



CreateWorld 2012

5-7 December Griffith University Brisbane



DESIGNING INNOVATIVE SMARTPHONE APPLICATIONS FOR VISITORS TO NEW ZEALAND'S NATIONAL PARKS.



GRANT BAXTER

PROFESSIONAL PRACTICE FELLOW

DESIGN FOR INNOVATION, APPLIED SCIENCES

UNIVERSITY OF OTAGO

MY BACKGROUND

TECHNOLOGY IN
NATIONAL PARKS

ISSUES WITH THE USE OF
TECHNOLOGY

PRECEDENTS

FEATURES OF SUCCESSFUL
APPS

IDEATION

IDEO METHODS

ARTHUR'S PASS

EXPERIMENT ONE

EXPERIMENT TWO

EXPERIMENT THREE

DENNISTON

CONCLUSIONS

ABOUT ME



My tent, pitched at the
head of Falls Creek,
Fiordland National Park.

► THE JOURNEYS OF ALPHEUS BARRINGTON

Barrington's reputation rests firmly on a single epic expedition. It was a journey of true exploration, undertaken into completely unknown country and without the assistance of Maori guides, unlike most European expeditions in New Zealand.

The roughness of the country covered and the severity of the privations endured were noteworthy. Barrington's diary of the journey is also remarkable.

As a gold prospector's record of discovery it is unique, and its descriptive power is unmatched by any other account of New Zealand exploration.

Strachan SR. 'Barrington, Alphonse John – Biography' from the Dictionary of New Zealand Biography. Te Ara – the Encyclopedia of New Zealand. Wellington: New Zealand Government; 2012

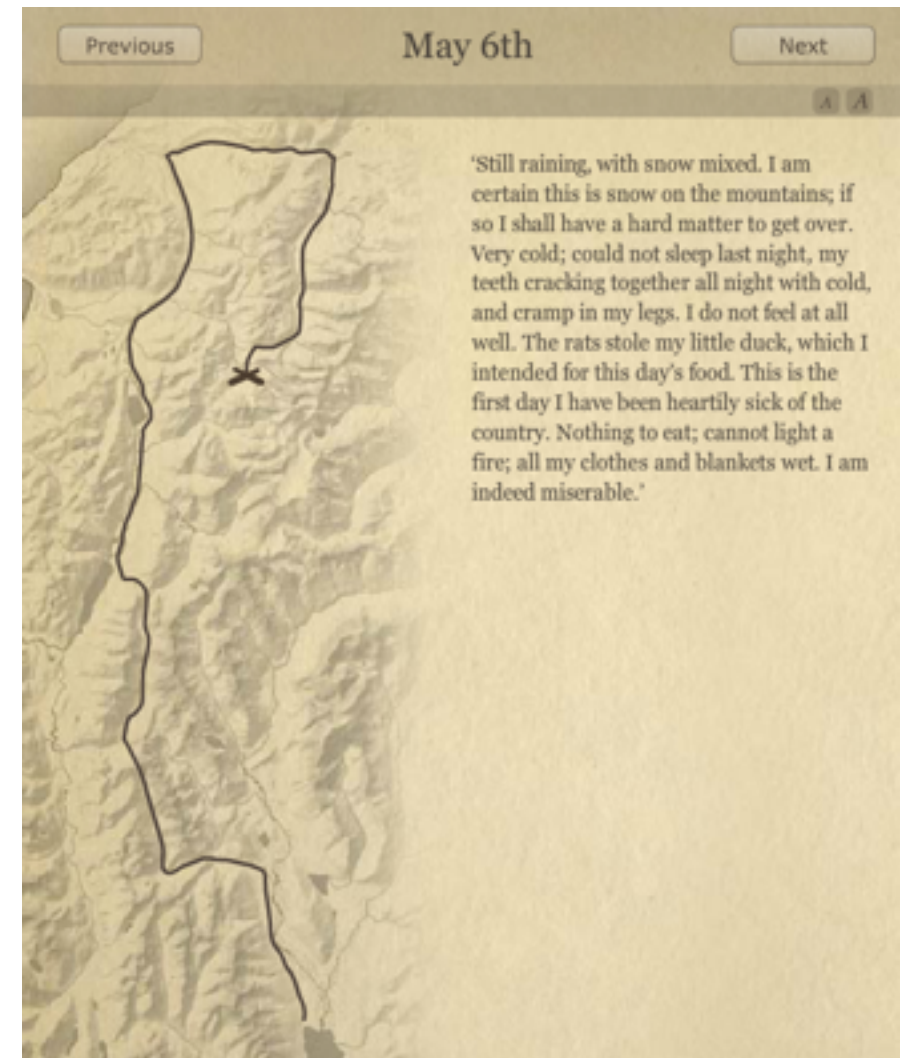


► ALPHEUS BARRINGTON

When reading about Alpheus Barrington's experiences in Fiordland and Mount Aspiring National Parks in 1864 one quickly realises how far technology has come in a “relatively” short period of time. When Barrington embarked on his epic (though slightly misguided) exploration of Fiordland, he and his companions were carrying:

“...60 lb of oatmeal, 4 lb of flour, 8 lb of salt, 2 lb of pepper, 4 lb of tobacco, 25 lb of shot, 4½ lb of powder, 2 double barrel guns, a couple of half axes, 2 blankets apiece, spare clothes, a tent, and cooking and prospecting gear. Their swags weighed more than 70 lb each.”

Strachan SR. 'Barrington, Alphonse John – Biography' from the Dictionary of New Zealand Biography. Te Ara – the Encyclopedia of New Zealand. Wellington: New Zealand Government; 2012



A virtual travel journal of Barrington's expedition through Fiordland National Park.

<http://www.TeAra.govt.nz/en/european-exploration/8/4>





5 clips @10 minutes
each available on
YouTube:

Fiordland & South Westland
by Welcome to the Fjordland Video Scrapbook



► THE RETURN TO QUEENSTOWN

'Three skeletons just alive', the prospectors were admitted to hospital in Queenstown, where a public subscription raised £60 towards their expenses. Barrington's diary of the expedition was published in the Lake Wakatip Mail and on 20 July at a public meeting he declared his intention of exploiting the gold prospects on the Cascade River by chartering a boat to Jackson Bay.

In the spring of 1864 Barrington led a party of diggers on the cutter Nugget to Jackson Bay. Although the rivers which flowed into the bay were extensively prospected no gold was discovered, probably because Barrington was mistaken in his belief that the Cascade River flowed into Jackson Bay; in fact it debouched further south. Bitterly disappointed, the party returned to Greymouth in December 1864.

Barrington returned to Australia and in 1873 fathered an illegitimate son whose name was later changed to Alpheus John Barrington. The boy drowned in 1880. In 1875 Barrington married Isabella Smith and worked in the hotel industry in Horsham. Isabella filed for divorce in 1893. By 1884 Barrington was settled in Nhill with Alice Hardingham, with whom he had four children, and was running a retail business which burnt down in 1884. He died on 15 December 1893, leaving Alice with two surviving young children and insolvent. She remarried in 1896 and died in 1941.



► TECHNOLOGY IN NATIONAL PARKS



My favourite tent ever – the
Jack Wolfskin Termite.

Mick Abbott describes an incident, while tramping (ironically) in an area Barrington had also travelled in, where he performed an audit of the 'technology' he was carrying while in the 'wilderness':

“For instance, on one week-long solo trip from the Cascade River to the Beans Burn via the Red Hills, I stopped for a rest day pretty much three days’ walk from the nearest track.

At my camp I thought to write down the gear I had with me. As well as the more obvious stuff – tent, sleeping bag, parka, pack, cooker, and so on – my list included my camera’s memory stick made in Taiwan, a watch bought at Los Angeles airport, disposable lighters made in France, a big black garden bag bought at Countdown as my pack liner, my credit card, foil sachets of Sweet Thai Chilli Tuna, couscous grown who knows where, a blue Chinese-made sun hat, and a Pilot Green Hi Tecpoint V5 Extra Fine Pen I used to write the list with.

The list grew to over two hundred articles.”

► ISSUES



Dependence . Distraction . Privilege

► DEPENDENCE



When any new piece of technology is introduced to a new context, that technology runs the risk of supplanting existing skills, knowledge, or memory. For instance, Aporta and Higgs found that from the mid-1990s the use of affordable handheld GPS units was leading to a lack of basic navigation skills amongst Inuit Indians.

Traditionally, the Inuit had developed a complex system of navigation based on land characteristics such as snowdrift patterns, animal behaviour, tidal cycles and astronomical phenomena.

As Aporta and Higgs point out, a mere glitch (or flat battery) in a piece of technology a user has come to depend on can result in a dangerous or life threatening situation.


When users become dependent on the smooth, reliable operation of the technology, they lose the 'built-in' ability to survive without the technology in question.


Additionally GPS technology tells a user where they are on the surface of the planet, it does not tell them how to travel safely, or what is of interest

Aporta C, Higgs E. Satellite Culture - Global Positioning Systems, Inuit Wayfinding, and the Need for a New Account of Technology. Current Anthropology. 2005 1/12/2005;46(5).




► WHAT MAKES A SUCCESSFUL APPLICATION?

 How much does the application encourage engagement with the user's environment?

 How sophisticated/professional is the user interface and user experience?

 To what degree is location/context aware information used?

 To what degree are Social Networking tools integrated into the App?

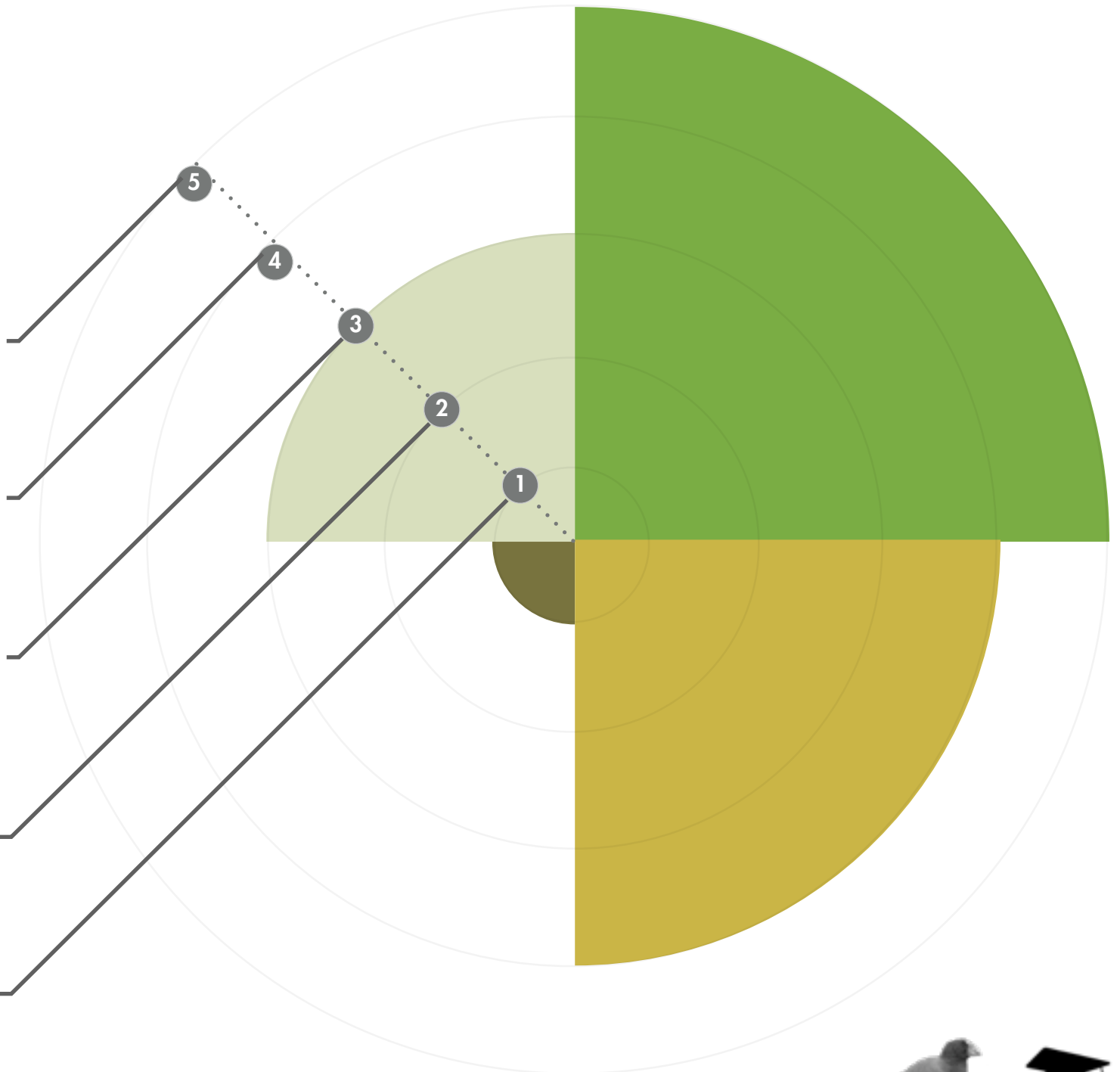
Advanced or integral use. The component is seen as essential to the application's use/point of difference.

Important or noteworthy use.

Average degree of use. Feature enhances application but is not essential for its operation.

Basic level of integration. Feature is present but not fully exploited.

No or extremely superficial attention given.



► EXISTING APPLICATIONS

► MOTIONX GPS (AND MOTIONX GPS LITE), BY FULLPOWER TECHNOLOGIES INC.



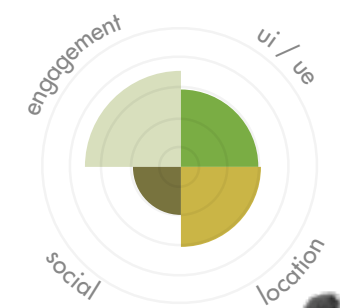
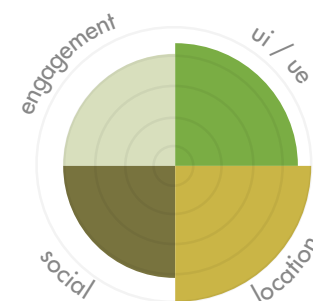
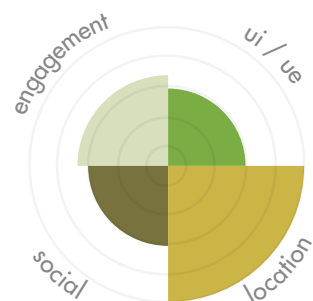
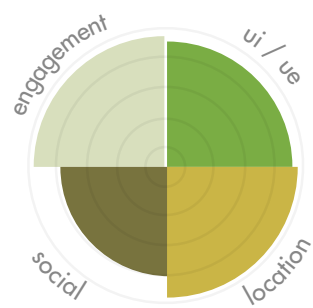
► FIND NZ, BY COCOA LOVE SOFTWARE



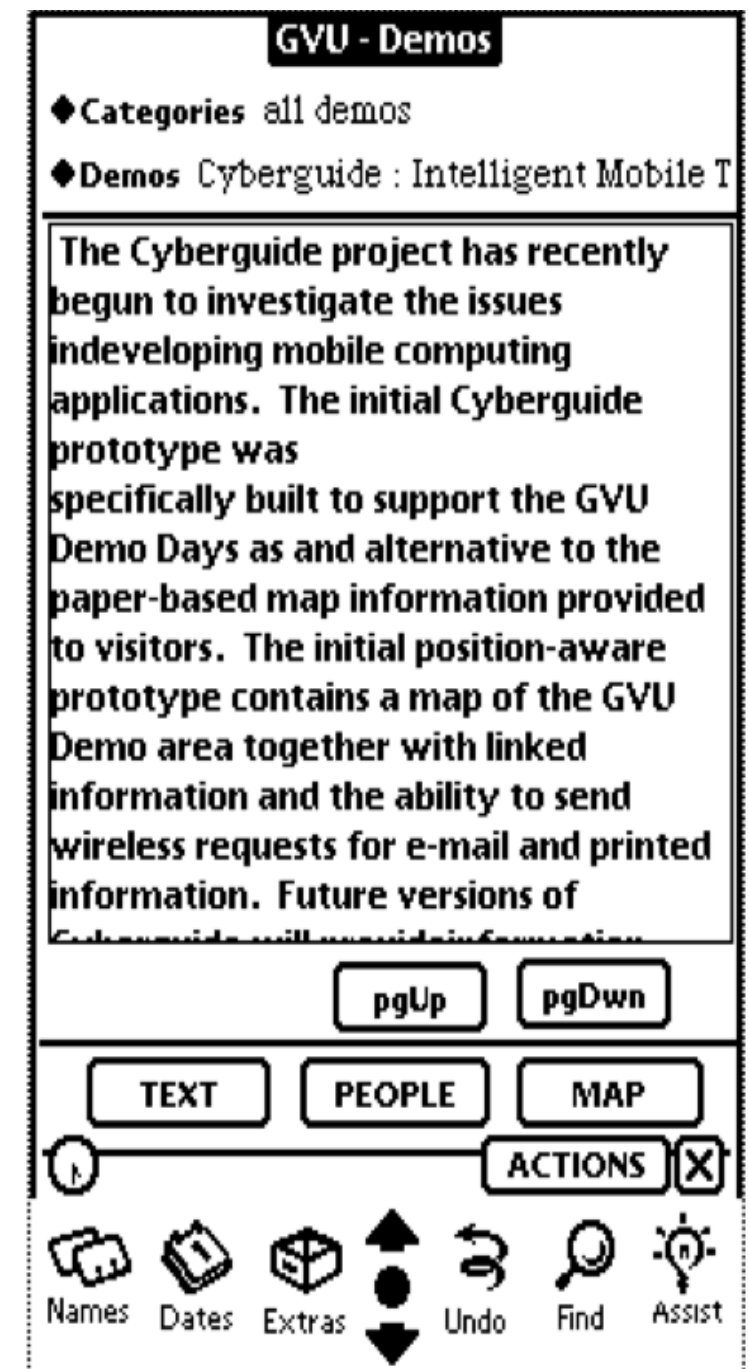
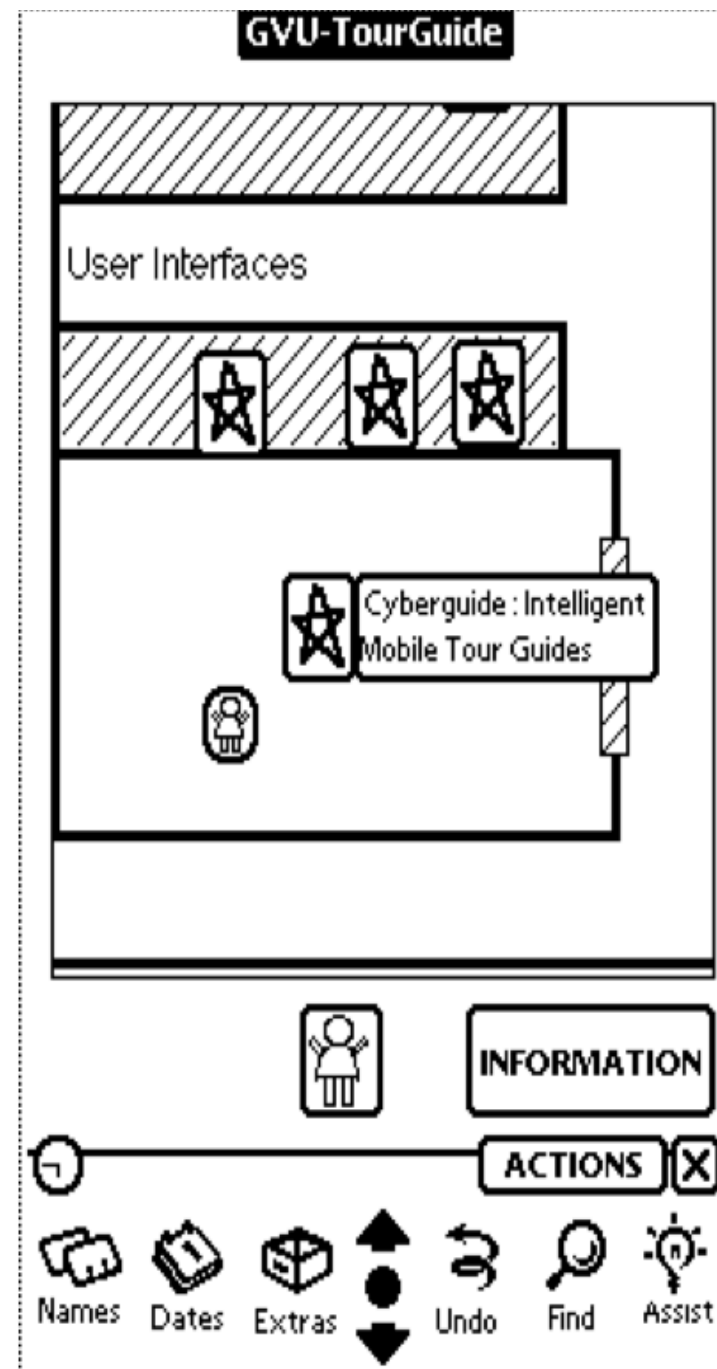
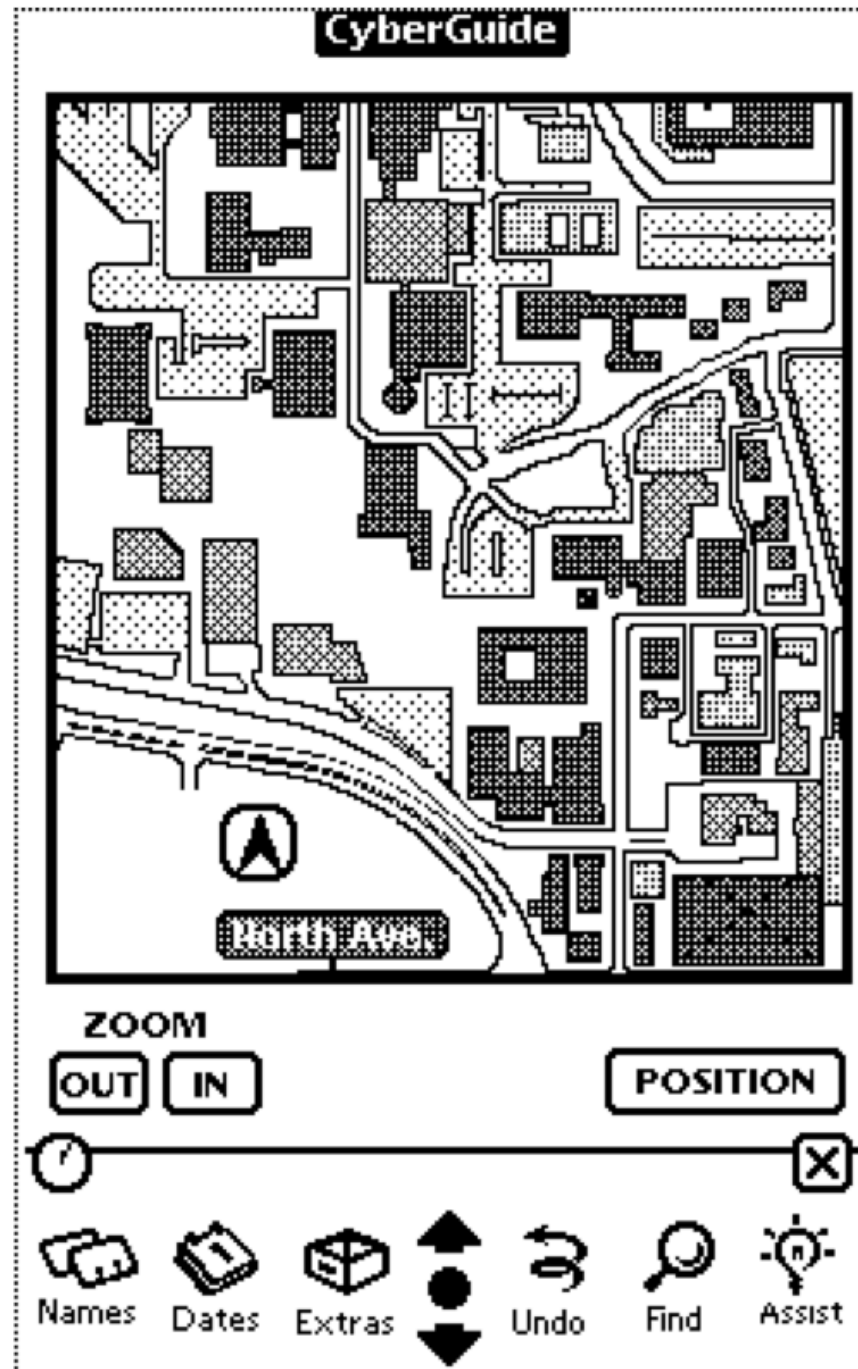
► TRIP JOURNAL, BY IQEST TECHNOLOGIES



► IYELLOWSTONE, BY SUSAN ANDRYK



► PRECEDENTS - CYBERGUIDE



“Our approach is to first think about what activities could be best supported by mobile technology and then determine how the technology would have to work”

ideation

where do (good) ideas come from?

We are told that a successful app must have a good idea behind it, but how exactly are these good ideas generated and can they be “coerced”?

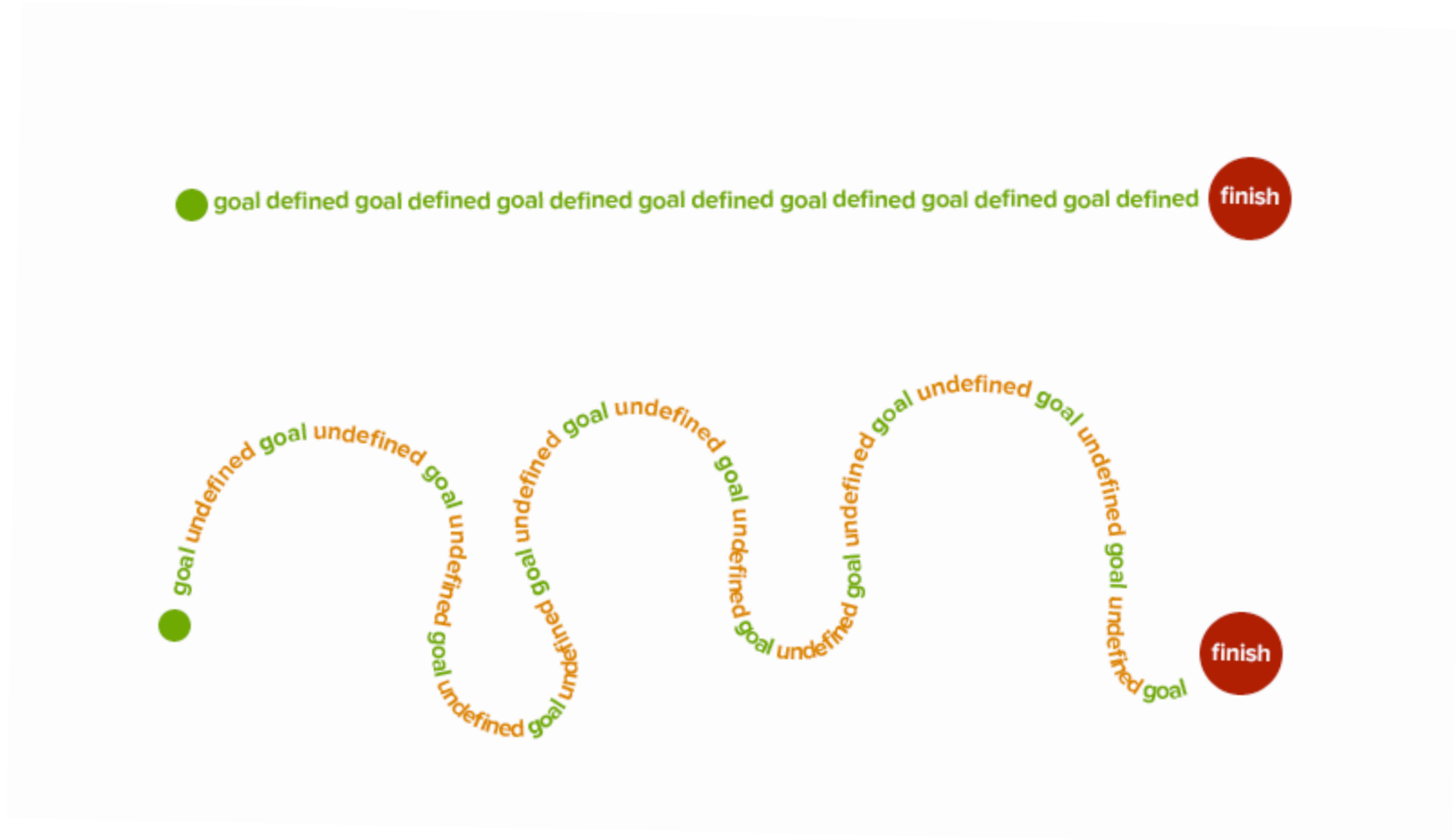
Spontaneously?

Coerced?

Informed?



► A GOOD PROCESS



You may find during this process that some fresh ideas come to mind that simplify the flow or that add a creative twist to the interaction design. Try to keep your original concept in mind without blocking the flow of new ideas!

<http://media.smashingmagazine.com/wp-content/uploads/2012/07/define-a-goal.png>

► BUCHANAN'S ORDERS OF DESIGN

1st

posters

"The first order of design is communication with symbols and images."

2nd

toasters

"The second order of design is design of artifacts as in engineering, architecture, and mass production."

3rd

interactions

"In the middle of the 20th century we realised that we can also design activities and processes. We work progressively more with these activities and services. That's the third order of design. In the beginning we called it Human Computer Interaction. Now we work with any kind of interaction – it's about how people relate to other people. We can design those relationships or the things that support them. It's this interaction I'm after."

4th

systems

"To me the fourth order of design is the design of the environments and systems within which all the other orders of design exist. Understanding how these systems work, what core ideas hold them together, what ideas and values – that's a fourth order problem. Both the third and the fourth order are emerging now very strongly."

<http://www.designskolenkolding.dk/index.php?id=3469>



► DEVELOPER SKILLS

The application developer's role involves aspects of **interaction** design, **information** design, **experience** design, and **graphic** design.



► METHODS FOR ENHANCING IDEATION: IDEO METHODS



IDEO is a design consultancy based in Silicon Valley with active connections to Stanford University. It is universally recognised for its innovative approach to design process and outcomes. Danny Stillion states that:

“IDEO creates products, services, and environments for companies pioneering new ways to provide value for their customers. Drawing on 20 years of experience in the field of innovation and design, IDEO defines and develops new futures for industry leaders and start-ups alike.”

IDEO places a strong emphasis on **rapid prototyping** as a means of exploring the strength and weaknesses of concepts, and specifically for avoiding “blind alleys”:

“Programming and basic stamp technology allow designers to more accurately address both the physical and virtual aspects of a user experience through prototyping.”

David Kelley, one of the founders of IDEO, famously created a prototype for the first computer mouse for Apple out of a **deodorant dispenser ball and a butter dish**.

Kelley T, Littman J. The Art of Innovation: Success Through Innovation the IDEO Way. London: Profile Books; 2004.

Hyatt J. Engineering Inspiration. Newsweek. 2010 2010/06/14/:44



► DAVID KELLEY'S TED TALK [2002]



TED talks DavidKelley 2002 Ideas worth spreading
<http://www.youtube.com/watch?v=VVDjzYCCP3j/M>

► CORE PRINCIPLES OF IDEO CONCEPT GENERATION STAGE

Go for **quantity**
(produce a large
volume of
possibilities).

Defer judgement
(don't worry
about the
practicality of
implementation)

Encourage **wild ideas**
(as these will likely be
innovative).

“That opting out [**of creativity**] that happens
in childhood ... moves in and becomes more
ingrained by the time you get to adult life.”

David Kelley



► **HENRY FORD MAY NOT HAVE SAID IT, BUT IT'S A GREAT QUOTE**

**“If I’d asked people
what they wanted, they
would have asked for a
better horse”**



► LEARN; LOOK; ASK; TRY

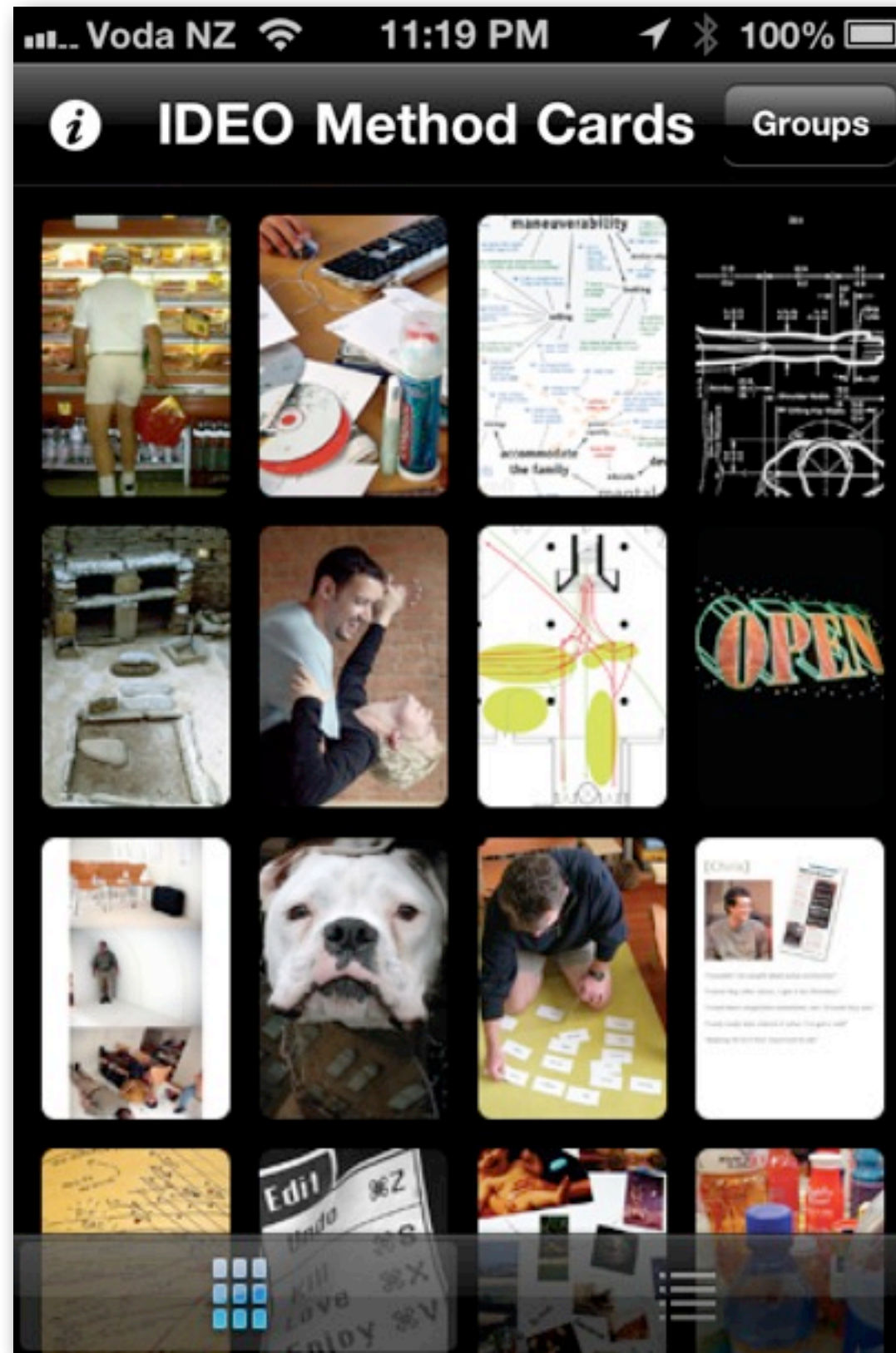
IDEO Method Cards is a collection of 51 cards representing diverse ways that design teams can understand the people they are designing for. They are used to make a number of different methods accessible to all members of a design team, to explain how and when the methods are best used, and to demonstrate how they have been applied to real design projects.

IDEO's human factors specialists conceived the deck as a design research tool for its staff and clients, to be used by researchers, designers, and engineers to evaluate and select the empathic research methods that best inform specific design initiatives. The tool can be used in various ways—sorted, browsed, searched, spread out, pinned up—as both information and inspiration to human-centered design teams and individuals at various stages to support planning and execution of design programs.

Inspired by playing cards, the cards are classified as four suits—Ask, Watch, Learn, Try—that define the types of activities involved in using each method. Each approach is illustrated by a real-life example of how the method was applied to a specific project. As new methods are developed all the time, the deck will grow and evolve over time.



► THERE'S AN APP FOR THAT





Learn

Look

Ask

Try

Error Analysis

HOW: List all the things that can go wrong when using a product and determine the various possible causes.

WHY: This is a good way to understand how design features mitigate or contribute to inevitable human errors and other failures.

The IDEO team used error analysis on a remote control concept in order to maximize the functionality of each button's size, shape, and texture.



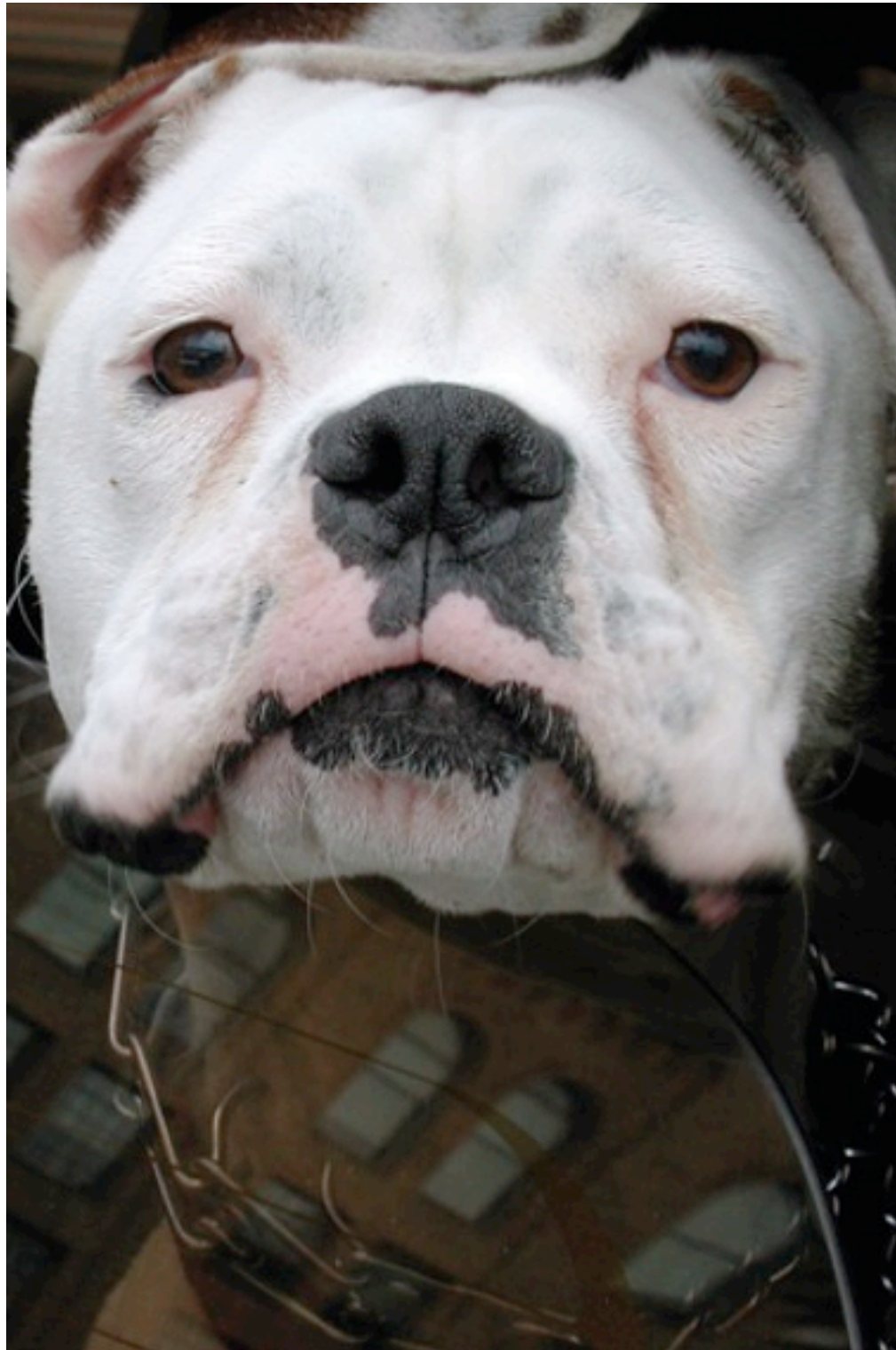
Learn Look Ask Try

Fly on the Wall

HOW: Observe and record behavior within its context, without interfering with people's activities.

WHY: It is useful to see what people actually do within real contexts and time frames, rather than accept what they say they did after the fact.

By spending time in an operating room, IDEO designers witnessed the regard with which the surgeons treated a transplant organ and incorporated these ideas into the transport box they were designing.



Learn Look **Ask** Try

Camera Journal

HOW: Ask potential users to keep a written and visual diary of their impressions, circumstances, and activities related to the product.

WHY: This rich, self-conducted notation technique is useful for prompting users to reveal points of view and patterns of behavior.

The IDEO team designing a travel information system distributed camera journals to families taking car trips to capture map reading and other car travel behavior.



Learn

Look

Ask

Try

Paper Prototyping

HOW: Rapidly sketch, layout, and evaluate interaction design concepts for basic usability.

WHY: This is a good way to quickly organize, articulate, and visualize interaction design concepts.

Sketching out various screens and testing their sequence helped the IDEO team to demonstrate the logic necessary for a successful interaction with an in-store inventory database.

Client \neq Users





CHAPTER 4: THE ARTHUR'S PASS FIELD TRIP

► KIWI TRACKING



1. A staff member holding the electronic tracking device (directional). The antenna picks up faint signals from transmitting devices attached to Kiwi's legs.
2. The receiving antenna held aloft.
3. The antenna device and corresponding battery pack/receiver unit.
4. The Department of Conservation tracking team arriving at the tracking site.
5. The tracking antenna folded up for easy storage and transportation.
6. The battery pack and receiver unit.
7. The Transmitting unit attached to each kiwi being tracked. The unit is custom manufactured and contains a battery that provides approximately six months of transmitting life. The unit transmits significant data including speed and activity by using a series of timed beeps. The strength of the signal indicates distance from the tracker, and the directional nature of the signal indicates the direction in which the kiwi is located.
8. The toolkit of transmitting units and ties.

► KIWI TRACKING



10. Waiting for the Department of Conservation tracking team to return. Numerous periods of time were spent waiting to get a signal update. During these times it was essential to stay quiet so as not to disturb or frighten the kiwi.

11. The tracking team waiting for the kiwi being tracked to stop moving. Kiwi were easily frightened into running away as a result of hearing the Department of Conservation team approaching. After a ten minute wait, tracking resumed again.

12. A kiwi having its beak length measured. Once captured the kiwi had various measurements taken such as weight and beak length.

13. Once the kiwi was caught, it was handled by the tracking team without causing much distress. The kiwis were much lighter than expected with extremely fluffy feathers. The claws are the kiwis primary means of defense and must be held to avoid injury.

14. Details and measurements were recorded manually once the kiwi was captured. Various stats were recorded including beak length and weight.

15. Tables of historical data were kept on hand back at the Department of Conservation vehicle. This data seems to be for Department of Conservation use only and is not displayed to the general public.



► THE VISITOR CENTRE



The Department of Conservation Arthur's Pass visitor centre.

► TEMPLE COL



The Temple Col day walk.

► INSIGHT

Twin Creek waterfall and pool, just off the main track (to Temple Col) but completely un-signposted.



► KELLEY'S CREEK NATURE WALK



► IDEO METHODS USED AT ARTHUR'S PASS NATIONAL PARK

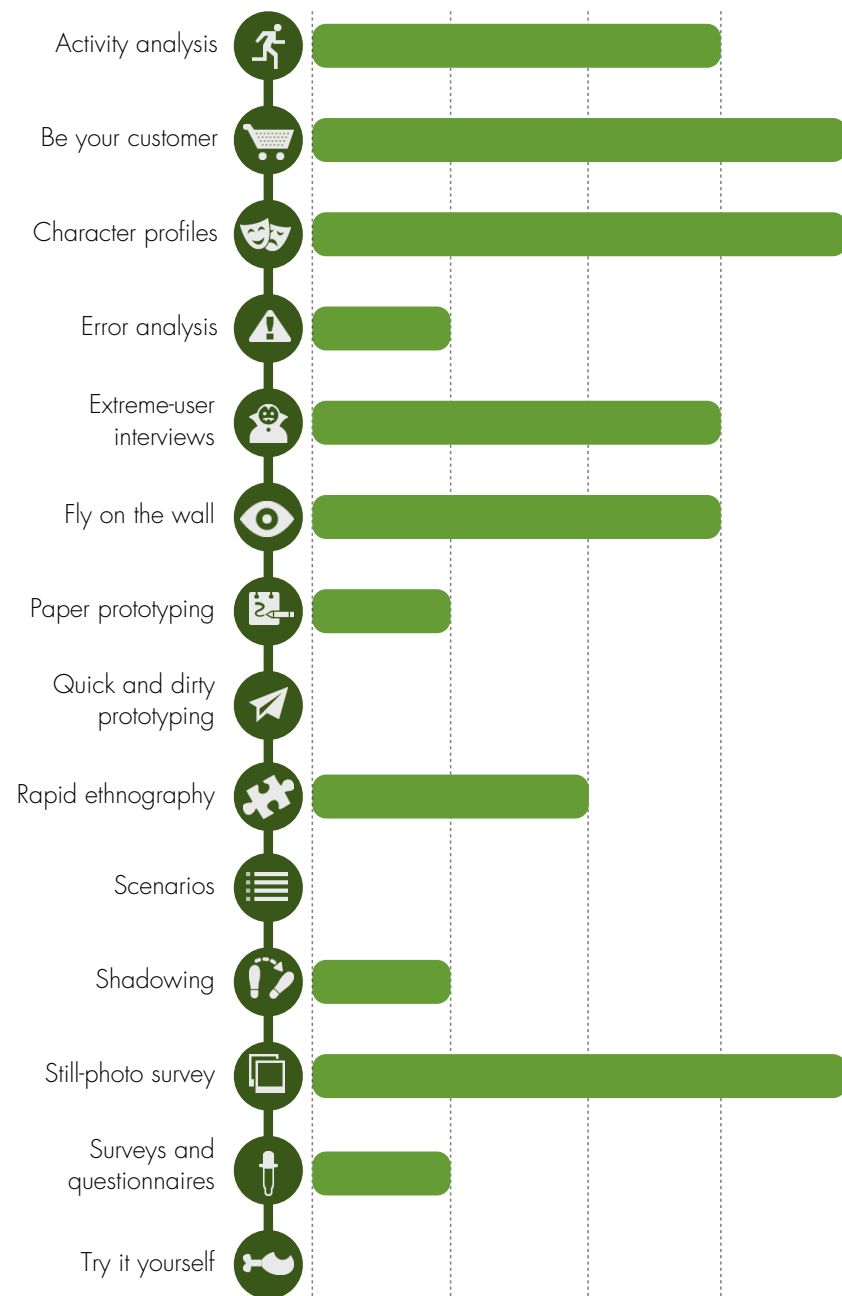


Figure 4.12: A summary of the IDEO techniques used to gather information and insights from the Arthur's Pass field trip.

- (1) *Be your customer* was used when the visitor centre staff were asked to describe the visitor requests patterns. Detailed information on visitor motivations, movements, and patterns was obtained.
- (2) *Character profiles* were used extensively when thinking about the activities visitors to the National Park would engage in. For example, young backpackers staying in Arthur's Pass would have quite different needs and expectations from a family of five passing through the National Park on their way to the West Coast.
- (3) *Error analysis* was considered when the problems of visitors either: (1) missing out on experiences because of poor signage, not enough time, or (2) not finding the relevant information in the visitor centre.
- (4) *Extreme-user interviews* were conducted with selected visitor centre staff and kiwi tracking team members.
- (5) *Fly on the wall* techniques were used to observe how kiwi tracking operations took place and how visitor centre users interacted with materials and staff.
- (6) *Paper prototyping* was used at the visitor centre to sketch ideas/concepts as they occurred to the field trip participants.
- (7) *Rapid ethnography* was used as the field trip team spent a significant period of time talking with staff, and observing the behaviour of staff and users.
- (8) *Shadowing* was used when following the kiwi tracking team. By observing them in the field, several insights were gained regarding how mobile technology could streamline the tracking process.
- (9) *Still-photo surveys* were used extensively. Annotated, sequenced photos were used to describe users' movements on the climb to Temple Col, the Kelley's creek nature walk (plant taxonomies), the visitor centre, and the kiwi tracking field trip.
- (10) *Surveys and questionnaires* were used to question visitor centre staff.

► INISGHTS

In the space of three days it [the Arthur's Pass field trip] identified multiple possibilities for enhancing or improving a user's experience in APNP. These possibilities included:

A kiwi tracker interactive game.

A kiwi protection application (similar in purpose to iGorilla).

An 'off-the-beaten track' application.

An interactive plant identifier application.

An interactive kiosk system (possibly running on tablet devices) in the visitor centre.



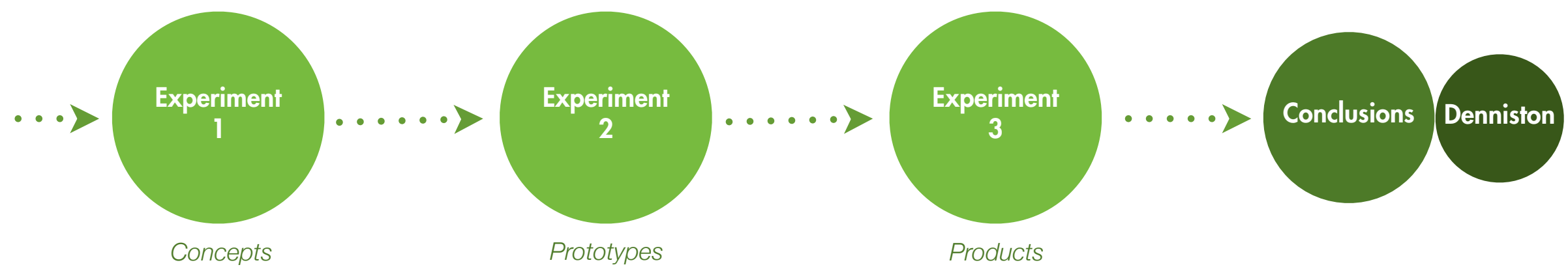
► OFF THE BEATEN TRACK



◀ A member of the field trip party taking a break while walking through the Cave Stream cave system. (Photo used courtesy of Josh Jeffrey).



► EXPERIMENTAL PROCESS



Purpose

Concept generation,
prototype production,
exploration of IDEO
methods and techniques.

Supervision of student groups
to develop wide ranging
ideas and concepts.
Concept generation for BNZ
Save the Kiwi Trust Hui.
Production of five working
prototypes.

Refinement of two
concepts from Experiment
One into two applications
deployed in Arthur's Pass
visitor centre.
Development of advanced
prototype of NZ Birds
concept.

A series of guidelines and
suggestions for how visitor
experience may be enhanced.
Production of Denniston
application in conjunction with
Department of Conservation
staff using all knowledge
gained in the study.

Outcomes

- Concept portfolio
- Peaks Identifier prototype
- Plant Identifier prototype

- Suite of concepts developed by
students
- Five working prototypes developed
from student prototypes
- Digital prototypes for Save the
Kiwi Trust Hui

- Arthur's Pass Activity
Picker application
- Arthur's Pass Bird
Identification game
application
- NZ Birds prototype iOS
and web application

- Recommendations and
suggestions.
- Audit of successful or useful
methods
- Denniston App



► EXPERIMENT ONE

Focused on rapid concept generation and prototype production



► PLANT IDENTIFIER

Application Definition Statement

A quick and easy to use application that allows users to easily identify NZ native plants and to receive information on the identified plant.

Users

Anybody wanting to know what plants they may be looking at, but particularly walkers in NZ National Parks.

Tasks/verbs

Reference, Plant guide, Interactive quiz, Interactive identification

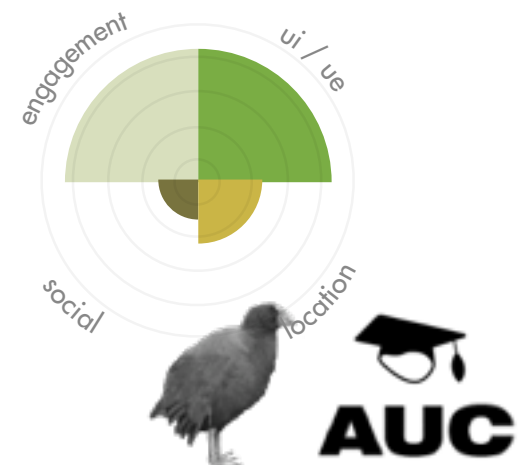
Find by name or type, Image identification/comparison, Collect a set of favourites, Learning/education

Details

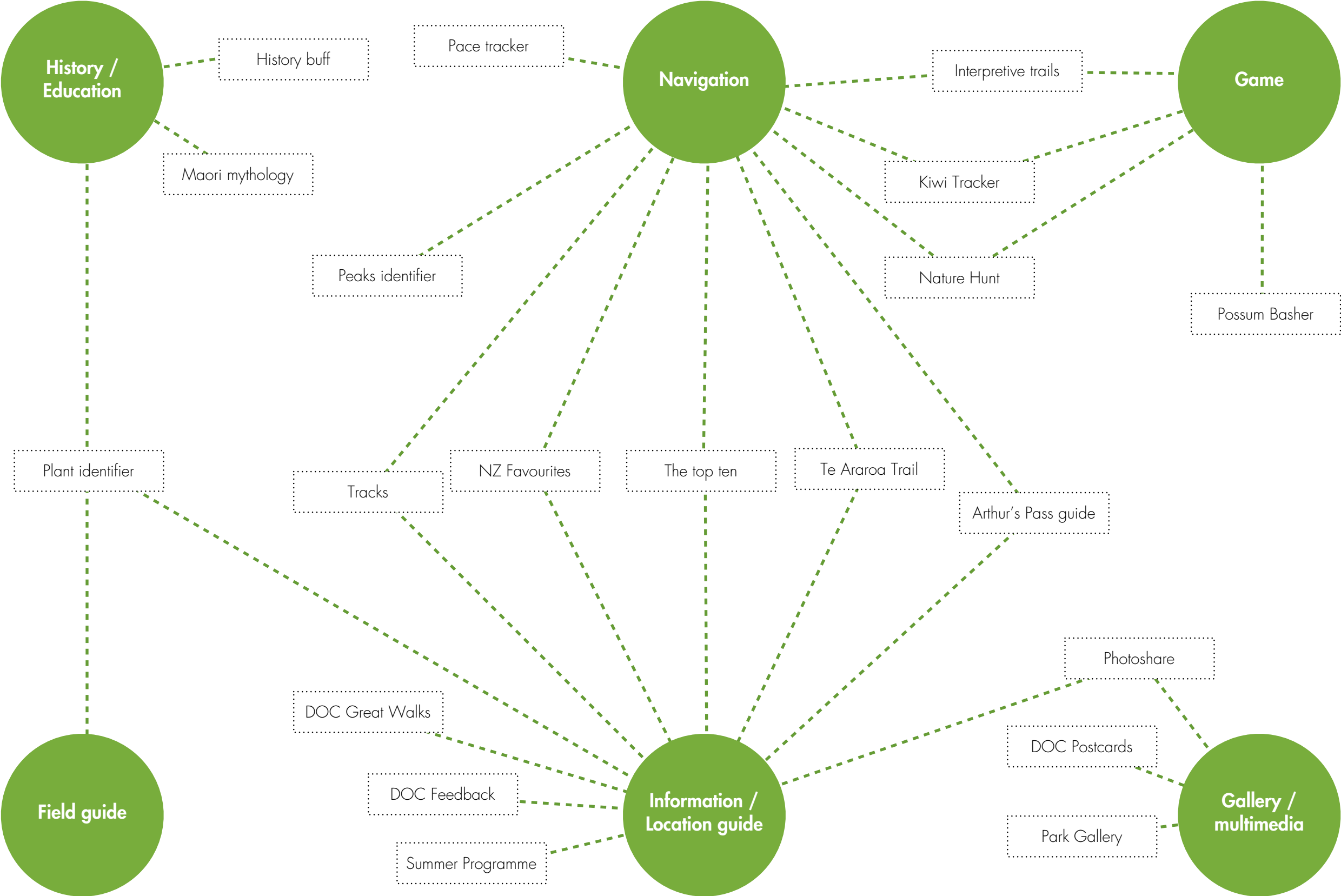
The Plant identifier application seeks to arm a user with a reference guide for all NZ native plants. Simply porting a book to the phone is not enough however, and more engaging, interactive methods of identification would need to be researched to allow users to easily and quickly identify the plants they are unfamiliar with.

A quick mode might ask the user a series of questions and will then present a number of potential matches. It would then be up to the user to make the final determination.

Similarly, an interactive id mode might allow the user to specify a number of characteristics. These characteristics would then narrow down a list of matches.



► **CONCEPT SUMMARY**



► **CONCEPT SUMMARY**



How much does the application encourage engagement with the environment?



How sophisticated and professional is the user interface and user experience?



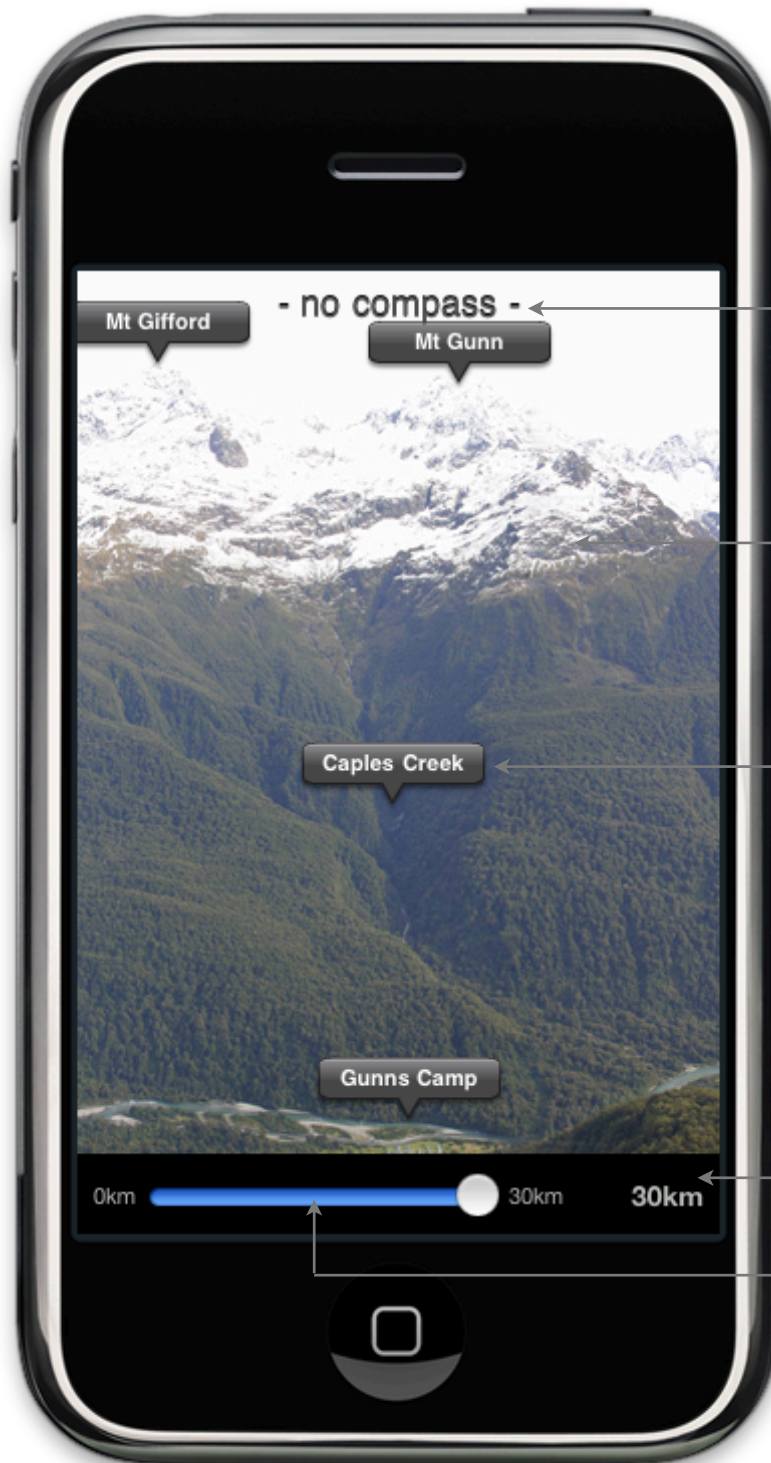
To what degree is location-aware information used?



To what degree are Social Networking tools integrated into the App?



► PROTOTYPE 1



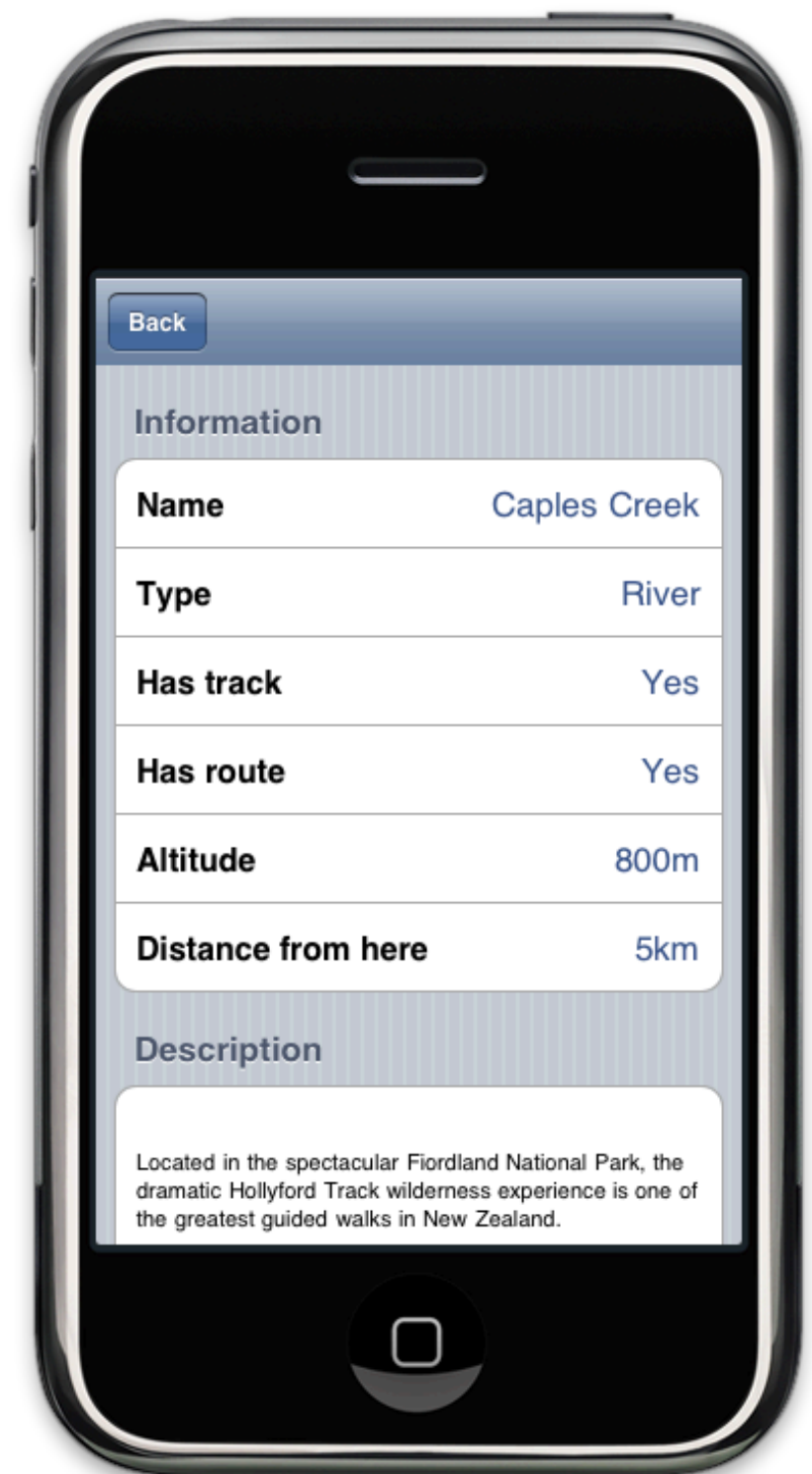
Current digital compass bearing (not shown as app is being run in the iPhone simulator, not on a device).

Single background panoramic image that scrolls when the phone is scrolled when digital compass value changes.

POI superimposed on background image.

Current range setting.

Slider to dynamically filter POIs by their proximity.



Back

Information

Name	Caples Creek
Type	River
Has track	Yes
Has route	Yes
Altitude	800m
Distance from here	5km

Description

Located in the spectacular Fiordland National Park, the dramatic Hollyford Track wilderness experience is one of the greatest guided walks in New Zealand.

► PROTOTYPE ONE - EXTENDED



MISTAKE CREEK TO HUT CREEK VIA U PASS

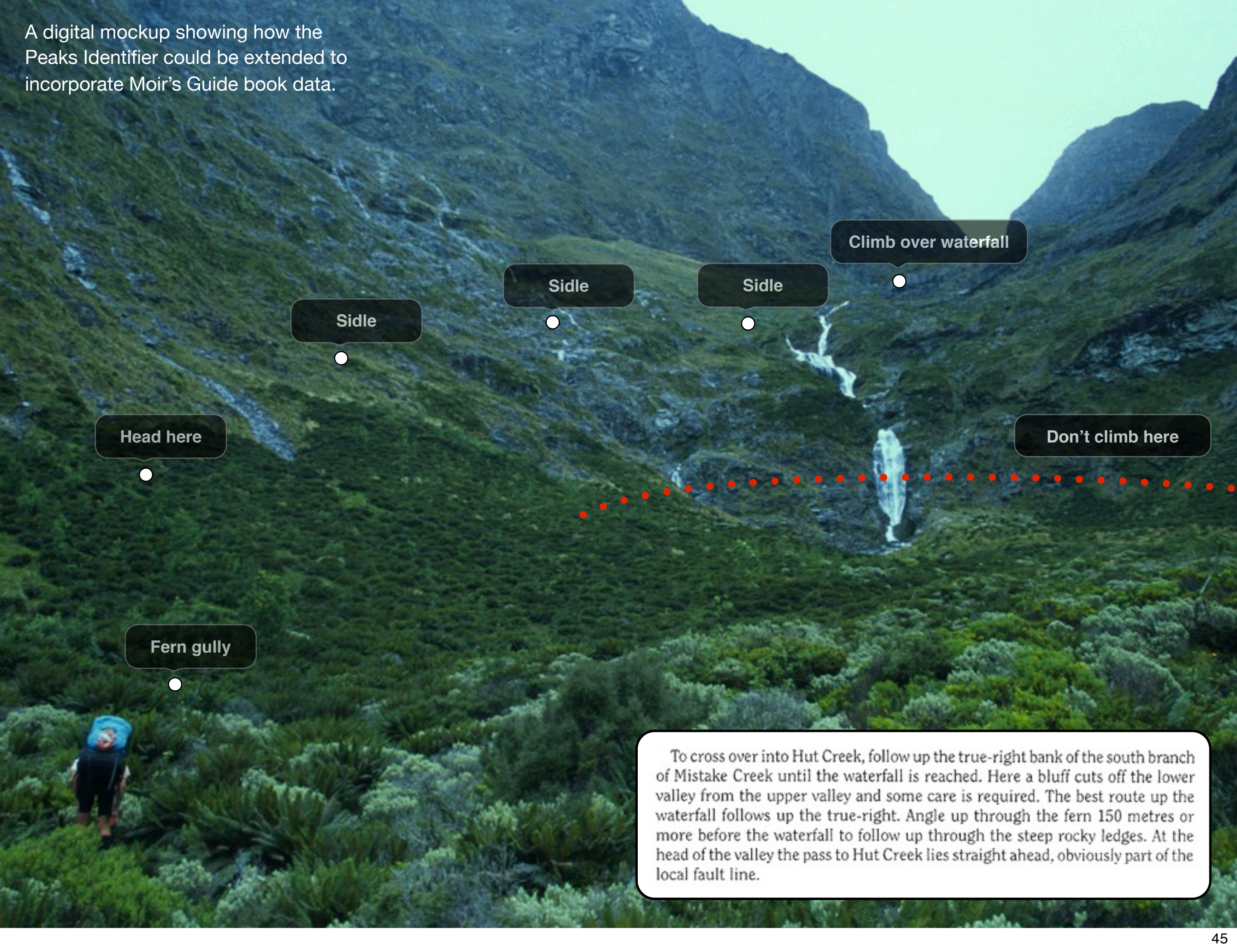
Cross the Eglinton as described above, but be careful not to cross Mistake Creek itself, thus entering Hut Creek in error. Turn hard right from the walk wire and initially follow up the east bank of Mistake Creek, then ford to the west bank. The track is marked all the way to the open flat near the head of the valley where the south branch from U Pass joins the main stream. However, considerable sections of track were lost in the January 1994 floods. There are pleasant campsites at the flat from which it is an easy walk to the head of the main valley.

To cross over into Hut Creek, follow up the true-right bank of the south branch of Mistake Creek until the waterfall is reached. Here a bluff cuts off the lower valley from the upper valley and some care is required. The best route up the waterfall follows up the true-right. Angle up through the fern 150 metres or more before the waterfall to follow up through the steep rocky ledges. At the head of the valley the pass to Hut Creek lies straight ahead, obviously part of the local fault line.

Times: Eglinton Carpark to flats at head of valley, 3 hrs; The round trip from the Eglinton takes about 9 hrs.

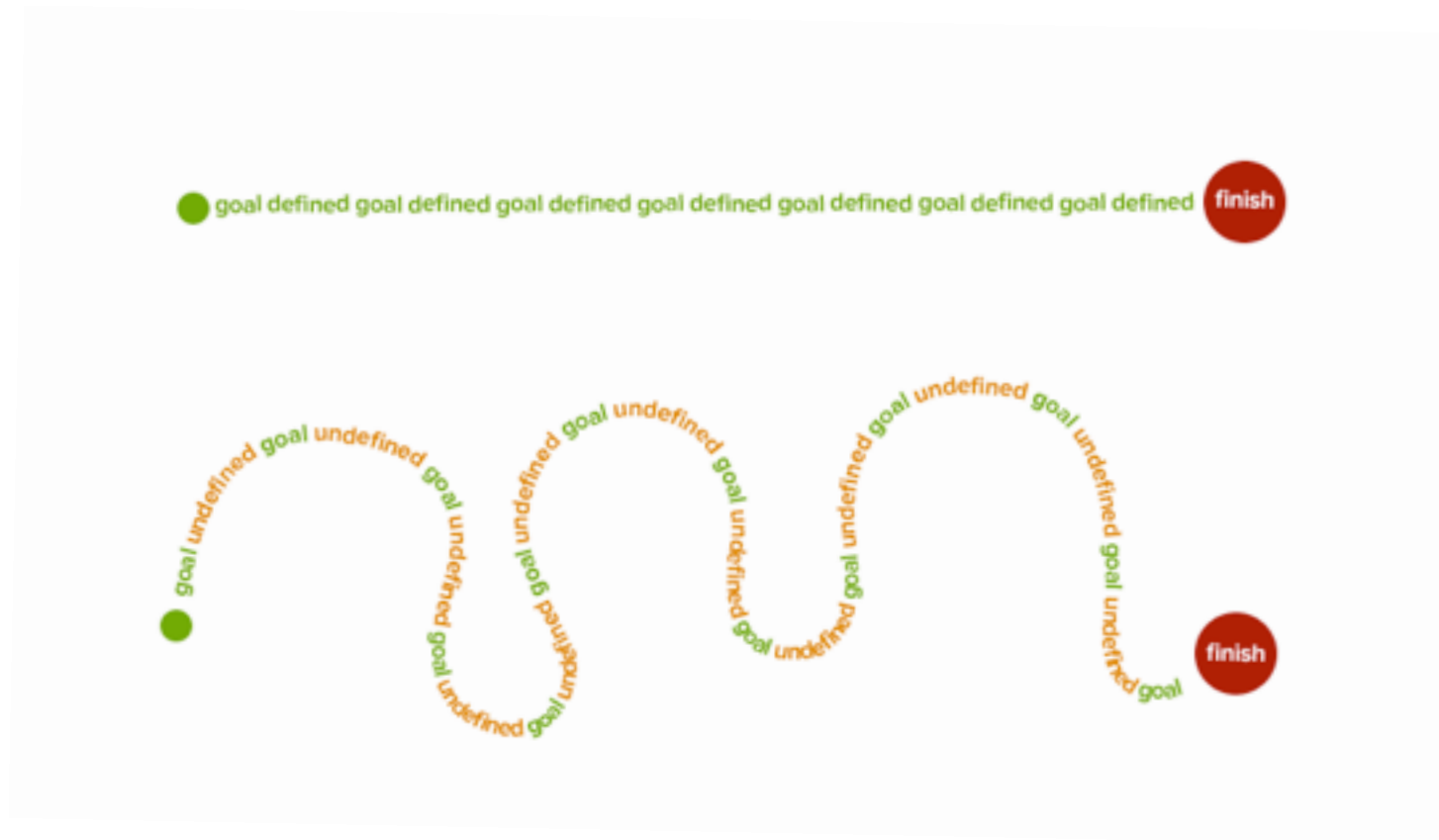


A digital mockup showing how the Peaks Identifier could be extended to incorporate Moir's Guide book data.

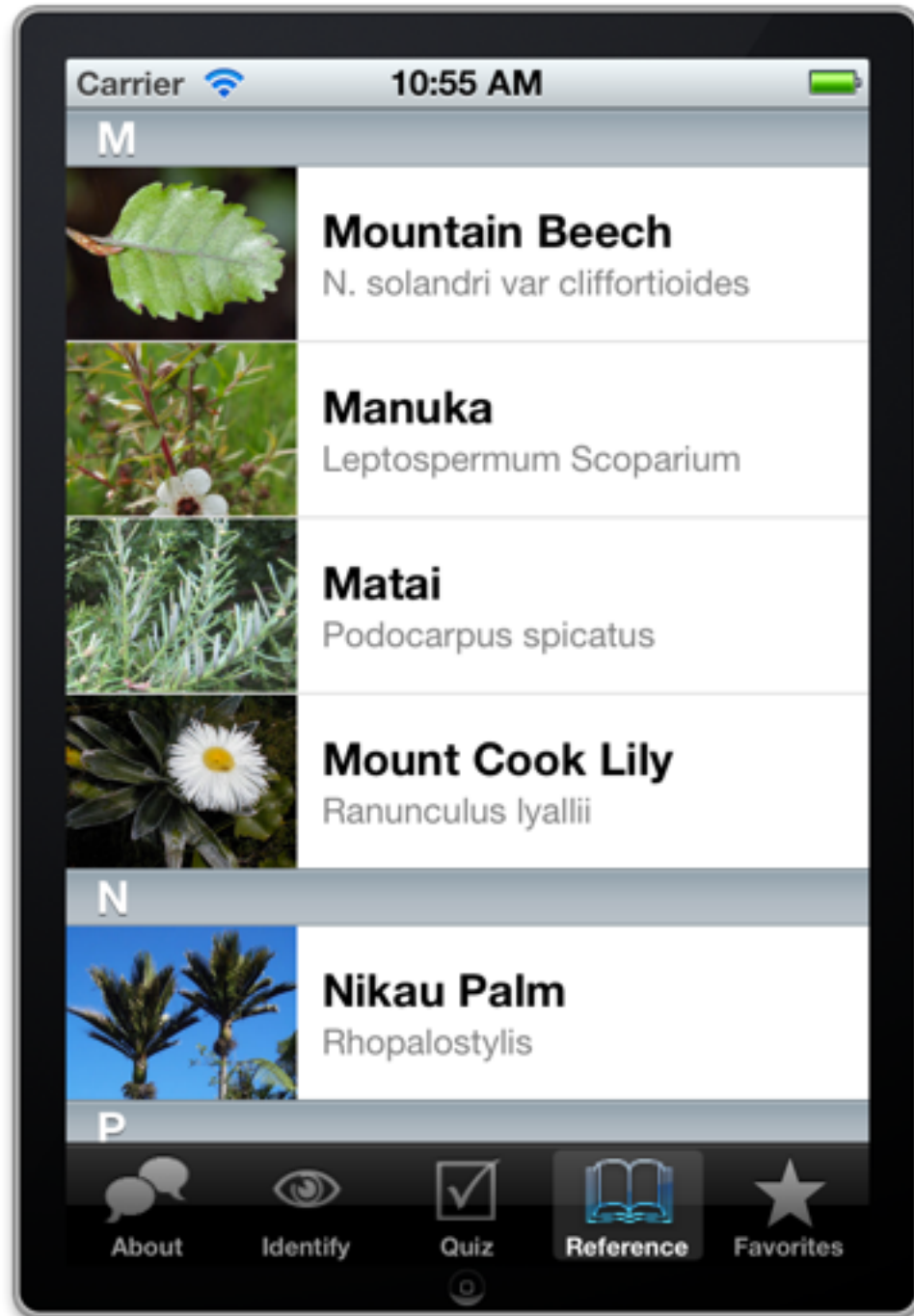


To cross over into Hut Creek, follow up the true-right bank of the south branch of Mistake Creek until the waterfall is reached. Here a bluff cuts off the lower valley from the upper valley and some care is required. The best route up the waterfall follows up the true-right. Angle up through the fern 150 metres or more before the waterfall to follow up through the steep rocky ledges. At the head of the valley the pass to Hut Creek lies straight ahead, obviously part of the local fault line.

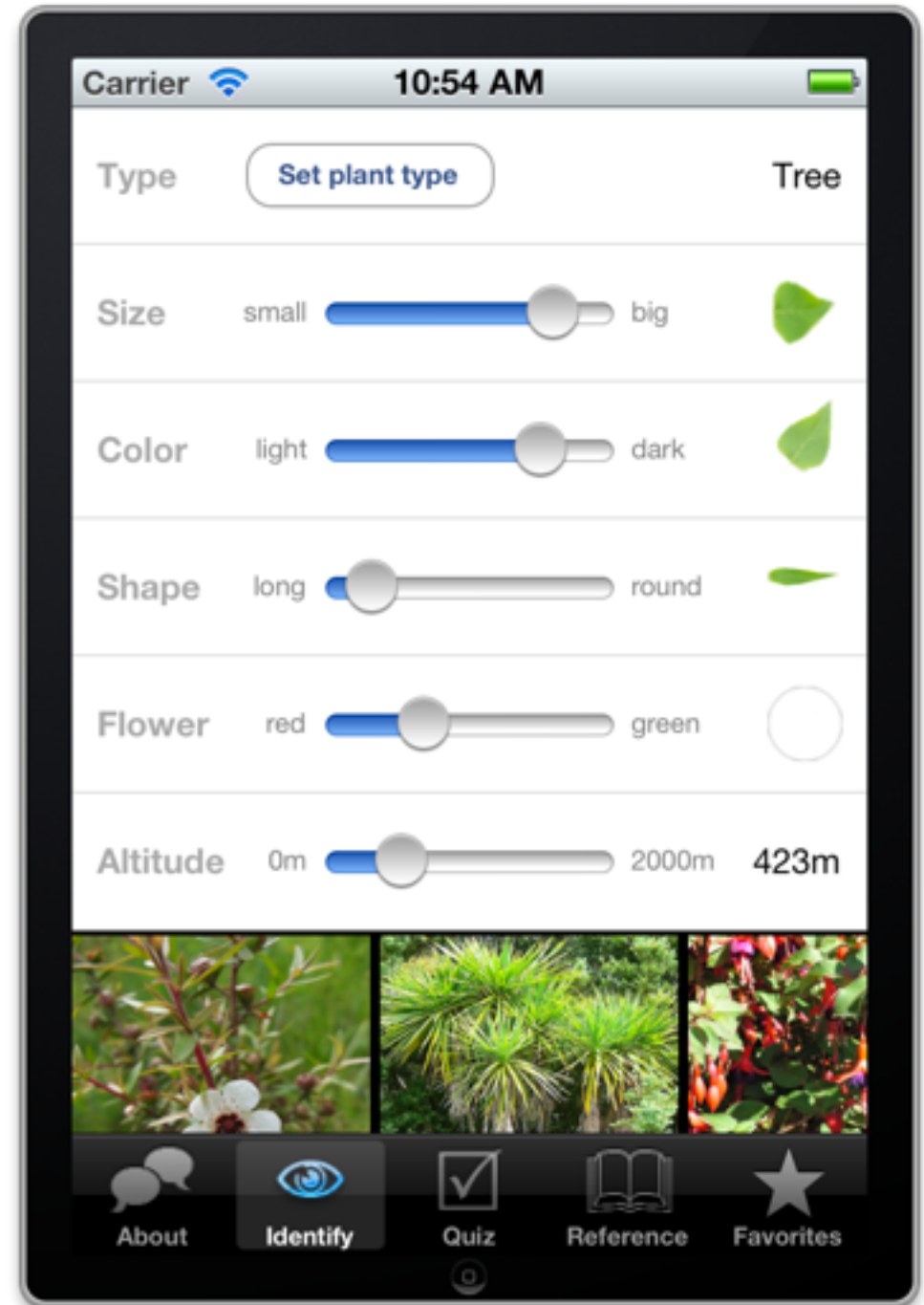
IDEAS GENERATE IDEAS, AND PROTOTYPES GENERATE MORE IDEAS



► PROTOTYPE 2



(left) *Plant Identifier* prototype reference view. Plants are simply listed A to Z, users click on a table row to view details on that plant.



(right) Interactive identification mode. Users set basic criteria describing the plant they wish to identify. Plants that match the criteria are displayed (sorted by match score) at the bottom of the screen. Users can click on the thumbnails to view detailed plant information.

► EXPERIMENT TWO

Group design versus
individual work

Save the kiwi work

Save the kiwi Hui



Brewster glacier,
Mount Aspiring
National Park.

► DEVELOPERS AS PROGRAMMERS AND DESIGNERS

"They [programmers] are tempted to take code into account when they should be concentrating on the best possible user experience."

"Being able to program corrupts your ability to focus solely on the human."

"Designers create for humans; programmers create for computers"

"It's tempting for programmers to dismiss design ideas because they would result in ugly code, regardless of the idea's «human» merit."

"The only real way to know if a web layout works or not is learning how to build it yourself."^[1]

"The best way to create as tight a feedback loop as possible between the design and the programming is to have them in the same brain."^[2]

"I know game designers who only want to work on paper and in excel sheets, and they want that to go as long as possible. I want to implement something fast and start playing with it, because so much emerges when you actually implement a system, when you implement a system, there's a thousand decisions to make that you never would have considered at that paper stage."^[2]

Mathis, L. Designers are not Programmers. Ignore the Code 2009 [cited 2012 20/4/2012]; Available from: <http://ignorethecode.net/blog/2009/03/10/designers-are-not-programmers/>.

[1] Urban, J. Why Designers Should Learn How to Code. Six Revisions 2009 11/6/2009 [cited 2012 20/4/2012]; Available from: http://sixrevisions.com/web_design/why-designers-should-learn-how-to-code/.

[2] Alexander L. Practice: Do Designers Need To Be Programmers? . Gamasutra; 2011 [updated 30/10/2011; cited 2012 20/4/2012]; Available from: http://www.gamasutra.com/view/news/127717/PRACTICE_Do_Designers_Need_To_Be_Programmers.php.



► THE SAVE THE KIWI TRUST



"conservation in New Zealand seems to be about killing sh*t."

Michelle Impey, BNZ Save the Kiwi Trust.



Rats



Stoats



Possum



How many starts in NZ?

146m yrs morning
nap in a different
place each night

2 Million Dollars A Year For

500 ~~more~~ Facebook
LIKES/FAN2

Predators:
• Sticks
• Dogs
• Cat
• Fer

expected life-span:

50 - 80 yrs.

↓
< 14 yrs due to
Predators.

"Humeral Mammal"

feather-like skin

• Small eyes

• Size of a
Rugby ball (?)

5 Kiwi Sanctuaries
in Country

14 yrs life expectancy in NZ island
because of dogs

Honeycomb peak structure

Kiwi Refuge

KIWI ZONE
NO DOGS
ALLOWED

BNZ

Community
groups play
a big part
in protecting
Kiwi

Dog zipper to make them not go after kiwis
breast training

► CONCEPT SUMMARY

<div><div></div><div></div><div></div><div></div><div></div></div>	1 Competitions between schools for raising the most donations to save the kiwi trust. Winner gets to track/hold/release live kiwi.
<div><div></div><div></div><div></div></div>	2 Kiwi fighter game
<div><div></div><div></div><div></div></div>	3 Shock ads (similar to cigarette packet health messages)
<div><div></div><div></div><div></div><div></div></div>	4 Kiwi call ringtone
<div><div></div><div></div><div></div></div>	5 Photos holding a kiwi
<div><div></div><div></div></div>	6 Rugby world cup revenue 'tax'
<div><div></div><div></div><div></div></div>	7 Kiwi experience – release your kiwi into the wild
<div><div></div><div></div></div>	8 Global kiwi tax
<div><div></div><div></div><div></div></div>	9 Volunteer networks to monitor/patrol areas for dogs
<div><div></div><div></div></div>	10 TV campaign
<div><div></div><div></div><div></div><div></div><div></div></div>	11 Sponsor a kiwi (like sponsor a child appeal)
<div><div></div><div></div></div>	12 Possum kill tracker on your car
<div><div></div><div></div><div></div></div>	13 Reduction in dog licensing charge if completed (free) training programme.
<div><div></div><div></div><div></div></div>	14 FarmVille™ style game for kiwis / Tamagotchi
<div><div></div><div></div></div>	15 ID Dogs who are trained and track those that aren't
<div><div></div><div></div></div>	16 Kiwi awareness week
<div><div></div><div></div><div></div><div></div></div>	17 Large billboards to promote the trust
<div><div></div><div></div></div>	18 Possum shooting contest
<div><div></div><div></div></div>	19 Dog collar that zaps when in range of a tracked kiwi
<div><div></div><div></div><div></div></div>	20 Video blogs from kiwi carers with progress etc
<div><div></div><div></div><div></div></div>	21 Home 'trap making' network
<div><div></div><div></div><div></div></div>	22 Volunteer network – what needs doing in your area

<div><div></div></div>	23 Eftpos charge – rounding or auto 1 cent on all transactions goes to save the kiwi trust
<div><div></div><div></div><div></div></div>	24 Kiwi telethon
<div><div></div><div></div></div>	25 Use TradeMe as a vehicle for collecting automatic donations on all purchases
<div><div></div><div></div></div>	26 Annual bunny hunt, do for possums/stoats
<div><div></div><div></div><div></div><div></div></div>	27 Volunteer workshops
<div><div></div><div></div></div>	28 Golden kiwi scratchies
<div><div></div></div>	29 More kiwi signs on the side of the road
<div><div></div><div></div></div>	30 Dog tracking system in rural areas
<div><div></div><div></div></div>	31 Annual national Kiwi day, collections in all towns
<div><div></div><div></div><div></div></div>	32 Kiwi role playing game (educational)
<div><div></div><div></div></div>	33 Stamps from NZ post to raise awareness
<div><div></div><div></div><div></div></div>	34 Have a kiwi named after you for a significant donation
<div><div></div><div></div><div></div></div>	35 Well designed museum exhibits on threats to kiwi
<div><div></div><div></div><div></div></div>	36 Webcam in kiwi burrow
<div><div></div><div></div><div></div></div>	37 Buy the opportunity to hold a kiwi
<div><div></div><div></div><div></div><div></div></div>	38 Kiwi comic, life and times of real kiwi
<div><div></div><div></div></div>	39 Calvin Klein underwear
<div><div></div><div></div><div></div></div>	40 Coordination of the donation of (peoples') time
<div><div></div><div></div></div>	41 Donation app that allows the user to target their donations to specific aspects of kiwi protection
<div><div></div><div></div><div></div><div></div></div>	42 Tours of the egg creche
<div><div></div><div></div><div></div></div>	43 Death notices when kiwi are killed by pests/predators
<div><div></div><div></div><div></div></div>	44 Ringtone (and others) in return for your donation



► CONCEPT MAPPING

- Education
- Raise profile
- Raise funds
- Emotional connection
- Increase involvement

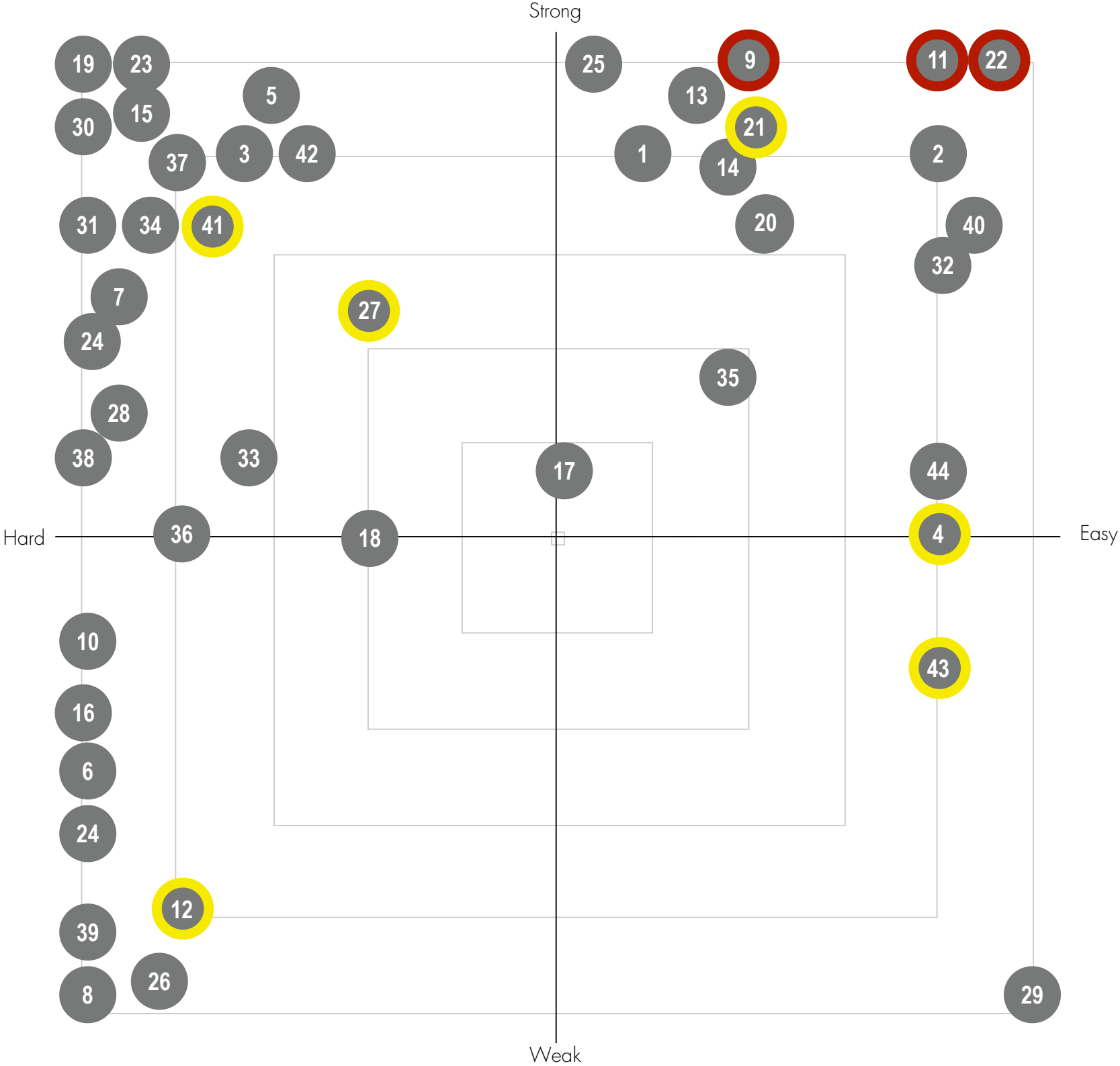


Figure 6.06: A simple mapping of the ideas generated during the DESI313 sessions. The ideas are projected onto a two axis graph where the horizontal axis determines the complexity of implementation (difficult on the left, easy on the right), and strength of concept (weak at the bottom of the axis and strong at the top).

- A red circle indicates a concept that was selected for development either in full or mostly unmodified.
- A yellow circle indicates a concept that contains elements that were extracted for inclusion in the developed concepts.

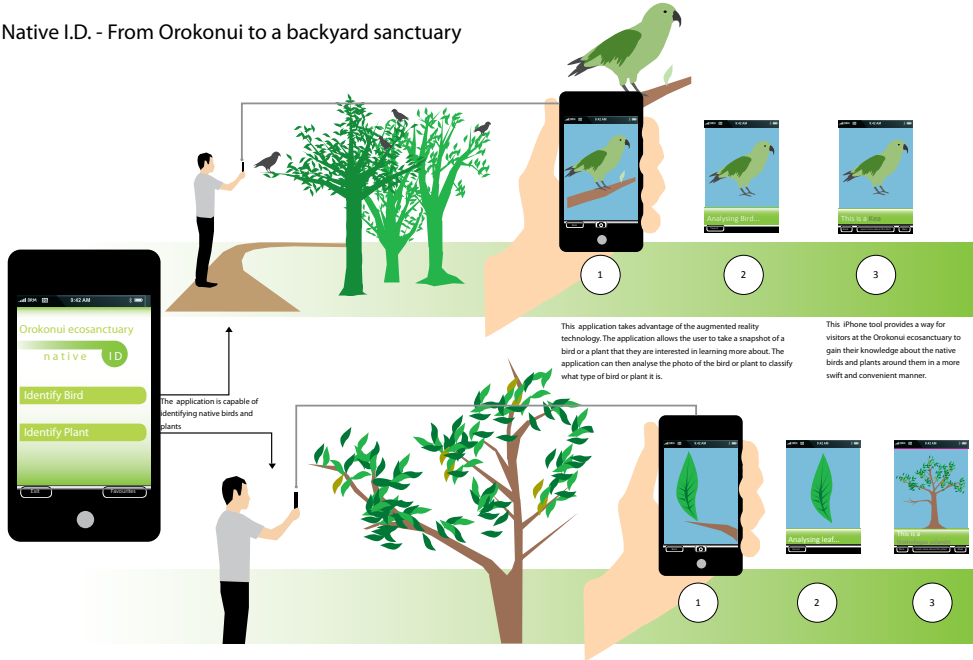
STUDENT SUBMISSIONS

Edible Nz.



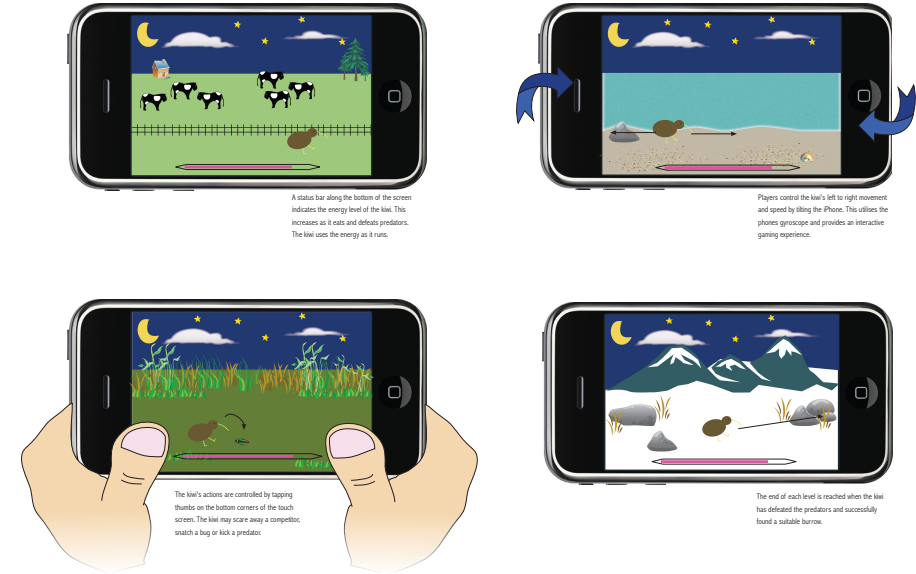
Work by Ella Mildren-Sheath

Native I.D. - From Orokonui to a backyard sanctuary



Work by Anthony Lee

Kiwi Game for iPhone



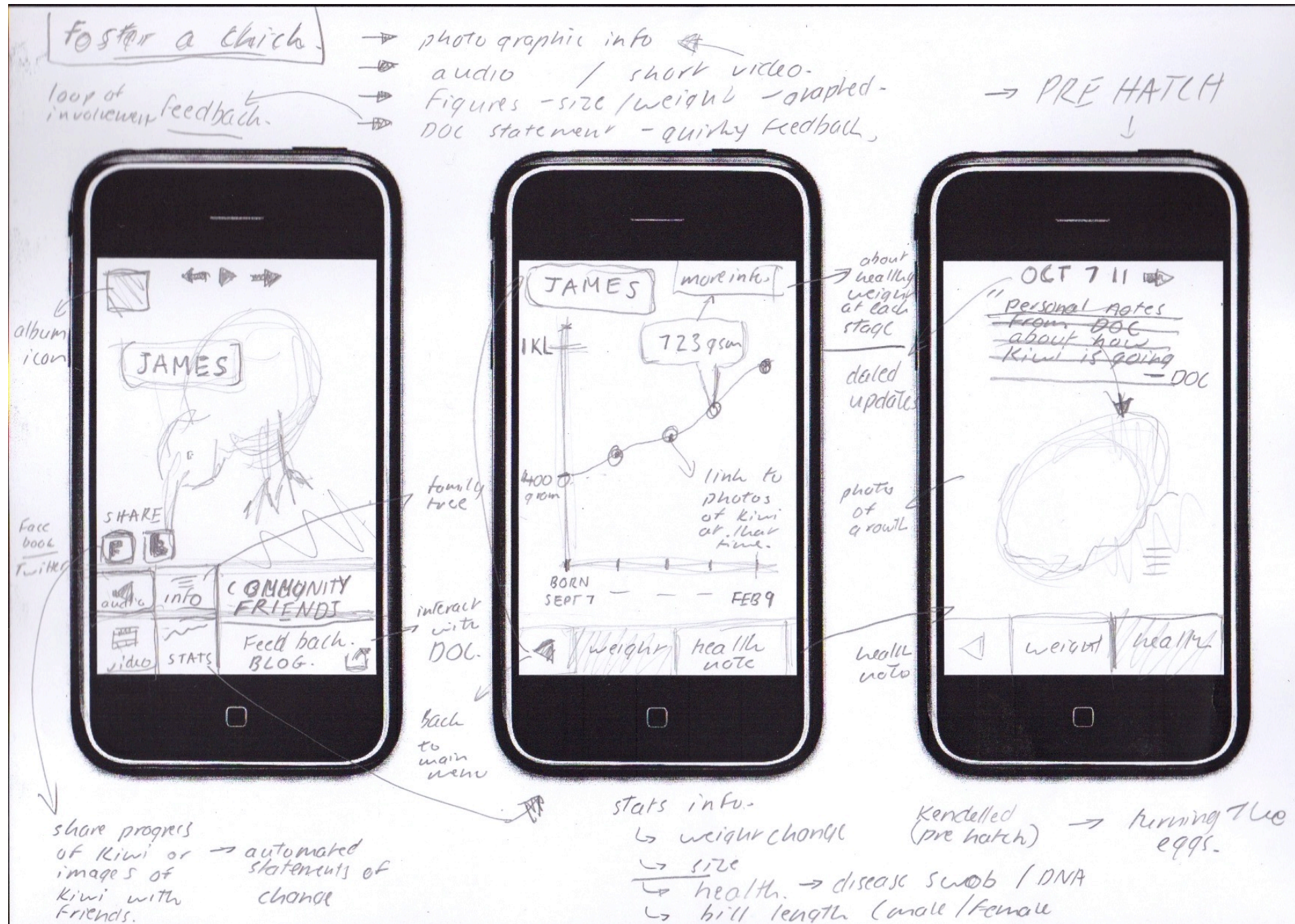
Work by Ceire Hopley

Possam Hunter



Work by Jonathan Verbiest

► SAVE THE KIWI CONCEPTS

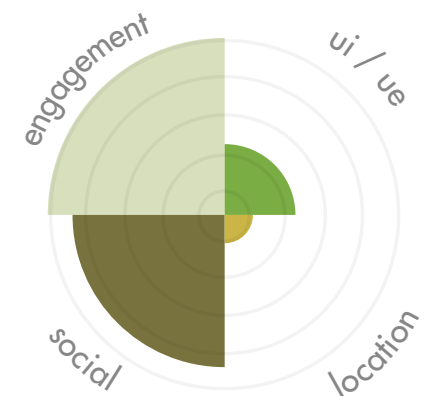


► FOSTER A CHICK

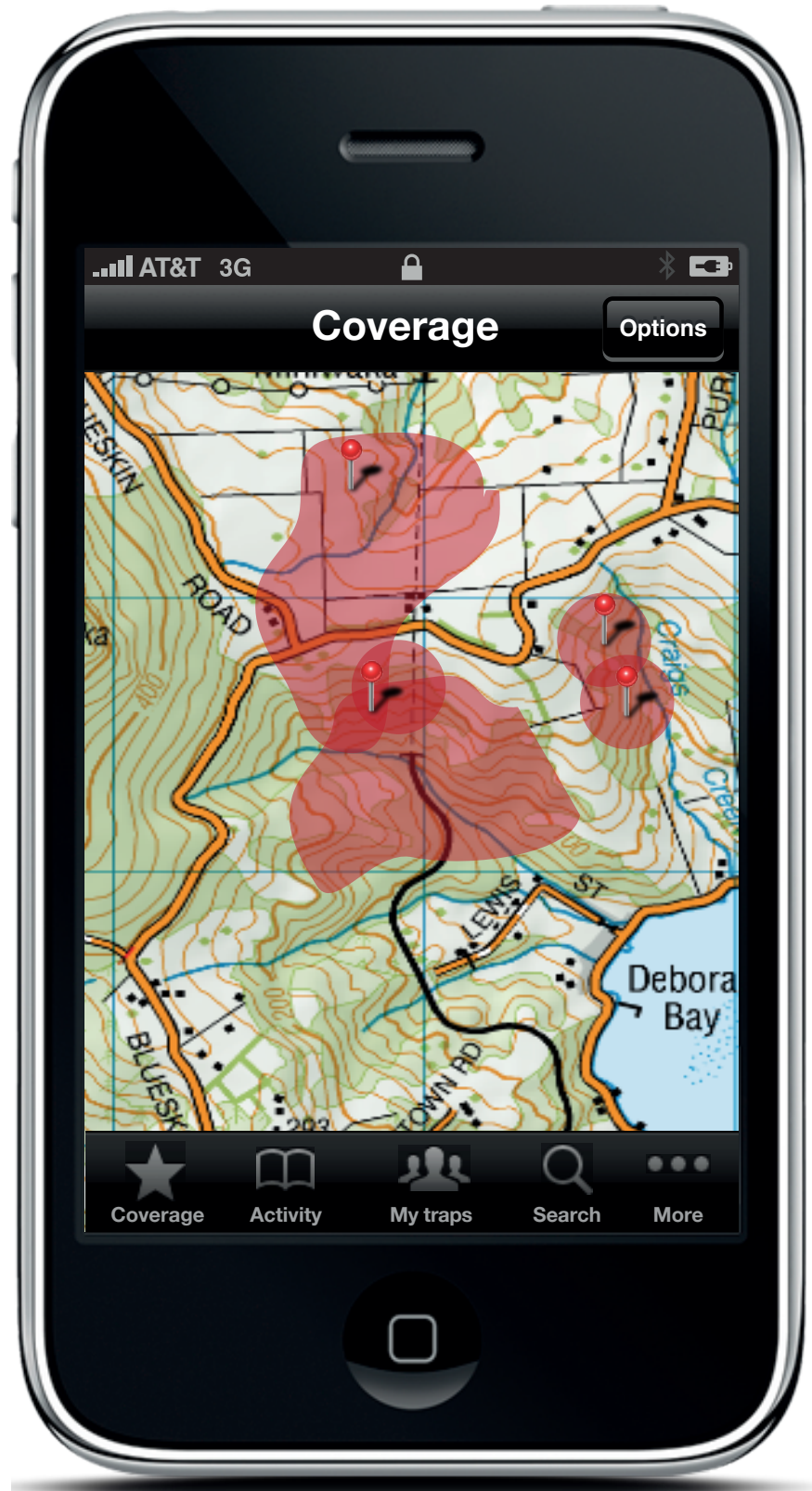
This application works in conjunction with project NestEgg™ and allows users to adopt a kiwi chick once hatched.

Regular updates on the chick's progress would be pushed out to the user. This information would include measurements (weight, beak length, etc.), and would include hi resolution photos, audio, and video.

Graphs of the kiwi's progress would be presented, and once released back into the wild, the kiwi's movements and habits (if the kiwi is tracked) would also be presented. The key is to present fresh, relevant, and personalised information on a regular basis.



► DIGITAL PROTOTYPING - KILL TRACKER



A map indicates areas or regions of coverage based on your traps, and those of other users. The locations of your traps are shown but the locations of other users' traps are hidden (unless they decide to make their locations public).

The visibility of other user's traps could be shown, and maybe it's the case that any user can clear/reset any other user's traps if they are close by. This would certainly be more efficient and cooperative. Certainly, traps can belong to a group rather than an individual, and maybe a user could designate their traps as private/public when they create entries for them.

By looking at the regions covered by you and other users, you are able to see what areas are not covered and what areas may be over-subscribed. An overlay of kill rates by time, type of pest, frequency, etc., can also be displayed on the map.

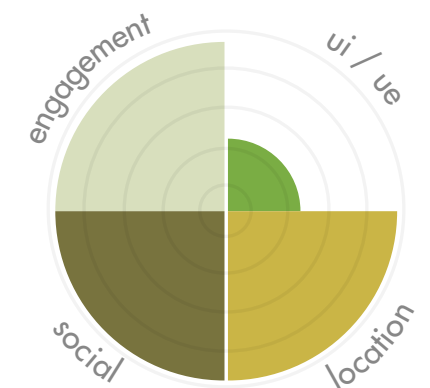
All data would be cached on the phone itself and would be synced with a web service once the device had network connectivity.

► 6.5.5 KILL TRACKER

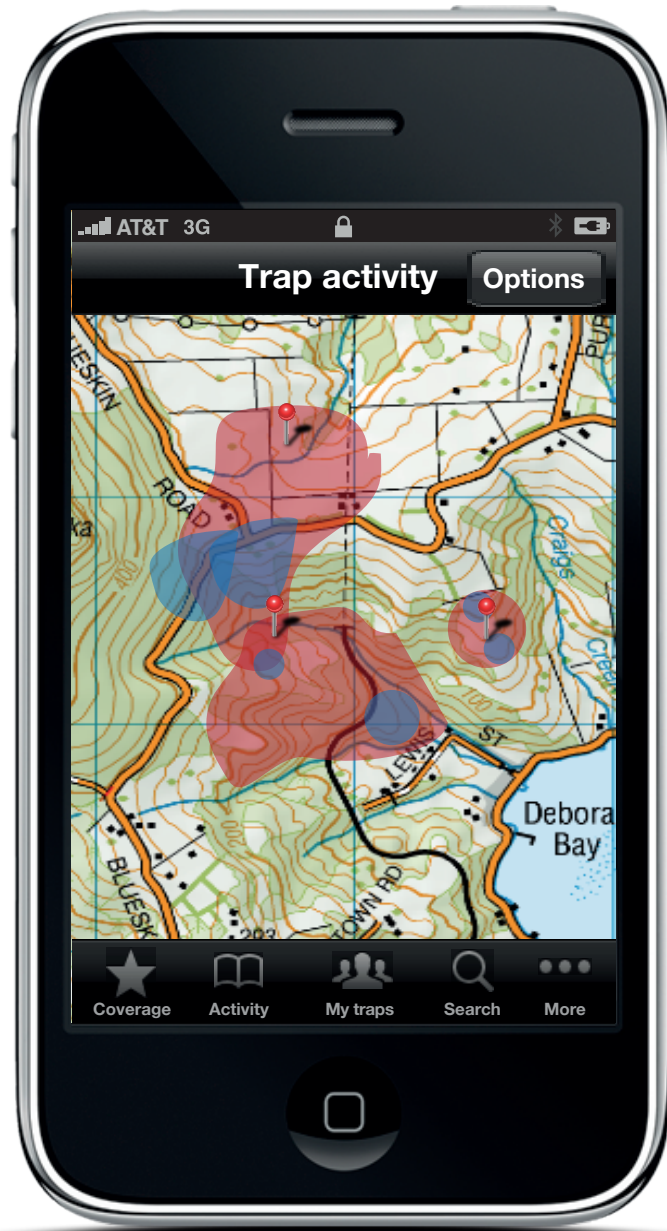
The *Kill Tracker* application is designed to allow community groups, or individuals to coordinate their pest control activities. By mapping an individual's traps, and the entire user base's traps, trappers can see where coverage gaps are, and where areas of high and low activity are.

Users can also track kill rates over time, analyse what is being caught, how often, and where.

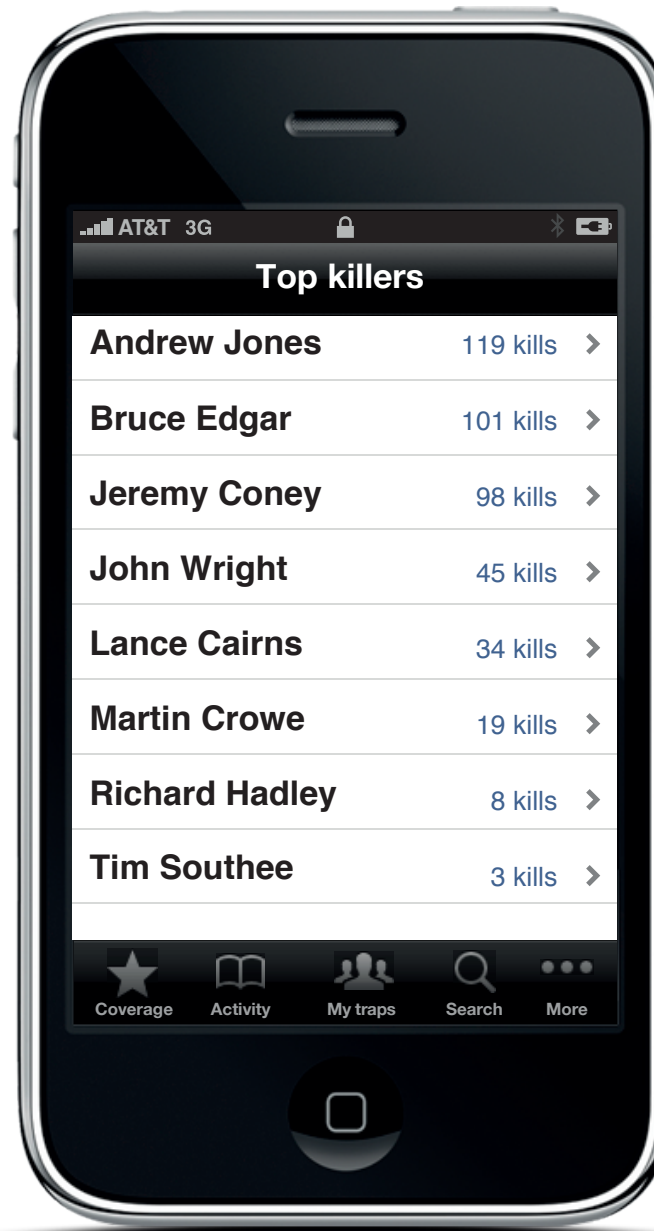
Key to this application is a sophisticated way of visualising trap and kill data on the phone and on a corresponding web application portal.



► DIGITAL PROTOTYPING - KILL TRACKER



The trap activity maps the areas that are covered by traps (shown by red areas) and superimposes areas of actual kills (shown by blue areas). This simple visualisation shows where gaps or 'hot-spots' may be developing and may need more intensive trapping. The location of your traps are shown by red pins.



All users in the trapping community can monitor the progress of other users. A mini-competition can be setup by measuring the number of kills each user has logged.

A web forum can be setup alongside the mobile application to allow users to exchange information and hints with each other.



A users kills can be tracked and divided into species counts. Over time this data can (when aggregated across all users) indicate success or failure of trapping programs or other useful patterns.



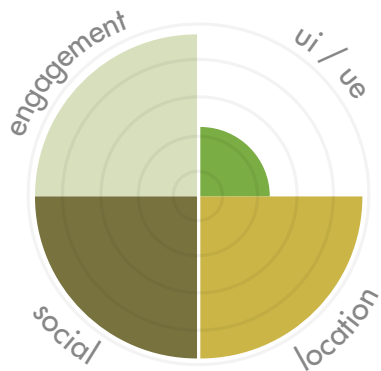
► DIGITAL PROTOTYPING - VOLUNTEER NETWORK

► 6.5.4 VOLUNTEER NETWORK

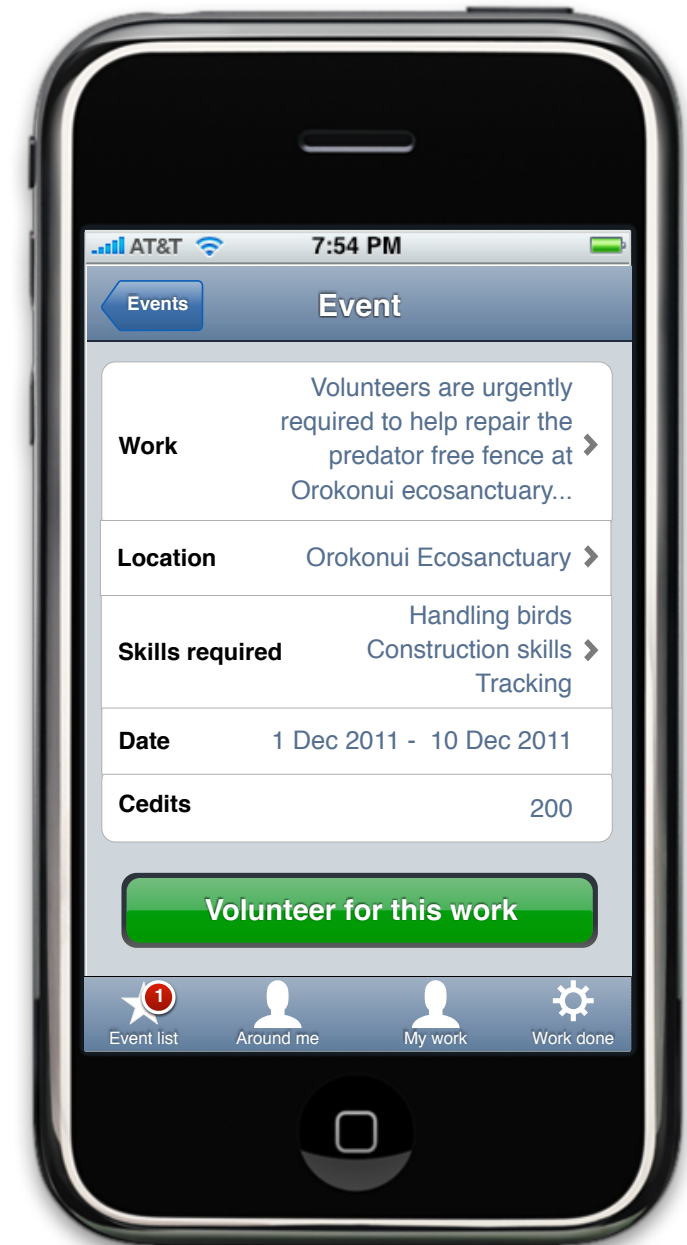
This application seeks to connect people wishing to donate their time to organisations involved in kiwi protection. Many community organisations rely on volunteers to check traps, erect predator fences, control weeds, plant trees, and maintain kiwi protection infrastructure.

This application utilises a user's location, their skills, the types of tasks they are prepared to undertake to show tasks that need to be completed that meet their criteria.

The reward could be points (to encourage competition between users). When a certain tier of points is achieved, users may be invited to attend special events, for example, the release of a new kiwi at the Orokonui ecosanctuary.



Users are notified of upcoming events that volunteers may be needed for.



Details on the help needed can be viewed. If there is overlap in terms of what the user can do, whether they have time, whether the reward available is high enough, and whether the activity is close enough, they may decide to volunteer.



► DIGITAL PROTOTYPING - SPONSOR A KIWI



Users are notified via push notification when a new egg is available for purchase (sponsorship).

The 'egg marketplace' allows users to see what eggs are available for sponsorship and where they are being reared.

Users can use in-app purchase to buy the eggs/kiwis. In effect this is sponsorship and the proceeds go to the Save the Kiwi Trust.

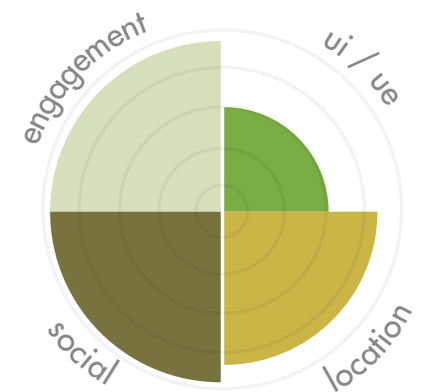
► 6.5.3 SPONSOR A KIWI

This application seeks to connect everyday users with the kiwi recovery and protection movement. As new kiwi eggs are recovered from the wild, they are auctioned and users can bid for 'ownership' of the egg. Several users can co-sponsor the egg.

Owners are able to track progress of their eggs and kiwis as they mature and are released into the wild. Since all managed kiwi are tracked and monitored, regular updates on movement patterns, weight, beak size etc can be monitored by the owners.

Owners will be notified via push notification when important events in the life of their kiwi(s) occur.

Figure 6.12: *Sponsor a Kiwi* concept.



► SEMESTER TWO

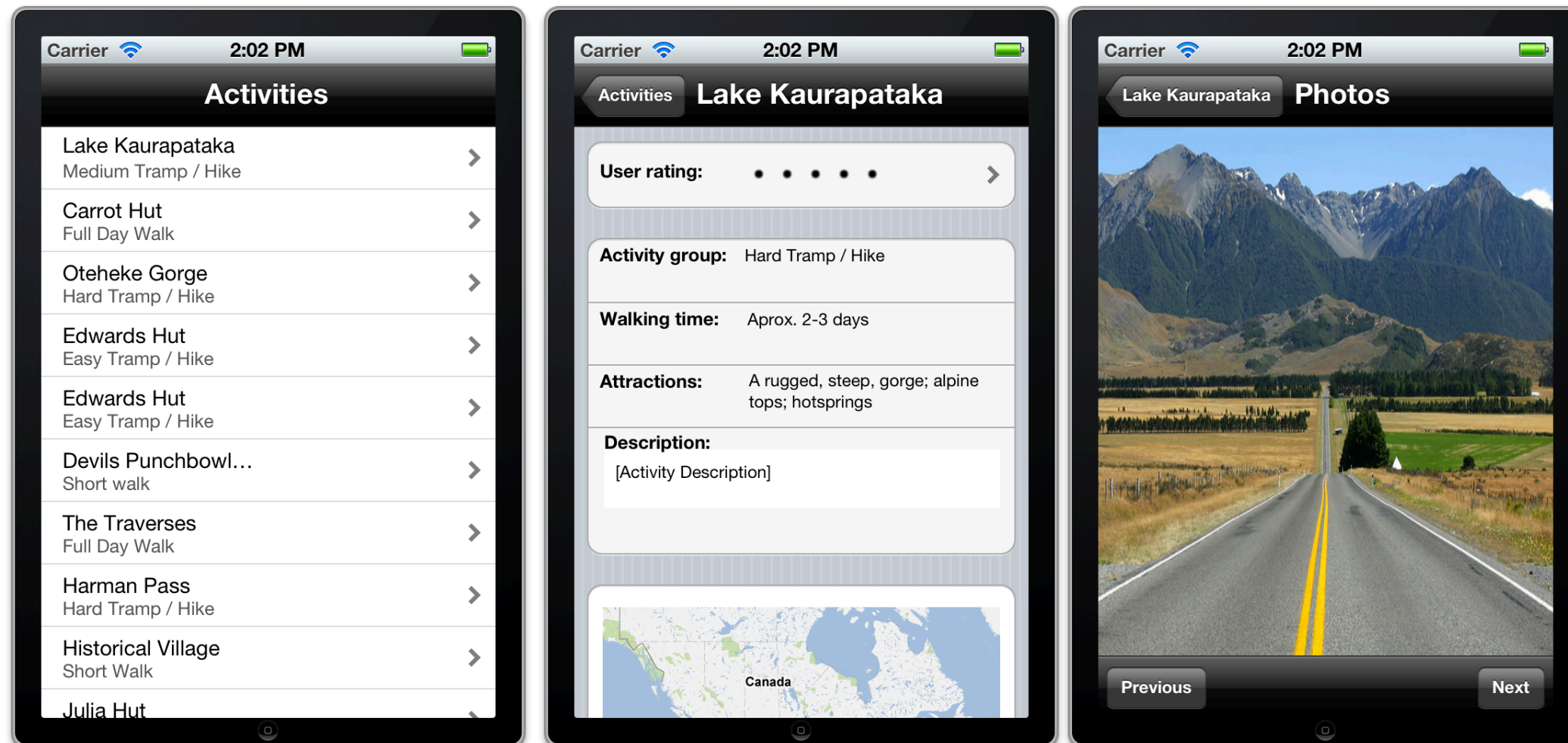


Figure 6.27: Arthur's Pass *Which Activity* prototype screenshots.

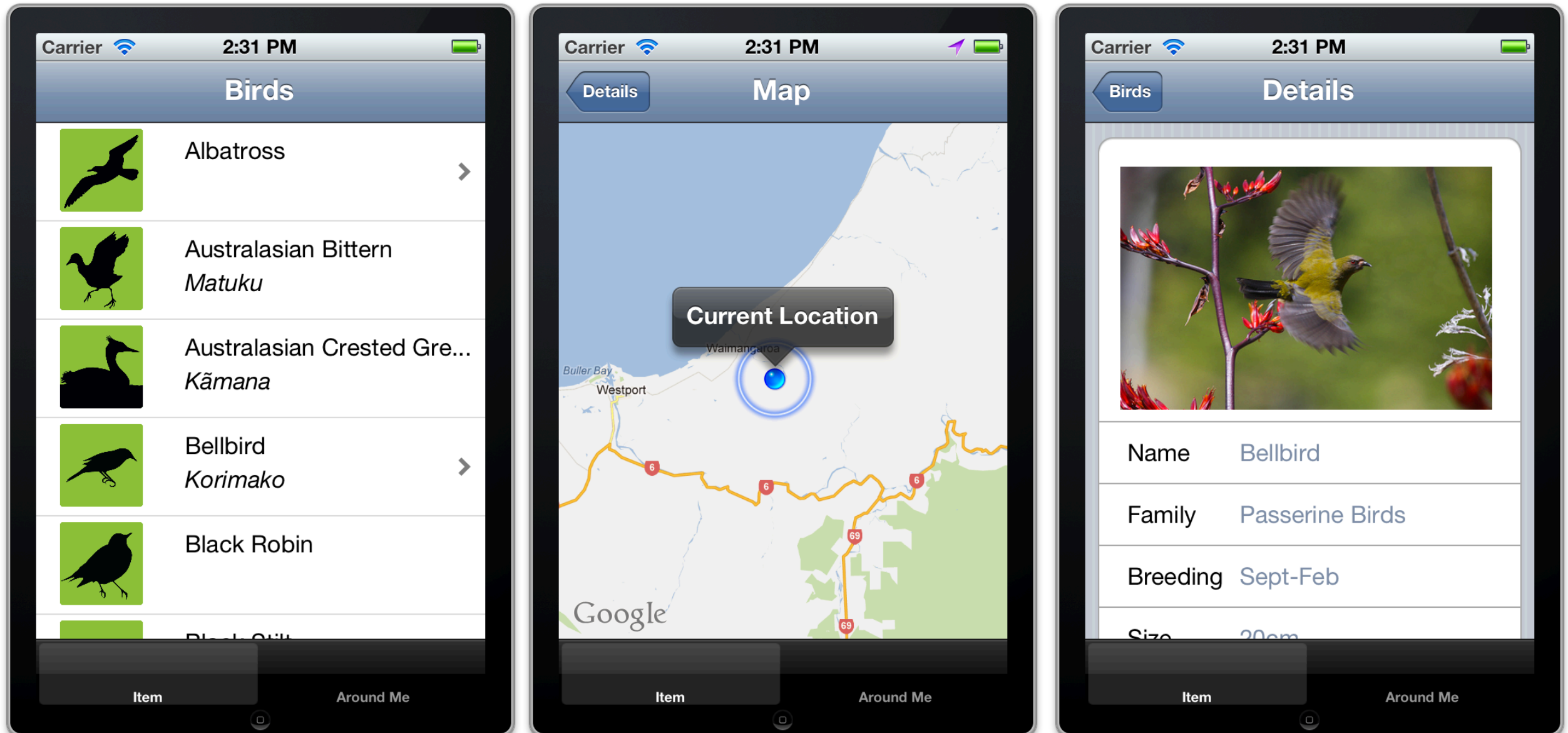
In this application users can view information on any of the activities in Arthur's Pass National Park. Users can search for specific types of activities by length of time, difficulty, type (for example, walk, overnight tramping trip, or viewpoint).

► BONUS LEVEL - VIEW OTHER PEOPLE'S FAVOURITE SPOTS



◀ **Figure 6.31:** *Bonus Level* prototype screenshots. In this application, users were able to see what places of interest or activities there were along their path (in this case, the Christchurch to West Coast highway through Arthur's Pass). Users were able to add places to their itinerary and the application would plot their way along the road and would provide directions and reminders when the user was about to arrive at one of their stops on the itinerary.

► BIRD IDENTIFIER

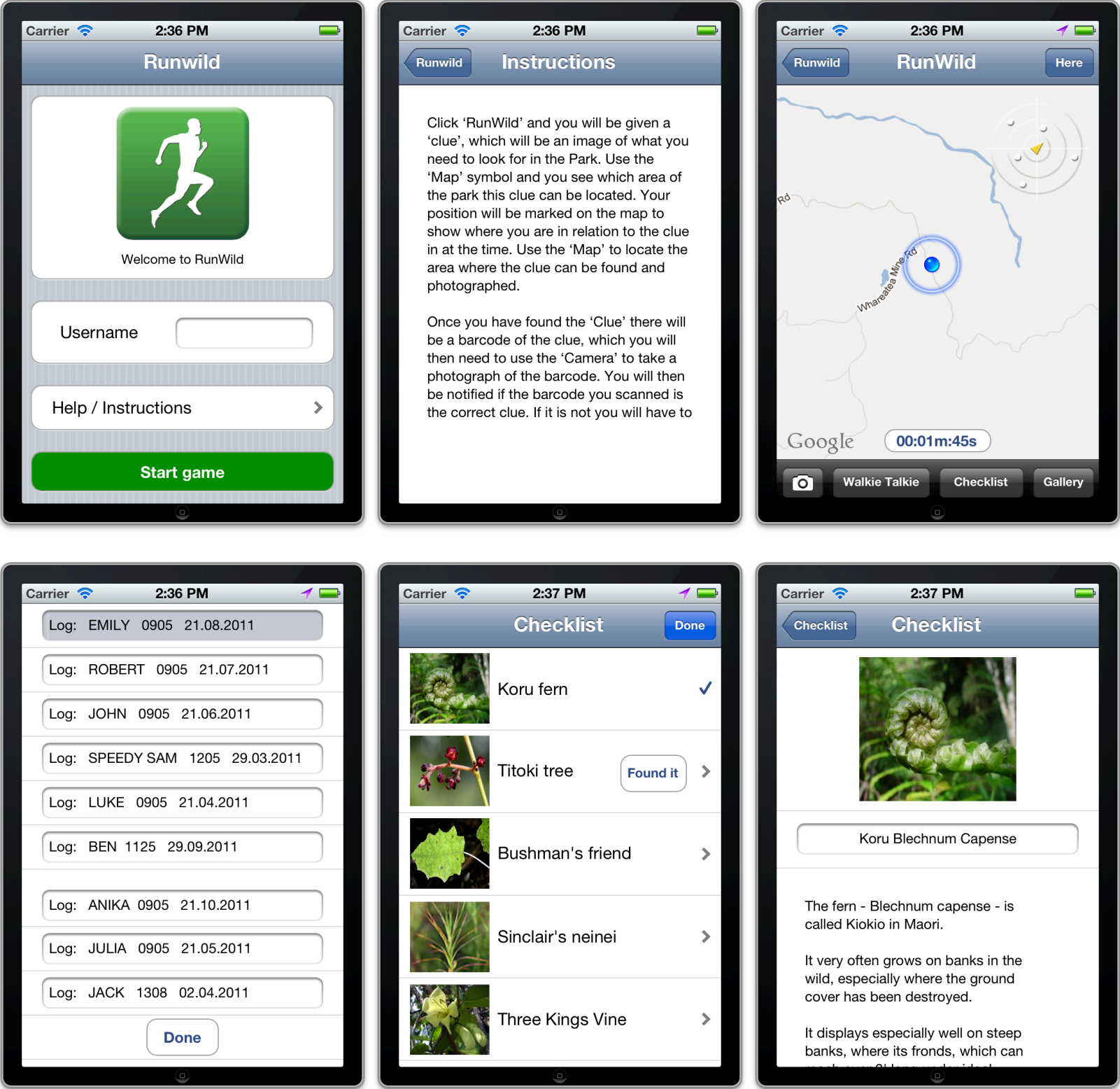


▲
Figure 6.33: *iBird* prototype screenshots.

In this application users can view information on New Zealand Native birds. The application shows information on each bird and allows the user to listen to the bird's sound(s).

The around me section is designed to show (on a map) where users are likely to encounter specific birds, for example, where they might be likely to see or hear a kiwi or other endangered bird.

► RUNWILD (GEOCACHING)



◀ **Figure 6.35:** *RunWild* prototype screenshots.

RunWild is a type of scavenger hunt application. Users choose from a list of hunt types (for example, plants, geological features, sounds etc) and attempt to find each of the items on their list.

Users can communicate with other users playing *RunWild* via a 'walkie talkie' function, and other users' locations are plotted on a radar like display.

Once the user has completed a list, they can move on to another, more advanced list.

► AUTHOR'S PASS

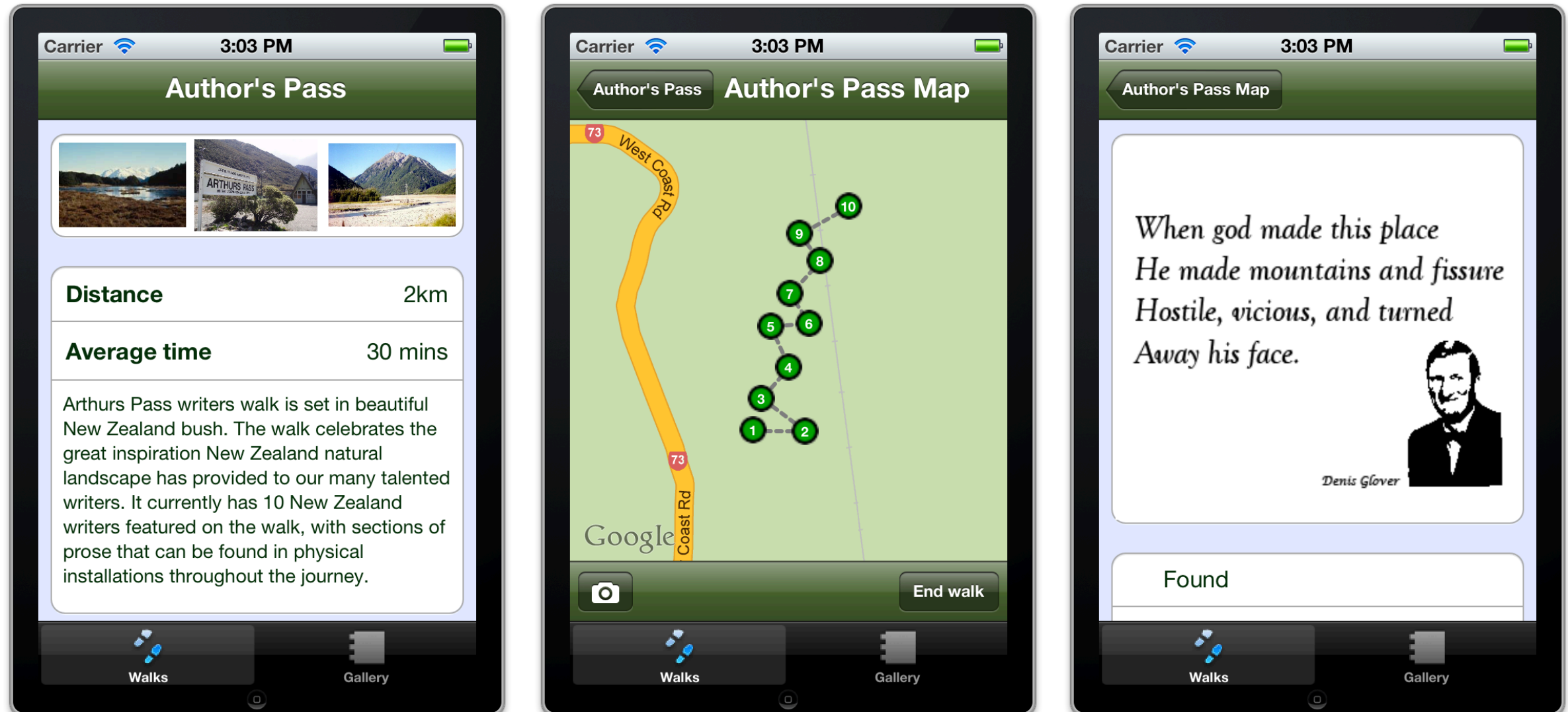


Figure 6.38: Screenshots from the final version of the *Author's Pass* application.

This application prototype had near full functionality by the time the second iteration had been completed. Users were able to navigate around a trail and the application would provide contextual prompts when they approached predefined positions on the map.

► FINDINGS

Group work produced more varied outputs (implications for single developer “teams”).

Digital prototypes are great for presenting to clients or other stakeholders.

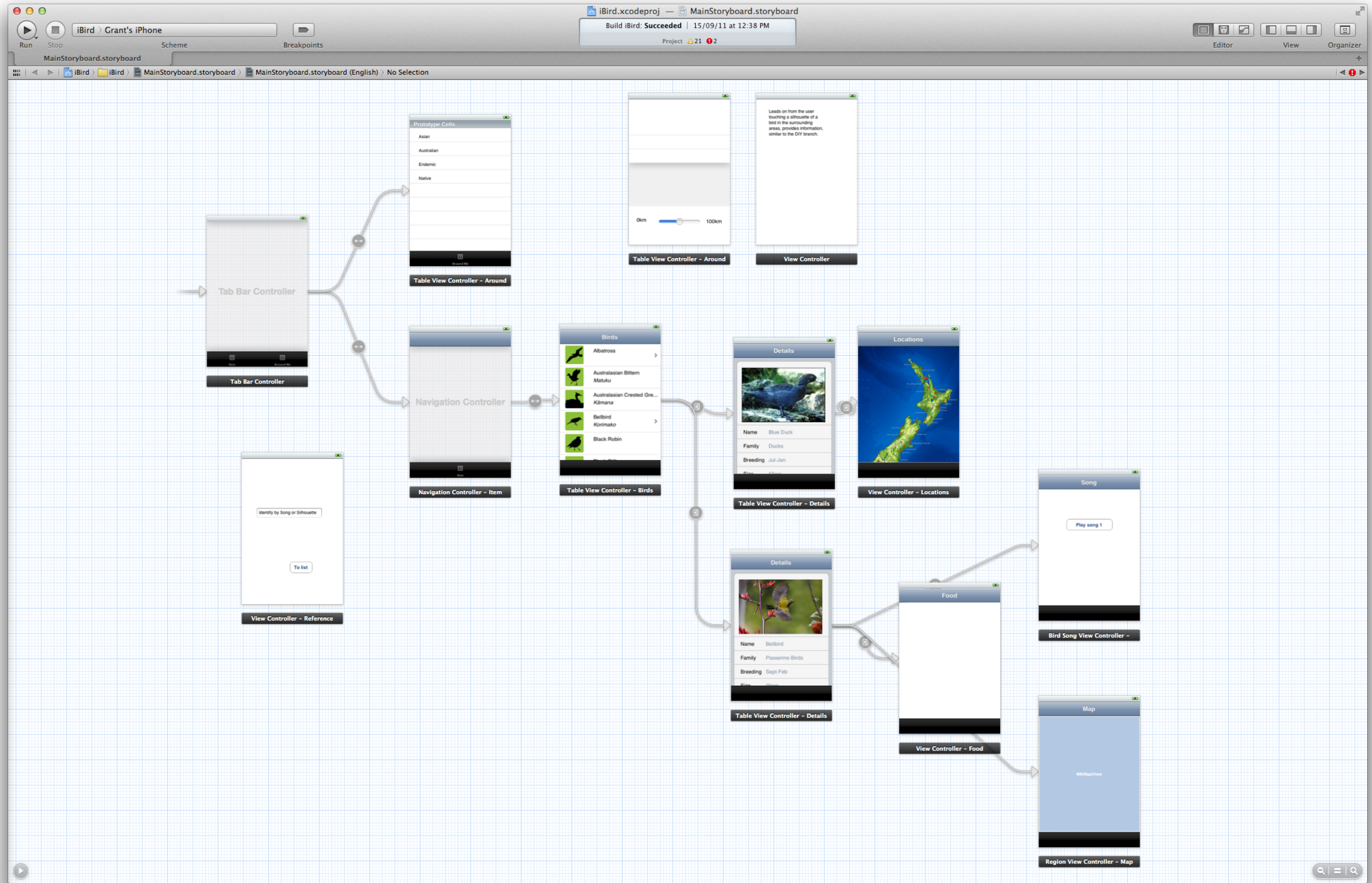
Extra effort required to make interactive prototypes is significantly less than the extra benefit derived.

Interactive, working prototypes are essential and need to be produced early in the process (IDEO are right).

Xcode 4 is great for allowing non-programmers to produce interactive, indicative prototypes.



► STORYBOARDING AND SEGUES



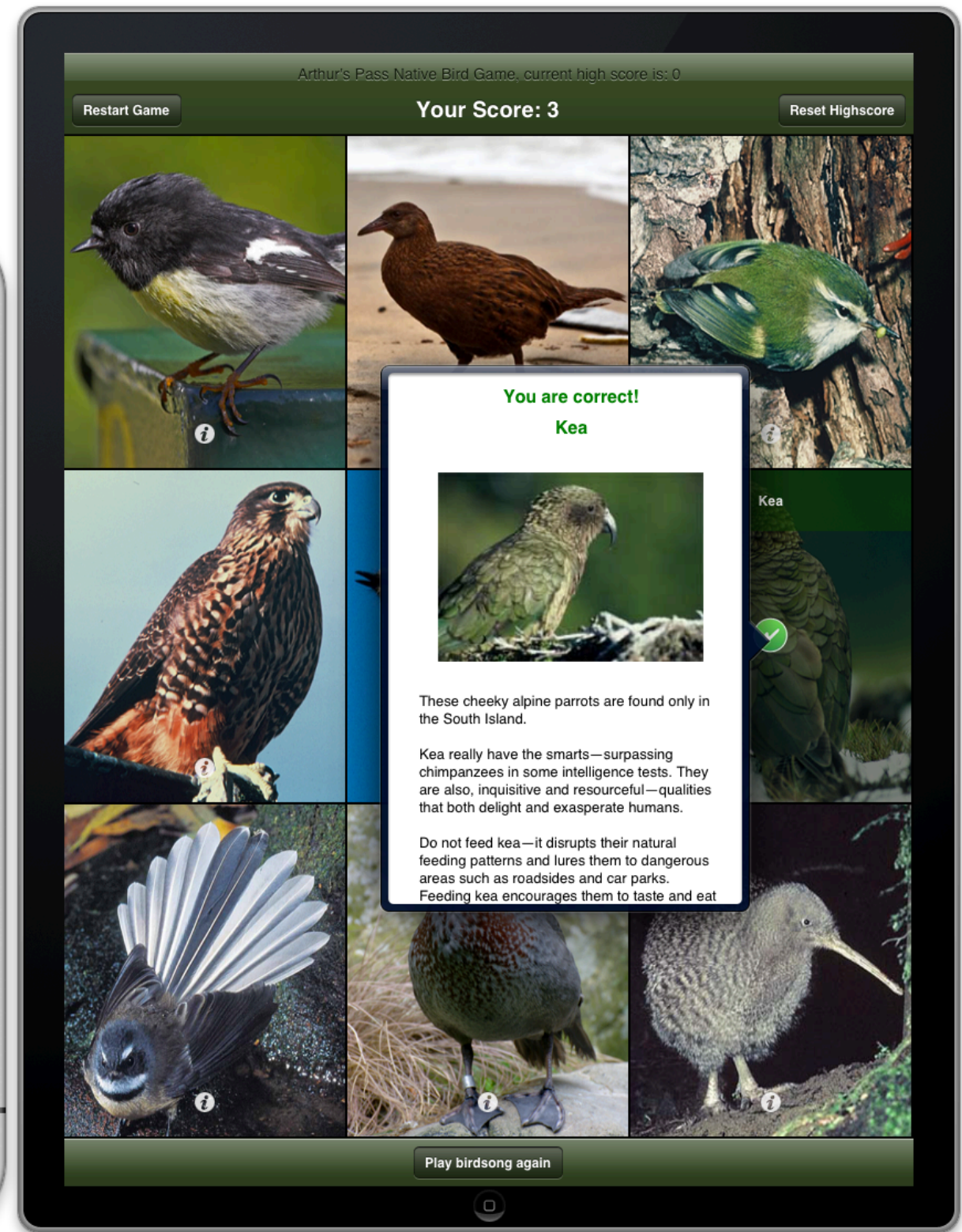
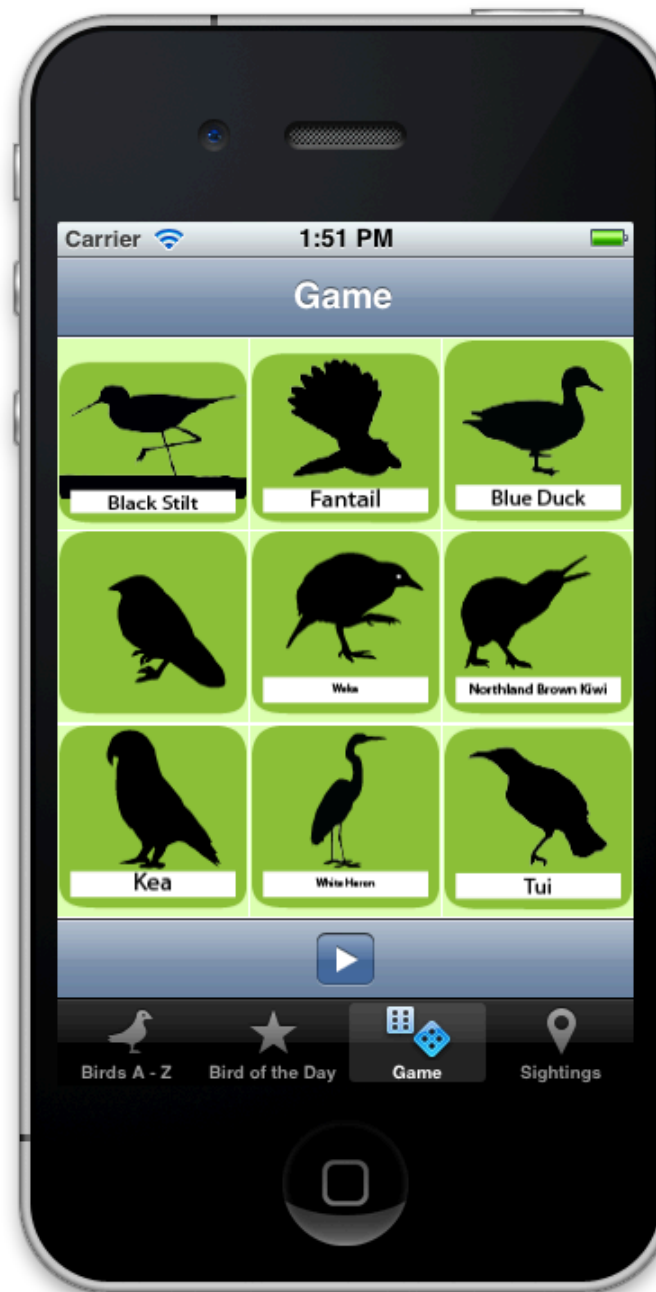
► EXPERIMENT THREE



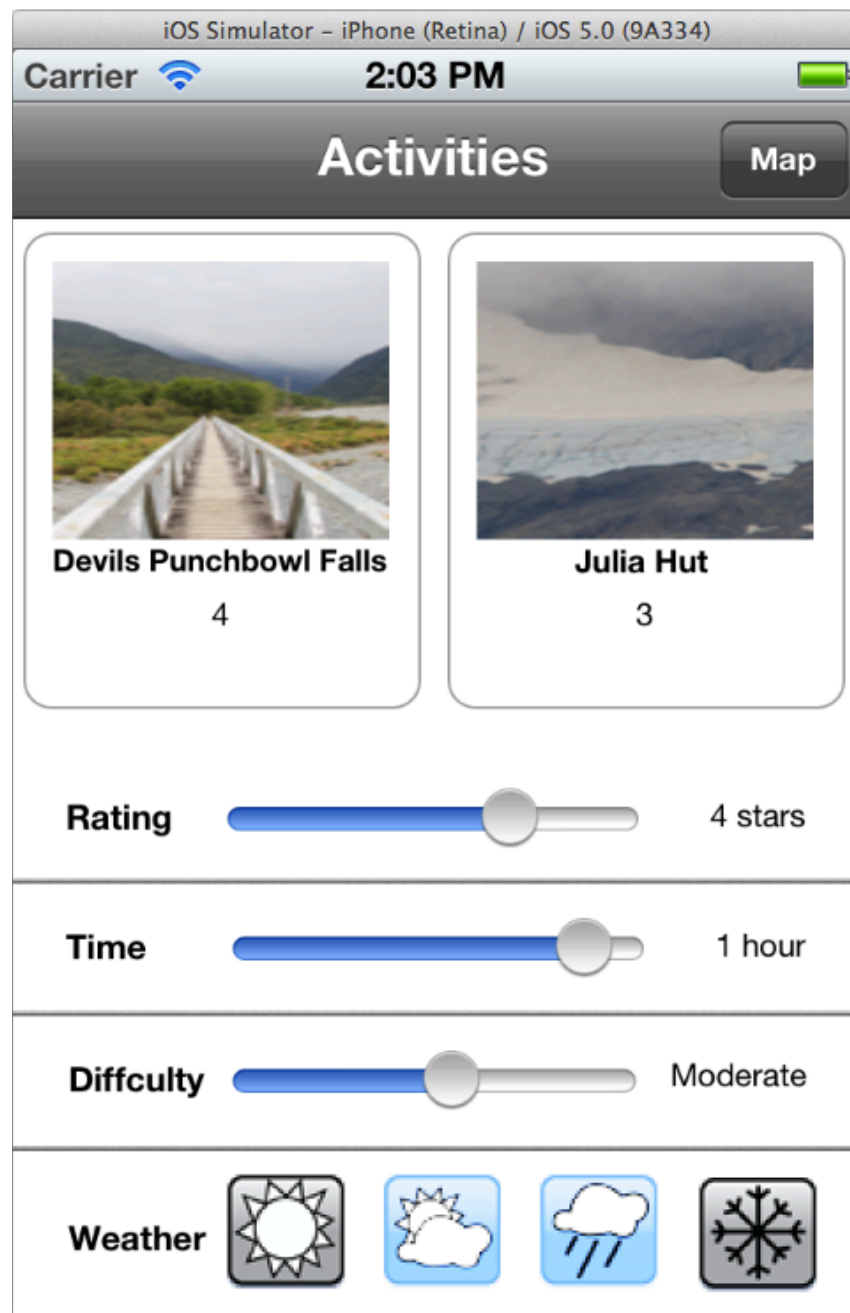
► EXPERIMENT THREE

Figure 7.01: (left) The original *NZ Birds* application prototype. This application was designed to act primarily as a reference and identification tool. The game and bird of the day features were added part way through the concept development stage.

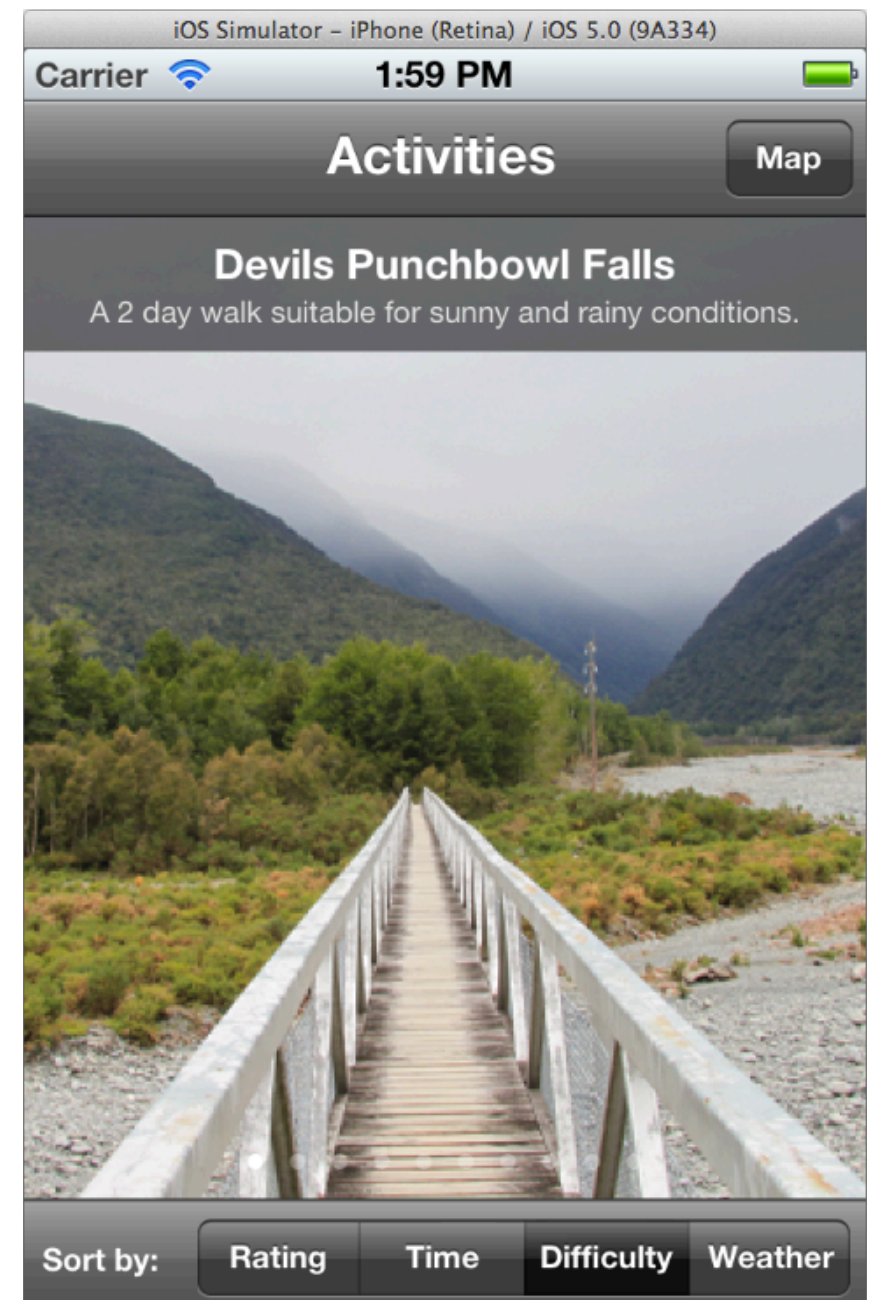
(right) The final *Arthur's Pass Bird Identification Game* running on an iPad.



► REFINEMENT

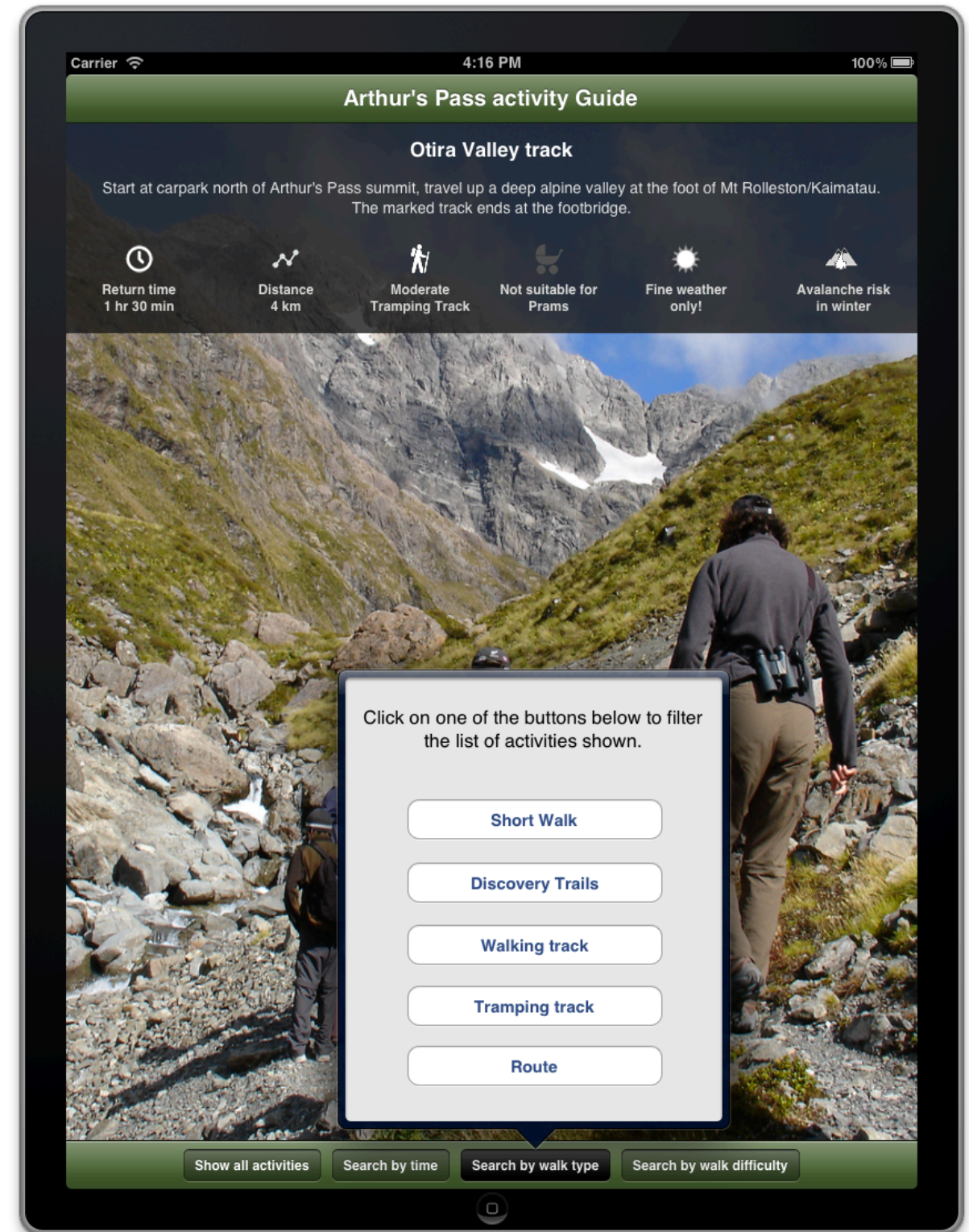
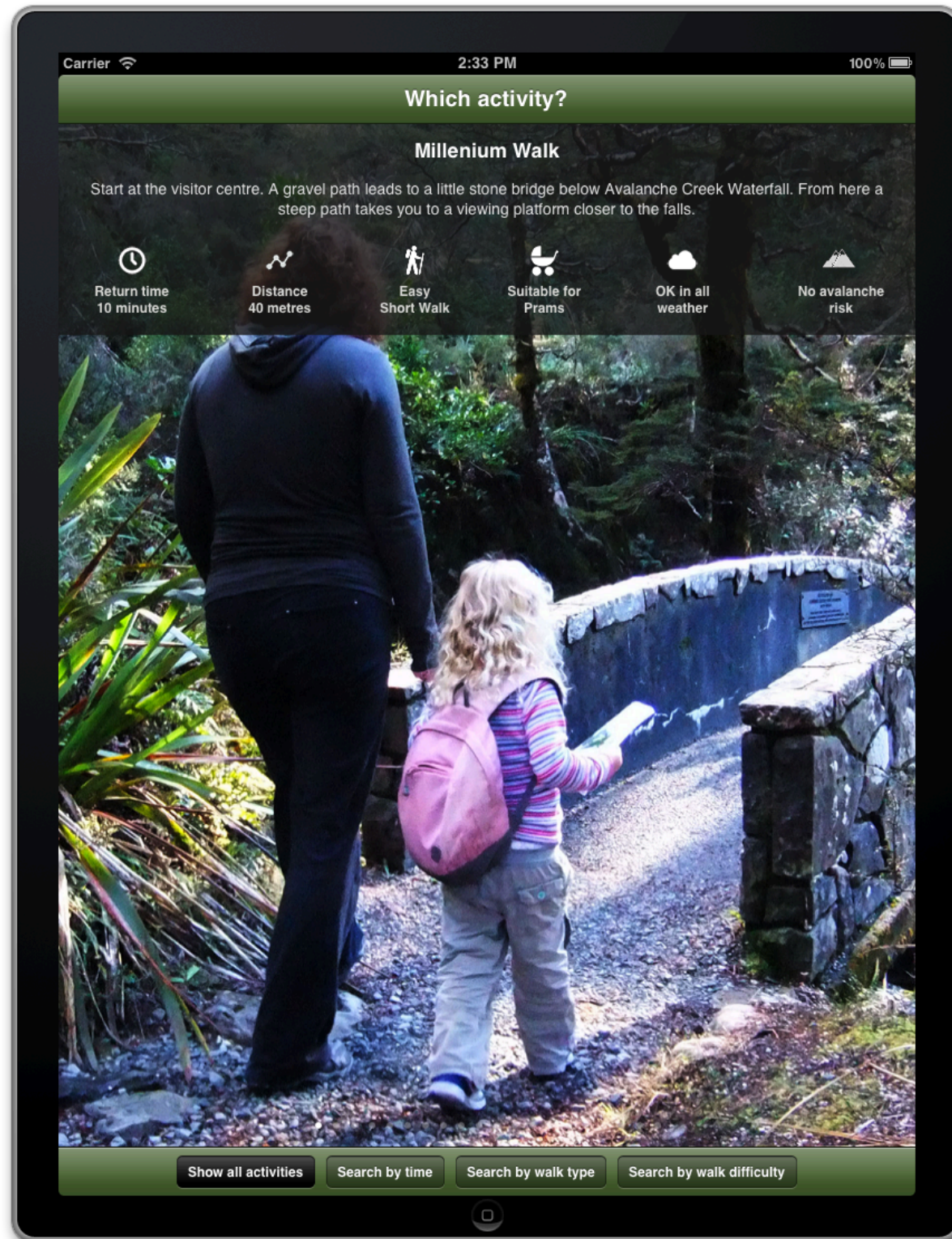


(left) the early student prototype. All search criteria is displayed on the same screen as the results. This produces a cluttered and relatively small results display area where the thumbnails of the images are almost useless.



(right) An alternative suggested by the author. The content (images of the places/activities) is made more prominent. The interface responsible for filtering the activities is placed at the bottom of the screen and is vastly simplified, only allowing a simple sorting (for example, for difficulty, activities might be sorted from least difficult to most difficult).

► WHICH ACTIVITY APP



► FEEDBACK

APNP visitor centre staff recorded application user's comments and feedback on the Which Activity application, and these are shown below:

"Different walk options"

"Lots of different length and skill level tracks"

"Now I know where O'Malley's track is"

"A lot of activities to do, classifications good"

"Found out distances"

"Got info you needed to do walks"

"Yes – going to for a while – gives you quick info about short walks."

The Which Activity application was well received and was generally seen as providing benefit to its users by displaying information on local walks in an easy to use way.

Of particular interest are the following post-use comments recorded by visitor centre staff[102]:

"The results were fantastic particularly with the bird call game; most visitors had a basic knowledge of some bird calls, but were able to add to this knowledge;"

"I learned about the birds"

"Bird song, I know the keas"

"I can now recognise grey warbler – it made it easy to learn names of birds"

"Distinguishing the calls of each bird"

"I learnt what a kea sounds like"

"Even more significantly, several adults noticed that their children were transferring this knowledge to use out in the external park environment."

"Our (aged 4 1/2) girl played with this and then went on a walk and was so engaged with what she heard in the forest – asking "what's that bird call", "what's that". I'm sure it's this game that's done it."

"I thought kiwi were silent but they have a voice." (10 year-old boy)

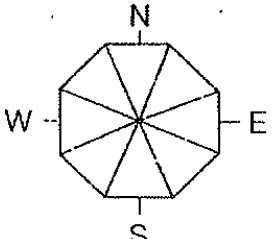
"(Sarah talking to guardian on guided trip) Kieran (11) played and played (got high score of 27). Kieran recognised a tomtit calling in the forest while on a guided walk while the two adults thought it was a grey warbler. A visual sighting then confirmed Kieran as correct! Kieran was also able to describe accurately the rifleman call."



► THE NZ BIRDS APP

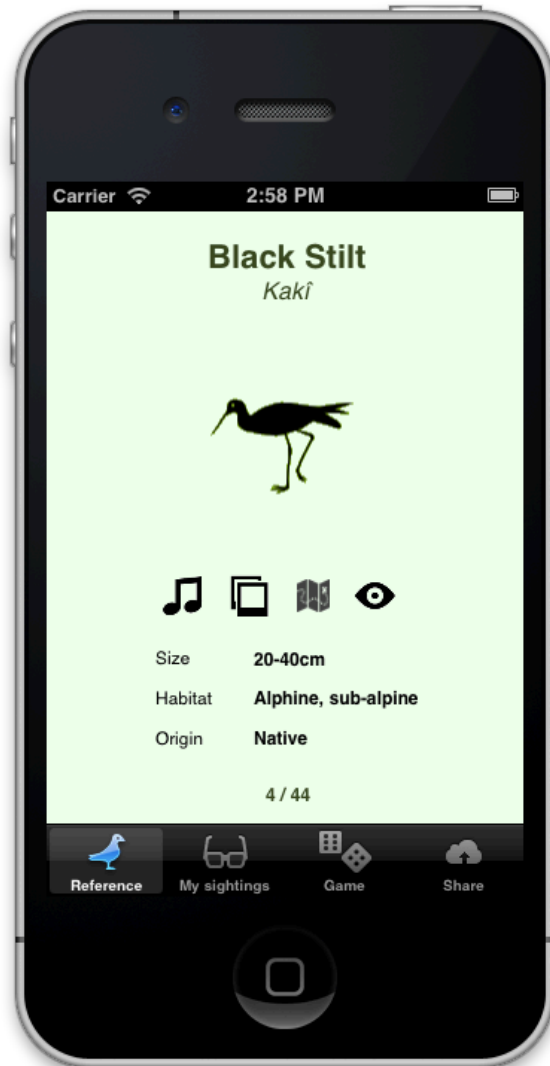
[illegible]

OTHER ANIMALS HEARD				
	1	2	3	4
Morepork	none	few	mod	many
Weka	none	few	mod	many
Possum	none	few	mod	many
		few	mod	many
		few	mod	many

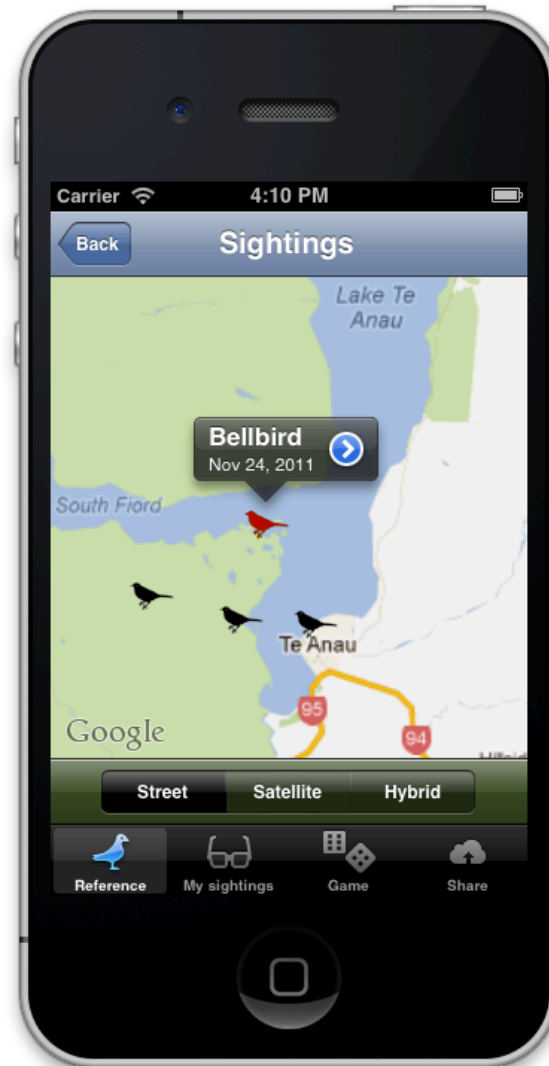
CARD No.		KIWI CALL SCHEME							
OBSERVER:				Date:		Locality Name:			
<div style="display: flex; justify-content: space-between;"> _____ _____ </div> <div style="display: flex; justify-content: space-between; font-size: small;"> Initials Surname </div>									
Address									
Affiliation									
NOTES:				Series <table border="1" style="display: inline-table; width: 40px; height: 20px; vertical-align: middle;"></table>		Sheet <table border="1" style="display: inline-table; width: 40px; height: 20px; vertical-align: middle;"></table>		Grid Reference <table border="1" style="display: inline-table; width: 100px; height: 20px; vertical-align: middle;"></table>	
Number of Kiwi calls.		WIND DIRECTION <div style="text-align: center;">  </div>		WIND 1 Calm 2 Light 3 Mod 4 Strong RAIN 1 Nil 2 Light 3 Moderate TEMPERATURE 1 Cold 2 Mild 3 Warm CLOUD COVER 1 Clear 2 Partly cloudy 3 Overcast		GROUND CONDITION 1 Dry 2 Damp 3 Wet NOISE 1 None 2 Slight 3 Mod MOONLIGHT 1 Light 2 Dark 3 Black LISTENING COVERAGE 1 Narrow 2 Medium 3 Wide		Major Habitat Types 1 Beech forest 2 Podocarp forest 3 Broadleaf forest 4 Exotic forest 5 Scrub 6 logged 7 burnt 8 undeveloped farmland 9 developed farmland 10 grassland 11 tussock 12 swamp 13 coastal 14 beach 15 river terrace 16 alpine 17 other	
Minutes listened									



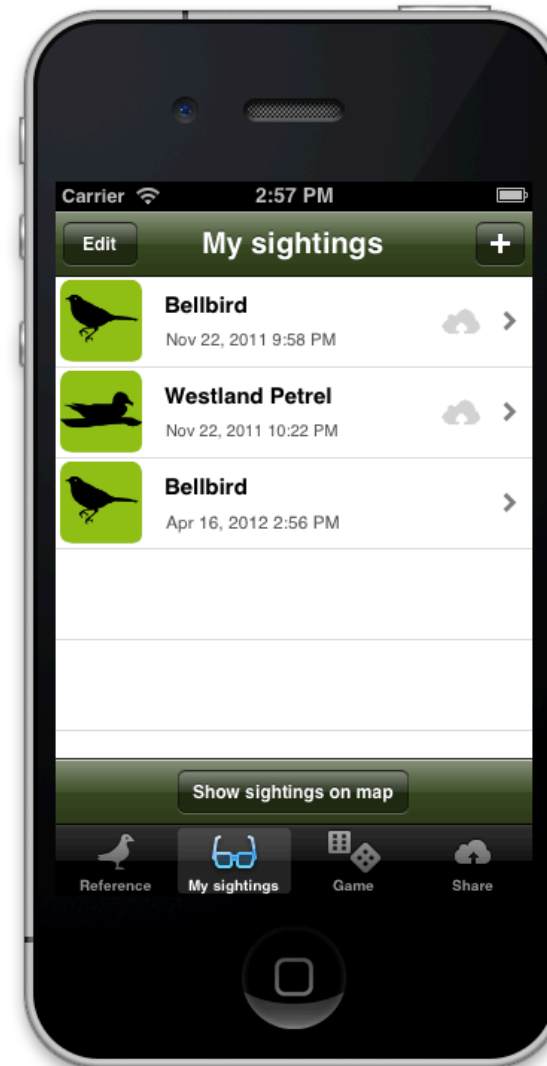
► NZ BIRDS APP



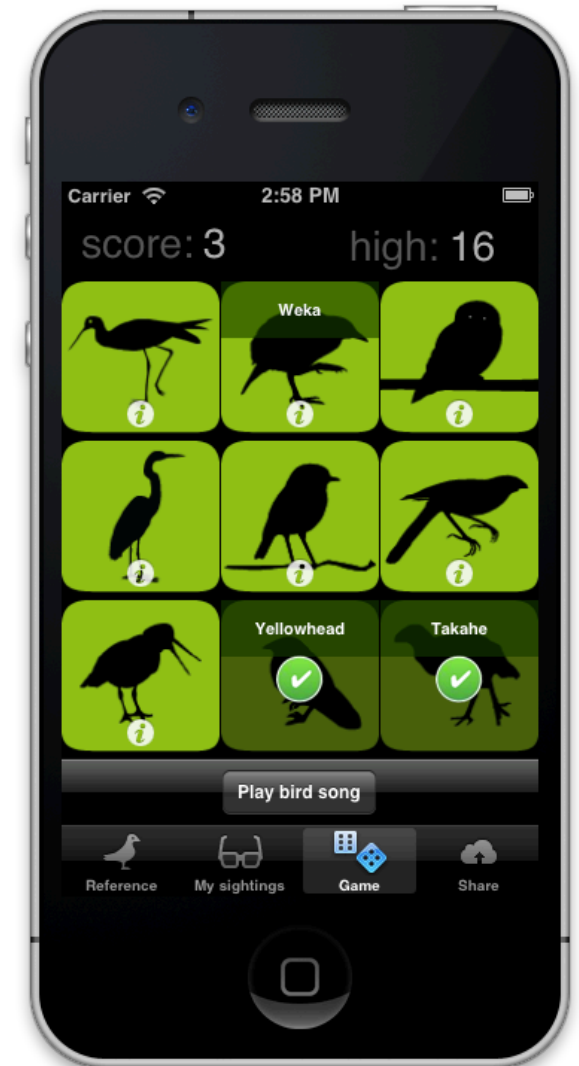
The reference section of the NZ Birds application. This image shows the page view, but a list view was also available.



When the sightings button for a bird is clicked a map is shown that displays reported sightings of that bird. Sightings shown by red icons were made by the user, sightings shown by black icons indicate sightings reported by other users.



The My Sightings section allows users to view the sightings they have made and allows them to create new sightings. The small cloud icon next to some sightings indicates that the sightings have been shared (uploaded to the web service).



The bird identification section (similar to the *Bird Identification* game in the Arthur's Pass iPad game).

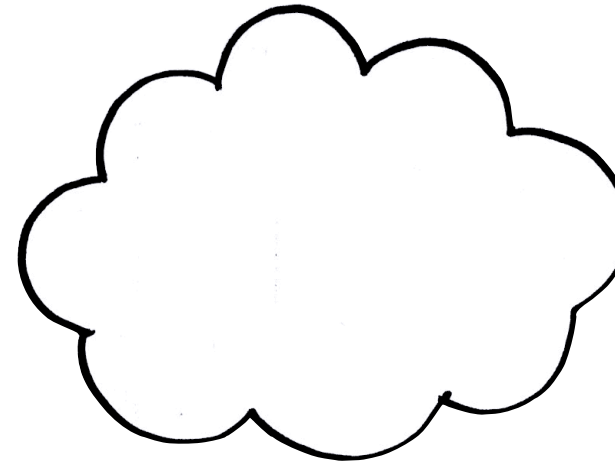


► NZ BIRDS SYSTEM



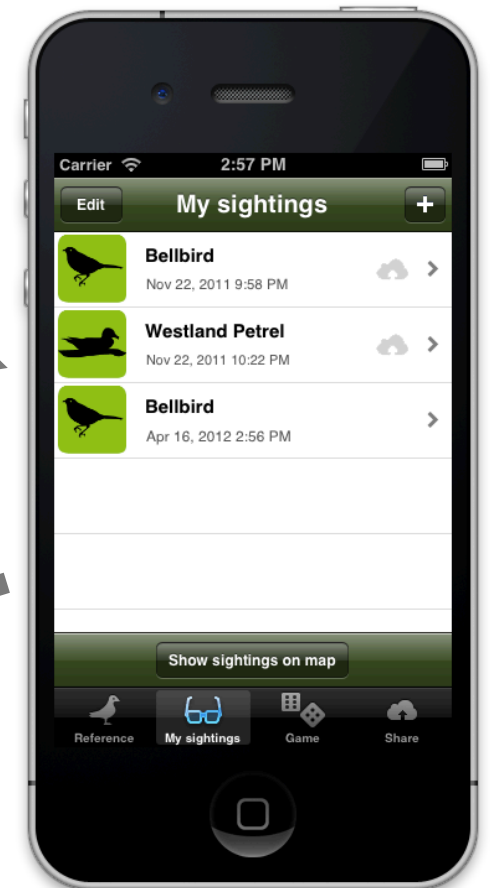
Web portal

The web site is an interactive portal that allows users to view the sightings reported by all users. It offers two distinct ways of visualising sightings and automatically displays new sightings as they are uploaded by users.



Web based cloud service

This service is responsible for allowing users to upload and download sighting information from/to their phones. It also provides data to the Web Portal.

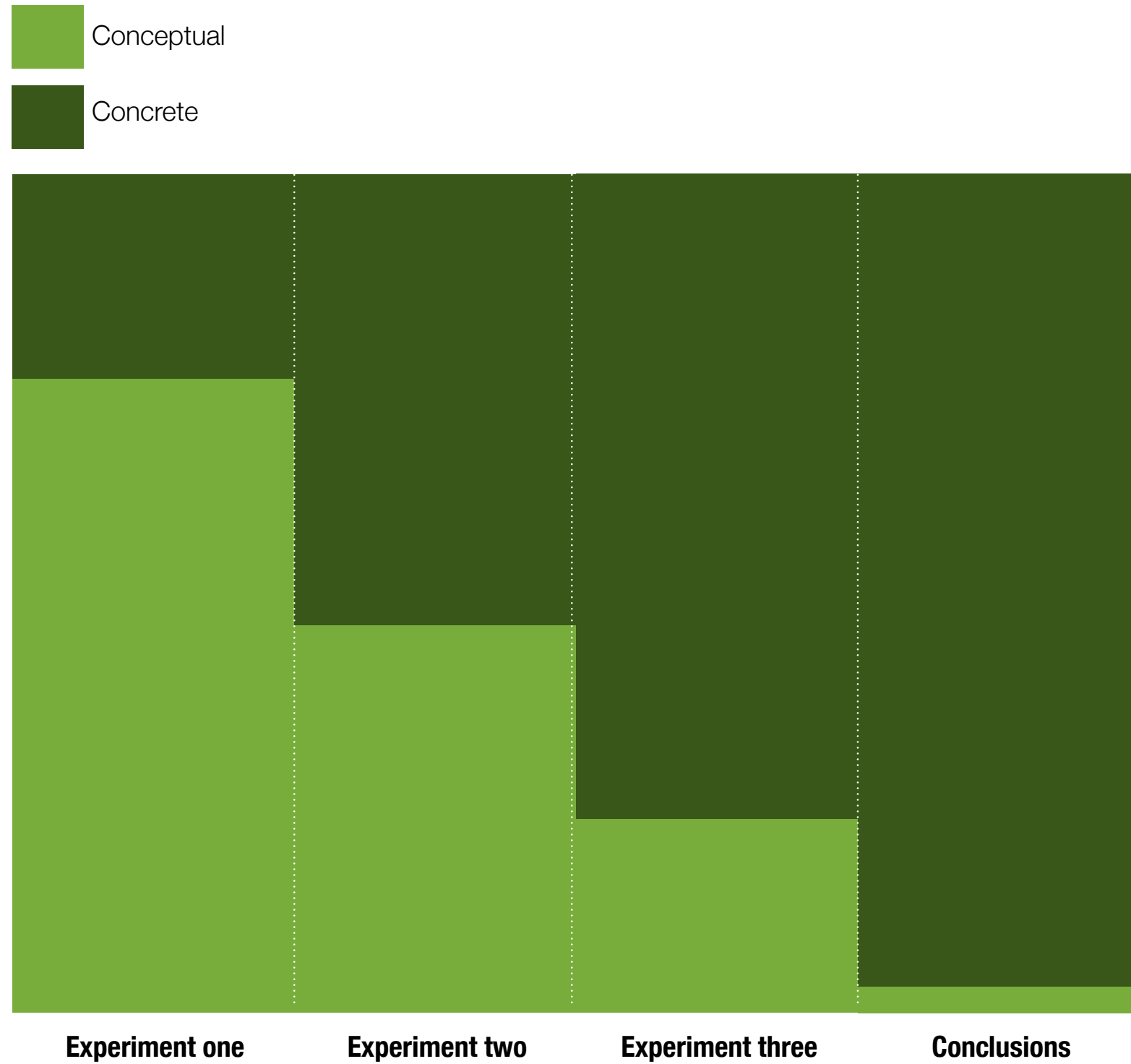


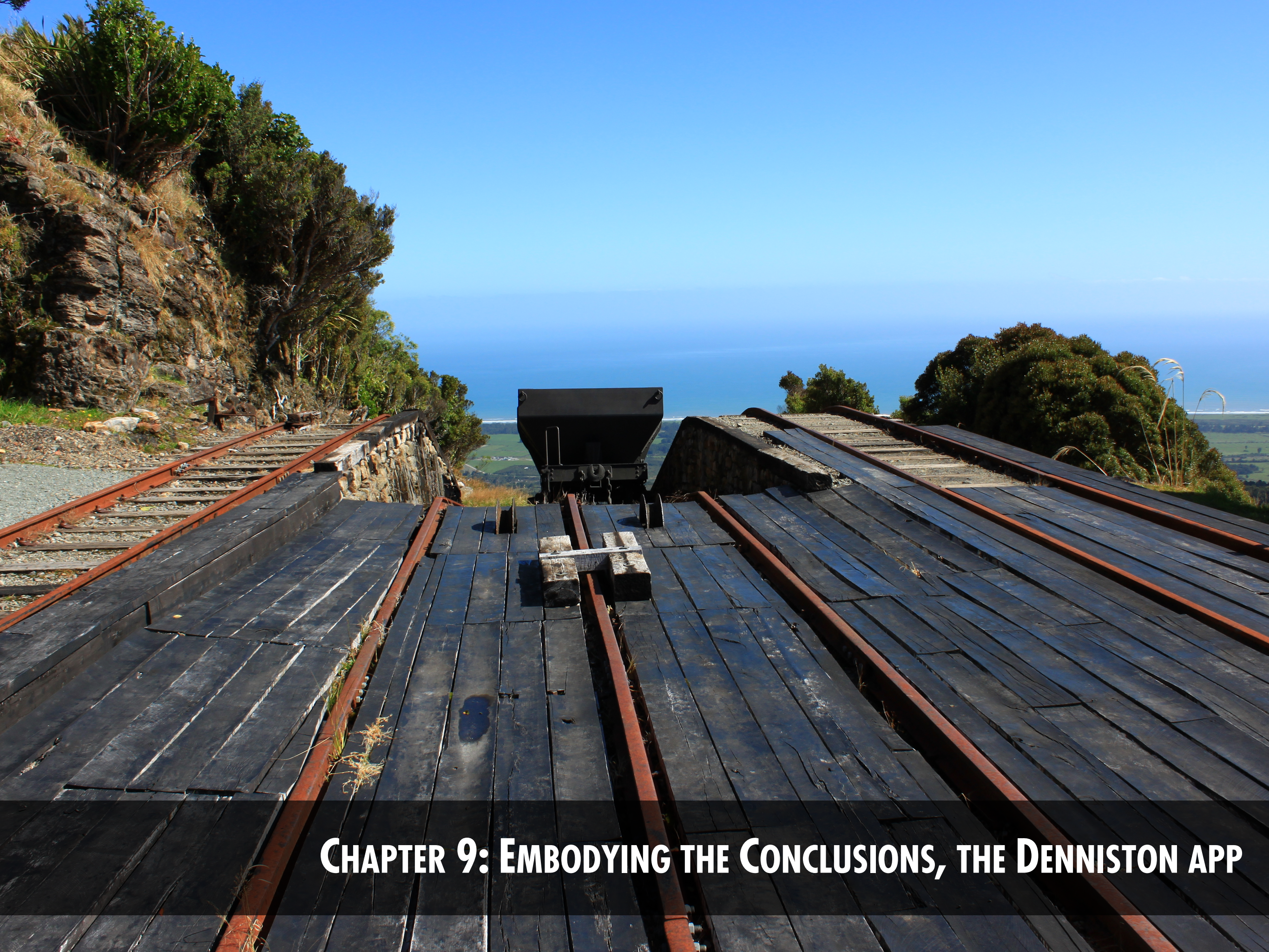
iPhone application

The iPhone application allows users to report sightings of birds by sharing any observations they have made. It also allows them to view sightings made by other users.



► THE END OF EXPERIMENTATION





CHAPTER 9: EMBODYING THE CONCLUSIONS, THE DENNISTON APP

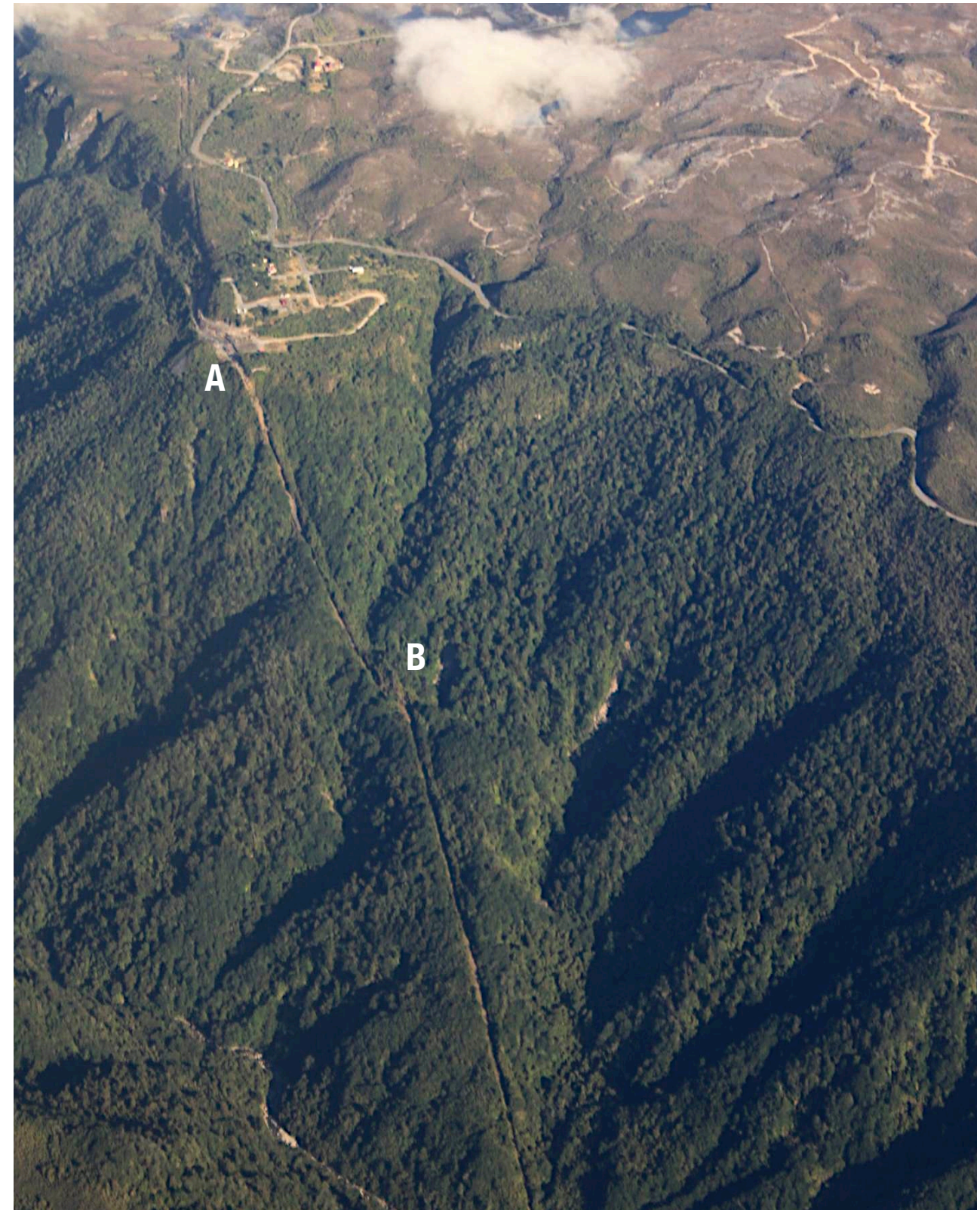
► DENNISTON - THE PLACE

The Incline actually consisted of two inclines. The first incline descended abruptly from the edge of Denniston plummeting towards the 'middle brake' area. At this point, coal wagons were decoupled from the ropes and loaded onto the lower incline for a slightly less steep descent to Conn's Creek. At Conn's Creek the coal was transported via railway to Westport. The incline was approximately 1.7km in length and fell 510 metres. At times the gradient was 1:1.25. It was 'powered' by gravity with descending, full coal wagons pulling empty wagons back up the incline. The Incline consisted of a single rail track for most of its length but had several passing zones where downward and upward wagons would pass each other.

A major reason so many people decided to live in Denniston despite the isolation, rugged landscape, and inhospitable weather, was that the Incline (for many years) was the only way on and off the plateau[111]. Only when a new access road opened in 1902 did the residents begin to move to nearby Waimangaroa. The road was widened and the first motorised vehicle came to Denniston in 1915. Subsequently, a 33 seat bus made the daily trip from Waimangaroa to Denniston and many of the permanent residents moved away.

Many people lived and died in Denniston. Life was incredibly difficult, and working conditions were exhausting and perilous[111]. An often mentioned fact was that the ground Denniston was built on was solid rock, so the dead could not be buried near their families. Instead, the coffins were loaded onto the coal wagons and were ferried down to the cemetery at Waimangaroa. Part of the challenge of the Denniston application project was communicating this hardship, sense of isolation, and the stories of the people that once lived there.

Figure 9.01. An aerial view ► of the Breakhead (A), the Denniston Incline (B), and Conn's Creek shown at the bottom (C).





► THE EXISTING PAPER GUIDE

6. The fire at the Bins

When a fearsome fire broke out, the Scobies and their miner friends fought to save the area.

'A finger of fire ... will bypass the Camp and drive around to threaten the Bins, where the great conglomeration of sheds and stacks of coal invite disaster. Already it is racing up through scrub, drawing a wide curve of leaping orange flame. 'To the Bins! To the Bins!' shouts Josiah. Saving the Camp is not their battle ... Their preparations seem pitiful in the face of the crackling flames that are now creeping onto the plateau, but the miners stand fast, solid as fenceposts, waiting to see where the fire will strike.'

🔥 Denniston Rose, 'Charring and scarring'

Keep walking away from the sea. You will come to the entrance to the Denniston Mine Experience. Ahead you can see the entrance to Banbury Mine. This is a good time to take the ride into the mine.

Banbury Mine.
Photo: Fell-Smith Collection.

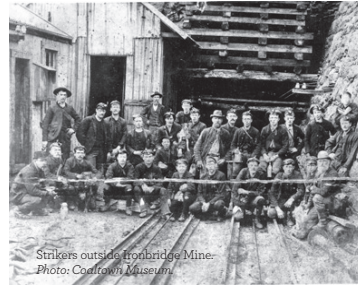


7. The accident in Banbury Mine

Frank and Samuel Scobie were trapped in Banbury Mine as the top-coal came down.

'Frank and Peter hear the coal shift. 'Bloody hell, it's coming down,' shouts Peter, 'Where's that brother of yours?' But Frank is already running down the shaft and through the brattice. As he reaches the junction, the top-coal comes down with a roar. The black tide rolls towards him across the floor. His feet are trapped. Frank knows he must stay upright but he is desperate for Samuel. 'Sam! Sam!' he shouts above the roar of the coal all around him. He is in total darkness.'

🔥 Denniston Rose, 'The Miners' Curse'



Strikers outside Ironbridge Mine.
Photo: Coaltown Museum.

8. The strike

Josiah Scobie incited the miners to strike inside this mine. You can hear his words inside the mine.

John Lomas was the real-life leader of the strike, and became the inaugural president of Denniston's first coalmining union.

Above the Bins area and to the right is where Denniston township was. The next few stops are in this area. You can walk up or go back to your car and drive up. (You will need the car soon to drive to Burnett's Face.)

Dickson Street crossed Boswell Street, (where people are pictured standing). The Volunteer Hall was down Dickson to the right.

Hanratty's corner of Dickson St.
Photo: Coaltown Museum.



9. Hanratty's Guest House in Dickson Street

Hanratty's Guest House was in this area above the Bins, as was Rusty McGill's barber shop and Inch Donaldson's drapery.

'Behind the bar Tom Hanratty presides, both hands spread on the polished wood, ready with opinions and advice ... The bar — no bigger than two decent-sized rooms — is crammed with men ... Mostly these are not miners, but above-ground workers. The men who spend their evenings in Tom Hanratty's saloon work at the Bins, filling the wagons, or maintaining the miles of railway tracks that carry the coal.'

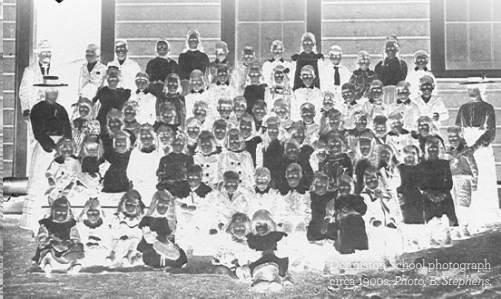
♥ Heart of Coal, 'Backing for a Stud Service'

10. Concerts at the Volunteer Hall

Rose and Brennan sang here as children. Later, Brennan played here along with the champion Denniston Brass Band.

'[Brennan] brings cornet to lips and the silver notes slide, supple as a silk ribbon through the quiet air. Here is magic! Oh, this visiting Scobie is good! Bandmaster Cooper sits forward. He wants the lad. Could he be persuaded to return? Brennan's last item is that beautiful love song The Rose of Tralee, and there she is, the Denniston Rose, standing alone at the back of the hall, motionless for once, listening to him.'

♥ Heart of Coal, 'A Public Proposal'



Denniston School photograph circa 1900s. Photo: B. Stephenson.

11. Rose's Schools

As a young woman, Rose taught first at Burnett's Face School (see 11) and here, at Denniston School. As a child she went to school down at the Camp (see 5).

'[Rose and Janet] were thick as thieves, both teachers at the school. The way the mining children progressed in leaps and bounds under these two had given the whole community a boost. This year, in a competition organised by Rose, the Burnett's Face pupils wiped the floor with their rivals at Denniston in spelling, arithmetic and even rivers of New Zealand. History and Football were another matter.'

♥ Heart of Coal, 'A Rose of Many Hues'

The next five stops are in the Burnett's Face area. Drive over the plateau towards the hills. As you head down into the valley, look for the sign to where the old Burnett's Face School was.

Drive down into the valley and park in the car park. This was the junction where the rope-roads from Ironbridge Mine and Coalbrookdale Mine joined to carry on through Banbury mine to the Bins.

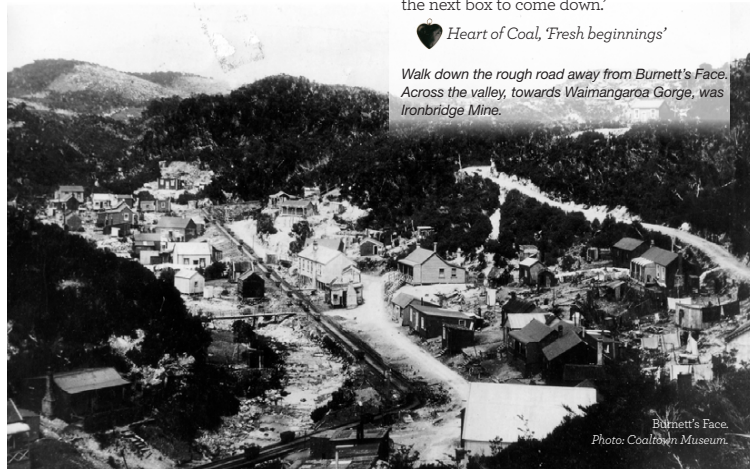
12. Where the Scobies lived: Burnett's Face

The Scobies built their house on the other side of the stream and rope-road, backing onto Mount William. Where you've parked your car is where Brennan met Nolly when he returned from Christchurch, in Heart of Coal. Rose's teacher, Henry Stringer, lived on the plateau, near the Friends of the Hill Museum.

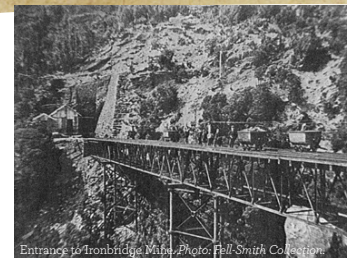
'The houses of Burnett's Face, every chimney plumbing, huddle together as if for warmth. They are built higgledy-piggledy, no discernable plan or pattern, on either side of the rope-road ... Nolly draws up at the railway yard where lines snake in all directions. He waves to Ned Farmer and Johnny Mitchell, who were at school last year and now, at fourteen years old, are clippies, out in all weather, blowing on their fingers and stamping their feet, waiting for the next box to come down.'

♥ Heart of Coal, 'Fresh beginnings'

Walk down the rough road away from Burnett's Face. Across the valley, towards Waimangaroa Gorge, was Ironbridge Mine.



Burnett's Face.
Photo: Coaltown Museum.



Entrance to Ironbridge Mine. Photo: Fell-Smith Collection.

13. Ironbridge Mine

The slip that nearly killed Rose happened on the slopes above the gorge, and above Ironbridge Mine.

'A section of cleared hillside ... shocked by the underground cave-in, separates from its parent rock with a crack ... Miners, eating Sunday dinner inside their homes at Burnett's Face, set down their knives and forks and walk to their doors, puzzled ... [Some] are in time to see a whole jutting landmark sheer away and slide, slowly at first, and then with increasing noise and velocity, down past the dark entrance to Ironbridge, towards the gorge below.'

♥ Heart of Coal, 'Letting Go'

Walk back along the track into the valley. The rope-road followed the valley floor.

14. Rose at Burnett's Face

As a child, Rose once visited the settlement at Burnett's Face. Then it was full of houses, a library, pubs and a chapel. The Scobie family drove her away as they came out of the chapel.

'The boys don't move. Their stillness is more terrifying than anything else they could do, for Rose is used to shouted taunts. She looks wide-eyed from boy to boy ... They are as daunting as a coalface in their shiny black suits ... Rose's cheeks are bright red. Great tears stand in her eyes ... Like a cornered rabbit, she faces the Scobies until Brennan, shaking and tearful himself, takes her arm. 'She is Rose of Tralee,' he says.'

🔥 Denniston Rose, 'Playmate and Pariah'

As you walk along the Burnett's Face valley, look for the track on the right, which follows the 'new' rope-road.



Burnett's Face library and rope-road.
Photo: Coaltown Museum.

15. The new rope-road

In Heart of Coal, Brennan surveys the new rope-road, which would take the coal boxes above ground to the Bins, instead of through Banbury Mine.

'There goes Rose, the school day over, striding out ... to see how Brennan is doing with the new rope-road ... Her arms are circling wildly, illustrating some theory he can't possibly follow at such a distance. Brennan straightens his levelling tool. He is supervising the actual laying of the railway lines now, up to his ankles in mud. Between him and his wife is a minefield of wooden sleepers, iron pins and shingle heaps.'

♥ Heart of Coal, 'A Rose of Many Hues'

There are two more stops, but before you drive back up the way you came, you might enjoy a walk further into the valley. You'll see entrances to mines and the remains of the great fan that ventilated them.

When you're ready to continue, drive back over the plateau to the top of Denniston Road, which opened in June 1902 on the same day that the end of the Boer War was announced.



Denniston Mine.
Photo: Coaltown Museum.



The 'New Track' taken a little later than Rose's time. Photo: Friends of the Hill.

16. Isolation ends

'That morning the mine manager rode up the six and a half winding miles in a smart new trap. Henry Stringer brought the schoolchildren to meet him at Hudson's Dam ... They stood there, Rose among them, looking over the edge, down the winding snake-bends, ready to cheer the first vehicle (other than a coal wagon on the Incline) to reach Denniston. ... Wheeled transport all the way from Westport! What other miracles will this new century deliver?'

♥ Heart of Coal, 'An End to Isolation'

Now drive down the hill, turn north onto Highway 67 and drive for about a kilometre. Turn left over the railway line and follow Newcastle Road back along the other side of the railway line. Take the first right into Sunderland Road and drive towards the sea. (Sunderland Road becomes Pottingers Road).

Close to the sea, on the left-hand side of the road, is the old Waimangaroa Graveyard. Look up to see the top of the Incline where this journey began. Many Denniston graves face up to the Hill.



► THE DESIGN BRIEF

- (1) The application needs to **extend the experience for the user**. A basic assumption was that most users would not have access to an iOS device. Therefore, the tour experience could not rely on visitors having a device. The application must augment the user experience, but must not be essential to engaging with the site.
- (2) The application needs to be **unobtrusive**. The experience of exploring the Denniston area must not be diminished by an application that requires constant attention, or is constantly on the user's mind. Notifications should be kept to a minimum, and context aware information should be provided at appropriate times and places. In this way, the application should not be driving the interactions but should be subservient to the user, providing information when needed.
- (3) The application needs to be extremely **easy to use**. While all iOS applications should be easy to use, the proposed Denniston application relied on a simple, consistent, easy to navigate interface. No specific learning should be needed to use the application, and wherever possible, standard user interface items should be used and conventions followed.
- (4) Use of location. The application **must make use of location services to orient the user** within the tour area. Tour stops would be geotagged and a user's location would need to be shown in relation to these locations. Thus, the application needed, at the very least, to locate the user within the tour map and give them some sense of how to navigate between points on the map. The application needs to run on as many devices as possible so it needed to add value even on devices with no GPS like the iPod touch.
- (5) 'Spirit' of the place. Wherever possible, as long as points #2 and #3 were adhered to, the application needed to be **themed in a style that was sympathetic to the area and its historical context**. The application style needed to reflect the historical nature of the site, the sense of a ghost town, or of a place that is almost unrecognisable from its recent past.
- (6) The application must operate in **offline mode**. All content must be contained in the application and the application must not rely on having a cellular or WiFi connection. This was partially because cellular connectivity was patchy on the plateau, but primarily because **overseas visitors would attract heavy data roaming charges** and might hesitate before downloading and using the application.



► VERSION 1



► SOME PROBLEMS UNCOVERED

(1) While the basic GPS functionality worked well, there seemed to be a level of confusion when swapping between the Trail stops view and the Trail map view. Users perceived that when viewing information on a particular trail stop in the list view, that stop should then be highlighted on the map. Solution: This revealed a fairly fundamental issue with the organisation of the application's functions. Due to time limitations, this was not addressed in the application that was released, but a solution has been proposed and will likely make it's way into a future version.

(2) The quick facts view was found to be "a little boring" (as described by some Department of Conservation staff). Solution: Simple cutout figures from some of the historical black and white photographs were used to present a personal face to the quick facts being shown. By adopting a paged interface that the user swiped through, the problem of a screen full of text was avoided. The individual fact screens were designed to convey the notion of 'memories' from the past. This new interface helped avoid the perception that the facts screen was text heavy by spreading the burden of reading across a series of screens of content rather than one full screen. Frequent use of a simple colour palette, often just black and white, helped reinforce the idea that users were using an application that dealt with the past, memories, and 'ghosts' of a bygone era (see figure 9).

(3) Issues were identified with spatial closeness of points on the map, and some basic mistakes with the location of some features were uncovered. Solution: The maximum scale factor on the map was increased which allowed users to zoom in to a greater detail, moving the pins further apart (see figure 9.08).

(4) A new method for indicating where the user is and where the user needs to go to reach the next point (see point one above) was requested. Solution: The map annotations were modified to include a stop number and were coloured to indicate the stop users were at, the stop they were heading towards, and any unvisited stops (see figure 9.08).

(5) A method for giving directions to the next point was proposed. Map overlaps were suggested as a solution, but given that these would need to be implemented manually (no MapKit), time dictated these would not make it into the release version. Solution: A directions button was added to the map and list views. By touching the directions button a new view would be displayed giving simple text based instructions for getting to the next stop. Warning messages, for example 'be aware of coal trucks', were displayed on this view (see figure 9.08).

(6) Interactive photos (part of the slideshow) were suggested. These interactive photos would need markers indicating significant features. Solution: Interactive photos were implemented by modifying the existing generic classes for handling scrollable maps. Simple pin annotations were used to indicate points of interest. An example of this was the aerial photo of Ironbridge Mine where ten points of interest, including the user's current location, were indicated by pins that could be touched for more detailed information (see figure 9.10).

(7) A new view (the deaths map) was proposed where users could see where Denniston workers and inhabitants died, and how they died. Initially a list of deaths was proposed but the author suggested a more interactive method, and

Figure 9.06. The redesigned home screen. This is the view first seen when the application launches. The Start Tour button explicitly states 'Click here to start the tour'.

the 'deaths map' came out of a short brainstorming session. Solution: The generic map view classes were once again modified to produce the 'deaths map' (see figure 9.10 and 9.11).

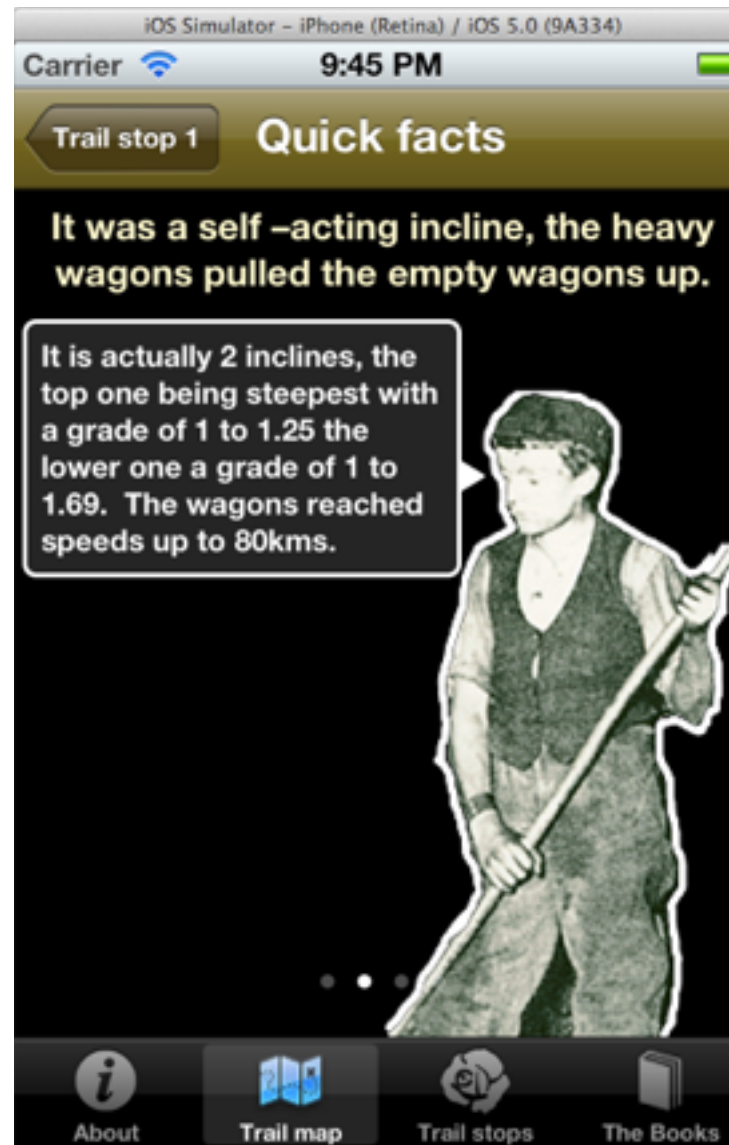
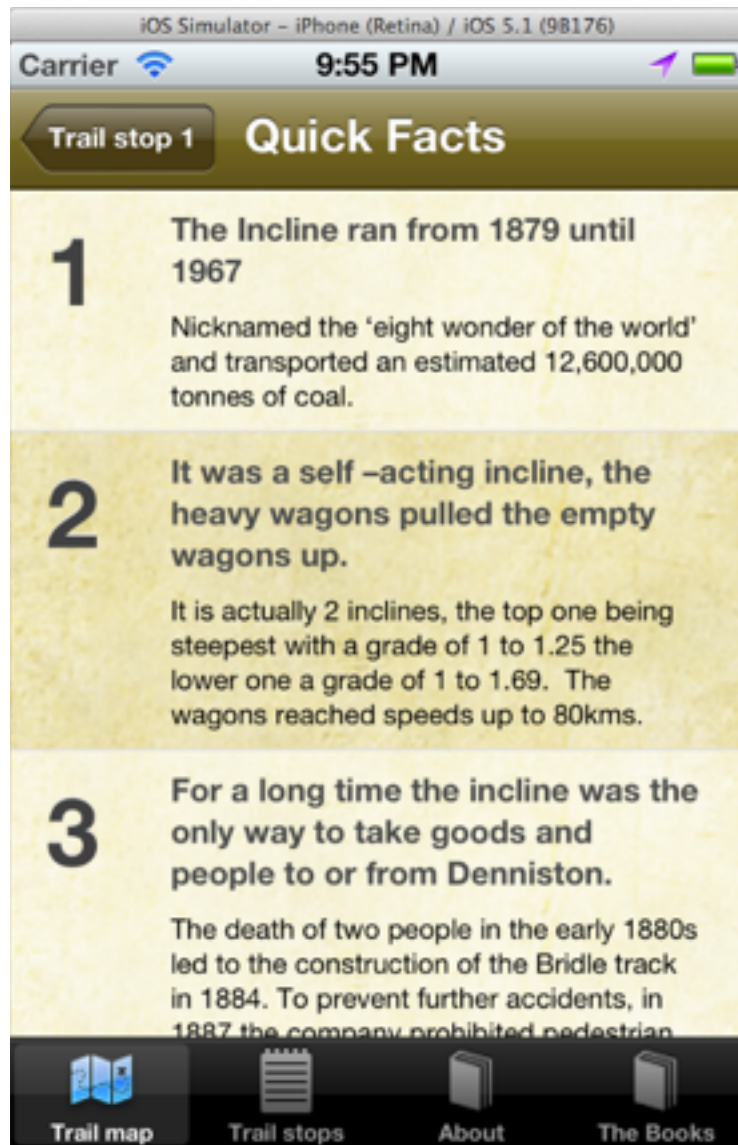
(8) The introduction screen seemed quite isolated and didn't really allow the user to start using the guide immediately – the user had to search for the entry point to the interactive tour. Solution: This issue was addressed by redesigning the start screen and the simple addition of a 'start tour' button that moved the user to the map view and displayed directions for getting to the first point on the map (see figure 9.06).

(9) The media player (for audio) needed to have caption text displayed on it and the play and pause buttons were too small and not obvious. Solution: The media player controller was completely redesigned (see figure 9.09).

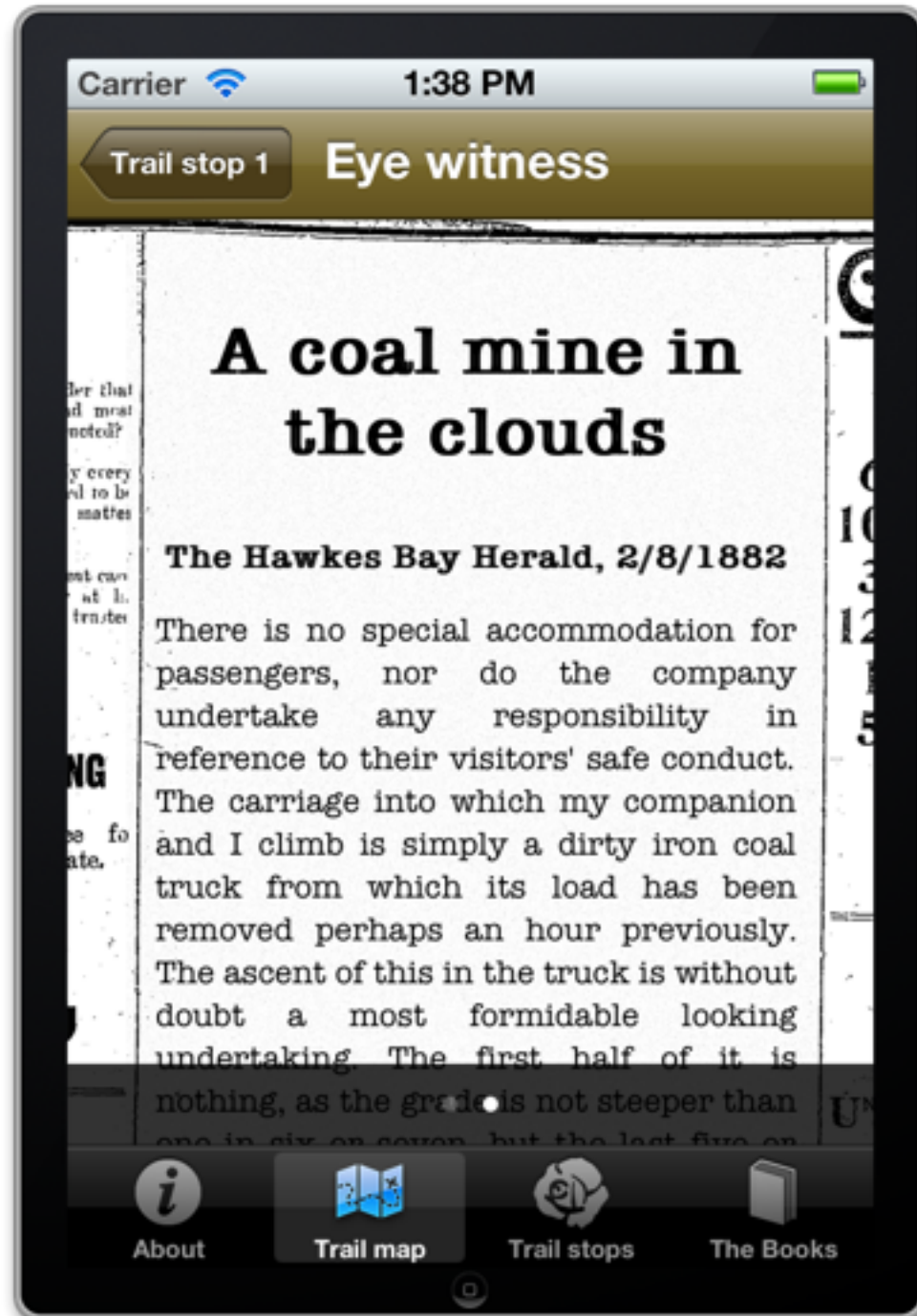
NOTE TO SELF, DEMO



► ITERATIVE DEVELOPMENT

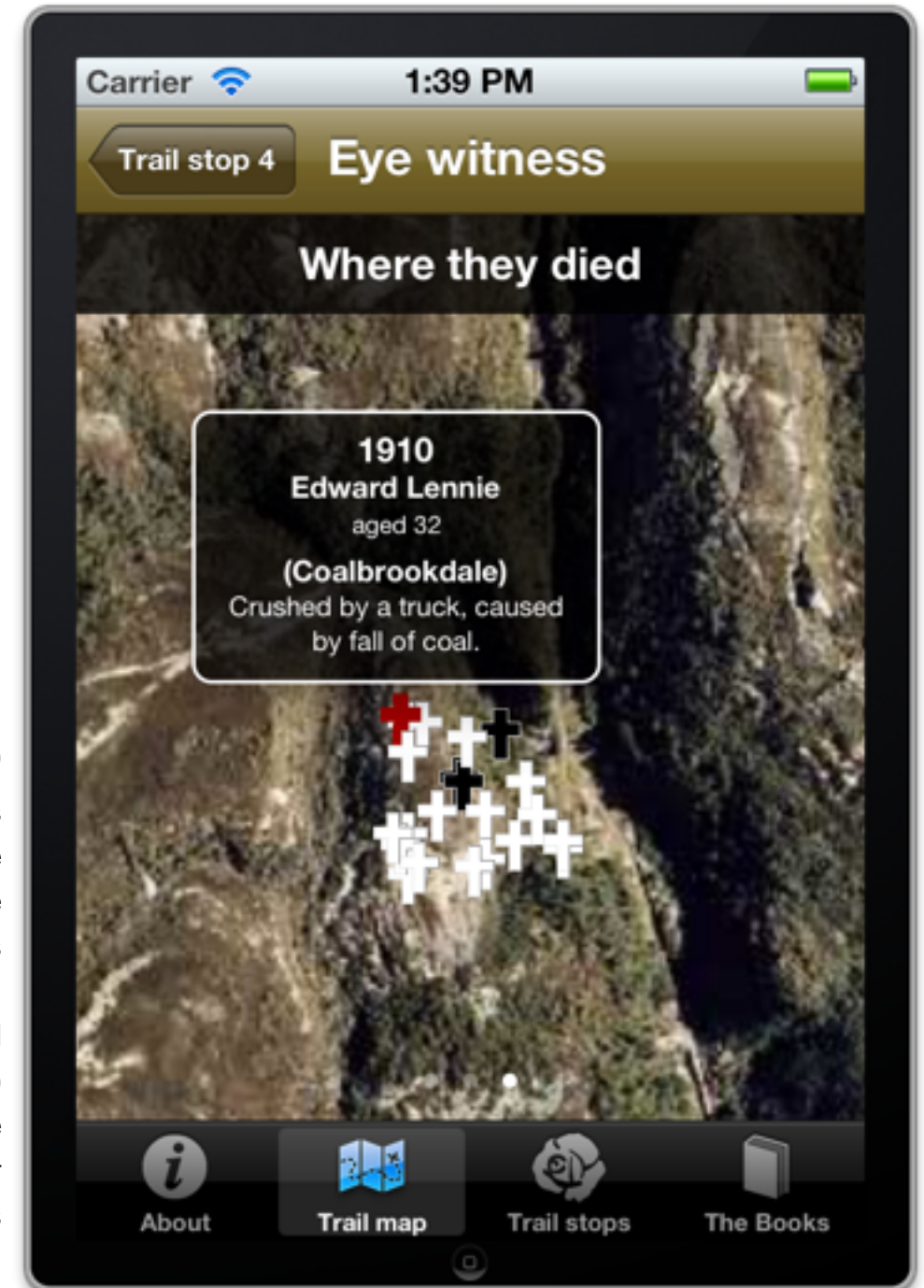


► ITERATIVE DEVELOPMENT - ENHANCEMENTS



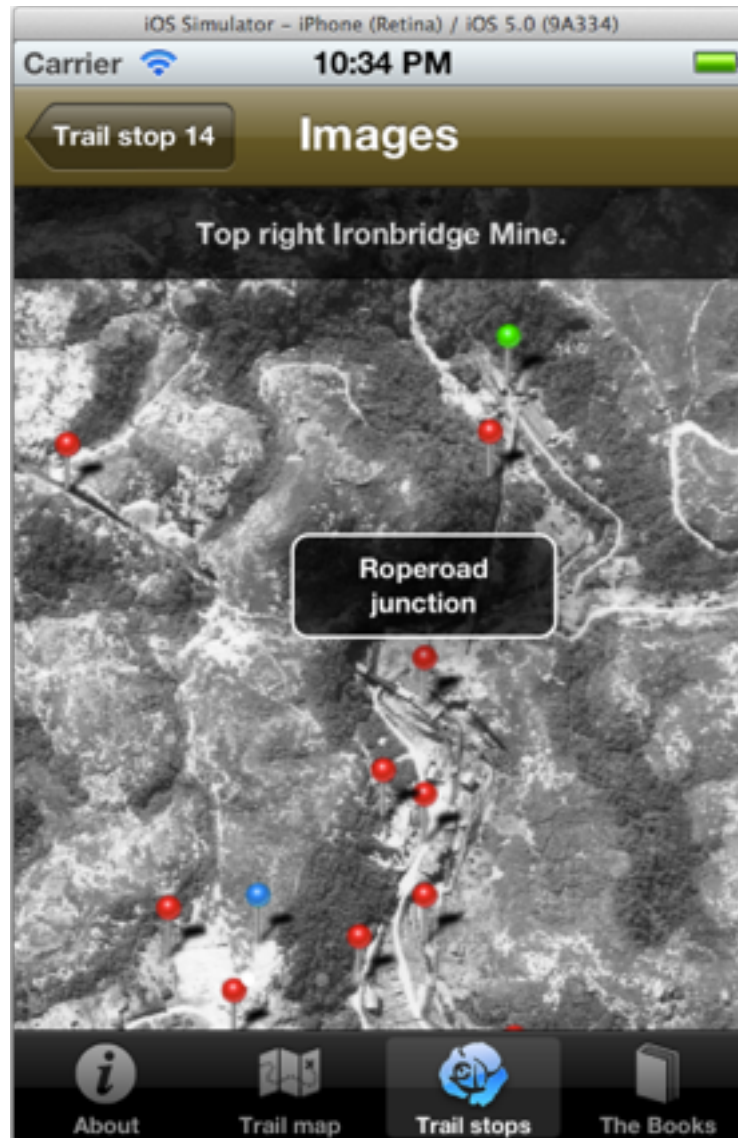
(left)

The new eyewitness text view. The old white text on black background was replaced by a more appealing newspaper view.



(right)

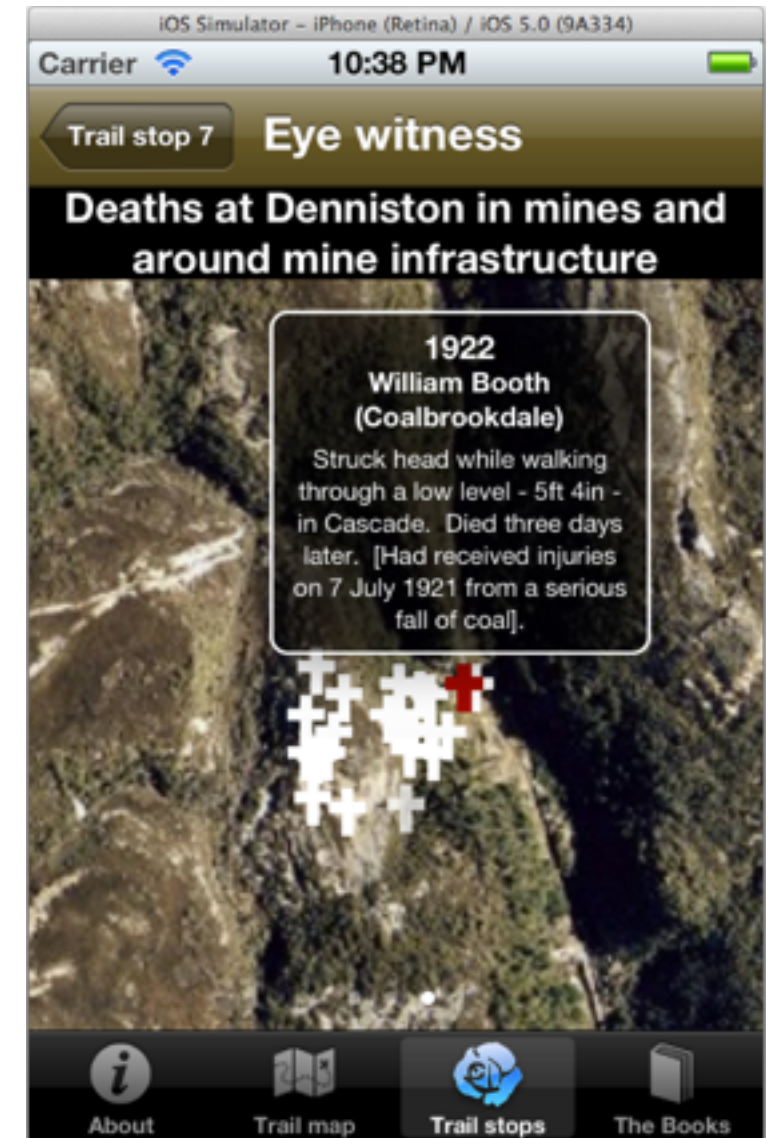
The 'deaths map' view was further enhanced to add the age of the person at the time of their death. Death markers were also changed in appearance once they had been viewed (turned black) and were moved to the bottom of the stacking order so other, unveiled markers could be seen and activated.



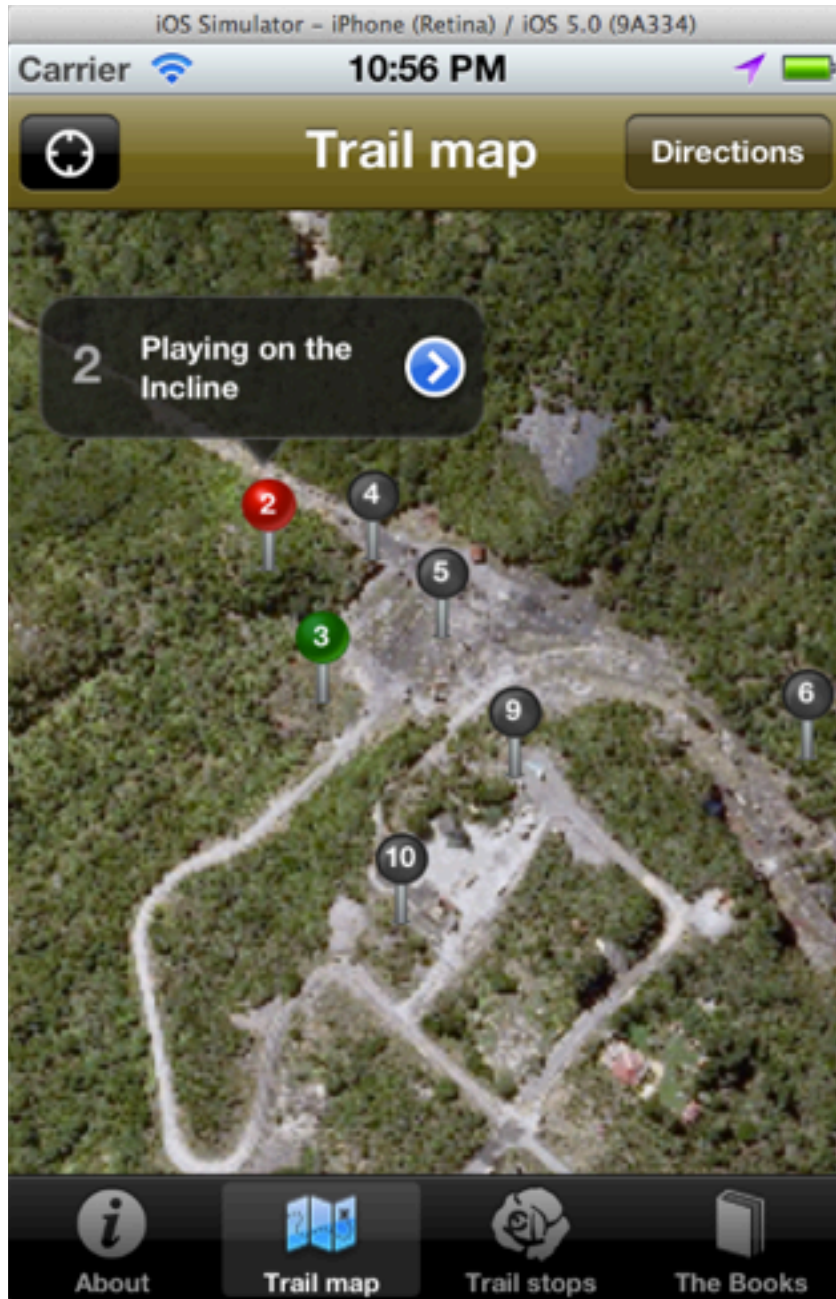
Simple photo annotations used at the Ironbridge Mine stop. Points of interest are shown on the map using pins. The user's current location is shown in blue, the major point of interest is shown in green.



Simple photo annotation showing how images can show more information than just a simple title.



The 'Deaths map' showing the clusters of deaths on the Denniston plateau.

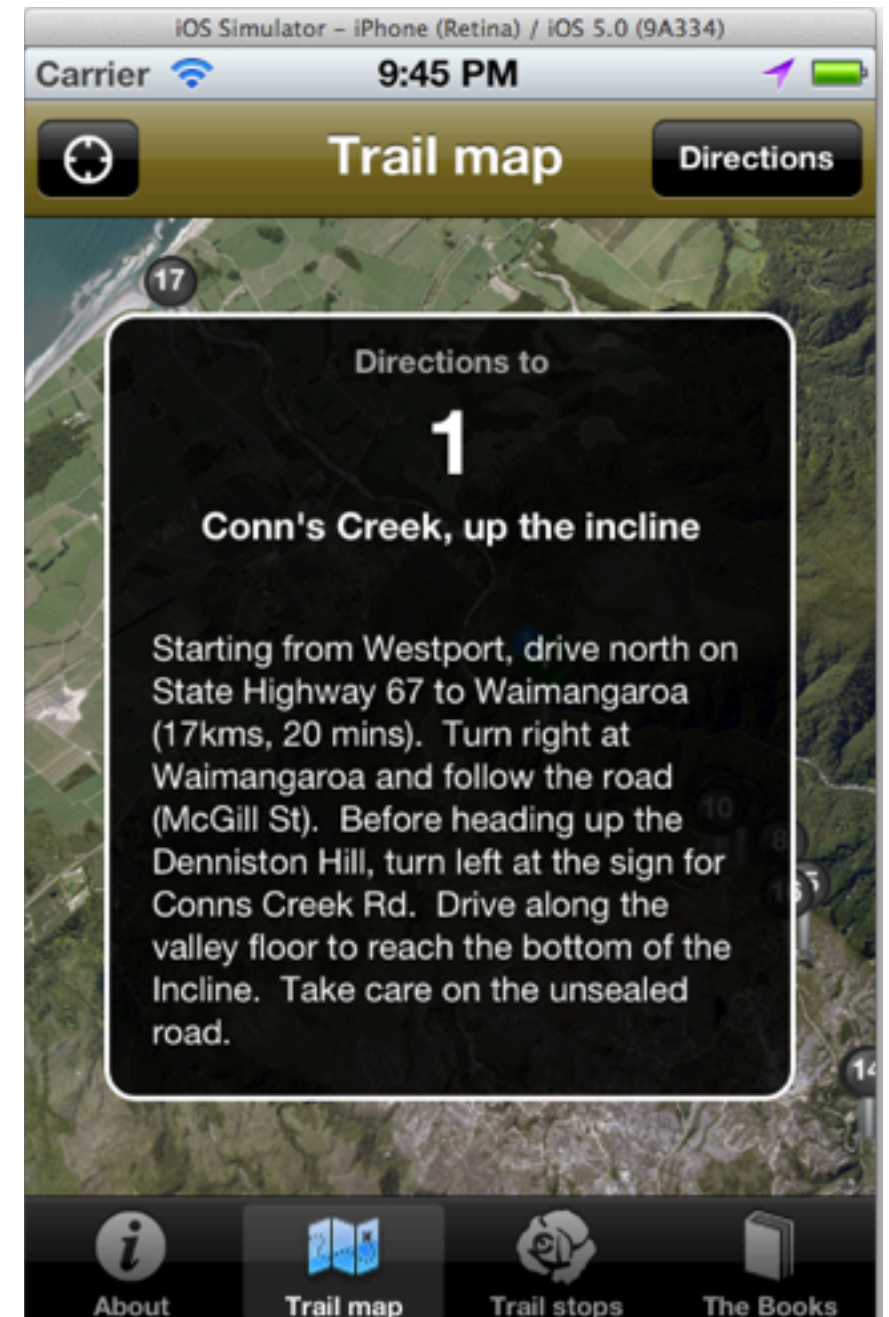


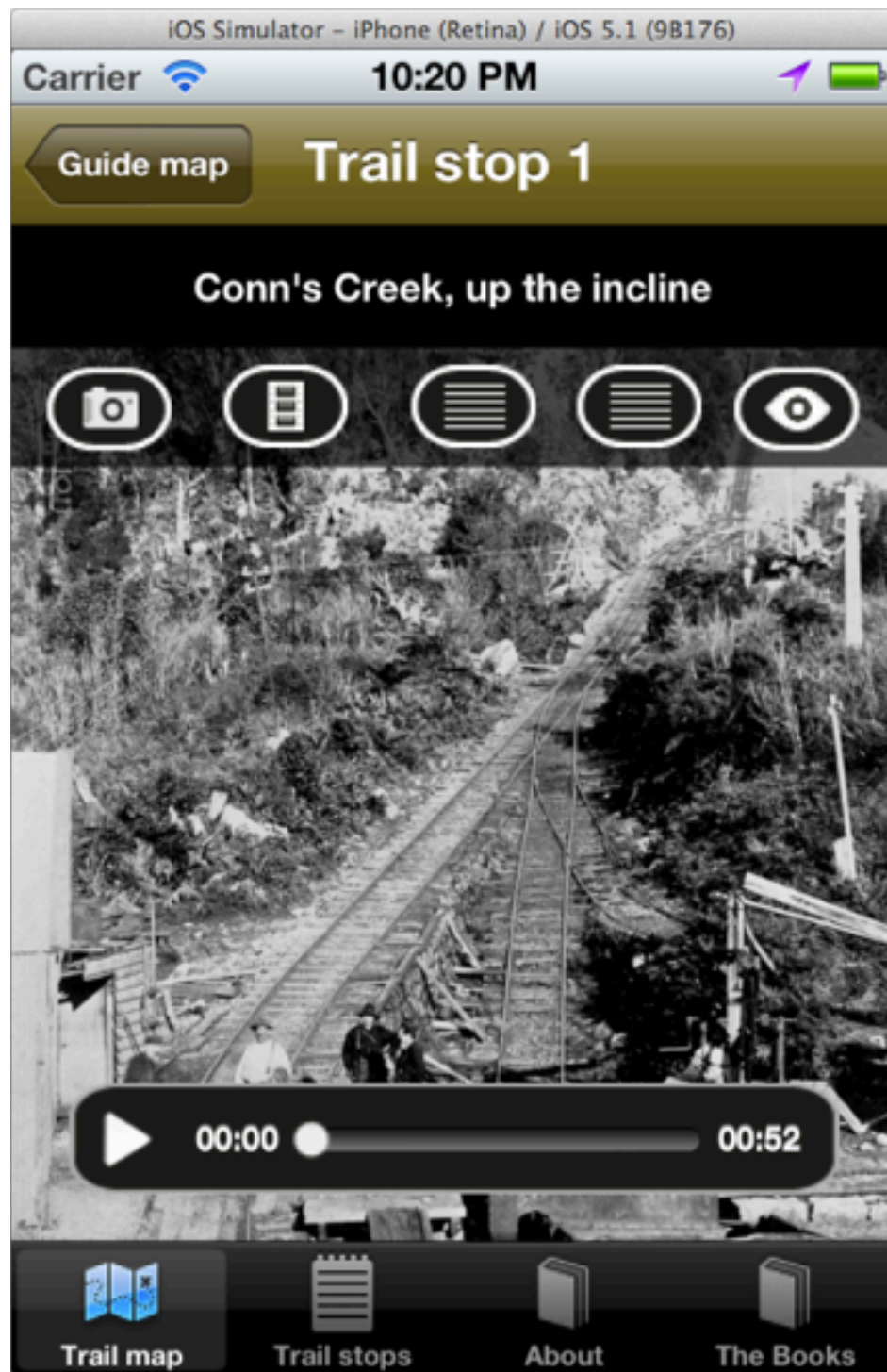
(left)

Main trail map for the application. Points are shown using trail stop numbers and are colour coded depending on where the user is and where they need to go (green shows destination, red shows current location). The directions button at the top of screen toggles directions on or off.

(right)

Directions view shown. These directions are shown in response to the directions button being touched, or the 'next stop' button being touched in the details view screen. By adding stop numbers, directions, and 'next stop' buttons the user was presented with a more obvious interface for navigating between points on the tour.





(left)

The old details view showing the old media player and details buttons. Note the position of the main tab bar icons (moved from the bottom of the screen to the top) has already been changed in response to suggestions made during the JAD session in Westport.



(right)

The new details view. The next stop button was added to allow an easy way for the users to get directions to the next point on the tour. The media player was also redesigned to make the play button more prominent and easy to toggle. In addition, the player indicates (via title and subtitle) what it is playing. A simple touch toggles the display of the media player.

► EXTENDING DENNISTON



► CONCLUSIONS



There are multiple opportunities for enhancing National park visitor experience through the use of iPhone/iPad technology.

A user-centred approach must be used when designing for NP visitors. While the developer's personal experience is valuable, users should be placed at the centre of the design process.

IDEO observation and learning methods were invaluable for gathering data about user needs, capabilities, and characteristics.

Insights may occur at any time, from any source. It's really important to document them as they occur and defer judgment until later.

Many (not all) of the existing solutions are focused towards provision of information and do not necessarily make use of advanced smartphone features.

The Department of Conservation needs to develop a national strategy for developing and incorporating new mobile technology into it's national plan as smartphone use increases.

While the model of individual development may be more efficient, it may suffer from a lack of diverse views that, for example, ethnographic observation techniques (IDEO), provide.

When developers are considering ideas for new applications they should try to defer judgements about how (or even if) an idea can or will be implemented. Failing to do so may result in truly innovative ideas being discarded.

Xcode 4 is a great prototyping tool, even for non-programmers.

Prototyping is a critical tool for realising the strengths and weaknesses of a concept early in the development process. In the words of IDEO, prototyping should be used to avoid "blind alleys".

► WHERE TOO NOW

Designers are seldom content to stop after “finishing” a project.

So, use the processes and techniques identified in this study to:

- Extend APNP prototypes

- Finish the NZ Birds app and see if people use it

- Need to maintain the Denniston App

- Kea conservation trust application

- Re-contact Save the Kiwi Trust with some ideas

- Develop my own ideas



Brewster Hut, Mount Aspiring National Park – where both myself and my supervisor had near fatal experiences involving uncontrolled slides down snow slopes and avalanches.

Red Beech trees on the
Milford Track, Fiordland
National Park.

THANK YOU

► WHAT IS DESIGN?

"To design is to devise courses of action aimed at **changing** existing situations into preferred ones."

Herbert Simon

"A scientist, in a broad sense, is one engaging in a systematic activity to **acquire** knowledge."

