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I. INTRODUCTION: DISCUSSION WITH GERMAN EXPERTS

1. From 18-21 March, 2019 a NATO PA Delegation was led by Miro Kovac, a Croatian MP and Chair of the Sub-Committee on NATO Partnerships, and Jean Luc Reitzer, a French MP and Vice Chair of the Sub-Committee on Transatlantic Economic Relations, visited Berlin and Stuttgart. In addition to meeting senior government and military officials and experts, it also held discussions with the Federation of German Industries (BDI), the German Institute for International and Security Affairs, US military officials at AFRICOM in Stuttgart, Systems Applications and Products in Data Processing (SAP) in Walldorf, and Audi in Neckarsulm.

2. German analysts see both NATO and Germany at a kind of a crossroads. The value of NATO is still very apparent; it is generally seen as a force multiplier and a critical manifestation of democratic solidarity in a dangerous world. But the current political environment seems to be eroding this solidarity. The Alliance has been consumed not only by growing populism but also by a burden sharing debate that has become very sharp edged. The United States also seems to be moving in new directions and the Administration has at times appeared to dismiss the importance of NATO to US security. The dividing lines between the United States and Europe seem to widen.

3. German analysts also believe that Germany itself could do more to narrow these divisions. Its own level of defence spending is not consummate either with its economic power or with its very real stakes in global order. It needs to do more on the defence side but continues to put off the date when it will achieve NATO's agreed 2% spending goal. It is making some progress on capabilities but analysts who met the delegation expressed a degree of frustration with the pace of change.

4. European-American relations are clearly in flux. Some countries see President Trump as an unreliable Alliance leader and are working to hedge their bets. Others, like the Baltic countries, feel that they have no choice but to tighten their ties with Washington. The third group of countries, like Hungary, appear to be moving closer to Russia and, in so doing, sometimes seem to be taking their cues from President Trump who himself has sent mixed messages about Russia.

5. Germany's leaders for their part do not feel terribly threatened by Russia and feel that they can conduct working relations with President Putin. This is not the case with the Baltic states, which confront an aggressive and meddlesome country on their border. There also appears to be questions about the leverage of the Franco-German axis which has long conditioned Europe's diplomatic and strategic posture. It is not clear today whether this axis has sufficient influence to generate European consensus on a range of key strategic challenges to the continent.

6. The situation has become particularly problematic as Russia has become significantly more aggressive in its approach to Europe, while Washington's relations with Russia seem ever more bound up in US domestic politics. Yet Russia has not only illegally annexed Crimea and worked to destabilise Eastern Ukraine, it has also wielded a number of hybrid weapons directly against Europe and the United States in the form of cyber-attacks, the proliferation of fake news, the widespread use of proxies to carry out non-military influence operations, and other measures aiming to destabilise democratic political systems and social comity. The Kremlin has actively blurred the line between peace and war, and this raises very serious questions about how best to respond to these challenges which seek to alter public perceptions. President Putin himself wants to renegotiate the old security order so that Russia is positioned to exercise a kind of veto power over European decision making, and he seeks to do so by exploiting internal weakness within the Alliance and Europe itself.

7. US-European relations have also soured over the approach to Iran, and each side now appears to be working against the other. The Europeans are taking measures to circumvent recently reimposed US sanctions on Iran, and the tension is spilling over into transatlantic relations more generally. This is a significant departure from the effective united front Europe and the United States previously showed to Iran, and the consensus the two sides had struck on a dual-track approach which had ultimately led to the signing of the Joint Comprehensive Plan of Action (JCPOA). That agreement froze Iran's nuclear weapons programme. The United States has now left that agreement and made demands that some German analysts believe Iran is not prepared to meet. There are some concerns that this broken consensus could spill over in Western relations with Russia and China, where, again, European and North American unity has been so important. The unilateral US withdrawal from the JCPOA has left some uncertain of American commitment to other multilateral institutions and arrangements including NATO.

8. More broadly, according to some German analysts who met the delegation, there has been a tendency in the West to understand developments in the Middle East as an extension of the Saudi-Iranian rivalry. This is deeply misleading, and it leads to a misreading of many of these issues, including the war in Yemen. There is also a tendency to read sectarian conflict into matters which, in effect, are highly political in nature.

9. This is not to say that the Iranian-Saudi stand-off is not important. For Riyadh, Iran is on the rise and needs to be contained. Saudi Arabia appears more worried about Iran than Iran is worried about Saudi Arabia. But neither country wants a direct military conflict, although Iran worries that Crown Prince Mohammed bin Salman lacks experience and is overly adventurous. There is, however, room for compromise between these two important regional players, but outsiders would have to play a proactive role to move them towards compromise.

10. Jan Techau, Director of the European Program and Senior Fellow at the German Marshall Fund, argued that the US security guarantee has become somewhat less credible in recent years. Part of this is understandable. The United States has other concerns beyond Europe, while Europe itself has been careless and has done its own share of damage by underperforming in the security sector.

11. Yet, NATO membership has served Germany well. The country is rich, reunified, stable, and secure. And all of this was achieved with a degree of restraint and even passivity. Suddenly, however, many of these accomplishments are under scrutiny. Germany, Mr Techau suggested, will have to move from serving as an object of the international system to a provider of security. But it is not yet prepared psychologically to play this role. In this sense, the defence budget discussion in Germany has been revelatory and suggests that Germany is not fully prepared to assume the role and burdens which many analysts would suggest it now needs to assume. Germany finds itself in a state of perpetual nervousness. It recognises that it can no longer rely on the goodwill of the United States, but it has grown exceedingly comfortable with the status quo. It needs to recognise that its own security and that of Europe will now come at a higher price. Some have characterised the problem either as one of pacifism or free-riderism. But neither is sufficient to explain the true nature of the problem.

12. There are several explanations. Firstly, among the German people, there is a profound distrust of the country's good intentions. The Germans never seem confident that they are on the right side of history. This is why the country is so given to caveats on the mandates it carries out internationally. The usual explanation is that this reflects a kind of inherent or historic pacifism. This is not a satisfactory explanation. Germany has come to distrust its own good intentions and cannot seem to square these with its ambitions and legitimate self-interest. The Germans fear that any attempt to assert those interests might go dangerously wrong, as

they did so catastrophically at critical moments of the 20th century. This psychological barrier now prevents it from playing a role consummate with its power and with its very real interests in global stability.

13. The German polity is also coping with mounting domestic political pressures and is obviously not immune to right-wing populism. There has been a substantial and worrying growth of the *Alternative für Deutschland* party (AfD). This is altering Germany's political landscape and will complicate transatlantic relations, although President Trump has made his own contribution to the expansion of this kind of dangerous populism. Mr Techau also suggested that demographics are conditioning Germany's approach to national security. Germany is an ageing society, and this means that the number of those who are prepared to serve in the military is falling while expenditure for the aged is invariably slated to rise. This ineluctable set of changes invariably shapes attitudes about defence spending and military ambition in Germany. Germany's posture is thus highly defensive, and, unlike France, it lacks the will to assume the role of critical protagonist in the international system. It supports the notion of European defence more because it is strongly pro-European than because it harbours any compelling sense of ambition or even a coherent understanding of the link between military capabilities and national purpose.

14. Mr Techau suggested that it would be folly for the Europeans to think that they can liberate themselves from the US security guarantee. This is a frivolous and romantic view. The Germans instead need to be encouraged to assume a more self-confident and assertive leadership role; they need to worry less about how this might be perceived and whether this could lead in the wrong direction. In other words, they will have to learn that they can be trusted to do the right thing for themselves, for Europe and for the global order more generally.

II. MEETING WITH GERMAN OFFICIALS

15. Germany remains committed to defending the core values of the Atlantic Alliance, including democracy, the rule of law, and the rights and dignity of the individual, German Defence Minister Ursula von der Leyen assured the delegation. While she acknowledged that the country has yet to achieve the Defence Investment Pledge agreed on at the Wales Summit that stipulates that each NATO Ally should spend 2% of GDP on defence by 2024, the Minister stressed that Germany continues to increase its military investments with an eye on achieving this goal.

16. Minister von der Leyen pointed to several difficulties in doing so. Germany's defence spending, she said, had fallen as low as 1.1% of GDP after the fall of the Berlin Wall and only began to rise as the security situation in Europe worsened. German leaders recognise that spending on the military must increase, but progress on this front has been complicated by several factors, including robust economic growth which has made the 2% goal a moving target.

17. The Defence Minister told members that Europe must make progress in reducing the fragmentation of European defence spending in order to achieve greater spending efficiency. This is precisely why the European Union is pushing for a more "homogenous development" of its armed forces through the European Defence Union and Permanent Structured Cooperation (PESCO) by encouraging a higher level of structural integration. She added that the Union is putting significant financial resources behind these projects to develop incentives for national militaries to work more collectively. She underlined, however, that Germany contributes almost one third of the USD 100 billion additional defence spending committed by

the United States' allies. The Minister also reminded the delegates that Germany is the second most important troop contributor to NATO missions. Minister von der Leyen added that if NATO did not exist, it would have to be invented, and that it is its values like the rule of law and the dignity of the individual that make the Alliance both unique and important.

18. Russia was another important theme of the discussions in the Bundestag. German officials took note of Russia's aggressive behaviour towards Allies and partners, and Ukraine in particular. As the Russian leadership is very dedicated to recovering its capacity to project power, it seems unlikely that it will change its current policies in Ukraine and Syria. This should not prevent the West from conducting dialogue with Russia on those matters of mutual interest. Germany itself continues to participate in bilateral discussions with Russian officials and supports military to military contacts including those between NATO and Russian officers.

19. In general terms, the German government does not anticipate a substantial change in Russian behaviour over the medium term. Russia is very dedicated to developing its capacity to project power while closing the technological gap with the United States. It has betrayed no hesitation to actively enforce its interests. Despite the difficulty of maintaining relations with a country that is pursuing policies antithetical to their own interests, German authorities seek to keep bilateral and multilateral channels of communication open and to identify areas of mutual interests. They accordingly attach great importance to the NATO-Russia Council, the OSCE, and the Arctic Council, among other fora. Germany maintains that these discussions help maintain a modicum of strategic stability.

20. Germany, however, has also supported EU sanctions on Russia stemming from its actions in Ukraine and believes that these should remain linked to progress in the Minsk process. Michael Siebert, Director for East Europe at the German Foreign Ministry, stressed that sanctions are a political instrument and must be linked to a political objective regarding Russian behaviour. In order to be successful, they should be targeted, proportionate, and gauged to incentivise a change in Russian behaviour.

21. German officials expressed concern that some US sanctions seem less clear in their objectives, and thus fail to provide a clear roadmap for the target of those sanctions and specifically a course of action that will result in the lifting of sanctions. This is counter-productive. In several instances, US sanctions are doing more damage to European firms than they are to the Kremlin. As a matter of principle, Germany, like many other European governments, believes that secondary sanctions are unacceptable. Mr Siebert urged members to look into this matter. Christian Tybring-Gjedde, the General Rapporteur of the NATO PA's Economics and Security Committee, produced a [draft report](#) on these issues that will be presented at the NATO PA's spring session in Slovakia.

22. It is also sometimes assumed that the Russian economy will somehow be brought down by sanctions. This is improbable to say the least. Russia has a substantial national welfare fund financed largely by energy exports which provides the Kremlin with a degree of financial insulation. It has also embarked on a strategy of de-dollarisation and is purchasing both Euro and Renminbi to add a greater mix to national foreign exchange reserves. German authorities believe that fomenting a crisis in the Russian economy is not in Europe's interest and would likely have broadly destabilising effects in the neighbourhood including the Caucasus. German officials do not believe this is in German or European interests.

23. German officials also have a unique view of the Nord Stream 2 project which is slated to bring more Russian gas directly to Western Europe. European demand for gas will increase in years to come as Western European sources for gas are dwindling. This inevitably means that Russian gas will remain a vital element of the energy mix, particularly now that Germany has

abandoned the nuclear energy option. The last nuclear power plant in Germany will close in 2023. Russian gas will help fill the gap, even as Germany advances its renewable energy programme and imports gas via the southern gas corridor and through LNG ports. Germany is aware of Ukrainian concerns and is engaging with both Russia and Ukraine to ensure that Ukrainian interests are protected. President Putin has made certain assurances to Chancellor Merkel on this matter, although some do not see these as credible.

24. At the same time, Germany wants to incentivise Russia to abandon policies that threaten peace and security in Europe. It has upheld sanctions against Russia for purposes of deterrence. These have given a clear signal about the costs of Russian aggression, and this is particularly valuable. Germany believes that Europe should remain united in maintaining those sanctions.

25. A degree of patience is required to deal adequately with Russian officials, and the goal should be to encourage Russia to move closer to embracing European values. Encouraging people to people contacts should inform this strategy, German government officials believe. The government has endorsed town twinning, educational exchange and communal partnership with Russia for this purpose. The government also seeks to engage with representatives of the Russian media and expose them to different views on a range of issues. This is not easy work, it requires taking a long view, and sometimes red lines have to be defended.

26. Wolfram von Heynitz, Head of the Cyber Policy Coordination Staff of the Federal Foreign Office of Germany on Cyber Security, spoke to the delegation on the changing international security environment with a focus on cyber security. He opened his remarks by suggesting that what were once considered to be technical matters have become highly political and strategic. Cyber defence is now a matter of growing concern in Germany and in the West more generally, particularly as any weak link in the defensive chain can make entire systems vulnerable to cyber-attack. In other words, this has become a matter of collective defence demanding close cooperation among allies and partners.

27. The UN established a group of experts in 2013 to begin to work on the international legal dimensions of this challenge, but by 2017, there was still no consensus within the UN on how best to cope with the cyber security challenge. The Secretary General has also established a smaller group of 25 experts to work on establishing broadly accepted norms governing activity in cyberspace. For its part, Germany is conducting bilateral consultations on these matters and is also working through the EU.

28. There is a clear need for greater deterrence in cyber space, and democratic societies must demonstrate to other actors that they are prepared to act against those that refuse to play by the rules. For this reason, countermeasures are an essential element of any deterrence strategy, as are diplomatic demarches, public statements, and sanctions. There is no single solution to the challenge, and any approach will by default have a patchwork quality. German authorities have some reservations about the possible use of offensive cyber weapons because control of the escalatory cycle is hard to ensure and an all-out cyber conflict could be catastrophic in terms of its impact. That said, maintaining a degree of ambiguity about the nature of the possible response to cyber attacks can be a critical element of deterrence. Analysts also suggest that NATO could do more to share intelligence in order to counter cyber capabilities. Efforts are needed to better understand how offensive cyber capabilities might contribute to strategic stability—this is a topic that Germany, for example, has been reluctant to take up.

29. Western countries also face a real challenge in deciding how to go about developing the infrastructure for future 5G networks. This is critical, as so much future economic development will hinge on this infrastructure and ensuring that any system is impervious to cyber-attacks or espionage is a critical concern in deliberations about it. Both Europe and the United States are struggling with this issue and need to consider a range of technical requirements to establish where critical vulnerabilities might lie. Doing this will help countries develop a more informed approach to the Chinese company Huawei, which is slated to be a major contractor for 5G network infrastructure in many countries, which is a cause for concern among many national security communities. The United States has been vocal in expressing concerns about this situation and their warnings have fomented important and, in some cases, tense transatlantic discussions. There are legitimate concerns that individual countries might sign contracts with Chinese firms without exercising due diligence. In so doing, they could become the weak link in the chain and thereby render other countries including Allies more vulnerable to both espionage and possible cyberattack. German authorities insist that this is precisely why it is important to build about a consensus as a precondition to forging a common approach to building 5G infrastructure.

30. One should also recognise that private companies will play a critical role in defending vital western infrastructure. The private sector thus needs to be engaged more comprehensively in security discussions. Digital attacks are becoming almost routine and are even affecting sectors like air-traffic control. Norway, for example, has suffered several cases of malicious jamming of air-traffic control systems and this has exposed vulnerabilities in the defence of these critical systems. This is a microcosm of a far broader threat, with which German authorities and others including NATO are now compelled to cope.

31. Brigadier General Jens Olaf Kolterman catalogued the rise of cyber threats from the first virus to the multifarious cyber threats that security officials now must confront. Germany has adopted a state-wide approach to coping with these threats. It has also incorporated cyber considerations directly into its military planning. At the same time, government officials are engaged in an extensive dialogue with industry to bolster cyber defence in the private sector which is essential to societal defence. One problem is that many political leaders are not so-called digital natives, but they are ultimately responsible for shaping policy in this critical and very delicate area. They too are challenged to learn more about the vulnerabilities and possible remedies.

III. MEETING WITH THE FEDERATION OF GERMAN INDUSTRIES (BDI)

32. Matthias Watcher, Head of Department of Security and Raw Materials at the Federation of German Industries (BDI), discussed German approaches to artificial intelligence. He opened his remarks by noting that the industry has been somewhat disappointed by the government's approach to Artificial Intelligence (AI). He suggested that it has been hesitant to embrace this cutting-edge technology in critical areas including the defence sector, and argued that Germany needs a thorough public debate on AI, its place in future battlefields and the ethical issues that reliance on AI raises. AI is changing the role of human actors in the production process and will have ever more military applications. He mentioned that air defence systems can now automatically detect in-coming missiles while future combat air systems will feature a swarm of drones designed to fight aircraft. AI will play a particularly important role for Western militaries, which must now cope with declining population bases and thus need technological solutions to anticipated personnel shortages. But the obvious need for these systems has not mitigated concerns about lethal autonomous weapons in which justifiable questions about human control persist. Indeed, there are international discussions underway in Geneva to

develop international protocols on matters like human control over autonomous AI-driven military systems.

33. AI is also playing a transformative role in commercial industries. The German government is supporting the development of related civilian technologies and has budgeted EUR 3 billion over the next three years for these purposes. But this may not be enough given the importance of this technology to the country's economic future. Although the German economy has fared very well in recent years, there are clouds on the horizon. It faces real trade challenges in three of its primary markets: the United Kingdom, the United States and China. BDI expects German growth to fall to 1.2% over the next several years.

34. The development of a new 5G phone network system will be critical to Germany's economic development. Machine learning and the internet of things will be pillars of the emerging economy and thus essential to national prosperity. German officials recognise that high-security standards will be needed as this technology is developed, and companies like China's Huawei will have to meet these standards if they want to operate in Europe. According to some in German industry, Germany is not moving as quickly as other countries to embrace and develop these critical technologies and at times officials seem more hesitant than ambitious in embracing change. There is more discussion about limiting these technologies than linking them for development and this is true on both the commercial and military sides. It is noteworthy, for example, that the German military still has no weaponised drones, although many Allies and adversaries are availing themselves of this critical technology. Germany will have to move more quickly on this front, or it will fall far behind technologically. This would obviously put it at a strategic disadvantage.

35. Germany will thus need to learn to embrace emerging technologies and significantly increase its investment in them. There are, however, financial impediments to doing so. German financial institutions are very conservative and have long been hesitant to invest in technologies which are seen as risky or only of long-term significance. Germany has an impressively strong tradition in science and engineering but confronts, or perhaps better, has constructed an array of roadblocks to commercialising this innovation. The United States is much more adept at doing so. The Federation of German Industry has recognised this problem and has advanced a number of ideas about how to loosen up the financial system so that a longer-term perspective shapes technology-financing decisions in ways to encourage entrepreneurship. It has urged companies to invest more than in the past and would like to see changes in the tax credit system to nudge the industry in this direction.

36. There are also powerful concerns in the German polity that AI will ultimately destroy jobs. Of course, technological innovation both eradicates and creates jobs and it is likely that some dull and dangerous kinds of jobs will be the first to be destroyed as AI is introduced. But invariably it will also create new and more high-value jobs. It is, however, the task of the state to help prepare society for these ineluctable changes through education and training.

IV. MEETING AT US AFRICOM

37. The delegation also visited US Africa Command (AFRICOM) located in Stuttgart to discuss security and stability in Africa and US military policy in the region. Although AFRICOM is the command centre for US military operations, it also engages a number of European liaison officers to ensure that the command is well aware of the work of other security forces operating in the region and is positioned to share experiences among Allied and partner countries.

38. AFRICOM, which was established in 2008, is helping African partner countries build up their own military and security capabilities, counter a range of threats, and conduct crisis response. AFRICOM's partners on the continent include the African Union, the Economic Community of West African States (ECOWAS), the South African Development Community (SADC), the East African Community (EAC), and the United Nations, among others. AFRICOM's senior leaders briefed the delegation about the command's mission and campaign plan, regional security threats in North Africa and the Sahel, and AFRICOM operations in those regions. The briefings focused particularly on the factors driving instability in Africa and the implications of this instability for the security on NATO's southern flank. In addition to the threat posed by violent extremist groups, economic issues, poor governance, and migration were high on the agenda in the discussions.

39. Rapid demographic growth has generated enormous pressure on the countries of the continent. By 2025, some 2.5 billion people will live in Africa, which will test governments' abilities to generate jobs. This is already posing a challenge as Africa already has the youngest population in the world. With an estimated growth of 4% in 2019, Africa's economy is notably dynamic. However, this growth is primarily centred in the continent's cities. Africa's vast geographic extension and its largely underdeveloped infrastructure are additional factors that place limits on economic performance. Moreover, poor governance and widespread corruption remain major problems that undermine international efforts to improve stability in the region. This issue is compounded by climate change and environmental degradation, the delegation learned. These factors fuel continued instability, which make it likely that migration from Africa to Europe will increase again in the foreseeable future. For these reasons "NATO should be very forceful in thinking about Africa", as one senior AFRICOM representative noted. "Individually, we cannot make an impact," General James C. Vechery, AFRICOM Deputy to the Commander for Military Operations, said. "But together, with our international, interagency, and African partners, we can build and develop African solutions that enable security, stability, and prosperity."

40. AFRICOM focuses on three main areas, namely: strengthening the national security forces of African partner countries, countering transnational threats, and responding to crises. AFRICOM relies heavily on contracted solutions in its African operations, i.e. it works by, with, and through African partners. To that end, the command organises 9 exercises, of which three are maritime exercises, in Africa every year.

41. More specifically, the command is supporting the African Union Mission in Somalia (AMISOM). AFRICOM also cooperates with the European Union (EU) including visits of senior officials of the EU Military Committee to AFRICOM and coordination with the EU on training missions, like the EU Training Mission in Mali (EUTM Mali). General Waldhauser, AFRICOM Commander, also regularly participates in EU Chiefs of Defence conferences which take place twice every year.

42. Insecurity and instability in the region have also been linked to the activities of violent extremist organisations (VEO). Although VEOs often have localised objectives in Africa, they target Westerners to gain greater notoriety. There are, however, several extremist groups which had had a greater impact on regional security. This includes groups like Boko Haram in Nigeria and Al Shabab in Somalia. The latter has between 5,000 and 7,000 fighters in Somalia and controls about 20% of the country's territory. AFRICOM and others are now assisting the government in its efforts to defeat Al Shabab.

43. Daesh's presence in Somalia is relatively small, but there are concerns that Daesh fighters from Syria and Iraq could join the fight in that country. In Libya, Daesh is now largely ineffective after the operations in Sirte in the east of the country. Al Qaeda in the Maghreb

(AQIM) poses a trans-regional threat that also threatens the Sahel region. More generally, terror groups like Daesh and al Qaeda exploit local grievances for their own strategic purposes.

44. AFRICOM briefers suggested that the United Nations Multidimensional Integrated Stabilization Mission in Mali (MINUSMA) is the largest and most dangerous mission in Africa. Although, in their view, MINUSMA has only been modestly effective in the past, its operational capabilities have been enhanced. AFRICOM speakers expressed the hope that MINUSMA will bolster cooperation with *Operation Barkhane*, the ongoing French-led anti-insurgent operation in the Sahel region.

45. AFRICOM speakers also pointed to the dramatic increase of violence in Burkina Faso, particularly in the east and the northeast of the country. The country, which had previously been known for its stability in a troubled region, has suffered 499 deaths from attacks on civilians since November 2018. The spike in ethnic clashes in Burkina Faso is fuelled by Islamist militants as they seek to extend their influence over the Sahel region. To deal with the violence in the country the government of Burkina Faso has reduced its military contingent participating in *Operation Barkhane*, the delegation learned. Meanwhile, Niger, the poorest country in Africa, is threatened from three sides: in the north, instability in Libya threatens to spill over; in the west, the country is facing a growing Salafist threat; while in the southeast, Daesh is resurgent.

46. The briefings also touched upon the mounting presence of Russia and of the People's Republic of China (PRC). Russia has become more active in Africa and is reestablishing links with countries that enjoyed good relations with the Soviet Union during the Cold War. Russia is the leading arms exporter to Africa, and a number of private Russian military companies are operating on the continent. Companies like the Wagner group, which is also active in Syria and in Eastern Ukraine, are providing a range of military support services. Russia very actively seeks out opportunities to counter Western interests in Africa.

47. China's economic presence has also increased considerably in the recent past. Although the PRC is primarily interested in natural resource extraction, it also sees the continent as a market for its products. Over 10,000 Chinese companies are doing business there today, and more than one million Chinese are currently living in the continent. The PRC is also providing more than 1,700 peacekeepers to missions in Africa, making it the largest peacekeeping contributor outside Africa.

48. A more troubling issue concerns the number of Chinese loans for infrastructure projects. Many of these loans are given to regimes which cannot serve the debt over the medium to longer term. The planning and implementation of these infrastructure projects also often promote corruption, which remains a serious impediment to African development. The PRC is the number two arms seller to the countries of the continent. Chinese arms sales often do not include an end user agreement, which is generally standard for Western armament companies.

V. MEETING AT SAP

49. The delegation also visited the headquarters of SAP in Walldorf, which is the base for its primary research and development centre. SAP is the biggest seller of business software in the world and has 40,000 customers across the globe. Apple devices, Vodaphone text messaging, and Uber, for example, all employ SAP software. An estimated 75% of all business transactions somehow involve the company's software which includes supply chain

management systems, resource planning and financial management applications. Its growth is currently greatest in Asia, but Europe remains a critical market.

50. The company is highly focused on cyber security issues and this is an essential component of its product development. Twenty of NATO's 29 militaries are using SAP software and so is NATO itself. This has helped make the Alliance more interoperable. It is also working on strategic forecasting, and its databases have become a critical tool for these purposes. With the threat environment changing very quickly, this technology is proving critical to helping militaries keep pace with change and to manage the information that these changes generate. The company is a pioneer in cloud technology, and many of its applications are running entirely in the cloud. Of course, this demands powerful encryption technologies to ensure the security of this information stored in the cloud. An increasing number of militaries are now using the cloud and are doing so with confidence.

51. Cyber security is a constant challenge for the company, and it demands that systems are constantly updated and made immune from external attack. Computer viruses are constantly changing and the damage that they can cause has increased exponentially over the past three decades. As the global economy begins to embrace an internet of things, the risk of cyber-attacks will grow exponentially, as almost all basic infrastructure, including transportation and energy systems, will be exposed to attack. Countering this threat requires continuous investment and a high degree of vigilance. More efforts are needed to standardise laws and regulations governing cyber security to ensure greater efficiency, common certification, and a higher level of security. This is happening within Europe, but more could be done to improve transatlantic harmonisation.
