



# Conceptualizing the European military-civilian-industrial complex: the need for a helicopter perspective

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## ABSTRACT

In his 1961 farewell address, US President Eisenhower coined the term “military-industrial complex,” referring to the coalescing of military, industrial, and political interest groups. In contemporary Europe, the military-industrial complex is arguably transforming into a complex with a noteworthy *commercial civilian* dimension, blurring traditional military and arms-focused understandings of European defence and security. Our emphasis on an added corporate civilian component captures the expansion of defence and security beyond the traditional military domain. Coalescing of industry and politics is observed in Europe, blurring the military-civilian divide, technologically as well as in organization and governance, particularly through public-private partnerships. Eisenhower, himself a decorated WWII general, warned of how the US military-industrial complex could lead to “disastrous use of misplaced power.” Rather than reiterating such a conclusion in the European context, our paper examines how the European military-civilian-industrial complex is emerging, looking at how elite participants shape the public-private structure of the complex, and specifically how policies on dual-use and emerging technologies influence developments in Europe. The focus herein is on novel actors, characteristics, and the European Union and charts out defining conceptual features of the defence and security industry in Europe.

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## Introduction

The defence industry is undergoing rapid change, particularly regarding the development of dual-use<sup>1</sup> technology and transfer of technology between military and civilian domains (Bromley 2022; Sezal and Guimelli 2022). The blurring of the military-civilian divide is particularly noticeable with the rapid development of Artificial Intelligence (AI), digitalization, satellite technology, integrated quantum, photonics, high-capacity wireless communications, and “big data” networking through 5 G – developments which have been referred to as “the fourth industrial revolution” (Schwab 2016) and come to be dubbed 4IR. Parallel to these developments in applied innovation, organization and

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governance of the defence industry is transforming, with the development of public-private partnerships (PPP), adding to the blurring of the military-civilian divide.

While these technological and organizational transformations have to some extent been addressed in past research, they have not been sufficiently conceptualized, particularly regarding the defence industry and its relation to government. To fully grasp the meaning and implications of these contemporary transformations – principally with respect to how organization and governance is affected – we suggest that an expanded conceptualization of military-industrial complex is applied, which includes a civilian component. By introducing and elaborating the notion of a military-civilian-industrial complex (MCIC) this paper primarily seeks to make a conceptual contribution, to help make sense of key transformations of the contemporary defence industry and its governance, including the development of dual-use, technology transfer between the civilian and military domains, and the widening of defence industry identity from “defence” to “security.” It is suggested herein that a MCIC is formed through what agenda setting theory refers to as inter-related “streams” of *participants*, and of *policies*.

Empirically, this paper addresses the coalescing of interests and actors specifically within the context of the European Union (EU) and its defence framework. While there is a body of research on domestic state-industry relations, as well as on the development of EU defence policy and defence industrial policy, there are relatively few studies on the wider context of public-private relations and how they shape the EU defence framework (cf. Calcara 2017, 527; Mörth 2005). Past research has shown *inter alia* that public-private relations vary considerably between EU MS, and that this variation helps to explain varying MS preferences with regard to EU defence and defence industrial policy (Bromley 2022; Calcara 2017; Tardy 2018). Moreover, while some scholars have observed a general militarization of the EU (e.g. Manners 2006, 183; Schilde 2017), the present paper emphasizes a growing military-commercial civilian nexus, particularly in relation to defence industry and the wider “security industry.” Past research has addressed specific institutions and policy-making bodies within the wider EU defence framework, revealing trends toward marketization and disassociation from security policy framing (Britz 2010; Mörth 2000). Much of the literature on European defence policy and the defence industry is rich on detailed description of specific policies and market developments but is comparatively weak on contextual and conceptual elaboration of the wider nature of political-economic relations. What is missing is an eagle-eyed helicopter conceptualization of the EU defence framework, one that captures the nature of policy processes and industry relations in the wider EU context. We contend that the concept of a military-industrial complex – with an added *commercial civilian component* – helps make sense of contemporary European defence policy and defence industrial relations.

The paper is structured in the following manner. The literature on the military-industrial complex and related concepts are first unpacked and their varying analytical usefulness discussed. It is noted that this literature is both multidisciplinary and quite diverse as some contributions apply the military-industrial concept in politically motivated debates and advocacy campaigns, whereas others use it for descriptive and analytical purposes – to identify features, causes, and consequences which arguably have not been sufficiently or accurately addressed. The present paper belongs clearly to the latter category.

Secondly, and based on a thorough review of the literature, our concept of a military-civilian-industrial complex (MCIC) is presented, motivating the need for the add-on of a commercial civilian component. Emphasis here is on the linkages as well as blurring of boundaries between military and civilian industry, application, and governance.

Thirdly, the relevance and utility of the MCIC concept are illustrated by contemporary developments in the European defence industry and public governance, focusing on the nature and implications of the techno-organizational blurring of the military-civilian divide. This section provides an overview of key participants in the European MCIC, identifies major features and trends within this complex, and indicates implications for organization and governance. Finally, concluding remarks are made regarding the analytical applicability and fruitfulness of the MCIC concept, and suggestions are made for further research.

### **The military-industrial complex: past theory and Research**

In his televised farewell address on 17 January 1961, US President Dwight D. Eisenhower coined<sup>2</sup> the term “military-industrial complex,” by which he meant the coalescing of military, industrial, and political interest groups. A more elaborate definition is suggested by Ledbetter: “a network of public and private forces that combine a profit motive with the planning and implementation of strategic policy” (Ledbetter 2011, 6).

Eisenhower warned of how the US military-industrial complex could lead to “disastrous use of misplaced power” (Eisenhower 1961). The notion of domestic military and industrial actors sharing ideas and resources shaping an aggressive foreign policy might seem like radical critique, an expression of anti-militarism or even conspiratorial theorizing on how industrial and military elites and interests are joined, forming a “state within the state” (Cypher 2015). Eisenhower however was certainly not an anti-militarist radical, but rather a conservative politician and a decorated WWII general. Eisenhower advocated the necessity of a strong military defence, capable of supporting international allies, and a solid domestic defence industry able to develop top-quality military technology on a large scale; Eisenhower (1961) stated that “Our arms must be mighty, ready for instant action, so that no potential aggressor may be tempted to risk his own destruction.” What then was the meaning of Eisenhower’s concept of a military-industrial complex? In the President’s own words:

This conjunction of an immense military establishment and a large arms industry is new in the American experience. The total influence – economic, political, even spiritual – is felt in every city, every state house, every office of the Federal government. [...] In the councils of government, we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex. The potential for the disastrous rise of misplaced power exists and will persist. [...] We should take nothing for granted – only an alert and knowledgeable citizenry can compel the proper meshing of huge industrial and military machinery of defense with our peaceful methods and goals, so that security and liberty may prosper together. (Eisenhower 1961)

This statement boils down to two basic aspects; first, the nature of a coalition of interests and actors among defence firms and the military establishment, and second, that this constellation presumably could shape policy, specifically that it could motivate the nation to start unwarranted wars. Arguably, participants in the military-industrial complex

share interest in high military expenditures, and a persistence of arms races (Bernstein and Wilson 2015; DeVore 2020; Ledbetter 2011; Mintz 1983; Moskos 1974).

Eisenhower, however, specifically advised restraint and “balance” in foreign policy and in defence procurement (Eisenhower 1961; cf.; Bernstein and Wilson 2015). He did not want to see the US take on a role as global hegemon or world police, rushing to every hotspot and establishing order through force: “America’s leadership and prestige depend, not merely upon our unmatched material progress, riches and military strength, but on how we use our power in the interests of world peace and human betterment” (Eisenhower 1961). Eisenhower’s understanding of the MIC concept may thus be an expression of “defensive realism” (Snyder 1991). Later, other US politicians, mainly from the Republican party, have argued against exaggerated military spending and overseas operations, which they claim has not made the world or the US safer (Dunlap 2011; Ledbetter 2011), but rather turned the US into a target – a critique which resurfaced after the “9/11” terrorist attacks in 2001. Moreover, what Eisenhower warned about was not only a powerful coalition of the military and a growing defence industry, but more generally the power of “a scientific-technological elite” which not only lacks democratic mandate, but also cannot be expected to balance scientific and industrial interests with other societal goals – that is where elected politicians ought to come in (Eisenhower in Greene 2007).

Research and theory on military-industrial complexes indicate empirical support for the MIC concept, showing that such complexes have prevailed over time across the world, although their features have varied, for example with regard to whether defence industry is largely state-controlled or privately owned and more independently operating on international markets (Bernstein and Wilson 2015; Brunton 1991; DeVore 2012, 2020; Dunlap 2011; Gibbs 1996; Hartung 2001; Ledbetter 2011; Markusen 1991; Pavelec 2010). In addition, past research has revealed that, to a degree, military-industrial complexes are based on personal connections – in many cases, military officers retire early from service, and find a second career within the defence industry (Fallows 2002, 48). A striking example is found in retired Italian Admiral Matteo Bisceglia who now directs OCCAR, the Organisation for Joint Armament Co-operation, highly influential within the European defence industry (cf. EDA 2022). Similarly, “double-hatted” roles in the defence arena are also typical at both high and lower levels in EU administration (cf. Chatzopoulou et al. 2022; Reykers and Adriaensen 2022).

Whereas the US remains in focus in the relatively large and diverse literature on the military-industrial complex (Back and Edward 1985; DeVore 2020), relations between the military and defence industry in numerous other countries and regions have been studied, for example Israel (Mintz 2008), Japan (Hanami 1993), Brazil (Conca 1997), Russia (Hynek and Solovyeva 2022; Kurochkina, Ostrovskaya, and Lukina 2016), the UK (Dunne 1993), and with regard to Europe and the European Union (Britz 2010; Bromley 2022, Sweeney and Winn 2022; Brzoska 2018; Calcara 2017; Calcara, Csernaton, and Lavallée 2020; DeVore 2012; Fiott 2017; Guay and Callum 2002; Karampekios, Oikonomou, and Carayannis 2018; Kurc and Oktay 2018; Mörth 2000; Schilde 2017; Slijper 2005).

Importantly, the empirical record since Eisenhower’s speech disproves the hypothesis that defence firms could get the military to launch war – they are not as touted post-WWI, “merchants of death.” The US as well as other great powers have certainly had

their share of military hawks, for example General Curtis LeMay who as head of the Strategic Air Command recommended the use of nuclear weapons against China to end the Korean War; in this as in many other cases though, the most hawkish proposals were not picked up (Fallows 2002, 46). Yet past research confirms that the complex has influenced procurement and investment policy (DeVore 2020); “it doesn’t matter [for the industry] whether weapons are used (or usable) as long as they are bought” (Fallows 2002, 47). Given the widespread perceived need for reliable long-term procurement of expensive military technology, a “military-industrial complex, of some sort, is thus a fatality of the modern state” (DeVore 2020).

When Eisenhower coined the notion of a military-industrial complex back in 1961, it immediately caught political and academic attention. In the years following his farewell address, several scholars applied it, discussed it, and interpreted it in different ways. Early on, it was observed that the term was used as a rhetorical tool in defending starkly contrasting political positions, and that it was often used pejoratively (Cuff 1978; Ledbetter 2011, 6). Two main interpretations emerged, one in which critical and Marxist theorists, particularly within the then adolescent Peace Studies discipline, argued that the defence industry and their allies within the military were “merchants of death” who formed an “iron triangle,” and that American society had become based on a “capitalism of war,” with advocates of the complex eager to launch war and continue the arms race to increase their own profit (e.g. Pilisuk and Hayden 1965; cf.; DeVore 2020; Moskos 1974). Some critics even argued that American society *as a whole* is a military-industrial complex (Pilisuk and Hayden 1965), which can be related to other notions, such as “the national security state” (Stuart 2008) and Harold Lasswell’s preceding notion of “garrison state” (Lasswell 1941). Other related notions include the “state within a state” concept (Pilisuk and Hayden 1965; cf.; Mintz 1983) and the more recent conspiratorial (Trump-related) concept of “deep state” (Michaels 2017).

By contrast, the other main interpretation suggested that the military-industrial complex implies greater bureaucratic control over the defence industry, specifically that the government had strengthened its control of both the defence industry and of defence policy (e.g. Melman 1970; cf.; Markusen 1991; Dunne and Smith 2016). Others still refrained from empirical analysis of politics and industry, instead focusing on tracing the theoretical roots of the MIC idea, suggesting that it contained a neo-Machiavellian and Weberian element, particularly with respect to how the agenda-setting power of the bureaucracy was unpacked (Moskos 1974). These interpretations also relate the MIC notion to Mills’s (1956) book *The Power Elite*, which observed the formation and significance of powerful elites within the military, the economy, and the political realm. These latter, non-Marxian interpretations seem to have become more widespread, notable within the “bureaucratic politics” approach in International Relations theory (Hodge and G 2007), which also reflects the general significance of Weberian-style theorizing in Political Science, Policy Studies, and Public Administration.

Finally, some observers have claimed that the “peace dividend” which followed the end of the cold war and subsequent economic recession and increasing budget deficits have resulted in the declining power of the MIC in the US and elsewhere (Dunlap 2011; Weber 2001). It has also been suggested that the US has turned from largely technology-oriented to mainly troops-based military missions, providing US interventions in Afghanistan and Iraq as examples, further diminishing the political significance of

defence industry (Dunlap 2011). By contrast, we contend that these observations have not considered the emphasis on an industry-driven “revolution in military affairs” (Matthews and Treddenick 2001), which in more recent years has taken another leap through the development of Artificial Intelligence (AI) for military defence, lethal autonomous weapon systems (LAWS or at times merely AWS), drones, integrated quantum, photonic devices, and new digital systems for surveillance, communications, command, and control.<sup>3</sup> AI is at the forefront of the Chinese Communist Party’s (CCP) military-civilian and dual-use strategy, used for “maintaining domestic political stability” through advanced monitoring and punishment of their civilian population in the “social credit system”, as well as in preparation for technologically revolutionized military conflict beyond its borders (Shyi-Min 2021, 100). Similar to China, much development of AI is in state-owned or controlled facilities and is a stated integral component of high-level Russian military strategy (Hynek and Solovyeva 2022) with recent Russian capabilities in both ground-based laser weapons such as the Peresvet system, even suspected of “having anti-satellite capabilities” (Sankaran 2022, 445).

Space Force, the newest addition to the US military, initiated during the Trump presidency, implies heavy dependency on industrial capacity and advanced technology. A more modest parallel European development entailed the European Commission’s (EC) establishment of the Directorate General Defence Industry and Space (DG DEFIS) in 2021 for propulsion of the EU Global Action on Space. Moreover, even under the Obama administration, the US abandoned its former troops-intensive strategy for international military missions, shifting to a strategy relying more heavily on drones, cyber and space assets (Shaw 2013). In addition, international military tensions and rapidly increased demand for military equipment which were a consequence of Russia’s full-scale invasion of Ukraine on 24 February 2022 imply strengthened military-industrial complexes not only in the US and in Europe, but across the world.

### **From MIC to MCIC: expanding the conceptual framework**

We contend that the MIC notion is relevant and useful for understanding the structure, transformation, and governance of the defence and security domain – not only in the US, but also in Europe and globally. The concept is particularly relevant for directing attention to linkages between the military, industry, and government (both nationally and internationally). Notably, the MIC concept is broad and does not contain an explanatory model of, for example, how investment, procurement, and defence policy are shaped. Yet the concept serves a heuristic purpose, particularly as an antidote to prevailing tendencies to address “defence industry” as if it were still a largely separate sector of the economy or in underestimating the institutional (and personal) linkages between industry, innovation, and politics (e.g. Guay and Callum 2002; Hartley and Belin 2020). Since the civilian component of the complex is already an empirical reality, it is a theoretical necessity to conceptualise it.

Notably, even within the arms industry – the core of defence industry – there is growing reliance on civilian innovation (e.g. microelectronics) as well as openings towards dual-use based on the non-lethal aspects of arms production, such as the identification and positioning functions of autonomous or semi-autonomous weapon systems (cf. Bromley 2022; Verbruggen 2019). Moreover, civilian “big tech” is

increasingly getting involved in the arms industry. For example, in 2013 Google bought Boston Dynamics, a robotics and engineering company which developed “BigDog,” a four-legged robot developed for use in military ground missions (Lynn III 2014). Boston Dynamics was sold to Japanese SoftBank just a few years later, and in late 2020 Hyundai took control of the firm, to expand Hyundai into the robotics domain (Campbell and Porter 2020).

In order to make the MIC concept useful for empirical analysis of the aforementioned contemporary developments in defence policy, governance, and industry, we suggest that the concept needs to be expanded. The contemporary notion of a military-industrial complex requires a commercial civilian addition. The purpose of this add-on is two-pronged. First, the add-on captures notable linkages between the military and civilian domains, including the rapid development of dual-use, technology transfer, and the widening of industry identity from “defence” to “security.” Second, the addition captures linkages while acknowledging prevailing differences between military and civilian domains – differences in culture, incentives, and governance. There is arguably not an all-encompassing amalgamation of a military and civilian complex as to make these two domains unidentifiable, but there is clearly a blurring of the military-civilian boundary (cf. Cuff 1978, 256). We contend that this blurring implies complexity and vagueness, not complete disappearance of a boundary – not institutionally, politically, or economically. Linkages between the military and civilian domains and attention to differences in culture, varying incentives and governance is integral in a world threatened by climate change, extreme weather, drought and famine where for example the US and other militaries have for over a decade considered climate change a “threat multiplier.” The potential for applying climate “solutions” such as strategic resource regulation, polar ocean alkalisation or fertilization, carbon dioxide removal techniques, stratospheric aerosol injection, cirrus cloud thinning and brightening via specialized aircraft, drones and other delivery mechanisms of geoengineering technologies engaged in the protection of critical infrastructure for climate – or as military strategy in the guise of civilian efforts to counter climate change – is a real and growing concern (Sovacool, Baum, and Low 2023).

Recent research on the development of autonomous weapons systems – a key example of what has been dubbed fourth industrial revolution/4IR – has shown that civilian innovation and technology transfer are pivotal, while also demonstrating prevailing obstacles for transfer between the military and civilian domains, related to differing business culture and incentives. This is a development observed in contemporary European defence industry and policy (Sezal and Guimelli 2022; Verbruggen 2019).

In one of the more substantial efforts at widening the MIC notion, James Der Derian added the media and entertainment industry to the military-industrial complex (Der Derian 2009; cf.; Wasson and Grieveson 2018; Eriksson and Newlove-Eriksson 2021). This is a noteworthy and relevant contribution, particularly in an American context, in which both Hollywood productions and computer games have been produced in cooperation with the military and defence industry, exemplified by the blockbuster movie *Top Gun* and the US Army’s freely downloadable computer game *America’s Army*. We maintain however, that the coalescing of media and entertainment industry with defence industry and the military is much stronger and

visible in the US than it is in Europe, which is the empirical domain to be discussed in the subsequent section. For this reason, we limit the media and entertainment industry discussion.<sup>4</sup>

As noted, the civilian component we address concerns dual-use, civil innovation, and the fading defence identity in parts of the industry, including the widening from “defence” to “security” and attempts at avoiding association with the military defence concept altogether, even if the military is still one of the main customers. Adding a civilian component to the MIC concept is useful for getting attention to the blurring divide between the military and civilian domain, in industry as well as in policy and governance. In order to conceptualize how such military-civilian-industrial complexes (MCICs) are formed, further analytical guidelines are needed, however. Drawing on related yet wider concepts of public policy – in particular the “advocacy coalition framework” (Sabatier and Jenkins-Smith 1988; Weible and Jenkins-Smith 2016), and the “multiple streams” framework (Kingdon 1995; cf.; Howlett, McConnel, and Pearl 2014) – we suggest that MCICs are formed through *participants* with varying roles and interests, and through what Kingdon calls the “*policy stream*”. While participants form the structure of the complex – a tangible set of relations across organizational and national boundaries – the policy stream shapes the content of the complex, providing substance in the form of ideas, strategies, and procurements. Thus, our contention is that interests and preferences can coalesce through participant’s partnerships and networks, resulting in policies which state joint visions, and which aim at integration of interests, and through procurement involving technological innovation and multiple-use across military-civilian sectors.

*Participants* refer straightforwardly to what public and private actors are involved in the formation of a military-industrial-civilian complex. Participation in the MCIC is considered here in a broad sense, including participants involved in regulation, policymaking, defence planning and operations, corporate associations, union representation, technological procurement, and provision of services and infrastructure. Hence, participants can have many different roles and varying degrees of influence in the wider commercial complex, both of a formal and informal nature. What we are mainly concerned with however are actors who participate with some continuity in the complex – such as governments, intergovernmental and supranational organizations, and major corporations. In the public policy literature, such participants are often termed “stakeholders” or “policy entrepreneurs” (Kingdon, 2005) – actors who are willing to invest time, energy and finance to shape some aspect of the complex – ranging from military operations to public policy and regulation, competition for market shares, and technological innovation. The significance of participation is often more noticeable when forces are joined in “advocacy coalitions” (Weible and Jenkins-Smith 2016) and “public-private partnerships” (Hodge and G 2007). Participants may come and go over time and play significant as well as marginal roles in the formation of the complex. In the original American MIC, the key participants were (and still are) the US Department of Defense and major corporations forming the US “defense industrial base” including Lockheed Martin, Raytheon, and Boeing. Today, there are a host of other American industries and associations involved, not originally associated with defense – including the microelectronics, telecommunications, sensor, cyber, and AI industries – which make a wider MCIC concept appropriate. Participants in the European complex are discussed in the subsequent section.



*Policy* refers here to defense and security policy in general, as well as more specifically policy on what, how, and why industry and industrial products and services are to be used and developed. The content of policies is observed in strategic and doctrinal documents produced by national governments, as the central institutions of the EU, NATO, and other international bodies. In order to understand the depth and breadth of the “policy stream,” it is necessary to look both at existing policy and ideas floating around in the policy community which, if implemented, imply policy change (cf. Kingdon 1995). The policy stream is where ideas and visions are discussed, approved, or rejected. Notably, the policy stream includes ideas on organization and support of stakeholders, i.e. industrial and investment policy, trade policy, and strategies for public-private partnership. The policy stream includes procurement, i.e. the process of acquiring industrial products and services. Notably procurement should be looked at both from a government-led and industry-led perspective. Procurement has been brought to the fore in European policy with Russia’s invasion of the Ukraine, providing an opportunity for the European Commission (EC) to “incentivise common procurement via the EU budget through a dedicated Short-Term Instrument establishing the European Defence industry Reinforcement through Common Procurement Act (‘the Instrument’)” (European Commission, Directorate General for Budget 2022). Broadly defined and with a quickly arrived-at budget of €500 million for mid-2022–2024, the defence industry procurement instrument is a “dedicated tool designed to tackle the adverse effects and consequences of the Ukraine war in the Union” (Ibid). The “emergency” situation of the war in Ukraine is used as a further means to boost defence industry collaboration between the EU Member States (MS), as collaborate procurement has for several years been deemed by the EC as too low at around half of what MS have committed to, 35% (Ibid.).<sup>5</sup>

The subsequent section applies the MCIC concept in an analysis of developments within the European defense policy and industry context, looking at participants, policy, and procurement – specifically how military-civilian connections are made. This application serves both to illustrate the general analytical relevance of the MCIC concept, and to shed light on current developments in Europe.

### **The European military-civilian-industrial complex: participants and policies**

A brief overview of the European MCIC is provided herein, to illustrate the analytical applicability and fruitfulness of the MCIC concept in Europe, which entails understanding the context and structure of relations between government and industry, considering the multilevel and cross-border nature of the constellation. The European defence sector produces, trades, applies, and cleans up various “defence materiel,” “strategic goods and services,” and licensed “dual-use goods” applications and services in complex public-private contexts and constellations (Bromley 2022). Appreciation of this highly complex context, where military and civilian applications are moreover typically overlapping or indistinct – what Devore (2012, 432) refers to as a “polycentric governance architecture” is important. The current section addresses these elements in some detail. The section following is divided into three subsections, devoted to how and where interests coalesce: *participants*, and *policies*.

### ***Participants forming the European MCIC***

In order to make sense of the European MCIC, it is necessary to first identify key participants, both public and private, and their general roles within the complex. This overview cannot be exhaustive, partly for reasons of brevity herein, and partly because of the complexity and changing patterns of the European MCIC. We focus here on EU institutions of key importance for the European MCIC. While acknowledging the significance of NATO as the provider of “hard security” in Europe, as well as the many linkages between the EU and NATO, this paper focuses on EU-core participants.<sup>6</sup> Industrial actors are briefly addressed, primarily the major players, and their transnational networks. National, domestic actors and institutions are not addressed as our main focus herein here is on developments on the international, European level.

European defence industry has traditionally been a national, domestic affair, with different and independent governance set-ups in each country, which has at times impeded deeper European integration of industry and policy on the level of the European Union (Bromley 2022; Calcara 2017). While the EU has certainly deepened its integration of defence and defence industry policy, particularly since the implementation of the Lisbon Treaty from 2007, and while the defence industry is partly transnationalised, the domestic base of defence policy and industry largely prevails. The leading EU defence nations are France, Germany, Italy, and Spain, as evidenced in their respective defence minister’s signing off to the EU High Representative for Foreign and Security Policy (HR/VP) on the launch of Permanent Structured Cooperation (PESCO) in 2017 (Martill and Gebhard 2022). Parallel to persistence of strong national states in Europe, the European MCIC can be charted, with key public and private actors and institutions on the European level engaging in fora such as OCCAR,<sup>7</sup> in which the dual-use and commercial focus became explicit a decade ago with collaborative European programmes in for example satellite systems such as MUSIS (MULTinational Space-based Imaging System) for surveillance, reconnaissance, and observation. Following Brexit, the OCCAR forum has grown in importance for cooperation in European defence acquisition (cf. Faure 2019). It is noteworthy that broader yet distinctive European procurement cooperation – including for example the UK – is eased by practices of exception, exemption, and discretionary power in obtaining defence contracts, as well as inclusive procurement strategies and “new bilateralism” (Brooke-Holland 2022; European Commission 2022b; Urbanovská, Chovančík, and Brusenbauch Meislová 2022).

What then, are the key actors and institutions of the European MCIC, and how do they contribute to the formation of the military-civilian, public-private nexus? If we begin with public institutions on the level of the European Union, the European Defence Agency (EDA) deserves attention (Calcara 2017; EEAS 2022; Fiott 2017). More specifically, the EDA, established in 2004, is “the EU’s specialised intergovernmental agency dedicated to defence capability and industrial issues,” promoting collaboration between EU MS and the defence industry (Fiott 2017, 399). The EDA funds “collaborative research and development projects. It also aims to pursue synergies with other sources of EU funding, such as [European Structural and Investment Funds] ESIF” (ENDR 2020). As the European Defence Fund (EDF) is the first EU initiative allocated to direct financing of military R&D, it is regarded as a game-changer (Calcara, Csernaton, and Lavallée 2020).

Conceptually, the EDA constitutes a key “policy entrepreneur” in the European MCIC, communicating ideas based on research and innovation, as well as functioning as a “clearing house” for competing national and institutional interests (Calcara 2017, 528; Fiott 2017, 399). The dual role of the EDA as both “policy entrepreneur” and “clearing house” is further enhanced by the 2022 addition of a new unit within the EDA, a so-called “innovation hub,” focusing on emerging technologies with dual-use applicability, including AI, quantum computing and nanotechnology (EEAS 2022, 47). This and similar EU initiatives are carefully aimed at boosting cooperation among MS and across the military-civilian and public-private boundaries (cf. European Parliament 2021).

For the 2021–2027 budget cycle, “the EDF will be endowed with €13 billion: €4.1 billion will be allocated to research while €8.9 billion will be assigned to co-finance capability development activities. EU funds could support up to 10% of project costs during development, but up to 20% for procurement costs” (Calcara, Csernaton, and Lavallée 2020, 1).

As a complement to strategic activities of the EDA through for example periodically released Capability Development Plans (CDP) for defence, the EU also embodies a range of unique legal tools through which to stimulate and streamline European defence – industrial cooperation. For example, there are two defence-specific EU Directives on intra-EU transfers of defence equipment (2009/43/EC) and defence procurement (2009/81/EC) known collectively as the EU “defence package,” which are respectively designed to liberalise the supply of defence equipment in the EU and to ensure transparency and non-discrimination during the award of defence contracts (Fiott 2017). While different MS advocate varying agendas for the EDA – where for example France wants a stronger focus on industrial affairs and the UK (at least before Brexit) wanted the EDA to focus on military and financial issues – the EDA prevails as a policy clearing house, and target for defence industry lobbying (Brzoska 2018; Calcara 2017; Schilde 2017).

The EDA was formed after the integration of the Western European Union (WEU) into the Union structures resulting in the European Security and Defence Policy, as well as following the Iraq War of 2003. These developments facilitated the development of the EDA, as well as the European Security Strategy (Brzoska 2018, vii). These developments paved the way for the morphing of the EU and its institutions into a defence and security *as well as commercial civilian* actor working regionally within Europe and abroad and articulated in recent documents such as the Defence Action Plan and the Implementation Plan on Security and Defence and “mandated in Article 42 of the Lisbon Treaty”, ratified in December, 2007 (Brzoska 2018, italics added). Here, the contours of core institutions of the European MCIC can be seen, including a significant civilian component. Recently, the European Council emphasized Common Security and Defence Policy (CSDP) contributions to “international peace and stability” and reaffirmed their “full commitment to strengthen civilian CSDP through a new civilian CSDP Compact to be adopted by mid-2023” (European Council 2023).

With respect to PESCO in which all EU MS with the exception of Denmark and Malta participate in, collaboration among MS takes place with regard to basically every aspect of defence and wider security policy concerns, from military training to acquisition and procurement of technology (PESCO 2021). Joint planning and coordinated cooperation are particularly emphasized, providing capability development and support of CSDP

operations (cf. Tardy 2018). Importantly, PESCO is based on legally binding commitments for the 25 MS that have signed the agreement (PESCO 2021). Thus, PESCO ensures a more stringent EU control over defence policy and investments compared to the situation before PESO was formed, when domestic set-ups in each MS generally were dominant. Moreover, PESCO complements two other EU initiatives – the European Defence Fund (EDF), which financially supports collaborative projects, and the Coordinated Annual Review on Defence (CARD), initiated by the Council and “backed by the EDA Secretariat” (Sweeney and Winn 2022, 240), which is intended to help identify collaborative opportunities between EU MS (PESCO 2021), and also acts as a form of “peer pressure” as the MS “submit a yearly report card in the form of the CARD and the National Implementation Plan” (Engberg 2021, 14).<sup>8</sup> There is also a link between the EDF and PESCO, where coordination of projects leads to a 10% bonus in support of the “increase [of] European countries’ defence spending to consolidate the long-term objective of a competitive European defence industry and a defence equipment market” (Calcara, Csernaton, and Lavallée 2020).

Hence, there are several key initiatives to promote coordination and planning on the EU level – EDA, PESCO, EDF, CARD, and various subunits – intended to achieve a pivotal role of the EU in the wider European MCIC, explicitly motivated as capability-enhancing efforts, making the EU safer at home and stronger on the international arena. At the same time, the number of initiatives and institutions, with partly overlapping mandates, seem to have created a complex institutional milieu, which we suggest might imply fragmentation rather than integration of the European MCIC (cf. Slijper 2005). Recent efforts have however been made to address fragmentation gaps, such as the Capability Development Plan (CDP), the “EU prioritization tool for defence capability development,” designed to address gaps and “military shortfalls related to military CSDP” (European Commission and HR/VP 2022, 6;1). European defence capabilities – punctuated by increasing expenditures and intensification of cooperation and civil-military synergies following the Russian invasion of Ukraine – are mapped and followed in the “Strategic Compass on Security and Defence” adopted and endorsed by the European Council in March, 2022 (Ibid.).

Importantly, the above-mentioned key participants of the European MIC act both as “policy entrepreneurs” investing time and expertise and communicating policy-oriented ideas, while also performing roles as “arena shaping” actors and “clearing houses” for the variety of national and institutional interests within the EU (Calcara 2017; Fiott 2017). This dual role may seem peculiar when compared with most military-civilian complexes on the national level but is arguably a common feature of many EU-level institutions.

The core political bodies are the Commission, the Council, the Council of Ministers, the European External Action Service (i.e. the “foreign ministry” of the EU), and numerous subunits and expert advisory bodies. Importantly, recent research shows a growing role of the Commission – a supranational body – in defence, a field traditionally associated with national security and sovereignty, notably in relation to the European Defence Fund (Håkansson 2021). Significantly however, the Council and Council of Ministers are not exclusively focused on defence and the defence industry, as opposed to the EDA and PESCO (and the Commission’s DG DEFIS), which on the other hand have also emphasised opening towards the civilian sectors, particularly through emphasis on dual-use technology (Bromley 2022).

The term “EU Institutions” is useful for maintaining conceptual clarity in distinguishing between official EU actors and quasi-private – for example in public-private partnerships (PPP)<sup>9</sup> – EU defence bodies and defence industry actors. Beyond aiding distinction, it also helps illuminate defence objectives and developments internal and external to the EU. Relatedly, looking at empirical examples of how defence is regarded, built up as an industry, and applied sheds light on *de jure* and *de facto* application of defence in and by the EU, something which is not either unrelated to defence industry objectives, and should not either be regarded as entirely consistent and linear. PESCO is a significant opportunity in this regard, “since it is underpinned by the legal force of a Council directive and came not from the Commission but from a joint undertaking by France and Germany” (Sweeney and Winn 2022). Broadly regarded, a razor-sharp area such as defence which is both highly economical and highly political (if not always politicized) is arguably ripe with contradictions.

Moving on to the industrial participants in the European MCIC, a noteworthy development is that the former industrial landscape of mainly middle-sized defence firms has transformed into a landscape with a handful of very large and dominant firms (Airbus, Damen, Leonardo, Kraus-Maffei, Diehl, Saab and others), accompanied with over a thousand small defence and security-oriented firms, many of them closely linked with the major players (Hartley et al 2019; Acosta et al. 2017, 830; Guay and Callum 2002). Notably, many of these firms have numerous *civilian* patents (Acosta et al. 2017, italics added). Furthermore, research published in 2017 found that the “majority of large defence firms are from European countries and from the USA,” including Lockheed Martin – the world’s largest defence contractor – as well as firms with a more balanced civilian as well as military profile, such as General Electric, Hewlett Packard, and Honeywell (Ibid, 833).

BAE Systems – Europe’s biggest defence firm with specialization in air combat systems rivalling Airbus<sup>10</sup> – is based outside the EU but has Swedish, German, Italian, and Dutch partners. The implications of new partnership constellations and Brexit more generally are still too early to be discerned, although the loss of British public and private influence has certainly been noted, as is the leaning in of the UK towards defence procurement cooperation with Japan. As Sweeney and Winn (2022, 242) point out, the legal anchoring of PESCO and its’ CARD-led monitoring make PESCO more effective in EU MS but at the same time decrease cooperation with the UK and other countries outside the EU. The effect of Brexit appears partially counteracted by the general effect of globalization, implying a “transnational defence-industrial class in Europe”, which arguably has influenced European defence industrial policy, including that of the EDA (Kurc and Oktay 2018; cf.; Schilde 2017).

In the event that French influence in EU defence industry policy increases, filling up the vacuum created after Brexit, this might imply enhanced interpenetration of public and private actors, and a stronger focus on industrial development and innovation rather than military strategy within the EDA (cf. Calcara 2017, 536–537). If so, this would imply a reinforcement of the traditional feature of the defence industry as a security policy domain (rather than a free market-domain) controlled by government including export control and an oligopolistic structure (cf. Calcara 2017; Heidenkamp, Louth, and Taylor 2015, 4–6).

Industrial participants work closely with the above-mentioned EU institutions, both directly through individual firm lobbying and consultancy work (Schilde 2017), and indirectly through defence industry associations, notably Aerospace and the Defence Industries Association of Europe (ASD), which is officially acknowledged by the EU as a main partner for policy planning and industrial development. In addition to lobbying, industrial actors gain access to EU institutions through participation in expert committees and advisory bodies, as well as through participation in EU-funded R&D, notably via the EDF, Horizon 2020, Horizon Europe, the Joint Research Centre (JRC), EURATOM's research and training program, and case-by-case direct funding from the Commission (Redmond and Georgescu 2022; Triollet et al. 2019, 85). Defence lobbying is pronounced even in the European Parliament (EP), where intergroups – assemblages of Ministers of European Parliament (MEPs) – gather under issue areas; the Kangaroo Group and Sky and Space Intergroup (SSI) are two influential defence and security groups in the EP (Calcara, Csernaton, and Lavallée 2020; Lemberg-Pedersen and Halpern 2022, 75; Sédou, Akkerman, and Vranken 2021, 75).

Whereas initially defence research was excluded from the scope of Framework Programs (FPs), they were gradually introduced in EU R&D funding from 2002 and onwards, resulting in full-scale introduction of security and defence research with FP7, particularly with regard to technological innovation (2007–2013) (Karampekios, Oikonomou, and Carayannis 2018, 1–2).<sup>11</sup> European Structural and Investment Funds (ESIF) with a total investment of €644 billion and €463 billion over the 2014–2020 and stated objective of “foster[ing] lasting socio-economic convergence, resilience and territorial cohesion” (European Commission 2021b) fund security and defence-related initiatives, for example in the area of border security, but fully tracing funding and projects is arduous if not impossible as clarity and transparency are lacking. Specific funding for joint defence industrial R&D projects was actualized in the Preparatory Action on Defence Research (PADR) from 2017–2019 with a budget of €90 million + €2 million from Norway and the European Defence Industrial Development Programme (EDID) with a 2019–2020 budget of €500 million (European Commission 2021a). PADR and EDID were the precursor defence-specific R&D funding programmes to the current European Defence Fund (EDF) with a budget of nearly €8 billion for the period 2021–2027 (Ibid.).

Thus, R&D funding has been increasingly militarised, as well as sponsoring the development and licensing of dual-use products and services, as in the EU's border agency FRONTEX use of dual-use drones for border surveillance (Csernaton 2018; cf.; European Parliament 2021). The dual-use applications of not only drones and satellites in the European Border Surveillance System (Eurosir) but also for data and biometric purposes in the European Asylum Dactyloscopy Database (Eurodac) have been criticized from a fundamental rights perspective (Lemberg-Pedersen and Hansen 2020). This pattern continues under the most recent program Horizon Europe with development of further defense initiatives and high-technology applications (cf. Redmond and Georgescu 2022). A notable example is the integration of dual-use technologies developed by American defence and surveillance contractor Palantir into interoperable data services used by not only MS police and defence, Interpol and FRONTEX, but by the United Nations World Food Programme (WFP) in humanitarian assistance for migrants and asylum seekers, something which has raised the attention of the European

Parliament's Directorate for Citizen's Rights and Constitutional Affairs (Iliadis and Acker 2022; Lemberg-Pedersen and Hansen 2020).

The significance of the European defence industry for the wider European economy and security is indicated by its turnover of more than €100B in 2015, and that more than 500,000 people are directly employed in its firms, and more than twice as many with subcontractors and the wider security-related industry (Hartley and Belin 2020). A recent EC-commissioned study notes the significance of defence-related and dual-use small and medium-sized enterprises (SMEs) – often in clusters – as key enablers of innovation and growth in the EU and where spillovers to multiple sectors such as electronics, space and civil aviation and Information and Communication Technologies (ICT) are central (Fernández López et al. 2021, 21–22). In the EU's recent evaluation study of cluster initiatives supported under the Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME),<sup>12</sup> H2020 and Foreign Policy Instrument (FPI) programmes, “Aerospace and Defence” is one of the key identified “industrial ecosystems” (Kramer et al. 2021) that the EU should continue to strategically support in partnering projects, networks and clusters.

According to a EC statement in 2007, security R&D in the EU is to be carried out via “public-private-dialogue,” involving key companies in the defence and security industry and “endusers” from national and European security agencies and services (Jeandesboz and Ragazzi 2010, 7). To this end,

[h]igh-profile venues [were] established to bring together these constituencies, in particular the Group of Personalities on Security Research (GoP 2003–2004), the European Security Research Advisory Board (ESRAB 2005–2006) and most recently the European Security Research and Innovation Forum (ESRIF 2008–2009), have been instrumental in establishing the priorities and outlook of current EU-funded security research. (Jeandesboz and Ragazzi 2010, 7)

These initial fora for public-private dialogue have been progressively expanded and institutionalized in innovation authorities and agencies at the national level which work towards supporting Public-Private Innovation (PPI) in the context of university, industry and government “triple helix”<sup>13</sup> and strategic research-based innovation (cf. Meyer et al. 2019) and cluster networks (CSES and PROGNOS 2021). Specifically with respect to defence and defence-related R&D in the EU, Research and Innovation Strategies for Smart Specialisation (RIS3) agendas guide PPI and investment through the multiple levels – EU, national and regional (Fernández López et al. 2021).

Advisory bodies, expert committees, “Innovation hubs,” “group of personalities” and other such entities are arenas where representatives of EU institutions, defence industry and legislative bodies meet, negotiate, and enter into dialogue on policy issues, and investment strategies (cf. Schilde 2017). These are clear examples of how the European MCIC develops and prevails, effectively forming not one but several “advocacy coalitions” (cf. Sabatier and Jenkins-Smith 1988). Moreover, the multilevel nature and blurring of the governmental-nongovernmental in the EU context challenges traditional analytical distinctions of public policy analysis. The term “complex” is certainly befitting in a double sense, as the myriad of institutions and public-private relations are both

numerous and highly complex. Describing participants and their networks says something about how the complex is formed, but to more fully grasp the nature of the complex, it is also necessary to look at what it does – i.e. what policies are advocated, and how policies shape the military-civilian nexus. That is the topic of the following section.

### ***Policies shaping the European MCIC: dual-use, and emerging technologies***

The “policy stream” manifests brokering of knowledge and ideas, rather than the simple display of power in terms of material resources and dominant interests (Howlett, McConnell, and Pearl 2014; Kingdon 1995). In the “policy stream,” an innovative idea or a clever framing of a problem may overcome conflicts of interests between powerful actors, which has been demonstrated in past research on European defence industry policy (Mörth 2000). In the following, we take a look at how the “policy stream” of the European MCIC has been shaped by notions of dual-use and emerging technologies, which highlight multiple connections between military and civilian domains.

That there is a notable civilian component of the European MCIC is clearly indicated by how both the EU institutions and industrial actors continually emphasise dual-use, and other features stressing linkages across the military-civilian divide (Bromley 2022). This is particularly the case with so-called “emerging” and “disruptive” technologies including AI, robotics, quantum computing, bio- and nanotechnology, new materials, cyber-surveillance, advanced propulsion, and space technology (Calcara, Csernaton, and Lavallée 2020). Importantly, there is agreement across the government-industrial divide on the importance of dual-use, evidenced by the emphasis on public-private partnerships for European defence, security, and critical infrastructure. Statements and strategic documents issued both by EU institutions and industrial actors generally identify a much wider policy range than that of traditional arms and military policy, incorporating broader societal security, civilian crisis management, critical infrastructure protection, counter-terrorism and the fight against organised crime (EEAS 2022, 47; European Parliament 2021).

The manner in which problems, ideas and technologies are framed is a crucial element of any “policy stream,” including those within the EU (Kingdon 1995; cf.; Mörth 2000). For example, EU policy entrepreneurs and strategic documents frequently frame linkages between defence and civil society in terms of “spin-offs” and “spin-ins.” In EU jargon, “spin-offs” refer to how defence research and innovation brings economic and technological benefits to citizens, while “spin-ins” refer to the use of civilian research and innovation within EU defence projects (European Parliament 2021). This type of jargon clearly contributes to a policy emphasis on connections between military and civilian domains within the EU, and thus illustrates the relevance of a civilian add-on – rather than a serious approach to RRI – to the concept of a military-industrial complex.

The “policy stream” that shapes the content of the European MCIC can be observed within the many EU treaties, strategies and action plans regarding defence, security, industry and innovation. That there is a general and continuous theme of military-civilian connections, illustrated not only by the oft-repeated notions of dual-use, “spin-offs” and “spin-ins,” but also by the stated aim of boosting cooperation between civil, defence and space industries (EEAS 2022; European Parliament



2021). These techno-optimistic and market-friendly ideas and concepts can be interpreted as part of a wider liberal, modernist paradigm which prevails within the EU policy system. The fact that the EU addresses “strategic dependency,” “technological sovereignty,” vulnerability of critical infrastructures, and challenges to resilience within the EU is compatible with the wider liberal paradigm. In this paradigm, technological innovation is seen not only as an instrument of economic development and social welfare, but simultaneously as a means to master the dangers of societal functions highly dependent on advanced technology (Newlove-Eriksson et al. 0000).

In the following, several more specific elements of the “policy stream” are addressed, focusing on significant treaties and strategies concerning a wider conception of security beyond military defence – including civil protection, critical infrastructure, AI, and hybrid threats. The move towards a civilian component is notable already within the Lisbon Treaty, signed in 2007, addressing a wide range of issues framed under a general security and safety umbrella, many of which are defined as the Area of Justice and Home Affairs – now integrated in the EU Security Strategy: border controls; intelligence; police; migration; asylum and migration; civil security; counter-terrorism; and border protection (Davis Cross 2020, 209; EEAS 2022; European Council 2009, 10–11; European Parliament 2021; Kaunert, Occhipinti, and Léonard 2014, 39). The Lisbon Treaty forms the basis of contemporary EU defence and industrial policy, i.e. the latest Treaty of the European Union (TEU) and which is further complemented in the defence arena by the Treaty on the Functioning of the European Union (TFEU). Here, particularly Article 346 and Article 222 of the TFEU are significant as the former constitutes the “legal basis that exempted defence-related procurement from the Internal Market rules” (Calcara, Csernaton, and Lavallée 2020, 4) and the latter – also known as the Solidarity Clause – “requires solidarity between the EU and its Member States in crisis situations brought about by natural or man-made hazards and terrorist attacks” (Berchtold 2020, iv). These articles are essential to any account of European defence and related industry as they map out expectations and commitment to collaboration in the critical areas of both finance and defence.<sup>14</sup> The prominent positioning of Art. 222 can be explained by its “close link to external action in the fight against terrorism;” moreover, the TFEU refers to the potential use of military sources for wider security purposes, under the umbrella of the Common Foreign and Security Policy (CFSP) (Berchtold 2020, 51). Hence, the Lisbon treaty and affiliated doctrinal developments are clear indications of a widened security concept in general, and a military-civilian nexus in particular (cf. EEAS 2022; European Parliament 2021).

Civil protection, arguably a sibling to defence, is “defined by Art. 222 TFEU and substantiated by Art. 196 TFEU for natural and man-made disasters, and by Art. 43 TEU as well as Art. 75, 83, 88 and 215 TFEU for terrorist attacks” (Berchtold 2020, 49). Art. 43 is interesting in that it “establishes the competence to combat terrorism through the Common Security and Defence Policy (CSDP),” while also mentioning “joint disarmament operations, humanitarian and rescue tasks, military advice and assistance tasks, conflict prevention and peace-keeping tasks, tasks of combat forces in crisis management, including peace-making and post-conflict stabilization including by supporting third countries in combating terrorism in their territories” (Berchtold 2020, 60).

Increasingly, the critical infrastructure sectors of ICTs and space technologies such as satellites and Anti-Satellite (ASAT) have come to be areas where the defence industry as well as governmental and intergovernmental bodies place an increasing role in forming, anticipating and responding to developments. In the EU, several organizations are party to the space policy subcomplex of the European MCIC, including the European Space Agency (ESA), the European GNSS Agency (GSA), EUMETSAT (the European Organization for the Exploitation of Meteorological Satellites), Frontex (the European border agency), the European Union Satellite Centre (EU SatCen), the European Maritime Safety Agency, and other public and private institutions (Polkowska 2020, 3).

Indeed, space is one of the highly technological R&D areas in the EU where dual-use technologies predominate and where CFSP and CDSP within and beyond union interests supersede that of civilian.<sup>15</sup> In their proposal for the launch of the new EU space program security agencies lead the coordination of dual-use space and space-based activities under Governmental Satellite Communication – GOVSATCOM – where agencies, international organizations, and sanctioned private parties meet in a wide range of civilian-military security-related activities and services on earth and in space, within the EU and abroad (Council of the European Union 2019). Notably, the (European Parliament’s 2021) *Action Plan on Synergies Civil, Defence, and Space Industries* highlight space communications technology within their “flagship projects.” Moreover, since this Action Plan specifically addresses synergies between sectors it also supports our claim that there is a need for a commercial civilian add-on to the concept of a military-industrial complex. DG DEFIS, in charge of implementing the EU Space programme in the EC consisting of the European Earth Observation Programme (Copernicus), the European Global Navigation Satellite System (Galileo), Space Surveillance and Tracking (SST)/Space Situational Awareness (SSA) and GOVSATCOM and the European Geostationary Navigation Overlay Service (EGNOS) (European Commission 2022a) also underlines the need for commercial civilian focus. The confluence of applications and policy authority across sectors in space, health, ICT and innovation is evident, for example in DG DEFIS being one of the “parent” Directorates – General for the European Health and Digital Executive Agency (HaDEA) (Kyriakides 2021), reflected also in the organisation of HaDEA with “Digital Industry and Space” being a main department of HaDEA and with key staff from DG DEFIS in the area of space research seconded to HaDEA.<sup>16</sup>

The EU explicitly states the need for space-based utilities to “aggregate user needs and requirements across national and *civil-military* boundaries” (emphasis added, Council of the European Union 2019, 18). Specific policy and user domains mentioned include military defence, borders and coast guard, law enforcement, fisheries, and civilian emergency response coordination (Council of the European Union 2019, 18). Again, developments in the space policy domain, which in the EU context originally was focused on civilian applications, have become increasingly focused on dual-use and more generally of a military-civilian nexus (Bromley 2022; Newlove-Eriksson and Eriksson 2013).

Furthermore, in the defence industry globally and within Europe, there is increasing investment in high-technology areas such as lethal autonomous weapons systems (LAWS) employing for example Artificial Intelligence (AI), electronic warfare and robotics. AI is regarded as a disruptive technology that impacts upon every sector including security and defence (EEAS 2022, 47). Examples of applications in these sectors

have gone from for example drones to more advanced unmanned aerial vehicles (UAV) and Unmanned Aerial Systems (UAS) and high-speed and high-density computing applications for intelligence gathering and sensing (Barbé and Badell 2020).

Parallel in time to this, the Commission appointed a high-level expert group on AI, precluding a “prescriptive approach and ensur[ing] that users are informed actors and in control of the decisions made” (CEPEJ and Council of Europe 2019, 7). An intelligence example of “predictive policing” is provided by the “no fly list, which is actually a big data analytics application that collects and analyses data on potential terrorists in order to prevent the commission of acts, or algorithms used to detect fraud or money laundering” (Ibid, 49).

Whereas the European Commission for the Efficiency of Justice (CEPEJ) and Council of Europe ethical Charter specifically refers only to security and counter-terrorism R&D such as those in the preceding examples, the charter is relevant to the defence industry as well as other European industries (cf. Hardy 2019). As hybrid warfare (HW) characterised by “its synergistic use of various means across the military, political, economic, civilian and informational (MPECI) spectrum to exploit the vulnerabilities of the enemy” is regarded as a reigning threat, the portfolio of both hardware and software AI tools across the MPECI range are also developed and applied in numerous contemporary military and civilian contexts (Yan 2020, 901). Indeed, many activities of EU’s GOVSATCOM are explicitly geared towards “the EU response to Hybrid Threats, [including to] provide support to the EU Maritime Strategy and to the EU Arctic Policy” (Council of the European Union 2019, 32). Thus, hybrid warfare and similar concepts floating around in the policy community are yet another illustration of the multifaceted military-civilian nexus.

In sum, the trend is clear: the EU and the European MCIC more generally is expanding military-civilian linkages and dual-use across the board – in R&D, investment plans, intelligence, public-private partnerships, and in overarching organization and governance.

### **Concluding remarks**

This paper applies and contributes to the concept of a military-industrial complex by adding a commercial civilian component. Seen particularly through the “streams” of participants and policies, respectively, the analytical add-on is intended to capture and contextualise the development of new dual-use technologies and a general widening from defence to security and societal safety, including civilian emergency management, border control, counterterrorism, and surveillance. These and related developments are noticeable in Europe, particularly within the institutions and networks of the European Union. While the influence of interest groups as well as emerging technologies and the transformation of the European defence market have been addressed in past research, past contributions have paid attention to specific technologies, industrial segments, and policy processes. What is needed is an eagle-eyed helicopter perspective, which captures the multi-faced and multilevel complexity of defence industry and defence policy. That is where our concept of a military-civilian-industrial complex (MCIC) comes in, putting the contemporary development of dual-use and emerging technologies in a wider perspective. Suggesting this add-on is only a first step, however. Further research and theorizing should seek to specify how, when, and with what consequences the MCIC develops, specifically with regard to the military-civilian nexus, which cuts across the relationship between NATO and the EU’s defence institutions and policies.

## Notes

1. Simply put, dual-use technology is “technology that can have both civilian and military application” (Martins and Ahmad 2020; cf.; Bromley 2022), but these and other researchers point out that the distinction is often not easily made, and is rife with ethical issues, only some of which have begun to be tackled with for example so-called Responsible Research and Innovation (RRI) approaches in the EU and “Dual-Use Research of Concern” in the US (Ulnicane 2020, 4–5). Notably, RRI in the EU is at odds with other central concepts and agendas vigorously applied in dual-use in the EU such as Research and Innovation Strategies for Smart Specialisation (RIS3) (Fitjar, Bennenworth, and Asheim 2019). Dual-use technology may also be referred to as “spin-off” technology when military technology is used in civil applications or “spin-in” when civilian technology is used in military applications (Acosta et al. 2017, 823), but from which direction the terms are used should of course depend on vantage point. “Spillover” denotes a “situation in which the research is conducted within one domain and then adopted without change to another domain” (Oliveira et al. 0000, 63).
2. It has been argued that the originator of the concept was speechwriter Malcolm Moos, and that navy captain Ralph Williams had some input (Fallows 2002, 46).
3. A recent report from the NATO Science & Technology Organization aimed at assisting military and civilian decision-makers identifies the following key emerging and disruptive technologies: Data; AI; Autonomy; Space; Hypersonics (assessed as predominately disruptive in nature); and Quantum; Biotechnology and Materials (“assessed as being emergent, requiring significantly more time (10–20 years) before their disruptive natures are fully felt on military capabilities”) (Reding and Eaton 2020 vi-vii)
4. Notably, the role of academia in the European military-civilian-industrial complex is expanding, for example in the context of university, industry and government “triple helix” and strategic research-based innovation (cf. Meyer et al. 2019) and Public-Private Innovation (PPI) in for example cluster networks (CSES and PROGNOS 2021). Specifically with respect to defence and defence-related R&D in the EU, Research and Innovation Strategies for Smart Specialisation (RIS3) agendas guide PPI and investment through the multiple levels – EU, national and regional (Fernández López et al. 2021). Defence and civil defence education are noted in several European countries even at the high-school level as part of regular curriculum (cf. Urych and Matysiak 2022). Future research should thus consider the significance of academia and education – as well as more closely examining PPI – within the MCIC.
5. The COVID-19 pandemic provided a similar opportunity for among other things, dual-use development application funding in the form of a “Recovery and Resilience Facility” (RRF) and NextGenerationEU (NGEU) instrument where for example broadly-defined crisis preparedness and crisis response capacity and digitalization are two of six focal areas (Official Journal of the European Union 2021 L57/34). The mammoth initiative for 2021–2026 is a combination of grants (€338 billion) and loans to MS (€386 billion); 10% of the NGEU (€83 billion) “will be used to reinforce centrally managed EU programmes such as Horizon Europe and the Just Transition Fund” (European Commission, Directorate General for Budget 2022, 4).
6. NATO – both through its political branch in form of the Strategic Council, and its military HQ – is undoubtedly playing a core role in European defence (Howorth 2017), particularly following the invasion of Ukraine (Maurer and Wright 2023). Relations between NATO and the EU are of importance, both with respect to various institutional mechanisms, and as there is considerable overlap of members states between the two organizations (cf. Fiott 2017; Reykers and Adriaensen 2022). Yet, it is our contention that EU-related institutions of the European MCIC are sufficiently rich, dynamic and interesting in themselves – and also relatively under-researched. This piece chiefly addresses EU-core institutions; a more complete and comprehensive analysis of the

European MCIC should also take into account international corollaries, constellations identified herein for further study at a later time.

7. With Belgium, France, Germany, Italy, Spain and the United Kingdom as members (represented by their respective Ministers of Defence) and many other EU MS plus Turkey as affiliates and the EDA and the NATO Support and Procurement Agency (NSPA) as partners, OCCAR “facilitate[s] and manage[s] cooperative European Armament Programmes through their life cycle” (OCCAR 2023).
8. “Collaborative opportunities”, the development of which are monitored in CARD, are listed under six “focus areas’ for cooperation, namely: Main Battle Tanks; Soldier Systems; Patrol Class Surface Ships; Counter Unmanned Aerial Systems; Defence Applications in Space and Military Mobility” (European Commission and HR/VP 2022, 6).
9. Official bodies or agencies are not always easily distinguishable from industry groups and endeavors and may have begun as PPPs but transitioned into commercial actors. Just one example of this is the benchmarking and legitimating organization, the European Secretariat for Cluster Analysis (ESCA) which “is an offspring of the 2009 European Cluster Excellence Initiative (ECEI), a pan-European initiative by the European Commission with the aim to create more world-class clusters across the EU by strengthening cluster management excellence. ESCA was established in November 2010 by one of the 13 European project partners, VDI/VDE Innovation + Technik GmbH” (ESCA, undated). This is a different organization from the European Cluster Collaboration Platform (ECCP), which along with “European Strategic Cluster Partnerships have been launched by the European Commission through financial incentives (under COSME program) to encourage clusters from Europe to intensify collaboration across regions and sectors” (ECCP 2020).
10. With roots in France, global actor Airbus is not only a leader in passenger aircraft but is a multi-divided defence contractor – like American-based Boeing.
11. In the Horizon 2020 FP for Research and Innovation defence-related research fell under “Secure societies – protecting freedom and security of Europe and its citizens” (European Commission 2014, 11); the current and ninth FP “Horizon Europe” (2021–2027) has increased the applied defence and security focus in R&D (Ulnicane 2023).
12. COSME was a €2.3 billion funding programme from 2014–2020 (European Commission, undated).for SMEs – defined by the EC as “enterprises employing fewer than 250 persons that have a turnover of less than 50 million euros and/or a balance sheet total of less than 43 million euros” (Eurostat 2022).
13. Quadruple helix or 4 helix is an EU-buzzword in some circles, as a way of adding citizens, in for example Responsible Research and Innovation (RRI). The citizen aspect is however virtually non-existent in defence, defence-related and dual-use technology development due to dual objectives (security and intellectual property) for limiting transparency and insight.
14. Over the almost seventy-year period the EU has existed, the concept of solidarity has been progressively underscored in EU treaties and directives. Berchtold (2020, 15) points out that solidarity is “declared to be a core value of the EU (Art. 2 TEU) and builds the basis for reasoning the fight against social exclusion and intergenerational equality (Art. 3 TEU). It is established as a guiding principle for the Union’s action on the international scene (Art. 21 TEU) as well as for its Common Foreign and Security Policy (Art. 24 and 31 TEU). Furthermore, primary legislation relates solidarity to policies on asylum, immigration and external border control (Art. 67 TFEU and Art. 80 TFEU), economic policies (Art. 122 TFEU), energy policy (Art. 194 TFEU) and disasters (Art. 222 TFEU). In parallel, solidarity is mentioned in secondary legislation and policy initiatives at the European level encompassing a broad range of policy fields.”
15. Another dual-use example within the EU’s regulation concerns cyber-surveillance, described in detail in a study by Mark Bromley (2022).
16. The current DG DEFIS seconded to HaDEA in the area of Digital Industry and Space is Marko Curavic with an entrepreneurship, venture financing, management and development economics profile and business administration education and expertise. It is relevant to examine the communities of practice in which experts are engaged, in order to distil profiles that are regarded of essence for the DGs and EU agencies.

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