CSBA
Center for Strategic and Budgetary Assessments

Research, Development, Test and Evaluation

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Overview

The U.S. military faces substantial challenges in maintaining its current technological and operational advantages. In testimony before the Senate Armed Services Committee, Chairman of the Joint Chiefs of Staff Joseph Dunford highlighted Russia and China's sustained investments in high-technology forces and anti-access concepts of warfighting designed to counter U.S. ability to project power and undermine U.S. ability to meet our treaty obligations to our allies. Russian and Chinese investment in long-range conventional strike and power projection, hypersonic weapons, cruise missiles, ballistic missiles, air defense systems, 5th generation fighters, and undersea anti-access technologies increasingly constrains the ability of the United States to project power in war and reduces allied confidence in U.S. security guarantees in peace. Corresponding Russian and Chinese investments in space, cyber, and electronic warfare capabilities challenge U.S. dominance in the electromagnetic spectrum.[1] (#_edn1)

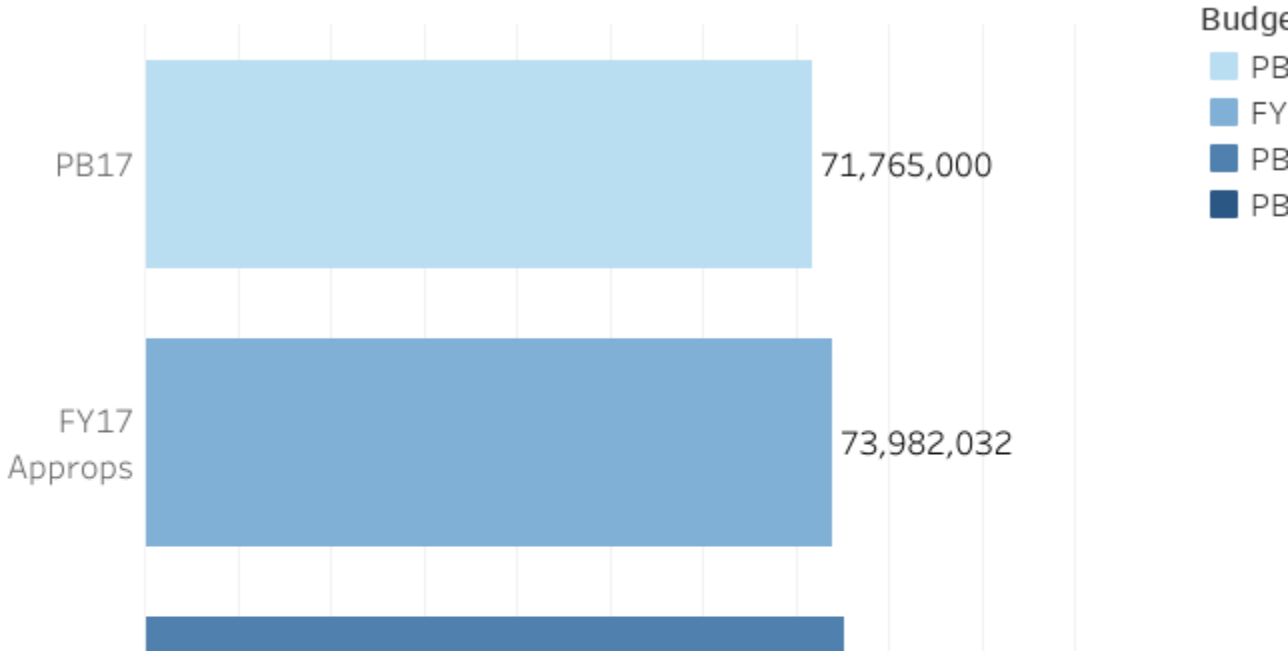
Secretary of Defense James Mattis highlighted the growing contestation of every warfighting domain by these high-end capabilities in testimony about the FY 2018 defense budget before the Senate Armed Services Committee.[2] (#_edn2) Space is no longer a sanctuary, and cyberspace is contested. In the traditional warfighting domains, advanced integrated air defense systems and the spread of 5th generation fighters challenge U.S. air dominance, while the spread of precision strike systems and the development of undersea warfare capabilities threaten U.S. freedom of operation at sea. On land, long-range air-to-surface and surface-to-surface missiles, advanced armored vehicles and anti-tank weapons, and sophisticated electronic warfare systems have severely eroded U.S. force overmatch.[3] (#_edn3) Testimony before the Senate Armed Services Committee by the Secretaries (or Acting Secretaries) and the chiefs of each of the Services on the FY 2018 defense budget request echoed these concerns.[4] (#_edn4) In addition to the new challenges posed by great power competitors, the rapid pace of technological innovation and dissemination to both state and non-state actors will challenge the U.S. military's slow-paced acquisition tempo and risks eroding U.S. military technological advantages over time.[5] (#_edn5)

Research, development, test and evaluation (RDT&E) funding is the pathway by which the U.S. military explores new technologies and capabilities and develops them into weapons systems and platforms. Maintaining the U.S. military's current technological advantages and adapting to future challenges requires RDT&E efforts that are robust, targeted at the correct operational problems, and nimble enough to be responsive to shifts in the technological and security landscapes.

2018 Request

Investment in increased capacity and lethality are the second priority of the Pentagon's PB 2018 budget request behind restoring the readiness of the current force.[6] (#_edn6) RDT&E is correspondingly a major area of focus, with requested funds substantially higher than those appropriated in FY 2017 or anticipated for FY 2018 in the PB 2017 budget request. In the PB 2018 request, the Trump administration asked for a total of $83.3 billion in RDT&E funds, with $82.7 billion in the base discretionary budget and an additional $622 million in Overseas Contingency Operations (OCO) funding. This is $9.3 billion (or 11.2 percent) more than was appropriated in FY 2017 and $8.2 billion (or 10.8 percent) more than anticipated for FY 2018 in the PB 2017 request (see Figure 5-1). Per Secretary Mattis, this emphasis on RDT&E investments will continue in PB 2019 and beyond. Secretary Mattis' memorandum on DoD budget guidance called for the National Defense Strategy (NDS), now underway, to "determine an approach to enhancing the lethality of the force against high-end competitors." The PB 2019, informed by the results of the NDS, will "include critical investments in advanced technologies."[7] (#_edn7)

Figure 5-1: Topline RDT&E PB18 Request, as Compared to PB17 and FY17 Appropriations



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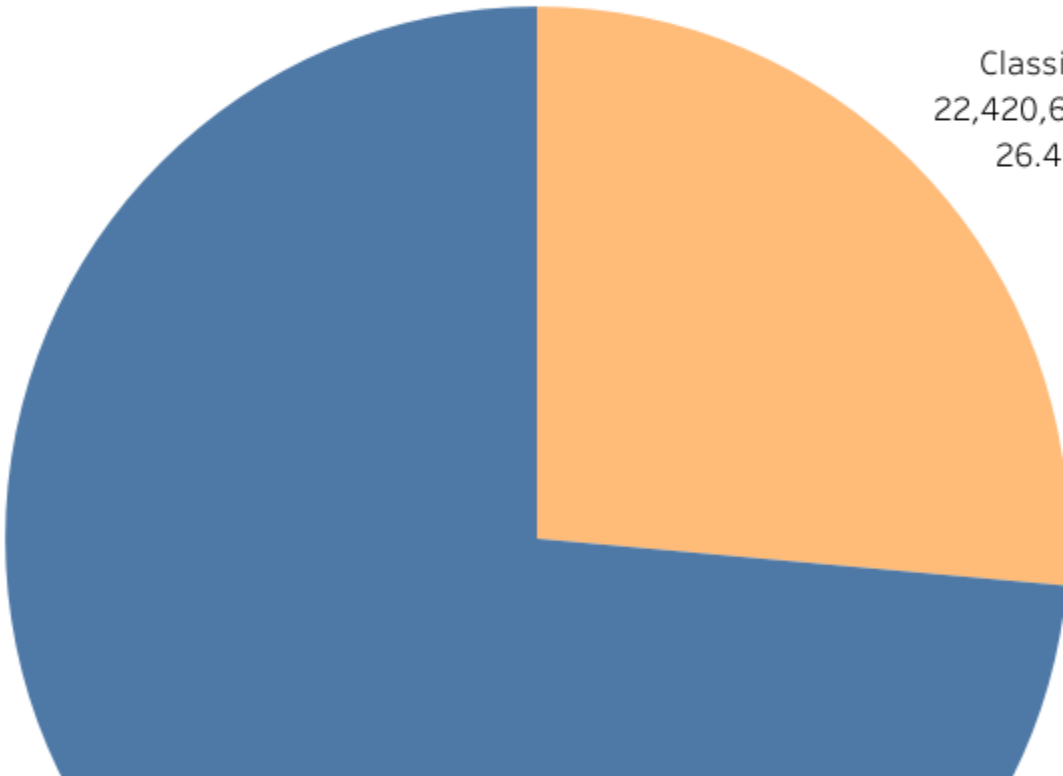
Source: Office of Management and Budget (OMB), Budget Analysis Branch, *Public Budget Database: Budget of the United States Government, Fiscal Year 2018, Budget Authority* (Washington, DC: OMB, May 2017), available at https://www.gpo.gov/fdsys/pkg/BUDGET-2017-DB/xls/BUDGET-2017-DB-1.xls. Analysis in Tableau.
Note: Dollars in thousands.

Overall, RDT&E funding, at $83.3 billion, accounts for 13 percent of DoD's discretionary budget request for FY 2018. $22.4 billion (or 27 percent) is for classified RDT&E programs (see Figure 5-2).

Figure 5-2: FY18 RDT&E Request by Classified and Unclassified Categories



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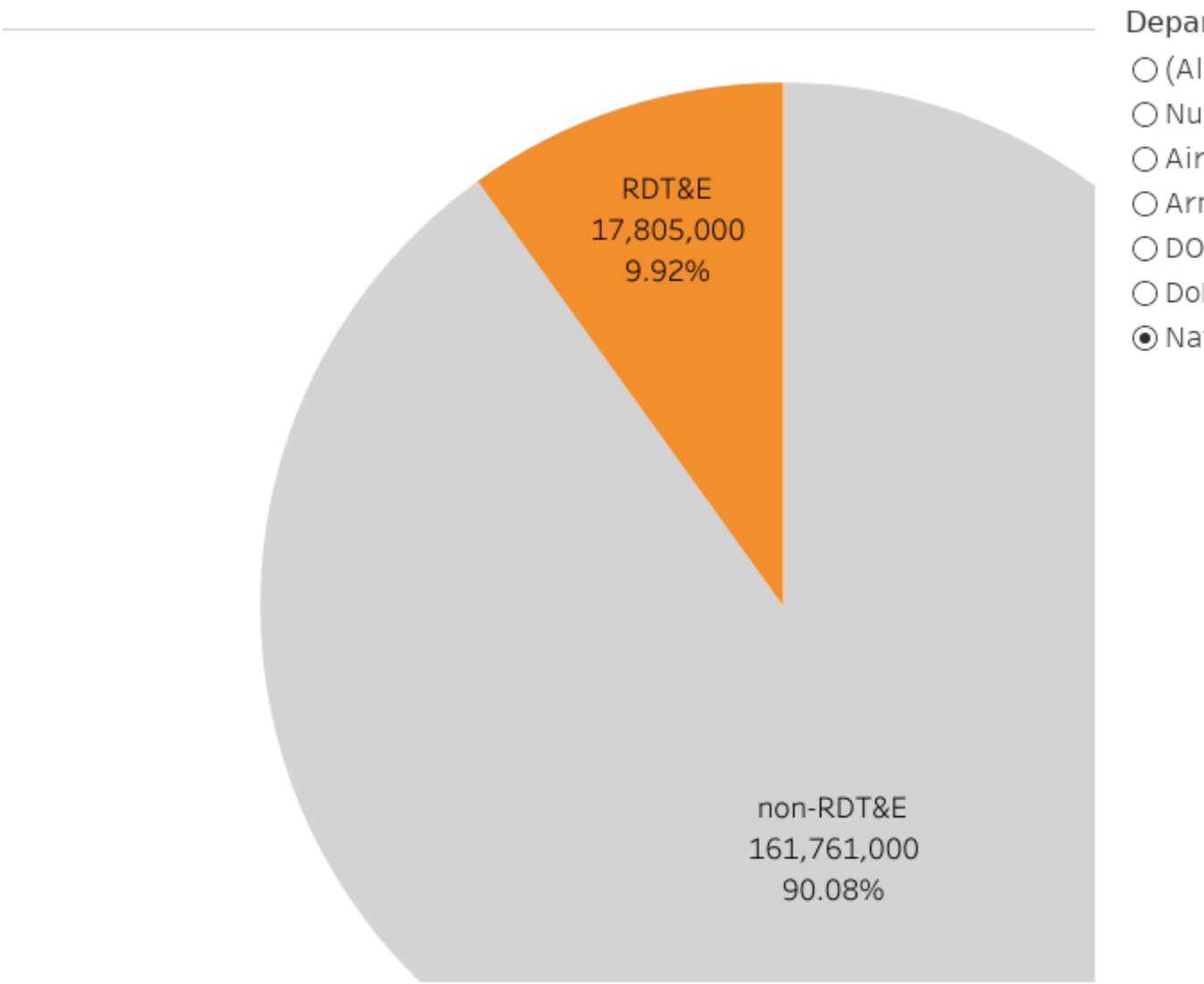
Source: DoD budget data from VisualDOD. Analysis in Tableau.

RDT&E funds are not evenly distributed across the Services. Including classified funds, RDT&E accounts for 19 percent of the Air Force's overall budget. Excluding classified programs, RDT&E still accounts for 19 percent of the Air Force "blue" (i.e., non-classified) budget. RDT&E also accounts for 19 percent of the total RDT&E budget, although the DoD-wide funds don't contain any military personnel expenses. RDT&E is a much smaller fraction of the Navy's budget, at 10 percent, and the Army's budget, at just 6 percent (see Figure 5-3 and Figure 5-4).

Figure 5-3 and Figure 5-4: FY18 Request for RDT&E Funding Overall



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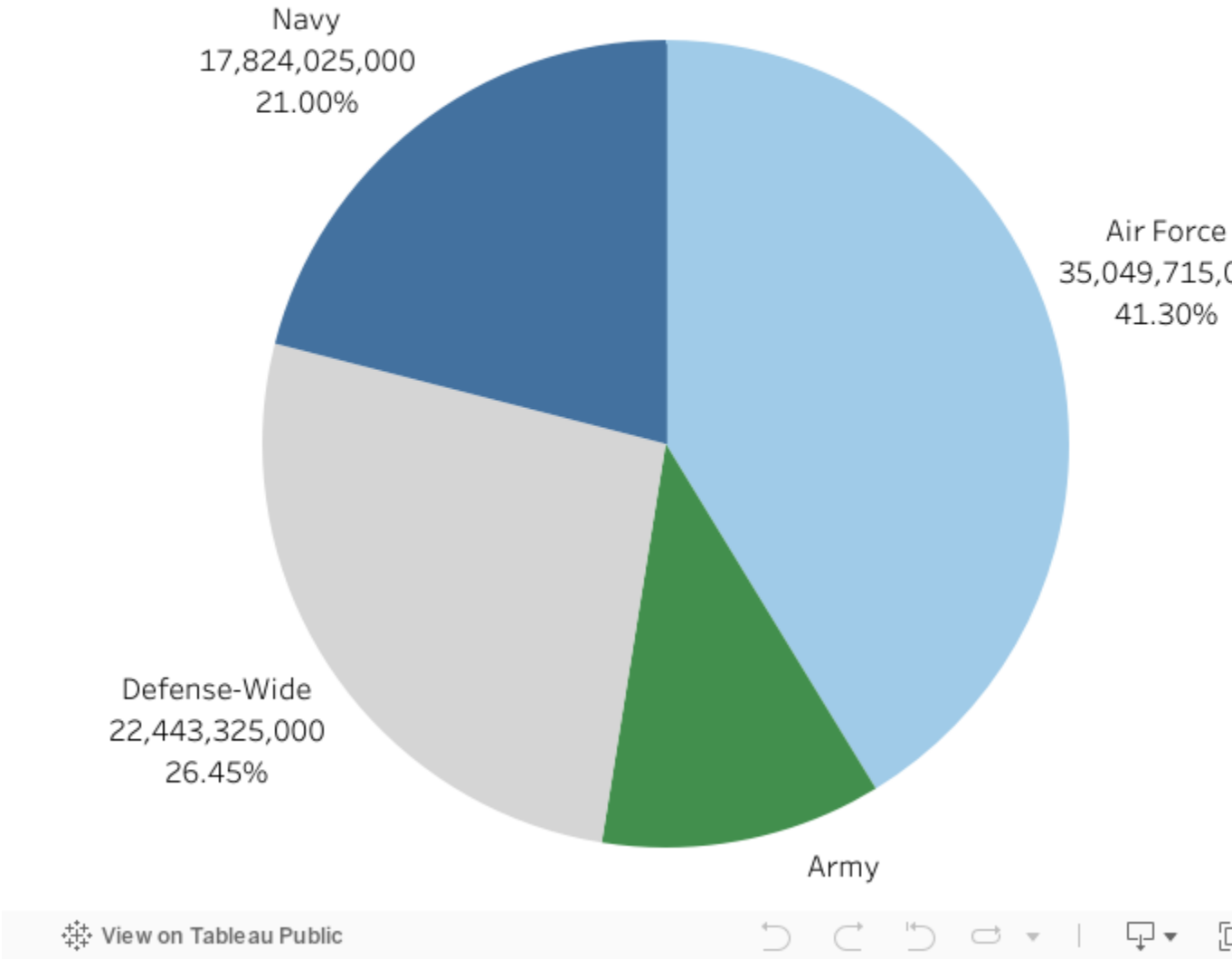
Source: OMB, Public Budget Database FY 2018. Analysis in Tableau.

Note: Dollars in thousands.

Figure 5-5: FY18 RDT&E Funding Requested by Military Department



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Source: DoD budget data from VisualDOD. Analysis in Tableau.

Within the Services, the Army has requested $9.5 billion for FY 2018. This is some $850 million (or 9.7 percent) more than was appropriated in FY 2017. The Army's RDT&E budget is by far the smallest of the Services in both relative and absolute terms. Without any new major systems in development, the bulk of the Army's RDT&E efforts "prioritize incremental upgrades of existing systems."[8] (#_edn8) As described in joint written testimony by Lt. General John M. Murray, Deputy Chief of Staff for the Army, G-8; Lt. General Joseph Anderson, Deputy Chief of Staff for the Army, G-3/5/7; Maj. General Robert M. Dyess Jr., Acting Director, Army Capabilities Integration Center; and Brigadier General Robert L. Marion, Deputy for Acquisitions and System Management, Office of the Assistant Secretary of the Army for Acquisitions, Logistics and Technology before the SASC Airland Subcommittee, "The Army will begin new developmental programs only if required to close an extremely high risk gap."[9] (#_edn9) However, despite this predominant focus on incremental upgrades, there are Army RDT&E efforts to develop new capabilities, with a focus on assured precision navigation and timing, secure communication, active protection for ground vehicles, cyber and electronic warfare, and ground-based fires and short-range air defenses to grow the capability to operate in A2/AD environments.[10] (#_edn10)

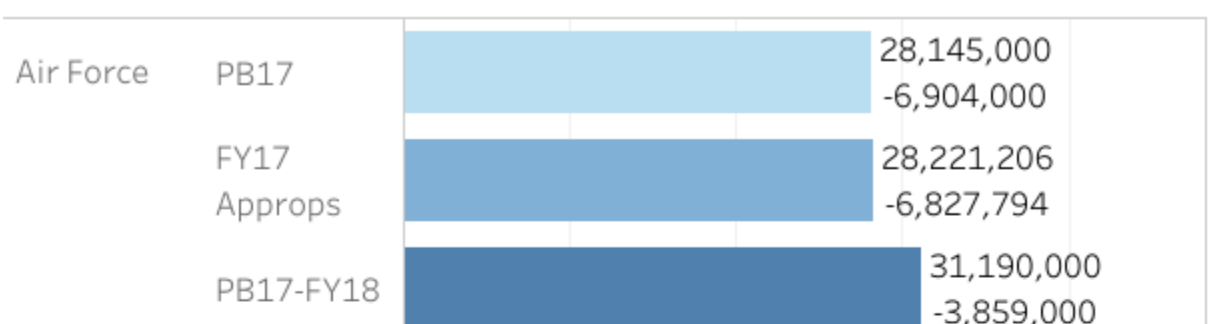
The Navy and Marine Corps requested $17.8 billion, which is $211 million or 1.2 percent more than was appropriated in FY 2017. Much of the Navy's RDT&E funding focuses on major new systems currently in development, like the *Columbia*-class ballistic missile submarine, but the PB 2018 request also funds new future capability investments in long-range missiles, hypervelocity projectiles and defenses, electromagnetic capabilities, and unmanned vehicles including unmanned underwater vehicles (UUVs).[11] (#_edn11)

The Air Force requested a total of $35 billion. This amount is $6.8 billion (or 24.2 percent) greater than the FY 2017 appropriations. Much of the Air Force's RDT&E request similarly focuses on major systems currently in development—predominantly the B-21 next-generation bomber; the struggling GPS III Next Generation Operational Control System (OCX), which has experienced continuing schedule delays and cost increases even after the program was restructured following its 2016 critical Nunn-McCurdy breach; and the new nuclear long-range stand-off (LRSO) weapon—but also includes boosts to research in hypersonic vehicles, directed-energy weapons, unmanned or autonomous vehicles, and nanotechnology.[12] (#_edn12)

Because the Air Force's budget is traditionally the pass-through for classified funding, about 43 percent of the Air Force's FY 2018 RDT&E request, or $15 billion, is classified. However, the other military departments and DoD-wide funds also include some proportion of classified funds. Although none approaches the Air Force's proportion, about 19 percent of the DoD-wide RDT&E request and 16 percent of the Navy's request would fund classified programs (see Figure 5-7). Defense-wide programs requested $20.9 billion, an increase of $1.4 billion (or 7 percent) from the FY 2017 appropriations.

The FY 2018 request for RDT&E funds is $8.2 billion higher than the PB 2017 plan for RDT&E funding in FY 2018. Proportionally, the biggest beneficiary from this increased focus on RDT&E is the Army, whose FY 2018 request is $1.6 billion (or 21 percent) larger than the projected FY 2018 request was in the PB 2017. The Air Force is the largest absolute beneficiary, with an RDT&E request about $3 billion larger. Including classified funding, the Air Force's request is $3.8 billion (or 12.4 percent) larger. The Navy and defense-wide programs gained an increase of $1.6 billion (or 9.8 percent) and $1 billion (or 5.3 percent) respectively (see Figure 5-6).

Figure 5-6: Topline RDT&E PB18 Request by Service, as Compared to PB17 and FY17 Appropriations



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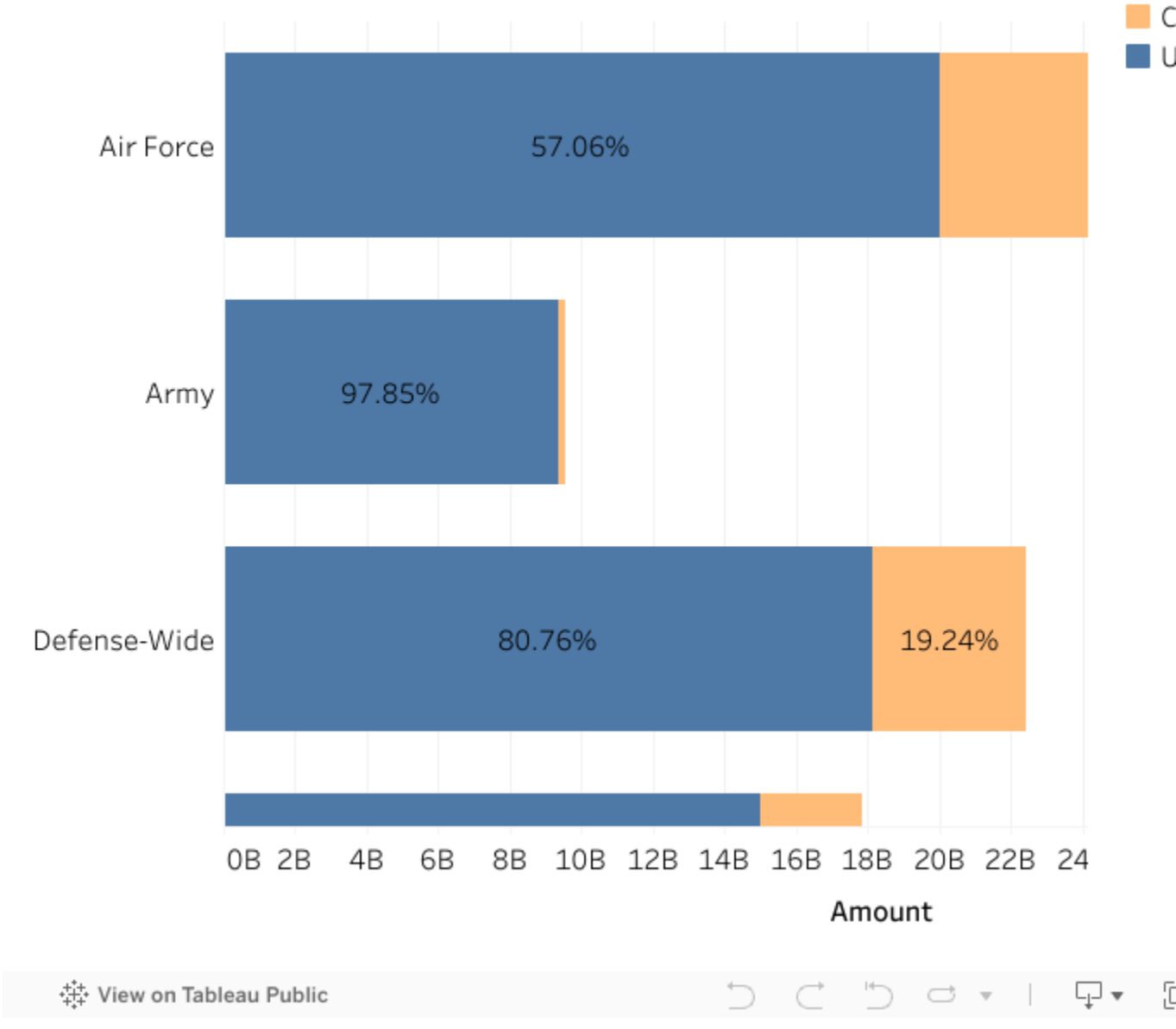
Source: OMB, Public Budget Database FY 2018. Analysis in Tableau.

Note: Dollars in thousands.

Figure 57: FY18 Total Classified and Unclassified RDT&E Funding Requested, by Military Department



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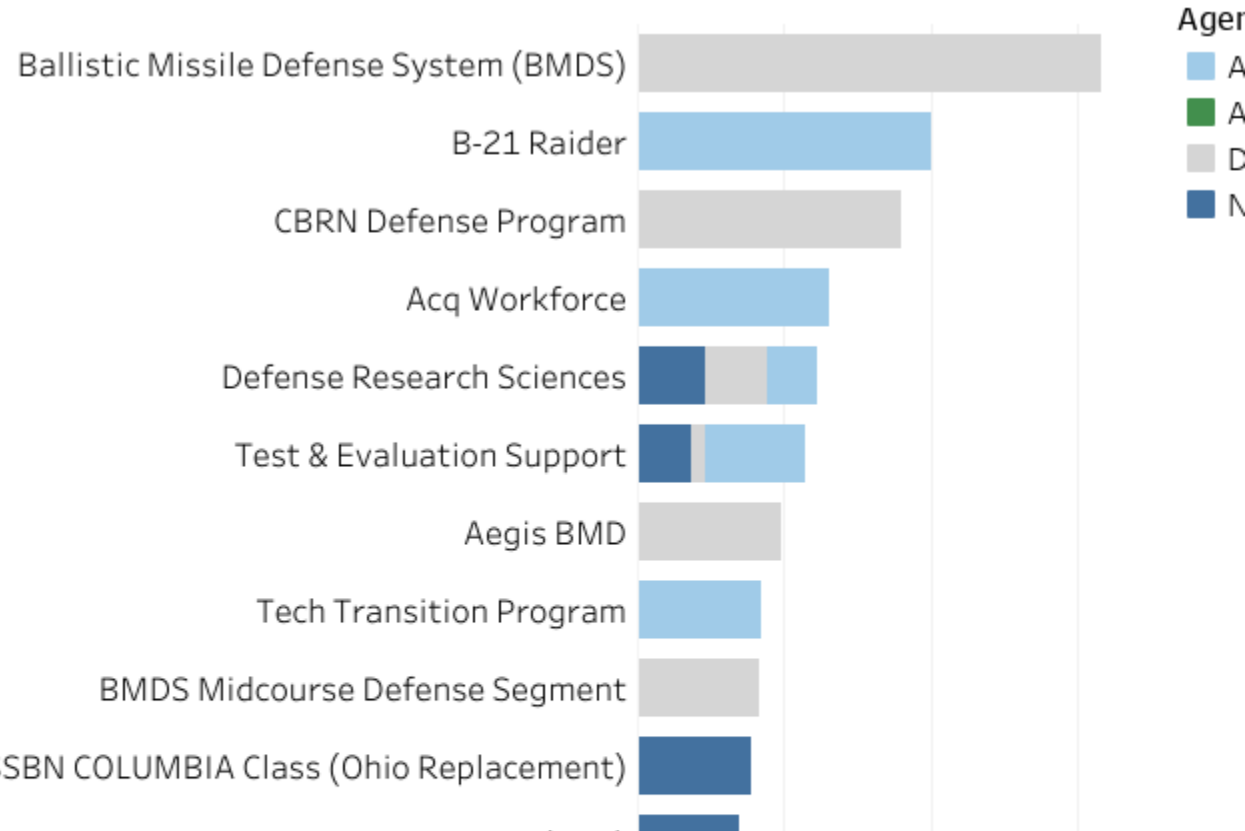
Source: DoD budget data from VisualDOD. Analysis in Tableau.

Functionally, the PB 2018 RDT&E request continues many of the investments that were the centerpiece of the Third Offset Strategy. This approach was championed by former Secretary of Defense Bob Work, who remained in his position until July 2017 and played a central role in formulating the FY 2018 budget. Key RDT&E investments in these Third Offset capabilities, including high-speed strike and laser weapons, leap-ahead improvements in turbine engines, and electronic warfare, aim to ensure U.S. ability to project power in the face of the A2/AD capabilities and strategies employed by potential adversaries that currently challenge U.S. military advantages. The PB 2018 request would also increase funding for the Strategic Capabilities Office (SCO) to $1.2 billion, or 25 percent more than the $902 million requested in FY 2017 and more than double the $519 million appropriated in FY 2016. Some publicly acknowledged SCO efforts include adapting existing missiles to shoot across domains, broadening their potential set of targets; pairing manned ships and planes with expendable unmanned platforms; adapting current Army and Navy guns with new projectiles to effectively turn them into hypervelocity guns; and leveraging commercial technologies, like sensors, processors, and network technologies, to add new capabilities to existing systems.[13] (#_edn13)

The PB 2018 request makes a handful of significant adjustments to specific RDT&E programs as compared to the PB 2017 plan for FY 2018. The largest single increase is for classified programs, which see $2.2 billion more in requested funding. Programs to turn promising technologies from demonstration to prototype to working system also receive substantial investment in PB 2018, principally new funding for advanced innovative technologies ($631 million) and technology transition ($345 million). The Air Force also moved forward funding for a 6th generation air dominance fighter ($282 million), while PB 2018 also increases funding for ballistic missile defense systems ($233 million), accelerates the future ground-based strategic deterrent replacement for the M*inuteman III* ICBM ($238 million), and boosts CBRN research ($323 million). The B-21 *Raider* needed $163 million less funding in FY 2018 than anticipated, but otherwise continues the PB 2017 funding profile in the PB 2018 request. Additionally, several systems currently in development have experienced cost growth and/or schedule slip, necessitating higher FY 2018 funding levels, including the GPS III Ground Control Segment, which experienced a critical Nunn-McCurdy breach in 2016 ($258 million), the F-35A ($110 million), and the Navy's next-generation jammer ($79 million) and DDG-1000 *Zumwalt*-class destroyer ($121 million).

Figure 5: 15 Largest Programs in FY18 RDT&E Request



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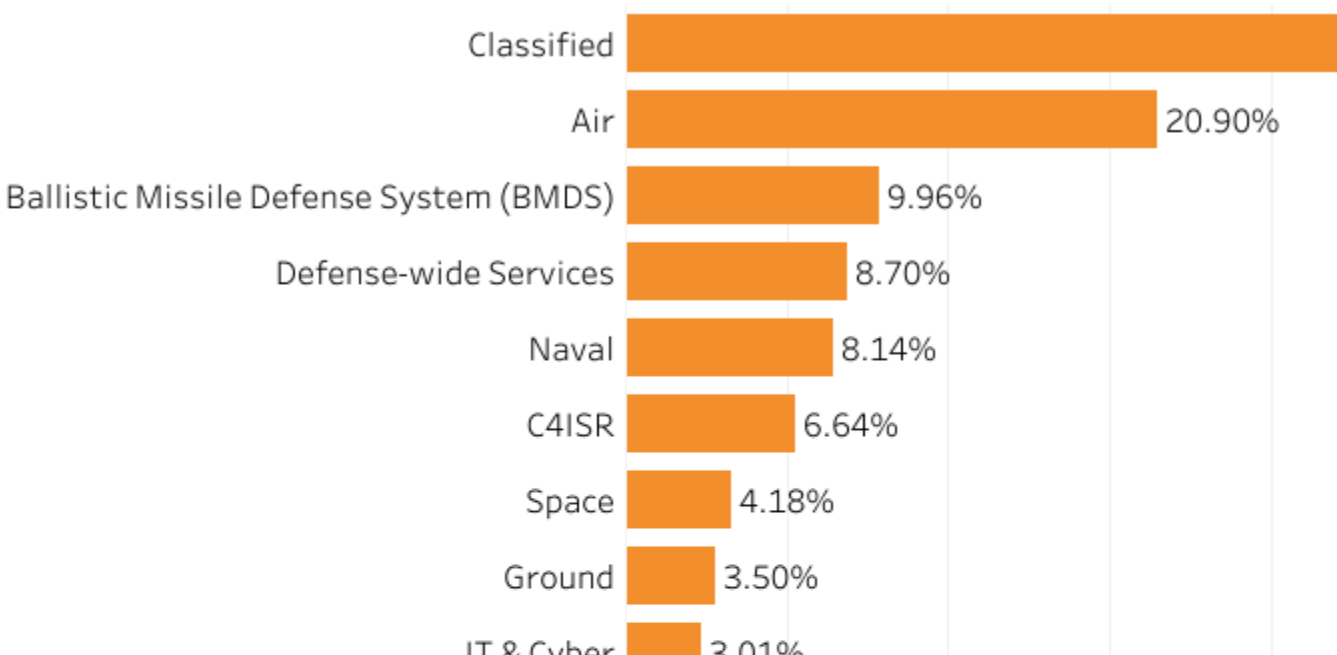
Source: DoD budget data from VisualDOD. Analysis in Tableau.

By segment, the largest single area of RDT&E funding in the FY 2018 RDT&E request is classified programs at $22.4 billion, or 29 percent of the total RDT&E request. Air programs, with a requested $16.5 billion, make up 21 percent; ballistic missile programs, with a requested $7.8 billion, make up 10 percent; and naval programs, with a requested $6.5 billion, make up 8 percent. Requested RDT&E funding for ground-related programs is just $2.8 billion, or 3.5 percent of the total RDT&E funding requested in FY 2018 (see Figure 5-9).

As compared to the PB 2017 FYDP (FY 2017–FY 2021), the overall PB 2018 FYDP (FY 2018–FY 2022) RDT&E funding portfolio includes substantially more funding for air (13 to 19 percent more, depending on the specific fiscal year within the FYDP), ballistic missile defense (12 to 25 percent more), C4ISR programs (12 to 24 percent more), classified programs (12 to 14 percent more), ground (16 to 31 percent more), IT and cyber (16 to 24 percent more), and nuclear chemical and biological weapons defense (29 percent more), as well as modestly more on naval programs (1 to 13 percent more). Spending on nuclear weapons and space largely remains consistent with the PB 2017 plan (see Figure 5-10).

Figure 5-9: FY18 Requested RDT&E Funding by Segment



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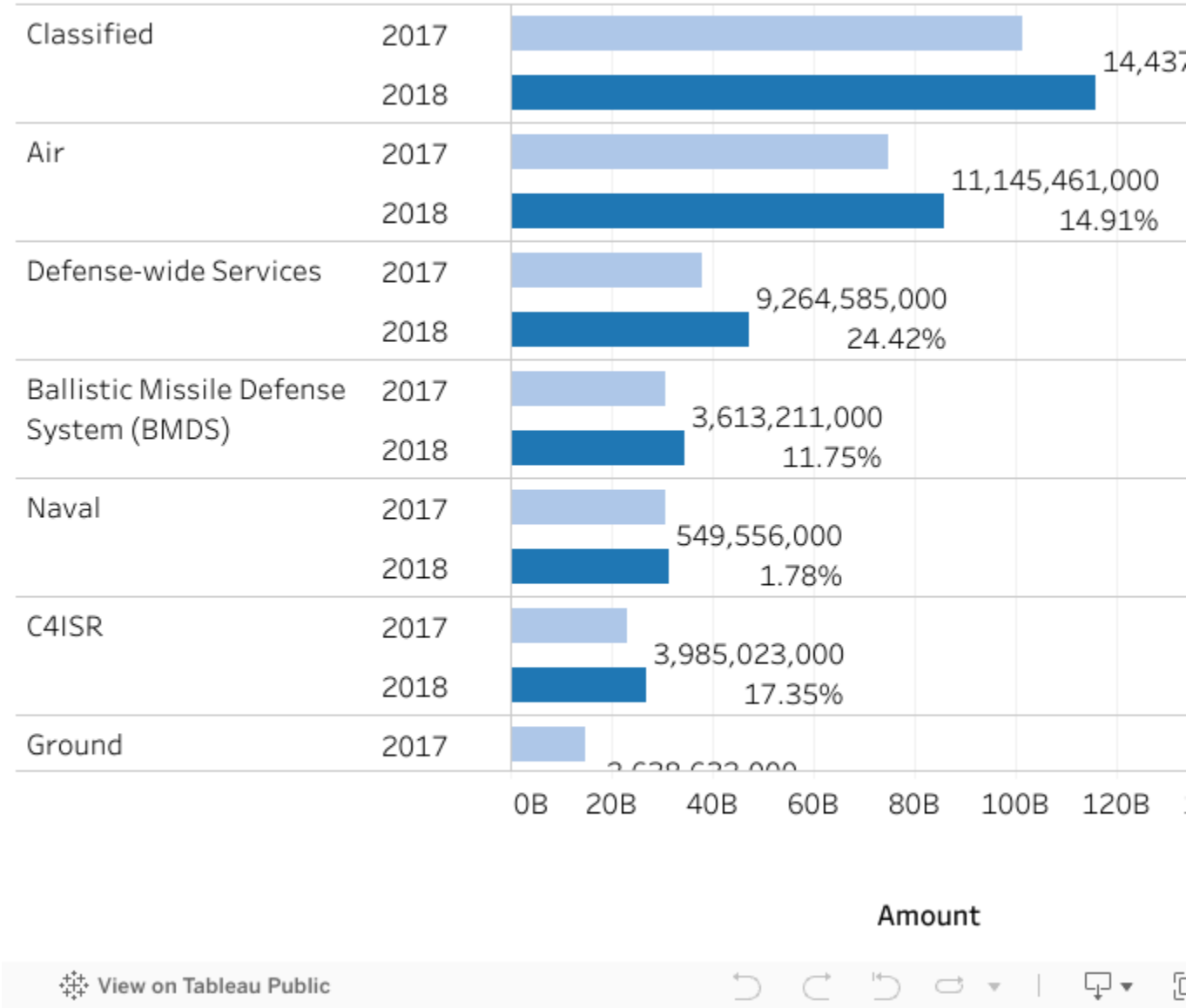
Source: DoD budget data from VisualDOD. Analysis in Tableau.

Figure 5‑10: PB18 RDT&E Request Across the FYDP by Segment, Compared to the PB17 FYDP



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Source: DoD budget data from VisualDOD. Analysis in Tableau.

RDT&E Details

RDT&E funding falls into seven budget activities. The later stages of RDT&E efforts are more tightly integrated into the acquisition process:

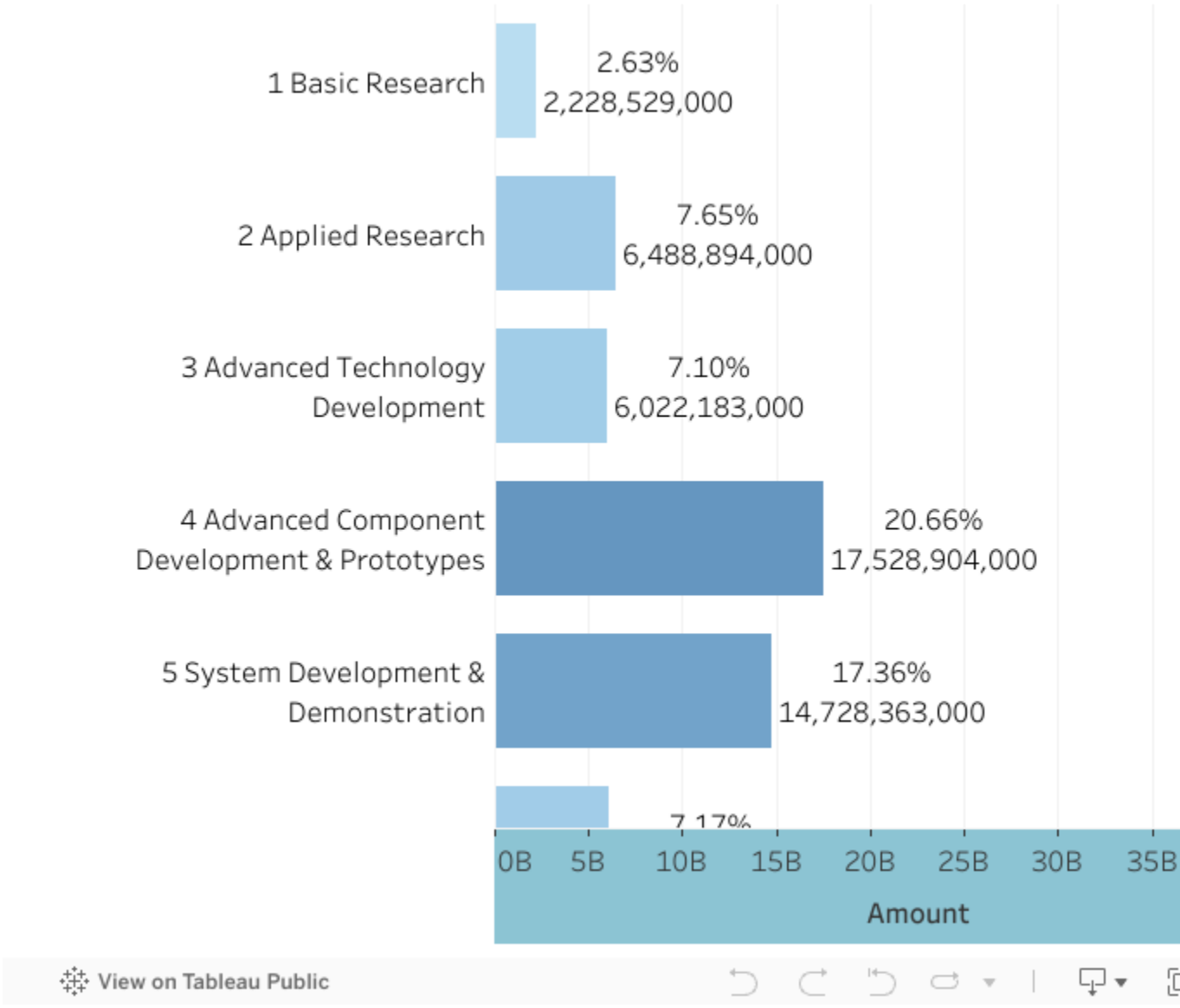
- **6.1 Basic research** funds unclassified research, often at universities and other non-governmental organizations, and precedes any system-specific research.
- **6.2 Applied research** funds aim to translate promising basic research into broad military needs by developing useful materials, devices, systems, or methods preceding specific systems. Applied research RDT&E efforts can be funded as part of the material solution analysis portion of the acquisitions process, which evaluates potential solutions and the trade space for addressing a capability gap, including a formal analysis of alternatives. After the materiel solutions analysis phase, programs are evaluated at Milestone A of the acquisitions process.
- **6.3 Advanced technology development** efforts develop and integrate subsystems or components into system prototypes for field experiments and tests in order to demonstrate technological feasibility and assess operability and producibility. This RDT&E budget activity most often funds efforts in the technology maturation and risk reduction phase of the acquisition process following Milestone A. This phase develops and demonstrates prototype designs to reduce technical risk, validates designs and cost estimates, selects appropriate technologies for a full system, and develops key performance benchmarks for the system. RDT&E efforts in this budget activity do not necessarily lead to development or procurement of systems, but should have the goal of moving into next RDT&E phase within 5 years.
- **6.4 Advanced component development and prototypes** efforts evaluate integrated technologies or representative prototype systems in a realistic operating environment and assess

the maturity, performance, or cost reduction potential. The emphasis is on demonstrating component and subsystem maturity before integration into major and complex systems, often including risk reduction initiatives. This RDT&E budget activity also occurs in the technology maturation and risk reduction phase of the acquisition process. Programs are evaluated for their technological and programmatic maturity and readiness to move into the subsequent step of the acquisitions process at the Milestone B review.

- **6.5 System development and demonstration** efforts encompass the shift from evaluating components of a system to evaluating the integrated system after the program has been determined technologically and programmatically mature enough to move into the engineering & manufacturing development phase at the Milestone B review. The engineering and & management development phase aims to finalize the integrated system's design and capabilities, and to demonstrate the production process before low-rate initial production.
- **6.6 RDT&E management support** funds RDT&E facilities, test ranges, and the operating costs of test systems.
- **6.7 Operational systems development** funds are for upgrading systems that have been fielded or that have been approved for full-rate production following the Milestone C review of the engineering and management development.

Across DoD, funding for the operational systems development budget activity makes up the largest share of RDT&E funding requested in FY 2018 at $31.7 billion, or 40 percent of total RDT&E funding. Most of this funding, $20.5 billion or 65 percent, is classified, making up 92 percent of the classified RDT&E funding. The advanced components and prototypes budget activity for systems in the earlier stages of development, between acquisition milestones A and B, makes up $17.5 billion, or 22.5 percent of total RDT&E funding in FY 2018. Systems in the engineering and management development phase, between milestones B and C, account for $14.7 billion (or 19 percent) (see Figure 5-11).

Figure 5‑11: PB18 RDT&E Funding by Budget Activity



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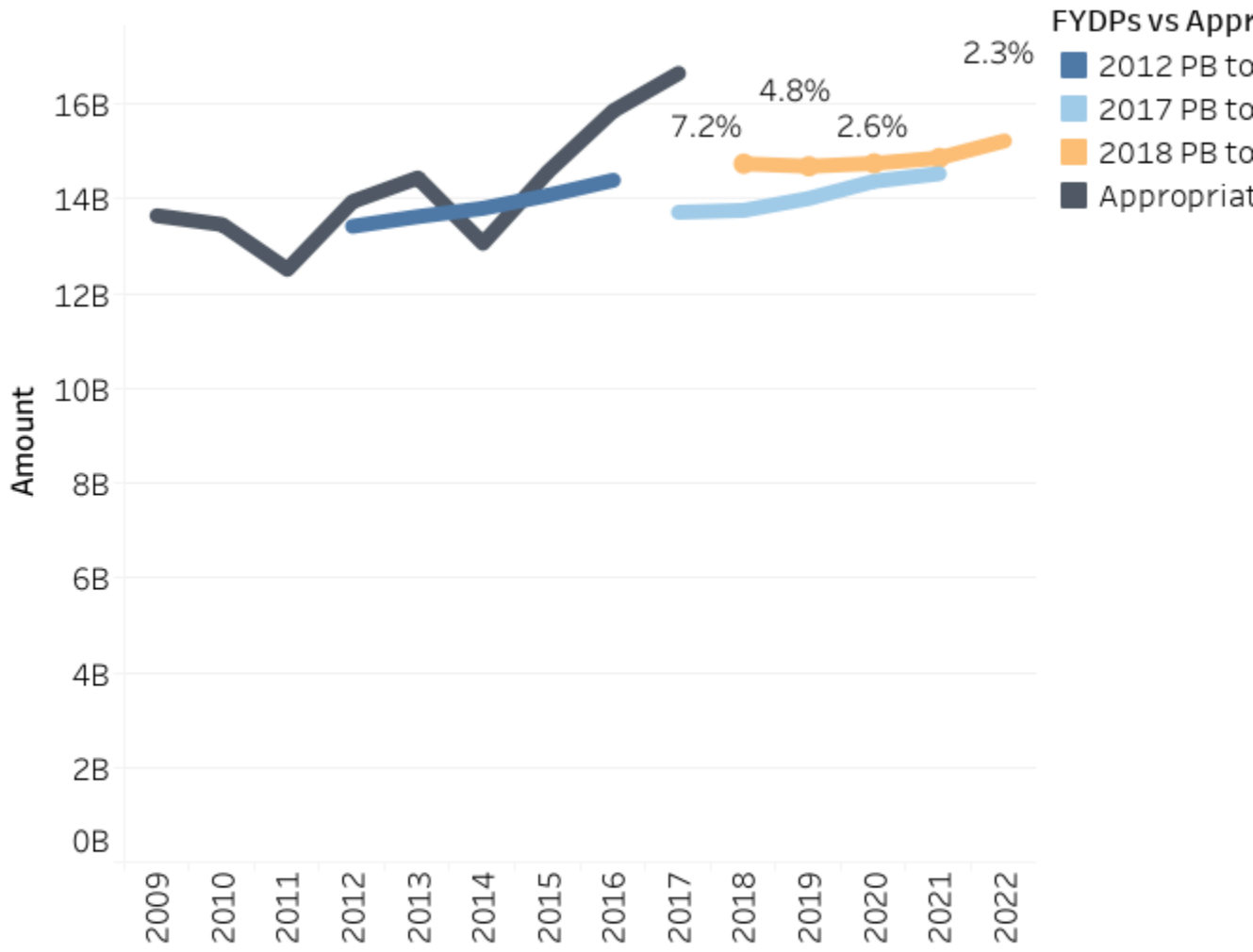
Source: DoD budget data from VisualDOD. Analysis in Tableau.

6.1, 6.2, and 6.3: Science & Technology

The first three RDT&E budget activities (6.1, basic research, 6.2 applied research, and 6.3, advanced technology development) are collectively described as the science & technology portfolio. The PB 2018 budget largely maintains the PB 2017 budget investment in the science & technology portfolio of RDT&E. It keeps funding levels for basic science the same and adds about $450–530 million each year in applied research, predominantly in nuclear, chemical, and biological weapons defense. It also makes modest increases in advanced technology development (see Figure 5-12).

Figure 5‑12: Total PB18 RDT&E Request for BA 1-3, Compared to PB17



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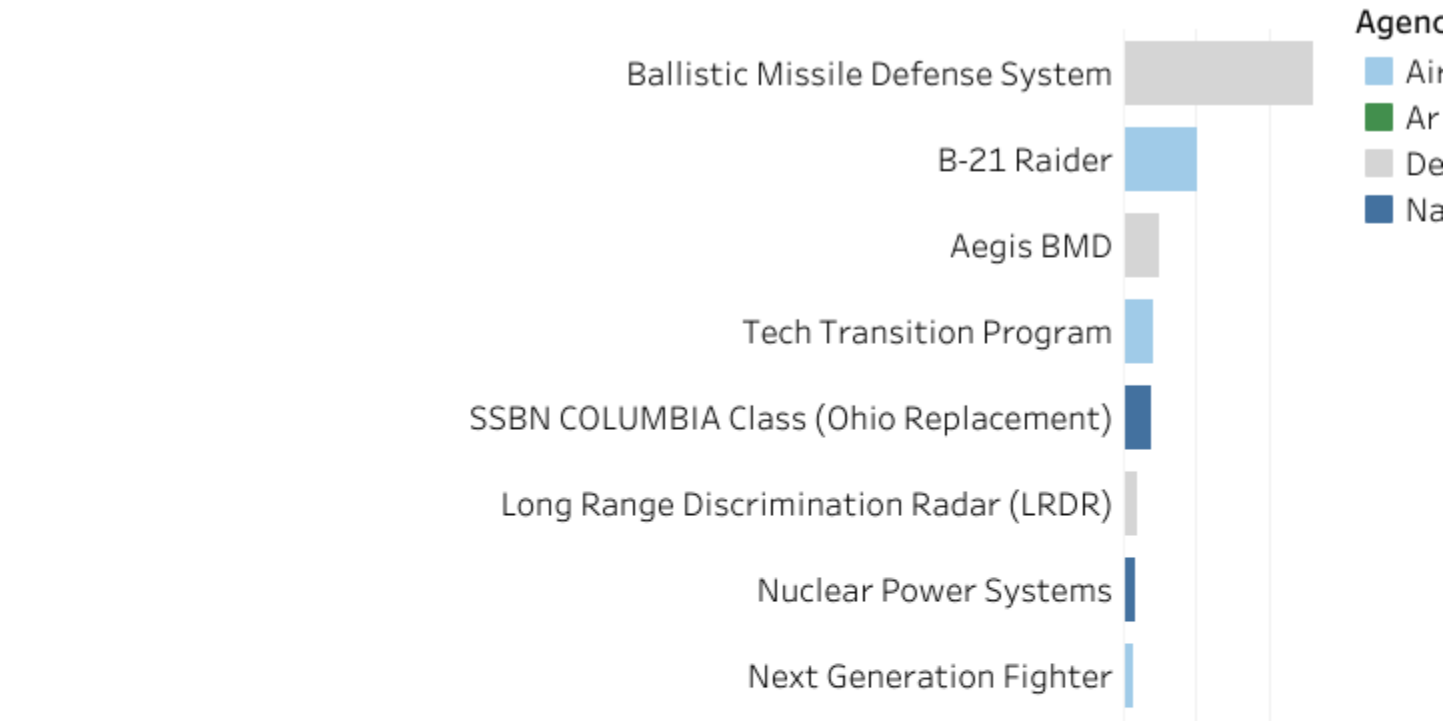
Source: DoD budget data from VisualDOD. Analysis in Tableau.

6.4: Advanced Component Development and Prototypes

RDT&E budget activity 6.4, advanced component development and prototypes, funds programs that are in earlier stages of development; transitioning from laboratory to practical use; and evaluating prototypes, components, and subsystems. Programs in this stage of acquisitions contain technologies or systems that are undergoing technological maturation and risk reduction and being evaluated for potential to move into the engineering and manufacturing development after the Milestone B decision. As such, RDT&E efforts in this budget activity fund both large programs at early stages of development and a wide array of technological efforts.

In the FY 2018 request, the largest advanced component development and prototyping efforts are various ballistic missile defense programs ($5.2 billion); the B-21 *Raider* stealth bomber ($2 billion); the Aegis BMD system ($1 billion); the doubling of funding for a tech transition program to demonstrate, prototype, and experiment with promising technologies to speed their transition to acquisition programs or operational use ($840 million); and the *Columbia*-class SSBN ($776 million) (see Figure 5-13). Examining PB 2018 funding across the FYDP by domain or segment reveals a strong concentration of programs in RDT&E pipeline the air domain. Just two programs—the B-21 *Raider* and the as-yet-undefined Next Generation Fighter, account for 77 percent of total funding for air programs in the RDT&E 6.4 budget. By contrast, the largest single program in the naval segment, the *Columbia*-class SSBN, accounts for just 23 percent of that category's funding (see Figure 5-14). Overall, the PB 2018 anticipates 6.4 funding to rise from 15 to 24 percent more than projected in the PB 2017, depending on the fiscal year. It will reach $19.6 billion by FY 2022, some $5 billion more than appropriated in FY 2017. This planned increase will be driven by growing spending on the B-21, the Next Generation Fighter, the Ground Based Strategic Deterrent (GBSD), protected C3, and ballistic missile defense programs, which together will account for 55 percent of RDT&E 6.4 funding by FY 2022.

Figure 5‑13: FY18 Largest Advanced Component Development and Prototyping Programs



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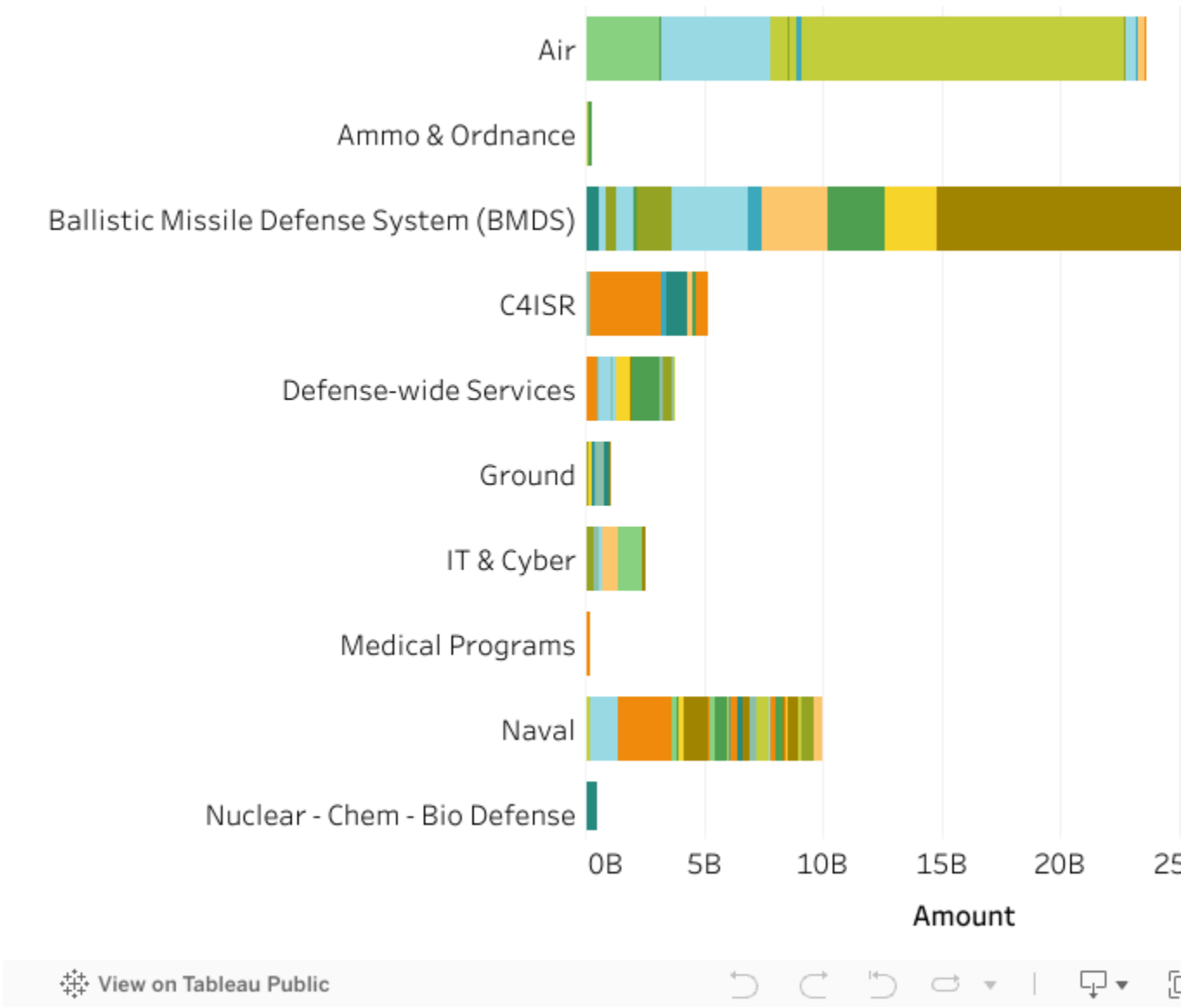
Source: DoD budget data from VisualDOD. Analysis in Tableau.

Figure 5‑14: PB18 BA4 Funding by Segment and Program



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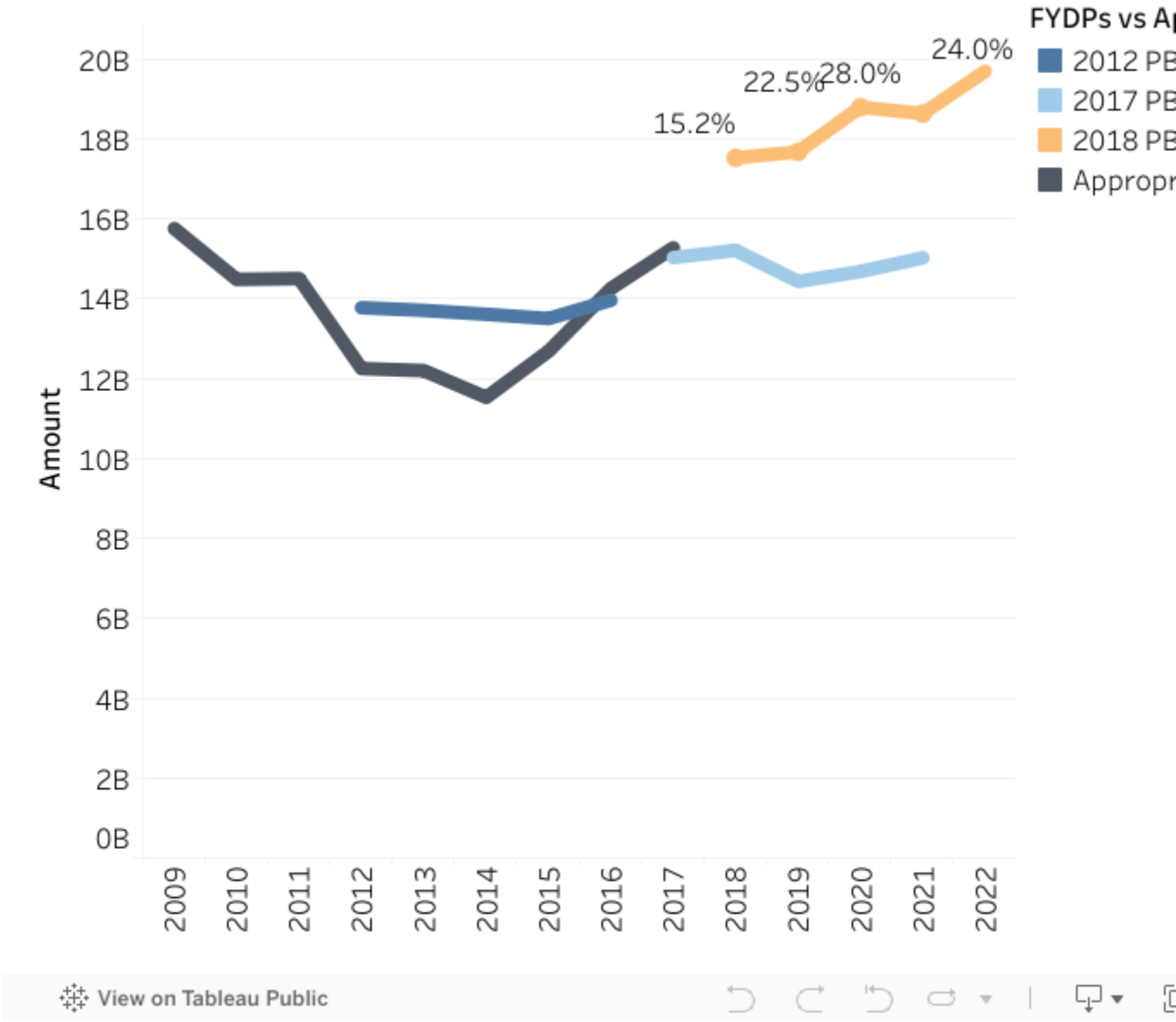
Source: DoD budget data from VisualDOD. Analysis in Tableau.

Figure 5‑15: RDT&E BA 6.4 Funding in PB18, Compared to PB17



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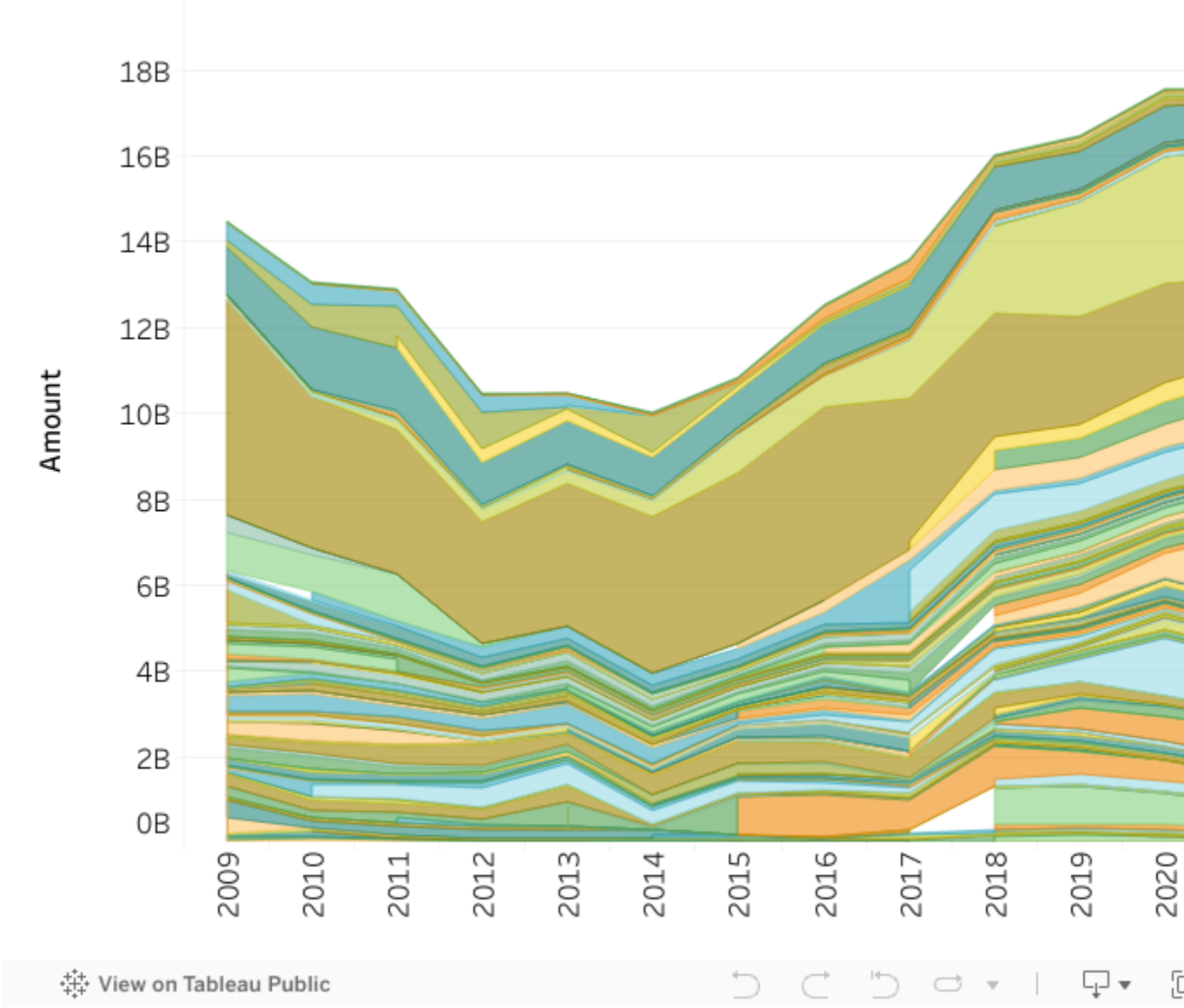
Source: DoD budget data from VisualDOD. Analysis in Tableau.

Figure 5‑16: RDT&E 6.4 Programs, FY09–FY22 (Projected)



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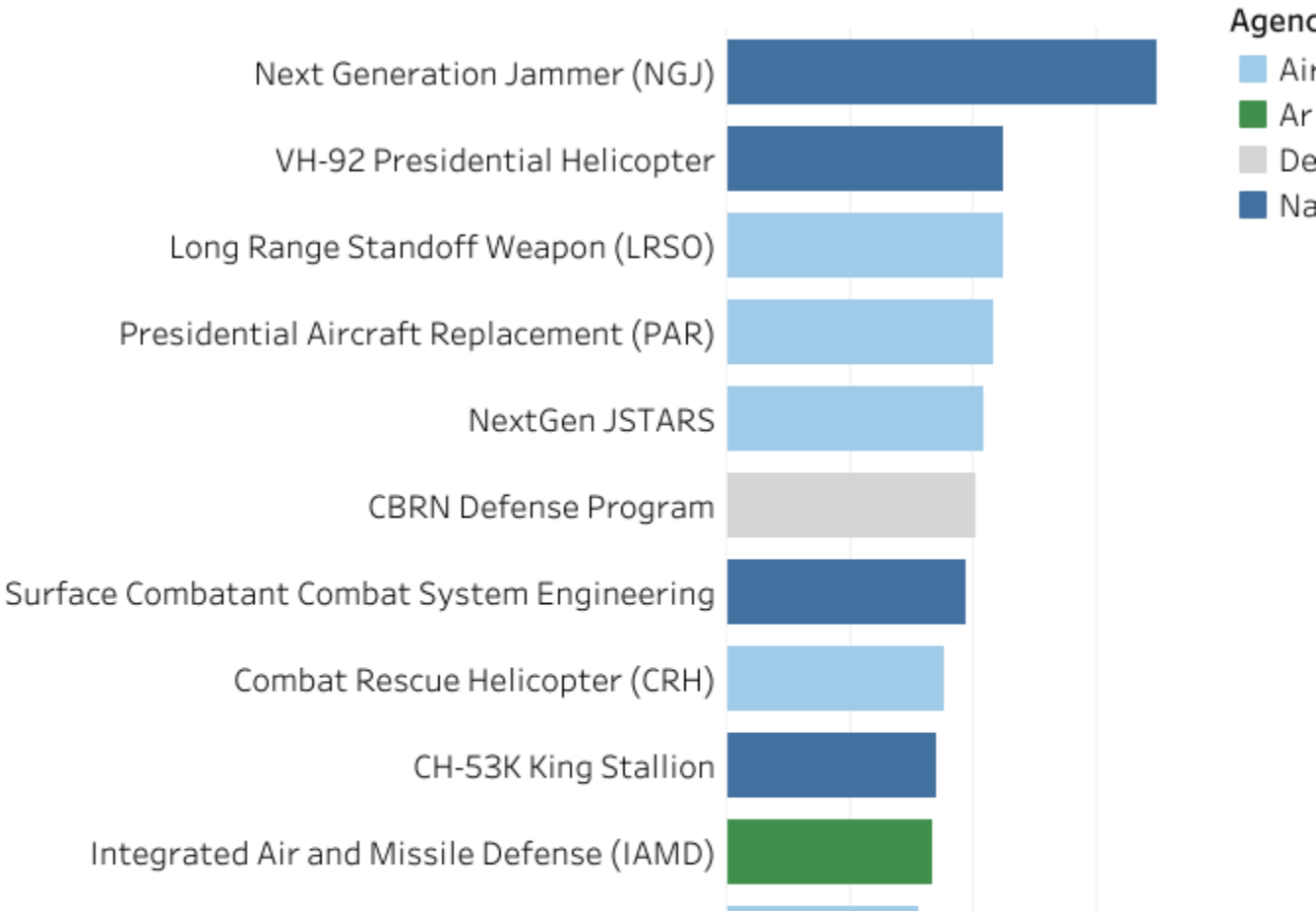
Source: DoD budget data from VisualDOD. Analysis in Tableau.

6.5: System Development and Demonstration

Evaluating the Services' RDT&E funding for RDT&E budget activity 6.5, system development and demonstration, illustrates what programs and systems should be available within ten years and what technologies are mature. Within the FY 2018 request, the preponderance of effort is for systems that have been underway for some time, with the exception of the LRSO and the Army's devotion of additional resources to integrated air and missile defense research (see Figure 5-17).

Figure 5‑17: FY18 Largest System Development & Demonstration Programs



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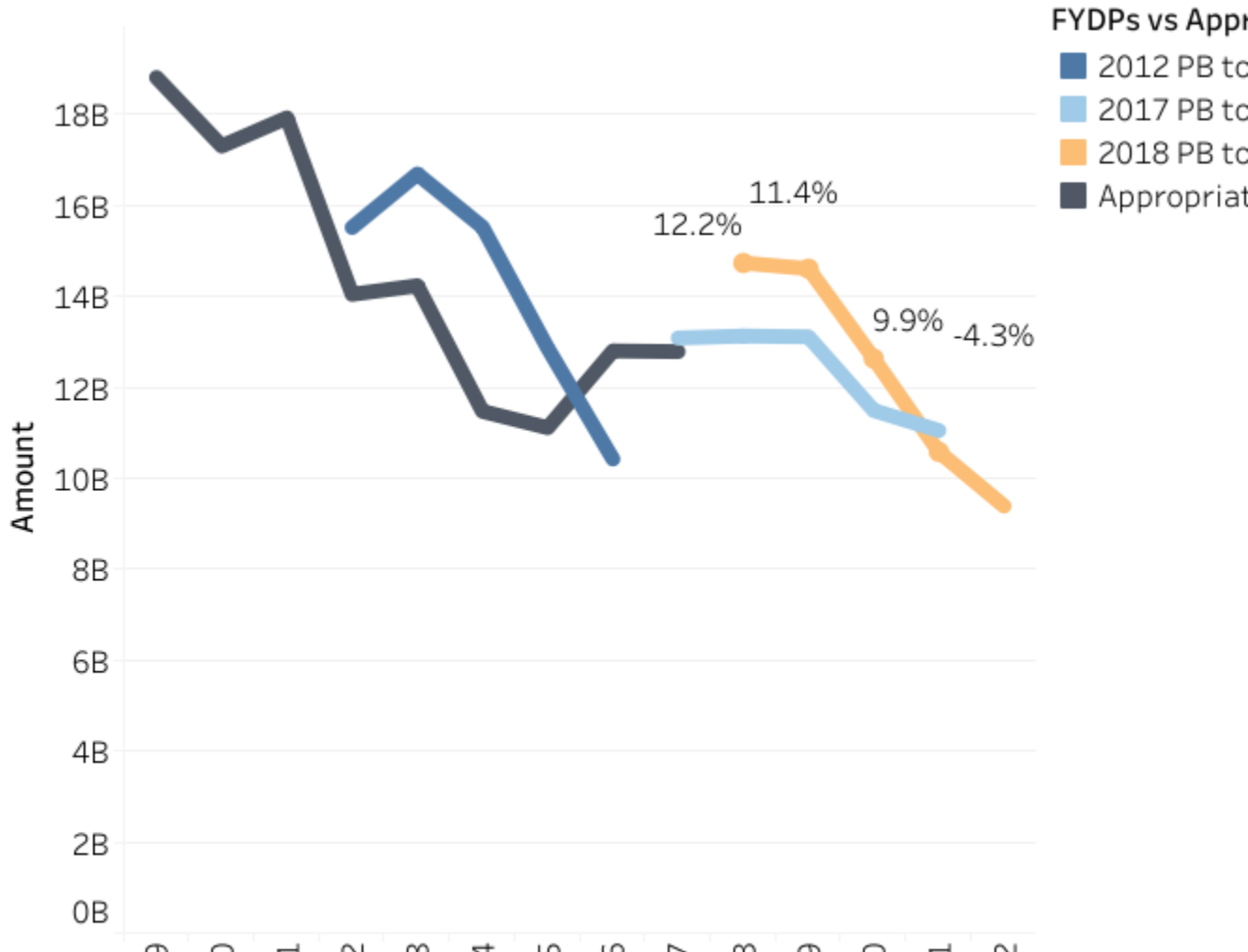
Source: DoD budget data from VisualDOD. Analysis in Tableau.

Looking at total funding across the full Future Years Defense Program (FYDP) from FY 2018 through FY 2022 allows a fuller view of the systems that are moving through the acquisition pipeline and their relative scale of funding. The Trump administration's PB 2018 RDT&E largely continues the Obama administration's PB 2017 efforts within the system development and demonstration budget activity of RDT&E funds, which is for programs that are in the engineering and manufacturing development stage after milestone B but before the milestone C decision to move forward with initial low-rate production, with only a modest increase in funding (see Figure 5-18).

Figure 5‑18: RDT&E BA 6.5 Funding in PB18, as Compared to Past Budgets



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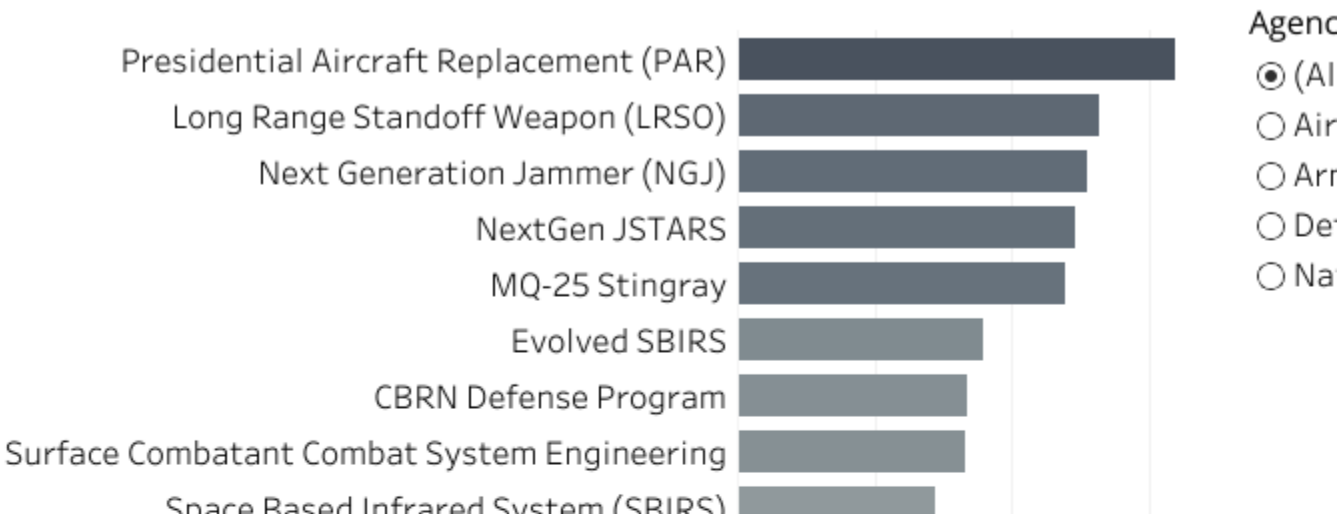
Source: DoD budget data from VisualDOD. Analysis in Tableau.

Within the Air Force, system development and demonstration funds are concentrated in air, nuclear, and space programs, including the presidential aircraft replacement, development costs for a new T-X trainer aircraft, B-2 improvements, the nuclear LRSO and ongoing efforts to replace the ICBM fuzes, various elements of the Space-Based Infrared satellite system (SBIRS), the Advanced Extremely High Frequency (AEHF) satellite, and space situational awareness systems. For the Navy, the largest programs include the continuing effort of the next-generation jammer; sustained focus on nearly mature or existing naval aviation platforms including the F-35, the CH-53K, the P-8 Poseidon, and the E-2D Hawkeye; and ongoing work on surface combatant engineering and ship self-defense. The largest new area of effort is the MQ-25 unmanned tanker/ISR aircraft, to which the Navy will devote $2.4 billion in 6.5 funds over the FYDP.

The Army's efforts, lacking major procurement programs underway, offer more nimbleness to the changing security environment and the challenges posed by the growth and spread of A2/AD capabilities, as well as the increasing need to operate in a contested, high-end ground combat environment. Major investment areas include integrated air and missile defense, indirect fire protection capability (IFPC), tactical command and control systems, electronic warfare, ground vehicles, armored multi-purpose vehicles, and combat vehicle survivability (see Figure 5-19).

Figure 5-19: PB18 Largest System Development RDT&E Programs FY18–FY22 (Projected)



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Source: DoD budget data from VisualDOD. Analysis in Tableau.

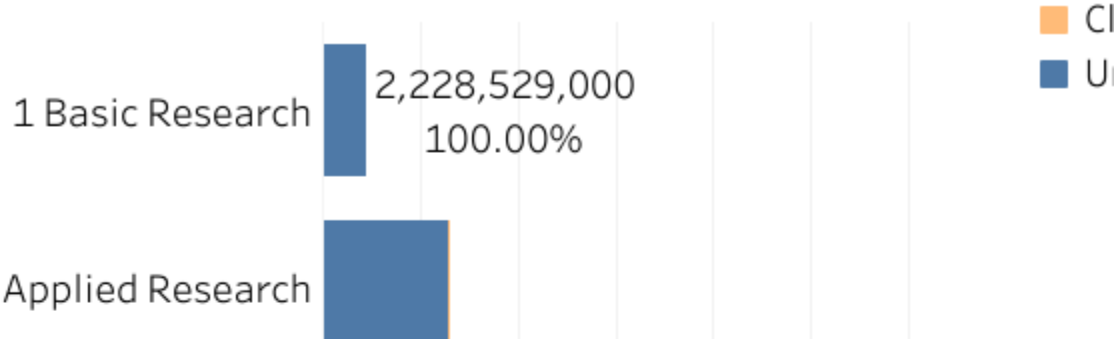
6.6 RDT&E Management Support

The RDT&E management support budget activity funds RDT&E facilities, test ranges, and the operating costs of test systems. The PB 2018 requests $6.1 billion for RDT&E management support in FY 2018, amounting to 7 percent of the total RDT&E request. This is a $1.5 billion increase from the $4.5 billion requested in FY 2017, due predominantly to shifting the costs of some civilian personnel in the acquisition workforce from the operation and maintenance account to the 6.6 budget activity of RDT&E.

6.7: Operational System Development

This RDT&E budget activity funds upgrades to systems that are currently in production or that exist in the force. It is the area of the RDT&E budget that receives the most funding. At a requested $31.7 billion in FY 2018, 6.7 efforts for extant or in-production systems would represent about 40 percent of the overall DoD RDT&E budget. In the FY 2018 request, $20.5 billion (or 65 percent) would go to classified programs. BA 7 is where the vast majority—92 percent—of classified RDT&E funding is allocated (see Figure 5-20).

Figure 5□20: Classified and Unclassified Funding in RDT&E Budget Activities, PB18



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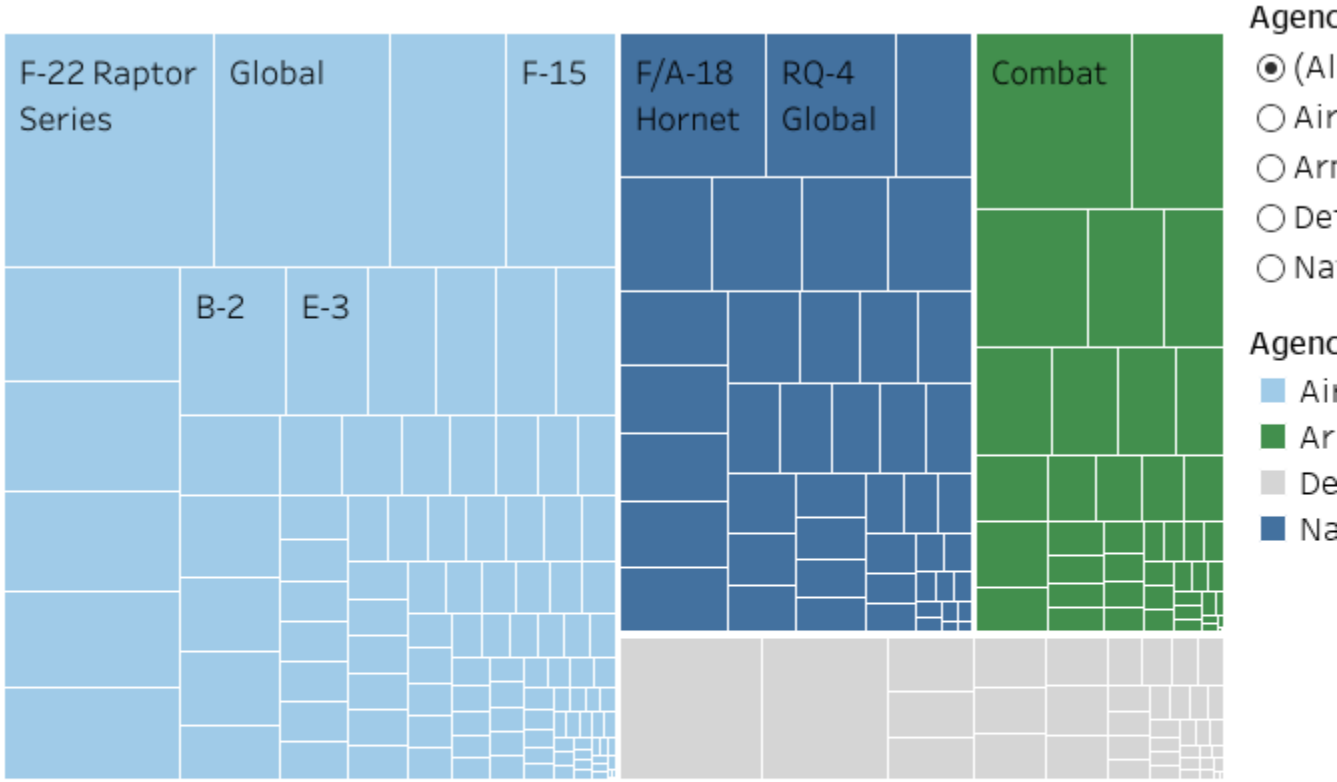
Source: DoD budget data from VisualDOD. Analysis in Tableau.

The remaining $11.2 billion of non-classified funding requested in 6.7 is scattered among DoD's existing programs, with substantial investments in current combat aircraft, principally the F-22 *Raptor,* the B-2 *Spirit* bomber, the F-15 *Eagle*, and the F-35; space systems, including GPS III OCX and the space segment; the *Minuteman III* ICBM; the MQ-9 *Reaper* and RQ-9 *Global Hawk* UAVs; and improvements to current guided missiles, aircraft propulsion, and ground vehicles (see Figure 5-21). Overall, PB 2018 anticipates RDT&E funding for operational systems development to rise by 15 to 18 percent more annually than projected in the PB 2017, depending on the fiscal year. From current levels, funding will still decline slightly to $30.5 billion by FY 2022, some $3.5 billion more than appropriated in FY 2017 (see Figure 5-22).

Figure 5-21: FY18 RDT&E BA 7 Operational System Development Funding



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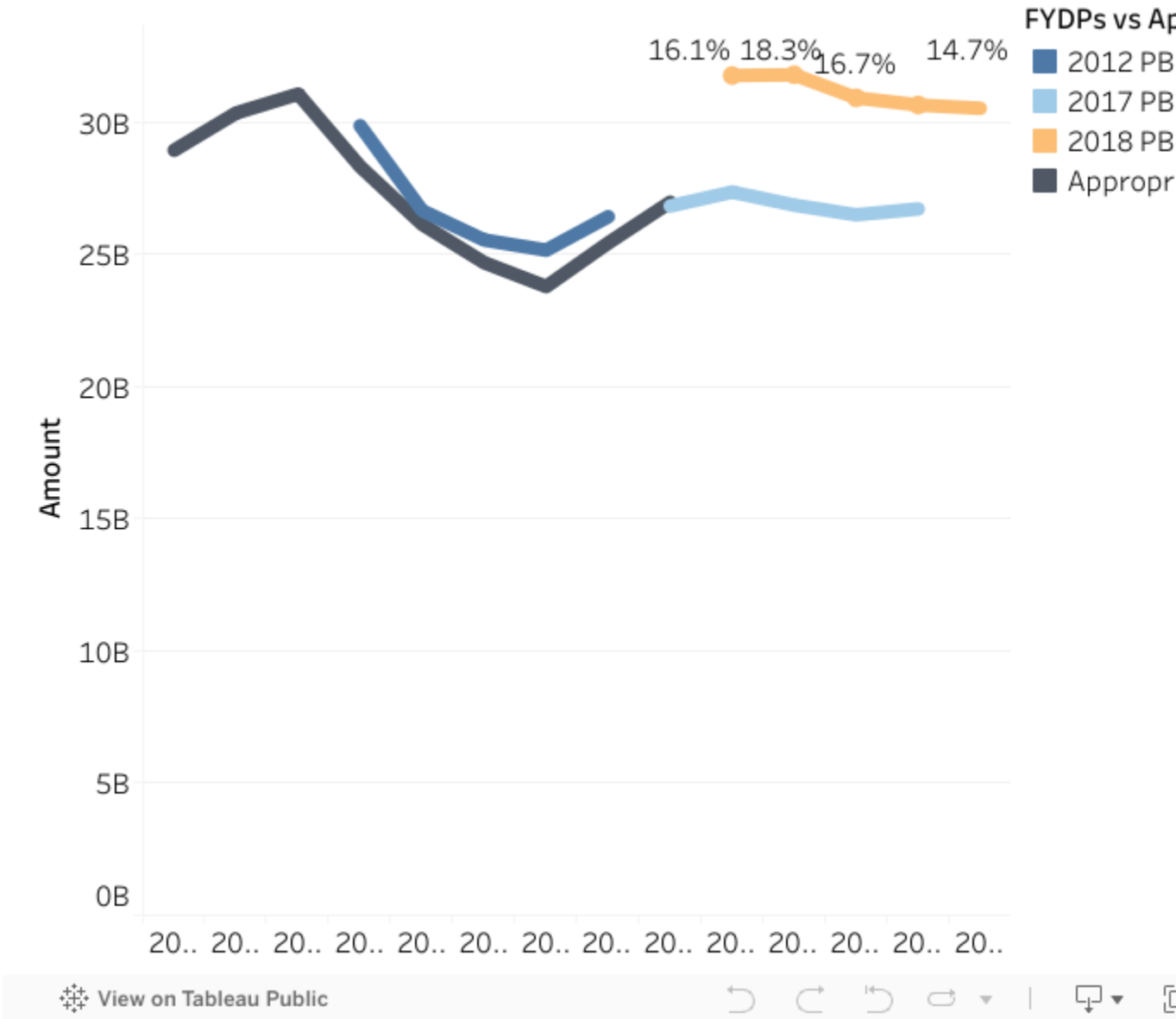
Source: DoD budget data from VisualDOD. Analysis in Tableau.

Figure 5‑22: RDT&E BA 7 Funding in PB18, as Compared to Past Budgets



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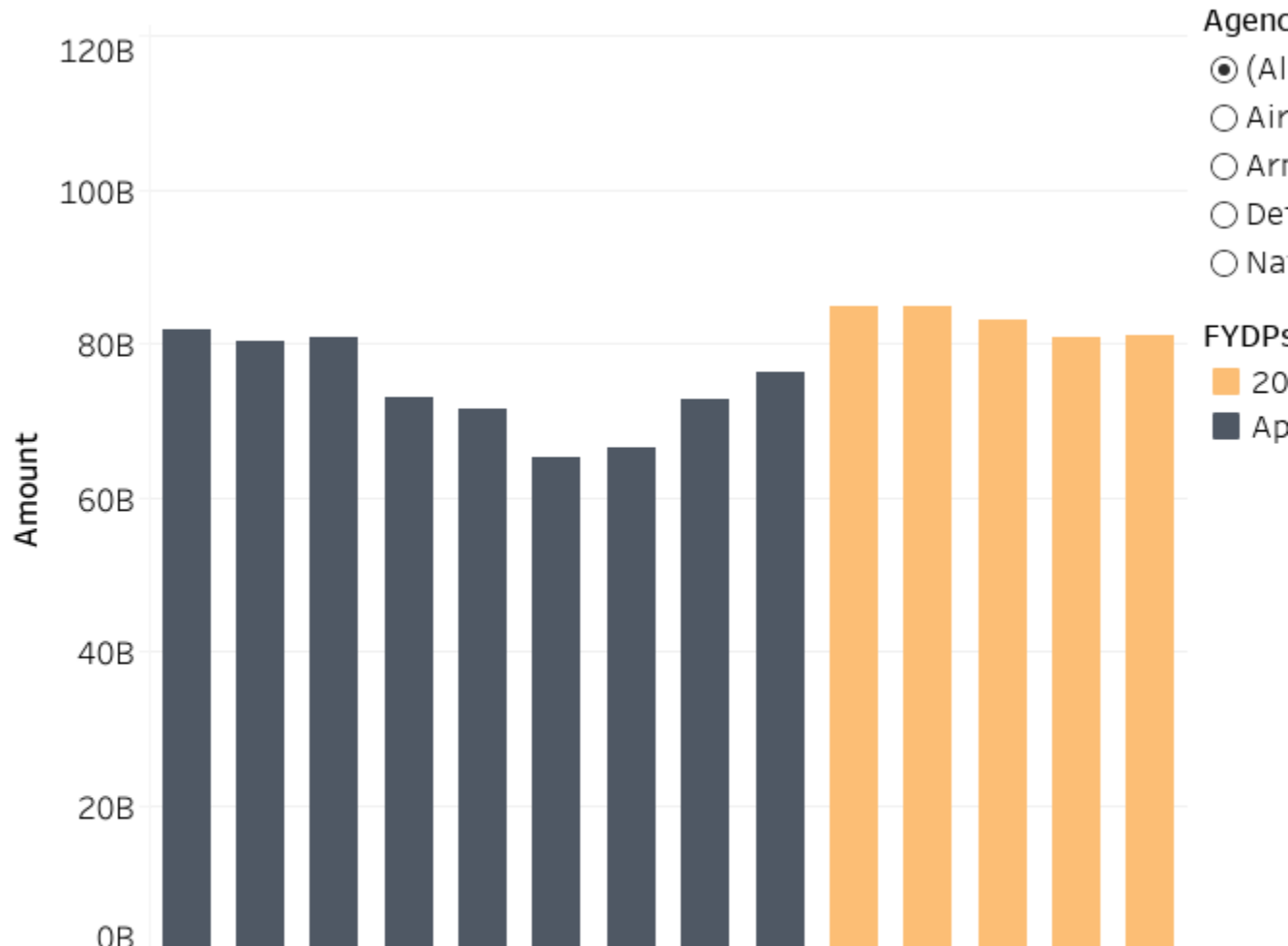
Source: DoD budget data from VisualDOD. Analysis in Tableau.

Trends

Since a recent peak of $81.7 billion in FY 2009, RDT&E funding declined rapidly to just $65 billion in FY 2014, falling from 16 percent of the total defense budget to 11 percent. However, over the past three years RDT&E funding has risen steadily to $76.2 billion in the FY 2017 appropriations. The FY 2018 request would bring RDT&E funding to $84.8 billion, the highest it has been within the past decade (see Figure 5-23).

Figure 5‑23: RDT&E Funding History and PB18 Request



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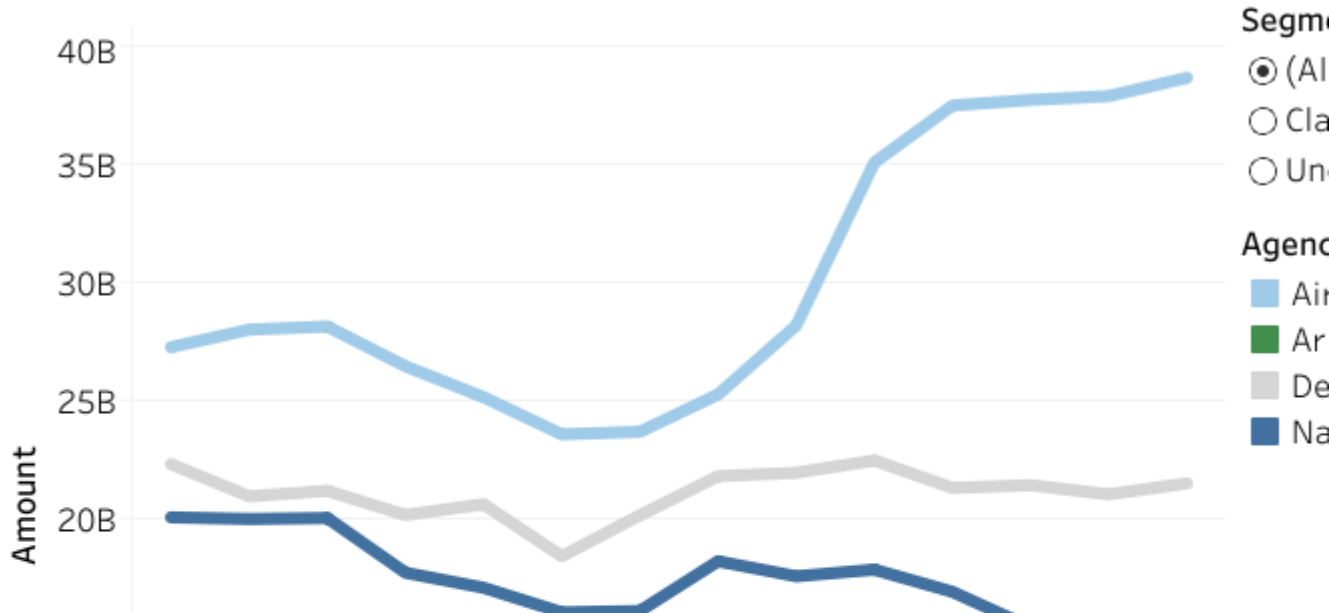
Source: DoD budget data from VisualDOD. Analysis in Tableau.

In accordance with this overall trend, funding for each of the Service's RDT&E portfolios declined rapidly between FY 2009 and FY 2014. Excluding classified programs, the Army's RDT&E funding fell most sharply over that time frame, from a peak of $12 billion in FY 2009 to a low of $6.5 billion in FY 2015, a drop off of nearly 50 percent. Similarly, the Navy's RDT&E funding fell from $17.2 billion in FY 2009 to a low of $12 billion in FY 2014, a decline of 29 percent. DoD-wide RDT&E funding experienced a shallower decline, from $17.5 to $14.6 billion, a decline of 16.5 percent. Finally, the Air Force's "blue" RDT&E dropped from $17.2 billion to a low of $12.5 billion in FY 2015, a decline of 27.5 percent. Since their respective low points in FY 2014 or FY 2015, each the Services has seen steady growth in their overall RDT&E funding as successive budgets have tried to protect long-term modernization funding. However, with the exception of DoD-wide RDT&E, funding for each of the Services remains $500 million to $3 billion below the prior highs. The PB 2018 RDT&E request accelerates this restoration of RDT&E funding, but does not make up for the foregone investments and time to develop new technologies and capabilities and modernize the current force.

Figure 5‒24: RDT&E Funding History and PB18 Request by Service, Excluding Classified Programs



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Source: DoD budget data from VisualDOD. Analysis in Tableau.

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The Center for Strategic and Budgetary Assessments is an independent, nonpartisan policy research institute established to promote innovative thinking and debate about national security strategy and investment options. CSBA's analysis focuses on key questions related to existing and emerging threats to U.S. national security, and its goal is to enable policymakers to make informed decisions on matters of strategy, security policy, and resource allocation.

NOTES

[1] (#_ednref1) General Joseph Dunford, Chairman of the Joint Chiefs of Staff, "Department of Defense Budget Posture Hearing," Senate Armed Services Committee, June 13, 2017.

[2] (#_ednref2) James Mattis, Secretary of Defense, "Department of Defense Budget Posture Hearing," Senate Armed Services Committee, June 13, 2017.

[3] (#_ednref3) Ibid.

[4] (#_ednref4) For PB 2018 hearings, see Robert M. Speer, Acting Secretary of the Army, and General Mark A. Milley, Chief of Staff of the Army, "Army Posture Hearing," Senate Armed Services Committee, May 25, 2017; Heather A. Wilson, Secretary of the Air Force, and General David L. Goldfein, Chief of Staff of the Air Force, "Air Force Posture Hearing," Senate Armed Services Committee, June 6, 2017; Sean J. Stackley, Acting Secretary of the Navy, "Navy Posture Hearing," Senate Armed Services Committee, June 15, 2017; Admiral John M. Richardson, Chief of Naval Operations, "Navy Posture Hearing," Senate Armed Services Committee, June 15, 2017; and General Robert B. Neller, Commandant of the Marine Corps, "Navy Posture Hearing," Senate Armed Services Committee, June 15, 2017.

[5] (#_ednref5) Ibid.

[6] (#_ednref6) Mattis, "Department of Defense Budget Posture Hearing," June 13, 2017.

[7] (#_ednref7) James Mattis, "Implementation Guidance for Budget Directives in the National Security Presidential Memorandum on Rebuilding the U.S. Armed Forces," memorandum to the Secretaries of the Military Departments et al., January 31, 2017, available at https://media.defense.gov/2017/Feb/01/2001693094/-1/-1/0/DDD-170201-373-002.

[8] (#_ednref8) Assistant Secretary of the Army (Financial Management and Comptroller), *FY 2018 President's Budget Highlights* (Washington, DC: U.S. Army, May 23, 2017), p. 28, available at https://www.asafm.army.mil/documents/BudgetMaterial/fy2018/pbhl.pdf.

[9] (#_ednref9) Lt. General John M. Murray, Lt. General Joseph Anderson, Maj. General Robert M. Dyess Jr., and Brigadier General Robert L. Marion, "Army Modernization," Testimony before the Senate Armed Services Committee, Airland Subcommittee, March 22, 2017.

[10] (#_ednref10) Office of the Under Secretary of Defense (OSD) (Comptroller), Chief Financial Officer (CFO), *Department of Defense Fiscal Year 2018 Budget Request: Defense Budget Overview* (Washington, DC: DoD, May 2017), pp. 7-9–7-10, http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2018/fy2018_Budget_Request_Overview_Book.pd

[11] (#_ednref11) Speer and Milley, “Army Posture Hearing,” May 25, 2017; Wilson and Goldfein, “Air Force Posture Hearing,” June 6, 2017; Stackley, “Navy Posture Hearing,” June 15, 2017; Richardson, “Navy Posture Hearing,” June 15, 2017; Neller, “Navy Posture Hearing,” June 15, 2017.

[12] (#_ednref12) Wilson and Goldfein, “Air Force Posture Hearing,” June 6, 2017.

[13] (#_ednref13) OSD (Comptroller), CFO, *Department of Defense Fiscal Year 2018 Budget Request: Defense Budget Overview*, pp. 3-7–3-9.