National Defence Défense nationale

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INTERNATIONAL DEFENCE PROCUREMENT COLLABORATION: ERECTING THE TEMPLE OF SUCCESS

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JCSP 42

Exercise *Solo Flight*

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CANADIAN FORCES COLLEGE – COLLÈGE DES FORCES CANADIENNES
JCSP 42 – PCEMI 42
2015 – 2016

EXERCISE *SOLO FLIGHT* – EXERCICE *SOLO FLIGHT*

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Word Count: 5383

Compte de mots: 5383

INTERNATIONAL DEFENCE PROCUREMENT COLLABORATION – ERECTING THE TEMPLE OF SUCCESS

> *In the long history of humankind (and animal kind, too) those who learned to collaborate and improvise most effectively have prevailed.*
>
> - Charles Darwin, *Descent of Man*

INTRODUCTION

It is the nature of man to collaborate. Within the framework of the North Atlantic Treaty Organization (NATO) and/or European Union (EU), defence collaboration is omnipresent for member countries at various levels. However, especially large and therefore prestigious armament programmes frequently turn out to be behind the schedule, over-budget and not meeting performance targets. Inter-governmental collaboration offers opportunities to share costs and risk as well as to combine financial savings with interoperability between allies.[1] Decisively driven by a new generation of military technology that requires large investments to stay operationally relevant, governments increasingly decide for defence procurement collaboration and consequently rely on collaborative success.

With a special focus on NATO and EU member states, this paper will demonstrate that the success of international defence procurement collaborations depends on the degree of fulfillment of certain universal criteria, resulting from different theoretical approaches to collaborative organisations on the one hand, and practical experience with different armament programmes on the other. In doing so, factors that are critical to success in collaborations will first be derived from collaboration, organisation and business cooperation theory. Afterwards, the role of the procurement function in public policy, as well as the political motivation behind

[1] Ron Smith, *Military Economics – The Interaction of Power and Money* (New York: Palgrave Macmillan, 2009), 123, 127.

intergovernmental collaborations, will be outlined to show special characteristics of collaborations in defence procurement. Subsequently, the derived factors will be validated based on practical experience, trends and challenges in intergovernmental organisations, and selected armament programmes as well. Finally, a list of universal criteria for success in defence procurement collaborations will be derived and discussed while considering different influencing actors.

COLLABORATION

Collaboration theory

The theory of collaboration is hard to grasp, as an unambiguous definition of the term 'collaboration' does not exist. Academic efforts to explore how collaboration is approached and understood by different disciplines have started just recently.[2] This analysis will be mainly based on management and organisational research. Here, several authors suggest to differentiate between collaboration and cooperation, while partially considering both in contrast to competition as a third characteristic or activity of an organisation.[3]

This paper, however, analyzes inter-governmental activities in international defence procurement collaborations. Therefore, competition between participating countries is not primarily considered here. Cooperation, though, is not seen as an alternative model to

[2] John C. Morris and Katrina Miller-Stevens, "The State of Knowledge in Collaboration," in *Advancing Collaboration Theory – Models, Typologies, and Evidence*, ed. John C. Morris and Katrina Miler-Stevens (New York: Routledge, 2016), 5-6, 8-9 and Max Planck Institute for Evolutionary Anthropology, "Coordination, Collaboration and Cooperation: Interdisciplinary Perspectives," accessed 2 April 2016, http://www.eva.mpg.de/psycho/pdf/Publications_2015_PDF/Amici-Bietti-CCC_2015.pdf.

[3] E.g. Karen Polenske, "Competition, Collaboration and Cooperation: An Uneasy Triangle in Networks of Firms and Regions." *Regional Studies* 38.9 (December 2004): 1030-1033 or Charles C. Snow, "Organizing in the Age of Competition, Cooperation, and Collaboration" *Journal of Leadership & Organizational Studies* 22.4 (2015): 433-435.

collaboration, but as an inherent part of it. So, collaboration is understood as a joint initiative of stakeholders[4] that is basically determined by two indispensable facets:

> cooperation as joint pursuit of agreed-on goal(s) in a manner corresponding to a shared understanding about contributions and payoffs […and]
> coordination as the deliberate and orderly alignment or adjustment of partners' actions to achieve jointly determined goals.[5]

Theoretical approaches have analyzed characteristics and discontinuities in practical collaborations[6] and developed models and assessment tools to capture central principles of collaboration[7]. Out of this, frequent theoretical findings and recommendations are used to derive universal factors for successful organisational collaboration.

Under the general term of cooperation, *proximity* has been found as one determinant of collaborative success. Of particular importance with a view to an international environment is hereby cultural proximity, including social norms and pre-existing social ties, but also that organisational and technological proximity significantly influences collaborative results.[8]

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[4] Following Jaouad Daoudi and Mario Bourgault, "Discontinuity and Collaboration: Theory and Evidence from Technological Projects," *International Journal of Innovation Management* 16, no. 6 (December 2012): 1240012-4. Additionally, a brief summary of definitions of collaboration in the relevant literature can be found ibid., 1240012-3. For the scope of this paper the collaborating countries / organizations are seen as stakeholders in a relatively narrow interpretation. For an academic discourse of stakeholder theory see Ronald K. Mitchell, Bradley R. Agle and Donna J. Wood, "Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts," *The Academy of Management Review* 22, no. 4 (October 1997): 853-886.

[5] Ranjay Gulati, Franz Wohlgezogen and Pavel Zhelyazkov, "The Two Facets of Collaboration: Cooperation and Coordination in Strategic Alliances," *The Academy of Management Annals 6*, no. 1 (June 2012): 533, 537. Hereby, Daoudi's et al. (see footnote 4) functional aspects 'communication' and 'participation in decision' are understood as integral part of the facet 'cooperation'.

[6] E.g. Charles C. Snow, "Organizing in the Age of Competition, Cooperation, and Collaboration" *Journal of Leadership & Organizational Studies* 22.4 (2015): 433-442 and Jaouad Daoudi and Mario Bourgault, "Discontinuity and Collaboration: Theory and Evidence from Technological Projects," *International Journal of Innovation Management* 16, no. 6 (December 2012): 1240012-1 – 1240012-25.

[7] E.g. Karen Polenske, "Competition, Collaboration and Cooperation: An Uneasy Triangle in Networks of Firms and Regions." *Regional Studies* 38.9 (December 2004): 1029-1043 and Rebecca Gajda, "Utilizing Collaboration Theory to Evaluate Strategic Alliances," *American Journal of Evaluation* 25, no. 1 (2004): 65-77. A recent discussion of different approaches to collaboration theory can be found at Andrew P. Williams, "The Development of Collaboration Theory – Typologies and Systems Approaches," in *Advancing Collaboration Theory – Models, Typologies, and Evidence*, ed. John C. Morris and Katrina Miler-Stevens (New York: Routledge, 2016), 14-42.

[8] Karen Polenske, "Competition, Collaboration and Cooperation: An Uneasy Triangle in Networks of Firms and Regions." *Regional Studies* 38.9 (December 2004): 1033, Ranjay Gulati, Franz Wohlgezogen and Pavel Zhelyazkov, "The Two Facets of Collaboration: Cooperation and Coordination in Strategic Alliances," *The Academy of Management Annals 6*, no. 1 (June 2012): 536, 538-541, 545, 554 and Jaouad Daoudi and Mario

Furthermore, *shared objectives or visions* among the stakeholders are needed for a successful collaboration.[9] This includes, beyond contractual agreements, a "collective and shared understanding of the nature of collaboration".[10] Most authors agree that *trust* is a key factor for cooperation that leads to collaborative success. This includes, in particular, confidence in other stakeholders' integrity and a feeling of strategic interdependence, but also healthy personal relationships.[11]

Furthermore, *commitment* is seen as an essential factor for cooperative success. Here the term is not only understood within the general relationship between stakeholders, but also in how the will to jointly accept determinations regarding national contributions contributes to stability and sustainability of a collaboration.[12] Against this it could be argued that, in particular, inter-governmental collaborations are characterized by opportunism since nations, like companies, ultimately follow their own agenda to maximize returns or to improve their own position.[13] However, besides the abovementioned level of *trust* being essential for success, it has to be considered that international armament collaborations[14] are generally based on contractual

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Bourgault, "Discontinuity and Collaboration: Theory and Evidence from Technological Projects," *International Journal of Innovation Management* 16, no. 6 (December 2012): 1240012-5 – 1240012-6.

[9] Charles C. Snow, "Organizing in the Age of Competition, Cooperation, and Collaboration" *Journal of Leadership & Organizational Studies* 22.4 (2015): 434.

[10] Rebecca Gajda, "Utilizing Collaboration Theory to Evaluate Strategic Alliances," *American Journal of Evaluation* 25, no. 1 (2004): 68.

[11] Charles C. Snow, "Organizing in the Age of Competition, Cooperation, and Collaboration" *Journal of Leadership & Organizational Studies* 22.4 (2015): 433-434, Ranjay Gulati, Franz Wohlgezogen and Pavel Zhelyazkov, "The Two Facets of Collaboration: Cooperation and Coordination in Strategic Alliances," *The Academy of Management Annals 6*, no. 1 (June 2012): 548, 552 and Rebecca Gajda, "Utilizing Collaboration Theory to Evaluate Strategic Alliances," *American Journal of Evaluation* 25, no. 1 (2004): 69.

[12] Charles C. Snow, "Organizing in the Age of Competition, Cooperation, and Collaboration" *Journal of Leadership & Organizational Studies* 22.4 (2015): 433-434, 436 and Ranjay Gulati, Franz Wohlgezogen and Pavel Zhelyazkov, "The Two Facets of Collaboration: Cooperation and Coordination in Strategic Alliances," *The Academy of Management Annals 6*, no. 1 (June 2012): 536, 549, 552.

[13] Charles C. Snow, "Organizing in the Age of Competition, Cooperation, and Collaboration" *Journal of Leadership & Organizational Studies* 22.4 (2015): 433, 436.

[14] "The term 'armaments collaboration' refers to programmes where two or more participating states agree to procure (joint acquisition) and fund the production (co-production) and/or development (co-development) of military equipment jointly." Katia Vlachos-Dengler, "The EDA and armaments collaboration," in *The European*

agreements. So, on the one hand, opportunism can be limited by establishing formal controls or sanctions. On the other hand, nations are able to consider potentially negative effects of opportunism in advance by careful selection of collaboration partners.[15]

Within the facet of coordination, *communication* takes a prominent position. Particularly dependent on the *proximity* among the stakeholders, the way communication instruments and techniques are applied defines liaisons, coordination mechanisms and interpersonal relationships, that in turn reinforce *trust* among stakeholders.[16] The established *leadership* acts as a coordinating instrument within the collaboration. This is why the "presence of a leadership capable to manage and anticipate conflict and to encourage participation in decision making"[17] is another factor determining success. Coordination results largely from the *complexit*y of the collaboration itself and its environment. Multiple or highly diverse partners impose high demands on coordination.[18] Therefore, *complexity* is another (*reverse*) factor: the less complex a collaboration, the more likely it is to succeed.

Inter-organisational collaboration

An exhaustive discussion of different interpretations of the term 'organisation' is not expedient within the scope of this paper. Instead, it is simply assumed that stakeholders in defence collaborations are, generally, interacting national organisations.[19] Although intra-organisational aspects of stakeholders are also suitable to determining success or failure of

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Defence Agency: arming Europe ed. Nikolaos Karampekios and Iraklis Oikonomou (New York: Routledge, 2015), 84-85.

[15] Ranjay Gulati, Franz Wohlgezogen and Pavel Zhelyazkov, "The Two Facets of Collaboration: Cooperation and Coordination in Strategic Alliances," *The Academy of Management Annals 6*, no. 1 (June 2012): 535, 542, 547.

[16] Ibid., 541, 550, 557, Rebecca Gajda, "Utilizing Collaboration Theory to Evaluate Strategic Alliances," *American Journal of Evaluation* 25, no. 1 (2004): 69 and Jaouad Daoudi and Mario Bourgault, "Discontinuity and Collaboration: Theory and Evidence from Technological Projects," *International Journal of Innovation Management* 16, no. 6 (December 2012): 1240012-5.

[17] Ibid., 1240012-19.

[18] Ranjay Gulati, Franz Wohlgezogen and Pavel Zhelyazkov, "The Two Facets of Collaboration: Cooperation and Coordination in Strategic Alliances," *The Academy of Management Annals 6*, no. 1 (June 2012): 539.

[19] MariaLaura Di Domenico, "Learning from and through collaborations," in *Organizational collaboration – Themes and issues* (New York: Routledge, 2011), 3.

collaborations, the analytical focus here lies on the inter-organisational perspective in the international arena.[20]

Organisation theory offers relevant impulses for intergovernmental collaborations, too. *Coordination* still plays a key role as "organizational success is often a function of how successfully individuals can coordinate their activities."[21] Furthermore, the role of *power* to get decisions implemented is highlighted without restricting it to a particular kind of organisational culture. Moreover, the use of personal *power* and influence outside a formal structure has to be considered.[22] Some identified challenges of managing multicultural teams suggest to consider *culture* as a separate factor. In particular, this includes aspects of language, attitudes towards authority and conflicting norms among stakeholders.[23]

The theory of business cooperation first introduces an economic perspective on collaboration. Thus, a key factor for stakeholders is striving for better *efficiency*, generally by minimizing own costs and/or realizing synergistic effects. Furthermore, there is a need to *structure* collaboration to ensure consistency and stability as determinants of collaborative success. Finally, derived from game theory, the principle of *equity* between economic agents has to be considered. With regard to contractual agreements, *equity* reduces mistrust between, and ensures strong *commitment* of, stakeholders.[24]

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[20] Partially referred to as 'international alliances'. E.g. Dev Kumar Boojihawon, "International management perspectives – Introduction," in *Organizational collaboration – Themes and issues* (New York: Routledge, 2011), 165.

[21] Jeffrey Pfeffer, "Understanding power in organizations," in *Organizational collaboration – Themes and issues* (New York: Routledge, 2011), 92.

[22] Ibid., 94-98.

[23] Jeanne Brett, Kristin Behfar and Mary Kern, "Managing multicultural teams," in *Organizational collaboration – Themes and issues* (New York: Routledge, 2011), 156-159.

[24] Nieves Arranz Pena and Juan Carlos Fernandez de Arroyabe, *Business Cooperation – From Theory to Practice* (New York: Palgrave MacMillan, 2002), 18, 37, 65, 75, 78, 85-91.

The defence procurement function

Defence industry and technology generally play a key role in a national economy "as a triggering factor and positive facilitator of economic growth and technological spin offs to other fields within the country."[25] The relation between the military and economy, though, is characterized by mutual interdependences. National safety and security has to be guaranteed by a governments' executive power. Therefore, the military indirectly influences domestic market economy and prosperity by shaping the overall environment. Besides this, defence budgets depend in particular on a country's economic situation, giving it (limited) resources and therefore determine a nation's military executive capabilities.[26]

Within a government broad procurement function, defence procurement is of special significance as:

> Procurement means to purchase or acquire, but it tends to be used in a narrower sense: the purchase of a one-off or customized product or service, where there is usually asymmetric information between buyer and seller; risk and uncertainty; concerns about the quality of the product provided; an inability to write a complete contracts [sic]; and the possibility of renegotiation.[27]

So, defence procurement tends to be unique and complex with regard to technological as well as contractual characteristics. Decision making therefore has to consider impacts of research and development, offsets, the involvement of the private sector and even corruption, to name just a few of them. Among these, intergovernmental collaboration has an increasingly important role to play, aiming to offset one's own limited industrial capacities, risk and costs.[28]

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[25] Gökhan Astan, "Factors effecting technology acquisition decisions in national defense projects," *Journal of Defense Resources Management* 6, Issue 1 (10/2015): 101.

[26] Ron Smith, *Military Economics – The Interaction of Power and Money* (New York: Palgrave Macmillan, 2009), 19, 24. As the focus of this paper is on procurement and therefore first and foremost economic and political aspects, interdependencies between military and society are not considered here explicitly.

[27] Ibid., 124.

[28] Martin Trybus, *Buying Defence and Security in Europe – The EU Defence and Security Procurement Directive in Context* (Cambridge: Cambridge University Press, 2014), 49, 53 and Royal United Services Institute for

Initially, without considering political drivers, but accepting a general trend of decreasing defence budgets[29] in combination with increasing *complexity* of procurement programmes, collaborations first and foremost aim to minimize costs. Therefore, again, special emphasis has to be given to *efficiency*. Furthermore, accepting that information is always imperfect leads to the conclusion that non-cooperative or immoral behaviour of stakeholders can hardly be observed or proved by others.[30] Consequently, a primary factor of successful collaboration is a valid basis of *trust*, especially within the sensitive defence sector.

Public policy theory

Being part of national defence and security policy, armament procurement decisions affect not only the fiscal budget and the economy, but also vital security interests and therefore national sovereignty.[31] In general, the theory of public policy understands defence value as a subset of public value. Therefore, international procurement collaborations should ideally reflect a nation's defence and security policy based on "dialogues with citizens about means and ends of defence capability formation, including defence-related Industry [sic] capabilities."[32] However, in reality, besides external events and contexts, numerous surrounding actors shape political landscapes and

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Defence Studies, *1992: Protectionism or Collaboration in Defence Procurement – RUSI Working Group* (London: RUSI, 1990), 21.

[29] E.g. North Atlantic Treaty Organization, *Financial and Economic Data Relating to NATO Defence* (Bruxelles: NATO Press & Media, 2011), 4-8, Gheorghe Stoiu, "The current global economic environment's impact on smart defence and pooling and sharing concepts' implementation," *Strategic Impact*, no. 4 (2014): 54 or Mikaela Blackwood, "How Smart is Smart Defense? A Review of NATO's Smart Defense Proposal," *Connections: The Quarterly Journal* 11, no. 3 (Summer 2012): 86-87.

[30] Stephanie J. Rickard and Daniel Y. Kono, "Think globally, buy locally: International agreements and government procurement," *The Review of International Organizations* (2014): 338 and Ron Smith, *Military Economics – The Interaction of Power and Money* (New York: Palgrave Macmillan, 2009), 124, 142, 152-153.

[31] Martin Trybus, *Buying Defence and Security in Europe – The EU Defence and Security Procurement Directive in Context* (Cambridge: Cambridge University Press, 2014), 39.

[32] Peter Hall, Stefan Markowski and Robert Wylie, "Government policy – Defence procurement and defence industry," in *Defence Procurement and Industry Policy – A small country perspective*, ed. Stefan Markowski, Peter Hall and Robert Wylie (New York: Routledge, 2010), 158.

decisions.[33] Thus, the theory of public policy accepts actions and non-actions as political decisions.[34]

As "money matters for the military,"[35] governments tend to put strong emphasis on economic benefits in defence procurement collaborations. Here too, the focus is on *efficiency* to achieve economies of scale in the field of development and/or production.[36] Furthermore, considerations of risk management by burden sharing among stakeholders play a prominent role.[37] Especially for smaller countries, the economic perspective can be essential and therefore collaboration is the preferred option to provide national security within limited budgets.[38] With regard to economically driven political objectives, clear parallels to business cooperation are apparent. Consequently, it can be assumed that the factors identified above are also valid within public policy.

[33] "The events are anticipated and unanticipated incidents ranging from elections to scientific discoveries to chronic and acute societal dilemmas and crisis that may result from a public policy or provide an opportunity for achieving political objectives related to public policy. The context of a public policy relates to its socioeconomic conditions, culture, infrastructure, biophysical conditions or impacts of public policy on a society, which […] continues to interact with the policy process." Christopher M. Weible, "Introducing the Scope and Focus of Policy Process Research and Theory," in *Theories of the Policy Process*, ed. Paul A. Sabatier and Christopher M. Weible (Boulder: Westview Press, 2014), 5.

[34] Christopher M. Weible, "Introducing the Scope and Focus of Policy Process Research and Theory," in *Theories of the Policy Process*, ed. Paul A. Sabatier and Christopher M. Weible (Boulder: Westview Press, 2014), 4-5 and Leslie A. Pal, *Beyond Policy Analysis: Public Issue Management in Turbulent Times* (Toronto: Nelson, 2010), 2.

[35] Ron Smith, *Military Economics – The Interaction of Power and Money* (New York: Palgrave Macmillan, 2009), 1.

[36] E.g. Center for Strategic and International Studies, *The Future of the Transatlantic Defense Community – Final Report of the CSIS Commission on Transatlantic Security and Industrial Cooperation in the Twenty-first Century* (Washington: CSIS Press, 2003), 18 or Peter Hall, Stefan Markowski and Robert Wylie, "Government policy – Defence procurement and defence industry," in *Defence Procurement and Industry Policy – A small country perspective*, ed. Stefan Markowski, Peter Hall and Robert Wylie (New York: Routledge, 2010), 162.

[37] Gökhan Astan, "Factors effecting technology acquisition decisions in national defense projects," *Journal of Defense Resources Management* 6, Issue 1 (10/2015): 102. For general considerations about the risk management function of defence procurement see: John Louth and Rebecca Boden, "Winging it? Defence Procurement as Risk Management," *Financial Accountability & Management* 30, no. 3 (August 2014), 303-321.

[38] Stefan Markowski, Peter Hall and Robert Wylie, "Introduction," in *Defence Procurement and Industry Policy – A small country perspective*, ed. Stefan Markowski, Peter Hall and Robert Wylie (New York: Routledge, 2010), 6.

Besides economic considerations, there are several strategic reasons underlying intergovernmental approaches to defence procurement.[39] In general, collaborations among allies can complement diplomatic instruments to achieve broader national security and foreign policy goals. Military coalitions and relations can be strengthened, while domestic defence programmes may be reinforced, by international collaboration. Such strategic objectives aim to promote cohesion within an alliance or to intensify mutual dependencies between countries in order to increase national security. Therefore, *cooperation* itself can be seen as one factor for success, determined by its sustainability and lasting stabilizing impacts. Furthermore, collaboration enables the pooling of scarce resources within coalitions or alliances as well as standardization and harmonization of military equipment and requirements.[40] As such political objectives primarily serve economic goals, they finally strive for *efficiency*.

One might object here that international collaborations are not necessarily based on superficial objectives as outlined above, but are solely established for the sake of symbolic meaning and political rhetoric. By following their own agendas, governments are prone to utilizing collaborations for their own purposes while accepting even apparently insufficient results, if politically appropriate.[41] As asymmetric information forms the basis for both political and economic environments, it has to be assumed that stakeholders in general act based on hidden agendas to a certain extent.

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[39] While political considerations in favour of defence collaborations are considered here, broader political objectives will be discussed within in the scope of the political environment (see page 28).

[40] Center for Strategic and International Studies, *The Future of the Transatlantic Defense Community – Final Report of the CSIS Commission on Transatlantic Security and Industrial Cooperation in the Twenty-first Century* (Washington: CSIS Press, 2003), 18-19 and Stefan Törnqvist, "Demand Side Collaboration and Multinational Procurement," *RUSI Journal* (April 2001): 64, 67.

[41] Robert Keohane, "Intergovernmental Organizations and Garbage Can Theory," *Journal of Public Administration Research and Theory* 12, no. 2 (2002): 155-157.

In terms of defence procurement, a distinction has to be made between collaboration in institutions[42] and armament programmes[43]. The latter is usually based on extensive contractual agreements in order to minimize negative effects of hidden agendas. Consequently, the more detailed that purpose, objectives and commitments become contractually, the less negative the impact for the collaboration has to be expected. In contrast, intergovernmental institutions usually provide more of a general framework for defence collaboration while leaving space for political manoeuvres. As symbolic actions cannot be totally prevented, defence collaborations have to at least diminish the likelihood by ensuring a relative closeness between stakeholders. For both forms of collaboration considered here, the next sections discuss practical experiences based on the evaluation of empirical data.

INTERGOVERNMENTAL DEFENCE INSTITUTIONS

North Atlantic Treaty Organization

NATO was established as a political and military alliance to unite "efforts for collective defence and for the preservation of peace and security"[44]. Shaped by changing political and security environments, NATO today consists of 28 member states collaborating within a complex political and military command structure.[45] Thus, NATO fulfills the criteria for a formal organisation: clearly defined structures, a relative permanence and a trend to elaborate.[46]

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[42] E.g. NATO or EU.

[43] E.g. the Eurofighter Typhoon or the Joint Strike Fighter.

[44] North Atlantic Treaty Organization, "The North Atlantic Treaty (1949)," last modified 22 August 2012, http://www.nato.int/nato_static/assets/pdf/stock_publications/20120822_nato_treaty_en_light_2009.pdf.

[45] North Atlantic Treaty Organization, "What is NATO?" accessed 16 April 2016, http://www.nato.int/nato-welcome/index.html.

[46] Herbert G. Hicks and C. Ray Gullett, *Organizations: Theory and Behavior* (New York: McGraw-Hill, 1975), 62-66, 80.

Like collaboration, the term institution is inconsistently defined. For this analysis, institutions are understood as "stable, valued, recurring patterns of behaviour"[47] in the form of institutionalised organisations that result from political development.[48] Therefore, NATO is an appropriate institutional case study to validate the factors derived above. Although procurement is not a core function of NATO[49], the organisation offers a complex framework for collaboration including several organisational elements dealing with aspects of collaborative procurement.[50]

In general, NATO can be seen as successful as:

> It has survived and adapted to massive changes in the international security environment; it has attracted new member states; it offers economic benefits and cost savings from collective defence; and it remains the only military alliance with an international military and peace-keeping capability.[51]

Collaboration within NATO reflects the derived factors at least up to a functionally-satisfying degree. Covering the cooperation facet, NATO brings together relative *proximal* stakeholders with *shared objectives* and *commitments* as laid out in the NATO treaty. Hereby, inherent command and communication *structures* enable the facet of *coordination* despite a relatively high organisational *complexity*. A contractual balance of *power* expresses *equity* and *trust* among member states confirming theoretical factors of organisation, business cooperation and defence procurement. Based on political motivation and decades-long tradition, NATO legitimately can be seen as a *lasting cooperation*. While these general findings are also applicable for NATO's

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[47] Samuel P. Huntington, "Political Development and Political Decay," *World Politics* 17, no. 3 (April 1965), 394.

[48] Ibid., 393-394.

[49] Although NATO aims to encourage economic collaboration, generating economic benefits is not explicit part of the treaty. North Atlantic Treaty Organization, "The North Atlantic Treaty (1949)," last modified 22 August 2012, http://www.nato.int/nato_static/assets/pdf/stock_publications/20120822_nato_treaty_en_light_2009.pdf.

[50] The intra-organizational spectrum ranges from relatively broad member services like the NATO Support and Procurement Agency (NSPA) offers, to single procurement programmes like the NATO SeaSparrow project including cooperative development, production, and in-service support for participating member-countries. North Atlantic Treaty Organization, "NATO Organization," last modified 14 July 2015, http://www.nato.int/cps/en/natohq/structure.htm#OA and Francis M. Cevasco, "Origins of a Four Decade Success Story NATO SeaSparrow's founders got it right," *Common Defense Quarterly* 4, no. 4 (2009): 18.

[51] Keith Hartley, *The Economics of Defence Policy – A new perspective* (New York: Routledge, 2011), 131.

procurement function, the role of *efficiency* has to be analysed separately. In doing so, selected intra-organisational aspects will be reflected on to identify trends and challenges in defence collaboration.

Striving for "individual and collective capacity to resist armed attack"[52], a main NATO focus has always been on interoperability and standardization. Today, NATO countries are obliged to a comprehensive work of Standardization Agreements.[53] However, there are still shortcomings in terms of standardization and *efficiency*. In particular, duplications, fragmentations and competition in defence procurement programmes between NATO member states must be criticised. To counter these trends,

> the search for improved efficiency becomes even more important. Economic analysis suggests that an efficient solution would require members of the NATO club to undertake mutually advantageous trade and exchange, based on the economic principle of specialisation by comparative advantage.[54]

Thus, the economic plea for extended standardization up to whole weapon systems is justified with cost saving opportunities through reduced research and development expenditures, lower unit production costs and gains from international trade.[55]

A more recent trend is NATO's 'Smart Defence' approach in response to the economic crisis in 2011. Considering

> how NATO can help nations to build greater security with fewer resources but more coordination and coherence, so that together [NATO] can avoid the financial crisis from

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[52] North Atlantic Treaty Organization, "The North Atlantic Treaty (1949)," last modified 22 August 2012, http://www.nato.int/nato_static/assets/pdf/stock_publications/20120822_nato_treaty_en_light_2009.pdf.

[53] North Atlantic Treaty Organization, "NATO Standardization Document Database – List of Current NATO Standards," last modified 15 April 2016, http://nso.nato.int/nso/nsdd/listpromulg.html. As Standardization Agreements (STANAG) also include standards for technical interoperability, NATO has a twofold function in regard to procurement. On the one hand, the development of common technical standards results from successful inter-governmental collaboration. For example, common standards for communication, support and others enable joint forces like the Standing NATO Maritime Groups. On the other hand, by making technical aspects a subject of discussion, it paves the way for intensified collaborative defence procurement.

[54] Keith Hartley, *The Economics of Defence Policy – A new perspective* (New York: Routledge, 2011), 117.

[55] Stefan Törnqvist, "Demand Side Collaboration and Multinational Procurement," *RUSI Journal* (April 2001): 63-64 and Keith Hartley, *The Economics of Defence Policy – A new perspective* (New York: Routledge, 2011), 116-118.

> becoming a security crisis, […] to make better use of NATO as an adviser and an honest broker […] and to minimise […] impact[s] on the overall effectiveness of the Alliance,[56]

the initiative aims to enable member states "to work better more effectively and efficiently together".[57] So, *efficiency* forms the centerpiece of Smart Defence. Different authors conclude that NATO offers great economic potential for *efficiency* enhancement through collaboration, but concurrently link it to lacking political will.[58]

European Union

A year prior to NATO, European intergovernmental defence collaboration found its origins in the Western European Union (WEU). Initially aiming for military co-operation within a European framework, the WEU has in the meantime merged into the broader institution of the EU.[59] Like NATO, the EU is an institutionalised organisation resulting from political development and therefore another appropriate case study for this paper.[60] Today the EU

> is a unique economic and political partnership between 28 European countries that together cover much of the continent. […] What began as a purely economic union has evolved into an organisation spanning policy areas, from development aid to environment. […] The EU is based on the rule of law: everything that it does is founded on treaties, voluntarily and democratically agreed by all member countries.[61]

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[56] North Atlantic Treaty Organization, "Building security in an age of austerity - Keynote speech by NATO Secretary General Anders Fogh Rasmussen at the 2011 Munich Security Conference" last modified 5 February 2011, http://www.nato.int/cps/en/natohq/opinions_70400.htm?selectedLocale=en.

[57] Ibid.

[58] E.g. Keith Hartley, "The Economics of Smart Defense," *Connections: The Quarterly Journal* 12, no. 3 (Summer 2013): 3-7, Mikaela Blackwood, "How Smart is Smart Defense? A Review of NATO's Smart Defense Proposal," *Connections: The Quarterly Journal* 11, no. 3 (Summer 2012): 92-93 or Gheorghe Stoiu, "The current global economic environment's impact on smart defence and pooling and sharing concepts' implementation," *Strategic Impact*, no. 4 (2014): 55-56, 59.

[59] Western European Union, "History of WEU," accessed 22 April 2016, http://www.weu.int/ and European Union, *Official Journal of the European Union Vol. 50 – Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community,* n.p., 2007 C 306/25 - 306/33.

[60] See page 12.

[61] European Union, "The EU in brief," last modified 20 April 2016, http://europa.eu/about-eu/basic-information/about/index_en.htm.

Moreover, the EU has deepened collaboration over time, so that today joint policies and laws apply to all member states.[62] Whether the EU is a collaborative success story is discussed controversially, depending on the author's perspective and the applied rating system. Within the scope of this paper, the EU's overall self-assessment of successful collaboration provides the basis for the following analysis.[63]

The institution itself confirms the significance of the outlined collaborative factors. Its contractual framework, structure and practical relevance reflect the outlined *cooperation* and *coordination* facets entirely. As all EU action is based on unanimous decisions, the aspects of *power structure* and *equity* are anchored in its statutes. Furthermore, by gradually extending collaboration over time, the EU itself sustainably shaped *culture*, *proximity* and *trust* among member states. As the institution is also used as a forum for armament collaboration, these general conclusions can be taken for granted to discuss aspects of the EU's procurement function.

With a view to trends and challenges in defence collaboration, the founding of the European Defence Agency (EDA) is the most considerable achievement. Its ambitious agenda covers "a wide range of issues from research and technology, armaments, military capabilities and defence industrial and market themes."[64] Thus, collaboration should be improved mainly in terms of *efficiency*. The EDA is given a coordinating function to harmonize cooperation by identifying and facilitating opportunities.[65] Today, it suffers from tensions between the mandate to reinforce

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[62] European Union, "EU institutions and other bodies," last modified 6 January 2016, http://europa.eu/about-eu/institutions-bodies/index_en.htm.

[63] See for example European Commission, *Research for Europe: A selection of EU success stories* (Luxembourg: Office for Official Publications of the European Communities, 2008), 12-107.

[64] Hilmar Linnenkamp, "Foreword," in *The European Defence Agency: arming Europe* ed. Nikolaos Karampekios and Iraklis Oikonomou (New York: Routledge, 2015), xv.

[65] Katia Vlachos-Dengler, "The EDA and armaments collaboration," in *The European Defence Agency: arming Europe* ed. Nikolaos Karampekios and Iraklis Oikonomou (New York: Routledge, 2015), 87, 91, 96, 99 and Martin

collaboration and the necessities of stakeholder's sovereignty.[66] Furthermore, its scope of action is limited as the EDA is not given any legal authority.[67] So, the EDA example also demonstrates political reservations to collaboration in the sensitive field of defence procurement.

Despite a long tradition of defence collaboration, military capability planning has remained a national responsibility. By introducing the concept of Pooling and Sharing (P&S) in 2010, the EU forestalled NATO's Smart Defence while pursuing the same target in the face of the financial crisis.[68] In this context,

> "Pooling" means the merging of capabilities, whereby the national power of disposition stays national. Pooled assets are no longer separate, but separable. "Sharing" means the eschewal of one's own national capabilities and is possible in two ways: either the building of common, multinational capabilities that are inseparable, or the use of weapons and forces of other nations that are willing to provide capabilities for others in a specialized role or as a lead nation for special tasks. […] Pooling and sharing can occur together.[69]

Different authors agree that P&S, like Smart Defence, actually offers significant savings potential. Its realization, though, depends once more on political willingness.[70]

Summing up, as much as the NATO and EU institutions tend to be collaborative success stories in general, in terms of economic *efficiency* there is still room for improvement. While underpinning the majority of the derived theoretical factors, both institutions provide clear

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Trybus, *Buying Defence and Security in Europe – The EU Defence and Security Procurement Directive in Context* (Cambridge: Cambridge University Press, 2014), 219-220.

[66] Katia Vlachos-Dengler, "The EDA and armaments collaboration," in *The European Defence Agency: arming Europe* ed. Nikolaos Karampekios and Iraklis Oikonomou (New York: Routledge, 2015), 97-98.

[67] Martin Trybus, *Buying Defence and Security in Europe – The EU Defence and Security Procurement Directive in Context* (Cambridge: Cambridge University Press, 2014), 221.

[68] European Defence Agency, "Code of Conduct on Pooling & Sharing," accessed 23 April 2016, https://www.eda.europa.eu/docs/news/code-of-conduct.pdf.

[69] Thomas Overhage, "Pool it, share it, or lose it: an economical view on pooling and sharing of European military capabilities," *Defense & Security Analysis* 29, no. 4 (2013): 324.

[70] E.g. Laura Chappell and Petar Petrov, "The EDA and military capability development – Making pooling and sharing work," in *The European Defence Agency: arming Europe* ed. Nikolaos Karampekios and Iraklis Oikonomou (New York: Routledge, 2015), 200-204, Thomas Overhage, "Pool it, share it, or lose it: an economical view on pooling and sharing of European military capabilities," *Defense & Security Analysis* 29, no. 4 (2013): 328-330, 337-338 or Gheorghe Stoiu, "The current global economic environment's impact on smart defence and pooling and sharing concepts' implementation," *Strategic Impact*, no. 4 (2014): 59.

indications of a special, politically-shaped role of *efficiency* in defence procurement collaborations.

COLLABORATIVE ARMAMENT PROGRAMMES

Programme selection

Literature on inter-governmental armament programmes shows a split picture. While organisations like NATO and the EU maintain entire agencies to reinforce armament collaboration[71], and financial imperatives increasingly force especially smaller countries into joint ventures[72], just a few programmes are actually broadly researched and analysed. Therefore, the majority of academic discussions deals with programmes that are highly complex and very cost-intensive while following a multi-national approach. Some are further used on a more case-by-case basis to support singular research objects or conclusions.[73]

> Although armaments collaboration is currently a priority for many states, only Europe and the USA have significant records of collaboration. However, in terms of both the number and variety of projects conducted, Europe, rather than the USA, is a better subject for analysis.[74]

Consequently, this paper focuses on collaboration between NATO and EU countries. As the main effort of academic discourse is on flying weapon systems, and the following analysis is

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[71] NATO Support and Procurement Agency, "What is NSPA," accessed 24 April 2016, http://www.nspa.nato.int/en/organization/nspa/nspa.htm and European Defence Agency, "About us," accessed 24 April 2016, https://www.eda.europa.eu/Aboutus.

[72] Stefan Markowski, Peter Hall and Robert Wylie, "Conclusion," in *Defence Procurement and Industry Policy – A small country perspective*, ed. Stefan Markowski, Peter Hall and Robert Wylie (New York: Routledge, 2010), 371-372.

[73] E.g. the ANZAC (Australian and New Zealand Army Corps) frigate project, Robert Wylie and Stefan Markowski, "The Australian defence value-adding chain – Evolution and experimentation," in *Defence Procurement and Industry Policy – A small country perspective*, ed. Stefan Markowski, Peter Hall and Robert Wylie (New York: Routledge, 2010), 199 and Stefan Markowski and Robert Wylie, "Industry case study – Australian naval shipbuilding," in *Defence Procurement and Industry Policy – A small country perspective*, ed. Stefan Markowski, Peter Hall and Robert Wylie (New York: Routledge, 2010), 325, 332-336; or the AMRAAM (Advanced Medium Range Air-to-Air Missile) programme, Mark Lorell and Julia Lowell, *Pros and Cons of International Weapons Procurement Collaboration* (Santa Monica: RAND, 1995), 28-30.

[74] Marc R. DeVore, "International armaments collaboration and the limits of reform," *Defence and Peace Economics* 25, no. 4 (2014): 423.

intended to be based on empirical studies of actual collaborative armament projects, two aerospace programmes are selected: the Eurofighter Typhoon programme (Eurofighter) and the Joint Strike Fighter Program (JSFP). In addition, the Horizon frigate as a maritime large-scale programme will be discussed.

The Eurofighter Typhoon programme

Inter-governmental collaboration has characterized European armament policy for decades. Traditionally, all participating countries work jointly on both development and production. The Eurofighter is one prominent example of a 'juste retour' programme, that distributes costs and benefits proportional to the purchases of each country.[75] Eurofighter presents itself as:

> Europe's largest military programme, with the four founding nations – Germany, Spain, United Kingdom and Italy – all using the aircraft in their own air forces. Upgradeability and flexibility was at the core of the specification to ensure that the platform could be used highly effectively by all air forces providing unrivalled global partnership.[76]

Hereby, an innovative armaments organisation was introduced: the Independent European Programme Group (IEPG).[77] The initially participating countries[78] used the IEPG to reach agreement on a need for a new aircraft and convergence in national requirements before starting the procurement process of the later Eurofighter. Inter-governmental collaboration continued

[75] Keith Hartley, *The Economics of Defence Policy – A new perspective* (New York: Routledge, 2011), 131 and Stefan Markowski, Peter Hall, Robert Wylie, "Demand – Military products, user requirements, and the organisation of procurement," in *Defence Procurement and Industry Policy – A small country perspective*, ed. Stefan Markowski, Peter Hall and Robert Wylie (New York: Routledge, 2010), 71 and Pia C. Wood, "The Never-ending Story: Germany, Great-Britain, and the Politics of the Eurofighter," in *International Military Aerospace Collaboration – Case studies in domestic and intergovernmental politics*, ed. Pia C. Wood and David S. Sorenson (Brookfield: Ashgate, 2000), 54.

[76] Eurofighter Jagdflugzeug GmbH, "About us," accessed 25 April 2016, https://www.eurofighter.com/about-us.

[77] "[…] as a platform for states to harmonize military requirements and discuss opportunities for collaboration on a permanent basis." Marc R. DeVore, "International armaments collaboration and the limits of reform," *Defence and Peace Economics* 25, no. 4 (2014): 435.

[78] France, Italy, Germany and Great Britain.

based on the existing NATO framework by forming a new agency[79] to supervise the contracted industry consortia.[80]

By staying within immediate European vicinity as well as the two established institutions, NATO and EU, the facets of *trust* and *proximity* were ensured. *Shared objectives* could be identified by the coordinating body IEPG. By initiating a formal collaboration form within NATO based on contractual agreements[81], the participants codified national *commitment* and empowered the programme. A special emphasis on *equity* became obvious in the French withdrawal after discrepancies about claims for "an inordinate amount of control"[82] within the collaboration.

While political motivation will be considered separately, the recurring factor of *efficiency* has to be discussed in relation to the programme. To that end,

> An economic evaluation of Eurofighter Typhoon requires a complete assessment of the costs and benefits of the programme compared with its alternatives. Costs include acquisition and support costs whilst benefits embrace military, economic, industrial and other benefits (e.g. performance; delivery dates; jobs; technology; exports; security of supply; inter-operability).[83]

In the absence of sufficient data, a complete economic evaluation is not feasible. Nevertheless, the programme has generated employment and provided technology spin-offs as well as export/import-saving and industrial benefits. So, compared to a purely national project,

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[79] NATO European Fighter Management Agency (NEFMA).

[80] Pia C. Wood, "The Never-ending Story: Germany, Great-Britain, and the Politics of the Eurofighter," in *International Military Aerospace Collaboration – Case studies in domestic and intergovernmental politics*, ed. Pia C. Wood and David S. Sorenson (Brookfield: Ashgate, 2000), 53 and Marc R. DeVore, "International armaments collaboration and the limits of reform," *Defence and Peace Economics* 25, no. 4 (2014): 435-436.

[81] "Two memoranda of understanding (MOUs) for production and in-service-support phases were signed by the defense ministers of the four countries (Germany, Great Britain, Italy, Spain) who will produce the Eurofighter." Pia C. Wood, "The Never-ending Story: Germany, Great-Britain, and the Politics of the Eurofighter," in *International Military Aerospace Collaboration – Case studies in domestic and intergovernmental politics*, ed. Pia C. Wood and David S. Sorenson (Brookfield: Ashgate, 2000), 53.

[82] Markus N. Heinrich, "The Eurofighter Typhoon programme: economic and industrial implications of collaborative defence manufacturing," *Defence Studies* 15, no. 4 (2015): 353.

[83] Keith Hartley, *The Economics of Defence Policy – A new perspective* (New York: Routledge, 2011), 174.

the Eurofighter indeed has achieved overall economies of scale.[84] However, the programme itself proved to be inefficient as it caused enormous increases in costs forced by its set-up, mismanagement and political unpredictability.[85] The fact that all countries have adhered to the Eurofighter, though, allows conclusions to be drawn about minor political importance of the *efficiency* factor.

However, the reviewed analyses consider the Eurofighter overall a successful programme.[86] Therefore, it provides the first empirical indication that success in international defence procurement depends on the theoretical factors derived above (with the exception of *efficiency*).

The Joint Strike Fighter Program

The JSFP is an international collaboration to procure the F-35 aircraft and is outlined as

> the Department of Defense's focal point for defining affordable next generation strike aircraft weapon systems for the Navy, Air Force, Marines, and [US] allies. The focus of the program is affordability -- reducing the development cost, production cost, and cost of ownership of the JSF family of aircraft.
> The F-35 Joint Strike Fighter Program is an Internationally oriented program consisting of partnerships with a number of countries.[87]

Unlike the Eurofighter, the JSFP represents an alternative form of collaboration aiming to avoid fragmentation and duplications among the participants.[88] Being a US-led programme from the outset, partner nations were enabled to participate by contributing development money, but

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[84] Ibid., 177-180 and Markus N. Heinrich, "The Eurofighter Typhoon programme: economic and industrial implications of collaborative defence manufacturing," *Defence Studies* 15, no. 4 (2015): 346.

[85] Ibid., 342-343 and Marc R. DeVore, "International armaments collaboration and the limits of reform," *Defence and Peace Economics* 25, no. 4 (2014): 437.

[86] E.g. Markus N. Heinrich, "The Eurofighter Typhoon programme: economic and industrial implications of collaborative defence manufacturing," *Defence Studies* 15, no. 4 (2015): 354, Marc R. DeVore, "International armaments collaboration and the limits of reform," *Defence and Peace Economics* 25, no. 4 (2014): 437 or Pia C. Wood, "The Never-ending Story: Germany, Great-Britain, and the Politics of the Eurofighter," in *International Military Aerospace Collaboration – Case studies in domestic and intergovernmental politics*, ed. Pia C. Wood and David S. Sorenson (Brookfield: Ashgate, 2000), 68-69.

[87] Joint Strike Fighter Program Office, "Program," accessed 26 April 2016, http://www.jsf.mil/program/. For a summarized background of the JSFP see Alan S. Williams, *Canada, Democracy and the F-35* (Kingston: Queen's University Press, 2012), 1-5.

[88] Stefan Markowski, Peter Hall and Robert Wylie, "Buyer-seller interaction in defence procurement," in *Defence Procurement and Industry Policy – A small country perspective*, ed. Stefan Markowski, Peter Hall and Robert Wylie (New York: Routledge, 2010), 143.

without any *commitment* to actually purchase the aircraft later on.[89] Here, four different levels of foreign participation apply from fully-collaborative to Foreign Military Sales (FMS), while all depend on US invitation to the JSFP.[90]

Currently,

> Of the original nine partner countries – Australia, Canada, Denmark, Italy, the Netherlands, Norway, Turkey, the United Kingdom and the United States – six have received their first jets […]. In addition, two of the three foreign military sale (FMS) customers, who are Israel, Japan and the Republic of Korea, will receive their first jets in 2016.[91]

The composition of participants indicates that the *proximity* and *trust* factors play a dominant role for the US. Only NATO allies and the close partner Australia were invited for active participation, and even the opportunity of FMS was just given to traditional US partners. Like the Eurofighter, the JSFP is based on a MOU that determines national *commitment* and *shared objectives*, and furthermore established and empowered a formal coordinating authority.[92]

JSFP realization was reliant on foreign participation for several reasons although the US is the predominant stakeholder.[93] As all partners accepted this given disparity, the *equity* factor seems not necessarily relevant for success. Furthermore, US considerations on *efficiency* united a collection of formerly-separate programmes into one joint project in the face of decreasing

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[89] Danny Lam and Brian P. Cozzarin, "The joint Strike Fighter / F-35 Program – A Canadian Technology Policy Perspective," *Air & Space Power Journal* (March-April 2014), 55.

[90] See in detail: Peter D. Antill and Pete Ito, "Multi-National Collaborative Procurement – The Joint Strike Fighter Programme," In *Case Studies in Defence Procurement and Logistics – Volume I: From World War II to the Post Cold-War World*, ed. David Moore (Cambridge: Cambridge Academic, 2011), 200-201 and Srdjan Vucetic, and Kim R. Nossal, "The international politics of the F-35 Joint Strike Fighter," *International Journal* 68, no. 1 (Winter 2012/2013), 5-6.

[91] Lockheed Martin Corporation, "F-35 Lightning II – Global participation," accessed 26 April 2016, https://www.f35.com/global.

[92] Joint Strike Fighter Program Office, "Memorandum of understanding concerning the production, sustainment, and follow-on development of the Joint Strike Fighter," last modified 16 April 2010, http://www.jsf.mil/downloads/documents/JSF_PSFD_MOU_-_Update_4_2010.PDF.

[93] Namely operational, political/military, economic, political/technical and technical reasons. Peter D. Antill and Pete Ito, "Multi-National Collaborative Procurement – The Joint Strike Fighter Programme," In *Case Studies in Defence Procurement and Logistics – Volume I: From World War II to the Post Cold-War World*, ed. David Moore (Cambridge: Cambridge Academic, 2011), 199 and Srdjan Vucetic, and Kim R. Nossal, "The international politics of the F-35 Joint Strike Fighter," *International Journal* 68, no. 1 (Winter 2012/2013), 4.

budgets and new political prioritisations. The imperative of international collaboration was, among others, based on the prospects to reduce US costs and to promote foreign procurement. In return, industrial participation was offered on a best-value basis.[94]

> For many countries who have joined the programme, JSF represents an economic necessity, as much as an opportunity. […] Partnership in the JSF project has […] become an important opportunity for the industries of small countries to break into the US defence market, which has proven difficult to enter in the past.[95]

Consequently, the factor of *efficiency* is decisive for success for all participants, even if interpreted differently.[96]

Despite significant delays and rising costs[97], several authors have already identified some evidence for an overall successful collaboration. First indications of this are seen in the demonstration of safely-shared technologies and interdependencies, efforts in project-specific teaming, technical achievements and nonetheless economies of scale (at least from a US perspective).[98]

So, even the JSFP offers some indication for interrelations between the identified factors and successful collaboration, whereby different political perceptions on the *efficiency* and *equity* factors have to be considered.

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[94] Peter D. Antill and Pete Ito, "Multi-National Collaborative Procurement – The Joint Strike Fighter Programme," In *Case Studies in Defence Procurement and Logistics – Volume I: From World War II to the Post Cold-War World,* ed. David Moore (Cambridge: Cambridge Academic, 2011), 199, 203.

[95] Ibid., 206-207.

[96] For a detailed overview of national perspectives to JSFP see for example Stephen G. Di Domenico, *International Armament Cooperative Programs: Benefits, Liabilities, and Self-Inflicted Wounds – The JSF As A Case Study* (Alabama: Air University, 2006), 13-32 for the US perspective or Jens Ringsmose, "Investing in fighters and alliances – Norway, Denmark, and the bumpy road to the Joint Strike Fighter," *International Journal* 68, no. 1 (Winter 2012/2013): 96-109 for a Danish/Norwegian perspective.

[97] Srdjan Vucetic, and Kim R. Nossal, "The international politics of the F-35 Joint Strike Fighter," *International Journal* 68, no. 1 (Winter 2012/2013), 8.

[98] Richard A. Bitzinger, "Overcoming impediments to transatlantic armaments collaboration," *The International Spectator* 39, no.1 (2004): 83-94, Peter D. Antill and Pete Ito, "Multi-National Collaborative Procurement – The Joint Strike Fighter Programme," In *Case Studies in Defence Procurement and Logistics – Volume I: From World War II to the Post Cold-War World*, ed. David Moore (Cambridge: Cambridge Academic, 2011), 233-236 and Forbes, "Ten Signs The F-35 Fighter Program Is Becoming A Smashing Success," last modified 13 July 2015, http://www.forbes.com/sites/lorenthompson/2015/07/13/ten-signs-the-f-35-fighter-program-is-becoming-a-smashing-success/#b11ea8b36137.

The Common New Generation Frigate – Horizon - programme

While Eurofighter and JSFP have offered participants to customize 'their' assets up to a certain degree based on national requirements, the Common New Generation Frigate – Horizon – programme (CNGF) aimed for as many standardization as possible with a strong focus on economic benefits through collaboration.[99]

> The original Horizon project was a three-nation initiative, involving Italy, France and the UK, to build a new design of air defence ship. The UK government withdrew from the programme in 1999. France and Italy signed a new memorandum of understanding in September 2000 confirming the joint development of the Horizon [… and] each ordered two Horizon Class anti-air warfare (AAW) frigates in October 2000.[100]

Again, the collaboration was decided within the intimate relationship of close allies of relatively *equity*. So, *proximity* and *trust* were given. Here, too, the collaboration was based on a MOU as contractual agreements between the participating nations. In order to improve multilateral efforts, the national representatives in the Horizon Joint Project Office (HJPO) as the coordinating organisation were initially given extended *power* to manage the project and conclude contracts.[101] While the *shared objective* at the beginning was to procure identical ships for each of the partner countries, this changed over time with the increasing level of detail.[102] Finally, discrepancies about significant technical details combined with insistence on specific

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[99] Peter D. Antill, "European Collaborative Procurement – The Horizon Common New Generation Frigate," in *Case Studies in Defence Procurement and Logistics – Volume I: From World War II to the Post Cold-War World*, ed. David Moore (Cambridge: Cambridge Academic, 2011), 163.

[100] Naval Technology, "Horizon Class," accessed 26 April 2016, http://www.naval-technology.com/projects/horizon2/.

[101] J. Darnis *et al, Occasional Paper no. 69 - Lessons learned from European defence equipment programmes* (Paris: EU Institute for Security Studies, 2007), 22.

[102] Foxwell, David, "Trouble over the Horizon – Europe's common frigate program beset by delays." *Jane's International Defense Review* (1996). http://linksource.ebsco.com/linking.aspx?sid=ProQ%3Amilitary&fmt=journal&genre=article&issn=&volume=&issue=&date=1996-06-01&spage=38&title=Jane%27s+International+Defense+Review&atitle=TROUBLE+OVER+THE+HORIZON+%7C+Europe%27s+common+frigate+program+beset+by+delays%3A+%5B1996+Edition%5D+IDR+IDR&au=Foxwell%2C+David&isbn=&jtitle=Jane%27s+International+Defense+Review&btitle=&id=doi:.

national requirements led to the British withdraw from CNFG.[103] As political disagreement arose, the HJPO was given less and less *power* in terms of power and coordinating authority with negative consequences for the collaboration itself.[104]

While the CNFG was a total failure from the British perspective, France and Italy continued collaboration bi-laterally.[105] With a view to economic considerations, the British pre-investment was lost as it decided against the collaborative project and for a national programme.[106] The economic situation developed in favour of France and Italy though. Not only did the collaboration manage to procure four ships of the Horizon class. Moreover, the Frégate Européenne Multi-Missions (FREMM), a follow-up programme that has proven not only its *efficiency* by reducing costs up to 40 per cent compared to older French frigates, but is also very successful in foreign sales.[107] Nevertheless, the CNFG presents another case in which *efficiency* of the armament programme itself, although initially propagated, was not the main focus of political considerations.

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[103] Peter D. Antill, "European Collaborative Procurement – The Horizon Common New Generation Frigate," in *Case Studies in Defence Procurement and Logistics – Volume I: From World War II to the Post Cold-War World*, ed. David Moore (Cambridge: Cambridge Academic, 2011), 171.

[104] J. Darnis *et al, Occasional Paper no. 69 - Lessons learned from European defence equipment programmes* (Paris: EU Institute for Security Studies, 2007), 22.

[105] J. Lewis, "France and Italy agree to build Horizon frigate," *Jane's Defence Weekly* 32, no. 12 (22 September 1999). http://linksource.ebsco.com/linking.aspx?sid=ProQ%3Amilitary&fmt=journal&genre=article&issn=02653818&volume=032&issue=012&date=1999-09-22&spage=1&title=Jane%27s+Defence+Weekly&atitle=France+and+Italy+agree+to+build+Horizon+frigate&au=J+A+C+Lewis+JDW+Correspondent+Paris&isbn=&jtitle=Jane%27s+Defence+Weekly&btitle=&id=doi:.

[106] Peter D. Antill, "European Collaborative Procurement – The Horizon Common New Generation Frigate," in *Case Studies in Defence Procurement and Logistics – Volume I: From World War II to the Post Cold-War World*, ed. David Moore (Cambridge: Cambridge Academic, 2011), 169.

[107] Armada International, "FREMM Frigate," last modified 1 December 2015, http://www.armadainternational.com/Article/programme-focus---fremm-frigate.html, Naval Technology, "FREMM European Multimission Frigate, France / Italy," accessed 26 April 2016, http://www.naval-technology.com/projects/fremm/, GlobalSecurity.org, "FREMM Program," last modified 20 March 2016, http://www.globalsecurity.org/military/world/europe/fremm-program.htm and Michal Fiszer, "Horizon/Orizonte Frigates Near Service." *Journal of Electronic Defense* 28, no. 7 (July 2005), http://linksource.ebsco.com/linking.aspx?sid=ProQ%3Amilitary&fmt=journal&genre=article&issn=0192429X&volume=28&issue=7&date=2005-07-01&spage=51&title=Journal+of+Electronic+Defense&atitle=Horizon%2FOrizonte+Frigates+Near+Service&au=Fiszer%2C+Michal&isbn=&jtitle=Journal+of+Electronic+Defense&btitle=&id=doi:.

DETERMINANTS OF COLLABORATIVE SUCCESS

Perception of success

Success cannot objectively be measured. Consequently, collaborative success lies in the eye of the beholder. Hereby, collaboration theory orientates mainly on economic benefits, mainly in terms of *efficiency*.[108] In short, business collaborations seek for 'more value for the money'. While business value is measurable to a certain extent by using economic indicators[109], public value is generally not measurable. A government can exactly determine the amount of money that it is willing to invest in a defence collaboration. But finally, the subjective perception of different national actors determines its value and consequently success or failure.

The prior analyses of defence institutions suggested some indicators for success, specifically, the long *lasting collaborations* themselves, the expansions and the inherent collective military power. More recently, initiatives like Smart Defence and P&S aimed to increase *efficiency* by realizing economic benefits to improve public value.[110] The discussions of actual armament programmes saw stabilizing effects of the collaboration itself, harmonization of military requirements, a capable final product or the protection of domestic industries as public value resulting from collaboration.[111] Additionally, economic considerations influenced the authors' assessments while differing in the applied perspective from solely cost considerations for the

[108] E.g. Karen Polenske, "Competition, Collaboration and Cooperation: An Uneasy Triangle in Networks of Firms and Regions," *Regional Studies* 38.9 (December 2004): 1036-1040 or Ranjay Gulati, Franz Wohlgezogen and Pavel Zhelyazkov, "The Two Facets of Collaboration: Cooperation and Coordination in Strategic Alliances," *The Academy of Management Annals 6*, no. 1 (June 2012): 533, 545.

[109] Like stock market value, sales figures, profit or market shares.

[110] See page 9.

[111] Markus N. Heinrich, "The Eurofighter Typhoon programme: economic and industrial implications of collaborative defence manufacturing," *Defence Studies* 15, no. 4 (2015): 354, Marc R. DeVore, "International armaments collaboration and the limits of reform," *Defence and Peace Economics* 25, no. 4 (2014): 437 and Pia C. Wood, "The Never-ending Story: Germany, Great-Britain, and the Politics of the Eurofighter," in *International Military Aerospace Collaboration – Case studies in domestic and intergovernmental politics*, ed. Pia C. Wood and David S. Sorenson (Brookfield: Ashgate, 2000), 68-69.

procured asset, up to long-term macroeconomic considerations.[112] However, a consistent assessment scheme is not discernible, not even for the frequently-stressed *efficiency*. Therefore, the indicators have to be seen as expression of the different authors' perceptions to public value of inter-governmental collaborations.

Generally speaking, the attempt to measure public value is challenging and so is defence value. As a government is neither able to quantify desired outcomes like peace or protection, nor the price taxpayers are willing to pay for it, there are no clear guidelines to ensure 'more value for the money' in defence collaborations. However, it is ultimately up to the government to determine the size and allocation of military expenditures.[113] In a democracy, this kind of political decision is:

> [a] product of various groups – political, military, industrial and bureaucratic – with their own interests and often conflicting objectives operating in a fluid system of institutions. These institutions and groups provide the transmission mechanism by which perceptions of threats and affordability are turned in decisions.[114]

Political environment

The final decision in terms of defence collaboration lies with the government of the day. Therefore, the political environment is a crucial factor for collaborative success. Defence budgeting is still shaped by the so-called 'peace dividend', that paraphrases massive cuts of national defence budgets after the end of the Cold War to release funds for other public

[112] Compare for example DeVore's focus on cost and quality of the Eurofighter and the long-term economic effects the Horizon frigates have for France and Italy. Marc R. DeVore, "International armaments collaboration and the limits of reform," *Defence and Peace Economics* 25, no. 4 (2014): 438 and pages 25-26.

[113] Keith Hartley and Binyam Solomon, "Measuring defense output – An economic perspective," in *Military Cost-Benefit Analysis – Theory and* practice, ed. Francois Melese, Anke Richter and Binyam Solomon (New York: Routledge, 2015), 36-37, 65-66 and Ron Smith, *Military Economics – The Interaction of Power and Money* (New York: Palgrave Macmillan, 2009), 54-56.

[114] Ron Smith, *Military Economics – The Interaction of Power and Money* (New York: Palgrave Macmillan, 2009), 27.

spending. In Europe, this was put into practice by cutting orders and delaying armaments programmes. As a result, defence industries reduced or reallocated capabilities.[115]

Therefore, European defence procurement is especially characterized by protectionism by countries with significant defence industrial capabilities. This leads to a traditional political unwillingness to import defence supplies, with negative implications for intergovernmental collaborations.[116] Otherwise, there is a strong political motivation to use collaborative programmes to gain 'offsets' – "where the vendor agrees to undertake some reciprocal transaction over and above that associated with the purely cash transaction."[117] In this manner, arguing with elusive offsets can either weaken arguments about economic *efficiency* or justify expenditures, or even both.[118]

The political environment is continuously influenced and shaped by actions of, and interactions between, several actors, namely the armed forces, firms, elected leaders and international institutions.[119] Table 1 outlines discrepancies between objectives and preferences of the different actors.

Table 1 – Objectives and preferences of actors in armaments sector

Group	**Objective**	**Preference**
Armed forces	Maximize their state's military power by acquiring cost-effective weaponry	Liberal policies that enable them to buy the most effective weapons regardless of who produces them

[115] Derek Braddon, *Exploding the Myth? – The Peace Dividend, Regions and Market Adjustment* (Amsterdam: OPA, 2000), 1, 11, 17, 288.

[116] Martin Trybus, *Buying Defence and Security in Europe – The EU Defence and Security Procurement Directive in Context* (Cambridge: Cambridge University Press, 2014), 28-30, 38-39.

[117] Stephen Martin, "Countertrade and Offsets – An Overview of the Theory and Evidence," in *The Economics of Offsets – Defence Procurement and Countertrade*, ed. Stephen Martin (Amsterdam: OPA, 1996), 15.

[118] Ibid., 40.

[119] Marc R. DeVore, "Producing European armaments: Policymaking preferences and processes," *Cooperation and Conflict* 49, no. 4 (2014), 441.

Firms	Maximize their profits and long-term technological viability	Protectionism against potential commercial threats and liberal export policies towards potential markets; generally seek to suppress competition
Elected leaders	Promoting their state's security, while also winning re-election and encouraging economic growth	Balancing electoral, military and economic considerations leads to satisficing behaviour in each of these areas
International bureaucracies	Maximizing their own size, wealth and autonomy	International cooperation is an objective to be pursued in its own right

Source: Marc R. DeVore, "Producing European armaments: Policymaking preferences and processes," *Cooperation and Conflict* 49, no. 4 (2014), 443.

Consequently, governmental decisions most likely constitute an acceptable compromise for most of the actors. Furthermore, international collaborations have to consider different actors' interests for all participating countries. However, collaborative success will have to be measured by the objectives and preferences of the respective actor.

Criteria

Table 2 summarizes the previous findings based on the different theoretical approaches to collaboration as well as procurement function and public policy.

Table 2 – Derived factors for success

Theory	**Factor**
Collaboration – cooperation facet	Proximity
	Shared objectives / visions

	Trust
	Commitment
Collaboration – coordination facet	Communication
	Leadership
	Complexity (reverse)
Organisation	Coordination
	Power
	Culture
Business cooperation	Efficiency
	Structure
	Equity
Procurement function	Efficiency
	Trust
Public policy	Lasting cooperation
	Efficiency

Source: Author's compilation.

In deriving a list of universal criteria for success from these factors, duplications have to be considered and removed first. As *coordination*, *culture* and *trust* are inherent in collaboration theory, there is no need to be considered separately for organisation theory or the procurement function. Within the political environment, the recurring *efficiency* factor has a special position and will therefore be solely reflected. The resulting adjusted list is shown in Table 3.

Table 3 – Adjusted factors for success

Theory	**Factor**

Collaboration – cooperation facet	Proximity
	Shared objectives / visions
	Trust
	Commitment
Collaboration – coordination facet	Communication
	Leadership
	Complexity (reverse)
Organisation	Power
Business cooperation	Structure
	Equity
Public policy	Lasting cooperation
	Efficiency

Source: Author's compilation.

With a view to the cooperation facet, the analysis of both defence institutions and armament programmes demonstrated that *proximity*, *shared objectives* and *trust* can be seen as decisive for success. Moreover, based on the empirical findings, these are applied like preconditions in the sensitive field of defence collaboration. In terms of *commitment*, a distinction has to be made between institutions and armament programmes. Although both are based on contractual agreements, conscientiousness differs decisively: while, for example, Great Britain withdrew from the CNFG when it felt unable to fulfill contractual obligations, collaboration within NATO continues despite the fact that several countries miss the statutory target of national defence spending.

The coordination facet can be discussed directly in the context of both organisation and (partly) business cooperation theory. The factor of reversed *complexity* appears not to be applicable as determinant of success as the practical examples showed a clear tendency to collaborate in case of highly-complex projects. To ensure *communication* and *leadership*, all discussed institutions and programmes installed robust multinational *structures*. In addition, the implementation of hierarchical structures ensured *power* to get decisions implemented, although limited to the particular contractual scope. Consequently, these factors appear to be crucial for success in defence collaborations.

Equity has not proven to be a universal factor for success. Within NATO and the EU, despite successful institutions, there is undoubted disparity in terms of financial contributions and military capabilities. With a view to armament programmes, the JSFP demonstrated inequities with a strong US lead and different levels of foreign participation.

Considering public policy and the political environment, *lasting cooperation* and *efficiency* seem to be ambivalent. Both are frequently referred to in theory and used to justify collaboration in practice. In general, however, collaboration can last very long without being efficient, as shown by the hesitant realisation of Smart Defence and P&S. Moreover, the CNGF demonstrated that Great Britain sacrificed a collaboration that was initiated for *efficiency* reasons in favour of national protectionism. The Horizon programme can be used, though, to demonstrate that a combination of *lasting cooperation* (France/Italy) and *efficiency* (FREMM programme) could lead to success. Therefore, it seems reasonable that both factors pave the way to successful collaboration, although only one of the two must be fulfilled.

While accepting the complexity of the political environment, several different influencing actors and the lack of measurability of public value, the different theoretical approaches and case

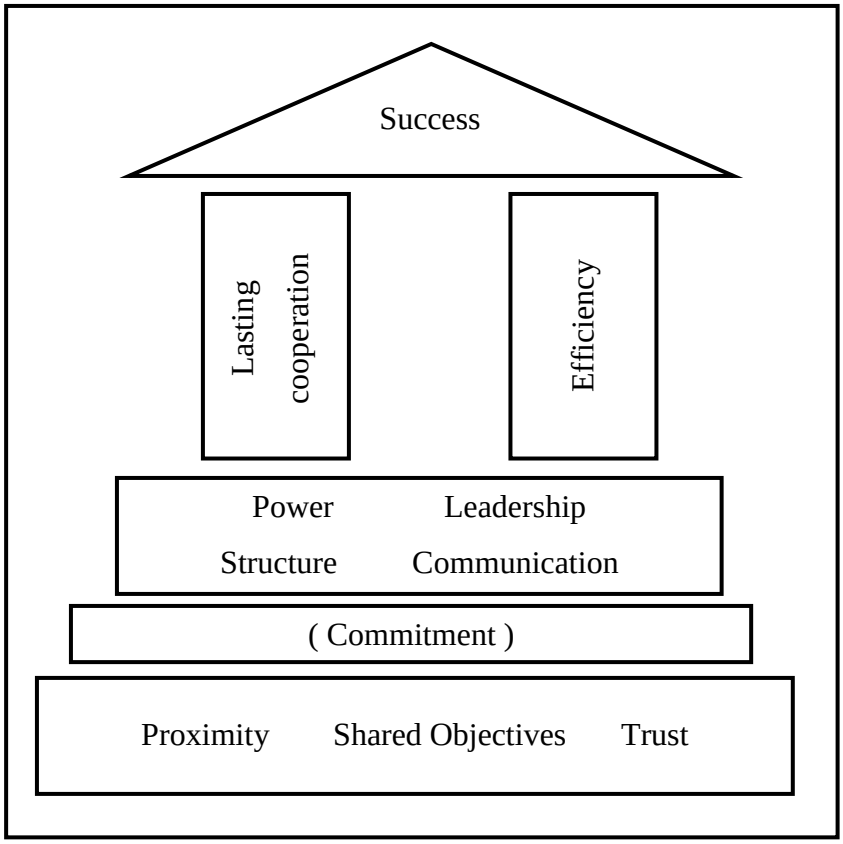

Figure 1 -- Temple of Success

Source: Author's illustration.

studies converge into the following 'temple of success' (Figure 2), which visualizes universal criteria for success in defence procurement collaborations.

CONCLUSION

This paper aimed to identify universal criteria for success of international defence procurement collaborations. A brief review of collaboration, organisation and business cooperation theory identified factors that were found critical to collaborative success in general. The subsequent analysis of defence procurement characteristics demonstrated a broad applicability of the derived factors within public policy theory while indicating that *lasting cooperation* itself and the frequently mentioned *efficiency* have to be considered divergently.

Brief outlines of the institutions NATO and EU as well as selected armament programmes confirmed that *efficiency* is not imperative for successful defence collaboration. Moreover, it turned out that efficiency may be sacrificed for political reasons to reinforce the collaboration itself.

Finally, the theoretical approaches substantiated by empirical findings allowed to derive universal criteria for success in defence procurement collaboration. While *proximity*, *shared objectives* and *trust* set the pre-conditions for cooperation, coordination has to be ensured by *structure*, *power*, *leadership* and *communication* to lay a solid foundation for collaborative success. *Commitment* was found to be quite relevant in actual armament programmes, rather than in institutional collaborations. *Lasting cooperation* and *efficiency* hold special positions in defence collaboration and therefore are the main difference to civil-economic approaches. To be seen as successful, defence collaboration needs to fulfill just at least one of both criteria. Therefore, the 'Temple of Success' builds on the two main pillars *lasting cooperation* and *efficiency*, both founded on the other universal criteria.

As this paper aimed to take account of at least the majority of theories relevant for international defence procurement collaboration, it just managed to scratch the surface of this extensive and complex field of research. How changing political objectives over time influence existing collaborations, which role the time horizon plays for efficiency assessment, what actual weight commitments by contract have, how governments calculate and use international collaborations in terms of burden sharing and national risk management or if these findings based mainly on NATO and EU case studies are globally transferable are just some research questions that had to be left out of consideration within the scope of this paper.

In the end, defence procurement happens in a highly sensitive political environment, in particular when it comes to international collaboration. One has to accept that, while universal criteria actually are identifiable, the perception of success is highly subjective and therefore not predictable. However, as collaboration is vital to prevail, the ‘Temple of Success’ provides orientation for worthwhile opportunities.

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