

21st Century Partnership Monthly Update

Sept 28, 2019



EXECUTIVE SUMMARY/BLUF: Below are items of interest to Central Georgia leadership. Thank you for your continued support and, as always, let us know how we can better serve you.

SYNOPSIS:

[Department of Defense Budget](#)

As we reported last month, it looked like Congress was going to move forward with a Continuing Resolution (CR) instead of getting the Appropriations and National Defense Authorizations Acts (NDAA) across the goal line. This has been confirmed. The CR is planned to extend the FY19 budget from ending September 30th to November 21st. This will leave in place the FY19 funding but stop the Department of Defense from starting new programs planned for FY20, start new contracts and will impact the readiness and modernization gains made over the last couple of years.

[Advanced Battle Management System](#)

The Air Force has begun to release some information on the Advanced Battle Management System (ABMS) and how it will work within the vision for the future Air Force. As acting Air Force Secretary Matt Donovan said the future of battle “will depend less on discrete warfighting platforms and more on the networks, data and IT infrastructure that binds them all together.” The Air Force is looking at Multi-Domain Operations (MDO) as the “membrane” across which the military will connect all systems needed to prosecute the next war. Buckle up, we are getting technical, but we will try and break down how this works...and we’ll try not to bore you!

It will help to look at more of what Secretary Donovan had to say: “It will take true teamwork across all forces and domains to meet the difficult challenges posed by future adversaries. That is the power of MDO: In effect, it integrates and synchronizes military activities instead of just seeking to deconflict them. ABMS, is our first real step in operationalizing this type of command and control required for MDO. Instead of relying on one specific platform for future command and control, we’re developing a robust, open-architecture family of systems that includes air, ground, remotely piloted and space assets, and synchronizing them onto a single network.” This from the recent Air Force Association’s Air, Space and Cyber Conference.

[Middle Georgia STEM Alliance Update](#)

Part of the mission of the Middle Georgia STEM Alliance is to increase awareness of STEM-related careers and the education required. The simple message to students is the choices they will inevitably face as they enter adulthood. After high school, they will most likely embark on one of four paths. Some will immediately enter the workforce, others will choose to join the military, many students will continue into post-secondary education, and some will go on to earn four-year undergraduate degrees. Regardless which path is chosen, great opportunities await those who have knowledge, skills, abilities, and experience in STEM disciplines.

Department of Defense Budget

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This is certainly a much better option than a government shutdown, but still has a negative impact on the military. As stated by Senator David Perdue, a member of the Senate Budget and Armed Services Committees, “Continuing resolutions have a direct and immediate impact across the entire Department of Defense – from training, to readiness, to maintenance, to personnel, and to contracting. CRs create inefficiencies and uncertainties that hurt the bottom line and our ability to fight.”

The positive aspect going in is that Sequestration is done, and we have topline numbers approved for Defense, \$738 billion in fiscal 2020 and \$740.5 billion in 2021. The House has passed the measures needed for their part. The Senate has not been able to get the 60 votes needed to pass their versions of the legislation.

Additionally, there is disagreement between the House and Senate on several provisions contained in portions of the groups of bills needed. The House and Senate are meeting to iron out differences between their two versions of the bills. Senator Perdue is a member of the Senate conference committee working on the deal. There are several sticking points between the versions, including funding for the border wall and the use of military construction dollars as well as others.

We are hopeful the House and Senate can come to an agreement that the President will sign into law, and we are very hopeful that another CR will not be needed. We look forward to watching how this develops and will keep you informed.

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operationalizing this type of command and control required for MDO. Instead of relying on one specific platform for future command and control, we're developing a robust, open-architecture family of systems that includes air, ground, remotely piloted and space assets, and synchronizing them onto a single network." This from the recent Air Force Association's Air, Space and Cyber Conference.

First, the concept...then we'll look at how this impacts Central Georgia. The ABMS concept is a system-of-systems approach for force integration and information sharing. Think of your cell phone. It is a multi-use tool that has access to tons of information and applications to solve problems. Add in Siri on Apple devices, or Google Assistant for Android fans, and you have an artificial intelligence platform that can anticipate your needs or locate information or applications to solve various problems.

Now, let's give that "cell phone" to the pilot of a F-35 or a F-22...any platform really...and then connect autonomous systems all working in tandem to provide the operator a solution to targeting problems. Add in a low-cost unmanned combat aerial vehicle (UCAV) to fly side-by-side with our pilot. They are completely autonomous, can anticipate the pilots needs and are programmed to not only respond to the pilot's commands, but can deal with their own threats, or target independently. This the "Loyal Wingman" concept and is planned for its first demonstration as an ABMS platform this December.

The test platform is the XQ-58A Valkyrie "loyal wingman" drone, built by Kratos for Air Force Research Lab. The Air Force is calling this platform Skyborg (I warned you to buckle up!) "to link an F-22 and an F-35 that speak two different languages," Secretary Will Roper, the Air Force's acquisition executive, explained. "We want to use the attritable drone to be the universal translator for both, or if you like the Hitchhikers Guide to the Galaxy, the 'babel fish' to talk to both, and we're even going to push the connection down to a tablet on the ground to simulate a soldier being there."



Now add in multiple Skyborg systems, all connected to the manned pilot, each with a different role, different weapons in the weapons bay, or sensors to feed information not only to the pilot but to Fusion Cells at remote locations. The Skyborg is being called a vessel for artificial intelligence (AI) technologies that could range from rather simple algorithms to fly the aircraft and control them in airspace to the introduction of more complicated levels of AI to accomplish certain tasks or subtasks of the mission. Eventually, that will be to draw in information, sort the relevant actionable data, and feed that to the proper location to execute on the data...think autonomous Tesla automobiles connected together on a grand scale.

Recently, Air Force Chief of Staff David Goldfein traveled to Silicon Valley visiting major tech companies. He describes himself as the “chief of staff of a garage startup” that needs to transition from a hardware startup building end items; airplanes, weapons, etc.; into a software startup. “We’re a garage startup, and today we’re sort of a hardware company: platforms, sensors and weapons and I’m here because our future is in software. It ain’t going to be the device that wins (the next war). It’s going to be the app.”

Skyborg will only be one link in the system and will connect to all the domains in the Air Force. Whether ground, air, space or cyberspace, the systems envisioned by the Air Force will work together to provide a combined multi-domain command and control (MDC2) system. This will require a huge investment in AI and the management of large amounts of information to pull off, and that is where the system is going. Think about it, there will have to be a system to process the massive amount of information generated. Then AI will sort through that data and find the bits of information that are relevant for multiple different users with a myriad of problems that need resolution. While daunting, the Air Force believes this is doable, and is positioning the Air Force for this future...by the way, analogy of the smartphone and Siri still fits, just on steroids.

Finally, the Air Force intends to upgrade this system every four months. ABMS will "show up in pieces and spread over time," per Secretary Roper. "That's what I really like about it, is that demonstrating the technology will go part and parcel with scaling across the force." They are looking at industry to determine possibilities for the "holy trinity of production-related technologies" -- agile software, open modular systems and digital engineering. They plan to start with 'pitch days' where start-ups can demo their ideas, then move to 'connect-a-thons' every four months for industry test designs and applications that connect ABMS to the MDC2. The intent is to "build families of systems" and "create something that feels like the Internet of Things for the Air Force."

There is no way we can write in detail about all the systems involved in this concept, but this gives you an idea. So, what does this mean for Central Georgia? The Air Force announced Robins Air Force Base will host the initial elements of this system. [They went on to say](#) "The air and space systems that make up the ABMS network will include a fusion center and associated supporting activities. In addition, the network will also include some remotely piloted aircraft at Robins with sensors capable of collecting and transmitting information from the battlefield." At this point, any speculation as to what all that means for us is just that, speculation.

However, this does point to the advanced technologies that will reside in our community. The capabilities in this community position us well to meet the challenges the home stationing of ABMS here will bring, in terms of technology and workforce of the future. We are building the software experts and system engineers right here in Central Georgia. We have the advanced technologies research centers. We have an airfield that is already unmanned aircraft ready. And, we have the "Doctors of Battle Management" stationed here at the 116th and 461st Air Control Wings. In short, we have the resources.

Our leadership throughout Central Georgia are working to prepare the community for this program as well. They are strengthening the partnerships with the Air Force and Robins Air Force Base, working to expand the programs in our K-12 schools that support STEM, and looking at the degree programs offered at our Colleges and Universities. The communities in Central Georgia are looking at Smart Technologies to help foster the sense of innovation.

What can you do? Look at the innovation around you and support their programs, volunteer to help, provide treasure, or even more important, your time. Encourage innovation where you work, at your home and in your lives. The things the Air Force is working on are already reflected in the technologies you use every day, and their efforts will parallel advances in the civilian sector. From autonomous vehicles, to virtual assistants that help identify your shopping needs for the day, to automation of travel plans and itineraries, our homes and communities are becoming more connected. The advent of 5G cell technology and the "Internet of Things" are just around corner. Let's move out and lead this effort here in Central Georgia.

Middle Georgia STEM Alliance Update

Part of the mission of the Middle Georgia STEM Alliance is to increase awareness of STEM-related careers and the education required. The simple message to students is the choices they will inevitably face as they enter adulthood. After high school, they will most likely embark on one of four paths.

Some will immediately enter the workforce, applying only the knowledge, skills, and abilities they developed in high school. Although some good jobs have minimal entry requirements, these opportunities will likely be in the unskilled service sector.

Others will choose to join the military, which will provide excellent training and experience, often in STEM-related disciplines. Military members may also pursue college credits leading to a degree. After military service, either by separation or retirement, the knowledge, skills, and abilities gained may translate to rewarding civilian careers. Options for military service include active duty, Guard, and Reserves.

Many students will continue into post-secondary education. There is a near-critical shortage nationwide of “Central skills”, which require more training than high school but less than a four-year degree. The Technical College System has campuses statewide for earning certificates and associate degrees in a variety of skill disciplines.

And some will go on to earn four-year undergraduate degrees, perhaps on to graduate, and even post-graduate studies.

Regardless which path is chosen, great opportunities await those who have knowledge, skills, abilities, and experience in STEM disciplines. For more information, visit <https://www.21stcenturypartnership.com/middle-ga-stem-alliance/> and @MiddlegaSTEM on Facebook.

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