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Impact Methods for Making a Change

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The aim of this paper is to describe theory and practice of methods for making a change. The methods in focus are called impact methods and they are used for defining effect goals that focus the outcomes and impacts of a transformation design project. They are used by user experience (UX) and service designers in Sweden and are potentially useful also in other design fields. In an interview study with seven practitioners and three originators of the methods, we ask what conceptions they have of their methods. They thought of them as methods for co-design, for designing the right thing, and for making strategy actionable. Four conceptions of impact methods were about: (A) having clear goals; (B) designing for user needs; (C) linking user benefits and features to business benefits, and (D) an approach to problem-solving. It is concluded that the impact methods have potential to be used to connect design and business, but they may also be drivers in transformation design.

Keywords: impact methods; transformation design; transition design; service design; user experience

1 Introduction

Design can be defined as devising action to transform existing situations into preferred ones (Simon, 1996), but how do you decide what are preferred situations and for whom are those situations preferred? It becomes imperative to understand what the change should be after the designed product or service is in use or operation. Once we reach such an understanding, we can then devise actions for transformation or transition (Sangiorgi, 2011; Scupelli, 2015), that are necessary to achieve the change. The conception of design as transformation means that design becomes central for strategic and tactical management (Holmlid, 2008; 2009; 2012). There are two extremes in approaching transformation and change, either as something manageable (Simon, 1996), or as something organic and emergent (Orlikowski & Hofman, 1997). In both of these there is need to balance ways of working that aim for coordination and collaboration (Johansson, et al 2011).

Transformation or transition design must be critical of the status quo of the societal situation, and it must be change-oriented and value-based (Tonkinwise, 2015). It builds on taking a stance on what is important, and for whom or for what something is valuable and good. What valuable and good design is, is however not a

straightforward question. It can involve design for a variety of different sorts of good: utilitarian, instrumental, technical, medical, hedonic or the good of humans (Arvola & Holmlid, 2016; Ylirisku & Arvola, 2018).

This will entail identifying objectives and criteria beyond the scope of technology or single products (Foglieni & Holmlid, 2017; Holmlid, 2014). The design effort involves reaching effects that make a change, which turns it into a form of change management, similar to how the design of information systems have been approached by Orlikowski and Hofman (1997) Setting design goals can also include articulating desirable qualities, values in use, and user experience (UX) goals, that reflect what users and stakeholders consider to be worthwhile (Arvola, 2010; Cockton, 2006; Kaasinen et al., 2015; Löwgren & Stolterman, 2004).

The purpose of this study is to describe methods used to create an understanding of change, by working with defining desired change in terms of effect goals that focus the impacts and outcomes of a transformation design project. In particular, the study will focus on a family of related methods we call impact methods, that are used by UX and service designers in Sweden. In the following section, a description of Effect Managing, Goal Managing, and Impact Mapping is given (see also Domingues et al. (2014)). Effect Managing and Goal Managing has gained considerable adoption in Sweden, and some in the other Nordic countries. Impact mapping is gaining traction among agile practitioners around the world.

The research question is, what different ways of conceiving “impact methods” practicing UX and service designers have. The question is approached in an interview study with designers about the methods they use. Consequences for transformation design are discussed in the final section of the paper.

It should be noted that this paper does not present a comprehensive in-depth study. Instead, interviews elaborate on experiences from design practice and facilitate the understanding of the methods.

1.1 Effect Managing

Effect Managing is an IT project management method based on the deceptively simple ideas that: (a) IT projects are initiated to generate a return; (b) enabled by specific measurable outcomes; which (c) are created as the system is being used (Ottersten et al., 2002). Furthermore, Effect Managing recognizes that usability and user experience are critical for a system to achieve its intended business goals. The approach aims to establish causal and logical links between users’ goal achievement and project success. Essentially, in order for the project client or sponsor to accomplish the purpose (“why?”), measured using the defined metrics (key performance indicators, KPI), the prioritized target groups (user groups, “who?”) need to be able to fulfil their goals (“what?”) using the features of the product (“how?”). These links and dependencies are visualized using an what is called an effect map as in figure 1, which can be regarded a variant of an objectives tree

(Cross, 2008; Jones, 1992) that visualize an effect taxonomy (Hertzum & Simonsen, 2011a; 2011b) of how to deliver value for business or society (Ward & Daniel, 2006).

The method entails creating a visualization of links between business goals, stakeholders, and requirements in a tree-like structure. The tree shows a hierarchy of a project purpose, broken down into multiple KPIs, that are realized through an application (or other solution) that enables specific stakeholders to accomplish their goals by using a set of features or functions, expressed concretely as requirements. The effect goals describe the difference made, for the business and for the users, when this particular IT system is completely in use (Domingues & Berntsson, n.d.).

The effect map is typically based on qualitative interviews with management stakeholders and decision makers (Domingues & Berntsson, n.d.). The interviews aim to answer the following question: What has become better in the business when the service is completely in use? It is necessary for the researcher to read up on the business to be able to narrow in on the concrete effects that the IT system is supposed to create. Annual reports, business stories, strategy statements, and similar documents are invaluable to learn what is valued in the business or government agency. Competitive analyses and evaluations of existing services and systems are also valuable sources of information. Workshops can be used to inspire and reflect on the results.

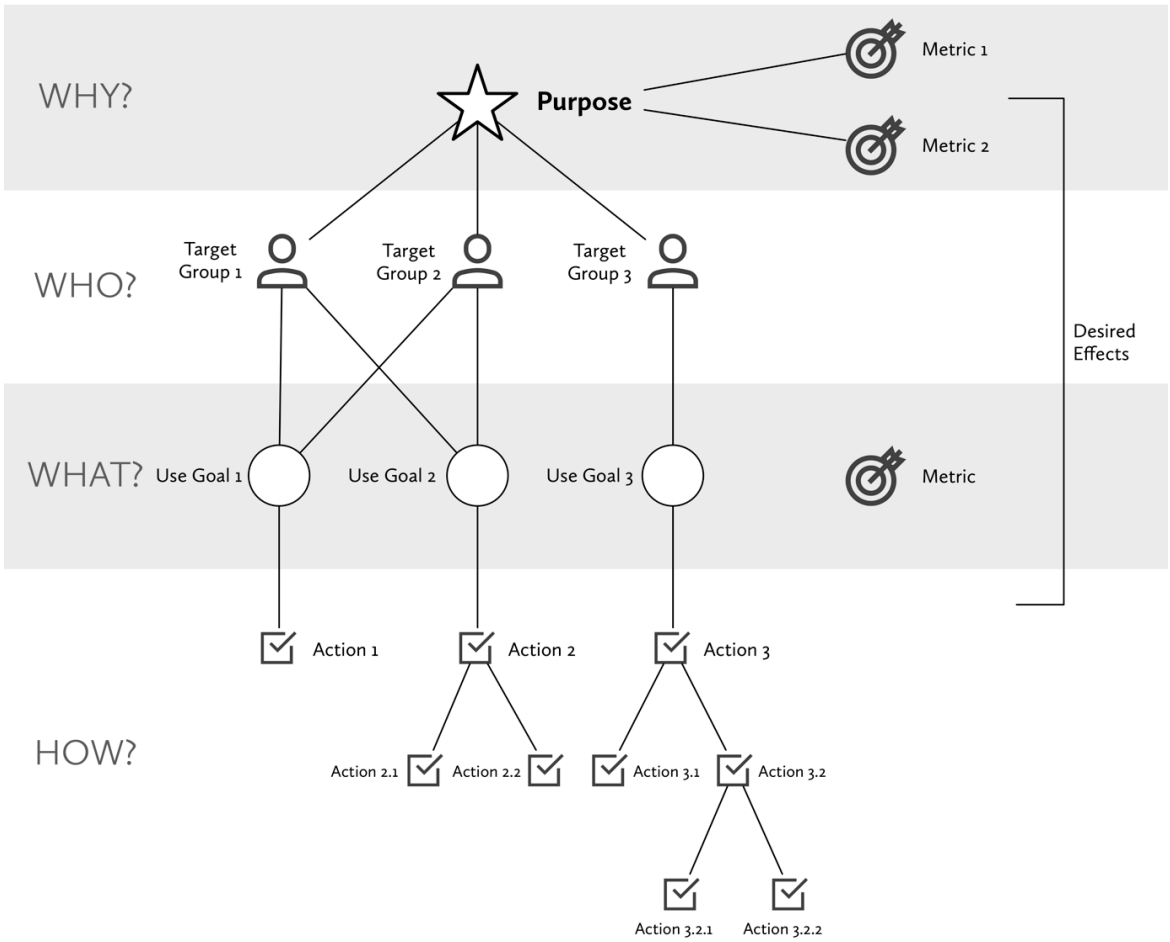

Figure 1. The structure of an effect map—adapted from Ottersten et al. (2002).

Effect goals are then formed in four, not necessarily consecutive, activities (Domingues & Berntsson, n.d.):

1. Decide what kinds of effects the service or system is expected to give (e.g. efficiency, improved brand loyalty, knowledge, interest, simplicity, speed, employee's work satisfaction).
2. Decide what the changes should be for each type of effect when this particular service or system is in use, and how those changes might be measured. Different metrics may measure different aspects of the changes, and only some of them can be directly related to the particular system or service. For example, there are different ways of measuring work satisfaction, such as self-rating and employee turnover, but can that be related to the design of an intranet? Evaluating if the intranet has made employee's work more rewarding, meaningful, or easier may be better measurements of work satisfaction in such a case.
3. Decide the method used to measure the effect goals.
4. Decide when to measure and what the expected measurements are. For example, it could be that the expected effect is that 9 out of 10 users should state that using the intranet is meaningful to them.

Activity 1 and 2 are the most important early on to be able to set the level of ambition and scope of the IT project, while activity 3 and 4 can wait to a later stage of the project (Domingues & Berntsson, n.d.). However, there is a risk of disagreement among stakeholders if you wait too long to have the discussion on metrics and measurement. Deciding the level of ambition and scope may require one or two workshops with decision makers and clients. The effects identified as the purpose (i.e. the why-level in figure 1) facilitates the identification of relevant target groups for the project (i.e. the who-level), which directs the following user research and conceptual design work in which users' goals can be identified (i.e. the what-level). Task analysis, subsequent requirement specification, and detailed design work constitutes then the how-level of figure 1.

As the method of Effect Managing was adopted, as well as adapted, by others and variations to the method started to appear. Two of those variations are Goal Managing and Impact Mapping described below. These methods largely share the principles, visual structure, and hierarchy of Effect Managing, but they differ in emphasis and approach.

1.2 Goal Managing

Goal Managing is a method that aims to bridge the gap between the business perspective of the client and the technical engineering perspective of the IT supplier, by means of user-centered (UCD) methods (Markensten, 2005). The bridge between business and IT consists of the activities that constitute the business and the interaction with the IT that users engage in to perform the activities (figure 2). UCD provides thus a concrete link between business goals and particular design decisions.

The design should bridge between the wishes of the client, the needs of the users, and the business objectives and aims to satisfy both users and management. Traditional UCD techniques (e.g. user research, prototyping) are used early at the levels of activity and interaction to discover and identify requirements and to understand the present and future usage. This allows discovery of what functionality a product should have and why. It also facilitates detailing of the interaction and user interface.

Hammarström (2014) described the procedures at a course in Goal Managing:

1. Get an orientation and read up on the project, the company, and the case, and plan the work.
2. Interview stakeholders (decision makers and influencers, including managers and employees) at the procuring organization.
3. Define goals and metrics in a cross-functional workshop with stakeholders, for example, web strategists, decision makers, and lead developers. The aim is to answer the following question: Why are we doing this project and what effects are we hoping to see? The answer articulates a change that provides a clear business value which everyone present recognizes and agrees on. What to measure and how is also defined, and a hypothesis about who the end users are is made in the form of a persona hypothesis, which will facilitate recruitment of participants for user research.
4. Analyze target group based on user research (primarily semi-structured interviews) to understand the goals and needs of users. The results are compiled into personas, i.e. fictitious characters that represent groups of users (Cooper, 1999; Cooper et al., 2007).
5. Present personas and use goals in a workshop with the client.
6. Map and develop scenarios, similarly to Effect Managing, to visualize the connections between satisfying the needs of a specific target group (who?) and the accomplishment of the effect goals (why?), as well as scenarios that connect the target groups with situations of use (what?).
7. Prioritize items in the map, since not all target groups contribute equally to the effect goals, and not all scenarios have the same bearing on the effect goals.
8. Define actions in the form of features or requirements (how?) that will be built during implementations. Inspired by user stories, they can take the format: “For <effect goal>, as <target group>, with <need>, I can <feature>, within <scenario>”.

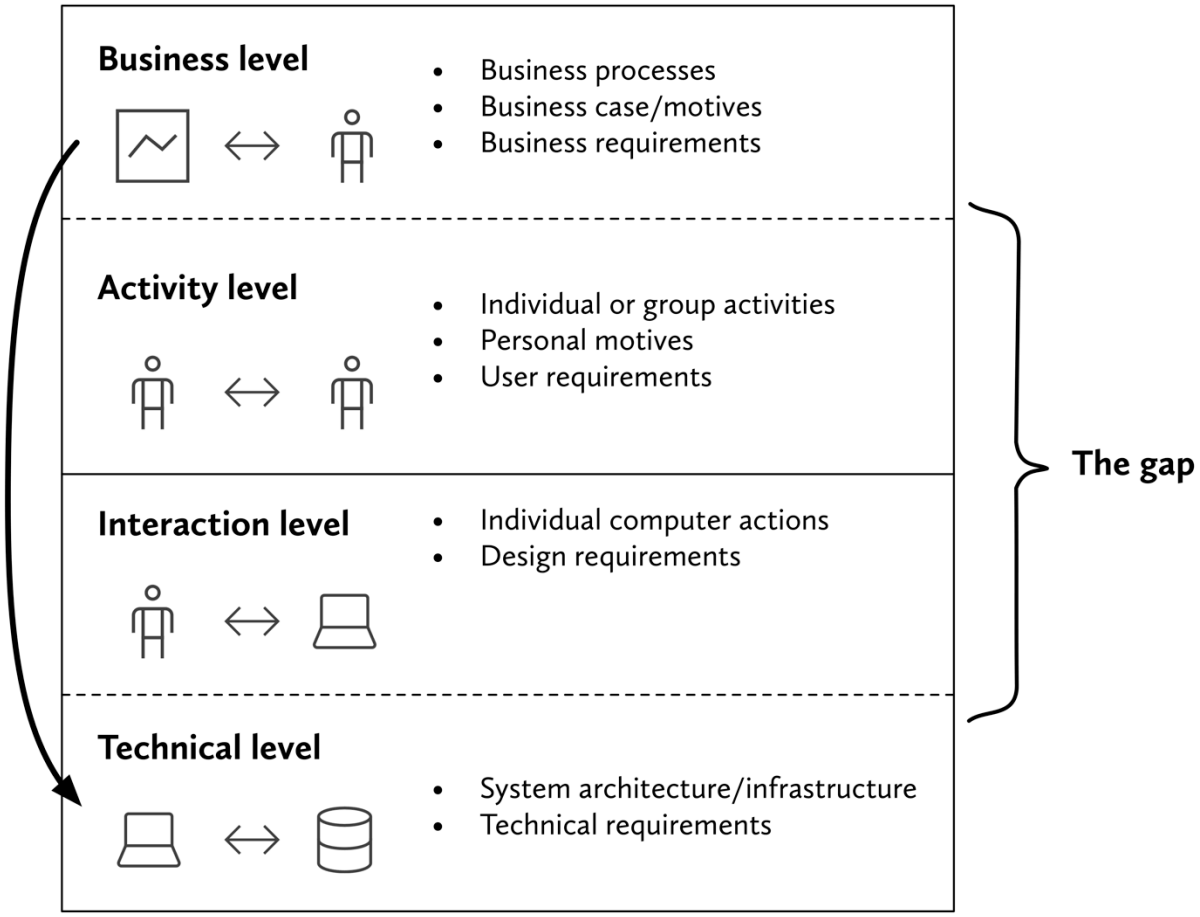

Figure 2. Levels of system requirements—adapted from Markensten (2005).

In a larger project, the map will grow considerably as actions are added. Navigating the structure may be difficult. Instead, the actions can be written in a spreadsheet, extended with use cases and linked to specific target groups along with estimates. This can serve as raw data for the project backlog. The spreadsheet can also be used to generate maps centred around target groups or goal effects.

1.3 Impact Mapping

Inspired by Effect Managing, Adzic (2012) developed his approach called Impact Mapping. Effect Managing and Goal Managing were born to address some of the problems with waterfall methods, by focusing on what goals users will try to accomplish using the product and how that contributes to business goals. Impact Mapping has a wider concept of stakeholders. An Impact Map can for instance list competitors as a stakeholder, their goals, and actions to counter the initiative.

Impact Mapping is rooted in agile project and product management in software start-ups where business viability is as important as usability (Adzic, 2012). It can draw on the expertise of many co-designers and visualize assumptions, user goals, and hypotheses about features that meet those goals. Figure 3 shows an impact map.

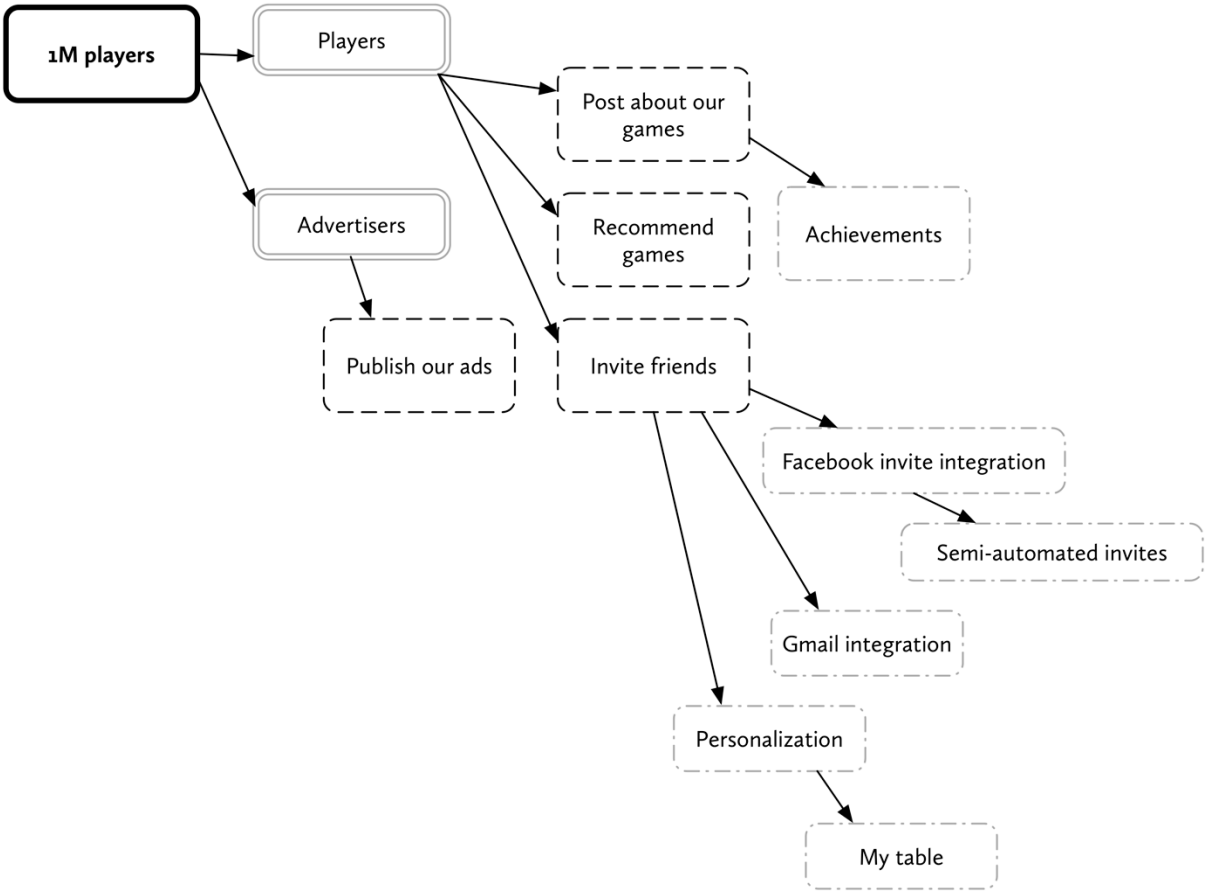

Figure 2. Impact map—adapted from Adzic (2012).

The mission statement (“1 Million players”) forms the root node (why?). On the second level are actors (“players and advertisers”) that can contribute to realizing the impact (who?). On the third level are the impacts (e.g. “invite friends”) that they can have (what?). Below that are deliverables for the software team to build that form features that they would use (how?). The process for Impact Mapping is based on two workshops. The goal of the first workshop is to produce a clear mission statement, in three steps:

1. Identify business objectives and not features. It is important to reach agreement on the scope and the number of goals per project. One goal per milestone is appropriate.
2. Define measurements for the goals which will steer the discussion towards priorities and viability. The discussion will include what will be measured (scale, e.g. number of monthly active players), how it will be measured (meter, e.g. using the game database), what the current situation is like (benchmark, e.g. 350,000 players), the minimum acceptable value or break-even (constraint, e.g. 800,000 players) and the desired value (target, 1,000,000 players). All numbers do not have to be in place at this point. It can be figured out in the time leading up to the second workshop. It is important to measure what is meaningful and has bearing on the intended goal rather than what is easy to measure.

3. Decide what the first milestone should be, for example: “Milestone 1: More players in 6 months, no negative impact on retention, 100% increase in IT costs permitted if needed.” The scale for “more players in 6 months” might, for example, be the number of monthly active players. The meter is the game database. The benchmark is 350,000 players. The constraint is 800,000 players. Finally, the target is 1,000,000 players. Scale, meter, benchmark, constraints, and target can also be defined for IT costs and player retention in this milestone example.

The goal of the second workshop is to map how to accomplish the mission statement and the milestones. This is achieved in four steps:

1. Draw a map skeleton by placing the first milestone at the centre of the map and connect it to a few high-level deliverables. Actors and their impacts are scrutinized by asking questions like: “Is it realistic that the feature will contribute to the impact?”; “is the impact valid for the actor?”; and “will the impact really contribute to achieving the goal?”.
2. Ideate divergently and find alternative ways to accomplishing the impacts.
3. Identify key priorities and converge by looking for constraints, show stoppers, low-hanging fruit that is easy to implement but yields a high return, and assumptions that need to be tested. Adzic (2012) suggests using Kano models (Jokela, 2004) to determine the desirability of features.
4. Discuss what will be built or done, i.e. the deliverables. The following questions can structure the discussion: What is the simplest way to support this activity? What else could we do? If we're unsure about the assumption, what is the simplest way to test it? Could we test it without software? Could we start earning with a partly manual process?

The map that is created is not a static document. It is intended to be re-visited during a project or product lifespan as results are measured. Deliverables that do not produce results hint at invalid assumptions. In the example given, it might be that players are not interested in inviting friends. If so, the “invite friends” impact might be invalid, or perhaps the deliverable is wrong. This way the map can be used to formulate and test experiments and determine if a given product strategy is working. Impact map practitioners that were interviewed stated that maps are often drawn on whiteboards or walls and revisited and updated continuously to reflect the current knowledge state in the product team.

2 Method

We have now described how impact methods are supposed to work in theory, but the research question for this interview study is what different ways of conceiving “impact methods” practicing UX and service designers have. Interviews were firstly made with three originators (2 male and 1 female) of the methods and the results of those interviews were used to get an overview of and introduction to the methods. Participants for further interviews were recruited based on references and

recommendations from contacts, personal network, and a survey posted in a LinkedIn group. Interviews were then made with seven UX and service design practitioners (4 male and 3 female) who used the impact methods in human-centred design work. The one who had least professional experience of the methods had worked with them for 3 years, three had used the methods for 5-6 years, and two participants had 10 years of experience of the methods. All had used the methods during the last six months. Three worked with internal projects and three with business-to-business projects. Five of them had experience from working with Effects Managing, three of them had experience from working with Goal Management, and only one of them had experience from working with Impact Mapping. Their age varied between 30 and 45.

The semi-structured interviews lasted 60–90 minutes. The protocol covered how they would describe the impact methods, their experiences of using them in particular projects, how they have adapted the methods, and relations to other methods. The interviews were recorded and transcribed verbatim at a level where pauses and non-verbal utterances were captured.

The first round of analysis employed phenomenography (Marton & Pong, 2005) and focused on the practitioners' conceptions of impact methods, i.e. the qualitatively different ways in which they understood the methods. The transcripts were subsequently also analysed using a conventional thematic analysis using holistic coding (Saldaña, 2013) to describe recurring underlying patterns defined by a central organizing concept regarding the application of the methods.

Participants were anonymized and data was encrypted for safe storage. It was ensured that participants understood that they could withdraw from the study without any further consequences for them. They were informed about the purpose of the study and that consent was obtained. In the cases where interviewees can be identified, a written consent has been obtained, and those participants have also been asked to review and confirm that the text is an accurate reflection of their views. The researchers had neither affiliation to the originators of the methods, nor any interests in the companies at which the participants work.

3 Results

Interview results are presented thematically, starting with general observations about the methods before going into details. A richer account with excerpts can be found elsewhere (Persson, 2017). Overall, four conceptions of what impact methods are about could be discerned:

- A: having clear goals
- B: designing for user needs
- C: linking user benefits and features to business benefits
- D: a way to think about problem-solving

3.1 Effects Managing

The structure of the effect map is an important part of Effect Managing. It has a well-defined formalism that allows it to be used for managing IT for specific outcomes and follow up effects over time. It is intended as a model for a set of ways to look at a problem and attempts to model the gains from a project. Effect Managing endorses defining a single purpose with a number of KPIs. According to practitioners in our study, this is frequently glossed over, to the detriment of the project, due to the difficulty of defining goals and metrics. Users are grouped according to their behaviour. In an intranet project, such behaviour groups could be titled “the seeker” and the “the informer.” These behaviour groups are not mutually exclusive and that a user may belong to more than one group. Such brevity serves to clarify the links between purpose, users, and user goals. The effect map can safeguard against adding features that cannot be traced back to user needs and organizational purposes.

3.2 Goal Managing

Goal Managing is not a strictly defined process, and the exact application of the method varies somewhat. However, the notion of a visual goal map is central. The application of Goal Managing in service design has given the method a different focus, compared to Effect Managing, which was originally conceived to address the challenges faced in IT projects. As a result, Goal Managing has incorporated high-level scenarios in the map to add the contextual dimensions needed for service design.

3.3 Impact Mapping

Only one of the participants had worked with Impact Mapping. Impact Mapping takes its departure in the realization that, for business success, product features cannot just be something that the team comes up with. It would be too expensive and too risky. You need to bring all stakeholders into a discussion about the product goals. Impact mapping is, therefore, a conversation and a planning technique to achieve particular business objectives rather than following plans dictated as a set of actions. The aim of Impact Mapping is to get people in a room around a whiteboard and helping them articulate their ideas on what to strive for.

3.4 Perceived Contributions of Impact Methods

The results indicate that practitioners thought that impact methods can contribute by bringing out people’s potential as co-designers, doing the right thing, and making strategy actionable.

A major benefit the participants saw is that the methods bring out people’s potential by strengthening teams and supporting collaboration and inclusion, creating alignment, and making teams more proactive. For example, Impact Mapping and tracking of backlog and features to overarching goals, can facilitate integration of a development effort in a bigger picture, thus contributing to a culture where collaboration and joint problem-solving is valued. The methods also improved goal alignment between internal and external stakeholders. Functional silos could, at least

momentarily, be disregarded. As a result of seeing the bigger picture, team members were perceived to become more proactive.

Participants thought that impact methods could aid in focusing on doing the right things in the project. One example of that is that they facilitate in telling “hygiene factors” from “wow factors” by classifying deliverables into “necessary/base functionality”, “expected/requested functionality”, and “attractive/unspoken functionality”. Having proactive team members and stakeholders were also thought to lead to better understanding of the business as well as the user behaviour designed for, which in turn meant considerable reduction in defects and bugs. The hierarchical maps that visualize the value for different stakeholders were found to facilitate cost–benefit analyses, since deliverables in the map can be cost-estimated and weighed against the business value of the impacts in relation to effects goals. Another challenge in many projects is knowing what to build when. While agile project management methods such as Scrum encourages prioritizing the backlog based on business value, few (if any) recommendations are made regarding how to determine that value. As a result, backlogs often have many things to do at the same level of priority, and the deciding factor will instead only be the time it takes to implement. Participants thought that impact methods can replace detailed backlogs and specification, by instead offering a framework in which the design team can improvise ways to achieve the goals and question underlying assumptions of user stories and features, thus reducing development time.

Even the most well-thought-out strategy can be hard to implement. Participants said that impact methods and their mapping techniques can aid in making strategy actionable, by means of the chain-of-reasoning connecting deliverables and actions to strategic goals. Stakeholders can argue for features during workshops by using the effect or impact map. This means that communication is supported, and they remind people about the overarching purpose of the work. Participants also mentioned that a map also can be used as a narrative tool, telling stories about individual users through the perspectives of personas/user groups and scenarios.

3.5 Comparison of Impact Methods

Even though participants had not worked with all methods, they some understanding about the ones they had not worked with. Different impact methods were considered suitable for different kinds of projects by the particpants. Table 1 offers a synthesis of practitioners’ statements about the impact methods.

Unlike Goal Managing and Effect Managing, Impact Mapping focus on moving ahead fast and figure out which ideas work, and which do not. Practitioners of Impact Mapping were said to often be product owners and managers, not UX or service designers.

Of the three impact methods, Effect Managing appears most strict and technical for the purpose of using the maps for subsequent evaluation of solutions. Goal Managing gives more leeway in how to work. The defining characteristics of Impact

Mapping are not research and well-founded arguments but rather fostering productive conversations, visualizing goals, and quickly creating alignment around them.

Table 1 Comparison of participants' views of impact methods.

	Effect Managing	Goal Managing	Impact Mapping
Suitable for	Digital services and apps	Service design projects	Agile development and change management
Used by	Organizations that prefer well-defined procedures and extensive user research	Organizations that prefer well-defined procedures and extensive user research	Agile organisations
Defining Features	Relatively strict conventions to model, predict, and evaluate outcomes	Loosely defined with ideas from service design, e.g. journey mapping	Fast and iterative with a focus on collaboration and alignment
User Modelling	User groups modelled around behaviour	Personas with multiple dimensions and scenarios	Offhand approach to UCD and can be seen as advocating manipulating users
Stakeholders	Does not consider stake-holders other than end users	Other stakeholders through secondary and shadow personas	Takes stakeholders into account
Structure	Traditionally based on initial research	Initial or iterative user research in parallel with implementation	Organic and less work up-front

4 Discussion

We found that all impacts methods focused on the desired outcomes and effects of the design project. The methods also used a particular kind of objectives tree (Cross, 2008; Jones, 1992) that included the users and other stakeholders, and that connected overarching values and business outcomes with the desired effects for users, all the way down to features of the product or service. Effect Managing, Goal Managing, and Impact Mapping have differences in theory, and in the interviews they were characterised as suitable for different situations but given this limited study it is difficult to say what the differences are in a more general sense within practice. The participants in our study were pragmatic and picked methods and techniques they liked regardless of where they came from or what they were called. This makes it difficult to make any definite claims about how the three approaches differ. The results indicate that there are four conceptions of impact methods: (a) having clear goals; (b) designing for user needs; (c) linking user benefits and features to business benefits, and (d) a way of thinking about problem-solving.

Orlikowski and Hofman (1997) state that "change is typically an ongoing process made up of opportunities and challenges that are not necessarily predictable at the start" and suggest that managers give up command and control. They encourage management to create an environment that facilitates improvisation, referred to as cultivation, and liken it to a jazz band that jams together without sounding discordant.

Based on our results, it appears reasonable that by organizing around transformation goals using impact methods, instead of strictly following plans, teams can achieve a higher level of collaboration and potentially also workplace satisfaction. While Orlikowski and Hofman (1997) suggest that managers give up command and control, Simon (1996) assume that transformation is manageable. In our results, the conceptions of using impact methods differ in relationship to manageable transformation. Conceptions A and B, having clear goals and designing for users' needs, work as devices for coordination, they do not necessarily make transformation manageable, but opens up a space for control. Conception C, linking user and business benefits, aids in making transformation manageable, works as devices for coordination, and requires collaboration. Conception D, a manner of problem solving, works as an informal means of articulating an expertise, which requires coordination with other expertise, and does not contribute to a higher degree of manageability of transformation.

4.1 Criticism of Impact Methods

Impact methods use cycles of internal discovery and external validation to consider what is known and then going out to validate it. A reasonable modification for improved rigor would be to attempt to falsify the assumptions. In the cases where impacts are validated using quantitative research methods, it would indeed raise the validity of the work.

Effect and Goal Managing also take a limited view of the possible outcomes of a project. The impact map, as proposed by Ottersten et al. (2007), focuses on the intended positive effects. But transformational projects can also have negative side-effects (Hertzum & Simonsen, 2011a; 2011b). Actively assessing benefits in order to identify unrealized benefits, as well as 'disbenefits', which have been realized unintentionally, can be a good practice (Ward & Daniel, 2006).

4.2 Limitations

This study is small, and the interviews allow us to elaborate on a few experiences of the methods. It builds on interviews with ten practitioners from primarily Swedish companies, and three of them are with the originators of the methods. The results describe their idiosyncratic experiences, and any general conclusions should be drawn with circumspection. It is likely that the results would have been different with other participants from other contexts. No observations were made, and the results reflect how participants talked about their understanding of the methods and their experiences of using them. It is not unlikely that actual practices differ from what the participants said.

4.3 Significance

The perspectives accounted for by UX practitioners connects design and business specifically in IT design, but we would argue that impact methods also have the potential to be a driver in strategic design and transformation design more generally, by facilitating the identification of what changes to make for whom. Impact methods would accordingly be valuable additions to a designer's toolbox. This study indicates

that practitioners pragmatically choose tools and methods based on fit, why a larger toolbox is an asset. Impact methods are gaining adoption in Sweden, in design and development of both public and commercial services, and we cannot see any reason why they would not be useful in other contexts.

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