Stakeholders' stake and relation to smartness in smart city development: Insights from a Swedish city planning project☆

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A B S T R A C T

Many of today's city planning projects aim to realize smart city ambitions. In order to plan and build a smart city district, where ICT is integrated in critical infrastructure and used to control and govern city functions in innovative ways, new ways of working in city planning are needed. The purpose of this article is to develop a framework that takes into account stakeholders and smartness dimensions in city planning. We have studied a city district development in Sweden where a new planning approach was implemented. The developed framework was used to analyze the complexity of this city planning process. By defining which smartness dimension each stakeholder primarily focus on and analyzing the consequences of this, the framework pinpoints each stakeholder's contribution and/or hindrance to the process and outcome. A recommendation from this study is that new stakeholder groups are important to involve in smart city planning, but this also adds complexity that must be acknowledged when setting up this kind of projects. The developed framework can be useful when organizing and staffing city planning processes as well as when evaluating project outcomes.

1. Introduction

City planning is undergoing major changes in a time when new demands and expectations on resource efficiency and sustainability in cities are made (Angelidou, 2017; Komninos, Kakderi, Panori, & Tsarchopoulos, 2018; Stratigea, Papadopoulou, & Panagiotopoulou, 2015; Yigitcanlar et al., 2018). Consequently, city planning is no longer just a matter of designing districts, buildings, infrastructure, and services, but also a matter of taking new perspectives into account, e.g. digitalization, integration, quality of life, citizen needs, and equality (Silva, Khan, & Han, 2018). Altogether, this forms a pressure on cities and city management to become smart – or at least smarter than before (Marsal-Llacuna & Segal, 2016). Technology, and especially information and communication technology (ICT), is seen as a main facilitator in this transformation, and cities are today seen as hubs of technological innovation (Yigitcanlar et al., 2018) or so called smart cities. The smart city concept embraces more than just the use of ICT (Angelidou, 2017; Anthopoulos, 2015), where ICT often is seen as a means to achieve better city services and/or more efficient city administration (Granath, 2016). The strong focus on better services could range from better transportation, water supply, waste disposal to better healthcare and education. Sensor technology, cameras, and meters are just some examples of the digital resources that are used to make cities smarter.

Consequently, this movement has also affected city planning which now has become more technology-oriented (Hollands, 2015; Kitchin, 2014) and there are signs of an increased technology optimism in city planning and management.

The goal of today's city planning projects is, thus, not seldom to create a smart city district, and focus is often on developing innovative services and futuristic solutions. However, we question if this is possible to achieve without radically changing the city planning and governance processes. This need for changed planning processes and smart governance is also noted by several information systems (IS) researchers; e.g. Nam and Pardo (2011), Gil-Garcia, Pardo, and Nam (2015), and Granath (2016). In order to plan and build a smart city district, where ICT is integrated in critical infrastructure and used to control and govern city functions in innovative ways, new ways of working are needed. We think that it is not only difficult to develop the smart city of tomorrow with the planning process of today, but rather impossible. Traditionally, the planning process has been mostly linear to its character, involving different key actors; i.e. land owner, architects, construction companies, property owners, and residents, in different phases of the process. Taking a holistic approach to city planning, in line with many smart city frameworks (e.g. Alawadhi et al., 2012; Anthopoulos, Janssen, & Weerakkody, 2016; Yigitcanlar et al., 2018), new actors need to be involved. Consequently, this also calls for new ways of

organizing and governing planning. Ruhlandt (2018) argues that the governance processes in cities become enormously complex as they are "multi-faceted and multi-level ecosystems of various agencies and stakeholder groups (e.g. local governments, citizens, urban planners) that are often driven by conflicting interests." (2018:1–2). In this article, we have studied a city district development in Sweden where a new planning approach was implemented, which makes it a timely and interesting case to explore and learn from. By doing this we also meet Ruhlandt's (2018) call for more empirical research on smart city governance and how contextual factors potentially influence governance.

The purpose of this article is to develop a framework which takes into account stakeholders and smartness dimensions. The framework is used to analyze the complexity of a contemporary city planning process in the realization of smart city ambitions. Such analysis can give us insights on how to improve city planning processes and to achieve better outcomes. As a first step, a framework has been used to explore which stakeholders are involved in this kind of city planning process and what their stakes are. As a second step, the framework has been used to analyze how these stakeholders contribute to smartness in the process and outcome of planning. The case we have chosen to analyze is a city planning project where a new form of planning model has been applied; a model that challenged institutionalized patterns and routines. Stakeholder theory (Freeman, 1984) is used as a theoretical lens, in order to identify involved stakeholders, their relations, and stakes. By characterizing identified stakeholders using Gil-Garcia, Zhang, and Puron-Cid's (2016) dimensions of smartness in government, we have examined the identified stakeholders' stakes related to smartness. This was done in order to understand which roles involved stakeholders had in the smart city planning process and what the consequences were. This provided answer to our research question *Which stakeholders are involved in the planning process of a smart city district and how can their stakes be understood in terms of smartness?* The knowledge contributions of this article are twofold; a framework that can be used for future analysis of smart city planning processes is built and a new city planning process is described and analyzed regarding involved stakeholders and their stakes, which could be of practical interest for city planners. The framework is also of theoretical relevance since we apply smartness dimensions combined with a stakeholder perspective on a current city planning case.

After this introduction, the article is organized in the following way: In Section Two we discuss previous studies on smart cities, stakeholder theory, and government smartness. The research approach is reported in Section Three. The empirical findings from our case are presented in Section Four. In Section Five the findings are discussed. The article is concluded in Section Six, in which we also make some suggestions about the need for further research.

2. Related research

In this section we discuss previous studies on the smart city concept and meaning. We also give a short overview of stakeholder theory, especially focusing on previous studies of stakeholder theory in a public sector context. After a brief description of a government smartness framework, the section ends with some comments on how to integrate stakeholder theory with smart city planning.

Cities are today seen as urban ecosystems meaning that they are complex systems consisting of different interactions and interdependencies (cf. Anthopoulos et al., 2016; Komninos et al., 2018) and adding a digital component – a smart layer – in this context increases complexity. The smart city concept does not yet have a commonly agreed definition (Anthopoulos, 2015) and is often described as difficult to define with precision (Gil-Garcia et al., 2015; Granath, 2016; Hollands, 2008). Caragliu, Del Bo, and Nijkamp (2011) state that a city is smart "… when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise

management of natural resources, through participatory governance" (Caragliu et al., 2011:70). At the other end of the continuum of smart cities, we find definitions of smart cities emphasizing the technical aspects rather than the social and economic aspects. Kitchin (2014), for example, talks about 'everywares' referring to technology as being "built into the very fabric of urban environments" Kitchin (2014):2. Still, Albino, Berardi, and Dangelico (2015) present an in-depth literature review on the smart concept in order to contribute to the lack of a joint definition of smart cities. They conclude that the concept has a multi-faceted meaning including people, communities and technology. As a consequence, smart city research has focused on identifying core components and building comprehensive frameworks to understand and manage such initiatives; e.g. a multidimensional smart city framework (Yigitcanlar et al., 2018), characteristics of a smart city (Silva et al., 2018), and a smart city initiatives framework (Chourabi et al., 2012). Yet, Glasmeier and Christopherson (2015) claim that more collaborative research is needed in order to help practitioners understand when technology is the solution and when it is not.

Even though research shows that there is no agreed upon definition of a smart city, several scholars point out some components as core components in smart city development, i.e. organization, management and technology (e.g. Chourabi et al., 2012; Yigitcanlar et al., 2018). Nam and Pardo (2011), for example, argue that three components could be seen as fundamental to a smart city, i.e. technology, institutional, and human factors, which we also find relevant in a city planning context. Others argue that understanding smart city development is about understanding the relationship between core components – technology, organization, policy – and outer factors – governance, people/communicates, economy, built infrastructure, and natural environment (Alawadhi et al., 2012); components that are also important to the planning process. Technology, and especially ICT, can play the role of combining social and environmental aspects in new ways and, thus, realize the ideas of the smart city, and ICT can also be the carrier of such ideas in the smart city planning (Axelsson, Melin, & Granath, 2016). Gil-Garcia et al. (2015:69–70) identify ten components that a smart city is built upon; (1) public services, (2) city administration and management, (3) policies and other institutional arrangements, (4) governance, engagement and collaboration, (5) human capital and creativity, (6) knowledge economy and pro-business environment, (7) built environment and city infrastructure, (8) natural environment and ecological sustainability, (9) ICT and other technologies, and (10) data and information. We note that some of these components directly concern city planning, like built environment and city infrastructure, while others are more connected to smart city outcomes and governance. Altogether these definitions show that smart city development is socially, politically, and technologically a complex matter, something which also affects planning processes and activities.

Smart planning is planning that is needs-driven and in this context we have noted a tension between policy-driven needs (which tend to be top-down and technology-oriented) and stakeholder-driven needs (e.g. bottom-up driven). Stratigea et al. (2015) propose a framework for guiding from policy-making to planning of smart city development, where the city is put in foreground instead of the concept of smartness. By using a digital platform for e-participation the citizen view is present in their framework. Komninos et al. (2018) go as far as arguing that smart city planning calls for an evolutionary perspective, where planning is "shaped bottom-up, gradually, by user engagement and the capabilities offered by volatile technologies" (p. 14). There are other scholars who caution against a too technocratic view of city development; a view that treats cities as technical problems that can be solved in a mechanistic way (Hollands, 2015; Kitchin, 2014). Hollands (2015), for example, argues that there is limited understanding on how cities work politically and sociologically. Consequently, we argue that it is important to also take these perspectives into account when analyzing complexity in city planning processes and how it affects smart city outcomes. In line with an evolutionary perspective, we find it important

to identify who the actors in the planning processes are and what their concerns are in the outcomes. We think that user engagement builds upon an understanding of involved actors' stakes in the planning process as such and in the outcomes. It has already been established in the area of digital governance that future infrastructure development is becoming much more complex as it is not only an intra-organizational concern, but also rather a cross-organizational one (Dawes, 2009). In a city planning context this could mean the involvement of multiple stakeholders. These stakeholders are not only multi-faceted but also part of multi-level ecosystems (Ruhlandt, 2018), meaning that they sometimes are located within the city administration and other times located outside the administration (ranging from industry and academia to citizens). These stakeholders sometimes have different or even conflicting goals and values. Hence, we note an increasing need of balancing goals and values from different key actors involved in smart city planning, and argue that using concepts and ideas from stakeholder theory is one way of identifying key actors and their roles.

Stakeholder theory is strongly grounded in private sector focusing on the firm's internal stakeholders, such as employees, managers, and owners, together with external stakeholders, such as suppliers, customers, government, shareholders, society, and creditors (Freeman, 1984). Freeman's seminal work on stakeholder theory has been used and developed by many successors and his stakeholder definition is still useful; "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984:46). Even though stakeholder theory has an obvious connection to the private firm, and has been used in order to find strategies for firms to approach different stakeholders, the theory has also been widely adopted in public sector research. There are several studies in public sector that build upon both Freeman's (1984) and others' work (e.g. Axelsson, Melin, & Lindgren, 2013a; Carter & Bélanger, 2005; Chan, Pan, & Tan, 2003; Flak & Nordheim, 2006; Flak & Rose, 2005; Kamal, Weerakkody, & Irani, 2011; Lindgren, 2013; Pardo & Scholl, 2002; Sæbø, Flak, & Sein, 2011; Scholl, 2001; Scholl, 2004). The discussion by many of these scholars implies that public sector could benefit from using stakeholder theory, although there are some challenges regarding the transfer of theories between sectors. The possibilities seem to outweigh the challenges and an argument for the theory's usefulness in public sector is the fact that there are many involved stakeholders, as e.g. Janssen and Cresswell (2005), Schneider (2002), and Kamal et al. (2011) highlight. Involved stakeholders are situated both inside and outside the organization in focus which makes us distinguish between internal and external stakeholders as well as direct and indirect stakeholders (Gelders, Galetzka, Verckens, & Seydel, 2008). Related to this, Chan et al. (2003) see a potential in using stakeholder theory in order to manage stakeholder relations in public sector projects. Sæbø et al. (2011) identify that stakeholder theory use in public sector research could increase a critical stance. Axelsson, Melin, and Lindgren (2013b) discuss how stakeholders' changing salience during a project is important to understand when developing public e-services that succeed in offering both external service and internal efficiency. Lindgren (2013) also highlights the usefulness of stakeholder analysis when identifying potential stakeholders to involve in public sector development projects. To our knowledge, stakeholder theory has not so far been applied in any significant extent in smart city studies. However, smart city planning obviously involve many stakeholders, from both public and private sectors, which makes it important to identify and understand different stakeholders and their stakes in city planning too. By stakes we here mean stakeholders' motives (aims) to affect both the planning process and its results, as well as stakeholders' motives for ignoring the same. Based on the above reported positive results from using stakeholder theory with focus on stakes in public sector, we argue that smart city research would also benefit from this.

In this article we also aim to illustrate how involved stakeholders' stake contribute to (or impede) smartness in the planning and outcomes of the process. In smart city literature participation (involvement) of

different stakeholders (such as citizens, agencies, and industry) is pointed out as important (Angelidou, 2017; Silva et al., 2018; Stratigea et al., 2015). Stakeholders are even seen as co-creative partners in the planning and realization of smartness; a type of we-government (cf. Linders, 2012). Previous research on smart government and smart governance have pinpointed different dimensions of smartness and Gil-Garcia et al. (2016) present a framework consisting of fourteen dimensions; integration, innovation, evidence-based decision making, citizen centricity, sustainability, creativity, effectiveness, efficiency, equality, entrepreneurialism, citizen engagement, openness, resiliency, and technology savviness (Gil-Garcia et al., 2016). Their findings show, in line with e.g. Albino et al. (2015), that the conceptualization of smartness requires a broad and multi-faceted approach in order to avoid a simplistic focus on technology and instead analyze the smart city in a systematic and comprehensive way (Gil-Garcia et al., 2016:532). This notion of smartness in a city context corresponds well with this article's assumption; that involved stakeholders have different stakes in the planning process and outcomes and, thus, focus and contribute to smartness in different ways. Therefore, we have chosen to use these dimensions of smartness to characterize how the identified stakeholders' stake is related to smartness in our studied case. This follows Gil-Garcia et al. (2016) who argue that their framework could be used to guide evaluation and analysis of smart initiatives. Our application of the framework focuses on a smart city planning process, which can be seen as a special case of smart government initiatives.

By integrating the two perspectives – stakeholder theory and smart city planning – we are able to pinpoint who the actors are, what their interests are and analyze and characterize these interests from a smartness perspective. This would help us to see what smartness values are promoted and prioritized by whom and where there might be conflicting values. The integration of the stakeholder lens in the smart city planning adds to the empirical understanding of the complexity in the planning and its consequences on the realization of smart city outcomes.

3. Research approach

As the aim of this study is to understand complexity in city planning processes and how this complexity affects the outcomes when realizing smart city ambitions, we have chosen a qualitative and interpretative single case study approach (Walsham, 2006). By carrying out an in-depth analysis of a single case we gain deeper knowledge of stakeholders' different roles and stakes in the process and outcomes. The case (further described below) consists of a Swedish city development project to which we have had inside access from early stages to completion. The aim of this particular project was to produce a new sustainable city district in a short period of time. In its ambition to achieve a sustainable district, the project also had distinctive characteristics of a smart city initiative. Planning for and developing new city districts involve many stakeholders per see; however in this particular case the city management had, in line with a holistic approach to planning, chosen to open up the planning process to "untraditional" stakeholders (both internal and external ones). Altogether, we found this project to be an interesting and timely case for analyzing and understanding complexity in city planning processes. Of course a single case study cannot be used to draw generalized conclusions, but that has not been our intention. Instead, our aim has been to use the case to show how different stakeholders act in the process and how their concerns have influenced the outcomes of the process. Nevertheless, we still find that the results from this case study would be of interest for those in similar settings, as it contributes with valuable insights on how different stakeholders and their stakes influence or impede smart city outcomes.

During data generation we have used a method triangulation approach (Denzin, 1970). We have conducted participatory observations in combination with document studies (see Table 1 for a summary of data collection). In general, we have conducted participatory

Table 1
Data collection.

Method	Instance (number)	Involved actors
Observations	Dialogue meetings (4)	Project team, civil servants, project partner coordinator (university)
	Inauguration public exhibition (1)	Local politicians and citizens
	Workshop cafés (7)	University and targeted interest groups
	Hackathon planning (3)	Local energy company and university
	Study visit city exhibition (1)	Project team and interested builders
	Coordination meetings (10)	Project group at the university (project partners)
	Sales pitch for builders (1)	Project team and potential builders
	Procurement meeting with building committee (1)	Project team, project partner (university), builder, architects
Document studies	Idea program (1)	Project team, local politicians
	Architect competition program (1)	Project team, civil servants
	Competing design proposals (27)	Architect firms
	Citizen dialogue reports (3)	Municipality and citizens
	Site plan (1)	Civil servants
	Winning design proposal (1)	Architects
	Digital platform for idea generation (1)	Project team together with advertising agency
	Quality program (1)	Municipality
	Directions for construction proposals (1)	Municipality
	Project website and social media	Project team

observations in planning activities where the chosen activities have been part of the new planning approach launched by city management. Some of these planning activities have been arranged by the project management, e.g. dialogue meetings, and others have been arranged by untraditional actors such as the local university or the local utility provider, e.g. workshop cafés and hackathon planning. We claim that by following the process both from inside (e.g. by taking part in planning activities) and from outside (e.g. by studying different documents) during 17 months, we have been able to map who is taking part in the process and to note what their concerns in the project have been. As these observations have been carried out over a period of time we have also been able to note how these interests either have been ignored or promoted and prioritized in the project. In addition to participatory observations, document have been used in the analysis. Documents represent instances of stakeholders' views or ambitions connected to the project and as such they are interesting when it comes to identifying stakes. We have chosen to study different types of documents, such as policy documents, project information material, and project web information, in order to get a broad picture of the project. One reason for not having conducted traditional interviews was to avoid interfering with empirical material.

Data analysis has been guided by stakeholder theory (Freeman, 1984) and the government smartness framework (Gil-Garcia et al., 2016). As the aim of this study was to understand complexity in city planning processes and how this complexity affects smart city outcomes, our analysis is limited to the planning process as such (further described below in Section 4). In this process we have focused on identifying the involved stakeholders and their stakes in the planning process. As stated above, a stakeholder is a person or a group who can affect or is affected by a decision or an action (Freeman, 1984). In the studied case, as a first step of the analysis, we have used Freeman's definition to identify different stakeholders. In total we have identified eight stakeholder groups; i.e. city management including *local politicians* and *civil servants* (project innovator and owner); the *expo corporation* (performer of the project), architects, i.e. the *architect firm* (winner of the urban planning competition), builders, i.e. the *construction firms* (realizers of the project), infrastructure providers, i.e. the

local energy company, the *local university* (strategic partner), and citizens, i.e. the future *residents*. In this analysis we have also focused on identifying stakes and, as mentioned above, stakes imply stakeholders' motives (aims) to be engaged (or not to be engaged) in the process and the outcomes. In the second step of the analysis, we have analyzed identified stakes in terms of smartness, using the fourteen smartness dimensions from Gil-Garcia et al. (2016) as a lens to discuss our results. In the analysis we use examples from the project to illustrate how stakes related to smartness are expressed in practice. In the final step of the analysis, we have discussed how these results could be understood in terms of complexity and how the results contribute to smart city research.

4. Empirical findings

In this section we initially describe the case and the studied planning process. We then continue with describing the identified stakeholders and their roles in the smart city project.

The district development project was initiated by the municipality in late 2011 and in 2017 the first residents moved in. Hence; from idea to physical form the project took six years. In a building context, this indicates a very short production time and one of the initial goals of this project was to challenge traditional routines and time frames. Time frames were initially even tighter than they actually turned out in practice, where the original idea was to build the first part of the new district in four years. To speed up planning and development processes the municipality (the idea owners) decided to launch an urban living expo when inaugurating the district. Thus, the time frame for the expo became the driving force of the project and the development as such. In this article, however, we only focus on the planning activities, i.e. from project launch (i.e. from the idea) to the decision on the local plan, i.e. the plan that governs the building process (see Fig. 1 below). The project was aimed by the municipality (city management) to be a role model project for planning, where insights from the new approach to planning were to be shared with other Swedish cities during the expo.

In Fig. 1 below, we illustrate different activities that were included in the overall planning process; activities that also involved different
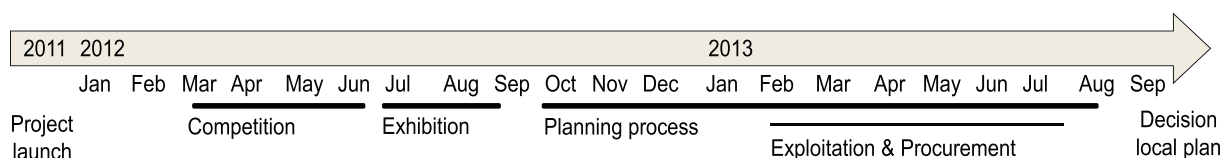
Fig. 1. Activities in the overall planning process.

actors. In late 2011, prior to the project launch, an internal project team (consisting of civil servants and a commissioner) had been working with preparations, e.g. developing an idea program where visions and aims with the district development were described. The overall aim of the project was to "create economic growth and attractivity in [the city] and contribute to the development of Swedish environmental planning" (Idea program, p. 3). Further, it was pointed out that "[t]he planning process and execution of [expo name] should be characterized by broad dialogue and knowledge creation" (Idea program, p. 3). Project management saw these early meetings with different actors (e.g. builders, researchers, civil servants, and citizens) as important in order to "catch ideas" as early as possible and in time for implementation. Sought ideas mainly revolved around social sustainability and resource efficiency (cf. Idea program).

> […] in practice it appears as ecological and economic dimensions [of sustainability] are easier to handle. In the development of [district name] particular focus will be given to social sustainability. Social sustainability is about the development of an inclusive society where basic human needs are fulfilled. (Competition program, p. 9)

In early 2012 the municipal board decided to adopt the idea program and at the same time it was decided that the local plan was to be developed through a public architect competition (see Fig. 1). The decision by the municipal board was also the official start of the project and the planning process. Project management (at the time civil servants) together with experts developed a competition program for architects and

> The aim of the architect competition was to generate viable ideas of how a new disctrict in [the city] could be formed and to find new collaborators to the forthcoming planning process of the district. Departing from the [expo name], the district should be a practical example of and a possible test lab for future built environment.
>
> (Swedish Architects, accessed 2018-04-24)

In total, 27 design proposals were submitted at the completion of the competition. These proposals were then exposed to the scrutiny of the general public through a public exhibition. Both right and left wing politicians were in place to cut the ribbon when inaugurating the exhibition. A jury decided on the winning design proposal. Characteristics of the winning design was that it focused the historical land concept of strips. In practice this meant that the site plan was divided into small land allotments, where different types of housing were to be mixed with public spaces and commonly owned houses, so called "felleshus" (Winning design proposal).

This proposal was then taken into the municipal planning process and laid the ground for the development of the local plan. Consequently, a quality program was developed as a complement to the common site plan in order to further guide involved actors in their planning. On an aggregated level, the quality program consisted of requirements and recommendations on how to" create a built environment where people's needs and wellbeing is in the center and to indicate how the design of the area [could] contribute to a resource efficient community" (Quality program, p. 2). The quality program was also used as an assessment tool in the exploitation and procurement phase (cf. Fig. 1).

In parallel with these activities the project team initialized different planning activities, e.g. citizen dialogues, dialogue meetings with different internal actors (e.g. civil servants from different departments) as well as external actors (e.g. the university and builders). The purpose of these meetings was to generate ideas for the future city district. In addition to physical meetings the project team also launched a digital platform open for idea registration from the general public. In addition to the municipal work, one of the strategic partners to the project – the local university – decided to arrange similar planning activities. A small project group within the university had been formed and they launched a series of so called workshop cafés. These workshops focused different

themes, e.g. energy and buildings, transport and mobility, creativity, innovation and entrepreneurship, and attracted both researchers and special interest groups from the surrounding society.

The decision on the local plan was after some debate and postponements taken by the local parliament in early fall of 2013.

In the studied phases of the project we have identified eight stakeholders, as mentioned above. The first stakeholder group is the local politicians in the municipality. The municipality was the initiator, "owner" and driver of the new city district development. The local politicians were the ones deciding on the project's initialization. In the early phase of the city district development the political landscape was characterized by cross bloc agreements (right and left wing parties) and the local politicians took pride in "finally connecting the city with the local university". We have identified the Commissioner responsible for built environment (belonging to a right wing party) to have a prominent role in the beginning of the project. In addition to his ordinary work as a Commissioner, this person also was the chairman of the board of the expo corporation, the company responsible for conducting the project. We will return to this below.

The second stakeholder group was the civil servants in the municipality. In this category we find landscape designers and city planners (rough planning and detail planning), managers and directors of technology and built environment, but also managers and directors of general education, of social service and security, of strategic planning, etc. Civil servants carried out the preparations for the decision making. For example, city planners and landscape designers had a central role in delivering the project program. The high ambitions of this particular project included not only the new city district, but also the development of a new model for city development per se.

The third stakeholder we identified was the expo corporation, which was a municipality owned company. This means that the municipal council is the body that decides the corporation charter as well as all the major decisions regarding the district development and the urban living expo. The council also appoints the members of the steering board. In this case the Commissioner of built environment was the chairman of the board and yet another Commissioner (representing the political opposition) was the vice chairman, other members were representatives from the strategic partner (the local university) and from the commercial and industrial sector. Judging by its name the expo corporation was mainly in charge of the urban living expo. However, the corporation also had a central role in planning and carrying out the project. The expo corporation consisted initially of two persons; a project manager and a communication officer as a marketing and communications manager. Together they formed the project management. From the beginning these two individuals were recruited internally from the department of environmental planning. Roughly one year into the project, in the middle of the planning process, the holders of these two roles were replaced by two externally recruited individuals. The new project manager, also CEO of the corporation, had previously held a position as Vice President in Marketing and Sales in a large industrial company and the new marketing and communications manager had previously had a position as a town center manager in a private company. We have noted that the change in these two roles also influenced the project process and focus; for example going from an internal to a more external view and project ambition.

The fourth stakeholder identified was the architects. In this category we can differentiate between several types of architects, e.g. landscape architects, architects focusing on physical planning and housing, city architects, etc. We have noted that architects have a central role in early stages of district development as they often set the physical frames and contents of the new district. In this case civil servants, working as landscape architects or city architects within the municipality, had a central role in creating the competition program aimed at architects. Arranging architect competitions is according to the Swedish Association of Architects a recognized approach when something beyond the normal is to be achieved. The winning architects (belonging to

a private architect company) got a central role in the project; their design proposal – which according to the jury was superior when it came to interpreting the notion of social sustainability – served as a blueprint in the municipal planning process to finalize the local plan. These architects were also contracted and involved in the remaining planning and procurement process since they got a role in the quality assessment of incoming proposals from the construction firms.

The fifth stakeholder group was the construction firms. Construction firms were invited by the project management to both regular and special dialogue meetings and, thus, were given the opportunity to contribute with their input before the finalizing of the local plan. Yet, we have noted that municipally owned housing corporations have been more inclined to join these meetings than privately owned corporations. In effect, many of the large construction firms even chose to refrain from registering an interest to be part of the development project. Instead, many small building companies, property managers, and architects chose to register an interest. One reason for this could be that the local plan monitors toward small scale building.

The sixth stakeholder group was the infrastructure provider. The local energy company distinguished itself as a proactive stakeholder and took part in many of the planning activities connected to the development per se, e.g. in dialogue meetings arranged by the project management, and in workshop cafés arranged by the university. The energy company also had an internal group working on different ideas to be implemented in the new district. An example of their proactive work is the development of a new type of tunnel infrastructure (culvert) which allows effective land use. In addition to this development they also initiated work on developing a new information and communication system with their customers. In several of the planning activities (independently of stakeholder) we have noted discussions on how to influence consumers/residents to become resource efficient. These ideas have been further explored by the local energy company in the planning of a hackathon event to develop a so called "killer app" for this purpose. Apart from the energy company itself, the university as well as the expo corporation also took part in the planning of this event.

The seventh stakeholder group was the strategic partner; i.e. the local university. The university was the main neighbor to the new district and an official partner in the project. As partner the university was offered to have two representatives in the steering board of the expo corporation. The university also formed an internal project group to coordinate activities related to the district development and the urban living expo and the arrangement of the above mentioned workshop cafés. The main purpose of these cafés was to generate (research) ideas and gather knowledge to be fed into the planning process at an early stage. Depending on the particular theme, these workshop cafés gathered not only different researchers but also other stakeholders. The local energy company had, for example, a central role in the café focusing on energy and buildings.

The eighth stakeholder was the (presumptive) residents; i.e. citizens and businesses. This group was central and was approached in different ways by all the other stakeholders. At an early stage, project management chose to arrange citizen dialogues (see Fig. 1), aiming to capture citizens' opinions on, for example, the identity of the city. The ideas generated in these meetings were recorded and used as input to the architect competition. Apart from this, residents have mainly been spoken of in third person, yet stressed as an important group in all of the above mentioned planning activities.

5. Discussion

In Table 2, below, we build a framework of the stakeholders' stake in relation to city planning in order to illustrate how stakeholder agendas and intentions relate to the overall expectations of this kind of project. We also characterize how the stakeholders' stake is related to smartness by applying the smartness dimensions of Gil-Garcia et al. (2016). We choose one or two dimensions that are found to be most

significant for each stakeholder and give examples from the city planning project to illustrate the stakeholders' stakes in terms of smartness and their contribution to smartness in the planning process and its outcome (i.e. the new city district). In the table, the consequences of each stakeholder's actions are also discussed.

When comparing the identified stakeholders during the initial phases of the project we find a very engaged stakeholder in the *local politicians*. Putting much prestige in the project from the beginning, the local politicians fought heavily to give the project a quick start by forcing some initial decisions. Regarding the smartness dimensions (Gil-Garcia et al., 2016) the local politicians' stake, at this early stage, mainly focused on sustainability. Aspects of both resource efficiency and social sustainability were stressed as overarching ideas of the project (cf. the idea program). The social dimension was treated with certain attention by the local politicians. This is a dimension which traditionally had been more or less ignored in city planning, but was at the time of the project launch referred to as the key to achieve the other two sustainability dimensions (ecological and economic) in line with on-going national discussions. Targeting social sustainability could also be seen as a way of aiming for equality, in line with Chourabi et al. (2012) who identify sustainability as an important part of the smart, livable city. Politicians appear, in this case, to take a visionary perspective where sustainability and quality of life are seen as important outputs, which harmonizes with smart city ambitions (Silva et al., 2018; Yigitcanlar et al., 2018). Further, in this case, both the competition program and the winning design proposal, emphasized "mixed living" as the norm as a way of targeting equality (i.e. mixing different forms of housing as well as mixing different forms of ownership). However, regarding this dimension the project also has been criticized since not everyone can afford to live in the new area, regardless of housing forms. Hence, this is an example of how politicians play an important role in promoting sustainability and equality in the planning and execution of the project and at the same time how hard it is to realize this in practice. Further, we can note that sustainability and equality not only are connected to issues related to natural environment and ecological sustainability, but equally to smart city components like built environment and city infrastructure (Gil-Garcia et al., 2015) and when planning for these components it appears that it is important to have the support of local politicians.

In addition to local politicians, *civil servants* have an equally important role in city planning. The civil servants had, for example, great influence on the project formulation, and the visions and ideas behind its launch. Regarding the smartness dimensions (Gil-Garcia et al., 2016), examples of innovation could be found in the new planning process that the civil servants set up. The civil servants attempted to improve the planning process and to make sure that innovative ideas were "caught" in an early phase in order to be able to implement them. As part of this strategy different stakeholders were invited to dialogue meetings (i.e. citizens, other departments within the municipality, and strategic partners as the university). Another part in their new approach to planning was that the winning design proposal was used as a "blueprint" when formulating the local plan. This decision affected the planning process as such, e.g. during exploitation and procurement. Smart city literature also points out that innovation not only refers to technical innovation but also innovation concerning organization and management (Alawadhi et al., 2012; Nam & Pardo, 2011) or the environment (Stratigea et al., 2015). In addition to innovation, there are also examples of integration when it comes to the civil servants' information sharing strategy. They used social media to communicate about the project and they also used a digital platform to gather ideas from different stakeholders. These ideas were documented and published in a book in order to be widely spread. Smart city planning is strongly associated with participation and bottom-up driven ideas (e.g. Angelidou, 2017; Stratigea et al., 2015); however, in practice integration tends to be more of a one-way information sharing than actual integration. Nevertheless, from a holistic perspective, we see that the

Table 2

A framework of stakeholders' stake and relation to smartness in the smart city project's initial phases.

Stakeholder	Stake in relation to city planning	Smartness dimensions in process and outcome	Consequences
Local politicians *Municipality*	The project implied much prestige to the local politicians. The decision to initiate the project was forced to meet the timeline. This group was a very engaged stakeholder with the project as a top priority. Their stake was to conduct a project that took both ecological and social sustainability into account	Sustainability equality	Important stakeholder in setting the visions and goals of the project (focus on the outcome). This is an example of how political convictions (sustainability and equality) serve as drivers of a project idea. These convictions also became blinders for other ideas
Civil servants *Municipality*	The civil servants formulated the project's idea program, i.e. were the innovators of the project. They were internally recruited to the project. Their stake was to set up and conduct a new planning process	Innovation integration	Important stakeholder in the formalization of the planning process. To this stakeholder group form become more important than content. Civil servants were preoccupied with incorporating new ways of planning. Their focus on the implementation of the new process appears to limit innovation concerning the outcome. Integration appears to be hard to achieve (e.g. better communication, coordination) and initial focus is rather on pushing information than actual sharing
Expo corporation *Municipality owned*	The expo corporation was established in the beginning of the project by the municipality (i.e. governed by local politicians). Its stake was to make sure that the project delivered a successful urban living expo	Integration	Important stakeholder in the management of the planning and development process. Having the operative responsibility of the project integration is an important dimension both in the process (communication and coordination) and in the outcome (better services). This case also shows that integration can be linked to the legitimacy of the stakeholder. Without legitimacy integration can be hard to achieve
Energy company *Municipality owned*	The energy company took a strong position in the project and participated actively. Their stake was to develop and test a new technical infrastructure and find new business opportunities	Technology savviness innovation	Important stakeholder in the planning and development of the critical infrastructure. In this case, technology savviness and innovation are closely linked to a smart outcome (culvert system). The expo became an important driver to test new technical solutions and to explore new markets. Interestingly, in this context, technological savviness does not focus on ICT
University *Public organization*	The university took part in the project in order to cooperate with the surrounding society. The involved researchers' stake was to find opportunities for collaborations	Creativity	Important stakeholder in the larger context and as a neighbor to the new district. With its strong focus on knowledge creation the university could be seen as a "creative partner" both in the process and in the outcome (applying research results). However, creativity alone together with limited legitimacy do not seem to be enough to realize results of planning activities
Architects *Private firm*	The architects participated in and won the urban planning competition. The winning design proposal was innovative and creative focusing on social sustainability. Their stake was to promote a new district design	Equality	Important stakeholder in the planning and regulation of land use and housing. Similarly to politicians, above, this is another example of the architects' political visions serving as drivers of specific ideas (equality). The architects' focus on social sustainability was timely and became influential in both the planning process per see and in the physical outcome of the district. The strong focus on equality also "blinded" other smartness dimensions (e.g. effectiveness, efficiency)
Construction firms *Private firms*	In the studied phases of the project the construction firms were invited to planning and allotments meetings. Their stake was to build housing with high profitability	Entrepreneurialism	Important stakeholder in carrying out plans. In this case we see an example of conflicting smartness dimensions. To construction firms economic values were the main drivers; however, the political visons of the project promoted sustainability and equality rather than entrepreneurialism. As a consequence, the big construction firms showed little interest in the project
Residents *Citizen*	Citizen dialogues were arranged but the interest from the public was low. The project also tried to engage citizen by using social media, but with rather weak response. The citizens' stake in early city planning phases was very low	Citizen centricity	Important stakeholder in understanding market needs, unfortunately represented to a low extent. In this case we see an example of how hard it is to engage citizens in both the process of planning and in the outcome. Without real incentives citizens' interest appears to be low and many solutions risk to be developed without deep understanding of citizens' needs

innovative planning process, which relates to the smart city component policies and institutional arrangements (Gil-Garcia et al., 2015), changed both planning policies and activities. This means that the stakes of certain civil servants have played an important role in creating new planning policies; policies that both questioned and pressured the institutional environment. Further, the use of social media and digital platforms for information sharing shows that this integrative dimension connects to the smart city components of ICT and technology and data and information (Gil-Garcia et al., 2015). In this sense the civil servants are definitely an important stakeholder when planning and realizing the smart city combining social, political and technical aspects. Combining and acknowledging these aspects are vital when realizing a

smart city (Hollands, 2015; Nam & Pardo, 2011).

The *expo corporation's* existence was totally dependent on a successful completion of the project. The seriousness is shown by the fact that the internal (first) project leader was not appointed CEO in the formed expo corporation. This event also illustrates that a stakeholder can be a group or an individual actor. In the latter case the person who has the position is the stakeholder and depending on this person's background and situation his or her stake might vary. This is illustrated by the difference in stake between the first and the second project leader (also the first CEO). The first project leader was internally recruited which also meant that this person had high validity within the municipality. He was later replaced by an externally recruited CEO.

This person had less internal legitimacy, but better relations to external actors in the region. Regarding the smartness dimensions (Gil-Garcia et al., 2016) integration aspects are shown when the expo corporation involved different departments and external partners in the planning process (in workshops and dialogue meetings), crossing traditional drain pipe borders. This is an explicit example of the smart city component of governance, engagement and collaboration (Angelidou, 2017; Gil-Garcia et al., 2015). As Nam and Pardo (2011) state integration is a key aspect when realizing smart cities. Obviously, the expo corporation has a prominent role in order to carry and execute the ideas of the local politicians and the civil servants in this kind of city planning process. Being organized in the form of a corporation also meant a more flexible organization, which could be seen as important when it comes to governance and engaging different stakeholders in the building process.

The *energy company* is also owned by the municipality, though, much more self-governed being a large and profitable corporation. This stakeholder made the decision to take active part in the project from the start. The company's interest and engagement in the project can be explained by a strive to develop new business models and to get closer connection to the customers; i.e. the future residents. Regarding the smartness dimensions (Gil-Garcia et al., 2016) there are examples of technology savviness in the energy company's implementation of critical infrastructure. In this case, the energy company planned for a new culvert system for their physical infrastructure; a system that was to include everything from water to fiber. This culvert system is an example of the smartness dimension of innovation. This use of smart technology combined with innovative creation of critical infrastructure show that the smart city components built environment and infrastructure coupled with (and sometimes dependent of) ICT and other technologies (Gil-Garcia et al., 2015) are vital parts of the smart city. Kitchin (2014) even mentions technology as a built-in component in smart urban environments. In this case, this stakeholder had interest in and authority of both components, which meant that they could be the driver of these issues in the planning process. A stakeholder with both technical know-how and business interest is important to realize this part of the smart city.

In this case we see an example of a *local university* being a strategic partner in the project. This stakeholder was active in certain parts of the initial project phases. Regarding the smartness dimensions (Gil-Garcia et al., 2016) there are examples of creativity, covering researchers' knowledge creation during the early workshop cafés. The university's stake in the project could be seen to be twofold. First, being neighbor to the new district, the university saw the development as important to attract both new students and employees, but also equally important for collaboration with the municipality. Second, the researchers involved in the workshops stakes was in general to collaborate and do research. The local university possessed the human capital and creativity component (Gil-Garcia et al., 2015) that is also an important aspect to get things happen in this kind of smart city initiatives (cf. Angelidou, 2017).

Architects have had central roles in the overall planning process, e.g. in formulating the idea and architect programs. The winner of the architect competition also became influential in the project as they were given a continued role in the quality assessment of incoming proposals from the construction firms. Regarding the smartness dimensions (Gil-Garcia et al., 2016) equality is found in the entire winning design proposal that targets social sustainability. In their design proposal they worked with the historical land concept of strips where housing was concentrated in small villages and where strips of farming land surrounded these small villages. The feeling of closeness in the villages contributed to the social meeting and by using this concept and applying it to a modern design the architects not only formed a new type of design, with small allotments, but this design also influenced the following planning process. Another example of how the architects interpreted social sustainability was to stimulate meetings between the

future residents by integrated green areas and common housing (so called "felleshus"), something which could be seen as a mechanism to reduce social exclusion. The architects role in the project can be related to the smart city component natural environment and ecological sustainability combined with built environment and infrastructure (Gil-Garcia et al., 2015; Yigitcanlar et al., 2018)). Without this kind of re-thinking of the city norms, the outcome of smart city planning might turn out to be rather similar to what we are used to find in traditional cities.

A rather invisible stakeholder in the project was the *construction firms*. This is surprising as smart city planning emphasizes participatory planning, (e.g. Angelidou, 2017; Stratigea et al., 2015), where businesses and entrepreneurs are pointed out as important stakeholders. Returning to this case and the low activity of construction firms we need to point out that this is not the result of being forgotten by the project. The project strived to attract construction firms early in the process, but with rather weak responses. Many big construction companies declined to take part in the project. They feared that it would be difficult to build with profit because of the highly raised demands for sustainability and the winning design proposal's limitations. Smaller construction firms, but also private actors, instead agreed to take part in the project. Later on some of the quality demands were changed in order to also attract bigger construction companies, in order to get the district built as planned. Regarding the smartness dimensions (Gil-Garcia et al., 2016) entrepreneurialism with its economic competitiveness is evident as a driving force for the construction firms. Engaged constructors are a necessity to turn the smart city plans into built environment and infrastructure (Gil-Garcia et al., 2015), especially when the project's ambitions contradicts short time profitability.

Another stakeholder with low activity in the early phases of the projects was the future *residents*. The project tried to involve citizens early to get their opinions about the future district, but few were interested in contributing in public meetings as well as social media discussions. Regarding the smartness dimensions (Gil-Garcia et al., 2016) there was a strive for citizen centricity resulting in better services, more information for citizens, and good livability. However, these aspects became more noticeable when the district was about to be inhabited. The opportunities for citizen's contribution to human capital and creativity (Gil-Garcia et al., 2015) were, thus, not fully used in the project.

Altogether, this review of stakeholders' stake in relation to city planning and smartness illustrates how a smart city development project can be very important for politicians and other actors within the municipality. This is much in line with the strong expectations that surround the smart city concept (Hollands, 2015; Kitchin, 2014; Stratigea et al., 2015). Some commercial actors that view the project as an opportunity to increase profit, develop business ideas and technology or win a good reputation are also very active and positive. This is coherent with the strong emphasis on, for example, technology aspects of smart cities (Kitchin, 2014) and how digital resources are expected to be the solution of societal challenges (Walsham, 2012). By returning to Hollands' (2008) claim that smart city development should start in the human capital and the people creating the city rather than in the technology shaping the city, we find a contradiction in the studied case. Even though the studied case was described as a project where social sustainability and equality were in focus, there were two main stakeholders – the construction firms and the future residents – who were almost invisible in the early phases of the project. This might indicate that other methods are needed to engage these stakeholders. Citizens were invited to initial physical dialogues and discussions in social media, but their interest was low as they did not find the future city district relevant for them in this very early phase. This is in line with previous studies showing that successful citizen participation demands that citizens sense relevance (e.g. Axelsson, Melin, & Lindgren, 2010; Lindgren, 2013). Altogether, the analysis of this case shows that in order for the smart city to be able to solve current urban problems

(Alawadhi et al., 2012) the planning process must acknowledge involved stakeholders and their differing stakes.

When viewing the sum of consequences in Table 2 above, it becomes visible that the stakeholders have different roles in the project and, thus, they possess different incentives and stakes to drive certain aspects. We see that a strong focus on one smartness dimension might blind other important dimensions. This might not be a surprising finding, but should preferably be the result of an intended choice rather than an insight after the project. Some smartness dimensions can be in conflict with each other, meaning that they are difficult to fulfil simultaneously. Such conflicts might make a certain stakeholder lose interest in the project or decide not to take part from the beginning. There may be stakeholders who possess important stakes for the project, but, nevertheless, for some reason are unwilling to participate. In order to be able to involve all stakeholders who are necessary for the project, each stakeholder group must find its own incentives for taking part in this kind of project. We also see that the smartness dimensions are complex as they can be applied to both the process and the outcomes and could, thus, mean several things in the same project. All these insights were found when applying the framework on the studied case and cover issues that are important to be aware of in city planning processes of this kind.

6. Conclusions

The purpose of this article was to develop a framework which takes into account stakeholders and smartness dimensions in the complex city planning process that occurs when aiming to realize smart city ambitions. The framework builds upon stakeholder theory (Freeman, 1984) in order to identify involved stakeholders, their relations, and stakes and Gil-Garcia et al.'s (2016) dimensions of smartness in government are used to examine the identified stakeholders' stakes related to smartness. The framework helps us to understand which roles involved stakeholders play in smart city planning and what the consequences are. In this article we have shown that in this kind of complex planning processes there are many stakeholders involved with differing stakes, aiming for different types of smartness in the outcomes. Even if a common objective is set to develop a smart city, we must acknowledge that the involved stakeholders will advocate different ways to reach this goal and also prioritize different outcomes. Smart city planning demands new stakeholders to participate but this adds complexity to the process. A key lesson learnt from this study is, thus, that since complexity increases with the number of stakeholders and stakes there is need for a new type of governance in the smart city planning process. With many stakeholders involved in parallel activities, clarity is needed from the very beginning and throughout the process regarding governance of involved actors, their responsibilities and assignments. The developed framework focus this issue by identifying stakeholders and their stakes in relation to the city planning process. By defining which smartness dimension each stakeholder primarily focus on and analyzing the consequences of this, the framework pinpoints each stakeholder's contribution and/or hindrance to the process and outcomes. This understanding is important when organizing and staffing city planning processes and the framework can also be used when evaluating projects outcomes.

6.1. Implication to theory and practice

This study's implication to theory is that by combining the use of 1) stakeholder theory (Freeman, 1984) to identify stakeholders in the city planning process and 2) the smartness dimensions (Gil-Garcia et al., 2016) to characterize each stakeholder's stake in relation to smartness, we build a framework illustrating that the stakeholders are carriers of certain smartness dimensions. We also show that some smartness dimensions are not present in the case and some smartness dimensions are focused on particular topics. In the studied case there was, for

example, no stakeholder actively carrying the ICT issues during the planning process. The technology savviness dimension was instead focused on a culvert system for physical infrastructure, but there was very little ICT innovation in the planned outcomes. Our finding regarding strong focus on one smartness dimension blinding others is interesting and might be brought back to the studies of smartness in governance (Gil-Garcia et al., 2016), together with the examples of possibly conflicting dimensions.

Besides showing how stakeholder theory and the smartness dimensions can be combined, another contribution of this study is a smart city case which applies the smartness dimensions supporting the authors' (Gil-Garcia et al., 2016) claim that their framework can be used in order to evaluate smart city initiatives and also help describing and analyzing such initiatives in a systematic way.

This study's implication to practice is that a new city planning process is shown regarding involved stakeholders and their stakes. Our results can be used to understand which new stakeholders a smart city planning process might involve and what knowledge and expectations they bring into the process. In the studied case there was not enough preparedness for this and the process, thus, became unnecessary long and costly. A lot of work was done during the workshops (for example citizen dialogues) that did not affect the outcomes. A conclusion from this is that it is vital to understand that when bringing new stakeholders into the process they carry certain smartness dimensions with them. This might be beneficial for the outcomes but demands an awareness of how to conduct the smart city planning process. Good governance of city planning processes is needed in order to fulfil smart city ambitions and the developed framework might be used in practice both when setting up and staffing a city planning process and when evaluating conducted projects.

6.2. Limitations

We have only studied the initial phases of one city planning process resulting in a limited case. In order to avoid influencing the process, which we were given the opportunity to closely follow, we decided not to conduct any systematic interviews. Instead we took part in many project activities as observers and complemented this with document studies. Every method choice results in some possibilities and some limitations. In this case we got close access to the process, but since we only studied one project the results cannot be generalized. Studying another project could lead to other stakeholders and other smartness dimensions. This is also in line with Gil-Garcia et al. (2016) who state that not all the smartness dimensions are expected to be found in one and the same project. Even so we trust that the identified patterns would be more or less the same; i.e. that other cases would also identify several stakeholders with contrasting stakes regarding smartness in city planning.

6.3. Future research

This study is only the first step toward exploring what contributions we can get from applying stakeholder theory and the smartness dimensions in the context of smart city planning, even though our experiences so far are promising. In future studies it is necessary to more systematically compare further cases, e.g. by following an urban development project from initiation to final realization, or complementing this study with studies of later project phases. Interviews with all involved stakeholders could also complement our data collection methods used in this study. Another interesting study would be to use stakeholder theory together with the smartness dimensions in a smart city context in order to see how this could influence the identification and involvement of stakeholders from the beginning of the project, not only studying the outcomes of certain choices as we have done in this article.

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Declarations of interest

None.

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