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Defense Research: DOD's Research, Development, Test and Evaluation Program

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Defense Research: DOD's Research, Development, Test and Evaluation Program

SUMMARY

On February 4, 2002, the Bush Administration released its FY2003 budget proposal. The Administration requested $379 billion for the Department of Defense, including $53.9 billion for the Research, Development, Test and Evaluation (RDT&E) account in FY2003. This is about $5 billion more than what Congress appropriated for the RDT&E account in FY2002. The Administration also requested $67 million in research and development within the Defense Health Program and $303 million for research and development in the Chemical Agents and Munitions Destruction Program. The Administration also requested $20 billion for a Defense Emergency Response Fund (DERF) to support the on-going war on terrorism. Half the fund would support specific projects identified by the Administration (including $2.2 billion in additional RDT&E). The other half would function like a contingency fund.

According to the FY2003 budget, the Administration is planning to request $288.5 billion for RDT&E through FY2007, with annual funding reaching $60.7 billion in FY2005. Funding would decline after that.

The Administration's request for the S&T portion of the FY2003 RDT&E budget was $9.7 billion. This is about $200 million below the amount appropriated last year. However, DOD counted $213 million in research and development within the transfer account mentioned above as S&T funding. This would bring the FY2003 S&T request to $9.9 billion. The $9.9 billion represents 2.7% of DOD's topline, short of the Administration's own goal of 3%.

The Administration requested $6.7 billion in research and development for missile defenses, about $300 million below what was appropriated last year.

The House voted on its defense authorization bill on May 10. The bill authorizes $2.5 billion more for RDT&E than what the Administration requested, $2.1 billion being DERF-related funds transferred to regular RDT&E accounts. The bill provides $10.0 billion for S&T. This includes $332 million in DERF-related S&T

The Senate approved its authorization bill (S. 2514, S. Rpt. 107-151) on June 27. The bill authorized $55.7 billion for RDT&E, this includes $1.9 billion in DERF-related funds transferred to regular RDT&E accounts. The bill also recommended $10.2 billion for S&T. This includes $293 in DERF-related funds. The Senate also voted to reduce BMD RDT&E by roughly $800 million, but adding that amount to an account that the President may spend on either counter-terrorism activities or BMD RDT&E.

The House approved its defense appropriations bill (H.R. 5010) June 27. It voted to increase RDT&E $3.9 billion above the President's request (to $57.8 billion). It also voted to increase S&T funding $1.7 billion above the President's request (to$11.4 billion).

The Senate approved its bill (H.R. 5010, amended in the nature of a substitute, S. Rpt. 107-213) on August 1. The Senate approved $56.1 billion for RDT&E and a 9% increase for DOD's S&T programs, $10.8 billion, $700 million below the House level.

MOST RECENT DEVELOPMENTS

The House approved its defense appropriations bill (H.R. 5010) on June 27. The Senate approved its version of H.R.5010 on August 1. The House provided more funding for RDT&E and S&T than the Senate.

BACKGROUND AND ANALYSIS

Congress supports the research and development efforts of the Department of Defense (DOD) with a Research, Development, Test and Evaluation (RDT&E) appropriation. The appropriation primarily supports the development of the nation's future military hardware and software and the technology base upon which those products rely. It is the federal government's single largest research and development account. Besides supporting the nation's military needs, some of the technology developed with RDT&E funds spills over into the commercial sector. For these reasons, RDT&E funding draws a considerable amount of attention within Congress each year.

During the Clinton Administration's tenure, Congress appropriated between $34 billion and $41 billion a year in RDT&E funding. Almost 80% of the RDT&E funding goes toward the development and demonstration of operational military hardware and software. The rest, over $10 billion in FY2001, goes toward basic research and more fundamental technology development and demonstration, referred to as the Science and Technology (S&T) program.

Most of the RDT&E appropriation is provided for in Title IV of the defense appropriations bills (Title II in the defense authorization bill). However, over the last couple years, Congress has also provided RDT&E funds separately in two other accounts: the Defense Health Program and the Army's Chemical Agents and Munitions Destruction Program. The Defense Health Program supports a wide range of activities, including research in areas such as breast and prostate cancer. The Chemical Agents and Munitions Destruction Program supports activities to destroy the U.S. inventory of lethal chemical agents and munitions to avoid future risks and costs associated with storage. Last year, Congress also appropriated $113 million in RDT&E funds within a $478 million Counter-Terrorism and Operational Response Transfer Fund (Title IX of the Department of Defense Appropriations for FY2002—P.L. 107-117). The RDT&E funds were directed to three areas: antibiotics and vaccines ($44 million), biological warfare exposure treatment ($30 million), and information security detection, warning, and response capabilities ($39 million). While this issue brief tracks RDT&E funding in these other areas, most of the focus of the issue brief is on those RDT&E funds provided in Title IV.

Every year, Congress must review and approve or revise how much money the Administration requests in RDT&E funding and how that money is allocated. This issue brief tracks the evolution of the RDT&E budget from the Administration's budget request through Congress's final authorization and appropriation (see **Table 2**), and discusses key issues that arise.

Funding data presented in this issue brief are expressed as total obligational authority (TOA), except where noted otherwise. Total obligational authority is a budget concept used

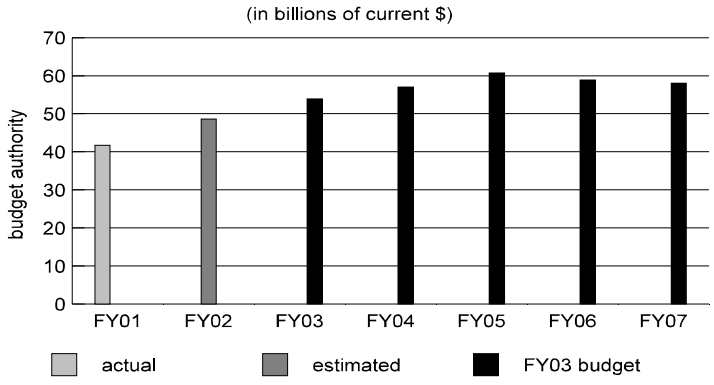
by DOD that represents the value of the direct Defense program for a fiscal year. It is equivalent to the sum of all budget authority granted by Congress, plus amounts from other sources authorized to be credited to certain accounts, plus unobligated balances of funds from prior years which remain available for obligation. Rescissions, transfers and other budget modifications affect TOA and budget authority (BA) differently. Therefore, TOA and BA differ by a few tens of millions of dollars when examining past year funding levels. Budget requests are in terms of budget authority and Congress authorizes and appropriates budget authority. However, funding data for individual program elements and cumulative RDT&E budget activities in DOD's R-1 document (used by this issue brief as the primary source of budget data in **Tables 1 and 2**) are reported as TOA. To remain consistent, all data in this brief are expressed as TOA, except where noted. It should be noted that in the current year (in this case FY2003) BA and TOA for RDT&E are the same. Differences occur only when considering past year activities.

For a general discussion of the fundamental principles and concepts of the RDT&E account, as well as long term budget trends and recurring issues, the reader is referred to CRS Report 97-316 SPR, *The Department of Defense's Research, Development, Test and Evaluation Program: A Primer*. For a general discussion of the basics of the overall defense budget, the reader is referred to CRS Report RL30002, *A Defense Budget Primer*. For a discussion of last year's defense appropriations bills in their entirety as they progressed through the House, Senate, and conference, the reader is referred to CRS Appropriations Report RL31005, *Appropriations and Authorization for FY2002: Defense*.

Total RDT&E Budget

The Bush Administration requested $53.9 billion in Title IV RDT&E funding. This is about $5 billion more than what Congress appropriated for Title IV RDT&E for FY 2002. Furthermore, the budget sets out a funding plan that would request $288.5 billion for RDT&E through FY2007, with annual funding reaching $60.7 billion in FY2005. See **Figure 1**. The Bush Administration had intended to increase military research and development prior to September 11. The budget now reflects additional support for RDT&E in response to the war on terrorism.

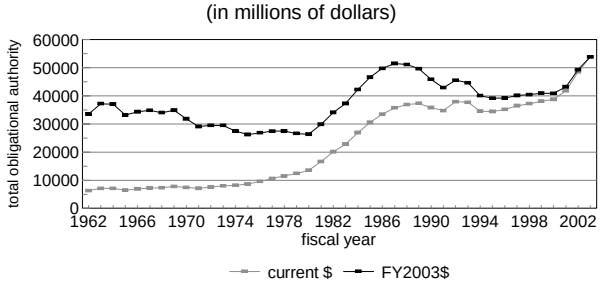
Figure 1. Total RDT&E: FY2003 Budget



In addition to the $53.9 billion in Title IV RDT&E funding, the Bush Administration also requested RDT&E funds for the Defense Health Program ($67 million) and the Army's Chemical Agents and Munitions Destruction Program ($303 million). In FY2002, these programs received $464 million and $274 million, respectively. The Administration also proposed a $20.1 billion Defense Emergency Response Fund. Roughly half of this would provide support for specific anti-terrorism activities (such as protecting military facilities and personnel, improving world-wide command and control capabilities, and procuring specific equipment). Of this amount, $2.2 billion was requested for various RDT&E accounts. The other half of this fund would be spent on a contingency basis.

Historically, RDT&E funding peaked in constant dollars in FY1987, declining over the next 8 years. Funding leveled off in FY1995 and FY1996 before beginning to rise again, due primarily to Congress appropriating more than what the Clinton Administration had requested (**Figure 2**). The FY2003 request would exceed, in constant FY2003 dollars, the peak set in FY1987.

Figure 2. RDT&E Funding Trend



In the past, the ability of Congress to increase RDT&E funding was constrained by the 1997 budget agreement which had set caps on defense spending. Increases in RDT&E had to come at the expense of other Department of Defense programs, or be declared as emergency spending. FY2000 was the first year Congress could increase defense spending above the agreement's caps by offsetting those increases with decreases in other non-defense discretionary programs. The constraint of budget caps subsided when the prospect of future budget surpluses would allow rising DOD's budget, including RDT&E, without the need to offset the increases. The Bush Administration had indicated its intention to provide even larger increases in defense spending and RDT&E. However, prior to the September 11 terrorist attacks at the World Trade Center and the Pentagon, a tax cut and a declining economy introduced new stresses into the budget environment. Since September11, declining surpluses do not appear to be an issue as Members have expressed a willingness to provide the necessary funding to meet the terrorist challenge. Even so, RDT&E must always compete with other priorities within the DOD budget, including quality of life, readiness, and, perhaps now more so than before, operations.

The House has approved its defense authorization bill (H.R. 4546, H.Rept. 107-436) on May 10. The bill recommends $56.4 billion for RDT&E, $2.5 billion more than the Administration requested. This includes $2.1 billion of DERF-related projects transferred to the regular RDT&E accounts. The House did not authorize a separate transfer account for these projects. The House chose to address the contingency half of the Administration's

Defense Emergency Response Fund (DERF) request in a separate bill (H.R. 4547). The House approved the Administration's request for RDT&E within the Defense Health Program and the Chemical Agents and Munitions Destruction Program.

The Senate approved its authorization bill (S. 2514, S.Rept. 101-151) on June 27. The bill authorized $55.7 billion for Title IV RDT&E, $1.8 billion more than the Administration requested. Like the House, this included $1.9 billion for RDT&E projects identified in the DERF request. The $55.7 billion figure also includes reductions associated with savings the Senate expects the Department to achieve due to improvement in financial management and contract services. The Committee also recommended approval of the Administration's request for RDT&E within the Defense Health Program and the Chemical Agents and Munitions Program.

The House approved its defense appropriation bill (H.R. 5010, H. Rpt. 107-532) on June 27, and provided $57.8 billion for RDT&E, approximately $3.9 billion more than the Administration requested. The Senate approved is defense appropriation bill (H.R.5010 amended, S. Rot. 107-213) on August 1, and provided $$56.1 billion for RDT&E.

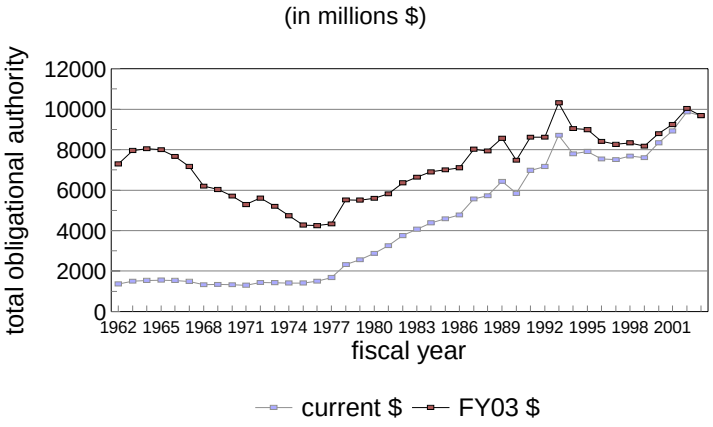
Science and Technology Funding

DOD's RDT&E budget supports a wide range of activities, from basic research (e.g., atmospheric sciences) to the full scale development of large military systems (e.g., the F-22 fighter). The RDT&E budget is accordingly divided into seven budget activities: basic research, applied research, advanced technology development, demonstration and validation, engineering and manufacturing development, management support, and operational systems development. DOD has designated these activities as 6.1 through 6.7, respectively (see **Tables 1 and 2** at the end of this issue brief).

Basic research (6.1), applied research (6.2), and advanced technology development (6.3) together are referred to as DOD's Science and Technology (S&T) program. S&T projects seek new ways of accomplishing tasks of military value and the underlying scientific and engineering principles involved. S&T projects are not directed at developing specific operational weapon systems, although they may support such development by solving specific problems. Many of the weapon systems used with such effectiveness in recent military actions, can trace their origins to earlier S&T projects. Besides developing the technology base upon which future weapons systems rely, S&T programs (primarily 6.1 projects) support the future manpower expertise that DOD relies upon. A large share of university research in certain scientific and engineering disciplines (e.g. materials engineering and math) is supported by the S&T program (especially 6.1 programs).

S&T funding has followed a slightly different trend than overall RDT&E funding (see **Figure 3**). As total defense (and total RDT&E) spending started to decline in the late 1980s, efforts were made to maintain S&T spending levels, especially 6.1 and 6.2 activities. And, in fact, funding for S&T generally increased over the next 6 years. FY1993 S&T funding, impacted by the Gulf War, saw a sharp increase. After FY1993, however, S&T funding began to decline. Over the next 6 years it fell back to FY1987 levels as measured in constant FY2001 dollars. The downward trend after FY1993 raised some concern within the S&T community (including universities), especially since the Clinton Administration's multi-year budgets continued to project declining funds for S&T in the out-years.

Figure 3. S&T Funding Trend



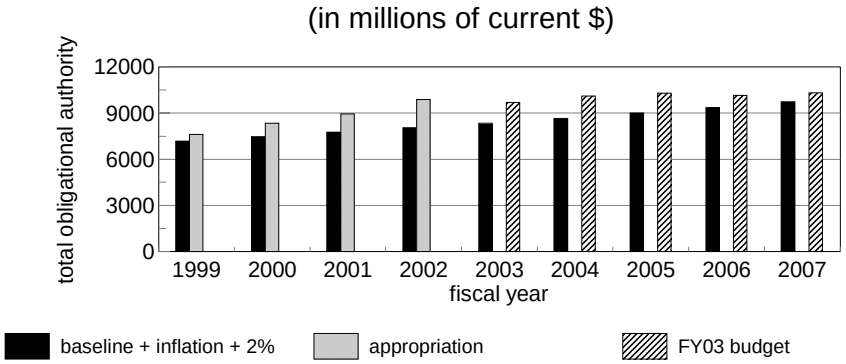
In the last three years, Congressional action has essentially reversed the downward trend. In FY2000, Congress appropriated nearly $1 billion more for S&T than what the Clinton Administration had requested and in FY2001 appropriated $1.5 billion more than what was requested (appropriating $9.0 billion). In FY2002, the Bush Administration requested $8.8 billion for S&T, a significant increase over what the Clinton Administration was planning to request, but below what Congress had appropriated in FY2001. Congress again increased S&T funding above the requested level, appropriating nearly $10 billion in FY2002. The Bush Administration's FY2003 budget would keep S&T at approximately $10 billion in current dollars for the next three years, before allowing it to drop to $9.5 billion in FY2006 and FY2007.

Assuring adequate support for S&T activities is seen by some in the defense community as imperative to maintaining U.S. military superiority. But, because the time between specific S&T projects and successful new operational systems is long and unpredictable, and because it is difficult to calculate a return on investment for the S&T program as a whole, it is difficult to determine what is a sufficient investment. There is concern in the S&T community that support within Congress and within DOD's own acquisition community may wane when faced with competing budgetary demands. They viewed the decline in S&T funding after FY1993 as a sign that DOD was under-investing in S&T.

The FY1999 defense authorization bill (P.L. 105-261, H.R. 3616, Section 214) expressed the sense of Congress that S&T funding between FY2000 and FY2008 should increase no less than 2% above inflation per year, using the FY1999 request as the baseline. The Clinton Administration's subsequent budgets made an effort to meet these goals in the budgets' current year, but were never able to sustain the commitment into the out-years. However, Congressional action has more than achieved that rate of increase the last four years (see **Figure 4**). The F2003 Bush budget for S&T would also achieve this goal.

In its defense authorization bill, the House authorized $10.0 billion for S&T. However, it also recommended $11 million less than what the Administration requested for basic research. The total S&T recommendation includes $332 million allocated from the Defense

Figure 4. Inflation + 2% vs Appropriations/Budgets



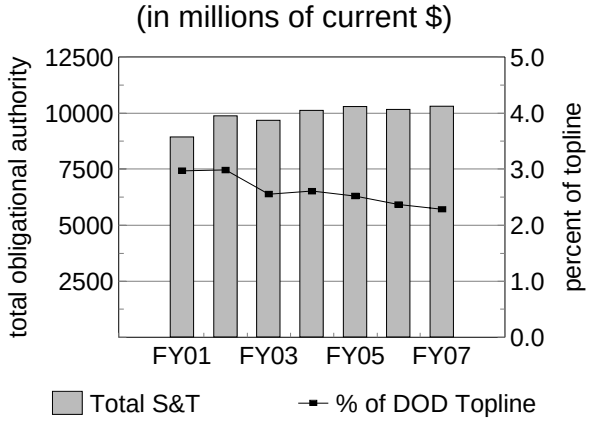
Emergency Response Fund. The House voted to appropriate $11.4 billion for S&T. The appropriators did not go along with the authorization bill reducing basic research, but instead increased basic research slightly above the Administration's request. Between reducing DOD overall topline compared to the Administration's request and its increase in S&T funding, the House S&T appropriations reached 3.2% of DOD's topline figure.

The Senate authorized $10.2 billion for S&T in FY2003. This includes $293 million transferred from the DERF request. The Committee recommended $60 million more in basic research than what the House authorized. The Senate voted to appropriate $10.8 billion for S&T, this is 3.0% of the total DOD topline appropriated by the Senate.

In testimony before the Senate Armed Services Committee last year (June 5, 2001), Under Secretary of Defense for Acquisition, Technology, and Logistics Pete Aldridge suggested that S&T should receive between 2.5 percent and 3 percent of DOD's total budget, based on the percent of sales certain high technology sectors of private industry invest in research. This became official policy in the 2001 Quadrennial Review, released in September, 2001, which stated that DOD planned to stabilize S&T funding at 3% of overall DOD funding. A number of Members have embraced this objective and the Senate Budget Committee has added it to the Senate Budget Resolution (S. Con. Res. 100). However, the ability of S&T budgets to keep up with overall DOD budgets has already become an issue. The Bush Administration's FY2003 S&T budget request does not make the 3% goal, nor do any of the other planned annual budgets through FY2007 (see **Figure 5**). Also, as the policy is stated, it would imply that should overall DOD budgets decline, S&T would decline as well.

How much should DOD spend on S&T? The 2% plus inflation goal established by Congress was essentially an arbitrary target. The goal of 3% of DOD's total budget is also arbitrary, but is based, in part, on a June 1998 report by the Defense Science Board (DSB—*Defense Science and Technology Base for the 21st Century*). The report reviewed how firms in several technologically sophisticated industries decide how much to spend on research. The Board found that firms do not typically go through an objective analytical process to determine how much to spend. Instead firms rely more on subjective "rules of thumb" that

Figure 5. S&T as a Share of Total DOD Spending



consider other investment needs, competitive pressures, etc. The metric is generally characterized in terms of investment as a percent of sales. The Board recommended drawing an analogy between sales revenue in the private sector and DOD's overall budget and using the pharmaceutical industry, which the DSB reported as having the highest commercial investment in research as percent of sales (3.4%), as a benchmark.

The DSB report argued that the pharmaceutical industry is an appropriate model for deciding how much DOD should spend on S&T because it is considered a high technology industry and that the competitiveness of firms depends on the ability to develop new products. But comparisons stopped there and the analogy may be inadequate. For example, the pharmaceutical industry is primarily manufacturing oriented and revenues are generated on the sale of products. A large part of DOD's mission and budget could be considered service oriented. If the pharmaceutical industry were also involved in delivery of services, would its investment in research as a percentage of sales still be as high? Perhaps only that part of DOD's budget devoted to acquisition should be used as an analog to pharmaceutical revenues. Also, the DSB report chose not to consider as part of DOD's current investment the amount DOD reimburses private contractors for independent research and development (IR&D). In 1997 (the last year for which figures were kept), DOD allowed defense contractors to claim $2.7 billion in IR&D expenses considered relevant to DOD's needs. The DSB report suggested that this should not be considered since the results of this research are not held solely by DOD. Nor did the DSB report make any allowance for the fact that the United States already significantly outspends its competitors (i.e. foreign governments) in defense research.

Ballistic Missile Defense

The Bush Administration has proposed major changes in the structure, funding, and acquisition strategy for ballistic missile defense, including changing the name of the organization from Ballistic Missile Defense Organization to Missile Defense Organization (MDO). The Administration has also gone forward with its stated goals of withdrawing from

the Anti-Ballistic Missile (ABM) Treaty, which for decades had put constraints on the development of ballistic missile defenses as part of the overall strategic arms control strategy between the United States and the former Soviet Union. For a more thorough discussion of missile defense (MD) policies and issues, see **For Additional Reading** for other CRS products on the topic.

In 2001, the Administration proposed, and Congress went along with, a reduction in the number of program elements associated with the program as well as doing away with programmatic distinctions between theater and national missile defenses (the Administration envisions that theater and national systems will be melded into an integrated global system). Consequently, RDT&E program elements are now divided along "functional" lines (boost, midcourse, and terminal segments, with system integration, etc.). The Administration also promised to increase greatly the amount of funding devoted to ballistic missile defense.

Also, rather than follow a tradition acquisition approach, where a program heads toward a definitive system architecture designed to meet specific performance criteria, the Administration is proposing a new evolutionary approach (being called evolutionary acquisition, see **Other Issues**) where the final overall system architecture is not determined ahead of time but will evolve as new elements contributing to the global capabilities are brought on line. The Administration has also floated a concept called capabilities-based management that it intends to use with missile defense. Citing these conceptual models of development as the reason, the Administration suggests that it can no longer provide Congress with much of the programmatic projections that the program has provided in the past. The Administration claims these projections were too constraining of development and deployment and unreliable in any event. Some Members have expressed concerns that without this information there is no way for Congress to exercise its oversight responsibilities.

For FY2003, the Bush Administration requested $6.7 billion for the RDT&E part of the Missile Defense program. This is approximately $250 million less than what was available for MD RDT&E in FY2002. The Administration again, as it did last year, proposed transferring more mature elements of the program (e.g. PAC-3) to the Services (to the Army in the PAC-3 case). Congress did not approve of this in FY2002. During the Clinton Administration, missile defense RDT&E was funded between $3 billion and $4 billion per year.

The House authorized $7.0 billion for missile defense RDT&E. This included increases in the missile defense technology program, and the systems, midcourse, and terminal phase programs. The recommendation reduced the Administration's request for the boost phase program. The House appropriated $6.8 billion.

The Senate authorized $5.9 billion for BMD RDT&E and another $813 million which the President may spend on either counter-terrorism activities or BMD RDT&E. The Senate appropriated $6.1 billion for BMD RDT&E and also appropriated another $813 million as previously authorized.

Other Issues

Evolutionary Acquisition/Spiral Development

The Bush Administration has stated its support of an acquisition concept called "evolutionary acquisition/spiral development." However, in early statements regarding this concept, different officials used the terms "**evolutionary acquisition**" and "**spiral development**" interchangeably. Also, the explanation of what these concepts mean has varied, causing some Members to be concerned about the impact these concepts might have on the ability to provide adequate oversight .

These concepts are not entirely new, the Air Force has been developing them for a number of years, and to some extent they merely expand upon more traditional acquisition concepts such as **block upgrades** of existing operational systems and **pre-planned product improvements (P^3I)**. In an effort to clear up some of the uncertainty involving the terminology, the Undersecretary of Defense for Acquisition, Technology, and Logistics (UDATL) released a memorandum on April 12, 2002, which provided an official definition of these terms. However, these definitions provide little insight in how the concepts are implemented. Perhaps a more useful document is the Air Force Instruction 63-123, explaining Evolutionary Acquisition for Command and Control Systems (see: [http://afpubs.hq.af.mil.])

Essentially, evolutionary acquisition is an attempt to develop systems incrementally, achieving useful capabilities in stages (say in 5 years intervals) rather than taking 20 years to fully develop all of the capabilities ultimately desired in a system. Conceptually, this allows for more accurate program projections regarding cost and performance and would allow a program, at each successive stage, to integrate the very latest mature technology available. It also would allow a system (albeit with more modest capabilities at first) to be fielded sooner, with input from the field being used to inform the next stage of development. Spiral development involves making tradeoffs between cost, performance, and operational concepts within a given stage of evolutionary development. This requires rapid prototyping and early and frequent operational testing of the prototype, with lessons learned fed back into the development process. Evolutionary acquisition differs from block upgrades or pre-planned product improvements in that an evolutionary acquisition program does not know ahead of time what the ultimate system design and capability will be. Only the next stage of development will have a clearly defined capability goal which must be incrementally better than the current stage, yet cost-effective (i.e. worth the cost to develop). These goals will be determined in part by the maturity of the technology available for the next stage.

While the lack of common definitions and understanding among the proponents of these concepts has created uncertainty among some Members, it is not yet clear whether a common definition and understanding will resolve all of the Members' concerns or just raise new ones. For example, planning horizons under these concepts are much shorter and it would seem that ultimate production volumes, with the subsequent impacts on jobs, etc. less certain.

While there has been some conceptual development, led early on by the Air Force, regarding evolutionary acquisition/spiral development, the term **capabilities-based management** has also been added to the systems development lexicon. This idea has not yet

undergone the same level of conceptual development as evolutionary acquisition. However, the Administration has stated that it will use this concept to develop missile defenses and has cited this decision as reason for providing Congress with much less program information than Congress has received in the past. Missile defense is also exempt from some of the Department's own internal oversight processes. The concept is being applied primarily to missile defense and not to other programs.

Additional uncertainty over what this concept is, its apparent preferred application to missile defense, and its apparent impact on the information the Administration is willing to provide Congress, has some Members concerned. In last year's Defense Authorization Act for FY2002 (P.L.107-107), Congress required that each system entering engineering and manufacturing development (i.e the 6.5 stage of development) be identified by a separate program element number in the budget. Also, the Secretary must submit to Congress a program plan for these elements that include the cost, schedule, test, and performance goals. Also, for those programs not yet entering engineering and manufacturing, the Secretary was required to include in his budget justification documents, information on the previous year's funding, expected funding for the next 6 years, and a detailed schedule of significant deliveries of hardware and software, decision points, and test events.

This year, the Senate Armed Services Committee recommended in its defense authorization bill that the Secretary of Defense provide guidance to the Services on how to conduct evolutionary acquisition and spiral development. Furthermore, the Committee recommends that the Secretary report to Congress on how the Department plans to meet statutory requirements for providing Congress with programmatic information while implementing evolutionary acquisition programs. Meanwhile, the Committee requested this information, which it says it has not received in either of the last two budgets, for certain missile defense projects. Finally, the Committee recommended that programs utilizing the spiral development concept be conducted on a pilot basis.

The House bill, while acknowledging the Missile Defense Agency's (MDA) responsiveness to specific information requests, also requires that MDA provide the Congress with the performance goals and development baselines generated in its internal Technical Objectives and Goals document. It also requires that MDA provide a funding profile for developing the major components for each project that may be fielded.

Research and Technology Protection

In March 2002, the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (along with the Undersecretary of Defense for Acquisition, Technology, and Logistics), and the Director of Operational Test and Evaluation, released a draft of a proposed revision to Department of Defense Directive (DODD 5200.39, Security, Intelligence, and Counterintelligence Support to Acquisition Program Protection). The proposal would expand upon the current policy protecting critical acquisition program information, technology and/or systems (collectively referred to as CPI), by extending the directive to include the protection of critical research technology (CRT) and by prescribing, in more detail, the protections that must be put in place. The current policy specifically applies to certain acquisition programs and not to Science and Technology (S&T) programs. The proposed policy would cover information and technology generated by all RDT&E activities, including S&T activities. Under the proposal, all sites (including

contractor sites) at which RDT&E activities take place must have a security plan. Among the protections required is advance approval for all public releases of all technical data determined to be critical research. The proposal states that the added precautions are needed to better protect the technological edge of the United States both militarily and economically. Critics are concerned that U.S. scientists and engineers will choose not to do business with the Department of Defense under the proposed controls and that research, especially basic research, progresses best in an free and open exchange of information and ideas.

However, the draft now has been set aside while a set of integrated product teams (IPTs) led by the Deputy Undersecretary of Defense for Laboratories and Basic Sciences and Deputy Director of Defense Research and Engineering review the policy. While the draft policy may be modified, the current policy, which only applies to acquisition programs, may still be changed.

Operational Test and Evaluation

The Senate Armed Services Committee recommended giving the Director of Operational Test and Evaluation more authority over the funding and improvement of the Test and Evaluation facilities run by the Services. Currently, the Director of Operational Test and Evaluation provides centralized oversight of all test and evaluation facilities and activities, but the funding and operations of the facilities are primarily supported by the Services. A December 2000 report by the Defense Science Board and the FY2001 annual report of the Director of Operational Test and Evaluation found the test and evaluation function significantly lacking. According to these reports, fewer systems were undergoing fewer tests (due in part to the shifting of costs to individual development programs), some tests that were done were not adequate, and in some cases corrective actions identified by tests were not taken. The reports also indicated that the number of facilities were not an issue, but they lacked certain equipment, size, and targets.

Based on the reports mentioned above, the Committee made the following recommendations: establish a Department of Defense Test and Evaluation Resource Enterprise, which reports to the Director of Operational Test and Evaluation, and which would be responsible for funding investments, operations, development and management of Major Range Test and Evaluation Base facilities; transfer of .625% of the Services' 6.4, 6.5 and 6.7 accounts in FY2003 to Department test and evaluation accounts (the Senate approved this in appropriations); increase the authorization for the Central Test and Evaluation Investment Program; require a single financial management system for all Test and Evaluation facilities; require a strategic human resource plan; and, require approvals for any deviation from a program's Test and Evaluation Master Plan.

The Administration supports only the human resource planning and the single financial management system. It has come out against the centralized funding and management of the facilities and against the need for approval to deviate from a program's original Test and Evaluation Master Plan.

Funding Tables

Table 1. Department of Defense RDT&E

($ millions)

	FY2000	FY2001	FY2002 estimate	FY2003 Request[c]
Accounts				
Army	5,314	6,263	7,053	6,918
Navy	9,065	9,596	11,389	12,502
Air Force	14,527	14,313	14,548	17,601
Defense Agencies	9,551	11,316	15,285	16,614
(DARPA)	(1,850)	(1,977)	(2,253)	(2,685)
(BMDO[a])	(3,457)	(4,208)	(6,969)	(6,691)
Dir. Test & Eval	265	225	230	222
Dir. Op.Test/Eval	31	35		
Total Ob. Auth.	**$38,753**	**$41,748**	**$48,505**	**$53,857**
Budget Activity				
Basic Research	1,139	1,287	1,376	1,365
Applied Res.	3,409	3,674	4,086	3,780
Advanced Dev.	3,789	3,972	4,415	4,532
Demonstr./Valid.	6,514	8,052	10,361	10,539
Engrg/Mftg. Dev.	8,879	8,441	11,018	13,550
Mgmt. Support[b]	3,076	3,342	2,850	2,890
Op. Systems Dev.	11,947	12,980	14,399	17,200
Total Ob. Auth.	**$38,753**	**$41,748**	**$48,505**	**$53,857**
Other Defense Programs				
Defense Health Program	295	432	464	67
Chemical Agents and Munitions Destruction	292	599	731	303

Source: FY2001 to FY2003 figures based on Department of Defense Budget, Fiscal Year 2003 RDT&E Programs (R-1), February 2002. FY2001 to FY2003 figures for Defense Health Program and Chemical Agents and Munitions Destruction Program come from OMB's FY2003 Budget Appendix. All other figures come from prior year R-1s and OMB budgets. Totals may not add due to rounding.

a. Includes only MDO RDT&E. Does not include procurement and military construction or missile defense RDT&E in other accounts.
b. Includes funds for Developmental and Operational Test and Evaluation.
c. Does not include RDT&E funds associated with the proposed Defense Emergency Response Fund.

Table 2. Department of Defense RDT&E

($ millions)

	FY2003 request[d]	House Auth. (HR 4546)_	Senate Auth. (S2514)	Auth. Conf.	House Apprn. (HR 5010)[e]	Senate Apprn. (HR 5010)[e]	Apprn. Conf.
Accounts[a]							
Army	6,918	6,933	7,301		7,447	7,410	
Navy	12,502	13,275	12,929		13,562	13,276	
Air Force	17,601	18,803	18,604		18,639	18,538	
Defense Agencies	16,614	17,191	16,491		17,863	16,611	
(DARPA)	(2,685)	(2,578)	(2,245)		(2,851)	(2,698)	
(BMDO[a])	(6,691)	(6,991)	(5,924)		(6,821)	(6,145)	
Dir. Test & Eval	222	222	362		242	303	
Dir. Op.Test/Eval					--		
Total Ob. Auth.	**$53,857**	**$56,424**	**$55,686**		**$57,753**	**$56,138**	
Budget Activity							
Basic Research (6.1)	1,365	1,354	1,413		1,418	1,491	
Applied Res. (6.2)	3,780	3,832	3,971		4,451	4,479	
Advanced Dev. (6.3)	4,532	4,837	4,780		5,483	4,822	
Demonstr./Valid. (6.4)	10,539	10,973	10,155		10,905	9,832	
Engrg/Mftg. Dev. (6.5)	13,550	13,950	13,677		13,449	14,106	
Mgmt. Support[b] (6.6)	2,890	2,959	3,274		3,053	3,200	
Op. Systems Dev. (6.7)	17,200	18,674	18,767		19,150	18,362	
Adjustments personnel costs accrual[c] financial mgmt. svgs. contract services svgs.		-155	-155 -107 -91		-155	-155	
Total Ob. Auth.	**$53,857**	**$56,424**	**$55,684**		**$57,754**	**$56,137**	
Other Defense Programs							
Defense Health Program	67	67	67		400	394	
Chemical Agents and Munitions Destruction	303	303	303		303	303	

Source: Department of Defense Budget, Fiscal Year 2003 RDT&E Programs (R-1). Figures for Other Programs come from OMB's FY2003 Budget Appendix. Remaining figures come from associated Committee reports.

a. Includes only BMDO RDT&E. Does not include procurement and military construction or ballistic missile defense RDT&E in other accounts.
b. Includes funds for Developmental and Operational Test and Evaluation.
c. RDT&E' share to support Department's retirement and health care expenses.
d. Does not include RDT&E funds associated with the proposed Defense Emergency Response Fund.
e. Does not include the minor amendments made during floor debate.

LEGISLATION

H.R. 4546 (Stump)

National Defense Authorization Act for FY2003. Introduced April 23, 2002. Reported out of the Armed Services Committee May 3, (H.Rept. 107-436). Passed House with amendments, May 10.

S. 2514 (Levin)

An original bill to authorize appropriations for fiscal year 2003 for military activities of Department of Defense. Introduced May 15, 2002. Reported out of the Senate Armed Services Committee, May 15 (S. Rpt. 107-151). Passed Senate, with amendments, June 27. Incorporated into H.R. 4546 as an amendment in the form of a substitute, June 27.

H.R. 5010(Lewis)

An original bill making appropriations for the Department of Defense for the fiscal year ending September 30, 2003, and for other purposes. Introduced June 25. Reported out of House Appropriations Committee (H. Rpt. 107-532), June 25. Passed House, with amendments, July 27. Received in Senate and referred to Senate Appropriations Committee, July 28. Reported out of the Senate Appropriations Committee with amendments in the form of a substitute (S. Rpt. 107-213), July 18. Passed Senate with amendments, August 1.

FOR ADDITIONAL READING

CRS Report 97-316 SPR, *The Department of Defense's Research, Development, Test, and Evaluation (RDT&E) Program: A Primer*, by John Moteff.

CRS Report RL30002, *A Defense Budget Primer*, by Mary Tyszkiewicz and Stephen Daggett.

CRS Report RL31005, *Appropriations and Authorizations for FY2002: Defense*, by Amy Belasco, Mary Tyszkiewicz and Stephen Daggett.

CRS Report RL31111, *Missile defense: the current debate*, coordinated by Steven A. Hildreth and Amy F. Woolf.

CRS Info Pack IP496B, *Ballistic Missile Defense*.