Modelling services of cooperatives of autonomous workers to create a space for autonomy and security

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Abstract. As autonomous workers grow in numbers and become more vulnerable to precariousness, cooperative structures flourish to allow those workers to mutualize risks and resources, thereby creating spaces of protection and autonomy. We argue that cooperatives of autonomous workers, in order to expand the range and quality of their services and to overcome the challenges that came with their increased size, need to engage in a formal design of their services, using a business modelling approach.

Cooperatives of autonomous workers have never been the subject of a specific ontological development, nor have they used an ontological approach to help them solve business challenges. With this project, we take on both these issues in collaboration with a large cooperative of autonomous workers based in Brussels (i.e. Smart Coop), following an Action-Design-Research methodological framework.

Keywords: Cooperative, Autonomous workers, Service Design, Business Modelling.

1 Introduction

Autonomous workers – workers who are not subordinated to the authority of an employer – have been growing in number in the last few years (+16,35% between 2008 and 2015) (Beuker et al., 2017) primarily due to companies' growing requisite for flexibility, but also workers' aspiration for autonomy (Charles et al., 2018). Autonomous workers are particularly vulnerable to precariousness (job and revenue instability, absence of protection from injuries and equipment damage, etc.), as shown by a report commissioned by the EU Parliament (Koukiadaki & Katsaroumpas, 2017).

Cooperatives of autonomous workers aim at creating a work environment that allows workers to maintain their autonomy while improving their job security and stability. To do so, cooperatives of autonomous workers offer capabilities[1] that usually belong to companies – such as the ability to make invoices, recover VAT from professional purchases, get an insurance, etc. – all the while providing workers with advantages that

[1] We use Sen's capability approach to describe a capability as "the alternative combinations of functionings from which a person can choose. Thus, the notion of capability is essentially one of freedom—the range of options a person has in deciding what kind of a life to lead" (Dreze et al., 1995, p. 10)

typically belong to salaried workers – such as unemployment, sickness or retirement benefits. Those capabilities are obtained by means of mutualization[2] of resources within the cooperative, which acts as a platform to manage those mutualized resources. These resources can include: tangible assets such as rooms, tools or machines, intangible assets such as an employee work status, access to competences and knowledge, a distribution network or an IT system and software. Generally, autonomous workers access these capabilities by becoming members of the cooperative and making a financial contribution (6.5% of their revenues, in the case of Smart). Members jointly govern the cooperative, collectively deciding what resources to invest in, which services to expand, etc. In short, those cooperatives "offer self-employed workers the advantages of an employee social status … workers then enjoy the autonomy of self-employment combined with collective protection of employment" (Bureau & Corsani, 2015, p. 214).

This project is a joint work between researchers from Université Saint-Louis Bruxelles and practitioners from Smart, a large cooperative of autonomous workers based in Brussels. Smart has known an important growth since its creation in 1998: it now counts more than 35.000 users spread across 44 cities in 9 European countries. Smart is a particularly advanced instance of cooperative of autonomous workers. A unique feature developed by Smart is the possibility for workers to group into virtual "activities", where capital can be gathered and invested into resources that are collectively owned, without the need for a legal status. With its expansion, Smart now has to deal with new organizational issues, not least of which is the need to continue to offer personalized services to its beneficiaries despite its size. This is the purpose of an internal project called redesign of services.

This project aims at further extending the model of cooperatives of autonomous workers towards more formalized and complex projects (section 2), using an Action-Design-Research Methodology framework (section 3) and leveraging business and value-modelling ontologies that have proven their worth in other domains (section 4).

2 Limitations and challenges today

Cooperatives of autonomous workers such as Smart have the ambition of expanding the range and quality of their services to become more appealing for entrepreneurial activities who want to grow in a safe yet autonomous environment, mutualizing more of their resources within the cooperative when relevant. However, there is a lack of a clear specification of the elements and mechanisms that underlie the services of cooperatives of autonomous workers. At Smart in particular, the services are provided by more than 150 front-line employees called the "*conseillers*". Despite the presence of a common software package that induces some standardization of practices, each *conseiller* has an important degree of autonomy in defining what the extent of the service is and may have a different approach in how to bring value to the users: some focus on a personal relationship while other favor an efficient, digital interaction; some give support to the users by helping them with their core-business issues while others focus on

[2] Mutualization is a process through which several individuals share the ownership and the usage of a resource within a structure that they collectively govern, usually a cooperative.

more peripheric issues such as administration or payroll so as to give the users the space to focus on their business issues. Further, the services are partially informal, i.e. some aspects of the service are not documented or accounted for at the company level, such as the personal relationship with the *conseiller*. Smart has had a pragmatic, informal, bottom-up approach, which has driven its success over the years as it allowed for a tailor-suited service definition.

This approach, however, has now reached a point where it hinders the ambitions of Smart. On the field, both users and *conseillers* express a clear demand for tools that can model the activity of the user and its interactions with Smart. This is particularly needed for when Smart or its users need to interact with external parties such as commercial partners, investors or public authorities. Indeed, there is no clear way to represent the business model of an activity hosted within Smart and Smart itself has no way of clearly representing an overview of its activities. Today, we see two types of modelling tools used in the Smart environment: (1) tools that are intended for traditional organizations but cannot represent the specificities of activities that are part of a cooperative of autonomous workers. The most widespread of those tools is the Business Model Canevas, which is used by *conseillers* and users alike, but cannot represent key elements that are core to the cooperative movement, such as the societal impact on beneficiaries or the organizational democracy; and (2) tools that have been crafted in the context of the cooperative movement, but lack theoretical foundations to support them. A good example is the "Coopcity Lean Canevas" (see annex), which is an adaptation from the Business Model Canevas and was intended to better represent activities in the social economics sector but has no theoretical foundations in design research.

We argue that because of this lack of tools, cooperatives of autonomous workers and Smart in particular have not been able to mutualize more resources and develop more complex services, such as making important investments and making a loss for a period of time, jointly owning a patent or a brand, invest in heavy machinery or large information systems. For instance, Smart had the project of creating of a value ecosystem where autonomous workers can offer services to each other. Given the large size of the community of members of Smart, it would have indeed been valuable to create a large value network. However, since there is no tool that gives an overview of the activities of autonomous workers, this project did not go through.

A clear definition of the activities embedded within cooperatives of autonomous workers and of the services that they provide is now needed for them to live up to their promise of creating a space of autonomy and security for autonomous workers. Smart, in a recent strategic note, stressed the importance of developing a service that is "adapted to activities that are conceived in a long-term entrepreneurial perspective. What needs to be developed is a management tool for an enterprise in a mutualized environment, in the context of a shared enterprise"[3] (p. 13). We propose to use a structured, action-design-research approach precisely to support this process and make it widespread and durable.

3 A Shared Enterprise is an enterprise that is owned and governed by the people who benefit from it. A cooperative of autonomous workers is a shared enterprise.

3 Method: Action-Design-Research

Action-Design-Research (ADR) is a "research method for generating prescriptive design knowledge through building and evaluating ensemble IT artifacts in an organizational setting" (Sein et al., 2011, p. 40) and constitutes a response to the disconnect between design-science research and practice. It joins forces from Design Science Research[4] – in which a prototype model is built to help solve the challenge at hand – and Action-Research[5] – where the model is tested and evaluated in the field.

In ADR, after the problem is formulated (stage 1), the ADR team engages in an iterative process consisting of three steps Building the IT artifact, Intervention in the organization and Evaluation (BIE) (stage 2) (Sein et al., 2011, p. 42). We identify this project as organization-dominant, meaning that the primary source of innovation is organizational intervention (Sein et al., 2011). In organization-dominant project, the research process can be summarized as follows:

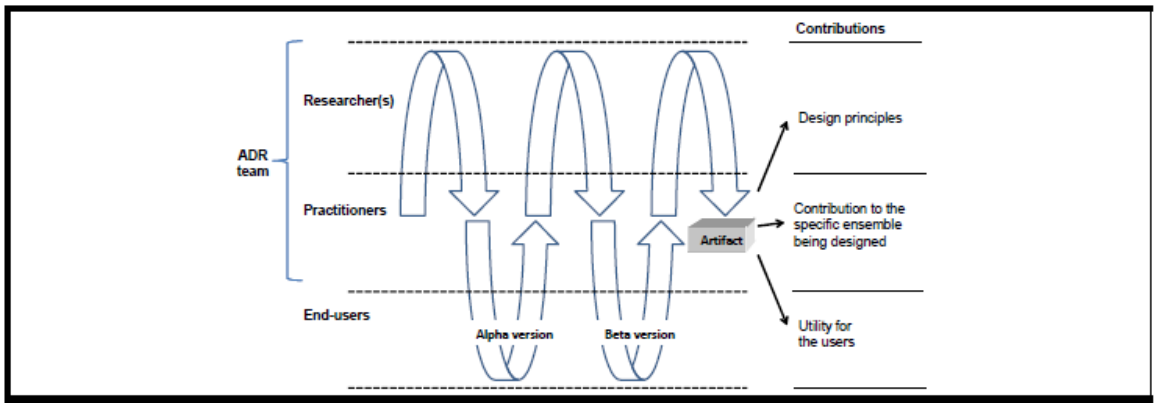

Fig. 1. The Generic Schema for Organization-dominant Building-Intervention-Evaluation (Sein et al., 2011, p. 43).

After enough iterations have been completed, comes the time for reflection and learning (stage 3) and formalization of learning (stage 4).

4 Design Science Research is a research methodology aimed at formally describing and structuring knowledge in a field (Gregor, 2006), with a problem-solving objective (Gregor & Hevner, 2013). It is often a preliminary to developing information systems, hence its close links with the field of IT.

5 Action-research is a scientific method in which knowledge comes from engaging in action. According to Shani & Pasmore (1985, p. 439), it is an emergent inquiry process in which we participate in the change process of the target structure while contributing to a scientific endeavor (Shani & Pasmore, 1985, p. 439).

4 Approach: Business Ontology & Value Modelling

Business Ontology

The purpose of this project is to develop a semantic model that formally describes a cooperative of autonomous workers such as Smart, the concepts that compose it and the way in which those concepts interact, which is essentially a business ontology: "a generic ontology applicable to various domains", that is based on a top-level/enterprise ontology, which "describes the primitives that allow for defining very general concepts" (Global University Alliance, s. d.). A business ontology "aims to achieve coherent and goal-oriented organizational processes, structures, information provision and technology by providing holistic overviews" (Boh and Yellin, in Gorkhali & Xu, 2017, p. 2)

Formally describing the business model of a cooperative of autonomous workers has never been done before, yet early interactions with Smart management and workers has shown that there is a need to clarify the meaning of key concepts of its future development. An ontology would be particularly helpful in this situation, given that it aims at describing a common vocabulary that will ensure that information can be shared without ambiguity between all stakeholders of a project – human (Borst, 1997) or computer (Noy & McGuinness, 2001).

This ontology will be based on existing business ontologies, of which we have identified several, each with advantages that for our purpose.

1- Osterwalder's Business Model Canvas (Osterwalder, 2004; Osterwalder & Pigneur, 2010) is very well-known and documented and could inspire the structure of our new ontology. However, it lacks detail for our purposes, as discussed above.
2- Von Rosing's Business Ontology describes a business model in 81 interrelated classes, which is a high level of detail (von Rosing, 2015; von Rosing & Laurier, 2018)
3- Lastly, the United Foundational Ontology (UFO) is a well-founded core ontology that can constitute a strong foundation for our ontology (Guizzardi, 2005). Its recent development towards a service ontology can prove very useful for our purposes.

Value Modelling

Next to the formal description of the cooperative of autonomous workers, our intention is to operationalize the ontology with practical instruments that are used to model exchanges in a value network. To this purpose, we are considering the REA Ontology (Resource-Agent-Event) (McCarthy, 1982) which is a good fit to model value networks where financial as well as non-financial exchanges occur between parties (Laurier & Horiuchi, s. d.). Similarly, we are also considering the e3 value ontology, which was developed to evaluate equity in business model networks (Gordijn, 2002) and the Value Delivery Modeling Language, which can be used for value modelling using the Value Management Platform (VMP) tool (Poels et al., 2018).

The advantage of a design approach is that the artefact resulting from our work would be applicable not only to Smart, but to other situations as well. In the present project, the artefact that we are aiming for is a model or canvas that helps entrepreneurs determine which resources they should seek to mutualize, and to guide internal workers of a cooperative of autonomous workers (the *conseillers* in the case of Smart) in mutualizing these resources.

5 Conclusion

As a conclusion, we would like to stress the scientific interest that this project represents, as it would lead to the development of the first business ontology tailored for cooperatives of autonomous workers. To the best of our knowledge, neither has there been a design method that fits the specificities of the cooperative model, nor have cooperatives resorted to business ontologies to help them solve business challenges.

Besides this project also presents a practical interest in helping cooperatives of autonomous workers to streamline their mutualization operations, which would make this process more efficient and sustainable. A formal modelling of services could constitute the basis of a software package that would simplify and automate some of the effort of encapsulating an activity into a cooperative, which could greatly improve the quality of services of cooperatives of autonomous workers and helping them to live up to their promises of creating a space for autonomy and security for autonomous workers.

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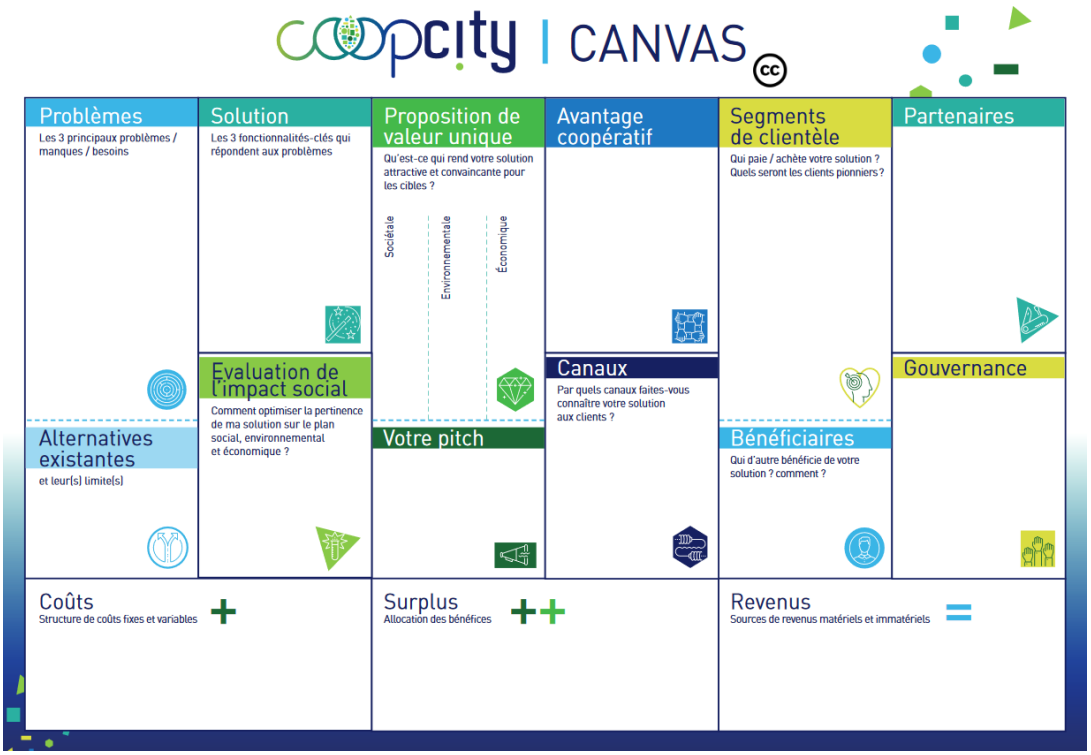
7 Annex: the Coopcity “Lean” Canvas, an alternative for Business Model Canevas developed for enterprises in the social economy sector

Coopcity is the public social entrepreneurship incubator for the Region of Brussels. It is closely linked with Smart, with whom they share their premises. This “Lean” Canevas, inspired and adapted from the original Business Model Canevas, is commonly used for activities hosted by Coopcity and Smart.



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