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THE UNITED STATES SELLING
ADVANCED MISSILES TO FINLAND

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- Finland's decision to acquire advanced semi-stealthy Joint Air-to-Surface Standoff Missiles (JASSM) from the United States is much more than an arms deal – it has significant political and regional military implications.
- Finland is only the second country to be approved for JASSM. No NATO country has ever received such approval. This suggests something about the closeness of the relationship between the United States and Finland, as well as something about how the United States sees European and regional defence arrangements.
- In the web of multilateral, multinational and bilateral relationships that Finland is weaving to enhance its security, the US relationship is a key cable.
- The JASSM acquisition significantly changes Finland's ability to disrupt enemy activities, both within Finland and beyond its borders. Despite being a conventional weapon, it will serve as a deterrent.
- Finnish decision-makers have a responsibility to understand both the implications of the new capabilities, and to ensure that the continued development of the Finnish Defence Forces is not inhibited due to misunderstandings of what a modern defence requires and consists of.

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Joint Air-to-Surface Stand-off Missile (JASSM) moments before penetration into test target. Photo: Lockheed Martin Corporation. Copyright 2012.

In early March 2012 Finland decided it would purchase advanced Joint Air-to-Surface Stand-off Missiles (JASSM) from the United States. The combination of upgraded F/A-18 (Hornet) fighters and semi-stealthy missiles will provide a new and important capability for the Finnish Defence Forces. However, it would be a mistake to view this merely as an arms deal. It is much more, and has significant political and military implications. The deal is a notable security policy win for Finland.

The deal itself has been discussed for a decade, but should be viewed as the culmination of two decades of work by Finnish and American officials to build a strong partnership between Finland and the United States.¹ Few people in Finland are aware of the depth of cooperation between the two countries, and how it has blossomed since the early 1990s, when Finland began procurement of the F-18 Hornet. The deal also suggests certain things with regard to US thinking about European and regional defence arrangements. The deal does not change the strategic military balance in the region, but it does positively impact Finland's military capabilities *vis-à-vis* Russia. The procurement of JASSM also requires Finnish decision-makers to drive further

changes to the defence forces, and gives them new options and decisions to make in conflict situations.

The result of decades-long cooperation: new capabilities for an experienced Air Force

The immediate impetus for Finland seeking advanced longer-range strike weapons can be found in the early 2000s when the Finnish Defence Forces conducted an analysis of the best mix of weapons and platforms for a long-range (interdiction) strike capability (hundreds of kilometres). In addition to heavy rocket launchers, an air-to-ground capability and special operations forces (SOF) were seen as a part of the optimal mix of platforms and weapons. The 2004 security and defence policy white paper set a goal for the air force to develop an air-to-ground capability², with the capability being added to approximately sixty F-18 C/D Hornets by 2016, as a part of their Mid-life Upgrade 2 (MLU-2) process.

The official press release by the Finnish Ministry of Defence provides the basic outline of the deal: for a total cost of €178.5 million, Finland is to receive AGM-158 Joint Air-to-Surface Standoff Missiles, necessary modifications to aircraft software, test

1 This paper greatly benefits from a number of interviews with both current and former Finnish and American military and defence officials. However, all opinions, analysis and conclusions are strictly the author's.

2 Suomen turvallisuus- ja puolustuspolitiikka 2004, Valtion neuvoston selonteko VNS 6/2004, pages 110-111.

JASSM in a box: What it's for and the technical risks involved

The Joint Air-to-Surface Standoff Missile was designed to fly using indirect routes through advanced air defence systems, striking medium-hardened, soft or area targets. The missile is relatively slow, flying at a maximum 0.8 mach, and therefore relies on low-observable (semi-stealthy) design and flight profiles which seek to actively avoid detection and attack by a target's air defence systems. Whether it can actually penetrate advanced layered and networked air defence systems is unclear.

Finland generally procures only proven technology, so the decision to procure JASSM suggests an increased acceptance of risk. The operational effectiveness of JASSM has not been demonstrated, neither through operational testing nor through use in actual combat operations¹. The reliability of the missiles is also a question mark, although it is above 80% currently, and is expected to exceed the target of 90% by Lot 11 in 2013. This suggests Finland should ensure that the missiles it receives are from as late a lot as possible, preferably Lot 11 or later. A thorough expansion of the JASSM-programme in 2008 has made its future very different; it has gone from a \$2.2 billion 11-year programme (and 2400 missiles) to a \$7.1 billion 28-year programme for around 4900 missiles.

1 Government Accountability Office (2010): "DOD Needs to Reassess Joint Cruise Missile Costs before Starting New Production Phase" GAO-11-112, page 8. This was verified to still be the case in late spring 2012.

missiles, technical documentation and training.³ The press release does not state the number of live missiles, but multiple public sources place this number at seventy. The foreign military arms sales notification by the US Department of Defense to the US Congress provides some additional details, which

3 Ministry of Defence press releases: "Suomi hankkii pitkän kantaman ilmasta-maahan ohjusjärjestelmän", 1 March 2012 and "JASSM-ohjusten myyntilupa Yhdysvaltain kongressin käsittelyssä", 3 November 2011.

are key to understanding the deeper political and military implications of the deal. The notification states that in addition to the 70 missiles, Finland will receive "2 test vehicles, support and test equipment, publications and technical documentation, personnel training and training equipment, US Government and contractor engineering, technical and logistics support services, and other related elements of logistical and program support".⁴ The deal suggests a number of things about the bilateral relationship, about US perspectives on the Baltic Sea and European defence arrangements, and has some military-political implications for Finnish decision-makers.

Finland + JASSM: Strengthening European defence and helping to secure NATO's northern flank

The United States has increasingly sought to get its European allies to take on more responsibility for their own defence and regional security. While Finland is not a NATO member, its geographical location and EU membership make it an important part of European defence and, from an American perspective a part of the overall solution to make up for general European underinvestment in defence. At the same time, Washington recognizes that its own interests and prestige dictate that it stand behind the mutual defence commitments it has made. Simple geographical realities make it harder for the United States to keep its alliance commitments in the Baltic Sea region than in many other places in the world.

When Estonia, Lithuania, Latvia and Poland joined NATO, they expected explicit plans for their mutual defence by NATO. When it became clear by 2007 that no such plans were being developed, a crisis developed within the Alliance. The war in Georgia in 2008 and Russian exercises simulating the invasion of a Baltic sea country heightened the pressure on NATO to develop contingency plans for the defence of Poland, Latvia, Lithuania and Estonia. The United States and NATO responded by holding a number of military exercises in 2009 and 2010 to demonstrate

4 The notice is available on multiple sites, for example through the Federal Register, at <https://www.federalregister.gov/articles/2011/11/04/2011-28546/36b1-arms-sales-notification>

Alliance solidarity and capabilities.⁵ Ultimately, formal contingency plans were agreed on in 2010, under the name Eagle Guardian.

Taking cooperation with Finland to a new level suggests that the United States, and more specifically the US European Command Commander (EUCOM) and NATO Supreme Allied Commander – Europe (SACEUR) Admiral James Stavridis, clearly understands the security policy dynamics involved in the unlikely situation that NATO’s north-eastern borders must be militarily defended. Finland and Sweden would unavoidably have roles to play in such a situation – whether or not they are members of NATO because of their EU membership and understandings of the Lisbon Treaty. Moreover, in Finland’s case, it is unlikely that even a declaration of “neutrality” would enable Finland to avoid becoming involved if a military conflict started between NATO and Russia.

Though the notification to Congress includes the standard disclaimer that the JASSM deal does not “affect the basic military balance in the region”, Finland’s acquisition of JASSM does significantly increase its deterrence and defence capabilities *vis-à-vis* Russia. Indirectly, this strengthens NATO’s north-eastern corner by removing one variable from EUCOM’s calculations: Russia’s ability to invade Finland or use Finnish territory to advance its goals is severely diminished and Finland gains the capability to comprehensively close all surrounding sea lanes.

Finland’s new capabilities are also interesting from a Nordic cooperation and Arctic perspective. Finnish, Swedish and Norwegian fighter planes train two to three times a month over Lapland in each other’s airspace. With Finland gaining an air-to-ground capability, all three countries now have incentives to expand training to include multinational air-to-ground exercises. From a military-strategic point of view, the entire Nordic region (‘flank’ from the US perspective) can in the mid-term future become to a large extent secure – if Norway, Sweden and Finland all continue the reorganizations of their respective

5 Examples include: Baltic Eagle for exercising the Baltic Battalion of the NRF in 2009, BALTOPS 2009, Loyal Arrow 2009, Baltic Hope 2009, Sabre Strike 2010, Amber Hope, and Baltic Host 2010.

armed forces, and develop multinational capabilities (not just interoperability).

The deepening of cooperation between the United States and Finland also speaks for the pragmatism of the United States in enhancing European military capabilities and ultimately strengthening multilateral organizations such as NATO. If the United States can increase an individual European state’s military capabilities through bilateral cooperation, it will increasingly opt to do so. A clear hope is that this cooperation will make regional cooperation, at the Nordic level, even more fruitful.

Being ready to sell JASSM to Finland before *any* European NATO member is indicative of two changes in how the United States sees European security dynamics: Firstly, the United States is interested in supporting the building of capabilities, not only institutions. Secondly, the US increasingly sees NATO as a part of a broader web of actors interested in European political, security and military cooperation.

Don’t ask don’t tell: the mutually beneficial yet opaque Finnish-US bilateral relationship

Finland and the United States have a strong, deepening and mutually beneficial, yet slightly opaque relationship. In the web of multilateral, multinational and bilateral relationships that Finland is weaving to enhance its security, the US relationship is a key cable. The JASSM deal serves as an additional sign of, and result of, how strong the bilateral US-Finnish relationship is. Cooperation between the United States and Finland is extensive, and has expanded into a number of areas during the past two decades.⁶

In the field of personnel education and training, the United States annually sends soldiers to be trained

6 The development of cooperation can be seen in the need to agree to and sign different types of official agreements, Memoranda of Understanding and technical agreements. The first, signed in 1991 (SopS 95/1991) is a basic document. Additional agreements followed in the mid-1990s and early 2000s, with the most recent ones being signed in 2010 (SopS 95/2010) and most recently an overall agreement on R & D cooperation (HE 5/2012 vp).

Figure 1: Extended reach: The ranges of Russian air defence systems (S-300 and S-400) which can cover most of Finland and approximate range of JASSM if fired from within Finnish borders. Graphic by Kauko Kyöstiö.



at a range of different Finnish units, including the Finnish Defence Forces International Centre (FINCENT). Finnish officers attend both short and long courses at US academies and staff colleges as well as serving as fellows at prestigious universities such as Harvard. During the past few years, the first Finnish soldiers have been trained to operate as Joint Tactical Air Controllers (JTACS) to coordinate air-to-ground attacks. Finnish soldiers also serve in regional commands such as CENTCOM, and participate in a number of international exercises. Lacking its own tanker fleet, the Finnish Air Force has also worked with US Air Force Europe (USAFE) to certify Finnish pilots for aerial refuelling.

The two countries also cooperate increasingly in research and development, with Finland (and Germany) contributing expertise to a project to understand how aluminum-hulled ships react to battlefield stresses, such as mine or torpedo explosions. The new class of Finnish Navy surface vessels (Laivue 2020) will also benefit from US experiences with the Littoral Combat Ship (LCS) and its mission modules. Finland's efficient approach to developing and procuring materiel may even benefit how future LCS mission modules are built.

The veil of secrecy that covers much of the cooperation is, however, notable. This speaks for mutual trust, strong discipline and a culture of secrecy on both sides. Cooperation is rarely discussed in any detail, making it difficult to assess the potentially

positive and negative consequences of an increasingly close relationship. The silence also highlights how politically sensitive extensive cooperation with the United States still is. However, despite some public misgivings about close cooperation with superpowers, Finnish civil servants and a handful of politicians have worked for two decades to develop a relationship which is built on trust and a mutual desire to achieve concrete results and military capabilities. The fact that Finland has become only the second country in addition to the United States to add JASSM to its inventory is testament to the success of this work.

The odds are changing: Finland's improving military capabilities vis-à-vis Russia⁷

The decision to procure JASSM will improve Finland's defence and deterrence capabilities. In both physical and conceptual terms, JASSM expands the reach of the armed forces beyond Finland's borders and laterally within Finland. To understand why JASSM so significantly increases Finland's

⁷ Though blatantly obvious, it cannot be emphasized enough that neither Finland nor Russia has anything to gain from military conflicts between the two countries. The economic ties between citizens of both countries are extensive and mutually beneficial, and cultural and social ties are flourishing. It would be a tragedy if this positive overall trend were to be reversed.

capabilities *vis-à-vis* Russia, it is necessary to consider when, how, why and to what end Finland's defence benefits from the physical increase in range at which it can strike and disrupt enemy units.

In an Institute for Defense Analyses Deep Attack Weapons Mix Study from September 2001, weapons with long standoff ranges, such as JASSM, were found to be most effective in early phases of a conflict, when opposition air defences were most effective. This is one reason why JASSM is so important for Finland. Russia has the best integrated air defence system (IADS) in the world. As Figure 1 indicates,⁸ when the most advanced S-300 and S-400 systems are positioned to protect two of Russia's most strategic targets, St. Petersburg and the Kola Peninsula, their operational ranges cover almost all of Finland's airspace. In any military conflict this would create problems for Finland, and the Finnish Air Force in its efforts to deny air superiority to opposing forces and support friendly forces through air-to-ground attacks; it would also make it harder to receive assistance from potential allies. JASSM is likely to be deployed to degrade the capabilities of these systems. However, it can and in a military conflict most likely would be used for at least two other types of missions.

JASSM can also be deployed to interdict a land attack in or into Finland. The limited number of JASSM suggests that other weapons, such as the JSOW (Joint Standoff Weapons, AGM-154), JDAM (Joint Direct Attack Munition) and even heavy rockets (ATACMS) are better suited to disrupting and blunting such attacks. The third, and significant mission type for which JASSM could be used is to place a broad range of the opponent's assets under threat. The increase in physical range at which the Finnish military can strike increases the number of targets that can be attacked and "prevents the enemy from establishing sanctuaries within which its military forces are safe from attack".⁹ This means that an opponent cannot

safely keep high-value assets within 300-400km of the Finnish border. This simple fact raises the cost of any military operation aimed against Finland. It also means Finland can target economically and politically important enemy assets. It is for these reasons that JASSM is frequently described as a *kynnysasejärjestelmä* (threshold-raising weapons system) – in other words, it is a deterrent.

New choices for decision-makers: defending Finland beyond its borders

The new capabilities Finland is acquiring demand that decision-makers begin to grapple with their military-political implications. The upgraded F/A-18 and JASSM combination, as well as the upcoming ATACMS upgrades to Finland's Multiple Launch Rocket System (MLRS), provide the Finnish Defence Forces with a multi-pronged interdiction strike capability. The capabilities could be used to strike military, economic or political assets without which the enemy cannot (without significantly more effort) reach the goals of its operations. Here, it is essential for Finnish decision-makers to recognize that in any realistic scenario the enemy's use of military force against Finland would simply be a means to a greater end.

Keeping this in mind, Finnish decision-makers must consider in advance whether they would be willing to strike assets which are viewed as strategic by an opponent. Other questions Finnish political decision-makers would have to consider are:

1. Is it possible to strike at only strategic military targets, and leave economic and political ones untouched?
2. How do we identify which targets would be semi-strategic; this suggests targets that are considered regionally important (but not existential) by the enemy and which are used against Finland.
3. To avoid a drawn-out and destructive war, are we prepared to deplete JASSM, ATACMS and JSOW stores in an effort to prevent an opponent from initially marshalling its forces?

The history of Finnish decision-making suggests that Finnish politicians would not use the new

8 S-300 and S-400 site locations and range rings are based on data from IMINT & Analysis blog and its "SAM Site Overview" file, available at <http://geimint.blogspot.com/2008/06/worldwide-sam-site-overview.html>. Thank you to Sean O'Connor for the site and permission to use the data.

9 Nicholls, David J. (2000) "Cruise Missiles and Modern War – strategic and technological implications", p.3. Center for Strategy and Technology, Air War College, Air University.

strategic-strike capability in a pre-emptive manner, or even in the initial stages of a military conflict; even though this could in some situations actually be the most effective time to use the new capabilities.

Not having possessed such deep-strike capabilities previously, Finnish decision-makers also need to be educated on the theories of airpower which undergird the operational planning for and use of weapons such as JASSM. The most notable risk is that the (predominantly US Air Force) view on the strategic impacts of bombing and its offshoot Effects Based Operations (EBO) are misunderstood, and a mechanistic view of warfare is adopted by Finnish decision-makers. Since the 1920s, air power theorists have argued that the precision application of air power to an enemy's weak points would result in victory, or a strategic result. The more than eight decades of history that have ensued since suggest that it is very difficult to identify the specific strategic assets which the destruction of would alter the behaviour of an opponent. Everything from different cultural perceptions to a potentially rapidly changing regional context make identifying such key strategic points a challenge.

Though conflict seems distant, decision-makers must now grapple with the conceptual and potential political challenges of using a new class of weapons which provides new capabilities. The potential decisions must be considered now, and integrated into continually evolving military plans. Politicians must also understand how the new capabilities and the new strategies they enable must be reflected in the ongoing reform of the Finnish Defence Forces.

Conclusions and implications:

JASSM – a game-changer for Finnish defense

To understand the myriad implications of the JASSM acquisition it is necessary to grasp that Finland is not just buying a weapon or a weapons system, but a game-changing capability. *The United States wants Finland to have certain capabilities and JASSM allows those capabilities to be developed.* Ultimately, to use advanced weapons such as JASSM to their fullest potential requires joint operations and advanced intelligence and targeting capabilities. Finland has an advanced intelligence gathering system. Joint operations between the different branches of the military and advanced targeting are

something the military must continue to develop during the next decade.

For example, the Finnish Air Force and Army must be able to use their strike assets simultaneously, while the Finnish Navy provides anti-aircraft protection. Grounding the air force because the Army is using ATACMS is not necessary, but requires a high level of coordination – and practice. The dynamic battlefield and a limited number of JASSM and ATACMS makes it imperative that the same targets are not unnecessarily struck multiple times with valuable ordinance.

It is not only the military that must develop its joint operational capabilities; politicians must understand that planning for joint offensive operations in the defence of Finland is necessary¹⁰. The cuts in the Finnish defence budget have already forced many to consider anew what defending Finland means in the 21st century; a continuous dialogue and communications flow is now necessary, so that new capabilities are not wasted due to a lack of understanding about the type of changes that are needed.

Advanced targeting is the third pillar of using advanced weapons such as JASSM to their full potential. While seemingly a technical question, it provides some insight into the political implications of the United States providing a capability, and not just a weapon, for Finland.

Finland will use a mix of assets to select targets for JASSM strikes. Some JASSM targets, such as standing military headquarters and bridges can be targeted with minimal effort. In any case, the F/A-18 Hornets which carry the missile are unlikely to themselves be responsible for targeting; other entities will provide real-time targeting information or coordinates for targets that continually re-locate. This information could come from other flying platforms, ground-based controllers or other electronic intelligence sources. Current flying platforms, whether manned or unmanned, would be unlikely to survive a lengthy flight deep into defended enemy territory.

10 This also applies to cyber operations. Though it may be politically convenient to artificially separate defensive and offensive cyber capabilities, it makes little sense in the real world – and only serves to increase inefficiency in tight budgetary times.

For the past decade Finland has emphasized training for special operations forces (SOF), with the goal of inserting them into enemy territory to provide targeting information. Currently, Finland has very capable SOF units that probably could provide some targeting information – as well as a strong direct action capability. So, using special operations forces to target JASSM is possible, but extremely sensitive politically: considering that JASSM is most useful in the initial phases of a conflict, would Finland really send SOF units deep into enemy territory to identify targets unless a war had already started?

This suggests that additional methods of targeting are available. Electronic intercepts and other domestic intelligence sources must be included as potential methods of targeting. Most intriguingly, elements of the JASSM agreement, and the acknowledged potential of targeting JASSM with other methods, indirectly suggests that in the event of a crisis that escalated to the use of military force, Finland would at least have the ability to receive and utilize externally provided targeting data. If the United States and Finland have agreed to even the potential of such detailed intelligence sharing, as well as a resupply of missiles (which would partially explain the low initial purchase), the relationship is, globally speaking, a truly unique one.

From a defence perspective, the relationship enables Finland to vault from using Cold War era tanks artillery and mass infantry to degrade enemy forces in Finland, to potentially stopping (or at least severely weakening) an attack before it enters Finnish territory. Like every relationship, this one also carries with it negative potential. The Finnish Air Force, and air defence in general, is increasingly reliant on the benevolence of the United States. The logic of path-dependency also begins to dictate future weapons and systems procurement choices (here the F-35 Joint Strike Fighter comes to mind). The potential for Finland to feel pressure to at least politically support other US actions is also likely to grow.

If the Finnish military does develop true joint capabilities by 2020 and properly integrates the new capabilities such as JASSM into its arsenal and plans, Finland's military situation will be better than it is now. For Russia, the acquisition of these advanced capabilities by Finland is a double-edged sword: it may delay Finland's application to become a member of NATO, but at the cost of a drastically improved

ability by Finland to withstand and respond to a broader range of military strikes and pressure.

The strengthening bilateral relationship with the United States has improved Finland's defence. A desire to deepen that bilateral relationship suggests that Finland knows that even NATO membership by itself would not be sufficient for Finnish defence needs; rather, Finland needs a web of multilateral, multinational and bilateral relationships for its security. It also suggests that clear-eyed realism drives Finnish security policy thinking: that Finland knows that it is still the United States that serves as the European bulwark (and provider of guarantees) against potential external aggression; and, that NATO is a necessary but not sufficient component for broader European defence, mainly because most European states have ignored their own defence for too long.

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