Business in the Age of Platform Economics: Managing Decentralised Business Processes Beyond Blockchain

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Abstract. The promise of an internet-based 'sharing economy' stands corrected by the reality of a 'platform economy' under the control of a few central proprietary markets. With increasing awareness of the many downsides of these oligopolistic markets, regulatory policies like the EU *Digital Markets Act* (DMA) have been enacted, while in research and practice, the term 'decentralisation' gained renewed interest. However, as we argue in this *problem statement*, decentralisation is often confused as an aim, while in reality it encompasses many different (often opposing) drivers and principles to achieve certain aims. In order to stimulate discussion, we discuss decentralisation referencing a multi-disciplinary perspective and exemplary projects in practice. We ask how profitable and sustainable business models can be created in the age of platform economics. We claim that, to reap the many proclaimed benefits of platforms, while managing and preventing its many centralistic downsides, an approach integrating technical and organisational capabilities is needed. We see Business Process Management (BPM) ideally positioned to be at the forefront of such a movement. With this contribution, we hope to stimulate discussion within the BPM community. Further, we see opportunity even beyond BPM. We draw comparisons to privacy engineering, which emerged as a discipline to operationalise the abstract notion of privacy.

Keywords: Platform Economy · Decentralisation · Blockchain · Business Process Management.

1 Introduction

Early theorizing on the internet contemplates the many promises of a decentralised network, where information flows freely (see e.g., [12]). Some authors proclaimed the dawn of a new *sharing economy* [20]. Taking stock of the actual state of the web paints a different picture: the dominant business models of the internet are proprietary markets under the control of few. More aptly, this model has become known as *platform economy* or *digital capitalism* [21]. Platforms serve as intermediaries in so-called two-sided markets [17], where the attractiveness of one side (e.g., number of users) has a direct influence on the attractiveness of the other side (e.g., advertisers). Through

network effects, price suppression, or large sums of investment capital, some platforms have established quasi-monopolies [1,4]. Yet, even these platforms are arranged in a hierarchy, where the offerings of giants like Alphabet, Amazon, Apple, or Meta are regarded as *superstructures* [1], *meta-platforms* [21], or, in the EU *Digital Markets Act* (DMA), as *gatekeepers*. Platforms of a lower hierarchy cannot reach relevance without entering the ecosystems of these few gatekeepers [1]. These control market access, command large amounts of data, and have created strong lock-in effects [4].

Even in the case of technologies like blockchain, tightly associated with decentralisation,[5] early "success" stories often were centralised platforms, offering e.g., proprietary markets for non-fungible tokens.[6]

Awareness of the downsides of these platforms has risen recently, fuelled by major scandals like Cambridge Analytica, where large amounts of data was exploited.[7] Gatekeepers are criticised for creating strong lock-in effects and stifling competition [4]. Or more drastically, for exploiting large amounts of personal data [26], creating precarious work environments,[8] and even eroding the fabric of liberal democracies [25].

To tackle these issues from a policy side, the European Union has enacted a range of new regulations. First, the *General Data Protection Regulation* was introduced, which gave rise to an entire new discipline: *privacy engineering*, an interdisciplinary field of research with the aim to translate the abstract notion of privacy into engineering knowledge and applicable practice [7]. Second, and more recently, the *Digital Services Act* and the DMA were introduced, with the latter specifically addressing the gatekeeper platforms, and obligating them to, a.o., interoperability and greater transparency. Simultaneously, the idea of decentralisation and decentralised systems has gained renewed interest in research and practice as a possible remedy [23].

We postulate that, in order to reap the many proclaimed benefits of platforms while managing and preventing their many centralistic downsides, an interdisciplinary approach that integrates technical and organisational aspects of decentralisation is needed—following the example of privacy engineering.

We see the discipline of *Business Process Management* (BPM) ideally positioned to be at the forefront of a line of research to explore this notion. BPM integrates organisational aspects with socio-technical systems, and focuses on business value and business improvement and change [5]. Most importantly, a process view allows a detailed analysis of information flow through a business.[9] Furthermore, BPM has a track record of integrating different perspectives into the management of processes (e.g., [3]). Although the notion of decentralised processes is nothing new *per se*, the focus so far has been largely on technical capabilities. One could say that our proposal

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[5] A more nuanced analysis [24] characterizes blockchain as "logically centralized [...] organizationally decentralized and physically distributed" system.

[6] https://www.theverge.com/2022/2/2/22914081/open-sea-nft-marketplace-web3-fundraising-finzer-a16z [Accessed: 13/06/2024]

[7] https://www.theguardian.com/news/2018/mar/17/cambridge-analytica-facebook-influence-us-election [Accessed: 14/06/2024]

[8] https://www.thenation.com/article/archive/how-crowdworkers-became-ghosts-digital-machine [Accessed: 13/06/2024]

[9] Compare this to the coarse-grained notion of the decentralised organisation [6].

follows a BPM tradition, in that the primary focus is on technical capabilities followed by a call for better integration of the managerial capabilities later (cf. [3]).

Indeed, as we claim, the fallacy of many previous hopes and promises was the postulate that organisational decentralisation would follow technical decentralisation (cf. also [2]). In this problem statement, we want to pose the overarching challenge: *"How can we create profitable and sustainable business models in the age of platform economics?"* Viewing current market dynamics through the lens of platform economics allows us to re-contextualize the need for decentralised process management and chart new opportunities for business and research—while avoiding the fallacy to treat decentralization as an unquestioned aim in itself. We believe this topic to be central to today's societal issues and see immense opportunity. Our epistemological viewpoint hereby follows Rosemann et al.: *doing good pays off* [18].

In the following, we will discuss the challenges and pitfalls, but also the opportunities of decentralised process management, referencing an inter-disciplinary view. We will exemplify the need for this new sub-discipline by introducing examples from organisational practice. We conclude by presenting exemplary problem statements for different aspects of BPM, in order to stimulate discussion.

2 Decentralisation: Drivers, Challenges & Opportunities

For a long time, the term decentralisation in the context of information systems mostly relied on a topology-based view (arrangement of computing nodes), with early works investigating how such topologies map to organisational structure (e.g., [11]).

The term rose to more significance with the popularity of blockchain and its many promises to revolutionise business [13]. Today, decentralisation is mostly defined with reference to this novel technology. (see e.g. [22,23]). We claim that this sole focus hampers many more practical and useful instantiations of decentralised systems.

As we will exemplify, many related, practical challenges exist at present—while proven use-cases of blockchain are still rare [14]. By referencing an interdisciplinary view, we propose to refocus on the actual *drivers* of decentralisation. This allows to approach decentralisation as an umbrella term for different design principles to achieve certain aims. While we argue that the sole focus on blockchain is problematic, we also envision how such a viewpoint can help shape blockchain research in information systems—shifting focus, with blockchain as one option of many, not an aim in itself.

2.1 Drivers, Challenges & Opportunities

Bodó et al. discuss four drivers for decentralisation that emerge from the viewpoint of different disciplines: *economics*, *power* (or distribution thereof), *politics* (or disintermediation thereof), and *information security* [2]. For the purpose of this problem statement, we forego the discussion on information security, as it is well covered by the distributed systems field. We reference these drivers, but discuss it in the light of platform economics and exemplary projects to highlight the current challenges, as well as opportunities, of decentralisation. From this, we formulate exemplary research challenges.

Economics. Applying a platform economy lens uncovers the—presently strong— incentives to form closed markets. Platforms often seek to acquire massive market

dominance, following a loss-leader strategy that is projected to eventually pay off [1]. Examples of such business models are numerous, with companies like Uber reporting losses for fifteen years before turning a profit.[10] Consequently, such business models are reliant on large capital investment or high stock market valuations [1].

New business models for emerging players can be incentivised through decentralisation. A present example is the movement towards open banking [15], where financial institutions are obligated to allow account holders to permit data access to other services. As the delicate nature of financial transactions exemplifies, such new obligations must be accompanied by technical and organisational *safeguards* to prevent, e.g., abuse of data. Moreover, any new unregulated decentralised market can lead, in principle, to strong *re-centralisation* effects (cf. [2]).

Distribution of Power. Dolata ascribes to closed platforms economic power, power over data, and infrastructural and rule-setting power. Indeed, the design of new features on such platforms are described to be "rule-setting, action-oriented, and opinion forming" [4]. An often fielded example of such rule-setting power is the case of Twitter (now 'X'), where the recent acquisition by Elon Musk led to major changes in its policies, directly affecting a place of public discourse (cf. [25]). Many controversial actions were taken, such as the suspension of accounts belonging to journalists critical of the platform[11]. Subsequently, many users declared their intent to move to alternative platforms (which X actively tried to undermine),[12] often with claims of a more decentralised structure. However, such *decentralised social media* still faces many challenges, often facing incentives toward re-centralisation [16]. However, we also warn of condemning all forms of centralisation: Many centralised institutions fulfil important societal functions. We see *accountable centralisation* (cf. [19]) as a major opportunity, where central control is made accountable and a certain degree of openness is preserved. A first reference frame for what such accountable centralisation might look like could be recent regulation such as the DMA.

Disintermediation. Platforms can be described as intermediaries in two-sided markets [17], bringing different actors together on their proprietary markets. Disintermediation promises to connect parties directly without the need of a central platform. Examples are initiatives like GAIA-X and other data spaces, which create decentralized data infrastructures [9]. They aim to facilitate the standardized exchange of *sovereign, locally stored* data and provide services such as identity management, data discovery, and access control. The data exchange itself occurs solely between data owners and consumers, thereby reducing the aggregation of data at centralized platforms. Similarly, the emerging idea of local-first software advocates data ownership and promotes software usage within local networks. Users can then choose to connect to centralised cloud offerings for additional features [10].

Disintermediation is often accompanied by the notion of reducing certain trust assumptions; however, in more precise terms, trust assumptions just shift (cf. [19]), e.g., from a trusted third party to a distributed network of actors.

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[10] https://www.businessinsider.com/uber-ceo-dara-khosrowshahi-helped-turn-billion-dollar-profit-2024-2 [Accessed: 13/06/2024]

[11] https://www.bbc.com/news/world-us-canada-63996061 [Accessed: 13/06/2024]

[12] https://www.bbc.com/news/technology-63999452 [Accessed: 13/06/2024]

Driver	Exemplary Challenges
Economics	• What innovative business models could emerge through decentralisation; how could such business be sustainably funded (without exploiting re-centralisation effects)?
Power	• What does the notion of accountable centralisation imply for process-aware systems? • How can such systems support accountable decisions and dispute resolution? • How could process re-design heuristics look like to achieve positive effects (for client, worker, or business) through accountable centralisation or decentralisation?
Disinter-mediation	• How can techniques such as conformance checking not just technically but also be organisationally distributed, without a centrally determined prescriptive model or centralized determination of conformance? • How can the effects of disintermediation be quantified and compared?

Table 1. Exemplary challenges that emerge from different drivers for decentralisation.

3 Outlook: Managing Decentralised Business Processes

Based on our investigation in the previous section, we formulate exemplary research questions and challenges in Table 1, in relation to the BPM discipline. A strong viewpoint that emerges is that decentralisation cannot be thought of as a *purely technical* concept. Only if it is accompanied by organisational structures can it achieve a positive outcome (cf. [2,19]). With this problem statement paper, we want to stimulate discourse on how the presented drivers for decentralisation may shape a decentralised BPM framework to create new but sustainable business opportunities in the age of platform economics. A cornerstone of BPM is that it fuses organisational capabilities with engineering knowledge—precisely what is needed to operationalise the potential benefits. Towards this end, we propose to treat decentralisation not as the mere question of who operates a server, but as an umbrella term encompassing many design principles. Such design principles aim to improve qualities including interoperability, accountability, or equal-access, with an awareness that possible downsides must be controlled for. The success of privacy engineering can serve as a reference. Notably, privacy engineering successfully translated the abstract notion of privacy to organisational and engineering design theory.[13] Consequently, while we think that this journey should begin within the BPM community, it must ultimately eclipse it and draw from a larger inter-disciplinary context.

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[13] See, for example, the *privacy design strategies* [8], now the 'little blue book', containing organisational and technical strategies to implement privacy.

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