

DIGITAL WORKPLACE TRANSFORMATION: SUBTRACTION LOGIC AND DEINSTITUTIONALISING THE TAKEN-FOR-GRANTED

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Abstract

Digital technology enables the transformation of work and workplaces. Previous digital workplace transformation (DWT) literature has shown how organisations add new digital technologies to create new workplace routines. However, such an emphasis on addition may hinder scholarship from recognising that some established workplace technologies and routines must disappear for new ones to emerge. Adopting the concept of deinstitutionalisation, we examine the rationale for and the process of how an organisation abandoned workplace routines that conflicted with its intended DWT. Referring to this as subtraction logic, we advance two contributions. First, we conceptualise how deinstitutionalisation of established workplace routines and technologies unfolds in DWT by outlining a process model that synthesises addition and subtraction. Second, we highlight the underlying rationales for DWT. With these insights, we shift the gaze from the dominant addition logic, which advocates for appropriating new digital technologies, to the equally important value of subtraction, that is, removing existing workplace technologies (or inscribed institutional rules) to abandon workplace routines that conflict with the intended DWT. Hence, our study highlights the oft-ignored subtraction logic to DWT.

Keywords: digital transformation, digital workplace transformation, subtraction logic, deinstitutionalization, routines, ethnography

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Introduction

Practitioners and academics alike are increasingly realising the importance of the digital workplace as an essential component of digital transformation (DT) (Baptista et al. 2020; Baumgartner et al. 2021; Vial 2019). Digital workplaces are ‘the physical, cultural and digital arrangements that simplify working life in complex, dynamic and often unstructured working environments.’ (Dery et al. 2017, p. 136). Thus, a digital workplace comprises physical spaces, social rules and technology all intertwined (Baptista et al. 2020; Kane 2015). Recent studies have found that traditional companies proactively engage in a digital workplace transformation (DWT), that is, efforts to change their workplace into a digital workplace (Jensen 2018), to support their digital business strategies. Furthermore, they stress the importance of the digital workplace and workforce for an organisation’s future success (Baptista et al. 2020; Colbert et al. 2016; Dery et al. 2017). These studies report findings of organisations integrating digital technologies into their workplaces to make it more digital. In other words, they feature a strong technology imperative (Markus and Robey 1988) in how and why a workplace becomes digital.

Indeed, digital technologies—as workplace technologies—deliver a range of digital services that enable novel ways of working in organisations (Baptista et al. 2020; Jensen 2018). Foremost, they are found to increase organisational effectiveness (Colbert et al. 2016; White 2012) but also to transform work and the deep structure of organising, for example, social rules on hierarchy and collaboration (Baptista et al. 2020). Motivated by these prospects, organisations engage in DWT as part of their DT not only to gain efficiency improvements, but also to shift to an innovation-oriented culture enabled by digital technologies that provide employees with diverse action potentials for collaboration (Baumgartner et al. 2021; Svahn et al. 2017; Zimmer and Niemimaa 2019). Studies on DWT have addressed the mobility, collaboration, compliance and technostress aspects of digital technologies in workplaces (Dery et al. 2006; Mazmanian et al. 2013; Tarafdar et al. 2015). In these studies, we can observe a shared premise: the appropriation and use of digital technologies entail the emergence of new workplace routines (Baiyere et al. 2020; Dery et al. 2017; Zimmer and Niemimaa 2019, 2020). We refer to this technology imperative (Markus and Robey 1988) in empirical cases of DWT as the addition logic.

We argue that the addition logic in existing DWT studies seems to neglect the fact that the emergence of new workplace routines—the patterns of action that constitute the workplace (Becker 2004; Pentland and Feldman 2005)—also involves the erosion of established routines, that is, a subtraction logic. We define subtraction logic as removing technology (or the institutional rules inscribed in this technology) to abandon routines towards aligning with intended transformation goals. Institutional theory, specifically institutional work and the concept of deinstitutionalisation (Lawrence and Suddaby 2006; Oliver 1992), postulates that transformation requires erosion of the established, otherwise, there would be no change (Greenwood and Hinings 1996; Robey and Boudreau 1999). Deinstitutionalisation

suggests that established routines erode over time because of entropy, inept randomness and deterioration (Oliver 1992). While this original conception diminishes actors' agency for deinstitutionalisation, institutional work foregrounds that actors can indeed disrupt and even deinstitutionalise institutional rules (Hempel et al. 2017; Lawrence and Suddaby 2006). We argue that this suggests, besides the addition logic reflected in existing studies, a subtraction logic to DWT in which organisations deinstitutionalise established workplace routines. This calls for studying how deinstitutionalisation unfolds in DWT.

Based on our observation of the prevailing technology imperative vis-a-vis our theoretical argument that DWT involves the deinstitutionalisation of established workplace routines, we ask the following research question: *How does the deinstitutionalisation of established workplace routines unfold in digital workplace transformation?* To answer this question, we conducted an ethnography in a large car manufacturer (Auto). We took a narrative approach to unpack Auto's rationale for DWT by analysing organisational documents that Auto distributed to communicate its DWT. This communication expressed rules in support of an innovation-oriented digital workplace. Further, we combined this analysis with participant observations of two specific routines (i.e. booking business travels and IT ordering). Auto removed the workplace technology underlying these routines since the institutional rules inscribed in these technologies conflicted with Auto's intended digital workplace. We observed how this entailed the deinstitutionalisation of these routines.

Drawing on our analysis, we highlight two implications. First, we show how the deinstitutionalisation process unfolds in DWT by removing workplace technologies that inscribe institutional rules, which conflict with the intended digital workplace. Since workplace technologies transfer inscriptions to local contexts (D'Adderio 2011; Rossi et al. 2020), removing workplace technologies entails disruption of routines enabled by these technologies. This disruption triggers negotiations on how to re-enact the affected routines. These negotiations draw on narratives that institute new rules by expressing these rules or by rejecting hitherto taken-for-granted institutional rules that conflict with the DWT goals. Removing existing workplace technologies thus facilitates the deinstitutionalisation of institutional rules and the routines reproducing these rules, which can engender the emergence of workplace routines supporting the intended digital workplace. This supports our argument that DWT—and by extension, DT—rests not only on an addition logic but also on a subtraction logic. Second, we found that Auto constructs its rationale for DWT to respond to institutional pressures (i.e. intra-organisational and organisation-environment factors) with little reference to digital technologies. Thus, our study suggests that research on DT, and DWT in particular, should consider a recalibration of their underlying rationales from a technology imperative to an emergent perspective that conceives of them as an entanglement of technological and organisational imperatives.

Theoretical background

Digital workplace transformation: The addition logic

Scholars and practitioners have argued that DT involves turning workplaces into digital workplaces (Baiyere et al. 2017; Baumgartner et al. 2021; Kaarst-Brown et al. 2018). Respective efforts are captured by DWT (Jensen 2018; Meske 2019). The core prospect of DWT is improved organisational effectiveness (Colbert et al. 2016; Dery et al. 2017). To reap this benefit, Colbert et al. (2016) argued for the mindful use of digital collaboration technologies and a shift in leadership culture as key activities for achieving DWT. Dery et al. (2017) captured these recommendations as two dimensions of digital workplaces: employee connectedness and responsive leadership. They defined employee connectedness as ‘the extent to which employees can engage with each other, with stakeholders and customers, with information and knowledge, and with ideas’ (2017, p. 136), and they defined responsive leadership as ‘the extent to which management prioritises the activities that focus on the development and continuous improvement of employee experience in the organisation.’ (2017, p. 137). In a review of digital workplace studies, Köffer (2015) found that besides collaboration, this body of work also delved into mobility, compliance and technostress issues. According to his review, extant studies suggest that organisations actively promote collaboration tools and employee empowerment, which necessitates changes in leadership culture. Thus, existing studies provide two observations: first, DWT rests on activities appropriating digital technology (e.g. Grønsund and Aanestad 2020; Rossi et al. 2020; Zimmer and Niemimaa 2019) and second, DWT activities involving changes to social rules on leadership and collaboration (e.g. Baumgartner et al. 2021; Meske 2019; Schwarzmüller et al. 2018).

Similarly, Baptista et al. (2020) refer to three orders of effect of DWT, which follow the appropriation and use of digital technologies in the workplace: convergent change, transforming work and transforming the organisation. Convergent change refers to intended and immediate improvements in work and interaction patterns because of new workplace technology. This relates to the improved organisational effectiveness often associated with DWT (e.g. Colbert et al. 2016; Kane 2015). Transforming work captures unintended and unexpected changes in work and interaction patterns because of new workplace technology. This effect entails fundamental shifts in organising, which we can observe only in hindsight. Transforming the organisation (i.e. third-order effect) presents the cumulation of convergent change (first-order effect) and transforming work (second-order effect), producing new understandings of the nature of work and associated interaction patterns. Drawing on Besson and Rowe (2012), Baptista et al. (2020) refer to this third-order effect as changes to organisations’ deep structure.

The three orders capture the progressive states of DWT effects (Baptista et al. 2020). While conceptualising three orders of effect, Baptista et al. (2020) suggested that existing studies, given the immediateness of convergent change, have focused on DWT's first-order effect. Moreover, workplace technology has so far taken the role of a change agent. That is, the three orders of effect follow the appropriation of new workplace technologies. This reflects a technology imperative (Markus and Robey 1988) to DWT, which we refer to as addition logic. Hence, one central premise in DWT studies following the addition logic is that affordances of new digital technologies enable changes to workplace routines (Dery et al. 2017; Leonardi 2011; Rossi et al. 2020); or, following Leonardi (2011, p. 147), '[...] perceptions of affordance lead people to change their routines.'

Workplace routines are patterns of action that constitute a workplace. This conception, specifically the notion of patterns of action, is grounded in the theory of routines (Becker 2004; Feldman et al. 2016; Feldman and Pentland 2003). Routines consist of ostensive and performative aspects. Ostensive aspects capture the generalised idea or principles underpinning a routine, incorporating the 'subjective understandings of diverse participants' (Feldman and Pentland 2003, p. 99), which we can observe in patterns of action. We consider these generalised ideas or principles as assumptions on how to perform workplace routines. The performative aspect consists of 'the actual performances of the routine by specific people, at specific times, in specific places' (Feldman and Pentland 2003, p. 95), that is, the concrete actions and interactions in local contexts, which perform workplace routines. The study of routine dynamics investigates the enactment of routines, that is, the relating of actions and how this forms patterns of action (Feldman et al. 2016). In this study, we consider routines as a unit of analysis (Pentland and Feldman 2005) to understand the unfolding of deinstitutionalisation in DWT by removing workplace technologies. This spotlights the role of workplace technologies as artefacts in the enactment of routines.

As artefacts, workplace technologies play a dual role in enacting routines (Becker 2004; Feldman et al. 2016; Feldman and Pentland 2003). They can stabilise as much as destabilise patterns of action (D'Adderio 2011). Furthermore, their designs can reflect ostensive aspects as much as their material features are performative. Hence, workplace technologies are not neutral but contain their creators' motivation, rules, principles and ideas about performing certain actions. This means that ostensive aspects not only reside in the minds of participants, but that '[...] inscriptions are ways in which specific functions can be delegated to artefacts and technologies' (D'Adderio 2011, p. 212). Since digital technologies increasingly exercise agency, their material features take part in routines' performances constraining or enabling actions (Leonardi 2011). They can influence action to follow a certain pattern (D'Adderio 2011; Rossi et al. 2020). While this makes workplace technologies part of ostensive and performative aspects (Iannacci and Hatzaras 2012), it does not mean that they prescribe the enactment

of routines. Rather, it underpins their role as organisational change agents (D’Adderio 2011; Feldman and Pentland 2003; Volkoff et al. 2007). We can see this role in the existing DWT literature’s addition logic.

Existing DWT studies implicitly presents digital technology as an organisational change agent (e.g. Rahrovani 2020; Rossi et al. 2020; Zimmer and Niemimaa 2019). Accordingly, DWT activities involve actions to appropriate digital technologies. The underlying assumption: adding new digital technologies engenders convergent change, that is, immediate changes that deliver intended task improvements (first-order effects) (e.g. Dery et al. 2014; Zimmer and Niemimaa 2019). This assumption rests on ideas about the use of new digital technology to perform workplace routines (Jensen 2018; Rossi et al. 2020). For example, the notion that social media can be used to democratise the strategising process (Morton et al. 2020) or that algorithmic analysis can deliver improved market insights (Grønsund and Aanestad 2020). Drawing on these assumptions and new digital technologies, organisational actors perform alterations in workplace routines. That is, over time, we can observe how the appropriation of the new digital technology’s affordances alters the enactment of workplace routines, leading to changes in the nature of work (second-order effects) and even organisations’ deep structure (third-order effects) (Baptista et al. 2020). These three orders of effect reflect the realised DWT, which often differs from the intended DWT (cf. Henfridsson and Lind 2014; Mintzberg 1978). We subsume this addition logic in Figure 1.

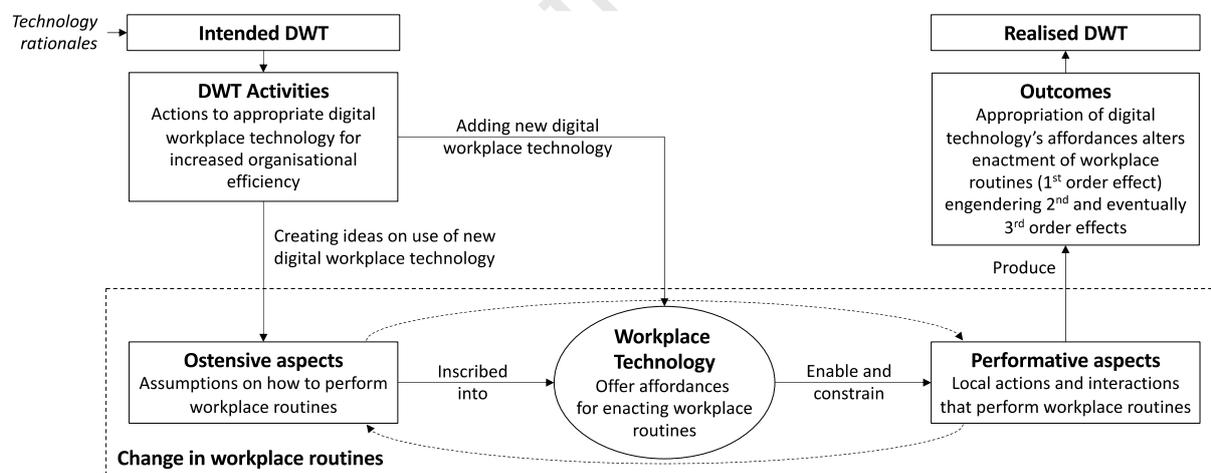


Figure 1. Process model visualising the addition logic to digital workplace transformation (based on previous literature)

While workplace technologies can be change agents, they can also be a source of inertia (Besson and Rowe 2012; Volkoff et al. 2007). In particular, existing workplace technologies, which contain inscriptions of hitherto taken-for-granted rules, influence workplace routines that can impede an organisation’s DWT (Bernardi et al. 2019; Rossi et al. 2020). One potential solution is that organisations remove existing workplace technologies (or functions of these technologies) that inscribe institutional

rules that conflict with the intended digital workplace. In Leonardi's words, 'perceptions of constraint lead people to change their technologies' (2011, p. 147). This suggests a subtraction logic to DWT, which we—considering the importance of identity, rules and values for DWT and for the enactment of workplace routines—ground in institutionalism, especially the concept of deinstitutionalisation.

Digital workplace transformation: A deinstitutionalisation perspective

We adopt institutionalism, specifically deinstitutionalisation and institutional work, as our theoretical lens for unpacking the subtraction logic in DWT. Institutionalism puts forth that broader phenomena influence socio-technical changes in workplace routines. Often, DT, which entails deep-structure changes to organisations' core, namely, identity and value proposition (Baptista et al. 2020; Utesheva et al. 2016; Wessel et al. 2021), presents such a broad phenomenon. This means that within a DT context, stability or flexibility in workplace routines cannot be understood by focusing solely on these routines' immediate socio-technical environment. Rather, we must consider organisations' broader DT contexts to grasp how and why these workplace routines change. Therefore, we employ institutionalism to extend our analysis of workplace routine changes to an organisation's broader DT context.

Institutionalism, in its basic form, explains stability in organisations. It refers to the study of taken-for-granted facts, norms and values that form rule-like understandings that 'provide stability and meaning to social life' (Scott 2001, p. 48) and shape organisational action (Greenwood and Hinings 1996; Mignerat and Rivard 2009). Early institutionalism sought to understand institutional processes to explain how these institutional rules shape organisations (DiMaggio and Powell 1983; Greenwood et al. 2008; Zucker 1977). In the 1990s, institutionalism turned to unpacking these processes by looking at the actions that constituted them (Battilana 2006; Hampel et al. 2017; Lawrence and Suddaby 2006). This later view conceives of institutions as the product of sequenced actions supported by specific mechanisms of control (Jepperson 2021). This makes institutionalism an adequate lens for explaining inertia in DWT contexts or how the sequence of actions enacting routines draws on and reinforces institutional rules that impede change within these routines and organisations. However, if institutions are everlasting, why can we observe change?

To explain how and why institutions change, Oliver suggested the concept of deinstitutionalisation: the 'erosion or discontinuity of an institutionalised organisational activity or practice' (1992, p. 563). Accordingly, deinstitutionalisation was necessary, as otherwise, institutional rules would continuously reproduce themselves (Greenwood and Hinings 1996). Factors that can trigger deinstitutionalisation—or undermine institutional rules—are intra-organisational (e.g. changes in political distributions, functional necessity, or social consensus) and/or organisation-environment factors (e.g. pressures in a competitive environment, social environment, random external occurrences, or changes in constituent

relations). In response to such factors, organisations abandon established organisational activities and practices.

In DT contexts, we observe intra-organisational and organisation-environment factors that provide ample triggers for deinstitutionalisation (Vial 2019). This applies particularly to incumbent organisations' DT (Baiyere et al. 2020; Sebastian et al. 2017; Svahn et al. 2017). These organisations look back at a long history of norms, assumptions and values that form institutional rules that underpin the emergence of their workplace routines. This necessitates that when engaging in DWT, incumbent organisations allow erosion or discontinuity of institutional rules and established workplace routines. However, while not specifically mentioning agency, Oliver discussed that deinstitutionalisation does not only involve allowing, but can stem from rejecting institutions 'direct assault[s] on the validity of a long-standing tradition or established activity' (1992, p. 567). According to Lawrence and Suddaby (2006), this notion became the cradle of institutional work.

Institutional work is 'the purposive action of individuals and organisations aimed at creating, maintaining and disrupting institutions' (Lawrence and Suddaby 2006, p. 212). This work focuses on the norms, assumptions and values that make up institutional rules and the actions that reproduce these rules (Hampel et al. 2017; Lawrence et al. 2011). Bernardi et al. (2019) connected institutional work and workplace technology to deinstitutionalisation when studying a health management IS in Kenya. They found that institutional work can impede or facilitate deinstitutionalisation, which depends on how actors' institutional work mobilises workplace technologies' affordances in support of their occupational identity. In another study, Gawer and Phillips (2013) found that Intel innovated new routines and enrolled organisational members to engage in these routines on its path to becoming a platform leader. The authors proposed that this involved instituting rules and assumptions supporting Intel's intended transformation and addressing tensions between existing and emergent rules constructively. Lastly, Nicholson and Sahay (2009) showed how forming dissensus in rejection of the institutional rules that underpin established routines can destabilise these routines. Hence, from the perspective of institutional work, changes in workplace routines involve actions that institute new rules, reject existing rules and address tensions between new and existing ones. In fact, institutional work that reduces the costs of rejecting taken-for-granted rules, assumptions and values can trigger and/or facilitate deinstitutionalisation (Scott 2001).

The lens of deinstitutionalisation foregrounds the idea that organisations may allow erosion and/or discontinue institutional rules to facilitate changes in workplace routines. In contrast to the existing DWT literature, which implicitly suggests an *addition logic*, deinstitutionalisation indicates a *subtraction logic*. While the addition logic rests on the premise that changes in workplace routines stem

from appropriating affordances of new digital technologies, the subtraction logic starts from a change in hitherto taken-for-granted institutional rules perceived as a constraint because of intra-organisational and organisation-environment factors. This change in institutional rules allows erosion or discontinuity of an established routine and the use of technology. Expressing new rules as well as removing existing workplace technologies, organisations facilitate the deinstitutionalisation of constraining rules and to innovate new workplace routines. This can involve appropriating digital technology in terms of replacing existing workplace technology. However, this only means that the addition and subtraction logic are indifferent in the assumed role of material agency. This indifference also highlights the key difference—the subtraction logic starts from inscriptions in workplace technology becoming constraints, while the addition logic starts from technologies' affordances enabling new routines (Leonardi 2011). Since prior literature has not widely illustrated subtraction logic, we focus on how workplace routines change when taking subtraction logic.

Research approach

This study presents an ethnography conducted in a global car company, referred to as Auto. Before describing the empirical side of Auto as part of the findings section, we outline our data collection and data analysis.

Data collection

The first author was immersed in the field from July 2017 to June 2020. He collected data via participant observations, informal interviews and organisational documents (Emerson et al. 2001; Ingold 2014; van Maanen 2011). He observed that Auto, a large incumbent organisation with more than 200,000 employees, used organisational documents to communicate its DWT as part of its DT strategy. Given Auto's use of documents, we became interested in how Auto constructs and communicates its DWT in these documents. At the same time, we wanted to understand how this DWT narrative unfolded in action in the documents. Thus, the first author focused participant observations on Auto's DWT, how managers and employees responded to the documents, changes to workplace technologies and how these entailed routine dynamics. He captured these observations in field notes (Emerson et al. 2001; van Maanen 2011). Hence, we combined organisational documents and participant observations to study the rationale and goals that Auto constructed in its documents and how changes in Auto's workplace routines unfolded. Collecting organisational documents, the first author continuously screened internal sources (e.g. Auto's enterprise social media platform, employee portal and internal email) and external communication (e.g. Auto's company website, career page and company blog). He collected documents dating back to 2016 that narrated the initiation of Auto's DWT and documents that narrated stories of Auto's DWT implementation. This produced a body of documents containing stories of Auto's DWT

that constructed a rationale for why a change in the institutional rules underlying the company's workplace was necessary and what changes the internal project team had implemented for this DWT.

Conducting participant observations, the first author kept field notes (Ingold 2014; van Maanen 2011). When in the field, he jotted down brief notes. Sometimes, these jottings comprised incomplete sentences or a list of words and terms. However, they served the first author as an aid in recalling and elaborating on the field events shortly after his observations. After observations, he sat down and extended his jottings to thick descriptions of the observed events (Jarzabkowski et al. 2014). Besides these descriptive notes, the first author kept analytical notes (Emerson et al. 2001). He restricted the first to descriptive accounts that refrained from interpreting the observations but included ad hoc interpretations in the latter. This created a set of extensive field notes on Auto's DWT, particularly on the changes in Auto's workplace routines.

We combined these two datasets because each partly answered our research question. Documents occur naturally, without any researcher intervention (Linders 2008; Silverman 2014), and construct meaning of and in organising because organisations produce them (e.g. policies, standards, files, reports and plans) to serve certain functions. They thus construct meaning, represent organising and even act as actants (e.g. a form's given structure interacts with an employee filling out this form) (Linders 2008). Lastly, because of their material fabric, documents construct meaning over time; that is, we can study historical documents in hindsight (Silverman 2014). The collected documents, therefore, allowed us to analyse Auto's rationale for its DWT and its narratives that constructed the intended digital workplace. While the documents allowed insights into Auto's discourse on the ostensive aspects of workplace routines, the participant observations offered insights into action (i.e. performative aspects). Participant observations capture a field researcher's experience of being there when it happened (van Maanen 2011). As opposed to documents, they can reveal the implicit, the things that are common sense to members of an organisation, their meaning-making and the processual flow of actions and events (Silverman 2014). Thus, they allowed us to study the actions that perform Auto's workplace routines to unpack how the automaker's changes in institutional rules and workplace technologies influenced the enactment of its workplace routines.

Data analysis

The data analysis comprised two stages. First, we analysed the organisational documents to understand Auto's DWT rationale and goals, that is, intended DWT, as part of its broader DT context. Second, we engaged with the first author's field notes to unpack how Auto triggered changes to workplace routines built on taken-for-granted rules that conflicted with the company's DWT goals. Table 1 summarises our data analysis by presenting the tasks and outputs of the two stages.

Stages	Tasks	Outputs
1. <i>Understand Auto's DWT rationale and goals</i>	(i) Identifying the DWT documents' authorship, readership, function and what they tell/omit (ii) Dissecting actors, actions and outcomes or object of actions in the documents' narratives (iii) Identifying narratives that present factors preceding deinstitutionalisation (iv) Identifying Auto's DWT goals towards a digital workplace	(i) DWT documents shift from constructing rationale to reporting implemented changes (see Appendix A). (ii) Tabulation of actions and outcomes or object of actions sorted by actors. (iii) Mapping Auto's DWT narratives to organisation-environment and intra-organisational factors, which provide an institutional rationale for its DWT and present factors preceding deinstitutionalisation (see Findings' second section and Appendix B). (iv) Categorisation of Auto's formulated DWT goals to Dery et al.'s (2017) digital workplace dimensions (see Findings' second section and Appendix B).
2. <i>Unpack workplace routine changes</i>	(i) Identifying workplace routines in which Auto's DWT intends to deinstitutionalise the institutional rules underpinning the workplace routine (ii) Compiling and analysing narratives of the observed workplace routine changes to unpack the role of workplace technologies for deinstitutionalisation within Auto's DWT	(i) Two workplace routines stood out: travel booking and IT ordering. Both are linked to institutional rules that conflict with Auto's DWT goals. The first is linked to obtaining approval and the second to hierarchical structures and status. (ii) Narratives (Findings' third section) revealing the subtraction logic in the removal of existing workplace technologies that conflict with intended digital workplace.

Table 1. Stages of data analysis, including each stage's tasks and outputs

In the first analysis stage, we dealt with questions such as: Who has authored a document? What is a document's function in the DWT process? Who are the readers? What does the document tell? What does the document omit? (see Appendix A). Next, we turned to the structure of the narratives in these documents to understand Auto's rationale and DWT goals. This means that we understood the documents as a topic, not as a resource (Prior 2008; Silverman 2014). Understanding documents as a resource, researchers peruse them for facts and evidence of the truth about a matter. Understanding documents as a topic, we used a narrative approach (Cortazzi 2001; Czarniawska 1998; Linders 2008) to investigate their inner structure, how this structure constructs a reality and what reality. In its basic form, a narrative comprises an initial state of affairs, an action or event and a conclusion or end state of affairs (Czarniawska 1998). In narratives, actors connect the initial state, action or event and end state (Czarniawska 1998, 2004). Thus, we read the documents to identify text passages—paragraphs or sometimes sentences—that provided a rationale or defined a DWT goal. We then unpacked these text passages by identifying actors, their actions and the outcome or object of their actions. We distilled these actors, actions and the outcome or object of their actions into a tabulation. In this tabulation, we also realised that the documents contain narratives of abandoning, in which Auto removed existing workplace technologies to change workplace routines and accomplish its DWT goals. Intrigued by this observation, we turned to the literature to identify helpful concepts. Considering that Auto's DWT goals

involved changing the norms, principles and beliefs that underpinned its workplace routines, we engaged with institutionalism and deinstitutionalisation. We found that it presented a promising lens to unpack Auto's DWT approach and thus mapped the identified narratives to Oliver's (1992) framework of factors preceding deinstitutionalisation. This produced a mapping of Auto's narratives of actors, actions, events, initial and end states to construct intra-organisational and organisation-environment factors as the rationale for its DWT (see Appendix B, Table B.2 for intra-organisational factors, Table B.1 for organisation-environment factors and Table B.3 for a summary of both). Subsequently, we categorised the narratives formulating DWT goals using Dery et al.'s (2017) digital workplace dimensions (see Appendix B, Table B.4). These mappings revealed Auto's DWT rationale and goals and indicated that Auto's DWT might—in part—involved deinstitutionalisation. However, we still lacked an understanding of how deinstitutionalisation unfolded in changes to workplace routines.

The second stage focused on answering the question of how deinstitutionalisation unfolded. Screening the first author's field notes, we found observations of instances of Auto appropriating new digital technology for its DWT. For example, the company aspired to an open and appreciative feedback culture. For this, Auto appropriated a mobile feedback app that allowed employees and managers to easily give and receive feedback to others at Auto. However, what underpinned the notion of deinstitutionalisation found in the documents were observations of disruptions to workplace routines after Auto removed the underlying workplace technologies. For example, the removal of the car manufacturer's intranet platform to liberise information sharing, meaning the former platform constrained information sharing to dedicated content creators. Besides this example, two routines illustrative of daily interactions stood out: a gatekeeping approval routine and a hierarchy-enacting routine. The gatekeeping approval routine was part of Auto's travel system and required managers to provide formal approval of their employees' business travels. The hierarchy-enacting routine was part of Auto's IT ordering system, which was accessible only to specific employees and defined by hierarchy (as opposed to work requirements), who could order which digital technologies. In both cases, Auto removed existing workplace technologies, which disrupted the affected workplace routines. Thus, we decided to delve into these two cases to understand what new and interesting insights they can yield about workplace routine change from the perspective of deinstitutionalisation. We chose these two routines because they rest on institutional rules that shape everyday mundane workplace interactions.

We started by identifying the inception of the deinstitutionalisation of these two routines. Reading through the documents and field notes, we looked for DWT activities that constitute subtraction logic. For both routines, we noticed expressions of new rules paired with the rejection of hitherto taken-for-granted rules that underlie gatekeeping approvals and hierarchy-enacting routines. We conceived of these (i.e. expressing new rules and rejecting conflicting rules) as the DWT activity of instituting new

rules. When we dissected the narratives and observations on this instituting activity, we noted that Auto not only expressed and rejected institutional rules but also removed existing workplace technology that inscribed the rejected rules. We theorised this DWT activity, removing existing workplace technology. Intrigued by this observation, we asked ourselves, why? What was the effect of the instituting? However, more pivotal, Why did it lead to the removal of existing workplace technology and its inscribed rules? Our observations suggested that while instituting informs and challenges assumptions on how to perform workplace routines, removing existing workplace technology disrupted the affected workplace routines. This disruption spurred negotiations on enacting these affected workplace routines. Dissecting these negotiations, we discovered that organisational actors draw on the instituting, removing workplace technology and prior institutional rules inscribed in the technology, to figure out the meaning for the performance of the affected routines. Since these negotiations affect alterations to the performance of workplace routines, we conceptualised them as subtraction outcomes. Hence, the second stage of our analysis revealed that the subtraction logic to DWT follows the instituting of new rules, the removing of existing workplace technology and negotiations on enacting affected workplace routines.

Findings

We first present Auto and its initiation of DWT before outlining our document analysis. The document analysis revealed Auto's rationale and goals for its DWT. Afterwards, we show how Auto implemented its DWT by removing existing workplace technologies to facilitate the deinstitutionalisation of established workplace routines, which conflict with the intended digital workplace. For this, we draw on our participant observations of the gatekeeping approval and hierarchy-enacting routine.

Empirical site: Auto initiates a digital workplace transformation

Auto is a large car manufacturer that employs more than 200,000 employees worldwide. As one of the oldest car manufacturers, Auto finds pride and inspiration in its extensive history. The company portrays itself as having continuously reinvented the automobile, contributed tremendously to its safety and created people's mobility. In all this, Auto believes in its virtue of striving for perfection. In accordance, and given the nature and heavy-asset industry of manufacturing cars, Auto develops and produces cars, lorries and buses in an engineering tradition of planning projects, research and product development well in advance. Moreover, engineering and selling vehicles requires the alignment of technical decisions and assurance of quality. To handle these requirements, Auto's workplace developed strong hierarchical structures, as well as a command-and-control leadership style. The institutional rules underlying this workplace reflected in the automaker's existing workplace technologies, for example,

they require employees to obtain approval from their superiors, concentrate decision power with gatekeepers (e.g. administrative roles) and delegate decision-making to higher management.

‘What’s your experience of leadership at [Auto] at present? The following terms may well come to mind: Characterised by hierarchy, from the top, focused on individual targets, marked by internal power struggles that are exclusive, political and standardised’ (Auto2020 document).

In 2012, Auto launched its DT strategy with the objective of transforming itself into a mobility service provider. Subsequently, the car manufacturer established digital innovation units, partnered with start-ups or converted promising projects into spin-offs. Despite celebrating one of its most successful business years in 2015, the company’s management decided to initiate a DWT programme (which we refer to as Auto2020). Launching Auto2020 in 2016, the company’s CEO declared that the DWT programme forms a response to environmental pressures, with the goal of Auto retaining its market position. The key intention was to transform its workplace into an innovation-oriented digital workplace to facilitate its DT strategy. While the company launched its DT strategy in 2012, its structures and leadership style still followed established rules. With new competitors entering the market and the new workforce generation valuing different aspects of their employers than the previous generations, the automaker’s management realised the necessity to transform Auto as a workplace. The DT strategy depended on responding to a fast-moving environment and securing skilled employees. Both aspects with which Auto’s hierarchical structures and leadership style boded unwell. Hence, to remain an integrated employer and to successfully drive its DT strategy, the company launched Auto2020.

‘With [Auto2020], we didn’t start with pre-defined answers but sought guidance in fundamental questions: How do we want to collaborate at [Auto] in the future? How do we remain an attractive employer—to both experienced colleagues and new applicants? How can we motivate our employees to leverage our potential?’ (Auto2020 documents).

The company designed Auto2020’s strategising process to reflect the intended change. Rather than formulating top-down DWT goals, the higher management invited employees to multiple workshops to define Auto2020’s content and process. The result was a set of eight leadership principles for a new collaboration style as well as eight game changers, that is, things that had to be introduced or changed for Auto’s workplace to reflect the new principles. These leadership principles and game changers were meant to promote: first, the use of digital technologies for collaboration and second, a new leadership style. Once the executive board approved the employees’ ideas for Auto’s DWT, the company founded a central Auto2020 project team to coordinate the organisation-wide rollout. This team comprised managers and employees tasked with reviewing Auto’s processes, structure and workplace technologies to suggest and implement changes in line with the DWT programme. They distributed documents such as newsletters, posters and posts on Auto’s enterprise social media to inform employees about the project

team's work, Auto2020, its goals, the new leadership principles and implemented changes. They also invited employees to summits focusing on explaining Auto2020 and receiving feedback. All these communication activities constructed a narrative for Auto's DWT, providing a rationale for why the company is implementing this programme and to what ends.

The rationale and goals that the documents construct for Auto's digital workplace transformation

The document analysis revealed the rationales and goals that Auto constructed for its DWT (for further insights from the document analysis, see Appendix A). We first describe the rationale by mapping the narratives to Oliver's (1992) framework of factors preceding deinstitutionalisation. Then, we outline the goals identified from the documents and relate them to Dery et al.'s (2017) digital workplace dimensions.

Auto's digital workplace transformation rationale

The central project team constructed a set of narratives to convey Auto's rationale behind its DWT in the documents released. For example, the documents portrayed 'markets' as 'changing', 'interconnecting' or 'penetrated' by new competitors, thus constructing factors as increasing resource or domain competition. Furthermore, the documents narrated that 'products' are 'changing' or that new products 'are being created beyond Auto's core business', which constitutes the factor of increasing innovation pressure. Moreover, changing societal values are narrated with 'changing customer expectations' and the 'concept of mobility follows new rules'. Lastly, the documents stated Auto's 'legal framework' as 'changing', thus weaving changing government regulations into the narrative on organisation-environment factors (for a summary of the organisation-environment factors see Appendix B, Table B.1).

An Auto2020 document on **domain competition** and **innovation pressure** stated that, 'We are increasingly moving in a market which no longer defines "mobility" as the purchasing of a vehicle. [...]. And our core business is also facing a new challenge: Electric mobility and autonomous driving have long since become far from science fiction.'

An Auto2020 document on **changing societal values** declared: 'Not just our products are changing but also our customers' expectations. They increasingly communicate online, co-creating our brand's image and story. But their mobility also follows new rules.'

Besides organisation-environment factors, the documents also conveyed stories forming intra-organisational factors. In these stories, the documents named actors as 'Auto' itself, the 'work environment' or 'multiple generations of employees'. They narrated that 'Auto' is 'developing' new 'expertise' and that the 'work environment' is 'changing' towards 'more projects' and 'virtual work',

both signalling changes in the functional necessity, namely, increasing technical specification. Moreover, ‘multiple generations of employees working at Auto’ and ‘having different values regarding leadership and goals’ contribute to changes in political distribution, specifically workforce diversity. Thus, these narrative elements (i.e. actors, action and object of action or outcome) form stories of intra-organisational factors as rationale for Auto’s DWT (for a summary of the intra-organisational factors, see Appendix B, Table B.2).

An Auto2020 document on **increasing workforce diversity** stated that, ‘Four to five different generations are currently working in our company. Each of them with a different understanding of work, communication and personal aims. To bring their different cultures together—so that they can learn from each other and help each other along—is a great challenge.’

Interestingly, these factors illustrate that Auto’s central project team constructed an institutional rationale rather than a technology rationale for its DWT. That is, the stories grounded the need and reason for Auto2020 not in opportunities that emergent technologies provide but in institutional factors that precede deinstitutionalisation. Hence, the documents constructed a narrative of organisation-environment and intra-organisational factors forming an institutional rationale, and by this an organisational imperative, for Auto’s DWT (for an overview of all factors identified in the document analysis, see Appendix B, Table B.3).

Auto’s digital workplace transformation goal

Auto2020 comprises eight leadership principles and eight game changers. Jointly, the principles and game changers should transform Auto’s workplace into a digital workplace in support of the company’s DT strategy. An Auto2020 document stated that, ‘The [principles] we defined within [Auto2020] assist us to change our organisation. That we remain successful in the future. They describe why we re-orient ourselves and how we want to change ourselves as [Auto].’ While this frames the principles as offering guidance on the intended digital workplace, the game changers are ‘specific changes to the organisation that will translate the principles into action and transform our culture’ (Auto2020 document). Thus, the principles and game changers formed the ends and means for Auto’s DWT. While the former outlined the goals for Auto’s DWT (i.e. ends), the latter implemented concrete changes to accomplish these goals (i.e. means).

An Auto2020 document on **empowerment** stated that, ‘We trust and inspire each other. We provide team members with an appropriate level of autonomy. Empowered employees feel responsible, are productive and willing to embrace change.’

An Auto2020 document on **collaboration** declared that, ‘We create a system of interactions to foster collaboration and leverage the know-how of the entire group instead of silo thinking.’

The narratives on the game changers fed into two key objectives for Auto2020: empowerment and improved collaboration. Both addressed the company's existing leadership and collaboration style, which the documents depicted as impeding Auto's competitiveness in an increasingly innovation-oriented market. In relation to empowerment, the documents stated that the game changers 'make room for a new culture', 'question Auto's processes' and 'change IT systems, processes and structures' that impede success in the future. For example, 'approval processes' must be 'realigned' and 'bureaucracy limited' to increase speed in decision-making, an aspect portrayed as important for succeeding in new markets and against new competitors. For improved collaboration, the game changers intend to 'reshape how Auto collaborates', 'create a collaborative team culture' and 'align working' to new workplace technology. Therefore, the game changers introduced new workplace technology, for example, they introduced a new innovation platform to support crowd sourcing processes or released instant messaging and a feedback app. The latter was meant to support new feedback routines. This suggests that the constructed narrative for Auto's DWT goals alludes to Dery et al.'s (2017) digital workplace dimensions of responsive leadership and employee connectedness. While the changes towards empowerment reflect the first, the changes for improved collaboration refer to the second (see Appendix B, Table B.4). Hence, Auto's DWT goal was to change its workplace into a digital workplace along the dimensions of responsive leadership and employee connectedness.

However, the narratives suggested DWT, not only by addition but also by subtraction. Documents on the leadership principles expressed DWT goals, such as empowerment and collaboration. Documents on implemented changes conveyed how these changes corroborated these goals or how they rejected conflicting institutional rules or their enacting patterns of action. These latter documents often juxtaposed the taken-for-granted rules with the intended digital workplace while also offering reasons for why this rejection was necessary in order to accomplish Auto's DWT and DT strategy goals.

An Auto2020 document **rejecting** existing patterns of action stated as follows: 'Once you embark on the digital transformation, you are going to encounter a lot of dynamite in the old structures—structures that have to be blown apart and changed. We believe this process is also a source for a new and dynamic momentum. It opens up a new world, offering opportunities for everyone—whatever their position in the hierarchy.'

In summary, the documents on Auto's DWT construct the rationale and goals for this transformation and link it to the company's broader DT context. While the narratives on the underlying rationale form institutional rationales that precede deinstitutionalisation (i.e. intra-organisational and organisation-environment factors; see Appendix B, Table B.3), for Auto's DWT, the narratives on DWT goals reflect the dimensions of a digital workplace (i.e. responsive leadership and employee connectedness; see Appendix B, Table B.4). Moreover, the analysis showed that the Auto2020 project team communicated

changes to workplace technology accompanied by an expression of new rules. At the same time, they constructed narratives that rejected conflicting institutional rules. Hence, the document analysis revealed not only the institutional rationale and digital workplace goals for Auto's DWT but also the expression of new rules and rejection of conflicting institutional rules. However, to our surprise, we also noticed that documents portraying stories of actual changes construct a reality of organisational change involving the removal of existing workplace technologies.

Removing existing workplace technologies for deinstitutionalisation

Analysing the documents, we made a surprising observation. We noticed that Auto had not only added new workplace technology (i.e. addition logic) but also removed existing workplace technology (i.e. subtraction logic). This removal entailed changes to workplace routines. The subsequent vignettes present the unfolding of these changes using the examples of a gatekeeping approval routine and a hierarchy-enacting routine. While we found additional examples of workplace technology removal within Auto2020 (e.g. removal of Auto's intranet platform), we present the following two vignettes since they rest on institutional rules, which conflict with Auto's DWT goals and shape not only these exemplary routines but everyday mundane workplace interactions.

Vignette 1: Abandoning gatekeeping approval routines

The gatekeeping approval routine was part of Auto's travel booking process. While Auto's travel system granted employees permission to plan and reserve business travels, the system demanded that their manager formally approve their itinerary before proceeding with the booking. According to the central project team, this approval routine exemplified Auto's hierarchical structure, as well as command-and-control leadership style. By demanding a formal approval, the travel system enabled managers to control employees' business travels, keep track of expenses and prevent misconduct. This materialised in the travel system prompting managers via email to access the travel system, check their employees' itinerary and approve (or decline) by clicking the respective button. Only afterwards did the travel system book the planned itinerary. The formal approval presented a gatekeeping action. The following vignette illustrates the gatekeeping approval routine:

Kim had just started at Auto. Most of the processes and computer systems overwhelmed her. Her colleague Robin always gladly lent a hand when she had questions. On one occasion, Kim had a business meeting at a different office location. She manoeuvred through the travel system but then stopped to ask Robin, 'Can I just book or should I ask first from our manager?'

Robin replied, 'You can't really book it, you can only plan it. The system will send him an email and then he's to click "approve." Before that, the system can't book anything. It's a kind of control mechanism. But he knows that you have the meeting, so simply plan your trip and send it to him.'

The central project team highlighted that this institutional rule and its inscription in the travel system conflicts with DWT goals, particularly ‘employee empowerment’, ‘limiting bureaucracy’ and ‘realigning approval processes’. Rejecting this rule, they defined the new rule that decision-making should depend on the involved expenses but include no more than two superiors. In the particular case of the gatekeeping approval routine, this rule manifested as travel booking requiring merely verbal consent since most business trips were below the expense threshold. That is, employees could book their itineraries without asking or obtaining formal approval. They envisioned that this change in institutional rules would support the organisation’s transformation towards a workplace that builds on trust and responsible leadership. The central project team’s communication thus rejected the existing rule and expressed the new rule. However, when it came to enacting the approval routine, the travel system still inscribed the existing rules. Accordingly, the central project team removed the existing approval workflow from the travel system. Instead of demanding formal approval from managers before booking, the travel system now enables employees to plan and book business trips without approval. It merely informed managers that their employees had completed a booking. The new rule and removal of the inscription in the travel system triggered mixed receptions. While some perceived it as empowering, others expressed doubts about how and whether their managers would comply with the new rule. After all, this new rule conflicted with the institutional rules underlying Auto’s existing workplace.

Browsing Auto’s enterprise social media, Kim saw a news post on the Auto2020 initiative. The central project team shared that: ‘In future, verbal consent from the direct superior is sufficient to book travel. There will no longer be any additional workflows, system authorisations or paper applications.’ Kim showed this to Robin and remarked that this makes travel booking easier and less bureaucratic. Robin hesitated. ‘I’m not sure. I mean, people could just book, right? This sounds completely unlike [Auto]. So... I’d wait to see what happens.’

Similar to the mixed reception among employees, managers voiced different opinions on the new rule and the accompanying removal of the approval workflow. While some managers were sceptical, fearing the loss of control of their travel budgets, others appreciated the reduction of bureaucracy. The sceptical managers introduced workarounds to maintain the formal approval of business trips. They asked employees to key in their planned business trips to a shared spreadsheet to be approved during regular team meetings or to email the itinerary, including costs in advance. One employee commented as follows:

Our manager asked us to email the travel details, including costs, before we book. I mean not just verbal consent but more like approval via email to replace the travel system.

Managers inclined towards Auto’s DWT goals showed themselves approachable. They allowed discussions on how the new rule could play out. In fact, managers and employees exchanged experiences on Auto2020 within their teams but also across teams, for example, at workshops, Auto2020 summits

or on the company's enterprise social media platform. They drew on the central project team's documents in these conversations to find grounds for rejecting taken-for-granted rules. They even encouraged each other to debate with their managers and to test boundaries. For example, they shared the mantra, 'Don't ask for permission, ask for forgiveness.' Similarly, when employees or managers acted in rejection of established institutional rules, their colleagues commented with approval, 'This was so Auto2020.' These conversations and encouragements also surfaced in response to the changes to the gatekeeping approval routine and the travel system. One employee made the following comment:

I was new and didn't know what my manager thought of Auto2020. I discussed with a colleague who suggested that I should just book and apologise after. I mean, the removal of the approval step enabled that, but I felt like no. I [am] gonna ask first. My manager was rather okay with it. He said, I should give him a heads-up, but he [has] no interest in whether I take the train or a car. After that, I told him before I booked something, for verbal consent, you know. After a while, I felt more comfortable and just booked stuff. I mean, the system allowed it and most of the trips he knew about anyway. He hasn't complained. (An Auto employee)

Over time, the performance of the approval routine settled. Managers who were sceptical at first decided to accept the change. They spoke to colleagues, realising that others reported no incidents after adopting the new rule. Further, they found that dropping formal approval reduced their workload significantly. Similarly, employees who received the changes with doubt grew accustomed to informal consent. With the formal approval workflow removed, they could test their managers' boundaries and in discussions, they leveraged the central project team's communication to justify that informal consent was sufficient. This observation shows that the removal of workplace technologies, which inscribe institutional rules conflicting with the intended digital workplace, can facilitate the deinstitutionalisation of routines that reproduce these rules. Thus, it supports the argument for subtraction logic (Appendix C illustrates this).

Vignette 2: Abandoning hierarchy-enacting routines

The hierarchy-enacting routine was part of Auto's IT ordering process. Managers and employees ordered workplace technologies (e.g. computers, screens, mobile devices or software applications) only via an IT admin. This was a special role that one employee per department observed. When managers or employees requested a new workplace technology, they had to approach their IT admin, who could then place the order in the IT order system. Auto's IT department had implemented this role to confine permission to access and browse the internal IT shop to IT admins who had to regularly attend meetings on IT shop updates. These updates addressed, for example, the release of new devices, changes to support services or the device strategy. This device strategy defined who was eligible for which device and who had to approve IT orders. Both depended on the ordering person's hierarchy.

With Auto2020, the central project team rejected this focus on hierarchy for two reasons. First, this focus, and the gatekeeping via IT admins, conflicted with Auto2020 flattening hierarchical structures and empowering employees. Second, the device strategy produced a diversified IT landscape. This diversification impeded collaboration. Managers and employees used workplace technologies that ran on different operating systems. Since the availability of software applications depended on the operating system, the possibilities for digital collaboration depended on employees' IT devices. The project team rejected the existing institutional rule and suggested that instead of hierarchy, work requirements should define Auto's IT ordering process and device strategy. Therefore, Auto removed all but one mobile operating system to create a homogenous IT landscape. In an enterprise social media post, the central project team made the following announcement based on an Auto2020 document on the **hierarchy-enacting routine**:

[...] new device classes such as tablets have been rolled out based on hierarchy—not on business requirements. We eliminated this pain point to enable employees order the IT equipment they need to do their job. We will provide all employees with a state-of-the-art mobile platform. We switch to iPhones only and we will offer the entire range of iPhones. This is a critical step towards seamless collaboration, as it builds the foundation for a single mobile work ecosystem. (Auto2020 document)

The announcement rejected the institutional rule that hierarchy determines the eligibility for IT equipment. This rule existed for two reasons: cost control and status. The hierarchical device strategy was meant to ensure that employees received cheaper IT equipment, while managers, particularly senior managers, could order more expensive devices. This saved costs. The central project team suggested a 50:50 model mix to address this cost-control issue. According to this model, Auto would offer the entire range of available iPhones. Thus, not all employees should receive the same model. They stressed, however, that 'the model depends on work requirements not hierarchy' (Auto2020 document). In addition to cost control, managers used IT devices to differentiate themselves from employees. In fact, the viewable catalogue of available devices differed depending on the hierarchy. This meant that IT admins could set filters in the IT ordering system to browse devices only available to senior managers. One employee in the IT department made the following comment:

'Besides economic reasons, I mean we [IT] have a budget to manage. Besides that, it [device strategy] was not about work but status. Once the head of IT at our office called me furiously. He had been in a meeting with an employee, like a normal employee, who had an iPhone 7. He was furious because those were only for heads of departments.' (An IT employee at Auto)

Neither all managers nor the IT department fully aligned with these changes. An employee commented that, 'I'm curious when the hierarchy gate in our department falls...currently, we hand out iPhone 6/7 only to senior managers and employees receive an iPhone SE.' Furthermore, the central project team missed defining a process for determining employees' work requirements. The IT

department resolved this issue by asking senior managers to confirm their employees' work requirements during the IT order process. Thus, despite the new rules for the device strategy, managers and the IT department maintained the existing hierarchy focus. Adjusting the changes to the device strategy, the central project team removed the access restrictions on the IT shop, as well as the local and hierarchy-specific device catalogues. While departments still had IT admins, this restriction removal enabled employees to 'self-order their new phones and other equipment in the IT shop' (Auto2020 document). Furthermore, the standardised device catalogue meant that employees could browse all available devices. The following paraphrased conversation between two employees illustrates the effect of this removal:

Susan: 'This week I get my iPhone. I was stuck with a Windows phone and all the applications that got introduced with Auto2020... most of them didn't run on it. I couldn't connect with colleagues or access the enterprise social media platform, since the apps weren't available.'

Kim: 'Great! So we can finally connect and chat on [instant messaging app]... but how did you convince the manager to finally agree to the replacement?'

Susan: 'Well... I told him about the change in the IT shop... that we could now self-order. I meant that this kind of means that I can decide myself about the replacement, doesn't it. He only remarked, "if they [Auto2020] think this is a good idea"... I then went and just ordered it.'

This observation indicates the importance of removing existing workplace technologies to facilitate the deinstitutionalisation of existing institutional rules that conflict with the intended digital workplace. After the central project team rejected the existing institutional rules while expressing the new rules, managers and the IT department still enacted the IT ordering within the existing rules. However, when removing the inscription of these rules from the IT ordering system, employees can negotiate the enactment of the IT ordering following the new rules. Moreover, the removal seems to signal to lower management that senior management takes the new rules seriously. This illustrates the role of workplace technologies and their inscriptions for participants in a routine to settle on how they enact this routine. For DWT, this underpins the importance of a subtraction logic, of abandoning the taken-for-granted (Appendix D shows this vignette).

Discussion and conclusion

Deinstitutionalising the taken-for-granted logic.

In this study, we have observed and theorised an organisation's DWT towards its overarching DT aspirations. We engage with the observation that existing studies on DWT emphasise an addition logic in which organisations appropriate new workplace technologies entailing changes to their routines in a sequence of three orders of effect (Baptista et al. 2020; Dery et al. 2017; Rossi et al. 2020). We illustrated how this logic rests on the premise that workplace technologies can act as change agents that transfer

inscriptions to workplace routines (Besson and Rowe 2012; D'Adderio 2011). Our study departs from this dominant thinking in the previous literature. Without diluting the importance of the addition rhetoric in previous literature, we argue that this emphasis neglects that existing workplace technologies can exert inertia (Fürstenau et al. 2019), indicating the importance of removing existing technologies to facilitate change. We showed that this view echoes institutionalism, specifically the lens of deinstitutionalisation (Greenwood and Hinings 1996; Oliver 1992), suggesting a *subtraction logic* to DWT. This involves appropriating new workplace technologies and removing existing ones that conflict with the intended DWT. Examining our case organisation's (Auto) DWT, we illustrated the subtraction logic outlining how Auto deinstitutionalised workplace routines by removing existing workplace technologies that inscribed institutional rules that appeared as constraints in light of the intended DWT. We highlight two key insights. First, we unpack how workplace routines change when DWT follows a subtraction logic. Second, we stress that the subtraction logic foregrounds that organisations initiate DWT not only based on technology rationale but also institutional rationale. While the first speaks to a technology imperative, the second indicates an organisational imperative. This shifts our view on DWT—and DT—from a technology imperative to an emergent perspective in which both imperatives coexist.

At Auto, we observed how the organisation embarked on its DWT in response to institutional pressures related to its broader DT. Constructing and communicating these pressures in archival records, Auto subsumed that for DWT, the organisation must transform parts of its deep structure since the existing leadership and collaboration style impeded its chances to compete in an increasingly innovation-oriented market. Thus, these pressures formed an institutional rationale for Auto's DWT programme (Auto2020). With Auto2020, the car manufacturer *instituted new rules* for its future digital workplace by expressing them (e.g. no more than two approval steps in every decision-making process) and by rejecting institutional rules conflicting its DWT goals, but which made up part of its deep structure. This deep structure was characterised by a command-and-control leadership style and hierarchical structures. This challenged organisational actors on the meaning of the new rules for enacting the current—taken-for-granted—workplace routines and why transforming the deep structure is necessary.

Implementing Auto2020, the automaker started identifying specific workplace routines that reproduced institutional rules that conflicted with its intended digital workplace. To disrupt their reproduction, the organisation *removed existing workplace technologies* that inscribed these rules. Removing these technologies, Auto removed the inscriptions of these conflicting rules, which constrained organisational actors in following the new rules (e.g. the access restriction to the IT ordering system). This entailed negotiation among organisational actors (managers and employees) on how to

perform affected workplace routines (e.g. negotiations among managers and employees on obtaining approval for business trips). Over time, the organisational actors settled on the actions and interactions for enacting the affected workplace routines. This involved figuring together the changed workplace technology, the nuanced understanding of the new rules, the rejected institutional rules and the task at hand. Inadvertently, they addressed questions of how they can follow the new rules in performing action and interaction such that they form stable and efficient action patterns (e.g. Susan’s negotiation with her manager on replacing her work phone). This settling meant the emergence of workplace routines that mobilised the rules aspired to in the automaker’s DWT programme. Table 2 presents the concepts theorised from our observations of how Auto facilitated deinstitutionalisation by removing workplace technologies to disrupt workplace routines that reproduce institutional rules that conflicted with the company’s DWT goals.

	Concepts	Effect in subtraction process	Vignette 1: Gatekeeping routine	Vignette 2: Hierarchy-enacting routine
Subtraction activities	<p><i>Instituting new rules</i></p> <p>Creating narratives that express the what, how and why of the intended DWT (e.g. envisioning a workplace routine enactment when following the new rule) and narratives that reject hitherto taken-for-granted institutional rules that conflict with the intended DWT.</p>	<p>Informs and challenges organisational actors’ assumptions on how to perform workplace routines, that is, <i>workplace routines’ ostensive aspects</i>.</p>	<ul style="list-style-type: none"> • Narrative constructing empowerment as DWT goal. • Expressing the new rule of no more than two approval steps in every decision-making process. • Rejecting formal approval for business travel, that is, verbal consent is sufficient. 	<ul style="list-style-type: none"> • Narrative constructing employee connectedness as DWT goal. • Expressing the new rule that work requirements should define the device strategy. • Rejecting the hierarchical device strategy for it impedes employee connectedness.
	<p><i>Removing existing workplace technology</i></p> <p>Removing workplace technologies (or parts of respective technologies) that inscribe institutional rules which conflict with the intended DWT.</p>	<p>Disrupts organisational actors’ actions and interactions that perform the affected workplace routines, which triggers negotiations on these routines’ enactment, that is, a <i>change in workplace technology’s affordances and constrains</i>.</p>	<ul style="list-style-type: none"> • Removal of the formal approval step in the travel system. 	<ul style="list-style-type: none"> • Removal of access restrictions in the IT ordering systems.

Subtraction outcomes	<p><i>Negotiations on enacting affected workplace routines</i></p> <p>Organisational actors engage in negotiations in which they draw on the narratives on new rules, rejected institutional rules and removed workplace technology and their meaning for enacting the affected workplace routine.</p>	<p>Negotiations alter the pattern of action and interaction that enacts the workplace routine (i.e. <i>performative aspects</i>) and thus, they alter the workplace routine and reproduction of the rejected institutional rule.</p>	<ul style="list-style-type: none"> • Managers defining workaround to maintain formal approval (e.g. Excel spreadsheet). • Negotiations on how to obtain approval for business trips. • Organisational actors mobilise changes in workplace technology in support of new rule. • New action pattern in line with the new rule emerges. 	<ul style="list-style-type: none"> • IT and senior management finding workaround to maintain institutional rules on IT device strategies. • Susan mobilises changes in workplace technology when negotiating with her manager on replacing her work phone. • New action pattern in line with the new rule emerges.
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Table 2. Concepts explaining the subtraction logic and process alongside empirical illustrations

Considering these observations, we note that Auto’s DWT process engages in subtraction logic, which we ground in the concept of deinstitutionalisation. The company implemented its DWT not only by appropriating digital technology to create new routines (i.e. addition logic) but also by removing existing workplace technologies to deinstitutionalise organisational actions following and reproducing undesired institutional rules (i.e. subtraction logic). The subtraction logic differs from the addition logic in that it places the inception of changes in workplace routines. While the addition logic starts from new workplace technology’s affordances enabling new workplace routines, the subtraction logic starts from a perceived need to eliminate institutional rules, which conflict the intended DWT, and workplace technology inscribing these rules to disrupt and deinstitutionalise the workplace routines that reproduce these rules. This logic is grounded in the notion that if inscribed institutional rules constrain action, existing workplace technology can exert inertia towards DWT. Hence, the subtraction logic’s key premise is the removal of workplace technologies that inscribe institutional rules that conflict and thus impede the intended DWT to facilitate the deinstitutionalisation of action patterns that reproduce these institutional rules. This means both logics involve appropriating workplace technology—after removal, employees appropriate the altered workplace technology—but differ in their inception. Lastly, we note that with institutional rules, workplace technologies and action patterns constituting workplace routines, we posit that subtraction refers to subtraction of workplace routines as a whole.

Juxtaposing the addition and subtraction logic to constitute a DWT process model

To be clear, our stance is not to claim that previous literature has not acknowledged the need to subtract. For example, IS research has illustrated behaviour in which users deliberately ignored or modified previous routines (Yamauchi and Swanson 2010) as part of institutional work (Bernardi et al. 2019; Gawer and Phillips 2013; Nicholson and Sahay 2009). Rather, our position is a call for sensitivity to this equally important aspect of DWT, which has so far been backgrounded in existing literature

(Baumgartner et al. 2021; Jensen 2018; Kane 2015). We argue that shifting the gaze of future scholarship from the dominant addition logic prevents us from making half-baked theoretical and practical recommendations. The danger of a dominant one-sided logic for DWT, in which the focus is on one at the expense of the other, may, in part, contribute to the abysmal rate of DT success reported in recent studies (Bughin et al. 2019; Clayton-Ball et al. 2020). That is, the definition of DT success differs depending on the observed logic.

However, despite our focus on developing our understanding of the subtraction logic of DWT in this study, the message is not to suggest that subtraction in and of itself alone can lead to DWT or DT. On the contrary, our position is that these transformations should not be seen or characterised as constitutive of either addition *or* subtraction, but as a process involving addition *and* subtraction (see Figure 2). Without diminishing the value of extant literature that has advanced the addition logic, we have chosen to emphasise the subtraction logic in this study to highlight the importance of deinstitutionalising the taken-for-granted. Indeed, our analysis has shown that the addition logic also exists in Auto’s DWT. However, the subtraction narrative in our study struck us as surprisingly critical of the advancement of the DWT. Thus, we call for future research to further explore how these two logics coexist and contribute to the process towards realisation of DWT (and DT). Such scholarly inquiries have both theoretical and practical potential to further illuminate our understanding of DWT and DT.

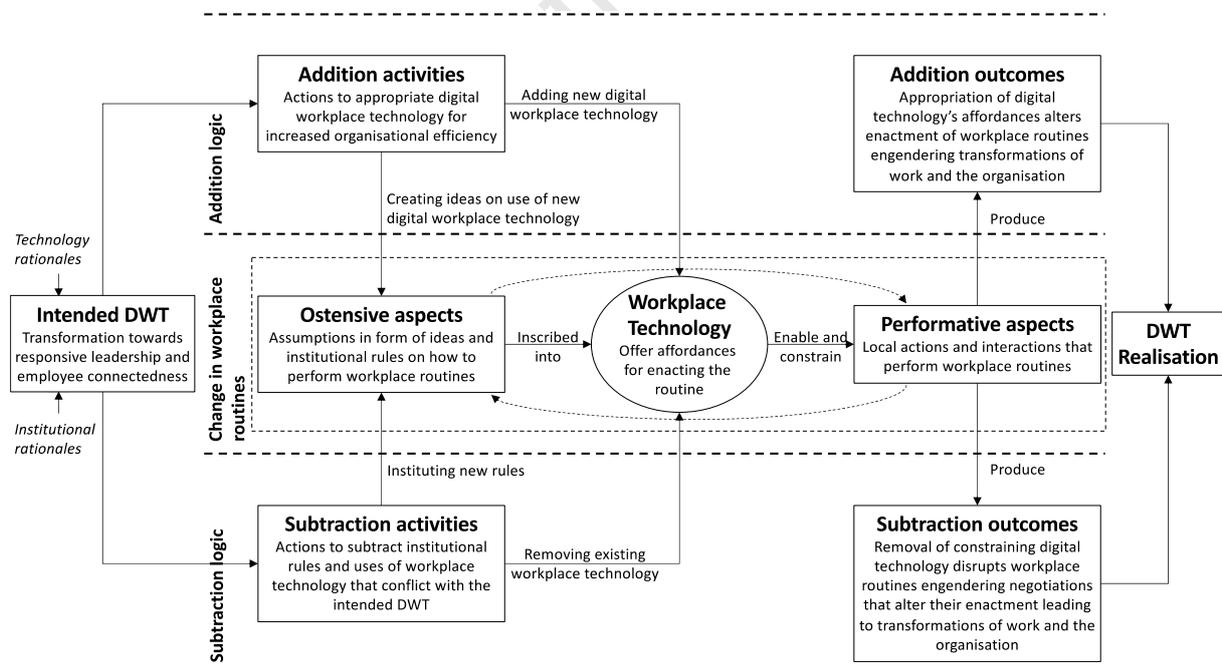


Figure 2. Process model of addition and subtraction logic in digital workplace transformation

The subtraction logic is also reflected in the rationale that Auto constructed for its DWT. We argue that the addition logic reported in existing DWT studies mobilises a technology rationale and is thus

imperative (Markus and Robey 1988), which casts DWT mainly as a case of digital technology appropriation. However, our empirical evidence illustrates that Auto constructed an institutional rationale (i.e. intra-organisational and organisation-environment factors) for its DWT with little reference to digital technologies. Rather than emphasising a technology rationale, the organisation (Auto) states abstract actors such as ‘market’, ‘world’ or ‘generation Y’ and places these with verbs, such as ‘changing’ or ‘interconnecting’, implying a ‘new concept of mobility’ or ‘new values and workplace requirements’. This suggests that an organisation may perceive and conceptualise the rationale for DWT not in digital technologies but in institutional pressures (Mignerat and Rivard 2009; Oliver 1992). As a response to these, Auto constructed a DWT narrative that uses verbs, such as ‘reshape’, ‘define’, ‘realign’ or ‘create’, which all place the actor(s) (Auto and its employees) in a position to take action towards redefining the organisation’s workplace. This suggests that Auto engaged in its DWT because of an organisational imperative grounded in an institutional rationale. Hence, DWT can not only be grounded in a technology imperative but also be involved in an organisational imperative. This underpins the idea that future scholarship should shift its technological focus on DWT, and in extension DT, to an emergent perspective (Markus and Robey 1988) in which both imperatives coexist. We believe that such a shift can bring forth future DT studies that unpack the interrelation of the addition and subtraction logic, including how they bridge, complement or impede each other.

Lastly, our findings hold implications beyond DT to the theoretical lens of deinstitutionalisation and institutional work (Lawrence and Suddaby 2006; Oliver 1992). Institutional scholars have argued that deinstitutionalisation occurs when we reduce the costs of rejecting taken-for-granted rules (Scott 2001). We outlined that workplace technologies—as artefacts—inscribe institutional rules that influence action and patterns of action, meaning and workplace routines. Our findings suggest that removing workplace technologies that inscribe undesired or rejected institutional rules disrupts the actions that build on these technologies. Their removal reduces the costs—the risk of acting unfavourably or the effort required to establish a new rule—for finding new actions or patterns of action. While removal cannot determine or prescribe future action, it changes the course of action. Hence, we propose that artefact removal, specifically the removal of inscriptions, presents disruptive institutional work that can trigger deinstitutionalisation. Moreover, our empirical findings suggest that DWT—and by extension DT—provides scholars a unique context with ample opportunities to deepen our understanding of the role of artefacts in deinstitutionalisation.

Limitations

We chose deinstitutionalisation to propose a subtraction logic to DWT and, in extension, DT. Considering the role of institutional rules in Auto’s DWT and their inscriptions in workplace technology,

we found that this concept best captured the subtraction process we observed at Auto. However, we acknowledge that other, perhaps less radical, theoretical foundations, such as deliberate delearning (e.g. Yamauchi and Swanson 2010), can also support our notion of subtraction. In fact, depending on the context, other theoretical lenses may be equally apt for capturing other routine dynamics or changes underpinning the subtraction logic. Furthermore, not all companies undergoing DT or DWT may engage in directly tackling their institutional rules. We consider this institutional aspect particularly pertinent in incumbent organisations like Auto. Lastly, our research focused on the process that emerged from the subtraction logic of Auto's DWT, but not its overall DWT outcome. We see both theoretical foundation and link to realised outcomes as an opportunity for future scholarship to engage in further uncovering the mechanisms, antecedents and dynamics of subtraction based on alternative theoretical backings, as well as how subtraction, in conjunction with other relevant processes, links to DWT and DT outcomes.

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Appendix A: Analysis of the documents' function, readership and what they tell or omit

Appendix A presents detailed insights into the document analysis. Unpacking the documents, we identified differences in when and to whom the Auto2020 project team published these documents. In terms of when, we noticed a change in communication when Auto's DWT moved from initiation to implementation.

An Auto2020 document at **initiation** stated: 'We launched [Auto2020], but what does this mean for you? Will we entirely change the way we work? No, we've been successful the way we operate, but to stay successful, we need to adjust.'

An Auto2020 document during **implementation** stated: 'One and a half years of [Auto2020]: Let's do real talk! It's important for us to summarise what has happened so far. That's why we took your feedback to our heart and decided to summarise what we have accomplished to this day.'

In terms of to whom, the project team posted most of the documents to the company's enterprise social media platform. In addition, they set up an internal website. These communication channels targeted the internal readership, which comprised managers and employees. However, the company also posted part of the communication on its external website and job page to inform stakeholders and future applicants about Auto's DWT. Depending on whom the documents addressed—internal or external readers—they differed in what they told and omitted. The internal documents included statements on the status quo, for example, '[...] we have to reshape the way in which we cooperate in other areas: Speed instead of endless process loops, flexibility instead of planning years in advance, dialogue and innovation instead of silo thinking.' External documents omitted their respective expressions but focused on painting a picture of the intended digital workplace. This suggests that Auto omitted details about the status quo in documents for external readership since the company considered its current workplace unfavourable in the eye of stakeholders and potential applicants. Similarly, the central project team changed the narrative in the documents posted at launch compared to the documents distributed during implementation. At launch, the central project team focused its communication on explaining

Auto2020 and its rationale and goal. During implementation, they told stories of realised change, e.g. redesigned processes and appropriation or removal of workplace technologies. Table A shows a summary of the documents' function, readership and what they tell or omit.

	Documents at DWT initiation	Documents during DWT implementation
<i>Author(s)</i>	<ul style="list-style-type: none"> • Central DWT project team 	<ul style="list-style-type: none"> • Central DWT project team • Employees participating in DWT
<i>Document function</i>	<ul style="list-style-type: none"> • Introduce DWT • Provide a rationale for DWT in organisation-environment factors • Construct a reality of urgency to change • Root for employee support 	<ul style="list-style-type: none"> • Report and inform about implemented changes • Delegitimise established routines • Construct a reality of organisational change • Root for employee support
<i>Readership</i>	<ul style="list-style-type: none"> • Internal readership: Managers and employees • External readership: Stakeholders, future job applicants 	<ul style="list-style-type: none"> • Internal readership: Managers and employees
<i>Documents tell</i>	<ul style="list-style-type: none"> • DWT is a bottom-up initiative. • DWT is a strategic choice. • DWT responds to organisation-environment factors pressurising Auto's business. • Auto is in a strong position (recent business success). • Auto intends to drive and shape its DWT as opposed to being driven. 	<ul style="list-style-type: none"> • DWT is being rolled out. • Changes to workplace routines and related information systems have been implemented. • Further changes are required. • Employee support is crucial (rooting).
<i>Documents omit</i>	<ul style="list-style-type: none"> • Actual changes for DWT • Status quo in Auto's traditional workplace (only told in internal documents) 	<ul style="list-style-type: none"> • Rationale for DWT

Table A: Summary of the document analysis regarding documents' function, readership and what they tell or omit

Appendix B: The rationale and goals that Auto constructed for its DWT

Appendix B presents the results of the narrative analysis of Auto's DWT documents. This analysis focused on identifying the actors, actions and the object of action (or outcome) in these documents. We then related these core elements of a narrative to Oliver's (1992) framework of institutional factors preceding deinstitutionalisation, namely intra-organisational and organisation-environment factors, to identify the rationale behind Auto's DWT. Table B.1 shows the organisation-environment factors that the documents construct as rationale for DWT. Table B.2 shows the intra-organisational factors that the documents construct as rationale for DWT. Table B.3 shows an overview of all the factors identified in the document analysis within Oliver's framework. Similarly, we analysed the narratives to identify the car manufacturer's DWT goals. We related these to Dery et al.'s (2017) digital workplace dimensions (see Table B.4).

Factors	Actors	Actions	Object of action (or outcome)
<i>Increasing resources or domain competition</i>	Market	• Revolves	• Around the customer
		• Changing	• Into a digital market
		• Interconnecting	• Intensifying competition • Introducing new competitors
	Competitors	• Penetrating	• Our markets
		• Know more	• About our customers
	Labour market	• Interconnects	• Intensifies competition for labour • Intensifies war for talent • Best employees (on the labour market)
<i>Increasing innovation pressure</i>	Products	• Being created	• Beyond our core business
	Business context and core business	• Face	• Significant shifts and pressures (electric mobility and autonomous driving)
		• Changing	• Business model
<i>Changing societal values</i>	World	• Is changing	• Leadership • Management approaches
		• Demands	• New behaviour from Auto
	Market	• Redefines	• Mobility as not purchasing a vehicle
	Generation Y	• Is ushered into	• The workforce
		• Has	• New workplace requirements
	Customer expectations	• Changing	• Marketing and communication
	Mobility	• Follows	• New rules
		• Has become	• More than a car
<i>Changing government regulations</i>	Legal framework	• Is changing	• No object or outcome stated in analysed documents

Table B.1. The intra-organisational factors that the documents construct (table shows direct excerpts from Auto2020 documents)

Factors	Actors	Actions	Object of actions (or outcome)
<i>Increasing technical specifications</i>	Auto	• Developing	• Expertise outside our core competencies
	Work environment, workplace	• Changing	• More projects • Virtual (remote) work
<i>Increasing workforce diversity</i>	Multiple Generations of employees	• Working in	• Auto
		• Have	• Different understanding of work

Table B.2. The intra-organisational factors that the documents construct (the table shows direct excerpts from Auto2020 documents)

Intra-organisational factors	Organisation-environment factors
Changes in political distributions <ul style="list-style-type: none"> • Increasing workforce diversity <ul style="list-style-type: none"> ○ Different generations work at Auto. ○ Generations have different values. • Power reallocations <ul style="list-style-type: none"> ○ Changes to approval processes (e.g. for business trips) 	Competitive environment pressures <ul style="list-style-type: none"> • Increasing resource or domain competition <ul style="list-style-type: none"> ○ New competitors penetrate the market ○ Markets interconnect ○ Labour markets interconnect intensifying war for talent • Increasing innovation pressure <ul style="list-style-type: none"> ○ New products beyond core business

	<ul style="list-style-type: none"> ○ Business models face technological pressure (e.g. autonomous driving, electric mobility)
<p>Changes in functional necessity</p> <ul style="list-style-type: none"> • Increasing technical specification <ul style="list-style-type: none"> ○ Developing expertise beyond current core business ○ Changing work environment (increasing workload and virtual work) 	<p>Social environment pressures</p> <ul style="list-style-type: none"> • Changing government regulations <ul style="list-style-type: none"> ○ Auto's legal framework is changing • Changing societal values <ul style="list-style-type: none"> ○ Changing customer expectations ○ Concept of mobility is changing ○ Values and requirements for management approaches and leadership are changing.

Table B.3. Intra-organisational and organisation-environment factors that form institutional rationales for Auto's DWT

Intended DWT goals	Actor	Actions	Object of actions (or intended outcome)
<i>Empowerment and flat hierarchies contribute to responsive leadership</i>	Auto	• Change	• Systems, processes, structures
		• Redefine	• Ourselves (Auto)
		• Realign	• Approval processes
		• Limit	• Bureaucracy
		• Trust and inspire	• Each other (managers and employees)
<i>Access to shared collaboration platforms and culture of trust contribute to employee connectedness</i>	Auto	• Change (reshape)	• How we collaborate
		• Create	• Collaborative team culture • Culture of trust
		• Align	• Working to digital technology

Table B.4. The narratives that Auto constructs for its DWT goals by Dery et al.'s (2017) digital workplace dimension

Appendix C: Visualisation of the first vignette of abandoning the gatekeeping approval routine

Appendix C shows Figure C, which illustrates Auto's abandoning of its gatekeeping approval routine within its business travel process.

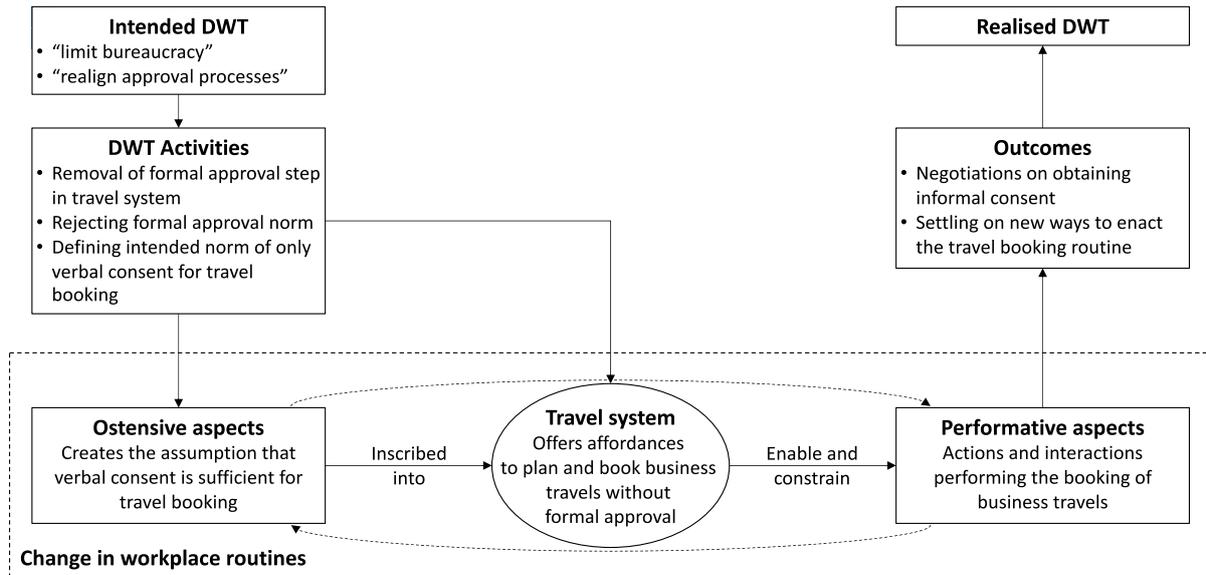


Figure C: Visualisation of the first vignette of abandoning the gatekeeping approval routine

Appendix D: Visualisation of the second vignette of abandoning the hierarchy-enacting routine

Appendix D shows Figure D, which illustrates Auto’s abandoning of its hierarchy-enacting routine within its IT ordering process.

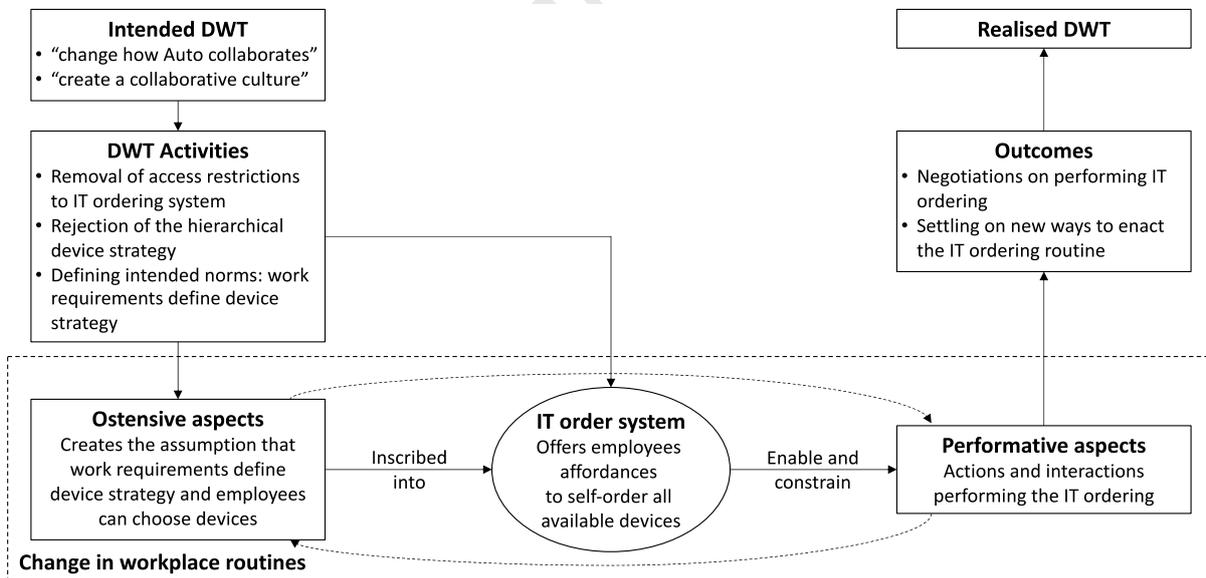


Figure D: Visualisation of the second vignette of abandoning the hierarchy-enacting routine