

Report

Social software for co-creation in Living Labs: Solutions and experiences

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ABSTRACT

In this report we summarize the results from our work on requirements and design of social software for co-creation in Living Labs, conducted within the SocialLL project. The intended readership of the report is practitioners and researchers working with user involvement in innovation processes.

First, we present different types of social software designed to support user involvement and co-creation at different phases of the innovation process. In particular, we go into detail on a social software solutions developed within the SocialLL project to support user feedback on design.

Second, we present our experiences and lessons learnt from using this social software in cases of user involvement in innovation. Our experiences are based on the results from the user involvement, as well as post factum reports from clients and participants. In particular, we discuss challenges and findings concerning participant interaction.

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1 Introduction

The Living Lab approach is a novel way of involving users in innovation and development processes (Schumacher & Niitamo, 2008). In Living Labs users are involved in the context of their everyday life to contribute in context research, discovery, co-creation, evaluation, or testing (Følstad, 2008). The Living Lab approach to user innovation has recently received much interest; the European Network of Living Labs now lists more than three hundred Living Labs (www.openlivinglabs.eu).

An emerging trend within European Living Labs, is to engage users and user communities in co-creation, that is, "collaborative activities between end-users and other stakeholders in an innovation and development process" (Følstad, Ebbesson, Hammer-Jakobsen & Bergvall-Kåreborn, 2011). Living Lab researchers use a wide range of methods for user involvement in general, and co-creation in particular, as for example is seen by the methods presented in the Living Lab toolbox (www.lltoolbox.eu), an online guide to Living Lab methods.

The bulk of the methods used by Living Lab researchers for user-involvement seem to require face-to-face access to users. Methods utilizing Internet applications and social software¹ for co-creation are remarkably absent in the field of Living Labs. We only know of a handful Living Labs, including the partners of the SocialLL project² (<http://sociall.origo.no>) and the Finnish Open Web Lab (Näkki & Antikainen, 2008), that systematically use social software for co-creation. This is surprising given the potential of the Internet as a platform for co-creation. In 2012, more than half (63%) of the population of Europe was online (www.internetworldstats.com) and nearly a third (30%) of the same population was present on Facebook (www.socialbakers.com). For North America, similar figures were 78% and 43%. Clearly, the Internet holds a great potential for accessing Living Lab user participants accustomed to provide input in an online social context.

This report summarizes results of the second of two research iterations in the SocialLL project on requirements and design of social software for co-creation in Living Labs. First, we present different types of social software designed to support user involvement and co-creation at different phases of the innovation process. In particular, we go into detail on a social software solutions developed within the SocialLL project to support user feedback on design. Second we present findings and lessons learnt from cases where this software has been used and studied.

2 Social software for user involvement in Living Labs

2.1 Which social software to choose?

Though social software is not much used for user involvement in the Living Lab field, there is a wide range of social software solutions available which may be used for this purpose. However, the multitude of social software solutions may make it challenging for the Living Lab practitioner to obtain an overview of existing tools and applications as well as the user involvement activities these may support.

To provide Living Lab practitioners with such an overview we established, in the first iteration of the SocialLL project, a framework for categorizing existing social software according to the cycles of the innovation process and the high level Living Lab activities which they may support. The framework is described in detail in a forthcoming book chapter (Følstad & Karahasanovic, in press), a preliminary version was presented at the e-Society 2012 conference (Følstad & Karahasanovic, 2012a).

¹ Social software is understood as "internet-based solutions supporting mutual sharing and open dialogue between users" (Følstad, Ebbesson, Hammer-Jakobsen, & Bergvall-Kåreborn, 2011).

² The SocialLL partners include SINTEF (RECORD online Living Lab), Halmstad University (Halmstad Living Lab), Copenhagen Living Lab, and Luleå University of Technology (Botnia Living Lab).

In this summary, we map social software to the different cycles of the FormIT innovation process. FormIT was formulated by Bergvall-Kåreborn, Holst, and Ståhlbröst (2009) as a Living Lab innovation process particularly tailored for user involvement. This innovation process consists of three basic cycles, *concept design*, *prototype design*, and *innovation design* (Ståhlbröst & Holst, 2012).

Social software supporting concept design (Cycle 1): Idea portals

In recent years there has been a growth in solutions allowing users to contribute ideas or suggestions in idea portals. Initially, such solutions were seen only for specific brands – such as Dell's IdeaStorm (<http://ideastorm.com>) and Starbuck's My Starbucks Idea (<http://mystarbucksidea.com>), both launched in 2007. Since then, customizable idea portals have been made available by UserVoice (<http://uservoice.com>), Get Satisfaction (<http://getsatisfaction.com>), and Induct software (<http://inductsoftware.com>), among others. These customizable idea portals are mainly promoted for involvement of brand or customer communities, in connection with a brand or enterprise web page, but may also be used for involvement of smaller groups of user representatives or stakeholders.

User participants in idea portals can usually read, comment on, and rate/vote for ideas that have been submitted – in addition to submitting ideas themselves. Though the ideas and comments contributed to idea portals often are openly accessible participants need to establish a profile and log on to comment or contribute ideas, which limits spam content. The idea portal administrator may update statuses on submitted ideas according to their status in the review and implementation process. An example screen shot from the UserVoice idea portal is provided in Figure 1.

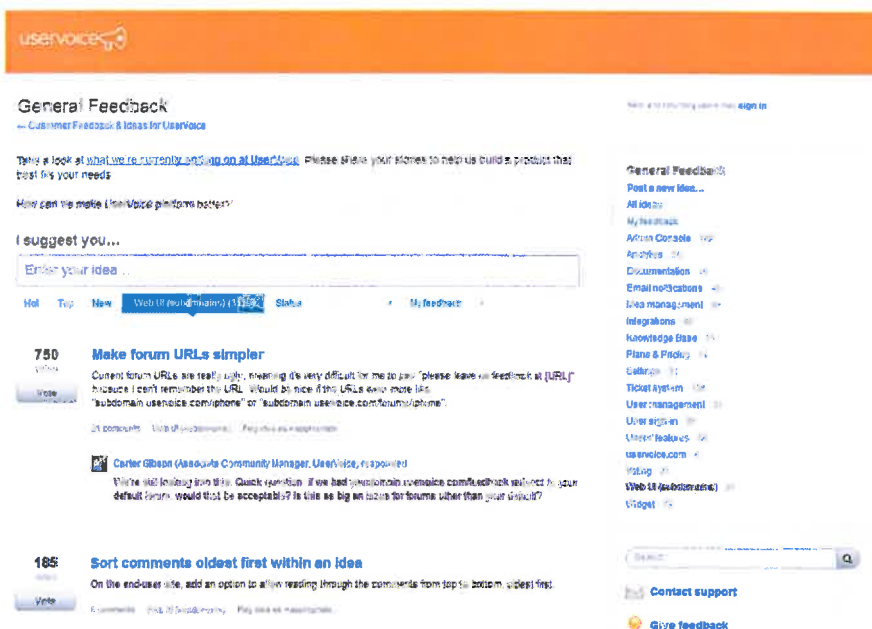


Figure 1: Example screen shot of UserVoice idea portal at <http://feedback.uservoice.com>

Idea portals may support concept design by involving users and stakeholders for idea generation and refinement. This may help the Living Lab administrators to a broader set of product or service ideas, increasing the range of opportunities identified in the ideation process. Furthermore, the Living Lab administrator may benefit from user discussions on strong and weak sides of the ideas, and get indications of their market.

Idea portals are often promoted as long term community engagement and support activities. However, from the perspective of the individual user participant, the involvement is likely to be short term, for example in

the case of a participant posting an idea and following its review and implementation. The interaction between the individual participant and the administrator will typically be limited.

Idea portals, such as those of UserVoice or Induct software, can also be set up for short term campaigns where users are invited to contribute to a defined innovation challenge across a relatively short time span. We believe that this use of innovation portals may be particularly useful for co-creation in Living Labs, as such co-creation processes may be associated with time-constrained project activities rather than long term community engagement.

Social software supporting prototype design (Cycle 2): Feedback on early visualizations

General purpose online discussion forums, social networks and blogs have been used to share and discuss prototypes with peer designers, users, or stakeholders for a long time. However, the last few years special purpose internet solutions have appeared allowing efficient gathering of feedback on early visualizations.

In these solutions, the designer may publish visualizations of a concept or a prototype related to a specific innovation or development project, and then invite development team members, users, or stakeholders to review and comment. One of the most prominent social software solutions for feedback on early visualizations is Notable (<http://notableapp>), but others exist such as Notebox (<http://noteboxapp.com>) and Cage (<http://cageapp.com>).

The starting point for the design feedback in these tools is a visual presentation of the object of evaluation. Participants are invited to add design feedback by locating a marker on the visual presentation and enter a comment associated with this marker. In some tools, such as Notable, replies to existing comments are presented in a thread together with the parent comment, for structured discussions on each separate design issue. Figure 2 shows an example screenshot from the Notable tool for review on early visualizations.

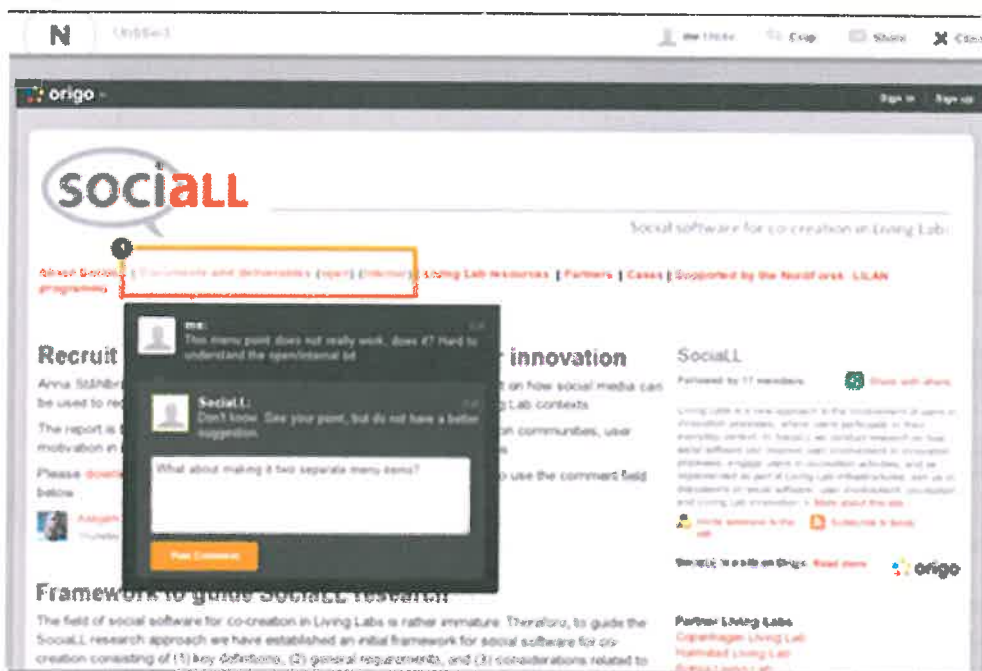


Figure 2: Example screenshot from the Notable tool for review on early visualizations; here used for feedback on a screen shot of the SocialLL webpage.

Social software for feedback on early visualizations may be useful in for Living Lab administrators to gather feedback from users and stakeholders in a prototype design process. User feedback may be useful to point

out weaknesses in the current concept and prototypes but, more importantly, user feedback can serve as constructive input in this highly creative part of the innovation process (Følstad & Knutsen, 2010).

Available social software for feedback on early visualizations is promoted as a way for designers to get feedback from their design team and their client. However, as users and other stakeholders often are sought to be integrated in Living Lab innovation teams, these solutions may also be used to gather feedback from smaller groups of users.

Social software supporting innovation design (Cycle 3): Feedback on running solutions

A range of solutions exist for gathering user feedback on running websites on the form of questionnaires or forms for user reports, such as Kampyle (<http://kampyle.com>) and Feedbackify (<http://feedbackify.com>). Such solutions, however, often do not include social functionality and consequently do not benefit from having users participating as a group to reflect and build on each other's contributions.

Several general purpose social software solutions, as well as social software solutions covering multiple cycles of the innovation process (see below), may be adapted to gather feedback on running websites. However, few special purpose solutions are found for this purpose. One of the few openly available solutions have been Critique the Site (<http://critiquethesite>), where participants provide feedback on running websites in adjacent discussion threads, where all comments are available to all participants at all times. This service may, however, have been discontinued.

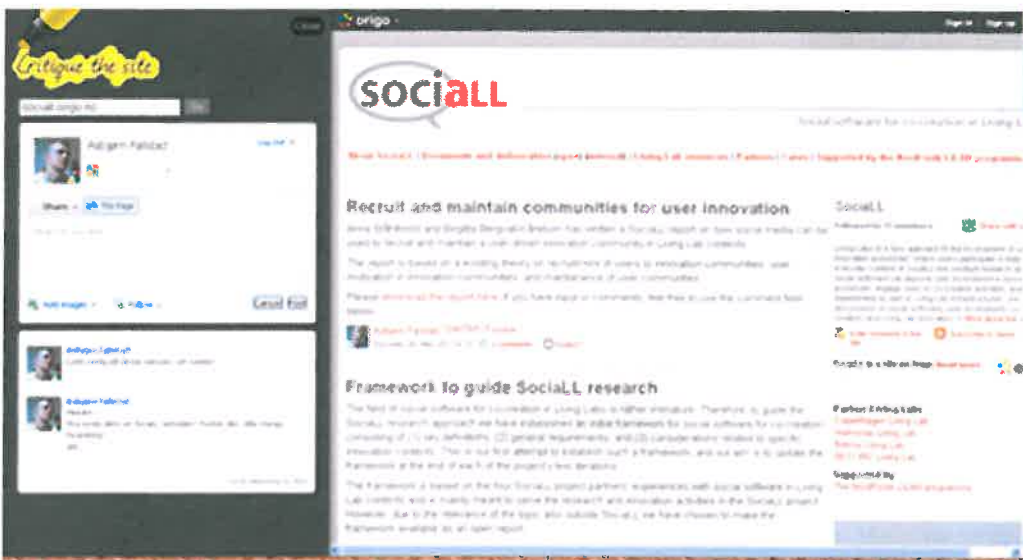


Figure 3: An example screen shot from the Critique the Site tool for feedback on running websites.

The design of Critique the Site, with a comment field and discussion thread in a panel adjacent to the evaluated website, resembles that of the RECORD online Living Lab (next page). However, the RECORD Living Lab includes functionality to allow it to be used also in other cycles of the innovation process.

Social software supporting multiple cycles of the innovation process

Each of the above social software types are found to be particularly useful for a specific part of the FormIT innovation process. However, some solutions also may be useful across multiple cycles of the innovation process. This may be beneficial from a participant, client and administrator point of view, as it is only necessary to relate to one solution. However, these more generic solutions do not provide equally targeted functionality for a given cycle as do the more specialized solutions presented above.

In particular, online content management systems with social functionality, may be adapted to support co-creation in Living Labs. Solution categories include blog platforms (such as WordPress), media platforms

(such as VIMP), discussion thread solutions (such as Disqus), wiki solutions (such as Wikispaces) and social network platforms (such as Ning).

Due to the flexibility of available social content management system, these may be used to involve users for customer research, needs finding, ideation, co-design, feedback, and evaluation. For example, Reyes and Finken (2012) presented a study where Facebook was used to involve users and designers for a three week co-creation process in early-phase concept-design. Well known examples of general purpose social content management systems applied for co-creation, though not related to the SocialLL project, include the social innovation idea generation initiatives of California state, using Twitter (<http://myidea4ca.com/>) and the Norwegian government, using a blog solution (<http://blogg.regjeringen.no/enkeltog greit/>); both of these were used for ideation.

Existing Living Labs using adapted general purpose social content management systems include the Finnish OWELA, built on a blog solution (<http://owela.vtt.fi>) and RECORD online Living Lab, build on a media content management system (<http://livinglab.origo.no>). Figure 4 shows an example screen shot from the RECORD online Living Lab, used in a Halmstad Living Lab case described in another SocialLL report. Halmstad Living Lab has previously used the content management platform Drupal for co-creation projects.

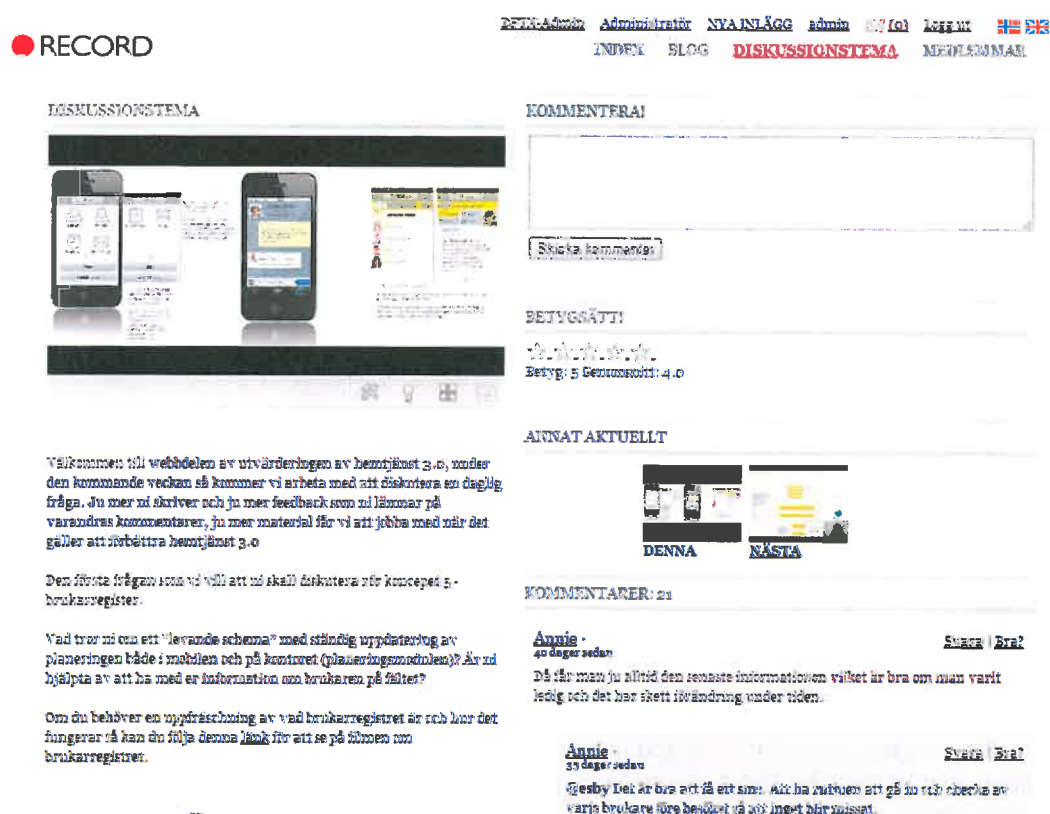


Figure 4: Example screen shot from RECORD online Living Lab

2.2 Requirements for tools supporting co-creation in Living Labs

In the SocialLL project we have previously suggested a set of requirements for tools supporting co-creation in Living Labs (Følstad et al., 2011, updated in Følstad & Karahasanovic, 2012b). The requirements, listed in Table 1, are given from the perspective of user participants, Living Lab administrators and Living Lab clients. Requirements 6 and 7 were refined following lessons learnt in the first iteration of SocialLL.

| Participant perspective | Administrator perspective | Client perspective |
|--|---|---|
| 1. Easy signup 2. Easy access 3. One point of entry 4. Clear communication of purpose 5. Shared areas for communication 6a. Easy to contribute 6b. Motivating to contribute suggestions rather than problems or positive feedback 7a. Clear presentation of other participants contributions 7b. Motivating to interact with others 8. Cross-platform | 9. Easy set-up and piloting of studies 10. Easy recruitment of relevant users 11. Easy user management 12. Easy real time overview of participant contributions 13. Easy participant follow-up 14. Editor rights 15. Easy real time analysis 16. Flexible export of data 17. Minimization of privacy issues 18. Flexible access control 19. Support for ethnographic analysis | 20. Varied degree of openness 21. Availability of data |

Table 1: Requirements for tools supporting co-creation in Living Labs. (see Følstad and Karahasanovic, 2012b for details).

The requirements are provided as background to the following presentation of the SocialLL contribution to solutions for co-creation in Living Labs.

2.3 The SocialLL contribution: Solutions for social design feedback

A key objective in SocialLL has been to design solutions for co-creation in Living Labs. To fulfil this objective, we have developed solutions to support *social design feedback*, that is, design feedback in online ad-hoc groups supported by social software. The solutions are designed to support short term user involvement in all three cycles of the FormIT innovation process, by facilitating feedback on ideas, concepts, prototypes, and running solutions.

As a starting point for this work, we have taken the online environment of the RECORD Living Lab which we have developed further during the two SocialLL project iterations. In the first project iteration we developed functionality to configure how the user contributions are presented in the online environment (corresponding to the requirement R7a), as well as functionality for tag-based analysis of user contributions (corresponding to R15). In the second SocialLL project iteration we have developed a new version of the online environment suited for smartphones and tablets (corresponding to R8) while also intended to be used from a desktop or laptop computer. For simplicity, we refer to the first iteration version of the online environment as *the online RECORD LL*, and the second iteration version *the mobile-enabled RECORD LL*.

In the following we will first give a brief presentation of key features in the online RECORD LL. This version of the environment is presented in more detail in the first iteration project report (Følstad & Karahasanovic, 2012b), but as this version was used in most of the cases presented later in this report we also provide a brief description in the current report. Second, we will present the mobile-enabled RECORD LL, developed in parallel with running the cases in the second SocialLL project iteration.

2.3.1 The online RECORD LL

The online RECORD LL is an environment for designers or developers to get feedback from users. The environment is a website with social functionality and a media content management system. The user participants provide feedback as free text comments or ratings in response to an idea, concept, prototype or final solution – presented as text, images, video, or functioning solutions. All free text feedback is made available to all participants in comment threads. The participants are encouraged to respond to each other's feedback to provide more in-depth feedback. Responses can be made as "likes" or comments. When comments are given on another participant's feedback, the other participant is notified by e-mail to support a collaborative process.

Participants may be invited from client customer registries or, in the case of Norwegian projects, from a national panel of users hosted by the market research company NorStat (<http://panel.no>). Upon registration, the participants are presented for one or more designs, and asked for feedback on one or more topics related to these.

The online RECORD LL also facilitates the presence of development team representatives and moderators whom may post thanks or follow-up questions. An example screen shot of the online RECORD LL is presented in Figure 5. For an online example case, see <http://i8.livinglab.info/mediadetails.php?key=d8c10ff212c1fee00ddf&title=Skisse+2>



Figure 5: Example screen shot from the online RECORD LL, in as study from 2010. (Concept by Theo Tveterås and Lars M. Vedeler, the Oslo School of Architecture and Design – AHO.)

2.3.2 The mobile-enabled RECORD LL

In the second SocialLL project iteration, we have developed the mobile-enabled RECORD LL. In this version of the RECORD LL participants may participate either through a browser or through a smartphone or tablet app. The following development and redesign have been done relative to the online RECORD LL:

- User interface layout redesigned for improved presentation on small screens
- Smartphone and tablet app developed; when using a smartphone or tablet, participants may choose between participating through the app or through their web-browser.

The mobile-enabled RECORD LL can be used both from a desktop computer or laptop, as well as a smartphone or tablet; when participating through a desktop computer or laptop the online environment may be accessed through the participants' web-browser only. The design of the online environment is the same across all devices, which provides consistency for participants accessing a study from different devices at different points of time in the study.

The Living Lab administrator can, for each particular study, set whether participants in this version of the RECORD LL can participate through their web-browser, the app, or both.

The mobile-enabled RECORD LL from a participant perspective

From a participant perspective, the functionality of the mobile-enabled RECORD LL can be grouped under three headings: (1) *signing up*, (2) *viewing feedback topics*, (3) *providing feedback and interacting with others*.

We first present the functionality for participation through a web-browser. Second, we present participation through the app.

Signing up

The sign-up process is designed to be fast and easy. The participants join a Living Lab study in four steps:

1. Receive an invitation in an e-mail, a post on a web site, or similar.
2. Read introduction web-page with a description of the study and the Living Lab privacy policy.
3. Input user name and e-mail address as profile information.
4. Input background data in a questionnaire (optional)

The participant is then signed in to the Living Lab study with a personal profile. The process is designed to allow for profile registration with as little input and interaction as possible. The minimum input needed is a user name and an e-mail address for subsequent notifications.

Figure 6 shows the sign-up page for studies allowing participation through a web-browser only.

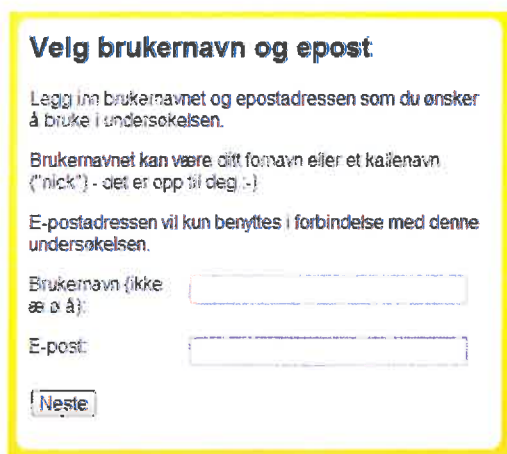


Figure 6: Sign-up page for participants in the mobile-enabled RECORD LL.

Viewing feedback topics

Immediately upon registration, the participant is presented for feedback topics. In the case of feedback on designs under development, the participant may be shown a visualization of an idea, concept or prototype and a brief introduction to the feedback topic including questions to guide the design feedback. The design

is presented to the participants on the same screen as the feedback is to be given in. The designs may be visualised as images or videos.

The mobile-enabled RECORD LL is currently not set up to present interactive prototypes, as the small screen of mobile devices may make it difficult to provide an acceptable presentation to the participants. However, as participation is possible in a mobile context, the feedback topics may also concern designs that are implemented in the everyday environment of the participants, for example new technology at the home, at the workplace, or outdoors.

In the only large-scale case we have run so far in the mobile-enabled RECORD LL, the feedback topics concerned users' perspectives on service provision in the future. The participants' feedback in this case was to serve as input in a foresight study, not a design process. Consequently, no designs were presented to the participants at all. Nonetheless, we got valuable experience on the use of the mobile-enabled RECORD LL.

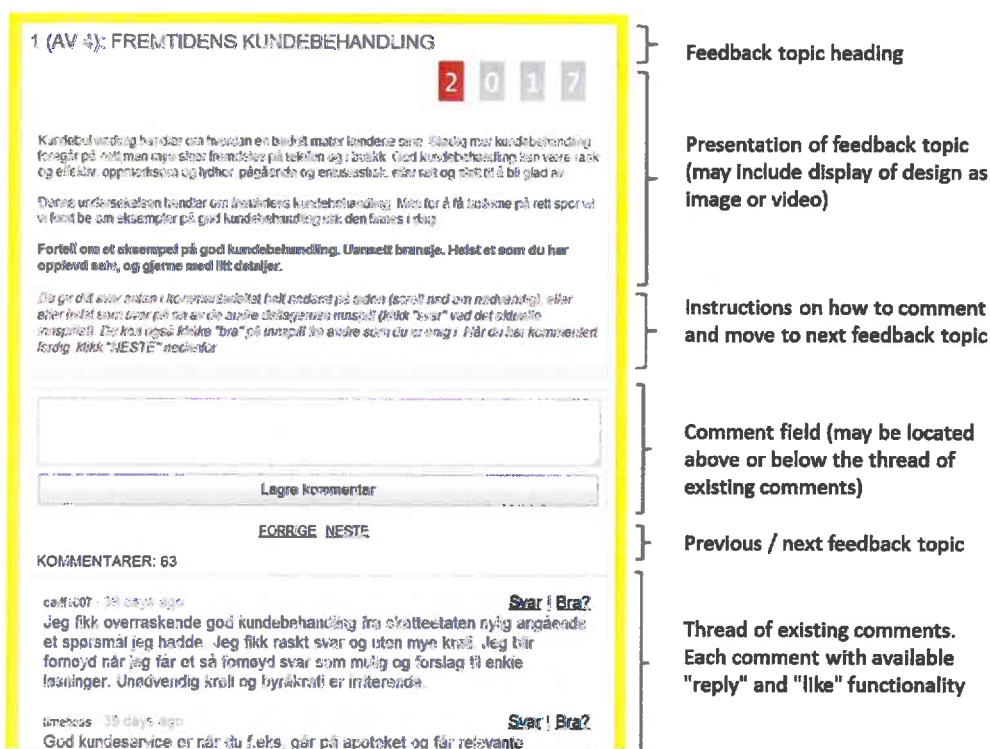


Figure 7: Example screen shot of feedback topic from a case run January 2013, using the mobile-enabled RECORD LL. To the right are explanations of the different onscreen elements.

Providing feedback and interacting with others

Participants may provide two kinds of feedback: Ratings and free text comments. The participants provide ratings as one to five stars (five is best). Only after making their own rating the participants are given information on the average rating for the design. The participants make their comments as free text in a dedicated field. Submitted comments are included in the adjacent discussion thread (see Figure 7).

Key to both the mobile-enabled and online RECORD LL is the participants' ability to interact with other participants, a moderator or representatives for the design team. This interaction is assumed to be valuable as it allows participants to build on each other's insights, as well as it allows for follow-up questions to get more detailed or nuanced insight from the individual participant.

A number of features are provided to drive such interaction (see Figure 7):

- The participants can see each other's comments in the adjacent discussion thread³
- The participants can “reply” directly on other participants comments
- The participants can “refer” to other participants by adding @ in front of their user name when writing the comment
- The participants can “like” other participants' comments

Since the communication in social design feedback is asynchronous, the interaction between the participants depends on the participants being notified when someone replies or refers to them. For this purpose, notification emails are sent to participants in the event that someone replies to one of their comment or refers to them. Notification emails include the comment that replies or refers to the participant, as well as a direct login link leading the participant to the correct discussion thread, logged in.

Participating through the smartphone and tablet app

Participants may choose to participate through a smartphone or tablet app. Currently, we have only developed this app for iOS (covering iPhone and iPad). The app is fully functioning, but not yet tried out in large scale studies.

Participation through the app is particularly beneficial if the participants are to participate in long-term studies and/or provide feedback on designs or other phenomena in their everyday environment. For long-term studies, the minor added effort required to install the app will be outweighed by the benefit of having a dedicated application through which the participants manage their participation. For studies where the participants are to provide feedback on designs or other phenomena in their everyday environment, it will be beneficial for the participants to have easy access to the online environment at the time when they actually experience the design or phenomenon in question. With an app, the mobile-enabled RECORD LL is immediately available through the home screen of the participants' smartphone or tablet.

Participants may be given the choice of participating through the app at the sign-up page. Upon registration, the participant is taken to the Apple App Store from where they download the app. Upon first use, the participant needs to enter the user name and password chosen at registration. For later access to the app, this is not needed.

When starting the app, the participant is presented with a start screen with a list of available feedback topics, the current topic being the most prominent. From the start screen, the participant may choose to go either to the current feedback topic or to one of the three most recent topics. Example screen shots of (a) an iPad home screen with the app icon, (b) the start screen with a list of feedback topics and (c) a feedback topic screen are presented in Figure 8.

³ In some studies it may be desirable not to allow the participants to see the others comments before making their own first comment to a particular thread. In particular, this may be relevant to avoid social biases in the responses. For such cases, there is a feature to hide the discussion thread until the participant has made an initial comment.

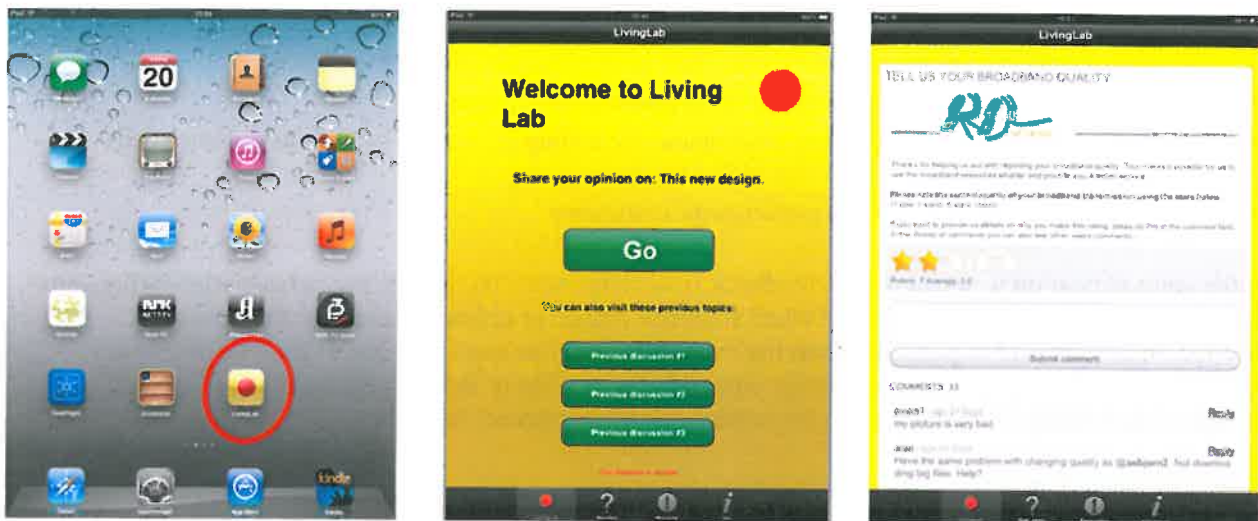


Figure 8: Example screen shots of the mobile-enabled RERORD LL app

When being part of long-term studies, the participant is notified on new feedback topics through push messages on the smartphone or tablet home screen. When clicking the push message or the notification symbol on the home screen app icon, the app is opened and the participant is taken directly to the app start screen.

Reviewing the requirements from a participant perspective

The mobile-enabled RECORD LL may be reviewed on basis of the requirements for tools for co-creation in Living Labs (Section 2.2). Satisfied requirements are presented in *italics* (R1, 2, 3, 5, 6a, 7a, 8).

Requirements not clearly satisfied are presented in **bold** (R4, R6b, R7b).

1. *Easy signup.* OK - the participant profile is generated upon the participant's submission of an e-mail address and a user name.
2. *Easy access.* OK – the participants get immediate access by a direct log-in link provided in notification e-mails.
3. *One point of entry.* OK – repeated entry by the same direct log-in link or by the same home screen icon in case of participation through the app.
4. **Clear communication of purpose.** Unclear – the communication of purpose depends on the introductory description. No support is provided for the design of introductory descriptions.
5. *Shared areas for communication.* OK – all communication related to a given discussion topic is conducted on one dedicated screen.
6. *Easy to contribute.* OK – contributions are made as free texts in a comment field and ratings.
- 6b. **Motivating to contribute suggestions rather than problems or positive feedback.** Unclear – participants having a moderator have been found to contribute more suggestions than if no moderator is present, but no support to increase the proportion of suggestions is provided apart from the opportunity to have a moderator present.
7. *Clear presentation of other participants' contributions.* Other participants' contributions are presented in an adjacent comment threads. To make sure that participants are aware of the other participants comments prior to making their own contribution, the comment field may be located below the comment thread.
- 7b. **Motivating to interact with others.** Unclear – functionality for interaction between participants is easily available. However, participant interaction has been challenging in some, but not all, second iteration cases.
8. *Cross-platform.* OK – the mobile-enabled RECORD LL is designed for use on smartphones and tablets as well as desktop/laptop computers.

The mobile-enabled RECORD LL from the administrator perspective

Key administrator functionality is presented below. We will not go into the same level of detailed on this functionality as we did for that of the user participants. Rather, we will present the functionality in association with the requirements from the Living Lab administrator perspective (see Section 2.2).

- *Set-up and piloting of studies (R9)*. Study set-up and piloting is simplified in the mobile-enabled RECORD LL compared to the online RECORD LL. Even so, special training will be necessary for setting up and piloting studies.
- *Recruitment of users (R10)*. Participant recruitment is conducted by using a third party market research panel. This implies that there is a direct cost on recruitment for each study, but the recruitment is easy.
- *User management (R11)*. A list of all participating users is provided in the admin section. Individual participants may be deleted from the study in case, for example, participants leave the study or behave improperly.
- *Overview of participant contributions (R12)*. Administrators use the same study interface as the participants, and thereby get adequate real time overview of participant contributions (cf. R7).
- *Participant follow-up (R13)*. Administrators use the same features for replying and referring to participants as the other participants. Furthermore, the mobile-enabled RECORD LL includes functionality for sending out notifications to participants to contribute to novel feedback topics in long-term studies.
- *Editor rights (R14)*. Administrators can delete participants' comments and modify their own comments in the admin section.
- *Easy real time analysis (R15)*. Tag-based functionality to support real-time analysis.
- *Data export (R16)*. All comments and ratings in the study may be exported as comma separated files, including data on associated discussion topic, location in discussion thread, and reply comments.
- *Minimization of privacy issues (R17)*. Privacy issues are prioritized in both the mobile-enabled and online RECORD LL. The only person data collected from the participants are e-mail addresses, which is done upon informed consent. Participant e-mails can be bulk deleted at the end of a study.
- *Flexible access control (R18)*. Anyone with a user profile can be given administrator or moderator rights, which is useful for example when involving clients as moderators.

Administrator requirements that were not supported in the version of the tool prior to SocialLL include:

- **Support for ethnographic analysis (R19)**. Not supported as such analyses are not assumed to be relevant for social design feedback in relatively short-term studies. Such analyses will rather be more important for long-term studies.

The mobile-enabled RECORD LL from the client perspective

The client is the recipient of the study results. As for the administrator perspective, we provide details on the mobile-enabled RECORD LL according to the client requirements to tools for co-creation in Living Labs (see Section 2.2).

- *Varied degree of openness (R20)* is supported by the login feature, and three degrees of openness exist:
 - Closed: Only invited participants are allowed to see the presented designs and feedback, and to give feedback.
 - Open for viewing: Only invited participants are allowed to give feedback, but anyone can see the designs and feedback.
 - Open: Anyone can give feedback (provided they establish a profile first).
- *Availability of data (R21)* is supported by the administrator data export feature described above (cf. R16).

3 Cases of social design feedback

In the second iteration of the SocialLL project we have run seven cases of social design feedback. Six of these were run in industrial contexts; one was a student case (Case 5). All but one of the cases were conducted in the online RECORD LL, one was conducted in the mobile-enabled RECORD LL (Case 7). In this chapter we will make an overall presentation of these cases to provide insight in the kind of results that can be expected in social design feedback studies.

- **Case 1-4** concerned new communication services and solutions for customer support for a Norwegian telecom provider. All cases were run for different teams in the organizations. This was seen as beneficial to obtain a good spread in the client experience data (see Chapter 4). The customer support solutions included manual customer support in shops and solutions for self-service through dial-up services, websites or smartphone apps.
- **Case 5** was a student case where the online RECORD LL was used to obtain user feedback on prototypes for self-service via smartphone apps. The clients in these cases were the students using the feedback to refine their prototypes.
- **Case 6** was set up to gather user feedback on early visual prototypes for a new intranet solution in a research organization (SINTEF). The client was the company internal owner of the intranet project, but also the external provider was involved in the case to use the feedback to improve the prototype.
- **Case 7** was conducted to collect user input in a future scenario process, meant to drive the development of novel solutions for customer service for three large Norwegian service providers. The client was an innovation project involving these service providers. This was the first large scale case in which we have used the mobile-enabled RECORD LL.

In each of the seven cases, 73-235 users participated. The users were recruited within the target group of the object of the study. Details on the study participants are provided in Table 2.

| Case | Object of user feedback | Participants | | Age - Mean (SD) | Gender - female |
|------|---|--------------|------------|-----------------|-----------------|
| | | Visiting | Commenting | | |
| 1 | Concept: Cross-channel self service customer support | 99 | 71 | 43 (16) | 37 % |
| 2 | Concept: New communication services | 92 | 56 | 47 (18) | 54 % |
| 3 | Concept: New approaches to cross-channel customer care | 112 | 52 | 45 (17) | 50 % |
| 4 | Concept: New approaches to phone-based customer support | 101 | 56 | 48 (17) | 51 % |
| 5 | Visual prototypes: Smartphone apps for customer support | 128 | 55 | 42 (17) | 50 % |
| 6 | Visual prototype: New intranet solution | 73 | 36 | 44 (12) | 33 % |
| 7 | User research: Customer needs in future customer care | 235 | 151 | 45 (15) | 51 % |

Table 2: Details on the participants in seven cases of social design feedback in the online RECORD LL

Each case included 2-7 discussion topics, and the participants contributed their feedback as comments to one or more discussion topics, as comments to other participants' comments, or as answers in responses to moderator follow-up questions. Participants could also contribute by supporting others' comments by clicking "like" for particular comments. Across the seven cases, 57% of the visiting participants left one or more comments. The remaining 43% only contributed "likes" or no feedback at all. See Table 3 for details on the participant comments. Motivations for commenting /non-commenting are analyzed in Chapter 4.

| Case | Feedback topics | Participant comments | Moderator comments | Positive / like | | Problem / dislike | | Change suggestions | |
|------|-----------------|----------------------|--------------------|-----------------|--------|-------------------|--------|--------------------|--------|
| | | | | Comments | Themes | Comments | Themes | Comments | Themes |
| 1 | 6 | 291 | 61 | 204 | 29 | 99 | 40 | 35 | 28 |
| 2 | 7 | 322 | 55 | 177 | 18 | 142 | 24 | 82 | 19 |
| 3 | 2 | 89 | 40 | 67 | 10 | 31 | 11 | 33 | 17 |
| 4 | 5 | 183 | 45 | 84 | 15 | 74 | 28 | 85 | 50 |
| 5 | 2 | 95 | 43 | 31 | 1 | 24 | 6 | 14 | 13 |
| 6 | 6 | 152 | 31 | 50 | 10 | 60 | 18 | 97 | 39 |
| 7 | 4 | 555 | 95 | NA | NA | NA | NA | NA | NA |

Table 3: Details on the participant comments in seven cases of social design feedback in the RECORD LL

The participant comments of Case 1-6 were coded in two passes. In the first pass, the comments were coded according to whether they included (a) positive feedback, (b) negative / problem-oriented feedback, or (c) change suggestions. In the second pass, the comments included in each high-level coding category were coded according to a thematic analysis, where themes were identified and the comments were coded according to these themes. Each comment could be coded as belonging to more than one coding category.

The participant comments in Case 7 were also coded in two passes. However, for this case a different coding scheme was developed as this case concerned user research, not feedback on a suggested design.

For most of the cases (except Case 5), positive feedback was most prominent (54% of the comments across all cases). However, a substantial proportion of the comments contained problems / dislikes (38%) or change suggestions (31%). Note that Følstad and Knutsen (2010) found that comments containing change suggestions were found to be more useful in the subsequent design process than problems or positive feedback. See Table 4 for example themes and comments

| High-level code | Theme | Example comments |
|-------------------|---|---|
| Positive / Like | The design supports easy access to notifications, tasks, and projects | [...] I also liked the personal notifications about, for example, time sheet registration, provided that these are not used for messages where a responses is required |
| | The design is perceived as aesthetically appealing / orderly | My first thought is that the front page looks clean, neat, and user friendly. |
| Problem / Dislike | The design may make it difficult to find general information | [...] What makes me worried is that I recognize the 'tools and services' menu item from the existing intranet and fear that the new intranet will inherit the structure of the current intranet where it is very difficult to find the general information I am looking for [...] |
| | Too much screen space is used in the design for news and personal information | [...] concerning 'my personal stuff,' I usually know where to find this. The visualization suggests that several systems, such as time sheet registration, should be accessed through the intranet. This is ok, but it should not take up this much screen space [...] |
| Change suggestion | Provide short-cuts to useful information and services | I like the front page but miss easy access short-cuts to useful services. This should be easy to find and located towards the top of the front page [...] |
| | Include default suggestion for personally configurable tool list | [Short-cuts to time sheet registration, travel expenses etc. is ok and should be 100% flexible, however with a standard set-up. In this standard set-up I would say that project leader tools are important [...] |

Table 4: Example themes and comments from Case 6 (visual prototype for a new intranet)

The contributions of the user participants were moderated by one or two researchers posting follow-up questions and comments expressing gratitude to individuals contributing relevant user feedback. The moderators made three kinds of comments: (a) praise / thank for good comments, (b) enquiry for more detail, and (c) requests to others to offer their opinion in response to potentially controversial themes.

| Moderator comment type | Example moderator comment |
|---|---|
| Praise / thank you | Thanks for your good feedback. Useful to get to know that you do not find this menu item self explanatory. It should be easy to find your way around the Intranet. |
| Enquiry for more detail | Thanks for your feedback. [...] you mention that the place 'most read right now' can be used for something more important. What do you think this should be, what is it important that get a prominent location in the new intranet? |
| Request others to offer their viewpoint | Thank you for detailed and useful feedback. The problem you mention between the two systems may be critical, and it is important that we get a reasonable sharing of responsibilities between these. @anonymousteammember , could you maybe add a comment here? |

Table 5: Example moderator comments from Case 6 (visual prototype for a new intranet)

In all the cases, the clients participated as observers. In Case 6 the clients also participated actively with responses and follow-up questions to participant comments.

4 The participant and client experience

During the first and second iteration of the SocialL project, we have collected data on how user participants and clients experience the social design feedback studies of the RECORD online LL. The experience of user participants is important as this will help us knowing more about their motivation and how we may change our social design feedback approach to better fit the participants' needs and wants. Data on the experience of the clients (the recipients of the Living Lab results) provides insight in the value of this kind of studies and possible changes to the social design feedback approach. In the following, we first present data from user participant surveys. Then we present data from client interviews.

4.1 The participant perspective

We have gathered data on the participants' experiences in three cases, one in the first project iteration (concerning a new web-TV solution for a Norwegian broadcaster) and two in the second project iteration (Case 1 and 2). The data was collected in a follow-up questionnaire distributed 1-3 weeks after the end of the main data collection in each case. 320 participants across the three cases responded to the questionnaire.

The participants responded to five free text questions concerning the following three topics:

- Reasons for making comments / not making comments
- Experiences on interacting with other participants and study moderators
- Experiences concerning the study set-up / the social software

The participants were also asked set-response questions concerning: (a) Perceived usefulness of interacting with the other participants and the study moderator, (b) the degree to which the participants found themselves to build on ideas or suggestions made by others, motivational factors of importance for their contribution in the study, (c) perceived usability of the online environment, (c) ICT competence, and (d) social media use. The quantitative data on perceived usability are treated in this section. The data on participant interaction are treated in Chapter 5. The remaining quantitative data are treated in the SocialL WP4 deliverable on participant motivation (Bertoni & Ståhlbröst, 2013).

Participant perspectives on commenting in social design feedback

We have already seen that 57% of the participants across all the cases in the second SocialLL iteration contributed one or more comments. However, also between those commenting, the number and thoroughness of comments varied greatly.

In this section we will go into depth on the participants' reasons for contributing or not contributing comments, as an analysis of the 294 free text responses to a question on their main reason for contributing / not contributing comments. See Table 6 for an overview of the reasons reported by the participants in the follow-up survey. Details on selected reasons are provided below.

| Reasons for high degree of commenting (n=163) | Freq. | Reasons for low degree of commenting (n=131) | Freq. |
|---|-------|---|-------|
| Contribute to the development | 50 | The participants' points made in others' comments | 27 |
| Express own opinion | 44 | Did not have anything to say | 24 |
| Engaging / relevant topic | 28 | Technical problem / user problem | 18 |
| Was asked for comments | 19 | Don't know | 12 |
| Interesting type of study | 5 | Did not have enough time / too time demanding | 11 |
| Economic reward | 3 | Not sufficiently engaging / relevant | 11 |
| Don't know | 3 | Did not see the need to comment | 9 |
| Other issues | 15 | Lack in competency on the feedback topics | 8 |
| | | Did not like others to see own comments | 3 |
| | | Other issues | 11 |

Table 6: Reasons for commenting / non-commenting reported by the participants.

Reasons for commenting

Participants reporting to contribute 3 or more comments were asked "What was the most important reason for you to contribute comments in this study?" 163 responded in free text to this question.

The most frequently reported reason was that the participants wanted to contribute to the development process (50 responses). This indicates that the use of social software in Living Labs can contribute to users seeing themselves as involved in a co-creation process. Noteworthy, the participants who stated a desire to contribute as their reason for commenting were significantly more prone to make change suggestions in their comments than other high-commenting participants (Independent samples t-test, $t=2,25$, $df=160$, $p(\text{twotailed})<0,05$). It may be a design challenge to make an even larger proportion of the participants understand the co-creative nature of Living Lab social software and make them to see themselves as contributors in a development process.

The second most reported reason for commenting was that the participants saw the study as an opportunity to express their own opinion (44 responses). These participants, however, had a tendency to make fewer suggestions in their comments than other high-commenting participants (Independent samples t-test, $t=-1,68$, $df=160$, $p(\text{twotailed})<0,1$). It may be important to design social software for co-creation so that it becomes clear to participants that their comments preferably should be made to contribute to the development process rather than just make their opinion heard, to increase the proportion of change suggestions in the comments.

Engaging and relevant topics was the third most reported reason for commenting (28 responses). This finding highlights the importance for Living Lab administrators to match user participants and feedback topics so that the topics are found relevant by the participants.

Reasons for not commenting

Participants reporting to contribute 0-2 comments were asked "What was the most important reason for you not to contribute more comments in this study?" 131 participants responded to this question.

The most prominent reason for not commenting (27 responses) was that others already had made the points the participant wished to make in previous comments. This is an interesting reason, as it indicates that a lack in the participants' understanding of the why a social online environment is used. Even though a point already has been made by one participant in a feedback topic it will, from a Living Lab administrator's point of view, be highly useful if others participants also elaborate this point - if only with an indication of their agreement and a reason for why they agree. As of today, it may be a design challenge to clearly show to participants that their voice is important even though they agree with what has already been said. However, it may be speculated that this challenge will be less prominent in future studies as the population of potential participants become ever more familiar with social software.

The third most reported reason for non-commenting, technical problems or usability issues (18), is also interesting as it highlights that usability is a critical factor when using social software for co-creation in Living Labs.

Only three respondents indicated that they did not like to comment for others to see, that is they did not like to participate in a social software. One of these three was highly negative due to privacy concerns. Even though only few respondents were negative to the social nature of the study, and the voiced privacy concern was unwarranted, these responses indicate the need for Living Lab administrators to clearly present the nature on the study as well as the study privacy policy before participant sign-up. However, such a presentation needs to be made brief and precise not to interfere with the requirement for easy sign-up.

Participant perspectives on the opportunity to interact with other participants and study moderators

Interaction between user participants and moderators are important to drive co-creation through social software. In particular, we assume that such interaction will increase the richness in the study data and thereby its usefulness in the design process. All participants were asked, in free text, to "provide a short description of your interaction with others in the study, or whether you experienced such interaction".

Furthermore, all participants were asked to report on rating scales "the degree to which you found it useful to interact with others in the study (for example by seeing their comments, answering their comments, or getting responses to your own comments)"; one rating scale for "other participants" and one for "the study moderator". The participants were also asked to report on a rating scale "the degree to which they built on others ideas or suggestions when making their comments". See Table 7 for an overview of the findings.

| Item | Low or very low degree | | Neutral | | High or very high degree | |
|--|------------------------|----------------------------------|------------------|----------------------------------|--------------------------|----------------------------------|
| | All (n = 273) | High- commenters (n = 153) | All (n = 265) | High- commenters (n = 152) | All (n = 279) | High- commenters (n = 160) |
| Useful to interact with other participants | 29 % | 18 % | 37 % | 37 % | 34 % | 45 % |
| Useful to interact with study moderator | 21 % | 10 % | 30 % | 30 % | 49 % | 60 % |
| Built on others' ideas or suggestions | 52 % | 47 % | 32 % | 30 % | 16 % | 23 % |

Table 7: Participant responses on the perceived usefulness of interacting with others in the study and the degree to which they built on others' ideas / suggestions.

We see that a substantial proportion of the participants found it useful to interact with others in the study. In particular, high-commenters (3 or more comments) were more prone to find such interaction useful.

Free text answers from participants who found it highly useful to interact with other participants ($n = 86$), provide some insight in the quality of interaction. Most of the participants commented on their liking of such interaction, or stated that they had some kind of interaction, without going into detail. However, for those that actually described their interaction in some detail, the most reported interaction type was to read others comments without responding (14 responses). But the participants also reported to build (12 reports), state agreement (8 reports) and state disagreement (8 reports) with other participants. Clearly, building, supporting, and discussing alike are co-creation activities that are appreciated by high-commenting participants, though reading comments to get inspiration or out of curiosity is likely to be the most common approach to interaction in these three cases.

Participants in particular reported it to be useful to interact with the study moderator (49% of all participants and 60% of the high-commenting participants). It may be speculated that the usefulness attributed to interactions with the study moderator is caused by such interaction being interpreted as a sign that the participants' contributions actually are attended to and may have some consequence. To further explore the benefit of moderator interaction, it could be interesting to implement "moderator likes" to participant comments, as a low-effort sign of appreciation.

Less than a fourth of the participants reported to build on others' ideas or suggestions to a high degree. Though the participants find it useful to interact with others, something that implies an appreciation for the co-creative nature of the study, most participants do not engage in full-fledged co-creation. This finding clearly implies a challenge for the use of social software for co-creation in Living Labs: How to motivate the participants' to build on each other's contributions to a greater degree? This challenge will be treated further in Chapters 5 and 6 where we discuss participant interaction and richness in contributions.

Participant perspectives on the study set-up and social software

We asked the participants three questions concerning their experiences of the study set-up and social software:

- *What was the most important problem you experienced when using the solution for providing feedback in [study name]?*
- *Which aspects of the solution you used for providing feedback worked well?*
- *Which changes in the solution used in [study name] would you suggest to make it better to use?*

Most of the participants responding to these questions reported that they had not experienced any problems. However, the answers still provide some insight in the good and problematic aspects of the study set-up and social software. See for an overview of the participant feedback.

| Worked well | Count | Problems | Count |
|---|-------|------------------------------------|-------|
| Solution in general worked well | 42 | Technical issues | 14 |
| Easy / fast commenting | 19 | Study time demanding | 7 |
| See others' comments | 17 | Confusing layout | 6 |
| Provide in-depth comments | 13 | Entering own comments | 4 |
| Get response on own comments | 8 | Repeated visits | 4 |
| Dialogue with other participants or moderator | 8 | Possible to see others' comments | 3 |
| The rating function | 7 | Unaccustomed to study type | 2 |
| Well structured layout | 6 | Possible to make erroneous ratings | 2 |
| Moderator role | 6 | Biased by others' comments | 2 |
| Design suggestions presented as images | 2 | Cumbersome commenting | 2 |

Table 8: Overview of the participants reports of the good and problematic aspects of the study set-up and social software

From a Living Lab administrator perspective it is reassuring to find that the participants to a much greater degree reported on strong aspects on the study set-up and social software than they did report problems. In particular, we judge it as positive that the commenting function is reported to be easy and fast to use, that it was easy to see others' comments, and that the participants appreciated the opportunity to provide in-depth comments. Furthermore, the perceived usability scores, measured by the System usability scale (Brooke, 1996), was on average above 70 indicating good usability (Bangor, Kortum & Miller, 2008)

The most frequently reported problem was technical issues, in particular that the study set-up did not support participation through smartphones or tablets well. This problem should now be handled by the mobile-enabled RECORD LL presented in Chapter 2.3.2. The second most frequently reported problem was the required time to participate in the study. For Living Lab administrators, it may be useful to look at ways to make it easier for participants to scale their participation - or to inform even more clearly on the time required to participate.

In response to the final free text question, the participants contributed 14 different suggestions for improving the study set-up or the design of the social software. The most relevant suggestions, as well as the associated responses from the RECORD LL administrator are presented in Table 9.

| Participant suggestions | RECORD LL administrator responses |
|--|---|
| Improved support for mobile platforms (suggested by 4) | Implemented in the mobile-enabled RECORD LL. |
| Possible to edit own contributions (suggested by 3) | In the mobile-enabled RECORD LL it has been made possible to update own ratings. However, due to a desire to avoid changes in the free text data set (which may be important for data analysis) free text comments currently cannot be updated. Possibly, one could consider allowing comment updates in a short period following commenting. |
| Make revisits of the Living Lab easy (suggested by 3) | E-mail receipts for sign-up contain a direct login link. Living Lab administrators to pilot the need to for such e-mail receipts on a study to study basis. |
| Clear communication of study time frame (suggested by 2) | Living Lab administrators to verify that the time frame for any study is clearly communicated. |
| Simpler language (suggested by 2) | Living Lab administrators to pilot studies for language quality. |
| Possible to enlarge comment field (suggested by 2) | To keep the user interface of the online environment as simple as possible, personalization of comment field size may not be relevant. However, the comment field is made larger in the mobile-enabled RECORD LL. |

Table 9: The participants' change suggestions and RECORD LL administrator responses.

4.2 The client perspective

Data on the clients' experiences were gathered in five cases, one in the first project iteration (concerning a new web-TV solution for a Norwegian broadcaster) and four in the second project iteration (Case 1, 2, 3, and 4). The data was collected in semi-structured interviews conducted after the closing of the case.

The interviews were structured according to a ten question interview guide. The topics of the interview questions are presented in Table 10. Below we go through the main findings from the interviews.

| Interview topics | |
|---|--|
| 1. Overall impression of the study | 6. Uses, or plans for using, the study results |
| 2. Perspectives on comments being visible to all participants | 7. Perspectives on the study duration |
| 3. Perspectives on the moderator role | 8. Perspectives on the opportunity to interact with participants |
| 4. Strengths of this type of study | 9. Change suggestions |
| 5. Weaknesses of this type of study | 10. Future plans for using this type of study |

Table 10: Interview topics in the client follow-up interviews

Perceived benefits

The clients reported a range of benefits for the online Living Lab approach to user involvement in innovation. The benefits were largely associated with early-phase user involvement, and concerned the findings as a useful basis for ideation and concept refinement, problem identification, validation, and getting improved insight in the user population. Furthermore, the clients appreciated the possibility to check in on the feedback as the study evolved, and made comparisons to other methods for user involvement.

Four of the clients considered this type of study to be particularly relevant for early phase user involvement. One of these also questioned whether the online Living Lab approach would be equally beneficial in later innovation phases.

I think this approach was great in the [early] project phase in which we were. As it is a typical innovation phase where we are looking at whether a concept works. But, of course, during product development and service development and testing of such, just as it starts getting mature, I see than we need more than this.

(Respondent 2)

Three reported the findings to be useful as basis for idea generation or as input in design processes, in particular the study was found useful for refinement of the concept or design. The user participants' feedback provided insight in strengths and weaknesses of the concepts, as well as served to open up the design space.

It has in a way served as an eye opener that one, we maybe have to be even more clear on what we want achieve with what we are developing. At least for my own part. That, we have to be even more precise.

(Respondent 3)

All five reported that the study served to identify problems. Either previously unknown problems or, as one of the clients reported, problems that were already known. Pointing out known problems may, however, also be beneficial as this may make it easier to prioritize fixing the problems.

There are quite a few things [problems] that, well, I know this so well but then it is so good to have someone else point it out again and again and again and like this. That is quite all right.

(Respondent 1)

The clients also mentioned concept validation as a benefit of the online Living Lab approach. In particular as the qualitative data provide some insight in the engagement the users communicate in response to the concepts. However, as mentioned by the clients, it should be noted that design feedback through the online RECORD LL is not a usability test, and that other methods will be more adequate for validation in later phases of the innovation process.

Getting increased insight in the needs and preferences of the user population was reported as a strength of the online Living Lab approach by three of the clients. It was also reported that such feedback could provide improved insight in how the customers perceived the service provider.

Get contact with reality, input on things we did not think of ourselves. And in a way, just really dialogue with those that we are making products and systems for. Get to know our users better.

(Respondent 3)

Three of the clients mentioned the possibility to check in on the user feedback throughout the data collection period as a strength of the online Living Lab approach, in particular as there usually is a quite a bit of excitement and curiosity associated with gathering of user feedback. Also, this allows the study findings to mature and support continued reflection.

[...] it is good to gradually build an overview of the responses and what you can do. As this starts thoughts right away when you see some answers. [...] Then you begin to see which direction this goes, and then. Because it is not as if the project stops even if the user study is to go on for a week.

(Respondent 3)

The clients all had experience with involving users in the innovation process, through methods such as usability testing, focus groups, and questionnaires. It was reported that in comparison with focus groups, the online Living Lab approach provided the participants greater anonymity while reducing the impact of dominant group participants. In comparison with questionnaire studies it allows the user to have a freer role, and also the opportunity to clarify issues throughout the data collection period. In comparison with usability testing the online Living Lab approach allows for earlier testing of ideas and concepts. It was noted as beneficial that the study, by using social software, was conducted on the user's own arena. Also the notion of relatively open-ended questions and the opportunity for all participants to see all responses was appreciated.

Perceived challenges

The clients also reported on a number of challenges concerning this approach to user involvement in innovation; in particular concerning the user participants, the moderator role, the analysis process, and fit with the company innovation process.

All of the clients accentuated the need for user participant comments to be rich and dialogue-oriented. Two of the clients expressed that they would like to see more interaction between the participants; in particular more discussions or exchange of opinion, as well as more instances of participants building on each other's ideas. As has been noted earlier, full-fledged participant interaction is a substantial challenge for this type of study, and this challenge will be discussed in depth in Chapters 5 and 6.

[For some feedback topics] the responses were insufficient and, that it, it was too little discussion, that it was too simple, and really, we saw that for some of them that it was, that it just was not, anything sensible to get out of it.

(Respondent 5)

Three of the clients reported in particular that it was useful with an external moderator. However, two of these also noted that it is important that the moderator has sufficient domain knowledge to post the right follow-up questions to the participants.

[I] was really uncertain concerning that role [as moderator]. Whether, whether I should be part of it, and if it was ok that it was handled by [an external], but in hindsight I see that it has been an advantage that [an external] has taken this in a way. But that, maybe, some times you need more insight to be able to provide better responses.

(Respondent 1)

Three of the clients noted challenges concerning analysis. Social design feedback in an online Living Lab generates a quite voluminous data set, which may contain several hundred participant comments. Analysis and reporting of the data in each of these cases was done in about a working day. However, without previous analysis experience, this process could be quite time consuming – indicating that the use of social media for co-creation require experience, also in the analysis phase. Furthermore, the output of the analysis process may not be as clear cut as it could be from for example a survey study with pre-set answer categories, as the interpretation process is more extensive.

It is a nice way to test early to see the lay of the land concerning the users. And it generates in a way discussions in the project team that would not have come automatically without the study. At the same time I think it is a bit challenging and because the results of the study do not say this or this, it may be difficult for the project team to handle the feedback.

(Respondent 3)

One of the clients also reported that this approach to user involvement may not fit the current innovation process, and that it may be difficult to accept critical feedback from the users.

It is a bit up to the project whether they want to use it [the study results]. They like quite a lot and the parts they do not like they do not want to consider. Or should you just use it as like, it is why I think that maybe it would have paid off if we had, or we had at least done this earlier because we then could have used it even more as input for ideas and idea development and concept development. Instead of the concept was being rather finished.

(Respondent 3)

Perspectives on needed resources

Three of the clients made note of the low resource requirement for running this type of study. On the Living Lab administrator side the resource requirements was between 30-60 hours depending on the case. On the client side, the resources spent while running the case was observing the participant feedback as it came in.

I was positively, extremely positively surprised of the result that came with the small effort I had to make to get it.

(Respondent 1)

At the same time, two of the clients reported that in their cases it could be quite effortful to establish concepts and feedback topics that actually work well in this kind of study. The ideas, concepts or prototypes presented to the users need to be self-explanatory as the participants need to be able to understand them as stand-alone presentations on a web page. Furthermore the feedback topics need to be designed so as to generate discussions and insightful feedback.

We were uncertain how to make this [concept] into a presentable format. [...] And this we spent quite a bit of time doing. And a lot of interaction with [the Living Lab administrator] and with our usability department and so on.

(Respondent 2)

The clients diverged somewhat concerning their opinion on the ideal client role. Three checked on the study regularly during data collection. Two of these chose actively to be observers only; one was uncertain whether it maybe would have been better to be more actively posting comments. Two of the clients only checked on the study a few times during data collection; one of these speculated on whether he would like to take on a more active role in future studies of the same kind by posting follow-up comments to the participants.

From my part it was somewhat conscious not to engage myself not to affect things in the wrong direction. [...] But then I saw that whenever something was posted, I monitored all the feedback threads.
(Respondent 2)

I was uncertain as to whether I should dare to engage myself too actively because I also thought about the results and so on But I could maybe have done this myself, that is I could have tried to be a moderator myself.
(Respondent 4)

Client suggestions for improvements of the study set-up and online environment

The clients made valuable suggestions for improvement of the study set-up and online environment, as well as the process of establishing and running the study.

Two of the clients suggested that the Living Lab administrators ought to be even more involved in the development of the concept to be evaluated, in order for this concept to be better suited for this type of study. Ideas, concepts, or prototypes that are presented for feedback in the online Living Lab need to be clear and intuitive, in order for the participants to understand what they are to provide feedback on.

Two of the clients had tried to use both open-ended feedback topics (how and why-type of questions) and closed feedback topics (yes/no-questions or questions of the type "which do you prefer?"). Their experience with this was that the open-ended feedback topics provided the most useful feedback. The Living Lab administrator should be clear on recommending open-ended feedback topics rather than closed topics, and help to rephrase closed topics into open ended topics.

One of the clients suggested to include a follow-up activity with particularly interesting respondents, for more in-depth data collection and co-creation. This is a highly interesting idea, to use an online Living Lab study as a place from which to recruit a few highly interesting participants into follow-up activities, possibly face-to-face rather than online.

5 The challenge of participant interaction

Participant interaction in the online Living Lab is assumed to be important in order to get rich feedback and support co-creation. In the first SocialL project iteration we started to work towards increasing participant interaction, by making changes in the layout in the online environment to make sure that all participants saw the comments of the other participants (Følstad & Karahasanovic, 2012b). However, at the end of the first project iteration the challenge remained partially unsolved.

In the second SocialL project iteration, we did in Case 1-4 try out the hypotheses that participant interaction can be increased by:

- *Information* on how and why the participants should interact with each other
- *Incentives* to interact

To our surprise, we did not find that participant interaction was increased much by these two factors. This is interpreted as an indication that other factors affect the participants' tendency to interact with each other. In Case 6 and 7, reported in Chapter 6, we may get some indications concerning the nature of such other factors. But before we get to these, we present the findings concerning *information* and *incentives*

The effect of information

In Case 1 and 4 we set up the study as a randomized experiment where half the participants were assigned to an *information* condition where they, between the first and second feedback topic were given extended information on why participant interaction is important and how the interaction functionality works. This

extended information is presented in Figure 9. The other half of the participants were given no such extended information, but just moved directly to the second feedback topic after finishing the first.

In Case 1, we found that participants in the *interaction* condition made significantly more mentions of other participants in their comments than in the *no-interaction* condition (Mann-Whitney U-test, $Z = -2,50$, $p < 0,05$), and that their comments received significantly more likes ($Z = -4,06$, $p < 0,01$). However, in Case 4 we found no such differences, neither for the participants' mentions of others in their comments ($Z = -0,68$, $p = 0,50$) nor for the number of likes received by the participants ($Z = -0,15$, $p = 0,90$). Thus, the effect of *information* seems to be relatively small and not stable across cases.

Remember that you can respond to the other participants

You have already noticed that this study is not like other studies. You can see and respond to others' comments.

It is very useful if you as a participant ask the other participants questions or tell that you like what the others say. Then it is easier to understand what is most important in the comments.

We therefore hope that you who have already responded to others continue doing this. And would like to invite you who have not tried this yet to try :-)

Best regards Asbjørn – responsible for the study

<< Neste >> Klikk: "Neste" for å starte Del 2

You respond to others like this:

Dag, 6 timer siden
Jeg synes denne måten å drive innledende linje på er nettopp at jeg liker å hjelpe meg selv. Men jeg er veldig på om de tre stegene som ble presentert vil løse problemet mitt.

Svar | Like

If you click "Reply" (Svar) here ...

Evan, 1 timer siden
Fag med ut Berlin. Forrige gang jeg hadde problem med mitt hushold hadde ikke de tre stegene hjulpet meg. Selv om så klart dette sikkert er et problem for mange.

Svar | Like

... then the answer you write appears below the comment you replied to

Dag, 7 timer siden
Selvfølgelig er helt klart fremtiden. I det hele tatt, telefon for å få meg til å snakke.

Svar | Like

You can also click "Like" (Bra) to comments that you find particularly good

Figure 9: Intermediary webpage presented to the participants in the *information* condition (translated from Norwegian).

The effect of incentives

In Case 2 and 3 we set up the study as a randomized experiment where half the participants were assigned to a condition where they, between the first and second feedback topic were given extended information on interaction as well as information that participant interaction was rewarded with increased chances to win in the participant lottery (10 gift cards of approx. 40 Euros). This incentive-oriented information is presented in Figure 10. The other half of the participants were only given extended information on interaction (as presented in Figure 9).

Respond to the other participants – increase your chances in the participant lottery

You have already noticed that this study is not like other studies. You can see and respond to others' comments.

It is very useful if you as a participant ask the other participants questions or tell that you like what the others say. Then it is easier to understand what is most important in the comments.

We therefore hope that you who have already responded to others continue doing this. And would like to invite you who have not tried this yet to try :-)

To make it even more motivating to respond to others, you get one additional ticket in the participant lottery for giftcards for each comment you provide in response to others.

Best regards Asbjørn – responsible for the study

   Klikk "Neste" for å starte Del 2

You respond to others like this:

Hei! Jeg har allerede
begynnet å skrive kommentarer til de andre deltakerne i studien, og det
er veldig nyttig for meg. Jeg liker å hjelpe meg selv, men jeg er usikker
på om de andre deltagere også blir presentert vil disse
problemene mitt.

 Svar

If you click "Reply" (Svar) here ...

Hei! Jeg har allerede
begynnet å skrive kommentarer til de andre deltakerne i studien, og det
er veldig nyttig for meg. Jeg liker å hjelpe meg selv, men jeg er usikker
på om de andre deltagere også blir presentert vil disse
problemene mitt.

 Like

... then the answer you write appear below the comment you replied to

Hei! Jeg har allerede
begynnet å skrive kommentarer til de andre deltakerne i studien, og det
er veldig nyttig for meg. Jeg liker å hjelpe meg selv, men jeg er usikker
på om de andre deltagere også blir presentert vil disse
problemene mitt.

 Like

You can also click "Like" (Bra) to comments that you find particularly good

Figure 10: Intermediary webpage presented to the participants in the *incentives* condition (translated from Norwegian).

In Case 2 and 3, we found no difference between the participants in the *incentives* condition and the *information* condition, neither for mentions of other participants in the comments (Case2: $Z = -0,68$, $p = 0,50$; Case 3: $Z = -0,17$, $p = 0,87$), nor the number of likes received for the comments (Case 2: $Z = -0,32$, $p = 0,71$; Case 3: $Z = -1,47$, $p = 0,14$). Thus, there seems to be no effect of adding incentives to the information on interaction. That is, incentives do not seem to affect the participants' tendency to interact with each other, at least not for such small incentives that were awarded in our study.

6 New hypotheses on participant interaction and richness in feedback

Two important challenges with social software for co-creation in the online Living Lab have been to get sufficiently rich feedback and to get the participants to engage in full-fledged interaction. In the first and second SocialLL project iteration, we have mainly focused on increasing participant interaction. In particular, we manipulated the layout of the online environment to make others' comments more visible to the participants (Følstad & Karahasanovic, 2012b). In the second iteration, we have included extended information to the participants on why and how to interact with other, as well as to motivate interaction through the use of incentives (Chapter 5). Though changes in layout as well as extended information were found to have some effect, the participants' interaction still was found to be less than satisfactory as, for example, seen in two of the client interviews reported in Chapter 4.2.

Fortunately, due to project internal resource reallocation, we were able to run two final cases in the SocialLL project focusing on participant interaction and richness in feedback: Case 6 and 7. As described in Chapter 3, Case 6 concerned user feedback on early visual prototypes for a new intranet solution in a research organization (SINTEF), and Case 7 concerned user input in a process to develop future scenarios for customer service for three large Norwegian service providers. In these two cases, we have observed substantial increases in participant interaction. Furthermore, we have also observed increases in the richness in the participant feedback.

In the following we will describe this increase, and then point out some aspects of these cases that we believe are possible causes of these beneficial increases. We cannot make general claims concerning these possible causes, as we have not tried their effect systematically. However, we present these as hypotheses for future research.

Case 6 and 7: Increase in participant interaction

In the online environment, participants may respond to another participant's comment by clicking "reply" for this particular comment. The reply is then included in a sub-thread immediately following the parent comment.

In previous cases, including Case 1-5 of the second project interaction, about 10% of the comments have been given as such replies, either to other participants or to the study moderator. This percentage was substantially increased in Case 6 and 7; in Case 6 as many as 33% of the comments were replies. See Table 11 for an overview.

Case 7: Increase in the richness of the participant feedback

The richness in participant feedback concerns the level of detail provided in the participants' comments. It is difficult to measure such richness as this would require us to detail not only the number of themes treated by the participants in their comments, but also the level of detail of which each separate team was treated.

However, a simple approximation to a "richness measure" is to measure the length of the participant comments. This clearly is a crude approximation, as lengthy comments not necessarily are richer in detail than shorter comments. Even so, given that we do not specifically ask the participants to write as lengthy as possible, comment length may be argued to be indicative of feedback richness.

In the previous cases, including Case 1-5 of the second project interaction, the average participant comment was between 127 and 202 characters in length. In Case 6, average comment length was about equal to the highest average comment length in the preceding cases. And in Case 7, the average comment length was more than 50% longer than this. See Table 11 for an overview.

| Case | Participant comments | Replies | Avg. length |
|------|----------------------|---------|-------------|
| 1 | 291 | 9 % | 136 |
| 2 | 322 | 11 % | 127 |
| 3 | 89 | 7 % | 202 |
| 4 | 183 | 8 % | 147 |
| 5 | 152 | 7 % | 153 |
| 6 | 95 | 32 % | 197 |
| 7 | 555 | 18 % | 333 |

Table 11: Percentage of participant replies and average comment length in Case 1-7

6.1 Possible causes for the increases in participant interaction and feedback richness

Sense of community as possible cause for the increase in participant interaction

Case 6 was different from the previous cases in that the participants were invited to contribute feedback on a future intranet solution. This means that all participants were from the same organization. The participants were recruited, via a stratified sampling procedure, from all parts of a 2000 person organization.

Consequently, most of them did not know each other. Furthermore most participated with a nick-name, not their real name, so that even if some knew each other it would be difficult to identify each other in the study. Even so, we expected the participants in case 6 to feel a stronger sense of community than in the other cases because they knew the other participants were from the same work organization.

Affinity to debate as a possible cause for the increase in participant interaction

In Case 7 we tried out a different approach to increase participant interaction; we included only participants with an affinity for debate. As part of the recruitment process in this case, all potential participants were asked whether they agreed with the following: "I enjoy debating topics of current interest". Only participants

responding "agree" or "strongly agree" to this statement were included in the study. Quite possibly, this screening question may have had a beneficial effect on the participants' tendency to interact with each other.

Affinity to written communication as a possible cause for the increase in comment richness

In Case 7, we tried to increase the comment richness by including only participants with an affinity for written communication. As part of the recruitment process in this case, all potential participants were asked whether they agreed with the following: "I enjoy expressing myself in writing". Only participants responding "agree" or "strongly agree" to this statement were included in the study. We assume that this screening question had a beneficial effect on the comment length in this case.

It is likely that the participants of Case 6 had a higher affinity to written communication than the typical participants of the previous cases. The vast majority of the participants in this case were academic researchers, and consequently having written communication as a key part of their everyday work.

Personal engagement as a possible cause for comment richness

In Case 6 we expected the participants to have a strong sense of personal engagement, as the object of feedback could be one of their key future work tools. In Case 7, we did not expect the same sense of personal engagement in the participants, as the recruitment for the study was done from a nation-wide market research panel without reference to any brand or community. However, in this case we included a personal task as the first feedback topic, that is, to contribute a personal experience of good customer service. Possibly, this introductory task may have had some effect on the participants' sense of personal engagement.

6.2 Hypotheses for future work

On basis of the possible reasons for the Case 6 and 7 increases in participant interaction and comment richness, we explicate four hypotheses as basis for future research to further explore these issues. Again, it should be noted that the hypotheses should not be seen as verified knowledge, rather as our current best explanation for the observed findings in Case 6 and 7.

- H1. *Participant interaction in social software for co-creation may be increased by increasing the participants' sense of community.* Sense of community may be increased by making the participants aware of a common belonging to an organization, brand community, or common interest.
- H2. *Participant interaction in social software for co-creation may be increased by selecting participants with an affinity to debate.* Relevant selection criteria may include the participants' self reported affinity to debate as well as historical data in cases where participants are invited to follow-up studies.
- H3. *Feedback richness in social software for co-creation may be increased by selecting participants with an affinity to written communication.* Relevant selection criteria may include the participants' self-reported affinity to written communication, historical data in cases where participants are invited to follow-up studies, or by including an introductory free-text question and using response length as selection criterion.
- H4. *Feedback richness in social software for co-creation may be increased by increasing the participants' personal engagement.* The level of engagement may depend on whether one is able to recruit participants with a perceived need for the innovation or design under development or, possibly, by engaging the participants in a personally oriented introductory task.

7 Lessons learnt and future work

The SocialLL work on requirements and design of social software for co-creation in Living Labs has generated valuable findings and lessons learnt. We have mapped relevant social software types to the cycles of the FormIT innovation process. Furthermore, we have established a set of requirements for such social software, and used these for assessing two Living Lab online environments for social design feedback. Finally, we have studied how social software may be designed to serve the purpose of social design feedback in nine Living Lab cases involving a total of about 1300 user participants across the two project iterations.

Our key experiences from studying social software for co-creation in Living Labs in this second iteration of the SocialLL project may be summarized as seven lessons learnt:

1. An online environment with a limited set of social functionality may be beneficial to gather user feedback on ideas, concepts and early prototypes. The online RECORD LL received an average system usability score of about 70, which is good.
2. Most participants entering the social design feedback studies, following a systematic recruitment process, provided one or more comments. However, when planning recruitment it is necessary to plan for a substantial fall-out (43% fall-out across the seven cases studied in the second iteration)
3. Typical participant comment length seems to be in the area of 150-200 characters. Interaction between participants is assumed to be important to get sufficiently rich feedback.
4. Participants are mainly motivated by (a) a desire to contribute to the ongoing development process and (b) by the opportunity to state their opinion. However, participants motivated by a desire to contribute seem to provide more useful design feedback. Engaging and relevant topics is also important for participant motivation.
5. About one-third of the participants find it useful to interact with other participants, and about half find it useful to interact with a study moderator. However, only a small proportion of the participants actually build on other's ideas or suggestions. Increasing participant interaction is still a major challenge in the use of social software for co-creation in Living Labs.
6. The use of social software for design feedback was perceived as beneficial by the clients. In particular social design feedback is seen as a valuable approach to early-phase user involvement in innovation.
7. The design of the social software to some degree affects the participants' tendency to interact with each other. In particular, it may be beneficial to make clear and repeated explanations of how and why participant interaction is important. However, it may be that participant interaction and feedback richness is even more determined by the nature of the case, participant recruitment, and the tasks given to the participants rather than the details in the design. Hypotheses for such determinants were established on background of the two last cases in the second SocialLL project iteration.

Important future work includes pursuing the study of participant interaction and feedback richness on the basis of the hypotheses established above. In particular, it will be relevant to include more cases of social software for co-creation in the internal context of an organization or enterprise. Furthermore, future work is needed to look more in depth on the interplay between the design of social software for co-creation and other aspects of a Living Lab study such as participant recruitment and co-creation tasks.

We hope that this report may serve to motivate a growing interest in how social software should be designed and used for co-creation in Living Labs, so that social software can mature as an integrated part of Living Lab work across the European Living Labs.

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