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Shaping Local Open Data Initiatives: Politics and Implications

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Abstract

This article explores different perspectives attributed to the open data initiatives and how these perspectives shape the opening-up process. A socio-technical lens, the social construction of technology, was used to analyse a qualitative cross-case study of two Swedish municipalities. Findings revealed two ways of interpreting open data initiatives: 1) as a platform for techno-economic growth and 2) as a platform for co-created societal growth. These two approaches addressed the municipalities respective contextual challenges and interests alongside national recommendations in their aims to realize the open data initiative. In doing so, they diverged into the evolvement toward two different ends: the realization of open data and the realization of open government. To excel the understanding of actions taken to meet these ends, an additional set of differences between these municipalities is provided within a sociotechnical framework that allows us to discuss diverging evolvements of open data initiatives based on agreed and non-agreed interpretations of what is believed to be constructed.

Keywords: Public sector information, Open government, Open data, Social construction of technology, Interpretative flexibility

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1 Introduction

The contemporary framing of a society where governments made their data open in digital formats is closely aligned with visions of economic and societal values that emerge when data is put into new use, thus enabling new innovations by new creators [21], [42], [66]. Increased citizen participation [17], knowledge creating data journalism [16], more value adding research [2] and the development of mobile services [27], [50], [57] are possible innovative outcomes. For these assumed and desired social effects to occur, the open data phenomenon is fuelled by government initiatives [9], [18], [51], [61] as well as by non-governmental organisations acting as advocates and experts for the opening up of government data [49], [62], [64], making investments for future innovations.

However, this initiative also triggers many challenges [31]. One challenge is to understand the complicated evolvement of desired societal impacts of opening data for re-use [32]. A thorough understanding is believed to be essential for successful policies and re-use efforts [22]; however current views of impacts are often scattered, niche or lack holistic considerations [23], [57]. Often, a too simplistic view of value added effects is adopted based on various myths of open data, which results in misinterpreting published data for being equal to benefits of use [32].

It is important to recognize that two movements with overlapping perspectives influence the current realisation of opening data [30], [66]. The *Right to Information Movement* (RTI) has a long history and is concerned with transparency as a civic right, which leads to decreased government secrecy [69] and reduced corruption [44]. Meanwhile, the *Open Government Data Movement* (OGD) draws on transparency as a means to create new services and innovations in combination with and based on technology enabled participation [5], [46], [53]. Both movements strive for access to government data and information in digital forms; however, the RTI movement mostly uses Freedom of Information Laws as the bases for argumentation while the OGD movement tends to rely on more recent open data directives [31]. Researchers also argue that the *shaping of OGD is open to significant contestation* and might hamper the on-going development if it does not adhere to the more social and political aspects promoted by the RTI movement [4]. p.1. In Europe, opening data is governed through the PSI-directive [9] and has been identified as being concerned with the information market perspective of the broader OGD movement [25].

The choices of involved public sector data owners also strongly affect open data initiatives [75]. Research based on the U.S. open data initiative revealed that federal bureaucrats who attributed political power to owning information assets formed a passive-aggressive stance toward freeing data, claiming to cooperate by identifying minimal amounts of data able to open up but locking in the rest more decisively [53]. In addition to federal bureaucrats, a number of large stakeholder groups that represent transparency advocates, technology driven futurists, civic engagers for e-Democracy, and compliance driven bureaucrats, have been active in attributing their values and perspectives, thus contributing to shaping open data initiatives toward different outcomes [39]. Together, the realisation of open data initiatives becomes a very tricky business that risks getting stuck because of the variety of involved actors, the complexity of the task, and the vagueness of what to aim for, thus hampering the possibilities for new innovations to emerge.

While the above examples reveal different interests, attitudes, and interpretations of open data, little information exists on how those involved shape local open data initiatives to reach desired goals [34]. Recent studies about municipalities show that they are not keeping the same pace of opening up as are larger open data initiatives (for example national platforms). Additionally, a lack of knowledge exists about their specific context and situation for contributing to open data based on value creation and innovation [56], which arguably can have a significant regional impact. Therefore, one could argue that research on how municipalities shape their initiatives, and thereby the potential outcomes, adds to the growing body of knowledge about how open government contributes to innovation.

The purpose of this article is to investigate municipalities' interpretations of opening data and to understand in what ways the perspectives of various actors contribute to shaping the realisation of local open data initiatives.

Qualitative fieldwork, carried out in two disparate Swedish municipalities that are currently undergoing the process of opening their data, was used for an exploratory investigation. In addition, the study followed and used the on-going debate in open data forums at a national level because this highly influences the work of less resourceful municipalities. The first part of the paper introduces the theoretical field of open government and sets the stage for this article by providing insights into the contemporary evolvement toward the realisation of the open data initiative. The methodological approach which follows is based on qualitative research and a socio-technical theoretic lens, is presented alongside an in-depth description of the two cases and their current situation and status in the opening process. Next, findings are presented in a narrative form to increase understanding of how the different perspectives shape the way open data initiatives are carried out and identify outcomes that are prioritized and valued. The article concludes with an analysis and discussion that is framed in a socio-technical perspective and proposes some generalizable conclusions concerning the relationship between interpretation-based visions and its on-going impacts in the realisation of open data initiatives at the local level.

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2 Open Government

The notion of *open government* is increasingly popular and is often used as a buzzword for the on-going extension of e-government that enables *new ends and new means* to facilitate an open culture that leads to transparency, participation, and collaboration [36]. It is stated to be an ICT-driven openness that results in the publication of data in digital formats under the label 'open data' [36]. Practitioners suggest that open data have greatly influenced the way the public sector interacts with citizens, the way innovation is created, and by who citizen services are created [36]. Therefore, it bears strong influences from other crowd-based open movements such as open source and open access [75].

Despite the contemporary excitement and open data hype, open government is far from new. In its early days, in the mid-50s, open government started to appear in relation to requests for access to government information [52]. This access later evolved into freedom-of-information (FOI) policies [26] that enable increased transparency for citizens and government accountability. Based on FOI, it was believed that access to government information, which later was published in digital forms, was "essential to the realization of a civil society, democratization, and a rule of law" [54]. p. 397. From this democracy-driven perspective, the concept of open government took another direction when Barack Obama launched the Memorandum of Transparency and Open Government [51]. In doing so, Obama raised attention to new ICT's and started including the notion of innovation into the concept of open government. In parallel, when a group of Silicon Valley open data advocates launched practical recommendations on open data using the concept of open government [47], the meaning of open government was gradually perceived as being based on technically enabled open data rather than being democratically-driven FOI [67]. This shift in view made the concept of open government even more ambiguous [75].

Proponents for open data picture citizens and companies as the target groups for a new information market. Therefore, citizens are not the only consumers of public information but also future developers of new digital services and the public sector is viewed as a provider of raw material or as the ICT-advocate Don Tapscott explains: *"…*government becomes a platform for the creation of public value and social innovation. It provides resources, sets rules, and mediates disputes, but it allows citizens, non-profits, and the private sector to do most of the heavy lifting*"* [36]. p. xvii. Rhetorically, open data is often pictured as an untapped resource that contains immense possibilities for new digital services [66] and for targeting innovative developers to deliver the means for civic engagement and increased democracy [34]. On the other hand, critics claim that this new technology-enabled transparency might negatively affect trust in governance and may also be unfavourable for good governance because of, for example, anticipated costs to release data and risks for misinterpretation and misuse of data [3]. Recent cases in which less resourceful people have been out-manoeuvred by more economically and technically resourceful people have triggered a debate of whether open data is simply empowering the already empowered [24]. Policy researchers who set out to enlighten others of the evolving prominent position of technologically skilled people as the sole influencers and interpreters of open data have also noticed this technology enabled divide [41]. Recently, open data have been merged into a broader and more global perspective with the emergence of the Open Government Partnership were sixty-two countries, and rising, are working toward accountability, technology and innovation, citizen participation, and transparency [48].

In Europe, the release of government data in open formats is governed by a recent EU-directive concerning the public sector information, called the PSI-directive [9]. Together, the different perspectives on open data and open government and the large number of global actors striving for consensus makes opening government data a rather complex story.

3 Analytical Framework – Social Shaping by Interpretative Flexibility

To understand how attitudes and actions shape the process of open data initiatives, an analytic framework provides extended guidance for the analysis [68]. The Social Shaping of Technology (SST) has been selected since it consists of a broad range of research streams that intertwines technological evolvement with societal issues and aims to create a framework that enable us to understand these different strands as a whole [40]. In doing so, it sets out to broaden the technology policy agenda by offering a theoretic perspective for us to see "that technology does not develop according to an inner technical logic but is instead a social product, patterned by the conditions of its creation and use" [70]. p. 866. It is portrayed as a useful approach for contextualizing how humans interact with technology in analysis of current events in society, in particular, for processes and contexts that frame technological innovation [28]. Additionally, it spans the boundaries for how we look at innovation by acknowledging the societal and political dimensions of technological advancements [38], [63] based on an agnostic approach that does not "privilege the survival of the information system" [71]. p. 21. That is, the possibility that innovation might not be worth pursuing is not ruled out.

The political aspects of SST are emphasized and it is stated that IT artefacts are permeated by politics that makes the understanding of different technology based evolvements more difficult and less straight forward [73]. Societal aspects are made possible by studying people's interpretations of technologies and the on-following events that

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shape use and outcomes leveraged from the notion of predefined roles [37], [55], company, region borders [1], or strictly in-house implementation processes [10].

Within SST, there are various theoretical strands with the Social Construction of Technology (SCOT) [55] being one of the most applied theories [70] as it studies "users as agents of technological change" [35]. p.113. SCOT challenges the practice of analysing and testing developed artefacts based on a predetermined and uncontested meaning of such artefacts [71]. This is accomplished by introducing the concept of *interpretative flexibility,* which states that not only is there "flexibility in how people think of and interpret artifacts but also that there is flexibility in how artifacts are designed" [55]. p. 40. However, in retrospection, many people are only capable of seeing the outcome as the only possible solution, which blurs other possible outcomes that do not occur [55]. The notion of *interpretative flexibility* is used to explain how groups of people that interact or are involved with the creation of IT artefacts come to form different interpretations based on different sets of perceived problems and solutions [55]. The interpretations themselves, whether performed by users, non-users, or designers, are governed both by the situated context in which the interpretation takes place and by the content of the artefact itself, which draws deeper social beliefs such as the notion of what constitutes a fully working artefact [55]. Broadening the ability to learn how different groups view artefact tells us how technology is embedded in human affairs [35].

To understand how technological artefacts are shaped, one need not only understand the people and their interpretations, but also the role they play in the development process. The SCOT approach opposes the traditional way of viewing this process as linear. Rather it regards the process as *multidirectional*. This means that the development process can be influenced from various directions by different social groups and can evolve in a multitude of directions, which leads to a portfolio of different outcomes [55]. The concept of *stabilization and closure* describes how the development process evolves and changes from multidirectional and diverging, with several opposing social groups, into a more streamlined process that converges a broader acceptance by the groups. A development process is said to stabilize when the problems perceived by its relevant social group start to be resolved (the process of gaining consensus) before final closure of the development activities. Apart from closure based on solving relevant problems, closure can also be gained using rhetorical means, (for example, advertisements or marketing) to change user's perceptions, or by redefining problems into something that can be solved [55].

For this study, interpretative flexibility for different social groups, in this case the two municipalities, was chosen as the basis for analysis, with the additional aim of searching for perceived problems and solutions to make the interpretation richer. However, the remaining parts of the analytic framework that constitute the basis of SCOT are used in the discussion of the analysis to further widen the reflectiveness of the paper.

4 Methodology

Based on the described complexity of the open data phenomenon, investigating this highly dynamic phenomenon in-depth is important to gain insight into possible future evolvement. At the time of this study, the Swedish open data initiative was still in its infancy due to an elongated disagreement with EU over implementation legalities [59], and very few officially proclaimed initiatives were found. The chosen municipalities, Stockholm and Skellefteå, were among the first to start. The rationality for choosing to study municipalities instead of, for instance, national authorities, was that all municipalities are governed based on the same basic foundation, which is to foster for their citizens living in the municipal area. Therefore, they provide rich material for comparative purposes, and findings can be disseminated more easily because of these similarities than if public sector authorities with very specific and distinct purposes had been investigated.

To understand the open data initiative, previous research has suggested qualitative methods as a suitable approach [11]. In general, qualitative research provides a suitable approach when the studied object cannot be isolated in time or place, rather needs to be studied in its own natural habitat of people, processes, and structures [45]. A qualitative researcher attempts to "make sense of, or interpret, phenomena in terms of the meaning people bring to them" [13]. p. 2. Therefore, case studies have been described as a suitable research strategy [74]. The chosen research approach was interpretive in its nature based on the assumption that social reality is subjective, socially constructed, and interpreted by humans [68]. To understand a social situation in which people try to make sense of their perceived world and to understand how perceptions among groups of people differ, a researcher needs to apply an organised research strategy. Hence, one approach is that the researcher deeply studies a situation, and follows it along whatever path it takes as it develops through time using case studies.

4.1 Data Collection

Given the exploratory nature of this research, the initial data collection aimed to gain an overarching understanding of how those engaged in the open data initiatives in the two municipalities perceived these initiatives, the new possibilities they offered for innovative service development, and to understand the effect on their organisations brought about by these initiatives. Based on these aims, two research questions were formed:

1) What interpretations of the opening up of governmental data could be identified at the municipal level?

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2) How did these interpretations shape the local realisation of the open data initiative?

In this study, a number of data collection methods were used including individual interviews, group interviews, and documentation gathering, see Table 1. However, the primary method was focused interviews [74] with predefined topics that included the following: 1) their organisation and open data project (aim, activities, resources, political support); 2) their view on open data (consequences, value of openness, control, existing knowledge, what data); 3) their view on open data based services (existing or wanted service creators and service users, citizens as new service developers, believed benefits for society); and 4) data availability (their definition of *available* for who and how). We used the same topics to guide the questions asked in the group interviews. Because the municipalities chose different strategies to implement their open data initiatives, it was not possible to have the same kind or amount of interviews in the two cases. However, the people most involved in the process of realising the open data initiative were interviewed.

The first round of interviews included strategic IT-management and a chosen number of data owners. The second round was restricted to IT strategic management because they were identified as the main shapers of the initiatives at the time. Efforts to gain trust and situate the researcher were made through informal talks at the beginning at each interview. To contextualize the case study, events related to the national debate about open data realisation were studied through public seminars [19] and documentation related to the development of national guidelines [15]. More detail about the performed data collection can be found in a table below. It must also be noted that, because the two municipalities started the process at different times, they had access to different versions of elaborated national guidance at the time they started their journeys. Therefore, because Skellefteå started later, more national guidelines relating to the publication process were available than when Stockholm started; however, efforts were made to stay observant to the effects from this difference.

Table 1: Summary of data collection

Data Collection	Description	Time period
Case: Stockholm City	1 interview with IT strategic management 2 group interviews with 2 IT strategy managers 1 mail interview with one person from IT strategic management 1 interview with data owners 1 group interview with 2 data owners 2 interviews with external advisors (one per person) Participation at the start-up event for Open Stockholm Awards Participation in one forum for participants in the app competition Listening in on 2 web casted forums for participants in the Open Stockholm Award and 1 webcasted event about the Open Stockholm Award competition winners Documentation from the Open Stockholm project and the Open Stockholm Awards competition, including more than 300 business ideas from people not participating in the app competition 1 webcasted journalist hackathon using Stockholm City open data	March 2012 – May 2013
Case: Skellefteå Municipality	4 interviews with IT strategic management 1 group interview with 4 IT strategic managers Participation at 3 meetings with IT strategic management Presentation of open data at open a forum hosted by local IT-organisation Presentation of open data at a workshop with 40 municipal employees regarding the upcoming open data implementation. An on-going survey was conducted in all municipal departments as inquired by strategic management.	March 2012 – October 2013

4.2 Data Analysis

In general, the data analysis process correlates well with Miles and Huberman's description of exploratory studies: "it's as if we are trying to solve an unstated and ambiguous problem, which has to be framed and reframed as we go" [45]. p. 91. In particular, the data analysis phase was characterized by an abductive approach, which is interplay between data-based and theory-based analysis [13].

Following data collection, interviews were transcribed and results from talks and workshops were documented. Thereafter, a first cut data analysis, based on the question topics from the interviews, was conducted. Guided by the results from this stage, the open government literature was revisited to find explanatory theories. This process rendered unsatisfactory results for broader holistic explanations for the different outcomes. After this, the need for a more extensive theoretic analytic framework that could guide the identification of different interpretations of the open data initiative and leverage findings emerged. Here, the *social shaping of technology* approach [40] was chosen because it holds a large degree of political awareness [72] that correlates well with the intrinsic political values that constitute open government evolvement [44]. More recently, scholars have claimed that social shaping of technology

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*"*seems especially promising in areas of technology where visions are manifold, societal interests conflicting, and applications and markets are non-existing or still under construction*"* [33]. p. 80, thus was a good match to the dynamic phenomenon of government open data. The analytic framework and its use are described later in the article.

The data material was revisited based on the analytic framework and findings were iteratively reworked three times within the framework. Additional discussions on the relevance of the findings were held with people involved in a contemporary study of IT-managers at Swedish municipals that also related to open data, but with a much more technical and legal focus on data release [20].

5 Empirical Results: Case Narratives

The two cases are presented in narrative form to preserve the rich experiences and variations between study participants [58]. This method can be argued to be especially important when the open data phenomenon is still in its infancy and established knowledge about smaller actors, such as municipalities is limited.

5.1 Stockholm

Stockholm City is the largest municipality in Sweden with more than 860,000 habitants covering the capital city of Sweden. It is characterized by a continuous growth in both population and business life, which has led to a growing need for public transport, enhanced city infrastructure, and housing. In the mid-90s, Stockholm was considered an international centre for ICT-innovation, a legacy that has influenced their current aim of making Stockholm a forerunner in IT-innovation and digital cities. The strategic IT-management group of five people and two external advisors, representing regional business life and developer community, started discussions about opening up data in 2009. In early 2012, they launched their open data initiative *Open Stockholm* with a hackathon focused on mobile applications and business ideas. The initial drivers for opening data were as follows: 1) to regain the international position as an IT-innovation centre, 2) to enable a vision of a *digital city*, 3) to increase service and transparency for citizens, and 4) to deal with practical problems relating to their increasingly growing city. Hence, it is the vision of a modern and digital city, rather than the Swedish PSI-initiative, that is highlighted as the driving force for Open Stockholm. However, the arrival of the Swedish PSI-law [60] triggered the start of their process by addressing the challenges of their growing city: *People are moving in, there are more constructions taking place, the traffic is getting increasingly tougher, and it's all about availability and accessibility in the traffic space. And for that we need traffic data (Strategic IT-manager).*

The strategic management group also strongly emphasized and took action in bringing the developers and companies as creators of economic value and emphasizing the possibility of access to a new market with their innovations. Creating services was seen as something that could easily be done, *if you have the knowledge to build an app, which you might have when you are sixteen, has a laptop and access to internet* (External advisor), and as something that favours new business opportunities in general. In addition, open data was said to make public authorities loosen their monopoly on services to new business actors. In general, the release of open data was seen as a major shift in their organisation and as a next step after e-services:

We have had several so called shifts of paradigm. The first was when we started to build e-services for self service; we outsourced a part of what the municipality traditionally would be doing for our citizens, for our users to do it themselves. Sort of like how the banks has launched their internet services. That was one shift. Now we are facing the next shift since we are making our information available. So this is a new era I think. If you think about it, this is a rather big thing if you understand the consequences. (Strategic IT-manager).

Their initiative, *Open Stockholm*, was widely supported. Regional politicians, business representatives, and the developer community actively contributed to setting the first strategy and making the initiative possible. Rhetorically, open data was pictured as an untapped goldmine. Their app competition drew a number of developers and people with business ideas; however, legal uncertainties concerning the right to promote certain companies publicly made them keep the prize ceremony a strictly internal meeting. Altogether, it was a quick and proactive initiative that gained a large amount of interest both regionally and nationally. In parallel, the city archives made some effort to establish a think-tank with creative and influential people from Stockholm, and an innovation lab was planned. The aim was twofold: 1) to gain feedback from the public on for example interesting datasets for commercial purposes and 2) to increase public knowledge among private persons about Stockholm's open data initiative. In parallel to the app competition, but not part of the Stockholm City action plan, was a 24-hour journalist hackathon organised by a national journalism organisation. Seizing the opportunity to try out new open data, the journalists used the same open data from Stockholm City as the developers in the on-going app competition hosted by Stockholm City to develop news articles and web services. A representative from Stockholm City participated partially, but the results from the journalists' hack-a-thon rendered little attention and attributed no outspoken value to their organisation or actions among strategic management.

For the process of releasing data, strategic management's decision was based on two criteria: the selected data would be quick and easy to release and it should address the citizens; primarily developers and companies. By determining what data could and should be released initially, the relevant data owners were then contacted and

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urged to open up their data. During this process, established companies also made requests for data; for example, information broker companies frequently tried to acquire public sector data in more traditional business related ways; some stated their willingness to pay the costs for the release of data without any demands for particular data portals. Strategic management deemed this approach as positive even though they did not act upon it. Additionally, companies wanted to show that they were using high quality data from Stockholm City in their services; however, strategic management was reluctant to share anything related to their brand. Even though strategic management in Stockholm had strongly emphasized the importance and transformative power of new external service providers, they also saw themselves as initiators in procuring especially interesting and valuable external services that had been proven successful. The issue of whether these open data based services were, in fact, for sale by their developers was not part of those discussions.

It was not only technically skilled people and companies who revealed an interest in open data, citizens also made requests for the release of planning documentation for local building projects because they wanted to influence those projects that were close to their neighbourhoods. However, these data were not released because of indecisiveness from politicians referring to the paper based freedom of information rights; thus diminishing individuals' possibilities to participate. Hence, this data were not considered as interesting and important to release in digital form as those requested by potential service developers. In the city archives, the individual's right and interest in accessing historic data such as photos and registers in digital form were strongly emphasized, not only as data users but also as data contributors. These people were often seen to complement historic data with additional information, but were not seen as likely service developers with commercial interests. Internal data were also seen as a potential new resource for increased internal revenues: *And then we are looking over the possibilities to charge for the data, in the long run that* is (Strategic IT-manager). Therefore, a conflicting approach emerged in charging strategies and the recommended free-of-charge-approach by the PSI-directive [12]. This approach revealed major similarities to the charging culture within the geo-data section where their metadata solution for the open data originated.

Transforming the selected data into formats that citizens could download and use easily, which, in this case, clearly related to developers, was considered a major challenges for the municipality. Once this challenge was solved, the data were published on a portal in different formats for different types of data. Of importance was publishing high quality data and retrieving corrections on data proposed by data users. However, this latter activity was not given explicit attention nor was any special communication channels established as complements to the already existing non-personal contact addresses to enable the in-flow of improved data. At the end of 2013, Stockholm City had released data, started a continuous work with open data, and formed plans for the future. However, they still encounter lack of control and knowledge over the process, for example over how to address the technical solution for metadata). The effects and consequences of open data are also still a matter of uncertainty. In 2013, Stockholm was involved in another innovation competition, this time targeting established companies that have the capacity to develop sustainable services for citizens, and the city is planning another app competition in 2014.

5.2 Skellefteå

Skellefteå is a coastal municipally with approximately 71,000 habitants in Northern Sweden and is the second largest city in Västerbotten County. It is characterized as an area with an active business life and positive spirit, but with the challenge of a constantly decreasing population that faces significant demographic challenges in the future. In early 2012, the IT-strategic management group of five people started their first discussions about opening up their data. Compared to Stockholm, their start-up was more reactive and elongated without the involvement of external advisors or local politicians. The PSI directive played the part of a formal catalyst for the process to start. It was not that they had not seen the point of open data before, but constraints in time, resources, and knowledge made it difficult to prioritize this work. Strategic management saw several possibilities with open data: 1) something that is good for citizens, 2) something well in line with their current strategic work related to e-services and IT-infrastructure, and 3) a way to deal with their future demographic challenges. Early, they also declared their will to let open data create *conditions for citizens to join in on dialogues before decisions were taken* relating to their experiences from youth being politically interested in specific issues rather than in political parties. Within this aim, an expected transformation of power structures was expressed as follows: *Data must not only be made available for a small group of people, because that would be like enabling power to some people but not to others. Who are we to judge who has a need for that [data]? (Strategic IT-manager).*

The demographic factor, as related to open data, was seen to affect the internal organisation and communications with citizens:

We have a rather big organisation; this means that we need to position ourselves to this demographic change. Either we make sure our population grows, or we need to decrease our costume. But we can't go on like before…We need to understand that the way people are working is changing. Outside, among citizens, they expect themselves to be able to communicate with the municipality in new ways, and that the services should be delivered in other ways than before. And then we have 70 % of our employees… retiring within a ten-year period... And this means a lot to think about, for example, this retiring generation has not done so much documenting, they keep a lot in their heads (Strategic IT-manager).

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For this, open data brought hopes of being a successful course to break a decreasing population and start dealing with their inadequate IT-architecture. The following possible changes were strongly emphasized as drivers for positive societal development: 1) increasing citizen engagement in the region, 2) fuelling regional businesses, 3) innovating the administration with new ideas and engagement, 4) empowering citizens by improved transparency and access to public administration, and 5) meeting a younger generation of citizens on their terms by making their organisations and work more pedagogic and understandable. Hence, strategic management acknowledged that economic growth was likely to occur but saw this from the perspective of increased regional competiveness. The effect of new services was mostly related to increased visibility for tourists and the anticipation of increased citizen satisfaction. Open data was also perceived as a major shift in their organisations, which was the next step after e-services that moved the analysis of citizens' needs out to open data users:

For me, this is a rather big change of attitude; from figuring out citizens needs all the time and ordering what is necessary, to release it for free for others to figure out what the citizens needs might be. This is a rather big change in our way of thinking. (Strategic IT-manager).

In late 2012, their operative process started with a data inventory across the municipality and a workshop where information about the PSI-directive and open data were presented to all relevant employees. The aim was to inform and engage employees in the work. Quite early on, there were discussions about hosting a hackathon, but this was postponed. Instead, they focused on a regional cooperation network because the question of open data was perceived as too big to handle by one municipality. Discussions with regional municipality neighbours included, for example, the question of whether all municipalities (within the cooperation) could release the same data and create greater value in total. Spreading knowledge and good practices were also emphasized. Opening up the public sector data was also connected to the on-going work of developing an application platform for the municipality where mobile services for citizens could be launched. This platform was seen as a great opportunity for external service developers to spread their open data based services, which would help succeed and, thus, stay in Skellefteå. Another way of helping out was the possibility of procuring these services; however, if that were the case, the initiative should come from the service developers and the services would need to be of high quality and align with the municipal's mission. By adopting a notion of co-creating of their society, strategic management expressed their ambitions as follows: *We want to foster and support citizens and companies in developing Skellefteå [the city and region] together with us. We are a part of it, but we don't own the question (Strategic IT-manager).*

IT-architecture, IT-control, and the relation with third-party system suppliers was a matter frequently mentioned and discussed in Skellefteå, but barely mentioned in Stockholm. A normal process for acquiring data was described as follows:

You have a system; let's say the ski track system for keeping track of when the tracks are being prepared and about the snow conditions and everything… Then we have an idea that we want to release that data to our citizens, because this is really good for them to know… And then you contact the supplier asking Can we release this? Because we know that via the organisation system I need to identify myself, login and run the client towards the system. And after that we always receive a job estimate for development, if they don't say no in the first place. So, then it's a job estimate, and then it becomes a matter for procurement, and then we need to pay for their development to get the hands on the data that is ours. This is really strange, but this is what happens (*Strategic IT-manager).*

However, not everything related to data publishing was deemed problematic in practice; it also brought hopes for an increased focus and visibility of the actual contents within IT-systems as a change to the universally prevailing focus on the systems, thus increasing the status of the data in relation to the systems. The data value was believed to become altogether more obvious the more it became transparent. Focusing on the data, instead of on the system, was seen as a way to finally gain a better position for negotiations with system suppliers and, thus, take back a bit of control over the process. As part of their open data project, they correlated the release of data with their on-going reformation of their IT-architecture to obtain a good foundation.

The development of the Skellefteå region was also believed to benefit from increased dialogue on open data and what the data represented, as well as from collaborations between citizens and public sector employees in various forms. For example, a co-creation of data via services where citizens report complementary data (for example, by adding names or places to archived photos) or reporting faults in data was believed to *make our data easier to understand for our citizens* (Data owner). Regional research and development projects were yet another group that was pictured as likely to create societal benefits from open data (Data owner). Citizens were also believed to be empowered with new knowledge about the region, the municipality, and the people living there. Service developers were believed to be empowered not only from entrepreneurial processes or achievements of technical skills, but also to mature from a *fun-to-do-stuff' state, to a this-is-what-is-needed state (Strategic IT-manager*). A related and much supported topic in Skellefteå was the possibility for locals to gain interest in the region and in the municipality's work, partly because of major needs for future recruitments to the municipality. Students in schools and elderly were particularly emphasized as individuals who strategic management wanted to benefit and learn from using open data. In Skellefteå, the work with regional collaboration continues and sets the stage for how the open data initiative will be made real.

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6 Analysis: Different Interpretations of the Local Open Data Initiative

This section presents the identified interpretations found when the chosen analytic lens of interpretative flexibility in addition to perceived problems and solutions was applied. A deliberate limitation was made to exclude interpretations of activities that could be adhered to initial and occasional problems (such as choosing technical formats, deciding what meta-data structure to apply, or the design of the web interface). Because these choices, to a large extent, needed to follow given recommendations and standards, they did not contribute to the understanding of underlying values or rationalities within the two municipalities. In addition to the identified interpretations, a set of differentiating factors was found that illustrates how these two open data initiatives were shaped in a more practical sense.

6.1 Open Data as a Platform for Techno-Economic Growth in Stockholm

Quite early in the process, problems related to open data emphasized in Stockholm had the character of being technically focused and included infrastructural problems within a growing city and digitalization needs for achieving a digital city. Additionally, strategic management worked to re-establish Stockholm as an ICT innovation hub that fostered national and international economically viable companies. For this, technically skilled developers and companies were viewed as the solution and targeted main users of open data. Therefore, they were supported to find ways into a new market using open data as fuel. The emergence of new digital services could not only serve as a solution for traffic and housing problems, but it was also suggested to spur local business life. A strong tendency existed to adhere to economic reasoning. Young developers faced the opportunity of becoming successful with their services, efforts were made in innovation contests to support economically sustainable services, data users were often pictured as clients or customers, and the strategic management saw open data as a possibility to create new revenue streams by investigating different charging alternatives. Their handling of data also resembled the way groceries are stacked in a store, unsupervised and without much possibility for personal communication about the contents. The prioritization of the economic perspective on digitalization could also be seen in terms of transparency related web services by journalists, which was downplayed in attention and actions.

In summary, Stockholm attributed the core meaning of open data as a platform for techno-economic growth, which can be described as *when public sector data is released in open formats, the digitalisation will spur new innovations and services that will lead to the creation of economic value and improved competiveness for the region*. It should be noted that aspects other than the techno-economic perspectives were seen, such as the recognition of transparency and democracy, but they were marginalised when it came to making decisions and performing activities.

6.2 Open Data as a Platform for Co-Created Societal Growth in Skellefteå

In Skellefteå, open data focused on problems concerning the future development of the region. The future demographic challenges were all encompassing and included citizens and the municipality organization itself in terms of upcoming retirements. Without satisfied and knowledgeable citizens in organisational and business life, economic growth will not occur and regional challenges cannot be addressed properly. The strategic management places special hope in reaching the younger and more digitally experienced generation by using new digital channels and having them use the open data. They also addressed problems with an aging IT-infrastructure and an inefficient way of handling data in closed silos by rigid third-party agreements. Open data was pictured as a possible way for them to regain control over their data and the systems holding them, thus liberating time to deal with more important issues such as the growth of their region. Because IT strategic management in Skellefteå were short on resources (monetary, people, and appropriate knowledge) for the task, they explored the possibility of cooperating with fellow municipalities. At the same time, regional cooperation was believed to strengthen the county area and support smaller municipalities in the region. Evident in their argumentation was the notion of solving problems together to co-create value. This was presented through cooperation with neighbouring municipalities by hosting an app platform for service developers, in dialogue with young people before decisions, and by making citizens generally more knowledgeable and empowered with open data.

In summary, Skellefteå attributed the core meaning of open data as a platform for co-creating societal growth, which can be described as *when public sector data is released in open formats, societal growth can be achieved by co-creating value such as empowered citizens, innovation in public sector and a change in collaboration and power structures*. It should be noted that economic growth via new digital services was recognised as a major effect, but was pictured as being one part of broader societal growth.

6.3 Shaping the Open Data Initiatives

After the identification of the different interpretations, a second-order analysis was conducted and the cases were revisited. This time, the identified interpretations were considered as analytic filters. The aim was to identify how the two open data initiatives were shaped (Research Question 2). Although not explicitly sought, the findings revealed some major differences by which the outcomes could be clustered. In sum, five differences were identified in how the

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municipalities shaped their open data initiative: 1) the opening-up process, 2) the relation with data users, 3) the view on the individual, 4) the perceived value of openness, and 5) the need for external visibility. These differentiating factors are exemplified separately and presented in a matrix form to clarify how the two open data initiatives were shaped (Table 2). Matrices with the inclusion of relevant condensed data are stated to increase the descriptive power of the data within a rich data set [45]. In this case, the data reveals how open data initiatives were shaped by the people during development. A summative description of how the two open data initiatives were shaped is presented before presentation of identified differences.

Table 2: Differentiators for the municipalities' interpretations of open data

	The Stockholm open data initiative: *Techno-economic growth*	The Skellefteå open data initiative: *Co-created societal growth*
The opening up process	- The municipality's responsibility end when data are released, then it's up to the data users. - Developers and companies are the main target groups for which data are adjusted. - Opening up of data is often coordinated with particular events like hackathons. - Opening up is done through collaboration with technology driven regional promoters. - A top-down approach is applied internally, where strategic management chose what data to release. Big departments are considered autonomous in releasing data.	- Opening up is just the start of a process that aims to empower the citizens and change their organisation. - Several data users are acknowledged but developers are the primary target group. - The release of data is a continuous process. - Opening up is done in cooperation with other municipalities in the county region. - An inclusive approach is applied internally that aims to engage all employees in the municipality that are affected by the up-coming open data initiative.
The relationship with open data users	- Business-like relations (suppliers and customers) with clear boundaries between data delivery and data use. - Communication and questions related to open data are often directed to non-personal mails and phone numbers. - Governed by legal restrictions such as Freedom of Information laws (FOI) that restrict municipalities in searching the identities of data requesters. - The municipalities see themselves as possible initiators of procuring externally created open data based services.	- An on-going dialogue can be initiated from the municipality and from citizens and companies. This dialogue can also be broader than open data to include topics such as service needs, regional growth issues, and personnel recruitment. - No strict strategy for communicating with open data users exists, rather it is flexible. - Valuable outcomes are seen as co-created with data users in the region. - Any municipal procurement of externally created open data based services is preferably initiated by the service developer.
The view on the individual	- Technically skilled people or companies are the main creators of value by the creation of services. - Individual's requests for transparency documents for active citizen participation are referred to FOI due to political unwillingness to include citizens in decision making regarding local building projects.	- A broad range of citizens is pictured as being empowered by open data in different ways, via services, usage, insights, and participation. However, developers are pictured as the initial users. - Individuals are seen as co-creators of the development of the Skellefteå region.
The value of openness	- Revenue creating services are developed by programmers, entrepreneurs, and established companies. - New tools, as in open data based services, for handling problems with a growing region and increasing citizen satisfaction. - Increased innovativeness in the region, mainly outside the organisation. - An increased competitive edge related to IT-innovation and digitalisation. - An increased transparency for citizens and companies.	- New means and creative tools to address a decreasing population. - Possibilities for regional growth based on economic growth, the empowerment of individuals, and the reformation and innovation of the municipality's organisation. - An increased internal openness is believed to make the organisation more innovative and the IT-architecture more efficient. - A changed relation with citizens (for example, a chance to getting closer to the ICT-enabled younger generation).
The need for external visibility	- The epithet 'capital city' brought a strong need to be visible at the regional, national, and global scene for various audiences; citizens, and tourists. An open data community with the fellow capital cities in the EU and the global ICT-innovation community.	- The primary need was to be regionally visible to the municipality and county citizens, even though both a national and international visibility seemed possible and desired.

In Stockholm, the techno-economic perspective led to a quick and top-down approach that primarily focused on believed revenue driven actors, established companies, developers, and information brokers, were data release, communication, and relations were most often fuelled by hackathons and innovation competitions. Once the data were released, it was up to the citizens to do something valuable with it, preferably developing digital services that both enhanced service quality to citizens and spurred regional business life. Service developers with more educational and informative stances from the journalist field and citizens wanting to participate in local decisions, were not targeted by any specific actions or acknowledgement. This is not to say that it will not happen in the future, only that these were the initial steps taken.

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In Skellefteå, the co-created societal perspective rendered a slower, but broader and more reflective, data publishing process where the inclusion of all employees related to municipal data sets were prioritized to gain a common understanding. The new openness was also believed to have transformative power of their organizations because both employees and citizens could gain more insight into the work of the municipality. By aiming for a broad citizen inclusion in the long-run, a continuous dialogue and collaborative regional problem solving was pictured as the main way forward. Thus, they saw themselves as participating in the diffusion of new services by making an existing app-platform available for external open data based services to maintain business life in the region. To make up for the lack of resources, collaboration with fellow municipalities was initiated.

The analysis of the empirical data revealed that the interpretations of the open data initiative between the two municipalities was very different, pointing to two different drivers for opening up data; techno-economic growth and co-created societal growth. On a more detailed level, these interpretations also revealed substantial differences in how the local open data initiative was approached and what outcome could be seen. The differentiating factors tell us that it is more to the open data initiative than just publishing data in digital formats.

7 The Politics and Implications of Shaping Local Open Data Initiatives

Given that this study set out to investigate and understand how the open data initiative was shaped by different interpretations, the findings raise some questions for discussion. What do these interpretations and their outcomes reveal about the current evolvement of the open data initiatives on a national level? To what extent are these findings applicable in other cases? The core of social shaping of technology is the balance and interaction between technology and society, which goes beyond being deterministic for either technology or human beings to argue that technology is not a "neutral part but in fact a carrier of particular social interests" [28]. p. 334. These theories take a stance not only to make us understand the society in which all live in, but also to help us see the trade-offs that development decisions lead to when they have "embodied or mirrored a set of professional, economic, and political realities" [6]. p. 3. Additionally, such theories help us understand how these trade-offs might affect future consequences when various constructed artefacts are put in use. Using the two open data initiatives that were differently shaped, this discussion brings forward future implications, or trade-offs, that might occur.

7.1 Local Context as Driver for Multidirectional Evolvement of Open Data Initiatives

The two interpretations of the open data initiative made the realisation process in the two cases take different roads. To understand this, we need to leverage the outcome of the interpretations into the broader SCOT model, which involves the notion of multidirectional development driven by groups of people with different understandings of what should be developed [55]. In these two cases (two of nearly 300 municipalities in Sweden), the open data initiatives were seen to evolve into regional techno-economic growth and regional co-created societal growth. SCOT researcher have stated that technological innovation processes become multidirectional because of the dynamic of opposing meanings from groups of people and are subject to a process of closure and stabilization wherein the dynamic between opposed either diminishes or leads to a portfolio of developed items [55]. This socio-technical process is built on the dynamic between people using, designing, or being affected by the constructed artefact. The social aspect, the people, is governed by a closure process in that people's perceived problems are solved as technology evolves. The technology aspect is governed by a stabilisation process wherein the demands for changes become fewer [55]. The problems and challenges stated in the two cases (for example, dealing with the technicalities of a growing digital city in Stockholm and trying to reverse the decreasing population growth in Skellefteå) are both seen to be larger than the open data context. This means that trying to make sense of the different interpretations; the open data initiative in itself needs to be observed in its broader worldly context. That is, open data is not seen as the solution to a purely open data related problem, rather it is seen as a co-driver to solve the larger context-related problems.

7.2 Transforming Public Sector into Open Data Publishing or Open Government

Given the global stance of open data [22], [64], its democratic aspects [41], multi aspect realisation [39], [43], and high level of connectedness [14], the social construction of open data initiatives can be described as highly complex. However, SCOT, in its initial arrangement, has been criticized for not being able to put technological innovation into a larger societal and political perspective. Specifically, critics have stated that we need to understand hidden norms and politics as well as the *transitions, transformations, and effects of complex objects* to address more complex socially constructed technological systems [29]. p. 257.

For these cases, this complexity not only adheres to the open data initiative itself, but also includes the opening up of an organization. In Stockholm, where a techno-economic perspective dominated, the organisation did not undergo any radical changes other than establishing new processes for publishing data in open formats and slightly altering their e-service strategies to include external service development. This only affected a small number of people in the organization. In Skellefteå, the organisation was affected more radically. The notion of increased openness was diffused throughout the entire organization and affected the internal IT-architecture. It also aimed to not only increase

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openness externally but also internally to increase the possibility for innovativeness and efficiency. They also revealed more radical changes in relation to citizens; therefore, citizens became co-creators of regional growth and pushing power boundaries.

In addition to these identified organizational transitions, hidden norms and politics of open data were stated to contribute to the complexity of open data initiatives and the organizations that drive them [29]. This contribution can be exemplified with the controversies between opposing movements of open government data (OGD) and the right to information and freedom of information (RTI/FOI) [4], [31] as described earlier in this article. Empirical findings revealed that Stockholm correlated well to the OGD movement, with its high focus on service development by technically skilled people and digitalization rather than democratization. Skellefteå, on the other hand, focused on citizen participation for co-creation, democratic value, and service development, which correlates with both the OGD AND RTI movements. Therefore, this multidirectional evolvement is not only driven by different visions, but also correlates differently with on-going discourses of open data.

Researchers have also stated that major implications are likely to derive from these transformations rather than from the technology itself, and that we need to leverage to a higher meta-level of analysis to understand the broader picture [29]. One way of doing that is to view the multidirectional evolvement of open data initiatives from the global open government perspective [48]. As previously described, open data is seen as one component of open government [36] together with the democratic right to data and government accountability. From this stance, the broader and permeated organizational change in Skellefteå, which included both the priorities within OGD and RTI correlates to the ideas of open government. In the Stockholm case, the service niched evolvement corresponding to OGD, correlated more to merely opening up data. This tells us that, depending on how open data are interpreted and realized through active choices and prioritization, the opening up of organizations is transformed into either the realization of open data or the realization of open government. However, because of the early stage of opening up data in Sweden, the identification of these evolvements must be seen as indications for likely future developments rather than as a verified truth of history.

7.3 Flexible Levels of Agreement on Open Data Initiative Structure

Even though we formed an increased understanding about the contextual effect on a multidirectional evolvement that eventually might evolve into either the realisation of open data or open government, structural ambiguities still exist when it comes to open data initiatives.

Early SCOT theories have been criticized for being too vague about larger societal processes by oversimplifying the development processes and the context wherein this construction takes place [29]. To deal with this vagueness, a more elaborate and in-depth comprehension of interpretations and their inherent structure, called *flexibility of structure*, has been proposed that separates how social groups look upon usage and value from how they perceive “an artifacts design and engineering” [29]. p. 244. Thus, we are better equipped to understand how complex socially constructed systems come to stabilize and mature from a state of diversity. This flexibility of structure theory conveys two interpretation levels; a basic level upon which all social groups share the same interpretation, and a subordinate level where different interpretations exist while still agreeing on the basic level of meaning. This has been exemplified with the evolvement of the mountain bike; when mountain bikes started to emerge, the interpretation of their design and construction caused a temporary instability at the subordinate level. Meanwhile, the basic level, the understanding of what defined a bike, remained unchanged [29]. Applying this way of thinking to the findings, it can be seen that the two municipalities do agree on some basic features for the *design and engineering* of open data initiatives and disagree on others at the subordinate level, see Figure 1.

Both municipalities agreed that the design for openness is something they have been working with for a long time by actions that correlate to the freedom of information act. Additionally, strategic management agreed on the basics of open data initiatives in that data should be released on the internet in digital and open formats as described by directives and recommendations [9], [15]. They were governed by directives that set the boundaries for how data can be made digitally available. Many recommendations also address this basic view [12], [14], [23], [56], [62]. They also agreed that new digital services are positive outcomes. All in all, these examples adhere to agreements on the historical legacy of openness and what should be done in practice rather than what this new openness should amount to in the future.

However, on a subordinate level, they reveal some major differences concerning what open data might lead to and how to design and prioritize to get there. First, the differing interpretations of open data (the techno-economic growth in Stockholm and the co-creative societal growth in Skellefteå) clearly reveal disagreement on what sort of systems are actually designed and constructed for the future. Stockholm created a system with high focus on publication of data primarily for a technically skilled audience while Skellefteå formed a system for publication of data and participation on both an organisational level with other municipalities and with citizens and companies to create value. Secondly, major disagreements on realising the future vision were identified and described by five differentiators described earlier in the paper. These differences were shown to shape both the open data initiatives into a realisation of open data in Stockholm or into a more transformational realisation of open government in Skellefteå. Also, the two municipalities were seen to address different contextual challenges in their regions.

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From a SCOT perspective, this indicates that open data initiatives are likely to obtain stability on a basic level that is related to the process of making data accessible; however, it also reveals a major instability at the subordinate level concerning its organisational scope and boundaries for diffusion of open data based openness. Thus, the notion of flexibility of structure [29], which involves how social groups view the actual design and engineering of what is being constructed, deepens the possibilities of understanding the current diverging evolvement, see Figure 1 for illustrative purposes. By adding a two-level structure for the interpretations of the design and construction, we can discuss the evolvement of open data initiatives in more detail.

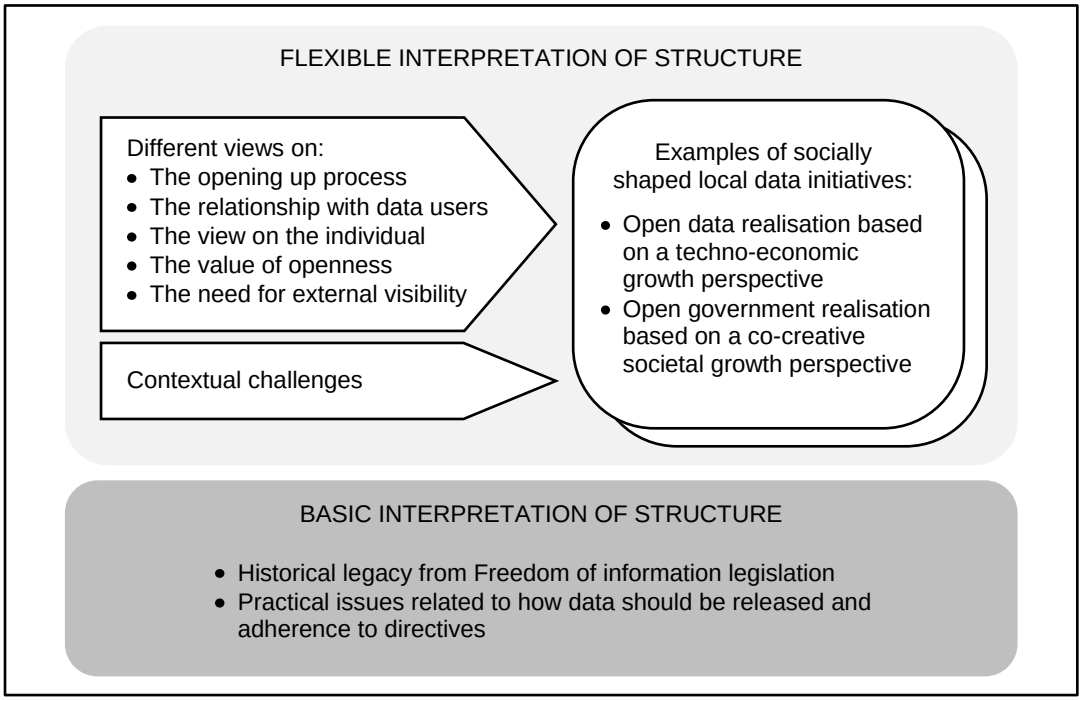

Figure 1: The flexible shaping of open data initiatives for the two cases, based on [29]

To deal with this multidirectional evolvement of open data initiatives, we must address the need for local data providers to make it possible to include contextual challenges for their realisation of open data initiative while providing support for how to set up strategies that, in the end, lead to open government rather than just the release of data in open formats. This is not to say that the realisation of open data might not be a first good step.

8 Conclusions

This study set out to identify existing interpretations of local open data initiatives and to understand how these interpretations shaped actions toward the realization of the open data initiative. By applying a socio-technical lens, the findings were framed using the social shaping of the technology approach to bring insights to the field of open government.

In retrospect, identifying the interpretations of open data initiatives displayed a world that was much less straightforward and more complex than the more traditional way of aiming for and arguing that data should be released in open formats and then desired affects will occur [32], [42]. The cases revealed two different interpretations that evolved toward diverging outcomes; a techno-economic growth that rendered a fast process aiming initially for revenue-driven developers and companies, and a co-created societal growth that led to a more elongated and reactive process targeting various citizens in the long run, but focusing primarily on IT-skilled people. The shaping of these two outcomes were influenced by differences in five different areas: 1) the opening up process, 2) relationships with the data users, 3) the view of the individual, 4) the value of openness, and 5) the need for external visibility. Altogether, the realisation of the open data initiatives was identified as a multidirectional process. That is, the open data initiatives that were socially constructed by the municipalities did not transcend along a common path; rather, they took two different directions. The municipality's also converged pure open data aims together with aims related to contextual challenges in their own region; therefore, they put their own local touch on the open data realisation. With the possibility of addressing already existing challenges with open data, the local initiatives gained momentum and, in doing so, they contributed to the on-going discourse of open data initiatives.

From a higher societal and political level, these cases also addressed a global agenda with their multidirectional evolvement. Findings revealed that the techno-economic growth in Stockholm adhered to an open data realisation

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that did not render any major changes to the organisation. Skellefteå, on the other hand, were seen to work their way toward an open government realisation and thus transforming their organisation more radically. Hence, we will either have open data initiatives that enable government data to be open or that will enable government organisations to be open. Previous research has highlighted this finding as the new ambiguity of open government [75], in that a government can be open in terms of enabling the citizens' right to information without using new technology and being opaque and unaccountable even though data are open in digital formats. To further understand these differences in approach and outcome, the notion of *flexibility of structure* from the SCOT theoretic field was added to dig further into the structure of open data initiatives. This approach revealed a two-level structure were municipalities agreed on basic structural matters but disagreed on others as clarified in a previous picture.

Recapitulating that the extensive artefact under construction here was thought to bring new ideas, new knowledge, and new innovation to our society, we can see that this is depends on how the open data initiatives were shaped. In the techno-economic growth case, innovation capacity was targeted and restricted to developers and companies, while in the co-created societal growth case, a much broader scale of people were acknowledged for their contributions, including the municipality employees. This approach of not downplaying potential innovators, that in fact holds knowledge and understanding of various societal needs, correlates much more to the theories of open innovation [8] compared to only applying targeted innovation activities although they initially render quicker results.

Given these differences, we should remember that there "exist a relatively brief window of opportunity" [65]. p. 98, before an increased sense of routine and perception of stability makes us lose our abilities to be creative about what we construct [73]. Therefore, we end up in technological constructions that are difficult to reverse and change once given a settled structure [7]. Hopefully this article will shed some light on how local open data initiatives can come to evolve into a socio-technical construction that leverages innovation capacity at regional levels, both within government organisations and within the society. Given the identified political dimension of open data, it is worth a reconsidering our sociotechnical standpoint [72]; what we really want the open data initiative to be and by what means we can be involved in shaping it.

8.1 Implications

On a more practical level, the identified interpretations in the two municipalities also render different implications for the realisation of the open data initiatives. Even though the interpretations found in Stockholm and Skellefteå could not be seen as generalizable, nevertheless, it is likely that many other municipalities will share parts of the contextual challenges and chosen approaches; they may not be pure open data realisations or open government realisation, but will probably lie somewhere within that range.

For municipal management, these cases show that there is a difference in whether open data is approached as a short-term or long-term strategy. Taking a broad and holistic perspective on open government, as in the Skellefteå case, might slow down the process, but is likely to enable a comprehensive long-term strategy that actually aims for an open government rather than just open data. From a technological view, it is also likely to be beneficial since the technological solution probably will have to deal with all aspects of open government in the long run, thus avoiding sub-optimizations. The relationship with open data users and the view on citizens as value creators are issues that are already addressed by other public sector in for example working with citizen's dialogue and democracy issues, and are issues that could be handled by others than IT-related employees. Also, differences in the perceived value of openness puts the spotlight on the importance of identifying values that motivates and creates engagement for an increased openness; which should be seen as an essential ingredient in innovation process that situates open data initiatives given its paradigm stance.

For policymakers, a clearer and more diversified picture of desired values and impacts is likely to make it easier to create policies and well working guidelines that goes beyond technical and legal recommendations for opening up data and embraces visions about the future. Also, when choosing open data initiatives for examples of best practice, it is important to remember the identified accelerating factor that the notion of capitol city brought to the opening up process, and to put forward examples that match different levels of resourceful municipalities. Altogether, these cases can be used as tools for discussion to further the discourse of open data initiatives, but also to add some fuel to the discussion about what measures we are using to evaluate initiatives, people and outcome.

8.2 Future Research

Future research could look further into how local context can be integrated into the evolvement of open data initiatives, and investigate in what ways the local presence can be an enabler for open government rather than yet another data provider with various resource challenges. Also, an interesting path would be to investigate how impacts could be deconstructed into smaller parts, to fit open data initiatives on different levels; global, national or regional, as a complement to more broad categorisations such as social, political and economic impacts [22]. Finally, the political aspects of the social shaping of technology approach might offer valuable insights into how both the social and the technological aspects can be addressed in this highly complex and politically permeated area that open data and open government provides us with.

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