An experiment in online AT open innovation

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Abstract.

Objective To initiate an experiment to see if an online tool can facilitate creation of new Assistive Technology (AT) through open innovation that engages the public (primarily end users and carers), prescribers, innovators and manufacturers. The final results and conclusions of the funded project which focus on AT relevant to access and use of Information Technology will be included in the poster.

Main content The REALISE project has created a prototype online platform. Open innovation is not widely employed in AT and so the approach in the platform assumes AT community members will explore the use of open innovation. The platform thus needs: information (definitions, guidance, and discussion of motivations of stakeholders), inclusive human computer interfacing, and open innovation process tools. Additionally, while good communication will be fundamentally important there are several other functional broad dimensions, ergonomic, language, educating and external connections/interaction. Solutions addressing these dimensions have to suit and excite the people expected to form the community otherwise user engagement is likely to be poor.

Results The platform website design and functioning is summarized, showing the open innovation framework employed (i.e. idea, incubator and project) and the use of an open community based solution as a market place for open source assistive technology engagement. The project's one year duration allowed for only one prototype to be developed and explored, so design decisions were made largely based on drawing parallels from other contexts and adhoc consultations with stakeholders. As in change management strategies, a bias to involve those who understood and were keen to try REALISE was employed, hoping that these people could then become advocates for open innovation in general and REALISE specifically. Networking to key external organisations was used both for promotion and engagement in the study.

Conclusion Designing any completely new service where a significant number of the potential users are not usually involved in the processes is challenging. The need for open innovation novices to gain access to support is seen as essential. Due to the project constraints a more participatory involvement of stakeholders and exploration of alternative strategies was not possible. Nevertheless new knowledge was gained about the use of open innovation in the field of AT.

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Introduction

Online tools tend to be thought of as 'utilities' that should be helpful to those working with computers and on the Internet, with web pages that include various forms of interactive communication. They are rarely thought of as a way to encourage and enhance open innovation in the field of assistive technology (AT). In this case AT is "any product or service designed to enable independence for disabled and older people".[1] There are tools that bring information and guidance together in public health such as those offered by the National Institute for Health and Clinical Excellence (NICE) who have a series of 'NICE Pathways' [2] for health and social care professionals, there are databases that offer AT products from the field of telecare, telehealth and ICT, both in the UK and Europe such as the European Assistive Technology Information Network (EASTIN) database [3]. There are also tools that aid accessibility and provide assistance when using webpages such as browser plug-ins that provide magnification, colour changes and text to speech for example ATbar [4] or interfaces for easy access to mulitmedia such as MAAVIS [5]. But there appear to be no AT specific online tools with guides and interactive components that might encourage the exploration of open innovation for AT products.

Various agencies and organizations have set up online tools such as blogs and wikis offering general business advice about 'open innovation' such as 'The Open Innovation Portal'[6]. The latter (and most advocates) are attempting to achieve near 100% openness. However, it should be noted that some 'state' online information propose something that could be distinctly less open, e.g. what is described on the Open Innovation EU website (where the author cites the work of Chesbrough[7]) suggests a process of "combining internal and external ideas as well as internal and external paths to market to advance the development of new technologies"[8] Thus not necesarily sharing the ideas.

Companies such as 100%Open offer advice about this 'advancement' of ideas and have freely available examples of good practice and sample projects that have succeeded in innovating in an open way. Nevertheless, even with a name like theirs, they ask, 'How open are we, and how open should we be?'[9] If you had discovered a simple way of automatically adding appropriate descriptions (for those who are blind) to all pictures seen on the web, would you want to share this idea at the outset so that others could collaborate? Or would you wish to keep the idea behind closed doors (closed innovation) and hope that you could market it at a later date with all the profits coming your way?

Questions such as these have been debated by the REALISE [10] team members whilst co-designing an online tool that is designed to see whether AT ideas can come to market more successfully if they are opened up for all to support?

1. Approach

1.1. Background

The REALISE project has been funded under the 'Open Innovation and Access to Resources' projects within the UK Joint Information Services Committee (JISC) Business Community Engagement programme. It is about learning how to engage with

a wider community around a particular sector or market 'to deliver services which benefit the economy and society'[11]. REALISE is an acronym for 'REfining And Learning from on-line tools for Internet Shared Enterprise' and involved iterations around the design and development of an online marketplace for open innovation and open source AT engagement.

Assistive technologies have often begun solving a problem for a single user, the resulting product sometimes gaining international recognition. The growth of Toby Churchill Ltd, developing its unique 'Lightwriter' keyboard with text and speech output for those with mobility and dexterity difficulties is just such an example.[12] However, not all AT products are as successful with a community willing to feedback ideas and comments that can enhance future development of the product, enabling sustainability and a successful market share.

It was questions around community building, sustainability and the business side of open innovation that led to collaboration with OSS Watch[13] and others in the world of open source software development to research elements that made up a successful transition of an idea to a project useful to those in the AT world.

1.2. Initial Design Decisions

At the outset of the project it was hoped that it might be possible to adapt a market place already used for the development of AT ideas in products to suit the concept of open innovation. The AT Innovation Broker (ATIB) [14] had been developed by a team based in Sheffield around open or closed innovation ideas for mainly medical hardware devices and it appeared the ideal starting point. However, while the knowledge of AT stakeholder desires and motivations regarding AT innovation was useful, the database design was closed to members and had yet to be published. So, copyright and intellectual property rights introduced the kinds of barriers that open innovation tries to overcome. It was also reported to Realise that the features of ATIB that addressed closed innovation needs were unnecessary. It was at this stage that it was also felt (due to project limitations) that software not hardware should be the initial innovation focus. Collaboration with ATIB was felt to still be a possibility, once the team's understanding of open innovation and open source development had matured.

Another option explored was to join an organization such as the Mozilla Drumbeat [15] project advertised as "Drumbeat is a global community of innovators like you, building a more awesome web and world. Connect with others. Find projects that need your help. Or share your own." There however, appeared to be a lack of any categories that would help users find what had already been developed as open source AT. At the time of writing, there was no way of browsing for particular types of products or projects; there were only 'featured', 'popular' and 'new' project categories. It could be debated, as Ross Gardler from OSS Watch commented, that by working with the Mozilla community and "expending time adding features to Drumbeat, rather than building a new, largely duplicate, tool in isolation [the outcome] would have resulted in both a more functional software facility, a higher profile hosted service and a worldwide community of hundreds of thousands. OSS Watch advice with respect to building collaborative communities is to focus on people and process first and tools second. Each community is different and the people within it behave differently. Focussing on tools before people have been attracted to the idea will often result in wasted effort implementing features that do not add value to the target audience or, worse still, enforce processes that are not acceptable to potential participants. It could

be argued that REALISE spent too much time focussing on tool development in the early stages and thus was not left with enough time to build a collaborative community in the AT domain during the lifetime of the project." [16]

This comment was felt to be important and valid, but the dilemma was that there were uncertainties for the project team when only one design cycle was going to be possible and whichever route was chosen, no guarantees. The concerns mentioned before over lack of ready resources/tools are complemented by those highlighted in ATIB. Designing for all is very difficult if not impossible for AT users who are very diverse in their interfacing needs – although there are those who would argue getting the needs of the AT stakeholders into Drumbeat first or very early would be good; there is also the danger that the lack of 'personalisation' may alienate some in the wider community. Indeed in a limited resource project like REALISE too much time could have been invested in establishing tools for broader needs such that sufficient accessibility aspects – for instance – may have been neglected.

Another concern related to the specialist AT community, many of whom lack understanding around complex concepts, like commercialisation and specifically open source and open innovation for AT. As the target user population was assumed to need guidance and support in engaging with the REALISE market place and open innovation, it would be necessary to ask them to abstractly put themselves into a process with which they were unfamiliar. There is no guarantee that such an exercise would deliver (within time or) better information, since so much is being imagined compared to a process where they have a working example and are asked: 'What do you think?', 'How could it be improved?' etc. A choice had to be made, the AT specialists chose to take the second of these routes. After consultation with knowledgeable key stakeholders, the team developed a certain number of tools and guidance to support those on the pathway to open collaboration. It was also recommended that there was the use of open innovation mentoring where the online tools did not provide sufficient support.

Open source content management systems and online tools that could have been used for the development of the marketplace itself did not facilitate moving an idea through the process of open innovation to a sustainable project. It was not so much the inability to adapt their open source code to suit the needs of the REALISE project, so much as the concept of 'idea transition to market'.

Mozilla Drumbeat showed that an idea could be placed on the website with a link to a project web page and the idea could have followers, comments and show updates, but there seemed to be no guidance as to how to 'incubate' the project to ensure success in the future. This concept of 'incubation' came from the Apache Software Foundation (ASF), thanks to the collaboration with OSS Watch. The concept of 'incubation' offers a period of support and guidance around the concepts of both open innovation and open source development. Before launching into a supported project with concerns around development and sustainability, such issues as community building, governance, and licensing can be considered whilst still at the interim idea stage.

1.3. Translating initial decisions into reality

The development of REALISE market place became an iterative process, from the initial storyboard of ideas based on the early decisions to final proof of concept. At each stage diagrams, mock-ups and ideas were shared on the Google discussion group and a development website produced by the team (http://www.realisepotential.org).

During each phase of development, the team had to address issues around language, education, process, ease of use and accessibility.

Organisations producing websites for developers tend to use the language of the computer scientist and designer. Organisations specialising in disability tend to use the language of the carer and user or the professional, depending on their market. Business leaders when discussing sustainability and funding have their own terminology that may also appear abstruse to others. The REALISE market place had to find a way of making its own ideas clear to all. The business case for open innovation and open source development required clarification. Not only were the economics of open source a quandary to some, with notions of free or no cost solutions, but ideas around project maintenance and continuation funding were also a concern.

Community building needed to begin with those who understood the concepts and could become advocates for the process, networking with key external organisations to promote the project and the ideas it represented. However, there were concerns around spamming, security and how open was open when it came to interactions on the site. It was decided that there had to be logins, but they needed to be easy and accessible. Commenting had to be a simple task – originally that entailed a separate login although the tool used had provided many additional features.

The functional design elements were in place and the concepts ready to be explained, it was a case of trialling the actual site and working on the feedback received to ensure a positive experience for users who needed to feel engaged in the process.

2. Results

The website design took on the look and feel of a card filing system with the first card representing the home page, the second a place for ideas, followed by the section to move ideas into the incubator. Finally, the section for projects in a development stage or being finalised was made available, with extra tabs for the community and resources.

Figure 1- Screen shot of REALISE market place – Ideas

The site offers the user a chance to browse through the ideas at every stage without logging in. This was felt essential for ease of use, but as mentioned, to provide an idea or collaborate with others, it is necessary to register. The use of a LinkedIn login, was

felt helpful for those who already have an account with this social network or there is the availability of a simple sign up without an inaccessible CAPTCHA.

Having registered the user has access to a series of tools that are designed to take an innovator, developer and possible funder through a process that may lead to a sustainable open source AT project.

The process of taking an idea into the incubator begins by thinking about factors related to building a community that can support the project. Considered essential for this to occur is the provision of an open discussion forum with the ability to have comments shared. There should be the consideration of a website for the project, finding a way of tracking development and a place to put the code along with the tricky questions of licensing and governance – is the code to be protected in any way or will it be open open with no restrtictions as to its use? Who will manage the project and take it forward? All considerations that may be forgotten in the excitement of the initial design and development phases. The REALISE market place has links to pages on these subjects, written by OSS Watch along with a 'Community Explorer tool', a 'Licensing tool' and an FAQ. Also on the resources tab a feature was included for users to have easy access to what was already available as open source AT to prevent replication. The contents of this were obtained from a review of all those software applications available on the OATS project [17] website as well as the EmpTech [18] database. The latter provided categories that were then available for users of the REALISE market place.

A report carried out for the European Union (EU) in 2009 found that "the AT ICT industry in the EU certainly is not a simple one. It is complex in various aspects, for example for the large number of products and small firms, and, for the different service provider systems that are used to get AT ICT products to disabled end-users."[20] Reading documents and using online tools to support the process may not clarify all the issues at stake, whether it is in an open or closed community and its felt that the concept of mentoring and an increase in the number of FAQs may be necessary.

Once the early community building structures are in place and funding has been found to initiate a project there is an 'Openness Rating' which guides the user through a series of questions that, it is hoped, will further ensure sustainability. This rating provides a way for debating the subject of how open the development has been and will be in the future and is an ideal way of initiating mentoring support.

The building of the knowledge base via both the website, discussion group and comments for individual projects will, it is hoped, result in the transfer and sharing of skills between innovators, users, carers, developers and those who know more about open innovation and AT.

3. Conclusion

Developing a new market place based on the research undertaken by the team with the support of OSS Watch and Devices for Dignity has proved a thought-provoking process. The constraints of time and the complexity of the open source world of software development along with the concepts of open innovation remain a challenge that is obviously not restricted to AT development. However, there are some specific notions that need to be clarified for this particular market. It is a niche market with a small community; those developing software for disabled users are well aware of the specific support they require, the costs entailed and the issues around maintenance let

alone procurement. The chosen methodology of producing a prototype should be regarded as one method with one form of solution being produced – but like all methods it has its advantages and disadvantages. Not surprisingly the EU research cited above [20] found that in terms of which of the models companies would like to see growing when it comes to the user purchasing items it was the consumer model as opposed to a social model or medical model. Twenty five out of the thirty responses agreed that "the assessment and selection of different product solutions should be the right and responsibility of the disabled end-user, and not of the national service provider systems (i.e. the consumer model) … In this model, the end-user consumer has direct contact with a retailer in order to get his/her AT product and no other intermediaries are involved to limit the solution selected. This system has been gaining in importance in Europe driven largely by the growing costs and bureaucracy generated by the Medical and Social Model systems."[20]

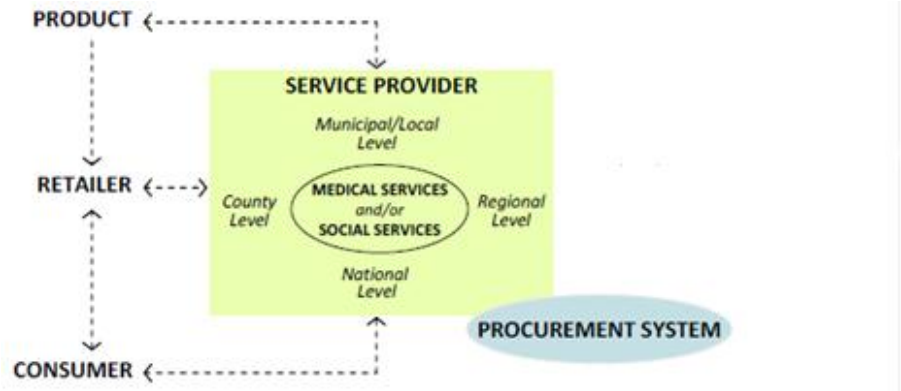

Figure 2 Consumer orientated service delivery model

> Independent Age[21] also pointed out there is: "Inadequate marketing; Technology marketing is generally aimed at the young, promoting gimmicky aspects of products that don't interest older people. Or, marketing is aimed at the frail elderly, a group with which most older people don't identify: Inappropriate design; Digital equipment is designed to attract young buyers who have grown up using technology. Small buttons, fiddly controls and unnecessarily complicated interfaces can all be barriers to older, or less adept, users…."

It would seem that the time is right for the model espoused by the REALISE Market place, but in order to make this happen the REALISE project requires the participatory involvement of all stakeholders to ensure sustainability in its own right as a consumer led model. There has been an attempt to find ways of encouraging users to collaborate using interactive technologies and there is an on-going active exploration for alternative strategies to maintain the project's place in the world of open innovation (which should include considering integration with Mozilla Drumbeat) and the development of assistive technologies. It is to be hoped that a prolonged period of use of the REALISE platform will reveal whether it is a useful innovation channel or not. It would be a pity if the opportunity were not grasped.

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