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ABSTRACT

Practitioners and academics recognize the importance of innovative intelligence organisations. However, we know little about how intelligence organisations innovate and what challenges they are being confronted with. Drawing upon intelligence studies as well as innovation and organisational studies this paper forwards a conceptual framework to answer the question: *how do intelligence organisations innovate?* To address this, we introduce the concept of *innovation capability*, an organisation's potential to innovate. The paper identifies seven attributes of innovation capability and explores these attributes within intelligence organisations. The attributes are: (1) vision and strategy, (2) competence base, (3) organisational intelligence, (4) creativity and idea management, (5) organisational structure, (6) culture and climate and (7) management of technology. The paper concludes with an agenda for further research.

Introduction

The concept of innovation is *en vogue* in intelligence. Practitioners and academics recognize the importance of innovative intelligence organisations. In one of the few academic articles addressing this topic, Petrelli states that policymakers and practitioners in both the US and the EU agree that 'intelligence systems operating under the present conditions of competitive interdependence, rapid technological change, and resource scarcity must innovate at a sustained pace in order to remain effective'.[1] Despite its importance, however, we know little about how intelligence organisations innovate and what challenges they are being confronted with. Much of the knowledge available is dispersed amongst think tanks and academia.[2] Meanwhile, intelligence agencies have their own information, documented both through case studies as well as through employee experience. Most studies focus on the changes in the environment such the rise of disinformation[3] or the role of private sector[4] rather than on the implications for intelligence organisations themselves. And if they do so, these studies emphasise technological innovation, while overlooking other types of innovation such as related to organisational processes or human capital.[5]

This leads to the main research objective of our paper. We forward a conceptual framework to answer the following question: *how do intelligence organisations innovate?* Drawing on Coulthart et al.'s[6] call for multidisciplinary approaches to intelligence studies, this paper weaves the innovation studies and organisational studies literatures. Based on this, we introduce the concept of *innovation capability*, which is an organisation's potential to innovate.[7] Subsequently, we take this concept as our theoretical lens and reflect on the capability of intelligence organisations to innovate. We do this making use of the limited intelligence studies literature that addresses this topic as well as grey literature and additional documents. The paper concludes with an agenda for further research.

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Innovation in intelligence studies

The theme of innovation is virtually absent in intelligence studies. In 2023 Coulthart and Rorissa[8] performed an extensive survey of almost six thousand journal articles in intelligence studies. The topic of innovation was only very scarcely addressed in these articles. This resonates with Petrelli who stated that 'no sub-field of inquiry specifically devoted to the theoretical study of the nature and process of innovation can be found in intelligence scholarship'.[9]

There are, however, some attempts to conceptualise innovation within intelligence. Petrelli,[10] for example, investigated the links between (intelligence) requirements, experimentation, and synthesis in net analysis, for the purpose of theory development of intelligence innovation. Schmid[11] applied a theory of military innovation to intelligence organisations, while Wolfberg[12] highlighted the theme of the innovative intelligence organisation making use of organisational learning literature. And Zegart[13] used insight from organisational theory to explain failure of adaptation of the intelligence community after 9/11. Other publications within intelligence studies that investigate innovation focus on external changes[14] or specific organisational processes.[15] Together, these publications offer only a rudimentary and fragmented conceptual foundation.

There are several other publications that address how intelligence organisations change, without directly linking the subject matter to the theme of innovation. These studies primarily deal with incorporation of (information) technologies in order to remain effective or increase effectiveness in a changing world, and the consequences for the intelligence community.[16] A small number of publications specifically deals with the so-called 'Revolution in Intelligence Affairs', highlighting the changing environment and the information revolution, as well as the consequences for the intelligence community, without addressing inner workings on how this change should come about.[17] Former intelligence officials have also written about their experiences implementing new ideas and technologies. In his biography, former director of the CIA John Brennan recalls his efforts to restructure that organisation and create the Digital Innovation Directorate.[18] An influential study conducted by General Michael T. Flynn, the senior intelligence professional of the International Security and Assistance Force (ISAF) in Afghanistan, along with two other intelligence professionals opted to change the intelligence structure of western forces in Afghanistan to adjust the intelligence effort to the operational environment.[19]

In sum, the intelligence studies literature widely recognizes the importance of innovation, but provides only very limited insights on how intelligence organisations exactly innovate and what problems they are being confronted with. To address this, we now turn to the organisational studies literature.

Innovation capability

Innovation is a difficult phenomenon to study. While thousands of publications address the topic of innovation, there is no consensus on what constitutes 'innovation'. Generally, in order to classify as an innovation, there must be a situation of implementation of a novelty, mostly a new process or new product. This novelty could be relative or absolute, and incrementally or radically implemented.[20] Based on these general notions, we define innovation in this paper as: *any change in the way an (intelligence) organisation operates, sudden or gradual, using new processes, concepts, and/or leading to new products or services*.[21]

Many practitioners and academics have suggested that innovation and its management may be sector, industry or organisation specific. Even so, Tidd et al.[22] provide evidence that a number of core attributes exist which aid effective innovation outcomes. Organisational studies literature has introduced the term innovation capability to incorporate such core attributes. Innovation capability is generally understood as the organisation's potential to innovate[23] and innovation can only occur if an organisation possesses some level of innovation capability. A classic definition is provided by Lawson & Samson[24] who define it as: 'the ability to continuously transform knowledge and ideas into new products, processes and

systems for the benefit of the firm and its stakeholders'. While initially developed for private sector organisations, innovation capability has been implemented in several other studies of the public sector.[25]

There are three common characteristics of innovation capability:[26]

- Innovation capability is an asset or organisational property.[27] Following Forsman,[28] Narcizo et al.[29] argue that innovation capability 'is related to the ability of the organisation to engage in experimentation, learning, adaptation, heuristics, and know-how'.
- It is 'an organisational process, practice or high-level organisational routine'.[30]
- Organisations can vary in levels of innovativeness from very low to very high.[31] In this respect, Lawson & Samson state that the higher the level of innovation capability possessed by an organisation, the more effective its innovation performance will be.

Assessing the innovation capability of organisations is difficult. This is because it 'is an enabling set of attributes and is detectable only when exploited; (...) [and] possibly requires a combination of factors, both hard and soft, interacting in a complex gestalt; (and) may not be unitary and may vary between organisational levels, configurations, national or firm- specific cultures, distinctive strategies, different threat levels, technological complexity or other factors'.[32] In line with this observation, Lawson & Samson[33] note "there is no clear agreement of what the real variables of innovation capability might be, and that there are likely to be disagreements as to how best 'cut the innovation cake". Still, it is possible to discern the main categories and relate them to intelligence organisations

Attributes of innovation capability

The attributes of innovation capability are divided into categories by different researchers.[34] We draw upon the seminal work by Lawson & Samson[35] who, based on the literature on the management of innovation, as well as best practice models, suggest that innovation capability consists of seven attributes.[36] Table 1 provides a description of each of these attributes. The following sections explore these attributes within intelligence organisations.

Table 1. The seven attributes of innovation capability.

Attribute	Description
A Clear Vision and Strategy	A cohesive and clear strategy for innovation articulated by organisational leadership
Harnessing the Competence Base	Organisational processes for channelling resources to innovation
Organisational Intelligence	Ability to learn from customers and about competitors
Creativity and Idea Management	Organisational routines for generating and capturing new ideas
Organisational Structure	An organisational structure that allows for innovation processes
Culture and Climate	An organisational climate that allows for risk taking and ambiguity
Management of Technology	Understanding and absorbing emerging technologies

A clear vision and strategy

A common vision and strategic direction are crucial to innovation as they determine the configuration of resources, products, processes and systems that organisations adopt to deal with their environment. As Lawson & Samson states, 'without a strategy for innovation, interest and attention become too dispersed'.[37]

Analysing the innovation strategy and vision of intelligence organisations is not an easy task. Most strategy documents are classified and for internal use only. Several organisations have revealed part of their vision or strategy in speeches of their leadership or in annual reports. In a keynote speech the CIA Deputy Director for Digital Innovation argued that 'innovation, taking risks, experimenting, iterating and failing smartly, isn't just the best way forward. For those who are charged with ensuring America's national security, it's the only way forward'.[38] And the director of the Netherlands Defence

Intelligence and Security Service (NLDISS), Major-General Swillens, argued that 'Working in the context of continuous change is our core business. Developments are taking place in quick succession, and constant innovation and improvement are our reality. Stagnation equals decline'.[39]

In many cases these expressions remain rather abstract and mainly stick to the statement that innovation is necessary. Or as the former director of GCHQ Jeremy Fleming said, 'to grab the innovation initiative'.[40] Blank[41] reflected on this, arguing:

> "While all of our defense and intelligence agencies will tell you that innovation is one of their pillars, innovation actually is an ill-defined and amorphous aspirational goal, while the people, budget and organization continue to flow to execution of mission."

Overall, only limited attention seems to have been paid to operationalizing innovation strategy.[42] In an attempt to do so, NLDISS has recently published an innovation strategy labelled the *Innovation Agenda*. This document defines the innovation objectives of NLDISS and identifies several measures to enhance the innovation capability of the organisation. These include directing the innovation efforts, allocating financial resources to stimulate innovation, strengthening the organisation and its cooperative relations with the Ministry of Defence, knowledge partners as well as the private sector.[43] The US intelligence community has included several of these innovation goals such as a diverse work force and reaching out to external partners in the US National Intelligence Strategy 2023.

Harnessing the competence base

Harnessing the competence base is the implementation of resources to enable innovation. We focus on four here: partnerships, diversity, expertise and leadership. External partnerships provide new ideas to an organisation. Relevant partners include other national intelligence organisations,[44] academia,[45] open-source collectives[46] as well as the private sector.[47] With regard to the latter, the director of the UK's Secret Intelligence Service remarked: '*we cannot hope to replicate the global tech industry, so we must tap into it.*'[48]

Managing these different partnerships is an important challenge, particularly for organisations that are intrinsically secret and quite closed. While the focus is often placed on formal cooperative structures, recent research reveals that mutual trust and social relations are equally important, if not more so.[49] Ties between intelligence professionals are founded on reputation, acknowledged professionalism, and shared characteristics. This helps them to bridge the divides created by nationality, organisation, or even conflicting interests. At the 2023 conference of the Netherlands Intelligence Studies Association, the director of NLDISS argued that 'intelligence and security services need to be smart cooperators to keep their concepts, modus operandi and technological base up to par'.[50] While the concept of being a *smart cooperator* sounds promising and stimulates personnel to reach out, it remained unclear how this concept could be implemented.

Diversity is another important enabling factor for a robust competence base. Cultural diversity is often viewed as the primary expression of diversity, based on race, skin colour, religion, gender, sexual orientation, socio-economic background and age. In addition to this, cognitive diversity is also important since it offers different perspectives, experiences and ways of thinking.[51] In his book *Rebel Ideas*, Matthew Syed suggests that complex (intelligence) problems must be viewed from different perspectives to release a group or organisation from the constraints of conventional frames of reference and thought patterns.[52]

A classic example of the importance of diversity is the CIA's failure to pick up on the various signals that preceded the 9/11 terrorist attacks, a failure that can be attributed partly to the predominance of highly educated white males on its staff.[53] To prevent such failures, Callum argues that it is crucial 'to infuse the IC with a competitive heterogeneity of ideas, cultures, and mindsets by pursuing increased diversity and pluralism'.[54]

An organisation with a deep competence base also has expertise in areas related to particular innovations. This closely relates to cognitive diversity. Given the significant innovations in the technical domain such as quantum computing, AI and blockchain, it is increasingly important for intelligence organisations to recruit and hold on to people with expertise in science and technology. Facing competition with many other knowledge-intensive organisations in the current employment market, intelligence organisations creatively attract people with a technical background through initiatives such as summer schools or hackathons. But despite this obvious need, Knopp et al.[55] state that it remains unclear what data science skills and knowledge intelligence organisations require. They stress the importance of identifying the 'desired output as precisely as possible, whether it be the transactional purchase of data or the development of in-house data analytics'.

A fourth and final factor related to the competence base is an organisation's leadership. Organizational studies widely acknowledge that leadership plays a vital role in fostering innovation. As such leadership can enhance organizational creativity, launch and drive innovation projects, and implement innovation projects as well as overcome resistance.[56] With respect to leadership in intelligence organisations, the literature includes many descriptive memoirs of intelligence leaders.[57] For instance, General Flynn's report mentioned earlier was part of the redirection of western activities towards counterinsurgency efforts led by General McChrystal.[58] More recently, intelligence scholars such as Walsh[59] have adopted leadership theory to analyse intelligence leadership. Walsh identifies and applies different leadership types such as transformational leadership to the intelligence domain. He concludes there is no set of normative theories on intelligence leadership and argues that 'leadership development in the intelligence context remains sub-optimal'.[60] As a result, it would be good to test theoretical perspectives to generate evidence regarding what type of leadership could enhance innovation in intelligence organisations and how.

Organisational intelligence

Organisational intelligence is about learning from customers and learning about competitors.[61] In intelligence organisations, the concept of organisational intelligence is slightly confusing as it refers to their raison d'être. As a result, we focus on organisational learning to address this element. The literature on organisations distinguishes between single loop learning, double loop learning, and triple loop learning.[62] Table 2 provides a description as well as examples of these types of learning.

Table 2. Different types of organisational learning.

Type of Loop & Description	Examples
Single Loop Learning: making relatively simple adjustments and implementing corrections	Intelligence analysts experiment with open source software and integrate it into their workflow
Double Loop Learning: reframing and perceiving subjects in a new way	Reorientation of an intelligence organisation's paradigm
Triple Loop learning: developing new processes or methods to enable reframing and new perspectives	Intelligence organisations experiment with new working arrangements and internal relationships

There are clear examples of single loop learning within intelligence organisations. Learning is continuous at both individual and team levels. For example, employees increasingly use open sources and data analysts experiment with the available software applications and models. However, most organisations seem to have few formal procedures to codify experiences and lessons learned. While some employees register their experiences and lessons (often in self-designed formats), others pay little attention to this, resulting in fragmentation and preventing structural comparisons and analyses of the lessons learned. In addition, managers often prefer operational personnel such as collectors or analysts rather than personnel charged with registering and codifying acquired knowledge.[63] Although this may be understandable from an operational perspective, it is

detrimental to the organisation's learning ability. Finally psychological security plays an important role in learning ability. This concerns the capacity for critical self-reflection and criticism of the team and the organisation based on the expectation of constructive feedback from colleagues and managers when doing so. Only then will an organisation learn.

The double loop learning level represents a gradual change in the approach to intelligence issues. This is reflected in the shift from the traditional to the new intelligence paradigm, which is depicted in Table 3.

Table 3. The traditional versus new intelligence Paradigm.[64]

Characteristic	Traditional Paradigm (solving incomplete puzzles)	New Paradigm (performing adaptive interpretations)
Nature of Threat	Predominantly military	Predominantly non-military
Information Requirements	Limited: emphasizes secrets	Enormous: most required information is not secret
Nature of Indicators (piece to puzzles/adaptive interpretations)	Large and small pieces	All pieces are small
Importance of pieces	Large pieces are more important than small pieces. Values are static.	The value of each small piece can change from moment to moment
Durability of Solutions	Relatively constant: 'Picture' experiences slow, incremental changes.	Dynamic: Values of pieces and, therefore, meaning of adaptive interpretations, change rapidly
Need for updates to analysis	Periodic (to detect major changes)	Continuous

Lahneman, *National Intelligence Agencies and Transnational Threats*.

With awareness of this paradigm shift gradually dawning, it is important for intelligence organisations to develop new processes or methods to enable an adequate response. This constitutes the third level of learning: triple loop learning.

One of the greatest challenges at this level is the use of open source information (OSINF). The conflict in Ukraine has reinforced the importance of using OSINF to create open source intelligence (OSINT) products.[65] There are many examples that illustrate this, ranging from the satellite data provided by Maxar Technologies to the Live Universal Awareness Map (Liveuamap),[66] which tracks near real-time battlefield developments and depicts these on a map. OSINT has several advantages. For example, OSINT enables already available intelligence to be placed in a broader context, it is less expensive than other intelligence capabilities, it can be used to compare intelligence products from different services, and it can easily be scaled up and disseminated.[67]

Intelligence services are taking notice of the need to incorporate OSINT into their workflows. The Central Intelligence Agency's Deputy Director for Digital Innovation stressed in a recent speech: 'Today, in this really dynamic digital media environment, OSINT is one of our richest sources of insight and our INT of first resort'.[68] This observation reflects the OSINT strategy the US Director of National Intelligence (DNI) released in March 2024. This strategy is tellingly titled: "The INT of First Resort: Unlocking the value of OSINT.[69] The National Geospatial Intelligence Agency (NGA) has made similar advancements in geospatial intelligence. During his tenure as director of NGA, Robert Cardillo significantly advanced his organisation's use of open sources and commercial imagery.[70]

A second challenge in relation to the development of new processes and methods constitutes the implementation of a data-driven working approach. While many teams mainly use traditional and qualitative analyses, they now have to contend with major developments in the technology and information domain. Only think of the ever-increasing volume of data as well as the increasing computing power and data analysis models. This necessitates the implementation of data-driven workflows. However, intelligence organisations face daunting challenges in this regard. While some have a small number of employees with a background in technical science, others struggle with potentially outdated infrastructure (including

hardware, software and applications), data illiteracy of analysts and managers, the integration between quantitative and qualitative analyses, and last but not least information management.[71]

Creativity & idea management

Creativity relates to organisational routines for generating and capturing new ideas. It is a crucial attribute for organisations to deal with complex challenges. While some studies stress the importance of creativity for intelligence organisations, there is hardly any study that emphasises this topic. In one of the few exceptions, Marchio[72] refers to the CIA, which in the late 70s organised multiple symposiums and meetings addressing the issue of creativity. However, he suggests that these appear to have had only limited impact. In addition to such symposiums and meetings, intelligence organisations incentivize creative thinking by means of competitions and awards. The Galileo awards, that recognize innovative ideas by US intelligence officers,[73] provide a good example. Also, continuous learning programmes for employees have been set up. These include opportunities to study internally (e.g., NIU) or externally (e.g., fellowship programs to study a degree outside of the IC).

Another option is establishing skunk works style teams. These are small teams of individuals who work in an 'enriched environment . . . by escaping routine organisational procedures' (Rogers 2004, 139).[74] A famous example is the establishment of the CIA labs. Apart from increasing engagement with academia, the labs also incentivised personnel to be creative. CIA employees could, for example, obtain patents for the intellectual property they created. As a result, these employees could financially profit rather than watching the private sector capitalise on their breakthroughs.[75] In a similar manner, the Israeli services have tried to foster creativity in their organisations. Shin Bet, for example, has set up a *tech garage* in which start-ups try out new technology with Shin Bet resources. In doing so, Shin Bet tries to 'leave behind the public sector culture, in favour of pushing hard for innovation and rewarding taking daring chances'.[76]

In conjunction to the adoption of these skunk works style teams, intelligence organisations realise that they have to move away from the lone genius paradigm. Although individuals still can have large impact – only think of Elon Musk's Starlink and the connectivity it establishes in the Ukraine, the complexity of the innovation challenges and the specialisation of most intelligence personnel require interaction with others to generate ideas.[77]

All these initiatives mostly focus on generating new ideas. Capturing these ideas and producing solutions that can be implemented in intelligence organisations is a different story. As a positive example, Richards Heuer Jr. imported many of the insights from behavioural economics to intelligence through his work on cognitive biases by creating a series of articles and a monograph, *The Psychology of Intelligence Analysis*. This research became the basis for structured analytic techniques.[78] Individuals such as Richards Heuer Jr. promote their ideas through their work in the intelligence organisation. By empowering these so-called idea entrepreneurs, intelligence organisations can harness their innovation capabilities.

More generally, however, bridging the gap between idea generation and producing solutions is very challenging for intelligence organisations. Blank[79] critically reflects on this and bluntly argues that:

> Accelerators, hubs, cafes, open-sourcing, crowd-sourcing, maker spaces, chief innovation officers, etc. are all great but they tend to create innovation theater – lots of motion but no action. Great demos are shown and there are lots of coffee cups and posters, but if you look at the deliverables for the mission over a period of years, the result is disappointing. Most of the executors and operators have seen little or no value from any of these activities.

An important reason underlying the gap between creation and implementation is related to bureaucratic organisational structure of most intelligence organisations.[80] We will further elaborate on this in the next section.

Organisational structures

The structure of an organisation is of crucial importance to foster successful innovation.[81] Lawson and Samson argue that 'unless this structure and its resulting processes are conducive to a favourable environment, other components of the innovation system are unlikely to succeed'.

Intelligence organisations are bureaucratic by nature. Following the German sociologist Max Weber, a bureaucracy is a specific form of organisational structure which is defined by complexity, division of labour, permanence, professional management, hierarchical coordination and control, strict chain of command, and legal authority.[82] There are, however, huge differences between the institutional logics of such public bureaucracies and the dynamics driving innovation processes. Table 4 summarises the main competing logics.

Table 4. Competing logics between public bureaucracies and innovation arenas.[83]

Competing logics	Public bureaucracy	Innovation arena
Authority	Hierarchical	Horizontal
Focus	Procedure	Output & outcome
Priority	Order, control and stability	Creativity, experimentation, change
Perspective	Intra-organizational	Inter-organizational

As a result of these competing logics, innovation does not come naturally in most intelligence organisations. To become more innovative, intelligence organisations need to pay more attention to the logics that foster innovation. In this line of reasoning, they should a have a more horizontal organizational structure, focus on their outputs and outcomes at the expense of following the procedures, have the freedom to experiment and emphasize relationships with external actors. Dennis Blair, the former US Director of National Intelligence, seems to echo this claim when he stated: 'If we give our intelligence professionals the right missions, and clear away the obstacles in front of them, those of us who have faith in them will also have the pleasure and privilege of watching them produce amazing results'.[84]

However, while the need for innovation is clearly present, intelligence organisations are simultaneously expected to perform their regular tasks with a high level of reliability. And, in doing so, they have to comply with the existing procedures, norms and performance criteria. The main challenge for intelligence organisations thus seems to find a balance between performing regular tasks and being innovative at the same time.

The organisation literature has coined the concept ambidexterity to address this ability to do thing at the same time. Empirical studies clearly show there are organisations adopting such a simultaneous approach and achieve very positive results.[85] The literature identifies several approaches to ambidexterity. Structural ambidexterity relates to the design of an organization. The crucial task is to not simply divide an organisation with one part focusing on the daily business while the other addresses innovation but to integrate both parts in a meaningful way.[86] Cyclical ambidexterity entails that organisations follow a pattern of long-term stability and relatively minor adaptations. This is then followed by a period of rapid and often radical changes.[87] This discussion also takes place within intelligence studies where evolutions and revolutions happen interchangeably.[88]

A third and final approach is contextual ambidexterity. This approach stresses that ambidexterity differs per context and level in the organization. In particular, intelligence leadership should be able to bridge the gap between innovative and conservative practices.[89] It is, however, often tempting to favour daily business at the expense of innovation as the latter is often inefficient and includes many bad ideas as well.[90] A large study into S&P 500 companies in the United States revealed that 80 per cent of the organisations underemphasized exploration and innovation and overemphasized day to day exploitation.[91]

Culture and climate

Closely related to organisational structure, the appropriate culture and climate within an organisation are also important to innovation success (Lawson and Samson 2001). With regard to the US intelligence community, the authoritative CSIS report *Maintaining the Intelligence Edge* even states that 'the primary obstacle to intelligence innovation is not technology, it is culture'.[92] Although culture has no fixed meaning it is widely seen as 'the collective programming of the mind',[93] 'a pattern of shared basic assumptions'[94] or 'the whole of values, norms, virtues, habits and beliefs, meanings and styles, the informal restrictions and permissions -including punishments and rewards-that make the machinery work'.[95]

During the last decades, the intelligence studies literature has seen a surge of publications addressing intelligence cultures.[96] Many of these focus, however, on national intelligence cultures and are mostly descriptive and anecdotal. Far less attention has been paid to the role of culture in intelligence organisations. One of the exceptions is the CSIS report. When referring to intelligence innovation it states that:

> At their core, many of these problems stem from an IC [Intelligence Community] culture that is resistant to change, reliant on traditional tradecraft and means of collection, and—ironically, given popular perception—averse to risk-taking, particularly to acquiring and adopting new technologies and integrating outside information sources. In sum, IC culture must adapt to take and reward calculated risks.

Two inter-related cultural traits stand out from this observation: the resistance to change and the aversion to risk-taking. Resistance to change is a key topic in Public Administration's change management literature and should be seriously considered to help intelligence organisations innovate. There are many different sources of resistance that are under-researched on intelligence organisations. These sources include the perception amongst organisational members why change is needed, a low motivation to change (e.g., direct costs of the change, past failures), a lack of creative response, departmental politics, as well as leadership inaction.[97] The slow adoption of OSINT in many organisations is an illustrative example. Despite its clear advantages as well as the legal requirement to deploy the most accessible collection sources first, intelligence organisations seem reluctant to adopt OSINT. Reasons that are often mentioned include the higher esteem of classified intelligence capabilities as well as a decrease of the exclusive character of intelligence organisations that sets them apart from think tanks, research institutes and collectives such as Bellingcat.[98]

Closely related to the resistance to change is the aversion to risks. Most innovations require multi-year commitments from leaders. Many intelligence leaders are, however, only in their positions for a short period of time. This makes them hesitant to spend much time and resources on innovation within their organisations. Especially if these are already strained. And at a working level operators and analysts often trust longstanding procedures. This makes it more likely that they will discard innovative, but often unproven, practices or technologies.

Interestingly, the cultural trait that distinguishes intelligence organisations most from 'ordinary' organisations, namely secrecy,[99] is not exhaustively studied. Braat even states that, with a few exceptions,[100] 'intelligence studies show little interest in singling out secrecy as a topic of research that might improve our understanding of . . . intelligence communities'. Secrecy, however, largely influences the capability of intelligence organisations to innovate. As intelligence organisations are no longer the dominant power when it comes to innovations, they have to rely on partnerships with outside actors (see also section on competence base).

Secrecy, which is generally defined as the intentional concealment of information, knowledge or behaviour from the view of others, obstructs such partnerships. While in some cases intelligence practitioners have clear guidelines on what to share and with whom, in many other cases there is a considerable grey area and practitioners choose to be *better safe than sorry* in sharing their secrets with outside partners. Braat explains this practice using the concept of goal displacement that occurs 'when adherence to the rules, originally conceived as a means, becomes transformed into an end-in-itself'.[101] In this respect, Braat argues that 'secrecy in intelligence and security services goes beyond

mere functionality; it is transformed from a means to protect sources and methods into an end in itself'. Braat concludes that this process leads to further dissociation from social contacts outside intelligence organisations. As a result, joint innovation activities with partners do not reach their full potential. Mechanisms that could help overcome this paradox include building trust, establishing preferred partnerships, as well as leadership support.

Management of technology

The seventh and last attribute of innovation capability is the management of technology. In literature on military innovation, technology features prominently as one of the main driving factors, if not the most important one.[102] For many decades, technology has been crucial for intelligence organisations. However, the current pace with which new technologies emerge as well as their (potential) impact on the effectiveness of intelligence organisations is immense. Present-day examples are numerous and include AI large language models such as ChatGPT,[103] cloud computing services[104] or blockchain technologies.[105] As a result, intelligence organisations need to swiftly understand, utilise, and absorb emerging technologies. Failing to do so 'erodes traditional (…) advantages'.[106]

Intelligence studies scholars tend to take a deterministic approach towards the role of technology. This approach assumes that within intelligence organisations change simply follows the development of new technologies. As such, changes in tactics and organisational arrangements are merely subsequent adjustments to a new technological reality. As an alternative perspective, social technology researchers argue that human agency shapes how technologies are used.[107] As such, users can figure out new and creative ways of using existing technologies that give these technologies different purposes. Consequently, the separation of technology and organisations is no longer accepted. Scholars refer to the technology-based fabric of organisations and sociotechnical practices.

To integrate technology, CSIS[108] highlights six key domains that intelligence organisations need to manage. Table 5 outlines these domains.

Conclusion

Whereas many practitioners and academics alike emphasise the importance of innovation for intelligence organisations, there is only limited knowledge how these organisations innovate and what challenges they are confronted with. Making use of organisational studies literature, this paper contributed to answering this question. More specifically we adopted the concept of 'innovation capability', that is generally understood as the organisation's potential to innovate. We adopted a general framework that was initially developed by Lawson & Samson[110] and used that to diagnose intelligence organisations. The innovation capability framework consists of seven attributes, namely vision and strategy, competence base, organisational intelligence, creativity and idea management, organisational structures, culture and climate, and management and technology. For each attribute, our analysis has revealed several indicators that characterise innovative intelligence organisations. Table 6 summarises the seven attributes of innovation capability, including their descriptions and main indicators.

Towards a research agenda

The framework of innovation capability is a useful starting point to answer important questions. We consider two projects among a variety of alternatives: 1) a wide scale study of the 'soil of innovation' in intelligence and 2) a set of targeted studies on specific, important technologies. Both projects start from the framework above and could be completed separately or in a complimentary fashion.

Table 5. Domains of technology management.[109]

Domain	Description	Examples
Workforce & organisational culture	A workforce and organisational culture trained and incentivized to apply new technologies.	• Providing the workforce with digital skills across the spectrum from digital awareness to literacy to fluency; • The teaming up of analysts and case officers with technologists such as data scientists, ML engineers, and product designers; • Building career paths for technology experts.
Acquisition processes	Acquisition processes that rapidly distribute technology to users for adoption.	• Bridging the gap between the traditional, linear acquisition processes of many intelligence organisations to the realities of the dynamic and more iterative technology development and operations cycles. • Align users, acquirers and providers during the acquisition process.
Strategic partnerships	Strategic partnerships with the commercial sector, research community, and foreign partners to ensure an innovation base supportive of IC needs.	• Build a robust intelligence innovation ecosystem with like-minded partners outside the IC to provide the technology, people, and expertise. • Collaborate on sharing algorithms, models, and data sets. • Synchronise major technology investments with allies and partners.
Strategic R&D	Investment in strategic R&D for gaining advantage in leap-ahead technologies.	• The intelligence community must accelerate its own R&D efforts in areas unique or acute to the IC. • Strategic R&D requires accurate forecasts of technological trends as well as assessments of adversary strategy, capabilities, and intentions in integrating technologies into intelligence operations.
Infrastructure	A robust IC infrastructure and architecture to exploit technology.	• A multilayer cloud infrastructure that is diversified yet interoperable. • Adopt best practices for software development and deployment. • Rather than risk avoidance, intelligence organisations must adopt a risk management posture. This would be an enduring process of exploring, documenting, and protecting the pedigree of the information flowing into intelligence organisations' systems and thinking.
Ethics and governance	A clear framework of ethics and governance principles to guide how technology is applied.	• Determine common standards and best practices for AI explainability in workflows and analytic products. • Increase transparency of biases inherent in the data, how models are used, and their impact on conclusion and confidence levels.

The first project considers refining the innovation capability framework. Specifically, we can ask: *Which attributes described above are most important for innovation in intelligence organisations?* From a theoretical perspective answering this question would help direct future innovation studies in the intelligence domain. Intelligence Studies scholars have examined how specific innovations, such as net assessment, cognitive biases, and crowdsourcing have been introduced to intelligence agencies. A better understanding of the most impactful attributes would help inform similar, future studies. From a practical standpoint, it is useful to understand which attributes are most important for improving the innovative capability of intelligence organisations. For example, if we understand that

Table 6. The seven Attributes of Innovation Capability, including description and indicators.

Attribute	Description	Indicators in Intelligence Organizations
A Clear Vision and Strategy	A cohesive and clear strategy articulated by organisational leadership	• Strategy documents (internal and external)
Harnessing the Competence Base	Organisational processes for channelling resources to innovation	• Ability to engage multiple external stakeholders • Diverse workforce • Relevant expertise • Leadership
Organisational Intelligence	Ability to learn from customers and about competitors	• Making relatively simple adjustments and implementing corrections (single loop learning) • Reframing and perceiving subjects in a new way (double loop learning) • Developing new processes or methods to enable reframing and new perspectives (triple loop learning)
Creativity and Idea Management	Organisational routines for generating and capturing new ideas	• Mechanisms for idea generation and capturing (e.g., existence of skunk works teams, employee idea competitions)
Organisational Structures	A shift from bureaucratic logics to the dynamics driving innovation processes	• Competing logics between public bureaucracies and innovation arenas: • Authority (hierarchical versus horizontal) • Focus (procedure versus output and outcome) • Priority (order, control and stability versus creativity, experimentation and change) • Perspective (intra-organizational versus inter-organizational)
Culture and Climate	An organisational climate that allows for risk taking and ambiguity	• Resistance to change • Aversion to risks • Dealing with secrecy
Management of Technology	Understanding and absorbing emerging technologies	• Workforce and organisational culture • Acquisition processes • Strategic partnerships • Strategic R&D • Infrastructure • Ethics and governance

organisational climate and culture are more important than strategic vision, then intelligence agencies would be well advised to focus resources on improving the latter.

Whereas the first project treats innovations as conceptually the same, the second project examines them as discrete phenomena. This research agenda can examine innovations that impact each of the main intelligence activities, such as collection, processing, analysis, dissemination, and covert action. The Center for Strategic and International Studies (CSIS) has compiled a list of emerging technologies. We describe each phase of the intelligence cycle with examples of potential innovations with reference to the CSIS list and our own ideas:

- Collection: image recognition software, speech-to-text translation software, and other natural language processing capabilities
- Analysis: Integration of open source information; New modes of report writing with AI assistance; cloud computing capabilities; teleconferencing and other collaboration tools (e.g., wiki tools)
- Dissemination: automated reporting tools that generate short-term products from raw intelligence;

Beyond the intelligence cycle process, scholars can examine other functions:

- Human capital management: new strategies for recruitment (e.g., innovative ad campaigns)
- Public relations: social media/public awareness campaigns
- Procurement: new organisational processes and contract mechanisms for identifying external partners/technology

In each of these cases scholars can investigate how specific attributes impact the ability of the intelligence organisation to adapt a specific innovation.

There are theoretical and practical implications of undertaking this second research project. First, focusing the research agenda on these standardised and accepted attributes helps clarify the literature on innovation in intelligence. The Lawson and Samson[111] framework provides a common vocabulary between researchers. Second, several studies targeted at important technologies would provide a cross-sectional study of how secrecy impacts the innovation process. Such findings would be useful for scholars in public administration who study how government entities learn and adapt. The practical implications are clear: it is helpful for practitioners to understand the conditions under which emerging technologies are adopted or rejected in intelligence communities. For example, highly complex innovations like machine learning are of interest to intelligence services but might be impractical in most that lack innovation capabilities. These studies can reveal these difficulties.

Conducting a study of innovation capability in intelligence organisations is difficult but not impossible. These organisations are great examples of difficult to access research problems, which 'guard their secrecy, conceal their activities, decide who is allowed (not) to know, and have no interest in being observed or understood by others'.[112] Such difficult to access problems necessitate the use of multiple data collection strategies since actors like intelligence organisations limit the usefulness of a single method.

The scholarship on innovation capacity suggests there are several possible data collection strategies: surveys, interviews, and case studies.[113] Each of these methods could be deployed in a single or series of studies to assess the relative importance of each element of innovation capability. The most common method of data collection in innovation studies is the survey. Such surveys ask employees questions that are connected to the elements listed above. For example, a questionnaire might ask about their willingness to take risks at work (climate and culture) or the extent to which they agree that their organisation has a clear strategy (vision and strategy). These studies also usually include questions related to outcomes, such as the extent to which they feel their organisation is innovative. A similar strategy might be feasible in specific intelligence organisations, depending on the researcher's access.

Interviews can provide insider descriptions of innovation processes. This data collection process is well-established, but still little used in Intelligence Studies research.[114] Researchers can use interviews and semi-structured questionnaires as well as focus groups to explore employee perceptions regarding innovation. While interviews can provide useful information, they are less useful than surveys for showing broad trends across an organisation or community. For this reason, if it is possible to combine surveys and interviews, the resulting analysis is more compelling.

Another common approach is to use case studies, or more specifically, we recommend focused-case comparison.[115] In these studies, the researcher selects cases for differences related to the goals of the study. For example, to tease out the importance of organisational structures, a researcher might examine an organisation with a flatter structure and one with a more hierarchical structure that adopted the same technology. This would allow for an examination of structure that affects innovation processes. Therefore, these types of studies are useful for testing the theoretical framework and making modifications. A drawback of this approach is the need for an extensive amount of data to conduct a fine-grained analysis of each case.

We recognize that intelligence studies are only at the beginning of gaining a structured understanding of how intelligence organisations innovate. Introducing the established organisational studies literature provides us with the conceptual lens that was lacking. Using this lens future research should further refine the framework of innovation capability as well as focus on specific innovations within intelligence organisations.

Notes

1. Petrelli, "Analytical Innovation in Intelligence Systems."
2. For example, see: Center for Strategic and International Studies (CSIS), "CSIS Launches Program on Intelligence, National Security."
3. Kapantai et al., "A Systematic Literature Review on Disinformation."
4. Robson Morrow, "Private Sector Intelligence."
5. For example, see: Lim, "Big Data and Strategic Intelligence".; Omand, Bartlett, and Miller, "Introducing Social Media Intelligence (SOCMINT)".
6. Coulthart, Landon-Murray, and Van Puyvelde, *Researching National Security Intelligence*.
7. Saunila and Ukko, "A Conceptual Framework for the Measurement of Innovation Capability and Its Effects."
8. Coulthart and Rorissa, "Growth, Diversivication, and Disconnection."
9. Petrelli, "Analytical Innovation in Intelligence Systems."
10. Petrelli, "Analytical Innovation in Intelligence Systems."
11. Schmid, "Intelligence Innovation."
12. Wolfberg and Pelley, "The Role of Innovation."
13. Zegart, "September 11 and the Adaptation Failure of Us Intelligence Agencies."
14. Nicander, "Understanding Intelligence Community Innovation in the Post-9/11 World."
15. Svendsen, "Contemporary Intelligence Innovation in Practice"; Vogel et al., "The Importance of Organizational Innovation and Adaptation."
16. See for a sample of such publications: Adams, "The New Spies"; Ashwell, "The Digital Transformation of Intelligence Analysis"; Gartin, "The Future of Analysis"; Hastedt, "Foreign Policy by Commission"; Lahneman, "The Need for a New Intelligence Paradigm"; Loleski, "From Cold to Cyber Warriors"; Lucas, 'Spycraft Revolution"; Pillar, "Adapting Intelligence to Changing Issues"; Warner, "Reflections on Technology and Intelligence Systems."; and part 5 (Leading Analytic Change) of George and Bruce, *Analyzing Intelligence*.
17. Barger, *Toward a Revolution in Intelligence Affairs*; Denécé, "The Revolution in Intelligence Affairs: 1989–2003."; Kurliak, "Applying the Revolution in Military Affairs to Intelligence"; and Lahneman, "Is a Revolution in Intelligence Affairs Occurring?."
18. Miller Center, ''Undaunted: Former CIA Director John Brennan", YouTube Video, 53:00. https://www.youtube.com/live/j52jJ38wttA?si=NFbs-BpfHhe9GdA-.
19. Flynn, Pottinger, and Batchelor, *Fixing Intel*.
20. Crossan and Apaydin, "A Multi-Dimensional Framework of Organizational Innovation," 1155; Fagerberg, "Innovation: A Guide to the Literature," 4–8; and Martin, "Innovation Studies: An Emerging Agenda," 171.
21. This definition is based on (military) innovation literature, see: Sinterniklaas, *Military Innovation*.
22. Tidd and Bessant, *Managing Innovation*.
23. Saunila and Ukko, "A Conceptual Framework for the Measurement of Innovation Capability and Its Effects."
24. Lawson and Samson, "Developing Innovation Capability in Organisations."
25. For example, see: Gullmark, "Do All Roads Lead to Innovativeness?"
26. Narcizo, Canen, and Tammela, "A Conceptual Framework to Represent the Theoretical Domain."
27. Akman and Yilmaz, "Innovative Capability, Innovation Strategy and Market Orientation."
28. Forsman, "Innovation Capacity and Innovation Development in Small Enterprises."
29. Narcizo, Canen, and Tammela, "A Conceptual Framework to Represent the Theoretical Domain of 'Innovation Capability' in Organizations."
30. Tang, Wang, and Tang, "Developing Service Innovation Capability in the Hotel Industry."
31. Corsi and Neau, *Innovation Capability Maturity Model*.
32. Lawson and Samson, "Developing Innovation Capability in Organisations."
33. Lawson and Samson, "Developing Innovation Capability in Organisations."
34. Aas and Breunig, "Conceptualizing Innovation Capabilities."
35. Lawson and Samson, "Developing Innovation Capability in Organisations."
36. Other researchers suggesting categories include: Den Hertog, Van der Aa, and De Jong, "Capabilities for Managing Service Innovation"; and Terziovski, "'Preface to' Building Innovation Capability in Organizations."
37. Lawson and Samson, "Developing Innovation Capability in Organisations."
38. Alderton, "CIA Deputy Director for Digital Innovation: Innovate or Perish'".
39. Claver, Van Nijnatten, and Pijpers, "Zonder Inlichtingen Geen Veiligheid," 11.
40. GCHQ, "Director's 2021 Vincent Briscoe Lecture."
41. Blank, "The Red Queen Problem."
42. This observation is based on frequent discussions between the authors and intelligence practitioners.
43. Militaire Inlichtingen en Veiligheids Dienst (MIVD), *NLDISS Annual Report 2022*, 35–36.
44. For example, see: Tuinier, "Explaining the Depth and Breadth of International Intelligence Cooperation."
45. Arcos, Drumhiller, and Phythian, *The Academic-Practitioner Divide in Intelligence Studies*; Bateman, "Secret Partners."

46. Higgins, *We Are Bellingcat*.
47. Van Puyvelde, *Outsourcing Us Intelligence*.
48. Gardner, "MI6 Must Adapt to New Technology to Survive, Says Spy Chief."
49. Tuinier, Brocades Zaalberg, and Rietjens, "The Social Ties That Bind."
50. Claver, "Smart Intelligence Cooperation."
51. Callum, "The Case for Cultural Diversity in the Intelligence Community."
52. Syed, *Rebel Ideas*.
53. Ibid.
54. Callum, "The Case for Cultural Diversity in the Intelligence Community."
55. Knopp et al., *Defining the Roles, Responsibilities, and Functions for Data Science within the Defense Intelligence Agency*, xi.
56. Kesting et al. "The impact of leadership styles on innovation management – a review and a synthesis."
57. See e.g., Helms & Hood. *A Look over My Shoulder: A Life in the Central Intelligence Agency*; Tenet & Harlow. *At the Center of the Storm: My Years at the CIA*.
58. Sinterniklaas, "Information Age Airpower in Afghanistan: Development of the Air Campaign in Afghanistan and How It Supported Strategic and Operational Goals of Civil and Military Policy Makers between 2001 and 2016." (Dissertation, University of Amsterdam, 2019), 339–40.
59. Walsh, *Intelligence Leadership and Governance;*
60. Walsh, "Making future leaders in the US intelligence community: challenges and opportunities."
61. Lawson and Samson, "Developing Innovation Capability in Organisations."
62. See also: Romme and Van Witteloostuijn, "Circular Organizing and Triple Loop Learning."
63. Within the military, especially air forces, we use job titles as "evaluators" or "instructors'. However, in practice these usually are the "operational personnel" mentioned before. Evaluators and instructors do register, codify, and (most importantly) disseminate lessons learned, but usually at the tactical level.
64. Lahneman, *National Intelligence Agencies and Transnational Threats*.
65. Van Beek and Rietjens, "Open-Source Intelligence in the Russo-Ukrainian War."
66. See: https://liveuamap.com.
67. See also: Gibson, "Open Source Intelligence."
68. Alderton, "CIA Deputy Director for Digital Innovation."
69. Director of National Intelligence (DNI) (2024). *The IC OSINT Strategy 2024–2026: The INT of First Resort. Unlocking the Value of OSINT*. Available at:
　　https://www.dni.gov/files/ODNI/documents/IC_OSINT_Strategy.pdf.
70. "Statement for the Record before the Senate Select Committee on Intelligence," National Geospatial Intelligence Agency, Last modified 28 September, 2016. https://www.nga.mil/news/Statement_for_the_Record_before_the_U.S._Senate_Se.html.
71. See e.g., Horlings, "Dealing with data"; Vogel et. al., "The Impact of AI on Intelligence Analysis"; and Tromblay, "Information Technology (IT) Woes and Intelligence Agency Failures: The Federal Bureau of.
　　Investigation's Troubled IT Evolution as a Microcosm of a Dysfunctional Corporate Culture".
72. Marchio, "Fostering Creativity in the IC."
73. https://www.dni.gov/files/documents/Newsroom/Speeches%20and%20Interviews/20090520_speech.pdf.
74. The term Skunkworks is derived from Lockheed Martin's Skunkwork project that was established during the Second World War. The project led to many radical innovations including the Blackbird, the U2 spy plane and the first stealth plane, the F117.
75. Lovelace, "CIA Goes Back to School to Collaborate on Spy Tech Research."
76. Bob, "Shin Bet Reveals, for the First Time."
77. Perry-Smith and Mannucci, "Social Networks, Creativity, and Entrepreneurship."
78. Coulthart, "From Laboratory to the WMD Commission."
79. Blank, "The Red Queen Problem."
80. Marchio, "Fostering Creativity in the IC."
81. Burgelman, *Strategic Management of Technology and Innovation*.
82. Rockman, "Bureaucracy."
83. Agger and Sørensen, "Managing Collaborative Innovation in Public Bureaucracies."
84. Office of the Director of National Intelligence, Remarks by the Director of National Intelligence Mr. Dennis Blair. Available at: https://www.dni.gov/files/documents/Newsroom/Speeches%20and%20Interviews/20100222_speech.pdf.
85. O'Reilly et al., "Organizational ambidexterity: Past, present, and future"; Heeren-Bogers et al. *The Yin-Yang Military: Ambidextrous Perspectives on Change in Military Organizations*.
86. O'Reilly et al., "Ambidexterity as a dynamic capability: Resolving the innovator's dilemma."
87. Gersick, "Revolutionary change theories: A multilevel exploration of the punctuated equilibrium." Waard and Bijlsma, "African Winds: Versatile Value Creation in the Military."
88. Zegart. "September 11 and the Adaptation Failure of Us Intelligence Agencies".

89. Shields and Travis, "Resolving Contradictions in Military Operations via Ambidexterity."
90. O'Reilly and Tushman. "Organizational ambidexterity: Past, present, and future."
91. Uotila et al, "Exploration, exploitation and firm performance: An analysis of S&P 500 corporations."
92. CSIS Technology and Intelligence Task Force, *Maintaining the Intelligence Edge*, ix.
93. Hofstede, Hofstede, and Minkov, *Cultures and Organisations*.
94. Schein, *Organizational Culture and Leadership*.
95. Soeters, "Organizational Cultures in the Military."
96. See: Davies and Gustafson, *Intelligence Elsewhere*; Davies, "Intelligence Culture and Intelligence Failure in Britain and the United States".; De Graaff and Nyce, *Handbook of European Intelligence Cultures*; Goodman, "The British Way in Intelligence"; Phythian, "Cultures of National Intelligence".; Stout, 'World War I and the Birth of American Intelligence Culture'.
97. For instance, see: Pardo del Val and Martinez Fuentes, "Resistance to Change."
98. See e.g., Miller, "Open Source Intelligence (OSINT): An Oxymoron?."
99. Braat, "Self-Reinforcing Secrecy."
100. For instance, see: Aldrich and Moran, "Delayed Disclosure". Aldrich and Richterova, "Ambient Accountability"; Moran, *Classified*.
101. Merton, "Bureaucratic Structure and Personality." Quote on p. 560.
102. Sinterniklaas, *Military Innovation*.
103. Coulthart, Keller, and Young, "What Chatgpt Can and Can't Do for Intelligence."
104. The UK services MI5, MI6 and GCHQ contracted Amazon cloud services to host large amounts of classified material. See: https://www.ft.com/content/74782def-1046-4ea5-b796-0802cfb90260.
105. Hong, Kim, and Chang, "Blockchain Technology Based Information Classification Management Service."
106. Zegart and Morell, "Spies, Lies, and Algorithms." 85.
107. Oling et al., "Towards a Cultural Perspective on the Absorption of Emerging Technologies in Military Organizations."
108. CSIS Technology and Intelligence Task Force, *Maintaining the Intelligence Edge*.
109. This table is adapted from: CSIS Technology and Intelligence Task Force, *Maintaining the Intelligence Edge*.
110. Lawson and Samson, "Developing Innovation Capability in Organisations."
111. Lawson and Samson, "Developing Innovation Capability in Organisations."
112. Von Maravic, "Limits of Knowing or the Consequences of Difficult-Access Problems for Multi-Method Research and Public Policy."
113. Iddris, "Innovation Capability."
114. Van Puyvelde, "The Why, Who, and How."
115. George and Bennett, *Case Studies and Theory Development in the Social Sciences*.

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