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After the announcement: an interdisciplinary analysis of blockchain development in governments

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ABSTRACT

Blockchain is a highly hyped technology, with many announced “*use cases*.” What happens, however, *after* the “announcement”? How—if at all—are blockchain applications further developed? This article deploys an interdisciplinary approach to study the development of blockchain projects in government. It focuses on the moment after the use cases are announced, but before their implementation. This interdisciplinary approach facilitates the investigation of the operationalization of rule of law values, such as transparency, legitimacy, and accountability. Instead of reporting on *use cases*, we conduct case studies to analyze the actual development and implementation of blockchain projects after the “announcement.” Studying innovation during the development process provides valuable insights into the development of blockchain applications in government.

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Blockchain; case study research; science and technology studies; public law; qualitative research

1. Introduction

Blockchain is a promissory technology, and it is claimed it may potentially transform the relationship between citizens and trusted third parties, such as public actors. Clearly, the qualities blockchain offers are not a given *in principle*, but have to be realized *in practice*. In the development and use of blockchain projects, its qualities, and the opportunities and challenges blockchain presents, have to emerge in the real world. Blockchain projects thereby pose challenges for policymakers seeking to develop and implement this technology as a policy instrument which is itself subject to regulation. Observers are confronted with a plethora of announced *use cases* with claims on different problem-solving capabilities of blockchain. It is, however, often unclear what happens *after* the announcement of these *use cases*, more specifically,

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whether, and how, blockchain applications are further developed and implemented in practice. This unclarity further obfuscates the policy and design challenges in dealing with blockchain technology.

In this article, we demonstrate the value of interdisciplinary research on blockchain developments by exploring what happens “after the announcement” of blockchain use cases. We do this by reflecting on the preliminary findings of the interdisciplinary “Blockchain in the network society” research project.¹ We provide insight into how an interdisciplinary approach affects the research design choices, and provides insights into the implementation of a new technology. Our interdisciplinary approach combines approaches from public law, Science & Technology Studies, the philosophy of technology and ethics (Albert, Vuolanto, and Laberge 2022; Zimmerman et al. 2022).

Analysis of the in-depth case study contributes to a better understanding of the complexity involved in the policy consequences, design, and practice of blockchain-based applications by government after the announcement of a “use case.” It shows the importance of the investment of time, money and effort in realizing a technology’s promise, which should be considered by policymakers when assessing the usefulness of emerging and potentially disruptive technologies such as blockchain in public administration.

This article is empirical and reflective in nature and does not have the ambition of imposing a particular implementation framework on how governments *should* (or should *not*) proceed with blockchain technology. Instead, it has two main purposes: first, to point out that a proper policy analysis of new and emerging technologies such as blockchain should pay attention to the processes and practices of realizing blockchain *use cases* in the real world or their (silent) termination and, therefore, carefully investigate *what happens “after the use case announcement”*; and secondly, demonstrate, through our *case study* of a blockchain project in the Netherlands, how interdisciplinary research can generate insights into the efforts and considerations involved in making new technologies actually *work*. A major policy implication of our research is that policymakers, too, should observe the period after the announcement and pay attention to the social, legal and ethical considerations that play a role in the development and realization of blockchain projects.

This article is structured as follows: in [Section 2](#), we present our research methods, empirical materials and our case, “the Red Button.” In [Section 3](#), we problematize the peculiar moment with its own policy and design opportunities this article is dealing with: that is, the moment after the use case announcement, but before its implementation. We also discuss how our interdisciplinary approach enables us to study this moment in-depth. [Section 4](#) then shows empirically two observations that we can make precisely because we focus on the *after the announcement* moment: [sub-section 4.1](#) delves into the issue of data protection, and [sub-section 4.2](#) into the embeddedness of the project in municipal dept help and the impact of the automation of administrative decision-making on discretionary powers in a governance network. [Section 5](#) provides concluding remarks:

policymakers can learn from what happens after the announcement-but before the implementation).

2. Methods, empirical materials and case

The empirical data used in this article has been produced as part of a broader research project, which studies how governments aim to develop and use blockchain applications in order to exercise public tasks or public authority. The NWO.MVI “Blockchain in the network society” interdisciplinary research project combines the disciplines of public law, Science & Technology Studies, the philosophy of technology and ethics. This project studies how emerging distributed technologies challenge and affect rule of law values based on a combination of legal analysis and social scientific research. The project entails two case studies. In this article, we discuss one of these: the Red Button (“*De Rode Knop*” in Dutch).

The Red Button aims at providing “debt rest” by offering a temporary payment suspension to people with problematic debts after signaling to a public creditor, the Central Judicial Collection Agency (*CJIB* in Dutch), that municipal debt help is sought.² During this period of debt rest, the debtor works toward the repayment of the debts together with a municipal debt councilor. The aim of the involved public actors is to explore the use of an application using blockchain-based self-sovereign identity in order to signal inability to pay and to ask for payment suspension.

In this article, we explore the Red Button case to reflect on how one is able to make rich case study observations and analyses by combining and interrogating different disciplinary approaches. The Red Button was selected because this initiative was identified as a technology project that was still in development, led by a government agency, and involved a collaborative network of heterogeneous actors, including: different government agencies and levels (*CJIB*, municipalities, and a European collaborative network), a private technology developer, a market research company, a law firm, citizens, and a debt collector’s association. Furthermore, the development process started as a technology-driven blockchain project. In addition, the Red Button project offered publicly available documentation on the blockchain solution that was envisioned (“the announcement”). All these elements, in conjunction with the access we obtained to do fieldwork, stakeholder interviews, and documents not made public, make the Red Button a fitting and interesting case to study the development and implementation of blockchain technology by public institutions. Finally, we observe multiple stakeholders involved, both public and private, with (unequally) distributed technological and legal expertise, who jointly contribute to the development of the Red Button mostly through informal and horizontal relations. As a result, the Red Button functions as an exemplary case (Swanborn 2010; Flyvbjerg 2011) highlighting elements that are observable in other projects where public actors want to develop blockchain applications and which is exemplary for a governance network of different actors (Scott 2000; van den Berge 2018).

The Red Button project, which creates a Red Button-app, is intended to further automate the administrative decision-making process of granting payment suspension by a (public) creditor in a GDPR-proof way. The Red Button has been developed

from 2018 and is a collaboration of, among others, two municipalities (Eindhoven with 240 k residents, and the Dutch political capital The Hague with 550 k residents), the CJIB,³ a blockchain technology company called Ledger Leopard, and the Dutch Blockchain Coalition. The two municipalities became involved in the development of the Red Button because of their role in debt assistance through the Municipal Debt Assistance Act. Collaborations between these organizations took place through the organization of core team member meetings and technology sessions. The core team member meetings took place every week, during which the conceptual design of the Red Button and its position in existing procedures and frameworks was discussed. The core team members consisted of an individual of each of the involved organizations, except for an individual of the technology company. The technology sessions took place every two weeks, or if necessary, every week. During the technical meeting, the technology company presented their progress on the technical aspects of the Red Button app to the core team. The idea to use blockchain technology originated from the “CJIB innovation lab,” which explored how technologies such as blockchain could be employed to help people who *want* to pay their debts but (temporarily) cannot do so.⁴ In this exploration, employees of CJIB were involved, as well as social work and debt scholars/experts, as well as the Dutch Blockchain Coalition. The Red Button project aims to establish a means for debtors to independently communicate through an authenticated signal to the CJIB that they have problematic debts and that they entered or at least intend to enter a municipal debt help program to manage these debts. By “pushing” the Red Button, citizens with problematic debts would receive “debt rest” (*schuldenrust* in Dutch) in the form of temporary payment suspension. The application is also intended to give citizens “data control”⁵ (*regie op gegevens* in Dutch), inspired by the idea of self-sovereign identity, which aims to endow individuals control over their data without reliance on a trusted third party (Zwitter et al. 2020). The intended use of a “blockchain-based SSI solution” could possibly also be linked to the involvement of the EU Interreg North Sea Region project BLING (“Blockchain in Government”), which provided funds for the development of blockchain projects by public actors (BLING 2018). In the fall of 2021, the *use case* was tested in two municipalities by the Red Button core team through an experimental pilot. Even though the exploration of the use of blockchain holds decentralizing promises, pursuant to the Coalition Agreement of December 15 2021, the current ambition of the Dutch government appears to be the development of a self-sovereign identity solution on the national level via a central database (Sanders 2022).

The data and observations that underpin this article were collected and analyzed from January 2021 to November 2022. Since January 2021, we conducted empirical fieldwork observations and kept fieldnotes during more than 50 online meetings between the actors involved in the Red Button and meetings with other stakeholders. We also conducted 30 interviews with key actors (e.g., innovation managers, project manager, financial assistance advisor, senior innovation advisor, digital innovation advisor) involved in the development of the Red Button. Public documents and internal documents made available to us were also included in the analysis. It is important to note that the development of the Red Button is not yet finalized and that the Red Button is not yet implemented in practice. This requires caution in

making definitive statements about the project results, yet our analysis focuses mainly on the processes and considerations during the development of the project.

Fieldnotes and interview transcripts were analyzed abductively (Tavory and Timmermans 2014) through qualitative coding, using the qualitative data analysis software Atlas.ti, intercoder meetings, collaborative analysis and testing working hypotheses during interviews. Abductive analysis is an alternative logic to induction and deduction. It gives a more realistic depiction of the research analysis in which researchers continuously go back and forth between theoretical observations and empirical observations. Our analysis entailed a “back-and-forth” approach between the different disciplinary literature and perspectives, the collected data for the Red Button case study, and the broader research project data.

As we discuss in detail in Section 4, the interdisciplinary constitution of our research project team enabled a more nuanced and challenging understanding of what happened “after the announcement” of blockchain use cases. First, we problematize the peculiar status of our object of study: a blockchain use case after its announcement, but before its implementation.

3. Use cases after the announcement

Blockchain technology has been “hyped” (Litan 2021) and accompanied by big expectations as regards its potential to disrupt sectors as diverse as supply chain management (Tapscott 2020), finance and markets (Buth, Wiczorek, and Verbong 2019), (refugee) identity management (Cheesman 2022) and the public sector (Tan, Mahula, and Cropvoets 2022; van Oirsouw 2021). The promise of blockchain technology to eradicate uncertainty, one of the key challenges of successfully setting up and executing “transactions,” is nothing less than revolutionary (Bodó 2021). Blockchain-based applications are said to be able to abolish trust issues in finance, security systems, subsidy allocation and government (De Filippi and Wright 2018; Cagigas et al. 2021). “Solving” the fundamental challenge of interacting with strangers without preexisting trust relations or trusted third parties to guarantee the execution of transactions, by enabling control rather than dependency, is claimed to be of huge value, especially in a globalized world where interactions increasingly transcend the national level.

It should, therefore, not come as a surprise that, with the arrival of this technology, an avalanche of blockchain-based solutions has been announced. Blockchain technology seems to be especially attractive to be presented as a problem-solver. Blockchain is claimed to (potentially) solve at least 187 problems, according to a list made for the magazine WIRED (Griffith 2018), often related to inefficiencies in government sectors and other social institutions, which are challenges that are difficult to effectively tackle by merely relying on trust relations. (Frederik 2018; Meyers and Keymolen 2023).

As Jens Beckett (2016) argued, (hyped) expectations on the potential of technologies are hugely important to initiate actions and investments in the present. In this sense, Pollock and Williams (2016) claim that even though most expectations on the unfolding of technology are “false”, they have a role in the development of innovation. A very important means to innovate and explore what a technology is capable

of is technological and economic experimentation (Meyers and Van Hoyweghen 2020).⁶

The blockchain field sees a plethora of “*use cases*” and “blockchain solutions.” *Use cases* are, however, mostly still detached from the (potential) hurdles of implementation, which is indicative of the solutionist tone in blockchain discourse (Morozov 2013; Meyers and Keymolén 2023). In blockchain discourse, the term “*use case*” is frequently employed, often very loosely as an idea on how blockchain might be useful in a specific context. Alongside the concept of *use cases*, the idea of a *Proof of Concept* (PoC) holds the same promise of a conceptual solution to a formulated problem. A blockchain *use case* does counterintuitively not imply that blockchain technology is actually used in practice. In reality, many announced *use cases* are not developed beyond the conceptual stage where an idea is presented on how blockchain technology *might* work to solve a particular project.

Notwithstanding the plethora of announced *use cases*, it is often unclear what happens *after* their announcement, and how—if at all—blockchain applications are further developed and implemented. As researchers, we focus on this period after announcement and before development through interdisciplinary case study research. We make a distinction between *use cases* as an actor category—concepts employed in the blockchain (and broader innovative “tech”) discourse itself, and *case studies*—which are selected research objects that are investigated and analyzed (Swanborn 2010; Krause 2021).⁷

As many *use cases* are not developed beyond the *use case* or PoC stage, they continue to be “merely” a potential and conceptual blockchain application. When contacting stakeholders of potentially interesting *use cases* to be selected as case studies, we experienced multiple times that the project was not further developed. The *use case* often appeared to be more of a thought experiment, or the project was even stopped altogether. Nonetheless, we argue it is important to learn from the *absence* of development and implementation after the announcement and the difficulty of many blockchain *use cases* to mature into technological artifacts employing blockchain technology. Due to success bias in press releases, researchers cannot solely rely on announced *use cases* to assess the potential future success or failure of blockchain technology and should look beyond the announcement.⁸ In the same way as social sciences researchers, policymakers too should be cautious when hearing enthusiastic use case announcements and look beyond, by paying attention to the dynamics, development and realization after the announcement. This attention by policymakers can avoid enthusiastic investments in promissory technological solutions that are difficult to realize and embed in the existing governmental infrastructure. Section 4 discuss two instances of such difficulties that we were able to identify thanks to our interdisciplinary research team.

4. Interdisciplinary research in the real world of blockchain in government

In this section we discuss two situations where the interdisciplinarity of the research project contributes to the conducted research: our analyses of the claim “no personal data on the blockchain” and the role of discretionary power in the governance network of the Red Button. The project’s research problem, which concerns the ways in

which governments aim to develop and use blockchain applications to exercise public authority, is one that is interesting to multiple disciplines. In this project, each researcher added different perceptions of the problem originating from their respective disciplines. Close collaborations took place between the researchers in terms of exchanging ideas and knowledge, jointly developing interview questions and conducting the interviews, and analyzing the data together. These interactions resulted in cross-pollinations of knowledge between disciplines.⁹ First, this interdisciplinary research shows that a claim such as “no personal data on the blockchain” turns out to generate several consequences and observations on the compliance-by-design process (sub-section 4.1). Secondly, the involvement of other actors, such as municipalities and debt help professionals, in the process of embedding the Red Button in municipal debt help led to important observations about the relation between automatization and the exercise of discretionary powers in a governance network (subsection 4.2). We inscribe our work in the tradition of Science and Technology Studies, which has investigated technological developments from a social science perspective since the 1980s (cf. Callon 1986; Callon and Latour 1981; Latour 1988), to avoid a monopoly of knowledge on technology for IT developers. Our research shows a fertile collaboration within the social sciences in the study of the development of blockchain technology by public institutions.

4.1. “No personal data on the blockchain”

The GDPR has been remarkably successful in emerging in many societal domains as if it was the only relevant piece of (privacy and data protection) legislation. The dominance of the GDPR as a catch-all for legislative requirements or compliance-by-design provided confidence to the key actors involved in the Red Button when the statement was made that “no personal data were stored on the blockchain” (BLING 2018).

A law firm was consulted early on to check if there might be data protection and privacy issues with the proposed blockchain application. This legal consultancy helped steer the development of the Red Button. Their legal analysis was often employed to claim that “no personal data” were stored on the developed blockchain solution (see Figure 1).¹⁰ This preliminary analysis was, however, based on a protocol shared by the technology provider and only made the claim that “conceptually” the technology works, and no personal data are stored on the blockchain (interview lawyer consulted law firm, July 8th, 2021).

The claim in the CJIB-report that no personal data would be stored on the blockchain has been employed multiple times as an indication of privacy compliance of the Red Button as a whole. This is important as an often-heard concern is that blockchain technology might pose serious privacy problems, primarily because of the immutability characteristic of blockchain transactions and the so-called right to be forgotten of article 17 GDPR. For instance, Finck (2018) stated the following: “There are many tensions and uncertainties between GDPR and blockchain and many blockchain projects are likely not compatible with GDPR.” Blockchain technology anchors data in consensus on a distributed ledger (De Filippi and Wright 2018; Goossens,

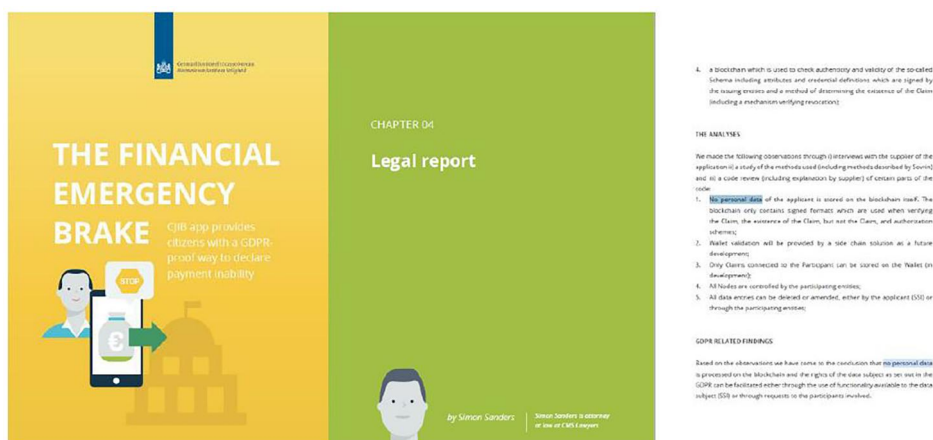


Figure 1. “no personal data on the blockchain” (BLING 2018). *Note.* The Red Button was then still named the “financial Emergency brake.”

Verslype, and Tjong Tjin Tai 2020). The claim that no personal data are stored on the blockchain but rather the means to authenticate a claim made by a citizen, gave confidence to the involved actors to proceed with the development of the project.

This “no personal data on the blockchain” statement led to the constitution of a blind spot or an area “out of consideration,” since questions posed during interviews on where personal data were to be found, if not on the blockchain, were often answered with reference to the fact that such “technical” issues will be decided upon in a later stage.

Furthermore, the fact that this claim was used by actors as an indication of GDPR compliance of the Red Button as a whole, sheds light on the divergence that may exist between the legal status of a document and the legal authority that is attributed to it by actors in practice. The reliance on the legal advice as an indication of GDPR compliance of the Red Button may suggest that the actors attributed a “Data Protection Impact Assessment” (DPIA)-like status to the legal report, even though the law firm stated that no DPIA was conducted.¹¹ This signals the existence of a difference between the interpretation of the meaning of the concept “DPIA” by the actors involved in the development of the Red Button (in the use case) and the meaning of the concept “DPIA” in legal scholarship and legal practice on the other hand.

The aim to design the Red Button in a GDPR-compliant manner is exemplary for compliance-by-design, the notion of integrating legal requirements into technology design (Bennet Moses and Zalnieriute 2020; Hildebrandt 2020). Thus, legal requirements, such as those posed by the GDPR, have the potential to influence technology design. However, when we asked the interviewees whether other laws, such as the Dutch Freedom of Information Act or the General Administrative Law Act, were to be considered relevant during the development of the Red Button, it was acknowledged that there were potential legally relevant issues to be dealt with, yet not (explicitly) identified and that these issues would be dealt with “in due time.”

4.2. The role of discretionary power in a governance network

As the project was further developed, the Red Button increasingly became embedded in the legal and social context. First, by “pushing” the Red Button, citizens with an inability to pay their debts would receive a suspension of the payment of their fines to CJIB. During the experimental pilot, the suspension of four months was based on the Emergency Stop Procedure (*Noodstopprocedure* in Dutch), a policy announced in 2020, developed by the CJIB separately from the Red Button pilot, enabling the CJIB to provide a suspension of fines for four months to citizens unable to pay their debts to CJIB, to be extended to eight months when citizens enter a municipal debt help trajectory (Cf. van Oirsouw and Goossens 2022). The competence of the CJIB under the Emergency Stop procedure to accept or refuse a request for payment suspension is a discretionary competence, because the CJIB enjoys the discretion to decide how to respond to the request of the debtor, i.e., to grant the citizen payment suspension or not.

This discretionary power is interesting from the perspective of public law, since the introduction of the Red Button affects the discretionary power in practice exercised by civil servants working at the CJIB, who are faced with requests for payment suspension. Pursuant to the initial design of the Red Button, the technology would “encode” that the debtor *always* and *automatically* receives debt rest from the CJIB upon signaling payment inability. The degree of discretion that originally existed would be limited by this introduction of automatization and is seemingly passed onto the Red Button. In practice, it would thus not be an individual assessment of the request by the CJIB whether the debtor is granted temporary debt rest. The citizen would automatically receive debt rest upon pressing the Red Button. Consequently, the discretion to grant payment suspension exercised by CJIB civil servants shifts to the technological system, which encodes pre-made agreements between the CJIB and the municipality (cf. Bovens and Zouridis 2002).

Secondly, two municipalities became closely involved in the development of the Red Button due to the Dutch Act on Municipal Debt Help, which attributes an important role to municipalities in the organization of debt help. This Act offers municipalities a large degree of discretion to organize debt help programs for citizens, both at the level of municipal policy and at the level of the organization of debt help professionals for individual citizens. A municipal debt assistance process is a prime example of network governance. A debt councilor (a civil servant or debt help professional) has a mediating role between debtor and creditors and is responsible for communicating to creditors that a citizen has problematic debts and is unable to repay the outstanding debts. The debt councilor also decides whether to ask a creditor for temporary payment suspension. With the introduction of the Red Button, the role of the debt councilor may be affected, because in the currently envisaged design the responsibility to communicate payment inability to the CJIB is envisaged to occur *through* the Red Button by the citizen who “pushes” the Red Button. The extent to which the role of the debt councilor will change thus becomes dependent on a socio-technical design choice, namely, whether the citizen will “push” the Red Button independently, or, with help of the debt councilor. This socio-technical design choice is illustrative of the interaction between governance networks, law, social norms and technology design.

Thirdly, most people with problematic debts have multiple creditors, public and private ones. As the Emergency Stop procedure only applies to CJIB's capacity to grant payment suspension, the implementation of a Red Button-like application may require further legal embedding to achieve the goal of enabling payment suspension by more creditors. Involved creditors other than the CJIB may again be bound to other (legal) norms and arrangements granting them more or less discretion regarding the competence and the period during which to grant payment suspension, which shows the difficulty of translating multiple (legal) regimes and levels of discretion into the design of one single technological application.

5. Conclusion

The qualities of blockchain technology, and the challenges and promises it presents, are not set in stone, rather, they have to be realized in the real world. This article takes this observation seriously and studies what happens “after the announcement” of blockchain *use cases*. In blockchain (and broader “tech”) discourse, the term “*use case*” is frequently employed as an idea on how blockchain *might* be useful in a specific context. However, researchers and policymakers alike cannot solely rely on announced use cases to assess the potential future success or failure and should look beyond their announcement. This observation justifies our interdisciplinary case study research into the way that governments aim to develop and use blockchain applications to qualitatively investigate how blockchain technology is developed in the real world and how it affects rule of law principles and public values.

We argued that interdisciplinary research into blockchain use cases can generate insights and rich observations into the development process of blockchain technologies to be deployed in the relationship between citizen and government. Firstly, the analysis of the claim “no personal data on the blockchain,” for instance, is much richer once it is seen from different disciplinary backgrounds. We were able to see that the claim itself “comforted” project partners that these issues had been dealt with, yet from a legal compliance perspective, the report should not be considered a DPIA. Moreover, more legal issues beyond GDPR play a role, though these were not yet addressed. The approach in this article helped to better understand the grey experimental zone in which the Red Button case was operating. The Red Button is still “in the making” and a definitive analysis of the relevant legal issues cannot yet be executed, as there is still time to consider other parts of the applicable legal framework. However, from a by-design-approach, it is important to tackle potential legal issues in due time during the development of technology—that is, after the announcement but before its implementation.

Secondly, another area where the interdisciplinary collaboration proved to be fruitful, is in analyzing the embeddedness of the Red Button in the legal and social context. Insight in the socio-legal context helps to better understand the impact of automatization by the Red Button on the execution of discretionary decision-making power in a governance network consisting of the CJIB, municipal authorities, civil servants, debt help professionals and other creditors. This again shows that the qualities of a technology such as blockchain are not a given from the start but are a result

of embedding a use case idea in the socio-legal context, which takes place after the announcement, but before its implementation.

Interdisciplinary research on the development of blockchain applications after the *use case* announcement also entails policy-relevant implications. First, stressing the importance of compliance of technology with the law, it is important to point out the need for continuous attention to legal issues throughout the entire design process and after implementation. Compliance-by-design is not a one stop or an ex post assessment, but a process (Dalla Corta and van Brakel 2022), as exemplified by the observations on the “no personal data on the blockchain”-claim. Secondly, technology has to be embedded in other infrastructures, technologies, best practices and legal frameworks. The absence of next steps “after the announcement” and slow implementation of blockchain applications in the real world could be indicative of the technology having difficulties in co-existing with, or becoming embedded in, other existing infrastructures.

Thirdly, not all blockchain projects use blockchain in the end and, many blockchain projects fade away “after the announcement.” This does not imply that blockchain does not play a role in these “blockchain projects without blockchain,” as the initial intention to employ blockchain and its affordances has consequences way beyond *whether or not* the technology is used *in the end*. The focus on data control in the Red Button is strongly linked to the aim of a blockchain-based SSI solution, and it is probable that SSI will survive the Red Button even if in the end blockchain is not used.

These policy-relevant implications lead to the insight that, when assessing an emerging technology, policymakers too should carefully watch beyond the announcement of tech ideas. In-depth interdisciplinary research focusing on public actors that develop blockchain applications enables the productive exploration of the grey zone of experimental technology development practices “after the use case announcement.”

Notes

1. More information about the research project can be found on the project’s website: <https://chainresearch.eu/>
2. In the Netherlands, municipalities provide debt help trajectories to inhabitants with problematic debts. Problematic debts are debts of which the monthly sum of repayments is greater than the capacity of the debtor to repay the debts. During this trajectory, a debt counselor helps the debtor to find a solution that will lead to the debt being repaid (Jungmann and Madern 2021).
3. The CJIB is part of the Ministry of Justice and Security in the Netherlands and is, among others, responsible for collecting traffic fines and punitive orders.
4. The distinction between *willing to pay* and *being able to pay* is a central distinction in the CJIB’s debt collection policy (CJIB), thereby contributing to the distinction between the “good” and the “bad” debtor (McFall 2011).
5. We are aware that the concept of data control(ler) has a particular meaning in the legal realm (Graef, Husovec, and Purtova 2018). We, however, understand control here rather in an experiential sense. Citizens are provided a sense of control over their data by means of the Red Button.
6. Even though we discuss the exploration of blockchain technology by public actors, we employ the concept of “economic experimentation” to refer to the broad domain of real-life experimentation, or “research in the wild,” that is not confined to a academically scientific laboratory that heavily controls the experimental environment (Muniesa and Callon 2007; Callon 2007).

7. We are aware that the made distinction between use cases and case studies a simple distinction, not taking into account the multiple “cases” to be found at the intersection of “disruptive” technology development, social science research and public law. In law (scholarship), activism and judicial practice a case refers to a particular instance—or a “case”—of (in)justice, invoking practices of case making preparing a judgement at the is ought conundrum (van Oorschot 2021). Similarly, a demonstration could refer to both an empirical proof and political manifestation (Rosental 2021). Furthermore a case can refer to a “dossier” or file, requiring case work(ers) (Foucault 1975; Eubanks 2018; Lipsky 1980).
8. As a caveat, one has to take in mind that if something is announced as a blockchain *use case*, this does not mean that it will always use blockchain technology *in the end*. Developers can potentially opt to achieve the project goals without the use of blockchain technology. In some of these cases it might still be relevant to consider these projects as “blockchain projects” as the (expectations on) blockchain technology enabled an initial *use case* idea (Meyers and Keymolen 2023).
9. (Taekema and van Klink, 2011; Aboelela et al. 2007).
10. This avoidance of personal data on blockchain applications for GDPR reasons is not unique to this case study. Our second case study, the Energy Wallet, too, avoids the collection of personal data which may have consequences for complying with legal requirements such as the official communication of individual administrative decisions. How can the government formally inform a citizen on whether or not they received a subsidy when the government has no way of knowing *who* applied for a subsidy because in the application process no personal data were recorded?
11. This claim is based on field observations (where the DPIA status of the report was confirmed without contestation) and multiple interviews (where most interviewees considered the legal advice a DPIA).

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Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to their containing information that could compromise the pseudonymity of research participants.

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