Visionary Design Research: Renewing e-government Support for Business Set Up

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Abstract. To set up a new business can be a complex and demanding task in a highly regulated society. There is a need for many contacts with and applications for permits to different public authorities. There exists e-government support for new businesses, e.g. business link portals with information and services based on a life-event approach. This presented research contains formulation of a vision for a renewed e-government support for business set up (an assemblage information system; joined-up support for application processes; a reversed application process). This is characterized as visionary design research, which is argued to be a legitimate research approach. The paper articulates a visionary design research approach based on multi-grounding principles. Grounding of the emergent vision is done in theoretical pre-knowledge, internally through vision coherence and empirically in identified problematic situations, articulated goals and opinions/assessments from knowledgeable practitioners.

1 Introduction

Governments strive to support the setting up of new businesses. This general aim is expressed in policies, advisory support and in IT tools of diverse kinds. In highly regulated societies (as the European countries) it can be a demanding task to set up a new business. For several types of businesses there is a need for many different permits in order to set up and run a business. A consequence of this is that many governments work with administrative simplification as a strong reform idea. To decrease the administrative burdens for businesses is one pivotal governmental strategy, both on a super-national level (confer e.g. a European initiative [1]) and a national level (confer e.g. a Swedish initiative [2]). On the European level this has been partially regulated in the Service Directive [3].This regulation states that, in each country, there should be digital "Points of Single Contacts" (PSC) for service businesses when interacting with public authorities. This means that business link portals have been established and developed in most European countries[1] as significant tools for government to business interaction (G2B).

In Sweden there exists, since several years, a business link portal, verksamt.se, which contains information and services for businesses, especially in the set up phase.

[1] An overview of such single points of contacts can be found at: http://ec.europa.eu/internal_market/eu-go/index_en.htm.

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However, this web portal has had a rather limited use. It has several visitors obtaining general information about how to start and run a business, but the use of different application services seems to be fairly low. One conclusion is that the service level on this business link portal is too low. Although the web portal is conceived to be a national portal that assembles and contains information and service to businesses, there exist many other websites with information and services to businesses. Verksamt.se operates in a complex digital landscape with many competitive digital resources. Business users need to navigate between different websites from different organizations (on national, regional and local level) in order to find adequate information and service opportunities.

The research presented in this paper has a concrete project background in a research endeavor on development of governmental information systems for businesses [4]. This project has been working with development of proposals for new digital solutions for governments' services to businesses. A specific type of business (restaurants) was selected as study object, since this type of business was considered to be especially demanding in setting up, due to many required permits from authorities on national (agencies) and local level (municipalities). The project started from knowledge about current unsatisfactory situation concerning governmental web solutions for businesses. Based on this knowledge, visions for a new web portal were formulated. This vision has been documented and presented for decision-makers and designers.

In what way can such visionary development be seen as research? It is a kind of idea generation, but is the formulation of new ideas to be seen as legitimate research? Idea generation and vision formulation has been the core of this research, but this is not the whole story. The project was designed in order to create credible knowledge. The development of visions of new digital services has been seen as a kind of design research. The project has not created any factual digital solutions. There are not any "instantiations" [5] in terms of running systems or prototypes. How can we claim any credibility of the formulated visions? In this paper we argue for a research approach of *visionary design research*. This visionary development has been conducted following the principles of multi-grounded design research [6, 7, 8].

This paper has *dual purposes*: 1) It articulates *visionary design research*, based on multi-grounding principles, as a legitimate research approach. 2) It presents and motivates *principles for an integrative business link portal with high service value for businesses* (a vision of an assemblage information system). The first purpose gives methodological justice to the second purpose. The second purpose gives an empirical illustration of and support to the proposed research approach as stated in the first purpose.

The content/structure of this paper follows the guidelines of the design science research publication schema [9] with some important extensions. This introduction has framed the research and stated the over-all purposes. Section 2 contains the description of the chosen research approach with special articulation and argumentation for a multi-grounded visionary design research. Section 3 describes some parts of prior theoretical work. The "artifact description" as a design vision is found in section 6. Since we apply a multi-grounding approach it is important to explicitly clarify the

empirical bases of problematic situations (section 4) and goals (section 5) as bases for the proposed design. These descriptions/sections are additions in relation to the suggested publication schema of [9]. These empirical parts are also used in the grounding of vision (section 7) which is the explicit evaluation part. Discussion and conclusions are found in section 8.

2 Research Approach: Multi-grounded Visionary Design Research

2.1 Visions as Elements of Design Research?

To develop something new should be understood in the context of design science research [5, 10]. This type of research is contrasted to the study and explanation of what already exists ("behavioral research"). We will use the concept of *design research* (and its abbreviation DR) below. Through design research, new artifacts are created. In DR theory, different types of artifacts are considered as valid outcomes; constructs, models, methods and instantiations [11, 5]. However, the primary outcome of IS design research is conceived to be an IT artifact: "The result of design-science research in IS is, by definition, a purposeful IT artifact created to address an important organizational problem" [5, p 82]. Visions can be thought of as a kind of DR outcome, including and manifested as constructs and models. Is it valid design research to stop with visions/models? Should the design researchers not try to instantiate the visions in IT artifacts?

We stopped, in this case, at *visions* only *linguistically expressed*. These visions were expressed in text and models (diagram figures). There were both practical and principal reasons for stopping at the visionary level and not trying to implement the ideas into artifacts of prototype character. We wanted to direct the discussions on *fundamental design issues*, not how something is solved in some prototype artifact. Our aim was to stimulate principal considerations and thus to think away concrete and specific digital solutions. The primary target groups for our visionary design proposals were policy-makers, designers and other practitioners. Even if our starting point for analysis was the existing business link portal verksamt.se, we did not want to restrict the design to making improvements in this portal. We wanted to be *innovative* and *radical* in our thinking and move *beyond limited adjustments* (see section 6.1 below for further motives).

In this design research we addressed real and highly relevant problems and concerns. This has required a strong orientation towards problem understanding and awareness [7, 10, 12]. We have made in-depth investigations of current practices and artifacts. This can be seen as a kind of *exploratory research* within a DR frame [13]. Based on a deep problem and practice understanding, we have formulated visions for future digital interaction in terms of principle design proposals. Such design proposals can be seen as proof-of-concept models.

Gregor & Hevner [9] discuss explicitly what kind of outcomes from DR that can be seen as legitimate ones. They state that a valid contribution can be 1) an instantiated artifact and/or 2) a nascent design theory (constructs, methods, models, design

principles) and/or 3) a well-developed design theory. Our contribution belongs clearly to the second of these types of contributions as a visionary model using new/improved constructs and expressing design principles.

2.2 A Multi-grounded Design Research Process

We claim that visionary design research can be seen as a legitimate research approach. This does not mean that we claim that any projection of ideas should be labelled as research. Idea generation and vision formulation can be part of research if there are other arrangements and considerations made. What are the warrants for making vision development a legitimate research process? To design and justify visionary development as a research process, we turn to the principles of multi-grounded design research (MGDR). The general principles of multi-grounding were originally formulated in [6]. These principles have later been further developed and refined by several scholars [7, 8, 14]. Multi-grounding comprises three types of grounding of some specific knowledge item:

- Theoretical grounding; i.e. grounding in theory sources
- Empirical grounding, i.e. grounding in sources of empirical data
- Internal grounding, i.e. establishing internal coherence and grounding within the knowledge item itself

Concrete results from a design process are, in MGDR, labelled situational design knowledge. There can be diverse kinds of situational design knowledge, following general principles of DR, like models and manifestations in concrete IT artifacts. Situational design knowledge, in a MGDR process, should be grounded in three kinds of sources; in theory, in empirics and in itself (i.e. through internal coherence). This means that visions can be legitimate results if they are theoretically, empirically and internally grounded. Theoretical grounding means that we need to find some theory that could give warrant to the vision. Internal grounding means that different elements of the vision need to be harmonious. The claims for empirical grounding are more multi-facetted. "The produced situational design knowledge should be informed and governed by practical knowledge as for example problems, goals and needs. The proposed design should be a conscious and reflective response to these practical needs: a practical grounding of purpose, relevance and compliance." [8, p 56]. It is stated that the design proposals should be assessed against anticipated and observed use-effects. In the case of design visions there will only be anticipated use-effects.

The concept of grounding comprises both *generation* and *validation*. This means that the external sources are used for informing the design process and as well as for justifying the design results. Validation means in this context to check the correspondence between the design knowledge and the identified knowledge sources/ warrants [6].

In MGDR, there is a differentiation between situational/concrete design knowledge (as result from a situational design process) and abstract design knowledge (as result from design theorizing). The aim of multi-grounded design research is to produce both situational design knowledge and abstract design knowledge (design principles

or design theories). Abstract design knowledge can be formulated as "classes of problems", "classes of goals" and "classes of solutions" [10, 15].

In the presented design case, the visions are formulated as principles for proposed digital solutions. The principles are fairly general and abstract, which means that this design knowledge can be seen as both situational and abstract at the same time. As said in section 2.1 above, we have formulated a principle digital solution and there are no concrete illustrations in lo-fi or hi-fi prototypes. In figure 1, we have depicted the multiple sources for grounding in this case. The empirical bases are divided into 1) problematic situations of current practices ("problems"), 2) desired situations of future practices ("goals") and 3) opinions and assessments of proposed principles by knowledgeable practitioners including estimates of use-effects ("assessments and estimated use-effects"). The new design (i.e. the design vision) is a response to the problems in the current situation. It is also a way to operationalize the goals for an improved future situation. The relations between problems and goals (and their formulations) can be said to be dialectical. Problems exist as deviations from desired states. These desires can be tacit goals, which can, based on problem formulations, be articulated as explicit ones. Explicit goals can be used to evaluate current situation in order to detect (other) problems. Empirical methods and sources for problems and goals are described in section 2.3 below.

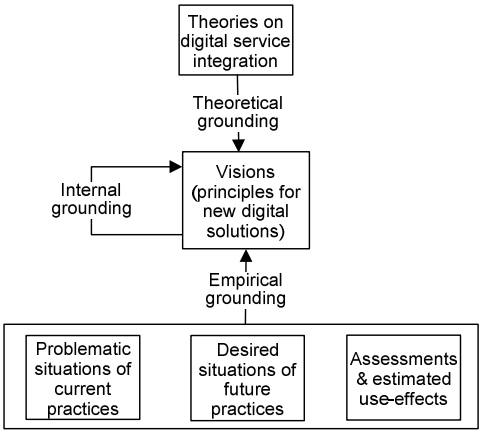

Fig. 1. Multi-grounding of visionary design knowledge

Since the design knowledge is stated in terms of not yet realized visions, there cannot be any factual use-effects. We have, however, collected views and opinions on the proposed new design from knowledgeable practitioners. The visionary knowledge has also been informed and justified by theoretical knowledge on digital service integration and the concepts of web portal and life-event.

2.3 Diverse Kinds of Data for Grounding

In order to pursue a multi-grounded design research process there was a need for diverse kinds of empirical data. Different empirical sources have been investigated. One

kind of important data was different *descriptions of goals and rules*, as e.g. the EU Service Directive [3]. In this category, other documents were also included such as the corresponding Swedish legislation and different goal documents concerning administrative simplification and web-based support to entrepreneurs. An obvious data source was the *existing web portal verksamt.se*, with its different web pages. There existed also *other websites* with information and services for businesses, e.g. different municipal websites. Such websites were also investigated. *Digital forms* for applications existed on the verksamt website as well as on other websites. We have also studied *paper-based forms* for applications, since these forms give knowledge about the information demand on entrepreneurs.

Besides these digital artifacts and documents, we have collected data from interviews. We have *interviewed entrepreneurs* (business owners, business executives) about their problems during setting up of businesses. We have also *interviewed public administrators* about their views on interaction with businesses. *Workshops* and meetings have been arranged with policy-makers, executives, designers and administrators for discussing and assessing different problems, goals and design proposals.

3 Theoretical Pre-knowledge: Web Portals with Integrative Services for Life-Situations

E-government is one way to enhance simplification for businesses and citizens. One approach to address simplification for citizens is through the introduction of "one stop government", that is integrated web portals [16, 17]. Such a portal is an integrated digital tool in front of public agencies as a new interface to the citizens. The egov portal idea builds often on the use of the concept of a life-event of a citizen (as an external user) [16, 18]. The use of the notions of life-event or life-situation [19] implies taking the perspective of the citizens and their everyday practices and situations. Setting up a business is a typical kind of a life-situation. In such a life-situation the citizen may require contacts with several public authorities in order to reach different services. A life-situation approach is described to consider "government operation from the perspective of everyday life. Its main purpose is to overcome the existent structure and complexity of public institutions." [18, p 3]. An egov web portal should contain information and services related to a life-situation which makes it possible for citizens to have "a simple access to all services they need in one place" [ibid]. The importance of a "unified entry point" is emphasized [ibid, 16].

A web portal is seen as a new integrating interface between the citizens and public agencies. Behind this portal/interface there are back-office processes going on [16, 18]. A key issue in web portals is the degree of service integration. There is an important difference if the portal is 1) only simplifying the interface for the citizen (just one access point) or 2) if it builds on an integration of services from different public agencies behind the portal [17, 18]. In the first case it will be easier for the citizen to find information and services and in the second case it should also be easier to perform the required information tasks. The type of portal in situation 1 does not provide any real service integration: "the single portal … looks like integrated government, in reality it is just a layer covering the fragmented organizations behind it." [17, p 280].

With inspiration from e-government maturity stage models [e.g. 20], there are many scholars who write about the need for service integration in e-government. Integrated services are seen as the most mature stage in many such models. However, there are not much said in detail concerning how services are to be integrated. There are suggestions for back-office process re-organization [18] and information sharing among involved authorities [20]. There are also proposals for explicit guiding functions for the users. "A (web) portal … will then locate the relevant services and make a recommendation, after which customers can use the portal to request the services they require." [17, p 281]. Digital guides seem to be important tools and there might also be needs for improved information sharing and process re-organization among involved public authorities. These proposals seem, however, to be insufficient for reaching a high degree of egov service integration. There is more knowledge to be added. Below, we will, through our design case, give more details concerning principles for service integration.

4 Problem Analysis

The existing web portal verksamt.se can be seen as a response to the demands for administrative simplification. Different kinds of information for businesses are assembled in one place. There are also several services co-located on the website, e.g. different forms for permit applications. We characterize verksamt.se as a first generation innovation of digital tools for businesses in their contacts with the public administration. The co-location of information and services (figure 3) is a clear improvement in relation to the fragmented situation of many authority websites with content limited to their "own" information and services (figure 2).

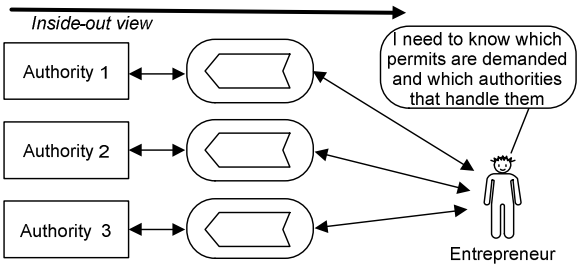

Fig. 2. Fragmented support for entrepreneurs (before/besides verksamt.se)

However, the fragmented and co-located solutions exist side by side. Not all application forms (and accompanying information) are located on the national business link portal verksamt.se. It is not mandatory for municipalities and other authorities to place their application forms on verksamt.se. In many cases there exist web links from verksamt to another website where some kind of form (completely digital or just a down-loadable pdf form) can be found. It is a complex digital landscape for entrepreneurs to navigate in.

The EU Service Directive [3] is one important impetus for a business link portal like verksamt.se. The Service Directive states that it should be possible and easy for service entrepreneurs to complete all procedures and formalities (declarations, notifications or applications necessary for authorization). These procedures should be possible to conduct through electronic means (a digital point of single contact). However, these regulations are not sufficient to enforce simple digital communication for the entrepreneurs in contacts with public authorities. It is even the case that the situation has been harder in business set up endeavors. The introduction of a digital PSC (like verksamt.se) adds partially more complexity and fragmentation to the digital landscape for entrepreneurs. The Swedish legislation (transforming the Service Directive to national rules and circumstances) has several dysfunctions making the communication between entrepreneurs and public administrators unnecessary complex and cumbersome [21].

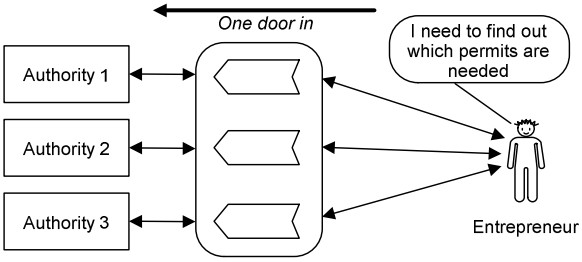

Fig. 3. Co-located support for entrepreneurs (current verksamt.se)

We have made empirical inquiries concerning the interaction between (restaurant) entrepreneurs and public authorities. As described in section 2.3, we have interviewed entrepreneurs and public administrators and also studied documents and digital artifacts. Even if there exist several websites with the intent to give support in the business set up process, entrepreneurs face severe problems in this process. We have elsewhere [4] analyzed and described such problems in detail. Below, we give an overview of different problems that may occur for entrepreneurs in interaction with public authorities (their websites, human agents and different documents). These problems exist even after the introduction of verksamt.se. We have identified the following problematic situations for entrepreneurs:

- Complex regulations, i.e. hard for entrepreneurs to understand demands for permits and operations
- There exists a mix of national and local regulations for businesses
- Information is provided by many different authorities/websites; hard to obtain a proper overview
- Information from different authorities to businesses can be contrarious
- Insufficient adaptation of authorities' information to certain types of businesses
- Bureaucratic (unintelligible) language with many synonyms and homonyms
- Many permits are demanded for business set up and operation

- The entrepreneurs usually lack knowledge about which permits are demanded for the planned practice
- The entrepreneurs usually lack knowledge about which authority that is responsible for a specific permit
- It is hard for the entrepreneur to get information about the case handling process of different applications and when to get a response to a submitted application
- Motivations and explanations for information demands (of applications) are often missing; it is hard for entrepreneurs to understand why certain information items are needed
- Some applications are hard to fill out; especially when multi-purpose forms are used
- Some information demands are fuzzy; especially in general descriptions in free text supplements to application forms
- Repeated information demands in different applications exist; authorities do not re-use already submitted information from entrepreneurs
- Hard for entrepreneurs to know the suitable sequence of filling out different application forms
- Sometimes, the entrepreneurs do not have (simple) access to the demanded information

5 Goal Articulation

There exist several policy documents concerning administrative simplification for businesses [e.g. 1, 2]. This includes also legislative documents such as [3]. We have studied such documents and detected many valuable ideas. However, when basing our analysis on the severe problems that entrepreneurs encounter when trying to set up a new business, we wanted to sharpen the goals further. We present below some goals aiming for *radical simplification* in the business set up concerning permits and other information from public authorities. This goal articulation is thus based on existing policy documents and our empirically based problem and practice analysis (summarized in section 4 above).

Instead of starting from public agencies and how they want to inform businesses and obtain applications from them ("inside-out"), we want to make a radical shift in the view. We want to start with the businesses and their needs for communication with public authorities ("*outside-in*"). We also adopt one collective view on public authorities treating them as *one compound actor*; the public sector as a whole. The entrepreneurs do not need to know how the public sector is organized in separate authorities. The goal is to have a *simple communication tool for* businesses when interacting with the public sector. Such a tool should enhance *communication quality* between the parties and give *mutual benefits*. The tool should also, with structured and accessible information, contribute to *knowledge development* among entrepreneurs; to support them to be more knowledgeable with *better grounds for decision-making* and having *better control* over the setting up process. Radical simplification is aimed for; a guided setting up process that is *transparent, coordinated, maneuverable* and *predictable*.

6 A Vision of an Assemblage Information System

6.1 Choice of Visionary Knowledge

We claim that our knowledge contribution is to be seen as vision development. What do we mean by visionary knowledge? A vision is a *desired state*. It should have an *attracting force*. The vision should *stimulate* and *inspire* people to strive towards it. In visions we *disregard* unnecessary *limitations* of current situations. Visions should be the result of a *radical* and *innovative re-thinking* aiming for knowledge of a *prospective* character with great *potentialities*.

We have, when forming a vision for the digital communication between entrepreneurs and public authorities, *intentionally disregarded many restricting aspects of the current situation*. We have put aside many organizational, technical, administrative and economic circumstances. We had, as a basis, knowledge about the current digital solutions (verksamt.se and other digital artifacts), but these different digital features of the current situation were disregarded in the visionary development. We did *not* work with *marginal modifications* of the current digital artifacts. It was rather a *clean slate* approach. We strived for an *ideal solution*. Even if we disregarded many aspects of the current situations, the vision should *not* be seen as *unrealistic*. We have for example taken into account the current legislation. The vision should be in alignment with current laws since we cannot just wish for new laws and we know that the legislation process usually takes quite a long time. We have based our vision on general *potentials of information technology* and an explicit view of a *free flow of information*. We have above emphasized (in text) different aspects of our visionary development. These aspects are to be seen as potential features of any visionary development, but DR designers need to take into account situational circumstances.

In using our vision for digital development, designers need to take into account current solutions and make choices how to adapt the vision and the current artifact to each other. Realizing a vision-based IS should probably be done in a step-wise fashion.

6.2 Proposal for a New Web Portal for Restaurant Businesses

We have formulated a vision for a web portal for restaurant businesses in their interactions with public authorities [4]. We describe three main principles of this vision here:

1. An assemblage information system
2. A joined-up support for application processes
3. A reversed application process

Following the goals (section 5) with one communication tool close to restaurant businesses, rather than close to public authorities, we put forth the principle of one information system for such businesses. We describe it as an *assemblage IS* for restaurants in their planning and communication with the public sector during both the set up phase and the operational phase. This should be a web portal in the meaning of gathering diverse kinds of information and services to be a meaningful assemblage. However, the emphasis is to see it as the entrepreneurs' IS, only provided by public authorities. This is

a shift from a traditional view of seeing the public websites as digital faces of public authorities. To gather all information and services in one system is a radical simplification compared with the complex digital landscape of the present. Everything that is needed should be in one place for the restaurant entrepreneur.

It is not the case the separate things are put together just besides each other. Information and services are integrated when there are reasons for simplification and support for the entrepreneurs. The existing business link portal (verksamt.se) is mainly driven by the principle of co-locating (figure 3). Different communication services exist together at the same place but no real integration is made. On the contrary, we strive, in our vision for a new IS, to fuse services together when there are reasons and possibilities for that. This is the second principle of our vision and we call it a *joined-up support* for entrepreneurs (figure 4). The process of completing different application forms should not be treated as separate fragments. There is an administrative burden for the entrepreneur to find out what permits are needed and where and how to apply for them. This administrative burden should be relieved. Instead of separate permits, we have used one "restaurant permit" as a figure of thought. Metaphorically, the entrepreneur should apply just for one (restaurant) permit instead of many different permits. We call this approach, a figure of thought, since we do not mean literally and judicially that the separate permits should be formally integrated into one single permit. What we mean is that the application process should not appear for the entrepreneur to be a fragmented process, navigating between separate application forms. It should appear to the entrepreneur as he/she applied just for one permit, although there will exist different parts of this composite permit.

This integrative process should be pursued through the third principle of our vision: *a reversed application process*. The existing procedure working with separate application looks like this: 1) find out what permits are needed, 2) select one permit and fill out the application form including parts of the planned practice, 3) submit the application. There can be digital support for all three phases of this process. In the first phase there can be guiding support to identify needs for permits. In the second phase, there can be digital forms to fill out and in the third phase there can be a digital procedure for signing and submitting.

As a radical alternative we suggest a reversed application process. Such a process can be described consisting of the following phases: 1) the entrepreneur is prompted by the digital tool to describe the planned and desired practice of the business, 2) the tool identifies from this practice description needs for a permit and 3) generates an application proposal for the entrepreneur to be reviewed and 4) possibly submitted. The entrepreneur does not need to know beforehand which permits are needed. The IS helps the entrepreneur to describe the planned business and based on these descriptions generates which applications are needed. This is why we call it a reversed application process. In the existing process there is first an identification of permit needs and then description of (parts of) the business practice. In our visionary alternative there are first prompted practice descriptions and then digitally supported identification of permit needs. Compare the speech bubbles in figure 2/3 (traditional application processes) and figure 4 (reversed application process) concerning the demands on the entrepreneur in the application process.

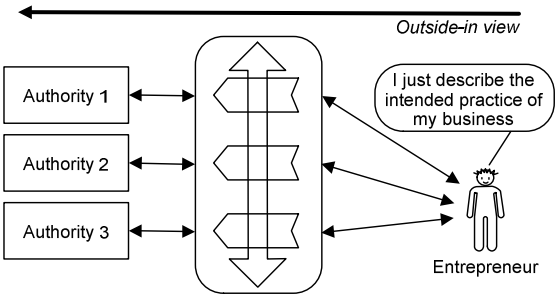

Fig. 4. Joined-up support for entrepreneurs (vision for an assemblage IS)

As a consequence of such a reversed application process there will be an automatic re-use of information between different applications. The current situation is characterized by multiple registering of the same information in different applications (section 4 above). The entrepreneur will only register one specific information item once.

We characterized verksamt.se above as a first generation of innovation for business support. Our design proposal can be characterized as a second generation of innovation.

7 Vision Grounding

7.1 Multi-grounding Principles

The design vision of a web-based IS for restaurant entrepreneurs, described in the previous section, is not just taken out of the blue. It has been developed based on empirical and theoretical knowledge. This visionary knowledge (in terms of design principles) can be justified through matching it with empirical and theoretical knowledge. Principles of multi-grounded design research [6, 7, 8] in relation to visionary design knowledge was described above in section 2.2. Theoretical grounding means an investigation how well the design principles correspond to established theoretical knowledge, that is relating it to what is sometimes called a kernel theory [7, 22, 23].

Even if the design principles have not been instantiated in real digital artifacts, it is possible to assess them empirically through knowledge of different epistemic types. The vision (as a proposed solution) can be assessed in relation to (figure 1):

- Problematic situations, which it is intended to reduce
- Goals, which it is intended to realize
- Opinions/assessments made by knowledgeable practitioners, including estimated use-effects

The grounding relations between the vision and its empirical warrants are specified in figure 5. The basic empirical justificatory scheme in DR is that a designed artifact leads to some positive use-effects [5, 8]. These use-effects should be factual. However, as said earlier in this paper, there cannot be any factual effects when we stopped at a visionary and linguistic level. The use-effects are anticipated, but not in a groundless fashion. The anticipated use-effects are grounded in an analysis of different empirical sources (problems, goals, assessments, estimates).

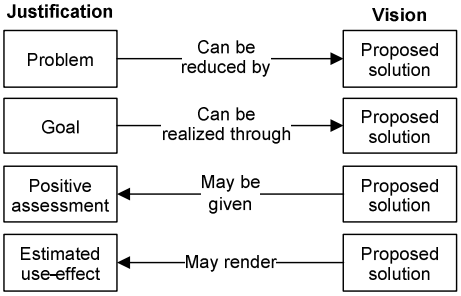

Fig. 5. Different types of grounding of the vision (proposed solution)

7.2 Empirical Grounding

The three main design principles in the vision are grounded in problematic situation as described in section 4 above. The first principle (an assemblage IS) is a response to the difficulties for entrepreneurs to comprehend the different demands from public authorities (e.g. complex regulations, fragmented information, several permits). The second and the third principle (a joined-up and reversed application process) can be seen as responses to several problems for the entrepreneur: Lack of knowledge of permits and responsible authorities, unclear information demands, difficulties to fill out applications, repeated registration of information, and unclear sequence for application submission.

The three design principles are operationalizations of the articulated goals for digital interaction between businesses and government (section 5 above). They are based on the outside-in view on arranging G2B interaction. The proposed IS is rather the restaurant entrepreneurs' IS than the public authorities. The public agencies will of course use the system as providers of information and services and receivers of applications. But the main and primary users are the entrepreneurs and the web portal will be fully adapted to their needs. The portal hides to a large degree the organizational structure of the government (different authorities). The public sector is mainly treated as one collective actor as stated in one goal. A joined-up and reversed application process is a way to create a transparent, coordinated, maneuverable and predictable process, which was stated as an important goal.

The vision (design proposal) was presented and discussed with several municipal administrators working with support for business set up. The reactions were very positive. They exclaimed: "This is what we want, but we don't want to wait too long". After our design research project was completed, we started discussions with executives and designers of the existing website verksamt.se. Our design orientation in the project had been to present something independent from this website, although with knowledge and inspiration from it. We did not take for granted that a new web portal for restaurant entrepreneurs, if realized, would be built through a redesign of verksamt.se. The executives and designers had general plans for expansion of verksamt through better inclusion of municipal information and services. These plans were, however, not as distinct as our design proposals. The practitioners became positive to

our design proposals and started to include them in their planning. There exist now concrete project plans and also on-going projects working in the direction of our design proposals. Their plans were based on their assessments and estimates of positive use-effects. We have studied such documents (project plans) and talked with participants as parts of data collection and empirical validation.

In their project plans there is heavy referencing to and quoting from our vision report [4]. They totally agree with our diagnosis (problem analysis) as a basis for future designs. There are explicit statements for treating national agencies and municipalities as a collective whole. A quote from the project plan illustrates this: "Verksamt.se provides the ability to integrate and interact. It should be able to reuse information and e-services. This becomes particularly clear if you emphasize the perspective of the entire public sector that also includes the municipalities." There are also clear statements in their roadmap for improved process support, reuse of information, joined-up support for services. It is very clear from this and another project plan that our visions have had great impact on the planning for the future verksamt.se as a more comprehensive business link portal.

7.3 Internal and Theoretical Grounding

The three design principles form together a coherent whole. There is a clear hierarchic structure between the principles in the order they are stated. This is to say that they are well grounded internally.

We now turn to theoretical grounding. In section 3 above, some parts of prior theoretical knowledge has been reviewed. The assembly IS approach is a typical example of a one stop government (a web portal) based on a life-event approach. However, the existing portal (verksamt.se) is also an example of a one stop government. The proposed web portal does not only co-locate information and services in one place. There is a clear design strategy to integrate services. It utilizes some principles known from the literature like guiding functions and information sharing. However, the call for back-office reorganization has not been prioritized in this proposed design solution. This was not considered essential for improved quality for service delivery. The focus has been towards procedural reorganization and simplification for entrepreneurs. To change work with applications to a joined-up and reversed process has been our design focus. This concept gives new meaning to service integration.

8 Conclusions

There is no standard template for design research [9]. Such research can be conducted in many diverse ways. However, what is common to all of them is an ambition to *improve practice* [5]. This presented research has worked with real and complex problems. The roles of the researchers have been to generate visions and principle solutions, and not to construct IT artifacts. This research need to be understood in a *context of dialogue and argumentation*. There have been dialogues between practitioners and researchers in order to establish reliable knowledge on problematic situations and

to furnish a basis for goal development. There have been dialogues between researchers and practitioners concerning proposed design principles based on a thorough argumentative base.

As all knowledge development, this piece of DR has been conducted in the becoming. What has been achieved is at the same time justified and provisional. There are needs for future studies for further development and justification of design principles for e-government support for business set up. There is also a need for inquiries concerning this kind of visionary design research. We have presented different arguments for conducting a visionary DR. These arguments are based on a multi-grounding perspective [6, 7, 8]. Further research (including more examples with elaborated reflections) is needed concerning different warrants for the creation and use of visions in design research endeavours.

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