# Flow with the Go:
# Real-time Continuous Improvisation in Digital Business Ecosystems

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## Abstract

This chapter explores the concept of Real-time Continuous Improvisation, suggesting that real-time and improvisation are interrelated concepts and representative of organizing performance processes in the fast-paced conditions of digital business ecosystems. We contend that the proliferation of digital platform ecosystems and the real-time interactions and speedy exchanges that they are creating, is pushing us from exceptional improvisation towards continuous improvisation. Improvising continuously in such real-time environments will require new ways of smoothing that process into organizational learning. That is what we have called "Flow with the Go."

To be able to survive and thrive under these conditions, the capacity to continuously navigate reflectively in such turbulent and complex settings -- while being able to react fast in synch with digital technologies and stakeholders -- is vital for operating successfully. Equally important is the capacity to constantly learn and innovate, which often happens in combinations of sudden moments of problem-solving when faced with new or unexpected challenges and flow experiences. Though these practices are being anecdotally reported, they are less acknowledged, articulated, explored, and understood as a real-time phenomenon. Our approach here is to better understand the coordination between the fast pulsing of real-time digital data flows and processes with the inner (and often slower) physical and human processes to improve our real-time continuous improvisation processes. Central to this is exploring how individuals--especially managers--can improvise continuously in a comfortable manner by synthesizing outer and inner forms of real-time management.

The chapter first characterizes these new conditions and the factors that are accelerating the tempo in digital platform ecosystems, leading to the need for, and practice of, real-time continuous improvisation. We show that when the tempo of data generation, data exchange, and data use go very fast, then digital, human, organizational, and environmental effects

interweave in a constantly interconnected pulsing fabric. We then set the stage for conceptualizing the dimensions of real-time continuous improvisation by taking advantage of the Fast & Flow real-time management approach. The Fast & Flow approach helps describe how to apply the dual nature of real-time information in managing fast responses to sudden events as well as managing continuous actions. We then further show how real-time continuous improvisation differs from previously defined dynamic capabilities and improvisational capabilities. "Flow with the Go" coins the improvisation needed to synchronize the human and digital pacing that leads to better performance in digital ecosystems. We propose an explanatory pulsing framework and managerial mindset that acknowledges the situated and temporal contexts that aligns fast and flow temporal logics, and that appreciates human-digital pacing. The chapter concludes by drawing implications for scholars and managers reflecting on what theories and practices that contribute to our understanding of real-time continuous improvisation as organizing processes and how "Flow with the Go" can affect learning and business performance in digital ecosystems.

**Section 1: Real-Time Continuous Improvisation in Digital Business Ecosystems**

In the past fifty years we have experienced an evolutionary change in organizational forms and organizational boundaries as market turbulence and business environment turbulence have increased. The business climate has moved from structured, stable, and predictable environments (cyclical management) to turbulent and uncertain environments (storm navigation and crisis management). A digital platform economy of today's real-time era is defined by disruption, exponentiality, fast-paced technology and meshed markets.

The role and relevance of improvisation depends on how markets, organizations, strategy, and competition are viewed, particularly the strategic scope and market turbulence. Accordingly, the role and relevance of improvisation is changing and will become the new normal, which we outline through the difference between dynamic capabilities, improvisational capabilities, and real-time continuous improvisation.

Figure 1 illustrates the shifts in strategic focus and the increasing influence of real time:
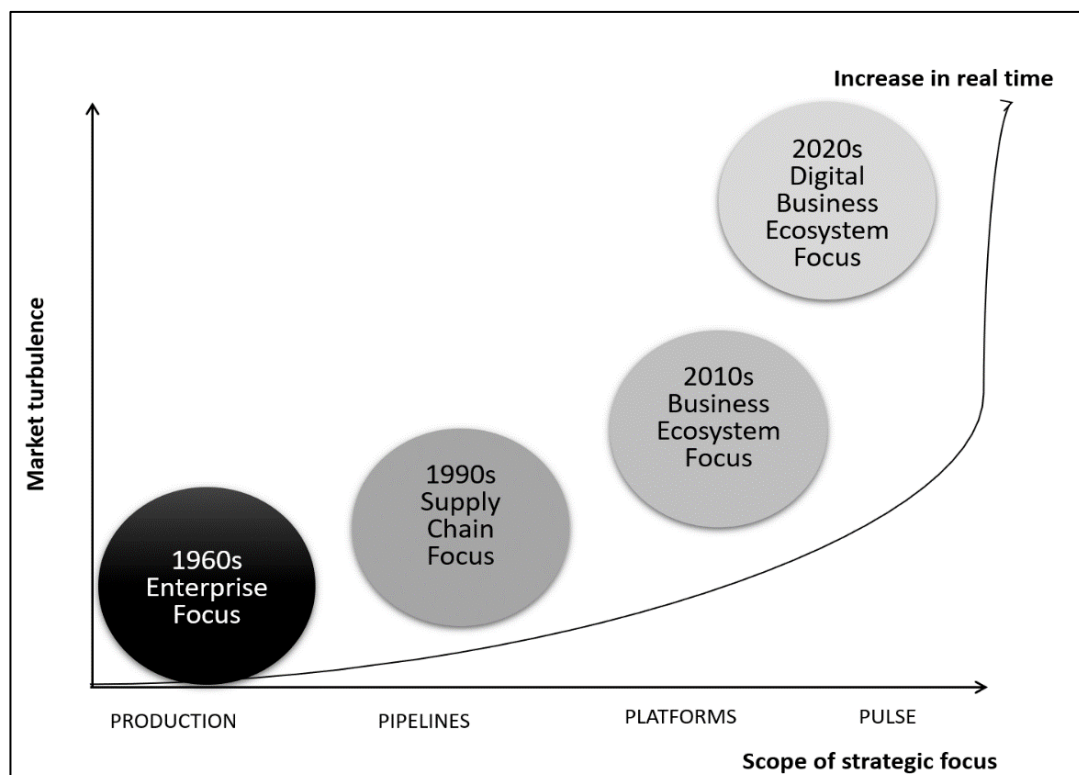


**Figure 1. Shifts in Strategic Focus and the Influence of Real Time (adapted from Rydén and El Sawy, 2019b)**

This shift from pipelines to platforms is well-documented and explained in both research and practitioner journals (cf. Van Allstyne et al., 2016). Managers of the post-war period were focusing on production optimization by acting at the appropriate time to reduce waste of time rather than encouraging improvisation (Ciborra, 1999). Then, technological change was seen as planned engineering rather than improvised, reflected in Lewin's (1952) three-stage change model of "unfreezing," "change," and "refreezing. Ciborra (1999) points out that improvisation is a ubiquitous human practice even in highly structured organizations, leveraged to face situations where rules and methods fail. The temporality of improvisation lies 'outside' the temporality of routine activity. Though managers were dominated by rational, and scientific ways of thinking about enterprise processes, chaotic discovery processes 'below the surface' was part of market decision-making. This often highly situated, and fragmentary nature of political and economic activity and decision-making, illustrated by the Garbage Can Model (Cohen, March, and Olsen, 1972), also reflected the importance of improvisation capabilities.

In the 1990s we shifted from what used to be a singular focus on the enterprise and its internal processes (*Production*), to what expanded to an enterprise and its supply chain all the way from sourcing to customers *(Pipelines)*. In the 90s, the temporal performance art form, jazz, seeped into the management literature (Eisenhardt, 1997; Barrett, 1998; Hatch, 1998; 1999; Weick, 1998), for understanding organizational improvisation while underscoring the centrality of time. Orlikowski and Hofman (1997) referred to organizations as global, responsive, team-based, and networked and suggested improvisation as a method for managing technological change. Using the jazz metaphor, they pointed out how effective execution of improvisational change requires aligning the technology and the organizational context with the change model. Such alignment requires explicit and ongoing examination and adjustment of the technology and the organization. Since then, we have seen improvisation in several areas such as *product development* (e.g., Moorman and Miner, 1998), *disaster management* (e.g., Mendonca, 2007; Weick, 1993), *entrepreneurship* (e.g., Hmielski et al., 2013), *strategic decision-making* (e.g., Eisenhardt, 1997; Davis, Eisenhardt, and Bingham, 2009; Cunha, Clegg, and Kamoche, 2011), *capability-building and organizational change* (e.g., Smets, Morris and Greenwood, 2012; Mannucci, Orazi, and Valk, 2020), and its potential for *managing unforeseen events* by abandoning routines (e.g., Suarez and Montes, 2019).

In the 2010s the ecological perspective of business strategy further expanded the scope of strategic focus as the organization's business ecosystem went beyond just tight supply chain

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partners who are directly involved in the delivery of an organizations' products and services to also include other entities that help the ecosystem niche survive and thrive. Improvisation in digital business ecosystems demands approaches that rely more on real-time detection of weak signals of changes and improvisations upon them. Cunha, Clegg, and Kamoche (2011: 265) state *"in fast changing environments, strategy entails noticing weak signals, enacting them as an object of attentions, making sense of them, and, consequentially, doing something in practice, hence the notion of strategizing in which rapid action is a valuable capacity".*

The connection between improvisation and real-time management has also been alluded to by Cunha et. al (2011) who have characterized improvisation as a form of ''real time foresight." They define the ability to take fast action, without the benefit of plans and with the available resources, as an important source of competitive advantage in high-speed environments. This redefined role of improvisation puts into focus the detection of weak signals of changes and improvising upon them. In such environments, it becomes more critical to incorporate the dynamic role of emergent, unplanned improvisational processes into managerial strategy. In this vein, Stein (2011) introduces improvisation as a model for real-time decision-making. He illustrates the connection between real-time decision-making contexts and improvisation by the jazz example as well as a fighter pilot on a mission who, supported by computer systems, must make series of interdependent decisions in real time, (i.e., each choice leads to other choices processing down a decision tree) in an environment that changes autonomously and because of the decisions made in real-time.

Concurrently with the increase of digital intensity and digital platforms, this has further evolved into an ecosystem view with entities that are connected as digital business ecosystems (Platforms) which is becoming a salient view in the 2020s. We believe that we are moving quickly towards a fourth configuration and evolution in the 2020s and beyond in which not only are entities increasingly connected with blurred boundaries like a fused fabric, but where the rapid interconnection of digital platforms is generating accelerated tempo through constant real-time data flows. This is further exacerbated by the Internet of Things (IoT) and multiple sensors generating continuous data. The constant bombardment of these very rapid data flows is generating the multitude of data pulses and pulsing that trigger the way that organizations decide, manage, and execute. We identify this pulsing configuration in Figure 1 (Pulse). As global competition becomes more turbulent in an increasingly uncertain future, it calls for more process-based approaches that incorporate the dynamic role of emergent, unplanned

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improvisational processes happening in instant moments. We are therefore moving away from conceptualizing organizations as sites where the activity of improvisation occurs, to now see improvisation as ongoing processes of "organizing" (Weick, 1993; 1998) the digital ecosystem.

*The emergence and growth of digital platform ecosystems and the real-time interactions and exchanges they are creating, is pushing us slowly, but surely, from exceptional improvisation towards continuous improvisation in real-time.* The Covid pandemic provides a sudden backdrop to the intense use of improvisation as we were forced to challenge organizing and managing-as-usual. Perhaps the new normal is not primarily going to be driven by the Covid shocks, but rather by the real-time system growth. We seem to appreciate the importance of improvisation the less confined and stable we see organizations, but Weick (1998) points out that at extremely fast tempos there is no choice but to use preplanned, repetitive material to keep the performance going, which suggests that there is an upper limit to improvisation. A key issue is just how much of a constraint high velocity really is if the increasing tempo of activity may discourage adaptive improvisation and instead encourage a reversion back to old ideas because humans cannot or will not follow.

However, since much has changed in the past 25 years, so it will be increasingly important to understand how individuals and organizations can improvise continuously and effectively in the digital business environment and if the upper limit to improvisation still applies or only applies to certain ecosystem contexts.

**Section 2: Understanding the Pulsing Fabric**

We have learned that the decision and action processes of a fighter pilot or jazz musicians, who depend on sensitive instruments and operate in high-velocity environments, can be characterized as real-time improvisation, but how can this be useful in a digital business context? In the new real-time environment of digital business ecosystems, improvisation also depends on how humans and technologies interact in fast-changing dynamic networks and how their different tempi are synchronized to improve business performance.

This raises central questions for leaders to consider: *How can we better understand the synchronization of the real-time tempi of people and technology processes in digital business ecosystems? Is the pulsing of real-time data flows and inner flows of people following any specific direction? If so, who sets it, how flexible is it, and how can we better coordinate*

*between the fast pulsing of real-time digital data flows and processes with the inner (and often slower) physical and human processes?*

First, we must understand the factors that are accelerating this tempo in the digital business ecosystem. We have identified four such factors:

The *first factor* is increased customer expectations in terms of speed: digital platforms such as Alibaba, Alphabet, Amazon, or Apple seem to be driven by customers demanding more intuitive, integrated real-time solutions and services. Amazon has single-handedly changed customer expectations to get our stuff delivered "now." Social media like Facebook, Twitter, and WeChat, as well as Google have conditioned customers to increasingly want to know "now", and the likes of Uber of Netflix have ushered a whole slew of on-demand services with rising expectations of "now" (Rydén and El Sawy, 2019a). Fast data-pulsing enables these companies to constantly compress the time separating detection and response to address a range of needs along the customer journey. At the same time, they are operating as part of a digital business ecosystem which continuingly innovates and expands market scope while delivering greater value in terms of the digital customer experience and overall value proposition. The concept of improvisation thus gains a new meaning when considered in fast changing digital markets, where long-term foresight is rendered meaningless and the need for innovation creates pressures for constant change (Cunha, Clegg, and Kamoche, 2011).

The *second factor* that is pushing accelerated tempo is the rapid and continuous generation of data through IoT sensors in both the industrial space (such as wind turbines and industrial machinery) and the consumer space (such as health and fitness wearables) and AI applications in both the consumer and the industrial space. Similarly, with the increasing proliferation of Artificial Intelligence (AI) and Machine Learning (ML), we now have organizations that are living with AI applications that can learn faster and deeper than people can and are speeding up processes and decisions to unprecedented levels. These AI applications work as small-scale data-pulsing information and insights in organizations as well as executing in real time. This accelerating march towards real-time business environments, and the continuous pulsing of rapid data flowing from multiple data sources, generate multiple rhythms. With this follows an increased need to sense and synchronize the many pulses to manage in the immediate moment. *When the tempo of data generation, data exchange, and data use go very fast, then digital, human, organizational, and environmental effects interweave in a constantly interconnected information network*. This data-pulsing fabric

defines digital business ecosystems as fast, adaptive systems that respond to changes in the types of products or services that people value. Moreover, the capacity to continuously improvise reflectively in real time rather than proactively, where historical data is used to prescribe future scenarios, may also negate the need for a long-term strategy (figure 2):
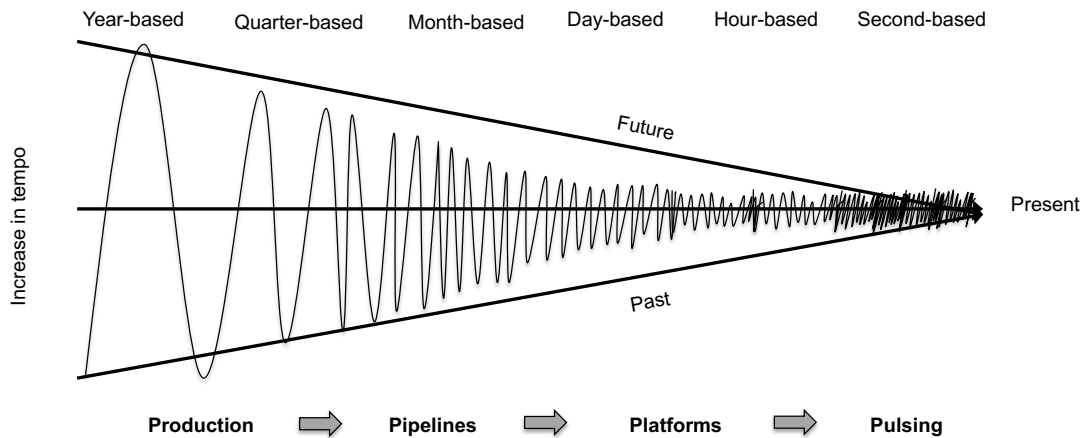


**Figure 2. The collapse of past, present, and future in real-time environments (adapted from Rydén and El Sawy, 2019b)**

The *third factor* that is speeding up pulsing of data is the ease of continuous large-scale digital field experimentation by platform in launching new products and services and testing deep personalization strategies (cf. Sun et al., 2021). This is now commonly known as A/B testing and becoming increasingly the mode of operation in the online world (Kohavi et. al., 2020) and used increasingly by all the large platform companies such as Facebook, Amazon, and Alibaba. These continuous experiments direct day-to-day tuning of operations in the platform world in which real-time experimentation is feasible and practical. This is coupled by the fact that the speed of innovation increasingly requires agility in seizing opportunities and here-and-now business iteration.

*The fourth factor* that has accelerated tempo is the Covid-19 pandemic. It has forced organizations to navigate at unprecedented levels of market uncertainty, unpredictability, retrenchment, and intense need for fast adaptation to new market conditions (Kottika et al., 2020). Organizations all over the world have been forced to pivot to digital engagement solutions at unprecedented speeds and those solutions are here to stay further enabling the capabilities for accelerating the move towards real time. Digital transformation projects that

we thought would normally need five years to complete have been completed in few months whether in healthcare, retail, or even government services.

*Pulsing, or pulsatile flows*, is the term we use to indicate the need for high-tempo strategic adaptation in a vigilant digital platform ecosystem replete with continuous learning in real-time contexts (El Sawy and Majchrzak, 2004). Thus, in a Pulsing Era, managers and employees need to have the skills to sense the ongoing activities, intentions, emotions, and challenges through real-time data and the tools to respond to needs to be fulfilled here and now.

The management required for creating such moments involve self-monitoring combined with real-time monitoring, just like sensor systems for detecting emerging earthquakes. These seismic waves that pass through the ground are part of the Earth's natural rock cycles or constantly pulsing rhythms of the earth that have sudden moves. We know that we cannot avoid earthquakes, but the better specialists are at understanding the natural phenomenon, using real-time advanced technology for learning about its dynamics by measuring vibrations of structures, the better can they sense the arrhythmia signals and initiate further probing based on these signals (Burkett, Given, and Jones, 2014). Real-time learning loops enable authorities to act fast to these challenges and orchestrate through complex interconnected information flows the various actions that must be synchronized to protect human beings. One adaptive view of learning is that of cognitive, affective, and behavioral interaction in complex responsive processes that produce emergent coherence and self-organization (Stacey, 2001). It occurs when different vibrating configurations/processes come into proximity (Hunt and Schooler, 2019) and they eventually begin to vibrate together at the same frequency. It implies a shift in perspective from a linear and sequential alternation between stages of past, present, and future, stability and change to a "continuous synchronization of rhythmic pulsing" perspective. Likewise, ecosystem navigation demands more rhythmic and holistic understandings of digital ecodynamics (El Sawy et. al., 2010) which calls for alternative thinking. To better understand adaptive digital-human interaction through the temporal domain and introduce an accompanying rhythmic language, we conceptualize digital ecosystems as *rhythmic fabrics* (See also Oliveira and Lumineau, 2019).

Pulsatile self-organizing activities in digital platform ecosystems can be illustrated as fabrics of interconnectedness that involve a vast and ever-expanding network of existing and emerging stakeholders and technologies. These forms of dynamic organizing do not constrain learning, adaptation, or innovation to structural boundaries of an organization (Zammuto,

Griffith, Majchrzak, Dougherty, and Faraj, 2007). Inspired by scholars (e.g., Weick, 1993; Callon, 1998, D'Adderio, 2011; Michel, 2014), the conceptualization of humans, technology, and contexts as mutually constituted in rhythmic fabrics advances our understanding of the performative aspects of the "real-time learning network". Bakken and Hernes (2006) propose that organization researchers should be cutting verbs and nouns from the same cloth. In illustrating the co-constitution of verbs and nouns, they draw on Von Foerster's (1967) example of the "pseudopod," whereby amoebas or similar unicellular organisms extend temporary projections to propel themselves or to engulf food. The essence of the pseudopod lies in its fluidity for which it is necessary to combine a physical dimension (noun) with a temporal dimension (verb). Likewise, the essence of the rhythmic fabric is 'contextually contingent fluidity'. The pseudopod example shows the usefulness of expanding perspective from entity to process when studying a dynamic phenomenon such as a constantly pulsing data fabric. Also, Hunt and Schooler (2019) find that all things are processes being constantly in motion, vibrating, oscillating, resonating, at specific frequencies.

Dealing with this pulsing configuration in rapidly changing turbulent environments requires a different form of simultaneous sensemaking that was identified by organizational theorists over twenty years ago (Bogner and Barr, 2000) when they examined hypercompetitive business environments in which firms act boldly and aggressively. They explored the conditions that managers encounter in making sense of such hypercompetitive industry environments and they showed that adaptive sensemaking practices for dealing with temporary turbulence had to be used. Most importantly, they argued that in hyper-competition, those processes would continue indefinitely and eventually become institutionalized as standard operating procedures rendering conventional sensemaking frameworks obsolete. Extrapolating forward 20 years to our emerging pulsing digital era, does that imply that improvisation will be the rule, rather than the exception? We believe it does, and the methods and processes of improvisation will have to change as well. In conditions of digital platform ecosystems driven by real-time data for market analysis, business operation, customer engagement, and product and service offerings, a new form of continuous improvisation will be needed for better understand and manage people and business processes in real time. We term our suggested approach "Flow with the Go", and we examine that theoretical positioning in the next section.

**Section 3: Improvisation as a Real-time Phenomenon: Flow with the Go**

Variations on the characterizations of time have been identified since the time of the ancient Greeks who had two different words for the concept of time *Chronos* and *Kairos* (Aristotle, 1936; Crossan, et al., 2005; Orlikowski and Yates, 1998). *Chronos* referred to an objective time that is measured with clocks. *Kairos* referred to the subjective deep time identified by philosophers and mystics where the world seems to stop while the individual can move forward in the present (Andersen, 2019). Crossan et al. (2005) define improvisation as the point where time to plan converges with time to act and propose improvisation as a vehicle for articulating a dialectical view of time-based organizational phenomena. So, there is no denial of their existence. However, we are extending this notion and operationalizing it for real-time digital business ecosystem contexts.

Management literature frequently use concepts such as just-in-time, time-to-market, time pacing, reaction time, timing, and real time (Crossan et al., 2005). The concept of real time in decision-making is not new (e.g., Brehmer, 1990), neither are the challenges of real time management of continuous knowledge flows, faster cycles, and shorter reaction times when organizations and people are under time pressure (cf. El Sawy and Majchrzak, 2004; Carlsson and El Sawy, 2008). To update our understanding of real-time improvisation and how to create a state of real-time responsiveness, we need a succinct language that is applicable to human, technology, organization domains respectively to tell what matters to organizations operating in the digital platform economy. We are taking the temporal context into account by proposing real-time continuous improvisation as a sensing and learningful capability, which we refer to as "Flow with the Go".

Organizational improvisation involves the conception of action as it is unfolding and drawing on available resources (Cunha et. al., 1999). A general perception, based on the Latin definition, is that improvisation happens in "a now", but it does not belong to a regular "clock-time" chronology in a linear sequence of events, but is rather an irruption or unexpected, surprising "now" breaking of plans. In Latin, improvisation is "extempore action" (Quintilian, 1993) or deliberate extemporaneous creation of novel activities (Cunha, Miner and Antonocopolou, 2017). It retains the qualities of suddenness and extemporaneousness as opposed to the idea of a slow, judicious decision. The negation "Im" means "not" and "Proviso" means to stipulate beforehand or to foresee, so improvisation means unforeseen or to take action in the moment, which aligns with the notion of real-time decision making (Stein, 2011). *Extemporaneous* defines improvisation as occurring (composed, performed, or uttered) in a

moment and literally means "outside the flow of time", like the Greek concept of 'kairos', the appropriate time, a moment without repetition or appeal (Aristotle, 1936). This leads to the relevance of understanding what outside the flow of time actually means.

According to Crossan et al., (2005), time is a resource that needs to be actively managed for organizations to remain competitive particularly in the context of highly dynamic and unpredictable environments. Under such conditions, improvisation allows for the convergence of planning and execution, and individuals make spontaneous use of their creativity and expertise to tackle unexpected problems or opportunities (Crossan et al., 2005). Decisions about pace, transitions, rhythms, and cycles have become increasing relevant for strategists (e.g., Ancona and Chong, 1996; Eisenhardt and Brown, 1998), but is complicated by the multiple conceptualizations and assumptions of time that exist. To become more skilled at thinking on your feet is central in improvisation, and something you effectively practice in a real-time environment. But improvisation may also be designed to bring people in a flow state, which increases wellbeing and performance (Forbes, 2020).

We base the concept of Real-time Continuous Improvisation on the Fast & Flow real-time management approach, which derives from an empirical study of real-time management -with 1,000+ senior managers from a variety of industries (Rydén and El Sawy, 2019a). The study also included in-depth interviewing of 16 senior managers in Denmark and the US. By asking the managers 'how do you perceive real time?', that study disentangled taken-for-granted assumptions of real time, which confirmed how people have different perceptions of real time (cf. Fraisse, 1963). The survey and interviews revealed that 'real time' is a phenomenon constituted by a complex set of assumptions, leading to different organizational and managerial norms and dispositions. Some managers viewed real time as being context-dependent and about a third of them viewed it as an emphasis on the immediate present and about managing in the here-and-now moment. These views also appeared to affect corporate performance, indicating that orchestrating different perceptions of real time across different functional areas (such as marketing versus operations) was central to creating value.

From the questionnaires and interviews, the study identified what it called "Fast & Flow" perceptions of real time. Drawing on insights of managers' diverse facets of experience and practices of "real time", the study developed the Fast & Flow framework, which shows that the two primary perceptions of real time in management contexts are *utility time* and *sense time* (See Figure 2 excerpted from Rydén and El Sawy, 2019a).
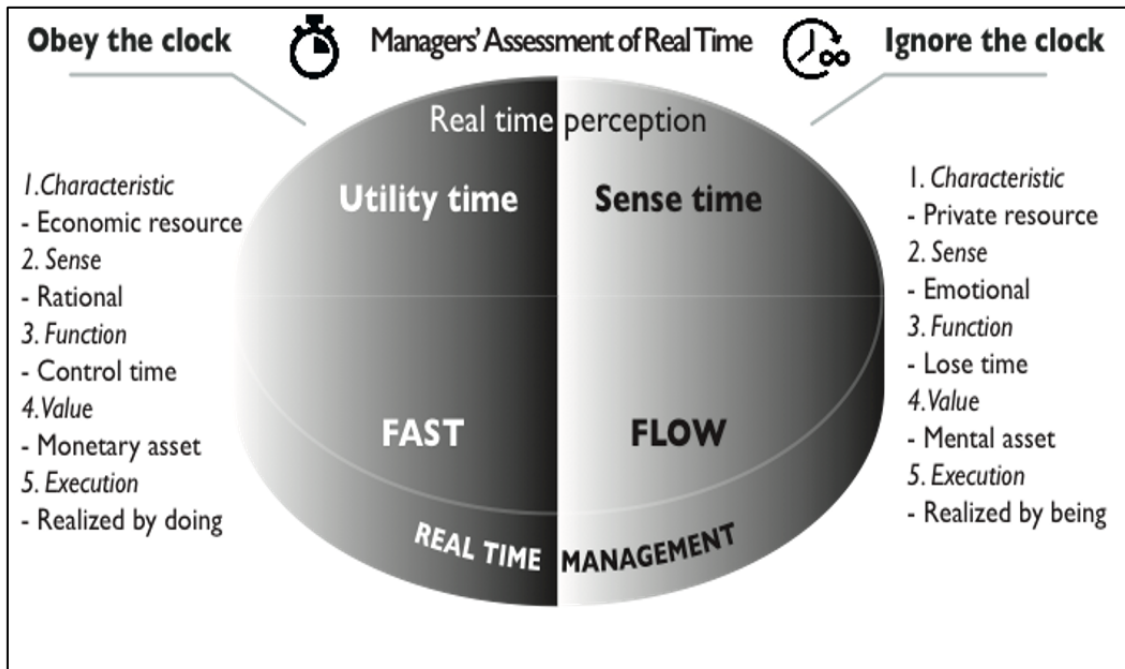
**Figure 2. Fast & Flow Perceptions of Real-Time (Rydén and El Sawy, 2019a)**

Managers influenced by a utility time framing *(Fast time)*, tacitly assume that time is a scarce resource that they must save by doing and executing as fast as possible. Real time is viewed in a rational and linear manner as clock time, an economic resource or monetary asset to be controlled and managed and to invest prudently. Real time is related to performance improvement by acting fast, "The faster the better" which aligns well with a production optimization focus of speeding up processes.

On the other hand, in a *sense time* framing *(Flow time),* real time is relative and depends on the subject (cf. Shipp, Edwards, and Lambert, 2009; Tang, Richter, and Nadkarni, 2020) and context rather than the clock and can be a means of achieving a flow state. Some even associate sense time with acting at a slower pace and being mindful of human interaction and digital engagement. Regarded as a private resource, it expresses energy or an emotional sense of being in the present moment. It is not linear like clock time, but circular and dancing inside the mind. An "improvisatory state of mind" as experiencing the flow state of mind has been identified and examined by psychologists (cf. Csikszentmihalyi, 2000; 2008) and shown to enable more creative and clear thinking. The function of escaping the clock also presents real time as a valuable mental asset that helps people to sense better what is in focus, and be more reflective, and manage the moment. In line with Crossan et al. (2005) and Burrell (1992), who argue that apparently contradictory time perceptions can be viewed in synthesis, we argue that

a synthesis of fast and flow real time perceptions is both possible and desirable and what managers need to pursue for organizations to remain competitive in today's environment.

We must improvise all the time so relevant to this study is how we do that in a comfortable manner? Improvisation helps to synthesize fast and flow time in organizational processes to better synchronize internal and external pacing in business ecosystems. In turn, that leads to a more sustainable way of continuous improvisation. The managers interviewed indicated that being able to being mindful and managing the moment while also being able to react and execute quickly, was something that bettered both the performance and their wellbeing. *So, Fast & Flow temporalities are mutually reinforcing when synchronized and meshed rather than sequentially moving from the one to the other*. Thinking about this from a pulsing perspective, different types of pulsing data flows need to be managed within an individual, organization, and digital business ecosystem.

There is considerable difference between how improvisation is defined and the variations hereof depending on the business context. Previous examples given are performances happening in a finite period (playing, flying, racing, crisis management, etc.) can be defined by a beginning, a middle, and an end. But in the context of business intelligence systems that can manage continuously expanding processes of collaboration and competition in digital ecosystems, changing data flows can alert platform organizations to continuously respond to subtle and weak signals, especially dissonant signals that indicate deviations from business-as-usual practices. Improvisation facilitates adaptation and translates alertness into action, so the second type of "intelligence system" relates to human processes of "competition and collaboration" with swiftly changing digital technologies and data flows. In focus here is whether the use of data and digital technologies are enforcing the human flow experience (Csikszentmihalyi, 2008) and hence the ability to improvise or are they seen as competitive elements that disturb the flow? Insight into human rhythms requires more than business analytical skills. The co-existence of these two temporal phenomena (Fast & Flow) and managing their different nature of data pulsing in real-time digital ecosystem contexts needs to be acknowledged as real-time continuous improvisation. Researchers have stressed the importance of reflection and sensemaking (e.g., Weick, 1998) to help people to learn and interpret prior experience. Humans need time to process the rich experiences, immersive digital information flows, and hence intensity of real-time contexts they encounter in digital ecosystems to stay in flow to learn.

The Fast & Flow perspective can reveal emotional reactions when people must accommodate to emergent and continuous change in the daily operations of organizations. It is therefore a useful starting point for providing better facilities for individual and organizational improvisation. Taking an ecosystem perspective, business processes take place as an interplay between human and non-human actors. Flow and empowerment occur when there is synergy between the individual's physical and mental wellbeing and commitment to mastering a task. Personal autonomy promotes independence and the ability to improvise in real-time.

**Section 4: From Dynamic Capabilities to Real-time Continuous Improvisation**

Improvisation has both an intentional, deliberate character and an inherent creative element (Vera et al., 2016) and it has usually been treated as an exceptional form of behavior: organizations need to improvise episodically, when routines fail and there was forced learning-by-doing (Miner, Bassof, and Moorman, 2001; Crossan et al., 2005). As the previous section outlined, improvisation has been studied in organizational contexts, but as the world changes, we need to describe and explain real-time improvisation as a root process in organizing the digital business ecosystem and as an invisible asset for companies operating in high market turbulence to explicate the tacit, taken-for-granted quality in *all* organizing (Weick, 1998).

Rapid moves are at the heart of the process-based view of competition in the pulsing real-time environment and managerial improvisation becomes a key top management skill and capability. For instance, Cunha et al. (2011) point to the need to act fast in high-speed environments, which limits the viability of the structural perspective and hence rationalistic view of strategy and competition and renders the intuitive and improvisational modes of operation crucial. Also, Rydén and El Sawy (2019b) state that the future cannot be extrapolated from the past or reduced to logical continuity. Regardless of the quality of organizational forecasts, emergence allows for surprises or disruptions (cf. Tsoukas and Chia, 2002).

Improvisation is not necessarily an innate quality but learnable. *Improvising continuously in such real-time environments will require new ways of smoothing learning processes*. That is what we have called "To Flow with the Go." *To Flow* refers to a state of being in synch with the continuous flow of changes through the sensing of data pulses and being able to engage oneself and others in the creation and implementation of the changes that follow. *The Go* defines the continuity of the high-speed fast-changing environment of digital platform ecosystems. We believe that such an approach will lead to more effective continuous

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managerial improvisation, which is a nuanced version of organizational improvisation that focuses on the actions of managers.

Some think of organizational or managerial improvisation as a learned capability rather than just a process. To qualify as a capability, the set of actions taken must be *collective*, *repeatable or patterned*, and *purposeful* (Winter, 2003), thereby not individual, ad-hoc, and random. As Weick (1998) explains, improvisation requires willingness to forego planning and rehearsing in favor of acting in real time as well as the ability to maintain the pace and tempo at which others are extemporizing. Focused on the "here-and-now" moment, skilled real-time improvisors prefer and thrive with process rather than structure, which makes it easier to continuously improvise.

Hence, improvisation is a patterned, conscious, and deliberate activity that is repeated in response to novel situations and can be enhanced with practice and developed into a capability enhanced with practice. Like AI and other autonomous learning systems, the goal of improvisational capabilities is to develop new operational capabilities that better respond to novel conditions (Cunha et al., 1999). Improvisational capabilities are somewhat different than dynamic capabilities and outlining their distinctions helps to better understand improvisational capabilities. We compare them in Table 1 (adapted from Pavlou and El Sawy, 2010). One major difference that is important to note is in terms of how they deal with environmental changes. Dynamic capabilities aim to predict, sense, and "ride" quasi-predictable patterns (waves) in the environment, while improvisational capabilities aim to spontaneously respond to unanticipated and unpredictable events (storms). Thus, different types of environmental turbulence create a need for improvisational or dynamic capabilities. Therefore, as we move more towards real-time digital business ecosystems, we would expect faster waves and continuous storms to occur and hence amplify the need for continuous improvisation.

| | Dynamic Capabilities | Improvisational Capabilities | Real-time Continuous Improvisation |
|---|---|---|---|
| *Market turbulence* | Predicted and anticipated waves and opportunities in the environment | Unanticipated environmental events, storms, surprising events, failures, and crises | Sensing and understanding the relatedness of storms and waves in platform ecosystem were organization and environment is meshed (pulsing fabric) |
| *Strategic stance* | Planned | Reactive | Interactive |
| *Nature of Activities* | Disciplined flexibility Judicious, systematic, | Planned spontaneity Highly unstructured, urgent, emergent, | Continuously monitor and self-monitor and synchronize the pulsing of |

| | | | |
|---|---|---|---|
| | stable, and disciplined activities | intuitive, and impromptu activities | the ecosystem and align instantly with internal flows |
| *Competitive Logic* | Planned Opportunity | Spontaneous Responsiveness | Effective synchronization |
| *Time Gap between Planning & Execution* | Sufficient time gap between planning and execution that allows adequate time for formal planning and execution | Small gap between planning and execution, narrow "window of opportunity," and inadequate time for formal planning | No gap between planning and execution – enactment based on the here-and-now-moment |
| *Dominant Vibe* | Planned contingencies | Emergent, unplanned actions | Continuous unfolding events |
| *Analogies* | American football

Left and right hand | Jazz

Third hand | Empathetic Machine Learning
Dominant hand |

**Table 1. Main Differences between Dynamic Capabilities, Improvisational Capabilities, and Real-time Continuous Improvisation**

Vera and Crossan (2005) have argued that improvisation is a means to manage the tension between exploration (dynamic capabilities) and exploitation (operational capabilities). Similarly, dynamic capabilities have been described as "exploration" capabilities and operational capabilities as "exploitation" capabilities that jointly create the "ambidextrous" organization with its "two hands" (Im and Rai, 2008). Pavlou and El Sawy (2010) have proposed improvisational capabilities as spontaneous capabilities that operate distinctly as a "third hand," that also contribute to the reconfiguration of operational capabilities and organizational change. They have shown that this "third hand" extends the "ambidexterity" of an organization and is used under certain conditions (extremely high turbulence or "storms") when the two "hands" (dynamic and operational capabilities) can no longer work as well together. Ten years later as real-time digital business ecosystems propagate and expand, we contend in this chapter that real-time continuous improvisation becomes a "dominant hand" rather just than the "third hand." When improvisation becomes the dominant modus operandi and continuous rather than exceptional, then we move to what we shall call real-time continuous improvisation.

Whilst algorithms are created to constantly adapt at a fast pace and adjust their actions to external stimuli, humans are different in nature. Humans can generate and process new information about the environment through different types of mental activities which

Kahneman (2011) called system 1 and system 2. System 1 works pretty much like many AI and ML algorithms and does 98% of all our thinking without self-awareness or control. In a fast, automatic, and effortless manner it assesses the situation and delivers updates. System 2 does only 2% of our thinking and is being slow, reflected, deliberate, effortful, and controlled mental processes that help seeking new or missing information and make complex decisions. When improvisation becomes continuous, it will then lose its exceptional nature and trigger system 1 thinking rather than system 2 thinking. A crucial management task therefore becomes how to combine different thinking modes to make real-time continuous improvisation more effective as a process and to learn how organizations can better coordinate between the fast pulsing of real-time digital data flows and inner flows of people.

To better understand the dynamics, we draw on Table 1 and propose a pulsing explanatory framework. This mindset acknowledges the situated and temporal contexts that aligns Fast & Flow temporal logics, and that appreciates human-digital pacing as shown in Figure 3. Starting from the top half of Figure 3, the first step is to acknowledge and understand the situated and temporal contexts in which business operate today. We have explained the data-pulsing fabric in the first section of the paper. We have also explained the two types of temporal logics – clock time and sense time. Moving to the lower half of Figure 3, the second step is to align the different temporal logics by monitoring and synchronizing the data flows with inner flows. Thinking Fast & Flow describes monitoring the overwhelming stream of information and trying to adjust it with our inner flow (synchronizing). There are no formal guidelines, templates, or best practices to support us in the present moment; instead, we rely on an inner sensing taking place in the present moment of how this constant stream of mental and behavioral activities affects our wellbeing, creativity, and energy. Sometimes it requires that we speed up to follow the pace or avoid boredom, in other cases we slow down or disconnect when it conflicts with our inner pace. That is how we experience real-time continuous improvisation. Thus, the outcome is measured in-process as appreciation of a harmonious reciprocal exchange between the human and digital pacing where the Fast & Flow becomes mutually reinforcing, which we describe as "Flow with the Go". These processes take place as real-time continuous improvisation of finding the ways to let digital and human paces interflow. As it is taking place as a continuous movement, there is no beginning or end.
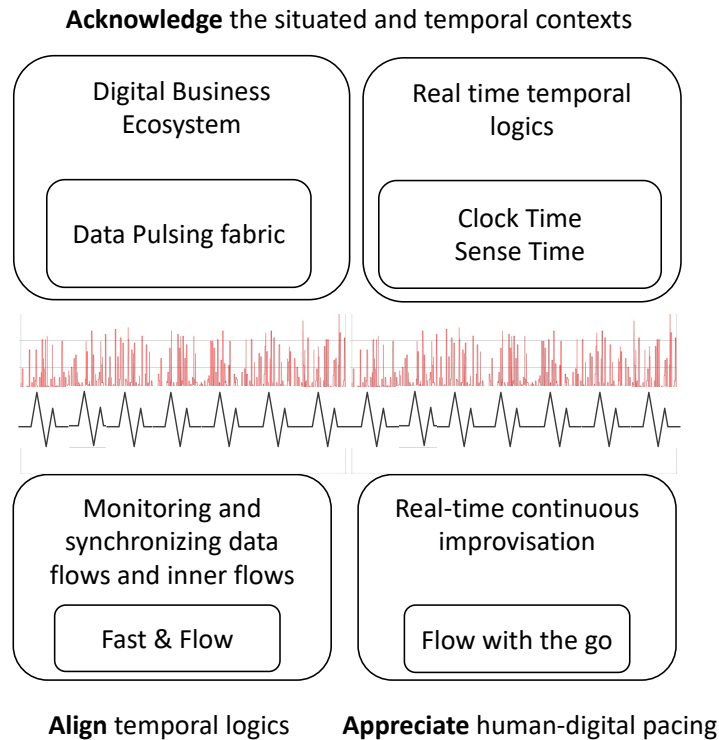
**Acknowledge** the situated and temporal contexts

**Align** temporal logics      **Appreciate** human-digital pacing

**Figure 3: Flow with the Go Explanatory Framework: Acknowledge, Align, and Appreciate Real-Time Temporalities**

We believe this applies to a broad range of organizations in many industries. Self-reflecting on our own work in academia, we experience a constant flow of tasks that cannot be managed one by one or finished at the same time. Back to our example, our different jobs both require constant improvisation of reading and creating data that rely on intuition (random and emotional cues) as well as systematic analysis to handle the overwhelming complexity of various data sources, expected and unexpected events and demands from outside and in our organizations. Adding to this cacophony, our inner constant production of new ideas, visions and self-initiated tasks blend in with the organization and its ecosystem.

**Section 5: Implications for Scholars and Managers**

The chapter concludes by drawing implications for scholars and managers reflecting on what theories and practices that can contribute to our understanding of real-time continuous improvisation as organizing processes and how "Flow with the Go" can affect learning and business performance in digital ecosystems. The increasing use of real-time data-driven platforms in turbulent markets is pushing us towards real-time continuous improvisation. Our approach has sought through a Flow with the Go explanatory framework (see Figure 3) to better

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understand the coordination between the fast pulsing of real-time digital data flows and processes with the inner (and usually slower) physical and human processes to improve our real-time continuous improvisation processes. Central to this is exploring how especially managers can improvise through Fast & Flow in a more continuously comfortable manner by synthesizing outer and inner forms of real-time management.

Organizations and people are to a larger extent being pushed into rapid action with less time to plan or respond based on existing procedures and improvisation is on the rise. We have understood for many years that improvisation is defined as the conception of action as it is unfolding (Cunha et al, 1999), and that implies a real-time dimension. However, it has largely been viewed as episodic and exceptional, rather than continuous. The proliferation of digital platform ecosystems, the increasing use of AI, and global business turbulence is driving us towards real-time continuous improvisation.

Data never sleeps, so we cannot stop or control the pulsing of 2.5 quintillion bytes of data keeps flooding out of the numerous connected devices every day (https://www.domo.com/learn/infographic/data-never-sleeps-5). At best, we can be selective and let our inner human pulsing determine the right pace and disconnect when the pace goes too fast or slow. Important to bear in mind is that improvisation as a real-time activity can produce dysfunctional outcomes that can only be evaluated in hindsight, which requires a low degree of risk aversiveness. First step to dealing with turbulent environments through real-time continuous improvisation may include discovery of what situations function as enablers of improvisation and what situations don't.

The Covid-19 pandemic has further increased the relevance and legitimacy of real-time continuous improvisation and enabled organizational learning in a broader, societal, and business context than the digital platform context. During the numerous mutations of the Covid-19 virus, we have experienced a shift from onsite practices towards digital platform solutions. Moreover, we see a shift in the role of improvisation as a crisis management capability to repetitive. Suddenly, routines were interrupted, businesses closed, organized activity disorganized on a massive scale. It forced many organizations to reinvent their practices continuously as they went along. As these changes were often enacted in the absence of a contingency plan, a prior script or of time to make new plans before acting, they were improvised. COVID-19 keeps closing societies, but we do not yet know if the pandemic slows down or eventually disappears, but it has been revelatory of how important improvisation is

for managing wellbeing for human performance. Affording the issue of wellbeing and flow experiences greater legitimacy provides an opportunity to highlight this underexplored aspect of improvisation: balancing between thinking and acting fast and establishing flow. This has obvious consequences for managers which scholars may find answer to in their future research.

*How does Fast & Flow synchronization augment real-time continuous improvisation?*
Fast & Flow helps to synthesize real time perceptions to better synchronize internal and external pacing processes in business ecosystems at the individual level as well as at the collective level. Identifying activities that can lead to flow states are also activities that require training to gain expertise. Like the jazz musician, fighter pilot or alpine skiers, once the individual has honed a hard-to-master skill, performance increases when feeling the flow, i.e., when the criticizing parts of the brain is deactivated (Limb, 2010). In turn, that leads to better improvisation using real-time information in managing temporal episodes (fast responses to sudden events) as well as managing temporal flows at the individual level (continuous actions).

Real-time Continuous Improvisation also seems to define a new way of organizing business activities in digital platform ecosystems which is very different from the role and nature of dynamic capabilities and improvisational capabilities. As mentioned, Flow with the Go may promote faster adaptability and stimulate learning when people are able to make sense of data flows while feeling motivated and empowered to take fast and innovative decisions. Effective improvisation becomes increasingly important for a world in which "liquid" competencies will become more strategically important (Hitt et al., 2020), i.e., to be able to tap into the explicit knowledge that is pulsing through the ecosystem and mesh it with the tacit knowledge and new ideas that can more likely be released by people when in flow.

Increasing evidence indicates that effective improvisation requires additional organizing processes beyond classical tools of the planning and execution of pre-designed action. This implies the importance of explicating in much richer detail micro-processes that occur during different sequences of improvisational activity and contextual issues that shape such activity. We believe this can be done by thinking Fast & Flow: Organizations who establish a digital and physical infrastructure that takes the dual real-time perceptions into account can better develop a sensitivity towards the temporal interconnectedness of human and digital learning processes. But it often requires a culture that values autonomy, variation, and a shared purpose (Cunha et al. 2011). Hatch (1999) also identified a supportive organizational

culture as a key factor that contribute to the successful use and control of improvisational working practices. She builds on a jazz performance conceptualization to redescribe organizational structure as ambiguous, emotional, and temporal, which underscores the relevance of incorporating a flow perspective.

*Do we need a different theoretical lens to better understand this digital pulsing environment and to synchronize with it*?

New digital organizational forms are often more dispersed and less hierarchical than existing organizations, which calls for scholars to explore specific challenges for improvisation in new organizational settings like the digital business ecosystem. In these contexts, improvisation effects are not necessarily limited to adapting an organization to a changing environment (Cunha, Miner and Antonocopolou, 2017). One challenge is how business managers should deal with the impact of improvisation enacted by other peripheral actors of the business ecosystem since this may have cascading effects. It is also important for scholars to highlight that real-time continuous improvisation is a pervasive, never-ending organizational process with multiple shapes and nuanced impacts on the individual. Not only do planning and action take place simultaneously (temporal convergence), but they also feed off each other substantively (material convergence).

We therefore need new managerial and theoretical lenses to develop systems that can identify what humans and technologies that are able and allowed to improvise and what the implications are for management and strategic decision-making. Will a common higher-order purpose that builds on a quadruple win of profit, people, planet, and purpose be sufficient for guiding people in deciding in whose interest real-time continuous improvisations should be directed? Depending on the position, one may be biased towards caring for the consumers or other stakeholders, the stakeholders or even the society in general. Research on improvisation theory and practice has advanced in the past twenty years but there are still gaps to identify and close in current knowledge both in the uniquely challenging and changing business environment we are currently experiencing (Ciuchta, et al., 2020), but also in other areas of the future, like pandemics, climate changes, over-populations, etc. which must not be confused with random deviations from history or single crisis events. Due to the exponential effects of digital busines ecosystems, we posit that real-time continuous improvisation will pervade every aspect of organizational as well as individual performance and wellbeing, whether it be

in response to life-threatening events, creative, experimental, and innovative activities, or just small adjustments in day-to-day actions.

The process of real-time continuous improvisation potentially impacts all aspects of strategic decision-making, management of people, digital transformation of businesses and societies and it should be understood more carefully. We must continue to better understand how and why we Flow with the Go.

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