Internet access is not required.

6 Recommendations for Modification

If any of these assumptions are not true for a particular audience, the seminar leader should review and modify the lesson plan or risk a suboptimal outcome. Each situation category identifies potential violations of assumptions and recommends how to modify the lesson plan accordingly.

Situation: Students have little or no prior familiarization with principles of defense planning.

Possible Solutions:

- Add an introduction to defense planning prior to Module 1. The introduction does not need to be comprehensive, but should cover:
  - An overview of the management and planning processes of defense institutions
  - Discussion of overall purpose of defense planning and what it is based upon
  - Definition of national security strategy, national military strategy, and other terms selected for the seminar and date.
  - Definition of military capability and its relation to units
  - Definition of capability planning

Situation: The host-nation has little or no familiarity with FOCIS.

Possible solutions:

- Add FOCIS training between Modules 3 and 4, and reduce the complexity of Modules 4, 5, and 6. Walk students through step-by-step (project the seminar leader's computer running FOCIS onto the screen), rather than having them work independently in small groups.
- Run a FOCIS-less version of the lesson plan by omitting Modules 4, 5, and 6.

Situation: Students have very low literacy, numeracy, academic experience, etc. Note that this seminar is designed to be comprehensible by a high school graduate, so "very low" in this context means any level of education lower than that.

Possible Solutions: This seminar should never be planned for such an audience; however, if the seminar leader finds his or her audience to be largely uneducated then.

- Run a FOCIS-less version of the lesson plan by omitting Modules 4, 5, and 6.
- Decrease the number of slides and the complexity of language.

- Rework numbers to qualitative descriptions: for example, from "$1 billion" to "very expensive."
- Convert independent group-work exercises to teacher-led collaborative whole-class exercises.

Situation: Students are not available for the full 16 hours.

Possible Solutions:

- The minimum lesson plan is only running Modules 1–3 (completion time: 5.5 hours). Further modules can be added as time allows.
- Do not skip Modules 1 and 2—they are the backbone of this lesson plan.

Situation: The host-nation has few or no FOCIS-installed laptops.

Possible Solutions:

- Bring extra laptops or, if available, tablets. IDA task leaders may approve the purchase of computing equipment in advance of the seminar..
- Increase the number of students to laptop ratio..
- Run FOCIS on the instructor's computer, display it using the projector, and have students tell the instructor what to do (rather than directly controlling their own computers).
- Run a version of the lesson plan without FOCIS by omitting Modules 4, 5, and 6. The students should still gain a good understanding of program analysis and obtain practical experience via the pen and paper exercise in Module 3.

7 References

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8 Abbreviations

COTS	commercial off the shelf
DTIC	Defense Technical Information Center
FOCIS	Force Oriented Cost Information System (database)
IDA	Institute for Defense Analyses
NTIS	National Technical Information Service
PPBS	Planning, Programming, and Budgeting System
U.S.	United States
VA	Virginia (United States)

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IDA

Student Learning Progress – Handout

Please bring this handout
every day of the seminar

<Name of Instructor>
Instructor

<Location>

01 May 2016 – 04 May 2016

Approved for public release; distribution is unlimited.

Student Learning Progress – Handout

Please bring this handout every day of the seminar.

Purpose Statement

The purpose of this seminar is to familiarize you with the skills needed to conduct Program Analysis. Program Analysis is a Program Budgeting activity that consists of creating and comparing multi-year, fiscally constrained options for implementing capability proposals on the basis of their cost and the capability produced.

This handout is a seminar aid. It supports the purpose of the seminar. Its purpose is to allow you to evaluate your learning progress.

The handout outlines each of the eight seminar modules according to their learning objectives. There are 31 learning objectives. Each learning objective is stated as a question or a request. At the end of the seminar, if you have replied to all 31 objectives, you will be familiar with the skills needed to conduct Program Analysis.

During the seminar, answer the questions at the same time I am addressing them in the seminar. Do not wait until the end of each day or the end of the seminar. Also, this handout is for you to keep. It is not a test and I will not grade it. Its purpose is to allow you to evaluate your learning progress.

Finally, please keep this handout after the seminar is over. It will be a useful reference for you in the future.

Seminar Instructor

(Facilitator - Insert Your Name Here)

Contents

Module 1: What is Program Budgeting?

1. What are the problems that Program Budgeting addresses?

2. What is the definition of Program Budgeting?

3. How is Program Budgeting different from traditional budgeting?

If needed, continue your answers on page 21.

4. What is the relationship between Program Budgeting and Program Analysis?

5. What are the six (6) principles are of Program Budgeting?

(1)

(2)

(3)

(4)

(5)

(6)

6. Please draw your own program structure that might represent your own nation's defense program.

If needed, continue your answers on page 21.

Module 2: How to Conduct Program Analysis

7. What are the inputs and outputs of Program Analysis?

8. Please list the six (6) steps of Program Analysis.

(1)

(2)

(3)

(4)

(5)

(6)

9. Please describe how to identify tradeoffs to make a program affordable.

If needed, continue your answers on page 21.

10. An Issue Paper is a way to present program options. What are the information elements that should be included in an Issue Paper?

If needed, continue your answers on page 21.

Module 3: Pen and Paper Exercise #1

11. Please break into small groups and complete the assigned exercise.

(Notes)

If needed, continue your answers on page 21.

Module 4: Introduction to Zed

12. Please describe Zed's strategic environment, Mission Areas, military services, and geographic commands.

13. What is Zed's yearly defense budget for the years 2016 through 2019?

14. Which military service has the most personnel and the highest budget?

If needed, continue your answers on page 21.

15. What is an Analysis Model in FOCIS (Force Oriented Cost Information System)? How do you run a report using one or more analytical models?

16. Which Mission Area has the most personnel assigned to it?

17. Which geographic command has the most Territorial Defense personnel assigned to it?

If needed, continue your answers on page 21.

18. Which Zed units are part of the Strategic Mobility program, and what kind of planes do they have?

If needed, continue your answers on page 21.

Module 5: Zed Baseline

19. What changes would cause a Baseline to be updated? Give specific examples.

20. What are the five (5) steps of creating a new Baseline?

(1)

(2)

(3)

(4)

(5)

21. What changes should be made by the Central Office? Which changes are made by the Services?

If needed, continue your answers on page 21.

22. List the administrative and procedural safeguards to ensure proper use of the **Merge** function?

23. What are special considerations for merging each of the three types of data? Setup Data? Unit Data? Cost Data?

24. How can you update the Baseline without using Merge? Under which circumstances should this be done?

If needed, continue your answers on page 21.

Module 6: Zed Program Analysis Exercise #2

25. Please break into small groups and complete the assigned exercise.

(Notes)

If needed, continue your answers on page 21.

Module 7: Information Needed for Program Analysis

26. What information immediately precedes Program Analysis?

27. What informs capability planning?

28. What informs joint concepts and doctrine?

If needed, continue your answers on page 21.

29. What informs Defense Strategy?

If needed, continue your answers on page 21.

Module 8: Review and Reflection

30. Please draw a Venn diagram mapping the conceptual, technical, and procedural skills you have learned?

31. Program Analysis is performed within a Program Budgeting system. What needs to happen for Program Budgeting to be established as a standard practice in the Ministry of Defense and armed forces of your nation?

If needed, continue your answers on page 21.

If needed, continue your answers here. Identify the module and section numbers. (Example: Module 5, question 19: …)

Notes (1)

Notes (2)

Notes (3)

Notes (4)

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Student Learning Progress – Instructor's Key

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Contents

Module 1: What is Program Budgeting?

1. What are the problems that Program Budgeting addresses?

- The disconnect between budget and strategy, leading to non-capable or unaffordable military

2. What is the definition of Program Budgeting?

- A management process that links strategy and budgeting through deliberate planning and programming steps. Program budgeting defines a multi-year, integrated force and support program, and allocates the available resources and finances among the individual programs to achieve a total defense program that achieves the highest priority national defense goals

3. How is Program Budgeting different than traditional budgeting?

- Traditional budgeting focuses on inputs
- Program Budgeting focuses on outputs

4. What is the relationship between Program Budgeting and Program Analysis?

- Program Budgeting is an entire defense management process
- Program Analysis is a sub-component of Program Budgeting that is focused on creating affordable and effective programmatic options

5. What are the six (6) principles of Program Budgeting?

- Decisions should be based on explicit criteria of national interest, not on compromises among institutional forces.
- Needs and costs should be considered simultaneously.
- Major decisions should be made by choices among explicit, balanced, feasible alternatives.
- The Minister of Defense should have an active analytic staff to provide him with relevant data and unbiased perspectives.
- A multiyear force and financial plan should project the consequences of present decisions into the future.

- Open and explicit analysis, available to all parties, should form the basis for major decisions.

6. Please draw your own program structure that might represent your own nation's defense program.

Module 2: How to Conduct Program Analysis

7. What are the inputs and outputs of Program Analysis?

- Program Analysis converts capability proposals (inputs) into programmatic options (outputs)

8. List the 6 steps of Program Analysis

- Step 0: Establish Program Baseline
- Step 1: Review Priority Challenges and Gaps
- Step 2: Review Proposed Solutions to Gaps
- Step 3: Quantify Program Solutions
- Step 4: Cost and Trade Off
- Step 5: Present Affordable Options

9. Identify how to make tradeoffs to make a program affordable.

- Totally eliminate some of the new proposals
- Scale back some new proposals
- Cut existing programs to afford new proposals

10. What information should go into an Issue Paper?

- Issue Title: Descriptive title of issue
- Organization Priority: What priority is this, and who prioritized it?
- Summary: Describe capability shortfall and why it should be addressed
- Risk: What are implications of not addressing issue?
- Current Program: What is the Baseline?

- Program Enhancements: What are the options?
- Summary of Proposed Enhancements: What would the future budget be?
- Offset: what tradeoffs are being made?

Module 3: Pen and Paper Exercise

11. Break into small groups and complete the assigned exercise.

Module 4: Introduction to Zed

12. Describe Zed's strategic environment, Mission Areas, services, and geographic commands

- Strategic environment: insurgency in East, aggressive neighbor to South, peaceful neighbor to West, foreign peacekeeping in North Mission Areas: Territorial Defense, Internal Security, International Peacekeeping, Central Support
- Geographic Commands: Northern Region, Eastern Region, Southern Region, Capitol Region
- Services: Army, Navy, Air Force

13. What is Zed's yearly defense budget for the 2016-2019 period?

- About 994,000,000

14. Which service has the most personnel and highest budget?

- Army

15. What is an Analysis Model in FOCIS? How do you run a report using one or more analytical models?

- An Analysis Model allows a FOCIS user to map units to some user-defined concept, rather than to services or budget categories
- Examples: Program Structure, Mission Areas, Operating Areas, etc.

16. Which Mission Area has the most personnel assigned to it?

- Territorial Defense

17. Which geographic command has the most Territorial Defense personnel assigned to it?

- Eastern Command

18. Which Zed units are part of the Strategic Mobility program, and what planes do they have?

- 113th and 114th Air Mobility Squadrons, C-130s

Module 5: Zed Baseline

19. What changes would cause a Baseline to be updated? Give specific examples.

- *De Jure* (legal) or *De Facto* changes
- Approved changes in the program of record (additions or deletions) that were directed outside of the deliberate and periodic capability planning and programming process
- Changes in implementing previously approved plans – For example, the delivery schedule for new aircraft or trucks is delayed by manufacturing problems and the fielding of the new equipment is delayed.
- Reorganization of units/agencies that may require a change in the program structure
- Other Fact of Life changes such as a change in the rate of inflation or in the estimated price of essential commodities such as oil and gas

20. What are the five (5) steps of creating a Baseline?

- Use Save As to make a new Baseline from the existing position
- The Central Office makes all changes that apply to all subordinate users
- The Central Office distributes the updated Program Baseline to subordinate services and agencies
- Subordinate agencies adjust their Baseline based on "fact of life" changes and return their updated Baseline positions to the Central Office

- Central Office merges the subordinate Baselines into a single new Defense Program Baseline

21. What changes should be made by the Central Office? Which can be made by the services?

- Changes affecting all users (e.g., Set-Up data, Cost data, etc.) must be made by the Central Office
- Changes affecting only a single subordinate user can be made by that user

22. List the administrative and procedural safeguards to ensure proper use of the Merge function.

- Always make a backup prior to any Merge.
- After any Merge, verify that the expected and only the expected changes were made

23. What are special considerations for merging Setup data? Unit data? Cost Data?

- When a Setup Merge is performed, new items are added and changes in item characteristics are made, but no Setup data items are removed from the To position
- Units must have the same year span. The "Top Unit" button allows the user to control how far up or down the chain of command that unit changes are felt.
- Cost Merges do not combine Cost Data, they replace ALL of the Cost Data in the Open Position with the corresponding type of data from the To Position.

24. How can you update the Baseline *without* using Merge? Under which circumstances should this be done?

- Use **Save As** on existing Baseline to create new Baseline
- Make changes
- Once all changes have been made, you have the new Baseline
- The **Merge** method of Baseline updating is ideal for gaining a comprehensive picture of MoD, but is difficult and time-intensive
- The **no-Merge** method is better for quick-turnaround projects.

Module 6: Zed Peacekeeping Exercise

25. Break into small groups and complete the assigned exercise.

Module 7: Information Needed for Program Analysis

26. What information immediately precedes program analysis?

- Capability planning

27. What informs capability planning?

- Joint Concepts and doctrine

28. What informs joint concepts and doctrine?

- Components of Defense Strategy, specifically scenarios, mission area decomposition, wargaming and experimentation

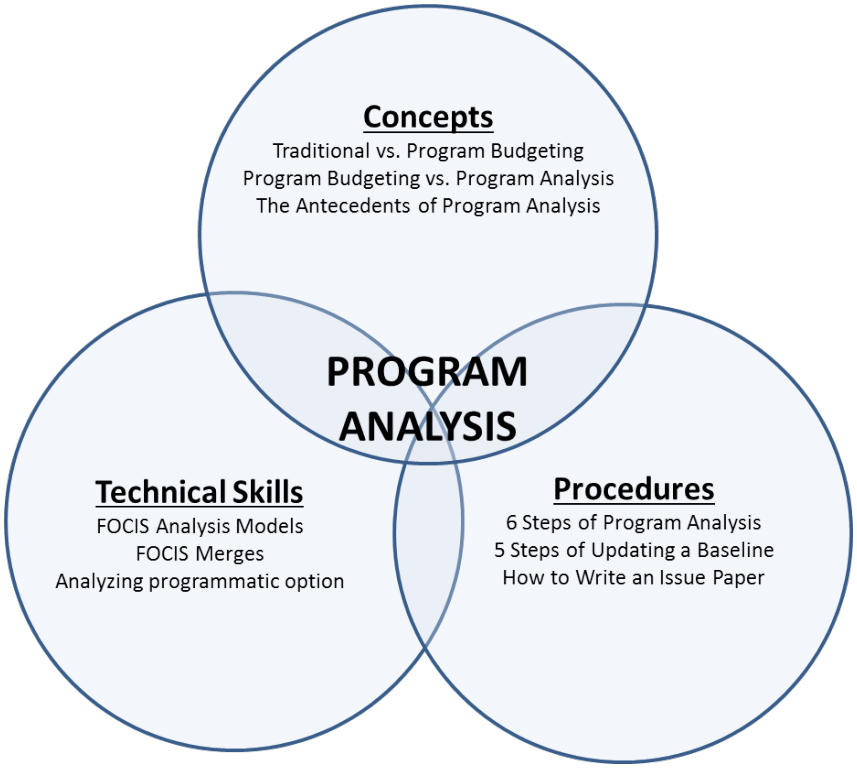
29. What informs Defense Strategy?

- National Security Strategy

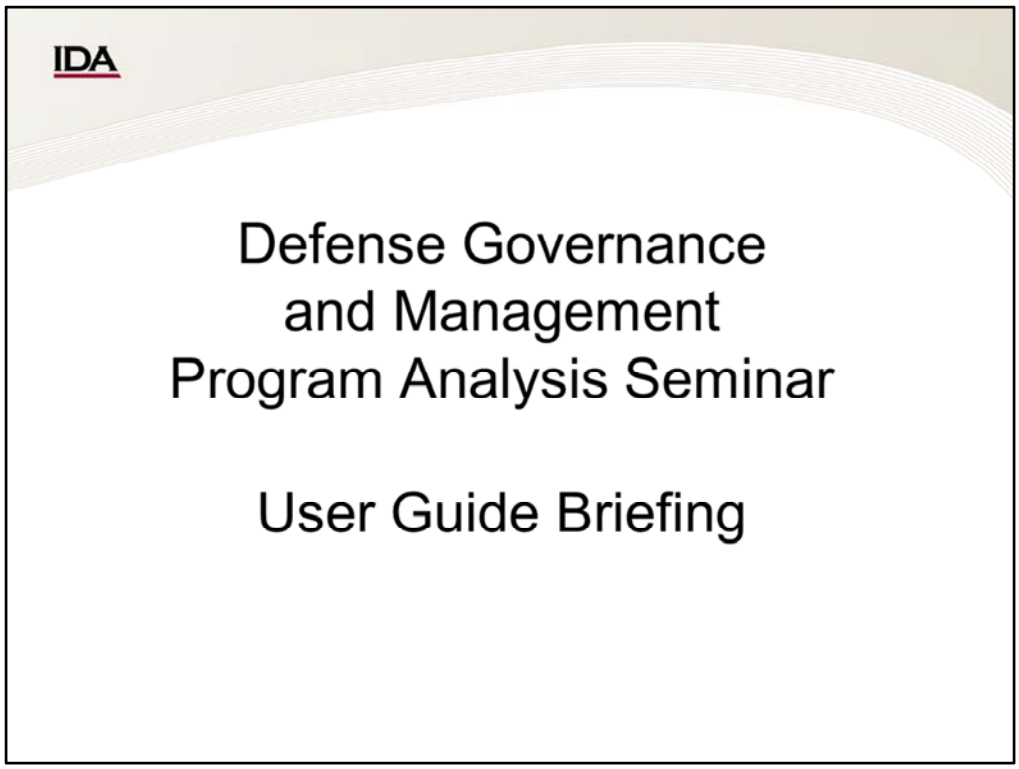
Module 8: Review and Reflection

30. Draw a Venn diagram mapping the conceptual, technical, and procedural skills you have learned

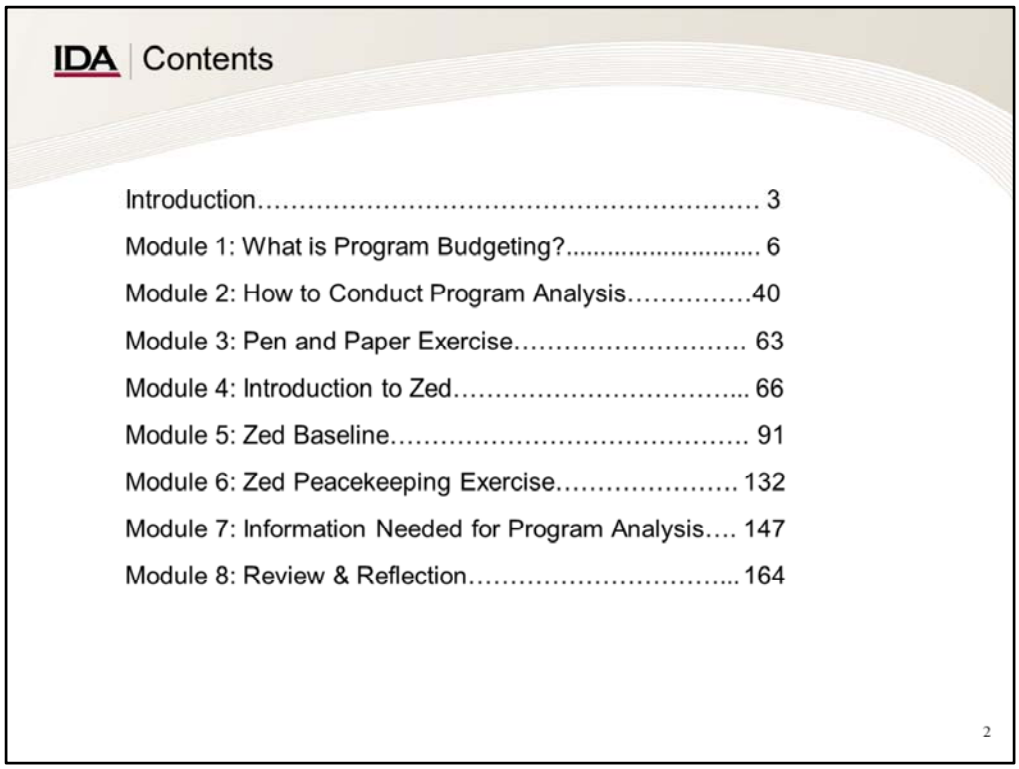
- Answers will vary, but it should include at least the following:



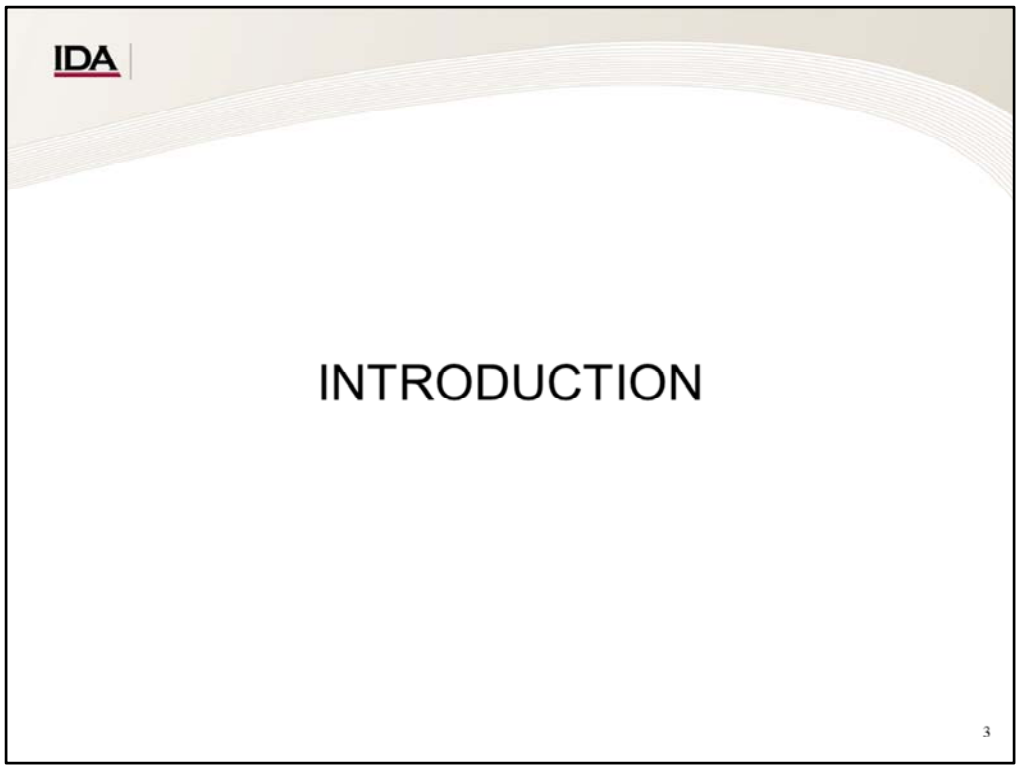
31. Program analysis is performed within a program budgeting system. What needs to happen for program budgeting to be established as a standard practice in the Ministry of Defense and armed forces of your nation?



This course is designed to familiarize a cadre of relatively junior-level analysts with the conceptual and technical skills needed to conduct Program Analysis. See the Introduction section (slides 3 and 4) of this briefing for a detailed description of the course's learning goals, content, pedagogy, and time and resource requirements.

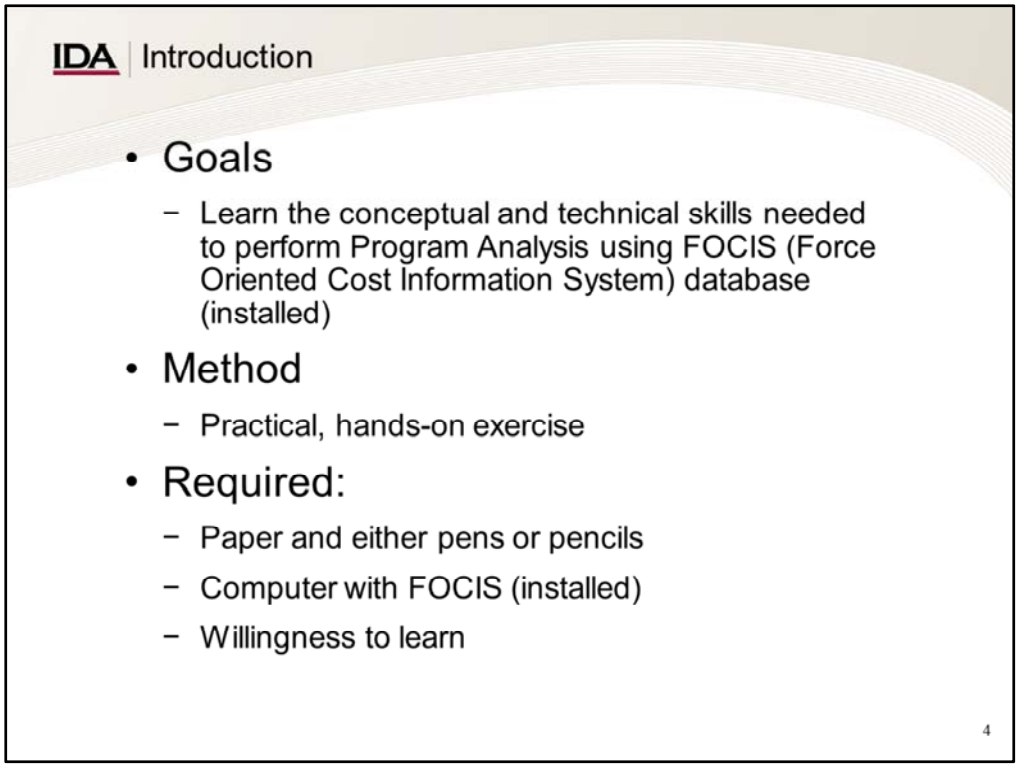


Module	Title	Materials Used	Estimated Completion Time (Hours)
1	What is Program Budgeting?	• PowerPoint (User Guide Briefing) • Student Learning Progress – Handout	2.0
2	How to Conduct Program Analysis	• PowerPoint (User Guide Briefing) • Student Learning Progress – Handout	1.5
3	Pen and Paper Exercise	• PowerPoint (User Guide Briefing) • Student Learning Progress – Handout • Pen and Paper Programming Exercise #1	2.0
4	Introduction to Zed	• PowerPoint (User Guide Briefing) • Student Learning Progress – Handout • Zed FOCIS database	1.5
5	Zed Baseline	• PowerPoint (User Guide Briefing) • Student Learning Progress – Handout • Zed FOCIS database	2.5
6	Zed Peacekeeping Exercise	• PowerPoint (User Guide Briefing) • Student Learning Progress – Handout • Handout – Zed Program Analysis Exercise #2 • Zed FOCIS database	4.0
7	Information Needed for Program Analysis	• PowerPoint (User Guide Briefing) • Student Learning Progress – Handout	1.5
8	Review & Reflection	• PowerPoint (User Guide Briefing) • Student Learning Progress – Handout	1.0
		Total:	**16.0**



This section gives a brief overview of the course.

It conveys the goals of this seminar and the required time commitment.



Re: "See Student Learning Progress – Handout"

The instructor hands out the "Student Learning Progress – Handout" to the students, and explains its use in the seminar.

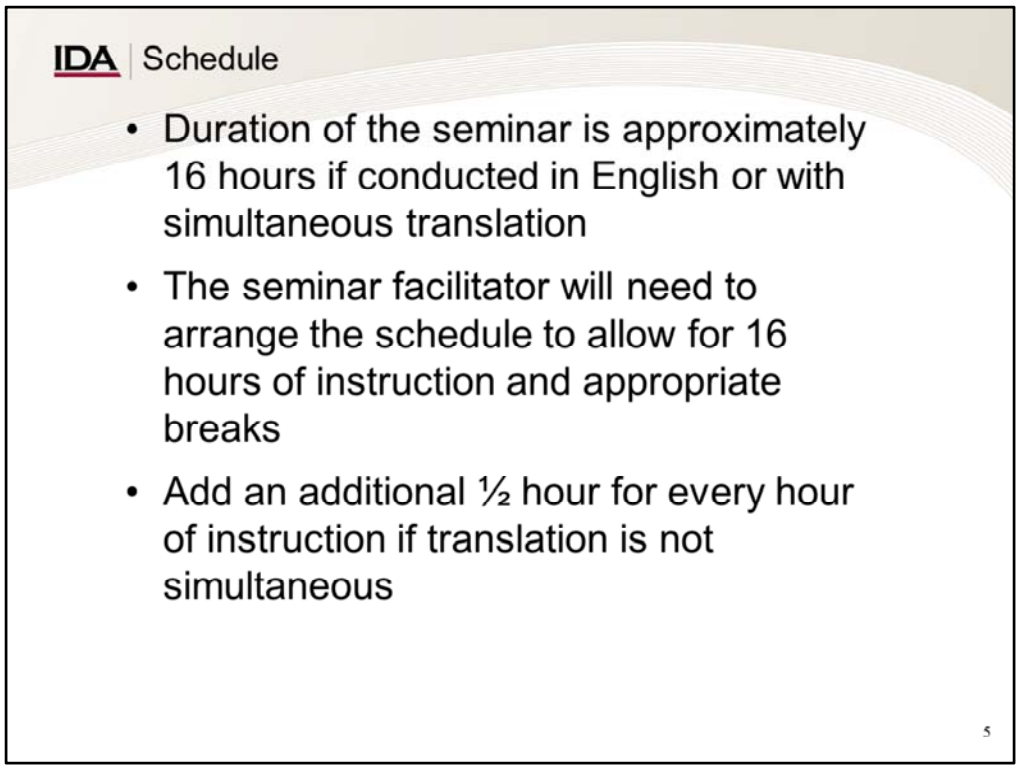
The Learning Progress sheet is a list of all the questions that the students can answer by the end of the seminar, with space for them to write down the answers and notes. Explicit presentation of desired learning outcomes and the assessment of student progress toward them have been widely argued to increase student learning (Carey and Vicki 2003).

The instructor should stress the hand-out is not a test, will not be graded, and will not even be handed in but instead is kept by the student. This is intended to encourage the students away from a "testing mentality" (in which they are likely to focus on rote repetition of the right answer rather than understanding *why* it is right) toward a "learning mentality" (in which they are more likely to deeply engage with the material), in line with best pedagogic practices concerning assessment-based learning (Ecclestone 1999).

The instructor should make it clear that asking questions or collaborating with colleagues to fill out the handout is not only allowed but encouraged.

Re: "Willingness to Learn"

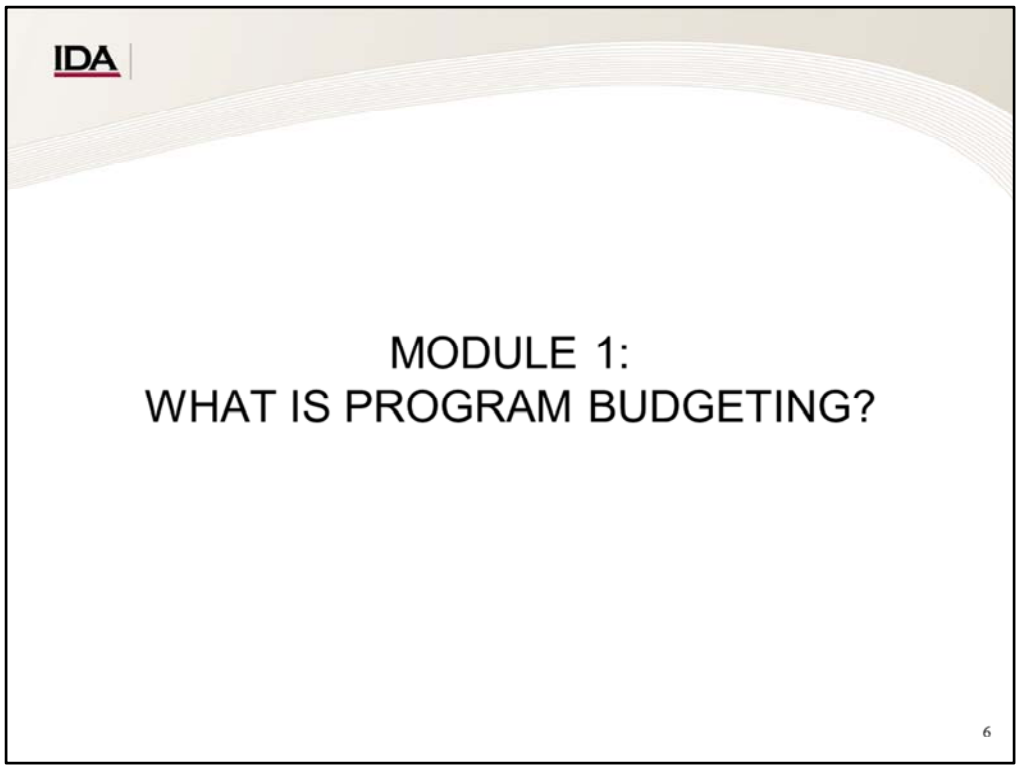
The instructor uses this opportunity to stress that this seminar is intended solely for learning purposes, and encourages students to ask questions if needed.



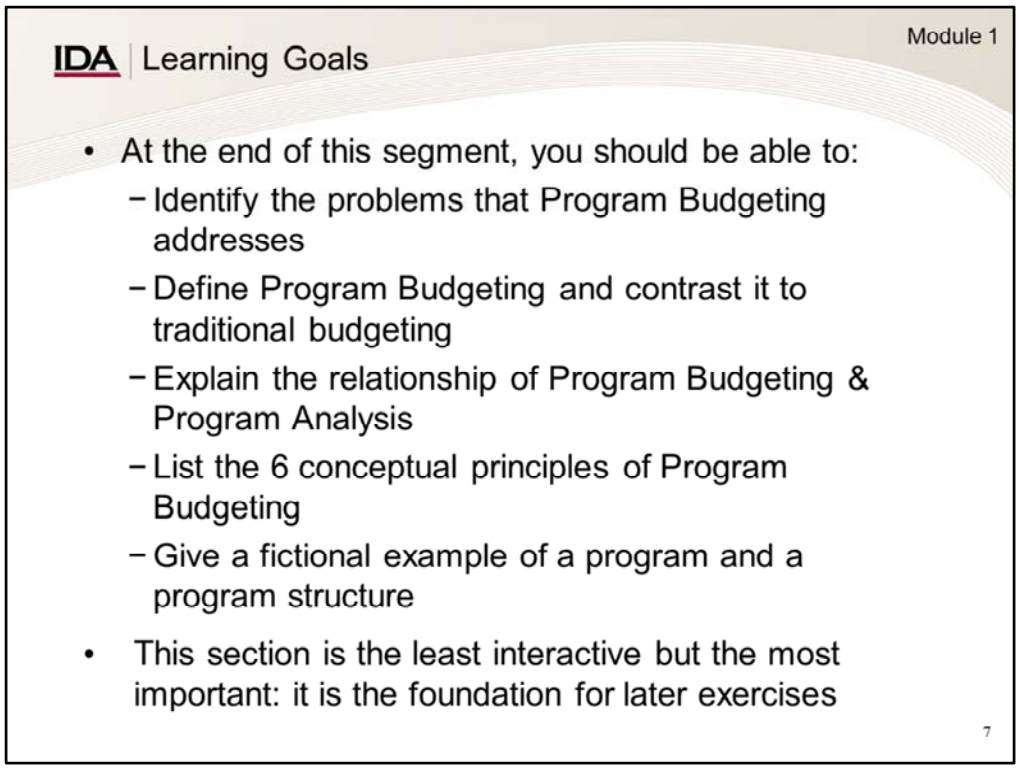
The dates and times on here are notional, but if all modules are implemented, it will take between 18 and 20 hours of class time depending on how long the break periods last. Four one-half days work well too.

The instructor should build in a 20-minute break for every two hours of instruction.

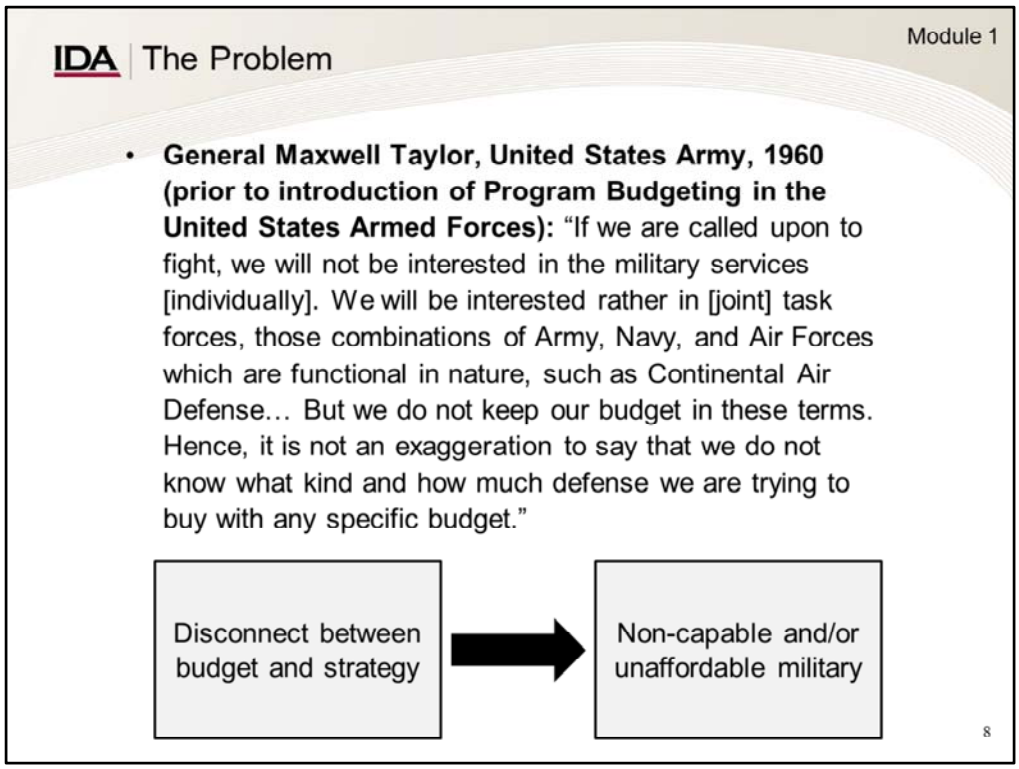
Such breaks have empirically demonstrated to improve classroom concentration and attention (Taras 2005).



Module 1 gives a conceptual overview of Program Budgeting. This module is foundational to the rest of the seminar and should not be skipped or heavily modified.

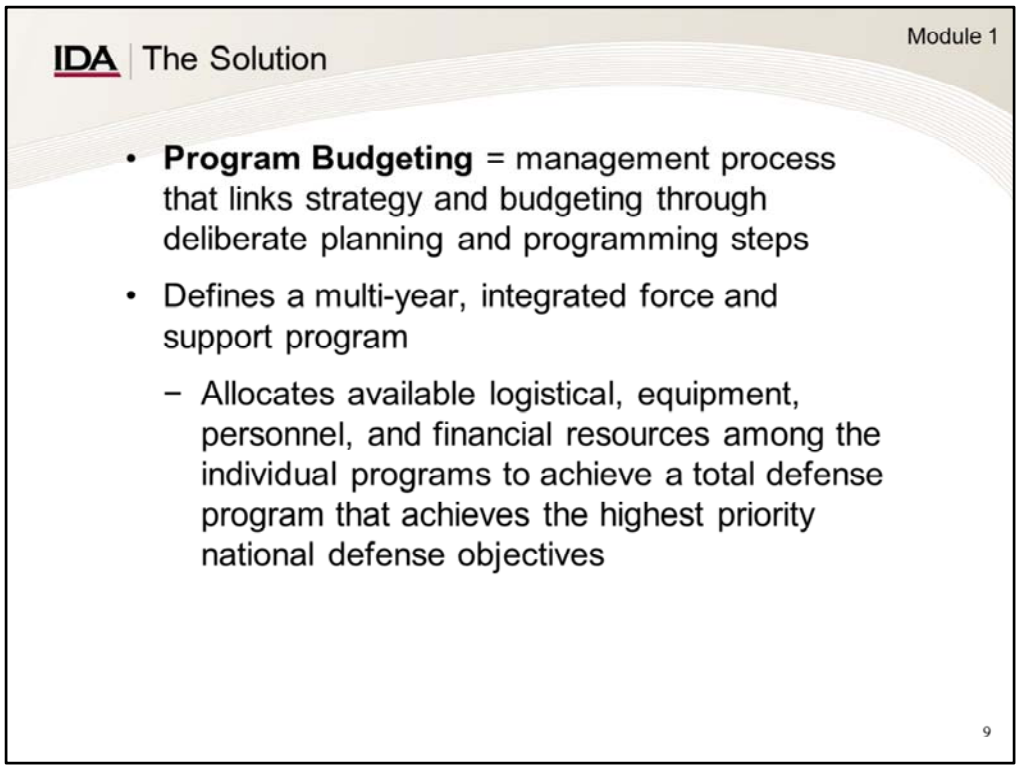


The instructor should remind the students that the learning goals presented on the slide are exactly the same as those written on their handout, and that they should write down answers as they go.

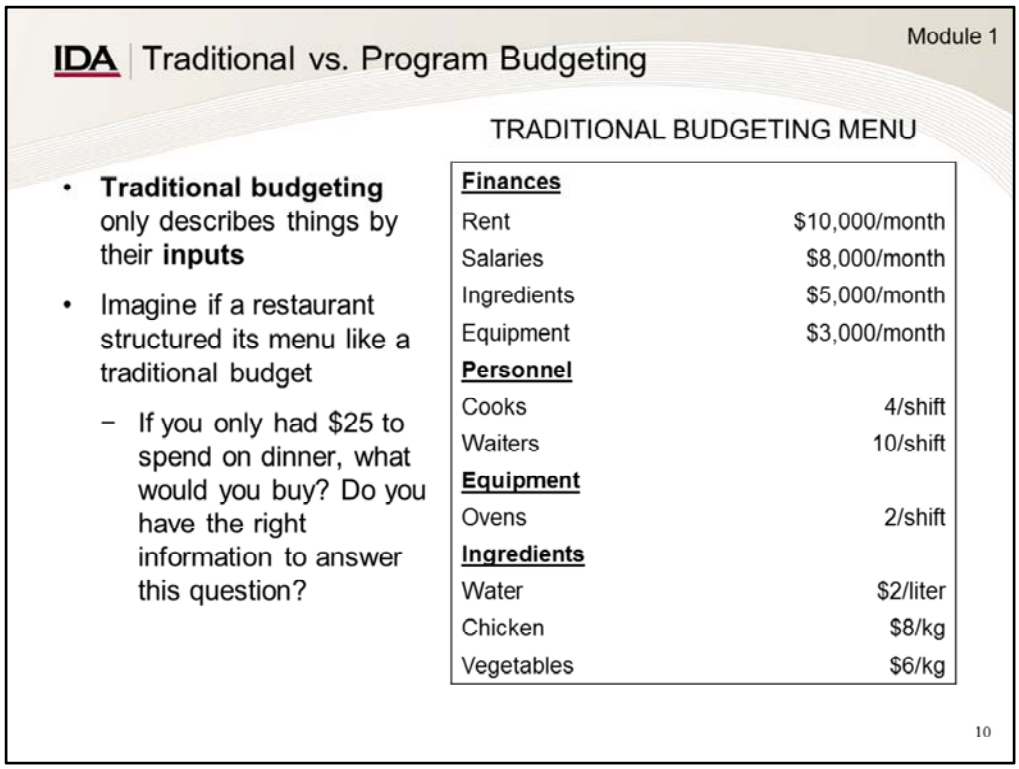


This slide corresponds to "Student Learning Progress – Handout," question #1, "What are the problems that Program Budgeting addresses?"

The source of the quote is U.S. Army General Maxwell Taylor, testifying before a Congressional committee in 1960 (Hitch 1965).



This slide corresponds to Student Learning Progress – Handout, question #2, "What is the definition of Program Budgeting?"

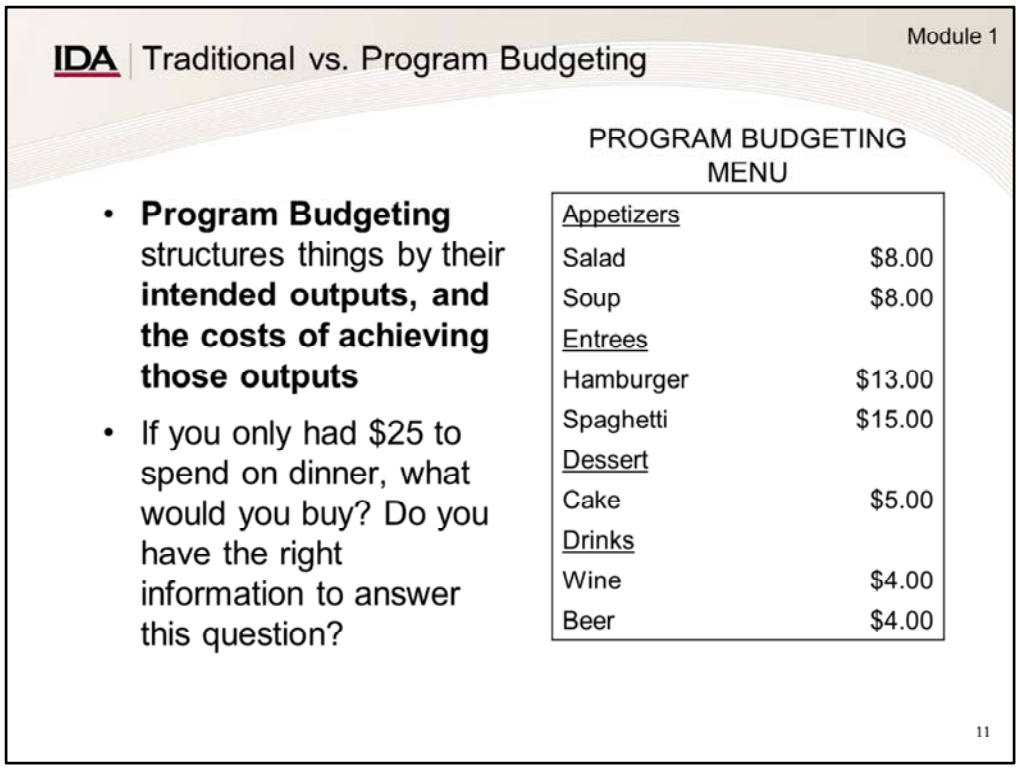


This and following slides use the metaphor of a restaurant menu to explain Program Budgeting and compare it to traditional budgeting, corresponding to Student Learning Progress Handout, question #3, "How is Program Budgeting different from traditional budgeting?"

The instructor should modify the menu with regionally appropriate food items and prices, subject to the country in which this lesson plan is utilized.

The instructor should encourage the students to come up with a $25 order using only the traditional budgeting menu.

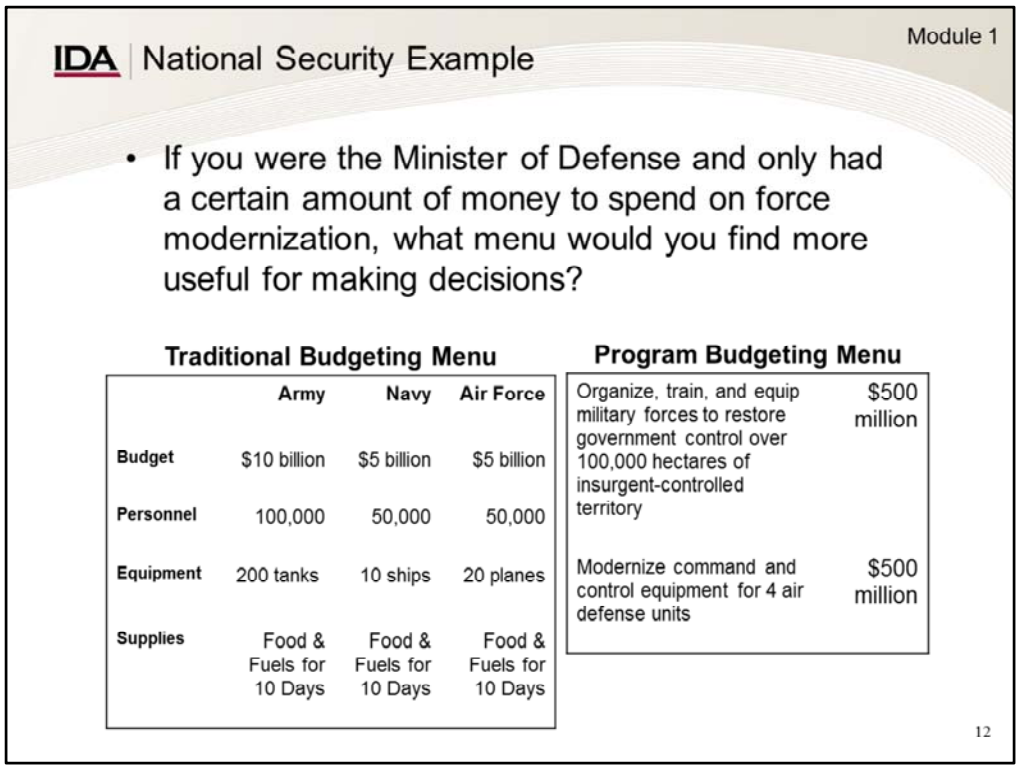
Trying and failing both demonstrate the shortfalls of traditional budgeting in an intuitive and understandable way.



The instructor should modify the menu with regionally appropriate food items and prices, subject to the country in which this lesson plan is utilized

The instructor prompts the students to combine menu items that total no more than $25.

The students should have two to three minutes to do this. Once the students have finished, the instructor should call on a few students to share their menu combinations.

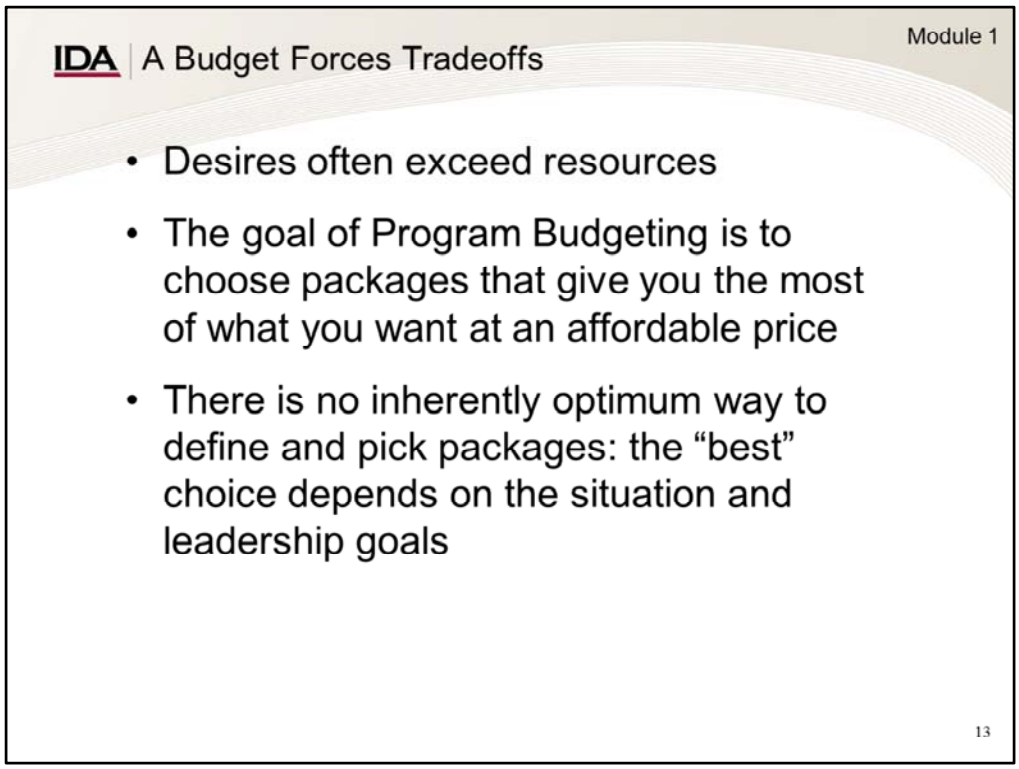


The restaurant metaphor is, of course, only a metaphor.

A Defense Ministry must pay for personnel, equipment, and supplies to create armed forces that provide defense and security for a nation.

Modify the options on the Program Budgeting Menu (*example above*) to list relevant issues of importance for the nation in which this lesson is used.

For example, this seminar was originally used in Colombia, South America, which struggles with an internal insurgency. At the time of the seminar, the country was also grappling with decisions on how to modernize its armed forces. So the menu items were “restore control over insurgent territory” and “modernize equipment.”



Slides 14 to 15 emphasize two concepts of programming that students often struggle with:

1. that programming inherently involves tradeoffs and is not a magic solution to render unaffordable packages affordable; and
2. that programming is not an equation to be solved—there is no mathematically optimum solution.

IDA | Example

- Example:
  - You want everything on the menu
  - You only have $25
  - What are your options?

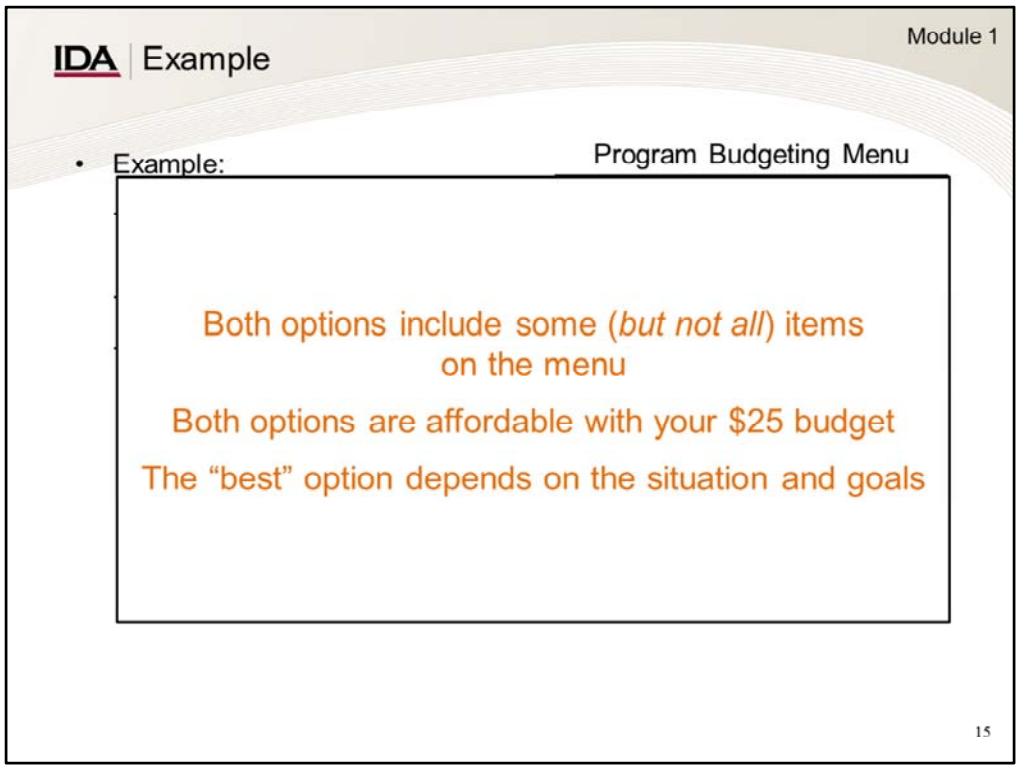
    Option A:
    Salad, hamburger, beer - $25

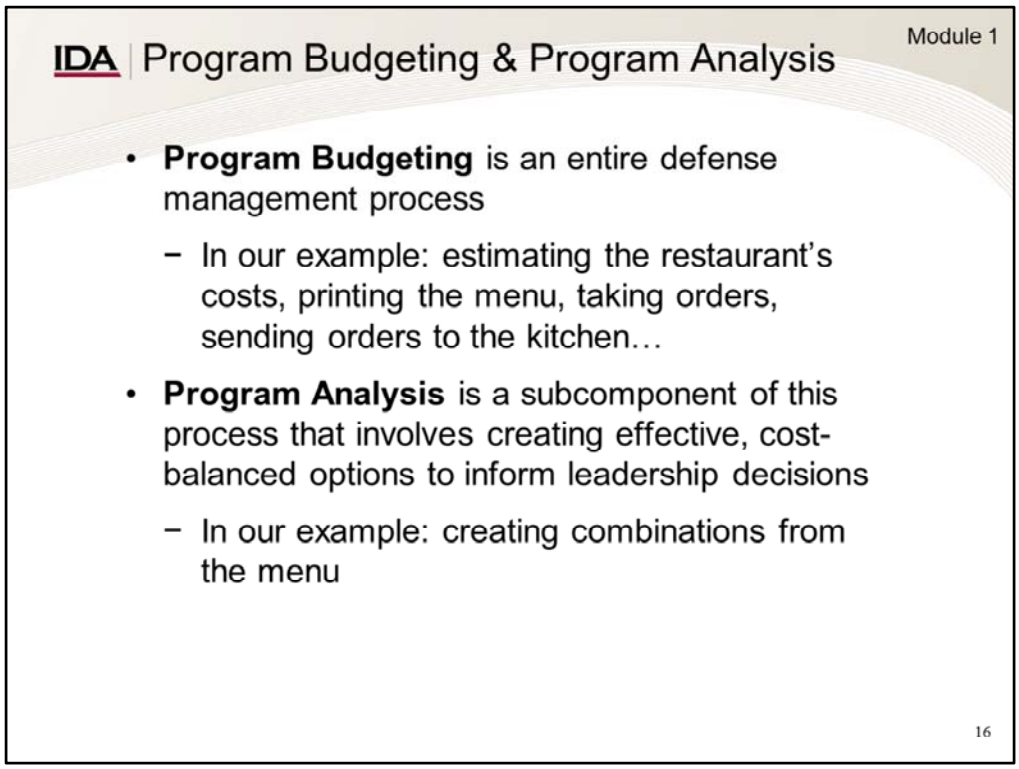
    Option B:
    Soup, salad, cake, wine - $25

Program Budgeting Menu

Appetizers	
Salad	$8.00
Soup	$8.00
Entrees	
Hamburger	$13.00
Spaghetti	$15.00
Dessert	
Cake	$5.00
Drinks	
Wine	$4.00
Beer	$4.00

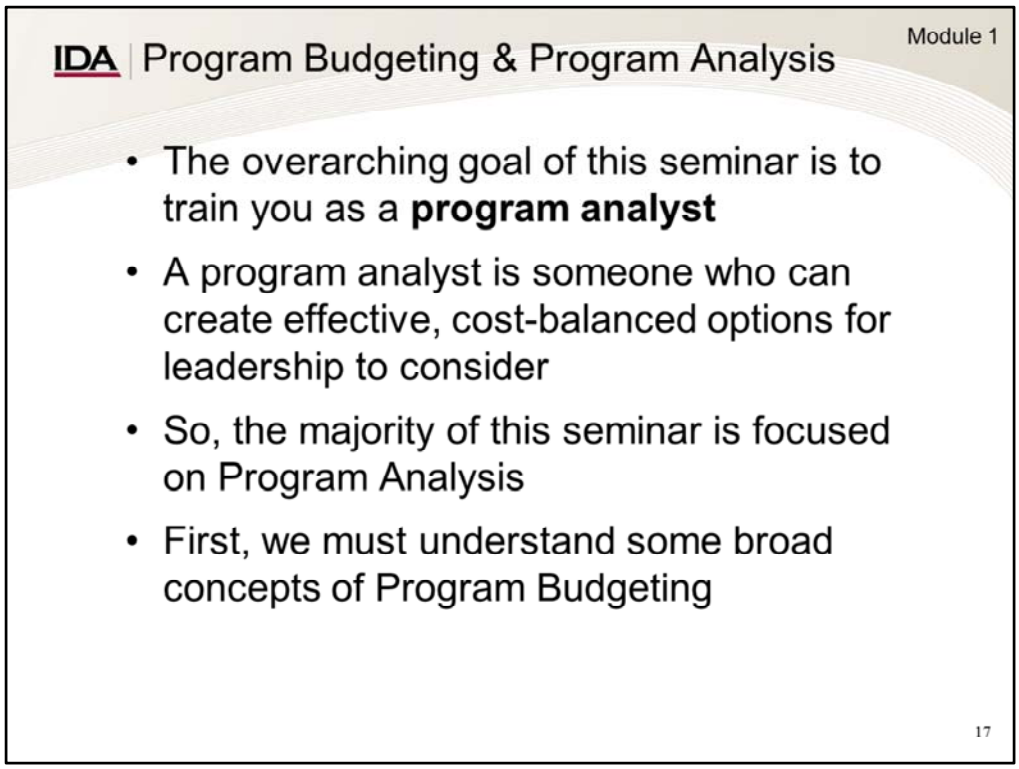
14


IDA | Example
Module 1
Example:
Program Budgeting Menu
Both options include some (*but not all*) items on the menu
Both options are affordable with your $25 budget
The "best" option depends on the situation and goals
15

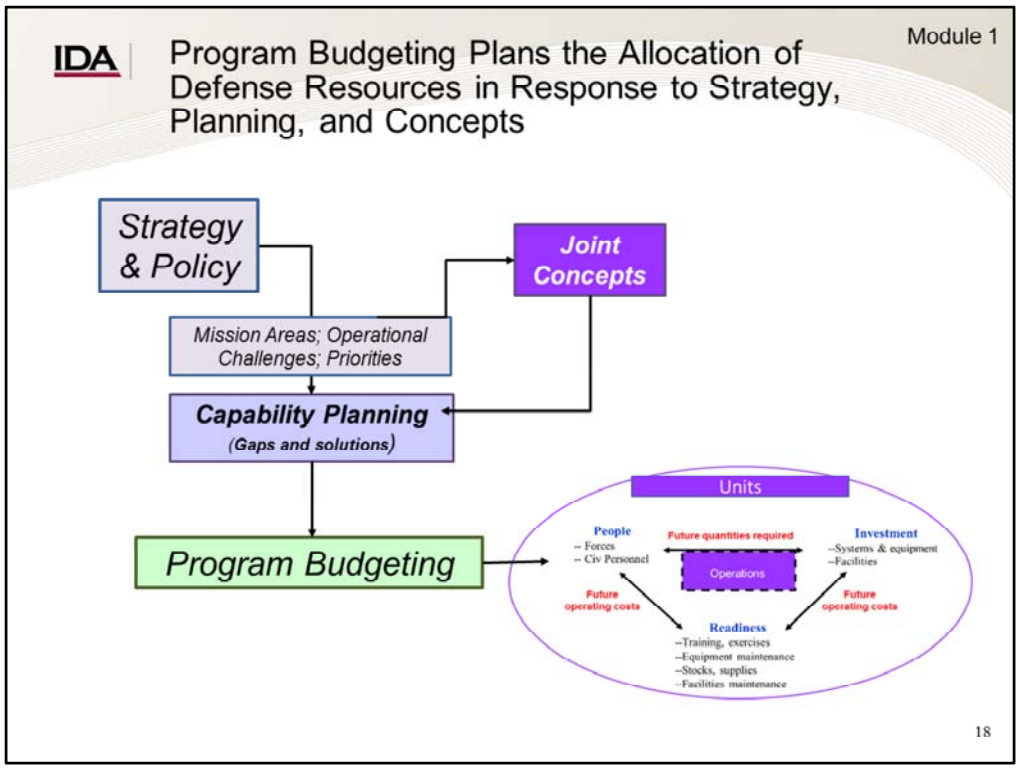


This slide and slide 17 correspond to Student Learning Progress – Handout, question #4, "What is the relationship between Program Budgeting and Program Analysis?"

This slide illustrates the difference between Program Budgeting (an entire management process) and Program Analysis (a specific step within that process).



The emphasis of this seminar is on Program Analysis, but this requires basic background information on the larger Program Budgeting context in which it occurs.

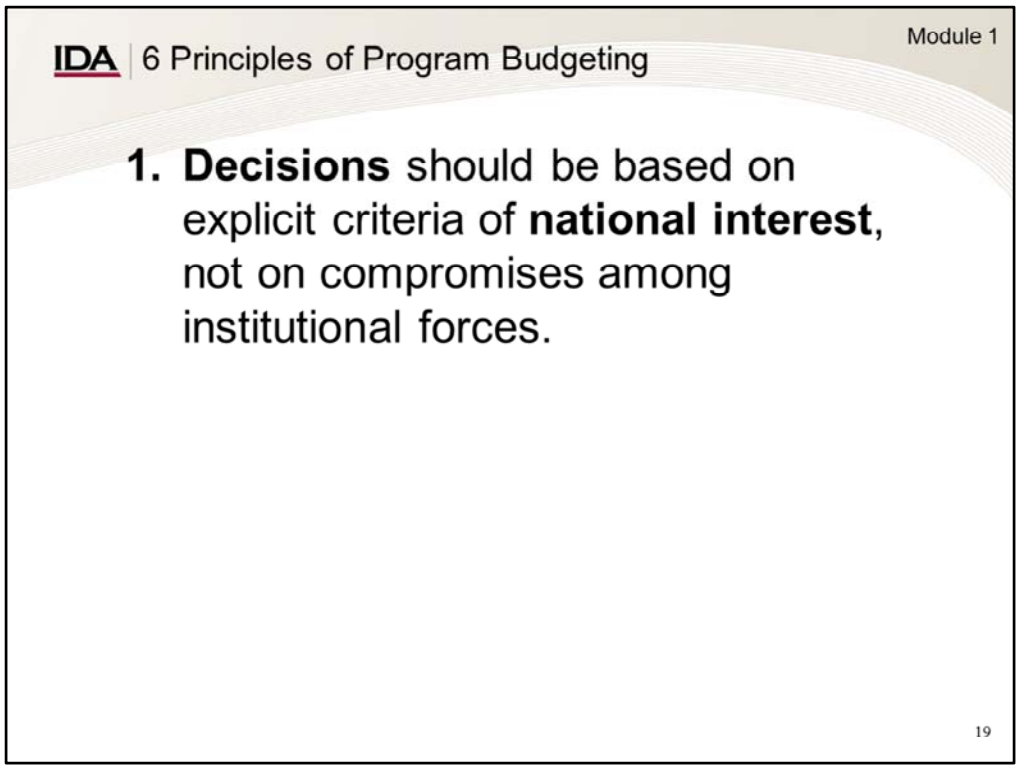


Strategy and Policy sets defense priorities and objectives and defines the Mission Areas and challenges defense planners must bear in mind:

Joint Concepts describe how the armed forces may respond to challenges

Capability planning determines what capabilities the armed forces will develop to implement the concepts. The intent is to organize, train, and equip armed forces with the capability to meet the objectives of strategy and to be prepared to meet the challenges assigned to them.

Program Budgeting is a plan to allocate the personnel, logistics, and financial resources of the defense sector to units which conduct operations to fulfill strategic objectives. The Program Budget plan is restrained by defense strategy and planning and it is constrained by costs. The plan cannot cost more than the expected budget limit of the defense sector or it is not an affordable, implementable plan.



The following six slides correspond to Student Learning Progress – Handout, question #5, "What are the six (6) principles of Program Budgeting?"

These are relatively complex points and require a higher than normal amount of verbal explanation. There is significant room for variation in explanation, and each instructor may add examples and modifications to the "base" explanation (listed below) that make it more comprehensible for the audience in question.

Key points for this slide (drawn heavily from Enthoven and Smith 1971):

- Countries do not raise militaries to have an Army, a Navy, or an Air Force. They raise militaries to pursue national interests, which are larger than any single military service.
- National interests should be the primary determinant of the size, composition, and employment of the military. Often this is not the case. Large organizations like a Ministry of Defense often manage by consensus.

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IDA

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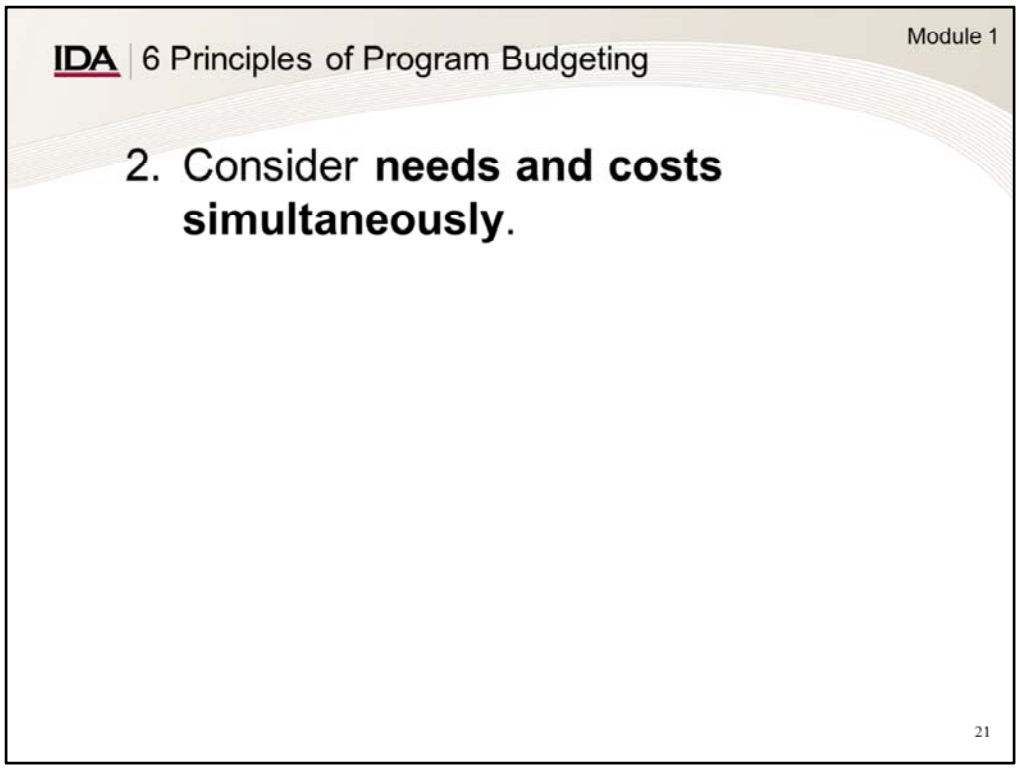
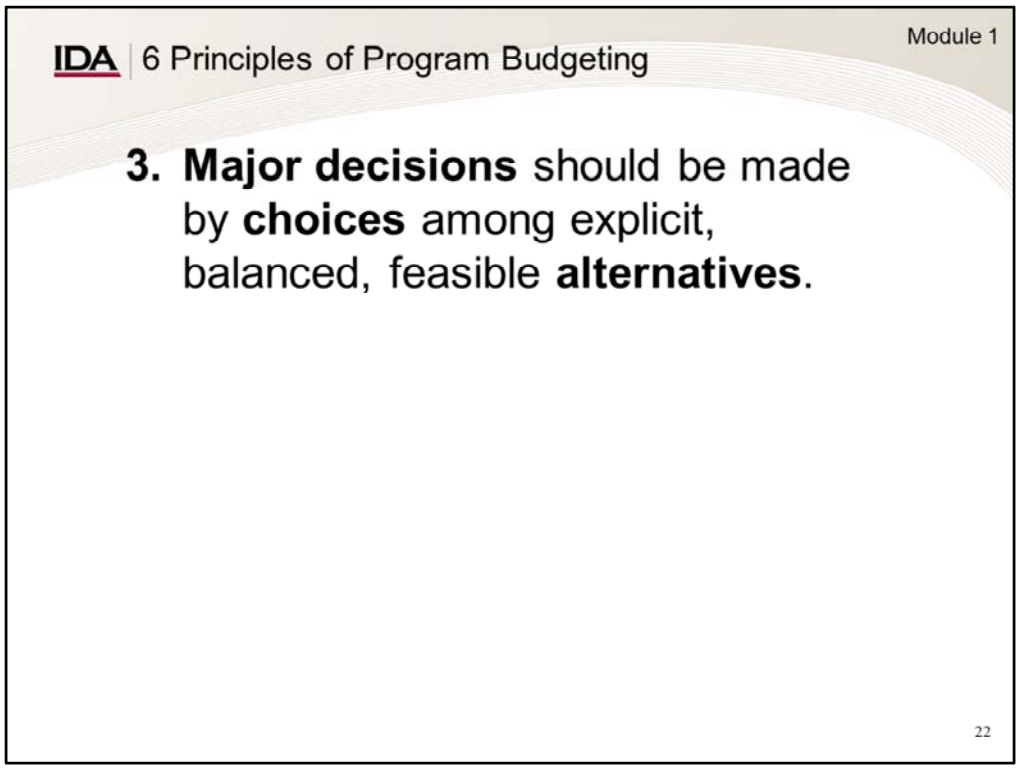
- This management style means all the military services must consent to something for it to happen.
- Consensus is reached by compromise among individual services and *quid pro quo* agreements.
- Consensus may or may not serve the national interest
- The interests of the services may or may not align with the interests of the Minister of Defense and the President.
  - For example, a big Army may or may not be in the national interest, depending on the strategic situation, but it is in the Army's interest;

  Or

  - Such mismatches can result in military forces that cannot achieve national goals, and so Program Budgeting requires everything in the military to be defined in terms of its contribution to national interests (via a Program Structure).
- This allows the Minister of Defense to adjust the military budget to better match national goals as defined by the President rather than defaulting to institutional compromise.
- The emphasis of Program Budgeting is not solely on cost: it is not a plot to defund the services. The emphasis is on *cost* and *effectiveness*, to put money where it will most contribute to national interests (as discussed on the previous slide).



- Decisions on the force structure and the allocation of the defense budget should be made at the same time. If an administration is not willing or able to pay for the costs of the force structure required to implement its policies, it should revise its objectives to bring them in line with the cost it is willing to pay. Or, said differently, the budget it is willing to allocate to defense in light of all other national priorities.
- This sounds reasonable. Therefore, who could object? Many people, in fact, who make arguments along the following lines:
  - "Where national security is concerned, money is no object."
  - "We must buy System X—we can't afford to compromise on security."
  - "Nothing is too good for our fighting soldiers."
  - "You can't put a number on national security."
- However, resources are finite and must be allocated among competing priorities. One cannot get a benefit without paying a cost. The way to get the most effective total defense program is to put each dollar where it will add the most to total effectiveness.
- The emphasis of Program Budgeting is not solely on cost: it is not a plot to defund the services. The emphasis is on *cost* and *effectiveness*, to put money where it will most contribute to national interests (as discussed on the previous slide).



- Program Budgeting is not a math problem: analysts cannot sit down and mathematically derive the best course of action. Instead, they should seek to improve the quality of senior decision-making by giving them explicit, balanced, and feasible choices among affordable options.
- *Choices* means presenting multiple options, rather than presenting a single course of action. The options must be plausible and feasible. This means they must be possible to implement within the time-frame being considered and they must be affordable. Also, they have to be politically and culturally acceptable. For example, Dr. Henry Kissinger admitted, during his time as Secretary of State under President Nixon, to frequently presenting President Nixon with "options" consisting of global thermonuclear war, complete capitulation, or Dr. Kissinger's preferred policy (Rothkopf 2014). Two of those three were neither plausible nor feasible.
- *Explicit* means clearly stating what each option entails, both in terms of what it is trying to achieve (the intended output) and how much it costs. If the benefits and costs of an option are not clearly understood, then a nation may commit itself to a course of action that is neither plausible nor feasible. The US Army's Future Combat System (FCS) program is a good example of this danger. Its vaguely defined goals and under-analyzed costs eventually led to program cancellation after billions of dollars of investment (Porter et al. 2009).

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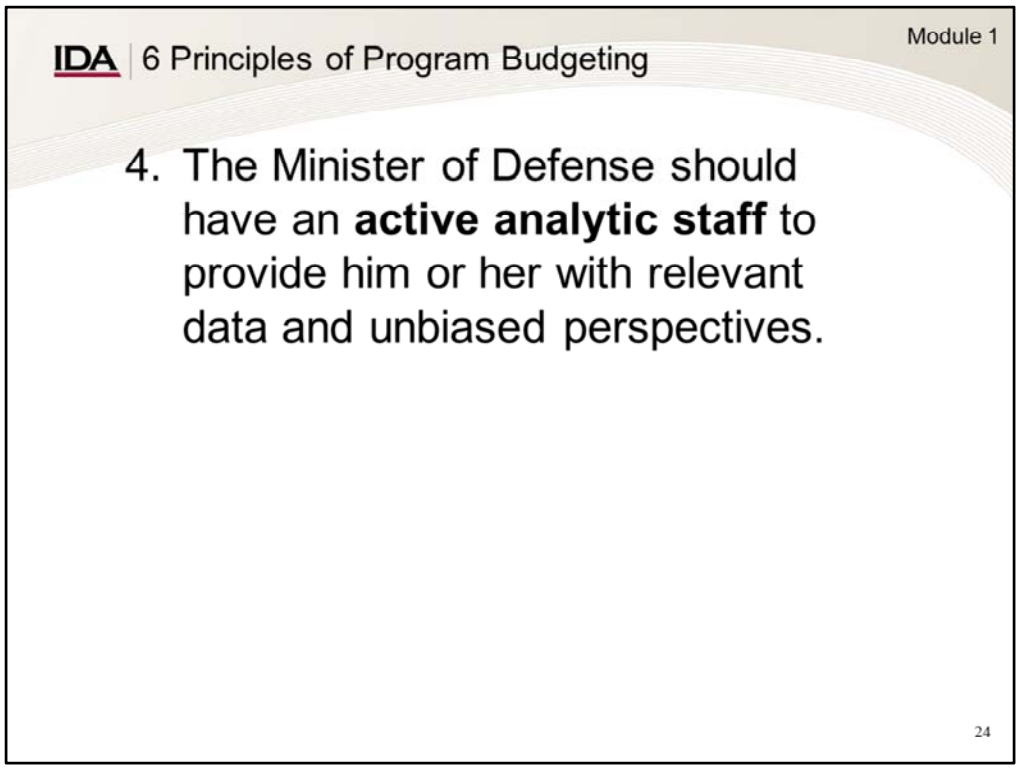
- *Balanced* means financially balanced and affordable. Any additions to the defense budget made during programming must be balanced by cuts unless the program analysts have been told to assume an increase in the defense budget. This is to prevent the common phenomenon of military services proposing large additions without corresponding cuts, which can lead to structural deficits. A structural deficit occurs when investment in capital equipment creates a deficit in the budget accounts responsible to pay to operate and maintain the equipment.



- The Minister of Defense needs an independent analytical staff to look at things from his or her point of view.
- The Minister's point of view must be broad and attuned to national objectives, as opposed to the narrower and more specialized viewpoints of subordinate agencies and the services.
- The Minister 's analytic staff must translate proposals from the individual service's point of view into discrete options corresponding to the Minister's point of view.

  Note: In some nations, this may be a civilian staff working for the Minister. In other nations, it could be a Joint Staff under a Chief of Defense. And in others, it could be an integrated civilian and military staff. The point is, the Minister needs a staff that provides him or her with the analysis to make decisions given his broad-based responsibilities. The analysis should not serve the parochial desires of any one military service or defense organization.

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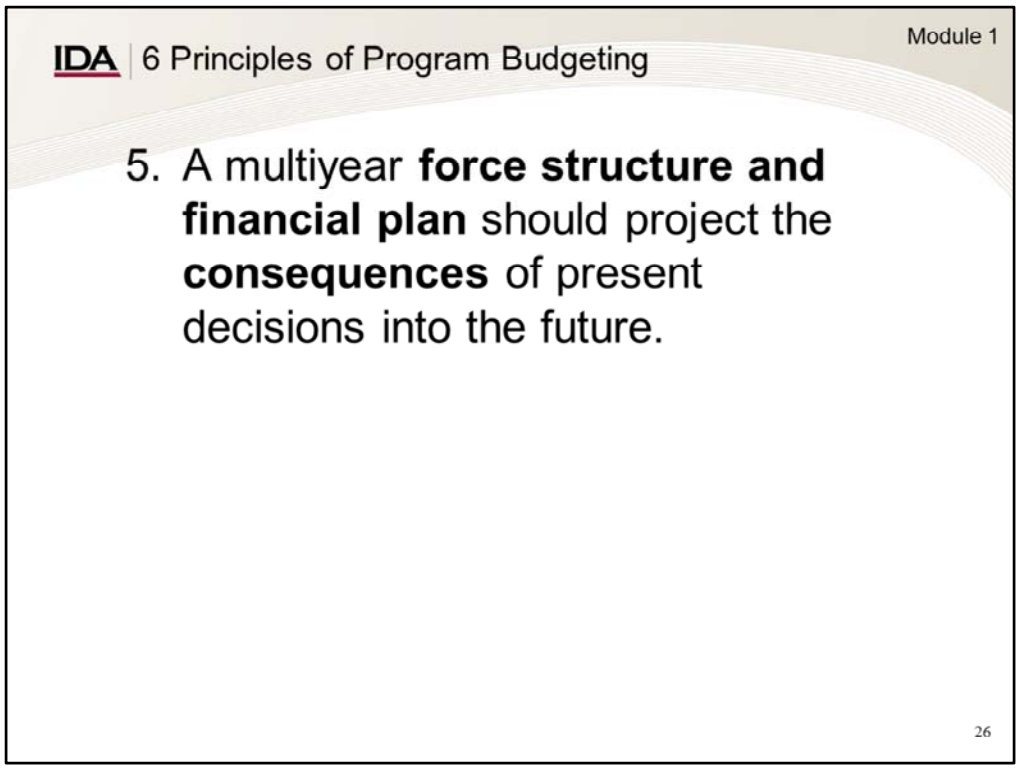
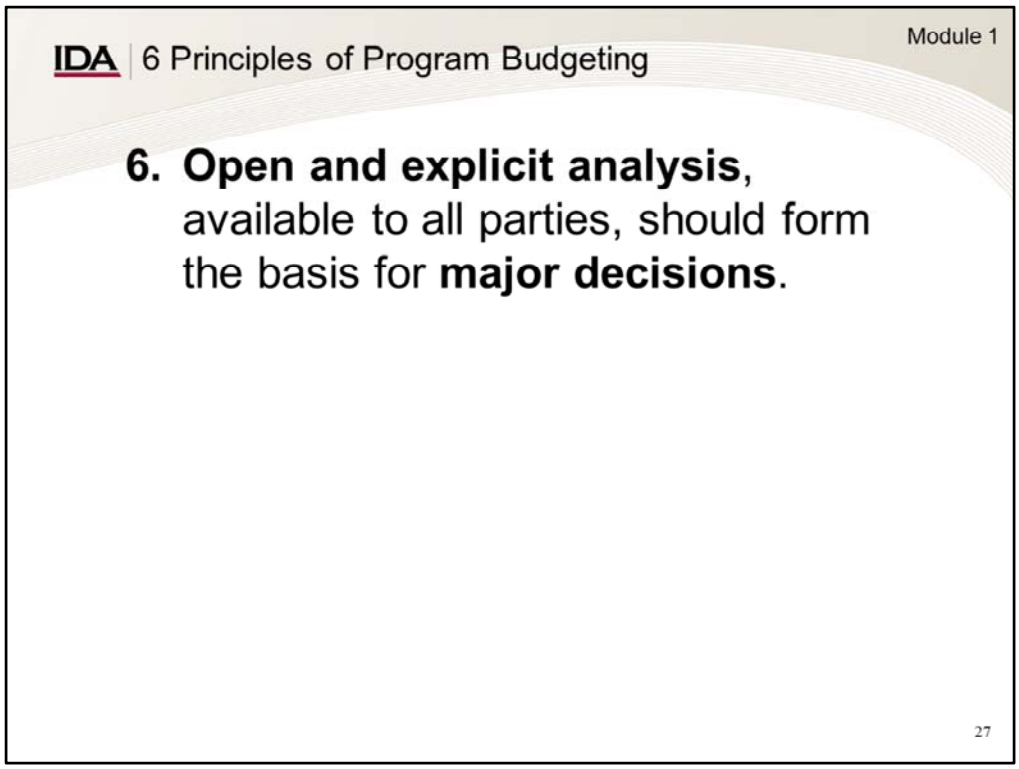
- An illustrative example:

  The Army sends the Minister information about the effectiveness of a surface-to-air missile system intended to shoot down invading enemy bombers. The Army report likely will describe the missile's effectiveness from a technical perspective (i.e., probability of kill against an enemy airplane) or from the warfighting perspective (i.e., how the missile contributes to operational success in a given scenario).

  However, neither perspective answers the most relevant question. Is the missile the best option for achieving national-level goals in air defense? Maybe it is better to buy bomber aircraft as a deterrent to enemy action. Maybe it is better build hardened bunkers to defend strategic material against bombers. The question the Minister needs to answer is, what is the most cost-effective option or options to achieve the overall goal of protecting the country? As such, the Minister needs an analytical staff to inform him or her from that broad national perspective.



Without a multiyear force structure and financial plan, a Ministry of Defense cannot accurately estimate future costs or fund future capabilities, and hence, cannot accurately ascertain whether future financial resource are sufficient to fund desired capabilities. This will result in a structural deficit (i.e., where costs exceed the total defense budget on a recurring versus periodic basis) and/or a non-capable force. For these reasons, all costs and capabilities must be projected into the future.



In a large institution such as a Ministry of Defense, processes will not be effective if they are not credible. Credibility is built through transparency. The analysis that decisions are based upon cannot be secretive. The analysis should be open to criticism and review from the major stakeholders of the defense sector.

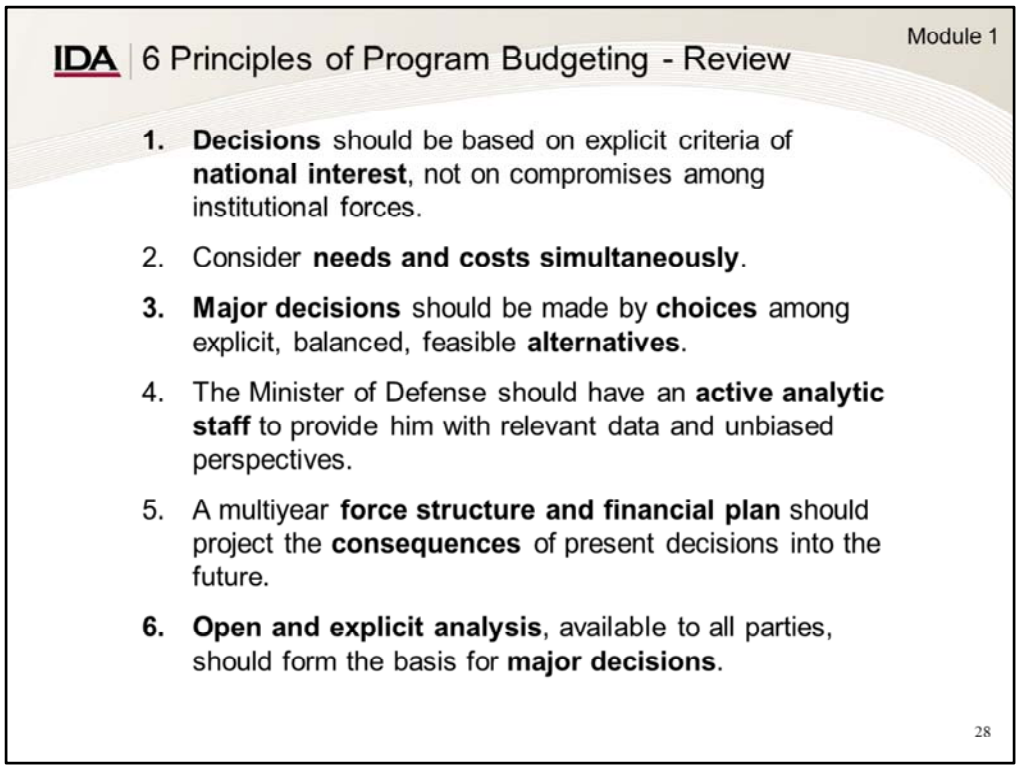
Program Budgeting is an analytic-based practice. For it to be credible, it must be clear to all that it is based on objective analysis and is not merely an analytic rubber stamp intended to support one organization or the other's point of view.

The best way to achieve this credibility is to make the analysis open, explicit, and available to all relevant parties within the defense sector.

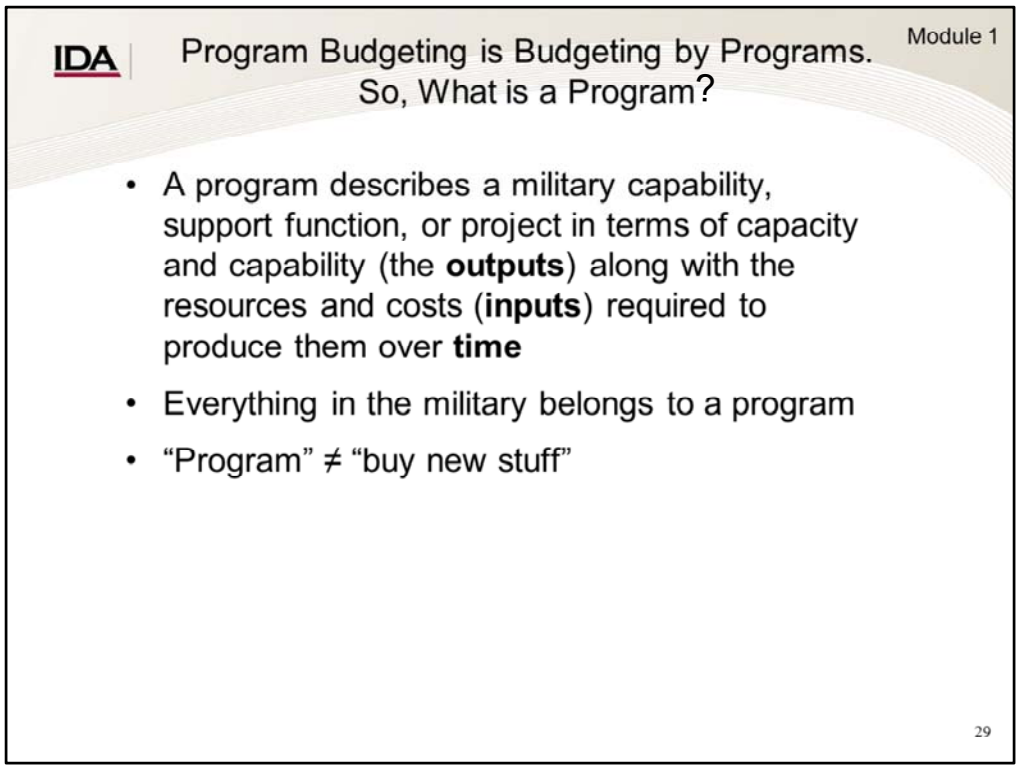
This practice not only insulates major decisions from charges of bias, but also places pressure on stakeholders to produce quality analysis.

Studies subject to peer review are more likely to be rigorous and reproducible than those only seen by a few people (Benos et al. 2007).

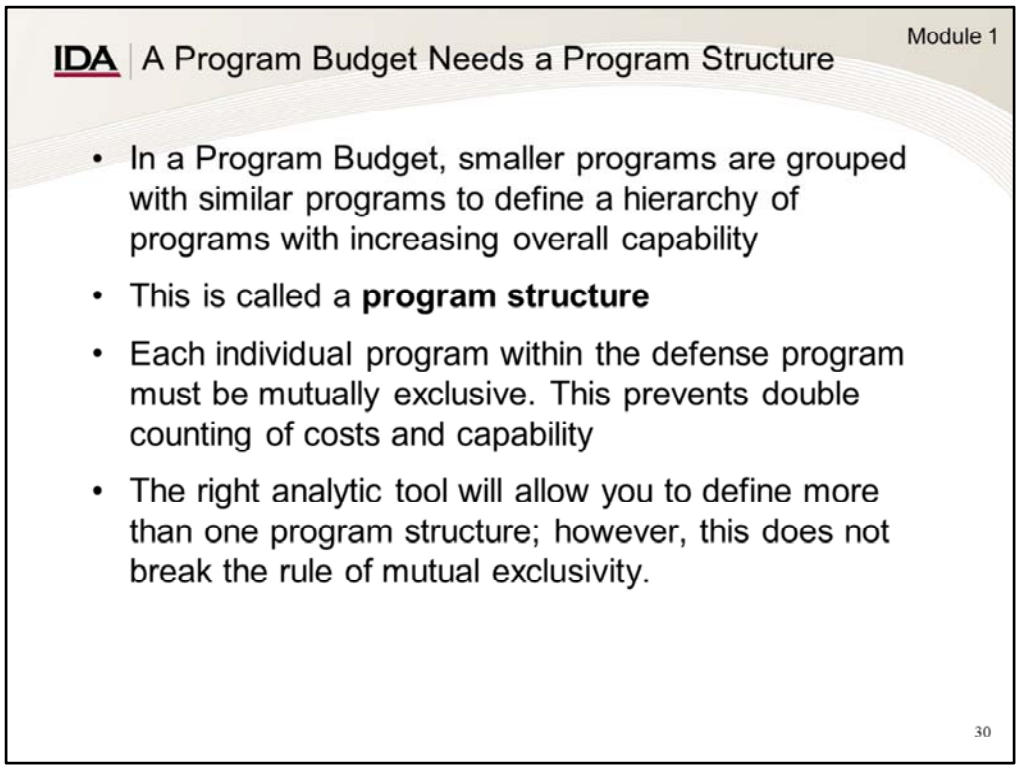
For a countervailing view, see Hopewell et al. (2014).



The instructor should ask if there are any questions about the six principles at this time.



The instructor should emphasize that everything in the military is a program to counteract the common misconception that "program" refers to solely to the acquisition of new equipment or infrastructure.



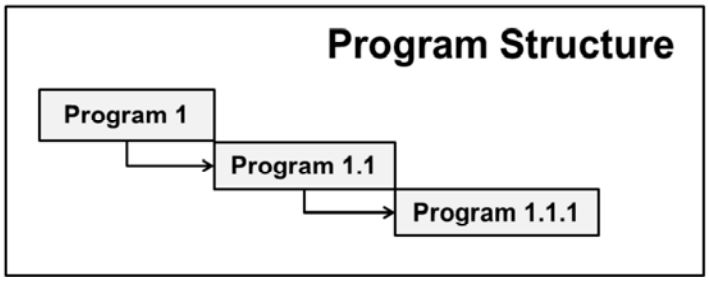
Each individual program must be mutually exclusive, which means a program cannot appear more than one time within the program structure.

The sum of all defense programs will be equal to the total cost of defense and also the total output of the defense program.

FOCIS allows users to define more than one program structure. Each defined program structure serves a distinct analytic purpose. Within each user-defined program structure, the rule of mutual exclusivity still applies.

IDA | A Program Budget Needs a Program Structure

- This is a simple depiction of a **program structure**



31

IDA | Example Program

Module 1

- Let us consider a Mechanized Infantry Battalion, but the idea is the same whether it is a ship, airfield, military hospital, working group of analysts…

32

Instructions: This picture is from Colombia: the instructor should pick a regionally appropriate photo.

The U.S. Government and the U.S. Department of Defense have sites opened to the public. Your searches should include the name of the country and the topic, e.g., Columbia and "mechanized infantry battalion" (where the quotation marks restrict the search to the exact words enclosed).

- U.S. Department of Defense

  http://www.defense.gov/Media/Photo-Gallery

  http://www.defense.gov/Media/Photo-Essays

  http://www.defense.gov/Media/Week-in-Photos
- U.S. Army sponsored sites, opened to the public

  https://www.dvidshub.net/
- Library of Congress (historical)

  http://www.loc.gov/pictures/

IDA

Example Program: Inputs to the 1st Mechanized Infantry Battalion Program

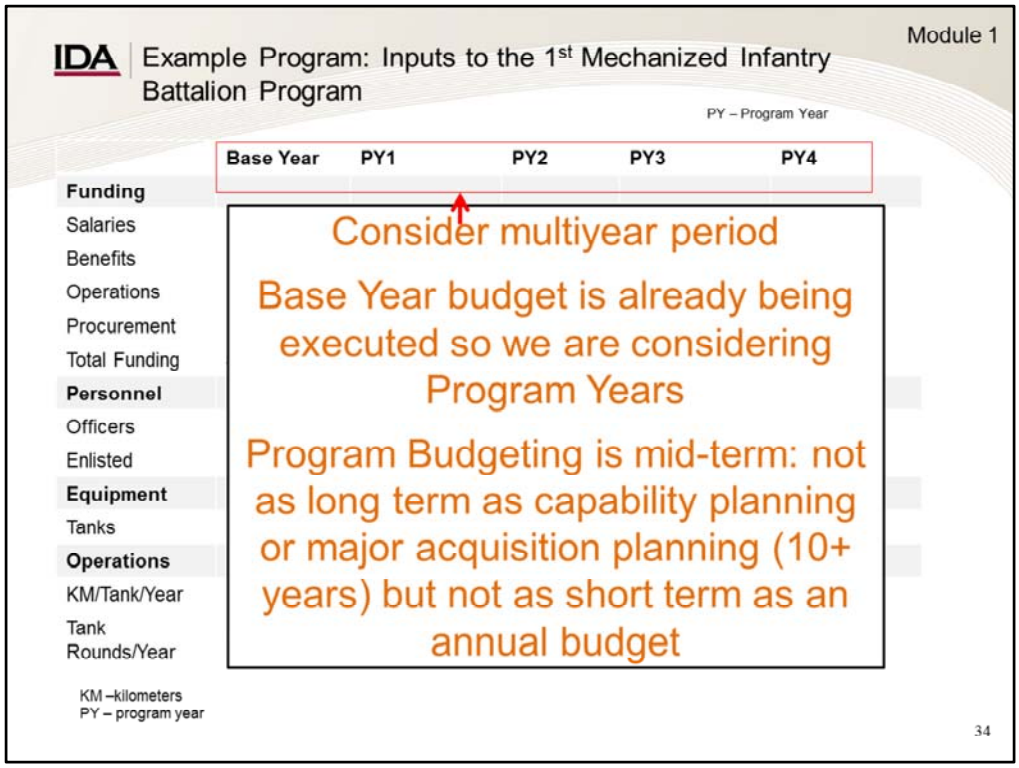
Module 1

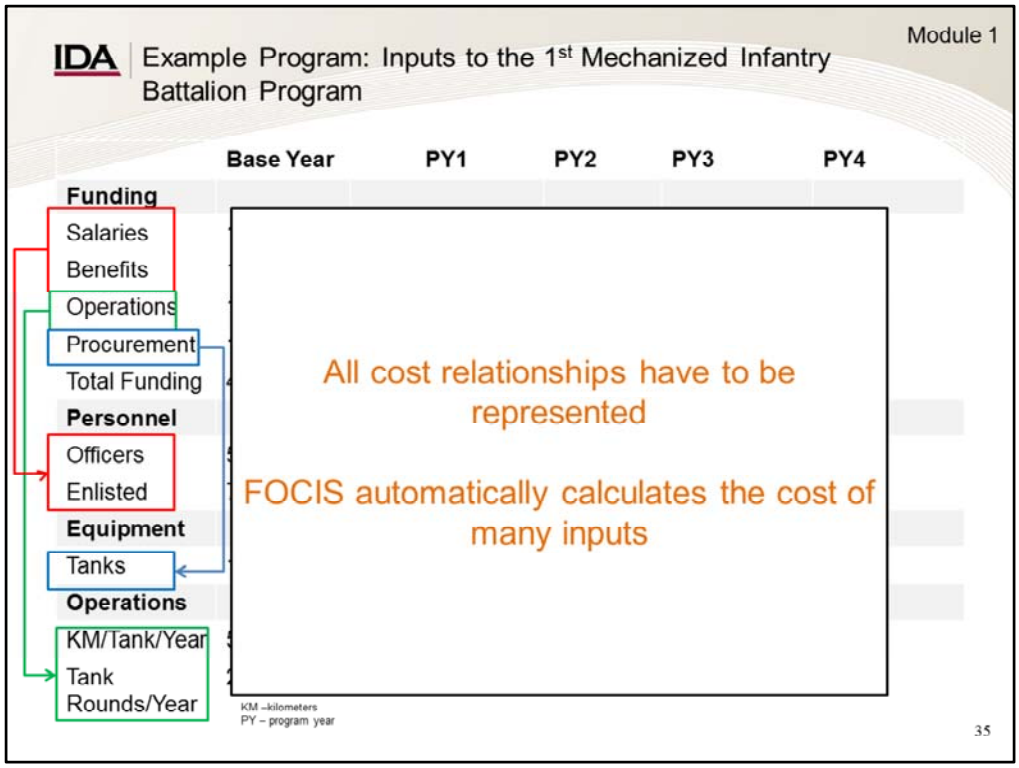
	Base Year	PY1	PY2	PY3	PY4
Funding					
Salaries	1000	1000	1000	1000	1000
Benefits	1000	1000	1000	1000	1000
Operations	1000	1000	1000	1000	1000
Procurement	1000	1000	1000	1000	1000
Total Funding	4000	4000	4000	4000	4000
Personnel					
Officers	50	50	50	50	50
Enlisted	750	750	750	750	750
Equipment					
Tanks	100	100	100	100	100
Operations					
KM/Tank/Year3	500	500	500	500	500
Tank Rounds/Year	200	200	200	200	200

KM –kilometers
PY – program year

33

The chart is a notional example. It depicts the resource inputs in terms of money, personnel, equipment, and operating hours to create the output of a Mechanized Infantry Battalion Program.

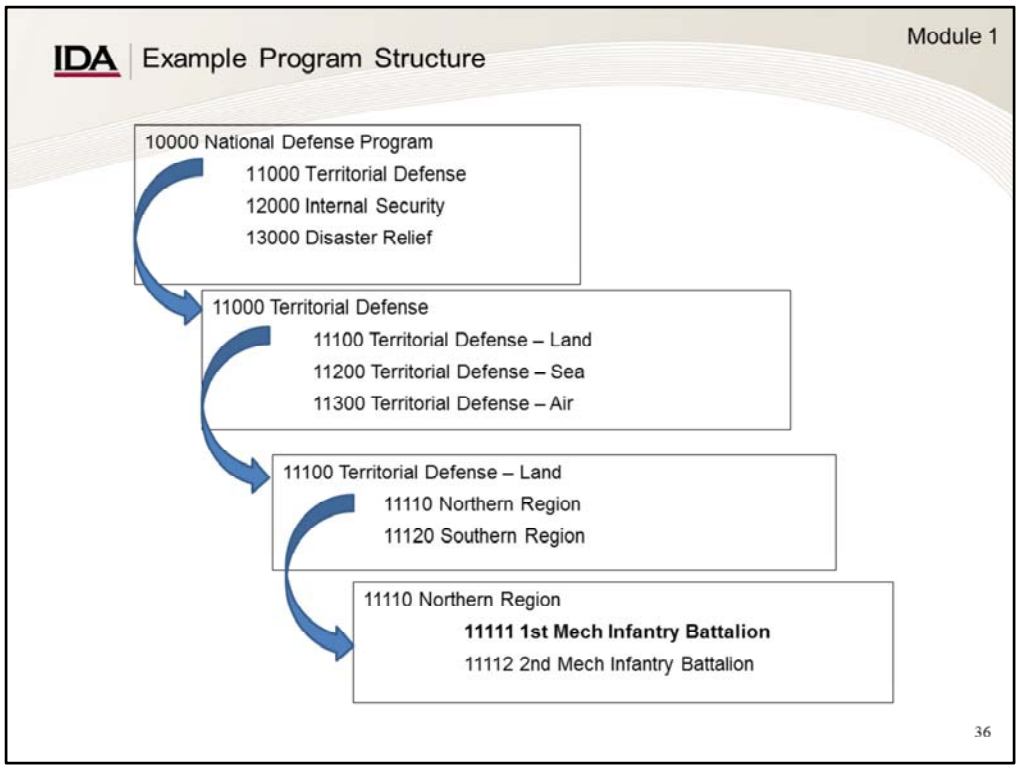

Module 1
IDA
Example Program: Inputs to the 1st Mechanized Infantry Battalion Program
PY – Program Year
Base Year
PY1
PY2
PY3
PY4
Funding
Salaries
Benefits
Operations
Procurement
Total Funding
Personnel
Officers
Enlisted
Equipment
Tanks
Operations
KM/Tank/Year
Tank Rounds/Year
Consider multiyear period
Base Year budget is already being executed so we are considering Program Years
Program Budgeting is mid-term: not as long term as capability planning or major acquisition planning (10+ years) but not as short term as an annual budget
KM –kilometers
PY – program year
34



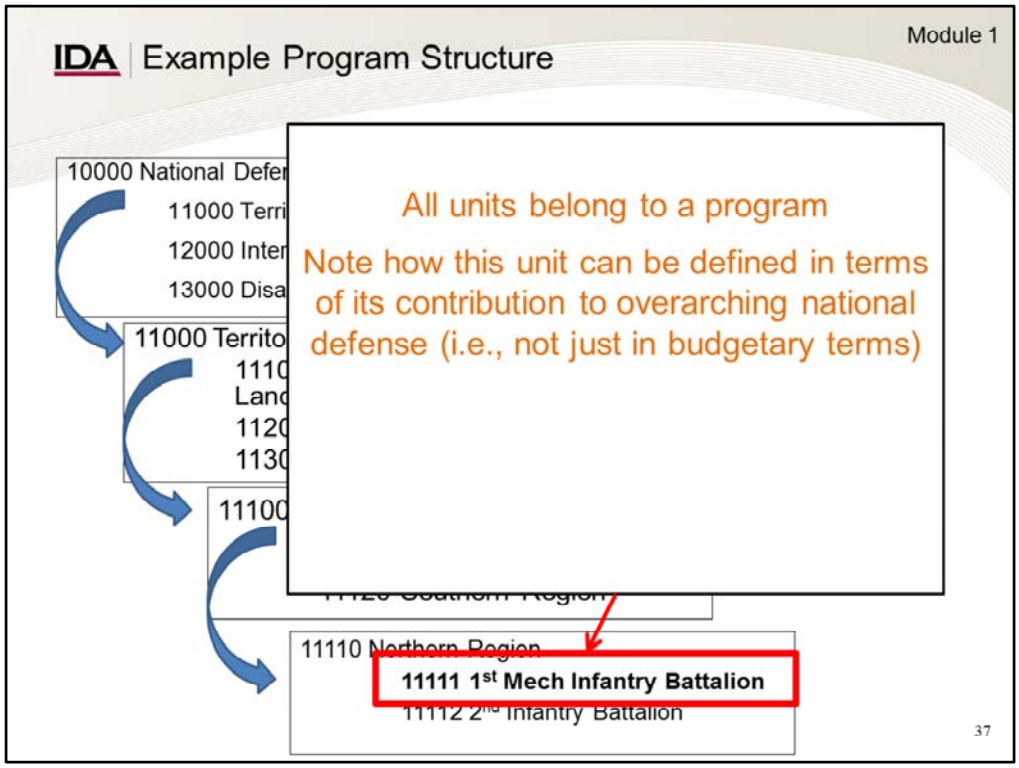
The instructor should explain the cost relationships depicted on screen.

For example, point out the costs of salary and benefits depend on the number of enlisted and officer personnel. The cost of operations depends on how frequently equipment is operated, and so on.

It should also be mentioned that this chart is a graphical depiction of the concepts presented on slides 21 (needs and costs considered simultaneously) and 26 (multi-year force and financial plan that projects the consequences of today's decisions into the future).



The point of this slide is to depict how the Mechanized Infantry program for the 1st Battalion fits within a program structure. The next slide emphasizes this point.


IDA | Example Program Structure
Module 1
10000 National Defe
11000 Terri
12000 Inter
13000 Disa
11000 Territo
1110
Land
1120
1130
11100
11110 Northern Region
11111 1st Mech Infantry Battalion
11112 2nd Infantry Battalion
All units belong to a program
Note how this unit can be defined in terms of its contribution to overarching national defense (i.e., not just in budgetary terms)
37

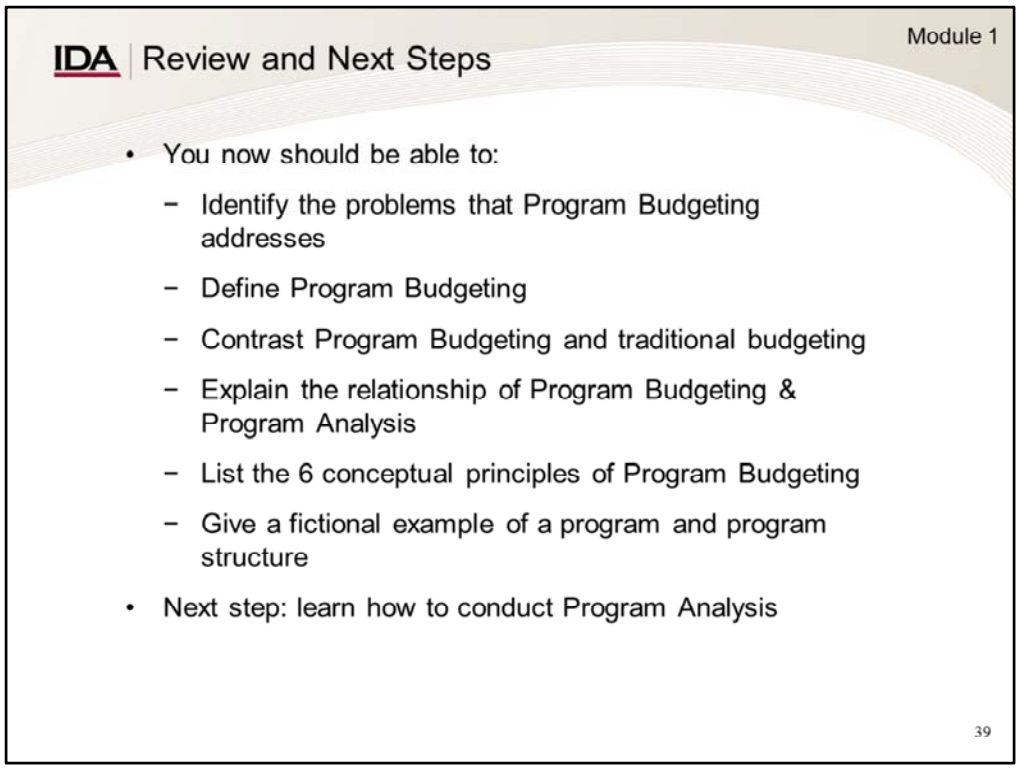
Module 1

IDA | Summary: Programs and Program Structure

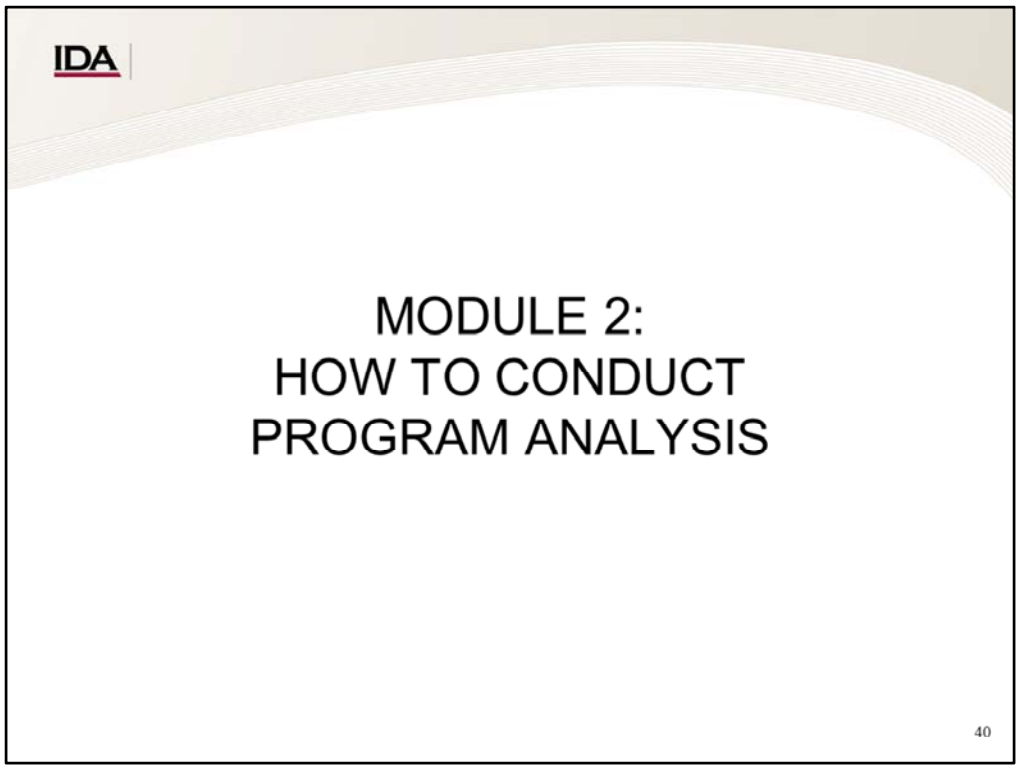
- Program = military capability, support function, or project in terms of capability (**output**) along with the resources and costs (**inputs**) required to produce them over **time**
- The entire defense program is made up of smaller programs, which are made up of smaller programs…this is called a program structure
- FOCIS is a tool to quickly and accurately crosswalk input vs. output across time for a wide range of programs

38

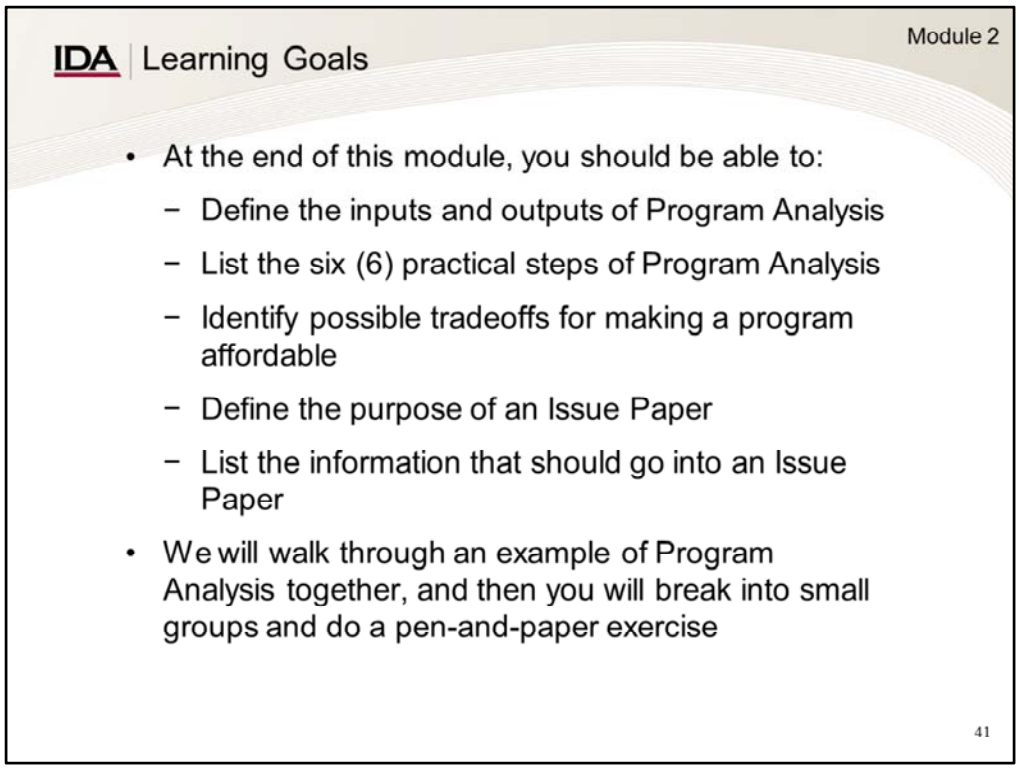
The graphic (lower half of the slide) is useful to emphasize that a program is essentially a crosswalk of resource inputs to intended capability output.



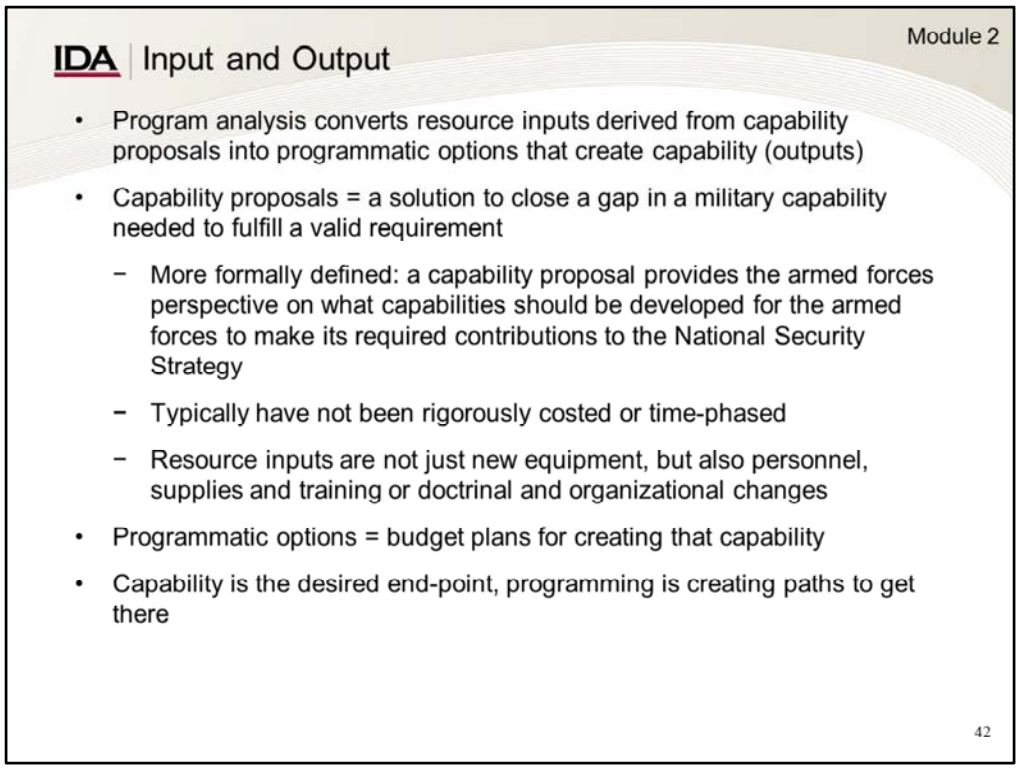
The instructor uses this opportunity to verify that students have written down answers for all of the goals learned in this module; and, if necessary, give further explanation.



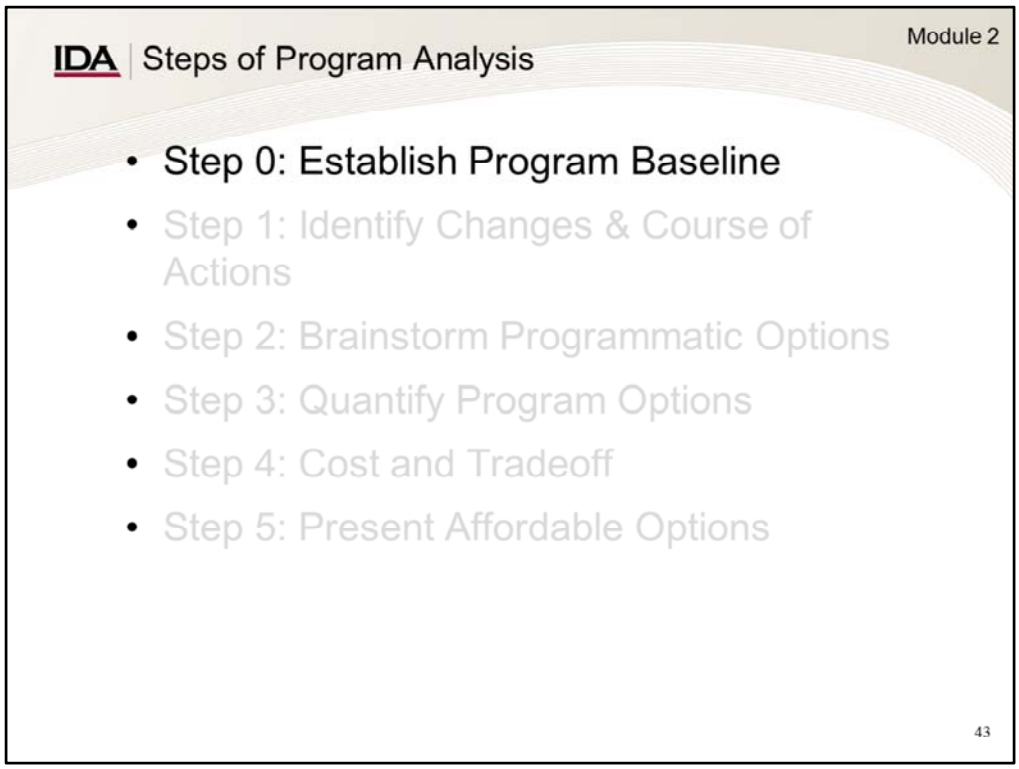
This module covers how to conduct Program Analysis in a rigorous, reproducible fashion.



The instructor walks the students through the learning goals and reminds them that these goals correspond with information on the Student Learning Progress – Handout.



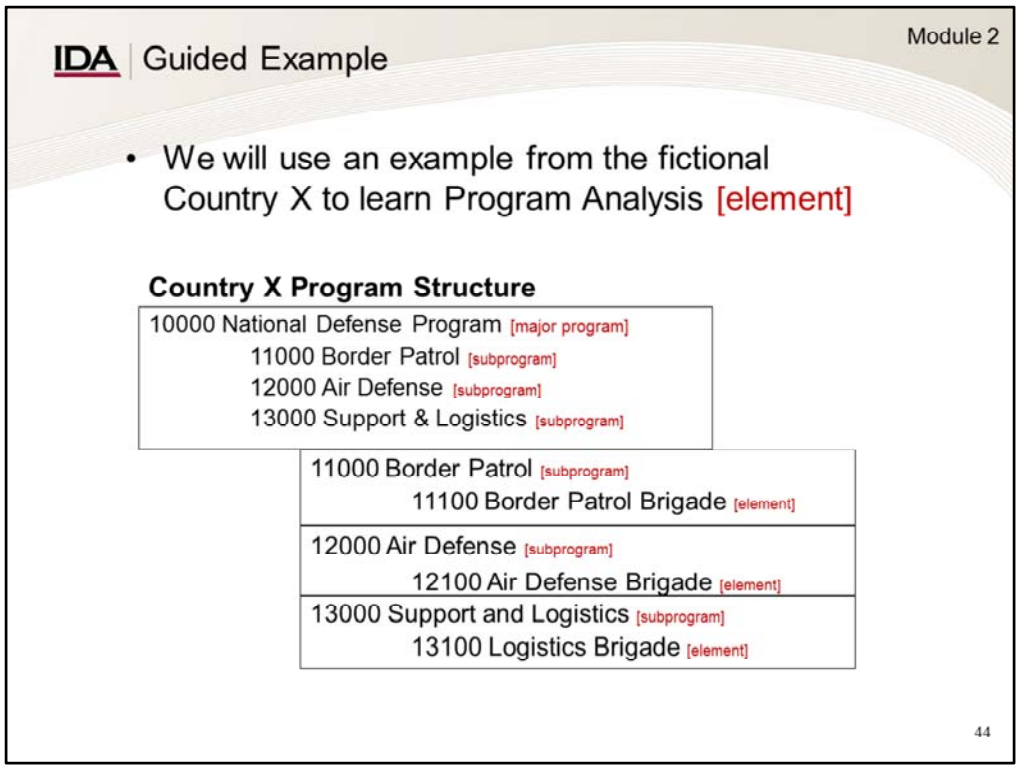
The information on this slide corresponds to Student Learning Process – Handout, question #7, "What are the input and outputs of Program Analysis?"



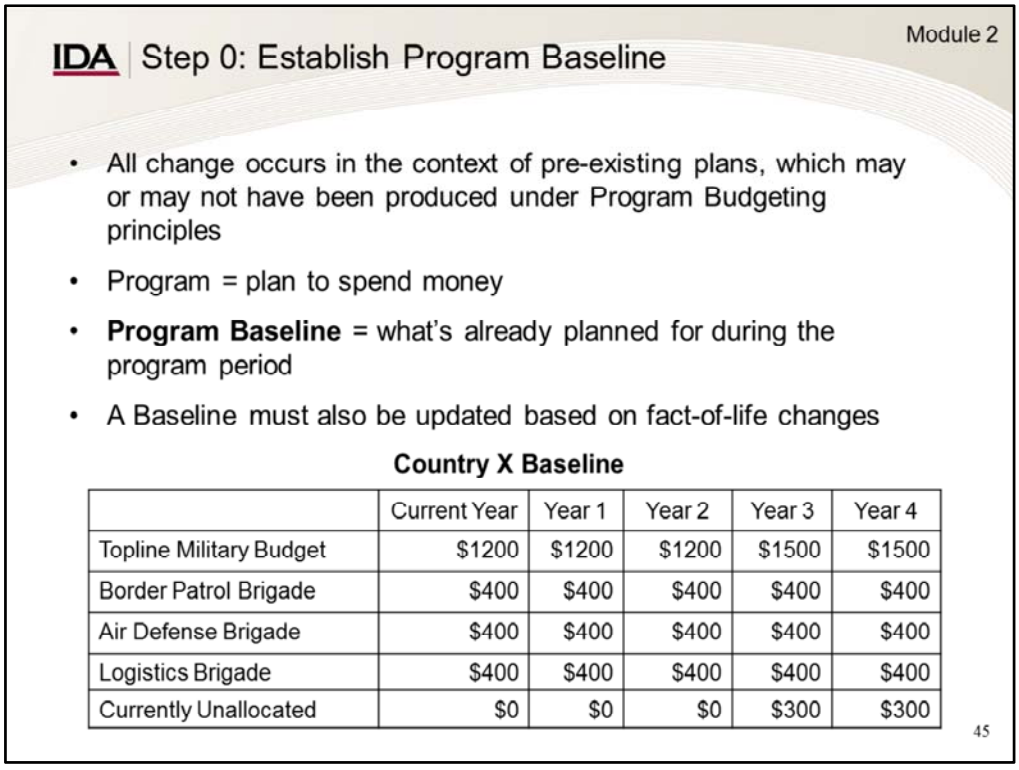
Capability planning processes inform program planning and ultimately Program Analysis. If a nation has no planning process through which it determines its capability requirements, then it cannot implement a Program Budgeting process; and Program Analysis, by itself, will have limited value.

The information on slides 43 to 62 corresponds to Student Learning Progress – Handout, question #8, "List the 6 steps of Program Analysis."

Important: Stress that no one office in the defense ministry or armed forces is responsible for all six steps. To undertake Program Analysis requires the staffs of the ministerial and armed forces to work collaboratively, aligned with the goals and procedures of the process. No one office can do everything.



A notional program structure is depicted in which the major program (National Defense) is subcomposed into three subprograms (Border Patrol, Air Defense, and Support & Logistics). Then each subprogram is subcomposed into a singular program element (e.g., a brigade).



	Current Year	Year 1	Year 2	Year 3	Year 4
Topline Military Budget	$1200	$1200	$1200	$1500	$1500
Border Patrol Brigade	$400	$400	$400	$400	$400
Air Defense Brigade	$400	$400	$400	$400	$400
Logistics Brigade	$400	$400	$400	$400	$400
Currently Unallocated	$0	$0	$0	$300	$300

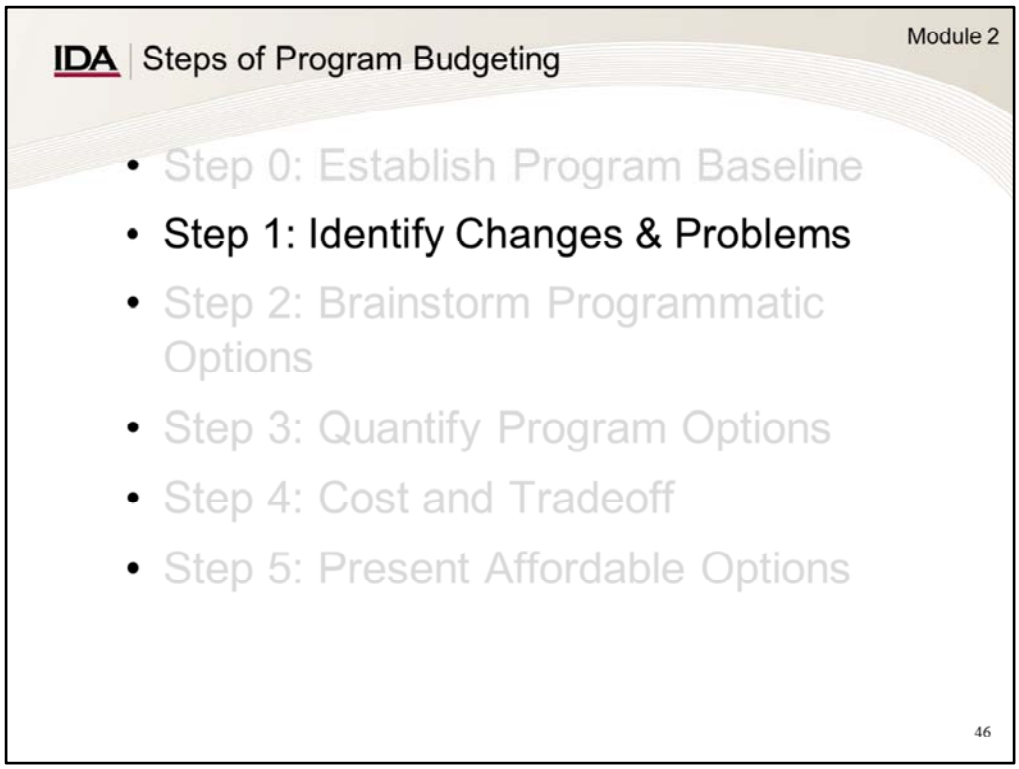
A Defense Program Baseline, which may also be referred to as the Program of Record, is a plan that details how defense resources (the inputs) are utilized in an integrated manner to produce intended operational and support capabilities (the outputs**).**

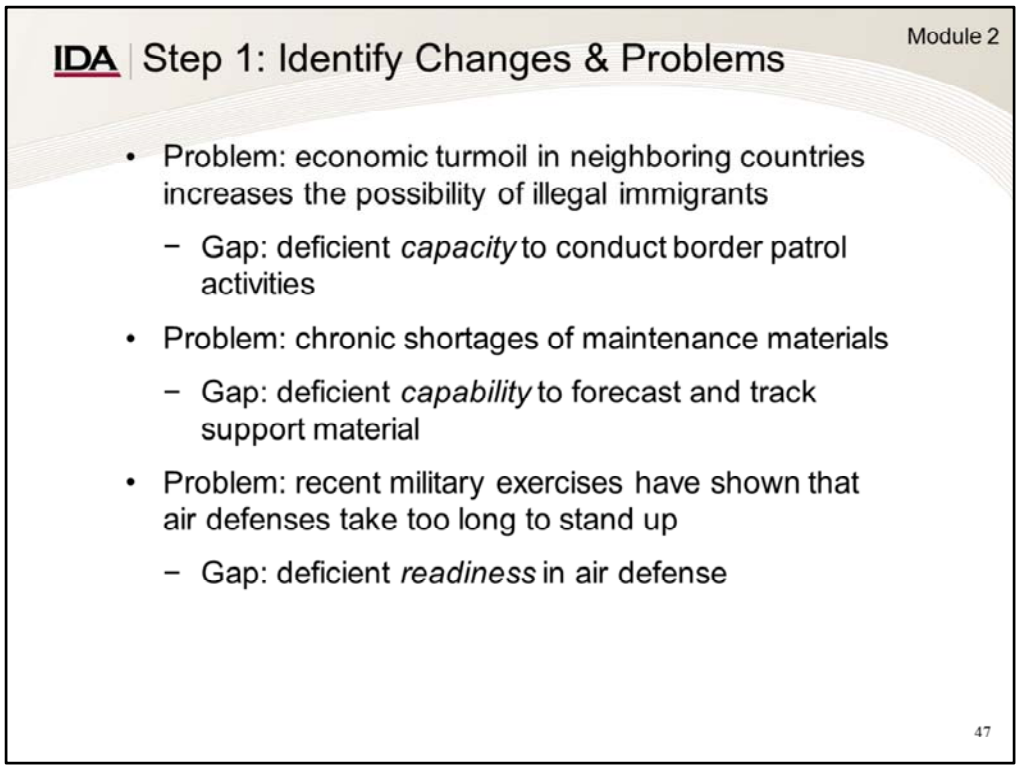
The charge to defense planners is to achieve the objectives assigned to the defense sector under the authority of the Senior Defense Official in a given nation—usually the Minister of Defense.

Fact-of-life changes are things such as

- changes in the assumed rate of inflation that may affect how certain costs, such as salaries, are calculated;
- changes in the base price of commodities such as oil, gasoline, or food stuffs that may also affect cost calculations; and
- changes that stem from legal or policy directives that were not deliberately planned and incorporated during the previous round of Program Analysis (for example, a legal or policy requirement to integrate females into combat units).

Fact-of-life changes that require an update to the Program Baseline occur outside the capability planning and Program Analysis processes.


IDA | Steps of Program Budgeting
Module 2
• Step 0: Establish Program Baseline
• Step 1: Identify Changes & Problems
• Step 2: Brainstorm Programmatic Options
• Step 3: Quantify Program Options
• Step 4: Cost and Tradeoff
• Step 5: Present Affordable Options
46

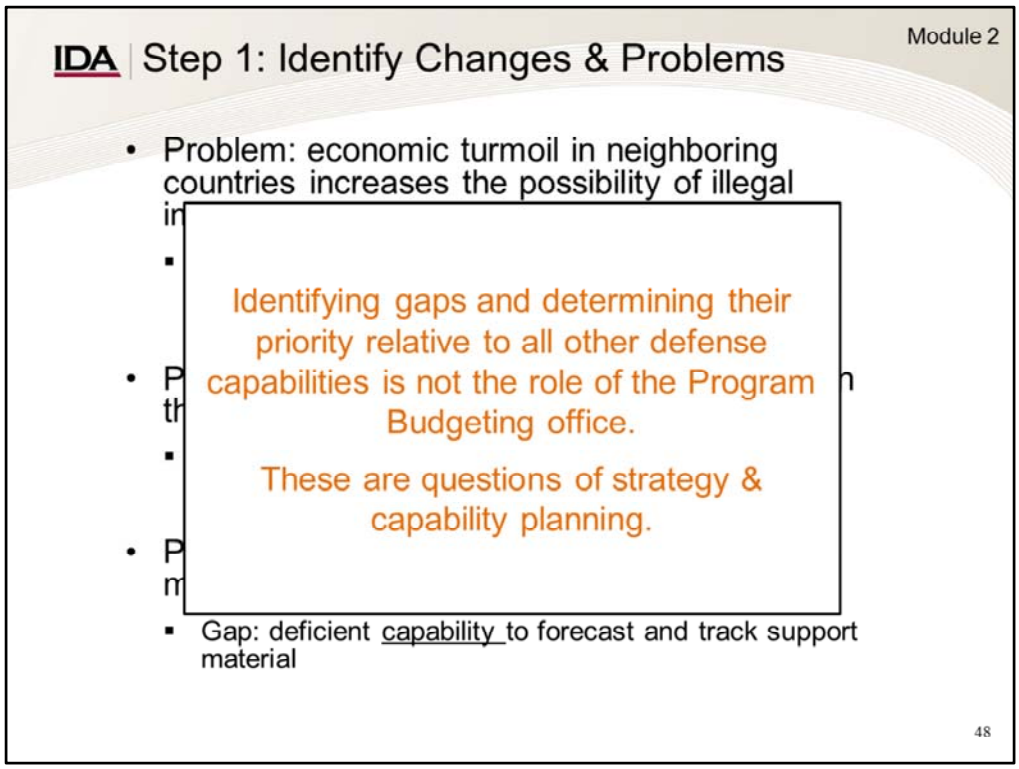


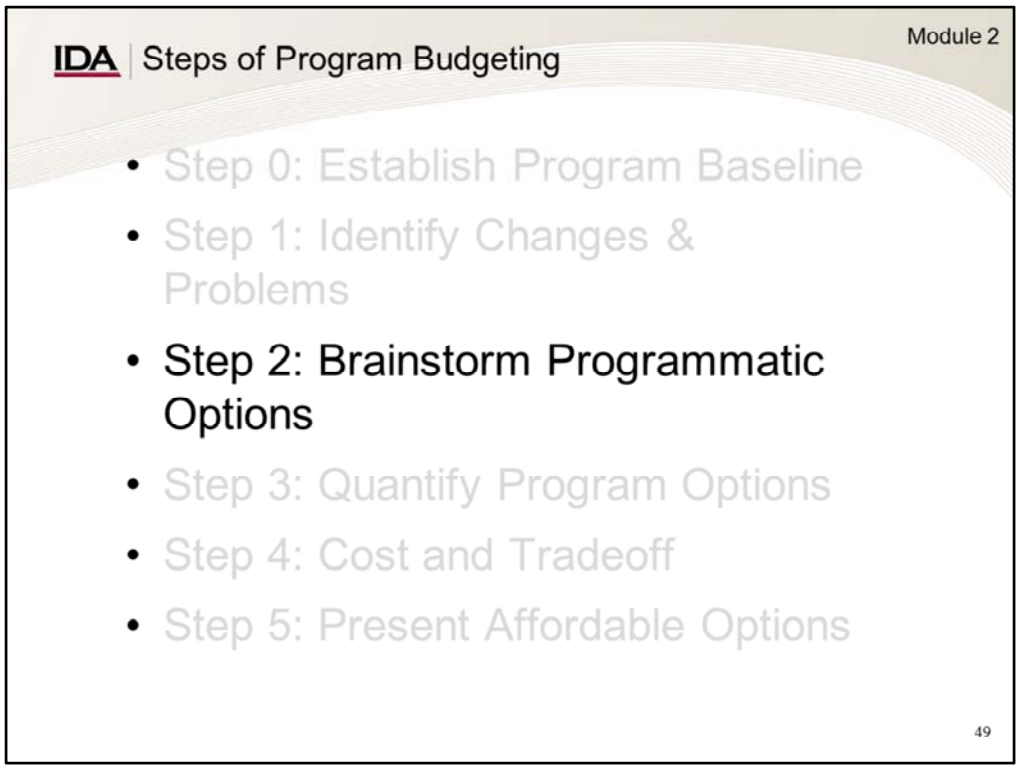
Priority challenges (or problems) and their associated gaps are not determined by the office responsible for Program Analysis. Where a Program Budgeting system exists, these items are communicated on a formal, documented basis by a senior defense official (e.g., the Minister of Defense), as these items require analytic attention.

The instructor should take some time to explain how a capacity gap, a capability gap, and a readiness gap are three different types of gaps.

- Capacity – I can do something, but I cannot do enough of it.
- Capability Gap – I can't do what I need to do.
- Readiness Gap – I can do what I am supposed to do, but not within the time needed.

Beware of the difference in *capacity* and *capability* being lost in translation. For example, in Spanish, both words typically translate to one Spanish word (*las capacidades*)


IDA | Step 1: Identify Changes & Problems
Module 2
• Problem: economic turmoil in neighboring countries increases the possibility of illegal
▪
Identifying gaps and determining their priority relative to all other defense capabilities is not the role of the Program Budgeting office.
These are questions of strategy & capability planning.
▪ Gap: deficient capability to forecast and track support material
48


IDA | Steps of Program Budgeting
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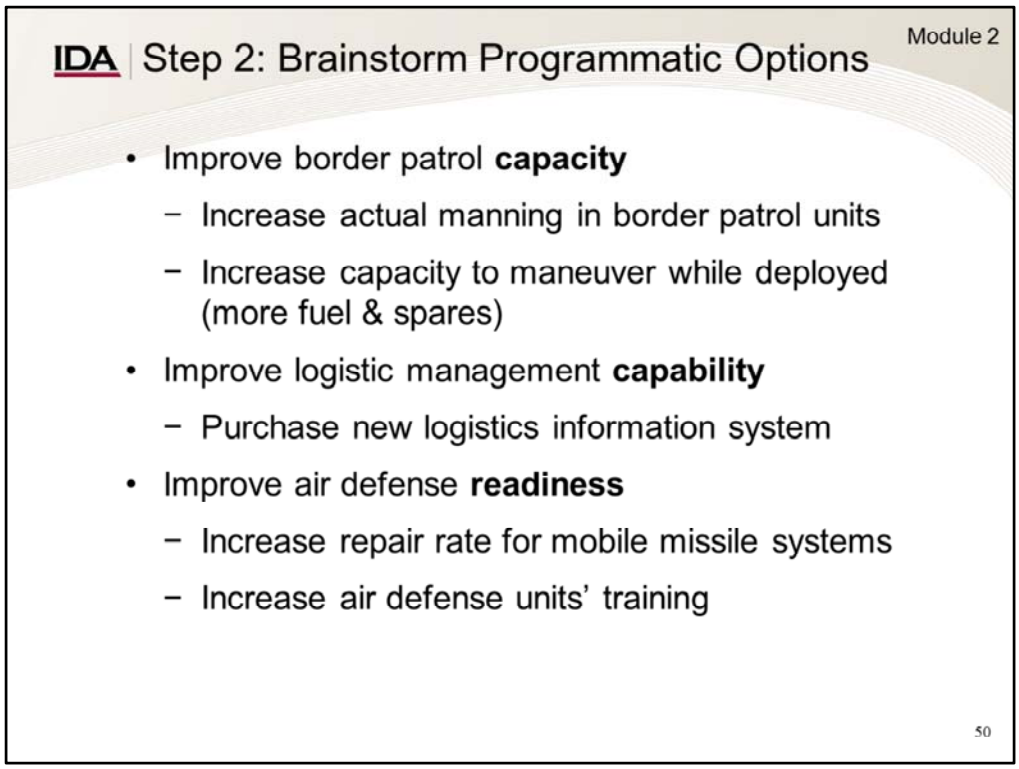
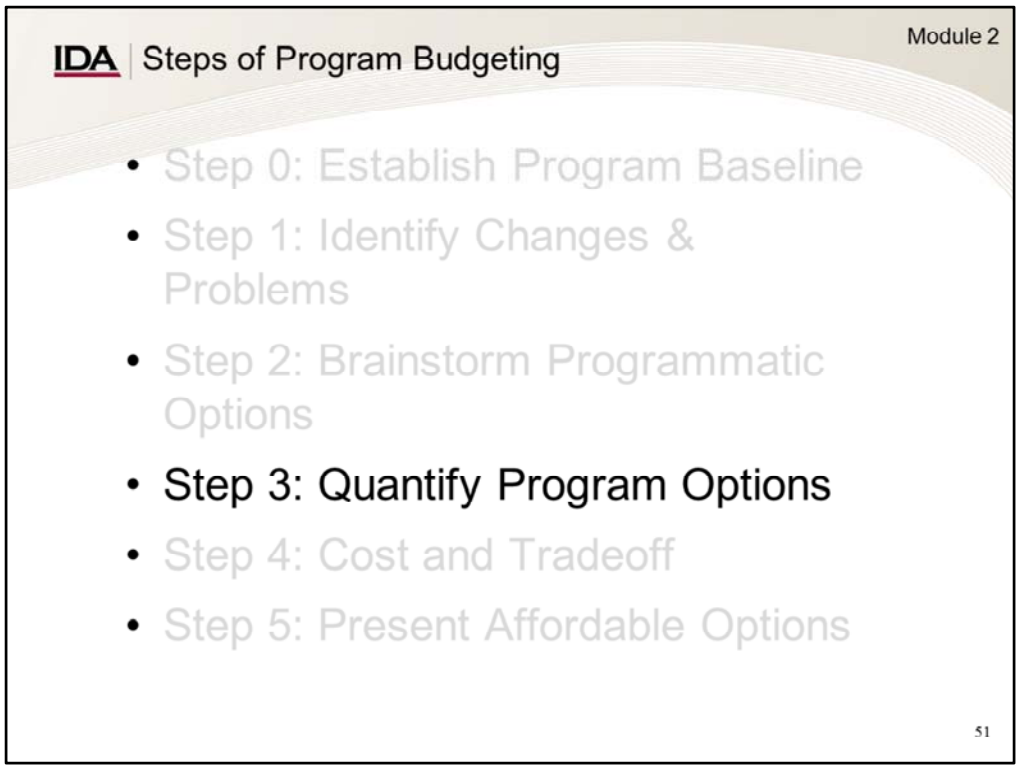
49



Once brainstorming is complete, the proposed solutions go through a review process that ultimately receives approval by a senior defense official (e.g., the Minister of Defense).


IDA | Steps of Program Budgeting
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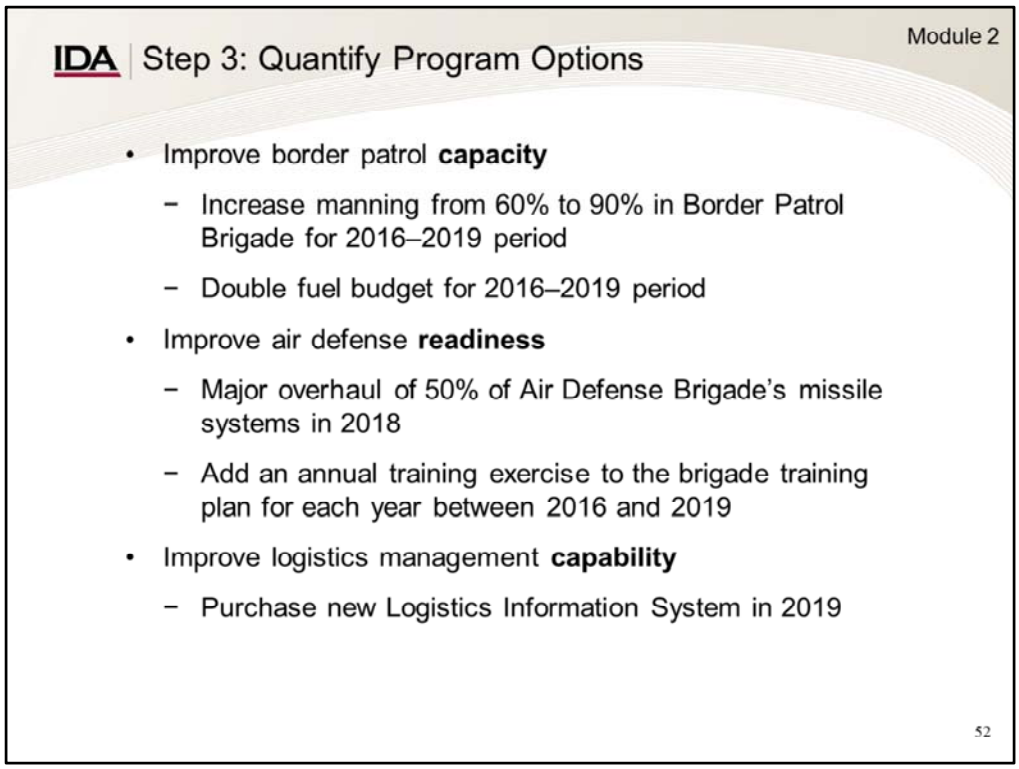
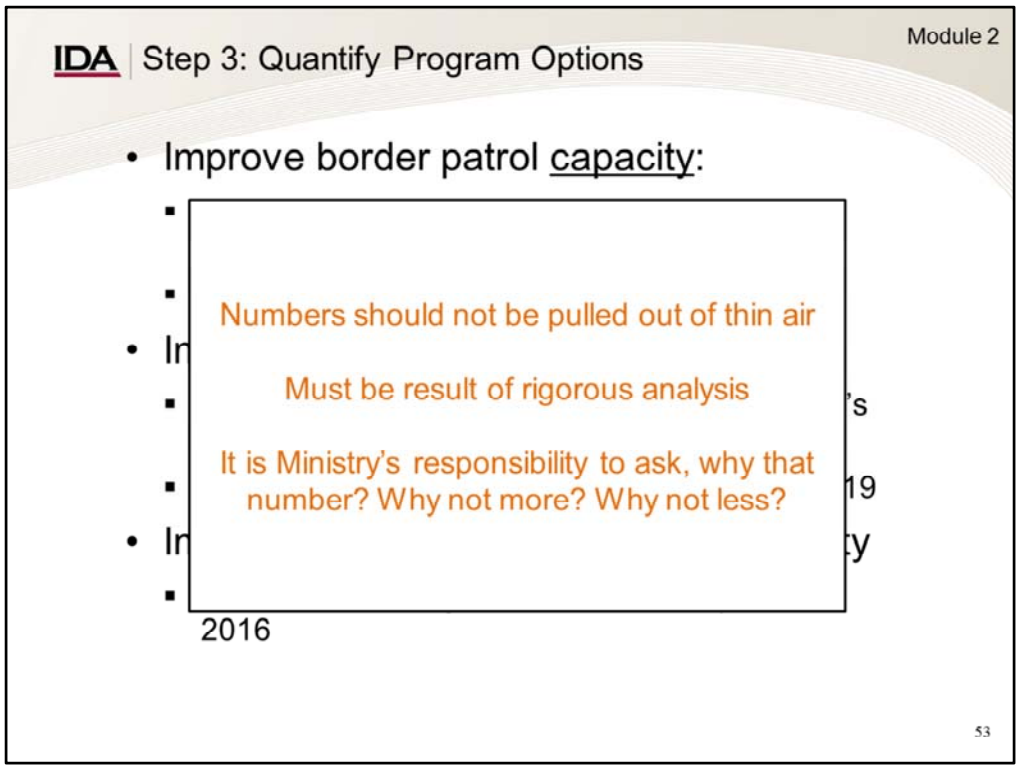


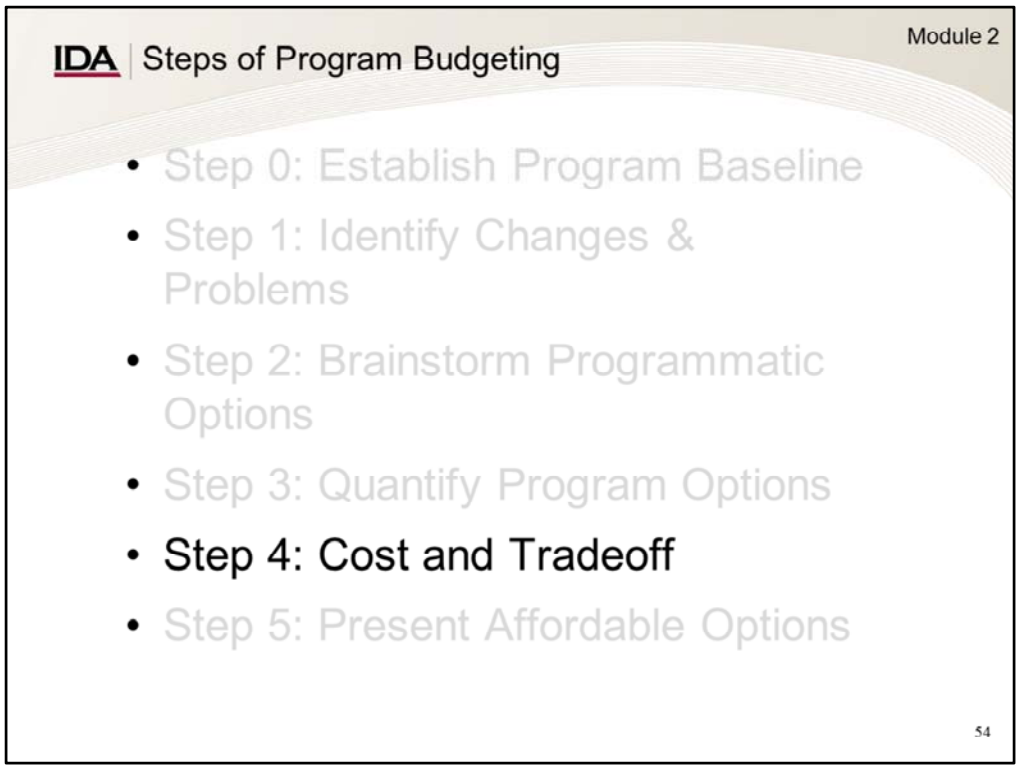
The proposed solutions must be articulated with enough detail so that all resource implications can be understood, estimated, and evaluated for feasibility.

Capability is a function of the inputs required to create the capability. An acronym to remember what the resource inputs are is DOTMLPFP (doctrine, organization, training, materiel, leadership & education, personnel, facilities, and policy).

A capability proposal must be decomposed into its functional inputs and then a cost estimate prepared.

If the proposed solutions are already well quantified, then step 3, Quantification, may be simple. If not, then step 3 requires the Program Analysis office perform this step in coordination with the defense experts who are able to assess whether a certain level of quantification may either close or mitigate a gap.


IDA
Step 3: Quantify Program Options
Module 2
Improve border patrol capacity:
Numbers should not be pulled out of thin air
Must be result of rigorous analysis
It is Ministry's responsibility to ask, why that number? Why not more? Why not less?
2016
53


IDA | Steps of Program Budgeting
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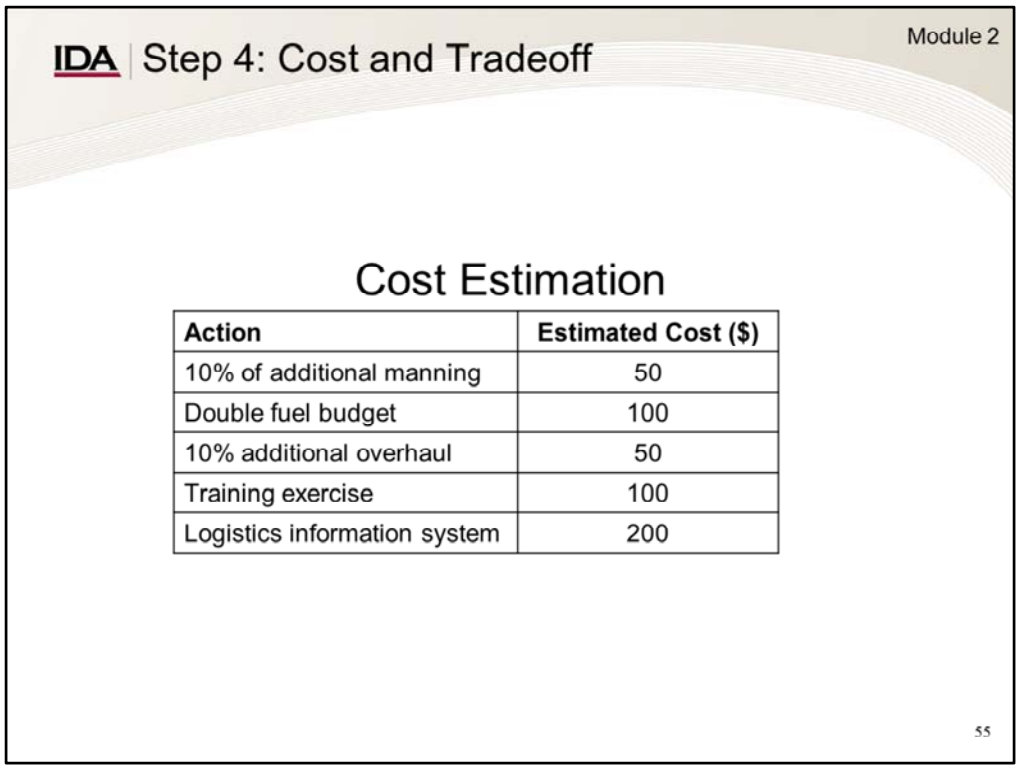
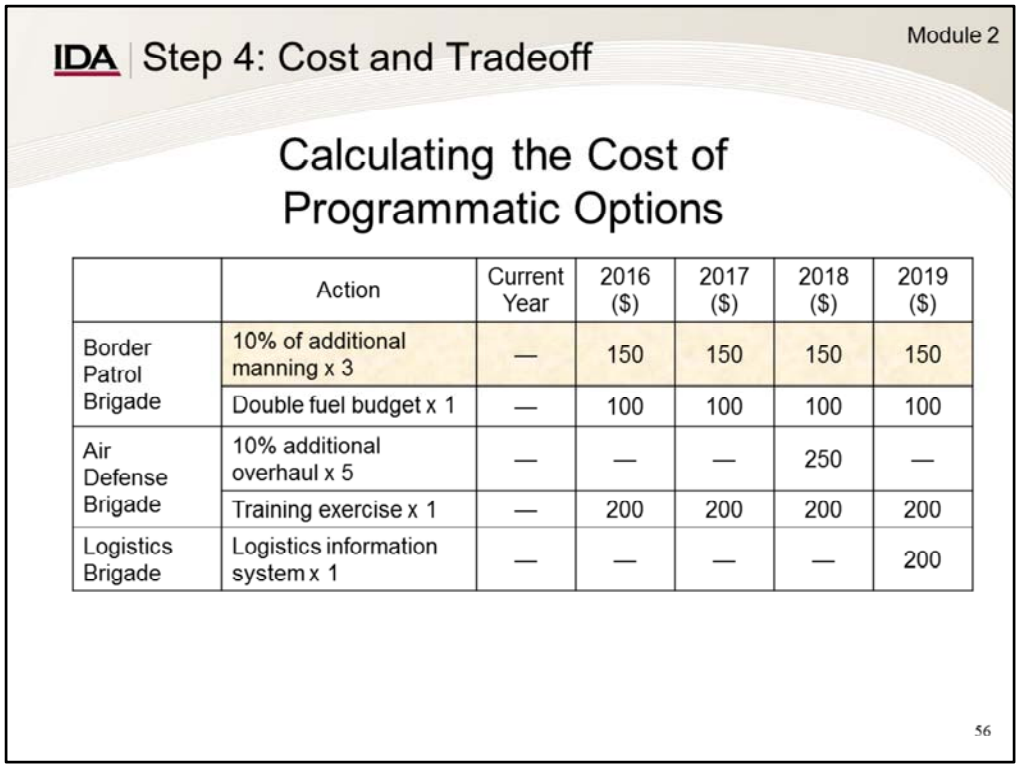


Cost estimates are based on a commonly agreed-to list of cost factors that senior defense stakeholders have agreed to and approved.



	Action	Current Year	2016 ($)	2017 ($)	2018 ($)	2019 ($)
Border Patrol Brigade	10% of additional manning x 3	—	150	150	150	150
	Double fuel budget x 1	—	100	100	100	100
Air Defense Brigade	10% additional overhaul x 5	—	—	—	250	—
	Training exercise x 1	—	200	200	200	200
Logistics Brigade	Logistics information system x 1	—	—	—	—	200

The cost calculations are tied to the options proposed on slide 50. The instructor walks the students through how these costs are calculated: for example, if 10% of additional manning costs $50, three units of additional manning cost $150.

Module 2

IDA Adding Programmatic Options to Baseline

		Current ($)	2016 ($)	2017 ($)	2018 ($)	2019 ($)
Military Budget	**Baseline**	**1200**	**1200**	**1200**	**1500**	**1500**
Border Patrol Brigade	Baseline	400	400	400	400	400
	New	—	250	250	250	250
	New Total	—	650	650	750	750
Air Defense Brigade	Baseline	400	400	400	400	400
	New	—	200	200	450	200
	New Total	—	600	600	850	600
Logistics Brigade	Baseline	400	400	400	400	400
	New	—	—	—	—	200
	New Total	—	400	400	400	600
Proposed Budget	**New**	**1200**	**1650**	**1650**	**2000**	**1950**

57

The instructor shows how the total costs are calculated by adding the cost of the new programmatic options to the cost of the existing Baseline. When the changes are made, the total defense program exceeds the forecast budget limit, e.g., $1,950 > $1,500.

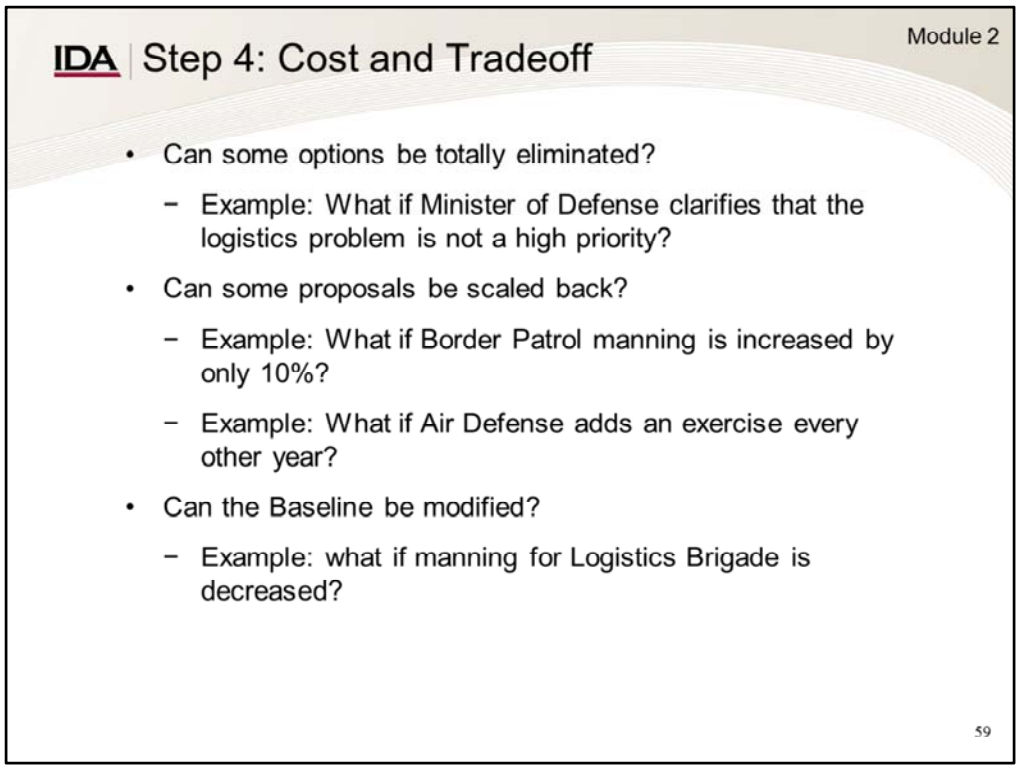
Module 2

IDA | Step 4: Cost and Tradeoff

		Current	2016	2017	2018	2019
Military Budget						$1500
Border Patrol Brigade						$400
						$250
						$750
Air Defense Brigade						$400
						$200
						$600
Logistics Brigade						$400
						$200
						$600
Proposed Budget	**New**	$1200	$1650	$1650	$2000	$1950

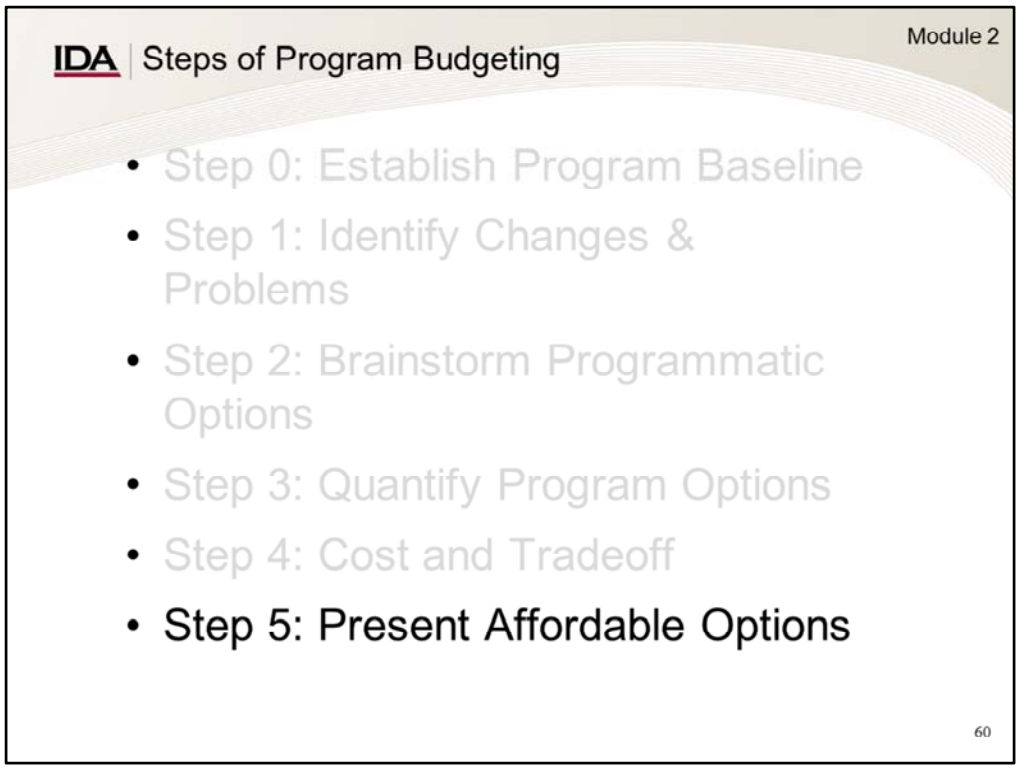
All of the proposed solutions are not affordable!

58



The information on this slide corresponds to Student Learning Process – Handout, question #9, "Identify how to make tradeoffs to make a program affordable."

By referring back to the cost calculations on slide 56, we can see how altering the program proposals lowers the total program cost. An alternative tradeoff is altering the Baseline to afford the program proposals as is. However, this step has to be carefully considered before being chosen. For example, what if the logistics brigade is already short of people to do its primary mission? Further reducing its personnel to be able to buy an information management system is only a good idea if the new system reduces the need for personnel in the brigade.


IDA | Steps of Program Budgeting
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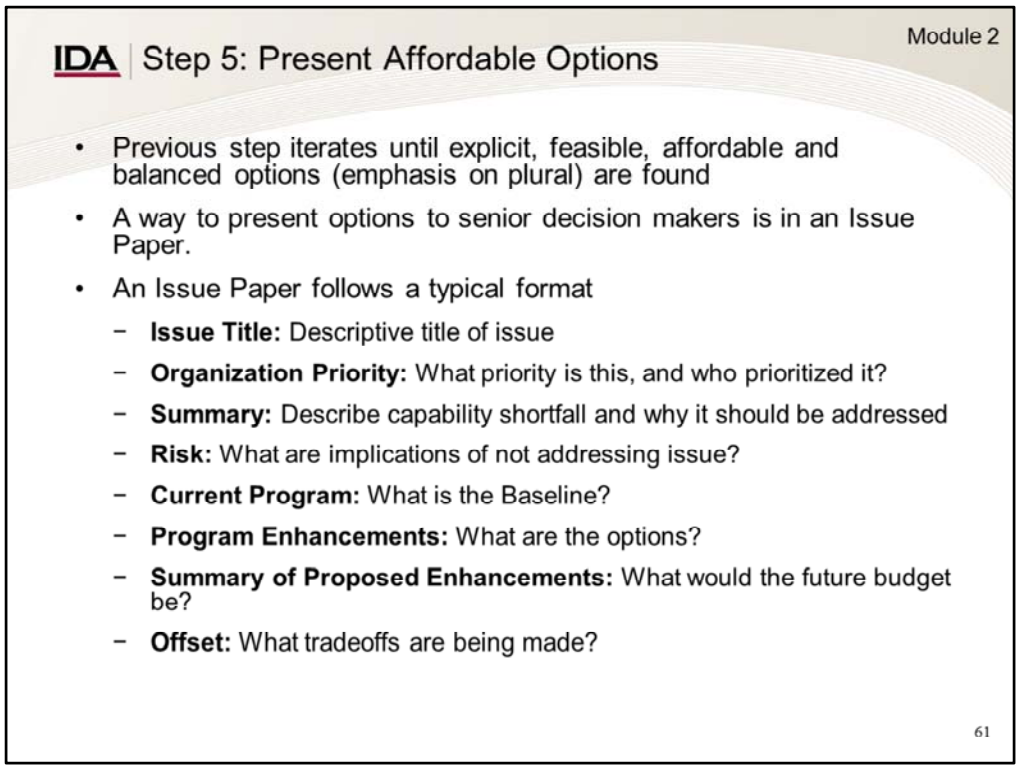
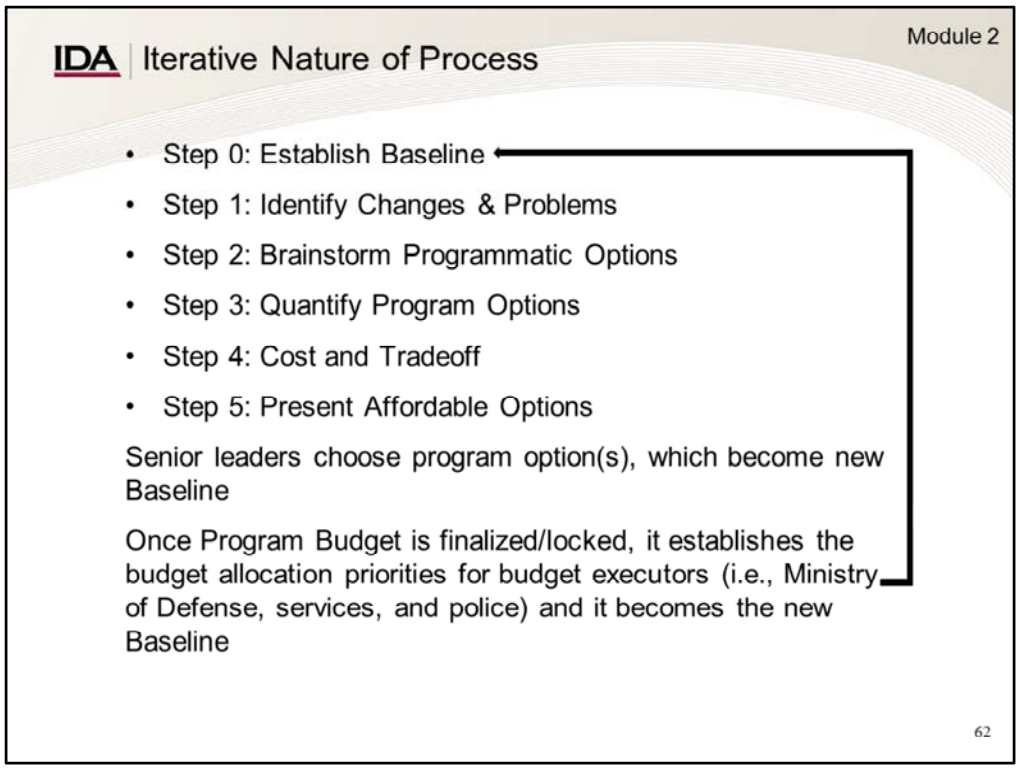
• Step 5: Present Affordable Options
60

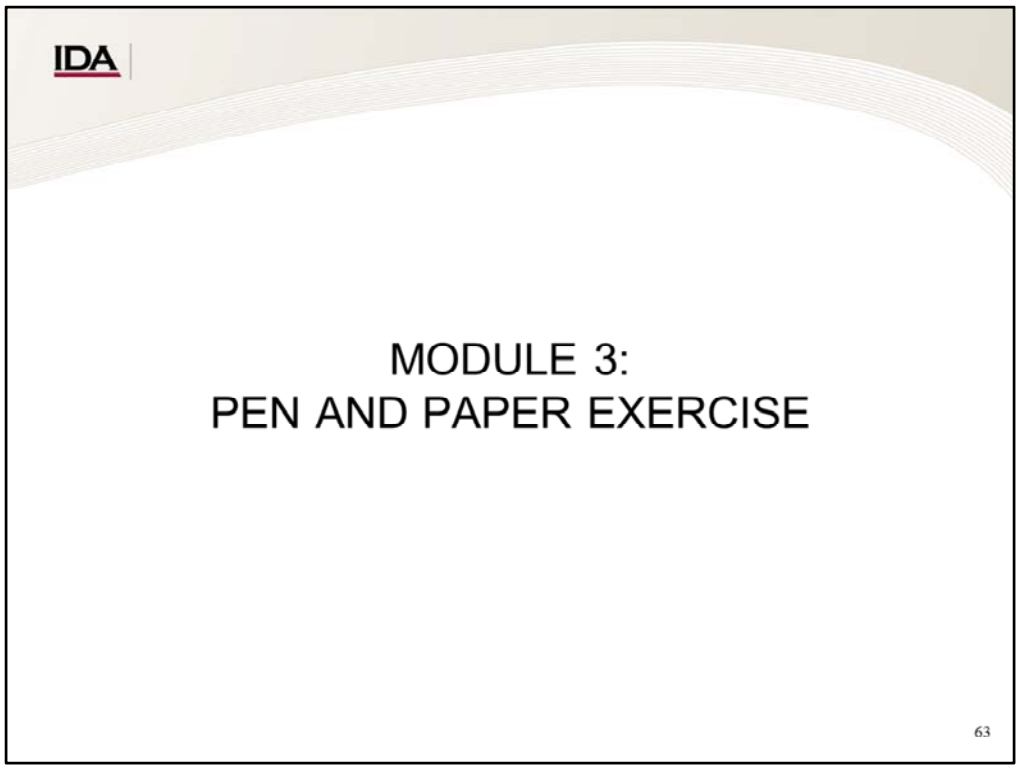


The information on this slide corresponds to Student Learning Process – Handout, question #10, "What information should go into an Issue Paper?"

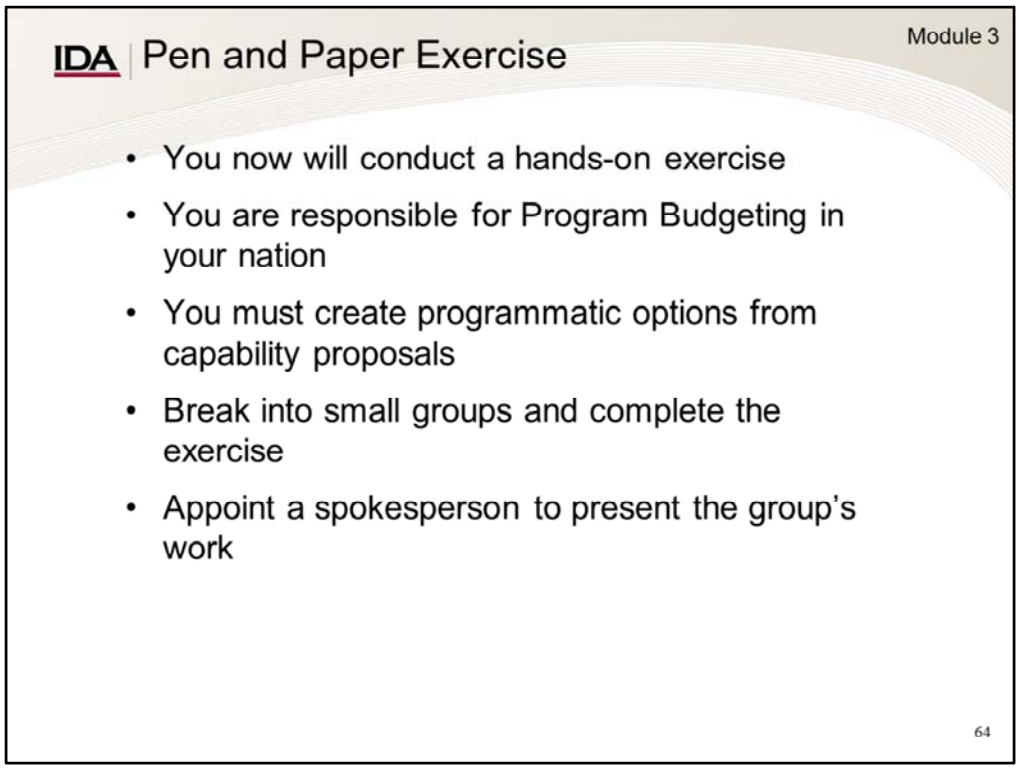


Program analysis is an iterative process that begins and ends by establishing a Baseline. After Step 5, "Present Affordable Options," is completed, the Baseline is updated based on the approved changes made to the Defense Program Baseline. This Baseline becomes the new Program of Record and is the starting point for the next round of Program Analysis in which the process being again by establishing a new Baseline by updating the one agreed to during the last round of Program Analysis.

A student may ask, how often does Program Analysis occur? The answer is that it is typically an annual or biennial (i.e., every two years) process.

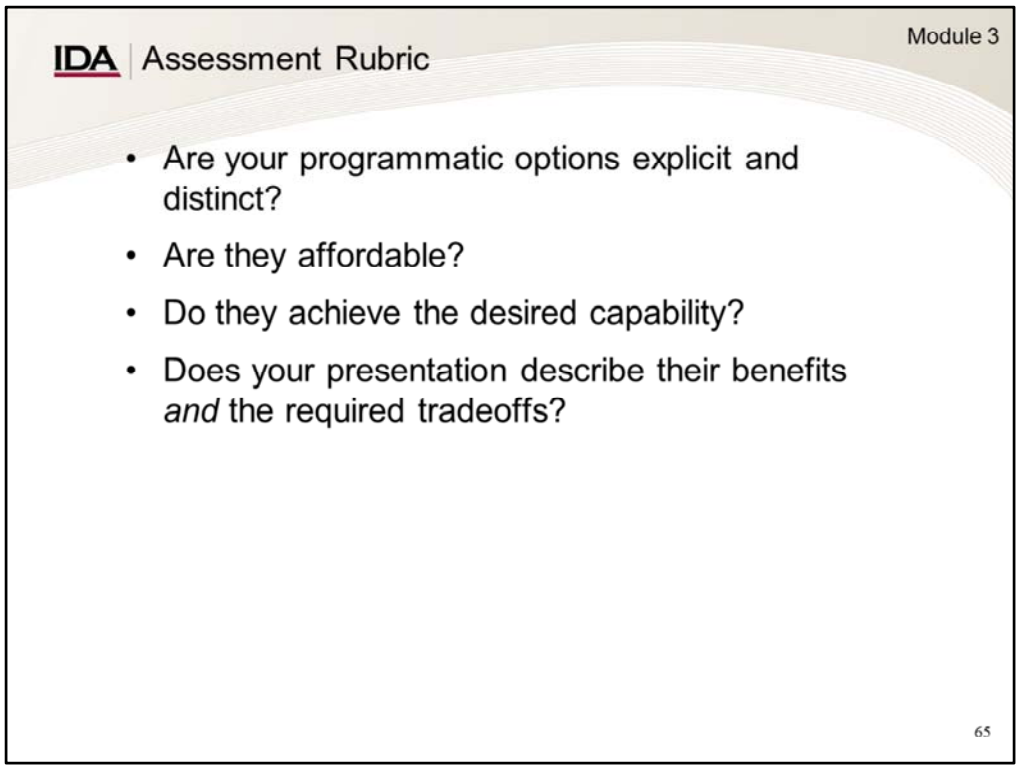


The instructor should pass out the pen and paper exercise handout, completion of which constitutes Student Learning Progress Handout, #11, “Break [out] into small groups and complete the assigned exercise.”



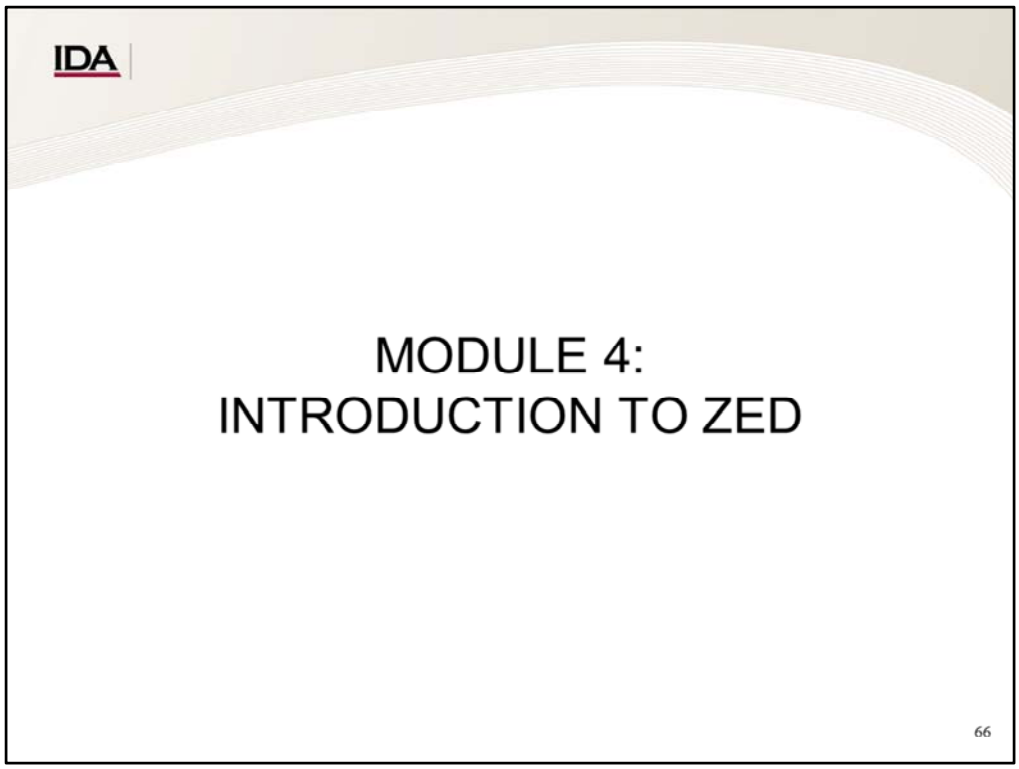
The instructor should walk the students through the handout, and break them into small groups to work on the exercise.

The exercise is self-explanatory, for the most part. The assessment rubric is shown on the next slide.



Before the students present their results, the instructor should show them the assessment rubric, against which their presentations are judged.

Afterwards, the instructor should offer constructive feedback on the student presentations.



This section has two purposes:

- Familiarize the students with the Zed force structure (questions 12 to 14 on the Student Learning Progress – Handout).

  12. Describe Zed's strategic environment, Mission Areas, military services, and geographic commands.

  13. What is Zed's yearly defense budget for 2016–2019?

  14. Which military service has the most personnel and the highest budget?

- Learn how to use analytical models within FOCIS (Questions 15 to 18 on the Handout).

  15. What is an Analysis Model in FOCIS? How do you run a report using one or more analytical models?

  16. Which Mission Area has the most personnel assigned to it?

  17. Which geographic command has the most Territorial Defense personnel assigned to it?

  18. Which Zed units are part of the Strategic Mobility program, and what planes do they have?

If the students are already proficient with analytic models, then the instructor should tailor this section accordingly.

IDA | Learning Goals

- At the end of this module, you should be able to
  - Describe the Zed strategic environment, Mission Areas, & geographic commands
  - Use FOCIS to answer questions about the Zed force structure
  - Use FOCIS Analysis Models
- This section is relatively short and is intended to familiarize you with Zed in preparation for a hands-on programming exercise using FOCIS

IDA | Republic of Zed

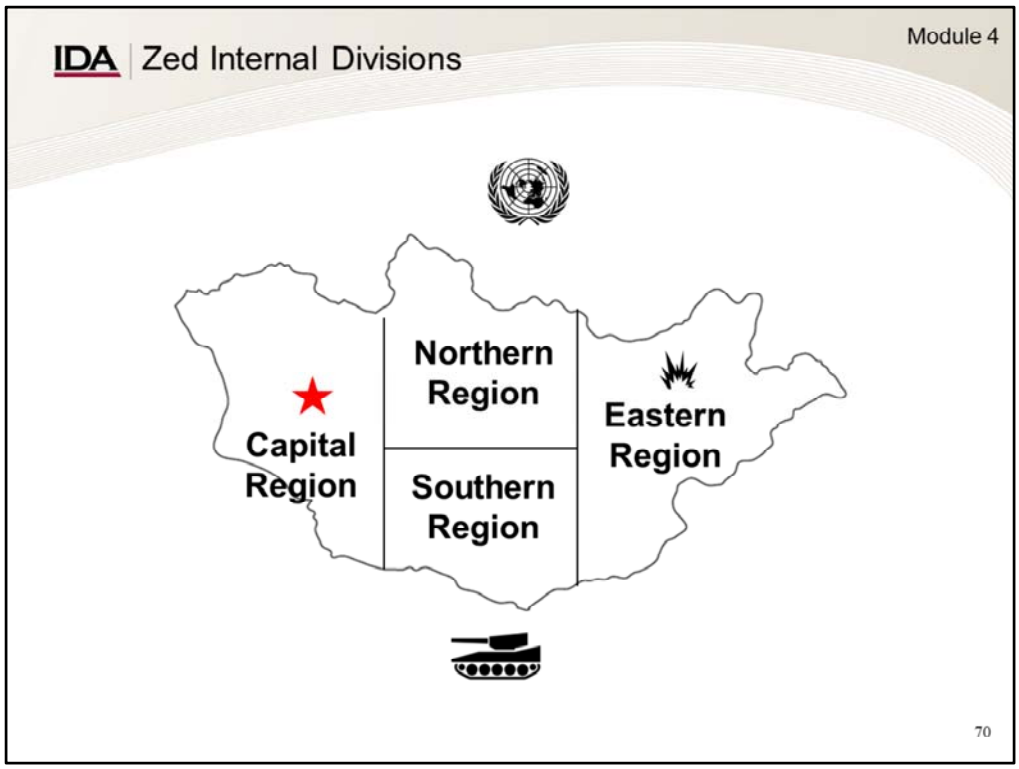
Module 4

- Zed is a fictional country
- You work for the Zed Ministry of Defense and are responsible for Program Budgeting

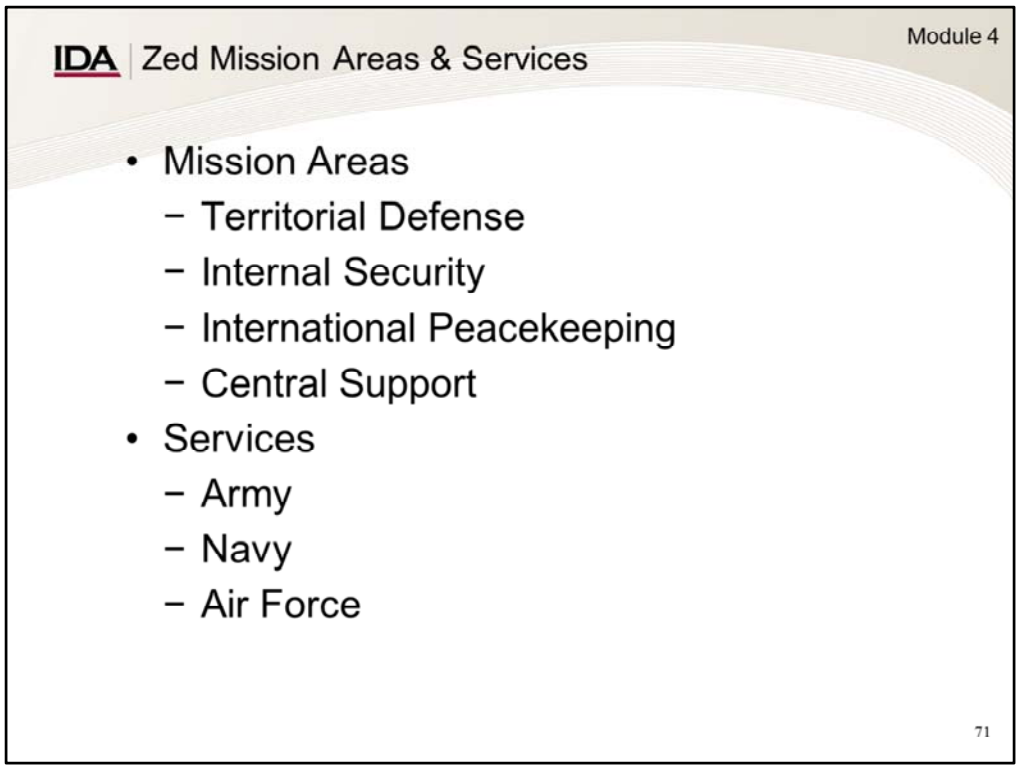
68

Zed's security environment has the following characteristics:

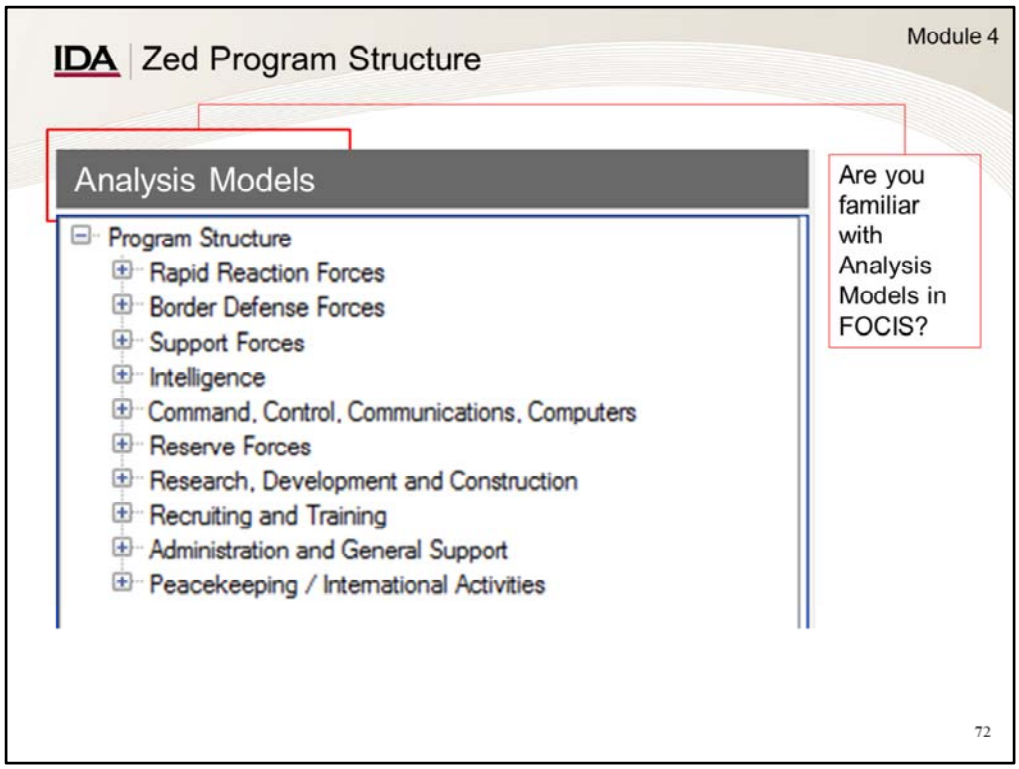
- In the east, violent insurgent groups are active.
- To the south, an aggressive neighbor has positioned combat troops and is conducting offensive military exercises.
- Relations with the country to the west are peaceful and friendly.
- Some of the nation's forces are deployed north of the country as part of an international peacekeeping operation.



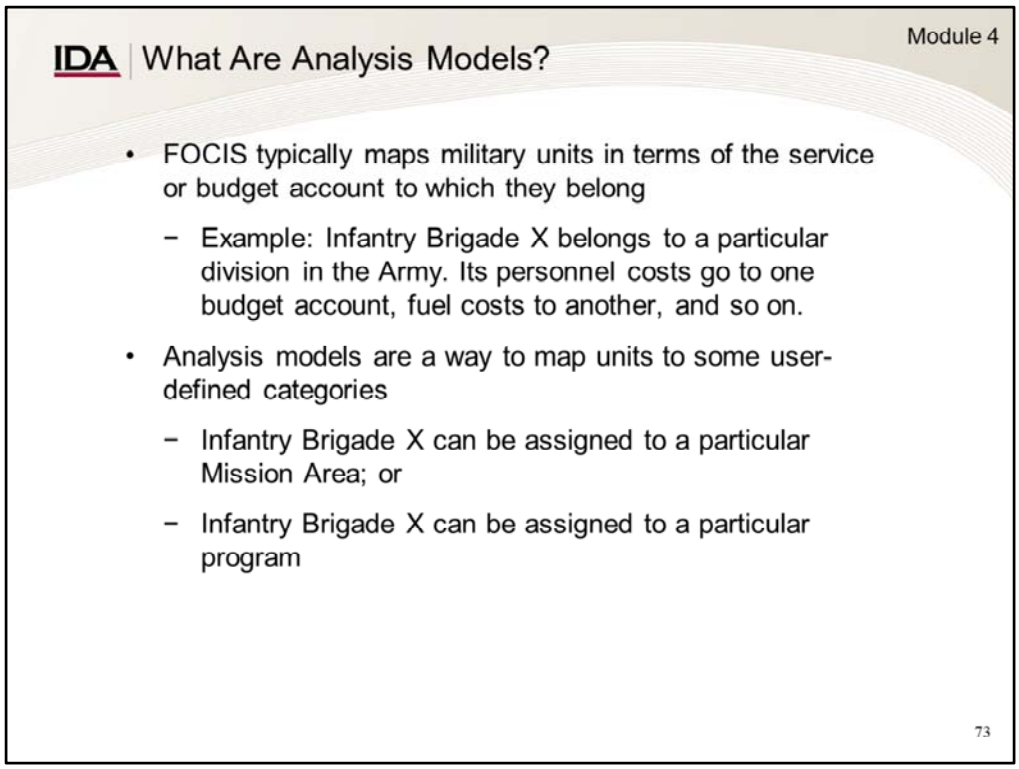
Zed divides its forces among four regions. Each region has its own command structure.



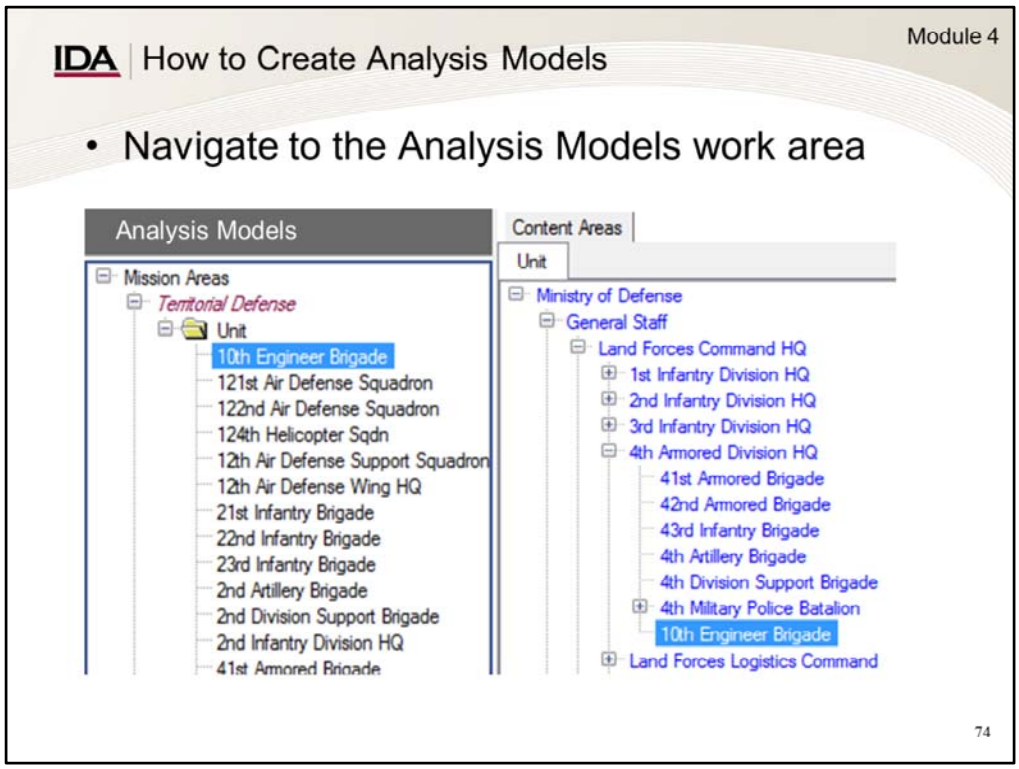
The Armed Forces of Zed are responsible for four major Mission Areas (listed in the slide) and have three independent military services, Army, Navy, and Air Force.



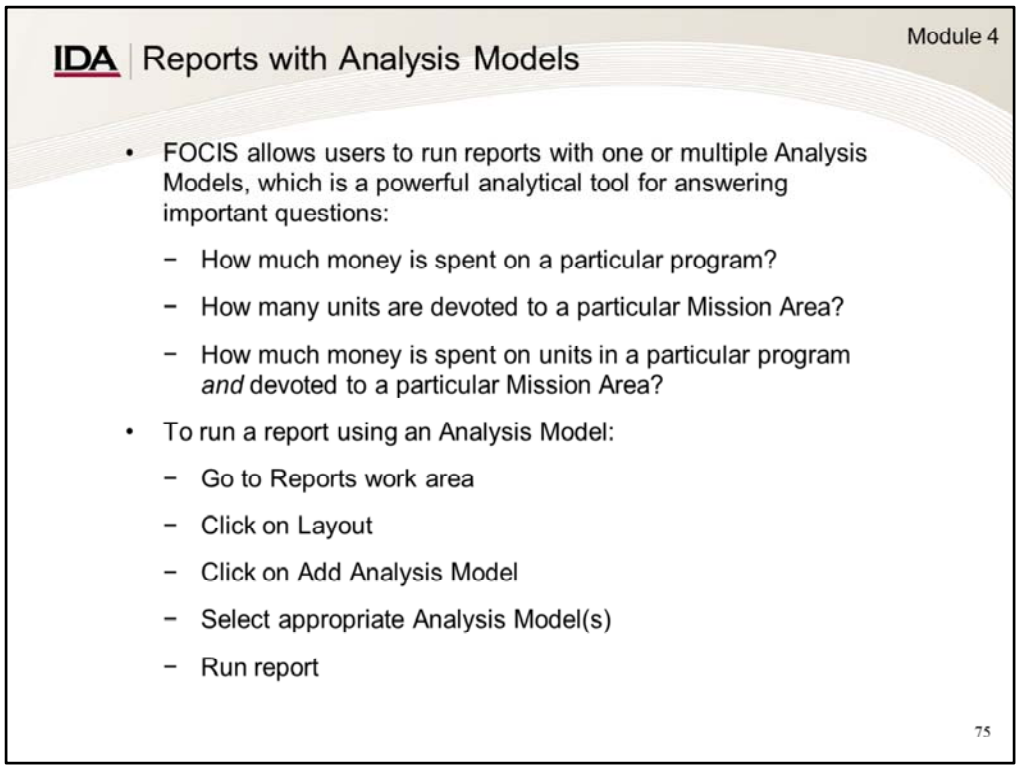
This is Zed's program structure. The instructor asks the students if they are familiar with Analysis Models, which is how Program Structures and Mission Areas can be mapped in the FOCIS database. Slides 73 to 76 contain a brief introduction to Analysis Models.



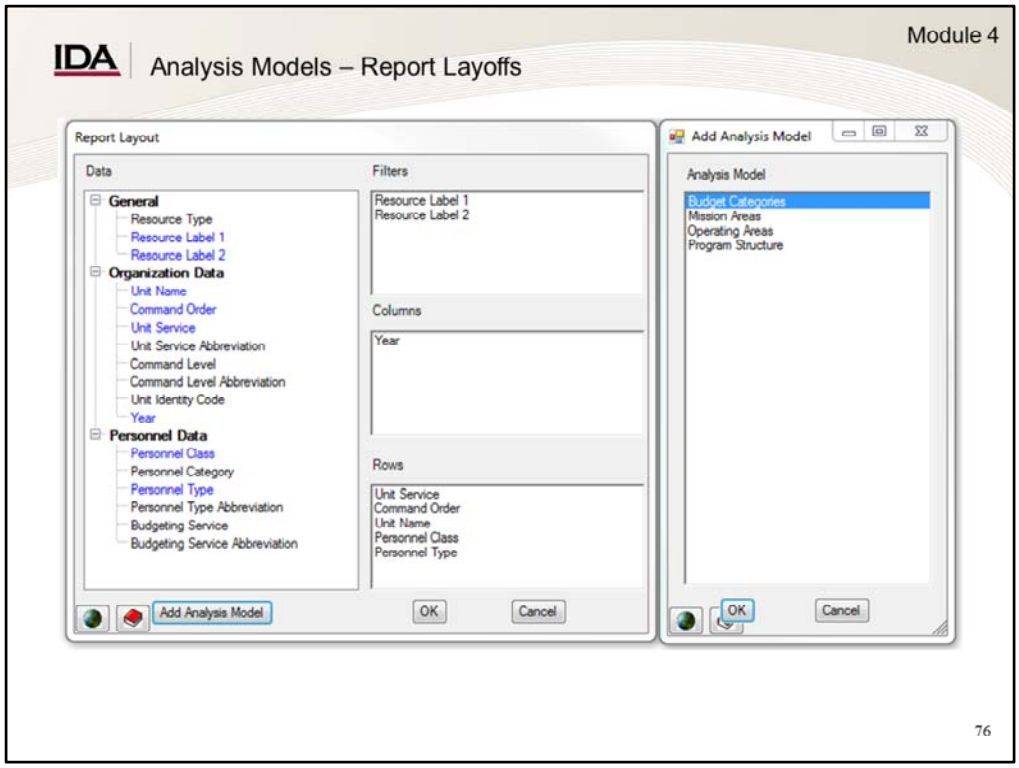
Slides 73 to 76 explain the purpose and use of Analysis Models within FOCIS.



The instructor demonstrates how to create Analysis Models using FOCIS. **Note:** Other relational databases may also be able to perform functions similar to FOCIS. However, FOCIS was specifically designed for the purposes described in the seminar.

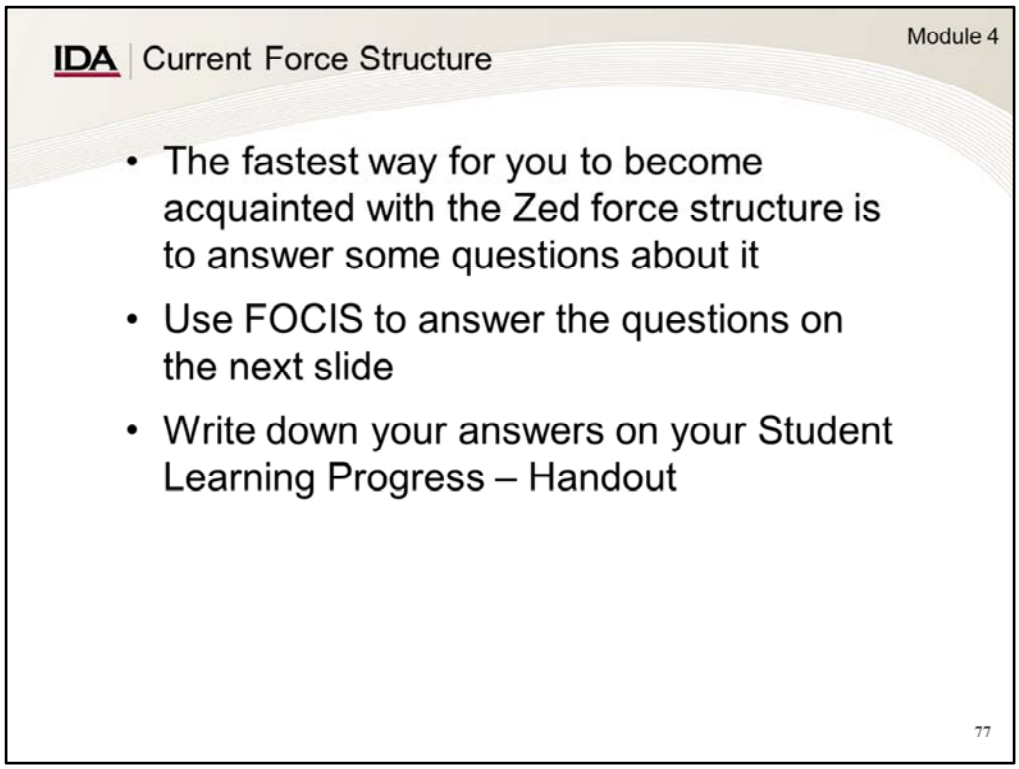


The instructor demonstrates how to run reports using Analysis Models.

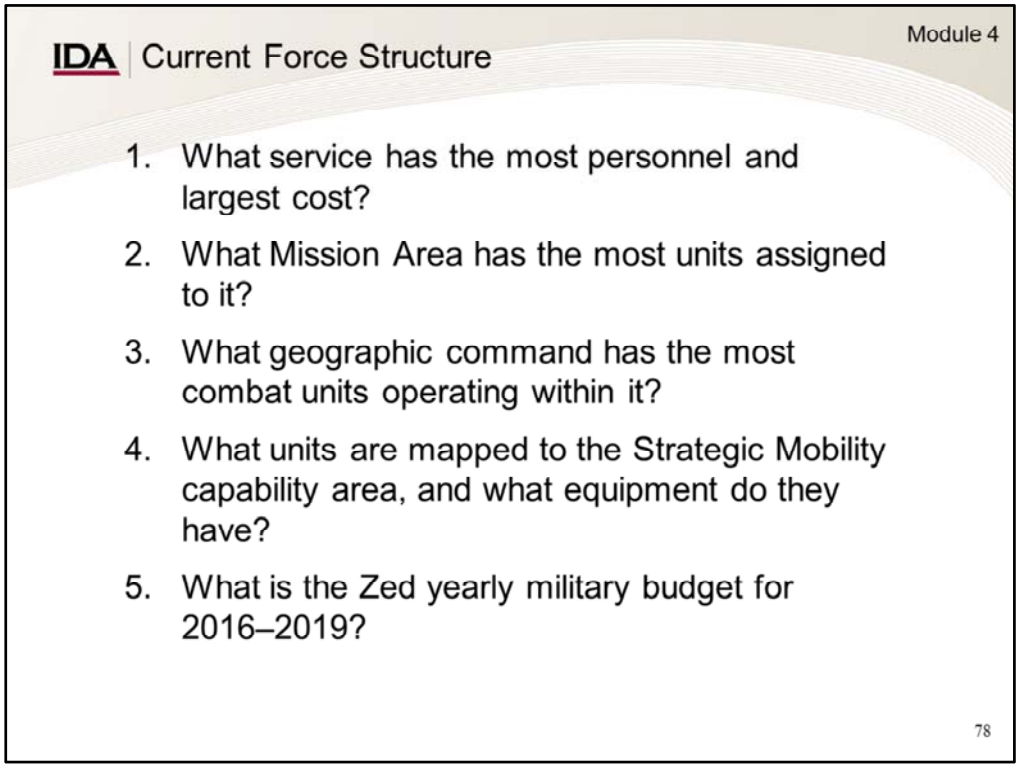


Ideally, the instructor should project from FOCIS to demonstrate how to select and run reports from Analysis Models.

Caution: If this is not possible, use this screenshot.



Organize the students into small groups to answer the questions that will appear on slides 78 to 88.



Leave this slide on the screen for students to reference while they are working. The instructor may need to help the students with some of the database reports, particularly those requiring the use of Analysis Model reports (questions 2 to 4).

Students should write their answers on the Student Learning Progress – Handout.

Each slide between 77 and 86 restates each question and then provides the answer.

The instructor should be prepared to demonstrate how to arrive at each answer in the event that any of the students did not arrive at the correct answer by him- or herself.

IDA | Current Force Structure

Module 4

1. What service has the most personnel and largest cost?
2. What Mission Area has the most units assigned to it?
3. What geographic command has the most units operating within it?
4. What units are mapped to Strategic Mobility, and what equipment do they have?
5. What is the Zed yearly military budget for 2016–2019?

79

IDA | Current Force Structure

Module 4

1. What service has the most personnel and largest cost? **Army**
2. What Mission Area has the most units assigned to it?
3. What geographic command has the most units operating within it?
4. What units are mapped to Strategic Mobility, and what equipment do they have?
5. What is the Zed top-line military budget for 2016–2019?

80

IDA | Current Force Structure

Module 4

1. What service has the most personnel and largest cost?
2. What Mission Area has the most personnel assigned to it?
3. What geographic command has the most units operating within it?
4. What units are mapped to Strategic Mobility, and what equipment do they have?
5. What is the Zed yearly military budget for 2016–2019?

81

IDA | Current Force Structure

Module 4

1. What service has the most personnel and largest cost?
2. What Mission Area has the most units assigned to it? **Territorial Defense**
3. What geographic command has the most units operating within it?
4. What units are mapped to Strategic Mobility, and what equipment do they have?
5. What is the Zed yearly military budget for 2016–2019?

82

IDA | Current Force Structure

Module 4

1. What service has the most personnel and largest cost?
2. What Mission Area has the most units assigned to it?
3. What geographic command has the most units operating within it?
4. What units are mapped to Strategic Mobility, and what equipment do they have?
5. What is the Zed yearly military budget for 2016–2019?

83

IDA | Current Force Structure

Module 4

1. What service has the most personnel and largest cost?
2. What Mission Area has the most units assigned to it?
3. What geographic command has the most units operating within it? **Eastern Region**
4. What units are mapped to Strategic Mobility, and what equipment do they have?
5. What is the Zed yearly military budget for 2016–2019?

84

IDA | Current Force Structure

Module 4

1. What service has the most personnel and largest cost?
2. What Mission Area has the most units assigned to it?
3. What geographic command has the most units operating within it?
4. What units are mapped to Strategic Mobility, and what equipment do they have?
5. What is the Zed yearly military budget for the year 2016 through 2019?

85

IDA | Current Force Structure

Module 4

1. What service has the most personnel and largest cost?
2. What Mission Area has the most units assigned to it?
3. What geographic command has the most units operating within it?
4. What units are mapped to Strategic Mobility, and what transportation platforms do they operate? **113th and 114th Air Mobility Squadrons, C-130s**
5. What is the Zed yearly military budget for the year 2016 through 2019?

86

IDA | Current Force Structure

Module 4

1. What service has the most personnel and largest cost?
2. What Mission Area has the most units assigned to it?
3. What geographic command has the most units operating within it?
4. What units are mapped to Strategic Mobility, and what equipment do they have?
5. What is the Zed yearly military budget for 2016–2019?

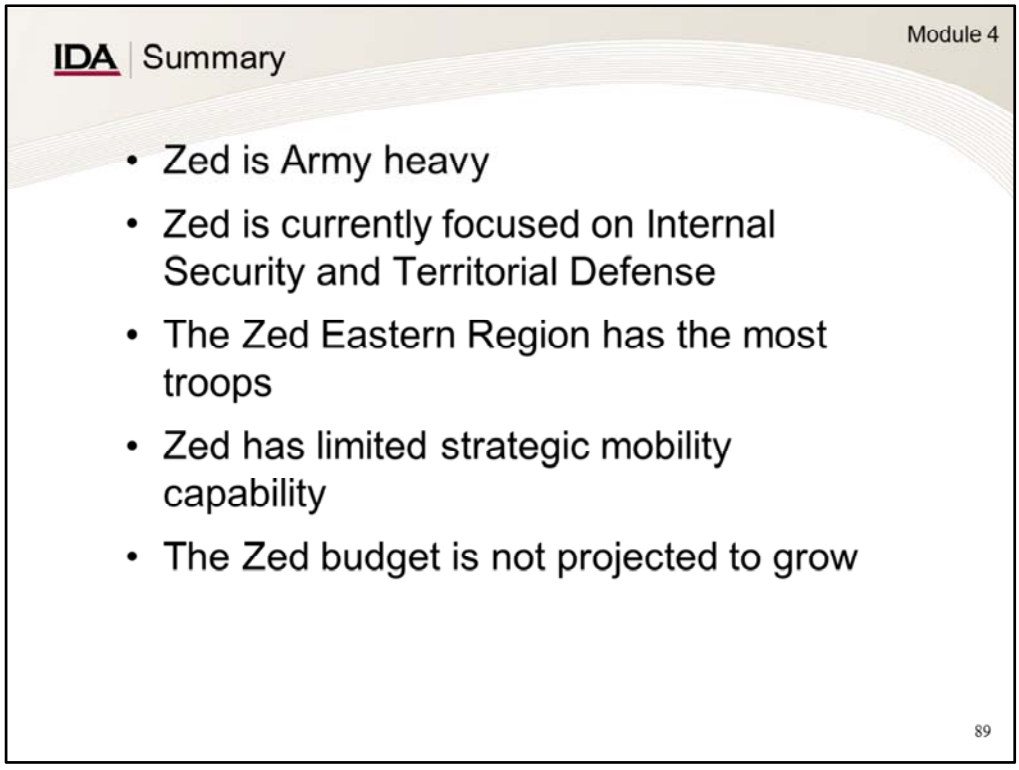
87

IDA | Current Force Structure

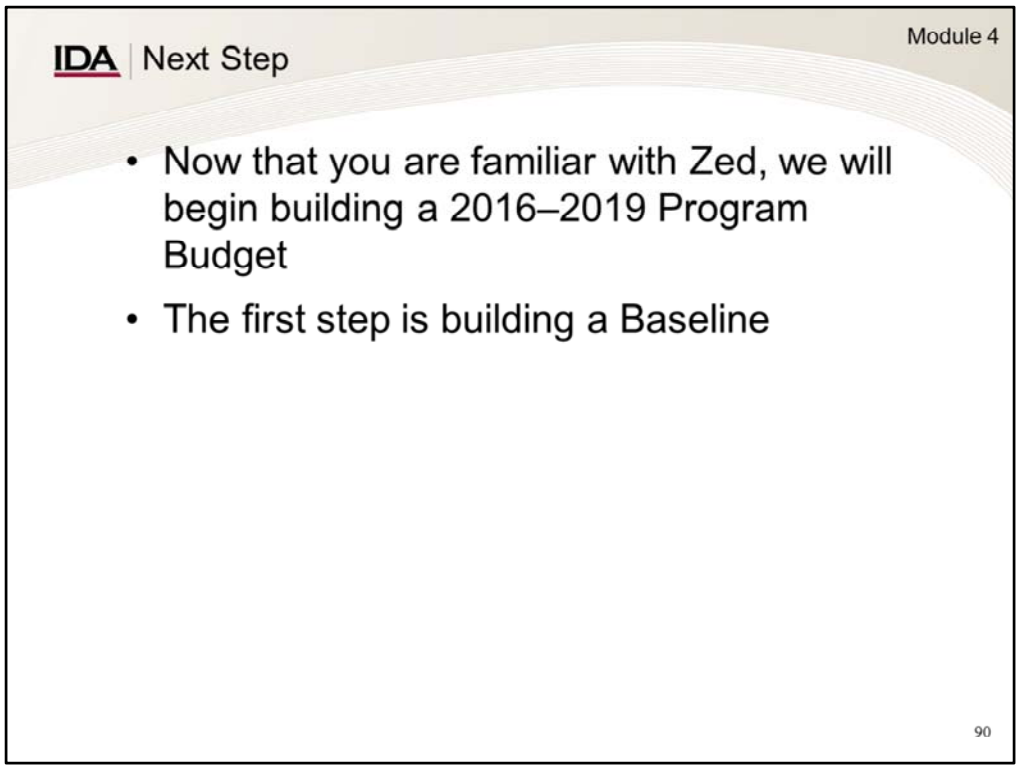
Module 4

1. What service has the most personnel and largest cost?
2. What Mission Area has the most units assigned to it?
3. What geographic command has the most units operating within it?
4. What units are mapped to Strategic Mobility, and what equipment do they have?
5. What is the Zed yearly military budget for the year 2016 through 2019? **About 994,000,000 each year**

88

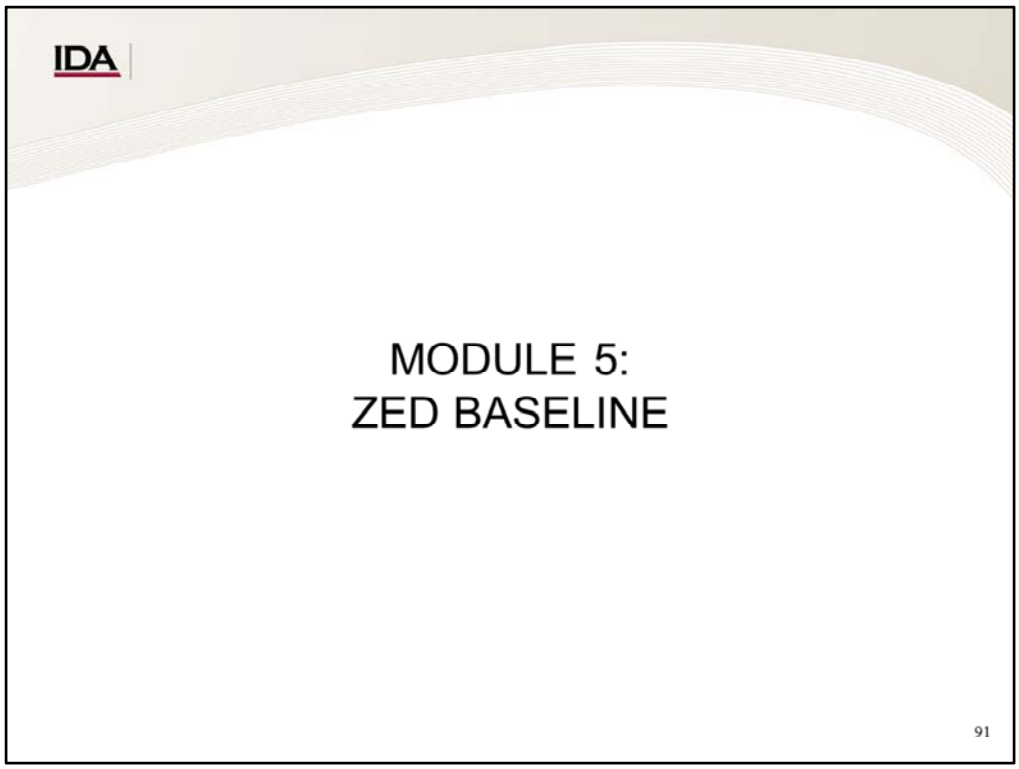


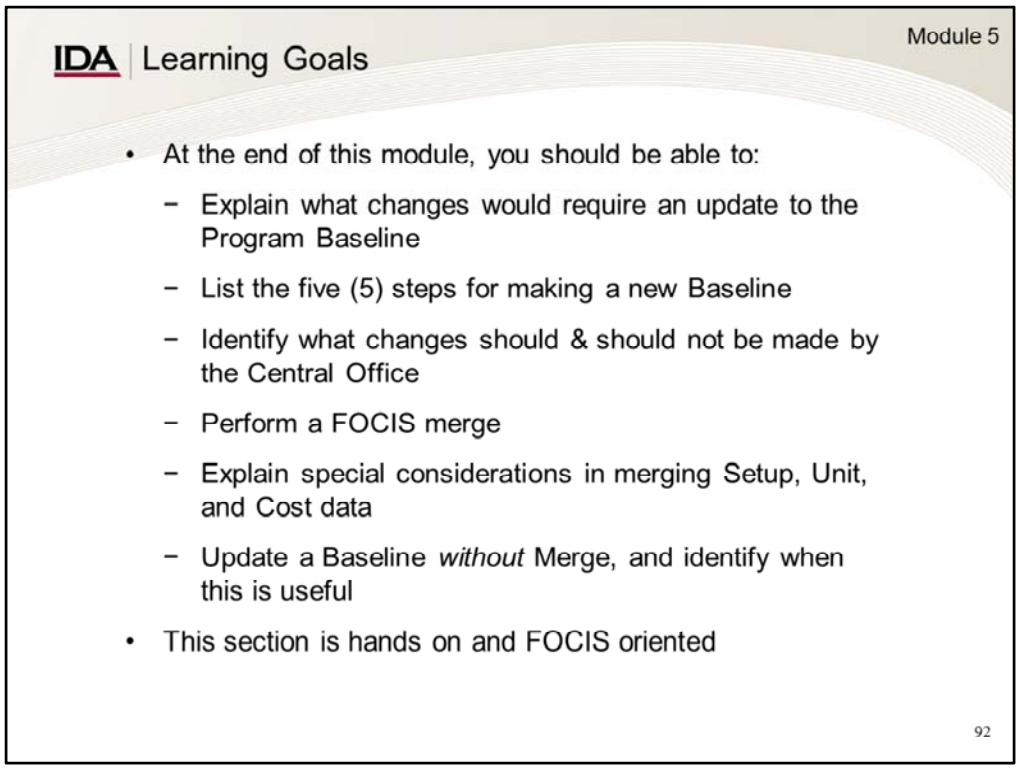
Regarding Zed's force structure, the students should keep these main points in mind.



Adjust the years so it is aligned with the national planning and budgeting cycles of the students and/or consistent with the FOCIS model being used during the demonstration.

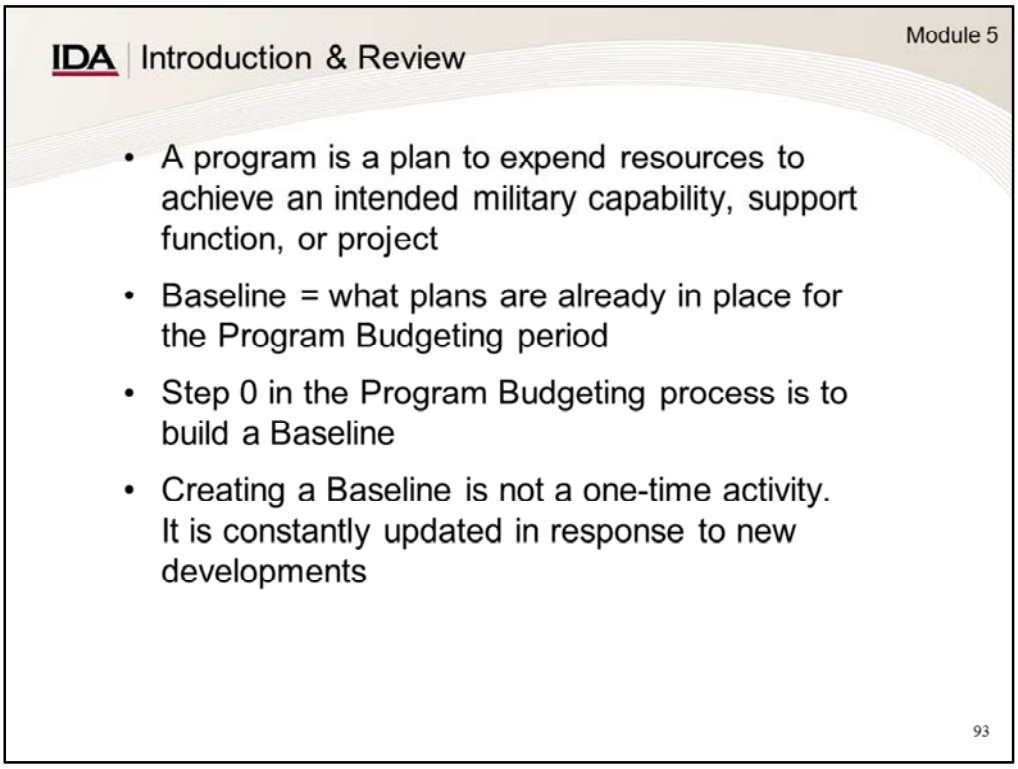
The demonstration was first used in Colombia, which submits a four-year budget on an annual, recurring basis.


IDA
MODULE 5:
ZED BASELINE
91



The instructor should walk the students through the learning goals for this section.

Note: Setup, Unit, and Cost are different data types within FOCIS.



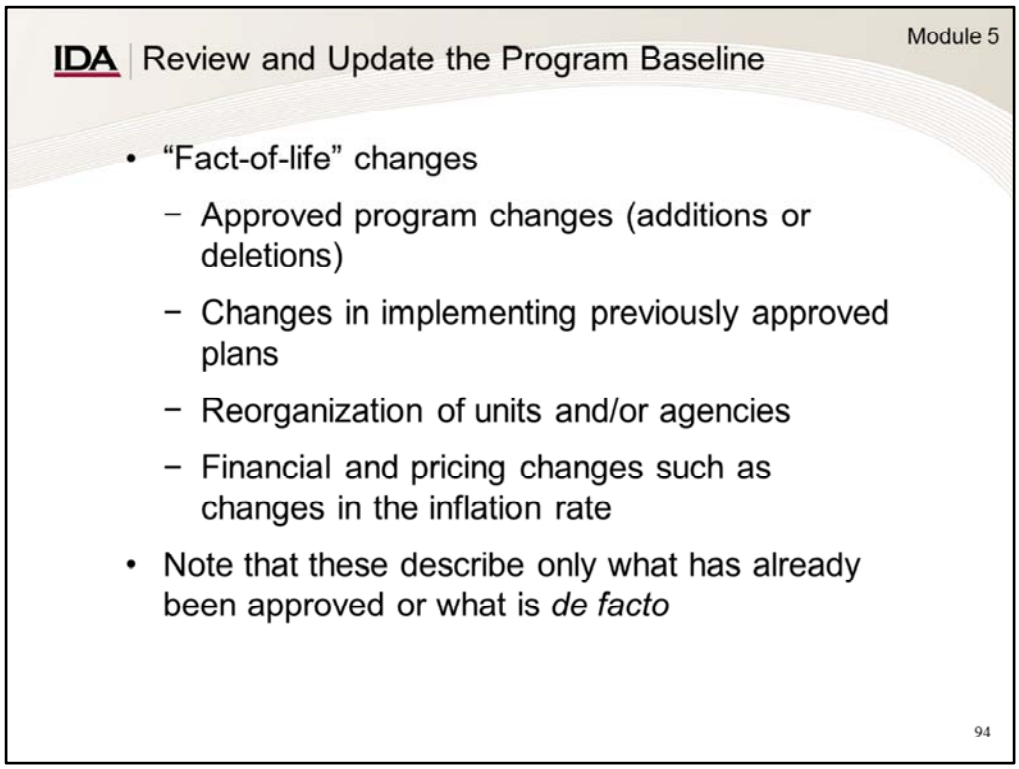
At this time, the instructor should review a few things covered in Modules 1 and 2. The instructor should refer to the answer key provided with the seminar material for ease of review.

Module 1: What is Program Budgeting?

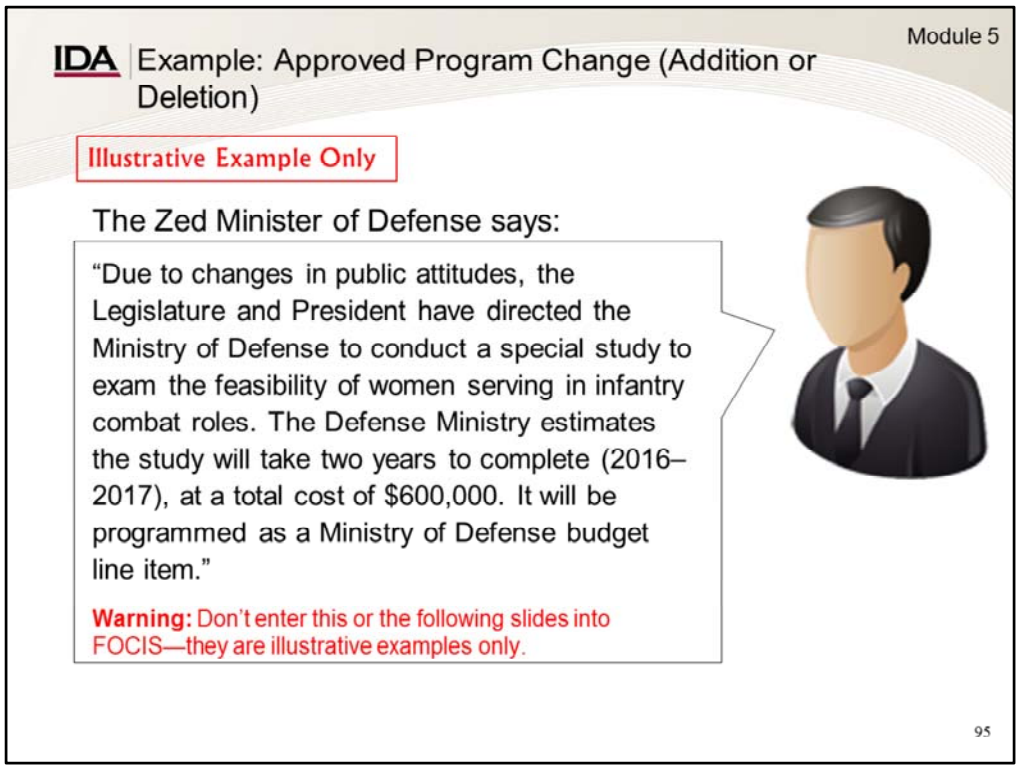
- What are the problems that Program Budgeting addresses?
- What is the definition of Program Budgeting?
- How is Program Budgeting different from traditional budgeting?
- What is the relationship between Program Budgeting and Program Analysis?
- What are the six (6) principles of Program Budgeting?
- Make a simple imaginary program structure and a program within it.

Module 2: How to Conduct Program Analysis

- What are the inputs and outputs of Program Analysis?
- List the six (6) steps of Program Analysis.
- Identify how to make tradeoffs to make a program affordable.
- What information should go into an Issue Paper?



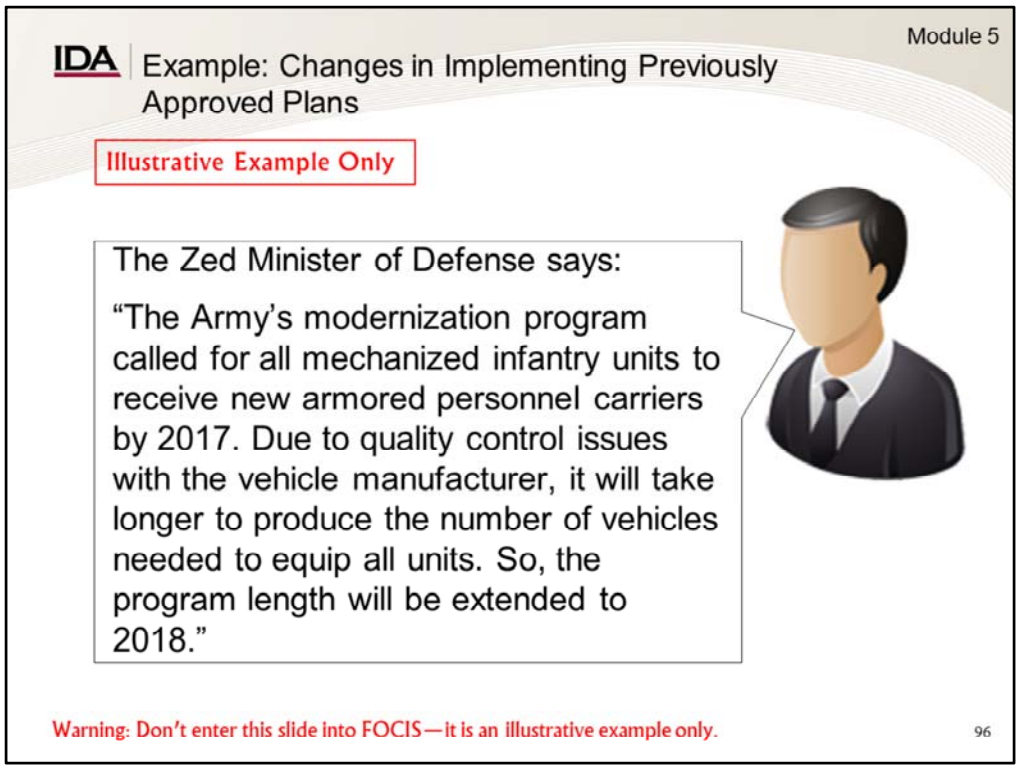
As discussed in Module 2, if a Baseline has already been established, then the first step in the Program Analysis process is to "review and update" the already established Defense Program Baseline based on fact-of-life changes.



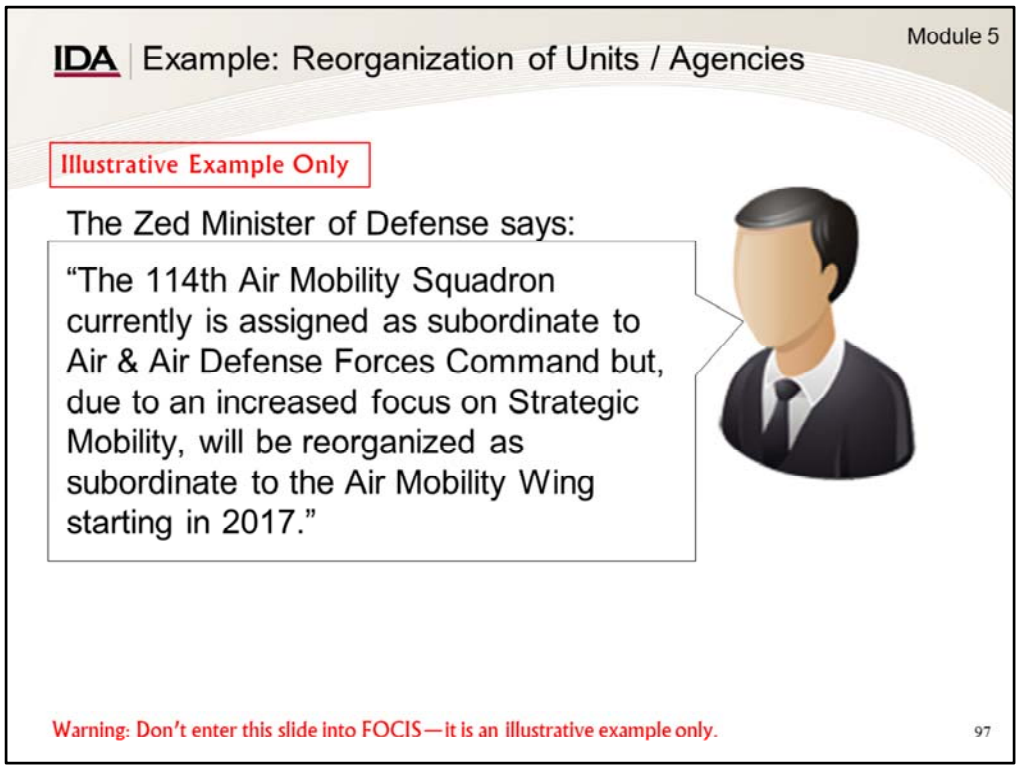
This is an example of a change that took place between the establishment of the last Baseline and the current round of Program Analysis about to begin.

The Baseline needs to be updated to reflect this change before a new round of analysis gets underway.

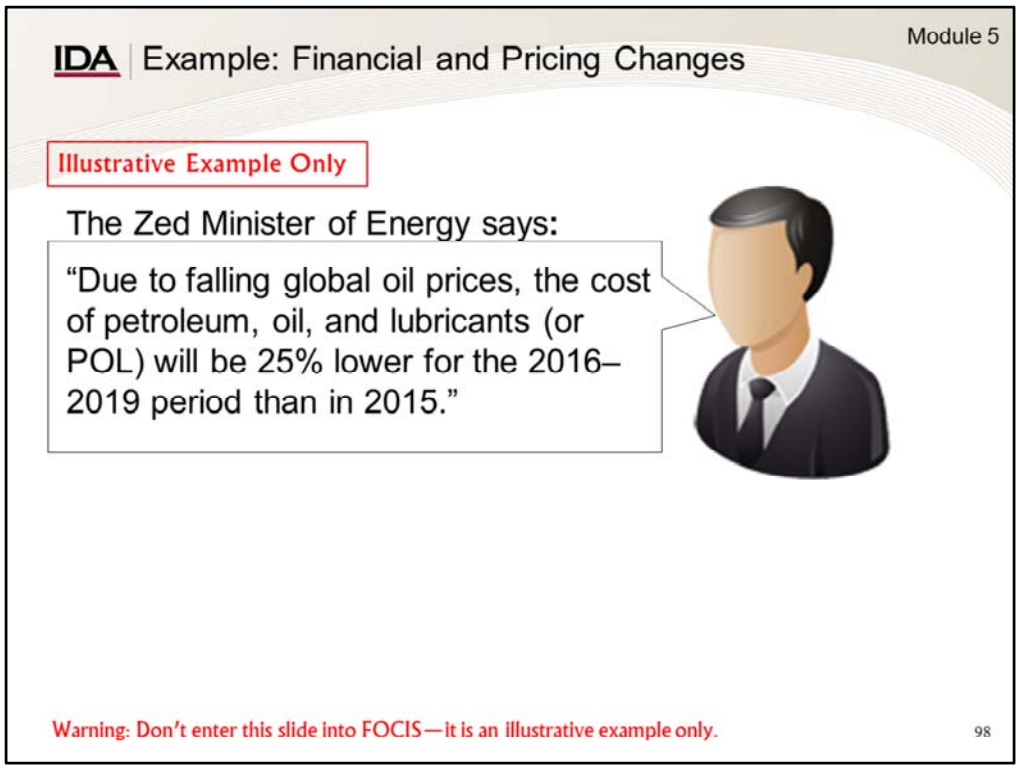
This is also why we refer to this step as Step 0: no new changes may be considered until the Baseline reflects all fact-of-life changes that occurred since the last round of Program Analysis has been completed.



This is an example of a *de facto* change. Even though the program plan is to equip all units with new armored personnel carriers by 2017, the fact of life is different.



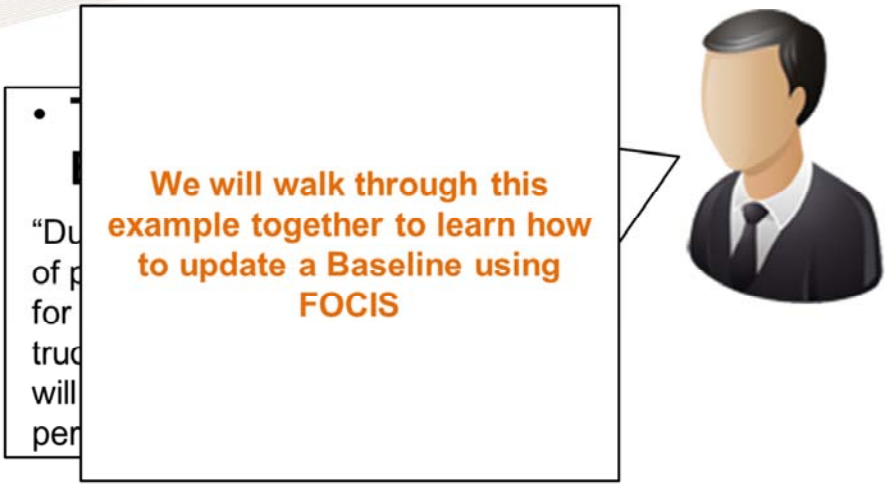
Some changes may not have resource implications (the inputs do not change). However, for analysis purposes, if a unit is reassigned, then the program structure needs to properly reflect this change so the costs are properly accounted for.



A change in how the government as a whole or the Ministry of Defense estimates the cost of commodities may have a significant impact on budget and spending plans. Any significant price impacts require an update to the Program Baseline. For military forces, petroleum, oils, and lubricants (POL) are significant determinants in the cost of operating aircraft, ships, and both ground- and track-wheel vehicles. Therefore, a change in how to estimate POL prices requires a change in the Program Baseline because the money required for operations (one of the inputs) will change.

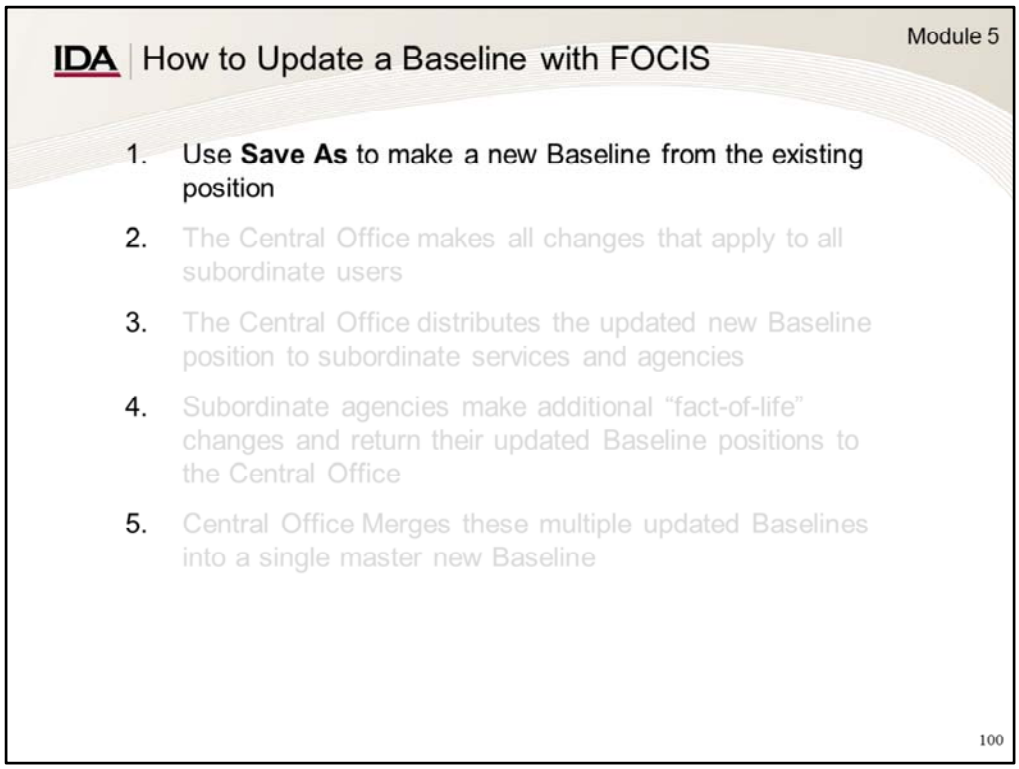
Module 5

IDA | Example: Financial and Pricing Changes

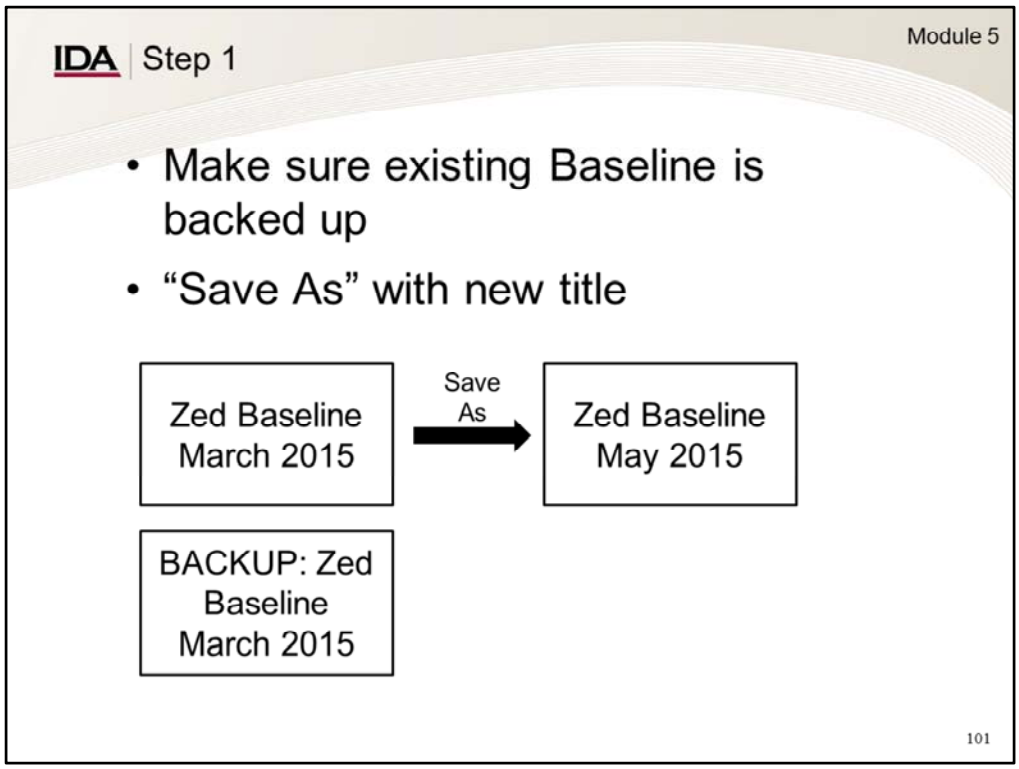


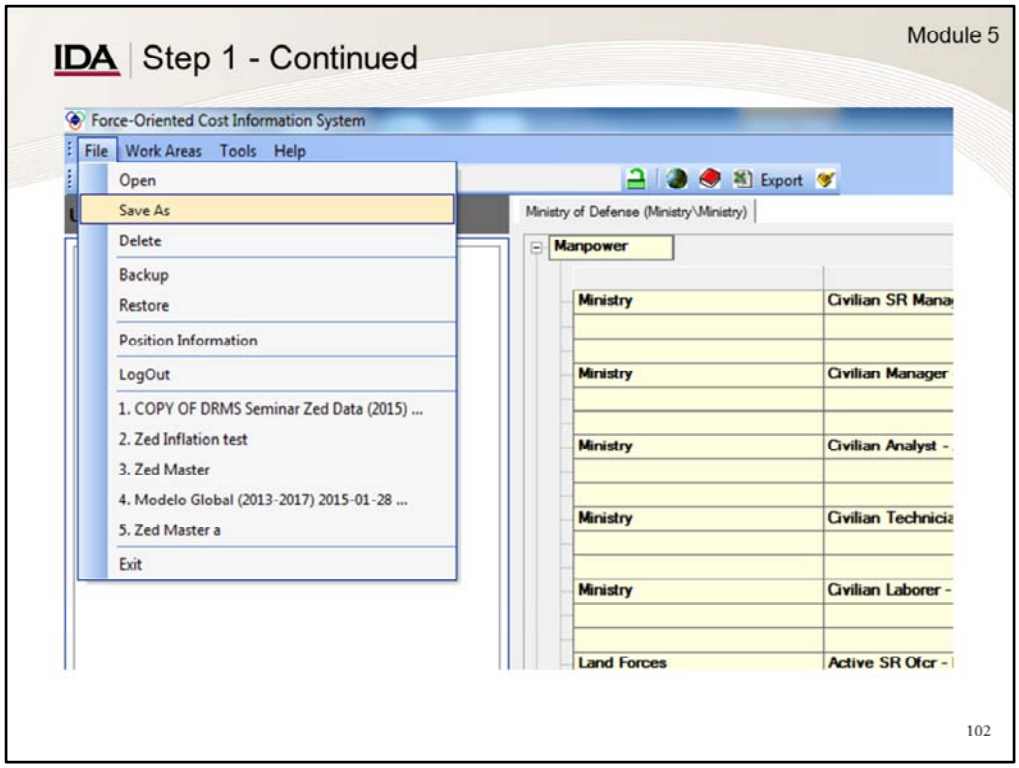
Warning: Don't enter this slide into FOCIS—it is an illustrative example only.

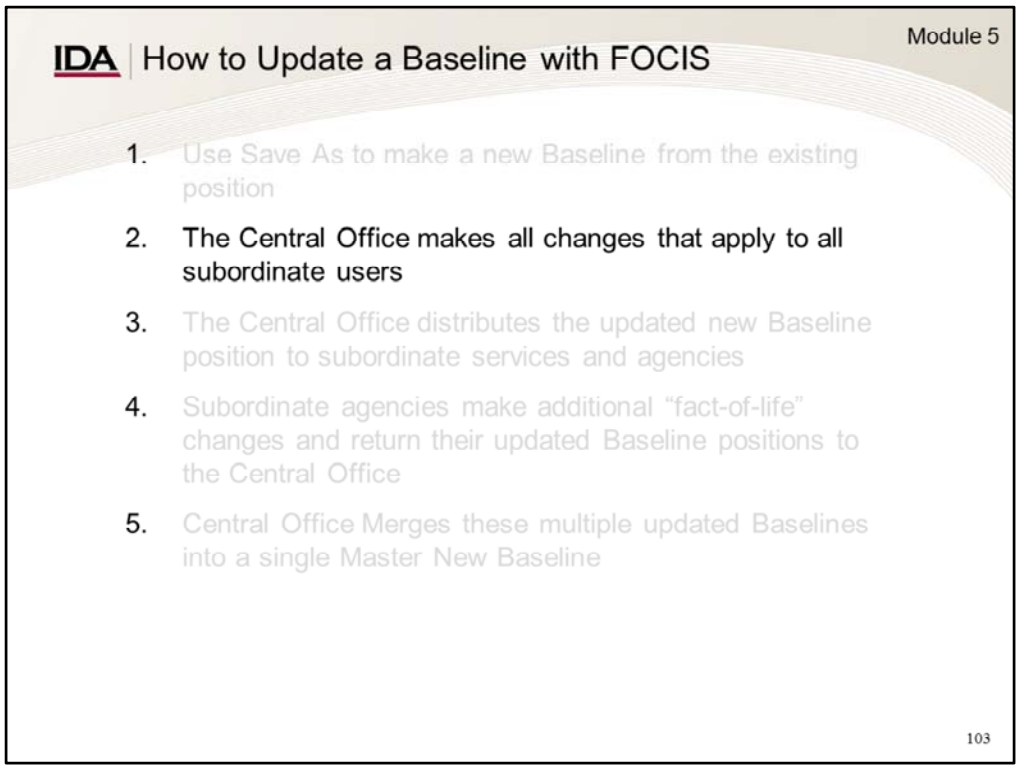
99



Slides 101 to 113 demonstrate how to update a Program Baseline using FOCIS.


IDA | Step 1
Module 5
• Make sure existing Baseline is backed up
• "Save As" with new title
Zed Baseline March 2015
Save As
Zed Baseline May 2015
BACKUP: Zed Baseline March 2015
101


Module 5
IDA | Step 1 - Continued
Force-Oriented Cost Information System
File
Work Areas
Tools
Help
Open
Save As
Delete
Backup
Restore
Position Information
LogOut
1. COPY OF DRMS Seminar Zed Data (2015) ...
2. Zed Inflation test
3. Zed Master
4. Modelo Global (2013-2017) 2015-01-28 ...
5. Zed Master a
Exit
Export
Ministry of Defense (Ministry\Ministry)
Manpower
Ministry
Civilian SR Mana
Ministry
Civilian Manager
Ministry
Civilian Analyst -
Ministry
Civilian Technicia
Ministry
Civilian Laborer -
Land Forces
Active SR Ofcr -
102



The Central Office is a deliberately vague term. The office responsible for Program Analysis and Program Budgeting varies in each country. In some cases, the Central Office may be within the Ministry of Defense and it is the *Central Office for the entire defense enterprise*.

In other cases, a nation may decide to allow each military service or major defense organization to run its own Program Budgeting process, in which case each military service and major defense organization will have a central office. To the extent that the Ministry must program its own budget, it would also have a central office.

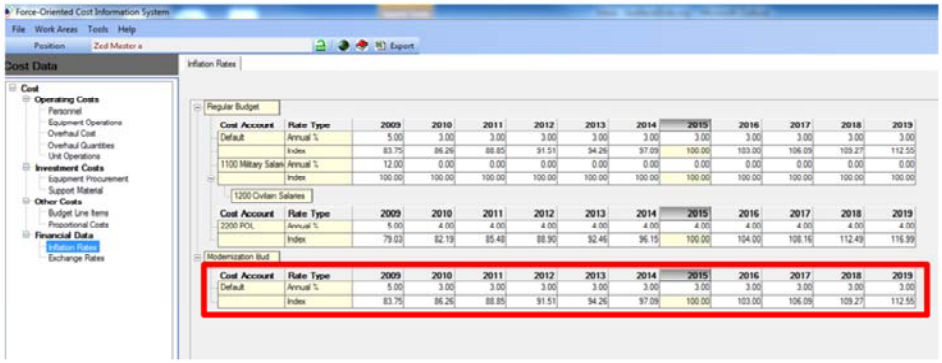
IDA | Step 2

- Central Office should make all changes that affect all subordinates:
  - Cost accounts
  - Equipment items
  - Personnel types
  - Cost factors
  - Inflation
  - Setup changes that affect all services (e.g., program addition or deletion, change in program implementation, reorganization of units and/or agencies)
- For our example: all services would be affected by the 25% change in POL, and you (playing the Central Office) must make the change

Module 5

IDA | Step 2 - Continued

1. Cost Data
2. Financial Data
3. Inflation Rates
4. POL
5. Set rate in 2016 to minus 25% and 0% for 2017–2019



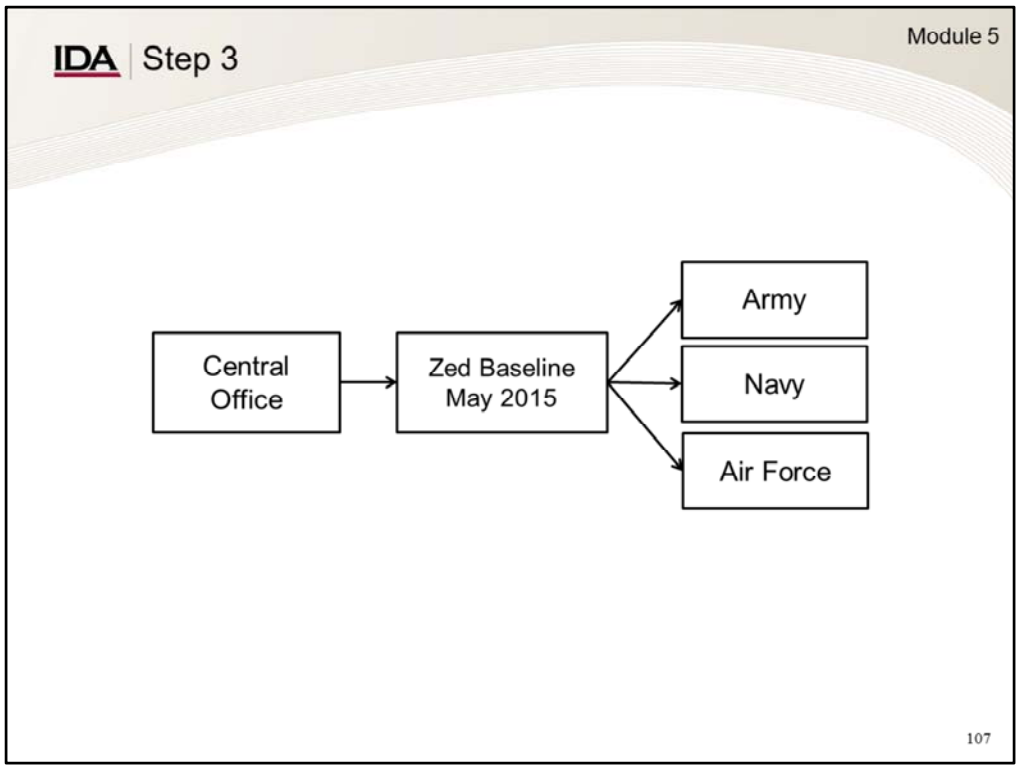
105

Using the FOCIS database, the instructor demonstrates the required steps to implement the Minister's guidance as given on slide 98.

IDA | How to Update a Baseline with FOCIS

1. Use Save As to make a new Baseline from the existing position
2. The Central Office makes all changes that apply to all subordinate users
3. The Central Office distributes the updated new Baseline position to subordinate services and agencies
4. Subordinate agencies make additional "fact-of-life" changes and return their updated Baseline positions to the Central Office
5. Central Office Merges these multiple updated Baselines into a single Master New Baseline

106

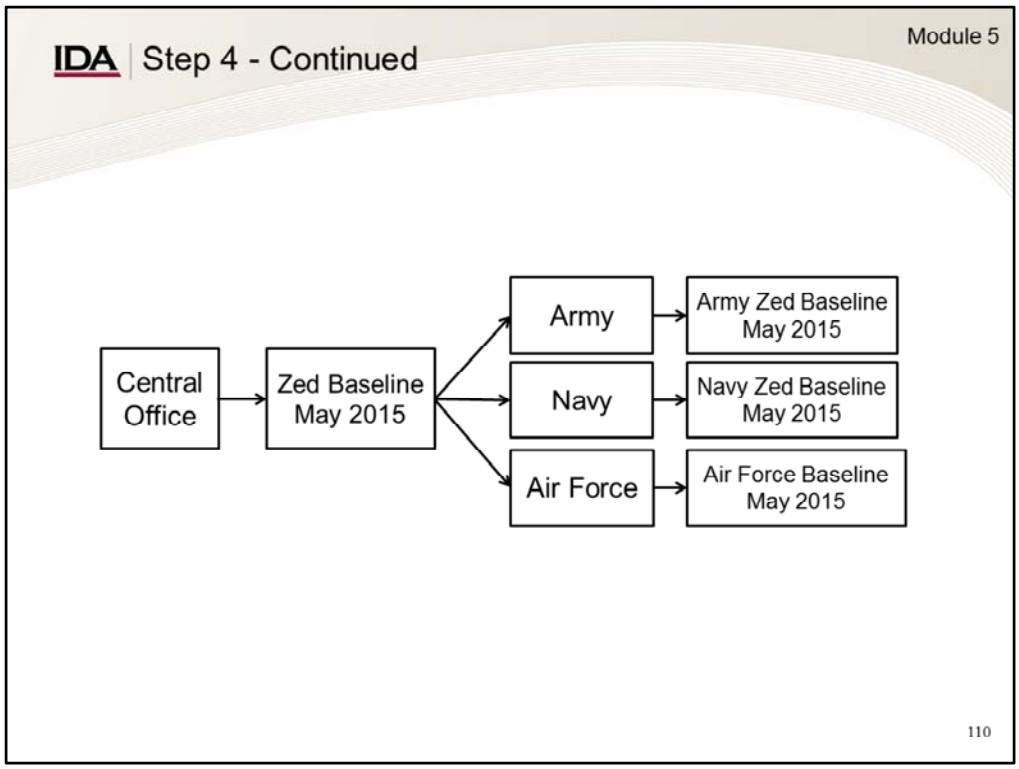

IDA | Step 3
Module 5
Central Office
Zed Baseline May 2015
Army
Navy
Air Force
107

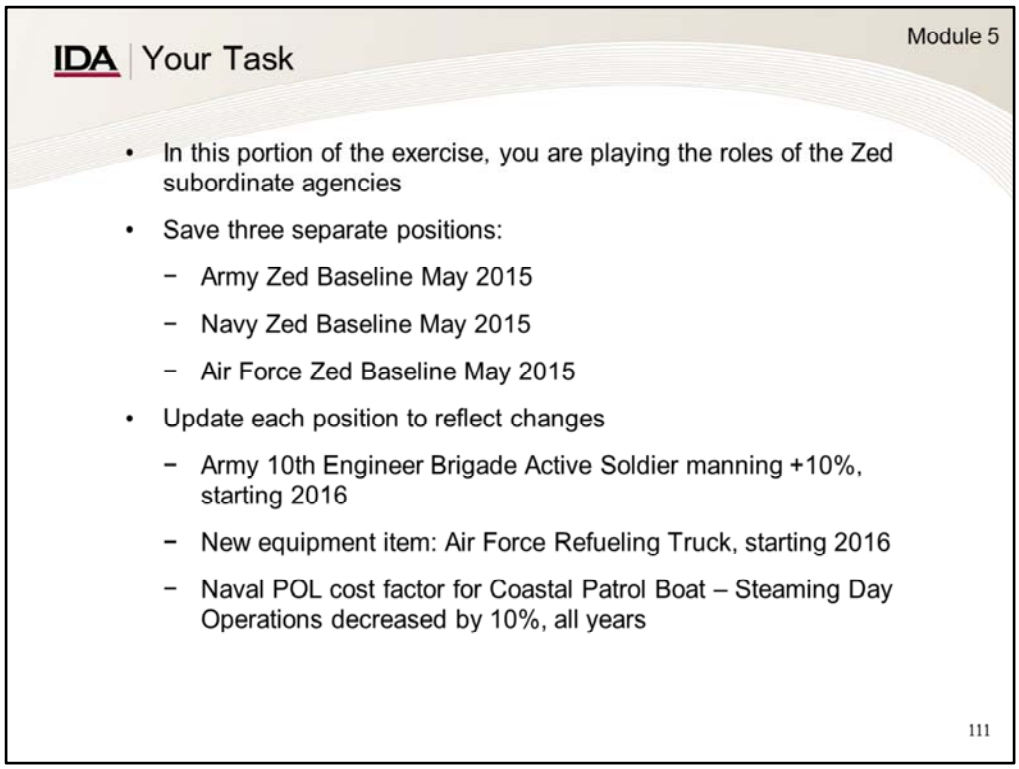
IDA | How to Update a Baseline with FOCIS

1. Use Save As to make a new Baseline from the existing position
2. The Central Office makes all changes that apply to all subordinate users
3. The Central Office distributes the updated new Baseline position to subordinate services and agencies
4. Subordinate agencies make additional "fact-of-life" changes and return their updated Baseline positions to the Central Office
5. Central Office Merges these multiple updated Baselines into a single Master New Baseline

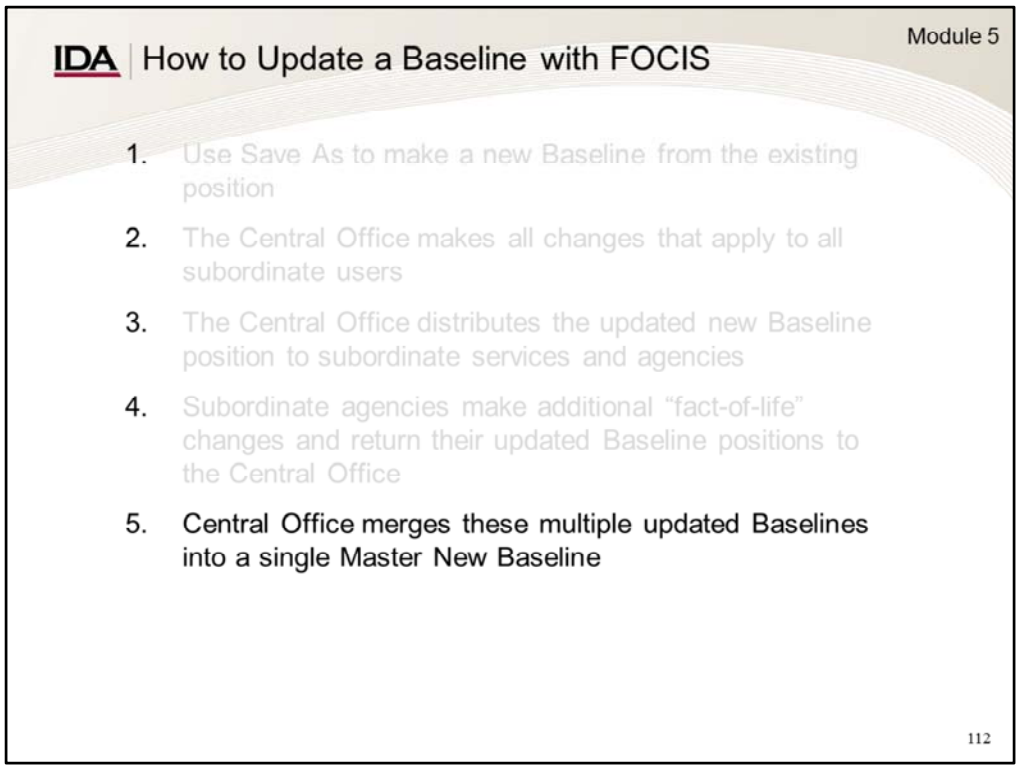
IDA | Step 4

- Suppose that because of the decrease in POL prices, the following modifications have been approved
  - Army 10th Engineer Brigade Active Soldier manning +10% starting in 2016
  - New equipment item: "Air Force Refueling Truck," starting in 2016
  - Naval POL cost factor for Coastal Patrol Boat: Steaming Day Operations decreased by 10% for all years
- Subordinate agencies update their Baselines to reflect these **service-specific changes**

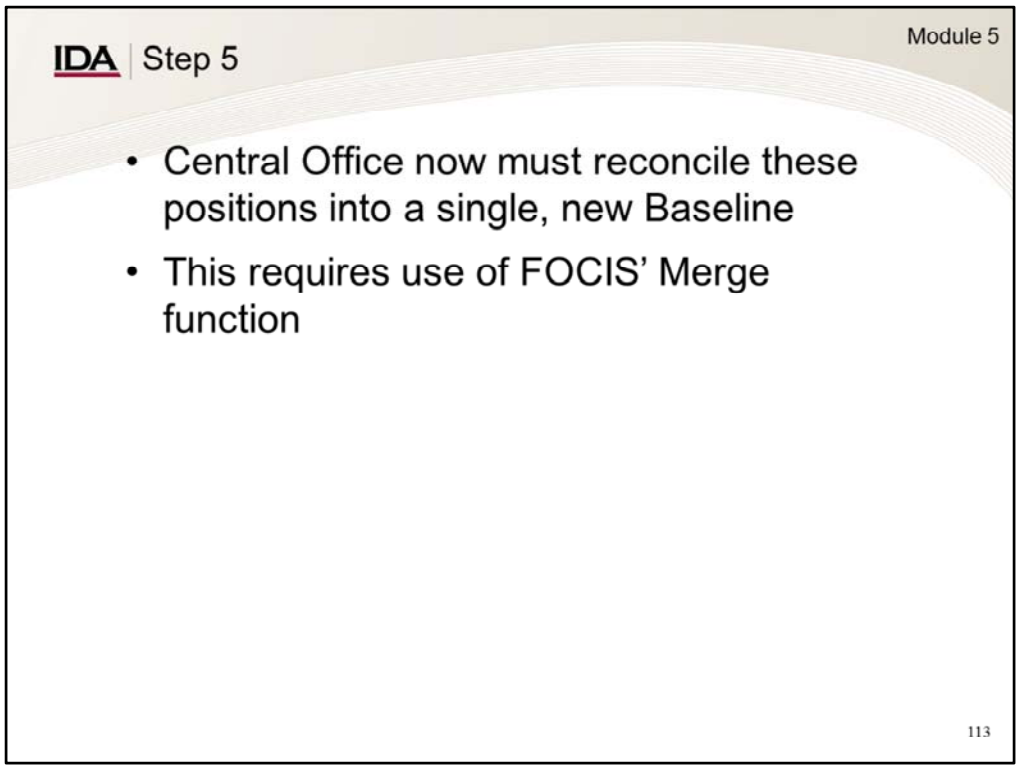

IDA | Step 4 - Continued
Module 5
Central Office
Zed Baseline May 2015
Army
Navy
Air Force
Army Zed Baseline May 2015
Navy Zed Baseline May 2015
Air Force Baseline May 2015
110



The students will break out into small groups to complete this exercise. The instructor shall help them as needed.

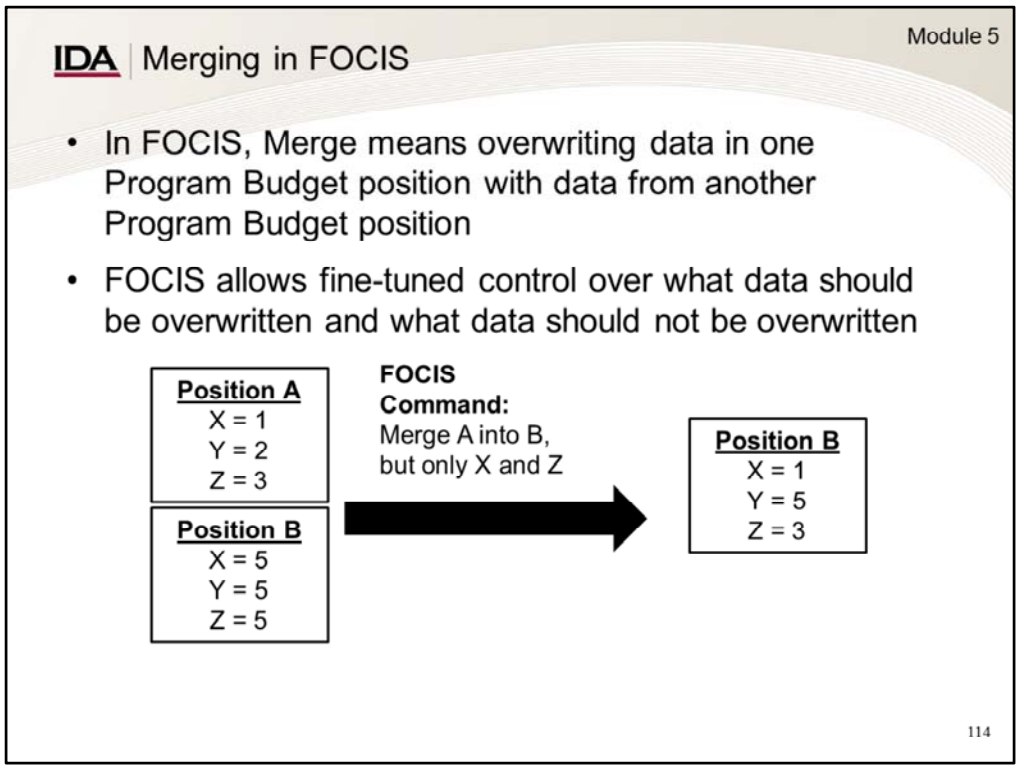


After completing Step 4, students come together again to learn Step 5, how to merge multiple Baseline positions into a New Master Baseline using FOCIS.



The rest of the module is a demonstration on how to use the Merge function. It also includes different techniques for merging as well as some cautionary notes and additional tips.

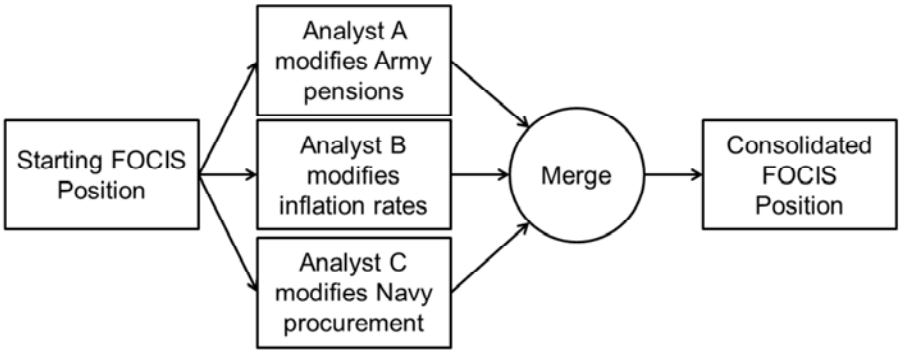
Slides 114 to 130 cover the use of the Merge function.



The slide depicts a simple example as a means of explaining what the Merge function is for and how it works.

IDA | Merging in FOCIS

- Merge is very useful if you have a team of analysts that must reconcile individual changes into a single Program Budget position

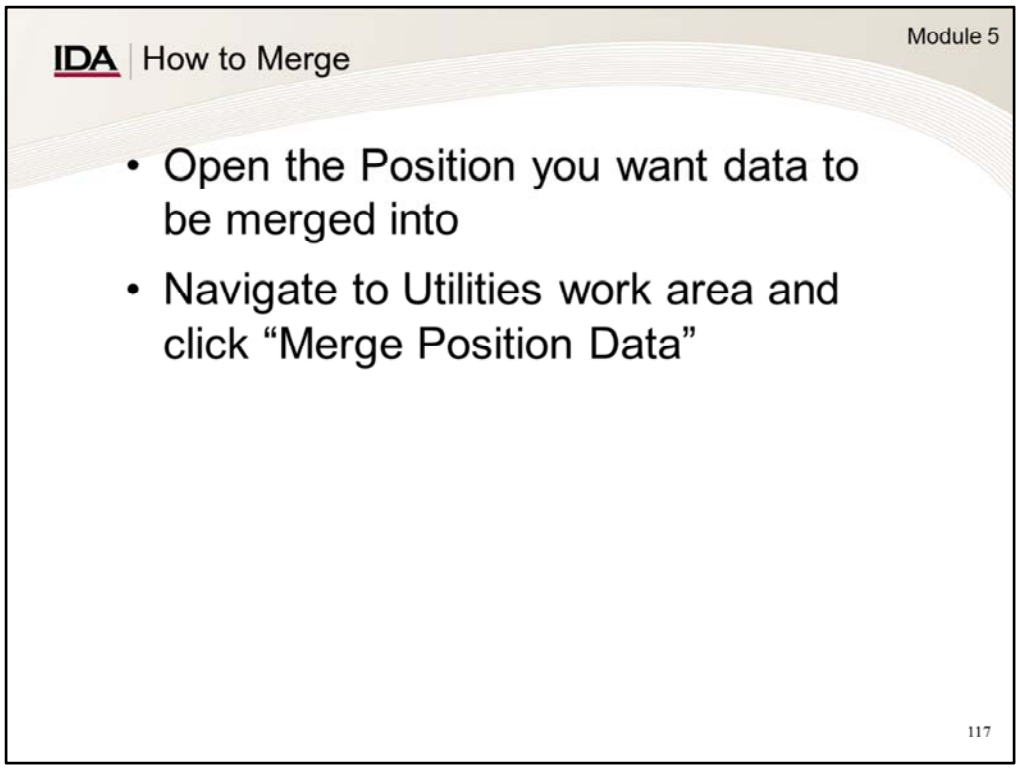


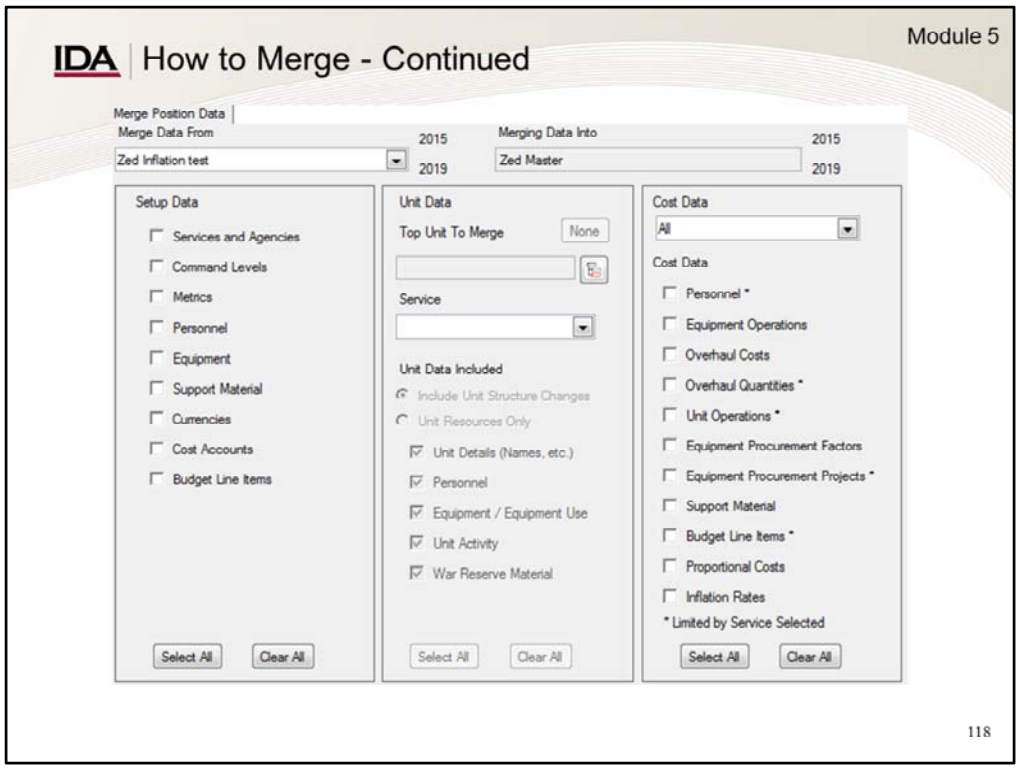
115

IDA | Merge Protocols

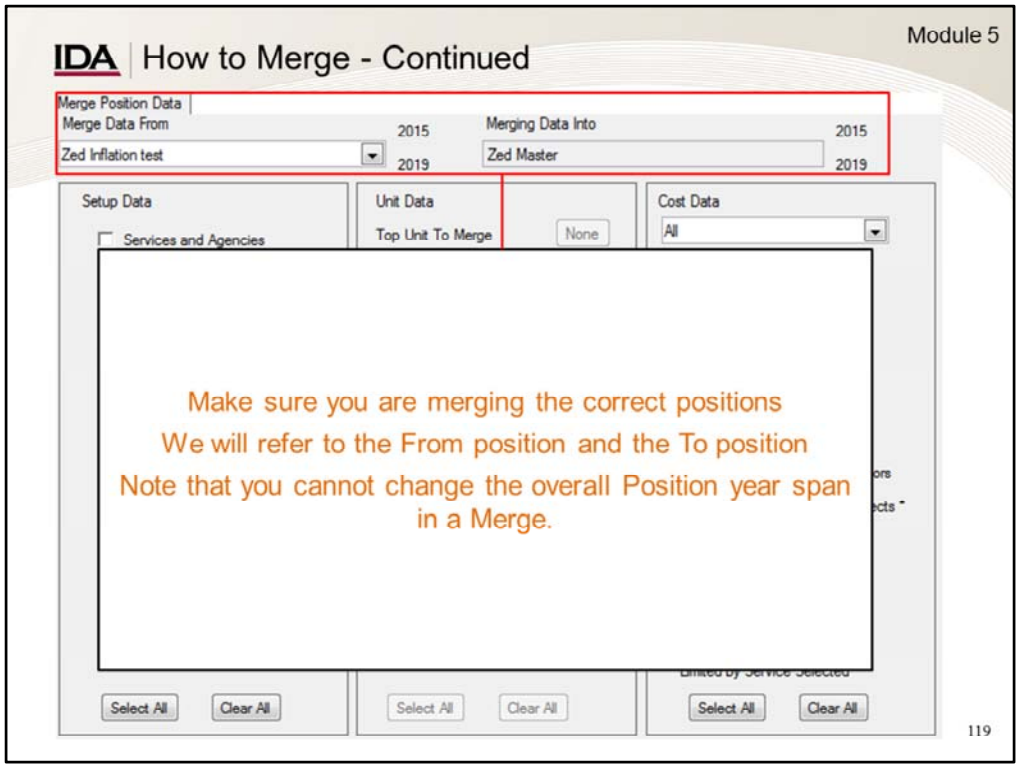
- Users must be *very* careful with Merge
  - Overwriting data erases it permanently
  - Therefore, always make a backup prior to any Merge
- Administrative and procedural safeguards are needed to ensure proper use of Merge, but this is a topic for a different seminar
  - After any Merge, verify that the expected and only the expected changes were made
- The following slides show how to perform a Merge

116

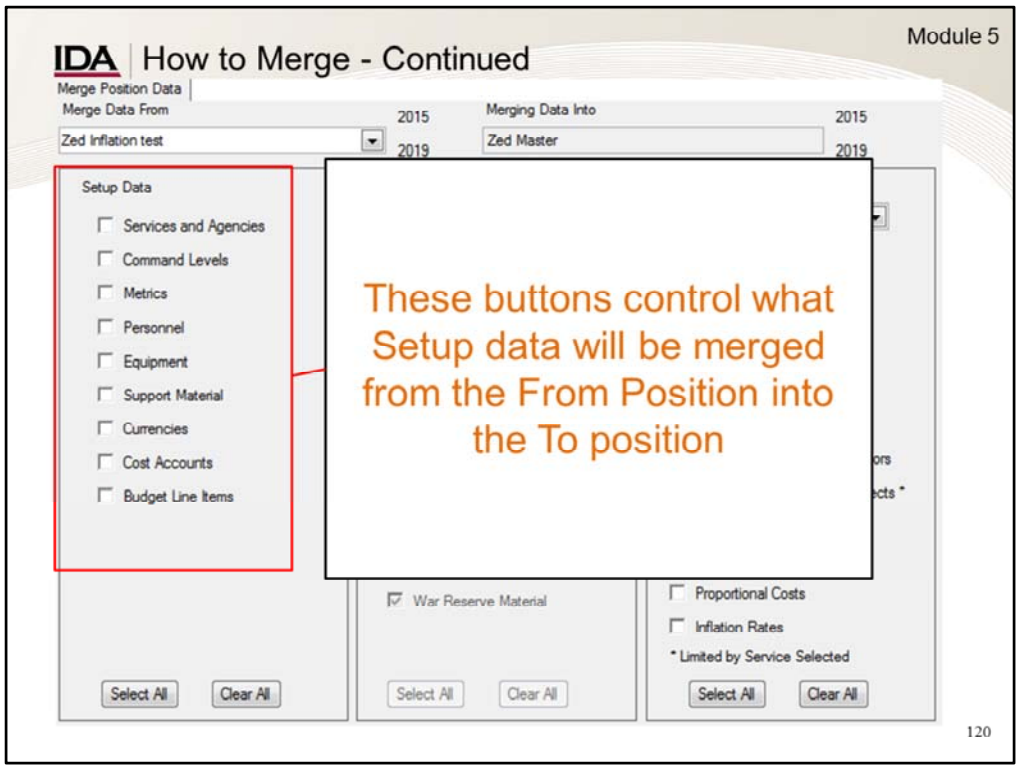

IDA | How to Merge
Module 5
• Open the Position you want data to be merged into
• Navigate to Utilities work area and click “Merge Position Data”
117

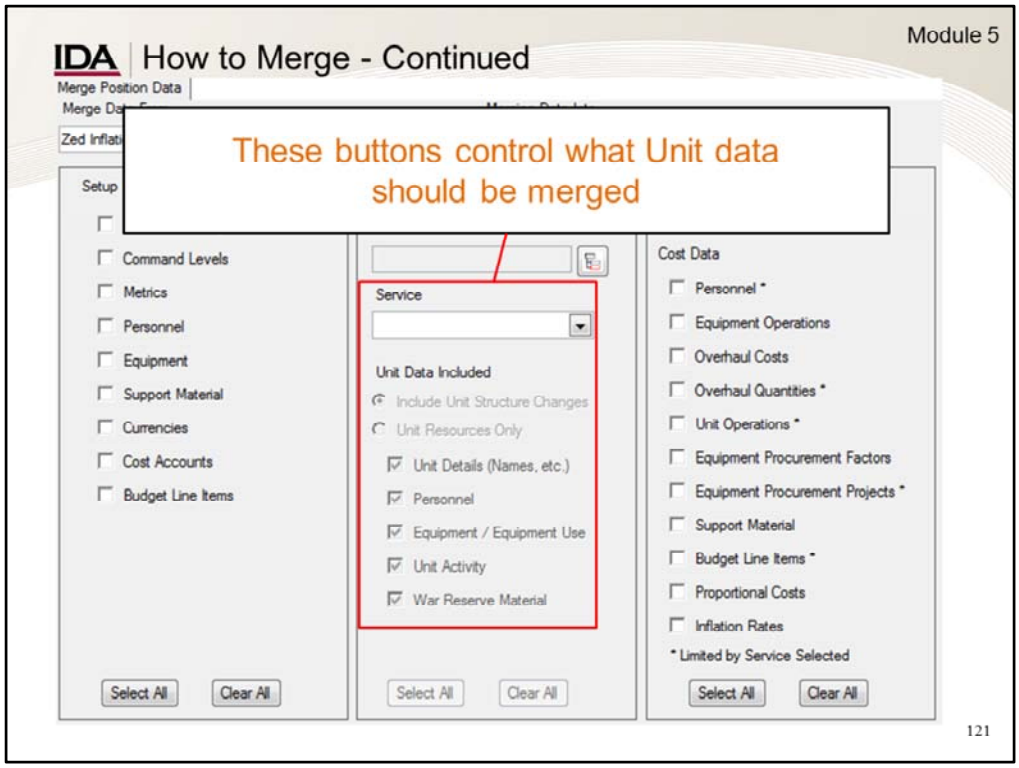


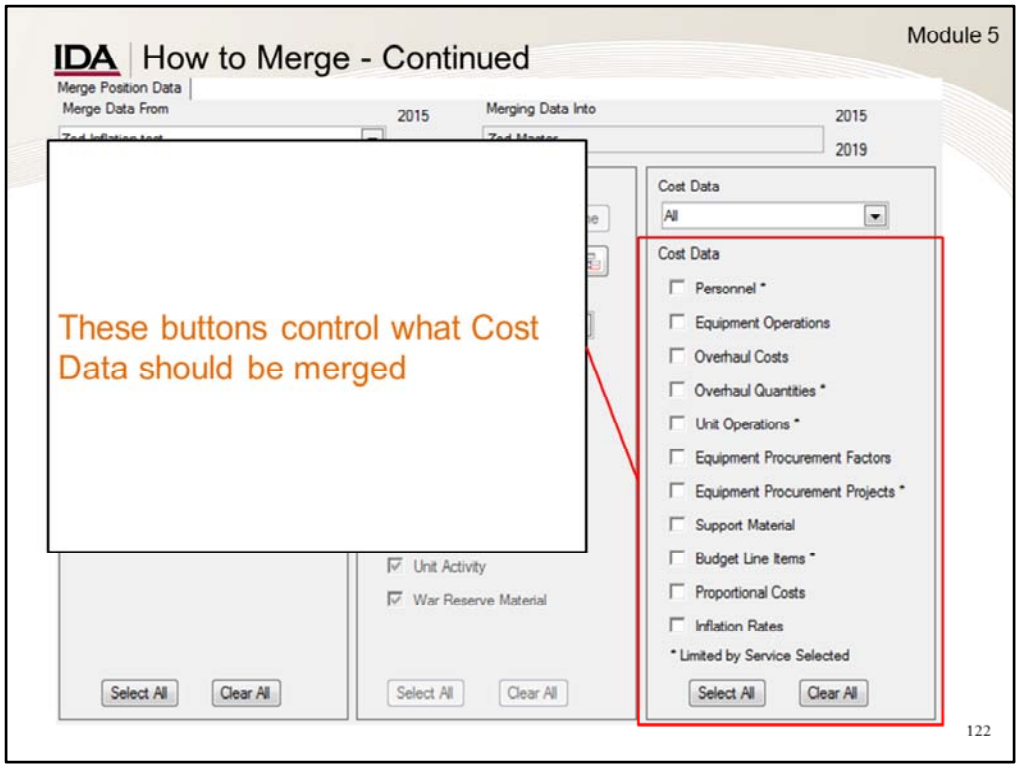
This is a screenshot of what a FOCIS user should see after following the instructions on slide 117.

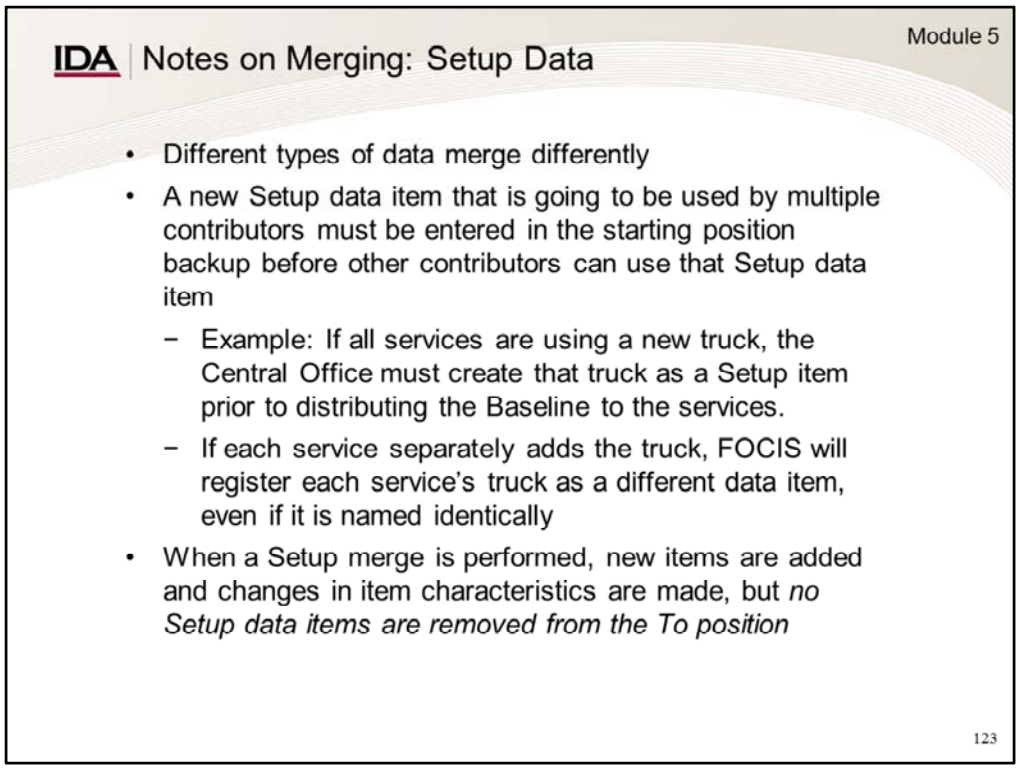


Note: In the screenshot depicted, the merge spans from years 2015 to 2019.


Module 5
IDA | How to Merge - Continued
Merge Position Data
Merge Data From
2015
Zed Inflation test
2019
Merging Data Into
2015
Zed Master
2019
Setup Data
Services and Agencies
Command Levels
Metrics
Personnel
Equipment
Support Material
Currencies
Cost Accounts
Budget Line Items
Select All
Clear All
These buttons control what Setup data will be merged from the From Position into the To position
War Reserve Material
Select All
Clear All
Proportional Costs
Inflation Rates
* Limited by Service Selected
Select All
Clear All
120


Module 5
IDA | How to Merge - Continued
Merge Position Data
These buttons control what Unit data should be merged
Setup
Command Levels
Metrics
Personnel
Equipment
Support Material
Currencies
Cost Accounts
Budget Line Items
Select All
Clear All
Service
Unit Data Included
Include Unit Structure Changes
Unit Resources Only
Unit Details (Names, etc.)
Personnel
Equipment / Equipment Use
Unit Activity
War Reserve Material
Select All
Clear All
Cost Data
Personnel *
Equipment Operations
Overhaul Costs
Overhaul Quantities *
Unit Operations *
Equipment Procurement Factors
Equipment Procurement Projects *
Support Material
Budget Line Items *
Proportional Costs
Inflation Rates
* Limited by Service Selected
Select All
Clear All
121

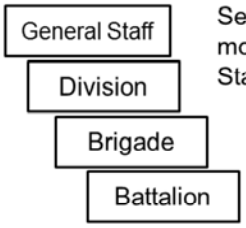

Module 5
IDA How to Merge - Continued
Merge Position Data
Merge Data From
2015
Merging Data Into
2015
2019
These buttons control what Cost Data should be merged
Cost Data
All
Cost Data
Personnel *
Equipment Operations
Overhaul Costs
Overhaul Quantities *
Unit Operations *
Equipment Procurement Factors
Equipment Procurement Projects *
Support Material
Budget Line Items *
Proportional Costs
Inflation Rates
* Limited by Service Selected
Unit Activity
War Reserve Material
Select All
Clear All
Select All
Clear All
Select All
Clear All
122



The Merge function treats each of three data types (Setup, Unit, and Cost) differently. The FOCIS user must understand how each is treated before using the Merge function.

IDA | Notes on Merging: Unit Data

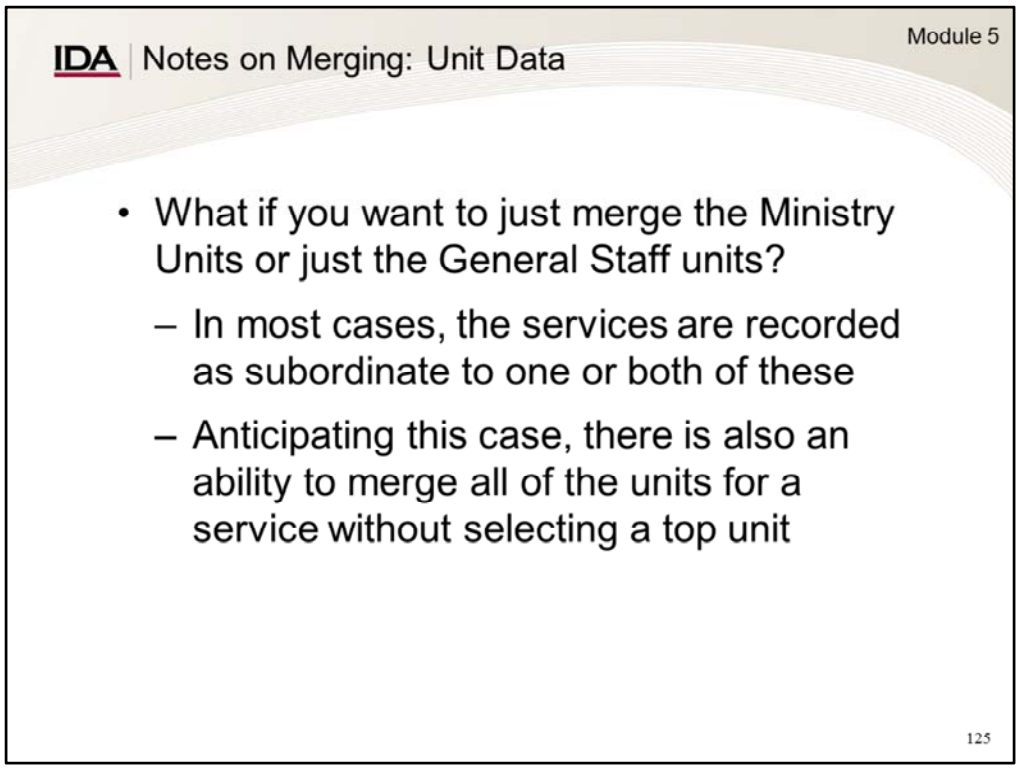
- Units must have same year span
  - When you perform a Unit Merge, FOCIS finds the unit, removes it and all its resources from the To position, and then copies the From unit into its place
- It is possible to merge units at lower levels without affecting data for higher level units, contingent on proper use of the top unit parameter



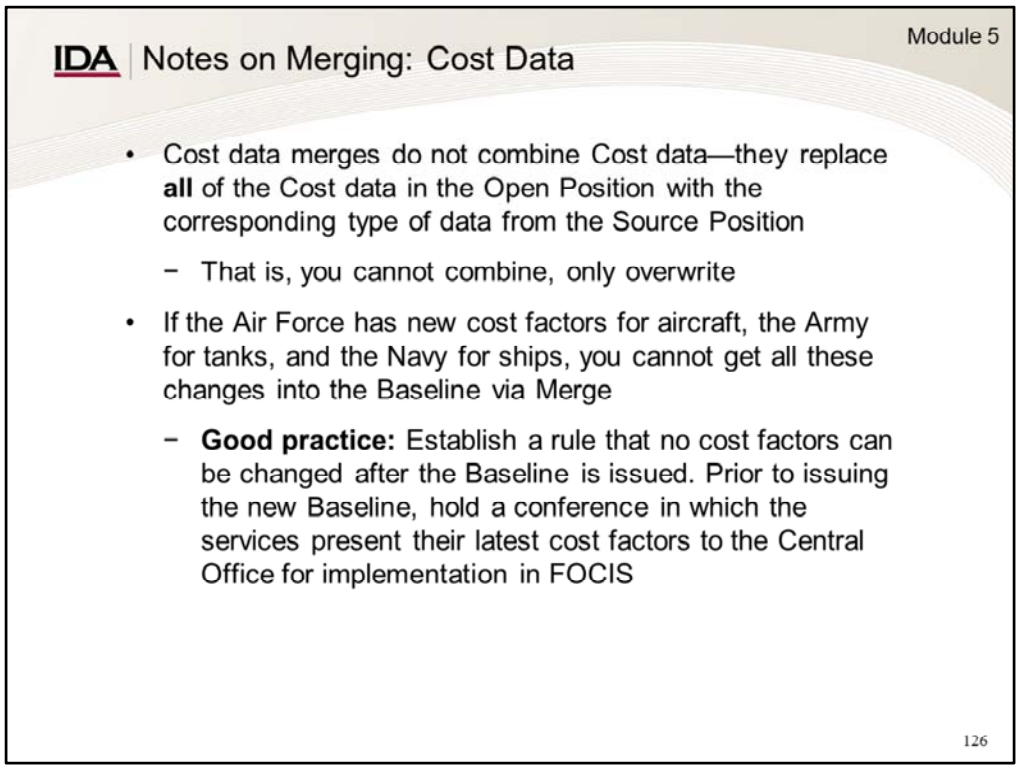
Selecting General Staff as top unit means modifying the Battalion will affect the General Staff and all subordinate units

Selecting Battalion as top unit means modifying Battalion will only affect Battalion

124



If needed, the instructor should be prepared to demonstrate the features described on this slide to the students.

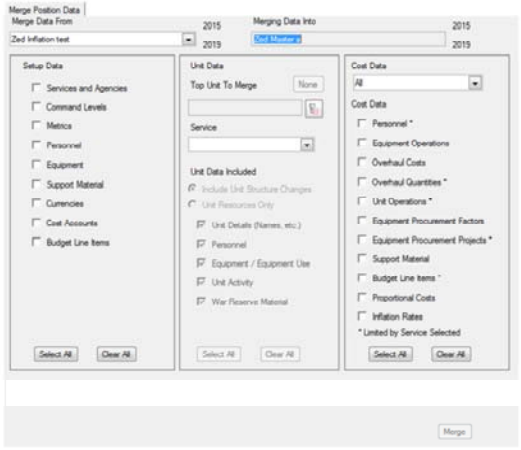


The points on this slide are critical. A common mistake when using FOCIS is to inadvertently overwrite data when attempting to perform 'Cost Data' merges.

IDA | Merge

Module 5

- When you are ready, click Merge
- FOCIS will preview the Merge—so double-check your work
- Commit the Merge

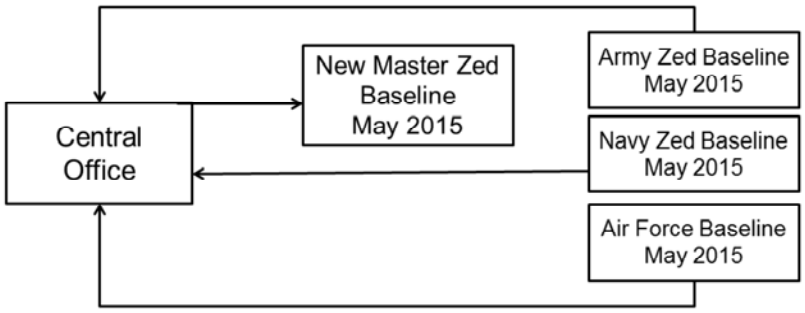


127

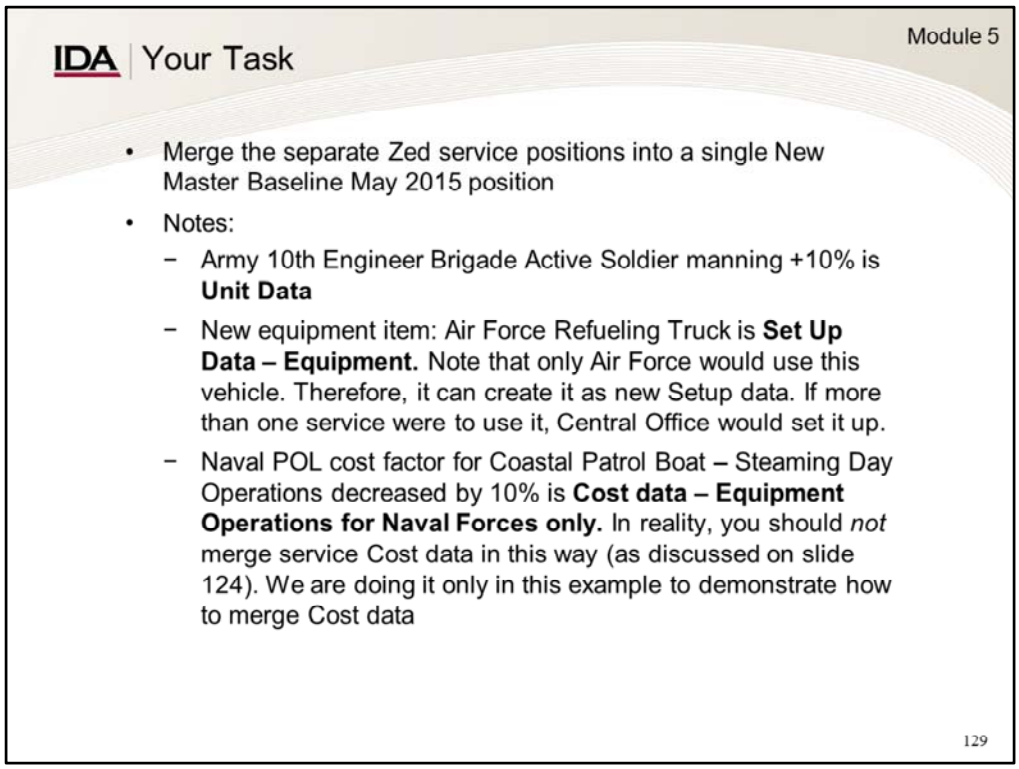
IDA | Merge

Module 5

- Central Office uses Merge to reconcile the changes made by subordinates into a single, updated Master Baseline



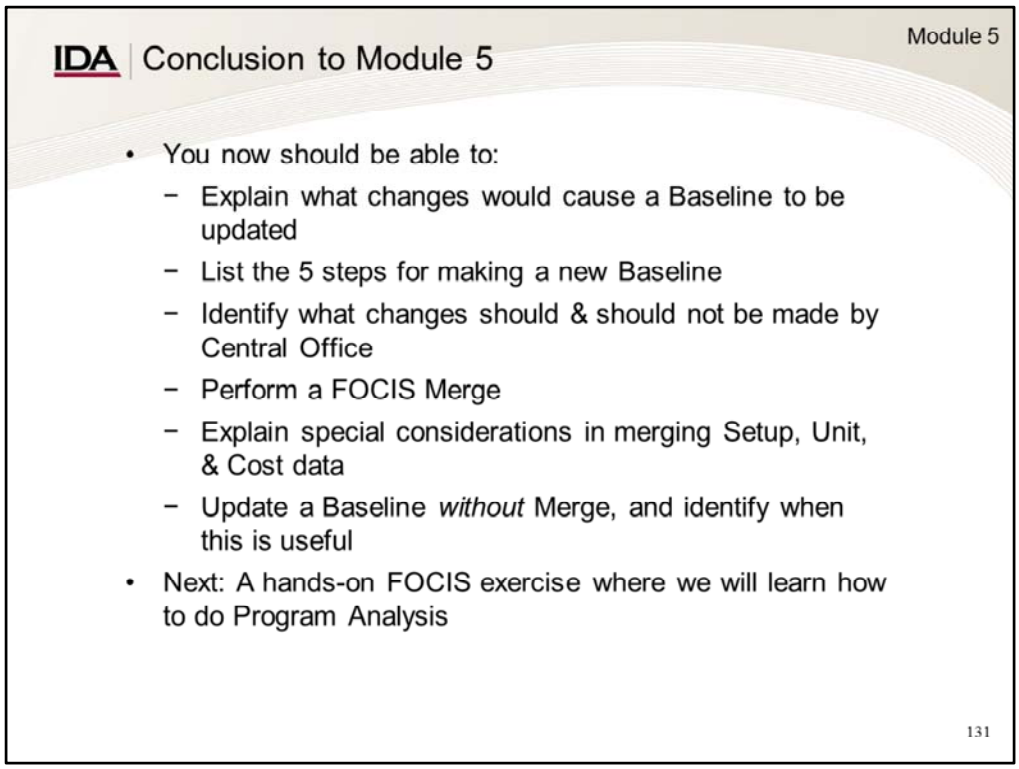
128



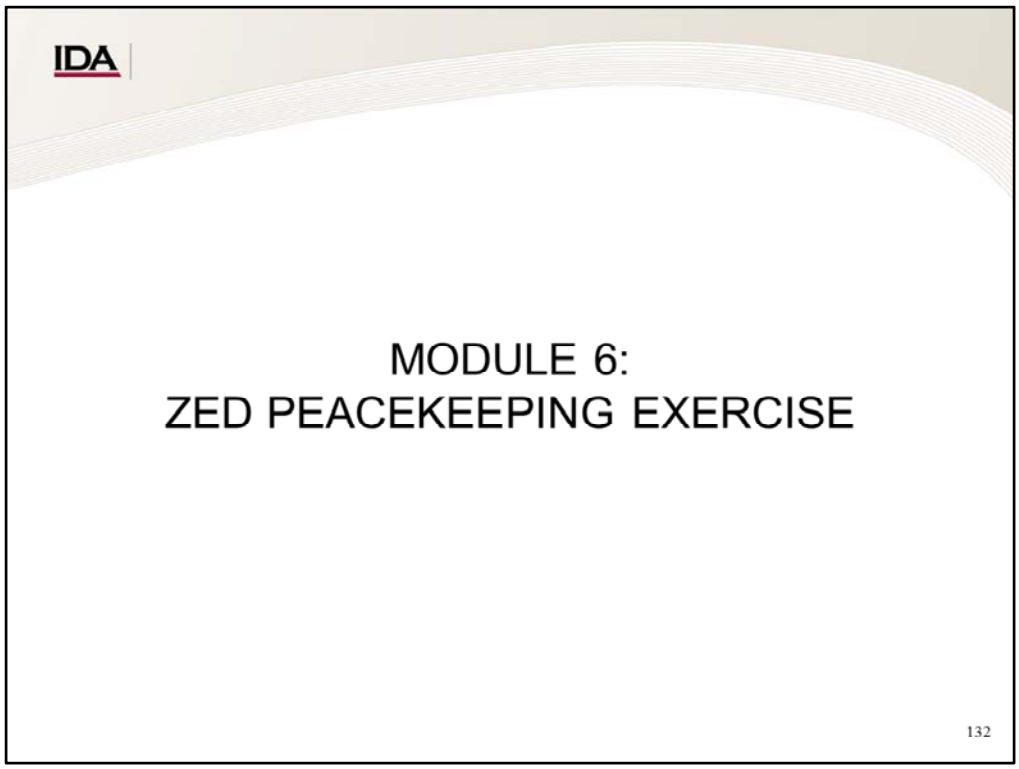
The students will break into small groups to complete this exercise. The instructor should help them as needed.

IDA | Alternate Method of Creating a New Baseline

- This method of creating a Baseline requires significant intra-ministerial and service headquarter coordination and FOCIS savvy
- This method is ideal for gaining a comprehensive picture of the defense sector and should be done periodically, but the method may be too laborious for quick turnaround situations or when only minor, nonservice-specific changes need to be made
  - Remember, a Baseline is not a one-time affair—one must be defined prior to every Program Analysis ; therefore, efficiency is not a trivial consideration
- In some cases, it may be better to use a less labor-intensive method:
  - Use Save As on existing Baseline to create new Baseline
  - Central Office makes all changes
  - Once all changes have been made, you have a new Baseline

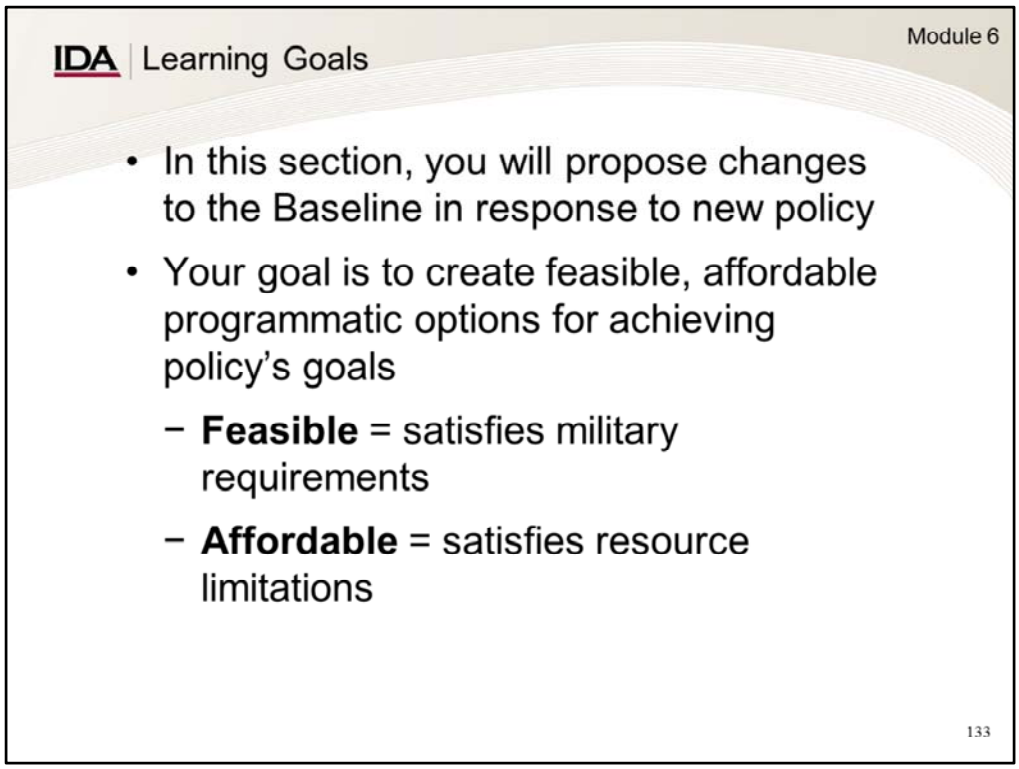


The instructor should review the main points of Module 5 and ensure the students have written down their answers in their Student Learning Progress handout.



This exercise is the capstone of this lesson plan.

The instructor should make sure each student has a copy of the Zed Program Analysis Exercise – Handout before beginning this exercise.



The instructor may want to have the students re-state the 6 steps of Program Analysis that were covered during Module 2.

- Step 0: Establish Program Baseline
- Step 1: Review Priority Challenges and Gaps
- Step 2: Review Proposed Solutions to Gaps
- Step 3: Quantify Proposed Solutions
- Step 4: Cost and Tradeoff
- Step 5: Present Affordable Options
- **Step 0:** Establish Program Baseline

Module 6

IDA | Policy Change

Illustrative Example Only

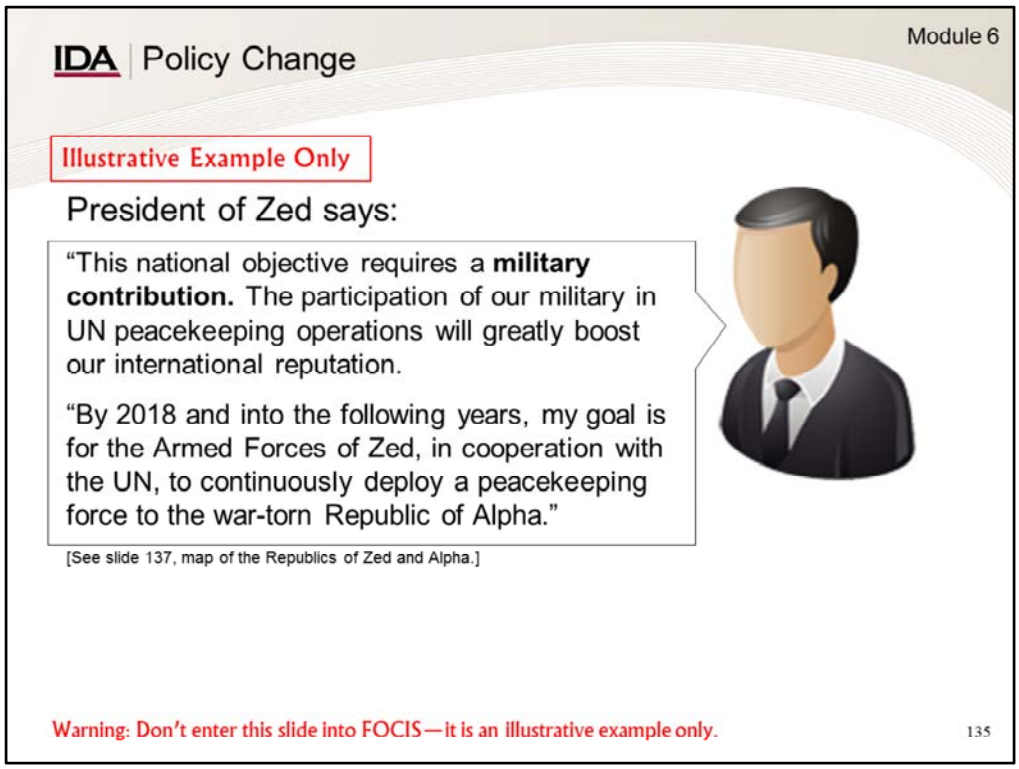
President of Zed says:

"Our highest **national objective** for the foreseeable future is to raise the international reputation of Zed as a contributor to the global peacekeeping.

"If other countries respect Zed as a positive force for global peace, I believe our international trade will increase, and other countries are more likely to come to our defense if necessary."

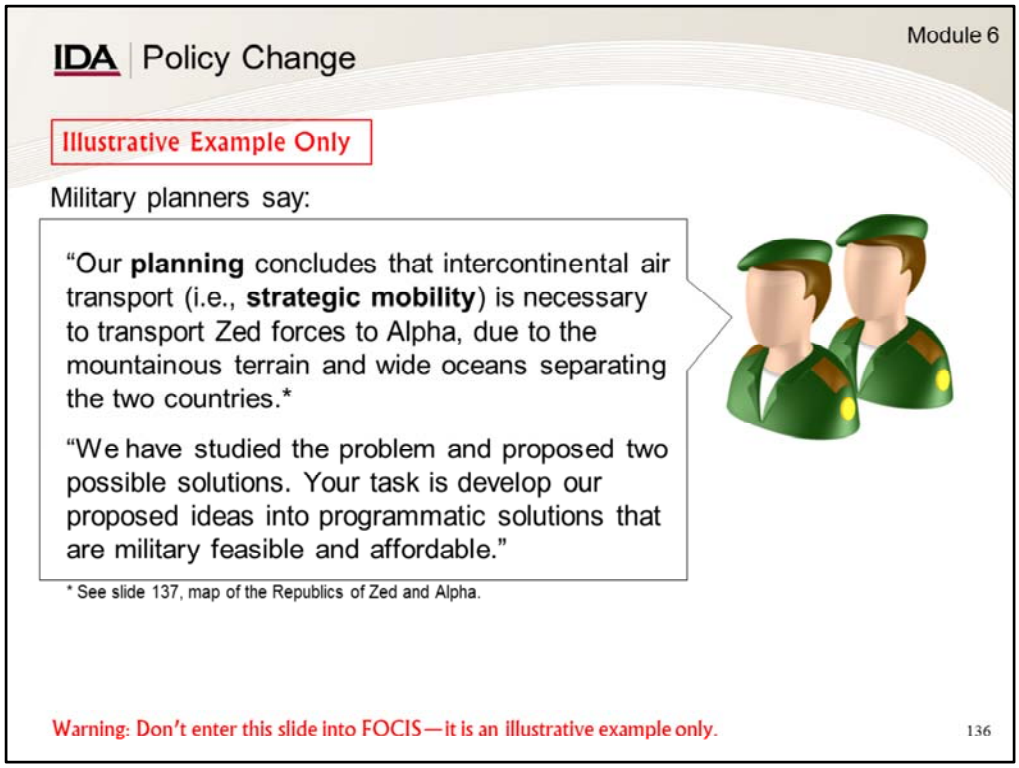
Warning: Don't enter this or the following slides into FOCIS—they are illustrative examples only.

134

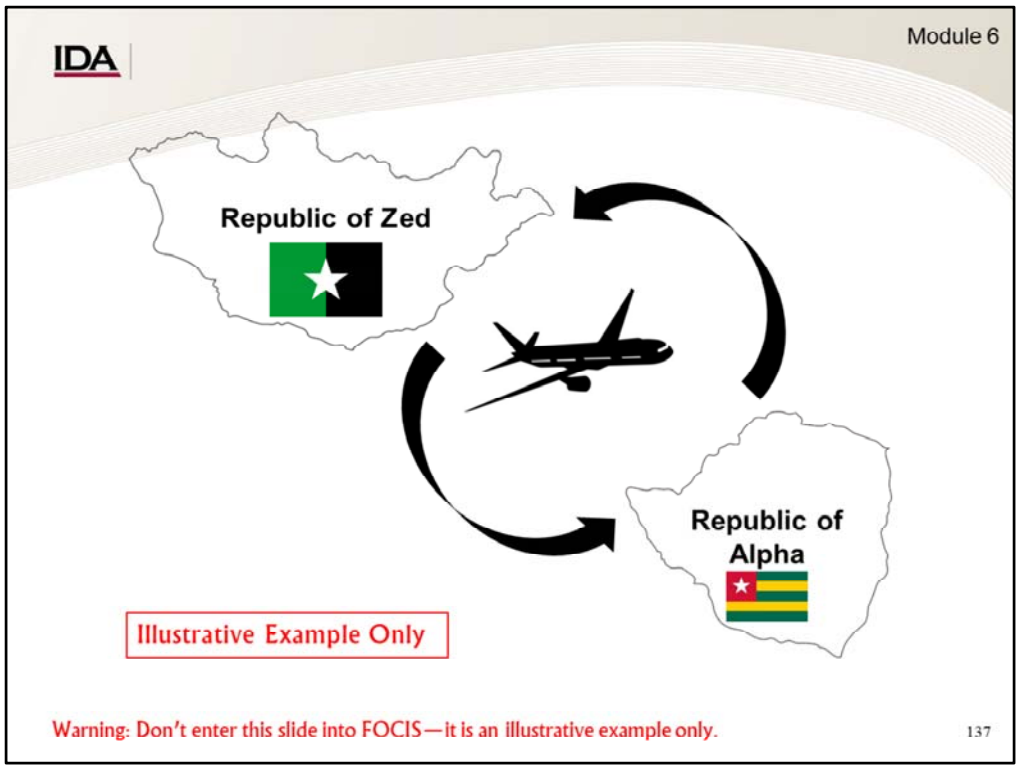


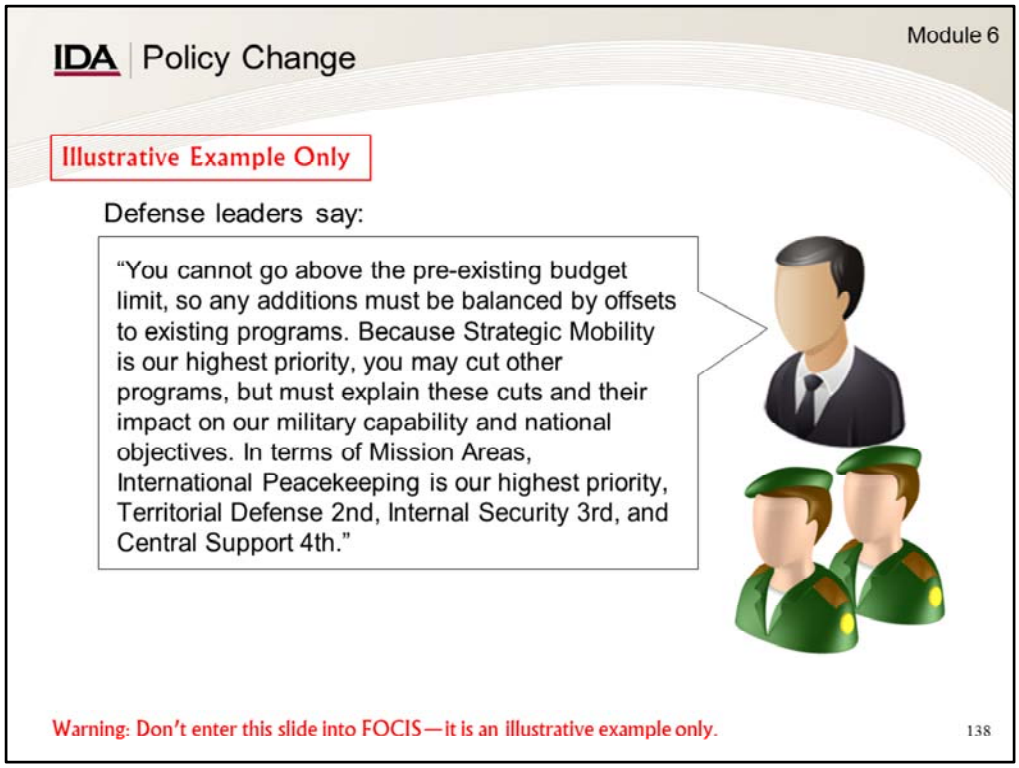
The instructor clarifies that a president may not ever publicly state something as clearly as the example provided on this slide and the previous slide.

However, policy decisions or the intent of policy (in this case to increase participation in international peacekeeping operations) is something that can be derived from strategies, speeches, white papers, or policy statements of the nation's chief executive and/or its most senior officials.



The instructor may wish to remind the seminar students that the "feasible" as in "military feasible" equals "possible to do." Therefore, a programmatic option has to be possible.

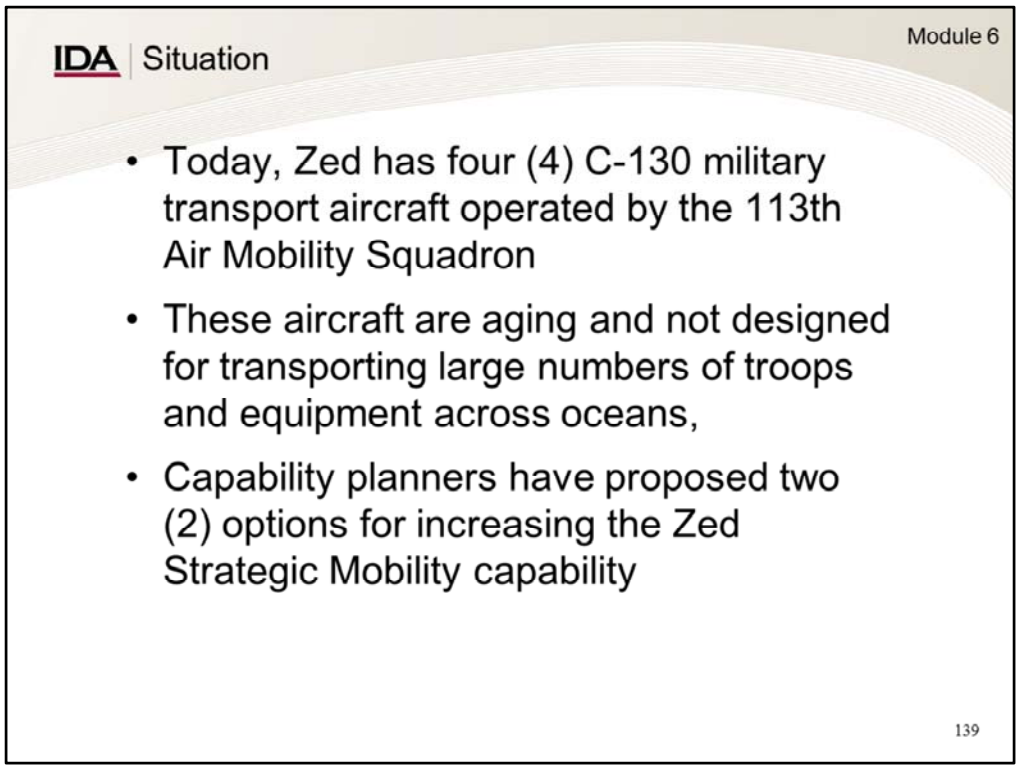

IDA
Module 6
Republic of Zed
Republic of Alpha
Illustrative Example Only
Warning: Don't enter this slide into FOCIS—it is an illustrative example only.
137



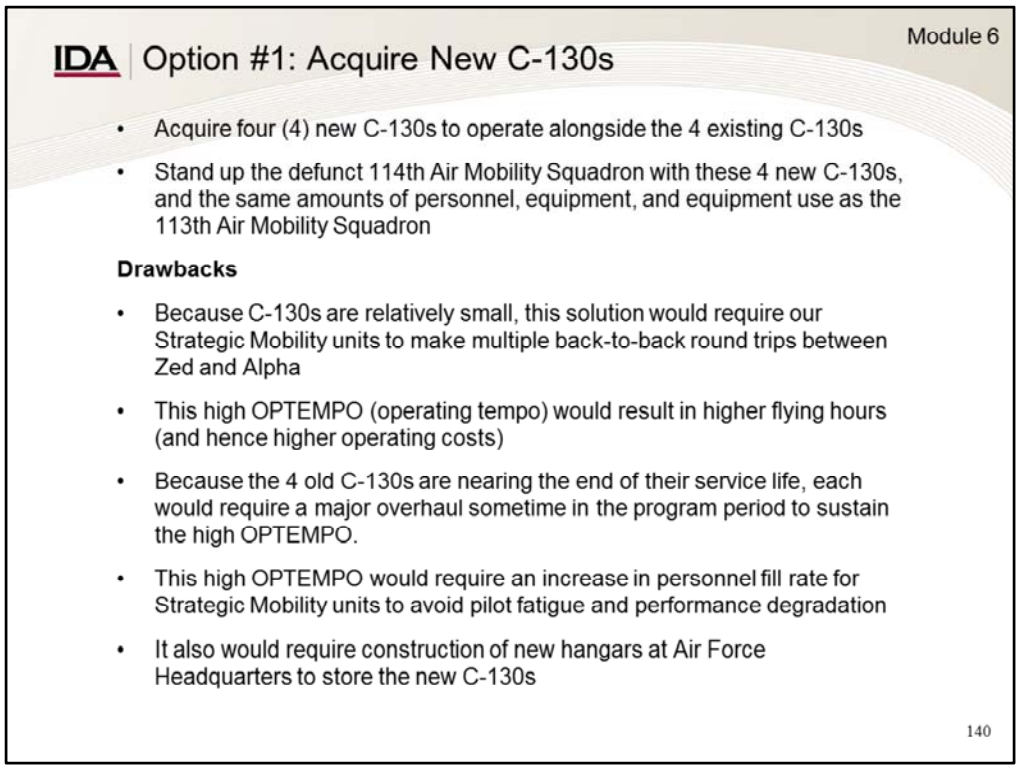
To properly review the proposed solutions, some guidance that establishes priorities and sets limits on spending and cuts is required. *Program guidance* is a term used to describe this guidance.

Remind the students that program guidance is usually issued by the Minister of Defense or the direct delegate of the Minister of Defense.

Creating program guidance is an intra-ministerial effort as well as an inter-defense sector effort because it has potential impact on all members of the defense sector.



Another important thing to know before reviewing proposed solutions is the current capability of the existing force structure relative to the gap identified. This information should be provided within the capability proposal.



This slide and the next are the proposed solutions to close the gap articulated on slide 139 (existing aircraft are not designed to transport troops and equipment over the ocean).

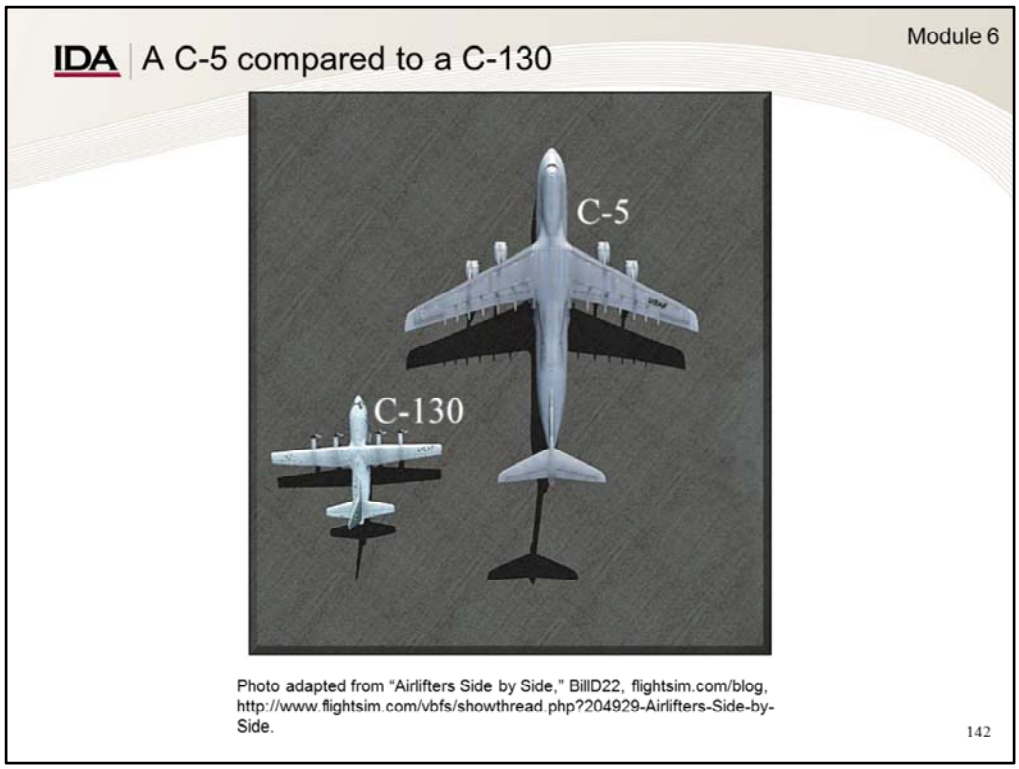
IDA | Option #2: Acquire New C-5s

- Acquire 2 new C-5s
- Stand up the defunct 114th Air Mobility Squadron with these 2 new C-5s, and the same amounts of Personnel, Equipment, and Equipment Use as the 113th Air Mobility Squadron
- Because C-5s are huge and can carry more cargo, this would avoid the high OPTEMPO of Option #1
- Flying hours for Strategic Mobility units would be lower as compared to Option #1
- Each old C-130 would require only a minor overhaul some time during the program period
- Strategic Mobility units would require only normal manning

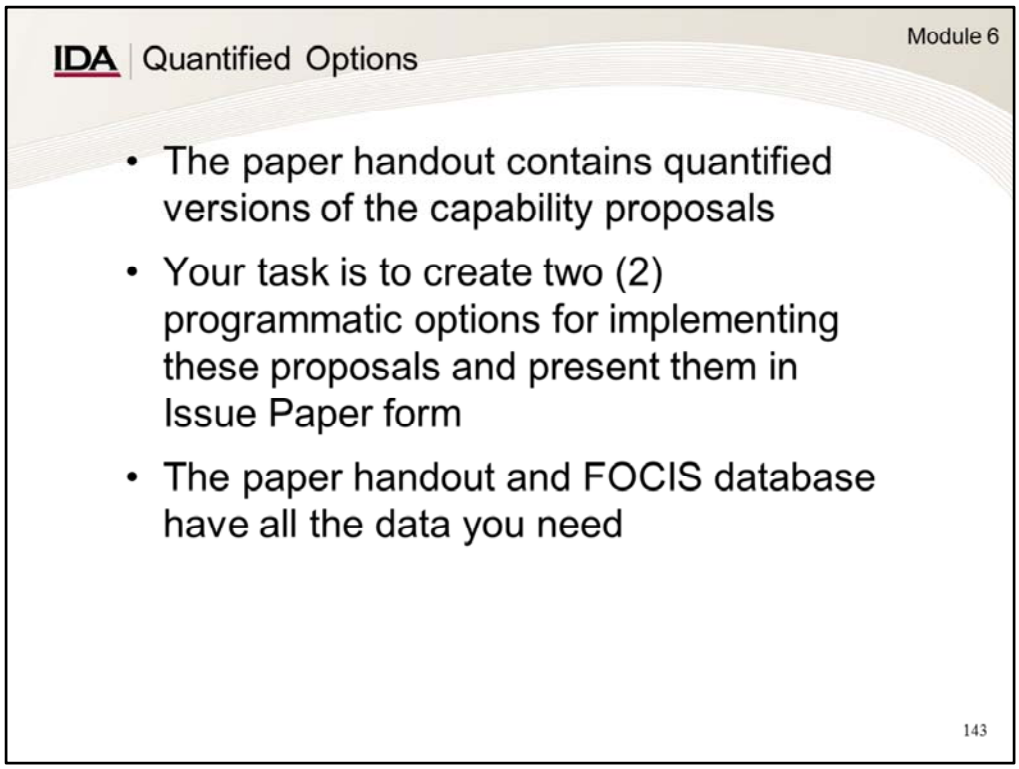
Drawbacks

- C-5s are too large to operate in our current facilities and would require construction of an entirely new C-5 air base in the Capital Region
- C-5s are more complex to operate and require more expensive maintenance and more training flight hours
- Existing C-130 pilots could not operate these aircraft without significant training time in a C-5

141



This slide is to provide the seminar participants a visual of the difference in size between a C-130 and a C-5. The instructor may use the slide to discuss how each aircraft has different support requirements (hangars, space on an airport ramp, maintenance requirements) and how those support requirements drive differences in the cost of acquiring and operating the aircraft.



For purpose of this exercise, the instructor should have already quantified the proposed solutions. The Student Learning Progress – Handout and the FOCIS database (Zed Program Baseline) provided for use with this exercise also provide all the data required.

IDA | Conceptual Reminders

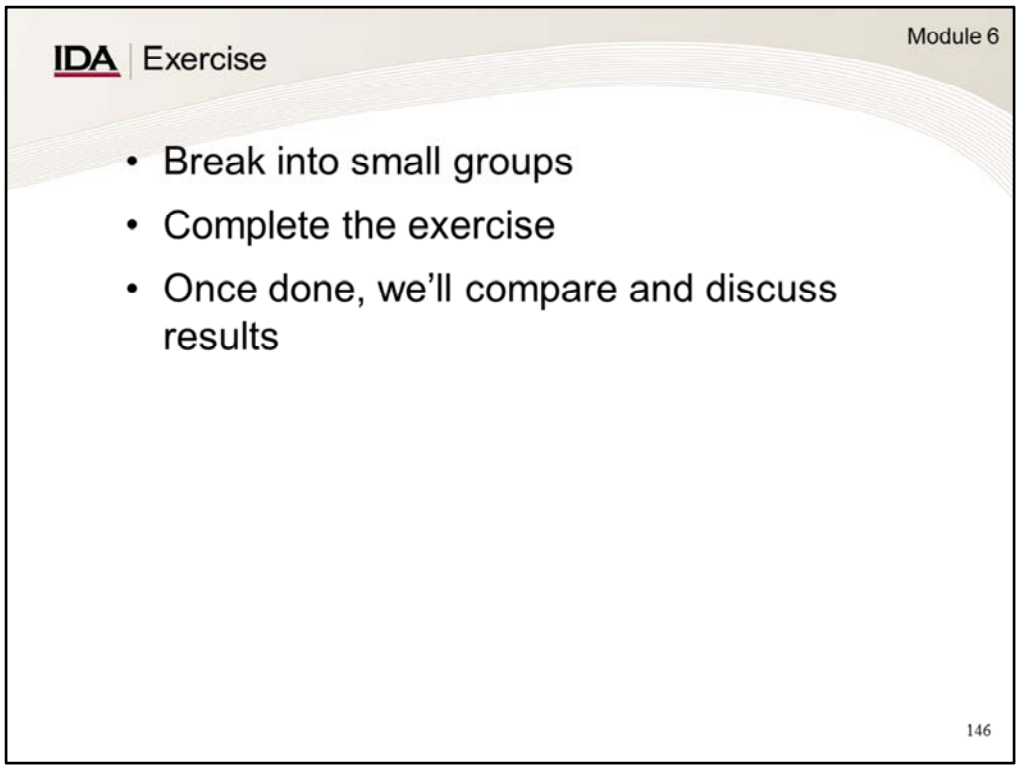
- Programming must represent all present and future costs & effects, and describe their relationship to military capability and national goals
- Because an overall military budget increase has not been approved, your additions must be balanced by offsets in existing programs.

144

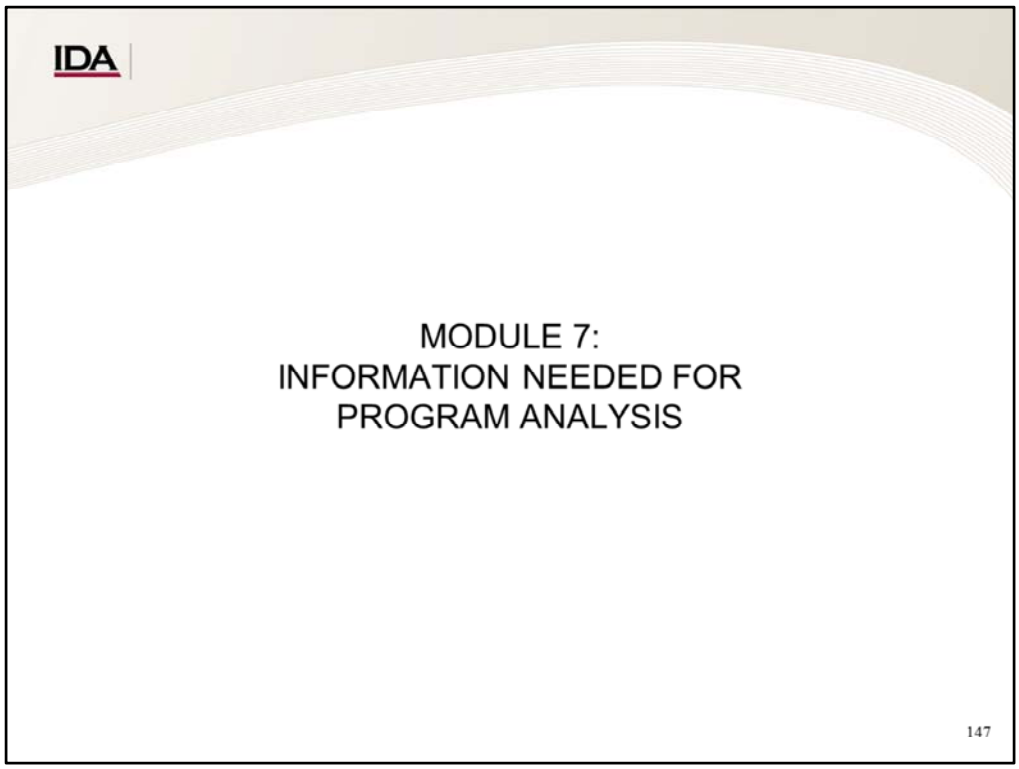
IDA | FOCIS Workflow & Notes

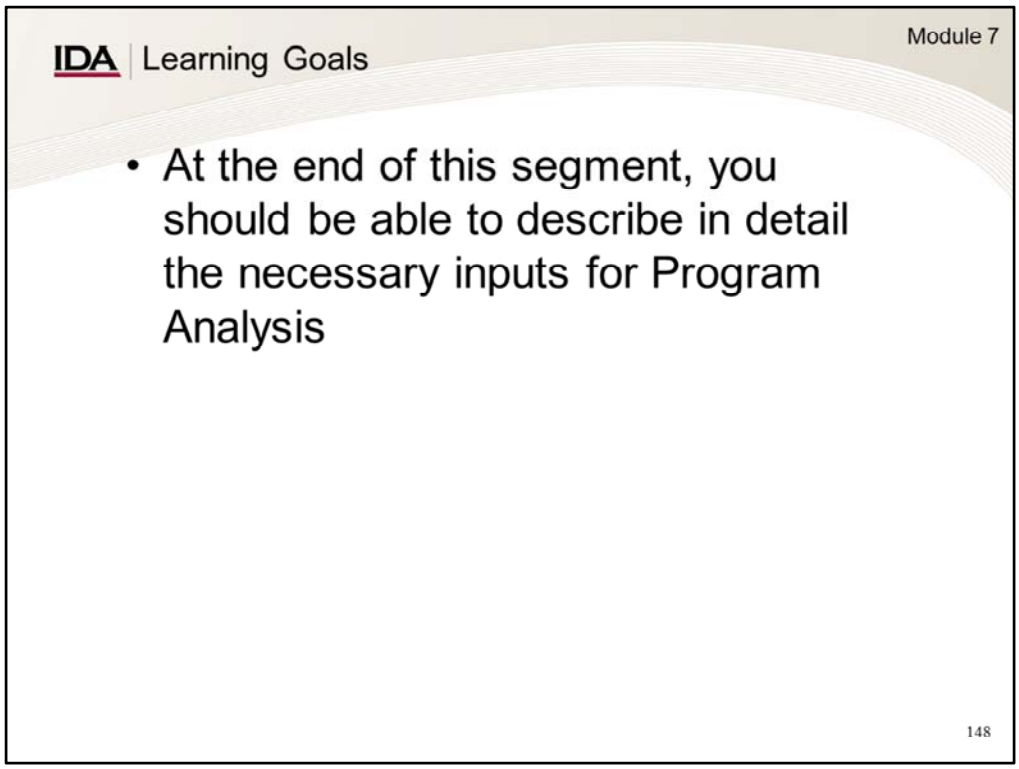
- You can select one of these approaches:
  - Approach no. 1. Modify the (backed-up) Baseline position as you go
  - Approach no. 2. Create different copies of the Baseline to explore different options and merge later
- As a rule of thumb, use Approach no. 1 for relatively small analyses with few variables moving parts (such as this exercise)
- Use Approach no. 2 for large analyses with many variables
- All necessary Cost data has already been entered in FOCIS by the Zed cost-estimating team

145

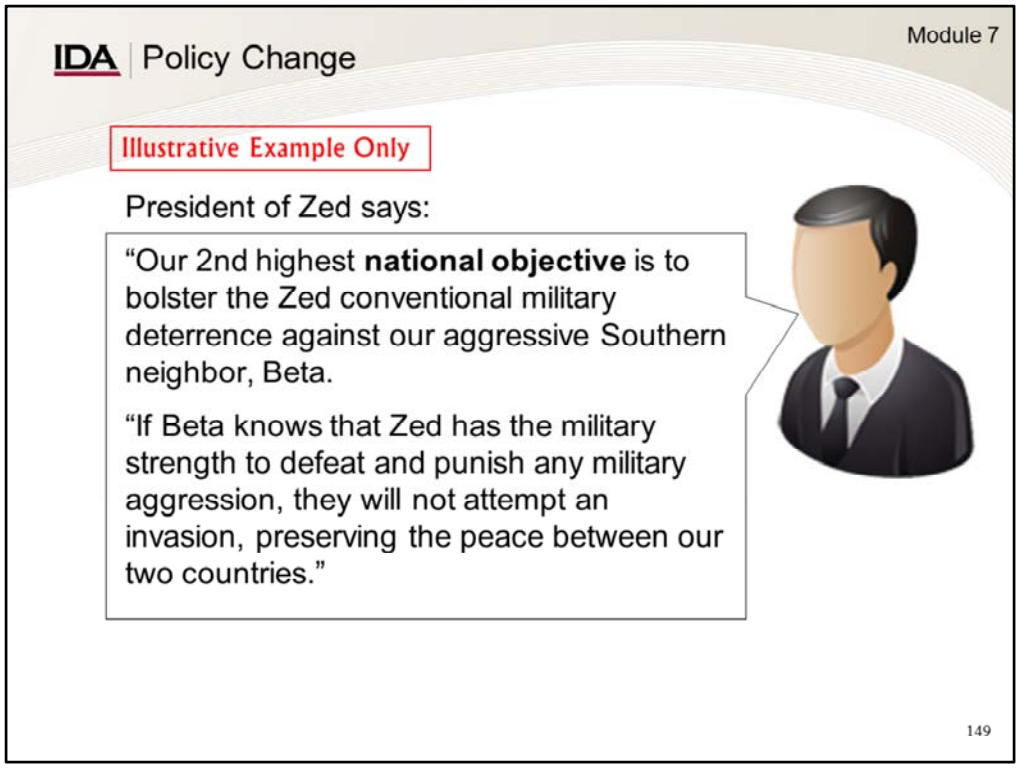


At the end of the exercise, the instructor should have students present their results orally in an Issue Paper format.

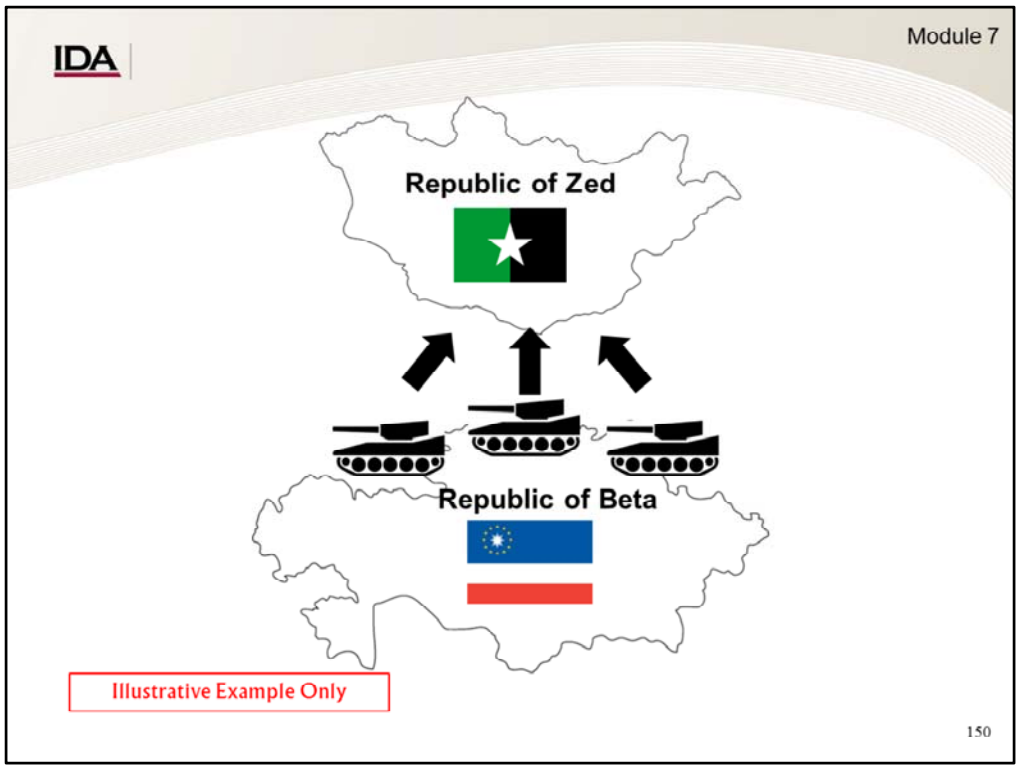

IDA
MODULE 7:
INFORMATION NEEDED FOR
PROGRAM ANALYSIS
147

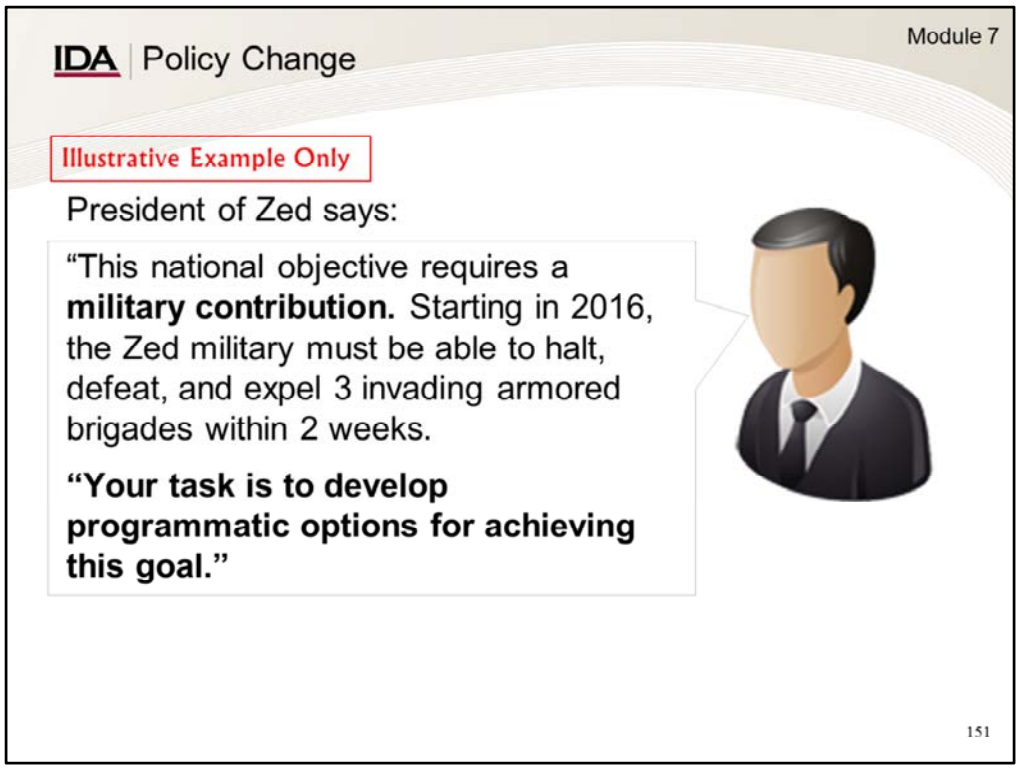


Instructor Note: The module is designed to be a question and answer session. Remind the students that a learning mentality is what they need (see the instructor's notes for slide 4—this is not a graded exercise and there will not a student evaluation following the seminar).

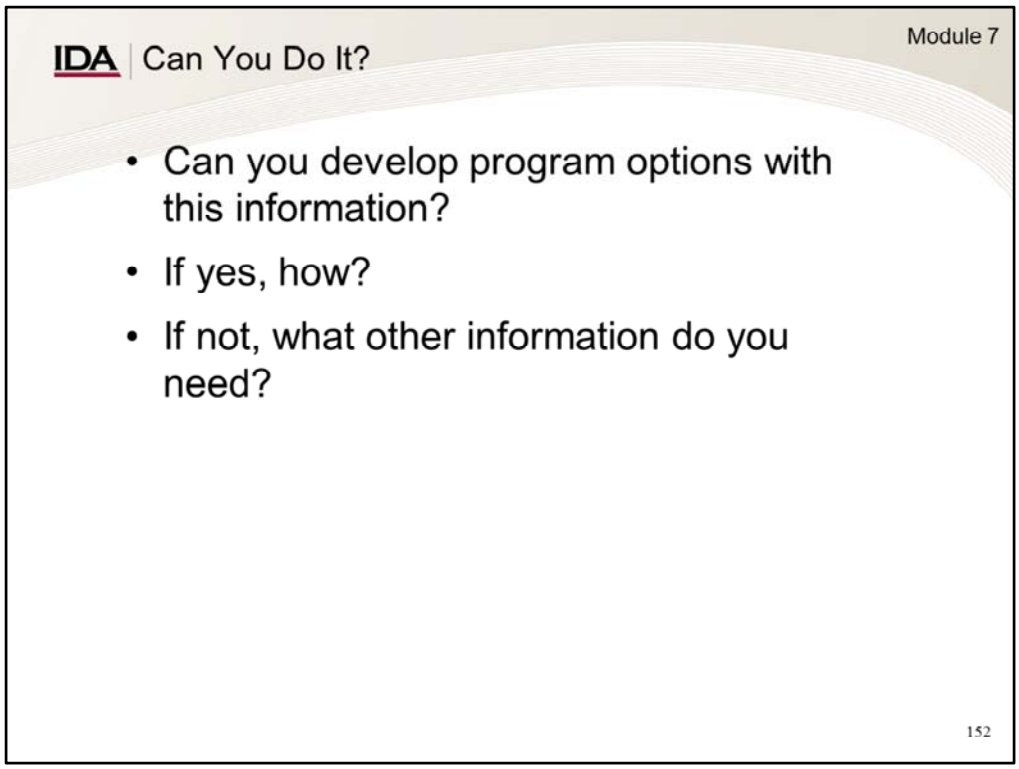


When using this seminar, the instructor should adapt the policy statements and the dates to best match the national context of the seminar participants.


IDA
Module 7
Republic of Zed
Republic of Beta
Illustrative Example Only
150



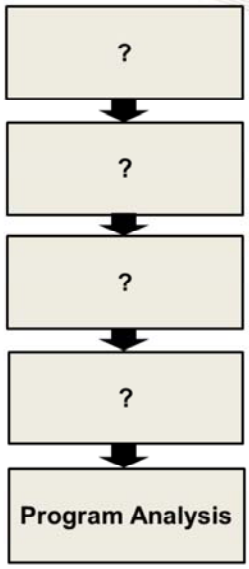
When using this seminar, the instructor should adapt the policy statements and the dates to best match the national context of the seminar participants.



For all of the questions posed on the slides within this module, their purpose is to prompt a discussion among the seminar participants. The seminar instructor should lead the students from one question to the next and provide prompts as required.

IDA | The Antecedents of Program Analysis

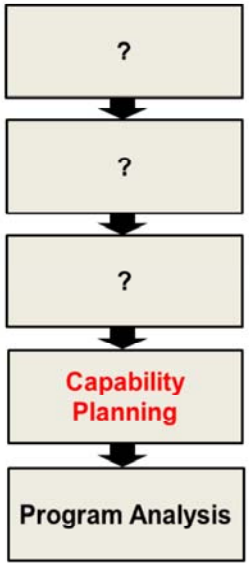
- To conduct Program Analysis, there is some information required.
- What is the source of information that immediately precedes Program Analysis?



153

IDA | Capability-Based Planning (CBP)

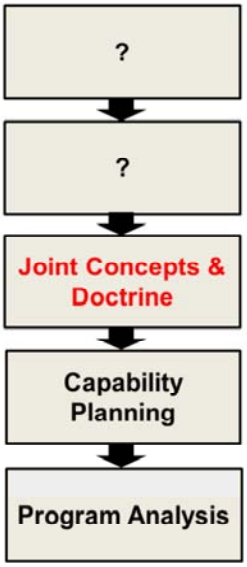
- CBP = Describing military units not in terms of their organizational affiliation (e.g., 1st Army Brigade) but in terms of what sort of military missions they can achieve (e.g., armored assault)
- Programming is intended to create capability, which raises the question: How much and what kind of capability do you need?



- Zed might want multiple heavy brigades for tank-on-tank engagement
- Or Zed might want dismounted infantry with anti-tank guided missiles
- Or Zed might want close air support from "tank killers" (e.g., A-10 aircraft)
- How are these decisions made?
- In other words: how does a nation decide which capabilities to pursue?

IDA | Joint Concepts & Doctrine

- Missing information: Joint Concepts + Doctrine
  - An idea of how the Zed military will jointly operate in a certain type of mission is needed to know what capability, capacity, and readiness are required
- A doctrinal change can have huge impact on Program Analysis because it may point to a different capability requirement.



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IDA | Thought Exercise on how Concepts and Doctrine impact Program Analysis

Module 7

- Example: U.S. experience in Vietnam led to huge doctrinal changes in 1970s and 1980s
- All Volunteer Force
  - Want skilled and motivated soldiers, no more conscripts
- Introduction of "Total Force Policy"
  - Restructure the Army, Army Reserves, and National Guard so that all 3 have to be deployed together
- Discussion: What are some Program Analysis issues you can imagine stemming from these doctrinal changes?

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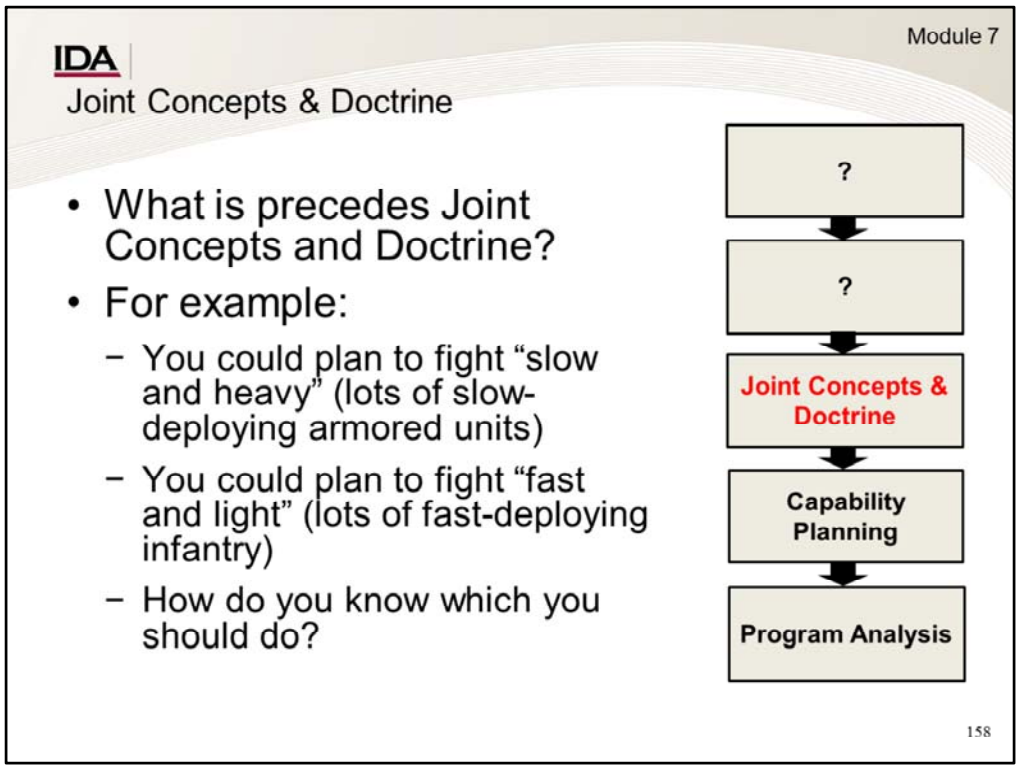

Instructor note: Joint concept and doctrine development will also be informed by operational experience and any form of war games (table top or computer simulated) and exercises (field or table top) that a nation's forces could undertake. Law, policy, and, to some extent, culture will also inform concepts and doctrine. A nation will generally not accept a way of responding to challenges that do not fit within its legal or policy framework or are not acceptable to its population.

The point of the slide is not to define all that informs concept and doctrine development; rather, the slide's intent is to show some of the relationships between *resource planning* and *concepts and doctrine*.

IDA | Defense Strategy

- Defense Strategy points to required scenarios, Mission Area decomposition, wargaming, experimentation
  - Need some idea of what challenges might be faced to come up with a concept for overcoming them
  - Need to test how well different concepts perform
- What precedes defense strategy?
- In other words: how do you know what scenarios & challenges you should be prioritizing?

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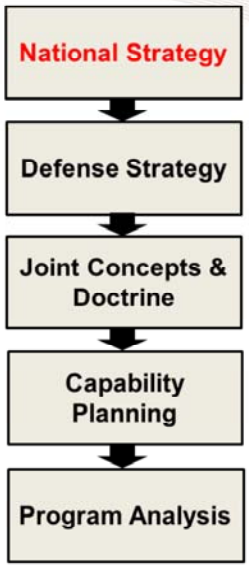
IDA | National Strategy

Module 7

- Documents authored by civilian leadership
- Specify national objectives and the expected military contribution to them
- Prioritization of what is most important



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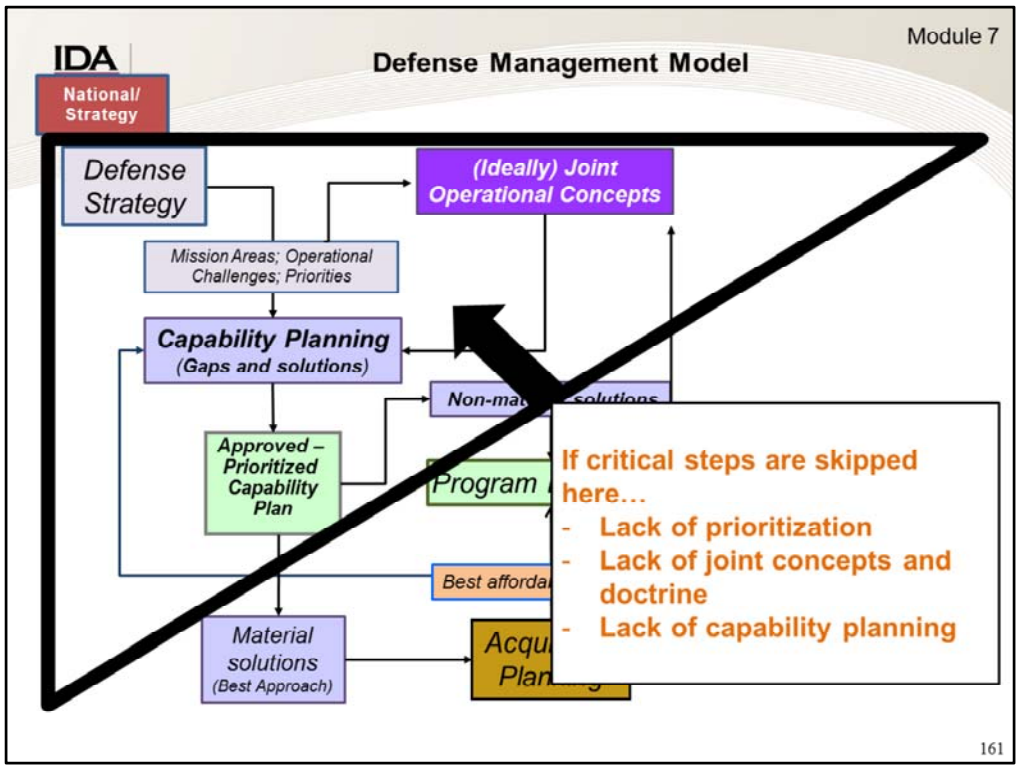
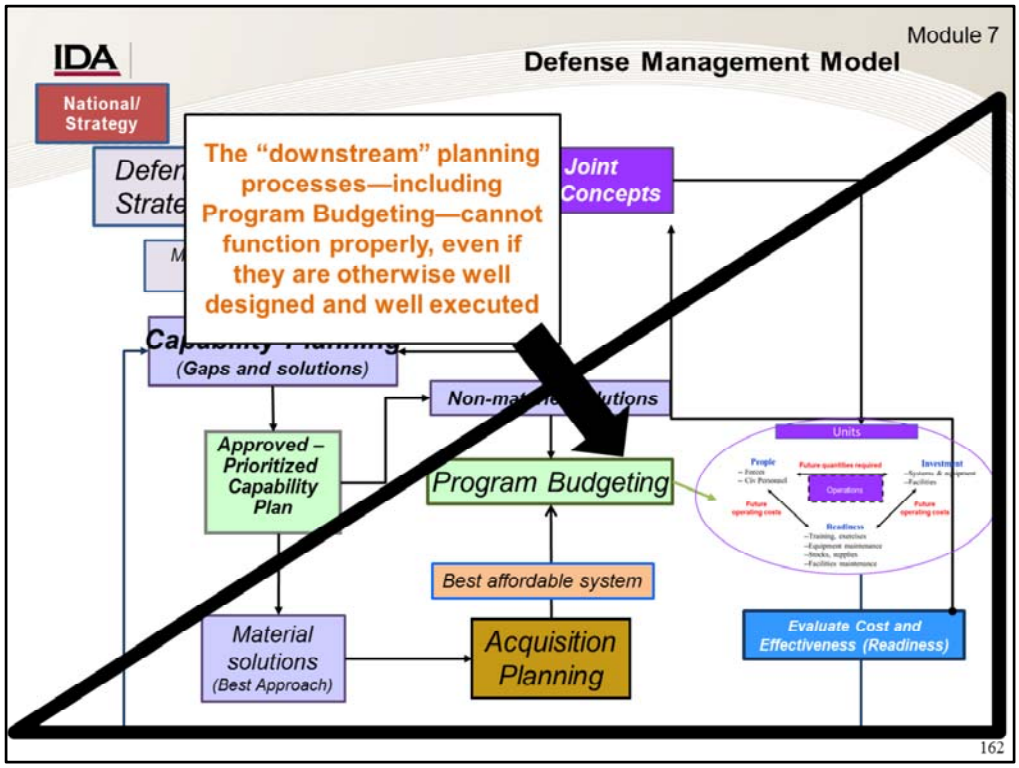
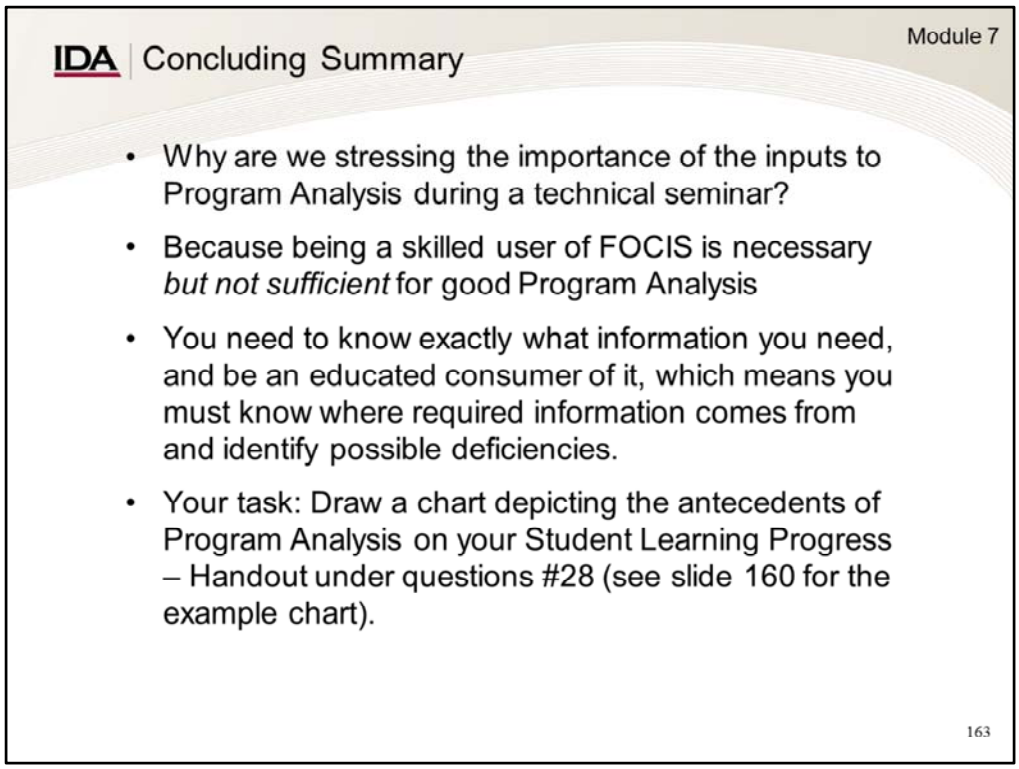
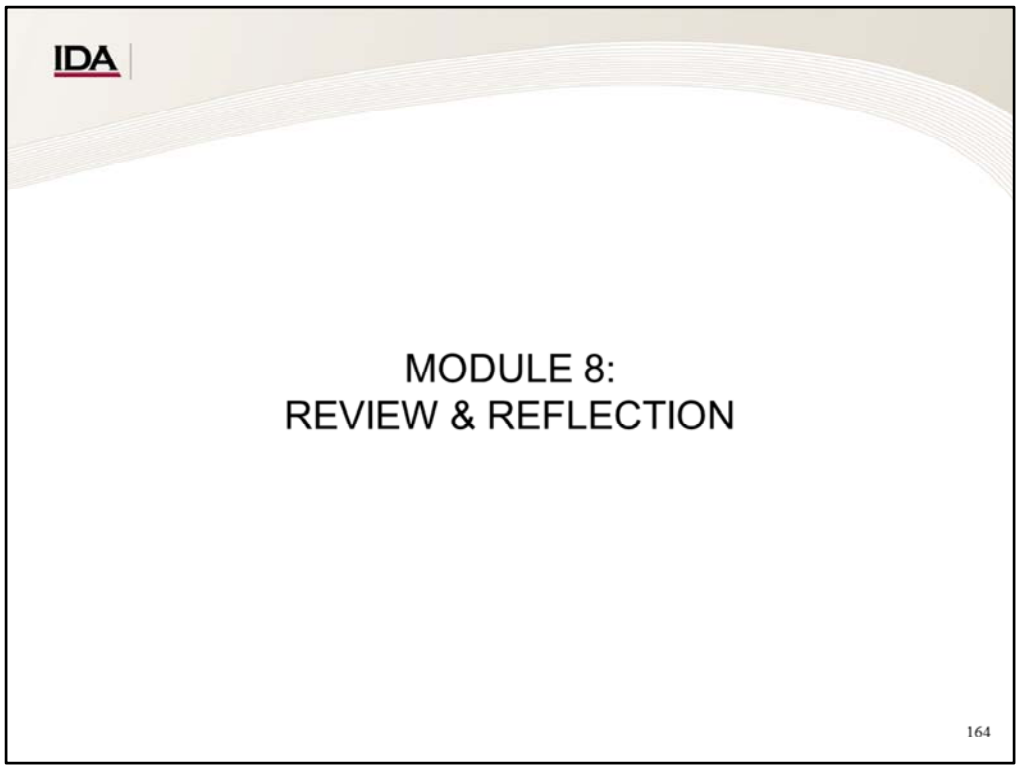
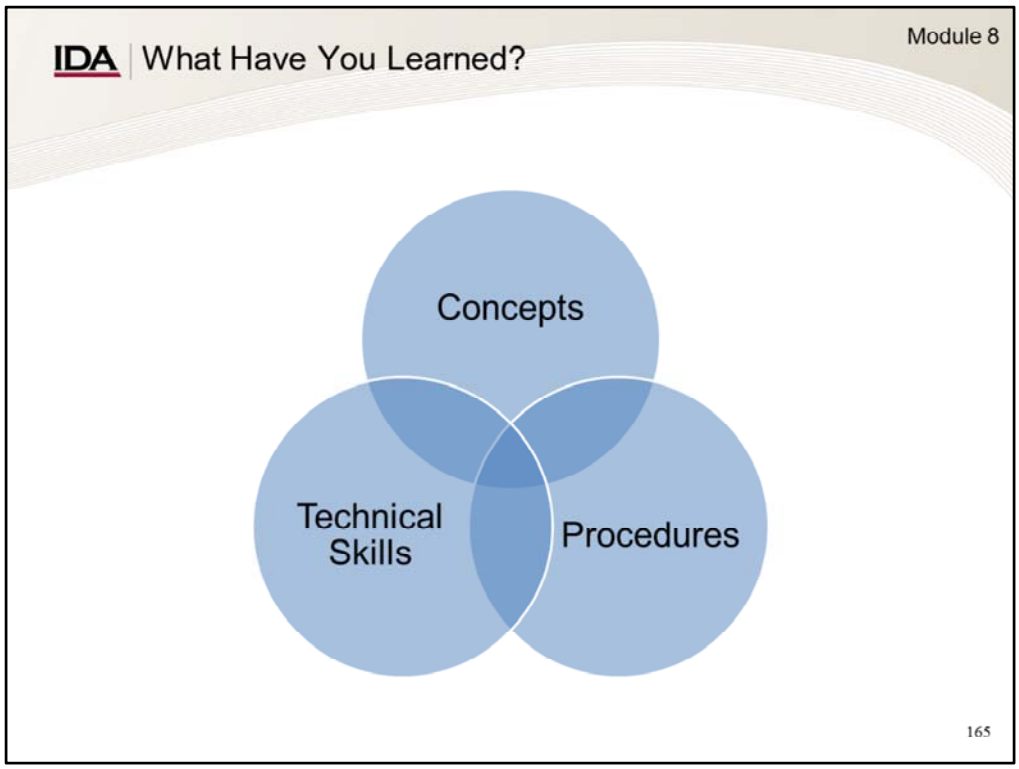

IDA
Module 7
Defense Management Model
National/ Strategy
Defense Strategy
(Ideally) Joint Operational Concepts
Mission Areas; Operational Challenges; Priorities
Capability Planning
(Gaps and solutions)
Approved – Prioritized Capability Plan
Program
Material solutions
(Best Approach)
If critical steps are skipped here…
- Lack of prioritization
- Lack of joint concepts and doctrine
- Lack of capability planning
161


IDA
Module 7
Defense Management Model
National/ Strategy
The "downstream" planning processes—including Program Budgeting—cannot function properly, even if they are otherwise well designed and well executed
Joint Concepts
(Gaps and solutions)
Approved – Prioritized Capability Plan
Program Budgeting
Best affordable system
Material solutions (Best Approach)
Acquisition Planning
Units
Evaluate Cost and Effectiveness (Readiness)
162



The Concluding Summary section is for students to reflect upon what they have learned, and to develop strategies for adapting the seminar's lessons into real-world action.

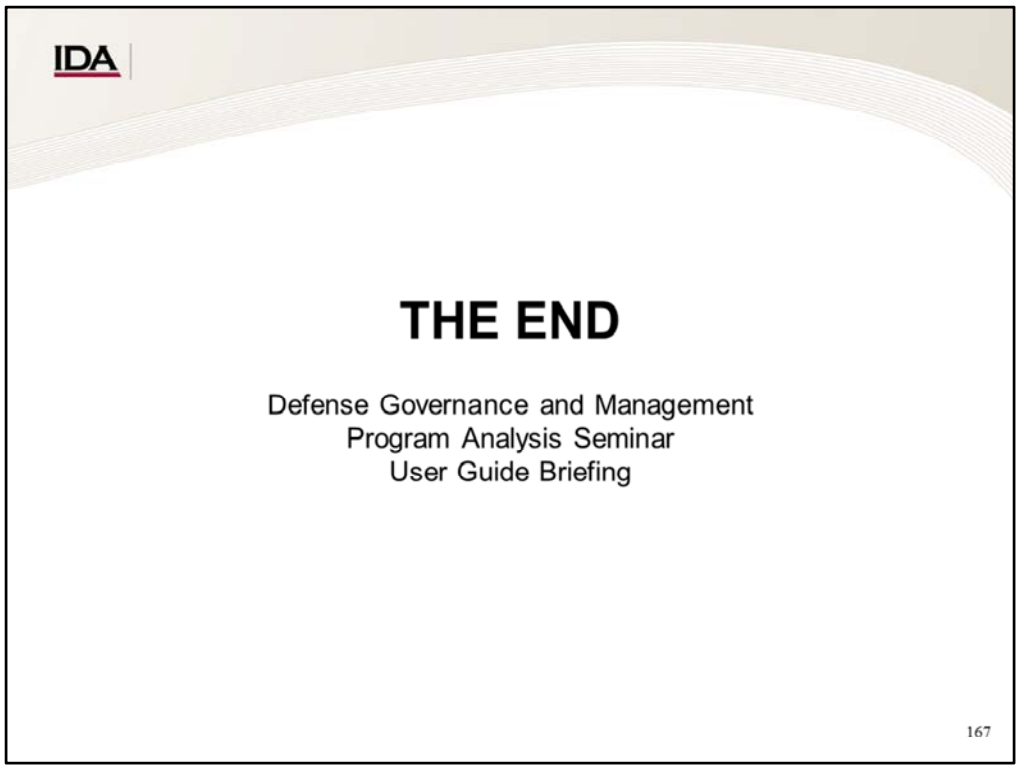

IDA
MODULE 8:
REVIEW & REFLECTION
164



The instructor should lead a free-form discussion about how Program Analysis might be instituted in their country.

To begin, discuss the concepts, procedures, and technical skills that have been taught. See Student Learning Progress – Instructor's Key to guide the discussion.

- What needs to happen to establish Program Budgeting?
- What barriers are there? How could they be overcome?
- What are the next steps?


IDA
THE END
Defense Governance and Management
Program Analysis Seminar
User Guide Briefing
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Pen and Paper
Programming Exercise #1

Directions

You are a program analyst within the Ministry of Defense. You have been asked to provide affordable and feasible options for changing the force structure in response to recent policy changes.

- Read the background information on Country X's program structure, baseline, policy direction, and desired capabilities.
- Using the provided cost estimates and priority rankings, develop programmatic recommendations that satisfy the requirements and fit within the fiscal constraints. Blank budget tables have been provided to help you analyze options (pp. 6–7).
- Present your recommendation using the attached format.
- Be prepared to explain the relationship of your recommendation to national objectives, capability, and fiscal limits.

Program Structure

10000 National Defense Program	
11000 Border Patrol	
12000 Air Defense	
13000 Support & Logistics	
11000 Border Patrol	
11100 1st Border Patrol Brigade	
12000 Air Defense	
12100 1st Air Defense Brigade	
13000 Air Defense	
13100 1st Logistics Brigade	

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Baseline

	Current Year	Year 1	Year 2	Year 3	Year 4
1st Border Patrol Brigade	400	400	400	400	400
1st Air Defense Brigade	400	400	400	400	400
1st Logistics Brigade	400	400	400	400	400
Currently Unallocated	0	0	0	300	300
Total Defense Budget	1200	1200	1200	1500	1500

Policy Direction

Review Priority Challenges and Gaps

1. **Problem:** Economic turmoil in neighboring countries has increased the possibility of illegally armed groups crossing the border to conduct black market activities
   a. **Gap:** deficient *capacity* to conduct border patrol activities

2. **Problem:** Recent security exercises have shown that the country's air defenses are slow to respond to if threatening foreign aircraft or missiles approach or enter national airspace
   a. **Gap:** deficient *readiness* in air defense

3. **Problem:** Country X's defense and security forces are chronically short of support material required for routine maintenance. This affects the readiness of nearly all units.
   a. **Gap:** deficient *capability* to forecast and track support material

Review Proposed Solutions to the Gaps

1. **Improve border patrol capacity**
   - Increase actual manning in border patrol units
   - Increase capacity to maneuver while deployed (more fuel & spares)
2. **Improve air defense readiness**
   - Increase repair rate for mobile surface-to-air missile (SAM) systems
   - Increase training rate for air defense units
3. **Improve logistic management capability**
   - Purchase new logistics information system

Quantified Solutions

1. **Improve border patrol capacity:**
   - 30% increased manning in Border Patrol Brigade for 2016–2019 period
   - Double fuel budget for 2016–2019 period
2. **Improve air defense readiness**
   - 50% increased maintenance of Air Defense Brigade's SAMs across 201–2019
   - Conduct one additional training exercise every year
3. **Improve logistics management capability**
   - Purchase new Logistics Information System in 2019

Cost Estimates

The following menu provides cost estimates for the proposed solutions to close the capability gaps. Many are presented as fractions of the whole. For example, to achieve the proposed 30% increase in staffing for the Border Patrol Brigade, you would buy 3 times a 10% increase. This allows for partial implementation of proposals in case full funding is not affordable. It is possible to make cuts to units, which has a negative cost (i.e., it frees up money to spend elsewhere). You will use these cost estimates to develop various programmatic options.

Unit	Action	Cost
1st Border Patrol Brigade	10% increased manning	50
	10% decreased manning	-50
	10% additional maintenance	50
	10% decreased maintenance	-50
	1 additional yearly training exercise	100
	1 fewer yearly training exercise	-100
	50% increase fuel budget	50
	50% decrease fuel budget	-50
	1 new technological modernization	200
	1 eliminated technological modernization	-200
Unit	**Action**	**Cost**
1st Air Defense Brigade	10% increased manning	50
	10% decreased manning	-50
	10% additional maintenance	50
	10% decreased maintenance	-50
	1 additional yearly training exercise	100
	1 fewer yearly training exercise	-100
	50% increased fuel budget	50
	50% decreased fuel budget	-50
	1 new technological modernization	200
	1 eliminated technological modernization	-200
Unit	**Action**	**Cost**
1st Logistics Brigade	10% increased manning	50
	10% decreased manning	-50
	10% additional maintenance	50
	10% decreased maintenance	-50
	1 additional yearly training exercise	100
	1 fewer yearly training exercise	-100
	50% increased fuel budget	50
	50% decreased fuel budget	-50
	1 new technological modernization (logistics information system)	200
	1 eliminated technological modernization	-200

Policy Direction – Gap Priorities

The Minister of Defense has consulted with the President and given you the following priority rankings to assist with your development of programmatic options:

- **Highest priority:** Improve border patrol capacity
- **Medium priority:** Improve air defense readiness
- **Lowest priority:** Improve logistics management capability

Anything not listed as a priority can be assumed to be lower importance than the three mentioned priorities.

Presentation Format:

Note that for the sake of brevity, we are omitting some elements of a standard issue paper

1. What are your proposed program enhancements?
2. What shortfalls do they address?
3. What tradeoffs are you making?
4. What is the net effect on the budget?
5. What is the effect of your enhancements *and* tradeoffs on national objectives?

Blank Budget Sheet 1

		2016	2017	2018	2019
Border Patrol Brigade	Baseline	400	400	400	400
	Proposed New				
	Proposed Total (Baseline + New)				
Air Defense Brigade	Baseline	400	400	400	400
	Proposed New				
	Proposed Total (Baseline + New)				
Logistics Brigade	Baseline	400	400	400	400
	Proposed New				
	Proposed Total (Baseline + New)				
Proposed Budget	Sum of Proposed Program Totals				
Budget Limit		1200	1200	1500	1500

Blank Budget Sheet 2

		2016	2017	2018	2019
Border Patrol Brigade	Baseline	400	400	400	400
	Proposed New				
	Proposed Total (Baseline + New)				
Air Defense Brigade	Baseline	400	400	400	400
	Proposed New				
	Proposed Total (Baseline + New)				
Logistics Brigade	Baseline	400	400	400	400
	Proposed New				
	Proposed Total (Baseline + New)				
Proposed Budget	Sum of Proposed Program Totals				
Budget Limit		1200	1200	1500	1500

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Zed Program Analysis Exercise #2

Your Task: Develop two (2) options to implement the following capability proposals.

Proposal 1

- Procure four (4) new C-130s by 2018 and assign them to 114th Air Mobility Squadron (AMS).
- Stand up 114th AMS with personnel, non C-130 equipment, and equipment use (use same as 113th) by 2017.
- Assign 2400 flying hours – operations to the 113th and 114th AMS for 2018 and 2019. This is the total amount of flying hours for each squadron.
- Assign one (1) major overhaul to each of the 4 old C-130s sometime between 2016 and 2019.
- The personnel fill rate for each personnel class in 113th and 114th AMS may not be lower than 80% for 2017–2019 period.
- Construct new hangar at Air Force Headquarters (identify as a budget line item) by 2019.

Proposal 2

- Procure two (2) new C-5s by 2018 and assign them to 114th Air Mobility Squadron (AMS).
- Stand up 114th AMS with personnel, non C-5 equipment, and equipment use by 2017. Use same amounts as 113th, except for flying hours – training, which must be 100% of authorized for every year that unit exists.
- Assign 1600 flying hours – operations to 113th AMS for 2018–2019. This is for peacekeeping operations and is the total amount of flying hours for the entire squadron.
- Assign 1000 flying hours – operations to 114th AMS for 2018–2019. This is for peacekeeping operations and is the total amount of flying hours for the entire squadron.
- Assign One (1) minor overhaul to each of the 4 old C-130s sometime between 2016 and 2019.
- Construct a new C-5 air base in the Capitol Region (identify as a budget line item) by 2019.

Identify offsets; the additive cost of the proposals may not exceed the budget limit

Present options in a short issue paper

- Issue Title: Descriptive title of issue
- Organization Priority: What priority is this and who prioritized it?
- Summary: Describe the capability shortfall and why it should be addressed
- Risk: What are the implications of not addressing the shortfall?
- Current Program: What is the baseline?
- Program Enhancements: What are the options?
- Summary of Proposed Enhancements: Summarize the enhancement and its costs compared to the baseline?
- Offset: What tradeoffs are being made in other capabilities to pay for the enhancement?

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12. DISTRIBUTION / AVAILABILITY STATEMENT

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13. SUPPLEMENTARY NOTES

14. ABSTRACT

This document is a handbook for a practitioner of defense institution building (DIB) seeking to institute program budgeting in a foreign host-nation. It has two major components: a textual explanation of the intellectual foundations and value proposition of program budgeting for defense purposes, and approximately 16 hours of seminar with which to introduce program budgeting to host-nation personnel. These instructional materials are deliberately modular and designed to be useful in a wide variety of countries and contexts.

15. SUBJECT TERMS

DIRI, DIB, DRMS, defense institution building, security cooperation, program budgeting, budgeting

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