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**The Return of Direct
Defense In Europe: The
Challenges for Germany**



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Berlin, Germany and the International Fighter Conference 2018: A Look Back

11/22/2018

By Robbin Laird

I spent a good deal of the 1980s traveling within and dealing with German security issues.

A key challenge in the early part of the decade was the Euromissile challenge and working common positions among European partners and with the United States to deal with Soviet intrusions and policies towards Western Europe.

I lectured on these issues and wrote several books on the subject as well.

It was a tough political environment, for President Reagan certainly was winning no popularity contests in Western Europe at the time.

At the Fighter Conference, we heard that we unexpectedly won the Cold War and were unprepared for the consequences.

I get the point but in 1985 I formed a working group at the Institute for Defense Analysis with both government and non-governmental experts to look at the prospects and possibilities for German unification and how we might deal with the Soviets to achieve this outcome.

Several future members of the Clinton Administration were in that group and we discussed quite often what role might a unified Germany play in Europe and would it act like a “normal” state after unification.

Several of us cautioned the more optimistic members that dealing with East Germany would take time for West Germany to pay for and culturally integrate.

Others were more optimistic and expected the pace of change to be rapid and the emergence of the new Germany to be a significant player in the rebuild of Europe more generally.

When the moment came, we could provide inputs to the process and again I wrote several pieces, including a couple of books on the subject as well.

So when I returned to Berlin for the international fighter conference this month, naturally thoughts of the 1980s and then the 1990s came flooding back into my mind, notably as I was not too far from Checkpoint Charlie, which is a museum for the current generation, but a fact of life for mine.

What then ensued in the 1990s would set the stage for where we are now.

Germany along with most European states in the wake of the collapse of the Wall and the emergence of collapsed Soviet Union, celebrated their good luck with a defense holiday.

And with this defense holiday, direct defense became a museum piece along with Checkpoint Charlie.

After the Crimean takeover by the Russians in 2014, the beginning of a new phase was emerging, one where direct defense had to now be considered as a realistic challenge for Europe, NATO and the United States.

But the Cold War required one type of political-military structure but now is required a quite different one.

How to build a relevant direct defense structure for Europe is not consensual and some states are more advanced in dealing with the challenges than others.

Notably, Northern Europe is accelerating their concern with direct defense.

This leaves a fundamental question with regard to Germany.

What is the direct defense strategy of Germany today?

Notably with European disaggregation and conflict with the US President, how is German to shape a realistic and resourced defense strategy?

What is the relationship of Germany to Poland in central front defense?

What is the relationship of Germany to the newly refocused Nordics on Northern European defense?

What kind of force structure does Germany need to build as a non-nuclear power facing a resurgent Russia, and one that clearly emphasizes the central role of nuclear weapons?

At the International Fighter Conference 2018, a representative from the German Ministry of Defence provided a perspective on how Germany is resetting its defense posture.

He argued that the current security environment was increasingly complex, increasingly volatile, increasingly dynamic and increasingly difficult to predict.

All of this is true, but how will Germany defend itself against resurgent Russia?

He noted that the last 25 years have seen a steady downward trend in defense resources and personnel.

He underscored that the German government is now focused on reversing three trends.

First, they are reversing the personnel trend with growth in the number of personal and abolishing the upper limits constraint.

Second, they are reversing the decline of investment in materiel, with a new procurement push. He noted that maintenance funds have been boosted from 2.6 billion Euros in 2013 to 3.2 billion Euros in 2017.

Third, he noted a reversal of the funding trend.

But although there is an increased defense budget, there is no real increase in the defense spending as a share of GDP.

It is anticipated that such growth will occur so that there would be a 29% increase from 2013 to 2021 by about 10 billion euros.

He argued that the strategic direction was to “become more European, but to stay transatlantic.”

In the brief, there was an emphasis on the various out of area missions in which Germany has participated under UN approval.

Clearly, a major trend has been to take the residual force, which was the result of the drawdown through 2013, and make it more capable of operating in areas of counter-insurgency operations.

But with the return of direct defense, nuclear deterrence and how Germany can contribute more effectively to Central European, Northern European and Southern Europe defense has returned as a key question.

And this will require a strategy which can guide where resources can transform the Bundeswehr into a force much more capable of contributing to the direct defense of Europe.

It is not about leading the various committees within NATO and the European Union on how to think about the future in abstract terms.

It is about building relevant force structure with some sense of urgency.

This is the challenge facing Germany and as it does so, it can then build out future capabilities, which can leverage the transformation of its forces in the short to mid-term.

The International Fighter Conference 2018 was held from November 12-14 2018 and was organized by IQPC Germany.

The Return of Direct European Defense: The German Challenge

02/06/2019

By Robbin Laird

For the last three years, I have travelled extensively in Northern Europe to discuss the Russian challenge and the return of direct defense.

During a visit to Germany in February 2019, I visited Germany to discuss with German experts and retired senior German military, their assessments of the challenge to Germany and the way ahead to deal with direct defense of Germany and its contribution to deterrence.

My visit started with a discussion with Dr. Andrew Dennison, the Director of Transatlantic Network, which is a think tank with focus on political education and consultancy.

Dr. Dennison attended Johns Hopkins's School of Advanced International Studies when I taught there and it was great to bridge from the past when West Germany had a solid military capability to defend itself and support its allies to the current period where the hollowing out of German defense is becoming reversed.

According to Dennison: "Germany is a very rich country that benefits from the peace and prosperity in Europe more than any other country, and it needs to spend about twice as much as it does on the three D's : Defense development, and diplomacy.

"Many people discuss the 2% goal for defense as a percentage of GDP is discussed. Wolfgang Ischinger, head of the Munich Security Conference suggests spending 3 % of GDP on defense, diplomacy and development—so as to not appear overly militaristic.

"Unfortunately, Germany is still under 2 % on this broader index of international engagement."

"The Germans spend 600 dollars per capita on defense and the Americans spend about \$2700 per capita.

"The Germans spend 13 dollars per capita on intelligence (BND), the Americans spend about a 180 per capita on the intelligence community (DNI).

"In the information age it would say that's a crazy under investment.

"Only on diplomacy and development do the Germans outspend the Americans, with the Germans at about \$213 per capita, and the Americans at \$186"

"And it is not just about defense, it is about the 3Ds.

"For example, Germany should spend twice as much on its foreign ministry to focus on tasks like helping Ukraine fight corruption, to deal with the Balkans and to deal with Syria and the refugees.

"There needs to be a comprehensive and strategic effort by the Germans to deal with the new threats."

"Germany's challenge is to recognize that history and geography have not disappeared as key factors shaping Germany's prosperity and security; and that Germany needs to focus upon re-energizing the European project.

"If Germany became a nation isolated in a disaggregating Europe, Germany itself might disintegrate as a political force."

He underscored that resetting the German effort was a strategic challenge, which required culture change.

It was about getting real about the evolving situation and that the more comfortable world of the 1990s is gone.

“The hardest thing is how to create a willingness among Germans to sacrifice for the broader German or European good. Germany needs to create a strategic culture that sees the world as what it is rather than as it was or what we (I am almost German) think it was.”

We discussed what technologies and forces Germany needed to invest in to provide for the common defense.

He argued that NATO had done a good job working through the coalition needs and requirements to think through how to deal with the direct defense challenge.

But it remained for Germany to invest in those forces.

“We agree on what’s necessary.

“What we don’t agree on is how much is necessary to spend to get those things.

“That’s really where I see the problem.”

Germany, Its Military and Shaping a Way Ahead: Strategic Focus, Allies and Creation of an Appropriate Force Structure

12/11/2018

By Robbin Laird

I spent a great deal of time in West Germany in the 1980s.

I focused a great deal on the Euromissile crisis in Europe and what would eventually become the INF treaty.

I put considerable effort into the rethink which led to German unification and the emergence of a United Germany.

At the time of the emergence of a united Germany what was certainly not clear was whether or not a German strategic elite would emerge that could shape an effective German national policy within a broader European and alliance context.

Or would the “victory” in the Cold War and the focus on economic growth and absorption within Europe of the relevant parts of the former Soviet Union become the German strategy within which the military would be a relatively unimportant player?

Returning to the questions posed in the early 1990s in the light of what is currently happening within Europe certainly underscores the absence of any real German strategic thinking or any real sense of what kind of military makes sense within the broader European and Alliance context.

After sliding into virtual oblivion, the German military is now receiving increased spending, and the trend lines are finally being reversed.

But not only is Germany nowhere near a 2% GDP spending on defense, but even more importantly, what exactly is the rebuild of German forces meant to do?

What kind of forces need to be crafted within the European or NATO context and for what purposes?

Investment is important; rebuilding forces is important; but even more importantly it is necessary to understand what kinds of forces and for what purposes Germany would build capabilities for European direct defense.

It is very clear from travelling in Northern Europe over the past few years, that the Nordics have certainly focused on the need for direct defense against a resurgent Russia.

And several Nordic strategists certainly recognize that Russia is not the Soviet Union and that they need to build forces, working relationships and concrete capabilities among themselves and with key allies to provide for credible direct defense.

The region has also seen the importance of total defense concepts to tie military modernization into a broader society wide crisis management approach.

What impact will the Nordic rethinking have upon Germany?

And with the end of the Soviet Union, two regions that were formerly under direct Russian dominance are not, and have become key areas which can further define the question of what kind of defense structure will Germany build.

The first are the Baltic states; and the second is Poland.

As Germany works its military modernization and rethinks its strategy, a core indicator of strategic thinking would be how Germany intends to reinforce the defense of the Baltics and Poland with a defense in depth structure.

The Franco-German calls to work together although interesting really do not solve the core German defense problem.

For France, nuclear weapons provide for the direct defense of France; this is not a German option or approach.

So what is the German direct defense approach?

Again, for me, simply raising the question of defense spending is relevant but not central.

After all the United States has spent significant money in the endless war and the engagement in Iraq which has very little direct relevance to building the force structure it needs for deterrence of China, North Korea or Russia.

It is about what forces to craft and how those forces are integrated into an effective crisis management approach, and certainly for Germany, one which has a European and NATO core aspect.

But that raises other key challenges.

With Europe in disarray, how will Germany build a defense capability, which can work with core partners, rather than the ever further away United European Army?

Let us get real; defense is national and needs to be crafted with core partners who will clearly act when necessary to defend one's enlightened national interests.

The two key European military powers, France and Britain, are each facing decisive challenges. Germany simply can not simply outsource defense to the most significant European military powers.

And with the core conflict between President Trump and the German leadership, the nature of the evolving German and United States relationship is in play as well.

With little doubt the US military is the core partner of Germany; but political conflict in the United States, as well as within Europe, call clearly for Germany to come up with a clear-headed strategic approach.

But really will this challenge be addressed?

My friend Dr. Holger Mey wrote a book shortly after German unification, which addressed the what German security policy might look like by 2030.

His core point was rather straightforward – whether it is a case of conflict deepening or European peace evolving, Germany needed a military structure which be ready for conflict or underwrite the peace.

His sage advice was simply ignored in the years that have followed, but if one goes back to his book his recommendations for what Germany needs to do with regard to shaping an appropriate force structure for the kinds of crisis management facing Germany and its allies remains as sound as when he wrote it almost 20 years ago.

“Germany’s geostrategic situation in Central Europe gives it a different role than those of its Alliance partners.

“Lying in the center of the continent, with more neighbors than any other European country, Germany is integrated into the Alliance as a land power with maritime interests.

“The term land power does not refer to any specific service, such as the army, but to the ability to successfully carry out operations on the ground and across territory.

“Air and naval forces contribute (sometimes predominantly) to this ability, the respective mix being a function of each operation.

“Germany must make a contribution to the pursuit of common alliance interests and the stabilization of the jointly agreed upon peace order in Europe.

“This contribution should be commensurate with Germany’s territorial size, its population and its political-economic weight.”¹

Of course, Germany has not done that.

But the question is that if Germany now addresses this power vacuum, what force structure modernization would allow it to play the most significant and effective role in the contemporary situation and looking at the decade ahead?

Of course, that is an open question.

The German dynamic is becoming increasingly central again to the fate and future of deterrence in Europe.

It is in the hands of our German friends, not the midnight tweeting of President Trump.

Footnotes

1. Holger H. Mey, *German Security Policy in the 21st Century: Problems, Partners and Perspectives* (New York: Berghahn Books, 2004, page, 205

Germany at the Center of European Direct Defense: What Role Will It Play?

02/10/2019

By Robbin Laird

For several years now, I have been working on the question of the reemergence of direct defense in Europe and the nature of the Russian versus the Soviet strategy and challenge to Europe.

It is clear that we facing not the cold war, but something perhaps even more challenging.

Russia is part of a global trend of the rising power of authoritarian states and leaders who interactively work together to undercut individual liberal democratic states and their coalition working relationships and commitments.

For Germany, the largest and richest state in Europe, is at the center of any effective European defense.

But it no longer has the capable and effective territorial forces, which worked closely with its NATO allies in providing a deterrent counterpart to the Soviet, force on the other side of the inter-German border.

Until the mid-1990s, the Germans had such a force built upon Cold War foundations, one, which had hardened bunkers, credible supply depots, air defense forces, armored, and artillery forces.

These forces and this approach are largely gone today.

And the Germans like other NATO European states reduced defense spending as well as changing the force structure to lighter and more mobile forces to do crisis management – not against a peer competitor – and to participate in Middle Eastern counter-insurgency operations.

Leading the charge for this change was the United States and the last three Administrations.

With George W. Bush we got the Iraq invasion and the “if you break it you own it” doctrine which has led to the no end in sight stability operations strategy.

We saw the endless war in Afghanistan launched.

A key turning point was the firing the Secretary of the Air Force and the Chief of Staff of the USAF which marked a complete commitment by the leadership of the Department of Defense to COIN as the core threat.

And billions of dollars of investment in operations and COIN relevant forces followed.

With the Bosnian Wars, the Clinton Administration wanted its allies to have forces relevant to non-peer competitor crisis management and drove change in this direction for the allies as well. The Clinton Administration was a key driver in NATO expansion and creating the longest borders in NATO history but without building the forces actually to do Article V defense.

Enter the Obama Administration and support for the “good war” also known as the endless one in Afghanistan followed along with pursuing the aspirations of a nuclear free world.

However, Putin seemed to miss the memo on the permanent European peace drafted in Brussels Washington, Paris, London and Berlin.

Putin and his exercise of what Secretary Kerry called a 19th century approach brought to a screeching halt the endless summer of peace and prosperity, although, unfortunately, this is not new in European history.

But of course, Putin has a 19th century approach, play powers off against each other in Europe, and pursues as a strategy splintering the European Union and NATO.

He was a good learner in the Euromissile period of the early 1980s and the playbook is already prepared.

After the Crimean seizure where Russia demonstrated an ability to move force rapidly, decisively and with clear political purpose, it was no longer possible to ignore direct defense nor ignore that challenge from peer competitors. With the Chinese building up combat forces and playing off of the Russian developments, it was difficult indeed to ignore reality.

But enter the Iran agreement and the reduction of the nuclear threat and a new hope was in play – we can extend Summer!

Russian sabre rattling in Europe about nuclear weapons and the emergence of the 2nd nuclear age, in the words of Paul Bracken has shredded these illusions.

NATO reshaped its plans for direct defense and Germany has done so for the Bundeswehr as well.

We will discuss those plans and German investments in later articles.

But for now the question is how will Germany contribute to credible deterrence in the short and mid-term, and not wait until the 2030 plans are matured?

As my colleague, Professor Holger Mey has put it: “I don’t think we have an agreement with Putin that nothing will happen until 2030 after we have repaired and built up our forces!”

I will focus in future articles on just what Germany might do to meet this challenge based in part on interviews and discussions this month in Germany with a number of retired Bundeswehr officers, journalists and strategists.

But key questions facing Germany are very clear.

How will Germany pump money rapidly into the Bundeswehr to repair its severe readiness problems in a short period of time?

Rumsfeld always argued that you have to fight with the army you have, so how will the government take seriously the need to repair an increasingly hollow force?

NATO now has the longest border in its history.

Germany is no longer garrisoning the inner-German border, where are the forces that can project power rapidly to reinforce the Baltic states, the Poles and other NATO allies to the East?

Repairing the Army you have and preparing for serious engagement forward are the two most immediate tasks facing Germany.

During the Cold War Germans spent 4% on defense; where are they now?

Russia directly threatens a core German value – multilateralism.

Putin clearly has a divide and conquer strategy and if Germany is to counter this, then the Bundeswehr needs to be built for force mobility throughout Europe.

This will take significant defense investment delivering capabilities in the midterm; it is not about the long term or an FCAS in 2040.

Preparing for the long-term is important but there needs to be a sense of urgency or there won't be a long-term or at least one that supports the "European" values one hears so much about in Germany.

To take an example, in the recent Trident Juncture 2018 exercise, Germany committed 8500 of the 50,000 troops in the exercise, which is a clear declaration of intent.

But to do so, the entire Bundeswehr had to be cannibalized and one clearly could ask how sustainable any such German engagement could be in a real conflict?

And then we need turn to the core question of the nuclear dimension of deterrence.

Is Germany going to play a central or a bystander role?

For example, the Tornado replacement issue is really not about an airplane; it is about whether Germany continues to participate in the NATO nuclear mission.

I discussed this considerably during this trip and will return to this question in future articles.

The issues are clearly much broader than Germany, and as the Trump Administration identifies the non-compliance of the Russians with the INF treaty as a good reason to withdraw from it, this is only a prologue to what needs to be a serious US and NATO rethinking about what kind of nuclear element is necessary for 21st century direct defense and deterrence.

Having spent much of the late 1970s and 1980s dealing with European nuclear questions in the US and in Europe, including working on the role of British and French weapons, we will certainly focus on this question seriously in the weeks to come.

Put bluntly, the future of German defense is central to what kind of approach the allies and the United States will take with regard to the direct defense of Europe.

Will the US work with those states who are serious about direct defense such as the Nordics and do work arounds for those states have little DEMONSTRATED deployment of real capabilities, or will defense planning simply project good ideas for NATO but without the capabilities?

Ironically, Germany is at the center of future US and NATO nuclear decisions.

If Germany is a void in defense terms at the center of Europe, Putin will need to face a more rapid and deep US projection of power for those states who are willing to confront them.

That almost certainly will include a more flexible nuclear component.

Germany, Direct Defense and Reshaping Coalitions

12/30/2018

By Robbin Laird

Recently, I wrote a review of the outstanding book by [Sir Paul Lever](#) which examines Germany's role in Europe and the challenges facing Germany as it shapes its role ahead.

His argument is straightforward – the European Union reflects the values and interests of Germany and weaves seamlessly into the German approach to economic policy. The founding of the Euro created a key venue for Germany to enforce its core economic approach upon those who entered the Euro zone.

And although the gap between Eurozone and non-Eurozone members is an important one within the European Union, the EU has provided the framework for Germany to find its national identity after having it shattered in the flames of defeat in World War II.

In this piece, I will leverage some of Lever’s analysis to deal with a subject which he discusses but which I would like to expand upon – namely, the impact of defense on the way ahead for Germany.

If we go back in time to the 1980s, the Euromissile crisis formed a significant challenge to Germany, NATO and Europe. President Reagan worked closely with core NATO allies to make the case for responding to what the Soviet leadership was doing with regard to nuclear weapons and to deploy a new system of our own.

The Soviet leadership worked hard to undercut the NATO position and forcefully to challenge the European leaders supporting the effort, notably, Thatcher, Mitterrand and Kohl.

Through close collaboration between Washington and Europe, this Soviet effort was defeated and became a prologue to the end of the Cold War.

As we began to contemplate how German unification might become possible in our working group established in 1985, it was clear that we needed to insist on Eastern Germany becoming part of the West German institutional mesh, notably NATO and the EU.

Certainly, the existence and functioning of the EU was a key institution within which East Germany could be folded into as part of a bargain with the Soviet leadership.

Looking back at the period of the early formation and functioning of West Germany, Lever made a key point that both NATO and the EU were crucial to laying the foundation within which West Germany could exist and operate.

He argued that NATO become a means to an end, namely, the physical protection of West Germany, but the EU was a central building block for shaping what would become the post-World War II German identity.

As such, the German political elite, across the political spectrum, strongly supported the European Union.

With the agreement with regard to German unification, the West Germans faced an immense task to rebuild East Germany and forge a new Germany.

Frankly, the achievement which the Germans have put together is clearly significant.

Certainly, having a European framework within which to do this has been a significant part of the process and effort.

But Lever noted that Germany is the leader of Europe but has preserved its cultural identity. This is true in terms of language, how the Landers operate. And how German business operates with the unions in Germany itself.

Lever makes the point frequently in the book, that the German domestic economy operates in unique ways, not replicated elsewhere in Europe and that German business leaders have not followed those practices in other European states or globally. They have as well resisted incursions by other European firms into Germany itself where German rules would be in any way put aside.

As Germany was being built again, or East Germany, rebuilt, the Soviet Union had collapsed and the Russians weakened considerably. With the rise of China, and Germany becoming a significant trade partner with China, global trade and relative peace and stability in the two decades after unification have allowed Germany to focus on its core efforts, namely, economic growth and strengthening the European Union in the German image.

But with the resurgence of Russia, the seizure of Crimea, Russian engagement in Syria in a way that has led in part to the outpouring of refugees to Europe, Germany has needed to reexamine the Russian challenge to Europe.

But to date this reexamination has relied on the tools built by the German-shaped EU rules, so that it is primarily in terms of sanctions and common diplomatic positions taken by the EU which have been the preferred response.

As Lever noted in his book, the idea of forcibly enforcing international norms is not part of the current German political culture but what if that is exactly what Europe will need to do to protect its core interests?

This may well need to happen with regard to China as well. Germany is seeing the Chinese after having been trading partners in acquiring German heavy industrial machinery, now adopting the technology, and exporting to Germany's traditional markets.

And Chinese economic dealings in Europe and cyber intrusions are part of the new security and defense environment as well facing a Germany which is finding its central approach to economic growth — trade — directly challenged by the Chinese, following their own set of rules as well.

Additionally, if Germany is directly threatened by Russian nuclear modernization, notably a lowering of the nuclear threshold, by pressures on Poland, the Baltics and Northern Europe, along with Russian actions in the Middle East and the Mediterranean, what actions might Germany need to take and who are the coalition partners likely to do something to forcibly enforce the values which Germany holds?

The Russian challenge coupled with the dynamics of change in the coalitions of which Germany is a part are not reinforcing a relatively laissez faire defense policy.

At the same time, the challenge is to rethink direct defense in terms of the threats, and the efforts of SPECIFIC coalition partners with whom Germany expects to work in a crisis.

The good thing about coalitions is that they provide a nation with enhanced impact when the coalition acts together, such as in the first Gulf War.

The problem with coalitions is that they are slow to act, and if improperly built, the lowest common denominator blocks effective action and it is crisis management and ability to act effectively and rapidly, which will increasingly be required to deal with Russia, among other authoritarian states.

Germany has not been built to take defense and security decisions. Whereas with regard to the EU, Lever has forcefully made the case that German makes decisions and sets agendas, none of this proactive approach is seen in defense and security.

But given the Russian challenge and the changing nature of the coalition which is NATO, Germany faces the need to change, or simply, not effectively defend itself in times of crisis.

Not liking President Trump is not a policy; reversing the decline in defense spending without a clear defense policy which defines what tools GERMANY needs to work with those coalition partners willing to act in their defense is not enough; and hoping the nuclear challenge simply goes away as the last German nuclear capable aircraft flies into retirement is simply a wish and not a policy.

And facing Germany are dramatic changes in the NATO coalition.

First, the United States with or without Trump faces a roust global competitor – China. Russia is a problem, but not at the same level of China.

Russia is a weak economic power, with pockets of military modernization within an overall relatively manageable competition.

The Russians do pose the nuclear question forcefully and have certainly ended the American Obama myopia on nuclear weapons. The notable quote from Secretary Kerry that the Russians were thinking in 19th Century terms with their policies in Europe, said more about the Obama legacy and myopia than it did about the realities of geopolitics today.

The United States will rely increasingly on its ability to enhance coalition capabilities in times of crisis, and the current growth of the F-35 enterprise within Europe is a key element o suggesting how the United States will operate to confront the Russians with direct military power in a crisis.

The US will work most centrally with those modernizing their defense forces in ways that allow the US to act decisively and rapidly.

The question of basing will be significantly be reworked as the US looks to an air-maritime foundation for engagement in Europe in terms of crisis.

Second, the Nordics are the most active coalition partners of Germany and they are focused significantly on direct defense as a core issue and seeing a combination of defense modernization and social mobilization as necessary to deal with the new Russia.

What is common between Germany and the Nordics in meeting the direct defense challenge?

Third, there are two significant military powers in Europe, Britain and France.

With Brexit, the Brits will focus more on the Northern Flank than on continental defense and the French will rely on their nuclear force to provide for direct defense.

This puts Germany in the cross hairs – what exactly constitute direct defense of Germany that is focused on Poland, Central Europe and Ukraine?

What mix of forces would most useful here?

Again, this not a question of simply increasing defense spending; it is a question of spending it on what and with whom to work to provide for enhanced direct defense?

Fourth, there is the threat from Southern Flank, whereby Turkey is as much of a threat as it is an ally.

And the dynamics of the Euro may well force Greece out, opening an opportunity with regard to Russia. Spain is economically weak and increasingly divided, and Italy is undergoing significant social, economic and political change and are part of the F-35 coalition as well.

What specific political-military actions by Germany would reinforce these player in the coalition?

In short, as NATO diversifies, working with each major cluster within NATO will be increasingly significant.

Simply using Article V as some sort of incantation will not take away from a core reality – NATO is disaggregating, not collapsing.

And for Germany this will be a major problem for its defense policy has rested on support for the US leading an integrated alliance.

Neither the US nor the coalition partners of Germany are playing their appropriate roles to sustain the current German defense approach.

Germany and Its Strategic Future: A Perspective from the German Ministry of Defence on Evolving Scenarios

11/04/2018

By J. Paul de B. Taillon

Will the international world order erode?

Will value systems drift apart?

Will globalization be stopped in its tracks?

Just 10 years ago, in 2008, the Western world was experiencing the worst financial crisis since the *Black Thursday* crash of 29 October 1929. Through the financial storms that ensued in Spain, Ireland, Greece and Portugal, Germany's political and financial leadership argued for a unified and coordinated strategy to address the issues and stave off a possible wide-scale collapse.

Germany has continued to lead the European Union (EU) in its response to the 2016 British referendum to leave the EU, better known as BREXIT.

Germany has demonstrably become the financial leader and economic powerbase of the EU. In tandem, Europe, "continues to be encircled by threats and instability, from an increasingly autocratic Russia which is waging a multifaceted hybrid war against the West, to continued instability in the Middle East, and an ongoing Islamist terror threat and a refugee crisis to the south that may escalate exponentially in the coming decades," as [Guy Verhofstadt](#) wrote in *The Telegraph* earlier this year.

In response to the ongoing political, financial and economic uncertainty and instability, strategists at Germany's Ministry of Defence developed six possible scenarios and the potential cascading political consequences.

The resulting "*Strategic Forecast 2040*" was published in February 2017 and sent a very distinct message that the "structure of Western Europe since World War II, and of all of Europe since 1991, is no more.

And Germany intends to look out for itself."

The analysis was commissioned in response to Western failure to anticipate the end of the Cold War and Russia's military aggression in eastern Ukraine since 2014. Authored by defence strategists belonging to Germany's Federal Armed Forces Planning Office, "the Defence Ministry secret paper is remarkable in every respect," noted German newspaper *Der Spiegel*, which further elaborated that the document "describes a possible failure of the EU with potentially incalculable consequences for German security."

That such a document was authored, suggests serious tensions within the global system.

The paper went so far as to outline the implications of "weakening national loyalties, faltering economies in the West, disease epidemics, 'drone swarms' deployed by hostile states, and miniaturized chemical, nuclear and biological weapons."

As with many governmentally-authored strategic analysis, *Strategic Forecast 2040* was reportedly kept secret until *Der Spiegel* accessed a copy.

The classified report outlines a number of social trends and international conflict scenarios that could have an impact upon Germany's future security environment.

While the document reportedly does not make any prognosis, it does emphasize that the scenarios described in its pages are "plausible with the 2040-time horizon."

It is projected that the combined threat of BREXIT, plus the persistent Russian aggression in Ukraine and along the borders of the Baltic states, would create a period of insecurity that could precipitate the breakup of the EU.

Six scenarios are described, with the worst-case scenario being the breakup of the European Union, a development that would force Germany into a “reactive mode.”

Other scenarios include issues surrounding BREXIT and calls by some elements within the EU nations to break away.

Historically, Germany has been a powerful voice for European unity and has continued since the EU inception to be a supportive voice as well as the economic driver.

Should the EU dissolve, Germany would likely find a separate path for continued economic success while other countries could find themselves in economic turmoil resulting, ultimately, in economic ruin without the financial life-support systems that the EU provides members.

The forecasted scenarios could push other European nations to seriously consider their respective situations and incorporate these potential realities to their national strategic planning.

Notwithstanding, Germany would stand to lose from the dismemberment of the EU although perhaps not to the same degree as many other members.

The scenarios envisioned by the German strategists embrace a variety of interesting geopolitical predicaments that could confront Germany and its leadership.

They include European nations being seduced by Russian influence to join the Eastern Bloc, the consequences of American isolationism, and the potential for a China versus Western confrontation. The Forecast includes the ultimately dire scenario identified as the complete demise of the West.

In the wake of each scenario, the authors provide an analysis of the trends in society, the economy, and environmental and political issues, as well as military analysis.

The first two scenarios imagine a European Union confronting various internal struggles, with Germany continuing to address local and international peacekeeping efforts.

According to Der Spiegel, these two scenarios use the term ‘existential crisis’ to define maintaining a unified and stable Europe, while fully appreciating the inherent flaws of the union itself. Notwithstanding, a strong transatlantic relationship continues. The scenarios were “regarded as the current state of affairs for Germany, where its defence and security focus has been on local and international peacekeeping operations.”

Interestingly, the third scenario resonates, reflecting the sentiments and activities that are currently occurring in Europe and the rest of the Western world.

It depicts a period of “rising nationalism and expanding anti-EU sentiment” as well as the heightened threat from terrorism. This is currently exemplified in the ongoing political machinations in Austria and within the former Eastern Bloc countries of the Czech Republic, Hungary, Poland and Slovakia. The situation describes exacerbating factors such as the uncontrolled mass migration of over 1.8 million into continental Europe. This issue has sparked serious political concerns predicated on the spectrum of experiences that EU members have had recently over Islamist-inspired terrorist acts.

Moreover, many countries see this mass migration as a means to facilitate the infiltration of Islamist terrorists into European Union member nations.

This scenario recognizes that the situation has sparked the phoenix-like rise of nationalist movements that emphasize sovereignty and security issues in certain EU members. These developments raise serious concerns over the future of the union itself.

As the study points out, these trends could facilitate the disintegration of the European dream.

This third scenario does not appear to explore further the implications of an EU breakup or its cascading consequences.

The last three scenarios are more global in nature but appear to be much darker and futuristic, detailing “the further deterioration of the economies of Europe and, ultimately, the collapse of the European Union, coupled with an ‘increasingly overstrained’ United States still serving as the world’s key ‘stabilizing factor.’”

Scenario four describes a collapse of the European Union as a political body. Extremism is rising and there are a number of EU partners who appear to “seek a specific approach to Russia’s ‘state capitalist model.’”

In this scenario, the United States is experiencing imperial overreach, including trying to address some issues of global strife as well as serious economic instability. Nonetheless, the United States continues to serve as a tentative stabilizing factor in the West.

This scenario notes a significant decline in the economies of Europe and China, with the commensurate direct impact upon Germany’s economy as their two main export markets experience extreme economic problems.

Entitled “West to the East”, the fifth scenario explores the possibility in which some eastern European countries are no longer pursuing European integration, and instead opt to join the Eastern Bloc.

Scenario five describes the West as being the United States and Europe (not the European Union) and the East consisting of Russia and China.

These two countries have negotiated a strategic partnership in their challenge to the unipolar world dominated by the United States.

In this new bipolar world, economic competition between these two blocs remains confrontational and intense, although the issues surrounding economics and trade precludes, for the most part, any major conflict.

Access to oil and gas draws some eastern European countries to ally with Russia as economic dependency on fossil fuels and natural gas continues unabated.

The most problematic of the six scenarios is entitled, “The EU in Disintegration and Germany in Reactive Mode”, which would consist of “multiple confrontations.”

This future prognosis describes a world in which the international order erodes after “decades of instability,” the value systems worldwide diverge and globalization comes to an end.

According to this study, EU enlargement has been abandoned, countries have abandoned the European Union and, Europe loses its global ability to compete economically.

“The increasingly disorderly, sometimes chaotic and conflict-prone world has dramatically changed the security environment of Germany and Europe.”

This sixth and last scenario proffers the strategic notion of a total collapse of the European Union as a political body. In this projection, the United States is experiencing critical imperial overreach and, as a nation, is concomitantly experiencing global strife and economic instability.

Nonetheless, the United States serves as a tentative stabilizing factor in the West.

Unfortunately, American leadership is increasingly seen as “no longer able to act decisively to prevent global crises from escalating.”

This scenario also identifies a significant decline in the economies of Europe and China, which would impact its top export markets and therefore Germany’s economy writ large.

Should such a situation arise, Germany would experience a serious economic slowdown and would have to find new markets for its manufactured goods.

This scenario paints a very dark futuristic view. The EU has experienced a total collapse, and the American national leadership has diminished such that it cannot provide the decisions necessary, nor act decisively, to prevent a global crisis.

Drawing from the open sources available regarding the scenarios, albeit futuristic, they do appear to embrace a number of strategic, national and domestic issues that presently exist in either nascent or maturing terms within the EU.

The strategists who authored the paper warn “there could be a breakdown in national societies because of a greater tendency for people to identify themselves by ethnic, regional or religious groups.”

It is clear from this analysis that the state's social fabric in terms of national defence is of critical importance, and that the oft-repeated social meme that diversity is strength appears to fail in real terms.

The issues surrounding the mass migration of over 1.8 million people, many of them young males, has brought with it a spectrum of issues – secondary and third order affects – not fully considered or anticipated in terms of the real or potential social, economic and cultural costs.

This migration has posed a threat to German unity, particularly with the rising conservative and nationalistic movement consisting of concerned, generally conservative German citizenry, joined with less savoury, ultra nationalistic elements that could prove a serious threat to internal stability and security.

The situation is further exacerbated by the real concerns and fears of Islamic extremism, European Islamisation in various manifestations as well as growing insecurity in the form of European cultures.

Recently, observers noted that certain countries in Eastern and Central Europe, particularly Poland and Hungary, have seen their respective governments becoming increasingly authoritarian, predicated in part upon the perceptions and differences that exist within the European Union on how best to deal with the flow of refugees since 2015.

The presence of formal and informal no-go zones in a number of EU countries poses a direct threat to sovereignty and the safety of their respective citizens.

Great Britain's stated intent to leave the EU, could potentially see other countries following suit, resulting in the rise of nationalistic sentiments within the EU membership in regards to protecting respective language, culture and security.

This multilayered environment, combined with a dearth of strategic leadership from either the United States or the EU, to deal with a number of multifaceted challenges, both domestically and internationally, is reflective of present themes and their manifestations.

Germany's economic and political interest in an economically and politically stable European Union, combined with its inherent interest in maintaining its markets in France and other EU nations is fully understandable.

Thus, Strategic Forecast 2040 and its scenarios demand attention.

As one reporter notes, an “increasingly disorderly, sometimes chaotic and conflictual world has dramatically changed the security policy environment for Germany and Europe.”

The German scenarios underline a seemingly growing concern as to the future of the EU and, with it, the North Atlantic Treaty Organization (NATO) which appears incapable of addressing increasingly divergent national interests and concerns.

The 2018 visit of American President Donald Trump to NATO highlighted that Germany, as well as other EU and NATO members, may no longer be able to rely on the United States security umbrella as it has since creation of NATO in 1949.

Should this be the case, there is an elephant in the room, in that a number of strategists and analyst have pointed out that Germany could create an independent nuclear capability in a relatively short time, joining Great Britain and France in a troika of European nuclear powers.

The present political situation may have sparked discussions on bringing about “National Service” as Italy, Germany and France are again considering reinstating such a national defence program.

We may have witnessed the high point of European domination and the intellectual aspiration to create a unified European superpower incorporating liberal values may have experienced political overreach.

Moreover, the substantial costs of a Brussels-based bureaucracy and Parliament, a disregard (in some cases contempt) for personal or national perspectives, as well as the bureaucratic arrogance and determination to Europeanize sovereign states, seemingly at all costs, may prove its downfall.

For Germany, the European Union is strategically important as it relates to Germany’s core national interest as the foundation of its relationship with France, the structure and purpose of which was to “ensure that the conflicts of the past stay in the past”

Another core interest is that Germany needs the EU free trade zone as the crux and market for the burgeoning German economy.

After decades of peace, the EU and NATO may be experiencing a slow and painful breakup “under the weight of an increasingly divergent set of interests among their members.

So, Germany must make its own plans and it must plan for the worst.”

Given the dire scenarios propounded by the German study, other EU nations would be prudent to create contingency plans for the possible demise of an EU dream, as well as considering the necessity for rearmament programs to address future defence and security requirements.

Colonel Taillon’s 42-year military career included more than 22 foreign training missions and numerous deployments and 30 years in the intelligence community.

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<https://security.frontline.online/article/2018/5/10469-Germany%E2%80%99s-disturbing-look-into-the-future>

Germany and Defense: A Military Readiness Crisis?

05/20/2018

Germany is at the heart of Europe and key to effective defense towards Russia in both the direction of Central Europe and the Baltics.

Having forces, which can defend Germany effectively, is an Article III NATO obligation is the foundation for its ability to support an Article V obligation, which is to come to the defense of the allies.

Although much attention has been focused on President Trump's NATO statements, at the end of the day, the US has deepened support for key NATO partners, not weakened them.

Rather than focusing on the verbal gymnastics of President Trump, Chancellor Merkel clearly needs to pay attention to the REALITY of Germany's performance and obligations.

A recent article by John Vandiver in [Stars and Stripes](#) highlights the German situation:

Germany's military is virtually undeployable and security experts say it is too weak to meet its obligations to its allies, as it prepares to assume command of NATO's crisis response force next year.

Pressure on Berlin is mounting after a series of revelations has exposed the German military as one of the least combat ready in NATO, despite its economic heft.

"The readiness of the German military is abysmal," said Jorge Benitez, a NATO expert with the Atlantic Council in Washington. "For years, German leaders have known that major elements of their armed forces, such as tanks, submarines and fighter jets, are not fully operational and can't be used for actual military missions."

The military dysfunction is likely to re-emerge as a flashpoint between Berlin and Washington when President Donald Trump attends a NATO summit in July.

Berlin's persistent shortcomings and resistance to meeting NATO spending targets is likely to further strain relations with Washington and risks a standoff that could eventually test the unity of the alliance and the American commitment to it.

Trump, long ambivalent about the value of NATO, remains fixated on Germany as a security free-rider: The alliance "helps them a hell of a lot more than it helps us," Trump said in December.

New German capability gaps have been brought to light in recent weeks, piling up on top of old ones that Berlin has failed to fix.

Among the failures: none of Germany's submarines is operational, only four of its 128 Eurofighter jets are combat-ready and the army is short dozens of tanks and armored vehicles needed for NATO missions.

In addition, troops are short on the basics: body armor, night vision gear and cold-weather clothing.

The situation is so dire that 19 helicopter pilots from Germany's Bundeswehr were forced to turn in their flight licenses because of a lack of training time.....

"Germany has the largest economy in Europe, but has been dragging its feet on fixing its scandalous defense problems," Benitez said. "Part of the problem is political and reflects the willingness of German leaders to consistently inhibit defense spending for the sake of other priorities."

One obstacle to boosting defense spending could be Trump himself. The U.S. president is deeply unpopular in Germany and appearing to kowtow to Trump's demands in the form of ramping up military investment could be politically damaging.

The last point is an interesting one.

Last time I looked, President Trump was not winning a beauty contest in the UK or in Northern Europe but transformation of defense capabilities was a priority.

Frankly, the Trump Administration has done much to strengthen the credibility of the American forces underlying the Alliance and President Trump himself has clearly not been putting moving red lines in the sand.

If dislike of an American President can be an excuse not to defend yourself, then it is just that.

Yet another excuse not to get serious about the defense of Germany or Europe.

Direct Defense and Germany: Rebuilding the Bundeswehr

02/12/2019

By Robbin Laird

During my visit to Germany in February 2019, I had a chance to talk with a number of retired senior Bundeswehr officers and procurement officials.

My focus is upon the challenge facing the US and its NATO allies to rebuild their forces to be able to have a credible defense and deterrence strategy in terms of providing direct defense of Europe and North America against the Russian challenge.

These discussions were wide-ranging and highly interactive and many of them are either off the record or partially on the record.

I will be building out a narrative of my assessment of the German contribution as well as challenges facing the rebuild of the Bundeswehr in the weeks ahead.

The broad point is that the German forces remained focused on direct defense through the mid-1990s and had a force structure appropriate to this challenge.

With the Bosnian War and with a strong US push, Germany committed itself to restructure its forces from direct defense to more mobile, and lighter forces to participate in what were referred to as crisis management operations.

The Bundeswehr for the past twenty years then participated in such operations and COIN operations.

The only problem is that these forces really are have not been oriented to or prioritized for collective or direct defense.

Since 2014, NATO has focused on the rebuild of direct defense forces, a significant challenge for the US and its European allies.

During the visit, I had the privilege to meet with the former Commander of Bundeswehr Joint Forces Operations Command, Lt. General (ret.) Rainer Glatz and to discuss these issues.

We discussed a wide range of issues, but for the purposes of this article, I want to focus on the core thematic, which the Lt. General (ret.) drove home.

According to Lt. General (ret.) Glatz, Senior Distinguished Fellow, International Security Division, German Institute for International and Security Affairs:

“In relation to the Cold War and the developments afterwards, we not only dismantled our structures, which to a certain extent have become much hollower, but we nearly dismantled our logistic structures, our support structures, and our transport structures as well.”

“People have to be clear about the fact, that in future the defense of Germany probably won’t take place at the German border, but at the borders of NATO in the east. “

“As part of credible deterrence, we have to question whether it was really wise that what we have left in place are only in soft or non-hardened support facilities.”



Figure 1 German Chancellor Angela Merkel (R) and Lieutenant General Rainer Glatz, Commandant of the Bundeswehr Operations Command speak at the Bundeswehr Operations Command in Geltow, eastern Germany on April 10, 2010. One day after the funeral service of three German soldiers, killed in a Taliban ambush in Afghanistan on April 2, Merkel informed herself at the command center of the German Bundeswehr about the current situation in Afghanistan. AFP PHOTO DDP/ MICHAEL KAPPELER GERMANY OUT (Photo credit should read MICHAEL KAPPELER/AFP/Getty Images)

“It is clear that the proper logistics support and transport structures are even more important than they have been in the past.”

“I also am concerned that we, along with our allies, have lost a lot of personal expertise if we focus on the challenges of deterrence in all of its aspects.”

“Has it to be the same as it has been in the past or have we to look at a totally new approach?”

“And this should be thoroughly thought through from my perspective.”

“But the cornerstone of that is that you have to talk with our populations about what deterrence is all about.”

“Clearly as part of the effort, we have to go back to military ownership of the most important parts of the logistic structures.”

“Also, we have to think about the stocks of supplies because in conflict we are not only surrounded by friends but by adversaries which in case of conflict clearly will target not only our C2 structures those stocks of supplies as another priority mission.”

Lieutenant General (ret.) Rainer Glatz

2006–2013 Acting Commander, Deputy Commander and from 2009 onwards Commander Bundeswehr Joint Forces Operations Command, Potsdam

2002–2006 Commander, Special Operations Division, Regensburg

2001–2002 Deputy Chief of Staff (Doctrine and Operations, Structure, Finance), FMOD Army Staff Füh III, Bonn

1998–2001 Commander, Light Infantry (Reaction Force) Brigade 37 (AMF-L), »Freistaat Sachsen«, Frankenberg, Saxony, including the deployment as Commander, Multinational Brigade Centre (DFGFA), SFOR, Sarajevo, Bosnia and Herzegovina (11/98 – 04/99)

1987–1989 Personal Assistant to Horst Teltschik, the Head of the Directorate for Foreign, Security and Development Policy, Federal Chancellery, Bonn

The Return of Direct Defense and the German Challenge: The Perspective of General (Retired) Egon Ramms

02/06/2019

By Robbin Laird

For the last three years, I have traveled extensively in Northern Europe to discuss the Russian challenge and the return of direct defense.

During a visit to Germany in February 2019, I am visiting Germany to discuss with German experts and retired senior German military, their assessments of the challenge to Germany and the way ahead to deal with direct defense of Germany and its contribution to deterrence.

I had the opportunity to talk with one of the most respected retired senior German officers during my visit to Bonn and to get his perspective on the challenges and the way ahead. General Egon Ramms has had an impressive career, which is detailed in his resume seen at the conclusion of this article.

For the purposes of my research, his time in Poland and working with the Baltics on their defense are especially relevant to thinking through the direct defense challenge and Germany's potential contribution.

Quite clearly, the German, Baltic and Polish defense spaces are closely interconnected, and Germany's potential role in reinforcing deterrence crucial to a credible NATO effort to constrain Putin and the authoritarian Russian state.

For General Ramms, the Russian actions in Crimea in 2014 functioned as the 9/11 attacks on the United States did for Europe.

It was clear that Russia was not going to play by the rules based or with regard to respected international law anymore and was taking seriously its claim that Russians in the former Soviet territory needed to be included in the new Russia.

This was already evident in 2008 with Russian actions against Georgia; but those warnings were largely ignored; but the Crimean (invasion) occupation could not be ignored. It was an in your face intervention which violated accepted international norms.

Question: Based on your experience, how do you view the challenge of common defense for the Balts, Poland and Germany?

General Ramms: I have had the advantage that I was garrisoned in Poland, and responsible as the Commander of Multinational Corps in Stettin in Poland between 2004 and the end of 2006.

“Something I realized when I came to Poland was that the Polish people and officials had a completely different feeling, and a different behavior towards Russia than we Western Europeans have had.

“There is real concern about Russian incursions against Poland.

“I then had the chance, a few years later in 2008, directly after the Georgian War to have a duty visit as the commander of Allied Joint Force Command Brunssum (NLD) to go to the Baltic States. That was six weeks after the Georgian War, and what the Baltic states expressed was their real concern about their safety, security and defense with what they saw as clearly a Russian aggressive role.

“They clearly feared that what has happened to Georgia could happen to them. The question then become how do we establish a defense plan for the Baltics?”

Question: With the return of direct defense clearly seen in the Baltic and Polish cases, what needs to be the German response?

General Ramms: The initial step has been to develop consensus with regard to the new situation. The Defense White Paper issued in 2016 is a whole of government document as opposed to the previous ones, which were simply MOD White Papers on defense.

“Based on this commitment, we have begun to revise policy and for example, Germany deployed additional aircraft to the Baltic Air Policing mission and began to shape a battalion for deployment to the Baltics.

“Obviously, this is not enough and one can look at the paper which I coauthored with regard to Baltic defense to get a sense of what I think is required for credible defense of the Baltics.

“But it is a start.”



Figure 2 USAF Joint Command commander, Lt. Gen. David M. Rodriguez, greeting German Gen. Egon Ramms during a visit to ISAF Joint Command at Kabul Afghanistan International Airport in Kabul, Afghanistan in 2009.

Question: That raises the question of what capabilities in your view does Germany need to provide a credible defense capability after the years of hollowing out the Bundeswehr?

General Ramms: What do we need?

“We have to have forces which are able to conduct enduring defense operations. From 2011, the German government focused completely on global deployments, stabilization operations and providing a contribution along those lines.

“That meant giving up the kind of capability we had in the 1970s and 1980s for common defense, home defense, enduring defense operations and Host Nation Support.

“It is clear that such an approach has led to a military much less capable of providing for the kind of direct defense requirements we now face. As a follow up to the 2016 White Paper, conceptual papers have been written by the Bundeswehr with regard to the capability profile which is necessary for a build out of forces and which can provide for enduring defense.

“By that I mean a force that can defend, attack and conduct delaying operations and – most important – is available in a timely manner.

“The force capabilities necessary have been identified; but they need not only be funded but fielded much more rapidly than a slow rollout process would allow.

“When we talk about direct defense, we are not simply talking about power projection; we are talking about defense in depth, territorial and home defense as well as about Combat Service Support and Host Nation Support.

“Because Germany would function as the rear in terms of force generation, C2, deployment and logistics for any defense operation for the Baltics or Poland, we need to be able to provide a credible and stable territorial defense of Germany as well.

“We need credible logistics and supply systems which can provide both timely and enduring support to German and allied forces.

“We need to do what you referred to as mean logistics not just lean logistics.

“The capability profile to be achieved until 2031 which I mentioned foresees the creation of three mechanized divisions which will be deployable in a much shorter time that we can do with today’s Bundeswehr.

“We are talking about 10 to 30 days at the maximum.

“But we have to introduce in some areas even more equipment than the plan projects for we will need to increase the number of artillery battalions, the number of engineering battalions, Army air defense units and acquire all those tools, equipment and supplies which provide for a sustainable force which can credibly defend Germany and support operations in the Baltics and Poland.

“And with regard to education, training and equipment, we have to regain the capacity to conduct combined arms operations and today under Hybrid Threat conditions.”

For a look at the study co-authored by General Ramms concerning Baltic defense, see the following:

<https://sldinfo.com/2019/01/european-direct-defense-the-case-of-the-baltics/>

General Ramms was born in Datteln, Westphalia on 21st September 1948. He joined the Bundeswehr on 1st October 1968 as an officer candidate and temporary career volunteer for three years, serving in the Unna-based Maintenance Battalion 470. From 1968 to 1971, General Ramms undertook his initial officer education and training at Aachen and Hannover. In 1971, he began academic studies in Darmstadt, from where he graduated as a Master of Mechanical Engineering (Diplomingenieur) in 1975.

From 1975 to 1978, General Ramms was appointed Commander of Maintenance Company 70 in Stade. From there he continued his military service as the G4 maintenance officer, Headquarters 3rd Armored Division in Buxtehude until 1980. Returning to the academic environment General Ramms attended the General Staff Course at the German Command and Staff Academy in Hamburg for the following two years.

From 1982 to 1984, General Ramms served in G3 Operations, 6th Armored Infantry Division in Neumünster. This was immediately followed by two years as Chief of Staff and G3 in Germany's Home Defense Brigade 51 in Eutin. From 1986 to 1988, he was Assistant Branch Head of the Arms Control and Disarmament Branch in the Federal Ministry of Defense, Armed Forces Staff III 5. General Ramms' next appointment, again for a period of two years, was Commanding Officer of Maintenance Battalion 120 in Rheine.

In 1990, General Ramms returned to the German Ministry of Defense as the Assistant Chief of Branch in Army Staff I 7. Subsequently he was appointed as Assistant Chief of Branch in the office of the State Secretary for Procurement. In this position, he was responsible for both Army and Air Force Armament and Logistics. For the years 1992 to 1994 General Ramms continued to work in the office of the State Secretary for Procurement (State Secretary Jörg Schönbohm), as Section Chief of the Armament Section. In 1994, he was appointed as Head of the Central Branch of the Army Staff, German Ministry of Defense.

From there, in 1996, General Ramms took command of Logistics Brigade 1 in Lingen/Ems, for a period of two and a half years. 1998 saw General Ramms assume the position Division Head Armed Forces Staff V, Logistics, Infrastructure and Environmental Protection in the German Armed Forces. This was followed by his appointment as Director of Armed Forces Staff, Ministry of Defense, commencing September 2000 from where he was assigned as Commander to the Multinational Corps Northeast Stettin in Poland in February 2004.

In his time as Commanding General, the Multinational Corps Northeast was certified as Combat ready HQ of lower readiness, got the Baltic States, Tchech Republic and Slovakia as new members into the Headquarters. General Ramms took up his post as Commander Allied Joint Force Command Brunssum on 26th January 2007. His main effort was the ISAF – Mission as its operational Commander. Dan McNeill, David McKiernan, Stan McChrystal and David Petraeus served as COMISAFs under his command. NAC authorized Prudent Military Planning for the Defense of Poland and the Baltic States was another – from today's perspective – very important part of his mission within his regional responsibility. He finished his duty in the Federal Armed Forces on 30th September 2010.

The Challenge Facing a German Reset on Direct Defense: The Perspective of Lt. General (Retired) Klaus-Peter Stieglitz

2/16/2019

By Robbin Laird

I first had the opportunity to meet Lt. General (Retired) Klaus-Peter Stieglitz, a former German Air Chief, last Fall in Berlin at the International Fighter Conference.

During my visit to Germany in February 2019, where I was continuing my look at the challenge of building a 21st century approach to the direct defense of Europe, I had a chance to meet with him again, this time in Bonn, to discuss the challenges facing a German reset on direct defense.

According to Stieglitz: “The strategic environment has changed and requires Germany, a nation in the heart of Europe with more than 80 million people, to pay it’s fair share for the collective defense and to shape and focus on a force appropriate to the new situation.

“Obviously, the new defense effort requires more money.

“This is starting to happen.

“But we are facing a significant rebuild given the state of readiness of the force today and the need to repair that force.

“Just undertaking the repair of todays state of readiness will make the Bundeswehr a construction site for the next years.”

“We are almost back to 1955 when we had to build a new Bundeswehr.

“Our rebuild for the new strategic environment today is as significant as during these early years of the Bundeswehr.

“And all that happens after decades enjoying a peace dividend, where savings certainly have not been spent within the Bundeswehr.”

“But money alone is not enough.

“We are talking about changing the focus and building a 21st century defense force which can play its role at the heart of Europe.

“We are no longer talking about defense at the inner-German border or supporting out of area operations; we are talking about providing an umbrella for new allies who wish to see that NATO has a credible defense strategy and deterrence capability.

” Germany needs to focus on this challenge and build the appropriate force.”



Figure 3 Franz Josef JUNG 1 CDU federal minister of defence is together with general Klaus Peter STIEGLITZ on April 2, 2007 when the Tornado bombers of the German Air Force are sent to their mission to Afghanistan.

He highlighted further that rebuilding the territorial defense is a key priority so that Germany could operate as a key operational reserve for NATO forces and to ensure that an adequate financial support could correct the current situation where i.e. pilots are waiting two years to get their first fighter cockpit after they finished their basic training.

“We Germans asked our allies for decades during the Cold War period to show their solidarity and to join in on the defense of Germany.

“They did this.

“Now we need to pay that back.”

The General also highlighted a key point which cannot be overlooked by the critics of NATO – the NATO military has worked effectively together and shaped common procedures and standards.

This commonality and the habit of cooperation needs to be reinforced and built upon.

“NATO is one of the international organizations which is still really functioning well.”

And he underscored that core bilateral relationships are of importance as well.

“I fully support the decisions of my successors to work on and to reinforce the relationship between the Luftwaffe and the RAF in terms of training and operations.

“We need to get to the point where we – while doing things like our Baltic Air Policing mission together – use the interoperability of our Eurofighter forces and employ these aircraft more efficiently.”

Lieutenant General (ret) Klaus-Peter Stieglitz was Chief of Staff, German Air Force from 2004 to 2009.

Lieutenant General Stieglitz joined the Luftwaffe in October 1968 and commenced officer training, followed by pilot training in the USA to become a fighter pilot. During his flying career he has accumulated more than 3.600 flight hours, mostly on combat aircraft, i.e. the F-104 Starfighter, F-4F Phantom, Mig-29 and Eurofighter/Typhoon. In 1981 – 83 he attended the German Armed Forces Staff College.

During his career he held numerous national and international staff and command positions, i.e. squadron commander, group commander, commander of a fighter wing, staff officer within the German MOD, staff officer at NATO Headquarters SHAPE, Belgium, commander of the NATO AWACS Component, Director Flight Safety of the German Armed Forces, commander of a German Air Division in Berlin and Deputy Commander NATO Air Forces Northern Europe, Ramstein.

In his last assignment he was Chief of Staff of the German Air Force from January 2004 to October 2009.

Today he is engaged as senior advisor and consultant.

A Building Block in Enhanced European Defense Capabilities: The German-Norwegian Common Submarine Build

12/02/2018

The Nordics are clearly working a way ahead for enhanced direct defense of their region.

And they are doing so within the context of a reworking of NATO capabilities for [Northern European defense](#).

F-35 acquisition is one way the Norwegians are working this approach.

The common acquisition of submarines with the Germans is another.

Recently (November 27, 2018), the Norwegian Ministry of Defence announced that they had received a binding offer from the Germans on October 30, 2018 and are now working on the next phase of negotiations.

Norway and Germany will together negotiate a contract to procure six identical submarines. The commercial process towards the supplier has been ongoing since the summer of 2017, and the binding offer from ThyssenKrupp Marine as a basis of the next phase of negotiations.

The procurement agencies, Norwegian Defence Materiel Agency (NDMA) in Norway and Bundesamt für Ausrüstung, Informationstechnik und Nutzung der Bundeswehr (BAAINBw) in Germany, received the binding offer from the main supplier on the 30th of October 2018, and has begun a thorough joint evaluation of the offer.

“We will now go through the offer from the shipyard before the negotiations begin,” says Minister of Defence Frank Bakke-Jensen.

Norway and Germany will conduct joint negotiations towards the shipyard with the aim of reaching an agreement and signing a contract in 2019. Both nations expect the negotiations to be challenging.

Germany and Norway will procure identical submarines in the same timeframe. This will give synergies and savings throughout the lifetime of the submarines for both nations.

In addition to the submarine cooperation, the nations have established a Navy-to-Navy cooperation, Research and Development cooperation and a Missile cooperation.

In other words, the approach will provide new capabilities for Norway and enhanced capabilities for Germany and a deepened cooperation in working the key areas of common defense, like the Baltic Sea.

An article written by Thomas Nilsen and published in [The Barents Observer](#) on February 3, 2017 highlighted the importance of the deal.

Norway’s current fleet of six Ula-class conventional submarines reaches end of life by mid- 2020 to 2030 and will be decommissioned. In times-of-budget-cuts and disarmament in the years after the Cold War, one option considered for the Navy was to scrap the idea of having an own fleet of submarines.

Then Russia started to re-arm and modernize its Northern fleet vessels and weapons based on the Kola Peninsula bordering Norway on the Barents Sea coast. After scrapping 130 of its Cold War fleet of nuclear powered submarines, Vladimir Putin’s Russia is now building new multi-purpose and ballistic missile submarines at a speed not seen since the end of the 1980s. Eight new Borey-class, eight new Severodvinsk class, several new diesel-powered and other special purpose submarines are recently delivered to the Northern fleet or currently under construction.

In a White Paper to the Parliament in 2016, the Norwegian Government again underlined the importance of submarines and their place in the future development of the Norwegian navy.

“Submarines are amongst the Norwegian Armed Forces’ most important capabilities and is of great significance for our ability to protect Norway’s maritime interests,” Ine Eriksen Søreide said when announcing the cooperation with Germany.

“Submarine cooperation with Germany will ensure that Norway gets the submarines we require, and at the same time contributing to Smart defence and more efficient defence material cooperation in NATO,” the Minister of Defence said.....

“The submarines Norway and Germany will procure ensures a submarine service for the future. Norway has an evolutionary approach to new submarines, and will base the procurement on an existing submarine design. This way we avoid an extensive development project with the risks and costs this would involve. In addition, together with Germany, we will get a larger scale in the production” said Ine Eriksen Søreide.

Franco-German Initiatives and the Next Phase of European Construction

11/22/2018

It is clear that for President Macron and for Chancellor Merkel that a new impulse needs to be generated for European construction.

And they clearly are working together to do this.

Whether this an engine driving effective change for the entire European Union is a different matter; for different initiatives are in play whether from the UK, Northern Europe, or Eastern Europe.

In the past two weeks, we have seen initiatives proposed in two key areas: Euro zone economic development and enhanced Franco-German defense cooperation.

At the Eurogroup Meeting held on November 19th, the German and French Finance Ministers announced a new Eurozone plan.

The plan is the next step from the Meseberg declaration of June and is two pages in length.

The plan combines two impulses – the French impulse to have a budget for the entire eurozone by 2021 with an German impulse that such an effort would be linked directly with the EU’s annual financial framework (MFF) which would ensure that it would be a controllable initiative.

The Eurozone Budget would be part of the EU budget.

This would ensure that it is in coherence with overall EU policies and satisfies budgetary principles and requirements in terms of sound financial management, budgetary control and parliamentary accountability.

The Eurozone budget would primarily be financed by external assigned revenues, possibly including the allocation of tax revenues (such as an FTT according to the French model) and European resources (such as the proposed reform delivery tool).

The assigned revenues would consist of regular contributions by Eurozone Member States, collected and transferred to the EU budget on the basis of an intergovernmental agreement (IGA).

Contracting parties of the IGA would be the Eurozone Member States.

The IGA would provide for a methodology to determine the contributions by each Eurozone Member State and a binding maximum amount. It will provide for a decision procedure on the funding priorities of the Eurozone Budget.

And in the defense field, the French and German governments are moving forward on pooling resources for a new fighter initiative.

The fighter project is called the Future Combat Air System and is designed to field a fighter in the 2040s.

The French Defense Minister meeting with her German counterpart have agreed to launch funding next year for the new combat air project.

Meeting in Brussels where both attended the EU Council ministerial meeting, Parly said she had agreed with her German counterpart Ursula von der Leyen to award two separate contracts for technology demonstrator programs for the new fighter and its engine in mid-2019, at the Paris Air Show in June.

The two nations' armaments directors also attended the meeting, which according to an official on Parly's staff "was a useful clarification of the status of the project, and a concrete step forward."

These contracts will be the first time the two countries have invested any meaningful funds in their future fighter since the project was unexpectedly announced in July 2017 by French President Emmanuel Macron and German Chancellor Angela Merkel.

<http://www.defense-aerospace.com/article-view/feature/197760/france%2C-germany-to-award-first-next-gen-fighter-contract-in-january.html>

We will write more about this initiative based in part on participation at the recent International Fighter Conference 2018 held in Berlin, where it was clear that the French and German air forces were working on shaping common perspectives on the way ahead as well as preparing for the two governments to fund joint development next year.

And it is anticipated that Spain will join the FCAS project next year as well.

In short, the French and German governments are shaping some common initiatives to reshape the European landscape.

Yet there are clear challenges to such efforts, whether from within the two nations or in the broader European and global context.

With regard to the Eurozone initiative, one European analyst of this initiative argues that the effort may be unable to succeed given the domestic situations in France and Germany as well as within the Eurozone overall.

As [Robert Steenland](#) concludes with regard to the new Eurozone initiative:

With both president Macron and chancellor Merkel losing support domestically, it is questionable whether their plans will succeed.

Even more, given the opposition by the Hanseatic states, the upcoming European elections and Italy's political hooliganism.

Even if some compromise would be reached, it would be too watered down to make a difference in case of a serious economic recession or crisis.

Therefore, the eurozone and EU will face serious political and economic risks that will continue to affect it for a long time to come.

The Signing Of The Aachen Franco-German Treaty: Towards More or Less European Defense Integration?

02/02/2019

By Murielle Delaporte

Recently, the leaders of France and Germany have signed a new treaty in the city of Aachen.

Aachen or Aix-la-Chapelle in French is the city of the birth of Charlemagne, Aachen.

It has been the theater of five treaties: the first one was signed in 1668 and put an end to the war of Devolution between France and Spain; the second, in 1748, put an end to the succession war in Austria; the third, concluded in 1816, established the borders between the Netherlands and Prussia; the fourth – the so-called *Congrès d'Aix-la-Chapelle* – followed in 1818 the Vienna Treaty; and finally this month, on January 22nd, 2019, France and Germany signed a Treaty “on Franco-German Cooperation and Integration”.

It is not clear yet whether this latter Treaty will enter History the same way its predecessors did, but it shares the same aspiration to counter instability and divisions in Europe.

Reaching out towards the next level in European integration by energizing the old Paris-Berlin engine has been President Macron's agenda in the past two years, as his speech at the Sorbonne University in 2017 and his initial (and very brief) appointment of Sylvie Goulard – a European MP known for her support for strong Franco-German ties – as Minister of defense, clearly indicated.

That agenda has been crumbling under the weight of domestic tensions on both sides of the border with Chancellor Angela Merkel losing her hold on the coalition in power in Germany and a growing grassroots opposition in France illustrated by the Yellow Vests movement.

The question therefore is what might be the true impact of such a treaty in the current environment and can its long-term goal of more integration be achieved?

In the short term, the prospect of the upcoming European elections tends to blur any assessment and color the debate. Traditionally, antagonistic voices are being heard loud and clear in an unprecedented manner as the extreme right and the extreme left are taking advantage of both the tearing apart of the classic political parties and system and the new information age.

Current projections forecast a 35% support for the CDU and 23.5% (22.5% if the Yellow Vests manage to have a list) for LREM (President Macron's party), while the French (ex-)National Front ranks second.

Such a trend would not play in favor of more integration in Europe – quite the opposite – while the Aachen Treaty is already being challenged by some critics (such as Assas law professor Olivier Gohin) for being unconstitutional and not respecting national sovereignty.

Criticism is being directed across the spectrum of opinion from the relatively low-key (accusation of more symbolism than real content) to the absurd (the *de facto* secession of Alsace and Lorraine to Germany).

In the longer run though, three aspects of the 2019 Aachen Treaty – which intends to be an updated version of the 1963 Elysée Treaty of friendship signed between then President Charles de Gaulle and Chancellor Konrad Adenauer – could however bear fruit and reinforce European collective defense in a broader and constructive sense, if not integration.

Joint (and concrete) Projects

The first, involves joint projects.

“Jointly invest to fill capability gaps, therefore enhancing the European Union and the North Atlantic Alliance” (Article 4 §2): the spirit of the 60's with the franco-german consortium Transall (or “Transport Allianz”) and C160 legacy seems to be back, as there is a common will on both sides to work out their respective cultural differences.

Defining a joint approach towards arms export is part of solving past and current conundrums.

Working towards joint tanks, artillery and a Future Combat Air System currently benefits from a strong bilateral political support, vision and financial commitment, which has already redefined the industrial defense landscape in Europe. Spain has shown interest in the SCAF, while Poland has recently stated that participating to the franco-german tank was on the table.

Similarly, the promotion of innovation on both side of the border with concrete steps in tune with the XXIth Century digital economy works in synergy with the determination to fight the risk of lagging behind game-changing technologies. The replacement of the “old” (the Fessenheim nuclear power plant) with the “new” (innovation centers and IA platforms, as described in Article 21) is a good illustration of such a shift.

Enhanced Military Co-operation

“Further reinforce the cooperation between the two armed forces (...) in order to operate joint deployments” (Article 4 § 3) and to establish *“a joint unit meant for stabilization operations in third party countries”* (Article 6).

Past initiatives such as the Franco-German Brigade have been challenged by significantly different post-WWII operational traditions.

French forces have kept their expeditionary legacy while the German forces have been reluctant to go beyond peacekeeping missions.

There is also the question of the disconnect between fundamentally different political systems authorizing military intervention. In France, the order may come from the President while in Germany the Bundestag has to approve it.

This clearly affects the nature and timing of operations.

This is changing in the past few years with a growing German military presence in Niger for instance as part of the war against terrorism in Sahel.

An example of the change is stronger cooperation to tighten a partnership between Europe and Africa (Article 7).

And such cooperation is clearly part of a broader effort to enhance security in Europe as a whole, with migration being such a divisive issue on the old Continent as well.

Enhanced Common Strategic Culture

“*Establishing a common culture*” (Article 4 § 3) is a *leit-motif* for the current German and French leaderships in order to unite Europe. The hope is for a riddle effect to occur with the current knitting of bilateral partnerships by both the German and the French sides. There is actually a re-centering of Berlin in Europe, if one observes the recent signing of cooperation agreements between Germany and Poland, and Germany and the Netherlands for instance.

Many Europeans are however critical of what is perceived as a “Paris-Berlin axis” and propose other types of European models and alliances (e.g. the New Hanseatic League or the « Italo-Polish axis » advocated by Italian leader Matteo Salvini).

However, the Aachen treaty, which promotes bilingualism on the franco-german border (Article 5) and joint franco-german officials both in executive and legislative frameworks, could be a tool to both formalize the existence and development of a youth genuinely European at heart, as well as to be an embryo for a joint European stance in multilateral bodies, such as the United Nations (Article 8).

Conclusion

There may be still a long way to go to make true John F. Kennedy’s dream to “*look forward to a Europe united and strong – speaking with a common voice – acting with a common will – a world power capable of meeting world problems as a full and equal partner*” (A New Social Order, June 24, 1963, The Paulskirche, Frankfurt, Germany).

But one has to focus on the concrete initiatives as stepping stones behind the big symbolic gestures, especially the ones which go beyond the bilateral franco-german friendship, such as Air Policing missions (France is the second largest contributor with seven NATO deployments over Estonia, Lithuania and Poland since 2007) or the development of a common strategic culture in the Baltic region with Germany, but also Denmark, Estonia and Finland in the framework of the European Intervention Initiative (EI2) launched last June.

At the end of the day, the only glue fostering a common European defense is a common threat perception, and that, in the Baltic area, is unfortunately not lacking.

A version of this article was published on Breaking Defense on January 31, 2019.

Germany, Fighters and the Future of Air Combat: Perspectives from the International Fighter Conference, 2018

11/24/2018

By Robbin Laird

This year's International Fighter Conference held in Berlin provided a chance for the participants and the attendees to focus on the role of fighters in what we have been calling the [strategic shift](#), namely, the shift from the land wars to operating in higher intensity operations against peer competitors.

It is clear that combat capabilities and operations are being recrafted across the board with fighters at the center of that shift, and their evolution, of course, being affected as well as roles and operational contexts change.

The baseline assumption for the conference can be simply put: air superiority can no longer be assumed in operations but needs to be created in contested environments.

It is clear that competitors like China and Russia have put and are putting significant effort into shaping concepts of operations and force structure modernizations which will allow them to contest the ability of the liberal democracies to establish air superiority and to dominate future crises.

There was a clear consensus on this point, but, of course, working the specifics of how one would defeat such an adversary in an air campaign gets at broader and more specific force design and concepts of operations.

The conference worked from the common assumption rather than focusing on specific options.

But the way ahead was as contested in the presentations and discussions as any considerations for operations in contested airspace.

The assumption that the air forces of the liberal democracies faced a common threat of operating in contested airspace was not contested; but the preferred approaches or the approaches being followed were.

There are clearly different approaches being taken to this challenge and each approach deserves to be examined.

The clear force for change is the coming of the F-35 global enterprise.

As a senior RAF officer put it, ["The future is now."](#)

He included in his presentation a slide outlining what from his point of view constituted the F-35 global enterprise and how the [UK](#) would both contribute to and benefit from that enterprise.

This slide laid out how he saw interactions among F-35 partners in shaping common and distinctive approaches to air power modernization driven by the introduction of the F-35.

The former Chief of Staff of the RAAF, [Geoff Brown](#), who is also the Chairman of the Williams Foundation, provided an overview of how the selection of the F-35 and its introduction in the force was part of a significant shift in the ADF to what the Aussies call a fifth-generation force.

Chatham House rules are followed by the Conference and are respected throughout this article.

A senior USAF officer involved with F-35 integration highlighted the work of the USAF in the area of operating the aircraft and working integration both on the level of the MADL-enabled F-35 force and that force with the legacy force.

His baseline point was that the F-35 is operating globally now and that the USAF is working with its service and global partners on both the ability of the F-35 as a unique fleet to operate together as well as through its link capabilities, notably generated by the software designed and enabled [CNI system](#) to work with other assets as well.

This officer argued that it was clearly a work in progress and the “sensor fusion” of the force was in its infancy, in terms of its being informed by and driven by the F-35 as a combat aircraft.

Or to put it in his words: “The aircraft works well in terms of sensor fusion; what we are focused on in this journey to mature its effects as an air system on the overall force.”

An experienced USAF test pilot, a combat proven F-16 pilot who shifted to the F-35, provided a presentation with regard to what sensor fusion means with regard to the combat pilot.

He addressed the core question: What does the situational awareness of the F-35 pilot look like and what does it mean for his combat prowess?

We published a separate interview with this pilot to provide further details on this key issue but the core graphic in his presentation highlighted the F-35 and its approach to sensor fusion.

But in simple terms, the 4th generation pilot fuses the data from his systems on-board to operate up against a specific combat task.

The F-35 pilot has SA provided to him from the sensor fusion machines on-board and he focuses on shaping tasks crucial to missions in the combat space.

What is also clear is that the [evolution of legacy fighters](#) which most would refer to as fourth generation fighters is part of the evolution of the response to operating in contested airspace.

This is a major focus of attention for any of the air forces introducing the F-35 and is clearly of concern for a legacy force like the French Air Force which does not intend to buy an F-35.

There is an interesting question: How will the different legacy fleets adapt to the F-35 and what will be their tactical and strategic contributions as they adapt to the evolving strategic environment?

This question will be the focus of attention for some of our work next year, and we will publish various pieces on this issue as well as a report next year.

There is also a key dynamic of change for what are referred to as the “[big wing](#)” aircraft such as AWACS, and the various ISR aircraft.

More generally, there is a major shift in how C2 will be done as fighters and their connected brethren work together to deliver the desired effects in the 21st century contested battlespace.

Several questions need to be addressed.

Where is sensor fusion done?

Where will decisions be taken with regard to determining the requisite effects and who will deliver them?

How will different air forces connect the force in distributed operations in contested airspace and with what systems and means?

And as multi-domain operations come to dominate, meaning the ability to deliver effects throughout the entire combat force with fighters playing various roles, C2, ISR, strike, how will platforms be designed going forward to enhance capabilities of the overall combat force?

The evolution of the fighters will include the F-22 as well so you have a case of a fifth-generation aircraft evolving with the introduction of the F-35 as well as the USAF’s F-16s and F-15s or the US Navy’s Super Hornets.

These adaptations will not be exactly the same and are clearly a focus of attention and discussion going forward.

Put in other terms, [how will legacy aircraft evolve](#), as the challenge of dealing with contested airspace but also contributing to multi-domain operations becomes a primary driver of change for the air combat force?

European speakers highlighted the evolution of three legacy aircraft, the Gripen, the Rafale and the Eurofighter.

The presentations built around Gripen provided insights concerning how the fighter really has become a flying computer and how the modern fighter is evolving as part of the reconnaissance strike enterprise.

One presenter argued that the evolution of fighters more on the model of computer dynamics meant that the meaning of aircraft generations was put in question.

A senior French General highlighted the upcoming changes in the core French fighter, [the Rafale](#), which would make it more capable, in terms of processing power and in terms of upgradeability.¹

He also raised concern that the coming of the F-35 to Europe and to NATO posed a significant problem of interoperability for the Rafale and he argued that this challenge needed to be met.

And this is a significant concern but also a focus of core attention at places like the [European Air Group](#) where I have engaged for many years exactly on this challenge.

The Eurofighter presenters highlighted as well the modernization of their aircraft and its expanded capabilities.

I have visited several Eurofighter bases and have discussed [modernization](#) of the aircraft with several persons involved in the process and produced a [report](#) on this effort in 2015.

I have also visited [RAF Tornado](#) squadrons as well to discuss the impact of the termination of their operations on the RAF as well.

The British evolution of their Eurofighters is called [Project Centurion](#) and encompasses changes associated with the retirement of their Tornados.

But it is also about evolving the aircraft to fly with F-35 which more generally subsume a broader range of Tornado and Harrier missions while adding some new mission capabilities as well.

There is an accompanying effort as well in the sustainment approach for the UK Eurofighters called [TyTan](#) and a visit to a key RAF airbase earlier this year provided an opportunity to discuss this approach with the architects and initial implementors of the evolving sustainment approach to the Typhoon fleet.

French and German presenters highlighted proposed modifications of the Rafale and the Eurofighter as part of a broader transformation which they refer to as the [Future Combat Air System](#).

This program has been launched last year by the French and German governments with the Spanish as probable partners perhaps later this year or next year.

The program is designed to replace Rafale and Eurofighter by 2040, although the question of the Tornado replacement for Germany remains a question mark and a clear focus of attention and contention as well.

Does FCAS incorporate the Tornado replacement by expanding the Eurofighter fleet and waiting for the new 2040 plus fighter or not?

This is an actively debated question, which came up as well at the discussions at the conference.

The FCAS approach can be looked at two very different ways.

One way is to look at the end state as a target towards which modernization is focused.

Here the notion is that the system or the networks will be designed to provide multi-platform and multi-node capabilities to deliver the combat effects required to operate in contested airspace and to prevail in the combat areas of interest.

The focus is less on what organically can be delivered by a proposed new fighter than its ability to trigger, interact with or work with other platforms to deliver the desired combat effect.

Here the discussion encompasses as well discussions I have in Australia with regard to what is the [changing relationship between platforms and systems](#) as well as the question of how to develop new platforms in light of the evolving approach to force package integration and distributed C2 approaches and capabilities.

A second but correlated way to look at it is to shape a building process whereby key elements are identified, designed and built through the next 20 years and operationally introduced into the relevant European combat force in anticipation of the fighter to be designed through an open-ended process with the design closure affected by that learning curve.

A case in point was provided by a senior Airbus official involved in FCAS who provided a case study of what Airbus has in mind.

The broad point was that the manned fighter would be working in the future with remote combat systems in the combat air space and the core competence which needs to be created would be a teaming capability.

This requires developing and evolving sophisticated software and teaming concepts of operations to work with extant fighters and any future fighter.

Airbus recently did a demonstration of such a complex teaming effort over the Baltic Sea. In this experiment, the drones or remotes were given combat tasks by a combat aircraft and the drones then executed their tasks using their own autonomous systems.

What this approach might mean for Airbus is that they would generate a core software driven house working to then shape relevant (in this case) platforms which would operate with remotes in the battlespace.

In other words, the relationship between software development teams and platform designers is in the throes of an historical shift, and the focus of the FCAS project in many ways underscores recognition of this shift.

I have a separate interview with this senior Airbus official which will lay out further elements of the core approach as well which will be published later this month.

Such software driven teaming capability could be understood as a building block or a stakeholder in the FCAS fighter some years down the road.

Of course, it could be part of the overall transition being driven as the F-35 has entered and expands its presence in the European combat force as well.

In other words, the adaptations of the legacy combat fighter fleet plus the development of blocks of FCAS capability can be seen as harbingers of FCAS and as adaptations to work as the NATO fleet changes as other new capabilities come into the force.

In short, significant innovation will characterize the way ahead as peer competitors confront each other and adjust to each other's capabilities and performance in combat.

And the [decade of innovation](#) ahead will clearly lay the foundation for the next.

The elephant in the room clearly was what would Germany do with regard to their Tornado replacement aircraft?

This replacement challenge also includes a subsumed issue with regard to any nuclear mission within which the German Air Force might participate in the period ahead.

The Germans face three choices with regard to Tornado replacement.

First, they could buy a squadron or two of F-35s which would link them as well to what the Nordics, the UK and Italy are also doing.

If they wish to continue the nuclear mission, the evolution of the F-35, [Block IV](#) of the software which is being readied now would be available to integrate nuclear weapons within the F-35.

Several German companies already are involved with the F-35 in terms of the manufacturing base for F-35 within the context of [Industry 4.0](#).

Second, the Luftwaffe could replace Tornado with an upgraded Eurofighter, similar in some ways to what the [UK](#) has done with Project Centurion.

There are key questions of the UK working relationship with the German part of Eurofighter as there are IP and investment issues which the [UK has made](#) but the other Eurofighter partners have not.

And with Brexit looming over the [Eurofighter future](#), ways need to be navigated to shape the way ahead.

But Eurofighter has not been certified to carry [nuclear weapons](#), and it is not clear that the US will do this, less for reasons of pique than for reasons of suitability as well.

But this is a work in progress or not.

Third, the FCAS project clearly is a long range goal for the French and German governments, but the path ahead needs to be shaped in part to find ways of convergence between the Rafale and German Eurofighter upgrades and software commonality.

Can this be done in time for the Tornado replacement?

If the goal is to replace Rafale and Eurofighter in the future with a common fighter aircraft in the 2040 time frame there is little doubt that by dovetailing efforts this can be achieved.

This requires convergence at the governmental level with regard to procurement, with convergence with regard to the two Air Forces and cultural integration among the key companies which will develop, test and build the new fighter aircraft.

As a long term goal, the key focus in the near to mid term needs to focus on the building blocks to get to the kind of integrated air combat picture highlighted by the FCAS approach.

For example, a new Airbus [A320neo](#) could be built in such a way that it is modular and FCAS enabled so to speak.

But the Luftwaffe is facing the question posed by the RAF F-35 leader: the future is now?

How does Germany address this question?

The French answer on display throughout the conference was fairly straightforward — continue the upgrade process of the Rafale which would fly in the words of on French General until 2060.

And concurrent with that upgrade and modernization process, launch the process of convergence in French and German thinking to get to an FCAS end point.

The question of the Tornado replacement either is a question which deserves an answer in and of itself, or it is mutated into Eurofighter evolution which neither the RAF nor the Italian Air Force are doing outside of the context of F-35 integration.

It is a debate and work in progress and perhaps by the next Fighter Conference there will be more clarity on these issues.

The International Fighter Conference is held by IQPC and next year's conference will be also held in Berlin from [November 12-14 2019](#) and if this year's conference is anything to go by, it is highly recommended that persons interested in the evolution of the air combat force attend.

Although the focus is upon fighters, given the evolution combat, the scope is rapidly expanding to a discussion of operations in the integrated battlespace.

I will conclude by highlighting a graphic which I crafted during my time over the past five years engaged with The Williams Foundation looking at the evolution of the integrated combat force, in ways necessary to deal with the evolving battlespace.

Operating and Prevailing in the Extended Battlespace

The Offensive-Defensive Enterprise Operating As a Kill Web



Figure 4 Conceptualizing the Extended Battlespace Operating Against a Peer Competitor

The Next Phase of FCAS: Dassault and Airbus Launch a Joint Concept Study

02/07/2019

According to an Airbus press release on February 6, 2019, the launching of the joint concept study for the Franco-German Future Combat Systems program.

Paris / Munich, 6 February 2019 – France and Germany have awarded the first-ever contract – a Joint Concept Study (JCS) – to Dassault Aviation (stock exchange symbol: AM) and Airbus (stock exchange symbol: AIR) for the Future Combat Air System (FCAS) programme. The launch of the JCS was announced by the French Minister of the Armed Forces, Florence Parly, and her German counterpart, Ursula von der Leyen, at a meeting today in Paris.

The decision by both countries represents a milestone to secure European sovereignty and technological leadership in the military aviation sector for the coming decades. Starting date for the two-year study is 20 February 2019.

Eric Trappier, Chairman and CEO of Dassault Aviation, said: "This new step is the cornerstone to ensure tomorrow's European strategic autonomy. We, as Dassault Aviation, will mobilize our competencies as System Architect and Integrator, to meet the requirements of the Nations and to keep our continent as a world-class leader in the crucial field of Air Combat Systems."

Dirk Hoke, CEO of Airbus Defence and Space, said: "FCAS is one of the most ambitious European defence programmes of the century. With today's contract signature, we are finally setting this high-technology programme fully in motion."

Both companies are committed to providing the best solutions to our Nations with regard to the New Generation Fighter as well as the systems of systems accompanying it. We are truly excited about having been given this opportunity and appreciate the trust placed in both our companies."

This planned Next Generation Weapons System will consist of a highly capable manned “New Generation Fighter” (NGF) teaming with a set of new and upgraded weapons as well as a set of unmanned systems (Remote Carriers) linked by a Combat Cloud and its Ecosystem embedded in a System-of-Systems FCAS architecture.

The JCS is based on the bi-nationally agreed High Level Common Operational Requirements Document (HLCORD) signed at Berlin Air Show ILA in April 2018 between the Defence Ministers of France and Germany as well as respective national concept studies.

Its aim is to conceptualise the different FCAS capabilities and to pave the way for future design, industrialisation, as well as an estimated full operational capability by 2040. The study will prepare and initiate demonstrator programmes for launch at the Paris Air Show in June 2019.

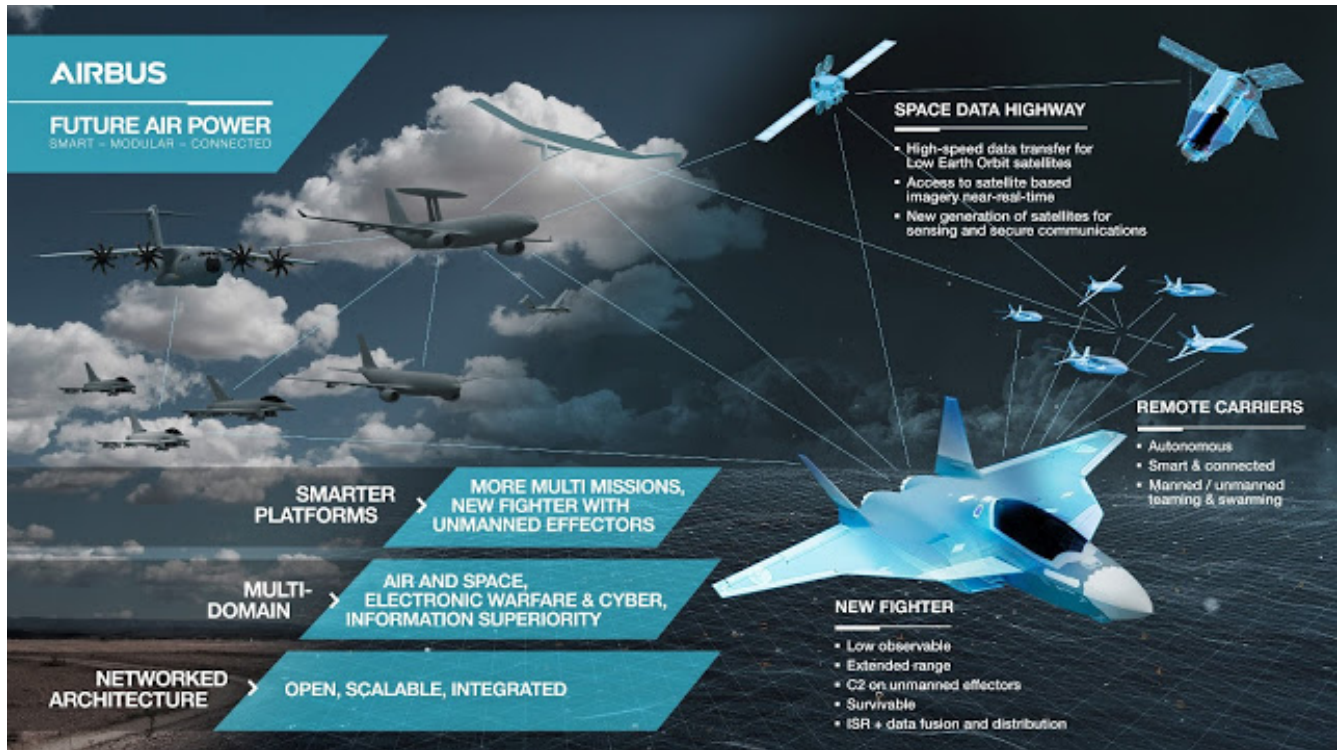


Figure 5 Conceptualizing the Future Combat Air System

In an interview last year done for *Second Line of Defense*, Pierre Tran talked with the Chief of Staff for the French Air Force who highlighted that the upgrade of the Rafale was viewed as a key step in the FAF’s approach to FCAS.

By Pierre Tran, Paris

December 5, 2018

A planned F4 upgrade of the Rafale fighter jet will serve as technology demonstrator for network capability of the Future Combat Air System, said the Air Chief of staff, Gen. Philippe Lavigne.

“Studies are fine but we need a demonstrator to see if the technology works,” Lavigne told Dec. 4 the Defense Journalists Association.

“What’s important in the F4 is connectivity,” he added.

That connectivity, via data transfer through satellites and other communications systems, is at the heart of the “collaborative combat” concept, he said.

Upgrading the Rafale to F4 will allow the certification of technology which will be at “the heart” of collaborative combat, key to the planned FCAS.

It was also important to fly the Rafale with the F-35, now arriving in European air forces.

“I’d rather have the F-35 at my side rather than flying into me,” he said.

Asked about a pending contract for the Rafale F4, Lavigne said, “it is very important it is signed as it will be operational in 2025.”

Rafale F4 will be “a form of evolution,” he said, adding that the fighter in flight rather than just have studies it work on a computer on the ground. Flying the F4 will be the start of what will effectively be a communications server for FCAS.

The network connectivity will be a critical part of FCAS, allowing the aircraft to dialog with other aircraft and platforms, while ensuring the French sovereign autonomy to carry an airborne nuclear deterrent, he said.

One way of developing communications between FCAS and allied aircraft would be working through NATO Supreme Allied Commander Transformation, he said.

That office of the Atlantic alliance studies technology which could help allied forces.

The French and German joint chiefs of staff, the respective Air Forces and procurement offices have worked on national studies for the system architecture of FCAS, he said. Industry worked alongside on those studies, with the conclusions being handed over the chiefs of staff and procurement offices of the two nations.

The French and German defense ministers have said they back a joint approach and have a “common vision of the architecture of the future combat air system,” he said.

That is backed up with their plans to sign contracts for a demonstrator for a next-generation fighter and the engine, he said.

Key to FCAS will be future threats, delivering increased capability for area denial and anti-access, he said. That greater capacity can be seen now in the Middle East, modern Chinese and Russian fighters carrying new radars and missiles, and surface-to-air weapons.

There are also threats in space as well as jamming of GPS and communications.

Other than stealth and hypersonic speeds of Mach 5, 6 and 7, it is hard to forecast what technology will be available in 2040, he said. That difficulty of prediction applies particularly to communications technology.

There is an option of building a “sword stronger than the shield,” but the cost could be unacceptably high, he said. Other factors to consider are stealth and enemies firing hypersonic weapons, “arriving very, very fast on you.”

Collaborative combat, seen as a way of dealing with potential future threats, rests on an aircraft firing and relying on another aircraft to guide the weapon to its target, allowing the pilot to leave the area, he said.

At the heart of the future system will be a next-generation fighter, which will be manned rather than unmanned, he said.

A manned aircraft reflects French pursuit of strategic autonomy, with an airborne nuclear deterrent along with submarine-launched ballistic missiles.

There will not be a robot flying an airborne nuclear weapon, for reasons of ethics, he said.

Naturally there will be artificial intelligence, with a start already made of merging sensors, he said.

There are French crews in Africa flying the Reaper UAV, rather than based at the Cognac airbase, he said. That differs from the U.S. as the French approach is to put “the crews closer to combat,” he added.

On interoperability of the Rafale with the F-35, he said there are operational and technological aspects.

On the former, the French fighter flew with US Air Force F-15 and RAF F-35 for the first time on the Point Blank exercise recently held in the UK.

There is confidence in opening up that interoperability, he said, adding that it is necessary to continue that trilateral cooperation.

In 2017 there was an exercise with the F-22, and there will be an exercise with Britain and the US in 2020, which Lavigne said he would ask to be held in France.

Those trilateral Point Blank exercises are a way to boost operational interoperability, he said.

Lavigne, appointed Air Chief of staff Aug. 31, is a former fighter pilot, having flown combat missions in the Mirage 2000 in former Yugoslavia and in the first Iraqi war.

The French Army’s Scorpion modernization program drew heavily on the concept of collaborative combat in its plan to hook up armored vehicles and troops in a single command and communications network, dubbed Scorpion Information Communications System (SICS).

The Luftwaffe Seeks a Tornado Replacement: The RAFs Tornado Replacement is Already Integrated into the Force

02/13/2019

By Robbin Laird

I had a chance to discuss many airpower issues while in Germany last week.

Obviously, issues like Eurofighter modernization, the impact of the European fleet of US and European F-35s, the Tornado replacement and the fate and trajectory of the Future Combat System were discussed during that visit.

Over the next few weeks, I will write to those discussions and the issues raised.

Clearly, a key one is the Tornado replacement issue.

As the RAF will no longer operate the aircraft, Germany is increasingly alone in dealing with operations of the aircraft and any updates necessary to contribute to the direct defense of Europe.

The cost to do so is going up.

As a [Defense News](#) story published April 13, 2018 put the challenge:

The planned phasing out of the United Kingdom’s last Tornado aircraft has German officials scrambling to deal with the increasing costs of a shrinking fleet.

Continuing aircraft reductions in the tri-national program, which also includes Italy, have led to “significant technical, logistical and financial risk” in maintaining the 1980s-era fighter-bombers, officials have told lawmakers in a confidential report seen by Defense News.

While the prospect of Britain’s exit from the aircraft program has been known since November 2016, there is “no sufficient and comprehensive planning in place” for sustaining the remaining German planes, the report warns.

And because the Tornado provides the nuclear component for the Luftwaffe, any question of the replacement of the aircraft raises the broader question of whether or no Germany remains in the nuclear deterrent business or not.

Currently, SPD machinations clearly are designed to put German out of the nuclear deterrence efforts to deal with Putin’s Russia.

But this is a work in progress which also makes considerations of the Tornado replacement a more open question than certain press reports have suggested, largely around whether or not Germany will joint the F-35 global enterprise.

The RAF has already shaped its Tornado replacement and it is not a single aircraft but an F-35 led integrated air system or air combat approach.

I have interviewed many RAF officers over the years and have provided a series of interviews that make it very clear the trajectory of the RAF on airpower modernization and the way ahead which the MoD wishes to take leveraging the new air systems combinations.

The first key element is clearly the F-35.

You need only see where the last Tornado landed to get the point. The Tornado landed at RAF Marham, where the UK’s F-35 s are based and will expand over time, to support both the Navy and the RAF.

As Group Captain Ian Townsend, the RAF Marham base commander, where the first F-35s have been IOCd for the RAF, noted in my interview with him:

“In the past two decades our airpower has been dominant. But we do not want to introduce the F-35 as a replacement aircraft operating within the constraints of the legacy system. We need a multi-domain capability to ensure that our adversaries do not simply work around a classic airpower template.

“The challenge is to exploit the F-35 as a lever for broader multi-domain combat innovations. What we need to make sure is that people don’t use multi-domain to go around our combat air advantage but rather to evolve our combat air advantage and make it a core part of our own cutting edge multi-domain capability.”

The second key element is to migrate the Tornado EW role over a system-of-systems approach, which will rely on the F-35, the P-8s, perhaps the Wedgetail as the core combat assets in an integrated approach.

In an interview which I did in 2016 with Wing Commander for the Tornado Operatinal Conversion Unit at Lossiemouth, Paul Froome, we focused on this key aspect of Tornado transition.

One challenge is that the Tornado crews have combined a wide range of operational experience, ground attack, day-night operations, electronic warfare, and reconnaissance and the question is where those skill sets will migrate within the RAF.

With regard to EW, Wing Commander Froome argued that there has been an atrophy of the Wild Weasel like skill sets in favor of what became a more pressing need, namely to combat manpads.

“Earlier, we had two squadrons of Tornados that were effectively Wild Weasel squadrons with our ALARM or air-launched anti-radiation missile, similar to HARM. As we fought in Iraq and Afghanistan, some skill sets began to fade, and this was one of them. The threats there were MANPADS, so our EW system developed a very capable counter-MANPAD capabilities.”

What will happen to the Electronic Warfare competence as the Tornados are retired?

“Good question. They can provide support for a number of the new platforms like F-35 and P-8. The RAF tends to be good at carrying forward core capabilities and sorting out how best to evolve them with new platforms coming in. I think we’re very good, historically, on recognizing people with those competencies, and their skill-set, and using them in the best place.”

He did issue a caution with regard to the coming of the P-8 and the need to evolve the skill sets.

“The P-8 is clearly not Nimrod. If we think that we’re going to take an old-fashioned air electronics operator, and use him in the same way on the P8, we’re missing a trick.

We need to be developing the crews now to be maritime warfare operators, not electronic operators, and radar, and wet and dry, we need to be thinking bigger than that. If we don’t, then you end up making problems for your F-35, your Typhoon, your P8, your Reaper, your Son of Reaper.”

In short, sun setting one platform requires a shift to shape an effective sunrise of the next. It is about the challenge of managing an innovative transition.

The third aspect is modernization of Typhoon.

The RAF does not fly a standard Eurofighter; they have evolved the Typhoon outside of the Eurofighter coalition and shaped capabilities to compliment the F-35 and to subsume some of the weapons capability of the Tornado.

For the UK, Project Centurion is the core modernization effort with regard to Typhoon, the main focus of which is upon transferring some of the weapons carried by the Tornado onto the Typhoon, to enable that aircraft to take over some of Tornado’s capabilities, but clearly not all.

It is clear that the RAF had to go outside of the very slow modernization process generated by the Eurofighter collaboration approach. And they did so, with a clear eye to subsuming some of the Tornado missions but also with regard to the coming of the F-35 and the expectation that synergy between the two would define the way ahead for the RAF.

My interview in 2016 with Wing Commander Peters, Officer Commanding Engineering and Logistics Wing at RAF Lossiemouth, highlighted the path which the RAF took to get the modernization of the Typhoon they wanted.

The RAF has paid for the upgrades on Eurofighter to get it to the point where it can subsume some of the Tornado missions and if another Eurofighter partner wishes to acquire UK intellectual property, the UK MoD is probably willing to do so for a price.

Wing Commander Peters highlighted that during his time at Abbey Wood, the structure was put in place to make the requisite changes.

Here the Requirements Management staff and the engineering specialists of the RAF and MoD Civil Service operated in close proximity to identify necessary changes and to find ways to get those changes implemented.

“The requirements manager would walk 100 yards across the hall and say: “The Air Command customer wants me to achieve this effect.

“Engineers, what can you do to deliver it?

“During my time at Abbey Wood, we were driving the PIEB modifications on the aircraft for UK needs for the RAF.

And it was clear from talking to an RAF weapons officer that only some of the Tornado weapons could be migrated to the Typhoon, and that those weapons would not operate exactly in the same manner, given the very different nature of the operating enveloped and flight characteristics of the two aircraft.

In other words, the Tornado replacement for the RAF is driven first by the F-35, secondly, by a modified Typhoon, which will subsume some of the weapons roles of the Tornado, and by an expanded EW capability delivered by several new aircraft working together in the fleet.

And the Ministry of Defence’s approach to its “next generation air combat system” or Tempest is just that: it is not an aircraft per se but leveraging the learning they will engage in the next decade leveraging the “Tornado” replacement so to speak.

And a key part of that will be the cross-learning delivered by the F-35 global enterprise and a challenge will be to work with those who are not as well.

A projection of what this looks like in terms of the impact of the F-35 global enterprise on European airpower can be conceptualized something like this:

The Impact of the F-35 Global Enterprise on Europe

France, Germany and Sweden: Reshaping Their Approach



Figure 6 Conceptualizing the F-35 Global Enterprise

In short for Germany, the Tornado replacement issue entails a number of questions and challenges.

First, will Germany remain part of nuclear deterrence by participation in that mission?

Second will the Luftwaffe will work with the RAF and how the most advanced Typhoon capabilities can be incorporated in the “Tranche IV” Eurofighter?

Third how will the Luftwaffe replace the integrated ground attack capabilities of Tornado not done by Eurofighter?

A key aspect of this which will be covered in later articles is the importance of ensuring in some way that its combat aircraft can integrate with active defense capabilities both for the direct defense of Germany and its ability to project power in the proximate neighborhood.

Fourth how will the Luftwaffe ensure that it can operate with F-35s?

Fifth, how will the Luftwaffe ensure that the very long range commitment to FCAS simply neglects the ability for the Luftwaffe to be at the heart of near and mid term rebuild of the Luftwaffe and German commitments to the defense of the new NATO members to its East?

Obviously, this a major challenge and a work in progress.

The Luftwaffe and Tornado Training in the United States: The Challenge of Preparing for Conflict in the Extended Battlespace

02/14/2019

By Robbin Laird

One of the challenges facing European airforces clearly is having training space to effectively work complex training, especially as the liberal democracies return to the challenges of operating in contested air space.

The importance of such training space is increasingly clear as the US and its allies work training operations in the extended battlespace.

In various interviews we have conducted at Nellis, Fallon and Yuma, the challenge has been identified as growing, which will be dealt with in part by new ways to do live virtual constructive training, and by operating in a much wider area within the United States beyond those of those found within the locus of the three warfighting centers.

What is clearly likely to happen is that Australia, Canada and the United States will become even more significant for the European Airforces training to operate in the contested and extended battlespace.

It is already clear that fifth generation enabled forces are doing so in the United States and that Canada and Australia are very likely to play key roles as well.

The announcement of the new FCAS program certainly raises really fundamental questions of where a system of systems air-centered force will train and given how essentially training will be in the actual development of the system, it is not just about flying a combat aircraft – it is about interactively developing, evaluating and reshaping its role within the kill web.

For the Luftwaffe, training in the United States for the Tornado force has been critical to their air warfare competencies.

This period is coming to an end as the aircraft itself is retiring from the force.

We highlighted this development in a [2017 story](#).

Auf Wiedersehen to New Mexico for the German Air Force

With the declining numbers of Tornados (the RAF is already on a clear sunset schedule) the German Air Force is closing its training facility in New Mexico.

The German air force has entered its final stage of departure, however they are not expected to complete their departure from Holloman AFB until mid 2019.

Symptomatic of the end in sight is the recent delivery of a German Tornado to the New Mexcio Museum of Space History.

And recently, the donated Tornado was moved from Holloman Air Force Base to the Otero County Fairgrounds for a public display on January 13, 2019.

The photo below shows that Tornado being transported to the fair grounds.



Figure 7 Moving a Tornado to a New Mexican Fair Grounds Prior to Moving to the New Mexico Museum of Space History

Editor's Note: The close linkage between training and development is very likely to deepen as well.

Training and Development for the Kill Web or an FCAS

In a discussion with John Blackburn held in Canberra, Australia in August 2017, the dynamics of change were discussed whereby training and development clearly need to be linked in shaping a software enabled system like the kill web or FCAS.

2017-09-08 By Robbin Laird

The Australian Defence Force has set a tough bar for itself – shaping an integrated force and crafting an ability to design such a force.

This is a tough bar but one which they are trying to energize in part by leveraging their new platforms to shape a way ahead beyond the classic after-market integration strategy.

But how best to do this with regard to training and development of the force?

And how to maximize the combat effectiveness to be achieved rather than simply connecting platforms without a significant combat effect?

When we visited Fallon this year, we were impressed that the training command is adding new buildings which are designed to shape greater capability to get the various platform training efforts much better connected.

Fallon is known as the Carrier in the Desert; but as the carrier and its role within the fleet evolve and encompass distributed lethality and the kill web, so must the Carrier in the Desert evolve.

It starts with the addition of two new buildings, which embrace the shift.

One building is to house the integrated air enabled force; the second houses the simulators that drive the process of their integration.

The first building, building P420, will house the integrated training effort.

“The entire building is a SCIF (Sensitized Compartmented Information Facility) at 55,000 square feet.

“We will have offices in there.

‘We will have auditoriums.

‘We will have classrooms.

‘We will have mission-planning rooms.

‘And the building will also house the spaces from which we monitor and control missions on the Fallon Range.

“We will be able to do all of our operations at the appropriate classification level for the entire air wing.”

The additional new building will house the simulators.

“Building P440, which is 25,000 square feet, will host initially the simulator devices for the integrated training facility.

“These include F-35, E-2D, Super Hornet, Growler, and Aegis.”

We were also interested in the clear desire to shape Training, Tactics, and Procedures (TTPs) cross platforms where possible.

The F-35 coming to the carrier deck also has key radar capabilities, notably built by the same company, Northrop Grumman, and working integration will provide a key opportunity to enhance the capabilities of the CAG in supporting fleet operations.

Clearly, tools like Live Virtual Constructive training will become increasingly more important in training for the extended battlespace and there is a clear need to work integration with live assets today with US and Allied forces in order to lay down a solid foundation for something like LVC.

The team emphasized the need to have the advanced assets at NAWDC to allow for the kind of integrated training, which is clearly necessary.

They would like to see E-2Ds and F-35Cs physically at NAWDC to allow for the kind of hands on experience, which can build, integrated cross platform training essential for the development of the skill sets for dominance in the 21st century battlespace...

Hence, a different pattern is emerging whereby training is as much about combat development TTPs as it is about single platform proficiency.

“The problem is right now, we don’t have aircraft here to fully develop cross platform integration, because we don’t have enough time spent together to figure out the optimal direction to drive that kind of integration.”

But what is missing is a capability to connect training, notably cross platform training with software code rewriting of the sort, which the new software upgradeable platforms like F-35 clearly can allow.

Indeed, we added to the above article the following:

One could also add, that the need to build ground floor relationships between code writers and operators needs to include the TTP writers as well.

During my visit to Canberra, I had a chance to discuss with Air Vice-Marshal (Retired) John Blackburn how the training approach could be expanded to encompass and guide development.

“We know that we need to have an integrated force, because of the complexity of the threat environment will face in the future. The legacy approach is to buy bespoke pieces of equipment, and then use defined data links to connect them and to get as much integration as we can AFTER we have bought the separate pieces of equipment. This is after-market integration, and can take us only so far.”

“This will not give us the level of capability that we need against the complex threat environment we will face. How do we design and build in integration? This is a real challenge, for no one has done so to date?”

Laird: And the integration you are talking about is not just within the ADF but also with core allies, notably the United States forces. And we could emphasize that integration is necessary given the need to design a force that can go up an adversary’s military choke points, disrupt them, have the ability to understand the impact and continue on the attack.

This requires an ability to put force packages up against a threat, prosecute, learn and continue to put the pressure on.

Put bluntly, this is pushing SA to the point of attack, combat learning within the operation at the critical nodes of attack and defense and rapidly reorganizing to keep up the speed and lethality of attack.

To achieve such goals, clearly requires force package integration and strategic direction across the combat force.

How best to move down this path?

Blackburn: We have to think more imaginatively when we design our force.

A key way to do this is to move from a headquarters set requirements process by platform, to driving development by demonstration.

How do you get the operators to drive the integration developmental piece?

The operational experience of the Wedgetail crews with F-22 pilots has highlighted ways the two platforms might evolve to deliver significantly greater joint effect. But we need to build from their reworking of TTPs to shape development

requirements so to speak. We need to develop to an operational outcome; not stay in the world of slow motion requirements development platform by platform.

Laird: Our visit to Fallon highlighted the crucial need to link joint TTP development with training and hopefully beyond that to inform the joint integration piece.

How best to do that from your point of view?

Blackburn: Defence is procuring a Live/Virtual/Constructive (LVC) training capability.

But the approach is reported to be narrowly focused on training. We need to expand the aperture and include development and demonstration within the LVC world.

We could use LVC to have the engineers and operators who are building the next generation of systems in a series of laboratories, participate in real-world exercises.

Let's bring the developmental systems along, and plug it into the real-world exercise, but without interfering with it.

With engagement by developers in a distributed laboratory model through LVC, we could be exploring and testing ideas for a project, during development. We would not have to wait until a capability has reached an 'initial' or 'full operating' capability level; we could learn a lot along the development by such an approach that involves the operators in the field.

The target event would be a major classified exercise. We could be testing integration in the real-world exercise and concurrently in the labs that are developing the next generation of "integrated" systems.

That, to my mind, is an integrated way of using LVC to help demonstrate, and develop the integrated force. We could accelerate development coming into the operational force and eliminating the classic requirements setting approach.

We need to set aside some aspects of the traditional acquisition approach in favor of an integrated development approach which would accelerate the realisation of integrated capabilities in the operational force.

The Euro-Hawk Case

And a cautionary tale with regard to flight certification for any system as complex as the FCAS in training for an extended battlespace is suggested by the Euro-Hawk example as well.

The EASA would only certify the Euro Hawk for use over unpopulated areas, which would render it pretty much totally useless. Adding the anti-collision system would theoretically be possible, but requires extensive re-engineering of the platform, increasing the costs of the project by hundreds of millions of Euros.

European airspace has always been heavily regulated—and the German military knew this. The political opposition has had a field day, calling the Euro Hawk's cancellation over a known issue a "squandering" of taxpayer money.

What All of This Means for the Tornado Replacement

Put bluntly and simply, the Tornado replacement program for Germany is not simply about an airplane it is about ensuring that whatever aircraft enters the force actually delivers directly and immediately on an accelerated path to a kill web capability.

And in such a way that training on that aircraft actually places Germany and the Luftwaffe on the development approach for the evolving processes of shaping combat capability in the extended battlespace.

And as Blackburn has noted, training and development will be correlated in new ways going forward, to being certain the Luftwaffe can train to develop a system of systems approach will be an essential part of such a replacement decision if there is to be a credible path forward to a future combat air system of systems approach.

Looking Back at the RAAF and its F-35 Turning Point: The Perspective of Air Marshal (Retired) Geoff Brown

02/15/2019

By Robbin Laird

I first visited Australia in 2014 in order to attend and to write a report for the Williams Foundation on their seminar on airpower in 2025.

The keynote speaker was clearly going to be Air Marshal Brown, the head of the RAAF, and one of the key subjects on the table was Australia and its decision to buy the F-35.

The Aussies had already added a new tanker, a new airborne command and control aircraft, were on the way to becoming a C-17 enabled force but the question of the nature of the tip of the spear remained up in the air.

They had purchased Super Hornets and with their AESA radars had already led to changes in how the force was handling that data, but the aircraft was not designed to operate in contested airspace in a higher intensity warfare.

The Australian defense leaders clearly grasped that their time in the Middle East was ramping down and that the dynamics of change in the region would require them to optimize their force for higher intensity operations in the region.

I remember this conference quite clearly because it was a public discussion of why make the transition from the Super Hornet as a the tip of the force for the RAAF to the F-35.

Why was such a transition considered by the COS of the RAAF to be so important?

In his presentation at the seminar in 2014, this is how he addressed this question.

With so much capability inherent in generation 4.5 fighters, it has been often asked why do we need 5th generation?

The answer to this is simple: we need to ensure we conduct tomorrow's air combat operations with tomorrow's capabilities.

Historical examples highlight loud and clear that today's technology won't be suitable in 2025, and certainly not in 2035.

Part of the answer in his view lay in the INABILITY of the 4th generation fighters to operate in the strategic environment of 2025.

He added:

Importantly, it tells us that technologies will have evolved markedly by 2025, making it essential to acquire capabilities with future growth. 5th generation capabilities, such as the F-35 Joint Strike Fighter, offer a quantum leap in air power capabilities over their compatriots,

The missions they will undertake may not be new, but the capabilities 5th generations fighters bring will vastly change the character and effectiveness of how the missions are undertaken.

He also argued that a core capability built into the F-35 would provide the kind of capabilities which the combat pilot of 2025 would need to rely on as a baseline capability in order to prevail in air combat and in support of the force.

To achieve decision superiority in 2025 and beyond, Air Combat Operators will need to be able to see who and what is in the area of operations, with very few limits to arcs of coverage.

The fusing of multi-spectral sensors and electronic support must enable targets to be detected without the knowledge they are being tracked.

The cueing of capabilities must not be limited to on-board sensors; they must be available from multiple off-platform sources.

The networking capabilities of these future air combat assets must be a force multiplier.

They must be able to feed, and be fed from, multiple sources.

The end result is that the pilot must be able to focus solely on the fight, not allocating time and effort to managing data that supports the fight.

Finally, he argued that the aircraft was both crucial in terms of air combat superiority but also in terms of changing the focus of the ADF to fight more effectively in the 2025 time frame.

New capabilities breed new methods, and how a 5th generation fighter undertakes these missions in 2025 and beyond are unlikely to resemble yesterday's air combat operations. In future, as it is now, the ability to integrate all the fundamental inputs to capability will still be what determines relative combat effectiveness.

The ability to fly an aircraft does not mean you have the ability to fight the aircraft.

This is never more so than in 5th generation fighters.

This is where training will be so important to our success in future air combat operations.

He would add later at the roll out event of the first Australian F-35 the following:

“Transitioning to a fifth generation fighter will challenge us to step outside our comfort zones and question past habits.

The RAAF will partner and work closely not only with our sister services – the Royal Australian Navy and the Australian Army – but also with the USAF, USN, and USMC to learn, leverage and exploit those intrinsic 5th generation opportunities.”

That seminar and the discussions at the seminar was an opportunity to see the RAAF and indeed the ADF at a strategic turning point and gain an understanding of their thinking about the way ahead.

Having just returned from Germany where there is a debate about the Tornado successor where two 4th generation aircraft, Eurofighter or Super Hornet, are discussed as options for this role, when the F-35 has already come to Europe and will come in increasingly numbers.

Because several senior Luftwaffe personnel see the need for the F-35 as the Tornado replacement, I decided to revisit the Australian decision point with regard to F-35 and to get a sense from Geoff Brown, now Chairman of the Williams Foundation of that decision point and the thinking about what the F-35 was the correct path for the RAAF, rather than staying solely on a Super Hornet track.

Question: Revisiting the strategic decision point about moving on from Super Hornet to F-35, what was your thinking?

Air Marshal (Retired) Brown: If you don't have the best fighter as a foundational element for your force to maintain air superiority, it calls into question your overall capabilities as an Air Force.

"To ensure air superiority you are then going to have to rely on someone else, and if they don't show up, you don't have it.

"You self select to be a secondary player.

"And as I look back at the history of the RAAF that has happened in our history and it has not been a pleasant national experience.

"One example was our experience in World War II in New Guinea with our Vengeance bombers, a plane not bought with regard to its role in the RAAF force structure or doctrine.

"We had a similar experience in the Korean War where we had second string aircraft and were marginalized in the operations.

"You are going to spend time and money to maintain a fleet; it makes no sense to go second best and place yourself in the second tier and be at the mercy of others to do the missions, which you need to do for your national security."

Question: Since we first met I have been involved with the Williams Foundation seminars and have watched the ADF discussions and debates evolve from classic airpower discussions to building an integrated force to now highlighting key building blocks in shaping enhanced Australian sovereignty in the defense of Australia.

As you know this year's seminars will focus specifically on the question of enhancing those options?

Where does the F-35 decision fit into the strategic trajectory which the ADF and the Australian government has set for themselves?

Air Marshal (Retired) Brown: For me the core point is that even allies have divergent interests.

"And if you want to pursue your interests in such a situation you need to have the means to do so.

"You will not be able to do so unless you are operating a front-line air force enabled by a fifth generation fighter.

"You cannot organize yourself just to rely on someone else; you have to be able to do key tasks yourself.

"And with regard to the projected new FCAS program, many of the things projected to be done then we will be doing in the next four to five years.

"We will have an announcement at Avalon, which will indeed highlight our approach along these lines.

"My point is, you need to do it now; not in 2045."

Question: Europe is starting to see the F-35 start to arrive in numbers and certainly the UK, Norway, Denmark, the Netherlands, Belgium and Italy will cross learn.

This clearly is going to happen in your region.

How do you view the importance of shaping a common fifth generation capability in your region?

Air Marshal (Retired) Brown: We will be facing significant crisis management challenges.

“With a common fifth generation infrastructure in the region, we can fly to the crisis and work with whichever ally is the key player in that crisis situation.

“We will not have to bring a fed ex fleet to establish our initial presence and operational capabilities; we can rely on the initial supplies and sustainment capabilities in our ally’s facilities.

“You can choose to build up your logistics at the time instead of having to bring the entire shooting match with you right from the start.”

Editor’s Note: According to the IISS Top 15 Defence Budgets 2017 Germany spends 41.7 billion dollars per annum; Australia spend 25 billion dollars per annum, yet Australia has the most modern air force of any of the liberal democracies.

For earlier articles which dealt with the 2014 seminar on Airpower in 2025, see the following:

<https://sldinfo.com/2014/03/the-coming-of-the-f-35-to-australia-shaping-a-21st-century-approach-to-airpower/>

<https://sldinfo.com/2014/03/the-coming-impact-of-the-f-35-on-raaf-modernization-transformation-by-a-battle-hardened-force/>

<https://sldinfo.com/2014/03/preparing-for-the-f-35-an-aussie-perspective/>

<https://sldinfo.com/2014/03/an-raaf-f-22-pilot-explains-the-dramatic-shift-to-fifth-generation/>

<https://sldinfo.com/2014/04/the-chief-of-staff-of-the-australian-air-force-on-the-future-of-air-power-the-impact-of-the-f-35-on-the-raaf/>

<https://sldinfo.com/2014/08/the-raaf-and-the-f-35-air-marshall-brown-discusses-the-way-ahead/>

For our reports on the various Williams Foundation seminars as well as other articles from the Central Blue section of The Williams Foundation website, see the following:

<https://defense.info/category/williams-foundation/>

German Defense Policy at a Crossroads: The Tornado Successor Issue

By Karl Müllner and Klaus-Peter Stieglitz

The successor to the Tornado fighter jets is about Germany's NATO contribution to credible deterrence. The government has ruled out the most advanced weapons system F-35 - for political reasons. Two ex-generals warn of the consequences
Karl Müllner and Klaus-Peter Stieglitz

With the decision to take the fighter aircraft F-35 of the US manufacturer Lockheed Martin without closer consideration from the competition for the succession of the obsolete Tornado jets of the Bundeswehr, Germany maneuvers itself in NATO offside. Moreover, with the simultaneous postponement of the successor decision for the 85 Tornado aircraft indefinitely, Germany weakens NATO at its core - the credible deterrence and thus its ability to maintain peace in Europe.

Why were these two decisions made that way?

There is only one answer to that: they were made just for political and industrial reasons. For from the perspective of all military experts, the succession decision is already overdue for years. And the big favorite in a fair competition is the F-35. Overdue is the succession decision for the Tornado fleet, because their economically viable service life will find an inevitable end at the latest by the end of the next decade, after 50 years of use. The other two Tornado nations, Britain and Italy, had seen this long ago with far-sightedness and therefore decided to participate in the US Project F-35.

With the decision to procure the F-35, which in Germany at that time was commented on with a shortsightedness and a peacemaking zeal as a wrong decision and billions grave, Italy and Great Britain not only consolidate their leading role in the field of European NATO air forces, they also gain valuable technological Know-how and secure high-tech jobs. Incidentally, both countries are also involved in the Eurofighter, which, despite intended further developments, offers far less high-tech potential in the coming years than the F-35.

That the F-35 could hardly be beaten in a fair competition is proven by the competitions already held in Norway, Denmark, the Netherlands and Belgium. The F-35 clearly won in all relevant categories against all European and US competitors, including the Eurofighter.

The performance of the F-35 is undisputed, the operating costs are at a comparable level, especially in the logistical network with the partner nations, and the initial costs are significantly lower than those of a Eurofighter.

Together with the future European F-35 nations Italy and Great Britain, these European countries will then have the world's most advanced fighter aircraft, which, with its unique capabilities, will open completely new doors to European and transatlantic military cooperation in operations and operations. Nations like Germany, but also France, will only be in the second or third row.



Figure 8 Air Chiefs of the Luftwaffe Discuss the Tornado Replacement Issue

So what was decisive for the exclusively political decision in Germany?

First, the state of the current federal government, which, according to opinion polls, has not had a majority in the population for months. In particular, the Social Democrats are in a low, in which they shy away from a decision on a new fighter aircraft for the Bundeswehr.

Secondly, the successor decision for the Tornado fleet involves German participation in NATO's nuclear deterrent, commonly referred to as nuclear sharing. A crucial issue for the security of Germany, but domestic policy in all parties unpopular topic.

Third, whether the Social Democrats hope to win back old voters by expanding the welfare state should not be of interest. The financing of such projects is in direct competition with higher defense spending. Even though Germany is in favor of achieving NATO's two-percent target, which is still a long way off at 1.24 percent, there is apparently no consensus in the grand coalition to finance a Tornado successor.

Fourth, ideological factors play a role that should not be underestimated. For example, hardly anyone in the grand coalition wants to support the purchase of a US fighter aircraft, even if it offers the best value for money and could be obtained with low risk.

Nobody wants to treat US President Donald Trump as a success right now.

Fifth, France threatens the failure of the politically agreed flagship project of a future Franco-German fighter aircraft in 2040+ if Germany decided to buy American F-35 aircraft. While this threat is hardly substantiated, it has left so much of an impression in Germany that it has had enough impact.

Although this can be explained by looking at the recently signed German-French Treaty on Future Cooperation in Aachen, it satisfies French rather than German interests. Incidentally, Belgium successfully resisted France's massive political influence over its F-16 successor selection decision and, based on the facts of its competition, ruled appropriately for the F-35.

And finally there is the interest of German industry to keep American competition away from the German defense market. In view of its own weaknesses, to be able to supply the Bundeswehr with the aircraft required for future order fulfillment, competition with a US F-35, which would inevitably be lost, must be avoided at all costs. The political decision to exclude the F-35 from further consideration in Germany is thus a victory for the German armaments lobby, it weighs heavily for the Bundeswehr.

Which security policy consequences arise from this?

First, the Ministry of Defense continues to explore two ways to succeed the tornadoes but without a specific timetable. Given the political environment, no one believes that the grand coalition will decide yet. The decision is therefore postponed indefinitely.

At the same time, however, this means for the Bundeswehr that it must continue to fulfill its mission with the decrepit tornadoes indefinitely. In addition to incalculable high costs and risks for availability, this also brings with it growing risks in operation.

As a successor are theoretically still the Eurofighter or the US F-18 for election. However, both options have the serious disadvantage of being less effective and less efficient than the F-35, despite higher

costs and development risks. Order fulfillment is not possible with any of these options without significant limitations.

For both the F-18 and more of the Eurofighter are lagging not only because of the lack of stealth cap, but also their sensors and management systems at least one generation of aircraft behind the F-35.

In concrete terms, they have little chance of achieving their goals and fulfilling their mission in an action against an enemy with a decent air defense.

For the pilots this would be like a hardly survivable Ascension squad.

The desired deterrent effect would remain.

The threshold to an armed conflict would be lowered.

And all in times of the termination of parts of the European contract-based security order, such as by Russia with the illegal international occupation of the Crimea or INF-contracted missile armor.

Neither in an armed international conflict nor for conventional and nuclear deterrence in the context of Alliance and national defense Germany will be able to contribute significantly to European or NATO air forces without fifth-generation combat aircraft.

The pledge to NATO to be able to lead one of the future multinational Air Force Groupings can also not be fulfilled.

The same applies to the EU.

The loss of credibility that Germany is suffering with the decisions taken so far also weighs heavily.

For years, Germany has spoken of its willingness to take on more responsibility for peace and a just order in the world - as documented in the 2016 White Paper on Security Policy. It also manifests itself in the right to a permanent seat on the United Nations Security Council.

However, the assurances and claims quickly reach their limits when it comes to the concrete creation of military capabilities with which they can be exercised in the first place. For the Tornado fleet is the only major German contribution to NATO for deterrence and peacekeeping in Europe. Deterrence, however, only works if it is credible.

It does not live by symbolism, but by concrete skills.

However, due to its age, the German contribution to the Tornado has already lost credibility. The discrepancy will be even greater as the F-35s become operational in Italy, the UK, the Netherlands, Belgium and Turkey within a few years.

If the German contribution continues to be untrustworthy or can no longer be provided, this would also have negative effects on the strategically indispensable US guarantee and the nuclear disposition of NATO because of the resulting imbalance in the risk and burden sharing in NATO. A termination of the NATO-Russia Basic Act and the stationing of nuclear weapons in Eastern Europe could be the result.

When deciding on the successor to the Bundeswehr's Tornado fighter plane, it is not just an important military decision with a European political and industrial significance, but a strategic decision with an impact on the European security order as a whole and Germany's role as a leading nation.

If Germany sticks with the path it has now taken, it will leave the circle of security leadership nations in the EU and NATO, degrading itself to become a secondary support force. It is necessary and corresponds to responsible policy for our country to deal with the issue of succession to the Tornado of the Bundeswehr once again objectively and with the necessary strategic vision and to revise the decisions taken so far.

The authors are former Chiefs of Staff of the Luftwaffe.

February 15, 2019

Translated from the original German piece in *Die Welt*

<https://www.welt.de/politik/deutschland/article188806907/Muenchner-Sicherheitskonferenz-Ex-Generale-greifen-Ruestungspolitik-an.html?wtrid=onsite.onsitesearch>

The European Air Group and the European Airpower Transition

03/27/2018

By Robbin Laird

The European Air Group has been an incubator for change within the European air forces. The EAG flies below the radar but is a key asset for the Air Chiefs of 7 major European Air Forces in shaping ways to work more effectively together and to get the best value they have from legacy and new assets at the disposal of those forces.

They clearly have grasped the point of the Ben Franklin moment: We all hang together or we hang separately!

“We need to learn to work more effectively together to ensure that our individual national air capabilities are maximized in their effectiveness,” as one EAG official told me a few years ago.

The head of the EAG is rotational among the Air Chiefs, with the current COS of the Italian Air Force now the head of EAG. The Chiefs meet once a year to shape an agenda and to determine the way ahead based on the work performed by the EAG or being shaped for the EAG. There is a small permanent staff, headed by a Deputy Director and a Chief of Staff for the EAG, with its headquarters at RAF High Wycombe, UK.

The seven European Air Forces involved in the EAG are the following: the UK, France, Italy, the Netherlands, Belgium, Spain and Germany.

Two notable achievements of the EAG are working through the terms of reference and the approach to establishing the European Air Transport Command and the European Personnel Recovery Centre.

In 2014, I first visited the EAG and presented a briefing on how to think about the integration of 4th and 5th generation aircraft as European airpower is transformed under the impact of fifth generation operations.

<http://www.euroairgroup.org/project/4th5th-gen-aircraft-integration-initiative/>

In 2016, the EAG held a working group session and conference on the opportunities and challenges with leveraging fifth generation transformation.

The 2016 two-day 4th 5th Generation Integration Information Forum was held at the home of the EAG, RAF High Wycombe, at the end of April 2016.

With national 5th Generation aircraft programs maturing and the need to integrate 4th and 5th generation aircraft into future coalitions acknowledged the forum is providing a vital conduit to keep information flowing between both EAG nations and external partners and increase the awareness of nations about the challenges to come.

The first day saw experts from academia and industry set the scene with their interpretation of the technological and political developments that are going to shape the future of air power and more specifically the challenges of integrating 4th and 5th generation multi-national air forces into that vision.

The second day opened the floor to a discussion between the individual EAG nations present, Tactical Leadership Program (TLP), Joint Air Power Competence Centre (JAPCC); European Union Military Staff (EUMS) and the USAF that was being represented for the first time at an EAG 4th 5th Generation Forum.

The debate focused on the specific challenges being experienced at a national program level whilst also providing an overview of the future Air Force compositions.

The identification of the common challenges being experienced with this cutting edge evolution of the approach to, and employment of, air power is key to the development of future collaborative solutions.

National representatives were able to take away key areas for further consideration and investigation that when resolved will be fundamental to enhancing interoperability between the nations.

The 4th 5th Generation Integration Information Forum will continue to provide a crucial communication channel between the EAG nations as the next generation of combat aircraft are brought into service in Europe.

<http://www.euroairgroup.org/project/4th-5th-generation-integration-information-forum-april-2016/>

Since then, the work on 4th 5th Gen integration has progressed considerably and the Integration Forum has been absorbed within a dedicated program that has been launched by the EAG in 2017.

During my most recent visit to the EAG in February 2018, I had a chance to talk with the Deputy Director of the EAG, Air Commodore Robert Adang of the Royal Netherlands Air Force, and to get an update on the effort to leverage fifth generation capabilities.

<http://www.euroairgroup.org/wp-content/uploads/20161114-Bio-Cdre-Adang-DDEAG.pdf>

As he noted in our discussion, as a young student he saw the first F-16 ever to visit the Netherlands fly over his school and head for a Dutch Air Base. Now, he is on the ground floor as the F-35 enters European Air Forces, and is a force for change in reshaping the overall concepts of operations and combat capabilities of European Air Forces.



Figure 9 Slide from EAG Briefing on Airpower Transition

The EAG is addressing the question of how to shape an interoperable 4th-5th generation air force. They are addressing the question of “interoperability gaps” and how to attenuate them.

The EAG has developed a program, which they call the Combined Air Interoperability Program (CAIP) guiding the overall effort. The EAG Steering Group mandated in 2016 that there was a need “to develop a plan to solve the interoperability challenges that result from integrating 5th Gen with 4th Gen systems.”

The EAG is clearly not working this alone but is also providing operational intellectual capital to core organizations working the challenge in Europe, including USAFE, the Joint Air Power Competence Centre and NATO HQ Air Command.

As Air Commodore Adang put it: “the objective is plain and simple. It’s to create the optimum conditions for future combined training, exercise and operations by resolving interoperability issues that result from 4th and 5th gen integration.”

The baseline point is that F-35s will be a part of the force but not the dominant part numerically.

As Adang underscored: If I look at European air forces, current plans, when you total the projected number of F-35s in about ten years' time, say 2028, and you compare it to the number of 4th gen fighters that will be used at that time still, then you're looking at about 20% fifth gen systems and 80% 4th gen systems, not including any F-35 or F-22 US forces.

“And the total number that makes up that 20% of F-35s is too small to create the total effects that you need in a major combined air operation.

“You need the missile carrying capabilities and other attributes of the 4th gen fighters to ultimately be successful. So it's only through a combination of 4th and 5th gen that we can be successful in future air operations.

“And this is the trick.”

Several dynamics of change are being addressed to generate a transformation process.

The first is shaping new training capabilities.

“How do we integrate the F-35 in the European theatre? We're working on that between the nations and associated organizations.

“How can we establish red forces capability that's relevant for a 5th gen force?”

The second is to build out airspace training ranges within Europe as well.

“There is a clear need for training airspace and ranges that are suitable for accommodating training with 5th gen weapon systems.”

The capabilities of the fifth-generation sensors and how the sensor-shooter relationship will operate over larger areas of airspace clearly requires reworking airspace training options. And to do so will require working with the civilian authorities responsible for handling the common airspace.

“When you've identified this common idea of where these chunks of training airspace are going to be, then you have to start looking at how that aligns with Single European skies. It's the aim of Single European Skies to optimize civilian air transport. Integrating military training airspace is not a primary objective, and needs to be addressed effectively.

Third, is working the synthetic training environment and cross linking the various European efforts, including reaching out to the US forces in Europe as well.

“When I look at synthetic training, what I see is these national networks being developed bit by bit. I see some initiatives to connecting F-35 simulators multinationally. We clearly need to have some multinational training network that enables interoperability training in a synthetic environment – or rather a live, virtual and blended environment – in addition to live training.

“And I think that from a technological point of view it will be relatively easy to connect F-35 simulators from different nations in a multinational network, but then connecting that network to 4th gen capabilities for 4th gen nations is going to be where the challenge is, not only because of technological differences but also from a security perspective. But in the end, that’s where we have to go.

“If in ten or fifteen years’ time, we don’t do a substantial part of our multinational training in a synthetic environment, we’ve done something wrong.”

More broadly speaking with regard to transformation, the European air combat fleet under the impact of fifth generation is forcing changes, which are congruent with where technology, C2 and concepts of operations are headed.

Air Commodore Adang treats the F-35 as a first-generation information dominance aircraft. The fifth-generation approach lays the foundation for preparing for the future while current capabilities are transformed as well.

“By now most people agree there’s a future of military operations come to be about information, not about systems. And the only way to be successful in these information-centric operations is when all the capabilities that you have are networked together seamlessly, or as seamless as possible. And those networks will see an increasing number of distributed centers and effectors operating in unison through the network. These sensors will give us an improved situational awareness if we prove to be capable of exploiting all the information that they’re gathering, that’s one of the biggest challenges that we will be facing in the future.”

Put simply: a different approach to airpower and the fifth generation transformation is clearly driving change in this direction and the EAG wants to both help shape a way ahead for integration of the legacy with the new fleet, but lay down the foundation for the kind of combat learning which such a 21st century air combat foundation can enable.

“How can we educate people in 5th gen awareness, make them aware what 5th gen warfare means?”

The EAG is working within a network of organizations to foster innovation and to provide cross organizational learning which can facilitate transformation as well. “We want to take the best ideas and approaches within the European airpower network and apply those throughout the European airpower system.”

In short, the EAG is proving pragmatic intellectual leadership in the European airpower environment to shape a way ahead for a more capable 21st century combat force.

NATO's Airpower Competence Center on the European Airpower Transition

5/15/2016

By Robbin Laird

During a visit to the Joint Airpower Competence Center of NATO located in Dusseldorf, Germany, specifically in Kalkar, Germany, I had a chance to discuss their important study on the evolution of air warfare capabilities in a networked environment.

The Joint Air Power Competence Center or JAPCC was formed and focused on helping NATO member nations shape more effective airpower solutions for 21st century challenges.

According to its website:

The Joint Air Power Competence Centre (JAPCC) was formed on 1 January 2005 to provide the strategic level proponent for Joint Air and Space (A&S) Power that was missing in NATO. Soon thereafter, JAPCC was accredited as NATO's first Centre of Excellence (COE) and, as such, is charged with the development of innovative concepts and solutions required for the transformation of A&S Power within the Alliance and the Nations.

A&S Power SMEs, drawn from the Land, Maritime and Air components of the 15 MoU nations, conduct collaborative research into areas in which JAPCC assistance is requested by leveraging their independent thought and a global network of experts that reach across the military, academic and industrial spheres. The resulting analysis and solutions are disseminated via studies, reports, journal articles, seminars, panels and conferences.

The co-leads of the study are Lt. Col. Carlos Presa of the Spanish Air Force who is the Combat Air Branch Manned Air lead, and Commander William Perkins of the US Navy the lead analyst for maritime air including carrier operations.

The two co-leads provided an overview of this important study, which is focused on the evolution of C2 in a networked environment.

Broadly speaking, there are two schools of thought among those looking at future generation-enabled air operations.

One school of thought looks at the evolution of networks within which airpower creates its effects and the coming of fifth generation is largely understood in terms of both its impact upon and role within the evolution of networks. This can be seen largely as an update on understanding of network centric warfare in the second decade of the 21st century.

The second school of thought focuses on the evolution of C2 within which fifth generation aircraft provide an impetus to an evolving trend towards decentralized C2.

The difference can be a subtle one but it is a significant one.

The first prioritizes the networks, their operations, and their security and assumes that the hub and spoke system largely continues within which hierarchical decision-making remains a norm.

The second focuses on a honeycomb approach within which force packages are shaped to work with one another but C2 evolves within the battlespace.

Tactical decisions are made at the key point of attack and defense; strategic decision making is really about the decision to deploy a force package, shaping ways for confluence of force to operate and evaluating the impacts of those force packages and calibrating next steps for the deployment of continuous evolving force engagement model.

Although the project is entitled air warfare in a networked environment, the study falls squarely in the second school of thought.

The co-evolution of platforms to shape C2 in self-adjusting networked operational environments is a key element of the approach.

In an interview, which we did with a former USAF officer who then joined Northrop Grumman the key impact of fifth generation on command and control, was highlighted in a key manner:

“You don’t want to have a fifth-generation Air Force, shackled by a third-generation system of command and control.”

He then added:

“The concept of dispersing aircraft on airfields is well understood. Rather than park them wingtip-to-wingtip, commanders might disperse them across broader geographies, so that at worst case, an adversary could take out one or two airplanes, not the entire fleet. And this idea of dispersing for survival is well accepted.

But the same kind of concept is not generally applied to command and control at the operational-level with the same level of effort.

Dispersing command and control for survival or distributing command and control in a way that one can pick up the slack is essential.

If the CAOC goes away and the Joint Force Air Component Commander is unable to C2 the forces, then, who are the subordinate commanders?

And, and what ability do they have to continue to fight in terms of operational-level command and control?

For the current fight, the tactical-level C2 elements, the air battle managers on board the AWACS for example, will continue to fight the current fight. But, what happens next?

And so, I think a wing commander in the future will have to have ability, in the same way a brigade commander does in land warfare, to exercise appropriate command and control over his forces absent the higher authority ... centralized command, distributed control, decentralized execution ... mission command for the air component."

It is in this spirit that the JAPCC study is being conducted.

How will enhanced communication networks working with the co-evolution of new and legacy platforms reshape operations and mission effectiveness?

The study is based on a number of key propositions, which are guiding the research and analysis for the evolution of NATO C2.

“An advanced C2 network through unrestricted communication will permit new forms of information transfer among different platforms that display information from different sensors and employ different weapons

This will happen through:

- self-synchronization
- in pre-authorized sub-tasks
- requiring a multi-functional supported-supporting toolbox

The different features or characteristics of these platforms may be combined in real-time to create more effective mission-tailored clusters.”

And this will likely result in an evolution in NATO Air C2 doctrine.

One of the elements for shaping the analyses is examining how European researchers are shaping understanding of swarm behavior or swarm intelligence.

How do swarms of bees balance and distribute their functions, configure their tasks and arrange the optimal motion policy for the swarm?

And what is the impact of swarming behavior among dissimilar species teaming when symbiotic behavior is a must in a competitive environment?

How does auto positioning and dynamic re-positioning happen with members of a swarm?

Data links have become important in shaping NATO coalition operations but with the introduction of the fifth generation multi-tasking aircraft, how will something more akin to self-adjusting cells of a honeycomb operate?

When considering the evolution of C2, a key dynamic of change is the evolving man-machine relationship and the enhanced role of machine-to-machine data transfers as well.

“Network-centric C2 and cyber warfare as a primary linking factor will dynamically reorganize the current functional distribution of Roles among aerial/joint platforms and expedite task accomplishment”.

F-35 is an example of a multi-functional platform that may act as an enabler for other legacy platforms.

Each platform has core functions. These functions are allocated for each tactical task, as well as the proper decision rights.

Task execution will become more dynamic and characterized by a flexible supported-supporting schema where the different systems contribute through data transfer to enable and augment everybody’s capabilities.

The ‘best available sensor’ and ‘best available weapon’ concepts will be allocated within the honeycomb for the different offensive and defensive stages of the fight.

Co-evolution of legacy platforms through LINK-16 is already a fact.

The JAPCC team, in close collaboration with the Tactical Leadership Programme, has analysed the pre and post LINK 16 efficiency trends within a 10-year span of TLP operations across different tactical scenarios.

But beyond LINK-16, and through gateways, like the Northrop-Grumman Freedom 550 Joint Enterprise Terminal, hyper-connectivity will create a new skeleton for decision making, force management and task execution based on data transfer while recognizing the future air forces will be comprised of aircraft with varying capabilities yet retain a requirement for robust network participation.”

The study draws upon the work of NATO researchers who have defined a maturity model for C2.

For future C2 model references, Alberts et al. proposed a Maturity Model for network-enabled operations. The scope of the SAS Panel study was to investigate how operational capability can be provided and enhanced through the exploitation of new technologies, new forms of organization or new concepts of operation.

The analogy used by the authors of this NATO NEC maturity Model is cartographic: ‘A maturity model is like a map, it helps you to determine where you are relative to where you want to go’.

As it is uncertain the impact that the incoming networked environments will cause in the existent C2 structures, the usage of a model will be the conceptual tool that helps to locate and understand the ‘intermediate destinations’ that these evolutionary trends will meet once the information’s age warfare changes the way to plan and conduct operations.

The Maturity Model defines 3 Axes:

1st Axis. Allocation of decision rights to the collective: The rules. The entities evolve from mistrust to a shared, robust and flexible decision-making process within the team by giving up their respective rights for

the benefit of the endeavour as a whole. This feature is related to the strength and validity of the team's contract and regulations.

2nd Axis. Patterns of interaction among the entities: The will and confidence. Axis where players with different communication capabilities, skills and communicative options can reduce uncertainty in support of the team's leader decision making.

3rd Axis. Distribution of information among the players: Axis where the information needed to accomplish required tasks is available to each player. As the flow of relevant information within the C2 system is tangible, this axis can be considered as a direct measure of the team's performance. A channel of communication must be available, a code compatible and messages understood without ambiguities.

Axis number 3 would cause a quicker effect as it would be possible to connect the team through universal sounds, icons and symbols, just as young teens play online videogames worldwide, sharing the rules and the functions, but neither the country nor the language or the culture.

Shaping an understanding of the way ahead for C2 in a coalition environment is built around what the authors call a dynamic airspace synchronization concept.

Because this is a NATO study, a key focus is upon understanding how the evolution of C2 maturity will impact on the evolution of NATO's air C2 doctrine.

And the authors argue that although "hyper-connectivity has already changed the air (joint) battle, there is not a concept for integrated-distributed ops at coalition level."

The Director of JAPCC is General Frank Gorenc, USAF. In previous interviews he addressed interoperability through machine-to-machine interaction as part of his future Air Power vision.

Recently, he has clearly identified the significant impact of the coming of the F-35 on NATO airpower.

In an interview with *Defense News* published on March 16, 2016, General Gorenc identified how he sees the impact of the coming of the F-35:

"The beauty of the F-35 is for the first time ever we have an airplane that literally can do four out of five core competencies. It can do air and space superiority, it can do strike, it can do intelligence, surveillance and reconnaissance (ISR) and it can do command and control".

With the coming of the F-35 and the evolution of the networks within which coalition airpower operate and are changing, it makes sense to think through a broader approach to C2, notably one which can leverage the evolving man-machine relationship.

The longer-term objective is to have a more effective coalition force which can provide much more effective C2 in a fluid battlespace with maximum effect.

With the evolution of two way data-linked weapons, and of remotely piloted vehicles and the coming of the F-35, the need to both understand and shape a more effective approach to self-synchronization of platforms through a collaborative use of the joint battlespace is crucial.

And understanding how this can be done in accord with the evolution of Alliance or Coalition rules, caveats and missions is required as well.

In short, the JAPCC is taking a solid step forward in looking at the future of airpower and how that future is reshaping concepts of operations.

The Australian F-35 Decision and the German Tornado Replacement Decision

02/17/2019

By Robbin Laird

Having just returned from my latest trip to Germany to discuss the significant challenge facing Germany in shaping a credible force to provide for its direct defense and to contribute effectively to NATO's overall collective defense, it is clear that for the near to mid term the Tornado replacement decision is a [significant indicator](#) of the way ahead.

The German government has committed itself to work with France to launch a [long-term project](#) to build a new air combat systems approach which will include a new fighter for the 2040s.

That is a long way off and will not contribute in the short to medium term to the deterrent challenges being faced now.

And that is not providing for a Tornado replacement.

For the Luftwaffe, there are two elements in play, which can provide for near to mid term ways to reshape its capabilities to provide for a credible effort.

On the one hand, the government is proposing to build a new Eurofighter which they have dubbed Tranche IV to replace the Tranche I Eurofighters.

If they wish to do this, the shortest path to do so is to build on the Luftwaffe's relationship with the RAF and with British industry and its engagement in Eurofighter to adopt the British innovations which are shaping a [new Typhoon](#) for the force, one clearly being redesigned to fly with the F-35.

If the gap between the UK and Germany created by Brexit and selected EU conflicts with Britain can not be attenuated to allow for Germany to work with the UK, there will be no short path to providing for the German Eurofighters transformation into an advanced Typhoon.

On the other hand, the Tornado replacement is pressing and carries with it many key tasks essential to direct defense.

One such task is the nuclear mission to shaping effective air ground integration.

Another key task is to be able to integrate with Patriot and MEADS to deliver movable joint fires solutions for the protection of Germany and its to be rebuilt logistics sites.

The importance of this latter task is critical.

Germany has committed itself to be the logistical hub of NATO for the movement of force through Germany to the nations East and North of it for collective defense.

And doing so is a near to mid-term task, not a long range one.

Options which have been or are being considered are the F-35, the German Eurofighter (which does not yet have an AESA radar) and the Super Hornet.

In 2014, the RAAF faced a key replacement aircraft decision when it was looking to move beyond the Super Hornet to a fifth generation solution.

The thinking which shaped that decision is very relevant to Germany or even more relevant to Germany because it is the center of any Russian action against Europe in a way that is not what the Aussies face from China or North Korea.

I wrote the report for the [Williams Foundation](#) in 2015 when the RAAF discussed in a public forum the nature of the turning point and why they believed that a transition to the F-35 was essential, not just for the RAAF but for the entire transformation of the Australian Defence Force.

A key strategic thinker who retired as an Air Vice Marshal of the RAAF and has remained a key player in the transformation effort is John Blackburn.

I decided to interview Blackburn about that turning point and his thoughts about why the transition was critical for the RAAF.

In that interview, he identified three key reasons he thought the transition was critical.

First, he took me back to the presentation of the RAAF F-22 pilot who spoke at the 2014 seminar and he compared his experiences with Super Hornet to the F-22.

The core point which the pilot made was that the fifth generation air system allowed for proactive planning and operations, compared to the largely reactive situation he was in with regard to Super Hornet.

In that briefing, the experienced combat pilot underscored that from the pilot's perspective the data fusion in the aircraft left the pilot free to manage the flow of information and to focus on mission tactics.

From the perspective of the mission commander, he now had the ability to forward plan and allocate resources pre-emptively and had a much greater ability to think and plan ahead of the current engagement.

5th Generation Fighters

Pilot

- Faster and more accurate decisions;
- Fusion is aircraft controlled leaving pilot free to manage the flow and mission tactics;
- Massive generational leap in SA; and
- Less sensitive to aircrew experience.

Mission Commander

- Extremely high level of mission SA;
- Ability to forward plan and allocate resources pre-emptively; and
- Ability to think and plan ahead of the current engagement.

“I have more SA with only 20 hours on the F-22A than I ever had with over 1500 hours in the F-15C”

- Anonymous F-15C Mission Commander

Figure 10 Briefing Slide from Airpower in 2025 Williams Foundation Seminar in 2014

Second, the force commander without a fifth generation aircraft would be limited against a significant peer competitor and the need to operate in contested airspace to operating in lower or mid threat levels.

This meant that a nation without direct access to fifth generation capability would need to rely on others to provide for the capability to degrade the forces of the adversary in a high threat area.

Clearly, if a nation was directly facing a peer competitor which was shaping area denial capabilities this meant that they would have to ensure that an ally with such capabilities would show up and lead the air operations.

“The challenge of working with coalition partners who really are not making the transition is that they risk becoming speed bumps in the way of fifth-generation airpower coalition engaging a peer competitor.”

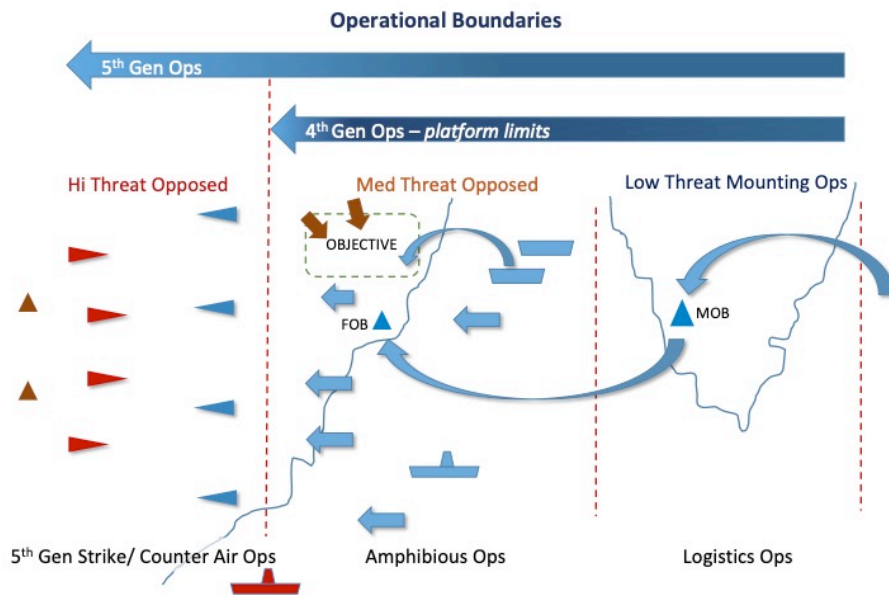


Figure 11 John Blackburn Graphic on Operational Boundaries in the Extended Battlespace

Third, he argued that even though the first two points were significant, the most compelling one was that “if you are focused on platform replacement in these conditions, you are asking the wrong question.

“The right question is how your fifth generation asset would drive transformation of the entire force whilst also integrating legacy capabilities.”

Put in other words, the introduction of the F-35 into the ADF is driving overall force transformation, without which one would be looking for single force modernization rather than multi-domain transformation.

From this point of view, the F-35 is a multi-domain not a multi-mission aircraft.

“Without the F-35, we would not be doing our Plan Jericho for the air force, or the kind of significant force integration efforts which we are currently undergoing in Australia.”

However, an important point to emphasise here is that the transformation is about much more than just the 5th Gen platforms.

As Blackburn wrote in a recent article in the [Australian Defence Magazine](#): the issue faced by the Australian Defence Force (ADF) today is that existing communications and information networks were not “designed” as an integrated system and do not appear to be a good foundation upon which to build the 5th Generation Force the ADF is acquiring.

Indeed, Blackburn came to Denmark in 2015 to co-host a conference on behalf of the Williams Foundation with the Copenhagen-based Centre for Military Studies.

And at that conference several European airpower leaders spoke and discussed how they viewed the airpower transition in Europe.

In his presentation to the conference, Blackburn focused on the transformation process, which had been launched driven in large part by the acquisition of the F-35.

And at that conference, [Col. Anders Rex](#) who is now chief of the Danish Air Force, highlighted the importance of coalition air operations for the Danish Air Force and for European collective defense. Later as Chief of the Danish Air Force, with the F-35 decision behind them and with preparation for the coming of the F-35 to Denmark, he has made it clear why this is important for Denmark.

His comments in that [interview](#) highlighted a way ahead for European airpower transition.

The goal for our coalition and our alliance is to get the best out of what we have as a coalition force. During Red Flag, the experiences we have been briefed on, fifth-generation aircraft make fourth-generation more lethal and survivable, and more effective.

“We could focus on the significant kill ratios which a fifth-generation aircraft can deliver. But that is not the sole focus. It is about how fifth generation aircraft lift the whole force so that the kill ratio for the entire force goes up exponentially.”

He emphasized the importance of combat learning associated with the new aircraft.

“When we were running our competition for a new fighter aircraft, I witnessed the operation of a Super Hornet F-squadron on the USS Nimitz carrier off the coast of San Diego.

“This was the latest variant of the Super Hornet which had just received a new AESA radar on it.

“And when we talked to the pilots, they made the point that there was no way they could have thought up or analyzed what they can use this radar for. Every single day they learned new things.

“That is how I see the kind of learning we are going to have operating the F-35 and more broadly the kind of co-learning which other platforms in the air, ground and naval forces will need to have as well to leverage what a fifth generation enabled force can bring to the fight.”

In effect, what Major General Rex was discussing was the opening of a significant aperture of co-learning, for example, in Danish terms, how the frigates can use their future SM-2s and SM-6s in conjunction with the SA and targeting capabilities which the F-35 would bring to the Danish force.

“Co-learning across the forces and the F-35 to the legacy platforms is a major challenge but a task which we need to master to get where we need to go as a Danish force, but even more significantly at the coalition level.”

And working with coalition partners who are not going to buy the F-35, Major General Rex underscored that the challenge was then “how do we elevate the effectiveness of those coalition partners?”

“We need to focus on the broad co-learning challenge and how to elevate the combat force as a whole as the F-35 becomes a key force for change.”

In short, it is not simply a shift from one platform to another, and in the Danish case the shift is from the F-16 to an F-35; it is about what Air Vice-Marshal (Retired) Blackburn highlighted about overall force transformation and a significant step change in overall capabilities for the force.

The cover photo shows a German Air Force Panavia Tornado aircraft taking off over Bodo, Norway on October 26, 2018 during Exercise TRIDENT JUNCTURE 2018.

Image by: Corporal Bryan Carter, 4 Wing Imaging