Digitalisation versus the Law. Tensions and recombinations in the German Bundeswehr

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Abstract

This contribution examines how organizations—using the German Armed Forces (Bundeswehr) as a case study—manage tensions between legal requirements and digital expectations. Focusing on the administrative sector, it explores how the Bundeswehr reconciles demands for digital efficiency with strict legal compliance. Two key strategies are identified: the creation of experimental spaces for digital innovation and the selective prioritization of legally compatible digital initiatives. The findings highlight the recombination capacity of traditional bureaucratic organisations.

1. Introduction

Organisations are subject to a wide range of social expectations, as they are seen as influential social actors with far-reaching societal impact (Bromley and Meyer 2015). These expectations are often complex and contradictory, posing challenges for organisations in how they respond. A growing body of research explores how organisations navigate such heterogeneous demands (e.g. Besio and Meyer 2015; Battilana and Dorado 2010; Battilana et al. 2017; Kraatz and Block 2010; Besharov and Smith 2014; Lindberg 2014; McPherson and Sauder 2013; Pache and Santos 2010). While this research highlights the diverse pressures organisations face, it has largely focused on economic expectations and their intersections with scientific, political, and moral concerns. However, one crucial dimension remains underexplored: the role of legal expectations – a gap this article seeks to address.

As Max Weber already emphasised, legal requirements play a central role in structuring all types of organisations. Yet, legal frameworks are

often complex and can collide with other societal expectations, particularly in contexts marked by innovation or rapid transformation. To examine these tensions, we focus on digitalisation, a relatively new phenomenon in which technological advancements are not yet subject to specific regulation. Instead, emerging technologies often encounter well-established legal requirements that were not designed with digital processes in mind. Regulations related to data privacy, transparency, and even cumbersome funding procedures can come into conflict with the societal expectation of swift and widespread digitalisation.

Digitalisation is a megatrend (Faber 2019; Reinhardt 2020) from which no organisation is exempt. It promises greater efficiency and productivity, particularly in business contexts (Meyer 2020), but also for political organisations and public administration (Klenk et al. 2020). In this article, we empirically examine the tensions between digitalisation and legal requirements within the Bundeswehr (German Armed Forces) and ask how this large public organisation navigates competing expectations. We then discuss some broader implications of these approaches beyond the organisation itself. Our focus lies on the administrative sector of the Bundeswehr, rather than the operational front of its military activities. The Bundeswehr is particularly well-suited for studying tensions between law and digitalisation. Digitising administrative processes is often viewed as a necessity, since the Bundeswehr's civil administration – like other government institutions – is widely regarded as lagging behind contemporary standards. In other words, digitalisation is crucial for the military to remain aligned with broader societal developments. At the same time, the Bundeswehr derives its legitimacy from its foundation in the constitutional state, as outlined in Articles 87a and 87b of the German Basic Law. Its structure as a parliamentary army with civilian administrative components influences not only the mandate for foreign missions (BMVg 2016: 109) but also internal processes throughout the organisation – all of which pre-suppose strict compliance with numerous legal regulations.

More generally, this article contributes to the conceptualisation of organisations as mediators of competing societal expectations (Besio and Meyer 2015, 2022a, 2022b) by highlighting legal expectations as a critical but underexamined source of tension. Our findings reinforce existing research, which suggests that organisations do not always need to innovate to manage heterogeneous logics successfully. Instead, traditional organisational structures and processes, when applied appropriately, can serve as highly effective tools for reconciling conflicting demands. In this sense, our study

supports the view that organisations are highly skilled at productively recombining competing demands (Besio and Meyer 2015, 2022a, 2022b).

This article is structured as follows: In section 2, we outline a framework for how organisations navigate heterogeneous expectations. Section 3 introduces our research methods. Section 4 examines the specific tensions between digitalisation and legal requirements in the Bundeswehr, followed by two empirical examples illustrating how the organisation responds (section 5). We then discuss organisational and supra-organisational consequences of these strategies (section 6) before summarising our key contributions (section 7).

2. How organisations navigate heterogeneous expectations

As powerful actors in the modern age, all organisations – whether businesses, NGOs, or government bodies – face a multitude of expectations, ranging from economic demands to legal requirements and moral imperatives. These expectations are often complex and contradictory, leading to internal tensions and conflicts (e.g. Battilana and Dorado 2010; Besharov and Smith 2014; Gluch and Hellsvik 2023; Kraatz and Block 2010; Pache and Santos 2010). In some cases, competing expectations can even threaten an organisation's identity. For example, in the non-profit sector, increasing pressure for cost-efficiency and professionalisation has been shown to clash with humanitarian goals and voluntary commitment (Hwang and Powell 2009; Pache and Santos 2010), potentially undermining an NGO's core mission and credibility.

At the same time, research has shown that organisations are highly resourceful in managing heterogeneous expectations (Besio and Meyer 2015; Besharov and Smith 2014; Lindberg 2014; Matinheikki et al. 2019; McPherson and Sauder 2013). In many cases, organisations do not merely cope with competing demands but actively mediate between them, sometimes even benefitting from their recombination (Besio and Meyer 2015; Besharov and Smith 2014; McPherson and Sauder 2013). This capacity is particularly evident in the non-profit sector, where studies have highlighted a specific type of organisation – the hybrid organisation – as especially well-equipped to navigate competing demands (e.g. Alexius and Furusten 2019; Florin et al. 2011; Pache and Santos 2013). Social enterprises and cooperatives, for instance, are examples of hybrid organisations which use

participatory structures to balance ecological and economic objectives, enabling them to simultaneously pursue multiple goals.

While many studies focus on the unique adaptability of hybrid organisations, we argue that established organisational structures are often equally effective in managing competing expectations. To support this perspective, we adopt a systems-theoretical lens, viewing organisations as inherently multi-referential (Wehrsig and Tacke 1992), polyphonic (Andersen 2003), or multifunctional (Will et al. 2018). Within this framework, we draw on two key concepts: respecification (Luhmann 1994 [1988], pp. 302–323, 2002, pp. 143–147; Besio and Meyer 2015) and recombination (Besio and Meyer 2022a, 2022b) to explain how organisations process and navigate diverse expectations.

2.1. Organisational respecification and recombination

Respecification describes how organisations translate social expectations into concrete, actionable formats, making them "decidable" within their internal decision-making processes. Each organisation processes external demands in their own distinct way. For instance, educational institutions, i.e. different educational authorities and schools, implement broad educational expectations differently depending on their governance structures (Luhmann 2002, pp. 143–147). Similarly, the concept of sustainability is interpreted and applied differently by municipal utilities, large energy corporations, and smaller energy cooperatives (Ametowobla et al. 2021). Even legal expectations – despite being explicitly defined – leave room for interpretation, adaptation, and evolution within each organisation (Apelt et al. 2020). For example, studies on the implementation of U.S. civil rights legislation of the 1960s have demonstrated how laws are not merely adopted but actively shaped by the organisations implementing them (Edelman 1990, 1992, 1999, 2007).

Of central interest to our study is the fact that organisations often respecify multiple, heterogeneous expectations simultaneously, leading to recombination (Besio and Meyer 2022a, 2022b). During recombination, different expectations are not only interpreted (respecified) but also weighed against each other and recalibrated when necessary. When successful, recombination ensures an organisation's continued decision-making capacity in the face of competing demands.

To achieve recombination, organisations can adopt creative solutions and introduce new techniques, but they can also rely on their conventional structures – such as roles, programmes, departmental divisions, or formal and informal boundaries. For instance, they may segregate conflicting expectations, keeping them operationally separate or housing them in different departments, or they may overlook contradictions and emphasise compatible elements to integrate diverse expectations more fluidly (Besio and Meyer 2022a, 2022b).

2.2. Beyond organisational boundaries: the societal impact of recombination

Importantly, organisational recombination does not remain confined within the organisation itself – it can extend beyond organisational boundaries and influence broader societal dynamics (Besio and Meyer 2015, 2022a, 2022b). For example, the recombination of economic and ecological expectations through innovative green technologies can influence broader market developments. From a systems theory perspective, this organisational capacity to recombine societal expectations has been discussed as a form of structural coupling between different systems (Lieckweg 2001; Luhmann 1997, pp. 784–785 for universities). Without delving into the complexities of structural coupling, it is essential to note that organisational recombination has diffusion power: it can be observed, copied, adapted, or critiqued by other organisations – within networks, organisational fields, and functional systems. The outcomes of these diffusion processes can be diverse and trigger both symbolic and structural transformations beyond the organisation itself.

Under certain circumstances, organisations actively seek to shape external expectations. When organisations attempt to stabilise or redefine societal expectations, they act as "institutional entrepreneurs" (DiMaggio 1988) influencing both the expectations placed on them and the ways in which these expectations interrelate. Such active attempts to shape societal expectations often include advertising and/or lobbying activities. However, even when organisations do not deliberately pursue change, their recombination efforts can passively permeate system boundaries, as external actors react to these organisational strategies – sometimes consciously, sometimes unconsciously.

In both active and passive cases, organisational actions remain embedded within broader societal and evolutionary processes, which in turn co-determine the impact of each recombination. This perspective aligns with theoretical models that view both deliberate shaping and evolutionary dynamics as key drivers of societal change (Abrutyn and Van Ness 2015; Abrutyn and Turner 2022; Mölders 2023).

2.3. Conceptualising law and digitalisation

From a systems theoretical perspective, legal regulations represent well-defined normative expectations – target requirements that are not immediately changed when disappointed (Luhmann 1993). Law stabilises these expectations and plays a central role in identifying wrongdoing and regulating conflict. However, regulating complex and uncertain issues remains a challenge, especially when the subject matter is still evolving. These challenges have been widely discussed in the context of environmental regulation, which is often perceived as complex, at times even contradictory in itself, and prone to becoming quickly outdated – rendering it insufficient for guiding day-to-day problem-solving (Ladeur 1995; Trute et al. 2004). Similar issues arise in the regulation of digitalisation, a broad and multifaceted societal process that encompasses not only technological developments, but also shifts in social structures and practices and is accompanied by a range of expectations as well as specific concerns and fears.

In particular, organisations face a host of expectations: they are expected to modernise, enhance the efficiency of decision-making, and introduce comprehensive information-processing systems that complement or even replace human activity. Digitalisation presents a significant challenge to organisational structures, disrupting power dynamics, shifting responsibilities, and calling into question established legitimation strategies (Besio et al. 2022; Büchner 2018; Constantiou and Kallinikos 2015; Faraj et al. 2018).

Moreover, specific tensions arise in organisations because digitalisation affects structures and processes in ways that challenge existing legal regulations – which organisations are nonetheless required to follow. At the same time, new challenges are emerging that have not yet been regulated. Key issues affecting all organisations, such as data protection, transparency, or accountable decision-making, arguably require reframing in light of digital developments. Yet the legal system requires time and specific procedures to adapt, while digitalisation is unfolding now, in real time. Organisations

must therefore find ways to navigate these tensions in their day-to-day operations. Our analysis offers examples of such tensions and illustrates how the Bundeswehr, as a public organisation, responds to them in a pragmatic manner.

3. Method

In the following, we analyse the tensions that arise between expectations regarding digitalisation and legal requirements, drawing on empirical material from our ongoing project, *Leadership cultures in the digital age. The case of the Bundeswehr*[1]. This project examines how organisational structures and cultures within the Bundeswehr influence digitalisation – particularly the introduction and use of data-intensive algorithms – and how, in turn, digital transformation impacts these cultures and processes.

The research design for this project is qualitative. At the outset, we analysed strategic documents addressing the digital transformation within the BMVg's scope of responsibility, encompassing both the military sector and civil administration. From these strategy papers, we identified the objectives for digitalisation, as well as the approaches and plans related to big data and data analytics.

In the second phase, expert interviews (Helfferich 2014) were conducted to explore digitalisation efforts in the Bundeswehr at a strategic level, with a particular focus on the introduction and use of software applications for processing large amounts of data. To this end, 20 experts involved in shaping the digital transformation of the Bundeswehr were interviewed. Following the evaluation of these interviews, 13 topic-centred interviews were conducted in three selected areas of the Bundeswehr, focusing on the implementation and use of specific data-intensive tools. Additionally, we conducted focussed participant observations (Knoblauch and Vollmer 2022) in meetings and workshops, systematically documenting interactions, discussions, and decision-making processes related to digitalisation efforts. All units studied are part of the civil administration within the BMVg's division and concerned with planning and/or controlling activities.

Using qualitative content analysis (Mayring 2014), we examined obstacles and challenges associated with digitalisation. Our theoretical lens

1 The project "Leadership Cultures in the Digital Age. The case of the Bundeswehr" is funded by dtec.bw – Centre for Digitalisation and Technology Research of the Bundeswehr. dtec.bw is funded by the European Union – NextGenerationEU.

allowed us to identify social expectations that counteract digital transformation. The empirical data revealed that legal concerns and lengthy legal reviews are perceived as significant barriers to a rapid and comprehensive digital transformation. Simultaneously, we observed how the organisation manages these contradictions through respecification and recombination. The following section summarises these findings.

4. Tensions between law and digitalisation in the Bundeswehr

As noted earlier, the Bundeswehr relies on social legitimisation. To this end, it seeks to align with societal expectations, particularly in its use of digital applications. In the BMVg's strategy papers, digitalisation is framed as a pathway to modernisation and enhanced problem-solving capability for the Bundeswehr (BMVg 2017, 2019, 2023). This applies to both combat readiness and administrative efficiency. The goal is to implement digitalisation across all military domains – land, air, sea, and in cyber and information spaces – as well as "[t]o drive forward the digital transformation of the Bundeswehr's administrative operations in order to ensure, further expand and make the administration's ability to work more efficiently under the demands of digital change" (BMVg 2022, p. 3; BMVg 2023, p. 3).

Digitalisation is understood as a cross-cutting task spanning both military and administrative domains: "In the military sector, the armed forces hope that AI will facilitate and optimise command, reconnaissance, operations and support processes, which should ultimately lead to an advantage in combat" (Lammert and Koch 2023, p. 3). More broadly, digitalisation is mainly perceived as a means of expanding the organisation's knowledge base, thereby optimising existing processes (BMVg 2017, 2019, 2023). It is also seen as a potential solution to accelerate traditionally slow processes, such as procurement (Lammert and Koch 2023, p. 4).

The interviewees clearly articulated the social pressure to keep pace with broader societal developments in digitalisation: "I think we have to [look] within the Bundeswehr at how digitalisation fits in with our rigid procedures in the sense of long-lasting procedures [...] How can we perhaps speed up our procedures so that we can simply keep pace with the digitalisation that is taking place in society in general?" (EI4, lines 420–430). Many interviewees expressed the view that the organisation has significant ground to cover in terms of digitalisation and highlighted the growing

demand – especially from younger generations – for the Bundeswehr to catch up (see for example EI8, lines 194–199; EI11, lines 183–187).

However, these expectations often conflict with the complex legal framework that the Bundeswehr, as a public organisation, must adhere to. The fundamental tension between the push for rapid and comprehensive di-gitalisation and the rigidity of existing legal requirements is particularly pronounced. The Bundeswehr must navigate an intricate network of regulations, including laws on data privacy, security, financing, data access, and transparency. Additionally, the organisation is bound by budgetary and public procurement law, administrative and civil service regulations, military laws, and the Military Personnel Working Hours Ordinance. Beyond federal laws, European legal frameworks also apply. To complicate matters further, the legal framework has remained largely unchanged in response to digitalisation. Legal standards originally designed for the land, air, and sea domains have simply been extended to the cyber and information space domain, without significant adaptation (TI4, lines 1143–1148).

The challenges arising from the collision between stiff legal requirements and the need for rapid digitalisation are numerous. One frequently cited example in our interviews is the complicated procurement process, which we examine as our first example. Procurement involves adhering to numerous legal regulations which, according to the interviewees, starkly contrast with the rapid pace of digital innovation. Not only are the internal procedures for securing funds particularly time-intensive, but the planning and administration of these funds are equally protracted. This is due to the need to ensure that the financial resources, sourced primarily from taxpayers, are used responsibly and effectively. Consequently, acquiring new technology – even when the need and potential supplier are clear – is a complex undertaking.

Another key challenge arises from EU public procurement law, which mandates a lengthy tendering process that involves soliciting, reviewing, and selecting tenders. Additionally, the internal processes for allocating funds are inherently complex (BMVg 2024). Ideally, these procedures, from planning to budgeting, should take one year, but in practice, they often take much longer (TI12, line 48). While decisions on requirements are initially made at a decentralised level within various organisational areas, all projects are eventually consolidated into the defence budget. During annual programme negotiations, these projects must compete for funding against other initiatives. Furthermore, all organisational areas and departments that will use the technology must be involved in the approval process,

a requirement which is highly time-consuming. Delays and bottlenecks can occur because different organisational areas have distinct interests and responsibilities, leading to divergent evaluations of specific requirements, such as security concepts (TI6, lines 910–931). In addition, various legally regulated considerations – such as military security, classified information, data privacy, occupational health and safety, standardisation and IT management, and sustainability – must be accounted for, often requiring input from multiple units (BMVg 2024). These layers of requirements starkly contrast with the fast-paced nature of technological developments, making it nearly impossible to introduce technologies swiftly.

Although there are ongoing efforts to reform these processes, progress remains slow. Resistance to change is particularly evident in long-established procedures, such as Customer Product Management (CPM), where entrenched practices hinder transformation (EI9, lines 68–93; EI6, lines 706–707).

The second key area of tension revolves around legal requirements for security and data privacy. Several challenges were highlighted in this regard. For example, enhanced security measures, such as encryption, often hinder and slow down systems (TI4, line 661). Furthermore, civilian manufacturers of digital applications are subject to strict security requirements due to concerns about external access to sensitive internal Bundeswehr data (TI4, line 833). Additionally, certain data security regulations limit the usability of data, creating further complications (TI4, lines 1120–1154). The Bundeswehr generates vast amounts of data, some of which is available in decentralised formats across various platforms. Many interviewees emphasised that making this data more accessible and usable could significantly enhance organisational efficiency. However, achieving this is challenging due to both technical issues and legal constraints. As one interviewee explained, creating "[an] integrated data pool that can be accessed with all the challenges that this entails – data privacy, information security, military security – is difficult. Balancing protection and usability – especially with designing all the authorisations is a major challenge" (EI7, lines 571–572). For example, in the area of personnel management, strict data privacy laws prevent the use of personalised data for recruitment purposes. Consequently, applicants can only be approached in general terms, such as targeting the broad audience of young graduates who have just left school. These limitations on data use significantly restrict the Bundeswehr's ability to personalise recruitment efforts and build stronger connections with potential candidates (field notes, meeting on 06.12.2023).

Moreover, certain units exhibit what has been described as an "administrative mentality" (Kühl/Schütz 2018), prioritising legal correctness over practical expediency. This mentality often shifts the focus from achieving organisational goals to ensuring that processes remain legally impeccable, as well as safeguarding the personal security of those responsible (EI13, lines 398–410; EI72, lines 32–234; field notes, meeting on 06.12.2023). As one interviewee observed, "[In] the area [...] of civilian administration, this willingness [to embrace change] is still rather reserved in some cases [...] [Administrators] are socialised to prioritise legally secure actions above all else. That's not a bad thing per se – it's actually good that we live in a state where the administration wants to act in accordance with the law, but it often serves as an excuse for delaying or resisting the introduction of digital solutions" (EI6, lines 977–983).

This "defensive administration" (cf. De Lucia in this volume) that arises from the administrative mentality offers little scope for flexibility or the kind of "useful illegality" (Luhmann 1999 [1964], S. 304–313; Kühl 2020) that could facilitate targeted digitalisation. The resulting tensions are evident between groups that adhere strictly to legal norms and those advocating for faster, more streamlined processes. These fundamental divides exist between civil servants and soldiers, older and younger generations, tech-savvy and non-tech-savvy professions, and departments or organisational units (EI10, lines 399–401; EI13, lines 143–145; EI21, lines 173–193; EI4, lines 160–164, EI4, lines 307–313). Legal departments, in particular, are perceived as especially conservative and resistant to change, with some interviewees even labelling them "enemies of digitalisation" (field notes, meeting on 06.12.2023).

5. Recombining digitalisation and legal requirements

While tensions arising from competing requirements are evident and frequently addressed in the Bundeswehr, they do not lead to a complete standstill of digitalisation efforts. Instead, the organisation manages to recombine conflicting expectations by leveraging typical organisational structures and dynamics to reconcile these heterogenous demands.

One prominent approach is the informal use of technologies perceived as essential for daily operations. For example, private technology – such as personal mobile phones and laptops – is frequently used for work purposes. This widespread "bring your own device" practice reflects the practical ne-

cessity of bridging the gap between organisational needs and the limitations of slow procurement processes. During several interviews, participants suggested developing secure software solutions that would allow private devices to be used safely for work tasks.

Another example of informal adaptation relates to the retention of equipment, including digital devices, after their official use – for example for an exercise. One interviewee highlighted this practice, stating: "[I don't] have a huge interest in handing in the material because I might not get it back. So it's currently possible for me – it's a breach of duty, but it has to be identified first. And that is difficult at some point with the amount of data" (TI4, lines 336–340).

These informal practices demonstrate a bottom-up approach to navigating the challenges posed by slow procurement and rigid legal requirements. However, they remain isolated actions and do not contribute to broader, standardised solutions needed to address these issues at the organisational level (EI18, lines 441–454).

While informal practices offer one way of navigating tensions between digitalisation and legal requirements, the Bundeswehr also employs more structured approaches aimed at recombining conflicting expectations. These approaches can be understood as either forms of *decoupling* (or loose coupling) or *translation through temporal prioritisation*.

5.1. Experimental spaces as a form of loose decoupling

One prominent example of decoupling is the creation of "experimental spaces". These are used to separate contradictory expectations and manage them in isolation – at least temporarily (Besio and Meyer 2015, 2022b). Recombination occurs here because expectations related to digitalisation are addressed within a defined space where several legal requirements are temporarily suspended. Our observations on experimental spaces within the Bundeswehr echo broader findings on innovation and digitalisation processes in organisations (Büchner 2018; Engels et al. 2019). The Bundeswehr's strategic policy documents underscore the importance of rapid testing and iteration of new technologies and processes with potential users (BMVg 2019, p. 8). Experimental spaces are designed to facilitate this by allowing exploration, discussions, development, and prototyping of digital concepts without their immediate integration into the broader organisation or the burden of fulfilling stringent legal requirements.

These test environments are intentionally shielded from the complexity of day-to-day business. For instance, they bypass lengthy financial audits or use anonymised datasets to trial applications before subjecting them to extensive legal reviews. A prominent example is the *Cyber Innovation Hub*[2], which develops diverse innovation projects tailored for the Bundeswehr. Among its initiatives are the Augmented Common Operation Picture (ACOP), which tests the realistic 3D operational imagery, and the Crowd Information Platform (CIP), which trials the extraction and use of social media data for geo-factor analysis. These projects allow the Bundeswehr to collaborate with start-ups and adopt external innovations without the immediate constraints of transferability or legal conformity.

Similar experimental units are emerging in other parts of the organisation. For instance, the Human Resources Laboratory (HR Lab) at the Federal Office of Personnel Management (BAPersBw) serves as a testbed for personnel management innovations[3]. Here, automated data analysis is explored as a means to improve processes such as training course allocation. Employees in HR have expressed frustration over redundant training assignments, and dissatisfaction with their own decisions, since they believe the relevant information is there, but they lack access to it. Automated solutions are seen as a remedy to such issues, because "IT systems 'know' where you have been and when on which course. Today, people attend the same course 20 times. AI would allow the modularisation of courses and end the excessive repetition of courses" (field notes, meeting on 11.04.2022). However, HR units face particularly strict data protection regulations, which pose significant challenges to implementing these innovations. A legal examination of whether, and under what conditions, automated data processing can be permitted is particularly complex in this area, as it must be determined whether such processes comply with the dual control principle. (field notes, meeting on 23.05.2022). Despite these challenges, the HR Lab enables the development and testing of prototypes using anonymised data sets. Recognising the importance of such innovation spaces, efforts are underway to expand them by establishing transitional spaces between experimentation and organisation-wide implementation. These transitional spaces are intended to serve as a "bridge", supporting the gradual scaling of

2 https://www.cyberinnovationhub.de, last accessed on 2 August 2024.
3 https://www.afcea.de/fachausstellung-2022/aussteller-2022-firmenprofile-kompetenzen/rheinebene/r-63.html, last accessed on 2 August 2024.

innovations. While these spaces are still in the planning stage, their development is being actively promoted (field notes, meeting on 11.04.2022).

Beyond their role in testing digitalisation initiatives outside the confines of major administrative or legal constraints, experimental spaces also serve as a corrective to the Bundeswehr's centralised organisational tendencies. Traditionally, central offices are established to handle specific tasks, often stripping decentralised units of their resources and responsibilities – a shift that is perceived as problematic beyond just digitalisation. One interviewee captured this concern:

"And they will realise everywhere: 'Oh, unfortunately no, no responsibility, no competence, no money' – tasks, expertise, responsibility. The triad. Then they look to see what else is in the [organisational areas], in terms of tasks, competencies, responsibility" (TI12, lines 592–595).

By contrast, experimental spaces counterbalance this tendency by granting decentralised units new opportunities to test digital processes autonomously. This approach not only fosters innovation at multiple levels of the organisation but also encourages a bottom-up contribution to digital transformation – something often hindered by rigid, centralised structures.

5.2. Translation through prioritisation

A second strategy for managing tensions between digitalisation and legal constraints involves translation through prioritisation. This form of recombination entails the selective implementation of digitalisation-related and legal aspects that are mutually compatible while deferring or downplaying those that are not. In the spirit of translation as described by Zilber (2009), translation is possible because the social expectations surrounding digitalisation are often broad and ambiguous, allowing organisations to emphasise certain elements while setting aside others – at least temporarily.

In the Bundeswehr, digitalisation is often framed in strategy documents as a broad concept incorporating a whole range of technical and social elements: it encompasses not only integrated and efficient information and communication networks, but also mobile and demand-oriented workplaces, data analytics, AI-supported applications, and even the development of a digital mindset (BMVg 2017, 2023). This vagueness enables flexibility in implementation: rather than attempting to meet all digitalisation demands simultaneously, the organisation can prioritise aspects that align most easily

with existing structures and legal frameworks while postponing more complex or controversial elements.

While digitalisation expectations provide flexibility in interpretation, legal requirements remain non-negotiable. One significant challenge that emerges in this context is the issue of transparency and traceability in decision-making, particularly concerning AI-based automated systems. One interviewee formulated the dilemma as follows:

"We always want to know why something is like this. However, when you analyse large amounts of data, the question of causality is not always obvious, but [...] [we only recognise] the correlation and that is [not compatible] with our previous understanding, where we can always derive an effect or explain an effect based on certain causes [...]. This is a very difficult thing mentally and possibly also a difficult thing legally" (EI7, lines 226–237).

In administrative bodies, the principle of traceability is fundamental, as it ensures accountability and serves as the basis for attributing legal responsibility (Klenk et al. 2020). The use of AI, however, introduces a black box problem (Beer 2016), especially when AI-supported automated decision-making systems are at play. This creates a core tension: digital solutions are expected to optimise and improve work and decision-making processes, yet they must also preserve transparency and explainability to maintain legal compliance.

One pragmatic response to this fundamental challenge is to prioritise digitalisation efforts that align with existing legal frameworks while postponing more complex applications. Solutions involving AI and automated decision-making – where transparency remains a major concern – are often delayed and viewed as a future possibility, whereas less legally contentious digital applications can be introduced more rapidly. As a result, the Bundeswehr digitises in certain areas, but not in all areas that are considered promising. A clear example of this selective digitalisation is the Bundeswehr's swift implementation of home office workplaces during the Covid-19 crisis. The swift rollout of equipment for remote work was in line with interpretations of digitalisation that were both easy to implement and legally compliant. By contrast, AI-based decision-making tools remain controversial and are largely deferred. The Covid-19 crisis was undoubtedly an external event that acted as a catalyst for the digital transformation (BMVg 2022, p. 3). It also created opportunities to temporarily set aside certain concerns, for example those related to working time regulations. From our perspective, however, it is particularly relevant to note how the organization made use of the social leeway created by the Covid-19 crisis

to translate preexisting expectations of digitalisation by prioritising certain aspects of digital transformation over others.

6. Discussion: Organisational and supra-organisational consequences

The approaches described – experimental spaces and selective prioritisation of specific forms of digitalisation – are not without criticism within the organisation. Experimental spaces in particular support the absorption of innovative impulses. One of the key challenges is the so-called "valley of death" (BMBF 2023, p. 25), referring to the difficulty of transitioning prototype solutions developed in experimental spaces into the wider organisation. Many innovative projects then remain isolated, leading to concerns about fragmentation, incompatibility, and a lack of coherence (EI18, lines 264–265). Both approaches raise doubts as to the overarching digital strategy – or lack thereof. Above all, it is unclear whether digital initiatives are truly aligned with strategic organisational goals and concrete organisational needs (EI21, lines 217–228).

Despite these concerns, we argue that these forms of recombination offer valuable ways of navigating complex social expectations. They enable organisations to advance digitalisation efforts even under restrictive legal conditions. Such recombinations are significant not only because they facilitate concrete examples of successful digitalisation, but also because they contribute to skill development and a cultural shift towards integrating digital technologies – even when implemented at a later date. Moreover, through these recombinations, organisations actively shape the direction of digitalisation by strengthening certain forms while sidelining others. This dynamic is particularly observable in the rapid and widespread introduction of work laptops and home office solutions, contrasted with the slower adoption of AI applications due to legal uncertainties surrounding automated decision-making.

The forms of organisational recombination described have implications beyond the Bundeswehr itself. Even if certain digital projects and experimental solutions are not fully implemented internally, they may still become available to external actors. While the Bundeswehr remains in the early stages of data analytics and big data adoption, interviewees highlighted existing "lighthouse projects" that demonstrate progress in data-driven analysis and decision-making (EI6, lines 199–206). Such projects contribute to the organisation's external visibility, positioning it as an innova-

tive player in digitalisation whose approaches may be observed, discussed, or even copied by other social actors.

Protected spaces like the Cyber Innovation Hub serve not only as internal innovation labs, but also function as forums for engagement with external partners from business and civil society. Some organisational members believe that, through these activities, stakeholders may come to view the Bundeswehr as a catalyst for broader digital transformation, influencing the digital ecosystem by shaping technological development beyond its organisational boundaries (field notes, meeting on 03.06.2022).

Organisational recombinations also have the potential to influence legal regulations, particularly in areas that are not yet specifically regulated. A major source of tension between regulations and digitalisation efforts emerges when existing legal frameworks are applied to digital contexts without adaptation, a move that is often seen as limiting, especially in relation to the potential of automation of decision-making. As one interviewee explained:

"But if I still assume today that cyberspace is something that's more or less physical like – land, air, sea – and I lay my legal framework on it, even all the technical feasibility is of no use" (TI4, lines 1120–1154).

In these complex areas, organisational recombinations can introduce specific technical solutions and, in doing so, create "digital facts" that necessitate subsequent legal reflection. Moreover, organisations can proactively establish internal norms that may later shape or influence legal frameworks. For example, internal standardisation efforts – such as the codification of home office policies or guidelines for automated data processing – can begin within specific units and gradually gain formal and informal traction across the organisation. In one observed meeting, a cost management guideline was discussed with the request that staff apply its principles to other, similarly defined problems in areas such planning or human resources (field notes, meeting on 23.05.2022). Over time, such internal governance mechanisms may feed into broader regulatory processes, demonstrating how organisations do not merely comply with legal frameworks but actively contribute to their development with specific technical solutions but also with their regulation efforts.

7. Concluding remarks

While much of the research on organisational responses to heterogeneity focuses on economic expectations, our findings highlight the similarly significant tensions arising from legal constraints. In our study we focused on how laws can act as structural barriers to digitalisation projects, particularly in public organisations. The challenges in digitalising the Bundeswehr's administration exemplify this issue. Specifically, examining how organisations navigate such tensions offers valuable insights into when and how they can function despite legal frameworks that neither align with their objectives nor reflect their operational realities. A broader comparison of these mechanisms across different conflict types remains a topic for future research.

Our analysis demonstrates that conflicting expectations – even legal ones – do not necessarily paralyse organisations. Instead, organisations can develop responses within their existing structures and processes. In our case, we observed two key forms of recombination: the establishment of dedicated innovation units (experimental spaces) and the selective prioritisation of legally compliant digitalisation initiatives. The latter approach represents a specific form of translation, allowing the organisation to advance digitalisation without directly challenging legal constraints. Importantly, this capacity for productive recombination exists even in traditionally bureaucratic organisations such as the Bundeswehr's administration – contrary to the assumption that only hybrid or highly flexible organisations can adapt in this way.

Finally, it should be noted that organisational responses to digitalisation are shaped by internal structures and resource allocation. The Bundeswehr, as a large, state-funded organisation, has the capacity to establish experimental spaces and fund flagship projects. Yet resource allocation is not neutral: high-profile, costly projects linked to military processes are more likely to receive funding, whereas lower-cost administrative digitalisation projects often struggle to gain support. This illustrates a broader issue: the recombination of heterogeneous expectations is not a free-floating process but one that is deeply embedded in organisational priorities and decision-making structures.

Our conceptual approach reframes what are often perceived as fragmented or inconsistent digitalisation efforts as purposeful responses to complex social expectations. This perspective becomes particularly important when considering supra-organisational effects. As we have shown, organisations

do not merely adopt digitalisation – they actively shape it. They do so by pioneering innovation through flagship projects, introducing specific technologies, and, crucially, creating "digital facts" that push legal reflection forward. In some cases, organisations can even anticipate legal regulations, developing internal standards and policies that later influence formal legislation.

With these insights, we contribute to a broader understanding of the role of organisations in transformation processes within society. The effects of organisational recombinations remain ambivalent – the benefits and drawbacks of specific forms of digitalisation are not evenly distributed and vary across contexts. This implies that a central question remains open: to what extent do specific digitalisation projects genuinely serve both the needs of organisations and those of society? Answering this question requires further empirical research, particularly on the long-term implications of digitalisation efforts and their social and organisational consequences.

Literature

Abrutyn, Seth, and Justin Van Ness. 2015. The Role of Agency in Sociocultural Evolution: Institutional Entrepreneurship as a Force of Structural and Cultural Change. *Thesis Eleven* 127 (1): 52–77.

Abrutyn, Seth, and Jonathan H. Turner. 2022. The First Institutional Spheres in Human Societies. Evolution and Adaptations from Foraging to the Threshold of Modernity. London, New York: Routledge.

Alexius, Susanna, and Staffan Furusten. 2019. *Managing Hybrid Organizations*. Cham: Palgrave Macmillan.

Ametowobla, Dzifa, Nadine Arnold, and Cristina Besio. 2021. Nachhaltigkeit organisieren – Zur Respezifikation von Nachhaltigkeit durch verschiedene Organisationsformen. In *Soziologie der Nachhaltigkeit*, Hrsg. SONA Netzwerk Soziologie der Nachhaltigkeit, 355–376. Bielefeld: transcript Verlag.

Åkerstrøm Andersen, Nils. 2003. Polyphonic Organizations. In *Autopoietic Organization Theory. Drawing on Niklas Luhmann's Social Systems Perspective*, Eds. Tore Bakken, and Tor Hernes, 151–182. Copenhagen: Copenhagen Business School Press.

Apelt, Maja, Henrik Dosdall, and Ray Trautwein. 2020. Wie das Recht in die Organisation kommt – Die Akteur*innen des Antidiskriminierungsrechts in männlich geprägten Organisationen. *KJ Kritische Justiz* 4: 445–456.

Battilana, Julie, and Silvia Dorado. 2010. Building Sustainable Hybrid Organizations: The Case of Commercial Microfinance Organizations. *Academy of Management Journal* 53 (6): 1419–1440.

Battilana, Julie, Marya L. Besharov, and Bjoern Mitzinneck. 2017. On hybrids and hybrid organizing: A review and roadmap for future research. In *The SAGE Handbook of Organizational Institutionalism*, Hrsg. Royston Greenwood, Christine Oliver, Thomas B. Lawrence, and Renate E. Meyer, 128–161. London: Sage Publications.

Beer, David. 2016. The social power of algorithms. *Information, Communication & Society* 20 (1): 1–13.

Besharov, Marya L., and Wendy K. Smith. 2014. Multiple Institutional Logics in Organizations: Explaining Their Varied Nature and Implications. *Academy of Management Review* 39 (3): 364–381.

Besio, Cristina, and Uli Meyer. 2015. Heterogeneity in world society. How organizations handle contradicting logics. In *Isomorphism and Differentiation. From Globalization(s) to World Society*, Eds. Boris Holzer, Fatima Kastner, and Tobias Werron, 237–257. London/New York: Routledge.

Besio, Cristina, und Uli Meyer. 2022. Gesellschaftliche Wirkung organisationaler Re-Kombinationen. Die Neuausrichtung von Gewerkschaften und Genossenschaften jenseits der Mitgliedervertretung. *Soziale Welt* 73 (3): 509–540.

Besio, Cristina, und Uli Meyer. 2022b. Organisationale Re-Kombination und sozialer Wandel: Eine Forschungsagenda. *Soziale Systeme* 25 (2): 436–456.

Besio, Cristina, Cornelia Fedtke, und Andrea Pronzini. 2022. Veränderungen organisationaler Legitimationsmuster durch Digitalisierung. In *Organisationen in Zeiten der Digitalisierung*, Hrsg. Corinna Onnen, Rita Stein-Redent, Birgit Blättel-Mink, Torsten Noack, Michael Opielka, und Katrin Späte, 63–81. Wiesbaden: Springer Fachmedien Wiesbaden.

Büchner, Stefanie. 2018. Zum Verhältnis von Digitalisierung und Organisation. *Zeitschrift für Soziologie* 47 (5): 332–348.

Bundesministerium für Bildung und Forschung, BMBF. 2023. Zukunftsstrategie Forschung und Innovation. https://www.bmbf.de/SharedDocs/Publikationen/de/bmbf/1/730650_Zukunftsstrategie_Forschung_und_Innovation.pdf?__blob=publicationFile&v=4. Zugegriffen: 22. Juli 2025.

Bundesministerium der Verteidigung, BMVg. 2016. Weißbuch zur Sicherheitspolitik und zur Zukunft der Bundeswehr. https://www.bmvg.de/resource/blob/13708/015be272f8c0098f1537a491676bfc31/weissbuch2016-barrierefrei-data.pdf. Zugegriffen: 22. Juli 2025.

Bundesministerium der Verteidigung, BMVg. 2017. Strategische Leitlinie Digitalisierung. https://www.Bundeswehr.de/resource/blob/66394/4bbd6bd8e0fe81df975480a081bd1a37/20190703-strategische-leitlinie-digitalisierung-data.pdf. Zugegriffen: 22. Juli 2025.

Bundesministerium der Verteidigung, BMVg. 2019. Umsetzungsstrategie Digitale Bundeswehr. https://www.bmvg.de/de/themen/ruestung/digitalisierung/umsetzungsstrategie-digitale-Bundeswehr. Zugegriffen: 22. Juli 2025.

Bundesministerium der Verteidigung, BMVg. 2022. 4. Bericht zur digitalen Transformation des Geschäftsbereichs des Bundesministeriums der Verteidigung. Berlin. https://www.bmvg.de/resource/blob/5666580/977aa3be46b067bdbcecd3d9d724b157/download-4-digitalbericht-data.pdf. Zugegriffen: 22. Juli 2025.

Bundesministerium der Verteidigung, BMVg. 2023. Fünfter Bericht zur digitalen Transformation des Geschäftsbereichs des Bundesministeriums der Verteidigung. Berlin. https://www.bmvg.de/resource/blob/5666554/469370412ca91daa3b6798beccf296c3/download-5-digitalbericht-data.pdf. Zugegriffen: 22. Juli 2025.

Bundesministerium der Verteidigung, BMVg. 2024. Projektbezogene Bedarfsdeckung und Nutzung. https://www.Bundeswehr.de/resource/blob/133334/d5cdf4ad42eaa94618f429ad06a684e3/pbn-data.pdf. Zugegriffen: 22. Juli 2025.

Bromley, Patricia, and John W. Meyer. 2015. *Hyper-Organization. Global Organizational Expansion*. Oxford: Oxford University Press.

Constantiou, Ioanna D., and Jannis Kallinikos. 2015. New Games, New Rules: Big Data and the Changing Context of Strategy. *Journal of Information Technology* 30 (1): 44–57.

DiMaggio, Paul J. 1988. Interest and Agency in Institutional Theory. In: *Institutional Patterns and Culture. Culture and Environment*, Eds. Lynne G. Zucker, 3–22. Cambridge: Ballinger Publishing Co.

Edelman, Lauren B. 1990. Legal environments and organizational governance. The expansion of due process in the American workplace. *American Journal of Sociology* 95 (6): 1401–1440.

Edelman, Lauren B. 1992. Legal ambiguity and symbolic structures: Organizational mediation of civil rights law. *American Journal of Sociology* 97: 1531–1576.

Edelman, Lauren B. 2007. Overlapping Fields and Constructed Legalities. The Endogeneity of Law. In *Private Equity, Corporate Governance and the Dynamics of Capital Market Regulation*, Hrsg. Justin O'Brien, 55–90. Melbourne: World Scientific Publishing.

Edelman, Lauren B., Christopher Uggen, and Howard S. Erlanger. 1999. The endogeneity of legal regulation. Grievance precedures as rational myth. *American Journal of Sociology* 105: 406–454.

Engels, Franziska, Alexander Wentland, and Sebastian M. Pfotenhauer. 2019. Testing future societies? Developing a framework for test beds and living labs as instruments of innovation governance. *Research Policy* 48 (9): 103826.

Faber, Oliver. 2019. Digitalisierung – ein Megatrend: Treiber & Technologische Grundlagen. In *Management 4.0 – Unternehmensführung im digitalen Zeitalter*, Hrsg. Michael Erner, 3–42. Berlin, Heidelberg: Springer Gabler.

Faraj, Samer, Stella Pachidi, und Karla Sayegh. 2018. Working and organizing in the age of the learning algorithm. *Information and Organization* 28: 62–70.

Florin, Juan, und Elizabeth Schmidt. 2011. Creating Shared Value in the Hybrid Venture Arena: A Business Model Innovation Perspective. *Journal of Social Entrepreneurship* 2 (2): 165–197.

Gluch, Pernilla, and Stina Hellsvik. 2023. The influence of multiple logics on the work of sustainability professionals. *Construction Management and Economics* 41 (11–12): 893–909.

Helfferich, Cornelia. 2014. Leitfaden- und Experteninterviews. In *Handbuch Methoden der empirischen Sozialforschung*, Hrsg. Nina Baur, und Jörg Blasius, 559–574. Wiesbaden: Springer.

Hwang, Hokyu, and Walter W. Powell. 2009. The Rationalization of Charity: The Influences of Professionalism in the Non-profit Sector. *Administrative Science Quarterly* 54: 268–298.

Klenk, Tanja, Frank Nullmeier, und Göttrik Wewer. 2020. Auf dem Weg zum digitalen Staat? In *Handbuch Digitalisierung in Staat und Verwaltung*, Hrsg. Tanja Klenk, Frank Nullmeier, und Wewer Göttrik Wewer, 3–23. Wiesbaden: Springer.

Kraatz, Matthew S., and Emily S. Block. 2010. Organizational Implications of Institutional Pluralism. In *The SAGE handbook of organizational institutionalism*, Eds. Royston Greenwood, Christine Oliver, Kerstin Sahlin-Andersson, und Roy Suddaby, 243–275. Los Angeles, Calif.: Sage.

Knoblauch, Hubert, und Theresa Vollmer. 2022. Fokussierte Ethnographie. In *Handbuch Soziologische Ethnographie*, Hrsg. Angelika Poferl, und Norbert Schröer, 353–366. Springer VS: Wiesbaden.

Kühl, Stefan. 2020. Brauchbare Illegalität. Vom Nutzen des Regelbruchs in Organisationen. Frankfurt am Main/New York: Campus.

Kühl, Stefan, Marcel Schütz. 2018. Organisationskultur – Verwaltungskultur: eine neue Perspektive auf ein altes Thema. Die Personalvertretung. *Zeitschrift des gesamten Personalwesens für Personalvertretungen und Dienststellen* 61 (8): 297–311.

Ladeur, Karl-Heinz. 1995. *Das Umweltrecht der Wissensgesellschaft. Von der Gefahrenabwehr zum Risikomanagement*. Berlin: Duncker & Humblot. Schriften zur Rechtstheorie 167.

Lieckweg, Tania. 2001. Strukturelle Kopplung von Funktionssystemen „über" Organisation. *Soziale Systeme* 7 (2): 267–289.

Lindberg, Kajsa. 2014. Performing multiple logics in practice. *Scandinavian Journal of Management* 30 (4): 485–497.

Luhmann, Niklas. 1994 [1988]. *Die Wirtschaft der Gesellschaft*. Frankfurt a.M.: Suhrkamp.

Luhmann, Niklas. 1993. *Das Recht der Gesellschaft*. Frankfurt a.M.: Suhrkamp.

Luhmann, Niklas. 1997. *Die Gesellschaft der Gesellschaft*. Frankfurt a.M.: Suhrkamp.

Luhmann, Niklas. 1999 [1964]. *Funktionen und Folgen formaler Organisation*. Berlin: Duncker & Humblot.

Luhmann, Niklas. 2002. *Das Erziehungssystem der Gesellschaft*. Frankfurt a.M.: Suhrkamp.

Matinheikki, Juri, Kirsi Aaltonen, and Walker Derek. 2019. Politics, public servants, and profits: Institutional complexity and temporary hybridization in a public infrastructure alliance project. *International Journal of Project Management* 37 (2): 298–317.

McPherson, Chad M., and Michael Sauder. 2013. Logics in Action. *Administrative Science Quarterly* 58 (2): 165–196.

Mayring, Philipp. 2014. Qualitative content analysis: theoretical foundation, basic procedures and software solution. Klagenfurt. https://nbn-resolving.org/urn:nbn:de:0168-ssoar-395173.

Meyer, Uli. 2020. Industrie 4.0 als technologische Zukunftsvorstellung. Zur Bedeutung von organisationaler Sinnerzeugung und -stiftung. *Soziale Welt* Sonderheft 23: 349–377.

Mölders, Marc. 2023. Multiple Differenzierung und Wandel. Der Beitrag der evolutionär-institutionalistischen Perspektive Multiple Differentiation and Change. The Contribution of the Evolutionary Institutionalist Perspective. *Zeitschrift für Soziologie* 52 (4): 345–360.

Pache, Anne-Claire, and Filipe Santos. 2010. When Worlds Collide: The Internal Dynamics of Organizational Responses to Conflicting Institutional Demands. *Academy of Management Review* 35 (3): 455–476.

Pache, Anne-Claire, and Filipe Santos. 2013. Inside the hybrid organization: Selective coupling as a response to competing institutional logics. *Academy of Management Journal* 56 (4): 972–1001.

Reinhardt, Kai. 2020. Digitale Transformation der Organisation. Grundlagen, Praktiken und Praxisbeispiele der digitalen Unternehmensentwicklung. Wiesbaden: Springer.

Trute, Hans-Heinrich, Wolfgang Denkhaus, und Doris Kühlers. 2004. *Regelungsstrukturen der Kreislaufwirtschaft zwischen kooperativem Umweltrecht und Wettbewerbsrecht*. Baden-Baden: Nomos Verlag. Schriften zur rechtswissenschaftlichen Innovationsforschung.

Wehrsig, Christof, Veronika Tacke. 1992. Funktionen und Folgen informatisierter Organisationen. In *ArBYTE. Modernisierung der Industriesoziologie?*, Hrsg. Thomas Malsch, und Ulrich Mill, 219–239. Berlin: Edition Sigma.

Will, Matthias Georg, Steffen Roth, and Vladislav Valentinov. 2018. From Nonprofit Diversity to Organizational Multifunctionality. A Systems-Theoretical Proposal. *Administration and Society* 50 (7): 1015–1036.