Crisis mapping before a crisis: a trans-situational map for the CDEM sector

Design research and proposal by
Tristam Sparks BCGD MFA
Senior Lecturer, Experience Design

and Jo Bailey BSc MDes
Lecturer, Senior Designer

Massey University
School of Design — Ngā Pae Māhutonga
Wellington

PREPARED FOR WELLINGTON REGION
EMERGENCY MANAGEMENT OFFICE
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With many thanks to the following who contributed their time and expertise:

<table>
<thead>
<tr>
<th>Name</th>
<th>Role Description</th>
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<tbody>
<tr>
<td>Lisa McLaren</td>
<td>Advisor, Community Resilience, WREMO; Project Lead Advisor</td>
</tr>
<tr>
<td>Jason Paul</td>
<td>Advisor, Community Resilience, WREMO</td>
</tr>
<tr>
<td>Dan Neely</td>
<td>Manager, Community Resilience, WREMO</td>
</tr>
<tr>
<td>Josh Barr</td>
<td>Technical Director and Strategist, Springload</td>
</tr>
<tr>
<td>Jonathon Alsop</td>
<td>Director, IT Effect</td>
</tr>
<tr>
<td>Abi Beatson</td>
<td>Postdoctoral Fellow, Joint Centre for Disaster Research</td>
</tr>
<tr>
<td>Raj Prasanna</td>
<td>Lecturer / Researcher, Joint Centre for Disaster Research</td>
</tr>
<tr>
<td>Diogo Freire</td>
<td>Project management and development consultant (worked on Christchurch 2011 earthquake crisis maps)</td>
</tr>
<tr>
<td>Klaus Kremer</td>
<td>Senior Tutor, School of Design, Massey University</td>
</tr>
<tr>
<td>3Months</td>
<td>Development partner to WREMO</td>
</tr>
<tr>
<td>Our volunteers</td>
<td>All our interview and testing participants</td>
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</tbody>
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t.sparks@massey.ac.nz @tristamsparks
j.bailey@massey.ac.nz @jo_bailey
1.0 Introduction

New Zealand is a seismically active country, geographically isolated from its neighbours. This isolation, coupled with a relatively small population, earmarked government resources, shifting communications technologies and the changing nature of civil society, all underscore that when the next big crisis or event occurs, communities will need to share and be encouraged to work together.

Christchurch’s experience has at least reminded people that a large, centrally coordinated response is not on standby for immediate mobilisation.

Prepare Wellington (a working title for this experience design proposal) is a proposed mechanism to connect the community, its latent resources, and to enable the information generated in the event of a crisis to be captured, documented and made available to the relevant agencies, as well as the community itself. Through this process, the resources of emergency services, local and national government can be allocated in an informed manner.

The ideas that are explored in this document are the basis for ongoing work should WREMO wish to take up some of the challenges and opportunities presented. It is also our hope that some of the techniques and information collecting processes might help diversify WREMO’s communication practices and engagement with the people of the Wellington and Wairarapa region.

2.0 Project background

Wellington Region Emergency Management Office (WREMO) is a semi-autonomous organisation that coordinates Civil Defence and Emergency Management services on behalf of the nine councils in the Wellington region. As an organisation, they have been at the forefront of using social media as a civil defence communication tool. WREMOS’s Facebook following is the largest for any civil defence/emergency management group in the country.

With an increase in the use of crisis maps during disaster response situations, WREMO instigated this project to consider how crisis maps could be used post-emergency, but also in an everyday context in order to ‘socialise’ the platform to allow for immediate deployment as an emergency response and management tool.

Massey University has expertise in the fields of emergency management (through the Joint Centre for Disaster Research) and within visual communication, user experience and interface design (through the School of Design). Massey design researchers were engaged to consider the feasibility of, and inform directions for, a potential crisis mapping tool.

This work builds on two years of exhaustive work by WREMO staff, particularly Lisa McClaren and Jason Paul. Initially WREMO posited a hub for events as a conduit for socialising the tool, and a map-based repository for information collected through community planning processes.

This project explores and evolves WREMO’s original concept via human-centred design principles. No predetermined platform or technological response has been supposed; needs and opportunities were identified through user and stakeholder interviews, surveys, and testing. A key value in this approach is that the solution should be technologically agnostic and as free from commercial pressure as possible.
Visual mockups by Lisa McLaren (WREMO) showing ways to display event information, and information from Community Planning Processes
3.0 Research process

In user experience design (UXD), the product is research and the research is product: a prototype formed through research is used for first tests, and these go on to inform the shape of the product in the next iteration. User testing is critical to defining functional steps, and the resulting experiences. Through interrogating the decisions made, user testing underwrites and extends the assumptions of the designer, by adding insight into how the users interpret what they are seeing.

Initial prototypes are informed by survey and interview data, which bring to light otherwise unobservable behaviours, and inform and underwrite a designer’s assumptions about the user’s perspective on the problem and how they would respond. The difference is the gathering of a user’s impressions before and after the experience. Surveys and interviews help to inform or confirm design assumptions based on business or stakeholder needs; a user test helps to focus the design decisions to do the same.
4.0 Context and considerations

4.1 The changing nature of Civil Defence

The role of civil defence organisations is moving from a (perceived) ‘emergency service’ situation to one where capacity and capability live within a community. WREMO’s Community Response and Resilience Plans focus predominantly on building communities that are empowered and equipped to survive a disaster situation.

As the plethora of new technologies enables new communication platforms to be produced, they also need to support this effort in extending and complementing the response tools currently shared with communities through WREMO’s Community Response and Resilience Planning process.

4.2 WREMO processes and resources

4.2.1 SMIRTS and SMARTS

WREMO has workflows that follow established research into how human beings respond to a crisis. Part of the process may include the activation of a Social Media Initial Response Team (SMIRT), where WREMO staff publish appropriate news to social media channels, and monitor online sources for information. This can, if required, be escalated to a Social Media Active Response Team (SMART), which takes responsibility for gathering online information for situational awareness, and sharing pertinent information with the public through social media channels.

The SMIRT/SMART system should take into account the need to monitor, moderate and manage data within the Prepare Wellington platform.

Learnings from previous crisis map situations suggest a significant volunteer task force and supplementary information management tools will be needed to ensure content accuracy and timeliness. The SMIRT/SMART process offers a sound basis for future workflows.

“individuals and communities are ultimately responsible for their own safety and the security of their livelihoods... individuals and communities must be able to care for themselves and each other, as much as possible, when the normal functions of daily life are disrupted.”

National Civil Defence Emergency Strategy (New Zealand Department of Internal Affairs, 2008)
4.2.2 Capturing other crisis information

WREMO has processes in place that are built on people in the field phoning or radioing in reports and the information being recorded on paper (Field Reports) by EOC (Emergency Operations Centre) staff. The Prepare Wellington experience should inform the relationship between WREMO and the crisis zone, offering a streamlined alternative process for gathering pertinent information.

4.2.3 Community-Driven Response Plans

CDRPs are created via consultation with the community and stakeholders. They contain information about resources in the community that could offer immense value in a crisis situation. At present, this information is housed within PDF documents available on the WREMO website. WREMO’s intention is that the CDRPs become a “living document”. Prepare Wellington offers an opportunity to change the practice from creating static information requiring updates by WREMO, moving to a dynamically updated database that is accessible to the whole community, anywhere, and at any time.

4.3 Information Technology

Although still very common in the distribution of information to the general public, traditional printed communication forms offer no mechanism for two-way dialogue, nor do they enable people to share information in a manner that can be utilised, or retrieved by those who can respond, or do something with it.

“The plethora of communications options available to connect the observations made during a crisis situation, and the centralised agencies responsible for addressing it

“Crisis mappers leverage mobile platforms, computational linguistics, geospatial technologies, and visual analytics to power rapid crisis response”

(Crisismappers, n.d.)
By using the available locational awareness, resilience and multimedia capabilities – tracking reports available in pre- and post-crisis situations – Prepare Wellington could become an invaluable resource for citizen and government alike.

While this research proposal recommends exploring and deploying new interaction opportunities on the smartphone in the first instance (partly due to their near ubiquity), eventually a responsive web experience can be provided on the same code base suitable for computers that rely on desktop and tablet displays, thus ensuring that the ability to contribute and confirm information is open to anyone outside of the crisis area.

4.4 Crowdsourcing

“People want to do something to make the world a better place. They will help when they’re invited to. Access to cheap, flexible tools removes many of the barriers to trying new things. You don’t need fancy computers to harness cognitive surplus; simple phones are enough.”

(Shirky, 2010)

Crowdsourcing is a contemporary form of volunteering that takes advantage of the opportunity provided by online communications and programming. This is partly explained by Clay Shirky’s concept of “cognitive surplus”: communities who volunteer their time and labour, almost exclusively for an online output, in order that information based tasks are performed rapidly and at scale.

The aim of the first release of this product is to take advantage of a ‘mobile first’ strategy where the public can input and share geolocative data. In the Prepare Wellington region, this may take the form of logging potential resources or events.

Users outside of a crisis zone – perhaps following events via social media should not be overlooked. These potential volunteers, with available ‘cognitive surplus’, ability and interest, may be invaluable in helping WREMO staff, volunteers and affected individuals in the crisis zone contribute, police and qualify information input within Prepare Wellington.

“In the words of Waikato Region Emergency Management Group, “Civil Defence is not one thing ... We are all Civil Defence”

(Waikato Civil Defence and Emergency Group, 2015).
4.5 Crisis Maps

Crisis maps are the real-time gathering, display and analysis of data in a crisis situation such as a natural disaster, period of political unrest or a conflict situation. These are usually short-term deployments active for the duration of weeks or months.

After the success of the defining crisis map platform Ushahidi in 2010, most iterations of crisis maps – especially those that have garnered publicity – have been ‘quick-up’ – ‘quick-down’ in nature (Hall, 2012).

These maps, generally undertaken by Volunteer & Technical Communities (V&TCs) such as the Standby Task Force (www.standbytaskforce.org) react quickly to an unfolding crisis. The Haiti Earthquake (Meier, 2012), the Japanese Tsunami (Seki, 2011), and the Christchurch Crisis Map (Beatson, Buettner, & Schirato, 2014) were all in this mode.

There are few examples of crisis maps established for long-term deployment. Bushfire Connect was a crowdsourcing and alerting system that was continually active throughout the fire season in Australia. It existed for about two years (up to the end of 2012) but did not continue as it was unsuccessful in securing funding and it was not feasible to sustain it on a volunteer basis (Hall, 2012). Prepare Wellington will a be a pioneer in the space of ‘permanent’ crisis maps that serve their immediate populations.

“The crowd has learned it can make its own map, they can jump on Twitter to learn breaking news before the news and can text and contribute to live, real-time and georeferenced maps during a crisis”

(Ziemke, 2012, p106)
Powered by the web, V&TCs are by nature decentralised and non-hierarchical. They are also unencumbered by bureaucracy, do not need to adhere to system or protocol, and can deploy software quickly.

In a crisis situation, other maps will, undoubtedly, appear. In Christchurch (2011) three crisis maps were initially deployed (Beatson, Buettner, & Schirato, 2014, p41). It has been observed that “the crowd has learned to first ask: Who is [setting] up the Crisis Map?... it is better to converge and swarm around a single crisis map ... to help the system find that equilibrium” (Ziemke, 2012, p106). Becoming ‘the map’ will require due consideration and inclusion of the V&TCs and local volunteers.

4.6 Crisis phase model

WREMO operates on the basis of a series of status levels or crisis phases that have been used as a model for the Prepare Wellington design research project.

Unlike the standard crisis maps model where deployments are “ramped up and continue for a limited period, based on volunteer effort only” (Hall, 2012), Prepare Wellington needs to remain active at all times, and offer engagement opportunities and information relevant to the user’s situation.

Interrogation of this model allowed for the inclusion of functions within the design of the experience that, beyond the mitigation and preparedness phases, might address predictable changes in psychological health (such as post traumatic stress), following extended time in a crisis area.
5.0 Design research

Unlike most consumer facing applications which have very specific target groups, the audience for Prepare Wellington needs to be as inclusive as possible. As the population matures and ‘digital natives’ become the majority within the community, WREMO will still need to produce information across various media to ensure as many people as possible remain within reach.

5.1 User interviews and workshops

To initiate the design phase and build empathy with our users, interviews helped to deliver an understanding of how people anticipate and prepare for a disaster, and to discover what plans they may have made for themselves and their family or household. The interviews focussed on a scenario involving a medium to high magnitude earthquake occurring in Wellington City.

All of our interviewees are permanent Wellington residents. From these individuals, the experiences of two participants (both male, 52 and 45 years old) highlighted different ends of our sample spectrum. While both had family, the duration of time spent living in Wellington meant their understanding of a potential situation, and their level of emergency preparedness were markedly different.
Interview transcript discussing the interviewees’ possible response scenario and knowledge of what they might do in a significant seismic event

<table>
<thead>
<tr>
<th>Subject 1.2 52 year old male. Married, 3 children. Long term (5 years+) resident of Breaker Bay at the time of the interview.</th>
<th>Subject 1.3 45 year old male. Married, 3 children. Immigrant who had been living in Khandallah for nearly a year at the time of the interview</th>
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<tr>
<td>“Preparedness is easy [to consider]: …when you’re a Wellingtonian, live by the sea and have kids.”</td>
<td>“I have never experienced an earthquake...”</td>
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<tr>
<td>“The community tried to organise its own [warning] siren. But it fell through...”</td>
<td>“I’d like to know more about unsafe housing...”</td>
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<tr>
<td>[Direct neighbours?] “Not tried to talk to them. Maybe we should...”</td>
<td>[I met our neighbours at a Christmas party] “Small talk mostly... [There was] No way to associate people to properties...”</td>
</tr>
<tr>
<td>[Sources?] “The usual: the paper, TV, leaflets”</td>
<td>“I need to check the web for more information”</td>
</tr>
<tr>
<td>“Geography defines the community”</td>
<td></td>
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<tr>
<td>Interviews conducted on 21 April 2016. Low risk ethics approval granted.</td>
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These two individuals are very similar demographically, yet confront different geographic challenges in the same city (tsunami zone vs. landslip risk). This diversity of risk scenarios, preparedness levels and community cohesion underlines that while Prepare Wellington can integrate the pre-existing information that crisis maps have displayed to date (what is happening and where), it should also do something new: present the social relations and diversity in geography that is represented by the combination of hazard maps and the location of people and community resources.
5.2 User surveys

An online survey conducted during this research had 310 respondents from across the region. 92% of respondents owned a smartphone, and of these the split is relatively even across operating systems (52% Android, 44% iOS with a range of unknowns and others) compared to international levels, where Android has over 70% market share (Netmarketshare.com, 2016). This high level of ownership, and international trends towards online consumption on mobile (internet browsing is now at over 30% mobile and rising at over 10% a year (Netmarketshare.com, 2016)), validates a ‘mobile first’ approach.

What follows are some key points of interest. The complete survey accompanies this research proposal as a separate document.

5.2.1 Do you use apps? Do you have any Hazard warning apps?

88% of users are either frequent app downloaders or regularly use a handful of useful apps, but 67% of users had no apps related to emergency preparedness or hazard warning. Where people indicated they did have this kind of app installed, Geonet was the overwhelming leader, followed by CPR/First Aid apps, and the Red Cross Hazard App.
5.2.2 What social networks do you use?
In terms of social media, Facebook reigns supreme, but Neighbourly usage at over 25% is unexpectedly high.

Social media usage amongst respondents

5.2.3 How did you hear about the 2011 Christchurch earthquakes?
This question was designed to reveal the relationship between New Zealanders’ information consumption habits and large scale disaster situations. Surprisingly a quarter of respondents became aware of the Christchurch earthquakes via television. More than email, the web and social media combined (20%). Word of mouth accounted for 18%.

How users became aware of the Christchurch earthquakes
5.2.4 How do you know what’s happening in your community?

In an everyday context, though 54% of respondents highlighted social media as a place they found out about community events, traditional means such as a flyer in the mailbox (44% of respondents) remain important. In both the Christchurch question above and in regards to events, word of mouth remains a key communication channel.

17% of respondents knew none of their neighbours by name. 40% knew ~30% of their neighbours.

But, despite the surprisingly high level of Neighbourly users in our sample, over 76% of respondents did not use online social networks to maintain connections with their immediate neighbours. Anecdotal feedback from an interview participant highlighted that Neighbourly is seen more as ‘Suburbly’ - not about conversations over the fence, more about conversations across the suburb.
5.2.5 Other responses of interest

In terms of preparedness, despite a possible bias towards people interested in civil defence, less than 30% of people have a comprehensive plan for an emergency situation from this survey, though 88% store water, and 41% have a nominated ‘out of region’ contact person.

92% of owners use maps on their smartphone, overwhelmingly *Google Maps* (94% of map users), suggesting a familiarity with geospatial systems on mobile devices. This relationship with Google became pertinent during user testing.

In conclusion, the relationship between people and their relations to social media is complex. While some figures suggest that online communication encourages people to get out more, in some manner that is down to engagement with like minded individuals with common cultural interest. Of course, the popular press is replete with stories about how social media is a distraction in itself.
5.3 Visual communication

Currently ‘Community Emergency Hub’ (CEH) is the term used by WREMO pending sector agreement for a name to be applied to community led centres. The visual language of the WREMO CEH guides are consciously different to the blue/yellow Civil Defence palette inherited from the Ministry of Civil Defence and Emergency Management and employed across the sector. The rationale for moving away from the yellow and blue palette has been to clearly delineate this as a community, not a WREMO document. How this relationship between ‘community’ information and WREMO or other official information is managed in Prepare Wellington will need careful consideration.

The shared equities that make up the ‘identity’ of the sector (e.g. the colour palette; round circle with yellow triangle CD icon; chevron patterns and to a certain extent the name ‘Civil Defence’) do convey a sense of recognition and credibility in the minds of the audience. There is a tension to balance between a visual vocabulary that semiotically suggests knowledge, expertise and authority, and with the need to avoid a suggestion that civil defence is something that is provided to a community, not developed and managed within a community. The strength of WREMO’s ‘brand’ is associated with high levels of goodwill and trust, and is therefore a powerful tool for engaging potential users, attesting by association to the platform’s quality, reliability and purpose.

It may be possible to shift perception whilst retaining a useful visual shorthand that is already established (in fact, many survey respondents framed the term civil defence as involving community). There is a case to be made too that retaining a sector-wide identity allows the public to make quick credibility judgements about a source, especially online. A consistent sector identity (beyond the scope of this project) also allows for scaling of a tool with little aesthetic intervention. The Hub Guide retains the WREMO logo, and it is possible that this common thread is enough to leverage
WREMO’s reputation.

5.3.1 What does civil defence mean to you?

Although this design research is not intended to inform the brand values of WREMO itself, understanding the contemporary public’s perception of what “Civil Defence” means, helps to inform how the Prepare Wellington experience may be visually represented. This perception issue is related to the vital issue integral to reputation and trust as mentioned above. The following example responses were drawn from the survey mentioned in §6.2 (above).

A sample of survey responses to the question ‘What does civil defence mean to you?’
“Taking care of people in a widespread emergency situation”
“Communities, with help from local and central government, being prepared to cope in the event of an emergency”
“People have to organise themselves in an emergency”
“Storing emergency water, alternate cooking, reserves of canned food, looking after ourselves”
“Ensuring my family are safe, and then local community safety”
“Planning for and reaction to natural disasters/severe events”

5.3.2 Accessibility considerations

Accessibility refers to the inclusive practice of removing barriers that prevent interaction with, or access to websites, by people with disabilities. This could include blind or visually impaired (including colour blind), hearing impaired, mobility impaired or cognitively impaired users. Though not technically an accessibility consideration, a range of languages in an increasingly multicultural Wellington and Wairarapa region should be provided for.

Development should be undertaken in line with the New Zealand Government Web Accessibility Standard 1.0.

Before development commences, UI and UX specifications and guidelines that govern the application’s behaviour and how people’s data is respected should be developed.

Web accessibility issues: blindness, visual impairment, hearing impairment, mobility impairment or cognitive impairment
CRISIS MAPPING BEFORE A CRISIS: A TRANS-SITUATIONAL MAP FOR THE CDEM SECTOR

PROJECT WORKSPACE
MAY 2016
6.0 Prepare Wellington

6.1 Concept

From ‘business as usual’, to a hole opening up in the street in front of you, from a clear summer’s day to a gradual onset of stormy weather, the stages outlined in §4.3 Crisis phase model are seldom easily separated from one another. In terms of bringing an attitudinal and potentially behavioural change within the mind of the public towards crisis preparedness and crisis mapping, the research and observations described to this point suggest that the term ‘trans-situational’ is appropriate.

Therefore as a trans-situational crisis map, Prepare Wellington needs to harness the interest of the local community by offering useful information, but in a way that bridges both ‘business as usual’ and an unknowable amount of time that may follow an event.

Might the provision of this experience also supply a populace, who suffer from what might be described as ‘disaster fatigue’, reasons to feel differently about their neighbourhood and the nature of their own preparedness?

And as we are accustomed to having access to everything else via the smartphones carried in our pockets near permanently, might there also be an opportunity to make that experience encourage crisis preparedness to become part of our everyday lives by including a friendly agent on that platform?

6.1.2 Prepare Wellington’s values

Within this concept of trans-situational crisis mapping, Prepare Wellington should provide participatory experiences that may promote behaviours that reach across the five crisis phases, encouraging contributions and volunteerism within preparedness across:

- Time — the platform should be constantly available, but never expectant. Relevant over long and evolving situations; during pre- and post-crisis. Or perhaps never actually being used in an crisis
- Location — provide information appropriate to the situation
- Event — not just the original use of crisis mapping or the identification of the minor events that make up a larger crisis, but also the creation of localised events in ‘peacetime’
- Personal — a place for people to document their emergency plans on their own terms, and ways to connect to other people.

Through this, an individual, household or self defined community has just the right amount of information and access to local resources, at the right time and at the right moment.

Wellington is a geologically-dynamic place. Frequent ‘shakes’ become prompts to get online (for instance, to check Geonet alerts and log ‘felt it’ reports). These geological nudges could become a great reminder and catalyst for people to manage their preparedness if they are integrated into the functionality of Prepare Wellington.
6.2 Human centred design

“Personal value is the kind of value we receive from being active instead of passive, creative instead of consumptive.”

(Shirky, 2010)

6.2.1 What’s being crowdsourced?

To understand how people might approach the usage of a ‘permanently’ accessible trans-situational crisis mapping tool, the proposal needs to identify what a member of the public might be able to share prior to an event unfolding. This should provide an experience in some way that takes into account the affordances enabled by a smartphone. For example: location, time and resultant relevance.

If the data being collected across a geographic location during a crisis will be similar to other ‘crisis maps’ that have been deployed before, how might Prepare Wellington look to encourage people to use the map during times where life remains ‘business as usual’?

As a concept, the ‘sharing economy’ – making resources available via web-based services – has been around for at least 15 years. Alongside ‘mutualisation’ (of assets) the core value: “Access trumping ownership” (“The rise of the sharing economy,” 2013), is usually presented through the lens of accessing latent utility in a neighbourhood that may be available for borrowing or hiring (streetbank.com, for instance). But the specific need of the object being borrowed is seldom part of the equation.

In most peer-to-peer sharing scenarios, the lender makes an item available knowing its intended use, and seeking for it to be used as much as possible (especially in a monetised relationship like AirBnB). If we turn this equation...
on its head and tie the utility and availability of an item to the occurrence of a situation that affects everyone in a community, might there be a way to ask people to privately record their ownership of something so that its potential is revealed and unlocked at a later date, for the relief of that community? With Prepare Wellington a ‘lender’ would lists an item as a potential community asset with no predetermined timeframe of use, and no specific use scenario in place – an inversion of the normal ‘sharing economy’ model.

6.2 User journeys

Within the design of an experience framework, a user journey is a linear flow that identifies one specific task to be completed by a probable user. Usually these tasks are matched to user profiles analogous to actual people.

However, in this preliminary phase of establishing and designing these tasks for Prepare Wellington, user profiles will be established at later date. The following user journeys were designed to prioritise the communication of the concept so that it could be further discussed and user tested.

6.2.1 Structure of experience within the five crisis phases

As noted in §4.6 Crisis phase model, WREMO uses an established framework that identifies the different phases of the pre- and post-crisis environment. Prepare Wellington proposes that these loosely identifiable phases also act as the framework for the experience.

Even if an amorphous ‘timeline’ of event categories, the broad identification of phases allows different functions to be aligned against and applied within, the proposed experience. This way each purpose of each function can be proposed for any particular citizen at the relative phase of the event. This is especially important for separating the functions which might be available between one form situation awareness or engagement and another.
6.2.2 Onboarding

In lieu of a registration process, onboarding (information given at first use) helps a user initiate Prepare Wellington. In the first stages of design, development and deployment, it is not anticipated that the experience requires a user account. However, the conventional inline permission notifications may be required.

6.2.3 Business as Usual

The following tasks are aligned with “Business As Usual”, the first period in the five crisis phases.

The first user journey asks the user to add an asset to the ‘community bank’ of items that might be accessed in the case of a crisis.

The second user journey asks the user to create an event and invite people for the purpose of making connections in the neighbourhood.
6.2.4 Post crisis

The following tasks are aligned with the ‘Initial response’ or ‘Response’. These are the third and fourth periods in the five crisis phases.

The first post-crisis user journey asks the user to report and describe a situation that may be otherwise unreported.

The second user journey asks the user to review and confirm a situation that is ongoing.
7.0 UI/UX design and testing

As a basis for testing, each step in the above user journeys are transformed into wireframes: each an illustration of an interface that enables the user to complete the task as may be required in each scenario.

7.1 Experience prototypes

Like blueprints for architects, ‘wireframes’ are sketches for interface designers. Their low level of aesthetic resolution (simple typography, no photographic imagery, no colour) is intended to do two things: ensure that the viewer focuses on function rather than ‘how it looks’, and how it enables the user to perform a set task (Brown, 2011).

This in mind, the following sequence of interfaces (derived from discussions with WREMO about what they considered were the most important functions of the first release of Prepare Wellington) all attempt to funnel a user towards the completion of a specific goal.

The following two screens feature the tasks that were given to each user when they loaded the prototype. Each of the blue links directed the user tester to the task that they needed to complete. At this point of the proposal, the design research was only interested in subjective and qualitative feedback.

Each of the following sequences represent a different position or new state that is possible to trigger by a user. Each task sequence follows the journey proposed and presented earlier in §6.2 User journeys.

The starting position for all users, the experience prototype listed instructions for each task that the user could attempt (left). The wireframe that illustrated the loading or start page for a user who had opened the page for the first time (right).
Onboarding – First use of app

About maps

The loading or start screen that describes the experience for a user who has opened the page for the first time. User selects ‘Begin’.

...and is presented with an explanation of the ‘Your’ map page. User selects ‘Next’ or ‘Ours’...

...and is presented with an explanation of the ‘Our’ map page. User selects ‘Next’ or ‘Event’...

...and is presented with an explanation of the ‘Event’ map page. User selects ‘Done’ or another map view. In BAU the user is taken to the screen in the next section.
Business as usual – Pre crisis
Add community asset

Initial screen when the user is experiencing BAU. Relative UI focusses user toward preparation. User selects ‘Contribute’…

…and is directed to ‘Our map’. Two options are presented: User selects ‘Add asset’

...‘Add community asset’ allows user to find out more about the purpose of a community asset. User selects ‘I’d like to add something’

...‘Describe and categorise the community asset’

...‘Categorise the community asset’

...‘Describe the community asset’ User selects ‘Set availability’

...‘Set availability and allowance permissions for community asset’ User selects ‘Add asset to the pool’

...‘Process conclusion and confirmation.’ User can press the [x] to leave the task.
Add event

Initial screen when the user is experiencing BAU. Relative UI focuses user toward preparation. User selects ‘Host an event’

…and is directed to ‘Our map’. Two options are presented: User selects ‘New event’

…‘Add community event’ allows user to find out more about the purpose of a community event. User selects ‘Host an event’

…describe the details around the time of the event including the location. User selects ‘Invite people’

…invite people includes details that allow the user to include people in their proximity and WREMO volunteers. User selects ‘Preview message’

…Options made in the previous steps are assembled into one message preview

…Process conclusion and confirmation. User can press the [x] to leave the task.
Post-crisis – What’s around you?

Report event

Initial screen when the user is experiencing a confirmed crisis relative to their location. Relative UI Focusses user toward response. User selects ‘Around you’

…and is directed to ‘Your map’. The information presented is slightly different from the BAU view. Two options are further presented: User selects ‘Report’...

…and is presented with a form encouraging them to describe an ongoing situation. User selects ‘Danger’...

…and are asked to describe the type of danger. User selects ‘Fire’...

…and is presented with an option to enter further information. User selects ‘Send’...

…and concludes the report with a confirmation screen. User can press the [x] to leave the task.
Review event

Initial screen when the user is experiencing a confirmed crisis relative to their location. Relative UI Focusses user toward response. User selects 'Around you'.

... and is... directed to 'Your map'. The information presented is slightly different from the BAU view. If there are active situations around the user, they will be displayed on the map. Two options are further presented. User selects 'Review'...

... and a modal overview of the information surrounding the situation and its location is displayed. Two options are made available. User selects 'Confirm' situation...

...and concludes the review with a confirmation screen. User can press 'Continue' or the [x] to leave the task.
7.2 User testing

On 26 May, this research project was given the opportunity to test an experience prototype at a WREMO volunteer evening. Of the approximately 20 volunteers in attendance, most had their own smartphone and were able to access this project’s supplied prototype.

In a controlled test, the user is normally led through the experience. This allows the test host to enquire after the reason that prompted the user to make so that user considers and explains their decisions in response to how the prototype encourages them to behave.

On this occasion, the testing environment did not allow for a lead situation, so the users were given test scripts to follow independently within the experience prototype and to write down their responses. This process amounted to 18 (documented) responses to five user journeys each with a specific task.

7.2.1 Feedback from user testing process

Practically none of the testers had used a ‘crisis management’ tool, or similar application related to civil defence on a mobile phone.

Most users were comfortable with the idea of maps on their smartphone as most of them had used a mapping service on their phone before. Ultimately this is the first overarching lesson learnt: the ubiquity of maps on a smartphone device dictated how the users approached it.

The testers aired concerns regarding whether they would have control over the map (as opposed to a static image-only map), and whether the map would show their location “…like on Google Maps.” A screenshot of a Google Map was used to simulate live data, but despite this, the appearance of the map gave users pause to consider how they thought the map might respond in terms of their prior experiences.
The second key finding from the test regarded the use of language. Many people disagreed, or disliked the terminology of the prototype. In some ways, this could be brought down to the limitations of linear test in a static environment, but it also suggested that the ‘civil defence jargon’ language used by emergency management organisations sounded too much “like government speak” (User 18), or simply not friendly enough.

The user test was, by a matter of circumstance a blind test. Not only did the user tester have to enter the URL of the prototype themselves, they had to parse a test script that described each assigned task. The wide array of backgrounds ages and technical competence made for an unexpectedly varied and diverse test.

All users had the option of choosing their own task(s). They were:

1: Scenario: Business-As-Usual (No Emergency), Setting Up
   - Locate the ‘learn about the maps’ function. Do you think this would be useful?
   - Where would you look for information about the app from the home screen?
   - What kind of information would you expect to find here

2: Scenario: Business-As-Usual (No Emergency), Day-To-Day Use
   - Locate the event map – what do you think this map would be for?
   - Add a ‘potential community asset’. What is one of these? How would you add it?
   - Add a privacy setting for your ‘potential community asset

3: Scenario: Business-As-Usual (No Emergency), Day-To-Day Use
   - Locate the map – what do you think this map would be for?
   - How would you add an event?

4: Scenario: Post-Event (Emergency) Tasks:
   - Add a report of some damage (a fire)
   - Locate a report on the map and confirm or add to it

In addition to the diagram above, please see Appendix 3 for the questionnaire that guided the volunteer users through the different journeys.

The following verbatims are included to highlight some of the more notable feedback encountered:
<table>
<thead>
<tr>
<th>Observation type</th>
<th>Observation</th>
<th>User</th>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assumption</td>
<td>“Will it show different maps for ‘BAU’ (Business As Usual) vs ‘Crisis’?”</td>
<td>User 17</td>
<td>Noted early-on in the experience, this suggests that the user could anticipate where the concept was taking them</td>
</tr>
<tr>
<td>Assumption/Expectation</td>
<td>“Overall - Great idea. [] Assume it would update automatically during an emergency. Would be great to plot the ‘Emergency Hubs’ on the map”</td>
<td>User 9</td>
<td>The user anticipates the value of the map and starts to suggest alternative, but related, uses of the map</td>
</tr>
<tr>
<td>Discovery</td>
<td>“Easily got to the ‘Add asset’ page – Nicely constructed and phrased. I couldn’t actually add anything thought!”</td>
<td>User 15</td>
<td>The user made their way through a BAU scenario. As the experience prototype was sometimes unresponsive, occasionally people could not complete the journey on the first attempt</td>
</tr>
<tr>
<td>Discovery</td>
<td>“Opening page should be more intuitive. Maybe [the] map should already be in the first page.”</td>
<td>User 16</td>
<td>Valuable feedback that helps to ensure that the products intent is clear in the experience as early as possible</td>
</tr>
<tr>
<td>Expectation</td>
<td>“I couldn’t see the CD symbol on it”</td>
<td>User 1</td>
<td>This may refer to the branding on the app in general, or information that displays on the map, possibly representing a CEH or other WREMO asset, itself.</td>
</tr>
<tr>
<td>Expectation/Assumption</td>
<td>‘Host an event’ implies you have to run the event. What if you just want to know of an event happening in the area but not hosting?”</td>
<td>User 3</td>
<td>Although an anticipated function that would eventually be surfaced from the design proposal, the user anticipates the functionality from multiple viewpoints over time</td>
</tr>
<tr>
<td>Functionality</td>
<td>[Listing a] Community asset: “Who can see this?”</td>
<td>User 18</td>
<td>A valuable insight into how people understand the ramifications of their contributions online</td>
</tr>
<tr>
<td>Functionality</td>
<td>“Can you also add to Neighbourly? As well as Facebook? Don’t know if their API is open or not”</td>
<td>User 18</td>
<td>Sophisticated comment that realises that online platforms outside of the experience should be used to distribute contributions</td>
</tr>
<tr>
<td>Language</td>
<td>“Action first; ‘Add’ is good, [but] not ‘Contribute’”</td>
<td>User 14</td>
<td>This comment was based on the complexity of the user interface and the language that it uses to invite people into each function within the experience. Comments regarding the “tone” of the language used in the user experience was quite common.</td>
</tr>
<tr>
<td>Language</td>
<td>What’s an “Asset”? — “Useful ‘thing’ / useful resource, add an item”</td>
<td>User 14</td>
<td>A comment on the choice of language. Most user testers were happy to speak aloud as they attempted to understand what the experience was asking them to do.</td>
</tr>
</tbody>
</table>
In conclusion, there is one more scenario that was unexpectedly brought to light. An elderly gentlemen (possibly in his 70s) was quite familiar with a smartphone but was not necessarily comfortable with the idea of the web (accessed in a browser), or maps in general (he stated he didn’t need them as he was a long time resident). When asked how he used his phone, he said that he only used it for email and short form messaging.

This observation was informative for understanding how the elderly might benefit from, or otherwise ignore, a tool like this. This one lesson also suggests that in the next few years, organisations like WREMO will have to maintain targeted messaging for certain sectors of the society.
<table>
<thead>
<tr>
<th>YOU CLICK ON?</th>
<th>DID IT DO WHAT YOU EXPECTED?</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>user 0</td>
<td>On the home screen it would be good if the graphic shows a map in ...</td>
<td>Onboarding - a technical term maybe = getting started.</td>
</tr>
<tr>
<td></td>
<td>Business as Usual - again not is plain enough terminology. If about adding assets &amp; events maybe = being prepared.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- all - great idea it would update an dynamically during an emergency.</td>
<td>Crisis - suggest using language as used by WREMS Emergency Event.</td>
</tr>
<tr>
<td></td>
<td>Asset - maybe call this</td>
<td>Asset - maybe call this</td>
</tr>
</tbody>
</table>

User Testing
May 2016
8.0 Minimum Viable Product

In contemporary product management parlance, a MVP (or Minimum Viable Product), should result in a product that can be used in the field, performing some level of identifiable and agreed minimal functionality that progresses toward an ever ‘richer’ experience.

From the outset, priorities that stakeholders consider the most valuable to make available in the nearest term, should be transformed into ‘user stories’ that are written from the user’s point of view. These practices are derived from the ‘Agile’ project management methodology.

The user stories seen in Appendix 3: MVP User stories, are descriptions of the required functionality derived from the user experience prototypes illustrated earlier in this proposal (see §7.1 Experience prototypes and Appendix 1: Expanding Experience). Ultimately these functions and other ideas within this document may provide a basis for the addition of further functionality. Which in turn may also respond to ongoing user and stakeholder feedback.

This cycle establishes a tighter relationship between designers, developers, users and stakeholders in the production environment. Ideally the product moves from a ‘beta’ version MVP and towards the anticipated ‘complete’ product.

When the Prepare Wellington MVP is in an operational environment (and hence utilising a responsive map) it will make relationship between situation and context easier for users to understand, as well as their needs and feedback as proposed in the design of this experience.

The resilience of the experience for any publicly accessible MVP is paramount. Typically, this is where much of the short term investment should fall. To achieve this resilience (considering the extreme use contexts required), any server side architecture should be scaleable. Ideally the Prepare Wellington MVP should provide some value if a crisis occurs while it is constantly being improved, moving towards some of the opportunities described in this proposal.

As this design research proposal has established experience benchmarks for the form of Prepare Wellington, it can now be built and tested to see if the product performs as the designers anticipated. Under the guidance of WREMO and using the MVP User stories created as one of the results of this research proposal, the first version MVP is currently being built by the design and development agency 3Months (www.3months.com) in Wellington.
9.0 Recommendations

A crisis affects everyone, but the immediate concern for anyone within a crisis is themselves, their family and the ability to pick up the pieces as soon as possible.

By setting the stage for resiliency in the individual and community at large, the Prepare Wellington concept aims to be part of a solution that might encourage or enable this to occur.

Should WREMO and its associates choose to take forward the concepts presented in this proposal, here are some broad recommendations as this project transitions from research to the creation and further establishment of close relations between designers, developers, stakeholders, users, the public and the evolving state of experiences created by the product itself.

The recommendations in §9.0.0 are written with reference to the design of the experience, not to the technical build requirements. They would benefit from further discussion with stakeholders and development teams.

— Even the most well-resourced and vetted software is not infallible. However unlikely, the introduction of a web based experience that people turn to for advice in an unpredictable event that may occur at any time may create unforeseen issues.

— While ensuring that people’s data is protected to the highest level, the product should be owned by the stakeholder and public. The role of the public may take on many guises, such as: assisting in the creation as developers, providing feedback on the data and experience, or contributing the data that other members of the community utilise.

— A mobile first strategy ensures that the experience is placed into as many hands as possible, as early as possible. It also helps to provide a focus for the experience thereby limiting ‘feature creep’.

— An individual’s mobile phone is their identity expanded. Through the device’s capabilities, a phone can help describe more about the user than they might be able to describe themselves (through data collected by the device). The initial experience should take this into account as, treated respectfully, contributed data in the short term will encourage people to trust it when they need it.

— Whether in the ‘business as usual’ or ‘crisis’ phase, the experience of Prepare Wellington has to record and reflect back to the user their situation and not their location. People know where they live in terms of their city; what they will want (or need) to know is the availability of resources immediately around them and specific hazards, if any.

— The relationship that a person may have with Prepare Wellington and information within should be relevant and timely. Stale information, or a lack of response from someone in the community, will only prove to frustrate to the user and underline why they may not use or trust the experience.

— While some of the experiences and ideas in this project have been tested in the field (albeit in non-dynamic, linear user journeys) the entire proposition requires more prototyping and testing with the public to ensure that it is understood, and that the user experience, and the concept more generally, is correctly vetted.

— Beyond the experience, which will always transition as needs and trends change, the data underpinning the whole enterprise should be structured and constantly maintained to be accessible at least a decade at a time.

— The likelihood of it ever being used in a crisis is low: the chance of an earthquake of ~7.5 is 10% in next century and 5% within the next 50 years (Rhoades et al., 2011).
The long-term nature of this project will necessitate ongoing investment in software and volunteer relationships – it needs to be ready to be used at any time. The trans-situational aspect of the concept will help ensure that the site is always up and operational.

9.1 Operating in public

“How we treat one another matters, and not just in a ‘it’s nice to be nice’ kind of way: our behavior contributes to an environment that encourages some opportunities and hinders others.”

Clay Shirky, Cognitive Surplus: Creativity and Generosity in a Connected Age (Shirky, 2010)

Beyond examining the literal functions that help to guide and suggest its eventual rhetorical presence and the raison d’être for the Prepare Wellington experience, one thing stands out: the product must be public in all senses of the word.

To achieve even the barest minimum of experience allowing for a trans-situational scenario in software, like all social experiences from cities to social media, the people who use it, make the values it becomes imbued with.

As a semi-autonomous organisation, WREMO appears somewhat private, or invisible until they are needed. This presents a fine line that must be walked: the quiet security that WREMO gives society will need to be balanced with the promotion and dialogue that comes with owning software that may come to become part of people’s day to day activity if not also representing their feeling of security.

This balance may require some form of cultural change so that the idea of partnerships, expressed in the National Civil Defence Emergency Strategy (2008), are also explicitly visible on any participatory and democratised product relative to the citizens that it will come to enable and ultimately serve.

— Alongside active language, the name Prepare Wellington helps to communicate the communal value of the service in addition to promoting engagement: helping focus the use, and encourage respectful behaviour.

— As discussed in §5.3, alongside identifiable trusted branding, people also need to see that a produced experience is reliable, maintained and safe to use. Additionally: no software is foolproof, nor is it impervious to misuse.

— Like any other considerations in the design of social media platforms and even before the intended purpose of the site is stably identified, brand and reputation, user tracking, privacy, moderation and security are all things that may affect people’s impression of the site.

— Having an open website that requires as little registration and identification of its users is, incongruously, one of the values that will enable this experience to succeed in the short term, immediate trials, despite the risk of ‘vandalism’. However, eventually the utilisation of a light sign-in will help to provide an impression that the site is trustworthy and that contributors do not risk unwanted attention.

— People may not contribute if they feel that they need to expose too much private information in public (especially concerning who they are and where they live). As a result, people will need to control and protect their privacy. The potential for abuse of that information by third parties is a real issue requiring analysis to mitigate.
— People need to contact a site’s owner about questions/concerns, and provide feedback on operation. The owner needs to be visible and accessible.

— The moderation and quality of the information entered into the software requires constant policing. This underscores the relevance and trust that people have in the service should a crisis eventuate and the experience tips from pre- to post-crisis.

— Software that governs the security of data voluntarily contributed within this experience should be open-source to ensure the widest possible validation of its security is sought and found.
9.2 Build and maintenance

This broad list of thoughts suggest the direction of discussion required as the design proposal moves closer to operational software.

- Identifying where the data ‘lives’ and what is done with it is as important as the data itself.
- Resilience of the information and the experience will need to take into account client side download and storage of data that allows the experience to operate whether there is a data signal from a cell tower or not. This download should occur regularly to lessen service to the user regardless of what even is underway. This download and caching should occur with the user’s knowledge and permission.
- Unless any secured budget is significant, the first version of this experience should be produced as a responsive web application in order to reach as many people as possible.
- A brief, separate proposal will need to be created that looks at the fragmentation of the market should iOS and Android applications be deemed necessary at some point in the future.
- Design note: the experiences illustrated in this document are shown on iPhones. However this is not a recommendation for the creation of an iOS native application.
- PDFs should not be used in a public experience online outside of long form reading as they are not semantically structured documents; they elicit some of the same experience limitations of printed media and enforce a static one way relationship. As long as they are formatted appropriately they may be used to fill some experience gaps within the MVP. But on a mobile phone they use excessive processor capacity and are hard for most users to manage.

- The processor intensive use and battery consumption issues highlighted in the application of a PDF within an experience apply also to data responsive mapping technologies.
- With the potentially patchy availability of a cellular signal in a crisis area, alongside clientside caching, Prepare Wellington’s UI will need to degrade.

9.3 Build locally

Leaving ‘Buy NZ’ discussions aside for the moment, why do we recommend building something essentially from scratch? Why not use Ushahidi, Google’s crisis map, or New Zealand’s own Thundermaps?

- Prepare Wellington should be personally relevant, socially and culturally specific information. The data that it collects and protects should be guaranteed within New Zealand law and potentially the primary data stored within NZs boundaries.
- The product should be open to local software development volunteers to help provide a sense of wider public ownership.
- Ushahidi is constantly changing its public/private relationships with the open source community and their business model locks account usage to a flat fee: only a few people can contribute to it. Despite that and in a ‘normal’ use context that the platform was designed for, it would be permissible to sign the contract, but the trans-situational use-case that WREMO has stated is not compatible with the Ushahidi deployments are usually made.
- As a ‘startup’ with European Commission funding, it is not hard to conceive that Thundermaps may find itself in a similar situation. That this mapping service is also built on proprietary code also means that the local V&TC community cannot support WREMOs goals and the
locked platform cannot respond to how WREMO sees the growth of their own product serving the local community.

— In the creation of the experience, a partnership between the public, private entities and the stakeholder should be created to ensure community ownership and a condition of transparency that helps encourage widespread adoption. Again, this should include dialogue with V&TCs.

— Wellington’s own Koordinates open GIS database should be explored as we consider the development of, and data sources for this product.
10.0 Conclusion

That online communications, the democratisation of publishing, has changed every human relation in the past 20-30 years is without doubt. How much more it continues to change our relationship with our civil institutions remains to be seen. It is up for us to decide the forms, disruption and integration of that ongoing change.

*Prepare Wellington* and trans-situational crisis mapping may yet become an unexpected and powerful contribution to that changing relationship between civic institutions and the public, bringing us into an unexpected partnership with our neighbours and the shaky isles we walk upon.

If there is a specific contribution to the ongoing experiment between code and civic society, *Prepare Wellington* would be a distinctly New Zealand contribution.

Thank you for the opportunity to explore this concept with you.

Tristam Sparks & Jo Bailey
Design researchers
School of Design
College of Creative Arts
Massey University
Wellington
Appendix 1.0: Expanding experience

A1.1 User interface concepts

Following on from the experience prototype tests, where some lessons could be brought to bear, the following studies were created to see how some of the core concepts considered for inclusion would work within an operational environment of an iPhone 6.

It is not anticipated that a native application is necessary at this time, but the examples below in the most case could easily be web applications accessed through a browser.

Both examples use a similar user interface colour palette as an nascent direction, but each display information and situate the user in a completely different manner. In some respect the first user interface proposal may prove to be more successful for a wider variety of users. In the other example, the UI proposal may allow for a more modular rollout of functions as they are included with Prepare Wellington’s suite of abilities.

Note that these two proposals also start to communicate how similar experiences could complement one another in a ‘degraded’ user experience.

A UI that degrades gracefully is one that can respond, not only to the type of screen it appears on, but also the quality of data that has been revealed. In this case the map doesn’t display due to it not having been cached, downloaded prior or due to a current lack of signal.
A1.1.1 Trunk and branch navigation

An examination that brings to light some of the opportunities around the integration of the “Preparedness kit” into a flow that allows the user to complete it incrementally at their leisure or perhaps in relation to known locations.
A1.1.2 Contextual navigation

With the experience design concept proposed at the wireframe level and tested (§7.2), this work in the visual design level includes some of the discoveries and observations.

“Business as usual” — Onboarding
Post-crisis confirmation — “Status broadcast”
Appendix 2: Initial interviews

Scenario: daylight 7.6 earthquake
User 1.1

No neighbourhood conversation (with a purpose) [Neighbours?] "Tell the dog to "No relationship with the neighbours"

Came with the flat

Food] "Whatever’s in the pantry..."

[Preparation] "There’s an orange backpack at home. I don’t know what’s in it. We don’t talk about it, there’s no discussion"

[Preparation] in general: NZ neighborhood: I suppose I’d “Get under a door..."

Check on people
Would try “Phone cell... then SMS”

[Status In situ, of situation] I’d check Twitter and online (generally)

[What prep now?] “After this chat, I’m checking the pack!”

“Do I rely on infrastructure? On other people? Not sure...”

[Check with] WCC
[Check with] Googling EQ Wellington preparations CD? ODT? CID?

“Whats that triangle with the blue flags?" "Have you seen the Walkerto CD twitter account?"

Check workplace protocols [] Rely on infrastructure... [Check] reasonably independent

Christchurch... the [duration] of the disaster [It] “Don’t change anything I did” "These are the effects of that" "How likely am I to check now? Hard to say” “I’d look for what to expect”
Appendix 2 cont’d: Initial interviews

Scenario: daylight 7.6 earthquake
User 1.2
Appendix 2 cont’d: Initial interviews

Scenario: daylight 7.6 earthquake
User 1.3

"I first noticed [Wellington] was in a seismic area when I saw a refurbishment plaque at the museum building..."

"I have never experienced an earthquake..."
"I would look for guidance... I would probably need it"
"I would try to call my family..."
"I would probably hop on my motorbike and head home..."
No plans — "Completely unprepared..."

No neighbourhood conversation

I got my information from what other people tell me (WoM)

We should probably get a food bin or organise a backpack of supplies
"I need to check the web for more information!"

Street Christmas party

"I have not seen any formal information"

We have "A couple of smoke detectors"

We have been given "An emergency kit" in unsafe housing...
Appendix 2 cont’d: Initial interviews

Scenario: daylight 7.6 earthquake
User 1.4
Appendix 2 cont’d: Initial interviews

Scenario: daylight 7.6 earthquake
User 1.5
Appendix 2 cont’d: Initial interviews

Scenario: daylight 7.6 earthquake
User 1.6
Appendix 3: User journey testing questionnaire

User Journey testing: Prepare Wellington digital prototype

26 May 2016
test URL: http://bit.ly/1NOJhMz

Thanks for your time this evening. We'd like to gather your feedback on a concept for a tool to help the public prepare for emergency situations, and to share information in the event of an emergency.

We are showing you a low-fi clickable prototype. We would like you to approach the tool with the aim of completing the tasks in one of the following hypothetical user scenarios. The aim is to test some assumptions we have about how people will interact with the information and the interface.

Please write down your step-by-step, and things you didn't understand, and any comments. All feedback welcome. Note: only some interactions work at this stage. If your clicks don't work, note them and try something else!

The scenarios are as follows:

1: SCENARIO: BUSINESS-AS-USUAL (NO EMERGENCY), SETTING UP

**TASKS:**
- Locate the ‘learn about the maps’ function. Do you think this would be useful?
- Where would you look for information about the app from the home screen? What kind of information would you expect to find here (note: there is nothing there at the moment!)

2: SCENARIO: BUSINESS-AS-USUAL (NO EMERGENCY), DAY-TO-DAY USE

**TASKS:**
- Locate the event map – what do you think this map would be for?
- Add a ‘potential community asset’. What is one of these? How would you add it?
- Add a privacy setting for your ‘potential community asset’

3: SCENARIO: BUSINESS-AS-USUAL (NO EMERGENCY), DAY-TO-DAY USE

**TASKS:**
- Locate the map – what do you think this map would be for?
- How would you add an event?

4: SCENARIO: POST-EVENT (EMERGENCY)

**TASKS:**
- Add a report of some damage (a fire)
- Locate a report on the map and confirm or add to it (note: you'll need to choose the RH fire)
Appendix 4: MVP User Stories

<table>
<thead>
<tr>
<th>User/Role</th>
<th>Task/Goal description</th>
<th>Reason</th>
<th>MoSCoW</th>
<th>WREMD's notes</th>
<th>Design notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>From a user’s point of view:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>As a member of the public...</td>
<td>I would like to...</td>
<td>So that I might...</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Browse the map without signing in</td>
<td>Understand the proposition through exploration</td>
<td>Must</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Browse anonymised events without signing in</td>
<td>Understand the specific goal of the experience</td>
<td>Must</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>See general location of anonymised events in a suburb relative to me without signing in</td>
<td>Understand what's near me (right now)</td>
<td>Must</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>See exact time of anonymised events without signing in</td>
<td>Know when forthcoming events will occur</td>
<td>Must</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>See general information of anonymised events without signing in</td>
<td>Get a sense of forthcoming events</td>
<td>Must</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Be invited to add events to the map</td>
<td>Understand that this is a community resource</td>
<td>Could</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Be invited to sign in before I can add events to the map</td>
<td>Understand that authenticated people contribute</td>
<td>Should</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sign into the map with Facebook</td>
<td>Publish my event on Facebook</td>
<td>Could</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>See a map centered on my location</td>
<td>Understand that this map is for me</td>
<td>Could</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>See a map centered on my suburb</td>
<td>Understand that this map is for me in my neighbourhood</td>
<td>Should</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>See the nearest CEH(s) relative to my location</td>
<td>Understand the ultimate purpose of this map</td>
<td>Must</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>See local event(s) in the suburb relative to me when I am signed in</td>
<td>See the event locations in context with my specific location</td>
<td>Should</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>See the exact location of an event in the suburb relative to me when I am signed in</td>
<td>See an event locations in context with my specific location</td>
<td>Should</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How else would people add information to the map? There are no provisions for any site-specific additions.
<p>| See extended event information the suburb relative to my location when I am signed in | Learn about the event’s proposed purpose | Could | shouldn’t need to sign in to see this level of detail - JP | note on row 22 |
| See who is hosting the event when I am signed in | Understand that this is an event driven by another member of my community | Could | shouldn’t need to sign in to see this level of detail - JP | note on row 22 |
| See when an event is approved by WREMO | Understand that there will be specific and exclusive information available at this event | won’t | Not relevant? - JP | suggested in the case where WREMO staff/volunteers present |
| See a list of the events I have contributed when I am signed in | Keep track of events I have hosted and will host | Could | | |
| Access general invite information when not signed in | Get a sense of a specific event | Must | | |
| See that I need to sign in to get more information about an event | Be encouraged to sign in to find out more | won’t | Only sign in to create events, or register to attend an event, all information should be available without signing in - JP | people may not contribute if they feel that they need to expose too much private information in public (who they are, where they live). Potential for abuse of that info by third parties is a real concern. People will need to control &amp; protect their privacy. The sign in and reveal of information helps to provide an impression that the site is trustworthy and that contributors do not risk unwanted attention. New stories: Rows 53 &amp; 54 |
| Be invited to sign in to make event invitation active | Be encouraged to sign in to indicate my interest | Should | | |
| Access further event information when I am signed in | Have my engagement rewarded with further information | Could | | |
| Accept event invitation when I am signed in | Connect with the host and the event information | Could | | |
| Add events to the map when I am signed in | Contribute to the event options available for other people | Must | | |
| Invite people to events when I am signed in | Ensure people know about the event that I am hosting | Could | the sole purpose is to show events are occurring? How would people know how to attend an event? Or who to approach? |
| View who owns the map | Understand why I should trust the map | Need to explore what this would look like - JP | applying an organisation’s reputation provides context to the platform’s quality, reliability &amp; purpose |
| Access information about the map | Understand why I should use the map and what it might be in the future | | | |
| Find out why I should add an event | Contribute to the map’s usefulness | Must | How? - JP | user interface design decision |
| Provide time and date of the event | Ensure people know when the event that I am hosting occurs | Must | | |
| Change the year of my event | Invite people to an event that happens next year | Must | | |
| Provide the location of the event | Ensure people know where an event that I am hosting will be | Must | | |
| Describe an event | Ensure people know what the event that I am hosting will be about | Must | | |
| Use my location as the location of an event | Not have to enter my own address | Could | | |
| Share the map experience | Tell others of the map’s existence via social media or email | Could | Site or specific events? - JP | site, new story added: Row 37 |
| Share event information | Tell others of an upcoming event via social media or email | Could | | |
| Understand how my information will be used | Trust that the experience will not use my data for any other reason than what I supply it for | Must | | |
| Accept terms and conditions | Understand that the application contains information that might change, but that the publishers of the map might not be liable (etc) | Must | | |
| Requirement                                                                 | Discussion                                                                                                                                                                                                 | Priority |
|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------Adam join the conversation with his friend Adam seen on Facebook at a local event. It is an educational event about how to handle a crisis. What is the purpose of the event and what is it designed to achieve? Could anyone interested in the topic participate? | Would like to participate. |
|                                                                                           | People need to see that the experience is maintained and safe to use. Additionally, no software is fool proof, nor is it impervious to misuse. People need to contact a site’s owner about questions/concerns and provide feedback on operation: catching bugs, etc. |          |
|                                                                                           | People need to see that the experience is maintained and safe to use. Additionally, no software is fool proof, nor is it impervious to misuse. People need to contact a site’s owner about questions/concerns and provide feedback on operation: catching bugs, etc. |          |
|                                                                                           | Should ensure that people can access the information they need to stay safe and informed during a crisis. Ensure everyone has access to accurate information in their suburb. |          |
|                                                                                           | Should ensure that people can access the information they need to stay safe and informed during a crisis. Ensure everyone has access to accurate information in their suburb. |          |
|                                                                                           | Ensure everyone has access to understanding the purpose and capabilities of a CEH. |          |
|                                                                                           | Should ensure that people can access the information they need to stay safe and informed during a crisis. Ensure everyone has access to accurate information in their suburb. |          |</p>
<table>
<thead>
<tr>
<th>Scenario</th>
<th>Task</th>
<th>Description</th>
<th>Desired Outcome</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign CEHs to suburbs</td>
<td>Manually associate known and potential CEHs to a specific and known population area</td>
<td></td>
<td></td>
<td>Which volunteers? Not WREMO ones, maybe volunteer admin have an area they look after in the site? - JP</td>
</tr>
<tr>
<td>Assign volunteers to suburbs</td>
<td>Manually associate known volunteers to a specific population area</td>
<td>What would this look like? - JP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post moderate entries</td>
<td>Remove information that maybe harmful to the community</td>
<td></td>
<td>Must</td>
<td></td>
</tr>
<tr>
<td>Contact an event owner through Facebook</td>
<td>Create connections with members of the community</td>
<td>Through Facebook? Not through the map itself? - JP</td>
<td>Through Facebook for the MVP: onsite comms is a huge undertaking initially. Rows 53 &amp; 54</td>
<td></td>
</tr>
<tr>
<td>Confirm WREMO attendance</td>
<td>Confirm connections with members of the community</td>
<td>won't</td>
<td>Not relevant? - JP</td>
<td></td>
</tr>
<tr>
<td>Receive feedback from identified users</td>
<td>Create a database of interested parties in the community</td>
<td>Could</td>
<td>self organisation requires some expert guidance? or the ability to seek it out at the least?</td>
<td></td>
</tr>
<tr>
<td>Receive feedback from anonymised users</td>
<td>Receive reports on map information for verification, deletion or fixing</td>
<td>Could</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add an event to the map identified as a WREMO (employee)</td>
<td>Invite “special” events independent of the community’s activity</td>
<td>won’t</td>
<td>Not relevant? - JP</td>
<td></td>
</tr>
<tr>
<td><strong>As a WREMO volunteer:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receive email when someone in my area has requested a volunteer at an event</td>
<td>Know when a WREMO employee has vetted a request for my attendance</td>
<td>won’t</td>
<td>Not relevant? - JP</td>
<td></td>
</tr>
<tr>
<td><strong>As a designer:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure events are only visible to people who are currently in a specific suburb</td>
<td>Help to maintain the relationship between individuals, households and neighbourhoods</td>
<td>Won’t</td>
<td>see comment on row 58</td>
<td></td>
</tr>
<tr>
<td>Display a message that encourages users to bookmark the experience</td>
<td>Introduce this experience to a person’s routine</td>
<td>could</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display a site icon and description when shared on social media and email</td>
<td>Underline the apparent trustworthiness of the experience &amp; shared info when an individual is sharing information independently</td>
<td>could</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import user photo and account name into the map</td>
<td>Allow users to align their contribution to their personal identity</td>
<td>could</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display a message that allows the user to opt out of location services</td>
<td>Allow the user to maintain control of their device and broadcasted data</td>
<td>could</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display a message that ensures the user knows the experience is more useful when location services are enabled</td>
<td>Allow the user to understand the purpose of their location’s use</td>
<td>could</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display a message that allows a user to know the experience requires space on their phone</td>
<td>Inform the user that location services require acceptance of cookies</td>
<td>could</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>As a developer:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure that all information entered onto the map is stored securely</td>
<td>Limit opportunities for any contributed information or activity on the experience to be stolen or misused</td>
<td>Must</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure information is kept in an encrypted database</td>
<td>Ensure any contributed information or activity on the experience is protected</td>
<td>Must</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ensure the experience uses HTTPS</td>
<td>Ensure users trust the experience and minimise chances where information is intercepted in transmission</td>
<td>Must</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure that all GIS information entered onto the map is stored securely</td>
<td>Ensure users trust the site enough to share accurate locations to a signed in audience</td>
<td>Should</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make the experience available on Chrome (Mobile)</td>
<td>Provide Chrome users with a supported experience</td>
<td>Should</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make the experience available on Safari (Mobile)</td>
<td>Provide Safari users with a supported experience</td>
<td>Could</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make the experience available on iOS 8+</td>
<td>Provide iOS web users who are reasonably up to date with a supported experience</td>
<td>Could</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make the experience available on Android Kit Kat+</td>
<td>Provide Android web users who are reasonably up to date with a supported experience</td>
<td>Could</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display a message to users with incompatible devices</td>
<td>Help users understand that their device is not suitable at this time</td>
<td>Should</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure GIS information is compatible with the map selected for the experience</td>
<td>Ensure GIS information can be moved from one presentation layer to another should it be required</td>
<td>Should</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure information is kept in a database that can be ported to future experiences</td>
<td>Ensure there is no disruption of service when future UX is added</td>
<td>Must</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Save a suburb on the user’s device</td>
<td>Allow the user to set their suburb independent of their location</td>
<td>Should</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select a map service that is appropriately detailed for the WREMO region</td>
<td>Ensure even users in rural regions can identify with their map display</td>
<td>Should</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure experience can accept account creation independent of Facebook in the future</td>
<td>Preserve existing user records and allow them to migrate or upgrade in the future</td>
<td>Should</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export event data from map to Facebook account associated to signed in Facebook user</td>
<td>Allow the user to give permission for event data on map to be displayed on Facebook</td>
<td>Could</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I wonder if we should ensure the map and our volunteer database are working of compatible database - JP
Appendix 5: Hazard/crisis digital tools

The following examples are some of the many examples we examined that brought to crisis or attempted to bring civil defence information online and into the hands of people who may need it.

Hazard app (Red Cross)


Analysis:
This app, beyond the alerts, is heavily weighted towards content giving general information on hazards and providing some checklist type information. It is informative, but beyond alerts (that do seem to be relatively geographically unspecific) it is not particularly personalised or localised.

User comments:
Averages 2.5 stars (out of 5) on Apple App Store
3 stars (out of 5) on Google Play Store

“The location of our place as recorded by the app during the initial startup process is incorrect, though the description is ok. There is no way to change it to show the correct location. This, in case of emergency, can lead to serious problems if the rescue used the map to locate our place.”

“...Programme needs to be far more selective and only issue relevant warnings. The auto GPS location is well out. But this is a google maps fault as well. Very irritating.”

“... it’s badly written and delivers multiple identical warnings when a widespread warning intersects multiple geographical areas.”

“Not ready: Great idea but as of June 2016 this app appears not ready for android release. ... Suggest lots more testing before it is released again and publicised. It’s too important to be a muck up.”
Auckland Civil Defence

Note: this app is being decommissioned as of June 30 2016.

Analysis:

Very slow to load, and Auckland-centric in content (though not in vocabulary—there was clearly an intention to roll this out further). Uses the Civil Defence visual language heavily (without any regional indication). There is a space for events within this app, but in the period of research, none were ever visible. This app is a good example of a good idea, unresourced and inadequately maintained.

User comment:

3 stars on Apple App Store
3.7 on Google Play Store

“How many years has this app been available and still the only region available for alerts is Auckland? Come on! There is more to NZ than Auckland. What a waste of time.”

“Can’t use it without logging in! Guys, don’t you know how big a turn-off that is. Get your act together and do a guest version”
Geonet

https://www.geonet.org.nz/

Analysis:

This app has real value for users, and has a clear and well defined purpose. It offers tailored information via alerts (though recent issues reported by users underline the need for constant updates to software to deal with changes in OS systems). The collection of citizen data via ‘felt it’ reports on the app is straightforward, though requires social media sign in which alienates some users. The web interface for reporting is not as refined, but collects comprehensive data.

User comments:

4+ stars on Apple App Store
4.2 stars on Google Play Store

“Simple and to the point, but also very informative and always up to date.”

“Yes, we look at it after any decent jolt. Good stuff”

“Good job Still prefer the website, but getting better”
Emergency AUS

http://emergencyaus.info/map

Analysis:
Available via the web and via an app, giving real time hazard information from emergency services. Web version does not allow the addition of public observations, but is otherwise a straightforward and useful experience. Icon system is comprehensive and available as an open source toolkit.

User comments:
4 stars+ on Apple App Store
4 stars on Google Play Store

“...not shareable on social media or even by email, so I use this in conjunction with other emergency apps which are. This is the only app that allows you to pinpoint areas for continual monitoring.”

“Need to be able to filter out total fire bans... don’t need to be constantly updated on these when nothing else is happening.”

“...I see that the app will only be suited for the current devices, and they’ve shut off app functionality to older devices. If this is an emergency app, it shouldn’t have to be so demanding on what version of iOS it should run on.”

“...Kept us up to date and correctly informed, especially helped in being on top of events and ready to evacuate, which we did have to do.”
References


Glossary

Crowdsourcing

From Beatson, Buettner, & Schirato, 2014:

Estellés and González (2012, 9) define crowdsourcing as ‘a type of participative online activity in which an individual, an institution, a non-profit organisation, or company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary Undertaking of a task’.

The Cloud/Cloud Computing

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. (Mell & Grance, 2011)

Platform

A software code base that runs on The Cloud. This is usually proprietary: eg: Facebook, Twitter, Google Maps and the WREMO community map, when it exists.

User Experience Design

The design process usually framing the creation of software in a human- or user-centered, or needs focussed approach. Although definitions vary in specificity, sometimes used interchangeably with IxD: Interaction Design and XD: Experience design.

Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAU</td>
<td>Business as usual</td>
</tr>
<tr>
<td>CEH</td>
<td>Community Emergency Hub</td>
</tr>
<tr>
<td>CDRP</td>
<td>Community-Driven Response Plans</td>
</tr>
<tr>
<td>EOC</td>
<td>Emergency Operations Centre</td>
</tr>
<tr>
<td>MCDEM</td>
<td>Ministry of Civil Defence and Emergency Management</td>
</tr>
<tr>
<td>MVP</td>
<td>Minimum viable product</td>
</tr>
<tr>
<td>UI</td>
<td>User interface</td>
</tr>
<tr>
<td>UX</td>
<td>User eXperience</td>
</tr>
<tr>
<td>UXD</td>
<td>User experience</td>
</tr>
<tr>
<td>UCD</td>
<td>User Centred Design</td>
</tr>
<tr>
<td>V&amp;TC</td>
<td>Volunteer and technical communities</td>
</tr>
</tbody>
</table>