Motives for Participation in Formal Standardisation Processes for Geographic Information: An Empirical Study in Sweden

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ABSTRACT

The purpose of this article is to investigate the personal motives for participation in formal standardization processes for geographic information. The method involved interviewing members of technical committees at the Swedish Standards Institute, SIS. The results are that the majority of the interviewees are very motivated in their work and they think their participation is well-financed by their organizations allocating them to a technical committee. The main motives are to contribute to development of society and be at the forefront of development. However, this article also shows that several members participating in this study felt that they do not have sufficient time for working with tasks related to their technical committees. Their daily work in their respective organizations often has higher priority in relation to standardization work. This contrasts with the organizational goals of the participating organizations and may slow down the development of standards and other publications due to lack of resources.

KEYWORDS

Cultural Historical Activity Theory, Geodata Infrastructure, Geographic Information, Motivation, Motivation in Projects, Project Management, SIS, Standardization, Swedish Standards Institute

INTRODUCTION

This article explores motives for participation in formal standardization processes for geographic information in Sweden. Geographic information is a common term for information describing the physical world around us (for example buildings, roads, forests and administrative boundaries, and e.g. presented on maps) and related information. To participate in a formal standardization process may require huge resources from the participants (Riillo, 2013). Standards are however not “trade secrets”, but available for others, such as competitors, for a fee after acceptance by the standardization body. The motives for participation in standardization processes do therefore not solely rely on the protection of ideas for the companies involved, but can also for example be motives such as to share technical and/or strategic knowledge and/or access to markets (Bild & Mangelsdorf, 2016; Riillo, 2013), thus gaining either technical and/or economic advantages.

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Geographical information has gained much interest during the last decades due to the increased use and exchange of digital data describing geographical and administrative features. Standards and related documents, such as technical reports, play an important part in this. Examples are the technical guidelines (data specifications) specifying common data models, code lists, etc., to be used when exchanging geographic datasets in accordance with the European INSPIRE directive providing a spatial infrastructure for Europe (European union, 2007). The benefits of standardization in the field of geographic information are well known and the development of formal standards have been in focus for several years, e.g. by private and public stakeholders participating in technical committees, TC, at the Swedish Standards Institute, SIS, for more than two decades.

The authors have not identified research on how individuals are motivated in standardization work in geographic information and hope this article will be a contribution to this field of study.

There is a long tradition for implementing international standards for geographical information and to develop national standards when international standards are not available. Examples are the International Organization for Standardization’s [ISO] 19100 series of standards for geographical information, i.e. specifying how to describe geographic information (ISO, 2014), the Swedish standards for application schemas for municipal zoning plans, SS 637040:2016 (Swedish Standards Institute [SIS], 2016) and road and railway networks, SS 637004:2009 (SIS, 2009). Sweden has recently adopted a national strategy for advanced cooperation for open and usable geographic information via e-services (Lantmäteriet, 2016). The strategy state, among other things, that the use of standards is of major importance for achieving an effective infrastructure for, among others, data exchange, digitization of public administration, more effective social planning processes, defense and civil contingencies. Standards are in other words an important part of the nation’s “invisible infrastructure”, a term coined a decade ago by the Swedish government in regard to increased cooperation concerning IT standardization in the public sector (Swedish government, 2007).

Standardization in the field of geographic information is a central part in the Swedish land use and planning infrastructure and, for example, play a vital part in the national Swedish strategy for geographic information infrastructure 2016-2020 (Lantmäteriet, 2016). An example is the initiative providing governmental agencies, municipalities and other organizations easy access to data within the Swedish geodata cooperation initiative. A third example illustrating the importance of geographical information standards is the financial agreement between SIS and Lantmäteriet, the Swedish mapping, cadastral and land registration authority, allowing the free-of-charge use of a number of standards within the Swedish geographic information sector (SIS & Lantmäteriet, 2017).

Research Question

This article presents the results of an investigation regarding participants’ personal motives for participating in formal standardization work at the Swedish Standards Institute, SIS, concerning the production of standards and related documents (such as national profiles and other publications) for geographic information. The Swedish Standards institute’s TC for geographic information stated in 2012 that it sometimes is difficult to recruit new participants to the technical committees (SIS, 2012). This is also an observation shared by one of the authors after having been involved in TC-work for more than a decade.

The research question investigated here is how a standardization project, intended to develop standards, technical reports and other guidelines for geographic information, is perceived as motivating by the project team members?
Research Method

SIS had when the investigation was conducted 9 technical committees, TC, active in field of geographical information. The TC’s were mainly dealing with national Swedish standardization and the ISO 19100 standard series for geographic information.\(^3\)

The individual TC’s have not been subject for individual research, but are treated as one entity. In order to meet the purpose a qualitative method was used to collect data. Narrative interviews were conducted to get the involved participant’s perspective on the standardization projects. An interview guide was constructed, based on Leontiev’s (1978) theory on the relationship between an individual’s goal and the motive of a collective activity. In the beginning of each interview, the interviewees were asked to describe the project, the goal, the stakeholders’ expectations, the interviewees experiences of the process, and the performances in the project team. The following questions concerned the interviewees’ view of the motives’ behind the project and their employing organization. Thereafter, the interviewees were asked about their personal meaningful goal and how it was related to the project’s motive. Finally, they were asked about the conditions for the project’s succeeding.

In order to understand how the projects were experienced by the interviewees and why they were experienced that way the Meaning Constitution Analysis, MCA (Sages & Lundsten, 2004) method was used. In a first step of the analysis each interview was divided into meaning units. Each meaning units consisted of one or a few clauses. The meaning units were then categorized into themes. The interviews were then compared in order to find differences and similarities. The interviews were categorized based on the motives behind the standardization processes. Based on the categorization the interviewees were divided into groups. For instance, in some interviews the motive could be related to “stakeholders”, whereas in other interviews the motive could be related to “the employing organization. If “stakeholders” was mentioned as the central aspect for the standardization process in one group of interviews the interviewees were categorized into one group in contrast to those interviewees indicating that “the employing organization” was the central aspect.

The case study was conducted by interviewing individual present and former TC members. The interviewees were randomly selected by studying their presence at committee meetings, documented in the meeting minutes where available, and through discussions with the author’s colleagues involved in TK standardization work. 23 present and former members were contacted. In total, 18 present and former committee members were interviewed; 13 members active in some of the TCs (seven chairmen and six team members), two former team members having left their TCs due to reorganizations, but have been replaced with others from their respective organizations, and three former team members whose organizations have left their TCs. The 9 TCs consist today of 81 members representing 43 different public and private organizations.\(^4\) Several organizations are represented in more than one TC. The TC chairmen were included in the study since they are responsible for managing the committee and appointed by SIS after recommendation from the participating organizations (Beskow, 2017), often employed by one of the organizations participating in the TC and normally much engaged in the TCs daily work.\(^5\) The TC team members are appointed by the participating organizations (Beskow, 2017). In the following text “member” indicate chairmen and team members unless otherwise noted.

All interviews were conducted by personal meetings or by telephone/Skype, supported by open ended questions. The authors have refrained from sending out questionnaires to all TC members, which may have increased the number of interviewees, but with answers on pre-formulated questions. Instead, the approach of in-depth interviews based in fewer open ended questions were chosen to allow narrative interviews concerning their individual motives. The interviewees were, for example, asked about the motivation of the organization they represent and their personal motives for being involved in standardization, the support they receive from their home organization and the view of their home organization on standardization. It must be noted that this study does not include the formal motives of the participating organizations and level of support, but the motives and support as perceived and described by the interviewees. SIS facilitate the TC work by supplying a project manager and by being responsible for formal, administrative matters.
Previous Research on Participation

The selection of stakeholders for participating in standardization projects is essential. There are cases where stakeholders from larger organizations tend to influence the standardization in a way that makes the standards more complex (de Vries, 2006). The motives for participating in standardization work are many, for example Blind and Mangelsdorf (2016), Blind and Gauch (2009), Mangelsdorf (2009), Blind (2006), and Jacobs, Procter, and Williams (1996; 2001). However, we have not identified research on the influence of stakeholders on standardization of geographical information.

Contributing to standardization demands managing information, implying that standardization is complex, see e.g. Hanseth, Jacucci, Grisot, and Aanestad (2006). Previous research has shown a relationship between performance in complex tasks and motivation (Amabile, 1982), implying that motivational factors need to be considered. According to self-determination theory, SDT, there are three fundamental psychological needs: Autonomy, Competence, and Relations (Ryan & Deci, 2000). The concept Autonomy refers to an individual’s experience of being able to control a situation, the concept Competence refers to a process of learning new skills or knowledge, and the concept Relations refers to a feeling of involvement in a social context. In an activity in which these three needs are met a state of autonomous motivation arises. A prerequisite for the basic psychological needs to be met in a work situation is that the individual has a certain degree of freedom, the work involves a certain level of challenge and that performances lead to involvement in a social context.

Steinfield, et al. (2007) mention that consultants may not be able to recover all their individual costs by billing their clients their total expenses. and that their participation therefore competes with fee-generating work. However, this behavior may be voluntary since there may be an eventual later payoff in future business development since they may have obtained a knowledge gap in relation to non-participating competitors (Steinfield, et al., 2007, p. 182). Another individual reason for many to participate is a personal interest in the subject-matter to be standardized. This may result in the will to participate more or less on one’s private, free time, as one interviewee expressed (Steinfield, et al., 2007, p. 182). Another reason to invest private time into the project was that they became committed to the cause or to the other participants (Steinfield, et al., 2007, p. 182). Frequent and lasting interaction among experts working in a group tend to forge groups together (Isaak, 2006).

However, not much research about motivation in geographical information standardization teams has been identified. However, one such publication is a report from the Swedish Standards Institute (2012).

Organizational Motives for Standardization

A governmental study from 2007 describes the motives of 62 Swedish governmental organizations to be involved in formal IT standardization. Their motives for participation were not primarily the production of standards, but rather to monitor the development of standards, point out areas where standardization is needed and to give input and comments (Swedish government, 2007, pp. 354-356). In standardization in general, there can be several different motives for participating, except the product of the standardization per se (de Vries, 2006). See Table 1. That is, there was a divergence between explicit and implicit motives.

An organizational motive leads the activity to satisfy a specific need (Leontiev, 1978). When the need is satisfied, external processes can be started (Tobach, 1999). These processes may then be activities in an external organization, implying that the activities are dependent on each other to function. In geodata standardization processes multiple developers from different organizations are involved to develop a standard, other normative, or informative product. Even though the organizations can have differing motives, they share the need of a standard. The standard can facilitate, or may even be a prerequisite for, the organizations to perform their activities. An example is to meet the expectations in the aforementioned Swedish national strategy for geographic information infrastructure 2016-2020 (Lantmäteriet, 2016).
Table 1. Motives for governmental agencies to participate in standardization organization. Translated from Swedish government (2007, p. 356)

<table>
<thead>
<tr>
<th>Motive to Participate in a Standardization Organization</th>
<th>Number of Agencies Who Answered Not Important at All / Not that Important</th>
<th>Number of Agencies Who Answered Quite Important / Very Important</th>
<th>Did Not Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor development in one’s area of responsibility</td>
<td>6</td>
<td>52</td>
<td>4</td>
</tr>
<tr>
<td>Point at the needs for standardization in the sector</td>
<td>11</td>
<td>47</td>
<td>4</td>
</tr>
<tr>
<td>Influence the development by giving comments on the content and design of standards</td>
<td>8</td>
<td>50</td>
<td>4</td>
</tr>
<tr>
<td>Participate in the production of standards</td>
<td>38</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>Take initiative to development of sector specific standards regardless of content</td>
<td>28</td>
<td>29</td>
<td>5</td>
</tr>
</tbody>
</table>

Relationships Between Organizational Motives and Personal Meaningful Goals

An organizational context affects people’s motivation (Deci, Connel, & Ryan, 1989; Gagné & Deci, 2005), implying that understanding motivation requires understanding the organizational structure. Leontiev’s (1978) theory on the relationship between an individual’s goal and the motive of a collective activity bridges the gap between the individual level and the organizational level. Satisfaction of the basic psychological needs in a task makes the goal of the task personally meaningful for the individual (cf. Gagné & Deci, 2005). By involvement in an activity the individual’s personal meaningful goal is related to the motive of the activity. A goal is a person’s imagination of a desirable state in the future, whereas a motive is the kit linking people in a collective activity. The motive forms the frame in which the individuals can fulfil their personal meaningful goals and, by that, be motivated (Leontiev, 1978). When an organization communicates the expectations on standardization, the individual relates these expectations to personal meaningful goals. The expectations can be unrelated to personal meaningful goals and thus the individual will not be motivated. The expectations can also encourage the individual to strive for development of personal competence along with standard development. A motive originates in a real or perceived need among a group of people (Leontiev, 1978). If the motive forms the activity in a way that makes it satisfy the psychological needs, autonomy, competence, and relations (cf. Ryan & Deci, 2000) the personal meaningful goal is related to the activity itself (cf. Leontiev, 1978). In a standardization project an individual’s personal meaningful goal can be to develop the personal competence by participation in the project and, by that, satisfy psychological needs. Multiple organizations, with differing motives, are involved in standardization projects. Consequently, the team members have several motives to consider in relation to their personal meaningful goal.

Multiple activities can share an object, in spite of differing motives. For instance, the motive for one activity can be to develop a product. The motive for another activity can be to distribute the product. The product is the object for both activities. The differing motives make people in the activities perceive the object from different perspectives, when the object is shared and people from separate activities interact. In these interactions people can learn from activities beyond their own (Engeström, 2001). Previous studies indicate that personal interactions enhance motivation (Bent & Freathy, 1997), which can be explained by the psychological need for relations (Gagné & Deci, 2005). Additionally, the psychological need for competence (Gagné & Deci, 2005) is satisfied by the learning process in interactions between activities. That is, interactions between activities can affect people’s autonomous motivation, implying that personal meaningful goals can be achieved.
Interactions between standard developers and stakeholders in standardization projects can have a positive effect on motivation (cf. Bent & Freathy, 1997).

To understand activities, their networks need to be studied along with them (Spinuzzi, 2011). Spinuzzi’s (2011) theory describe relationships between multiple activities. An object, shared in a network, tend to be inconstant, making it perceived differently in different activities. In a network of activities, which takes place in standard development, a single person can be involved in multiple activities (Miettinen, 1998 [as cited in Spinuzzi [011, p. 457]). Thereby, a person constitutes a link between different activities and transfer understanding of an ambiguous object. In some cases, the object is unclear. That is, people involved in such network do not have a clearly defined aim to strive for (Spinuzzi, 2014). In standardization of geodata the object should be rather clear. However, there can be implicit motives for participation in standardization (Swedish government, 2007, pp. 354-356). Consequently, there can be several motives for the individual standard developers to take into respect, which affects their motivation.

RESULTS

Motivation Among Members in Technical Committees

The interviewed chairmen expressed that their main motive for participation in the technical commissions was to structure geographic data. For two chairmen, there was an additional motive, namely to intensify the interactions among the team members. They experienced lack of engagement among team members as a hindrance in the standardization process. There are time constraints in the projects considered as a reason for the lack of commitment among participants. The individual project team members cannot influence the workload in the organizations, but the employee’s motivation may still be relevant. With a high degree of motivation for the task, the employee will be more inclined to prioritize the task.

There were considerable differences between the team members’ descriptions. All members from public organizations, except one, expressed that their organization had to prioritize the members daily working tasks, and that the technical commissions thus were not prioritized. They needed to focus on the organization’s core activities.

One of the team members, who represented an interest organization predominantly for small sized companies, expressed that the organization was dependent on the work done in the technical committee. Many of the companies needed accessible geographic data. In order to satisfy this need, the organization engaged itself in a technical committee. The relations between the companies and the interest organization made the representative being motivated to participate in the technical committee. The project manager did not need to focus on interactions between team members; the project proceeded driven by the motivation to solve the needs of companies indirectly involved by the interest organization.

In all interviews the interviewees said that the standardization projects demanded a considerable effort from them. For some of the interviewees the standardization project was related to an unpleasant personal situation. However, the standardization projects had different motives and goals for the interviewees.

Organizational Motives and Personally Meaningful Goals

The interviewees described five different motives for participation: 1) to develop standardized structures for geographic information, 2) to take part in technical development, 3) to minimize resource waste, 4) to run the organization based on national perspectives, 5) to facilitate information transmission.

Six interviewees described the object for their activity as structure of geographic information. Geographic data needs to be structured in order to enable information transfer between users. There is a need for standardization in the organizations, which made them engage in the
standardization projects. The main obstacle, as described by the interviewees, was committee member’s engagement. Insufficient communication came as an effect of lacking engagement. That is, in the beginning of the project the object is structure of geographic information. During the project the object changes. In a later state the object is the communication in the committee. In order to structure data multiple perspectives from different branches are needed. In turn, interactions in project teams were needed to synthesize the multiple perspectives. The interviewees described two aspects of clarification as a personal meaningful goal. The first aspect was clarification of their own and committee members’ roles in the standardization projects. Their roles and the expectations on each committee member were unclear, which hindered the projects from proceeding effectively. The second aspect was clarification of the explicit purpose of the standardization projects.

The second group, of two interviewees, described their object as technical development. In contrast to the previously mentioned interviewees, for them the objective was not social interactions, but plans for development of the technical aspects of standardization. The interviewees described making contributions to the community benefit as a personal meaningful goal.

The third group, of four interviewees, described the object as minimized resource waste. The standardization projects were not prioritized by their organizations. Therefore, the amount of time spent on standardization needed to be minimized. Still, these interviewees were involved in standardization projects and they had a value for them, namely insight into other organizations. They learned from others in the standardization projects, regardless of the lack of focus on standardization per se. The objects described by the interviewees differed and were not associated with standardization. Likewise, the personal meaningful goals differed. For two interviewees, the personal meaningful goal concerned their organization. The other two interviewees described learning from other committee members as their personal meaningful goal.

A fourth group, of three interviewees, described the object as enabling the activity of their organizations. They emphasized the organization’s national perspective on standardization. The main objective was establishment of guidelines for standardization of national geographic data. Two interviewees talked about technology as a mean for communication. One of the interviewees talked about the final standards as the mean for communication. That is, the interviewees emphasized different aspects of communication; technology per se vs the final standards. Facilitating the transmission of information was described as a personal meaningful goal, implying that the personal meaningful goal corresponded to the motive of the activity.

The fifth group of interviewees differed from the former four groups. In the fifth group, one interviewee represented a governmental authority, one of the interviewees represented an interest organization, and one interviewee represented a profit driven company. Among these organizations, a network with frequent interactions with stakeholders was a common feature. The interviewees in group 1, 2, 3, and 4 represented a governmental authority. Possibly, representing a non-governmental organization makes commission members more prone to perceive stakeholders’ needs and satisfaction as a personal meaningful goal. This is however subject for further research.

The interaction of private and public actors are often blended to combine their advantages, such as providing technical expertise from the private sector and mobilization of state power (Abbott & Snidal, 2001, p. 363).7

The interest organization’s stakeholders were mainly small firms. They communicated their needs of facilitation of transmission of geographic data. The interest organization monitored these interests. In turn, the governmental authority was in frequent contact with the interest organization and additionally with similar interest organizations. The profit driven company was in frequent contact with customers communicating standardized solutions for e-services. The interviewees in the fifth group had frequent interactions with clients. In these interactions, the clients expressed
their needs. That is, the interviewees considered the standardization projects being related to people’s needs (see Table 2).

### ANALYSIS AND DISCUSSION

The study showed that a major motive for organizations and individuals to participate in formal standardization is to contribute to the development of standards for the description and exchange of geographic information. However, there were differences depending on the relationships between the interviewees and the stakeholders. Interviewees with frequent interactions with stakeholders perceived the standardization project being a personal meaningful goal. This finding corresponds to the research results presented by Bent and Freathy (1997), implying that personal interactions with clients facilitate motivation.

None of the interviewees mentioned their participation in standardization work as an individual strategic personal career planning aiming at, for example, a higher/better position in the organization or higher salary. That is, the motivator was not mainly related to an extrinsic reward. The interviewees were intrinsically motivated, implying that their basic psychological needs of autonomy, competence, and relations, were met (cf. Gagné & Deci, 2005). On the contrary, for 15 interviewees in the first four groups described earlier, participation in standardization was related to an increased workload, knowing that one cannot make a proper contribution due to other priorities in the participant’s organization. They were not able to meet the expectations set on them in the standardization projects. For some of these interviewees a personal goal was to learn from other commission members. This implies there were contradictions between motives and the personal meaningful goals. In such situation, the individual risks to feel alienated, resulting in amotivation, namely an absence of motivation (Gagné & Deci, 2005). For the interviewees in the fifth group, the relations to the organization’s stakeholders, standardization was perceived as a mean to facilitate the stakeholders’ activities. For them standardization was both the object and a personal meaningful goal, which increases intrinsic motivation.

This observation seems to contradict the views expressed in e.g. the Swedish national geodata strategy that standards are an important part of the geographic information infrastructure and the effort of financing access for users to standards. There is a generally wish among the stakeholders that it is important that standards are being used.

Participation in the formal standardization process is voluntary and in line with the Swedish principles of governmental autonomy. Lantmäteriet was in 2006 appointed as responsible for facilitating increased cooperation concerning geographic information among stakeholders in Sweden by the Swedish government (Swedish government, 2006; 2009). This appointment does however

<table>
<thead>
<tr>
<th>Group</th>
<th>No. of Interviewees</th>
<th>Representing</th>
<th>Personal Meaningful Goal in Relation to Standardization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>Governmental authority</td>
<td>To structure geographic information.</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Governmental authority</td>
<td>Technical development through standardization</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>Governmental authority</td>
<td>Meaningful goals concerning organizations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Learning from others as meaningful goal</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>Governmental authority</td>
<td>Enabling the activity of their organizations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>National perspective on standardization</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Technology as means for communication</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>Governmental authority</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interest organization</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Profit driven company</td>
<td>Satisfaction of stakeholders’ needs</td>
</tr>
</tbody>
</table>
not include any mandate to instruct other among public agencies or other parties to participate. The Swedish system of public agencies is based on a centuries old principle of rather independent agencies, where tasks are meant to be solved in cooperation, not by one agency mandating another agency to do specific tasks. Swedish governmental agencies therefore hold a considerable high level of autonomy and are independently managed under performance management by the government (Hall, Nilsson & Löfgren, 2011). This autonomy is constitutionally enshrined. The responsibilities of each governmental agency are specified in their governmental instructions, for example Lantmäteriet’s instructions (Swedish government, 2009). This autonomy means that agencies can make their own decisions concerning if, and how, they want to participate in national and international standardization (Swedish government, 2007, p. 123), unless they receive specific, governmental instructions.

This principle is in these authors’ opinion to be seen as an organizational challenge, due to the risk that participation in standardization may not be prioritized by the organization itself by allowing their employees sufficient time to work with these issues (cf. Riillo, 2013).

One of the findings of this study is that the reason why the invested resources in standardization by some organizations are insufficient is the result of that standardization seem not prioritized in relation to their main activities (cf. Riillo, 2013). They have nevertheless invested resources to a specific, albeit not sufficient, extent. They are officially involved by the invested resources. Previous studies show that networking tend to lead organizations to aiming at their self-representation per se (Spinuzzi, 2014). In some contexts, an organization can improve its self-representation by investments of resources in a standardization project.

CONCLUSION

This study focused on investigating individual motives for participation in formal standardization of geographic information, and a selection of chairmen and members of Technical Committees at the Swedish Standards Institute were interviewed.

The majority of interviewees expressed a strong personal motivation in standardization of geographic data. A minority expressed a lack of motivation for participating in standardization projects. The interviewees motivation corresponded to the interest of their organization. It is not sufficient to support the financial obligations of being part of a technical committee by paying participation fees, etc. If the individual participants’ time is not allocated for the specific purpose to participate in the technical committee it may lead to lack of motivation due to the feeling of not being able to participate in an optimal way and that the work is regarded as less important than other work activities closer to daily life activities. This view has also been expressed by some of the interviewees.

Interviewees representing organizations with frequent contacts with stakeholders described the standardization as personally meaningful for themselves. According to the analyses the interactions with stakeholders made the purpose of standardization clear. The stakeholders’ needs were related to the standardization projects.

Their daily work in their respective organizations has often higher priority in relation to standardization work. This is in contrast with the organizational motive of the participating organizations and may slow down the development of standards and other publications due to lack of resources.

Further Research

A larger study encompassing the majority of organizations in the investigated technical committees is being planned as either a stand-alone study of more participants from the technical committees, or as part of a comparative study of one or more technical committees within the information sector. Future
research should even focus on organizational aspects of participation. For example, how organizations prioritize and implement standards on geographic information and whether it is possible to measure the societal and economic impact of degrees of motivation.

**ACKNOWLEDGMENT**

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REFERENCES


ENDNOTES

1 Examples are Lantmäteriet [the Swedish mapping, cadastral and land registration authority], Trafikverket [the National Transport Administration] and others have been involved in formal standardization since the late 1980-ies, being part of a national initiative concerning a standardization programme for geographic information at the Swedish Standards Institute. See Swedish government (2007) for additional information on Swedish standardization.


3 The technical committees are: TK320 (Road and railroad information), TK323 (Framework for Geographic Information), TK452 (Water systems), TK466 (Addresses), TK533 (Building information), TK538 (Forestry information), TK489 (Metadata for geographic information), TK501 (Physical planning), TK570 (Web cartography). Note: TK489 was dissolved during this research due to a reorganization at the Swedish Standards Institute and transformed into a working group under TK323, but has in this investigation been treated as a separate committee.

4 Different branches/divisions of an organization are counted as belonging to the same organization.

5 One author’s own experience after being TC chairman for 11 years. This also corresponds with the opinions of the interviewed TC chairmen.

6 The survey was send to 120 governmental agencies, of which 52% responded. See Swedish government (2007, p. 354) for additional information.

7 Abbott & Snidal (2001) focused in their study on international standards and international governance. We, however, see no reason why their conclusions are not valid for domestic standardization.

8 A survey has shown that the level of autonomy differs among Swedish agencies, see Niklasson and Pierre (2012).

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