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Platforms, Concepts of Operations and Defense Decisions: The German Case



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Introduction

With the launch of our defense information website (defense.info), we introduced a micro-site on defense decisions.

We wrote: “In this new section of the defense.info website, we will address U.S. and allied upcoming procurement choices and decisions.

“We are focused on how platform and system choices affect the evolution of the capabilities, concepts of operations of a particular ally or of U.S. services or the joint force.

“Too often, the focus of the defense press or of analysts is narrowly focused on platforms, rather than placing platform decisions or system decisions into the broader context of the evolution of core capabilities.

“We will focus on such decisions by placing them in a broader context.

“In particular, we are focused on the building, shaping, operating and sustainment of what we have called the integrated distributed force.

“We have built a separate micro site focused on this theme, but here we are focused on procurement, or equipment decisions which play into this strategic shift.”

To further develop a discussion of how to evaluate platforms in the evolving concepts of operations for full spectrum crisis management forces, we will focus on Germany, and key procurement choices which they face in the context of the direct defense of Europe.

We are publishing this Fall our book entitled *The Return of Direct Defense in Europe: Meeting the 21st Century Authoritarian Challenge*. In this book we identify the key trends reshaping the direct defense challenge and the approaches being taken to reshape capabilities for enhanced direct defense

In that book, we focus on how key states in Europe are reshaping their forces and their approach to defense to deal with the new strategic challenges.

Clearly, Germany is a key lynchpin state in how Europe is reshaping its approach, and within that approach key procurement decisions will be taken in the period ahead.

In particular, Germany is currently facing three key procurement choices which illustrate the complexity of choice.

Too often, a simple platform versus platform presentation is made which confuses rather than clarifies what the tactical and strategic implications of particular platform decisions in a key functional area for force development and tactical and strategic evolution of a nation’s defense posture.

With regard to this series, we will address, the following procurement choices facing Germany in three key operational areas:

The first is the face-off between the legacy Chinook medium-lift helicopter versus the new generation CH-53K heavy lift helicopter.

The second is the decision to pursue signals intelligence with a manned aircraft option versus an unmanned option, or the face-off between the Pegasus versus the Global 6000 program.

The third is the question of how Germany will replace the Tornado aircraft in its nuclear role.

In each case, much of the analysis has been to compare platform versus platform: Chinook versus CH-53K; a Triton variant versus a manned Canadian aircraft with both systems delivering signals intelligence but in very different ways and with very different implications for force structure development; how to transform the legacy Tornado into its replacement with no clear lineage from Tornado to what will replace it.

The German case provides an opportunity to address the broader question of how to analyze platform choices in a very different strategic context and with significant changes in how US and allied force structures need to evolve to meet the challenges of full spectrum crisis management.

CH-53K versus the Chinook

As I suggested above with regard to evaluating platform choices in the context of evolving needs and concepts of operations, too often, a simple platform versus platform presentation is made which confuses rather than clarifies what the tactical and strategic implications of that particular platform choice might be.

Germany is facing a number of such platform choices, and in this second article in the series, I will address the face-off between the CH-53K and the Chinook and what this choice means for the evolution of the German armed forces.

Recently, there have been a number of articles which have directly raised the question of how the Chinook compares with the CH-53K which suggested that the venerable though legacy Chinook is good enough to consider treating the CH-53K as an outlier to both U.S. Army modernization and for the German armed forces.

For example, Loren Thompson wrote a piece published on July 22, 2020 for *Forbes* which is entitled, “Why Boeing Believes it Will Win the competition to Supply Heavy-Lift Helicopters to Germany and Israel.”

This is a good place to start.

Thompson noted that “Boeing, builder of the rival CH-47F twin-rotor Chinook, has other ideas. It thinks it can displace the CH-53 from both the German and Israeli markets by offering an upgraded version of its own heavy lifter that meets all customer performance requirements at considerably less cost.”

We should note at the outset that the CH-53K is a heavy lift helicopter; the Chinook is not—it is a medium lift helicopter, based on weight that each can carry. But putting aside that point, the argument

boils down to the notion that the CH-53K is built to support unique Marine Corps missions which the Germans will not need, and that Chinook is more than adequate for German needs.

“Although King Stallion is a bigger aircraft than Chinook, Boeing notes that the size of their cabins is virtually identical. In fact, it says that due to weight limits on the CH-53K’s wheels, the CH-47F can “oftentimes carry more weight internally than the CH-53K.” Since Germany and Israel do not conduct the kind of ship-to-shore maneuvers practiced by the U.S. Marine Corps, Boeing figures that the greater external lifting power of King Stallion isn’t worth the additional cost to either country.”

Then Thompson highlights that Boeing believes that the “CH-53K is so new that its future reliability and maintainability are not yet proven.” And associated with this is that there is a higher level of risk in buying a new helicopter and in the potential challenges of customization of the aircraft for Israeli and German needs. Boeing ignores that the block upgrade that they offer in their medium lift Chinook is a development and not production program.

But the core point of comparison highlighted by Boeing is the question of cost. “Boeing contends that the cost of procuring and operating the latest version of Chinook is far below that of King Stallion. In an apples-to-apples comparison, it calculates that ‘CH-47F aircraft cost is about half the CH-53K.’ The higher price-tag for King Stallion could be justified if it were a markedly better fit for German and Israeli performance requirements, or more reliable and maintainable, but Boeing doubts that a case for either claim could be made convincingly.”

This presentation highlights why the legacy aircraft has perceived advantages over a new, 4th generation aircraft, but does not really answer the question of how Chinook fits into the new demands being placed on the German armed forces not how it relates to the overall modernization strategy of German defense.

If this was the Cold War, where the primary focus was really upon moving support around Germany to reinforce the direct defense of Germany, then there might be a compelling case for the legacy Chinook.

But that is not what Germany is facing in terms of the return of direct defense in Europe. In our forthcoming book, *The Return of Direct Defense in Europe: Meeting the 21st Century Authoritarian Challenge*, we focus on the major challenges facing the allies in terms of defense against the Russians in terms of the Poland-to Nordic arc. Within this arc, the challenge is to move force rapidly, to reinforce deterrence and to be able to block Russian movement of force.

Germany faces the challenge of reinforcing their Baltic brigade, moving rapidly to reinforce Poland, and to move force where appropriate to its Southern Flank. In the 2018 Trident Juncture exercise, German forces moved far too slowly to be effective in a real crisis, and it is clear that augmenting rapid insertion of force with lift is a key requirement for Germany to play an effective role.

This is where the CH-53K as a next generation heavy lift helicopter fits very nicely into German defense needs and evolving concepts of operations. The CH-53K operates standard 463L pallets which means it can move quickly equipment and supply pallets from the German A400Ms or C-130Js to the CH-53K or vice versa.

This is not just a nice to have capability but has a significant impact in terms of time to combat support capability; and it is widely understood that time to the operational area against the kind of threat facing Germany and its allies is a crucial requirement.

With an integrated fleet of C-130Js, A400Ms and CH-53Ks, the task force would have the ability to deploy 100s of miles while aerial refueling the CH-53K from the C-130J.

Upon landing at an austere airfield, cargo on a 463L pallet from a A400M or C-130J can transload directly into a CH-53K on the same pallet providing for a quick turnaround and allowing the CH-53K to deliver the combat resupply, humanitarian assistance supplies or disaster relief material to smaller land zones dispersed across the operating area.

Similarly, after aerial refueling from a C-130J, the CH-53K using its single, dual and triple external cargo hook capability could transfer three independent external loads to three separate supported units in three separate landing zones in one single sortie without having to return to the airfield or logistical hub.

The external system can be rapidly reconfigured between dual point, single point loads, and triple hook configurations, to internal cargo carrying configuration, or troop lift configuration in order to best support the ground scheme of maneuver.

If the German Baltic brigade needs enhanced capability, it is not a time you want to discover that your lift fleet really cannot count on your heavy lift helicopter showing up as part of an integrated combat team, fully capable of range, speed, payload and integration with the digital force being built out by the German military.

It should be noted that the CH-53K is air refuelable; the Chinook is not. And the CH-53 K's air refuelable capability is built in for either day or night scenarios.

A 2019 exercise highlighted the challenge if using the Chinooks to move capability into the corridor. In the Green Dagger exercise held in Germany, the goal was to move a German brigade over a long distance to support an allied engagement. The Dutch Chinooks were used by the German Army to do the job. But it took them six waves of support to get the job done.

Obviously, this is simply too long to get the job done when dealing with an adversary who intends to use time to his advantage. In contrast, if the CH-53K was operating within the German Army, we are talking one or two insertion waves.

And the distributed approach which is inherent in dealing with peer competitors will require distributed basing and an ability to shape airfields in austere locations to provide for distributed strike and reduce the vulnerabilities of operating from a small number of known airbases.

Here the CH-53K becomes combat air's best friend. In setting up Forward Operating Bases (FOBs), the CH-53K can distribute fuel and ordnance and forward fueling and rearming points for the fighter aircraft operating from the FOBs.

Being a new generation helicopter it fits into the future, not the past of what the Bundeswehr has done in the Cold War. It is not a legacy Cold War relic, but a down payment on the transformation of the Bundeswehr itself into a more reactive, and rapid deployment force to the areas of interest which Germany needs to be engaged to protect its interests and contribute to the operational needs of their European allies.

From an operational standpoint, the K versus the E or the Chinook for that matter, offers new capabilities for the combat force. And from this perspective, the perspective of the two platforms can be looked at somewhat differently than from the perspective presented in the Thompson article.

Next generation air platforms encompass several changes as compared to the predecessors which are at least thirty years old or older, notably in terms of design. Next generation air platforms are designed from the ground up with the digital age as a key reality.

This means that such systems are focused on connectivity with other platforms, upgradeability built in through software enablement and anticipated code rewriting as operational experience is gained, cockpits built to work with new digital ISR and C2 systems onboard or integrateable within the cockpit of the platform, materials technology which leverages the composite revolution, and management systems designed to work with big data to provide for more rapid and cost effective upgradeability and maintainability.

Such is the case with the CH-53K compared to its legacy ancestor, the CH-53E or with the venerable legacy Chinook medium lift helicopter. Comparing the legacy with the next generation is really about comparing historically designed aircraft to 21st century designed and manufactured aircraft. As elegant as the automobiles of the 1950s clearly are, from a systems point of view, they pale in comparison to 2020s automobiles in terms of sustainability and effective performance parameters.

To take two considerations into account, the question of customization of the German and Israeli variants and the question of sustainability both need to be considered with next generation in mind.

With regard to customization and modernization, digital aircraft provide a totally different growth path than do a legacy aircraft like the CH-53E or the CH-47. Software modifications, and reconfigurations can provide for distinctive variants of aircrafts in a way that legacy systems would have to do with hardware mods. And with regard to security levels of information flows, software defined systems have significant advantages over legacy systems as well.

With regard to sustainability, NAVAIR and the USMC have taken unprecedented steps to deliver a sustainable aircraft at the outset. The logistics demo effort at New River has taken the new aircraft and worked through how to best ensure sustainability when the first squadron is deployed.

With the data generated by the CH-53K, the “smart” aircraft becomes a participant in providing inputs to a more effective situational awareness to the real performance of the aircraft in operational conditions, and that data then flows into the management system to provide a much more realistic understanding of parts performance. This then allows the maintenance technicians and managers to provide higher levels of performance and readiness than without the data flowing from the aircraft itself.

Put in other terms, the data which the aircraft generates makes the aircraft itself an “intellectual” participant in the sustainment eco system. This is certainly not the case with legacy aircraft which were not birthed in the digital software upgradeable world.

The next generation system which the CH-53K represents brings capabilities to the challenges which Germany faces in terms of getting force rapidly to the point of attack or defense required by the Bundeswehr. It is no longer about defending against breakthroughs in the Fulda Gap; it is about

moving force rapidly to make a difference in a time urgent combat setting on Germany's periphery and flanks.

As I wrote earlier:

For Germany, the K clearly would be part of how they might adjust flexibility to the strategic shift facing the liberal democracies in dealing with the Russians.

For example, Germany needs to rapidly reinforce their Baltic brigade or move forces forward to reinforce Poland in a crisis.

Compared to Chinook, the K goes further, faster and brings a significantly greater combat load to the fight rapidly.

And flying with the A400 M or the C-130J, the ability to carry standard pallets means a rapid movement of cargo from an airlifter to the K to move support within an area of interest.

And the K is changing as well the meaning of what a support helo really is.

It is in an information or C2 asset through the nature of the cockpit and how information can be managed within the cockpit or delivered to the combat soldiers onboard the aircraft.

This means that for Germany, the K is already FCAS enabled, or able to operate in a combat cloud in a way certainly neither the E nor the Chinook can do.

The FCAS enabled part is also crucial for Germany. The FCAS approach is forward leaning and ultimately rests on shaping the networks which enable an integratable force. It is not about simply building a replacement combat aircraft; it is about building out a system of networks which can able an integratable force to work effectively together. Simply buying legacy systems and leaving networked capabilities to show up in a future FCAS really misses the point; integratability has to be built in which it clearly is with the CH-53K.

It is a down payment on building out the kind of networked force Germany has committed itself too with its FCAS commitment. Put in other terms, platform choices should be considered as well from the vantage point of whether or not that platform choice advances the integratable force able to move rapidly to the point of attack or defense or not.

From this standpoint the choice is clear: The Chinook represents the Cold War past; the CH-53K the future of the integratable force.

With the shaping of a new force structure within the context of the current and projected security context for Germany, it makes sense that each new platform or program be made with regard to where Germany is headed in terms of its 21st century strategic situation, and not be limited by the thinking of the inner-German defense period.

Selecting an Airborne SIGINT Platform

After Germany retired its specially modified signals intelligence Atlantique maritime patrol aircraft, there was a clear gap in the capabilities of Germany to provide for either national or NATO capabilities in this area.

This was done in the immediate post-Cold War environment where the United States and NATO nations were increasingly focused on out of area operations, and reduced dramatically their capabilities to defend against direct military threats to NATO Europe.

Leaving a huge ISR gap with the retirement of its airborne manned SIGINT asset, the Germans focused on replacing this aircraft with an unmanned variant of the Global Hawk, with German designed and produced payloads, or the EuroHawk.

This program was a joint venture between Northrop Grumman, the prime contractor of Global Hawk, and Airbus Defence and Space, the producer of the payloads and of the ground mobile stations.

But in what one publication called “death by certification,” the Euro Hawk flew, and was performing on a technical level, but regulatory barriers killed the program in May 2013.

The program was killed precisely at the moment when the return of direct defense in Europe was about to be abundantly clear to everybody with a pulse.

With the seizure of Crimea, perceptions began to change.

In an interview I did with Brigadier General (ret.) Rainer Meyer zum Felde, he highlighted the impact of these events on Germany and NATO. Meyer zum Felde is currently a Senior Fellow at the Institute for Security Policy Kiel University (ISPK). From July 2013 to September 2017, he was the Senior Defence Advisor at the Permanent Delegation of Germany to NATO in Brussels and the German Representative in NATO’s Defence Policy and Planning Committee.

In 2013 it was increasingly clear that after a 20-year long set of missions at the lower or mid-level COIN and crisis management operations, NATO had lost core skills to provide NATO with the necessary set of forces and capability for high-intensity warfare.

“Although we still talked about the need for sustained collective defense from the mid-1990s on, we failed to underpin direct defense with usable capabilities, larger combat formations and a realistic defense planning process.

“Most European nations decreased their level of readiness, eliminated forces which they believed they no longer needed, notably heavy ones, and turned their forces the kind of expeditionary forces recommended and requested by the Americans and the Brits.

“We certainly followed suit in Germany.

“And the last two decades we no longer prioritized the forces for high-intensity warfare.

“Instead, we used the German armed forces formations since the mid-1990s as a pool for generating contingents for sustained crisis management operations abroad, while shrinking the entire posture to a much lower size and decreasing the defense budget from about 3% to 1.2% of GDP.”

But Russia today is not the Soviet Union. It poses a different military set of threats including hybrid warfare, gray zone activities, increased reliance on the threat to use limited nuclear strikes, and shaping a maneuver air-ground force backed by long range strike systems, notably land, air and sea-based missiles.

In this environment, gaining ISR dominance is a key part of ensuring that crisis management is effectively pursued, and in a very timely fashion.

It is clear from the interviews I have done in Europe, the United States and Australia, that the return of high-end warfare is occurring in the context of new approaches to ISR-enabled C2 for mobile engagement forces.

As one senior US Navy Admiral has put it: “The next war will be won or lost by the purple shirts. You need to take ISR enablement seriously, because the next fight is an ISR fight.”

Notably, the German MoD mutated the EuroHawk into the Pegasus program.

The objective of the Pegasus program has been to deliver situational awareness to allow Germany to tailor military and diplomatic responses during peacetime and crisis.

PEGASUS is unarmed and would provide the strategic component of Germany’s and NATO’s SIGINT capability roadmap

Based on a 2017 request, the US Government offered a Letter of Offer and Acceptance (LOA) in August 2018 for a foreign military sales procurement. After one extension, the current LOA expired in late 2019, requiring MOD to update the LOR for a restated offer in 2020 which they have not done to date.

Interestingly, one of the objections raised against the Triton derivative which Pegasus is, were many of the same arguments made against EuroHawk with regard to the challenge of unmanned systems flying in European airspace.

But now that the NATO AGS system is doing precisely that, one wonders how credible this argument is.

Even more troubling is the disconnect between the discussion of Pegasus in Germany and that of FCAS.

As I noted in an [earlier](#) article:

Germany is committed to the joint Future Combat Air System.

A key part of that plan is to work the connected force with sovereign payloads.

That would seem to highlight the importance of adding the high flying German enabled payload on their version of the Global Hawk, which is what the Pegasus program was working to do.

But apparently this is being abandoned by the German Ministry of Defence and the reason stated is even more troubling.

One of the reasons noted is the challenge of flying Pegasus in European air space.

If this is true, one would ask how the FCAS is going to be tested and trained in real air space as opposed to simulators?

And how then will the FCAS combat cloud work its connectivity magic in a world of civilian communications and the standup of the European 5G network?

The current plan in Germany is to abandon Pegasus and pursue a manned Air SIGINT mission with the Global 6000 where the prime contractor would be a sensor company with no prime contractor experience with regard to overall aircraft integration and certification of an integrated platform.

These solutions are radically different.

But how best to compare them in terms of what their acquisition would mean for the Bundeswehr and the evolution of its future capabilities?

Pegasus versus Global 6000 Special Mission Aircraft

6/20/2020

As I suggested in the lead article in this [series](#) on how to evaluate platform choices in the context of evolving needs and concepts of operations, too often, a simple platform versus platform presentation is made which confuses rather than clarifies what the tactical and strategic implications of that particular platform choice might be.

Germany is facing a number of such platform choices, and in the second article in the series, I addressed the face-off between the CH-53k and the Chinook and what this choice means for the evolution of the German armed forces.

I concluded in that article: *The FCAS enabled part is also crucial for Germany.*

The FCAS approach is forward leaning and ultimately rests on shaping the networks which enable an integratable force.

It is not about simply building a replacement combat aircraft; it is about building out a system of networks which can able an integratable force to work effectively together. Simply buying legacy systems and leaving networked capabilities to show up in a future FCAS really misses the point; integratability has to be built in which it clearly is with the CH-53K.

It is a down payment on building out the kind of networked force Germany has committed itself too with its FCAS commitment.

Put in other terms, platform choices should be considered as well from the vantage point of whether or not that platform choice advances the integratable force able to move rapidly to the point of attack or defense or not.

From this standpoint the choice is clear:

The Chinook represents the Cold War past; the CH-53K the future of the integratable force.

With the shaping of a new force structure within the context of the current and projected security context for Germany, it makes sense that each new platform or program be made with regard to where Germany is headed in terms of its 21st century strategic situation, and not be limited by the thinking of the inner-German defense period.

In the next part of the series, I will begin an assessment of a more difficult platform comparison to make because it really is a system versus a system built around a platform.

And I will do so in a series of articles which will examine different aspects how these two choices might be compared in terms of their contributions and implications to shaping Germany strategy and capabilities for Germany and the defense of its interests.

On the one hand, the Germany military has focused on the importance of developing and deploying a remotely piloted solution to provide for its national signals intelligence needs. After terminating the Euro Hawk program, Germany's Chief of Defense (CHOD), General Wieker, signed the Auswahlentscheidung (AWE) program on 6 Mar 17 for Triton as the "preferred solution" for Germany's Airborne SIGINT mission.

Three MQ-4D PEGASUS air vehicles were envisaged to provide capability across the full range of German military missions – including strategic SIGINT, Indications & Warning, peacetime surveillance, and crisis management for sovereign or NATO operations.

The prime contractor for this program is Northrop Grumman, which has delivered Triton to the US Navy and has worked with Airbus to deliver a German sovereign set of payloads for the Pegasus which stands for Persistent German Airborne Surveillance System.

The two companies worked together on a feasibility study which concluded that the Airbus ISIS 2.0 payload is fully compatible with Triton and was fully mission integration capable with the Triton air vehicle.

The objective of the Pegasus program is to deliver situational awareness to allow Germany to tailor military and diplomatic responses during peacetime and crisis. PEGASUS is unarmed and would provide the strategic component of Germany's and NATO's SIGINT capability roadmap

Based on a 2017 request, the US Government offered a Letter of Offer and Acceptance (LOA) in August 2018 for a foreign military sales procurement. After one extension, the current LOA expired in late 2019, requiring MOD to update the LOR for a restated offer in 2020 which they have not done to date.

On the other hand, Germany is pursuing a manned special mission aircraft solution as an alternative to Pegasus.

This approach would be based on buying a fleet of Bombardier Global 6000 aircraft operating as a mission systems aircraft. The focus of the mission systems would be upon signals intelligence purposes.

These are very different options with radically different implications for Germany's capabilities and their approach their direct defense and how they will operate in support of allies.

What little exists in the open literature has focused solely on platform costs as a differentiator, but without considering operations costs, coverage or implications for the FCAS rework underway for Germany's approach to force integration.

It is that comparison which I will now turn.

How to Compare Pegasus With Global 6000

With the US Navy's FMS Offer to Germany for Triton having expired without being extended, Germany is now pursuing a manned aircraft alternative for the SIGINT mission.

The approach would be to buy three Bombardier G6000 aircraft and equip them as special mission aircraft.

Germany already has Bombardier G6000s in its inventory, as VIP aircraft.

What little press there has been about this alternative suggests, that this will be a lower cost solution and able to make the NATO commitment by 2025 to provide for Germany's contribution to the SIGINT mission.

An article by Jhon Lake published on January 29, 2020 by *AINonline*, highlighted the argument for a new alternative:

It has been reported that the Triton plan had grown "significantly more expensive" compared to German planning assumptions, while there were growing concerns that full European Union Aviation Safety Agency (EASA) certification was going to be difficult to achieve within the required timescale.

Experience with the similar Global Hawks used by NATO's new Alliance Ground Surveillance fleet, stationed in Sigonella, Sicily, led the German Ministry of Defence to conclude that it was unlikely to be able to meet the safety standards required for flying in European airspace by 2025, and would be subject to onerous restrictions that required it to fly only in segregated airspace and dedicated corridors.

Bandwidth constraints—and the growing problem of GPS and datalink jamming and disruption—may also have influenced Berlin and prompted it to look again at a manned platform with onboard analysis capabilities. It may be no coincidence that no major air force has deployed a UAV platform in the strategic SIGINT role.

Production of the Global 6000 is drawing to a close, and Berlin will have to move quickly if it is to obtain the aircraft it requires. The Global 6000 already forms the basis of a dedicated Sigint platform

for the UAE Air Force (two aircraft having been converted by Marshall Aerospace in the UK), while Turkey is converting another four to Hava SOJ (stand-off jammer) configuration.

But how comparable are the two solution sets?

And are the projected cost savings realistic and is the ability to deliver a manned SIGINT capability by 2025 realistic?

The basic challenge posed by comparing the two systems is rather obvious – these are two very different system solutions, with very different capabilities, which can provide for very different approaches to concepts of operations.

I would like to compare the two platforms from the standpoint of delivering very different systems outcomes and providing very different contributions to concepts of operations.

The table below highlights a number of aspects which I think provide a way to do such a comparison.

I will address in a later article the question of networks, and enablement of German and allied forces able to leverage the data provided by the two very different solution set approaches.

| Solution Foci | Global 6000 | Pegasus |
|----------------------|--|--|
| Operating Con-Ops | Sortie Generation | Orbital Generation and Management |
| Area Coverage | German Territorial-Centric | Regional Dovetailed to Germany Territorial and Regional Defense |
| Data Exploitation | On Board | Off Board |
| Combat Focus | German Territory | Extended Defense of Germany and Support for Mobile Operations |
| Core Combat Partners | German-Centric | US Navy and NATO AGS |
| Systems Integrator | National Integrator with Unique German Solutions | Northrop Grumman and Airbus and Defence and Space with Northrop Working with the Global Hawk and Triton partners worldwide |

The first element of comparison involves the operational concept of operations.

The Global 6000 is a manned aircraft and will operate within a sortie generation cycle. This means that get continuous coverage in the combat radius area the Bundeswehr deems as necessary will require air crews and planes sufficient enough to keep it airborne continuously in times of crisis.

This will be a clear cost driver beyond the notion of simply buying three initial aircraft and crewing and sustaining those three aircraft.

Any realistic cost projection must take this dynamic into account.

The Pegasus which is a German variant of Triton operates very differently.

Triton's persistence at long range lends itself to a concept of operations which facilitates a continuous orbit at 3000km, a platform requirement the Bundeswehr set at the initiation of the program.

This year I have had a chance to discuss this orbital con-ops approach with Navy officials and operators.

The point is that operational experience is already being generated which the Bundeswehr are able to leverage.

As I argued in [an article on the Triton](#) and its contribution to shaping the kind of ISR which the U.S. and its allies require for the high-end fight:

“For full value to be derived from the Triton fleet, a kill web mentality will have to replace what has been a sortie generation mentality for the carrier fleet. It is about building in an orbit-enabled concept of operations, rather than thinking of the aircraft in sortie-generation concepts of operations.

“What this means is that for the Navy to get full value out of its Triton force... means embracing what a high altitude remotely piloted vehicle with a sensor package which can help build a common operational picture generated by orbits can provide for a kill web strike force, which may well operate within a sortie-generated concept of operations, which the orbiting high altitude asset will provide.

“With a four ship 24/7 coverage of the area where you will operate or wish to operate, the Triton can provide domain knowledge crucial to informing both the threat and opportunity calculus in an area of operations.

“And because the orbit is not about sorting into a specific area, one can sort through where the best advantages might lie for the projection of force without tipping your hand by having to fly to a specific tactical area.

“This is a work in progress, but it is a new capability which if fully embraced provides significant warfighting advantages to the United States and its allies.”

These differences in operating con-ops leads to the second and major difference between the platforms, namely, their area coverage.

Triton’s onboard capabilities, range, altitude and efficient operating cycles will provide significant regional coverage and early warning for German forces of enemy threats and intent in real time.

These vast improvements in situational awareness will allow German armed forces and political leaders to tailor military and diplomatic responses during peacetime and crisis, improve Bundeswehr survivability, while providing critical ISR data to NATO partners.

With limited operational combat assets, it is crucial to be able to ensure, that your force goes to the right place, at the right time, and to deliver the desired combat effect.

Reducing area coverage is hardly a smart move strategically, tactically, or financially.

But that is precisely what a shift from Pegasus to a manned platform would do.

The third difference is with regard to data exploitation.

The Global 6000 is built around data exploitation and operators onboard.

Not only does this put Bundeswehr soldiers in harm's way, the size of the aircraft is a problem in terms of limiting the number of stations onboard to do data exploitation.

Likewise, the ability to off-board time sensitive ISR data to decision makers and users on the ground is limited in a G6000 Concept of Operations.

In comparison, Triton's satellite communication architecture allows off-boarding of Pegasus information from anywhere in the world to various ground sites in near real time, facilitating more rapid exploitation and dissemination of data than a manned solution.

And with the advances in big data management and exploitation, the computational power and AI enablement coming to the ground operators will allow for rapid change in how data can be exploited and delivered.

[This includes data fusion with other sovereign and NATO ISR assets including Euro-Drone, NATO AGS, and FCAS to develop a richer and more accurate picture of the battlespace.](#)

The recent airworthiness criticisms have always been puzzling because the Chief of Defense approved the Auswahlentscheidung (AWE) for Triton in 2017 based on significant coordination, mutual recognition and Luftfahrtamt der Bundeswehr approval of the USN airworthiness process.

Likewise, Triton flies at altitudes well above manned traffic and includes some of the most capable U.S. technology and safety features for integrating UAS with manned aircraft.

The German PEGASUS variant was planned to have additional capability to meet the European Airspace requirements.

[The fourth comparison is the question of where combat will occur and how best to support it.](#)

If this were the Cold War, a manned solution to SIGINT would make sense as it would be about reinforcing the German defensive bulwark.

That bulwark is gone, and the immediate combat threats and requirements will occur in Germany's neighborhood.

[The challenge will be to take the limited German military assets and move them to the point of maximum effect as rapidly as possible.](#)

Regional coverage is the priority, tailorable to the national force and territorial defense.

[The fifth aspect really revolves around the kind of combat learning crucial to be effective.](#)

With a unique German solution, the challenge will be to integrate into NATO forces.

With the Pegasus solution, interoperability is assured given the impact already of Triton on the US Navy and the impact of the AGS remotely piloted aircraft on NATO as well.

With a common system, PEGASUS can realize regional basing, training and logistics synergies with NATO AGS, USAF Global Hawk, and USN Triton at Sigonella, IT and other regional deployed sites.

The AGS Mobile General Ground Station (MGGS) built by Airbus is the core component for data dissemination with NATO and Partner Nations.

For the PEGASUS ISIS Mission System, Airbus evaluated elements of the MGGS system that would be utilized for the ISIS Ground Station, resulting in improved interoperability with AGS.

The sixth flows from the fifth.

The Global 6000 solution will be led by Hensoldt, a company which has never previously performed complex aircraft integration work, and a company that is expected to be up for sale in the near future, as its KKR investors seek to recoup its investment.

This means that with little doubt that program and technical risks will increase Global 6000 program costs with the promise of significant cost saving compared to the Pegasus solution very problematic at best.

With a direct commercial contract to Hensoldt, there is no certainty that the final development costs of the G6000 will provide any cost savings, compared to the PEGASUS cost estimates.

As a comparison, the recently announced acquisition of 3 Triton Aircraft, 2 Main Operating Bases (MOB), and one Forward Operating Base (FOB) by Australia, was reportedly contracted at \$333M, whereas the German Parliamentary approval for 3 unmodified G6000 aircraft is estimated at \$890M.

This G6000 cost does not include the Mission System and Integrations costs.

This brings into question, if the German MoD accurately portrayed the cost differences of these 2 systems.

And as mentioned above with regard to area coverage, there is really no comparison to what Pegasus can deliver and what Global 6000 will deliver.

This means that SIGINT mission requirements must be reduced to what the Global 6000 platform can perform, rather than focusing on the real combat situation facing the Bundeswehr today.

There is a reason the US Navy has selected Triton as the mainstay of its future SIGINT capability, equipping the entire fleet to replace the manned EP-3 in the 2020's.

In short, these are two radically different solution sets.

Pegasus aligns with the evolving strategic environment and the innovative approaches being taken by the U.S. and its allies with regard to force modernization; Global 6000 does not.

NATO and AGS: Its Impact on the German Airborne SIGINT Decision

The remotely piloted solution (Pegasus) versus a manned aircraft solution (Global 6000) for airborne SIGINT should take into account the coming of AGS to NATO.

The NATO Air Ground Surveillance approach is built around a remotely piloted solution which dovetails nicely with such a solution for airborne SIGINT.

With the coming of the Global Hawk-based NATO AGS aircraft to NATO, the teaming of manned and unmanned systems to deliver interoperable data will be driven by working collaboration between NATO's E-3A and AGS aircraft.

As Major Jay B. Vizcarra noted in a [2017 article](#) published by **The Joint Air Power Competence Centre** (JAPCC) the collaboration between the manned and unmanned assets delivering core information with regard to the air C2/ISR integration effort requires the further development of networks to manage fully the result of operating such a synergistic manned/unmanned teaming effort.

When combining manned and unmanned capabilities to produce C2ISR combined effects in multiple environments, NATO E-3A and AGS integration possesses the potential to provide the Alliance with an initial vector towards MDC2 operations.

However, to expand on MDC2 capabilities and secure an asymmetric strategic advantage into the 21st century, NATO must gear towards a new enterprise 'system of systems' approach, tap into 'combat clouds', and leverage the competitive advantages afforded from Joint ISR fusing and rapid information sharing.

Additionally, technocratic 'stove-pipes' of proprietary intelligence data must be freed to induce fusion warfare and allow C2 and strike assets to hastily complete the F2T2EA 'kill-chain'. As General (retired) Herbert J. Carlisle¹⁹ stresses, 'if you don't have the ability to do something with it [the intelligence data], then you're missing half the equation'.

Subsequently, smarter network architectures with automatic processes will ensure cyber domain integrity and the fluid transfer of crucial information to the right person, in the right place, at the right time.

While NATO E-3A and AGS may have provided a small glimpse towards a multi-domain operational concept, it is up to the Alliance to ensure a new foundation is set to adopt and nurture an MDC2 capability.

The arrival of the AGS solution set with the fourth aircraft delivered to NATO this past July, sets in motion infrastructure to manage what a remotely piloted aircraft can do.

It also sets in motion a path ahead for shaping the infrastructure and the combat learning curve to manage the how data flowing from AGS into NATO and individual national networks.

For several years, the USAF has operated U.S. Global Hawks from Sigonella Airbase with no major problems within Europe.

That experience laid the foundation for high confidence that AGS could do the same.

That is why it is puzzling that another HALE system, this time Triton/Pegasus would somehow be more of a problem.

In any case, Germany, as the second largest stakeholder in the AGS program, certainly will gain significant operational experience, and will have a large pool of trained personal, with regard to operating a HALE system similar to that of Pegasus.

Indeed, the industry team which worked the airworthiness side of AGS has built up significant data and working experience with the European authorities who have authorized the use of AGS in European air space.

Again, this is a significant down payment on shaping the way ahead for HALE remotely piloted air systems in Europe.

AGS will provide information through various networks, and be exploited on core bases and mobile ground stations to deliver actionable information on a timely basis to the alliance and to its member states.

Obviously, the commitment of different nations will vary in terms of their investments in exploitation capability and this will be translated into how effectively different national militaries will be able to exploit the information generated from the AGS system.

The AGS is a system, not simply a HALE aircraft.

NATO has described the AGS system as follows:

Just as NATO Airborne Early Warning & Control (NAEW&C) aircraft – also known as AWACS or “NATO’s eyes in the sky” – monitor Alliance airspace, AGS will be able to observe what is happening on the earth’s surface, providing situational awareness before, during and, if needed, after NATO operations.

The AGS core will be an integrated system consisting of an air segment, a ground segment and a support segment.

The air segment consists of five NATO RQ-4D aircraft and remotely piloted aircraft (RPA) flight control elements. The aircraft will be equipped with a state-of-the-art, multi-platform radar technology insertion programme (MP-RTIP) ground surveillance radar sensor, as well as an extensive suite of line-of-sight and beyond-line-of-sight, long-range, wideband data links.

The ground segment consists of a number of ground stations in mobile and transportable configurations, able to provide data-link connectivity, data-processing, exploitation capabilities and interfaces for interoperability.

The ground segment will provide an interface between the AGS core system and a wide range of command, control, intelligence, surveillance and reconnaissance (C2ISR) systems. It will interconnect with multiple deployed and non-deployed operational users, as well as with reach-back facilities away from the surveillance area.

The AGS core support segment will include dedicated mission support facilities at the AGS Main Operating Base in Sigonella.

Interoperable contributions in kind, such as national surveillance systems and data/communications, will also be made available to NATO and will complement AGS with additional surveillance capabilities.

The composition of the AGS core system and national contributions in kind will provide NATO with considerable flexibility in employing its ground surveillance capabilities.

This will be supplemented by additional interoperable national airborne surveillance systems from NATO member countries, tailored to the needs of a specific operation or mission conducted by the Alliance.

A key part of the AGS system clearly is the ground segment and the ability to process information and communicate that information to the forces and the decision-makers.

The ground segment system will be shaped to provide for inputs to national decision-making systems, while working the ISR-C2 dyad to shape ways to come up with more effective technologies, policies and procedures to deliver better and more timely information to national and collective decision making.

This AGS ground system clearly could be a foundation from which the Pegasus HALE system could work was well.

In other words, rather than looking at Pegasus ground system investments as program-specific, they are not; they would be part of a broader exploitation and data delivery system to the German armed forces, and would almost certainly flow through similar or the same data pipes to the German decision making community.

A key factor is that both the AGS and PEGASUS ground systems are or would be provided by Airbus Defence and Space.

When considering whether one would prefer a manned to a remotely piloted one for AGS, the ultimate decision was for a remotely piloted one.

I was a consultant to the USAF in the period of time when the manned option was rejected in favor of the remotely piloted one and remember very well Secretary Wynne's thinking with regard to why it was crucial to go ahead with the remotely piloted solution set.

With the coming of the F-35 and the already evident impact of the F-22 on the USAF, it was clear to Wynne that the role of specialized manned aircraft in the ISR and C2 role was going to diminish significantly.

The ability of the remotely piloted aircraft to have much greater endurance, an ability to operate at heights that provide for significant area converge, and the innovations in wave forms, would mean that the role of RPAs in the ISR world would rapidly grow.

And that solution has arrived for NATO in the form of its new AGS aircraft and system.

Its impact on the Pegasus/Global 6000 trade off seems obvious – why turn your back on the future?

Notably, why would you do so, when you have already joined the future in another program area related to the one where you are mimicking the past.

FCAS, Networks and Platform Choices: Implications for Airborne SIGINT

The Germans had a clear opportunity to acquire F-35s as their Tornado replacement aircraft and chose not to do so.

Unlike other Tornado users, namely, Britain and Italy, the F-35 was put aside in favor of a new Eurofighter replacement option known as the Future Combat Air System.

This created a gap on the nuclear mission side of the ledger, because Tornado is the aircraft currently configured to execute Germany's nuclear mission.

I will deal with that platform replacement option in the next article in this series.

Virtually all of the press has focused on the new combat aircraft to replace the French Rafale, and the German Eurofighter.

The Merkel government has gone out of its way to emphasize the importance of this program and solidarity with France in pursuing the program.

Whatever this new combat aircraft will be when it flies later in the decade, the approach signed on to by the German government is much more ambitious than that of a new combat aircraft: it is about building the networked force, while the United States and a number of allies are now pursuing a kill web enabled integrated distributed force.

Airbus Defence and Space has a major role in the Future Combat Air System or FCAS, precisely revolving around working the integrated, networked air combat force and the ability to work manned and unmanned aircraft in coordinated operations.

For example, in an interview which I did during the International Fighter Conference held in Berlin in November 2019 with [Bruno Fichetfeux](#), Head of FCAS for Airbus Defence and Space:

“He argued that there were two ways in which Airbus Defence and Space was addressing the opportunities within and eternal to the FCAS program.

"First, for each of its key platforms such as tanker and A400M, they were shaping road maps for the development of the platforms which highlighted ways to enhance their capabilities within an integrated and connected battlespace.

"Second, they are shaping technology streams which are designed to deal with the different challenges within manned-unmanned teaming."

This is an interesting approach, but the networks will not be built de novo.

They will leverage current and evolving networks, plus building new wave forms.

Certainly platforms, wave forms and networks are not the same thing, so that any build out of force capabilities by the FCAS partners will have to work with the platforms they have, or they will buy, or they will develop.

And because the kill web networks being built are platform agnostic, the focus of FCAS surely cannot be to exclude non-French or non-German platforms that they might buy, or the need to deal with the platforms entering or operating in Europe, which are not simply built by the French and the Germans.

With the launch of the first phase of FCAS, the German and French governments indicated that Airbus will work with Thales on shaping a combat cloud capability for the FCAS system, but funded at a very restricted level.

As Pierre Tran noted in an article published earlier this year:

Thales welcomed the French and German launch of a technology demonstrator for a Future Combat Air System, with the electronics company winning a key role, Patrice Caine, chairman and chief executive, said Feb. 26, 2020.

Thales will partner with prime contractor Airbus on work on the "combat cloud," one of the five key work areas on FCAS, he told a news conference on 2019 financial results.

Launch of the demonstrator program was "great news for Europe," he said.

"This is a great agreement... with a significant role" for Thales.

The combat cloud is intended to provide an extensive network of communications and command to link up a next generation fighter, remote carrier drones, and other elements in the combat air system.

An initial budget of €14.5 million (\$16 million) has been set for work on that combat cloud, news agency AFP reported, specialist publication Journal de l'Aviation said Feb. 20.

Some €91 million has been earmarked for initial work on the new fighter jet, led by Dassault Aviation as prime contractor and Airbus as partner.

Studies for a new fighter engine, led by prime contractor Safran and its partner MTU, will receive an initial €18 million.

Prime contractor Airbus and partner MBDA will receive an initial €19.5 million for work on remote carriers, which are intended to penetrate enemy air defense in the first wave and support manned fighter jets.

Some €6 million is earmarked for overall management and simulation. Funding of €4 billion to 2025 is expected, with a total of €8 billion by 2030, AFP reported.

As I noted in an article on the key question of how the FCAS combat cloud will fit into a world of a fifth generation enabled combat force, and the spread of 5G technologies, I underscored: “while all the analyses of the FCAS approach have focused on its launch or its feasibility in terms of the capability of France and Germany to actual build such a program, there is another key aspect: how will the FCAS combat cloud come to terms with the two 5s – fifth generation in the defense domain and 5G in the commercial domain.”

To an outside observer, this should mean that Airbus Defence and Space is keen to work manned-unmanned teaming, data integration, mission integration, and “combat cloud networking.”

This is exactly what the German sovereign SIGINT system ISIS built by Airbus to fly on the PEGASUS represents.

On PEGASUS, the Bundeswehr has invested significant funding under the SLWÜA program to mature Airbus Defence and Space unique SIGINT payload.

Specifically, Airbus has developed the ISIS-Airborne SIGINT Mission system along with it’s subcontractor Hensoldt; the ISIS-Ground C2 System and would provide support to the program in terms of modernization, training systems, flight line support equipment and engage in the combat learning process associated airborne remotely piloted software upgrades.

Airbus designed the ISIS system to integrate uniquely on a HALE platform such as Global Hawk or Triton.

The NATO SATURN wave form would be used to work the EW links from aircraft to the ISIS-G where mission payload operators would configure the EW Network with all EW C2 occurring in ISIS

In other words, rather than waiting for a decade from now, Airbus could have an operational system for the German government onboard an operating HALE system.

With the additional advantage of co-learning with the US Navy, Triton will be the US Navy’s mainstay SIGINT asset replacing the EP-3 and will be operated at Sigonella where AGS currently operates from.

Cross-learning is clearly available, and this cross learning is crucial as Triton is shifting the Navy from a sortie generation ops mentality to a global orbital con-ops approach.

This clearly is a learning process for operators, network operations and data management with deliver to the right place at the right time to make the best decision.

If FCAS is to be more than briefing slides, combat learning in the near term needs to drive the networked enabled force. Operating PEGASUS with an Airbus payload provides precisely that.

When the decision on AGS was first modified, the concept was that there would be a variant of Global Hawk and a manned variant built around an A-321. The reasons for not building a manned variant of AGS still hold today; the remotely piloted option is a better one in terms of area wide surveillance, data generation and transmission to ground, air or surface platforms or data centers or ISR exploitation sites for rapid decision making.

Since the German government has committed itself to FCAS and manned-unmanned teaming in a cloud-based system is seen as part of that effort, the future is now in terms of down-selecting a cloud-based remotely piloted aircraft able to team with manned systems.

Choosing the Global 6000 provides less persistent coverage, and less radius of operations and reduced data collection.

It also is not moving you down the FCAS path.

Selecting the Tornado Replacement and the Nuclear Mission

Nuclear deterrence is back on the agenda for NATO and the United States.

The buildup of the Russian missile arsenal, short, medium and long range, with clear violations of INF limitations are designed less to create a so-called anti-access and area denial capability than an arsenal designed to make the recovery of classic conventional deterrence seem beyond reach in Europe.

The anti-access and area denial bit is really about defending the Kola Peninsula, the largest concentration of military force in the world as well as the always-vulnerable “European” Russian area.

But with the gaping holes in European defense capabilities and the with the United States working to repair the focus on the land wars, there clearly is a major gap in a credible continental conventional deterrent force.

In this sense, the ability to combine hybrid warfare means, significant offensive strike missiles, and an ability to blend in low-yield nuclear weapons in the mix are designed to give the Russians flexibility in coercing European states.

With such an approach, how can European states, European NATO and the United States enhance a credible warfighting approach, which can deter the Russians?

I looked at ways the United States might approach answering this question in an article which I published last year. There I dealt with a range of options facing the United States in terms of reinforcing nuclear deterrence within Europe against the Russian nuclear and missile modernization efforts.

But it is not just about the United States; but it is also about the European nuclear powers, Britain and France, and we have dealt with those dynamics of change in our forthcoming book, *The Return of Direct Defense in Europe*.

For a number of European states, they have participated for some time in a NATO nuclear sharing effort, in which those states arm combat aircraft with a nuclear weapon provided by the United States and have available a core capability which can be used in sync with NATO concepts of operations.

The current NATO nuclear sharing policy is built around a policy whereby the United State forward deploys a small number of nuclear warheads which could be operated by non-American NATO assets in time of war. These non-strategic weapons would be deployed by dual capable aircraft (DCA) maintained by certain NATO allies, including Germany.

DCA aircraft are specially configured for a nuclear mission including special radiation “hardening,” to make their electronics more resistant to the electromagnetic pulse and other radiant energies associated with a nuclear explosion. Also involved, is special training for DCA pilots for the nuclear mission as well.

Germany faces a twin transition challenge with the coming retirement of its Tornado aircraft. On the one hand, there is the platform itself; on the other hand, there is the nuclear mission which that aircraft currently delivers for Germany.

Of course, Germany could simply walk out of the nuclear sharing NATO effort, and replace Tornado not as a DCA but with a single conventional only platform.

But as Rafael Oss noted in an article published by the European Council on Foreign Relations on April 30, 2020:

Without dual-capable aircraft in its arsenal Germany could still contribute to the alliance’s SNOWCAT (Support of Nuclear Operations With Conventional Air Tactics) programme by having its non-nuclear Eurofighters escort allied dual-capable aircraft. It could also continue to participate in the high-level Nuclear Planning Group and related forums in which all NATO members apart from France confer on issues associated with nuclear forces.

But its influence on nuclear matters within the alliance, including arms control and disarmament, would diminish considerably.

The “détente” portion of NATO’s basic policy of combining deterrence and détente – traditionally of great interest to Germany’s political left – would lose an important champion.

The loss of Germany’s influence might even extend beyond the nuclear realm: the US, France, and the United Kingdom would be unlikely to continue consulting with Germany in the informal Quad group if it is unwilling to share either the financial or the nuclear burdens of collective defence and deterrence.

Germany abandoning its dual-capable aircraft could even mark the beginning of the end for nuclear burden sharing in NATO.

Public opinion in the three other countries that contribute dual-capable aircraft to the nuclear mission – Italy, Belgium, and the Netherlands – is even less enthusiastic about nuclear deterrence than it is in Germany.

If Germany were to quit, such allies may eventually follow suit. In turn, other NATO members with more favourable views of nuclear deterrence, like Poland or Romania, might seek bilateral agreements with the US to satisfy their security needs.

Either way, the alliance's deterrence and defence posture would become even more beholden to Washington.

Finally, failure to replace the Tornado could affect the future of arms in Europe. Cold war arms control was not driven solely by moral concerns, but also by practical considerations centring around particular weapons. As the international arms control architecture crumbles, Europeans rightly lament the ending of the Intermediate-Range Nuclear Forces Treaty and the less-than-certain future of the New Strategic Arms Reduction Treaty.

But moralistic arguments alone will hardly entice Russia to the negotiation table. Without forward-deployed US nuclear gravity bombs and European dual-capable aircraft to carry them to their targets, NATO would have much less to offer in exchange for Russia's estimated 2,000 tactical nuclear weapons.

But what then are the options to replace Tornado DCA with another aircraft?

The first and most obvious choice is the F-35.

This is the aircraft which the United States and a number of European allies who participate in the nuclear sharing mission will use moving forward in the decade.

In an article which I wrote in 2017, I laid out the way ahead with regard to the F-35 and nuclear deterrence.

There is much to be said for such an option for Germany, and two former Luftwaffe air chiefs provided a hard-hitting case for acquiring the F-35 in part for this mission set.

But Germany chose for defense industrial base reasons to not go down this path.

Its decision was to pursue the Future Combat Air System program with France which is designed to replace Eurofighter and Rafale by 2040.

This means that either one simply does not replace Tornado, or argues that Eurofighter can subsume Tornado functions and you simply build more of them.

Project Centurion for the RAF does subsume some of the weapons load outs on the Tornado for the modernized Eurofighter. And clearly, Germany can leverage the fruits of Project Centurion.

But the RAF is buying F-35 and not only that is a major stakeholder in the program, and working F-35s with Eurofighters as an air combat dyad.

The second option would be to develop a DCA Eurofighter.

For Germany, if they would remain a nuclear player, they would face the challenge of achieving nuclear certification of the Eurofighter in the United States. This would entail as well significant training for the DCA mission, also to be conducted in the United States.

Airbus made the case that the Eurofighter could be certified by 2025 which would meet the projected deadline for retirement of Tornado.

This was almost certainly an optimistic projection, but there remains a number of questions about the weapon to be carried at what altitude and what mission profile. The altitudes at which Tornados fly a nuclear mission versus the altitude at which Eurofighter would do so are so different the question would not just be one of certification, but of effective combat operations as well.

A third option, which purportedly the one taken, will be to buy Super Hornets for the nuclear mission and Growlers for the EW mission.

Recently, the defense press has asserted that the German government has approved a mixed buy of Boeing F/A-18E/F Super Hornets, EA-18G Growler electronic attack aircraft, and Eurofighter EF-2000 fighters for the Luftwaffe to replace its remaining fleet of 90 Panavia Tornados.

Even though the defense press has announced this, the German government has not. Even more to the point, Germany will see an election, a new Bundestag, a new Defence Committee within the Bundestag, and the ever-challenging budget process to sort through all of this.

Nevertheless, the prospect is an intriguing one and raises a number of key questions.

How will the German government play out its nuclear policy in the years ahead?

How will its new nuclear capable aircraft dovetail with those other members of the nuclear club in Europe who will be flying F-35s?

France is not part of the integrated nuclear club within NATO, but how will the German engagement mesh with any evolving French nuclear policy?

The Growler buy is interesting on many levels.

At the International Fighter Conference 2019, a senior Luftwaffe officer made it very clear that the EW mission was a central one for his Air Force.

At the same conference, Eurofighter made a splashy announcement of their EW build out of their aircraft. Obviously, the Luftwaffe preferred a flying aircraft to a briefing chart version of the Eurofighter.

What made the Luftwaffe go down the Growler route?

Then there is the question of partners.

The only force which flies the Super Hornet and the Growler other than the US Navy is the RAAF.

Might new partnerships emerge from the Luftwaffe operating the Growler, up to and included working on Australian training ranges?

The Eurofighter modernization is also interesting.

Much of the technology envisaged in the “new” version of the Eurofighter already exists on the RAF’s aircraft.

Does this presage a closer working relationship between the Luftwaffe and the RAF in shaping the evolving Eurofighter fleet, up to and including participation in Tempest?

And Germany and project Tempest is interesting to think about, for the project is more about leveraging 4th/5th generation aircraft and shaping the way to 6th generation than building a new fighter.

And with SAAB’s as well as the Italian’s participation in the project, this looks more like a renovated Eurofighter coalition than anything else.

And then what are the implications then for FCAS?

At a minimum, the Germans would expand their options and enhance their position vis a vis the French in shaping a way ahead for 21st century air combat.

Other questions are posed by one user of the Super Hornet, namely, the RAAF.

Former Chief of Air Force, Air Marshal Brown has highlighted that the shift from the Hornet to the Super Hornet was a significant one as the RAAF was faced with the challenge of handling securely a data rich aircraft.

Working through those security and data managing aspects of the aircraft could provide a useful learning curve for the Luftwaffe going forward.

And Brown provided another interesting aspect of where the learning curve might help the Luftwaffe as well.

“With regard to the Growler, it is not about flying with the F-35 as far as the Growler is concerned, for the F-35 clearly does not need it; but the Growler can be and will be used in many other situations. Also a two-seat aircraft has the advantage of being able to evolve it’s roles to take far more advantage of second seat.

“We do not need pricey UAVs, which look like manned aircraft; we need cheap expendable assets. And the Super Hornet as a two-seat aircraft can evolve into a good asset to launch and control such assets, or to command assets launched by other aircraft as well.”

The projected dual buy of Super Hornets and Growlers could have impacts on other German procurement decisions, notably, the Pegasus versus Global 6000 options. Northrop Grumman is the prime contractor for Pegasus, and also the key provider for the EW systems onboard the Growler. Presumably, there would be synergy between Growler and Pegasus which could be leveraged.

And historically, Luftwaffe EW operators have trained with the US Navy at NAWDC. In my recent interview with CDR Brett Stevenson, the Commander of HAVOC, we discussed the potential German acquisition of the Growler as well. I would like to say, the CDR reminded me, but if you do not know a fact, you can be reminded of it, that the Germans are long standing partners with the US Navy as well in EW.

The CDR noted that there is a long-standing exchange officer program with the Luftwaffe at VAQ-129, the Growler training squadron. This means that UK and German legacy EW training via Tornado plus the Australians would add up to an EW coalition being trained in the evolving and developing 21st century approach to EW.

Given that both Triton, and Growler are key stakeholders in the way ahead for fleet ISR and tron warfare, German operators of Pegasus and Growler could almost certainly be part of the US Navy reworking its EW/ISR/CR concepts of operations.

In the increasingly focused effort on integratability, no platform fights alone.

This why ANY platform decision must be considered from its impact on the evolving capabilities for the future fight; and not just on a stove-piped short-term solution.