

Individual's Motivation In Standardization Of Geographic Information

Jonas LUNDSTEN and Jesper M. PAASCH, Sweden

Key words: Individual motivation, Standardization, Geodata, Geographic information, Sweden, SIS

SUMMARY

Geographic information and standardization has gained increased interest in the last decades due to the increased use and exchange of digital data describing geographic and administrative features. Standards and related documents, such as technical reports, play an important part in this for private and public organizations. However, the role and motivation of the individual participants in the standardization process has been less researched. This paper presents the results of a qualitative study on participants' personal meaningful goals for participating in formal standardization work at the Swedish Standards Institute, SIS. The study focus on production of national standards and related documents, for example national guidelines and other publications. The research question is how project team members are motivated in the standardization project. One or more participants in each of the technical committees, TCs, working with geographic information standardization, have been interviewed in regard to how they perceive their individual involvement in the standardization work and the personal meaningful goals making them to do so. A phenomenological method, *Meaning Constitution Analysis (MCA)*, was used for analyzing the interviewee's experiences of the projects. The organizational motive behind the project and the personal meaningful goals for the individuals were focused on in the analysis of each interview. The study concluded that the investigated private companies and public organizations' fulfil their obligations concerning financing the TCs work, but that some companies and organizations do not allow sufficient time for their employees to engage in standardization work, due to prioritization of other day-to-day tasks to be done. That is, standardization was not the organization's main motive. This may lead, apart from poor work environment for the individual participants and concerns about how to prioritize their daily work, which may result in delayed standardization projects. The interviewed participants were mainly motivated by their individual curiosity for the subject. That is, learning was a main personal meaningful goal. However, participants with frequent contacts with stakeholders had a significant motivation for participating, with the long-term goal to satisfy the stakeholders' needs.

Individual's Motivation In Standardization Of Geographic Information

Jonas LUNDSTEN and Jesper M. PAASCH, Sweden

1. INTRODUCTION

This paper is based on results presented in Lundsten and Paasch (2017), exploring the motives for individual participation in formal standardization processes for geographic information in Sweden. Accepted standards are no trade secrets, but are available for everyone, even though participation in a formal standardization process usually requires considerable resources (Riillo, 2013). The main incentive is therefore oftentimes not to make money on a trade secret, but to gain knowledge by sharing technical and strategic competence and do expanding networks (Blind and Mangelsdorf, 2016; Riillo, 2013). In turn, participation in standardization processes potentially leads to gain of technical and strategic advantages, on an organizational level. In order to achieve technical and strategic progress, projects need to have motivated team members. According to the authors' literature search, there are no previous studies of motivators for individuals for being engaged in standardization processes in geographic information. Together with Lundsten and Paasch (2017), this paper will hopefully contribute to this field.

The Swedish Standards Institute, SIS, organizes, among other things, implementation of international standards and development of national standards in cases where there is no existing applicable international standard. International Organization for Standardization's [ISO] 19100 series of standards for geographic information, the Swedish standards for application schemas for municipal zoning plans SS 637040:2016 (SIS, 2016), and road and railway networks SS 637004:2009 (SIS, 2009) are some examples. A national strategy for advanced cooperation for open and usable geographic information via e-services was recently adopted (Lantmäteriet, 2017). The strategy includes communicating the importance of the use of standards for achievement of an effective infrastructure for e.g. data exchange, digitization of public administration, and more effective social planning processes. According to public inquiries standards are essential for the nation's "invisible infrastructure" (Swedish government, 2007). As reported by Lantmäteriet, the Swedish mapping, cadastral and land registration authority, there is presently a focus on digitalization of geographic information (Klintborg and Drewniak, 2018).

1.2 Research question

It is difficult to engage participants to work in technical committees working with geographic information. (SIS, 2012). The study presented in this paper aims to investigate individuals' motivation for standardization for geographic information at the Swedish Standards Institute, SIS. The research question the author's try to answer is how members of technical committee's perceive the standardization projects and how they are motivated to participate in development of standards, technical reports, and additional guidelines for geographic information.

1.2 Research method

During the study, SIS had nine technical committees, TCs, working with projects related to the ISO 19100 standard series for geographic information and own, nationally produced standards.¹ In order to fulfil the research purpose members of the TCs were selected for interviews. The researchers based the interviews on open-ended questions giving the interviewees opportunities to describe the work in the projects teams from a personal perspective. The interviewees were asked to describe the work in the TCs and their personal meaningful goals related to the work. The interviews were transcribed and then analyzed. The *Meaning Constitution Analysis, MCA* (Sages and Lundsten, 2004) method was used for the analyses. Eighteen present and former TC-members were interviewed, out of 23 who were asked to participate in the study. The TCs consisted of 81 members in total. 43 private and public organizations were represented in the TCs.

2. THEORY AND PREVIOUS RESEARCH

Developing standards is complex (Hanseth et al, 2006), due to the demands of information processing. Amabile (1982) has shown a relationship between performance in complex tasks and motivation. Research on motivation has identified three basic psychological needs: 1) sense of ability to control situations, *autonomy* 2) learning skills and knowledge, *competence*, and 3) sense of involvement in *relations* to others. When the psychological needs are satisfied in an activity the individual become *autonomously motivated*, implying that the focus is on the activity. When being motivated towards extrinsic rewards, without having the psychological needs satisfied, the individual is in a state of *controlled motivation*. Consequently, to be motivated in a complex task, the individual needs freedom, manageable challenges, and social involvement. A task becomes personally meaningful if the psychological needs are met (cf. Gagné and Deci, 2005). The relationship between the individual's *personal meaningful goal* when being focused on an activity and the circumstances for the activity is essential to study in order to understand motivation (cf. Leontiev, 1978). Motivation is affected by the organizational context (Deci, Connel, and Ryan, 1989; Gagné and Deci, 2005). An organization's employees relate the communicated expectations to their personal meaningful goals. If the expectations are related to personal meaningful goals, the employees will be motivated. When the employees perceive that fulfilling the organizational expectancies correlates with fulfilment of their psychological needs of autonomy, competence, and relations, they will become autonomously motivated. In relation to standardization of geographic information, different organization may communicate their needs to participate in technical committees differently, implying that team-members can be motivated in different ways. In standardization projects multiple organizations are involved, implying that the team members might have to consider differing expectations.

¹ The invested technical committees were: 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 (Webb cartography). Note: TK489 was dissolved during the study due to a reorganization at the Swedish Standards Institute and transformed into a working group under TK323, but has in Lundsten and Paasch (2017) been treated as a separate committee.

Bent and Freathy (1997) showed that personal interactions between suppliers, in the independent retail sector and their customers had positive effects on the suppliers' motivation. This relationship is probably best explained by fulfillment of their psychological need for relations (cf. Gagné and Deci, 2005). The need for competence (Gagné and Deci, 2005) could also be satisfied in interactions with customers. Interactions with clients facilitates the supplier's awareness of the customers' needs, implying that there is a clear direction for the suppliers. The suppliers know when they have achieved essential goals. Correspondingly, it is possible that relations between developers of standards and stakeholders affect the developers' motivation.

2.1 Organizational incentives and personally meaningful goals

Among the organizations, represented among the interviewees, there were five different incentives for participation in standardization of geodata: 1) development of standards for structuring geographic information, 2) to get involved in technical development, 3) to prevent waste of resources, 4) to adapt the organization to the national context, 5) to make information transmission possible or more effective. Private and actors oftentimes exchange technical expertise to mobilization of state power with public actors, and vice versa (Abbott and Snidal, 2001, p. 363).²

3. RESULTS

All interviewed members described the work in the technical committees as demanding, but still stimulating. They were motivated to meet the challenges in developing standards. However, their personal meaningful goals differed.

For six interviewees the situation in the committees was confusing. The members in each committee represented different organizations, implying they had different perspectives. During the projects, developing a structure of geographic information became highly challenging. Multiple perspectives were needed to structure data to make it useful for the stakeholders. Simultaneously, the differing perspectives were oftentimes hard to synthesize. In order to make the standardization work proceed, the ways of communicating between the team members needed to be clarified, as well as the purpose of the standardization projects. The clarification of communication was a personal meaningful goal, per se.

For two interviewees the main focus was on the technical aspects of standardization. The technical development, emerging from the standardization projects, should benefit the community in general. The opportunity to contribute to technical development was a personal meaningful goal for these interviewees.

Four interviewees experienced that their organizations did not prioritize the standardization projects. Consequently, they had to minimize their time spent on standardization projects. In

² Abbott and Snidal (2001) focussed in their study on international standards and international governance. We, however, see no reason why their conclusions are not valid for domestic standardization.

order to contribute in the Technical committees they had to be efficient and minimize waste of time and additional resources. Their personal meaningful goals differed, but all of them concerned the interests of their organizations, for instance, knowledge development beneficial for the organization.

Three employees expressed that the standardization projects were valuable for development of guidelines for standardization of national geographic data. For these interviewees development of means for information transmission was the main personal meaningful goal.

For three interviewees the standardization work implied frequent interactions with stakeholders. Their personal meaningful goals were related to satisfaction of their stakeholders' needs. These three interviewees differed from the remaining interviewees in one critical aspect, namely the other interviewees mainly represented governmental organizations, whereas the three interviewees represented an interest organization and a profit driven company.

Table 1. Representing in relation to personal meaningful goals (Lundsten and Paasch, 2017)

Group	No. of interviewees	Representing	Personal meaningful goal in relation to standardization
1	6	Governmental authority	To structure geographic information.
2	2	Governmental authority	Technical development through standardization
3	4	Governmental authority	Meaningful goals concerning organizations Learning from others as meaningful goal
4	3	Governmental authority	Enabling the activity of their organizations National perspective on standardization Technology as means for communication
5	3	Governmental authority Interest organization Profit driven company	Satisfaction of stakeholders' needs

Interviewees from group 1–4 share two common features. They represent a governmental authority and their personal meaningful goals were not directly related to the stakeholders. Interviewees from group 5 represented a governmental authority, interest organization, and a profit driven company. Their personal meaningful goals were directly related to stakeholders.

4. ANALYSIS AND DISCUSSION

The results presented in Lundsten and Paasch (2017) 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. Interviewees which had frequent interactions with stakeholders experienced the standardization project as a personal meaningful goal. This finding is in line with research implying that personal interactions with clients facilitate motivation (Bent and Freathy, 1997).

It is interesting to note that none of the interviewees mentioned their participation as an individual strategic personal career planning move. For example aiming at a higher/better position in the organization or higher salary. The motivator was therefore 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 and Deci, 2005). In contrast, 15 interviewees in the first four groups described earlier, mentioned that participation in standardization was related to an uncomfortable workplace situation by knowing that one cannot make a proper contribution due to other priorities in the participant's organization outside one's own control. 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. 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 the interviewed participants 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. Swedish governmental agencies therefore hold a considerable high level of autonomy due to a century's old and constitutionally enshrined principle and are independently managed under performance management by the government (Hall, Nilsson and Löfgren, 2011). This autonomy means that agencies to a large extent can make their own decisions concerning if, and how they want to be participate in national and international standardization (Swedish government, 2007, p. 123).

One of the findings is that the reason why the invested resources in standardization are insufficient in some organizations is the result of that standardization seem not to be prioritized in relation to the organization's main activities (cf. Riillo, 2013). They are officially involved by the invested resources, and have nevertheless invested resources to a specific, albeit not sufficient, extent, which may result in non-optimal working conditions for the employees involved in standardization work.

5. CONCLUSION

The study presented here was published in Lundsten and Paasch (2017) and investigated individual motives for participation in formal standardization of geographic information. Personal interviews were conducted with chairmen and members of Technical Committees at the Swedish Standards Institute.

The majority of the interviewees expressed a strong personal motivation in standardization of geographic data and only a minority expressed lack of motivation for participating in standardization projects. The interviewees' motivation corresponded to the interest of their organizations. It is however not sufficient for the participating organizations only 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 and poor working conditions. This is 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 in the employees' organization. This view has even been expressed by some of the interviewees.

The study showed that interviewees representing organizations with frequent stakeholders' contacts described the standardization as personally meaningful for themselves as individuals. The stakeholders' needs were related to the standardization projects and the interactions with stakeholders made the purpose of standardization clear.

The interviewees daily work in their respective organizations had however often higher priority in relation to standardization work. This may create a non-optimal work environment for the individual participants and slow down the development of standards and other publications due to lack of human resources. This is in contrast with the organizational motive of the participating organizations.

ACKNOWLEDGEMENTS

The authors would like to thank the members of the technical committees participating in this study for their valuable input and comments.

REFERENCES

- Abbott, K.W., and Snidal, D. (2001). International "standards" and international governance. *Journal of European Public Policy*, 8(3), pp. 345-370.
- Amabile, T. M. (1982). Social psychology of creativity: A consensual assessment technique. *Journal of Personality and Social Psychology*, 43(5), pp. 997-1013.
- Bent, R., and Freathy, P. (1997). Motivating the employee in the independent retail sector. *Journal of Retailing and Consumer Services*, 4(3), pp. 201-208.

Blind, K., and Mangelsdorf, A. (2016). Motives to standardize: Empirical evidence from Germany. *Technovation*, 48–49, pp. 13–24.

Deci, E. L., Connel, J. P., and Ryan, R. M. (1989). Self-determination in a work organization. *Journal of Applied Psychology*, 74(4), pp. 580-590.

Gagné, M. and Deci, E.L. (2005). Self determination theory and work motivation. *Journal of organizational behavior*, 26, pp. 331-362.

Hall, P., Nilsson, T., and Löfgren, K. (2011). *Bureaucratic autonomy revisited: Informal aspects of agency autonomy in Sweden*. Paper presented at the Permanent Study Group VI on Governance of Public Sector organizations, Annual Conference of EGPA. Bucharest, Romania.

Hanseth, O., Jacucci, E., Grisot, M., and Aanestad, M. (2006). Reflexive standardization: Side effects and complexity in standard making. *MIS Quarterly*, 30, pp. 563-581.

Klintborg, M. and Drewniak, M. (2018). *Digitalt Först- För en smartare samhällsbyggnadsprocess* [Digital First - For a smarter Planning and Community Development Process.] (In Swedish). Report 2018:1. Gävle, Sweden: Lantmäteriet [The Swedish mapping, cadastral and land registration authority].

Lantmäteriet (2017). *The National Geodata Strategy 2016-2020*. Report no. 2017:1. Gävle, Sweden: Lantmäteriet [The Swedish mapping, cadastral and land registration authority].

Leontiev, A. N. (1978). *Activity, consciousness, and personality*. Englewood Cliffs, NJ: Prentice-Hall.

Lundsten, J. and Paasch, J.M. (2017). Motives for Participation in Formal Standardization Processes for Geographic Information - An Empirical Study in Sweden. In *International Journal of Standardization Research*. 15(1), pp.16-28.

Riillo, C. (2013). Profiles and motivations of Standardization Players. *International Journal of IT Standards and Standardization Research*, 11(2), pp. 17-33.

Sages, R., and Lundsten, J. (2004). The ambiguous nature of psychology as science and its bearing on methods of inquiry. In M. Lahlou, and R. B. Sages (Eds.), *Méthodes et Terrains de la Psychologie Interculturelle* (pp. 189-220). Lyon, France: L'Interdisciplinaire, Limonest.

Spinuzzi, C. (2011). Losing by expanding: Coralling the runaway object. *Journal of Business and Technical Communication*, 25(4), pp. 449–486.

Swedish government (2007). *Den osynliga infrastrukturen - om förbättrad samordning av offentlig IT-standardisering*. SOU 2007:47 [The invisible infrastructure - concerning improved

coordination of public IT-standardization. SOU 2007:47]. Stockholm, Sweden: Ministry of Enterprise and Innovation.

SIS (2009). *SS 637004:2009. Geografisk information - Väg- och järnvägsnät - Applikationsschema* [Geographic information - Road and railway networks - Application schema]. Stockholm, Sweden: Swedish Standards Institute, SIS.

SIS (2012). Rapport om förslag till utveckling av Stanlis metodik. [Report on suggestions for development of the STANLI methodology] (In swedish). 2012-05-25. Stockholm, Sweden: Swedish Standards Institute, SIS, Technical committee TK323.

SIS (2016). *SS 637040:2016. Geografisk information - Detaljplan - Applikationsschema för planbestämmelser* [Geographic information - Detail plan- Application schema for planning instructions]. Stockholm, Sweden: Swedish Standards Institute.

BIOGRAPHICAL NOTES

Jonas Lundsten, associate professor in Business Administration/Leadership & Organization at Malmö University, Sweden. He holds a PhD in work- and organizational psychology and a Master in sociology from Lund University, Sweden. He has studied motivation and organizational structures in industrial companies, technical development companies, and the Swedish public sector.

Jesper M. Paasch is a senior lecturer/associate professor in land management at the University of Gävle, Sweden, and coordinator of research in geographic information at Lantmäteriet, the Swedish mapping, cadastral and land registration authority. He holds a PhD degree in Real Estate Planning from KTH Royal Institute of Technology, Stockholm, Sweden; a MSc degree in Surveying, planning and land management, and a Master of Technology Management degree in Geoinformatics, both from Aalborg University, Denmark. He has been working with standardization, cadastre and geographic information at Lantmäteriet for several years. He is a national delegate to FIG Commission 3 and member of the FIG Joint Commission 3 and 7 Working Group on '3D Cadastres'

CONTACTS

Jonas Lundsten, Ph.D.
Malmö University
SE-205 06 Malmö
SWEDEN
Tel.+46 (0)725473838
Email: jonas.lundsten@mau.se

Dr Jesper M. Paasch
University of Gävle / Lantmäteriet [The Swedish mapping, cadastral and land registration
authority]
SE-801 76 Gävle / SE-801 82 Gävle
SWEDEN
Tel.+46 (0)720154701 / +46 (0)26633001
Email: jesper.paasch@hig.se / jesper.paasch@lm.se

Individual's Motivation in Standardization of Geographic Information (9364)
Jonas Lundsten and Jesper Paasch (Sweden)

FIG Congress 2018
Embracing our smart world where the continents connect: enhancing the geospatial maturity of societies
Istanbul, Turkey, May 6–11, 2018