Stakeholder Journey Analysis for Innovation

A Multiparty Analysis Framework for Startups

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Abstract. When analysing how the information-technological innovation of a startup company is perceived to affect the market, we encountered challenges when using existing customer journey analysis frameworks. In particular, we identified a need to express critical events for technology adoption, a need to express universal access principles and a need to express journeys for multiple stakeholders in the same diagram; all in an easily readable manner. To do this, we extended an existing stripped-down customer journey framework with elements for the above aspects. We present this extended framework as a *stakeholder journey framework*. Based on the initial application of this framework on the startup company's innovation product, we conclude that the stakeholder journey framework aided in uncovering issues within technology adoption and universal access that would otherwise not have been addressed.

Keywords: Customer journey analysis · Stakeholder journey framework · Innovation · Technology adoption · Universal access

1 Introduction

Organisations who wish to introduce new IT services into the market face particular challenges regarding needs analysis and requirements engineering. Innovation implies, in many instances, not only the introduction of new services, but also establishing the market's perceived need for those services. Innovation can aim at augmenting existing business processes, as in *value chain innovation*,[1] whereas in *disruptive innovation*, new technological services do not merely meet needs and demands of existing business processes, they change business and societal processes or create new ones altogether [16].

Some disruptive innovations can trigger total discontinuities in the market. Geoffrey A. Moore describes how the exponential growth in computing power (in line with namesake Gordon E. Moore's law [20]) routinely destabilises the entire IT sector, creating instability that unleashes "vortexes" of new market demand [17]. The romantic vision of "unicorn startups" arises perhaps from those companies that strike gold; both when creating vortexes (Facebook) and

[1] https://www.gsb.stanford.edu/faculty-research/centers-initiatives/vcii.

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when using their momentum to create successes within a vortex (WhatsApp, Angry Birds). The people behind such chance innovations (which were not meant to be innovations at all) had seemingly no other plan than to fulfil a, perhaps trivial, need for themselves and their friends. Such has become the allure of non-deliberated fortune that organised venture capital initiatives now are referred to as "garages".

However, according to a recent analysis of 1,100 startups, only a little over one percent succeed;[2] the most frequent reason for failure being "no market need".[3] For the vast majority of innovationists, this suggests that a better understanding of what an innovation addresses and in what situations it will be used would reduce the risk of failure. This entails, at least to some degree, that aiming for value chain innovation might more likely lead to success than would an aim to disrupt the market.

Design thinking and customer journey analysis (CJA) [2] are currently in vogue as mind- and toolsets for understanding how customers would use services as a part of their profession or in their lives. This helps to deliberate on the *whole product* [16], not just some technical functionality in isolation. CJA takes many forms and involves variations of process flows in terms of phases, customer actions, touchpoints with technology, emotions, thoughts and more. By now, there is a proliferation of CJA methods and templates offered by consulting companies.

Recently, a stripped-down customer journey framework (CJF) was presented which models customer journeys purely in terms of touchpoints with technology, along with annotations that indicate phases and other process flow elements [10]. Further, the CJF promotes the elicitation and comparison of *planned* versus *actual* customer journeys. Here, we focus on eliciting planned journeys; that is, the intended use of an innovation, as perceived prior to deployment.

Due to its frugality, we are able to apply an extended version of the CJF to a complex case, in which a startup company is running a project to develop digital, AI-supported information services for facilitating property (real estate) buying and selling processes. The complexity arises from the fact that multiple stakeholders are involved who traditionally have conflicting interests and from the fact that these stakeholders have different key technology adopter roles in Rogers' *innovativeness* dimension [18]. For example, if the service offers better and more detailed information on a property's true state, property buyers may be the *early adopters* of the service technology, eager to be equipped with better information for their potential bid. On the other hand, estate agents may take the role of the *late majority*, not willing to use the service during marketing and sales unless everyone else in the business does so; thereby potentially halting the innovation if they are the primary service onboarders.

There is a fundamental challenge as to the nature and amount of information to present through the service. Decision making relies on salient and actionable cues [1,8]. Startups often have an abundance of ideas, and it is essential to

[2] https://www.cbinsights.com/research/venture-capital-funnel-2/.
[3] https://www.cbinsights.com/research/startup-failure-reasons-top/.

understand what functionality gives added value rather than produces waste and confusion [5]. Moore proposes that technology adopters look for solutions to only a narrow set of problems [16].

In many countries, there is an increased focus on accessibility for people with disabilities through politics and legislation. Directive (EU) 2016/2102 of the European Parliament on the accessibility of websites and mobile applications requires public bodies to ensure that their websites and apps are accessible to persons with disabilities. The directive refers to the Web Content Accessibility Guidelines (WCAG) 2.1[4]. The aim of these guidelines is to make functionality perceivable, operable, understandable and robust for a wide range of people, without adding extra functionality or a specialised design for certain user groups. In Norway, most of these requirements will apply for private organisations as well. The more a service is digitised, the more dependent its users become on the accessibility, usability and utility of each touchpoint.

In spite of the adoption of accessibility legislation in EU and many countries, the needs and perspectives of people with disabilities are often ignored during service design, and it is rarely mentioned in academic literature on customer journey analysis. At the EU level, about 26.3% of women aged 16 and over, and 21.8% of men of the same age group, declare a disability [9]. This means that it is important to consider their needs and perspectives to avoid design exclusion of this rather large minority.

To illustrate how an innovation can address universal accessibility, there is therefore a focus on universal accessibility in our extended CJF.

2 Stakeholder Journey Framework

We call our extension of the CJF of Halvorsen *et al.* [10], a stakeholder journey framework (SJF).

The CJF of Halvorsen *et al.* [10] has a focus on technology *touchpoints*; that is, integral points of contact and interaction with technology. The CJF operates with two types of touchpoint; namely, those initiated by the service provider (blue circle in Fig. 1) and those initiated by the service consumer (orange circle in Fig. 1).

We think of such an integral point of contact as an interaction with technology that allows a user to perform a well-defined task that can be initiated and concluded as a single event in ones' daily life, but perhaps being a part of a larger sequence of events. A task performed with a mobile app is an example of such a touchpoint.

2.1 Services

The functionality that enables a task to be completed in a touchpoint is often offered as a *service* [4,14]. The service concept embodies a host of principles, but

[4] https://www.w3.org/TR/WCAG21/.

central is the principle of loose coupling in the sense that the service consumer owns or provides the data, while the service provider owns or provides the functionality to process that data. Services can also vary in terms of statefullness; in that they may or may not need to maintain portions of system state over a period of time. The degree of statefullness coincides with the need for a service to function in an isolated event or in a sequence of events.

In the SJF, we formulate touchpoints in terms of services. A solid arrow (Fig. 1) between touchpoints indicates that the underlying services share state. This includes sharing data.

2.2 Technology Adoption

The SJF extends the CJF by expressing crucial points for technology adoption. A filled light-green circle (Fig. 1) indicates a touchpoint that exposes or introduces a consumer to a service and which is considered crucial for adoption of the technological innovation in that service. People who do adopt innovations at a stage before the innovation is at all common in the market are the *early adopters* in Rogers' terminology [18]. Rogers characterises an early adopter as an "individual to check with"; that is, someone to whom others who are sitting on the fence waiting to see if an innovation is worth trying, will look to for positive or negative cues. Early adopters are therefore crucial actors for advancing an innovation in the market. A filled dark-green circle (Fig. 1) indicates a touchpoint that is crucial for adoption, and where there is an active push of a service by either the provider or a consumer of the service. People who push innovations in this way sort under what Rogers calls *innovators*. Innovators often have an interest in innovations as such, regardless of their (economic) benefit, or they have a degree of venturesomeness that enables them to take risks in adopting technology not yet subjected to the masses. Innovators are those individuals who launch the new idea into the boundaries of the existing processes [18], where early adopters take up the beat. This transfer between innovators and early adopters is indicated in the SJF with a dashed arrow (Fig. 1). Together, innovators and early adopters constitute the initial 16% of adopters of an innovation [18].

2.3 Universal Accessibility

Further, the SJF extends the CJF to take into account universal accessibility. This can be done at each touchpoint within a user story or in the journey narrative. There are several methods to evaluate universal accessibility. It is important to think about technical accessibility as well as usability for people with disabilities, sometimes referred to as usable accessibility [7]. The former refers to the user's ability to perceive, operate, understand and use the functionality of the service. The latter refers to the user's ability to use the service to achieve his or her goals. Technical accessibility is usually addressed during the implementation phase by ensuring that the code complies with the before-mentioned WCAG 2.1 guidelines. One should be aware that the stakeholder journey can be broken if it is dependent on touchpoints from service providers that have not addressed

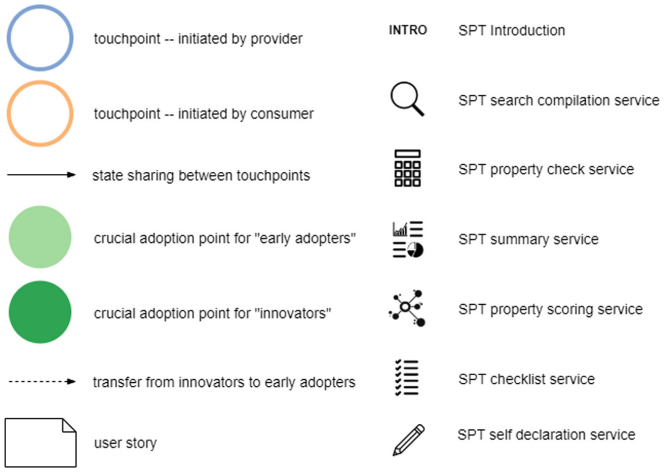

Fig. 1. Symbols for stakeholder journey framework

universal accessibility. In addition to technical accessibility, one should evaluate the stakeholder journey from a usable accessibility point of view. This means to evaluate the usability from the perspectives of people with different types of disabilities. In early design stages, one way to do this, is through a persona walk-through of the stakeholder journey using personas with disabilities [19].

2.4 Multiparty

We find it necessary to express journeys for multiple stakeholders in one diagram. The SJF extends the CJF using swimlanes for stakeholders, with the possibility to express interactions between different stakeholders' touchpoints. Many customer journey formats disable multiple journeys in a single diagram. The SJF, with its succinct notation inherited from the CJF, enables this.

2.5 Symbols

The original CJF uses graphical symbols to indicate a touchpoint's medium (telephone, email, regular mail, customer service desk). In the particular case that we shall use to illustrate the extended framework, the medium is a web application running on a computer or smartphone. We use graphical symbols to indicate the service offered at a touchpoint. These symbols are given in the second column of Fig. 1, and we will return to these below.

2.6 Stories and Narratives

Although the original CJF depicts touchpoints only, the elicitation methods used to arrive at a diagram with touchpoints may involve any number of other notations. Diagrams in terms of touchpoints are therefore a summary of a much larger

body of information. In the original CJF, the touchpoint diagrams are annotated with business process phases. To understand technology adoption and universal accessibility, we need to annotate journeys with hypothetical motivations to use the services. In the SJF, we use familiar techniques from requirements engineering to summarise planned functionality and stakeholder motivations and interactions at each touchpoint into the following user story format [11,13]:

> User Story: As ⟨stakeholder⟩, I can ⟨perform functional action in my domain⟩ by using ⟨service S⟩ to ⟨handle and use information⟩.

User stories are depicted by the "note" symbol in Fig. 1.

User stories in this format are subsequently used to write textual narratives for entire journeys to supplement the graphical representation.

2.7 Objectives and Returns

We also find it necessary to relate to the visions that the stakeholders have for the innovation. Visions can be explicit or tacit and formulated at various process levels [13]. Here we distinguish between *solution objectives*, *functional objectives*, *project objectives* and *returns*. In our example case, we will only explicate project objectives, but it is useful to hold in mind how these differ from solution and functional objectives.

The user stories are assessed on their estimated contribution to each project objective, using benefit points [11]. This enables the project to prioritise which story, and hence which services to construct first [12].

Solution Objectives are what the system under development should fulfil as a technical solution; for example, to display a simpler technical conditions profile for properties. In the user story format above, these objectives pertain to ⟨service S⟩ enabling stakeholders to ⟨handle and use information⟩.

Functional Objectives are what the system under development should lead to in the stakeholders' business and life processes; for example, to obtain a better understanding of the technical conditions of a property. Here, these objectives pertain to the ⟨perform functional action⟩ in the user story format above.

Project Objectives pertain to effects outside the processes that are directly formed by solution objectives and functional objectives; for example, to reduce the number of buyer-seller conflicts following house sales. Project objectives (also known as *impact goals* or *effect goals*) express a business' (perhaps evolving) reasons for initiating and running a development project [11,12].

Returns express the expected worth of business objectives [11,12]; for example, reduced payments (EUR 10 million) or increased sales (EUR 30 million). Whereas the three types of objective above can have diverse denominations (readability, decision quality, number of conflicts), returns are expressed in monetary terms; even in the case when returns may be non-financial [11,12].

2.8 Work Phases

Inspired by the original CJF, the SJF employs five incremental methodological phases: Phase 1: overview, scope, and delimitation of innovation, Phase 2: identification and design of planned stakeholder journeys, Phase 3: stakeholder recruitment and data collection on actual journeys, Phase 4: analysis of actual journeys. Phase 5: adjustment and refinement of planned journeys.

This paper focuses on, and outlines a methodology for, Phase 2. To meet the exploratory setting of startups planning an innovation, we extend this phase with incremental elicitation and structuring of journeys. We employ practices from agile benefits-driven development, which also allows for explicit consideration of universal accessibility.

3 Example Case – Smart Property Transaction

In this section, we describe a case to illustrate the SJF. A startup company is running a research-driven project to develop smart property transaction (SPT) services to help stakeholders to make better-informed decisions when selling and buying property. Services are developed and deployed incrementally. Stakeholders that are included in the development phases include buyers and sellers of property, property agents, property assessors, insurance companies and the startup.

Phase 1 involved workshops, informal meetings and stakeholders' personal experiences of buying and selling property. A central goal that materialised from this phase was to reduce conflicts after a property is handed over, by informing buyers and sellers better of the technical conditions of the property during the selling and buying process.

Phase 2 is in progress when writing. We show how *planned stakeholder journeys* evolve through a series of stakeholder workshops.

Phase 3 will involve observing how services are used once they are deployed. This gives rise to *actual stakeholder journeys* [10], that are described textually and graphically using the same methods and symbolism as for planned journeys.

Phase 4 will analyse actual journeys with respect to how they deviate from the planned stakeholder journeys. This involves understanding which touchpoints actually occurred, what actually happened at each touchpoint and which other touchpoints actually occurred (instead). This further involves understanding what dynamics of innovation adoption actually happened in actual journeys and how universal accessibility actually played out.

Phase 5 will then use the deviations between planned stakeholder journeys and actual stakeholder journeys to inform further service increments and give rise to adjusted planned journeys.

3.1 Phase 2 Activities

The main activities in Phase 2 were workshops with the startup company, their affiliates and a group of estate brokers, with subsequent structuring and

consolidation by the researchers. The work proceeded incrementally on the following activities:

stakeholder mapping, where participants were to brainstorm on what types of individuals and organisations that would have effects on, and be affected by, SPT services. Participants were invited to submit proposals freely on a stakeholder chart on a whiteboard; see Fig. 2. A few salient stakeholder types (seller, buyer, property broker) were then chosen by group discussion for further elaboration in the form of personas. In addition, insurance company and property appraiser were selected as background persona types; that is, entities that have effect on, and are affected by, SPT, and that will appear in stakeholder journeys, but who are not elaborated on further as personas.

persona elaborations, where the salient personas were elaborated upon. The researchers provided templates and example personas, which were then elaborated upon by the workshop participants.

While there is a widespread view that personas should be developed based on extensive user research, we chose to co-create personas with the workshop participants; that is, with people who represent, or are in daily contact with, the persona types in question. Co-creating personas in this way comes at the cost of statistical representativity, but is rapid and eliminates an extra layer of data interpretations. By tapping directly into the experience and knowledge of people that have a broad experience with and knowledge of the persona types in question, we can increase the coherence and realism of the personas, and reveal particularly relevant information that may be lost in a quantitative approach [6].

We therefore included a discussion point for personal challenges and needs in the persona template and encouraged the workshop participants to include some form of impairments or special needs into the persona descriptions.

stakeholder journey elicitation, where participants were to sketch high-level stakeholder journeys from the perspectives of the given personas. The researchers provided examples of high-level stakeholder journeys using a simplistic notation based on Business Process Model and Notation (BPMN) 2.0[5] and an experimental version of SJF for use during the workshop; see Fig. 3. The participants then discussed in groups designated to a given persona and came up with respective stakeholder journeys.

stakeholder journey elaboration, where participants were to detail high-level stakeholder journeys. The researchers provided examples of more detailed stakeholder journeys using the same notation as for the high-level journeys, for use during the workshop. The participants then discussed in groups designated to a given persona and came up with respective stakeholder journeys; see Fig. 4.

stakeholder journey consolidation, where researchers summarised and structured the elaborated stakeholder journeys. From the results of the workshop, we distilled planned stakeholder journeys as shown in Fig. 5 and Fig. 6.

[5] http://www.omg.org/spec/BPMN/2.0.

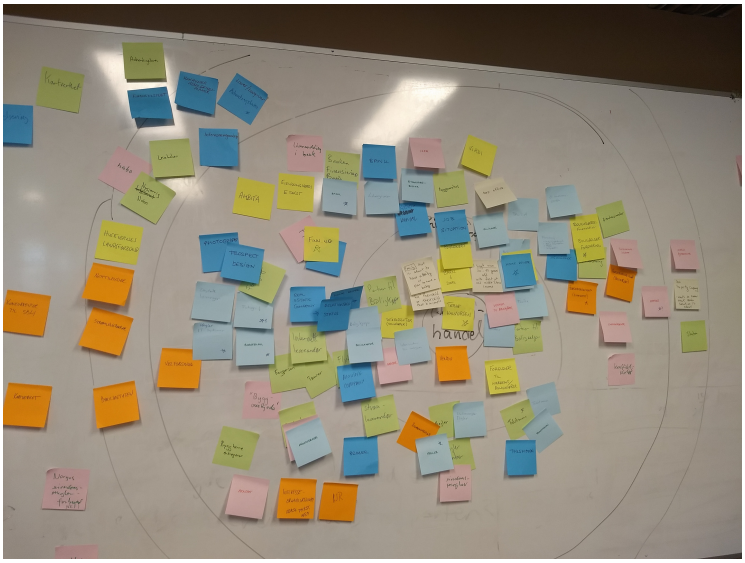

Fig. 2. Stakeholder mapping brainstorming phase

3.2 Personas

So far, we have developed six personas, which includes two sellers, two buyers and two estate agents. Among these, were one elderly female seller persona with arthritis and somewhat reduced vision, a pregnant buyer persona, and a male buyer persona with asthma who is concerned about ground radon values. While these personas can only shed light over a small part of potential universal accessibility issues, it has helped to highlight some concrete needs; see examples in the stakeholder journey descriptions below. We also plan to conduct workshops with people with different types of disabilities to get further insights into universal accessibility issues for SPT services.

3.3 Services

The following SPT services arose in part from the workshops and in part from the startup company's own ideas. They are the current consolidations of functionality formulated as services.

SPT introduction service gives an overview of SPT services; to be used whenever there is an opportunity for sell-ins.

SPT property check service lists recommendations for what a seller can do to increase the value of a property before selling. Based on price estimates for refurbishments.

SPT search compilation service compiles properties of interest based on the user's searches in other search engines. This readies the user for investigating a favourites list further with SPT.

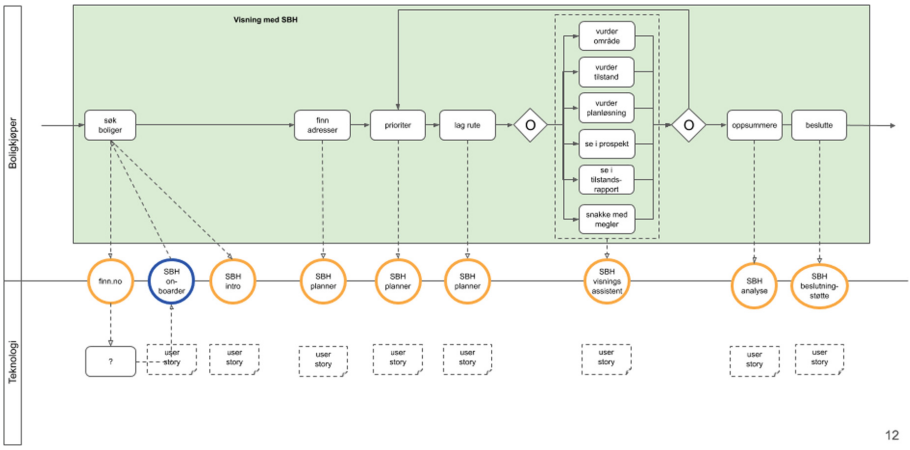

Fig. 3. Example stakeholder journey for buyer persona type

SPT summary service summarises the key characteristics of properties found and tagged during a search, so that a user can compare properties of interest.

SPT property scoring service extracts crucial information regarding the property from its documentation; to be used when investigating a property in depth. The extraction uses a combination of machine learning on property appraisal documents, knowledge of the appraisal process and comparisons with similar properties. Its output is a score reflecting the technical conditions of the property.

SPT checklist service lists crucial items of a property that a potential buyer should check; to be used at home and during a viewing.

SPT self declaration service assists a seller with filling out a self-declaration form on the property, required in order to buy a property sales insurance.

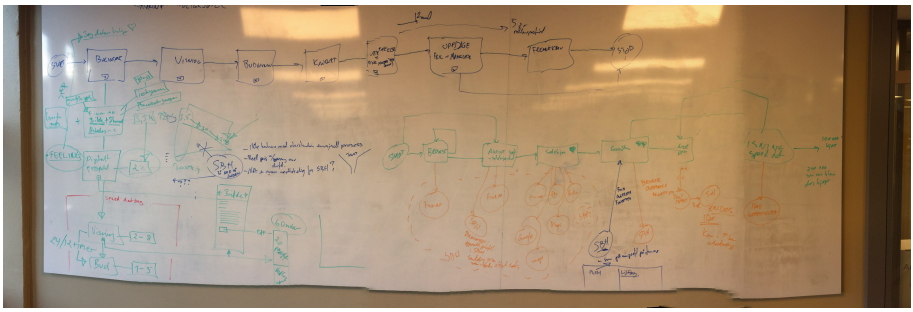

Fig. 4. Stakeholder journey brainstorming for buyer persona “Catarina”

3.4 Objectives and Returns

The solution and functional objectives pertain to the property transaction process (or journey). For SPT, the main **solution objectives** are to:

Amount of information: increase the amount of actionable information
Quality of information: increase the quality of actionable information
Degree of universal accessibility: increase legibility and simplicity of information

The main **functional objectives** are to:

Better understanding: improve the understanding of a property's worth
Higher level of trust: increase levels of trust and security in buyers and sellers on the validity and soundness of the property transaction
Simpler tasks: simplify the tasks of the process
Less diverse tasks: reduce the number of tasks or task variations in the process

The main **business objectives** from the point of view of the SPT project and product owners, are to:

Better decisions: induce better-informed decisions
Fewer conflicts: reduce buyer-seller conflicts
More customers: increase the number of customers

It is also useful to express objectives from the point of view of other stakeholders. For example, buyers' objectives might be to:

Short-term optimisation: buy the dream property for as little as possible

while sellers' objective might be to

Short-term optimisation: sell the property for as much as possible, fixing as little as possible

The mission of the SPT project is to give sellers and buyers tools to shift their diverging foci away from short-term optimisation to:

Balanced optimisation: sell/buy the property for the right price,

from the assumption that a common understanding of what the "right" price is, will led to better outcomes for all.

In turn, the project objectives are expected (or desired) to contribute to the following **returns**:

Increased profits: X million
Sharper profiling in market: At least as important as "Increase profits"; say $1.5*X$ million
Increased stakeholder investment: Z million

The "Sharper profiling in market" return is non-financial, but it is possible to assess its importance relatively to one of the financial returns and indirectly set a monetary value on it. This enables one to include that return when prioritising user stories according to benefit and cost for realisation and production. We do not pursue this here, and the monetary values are for illustration only.

3.5 Planned Stakeholder Journeys – Initial

Figure 5 shows the initial combined journeys for each stakeholder. We give a short narrative for each journey together with its user stories.

Journey for Buyer: The potential buyer starts by browsing properties using existing search engines, where there is a link to the SPT search compilation service. At this point, it will be useful for the buyer to be able to enter mandatory search criteria based on specific needs, such as wheelchair access, elevator, short distance to public transport, radon level limits, etc. This is perceived to be an important entry point for introducing the service to possible early adopters.

Eventually, the potential buyer starts investigating favourites compiled in this service more thoroughly, perhaps using traditional information sources (including social media), but also using the SPT summary service to structure more detailed information.

Before viewing a particular property, the potential buyer can use the SPT property scoring service to see the basis for the asking price. When viewing the property, the potential buyer can use the SPT checklist service to structure what issues to check. Again, the buyer may want to rank properties according to his or her specific needs.

If ending up buying the property, the buyer can get help from the same SPT checklist again to check issues for the handing-over process.

Since the buyer might now have to sell an existing property, the buyer will be prompted to use the SPT introduction service; but now as a potential seller. This will be triggered by the service provider (blue circle) but also by the insurance company, in the case the buyer purchases a buyer's insurance.

The user stories for buyer are listed below:

Browse properties: As a potential buyer of a property, I can get an overview of interesting properties by using the SPT search compilation service to set up a list of properties based on searches in commercial search engines.

Investigate properties: As a potential buyer of a property, I can build a better basis for decision making by using the SPT summary service to investigate properties by quality and pricing criteria with comparisons to mid-values of the neighbourhood, region, type of house, universal accessibility, etc.

Understand asking price: As a potential buyer of a property, I can understand how the asking price is rooted in facts by using the SPT property scoring service to show me how the technical conditions report affects the price in relation to other comparable properties.

Structure observations: As a potential buyer of a property, I can get help on issues to check and on structuring my observation on a property by using the SPT checklist service to show me a structured list over important issues on the property.

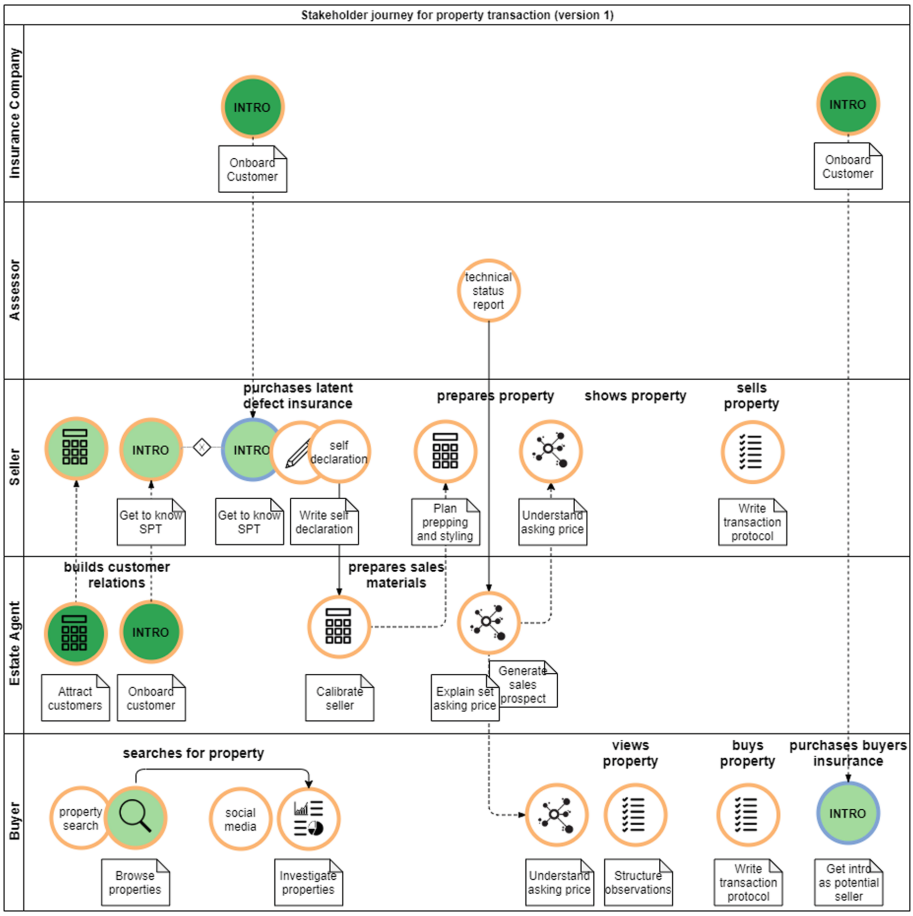

Fig. 5. Planned stakeholder journeys – Initial version

Compose transaction protocol: As a buyer of a property, I can get help on issues to check during viewing the property before takeover by using the SPT checklist service to show me a structured list over important issues on the property.

Get intro to SPT as potential seller: As a buyer of a property, I can get to know SPT as a potential seller by using the SPT introduction service to see demos and examples of SPT services and receive a pre-filled user profile.

Journey for Estate Agent: The estate agent is perceived to be one of SPT's main portals into the property transaction process. The other portal is the insurance company. These portals are where one envisions that SPT is actively introduced into the process. In the case of the estate agent, there is a perceived

dilemma, since estate agents are often, in the outset, geared on marketing and on obtaining the right dynamics in the bidding process for a property, often relying on emotional aspects with potential buyers. SPT is geared toward providing factual information that could be seen as irrelevant or even as undermining the above dynamics. To get estate agents to be the desired innovators for SPT in Rogers' sense would therefore seem challenging. Although estate agents were markedly positive toward SPT during the workshops, it would seem crucial that they see sufficient incentive to push the innovation.

The estate agent starts the journey by attracting new potential property sellers as customers. Using the SPT property check service, the agent tries to bestow confidence with the potential client, and subsequently uses the SPT introduction service to demonstrate the agent's unique selling point. Both of these touchpoints involve an active push of SPT onto the customer. If the agent can demonstrate how SPT structures information on factors that make a property accessible and attractive to people with disabilities, such as wheelchair access, single-floor layout, lift, etc., this can constitute a further unique selling point.

If and when the client contract is signed, the agent can use the SPT property check service to set the client's expectations at an early stage.

When the assessor has reviewed the property and written the technical conditions report, the estate agent can use the SPT property scoring service to document how the asking price is calculated and to auto-generate parts of the sales prospect.

The user stories for estate agent are listed below:

Attract customer: As an estate agent, I can increase a potential seller's trust and sense of security and increase confidence in me as an agent by using the SPT property check service to show how refurbishments may increase the attractiveness of the property and/or estimated sales price.

Onboard customer: As an estate agent, I can create enthusiasm with the seller and promote our unique selling point of SPT by using the SPT introduction service to show examples from the SPT service portfolio.

Calibrate seller: As an estate agent, I can provide a rational base line for sales price expectations early by using the SPT property check service to quickly explain the technical conditions of the property based on the seller's self declaration.

Explain set asking price: As an estate agent, I can get a seller to understand the rationale for my suggestion for asking price by using the SPT property scoring service to show the technical conditions of the property.

Generate sales prospect: As an estate agent, I can generate a sales prospect automatically by using the SPT property scoring service to retrieve key technical information on the property.

Journey for Seller: The seller is, perhaps, the persona type most sceptical to revealing more technical detail of the property. However, new legislation is putting increasing liability on property sellers, and sellers should therefore benefit from an as enlightened process as possible. Sellers would still presumably not be early adopters (unless forced to be by legislation), but rather be in the early or late majority segment in Rogers' terminology; that is, those who use technology when it has become run-of-the-mill.

In this journey, the seller gets prompted by an estate agent to look at the SPT property check service, and subsequently to experience further SPT services via the SPT introduction service.

When the seller chooses an agent and has purchased the (optional) latent defects insurance, the seller is prompted by the service provider or the insurance company to view the SPT introduction service, unless the seller already has done so.

The seller can subsequently get help to fill out the self declaration form using the SPT self declaration service. Here the service can prompt the seller to assess whether the home has accessibility factors that can be highlighted.

When preparing the property for sale, the seller is prompted by the estate agent to use the property check service to decide what to do to the property before putting it on the market. After the technical conditions report has been written, the seller is prompted by the agent to use the SPT property scoring service to come to terms with the agent's suggestion for the asking price. During handover, the seller can use the SPT checklist service as a guide to write the legally binding transaction protocol.

The user stories for seller are listed below:

Get to know SPT: As a seller of a property, I can get an overview of SPT by using the SPT introduction service to see demos and examples of SPT services.

Write self declaration: As a seller of a property, I can get a personalised assistance when filling out the self declaration by using the SPT self-declaration service to give me defaults and pre-filled items in the online form of the sales insurance company.

Plan prepping and styling: As a seller of a property, I can get a personalised to-do list by using the SPT property check service to organise prepping and styling of my property before potential buyers come to see it.

Understand asking price: As a seller of a property, I can understand how the asking price is rooted in facts by using the SPT property scoring service to show me how the technical conditions report affects the price in relation to other comparable properties.

Write transaction protocol: As a seller of a property, I can get help on issues to check during viewing the property before takeover by using the SPT checklist service to show me a structured list over important issues on the property.

Table 1. User stories' contribution to objectives

Objective				
Epics	*Better decisions*	*Fewer conflicts*	*More customers*	Sum
Buyer				
Browse properties	2	1	15	*18*
Investigate properties	7	1	12	*20*
Understand asking price	15	12	1	*28*
Structure observations	8	12	1	*21*
Write transaction protocol	6	10	1	*17*
Get intro to SPT as seller	1	1	15	*17*
Estate agent				
Attract customer	3	1	12	*16*
Onboard customer	4	1	15	*20*
Calibrate seller	10	12	1	*23*
Explain set asking price	15	12	1	*28*
Generate sales prospect	1	5	3	*9*
Seller				
Get to know SPT	1	1	10	*12*
Plan prepping and styling	7	5	1	*13*
Understand asking price	15	12	1	*28*
Write transaction protocol	4	10	1	*15*
Insurance				
Onboard customer	1	4	10	*15*
Sum	*100*	*100*	*100*	

Journey for Assessor: None elicited at the moment.

Journey for Insurance Company: The insurance company has a major incentive to reduce vacuous claims and to reduce (legal) conflicts due to clients (both sellers and buyers) with misguided expectations. In the current journey, the insurance company wishes to onboard clients to SPT whenever clients sign property transaction-related insurance deals.

The user story for insurance company is as follows:

> Onboard customer: As an insurance company, I can help clients to have realistic expectations to properties by using the SPT introduction service to show examples from the SPT service portfolio.

3.6 Contribution to Objectives

We tentatively assess the user stories' contribution to project objectives; see Table 1. Following Hannay *et al.* [11], this is done by assessing all users stories relatively to each other on one objective at a time. This ensures that assessment are done with respect to one metric at a time. It has become common to adopt the planning poker use of the Fibonacci sequence also for benefit points, but here we use the so-called *hundred-dollar test*, in which one distributes 100 points on the user stories to indicate their relative contributions. The sum for each user story indicates its relative benefit. The user stories that pertain to explaining and understanding the asking price has the most benefit points in this tentative assessment, and one might consider developing the service(s) needed for those user stories first. This assumes that the three objectives have equal worth with respect to the stipulated returns. Usually, objectives have different worth, which would then give rise to weighted sums in Table 1.

3.7 Planned Stakeholder Journeys – Revised

We then held a third workshop to get feedback on the planned journeys and to get more input as to what functionality should be offered at each touchpoint. This resulted in revised planned stakeholder journeys as shown in Fig. 6.

The value of automatically generating the sales prospect was now seen as negligible, so the user story for that is removed. Further, the importance of using SPT services early for the estate agent to attract customers was now seen as questionable and more of a disturbance to their regular ways of recruiting clients. Hence, the two customer relations touchpoints for the estate agent are omitted.

Instead, emphasis was put on the value of facts-based expectations management of sellers and buyers. The crucial touchpoint for agents to introduce SPT to the process was thus moved to when the technical conditions report is ready, whereupon the estate agent can go into dialogue with the seller and potential buyers to justify the asking price and answer questions regarding the property with a basis on a property score relative to similar properties.

The property scoring service was therefore seen as more to the point, and was perceived to cover the needs in a wider range of touchpoints. In particular, the user story Calibrate seller is reformulated in terms of this service:

> Calibrate seller (revised): As an estate agent, I can provide a rational base line for sales price expectations early by using the SPT property scoring service to explain how the property compares to other relevant properties, based on the seller's self declaration.

> Plan prepping and styling (revised): As a seller of a property, I can get a personalised to-do list by using the SPT property scoring service to understand what can be gained by prepping and styling my property, based on comparisons with other relevant properties.

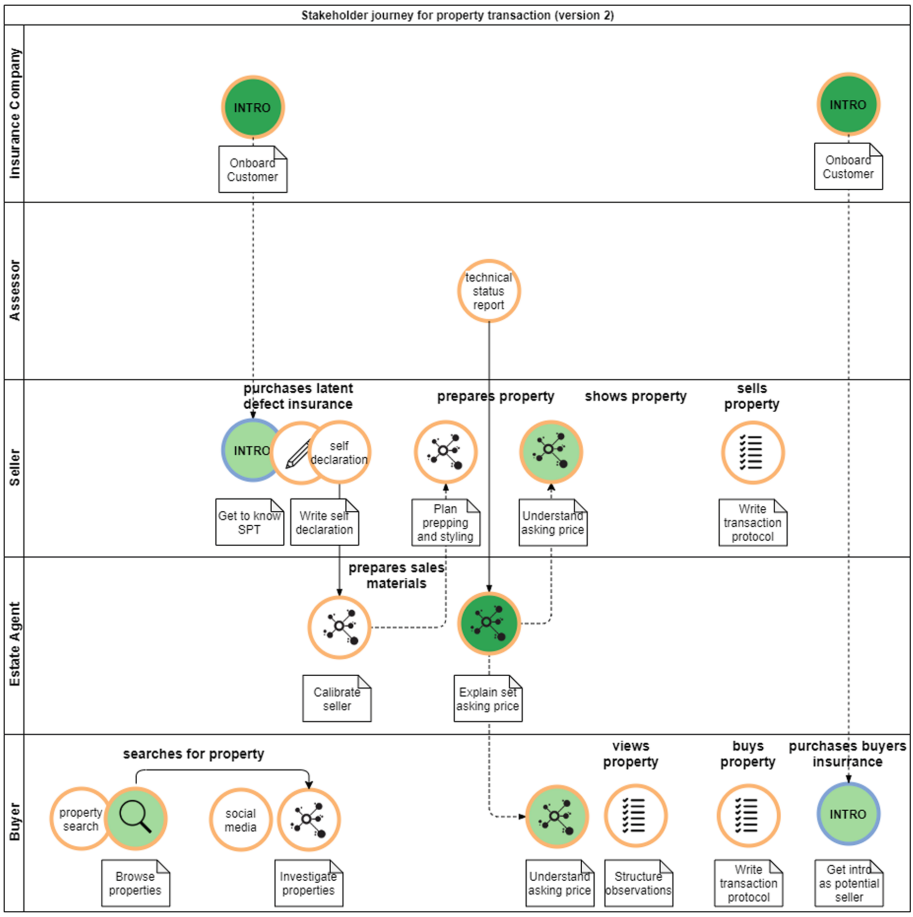

Fig. 6. Planned stakeholder journeys – Revised version

In fact, as more insight is gained on these journeys via walk-throughs and discussions, the required diversity and number of services seems to diminish, in line with the remark earlier that one need look for solutions to only a narrow set of problems. It is not unlikely that the SPT property scoring service might turn out to cover the demands in most of the touchpoints.

In the first version of the stakeholder journeys, the universal accessibility issues were not addressed through the SPT property scoring service. One question that arises with the increased focus on this service, is therefor whether universal accessibility factors somehow can be included, for example in the basis for calculating the property score.

In line with incremental development, the SPT property scoring service will be refined according to the above analyses and released in a bare-bones version as a *minimal viable product* [3,15]. This will enable the first increment of eliciting actual stakeholder journeys. We will then analyse deviations from planned journeys in terms of touchpoints and service content.

4 Final Remarks

Our extended customer framework, the stakeholder journey framework, retains the simplicity of the original framework by design. Empirically, the possibility to express dependencies between stakeholder touchpoints revealed issues with the proposed services that would likely not have been addressed using the original framework. The explicit technology adopter roles helped the startup to localise and prioritise the functionality that is key to getting traction in the market.

Our extended methodology for eliciting planned stakeholder journeys employs practices from agile benefits-driven development, with explicit business objectives. The focus on universal accessibility during the process uncovered particular challenges that must be addressed to ensure that the innovations will be useful to the widest possible audiences.

Current customer journey methodology promotes a strong visual component in both elicitation and representation. Although highly beneficial for brainstorming and rapid summarising, we found that textual summaries in terms of user stories and journey narratives clarified the journeys and uncovered inconsistencies in touchpoints, services and journeys as perceived (perhaps superficially) at the diagrammatic level.

We conclude tentatively that the stakeholder journey framework, with a more elaborative planned journey elicitation phase, is beneficial for analysing innovation needs and requirements.

Further work on the stakeholder journey framework will focus on expressing and resolving conflicting interests, as expressed in objectives. Moreover, work is in progress on expressing and resolving points where journeys may break; both in terms of universal accessibility and in terms of technology adoption. We hold that universal accessibility represents a "stress test" for whether services and touchpoints provide coherent and continuous journeys, rather than a heap of discontinuous functionality. For technology adoption, a single point of disappointment may kill an innovation's chance of getting admitted into an existing process.

We also emphasise universal accessibility of the framework itself. For example, for the visually impaired, stories and narratives are essential for complementing purely visual elements. We shall also optimise the symbolism in terms of form and colour.

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