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**JOY
ROXAS
MDES**

—

Exegesis

2014

Refining 'State of the art'

Graphical User Interface redesign proposal for Gallagher's existing digital product - the "TSi"

Print Version

Joy Roxas Master of Design Exegesis 2014

AUTHOR'S NOTE

This document has limitations in regards to interactions with gallery and videos - see Media folder. Exegesis is best experienced on 'iBooks' format - see disc for interactive version.



We have a double-edged relationship with the products and services we use. They empower us and frustrate us; they simplify and complicate our lives; they separate us and bring us closer together.

(Garrett, 2011, p. 03).

Acknowledgements

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Mum, Josh, Kuya, Addie & Papa *maraming salamat po* for all the love and support.

I also want to dedicate this to the following people who have been a part of this journey:

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And last but not the least, to the big man above for all the guidance, wisdom and strength.

Philippians 4:13



first chapter:

Chapter 1 - Introduction

CHAPTER 1

Introduction

In this chapter we explore the following:

1. Abstract
2. Definitions
3. The “TSi”
4. Gallagher Group
5. Design Background

Abstract

This design research project proposes a new and improved touch screen graphical user interface (GUI) for Gallagher's on farm animal management product - the "TSi". The re-design concept aims to develop appropriate design aesthetic treatments, as a foundation for a more attractive, intuitive, easy to use graphical user interface. The intention is to encourage farmers and farm workers to readily engage and exploit the full performance capability of the TSi and to reduce the perceived stigmatism of learning specialist software that requires adopting to new technologies. The design research propose that a GUI enhances the end user experience to create a more desirable and usable product by introducing User Interface (UI) elements and utilising common user scenarios. The research has incorporated end user feedback and co-creative development process with the Gallagher product development and marketing team.

The TSi is a revolutionary weigh scale device that allows users to instantly record and access data on individual animals and groups of animals. This allows farmer's to critically assess livestock

performance and enable strategic farm management decisions - in the office, in the yard or elsewhere on the farm. The redesign begins with a thorough critical analysis of the TSi's existing GUI, identifying issues involved with information and visual hierarchy of elements such as navigation, buttons, text and graphical icons.

The methods and processes used include user observation, rapid prototyping and mind-mapping user journeys through a series of workshops done at Gallagher headquarters (Hamilton) and Massey University (Wellington). These are tested methods and processes used within the field of Human Computer Interaction and User Experience design advocated by academics and theorists such as Don Norman, Jakob Nielsen, Jesse James Garrett and Bill Moggridge.

Key Words: 'TSi', State of the art, Graphical User Interface, User Interface, User Experience

2

Definitions

Human-Computer Interaction (HCI)

Commonly used in the field of computer science, it is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and is the originating discipline implemented by UX and UI (Hewett, Baecker, Card, Carey, Gasen, Mantei, Perlman, Strong & Verplank, 2009).

User Experience (UX)

UX encompasses all aspects of the end-user's interaction with the company, its services, and its products. It goes far beyond giving customers what they say they want and explores seamless merging of the services of multiple disciplines (Nielsen, J., & Norman, D. (n.d.)).

User Interface (UI)

UI refers to the visual elements or tools that skin and create an aesthetic that users directly interact with, which is part of the software system as a whole.



You can't be good at one or the other, be good at both

Philip Fierlinger (Head of Design, XERO) on the relationship between UI and UX

Graphical User Interface (GUI)

A visual language combining text and graphical elements that provides a variety of components such as windows, menus, icons through intangible representations enabling flexibility and malleability (Moggridge, 2007).

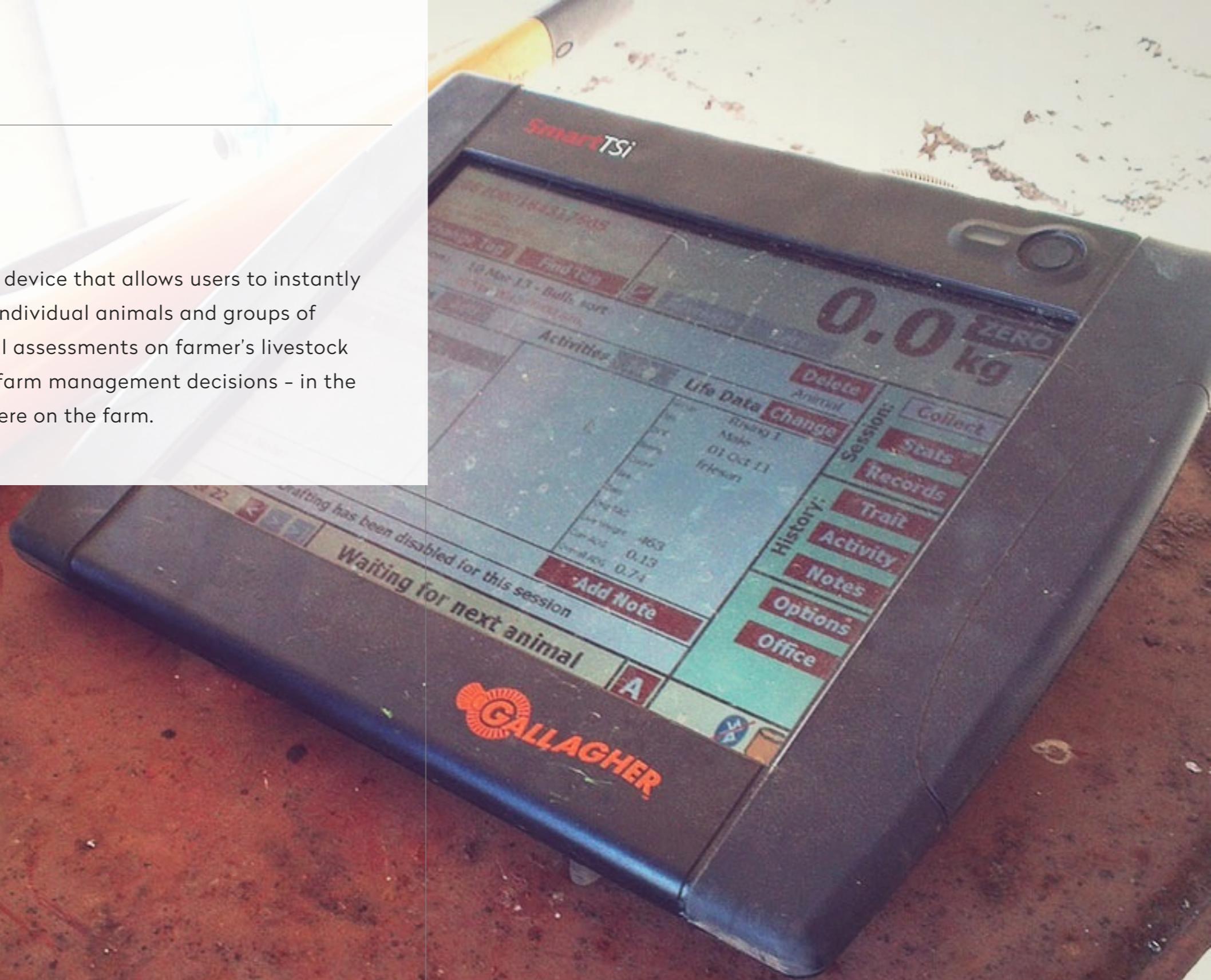
State of the Art - The 'TSi'

Refers to the highest level and most modern development of a device, technique, or scientific field achieved at a particular time.

3

The “TSi”

A revolutionary weigh scale device that allows users to instantly record and access data on individual animals and groups of animals, this enables critical assessments on farmer’s livestock performance and strategic farm management decisions - in the office, in the yard or elsewhere on the farm.



TSi in Context

The TSi is a key element in building a weighing and identification system which requires additional components situated in the users' farm yards.

The TSi is primarily used in sheep, cattle and dairy procedures.

See it in action:

VIDEO 1.1 TSi and the Gallagher Sheep Auto Drafter

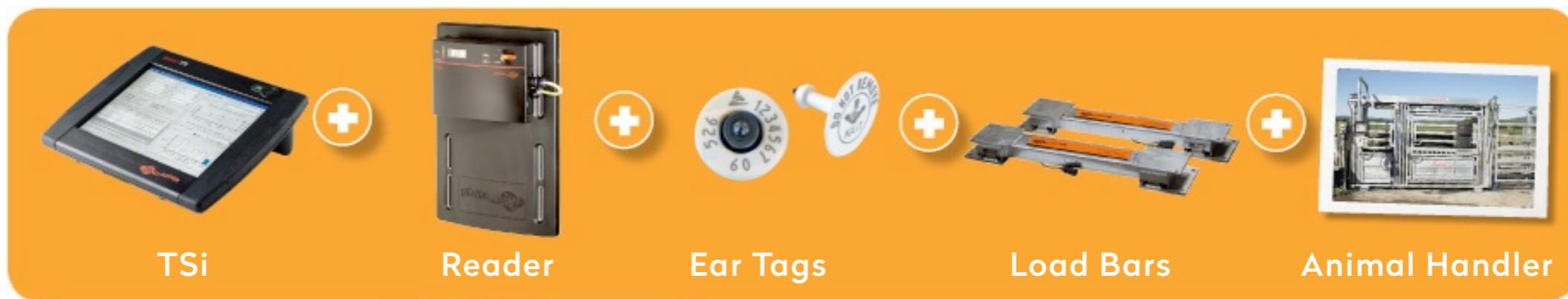
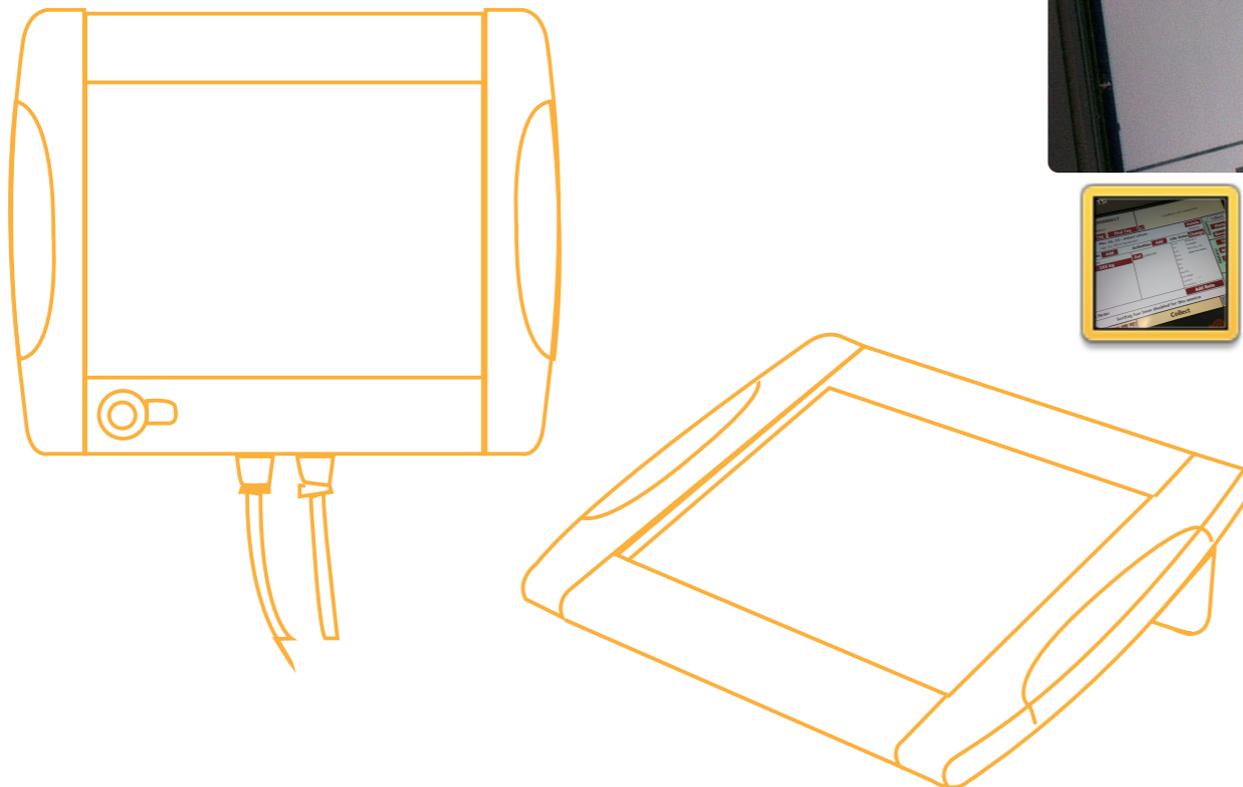


FIGURE 1.1 TSi weighing and animal identification system

The Re-design

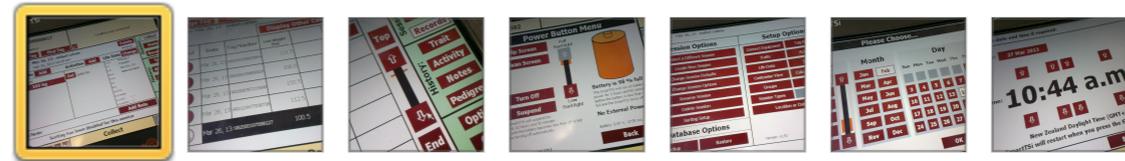
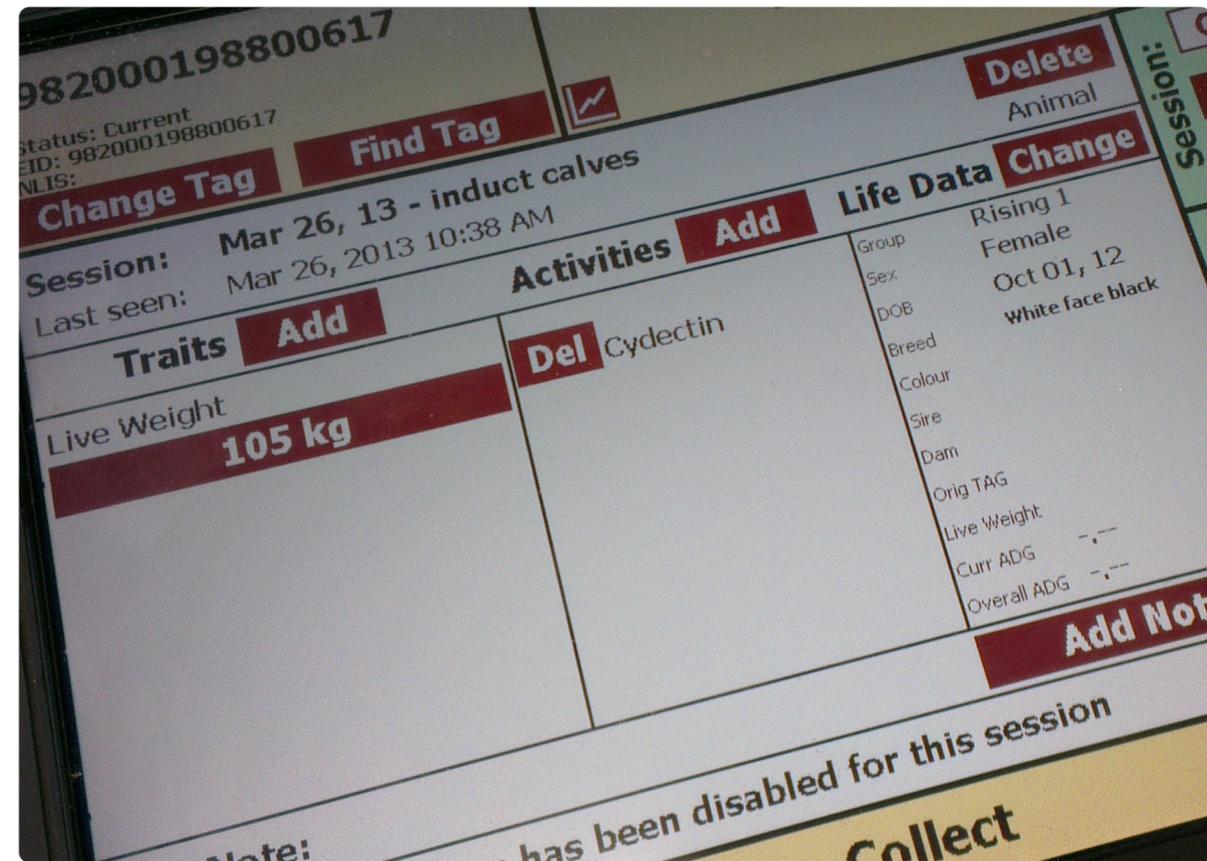
This project focuses on the re-design of the existing user interface - software - and not the hardware/ physical product itself. The TSi was introduced to the market in 2007 and has kept the same interface since. Gallagher has employed design thinking towards the TSi's existing user interface but have not applied graphical design aesthetic and visual communication elements sensitively and effectively.

Critical analysis of the existing UI is located in:
Chapter 2: Structure - Existing User Interface



GALLERY 1.1 TSi Existing Interface

Main screen (Collect Screen)



Gallagher Group

Gallagher Group is based in Hamilton, New Zealand and has been developing, manufacturing and marketing world leading farming products since the 1930's. Founded by Bill Gallagher Snr, the inventor of the worlds first electric fence system right on his own backyard in 1938 (Gallagher Overview, 2006). The company turns over \$200 million a year in sales from exporting New Zealand made products to 130 countries through 9 majority-owned distribution subsidiaries and 13 associated distributors (Mace, 2012). In 2013, Gallagher celebrated their 75th year designing and delivering innovative solutions to their customers all over the world.



VIDEO 1.2 Gallagher
Corporate Video (2013)



TSi is featured at 02:00 - 02:43
Duration: 11' 49"

5

Design Background

My undergraduate studies (BDes Hons) focused on visual communication design through a graphic design practice, but throughout the four years of study an interest in interactive and digital technologies arose. This interest has led to a variety of hybrid experimentations involving design and technology and has led me towards user interface and user experience design. For this masters degree (MDes), my focus is to further refine those skills and apply appropriate UI and UX methods and processes to fulfill the project requirements.

Design thinking is an essential ingredient in creating not just beautiful products but even better experiences for the end user. The agriculture industry is no exception, it is the backbone of New Zealand's economy and a major determinant of employment and social wellbeing in the country ("Agriculture and the New Zealand Economy", 2013). This in turn has assisted farmers in making better decisions in the field for many years – in this case for Gallagher, it has contributed to 75 years of innovation.



next chapter:

Chapter 2 - Research

CHAPTER 2

Research

In this chapter we explore the following:

1. Strategy
2. Scope

1

Strategy

The foundation of a successful user experience is a clearly articulated strategy. Knowing both what we want the product to accomplish for our organisation and what we want it to accomplish for our users informs the decisions we have to make about every aspect of the user experience.

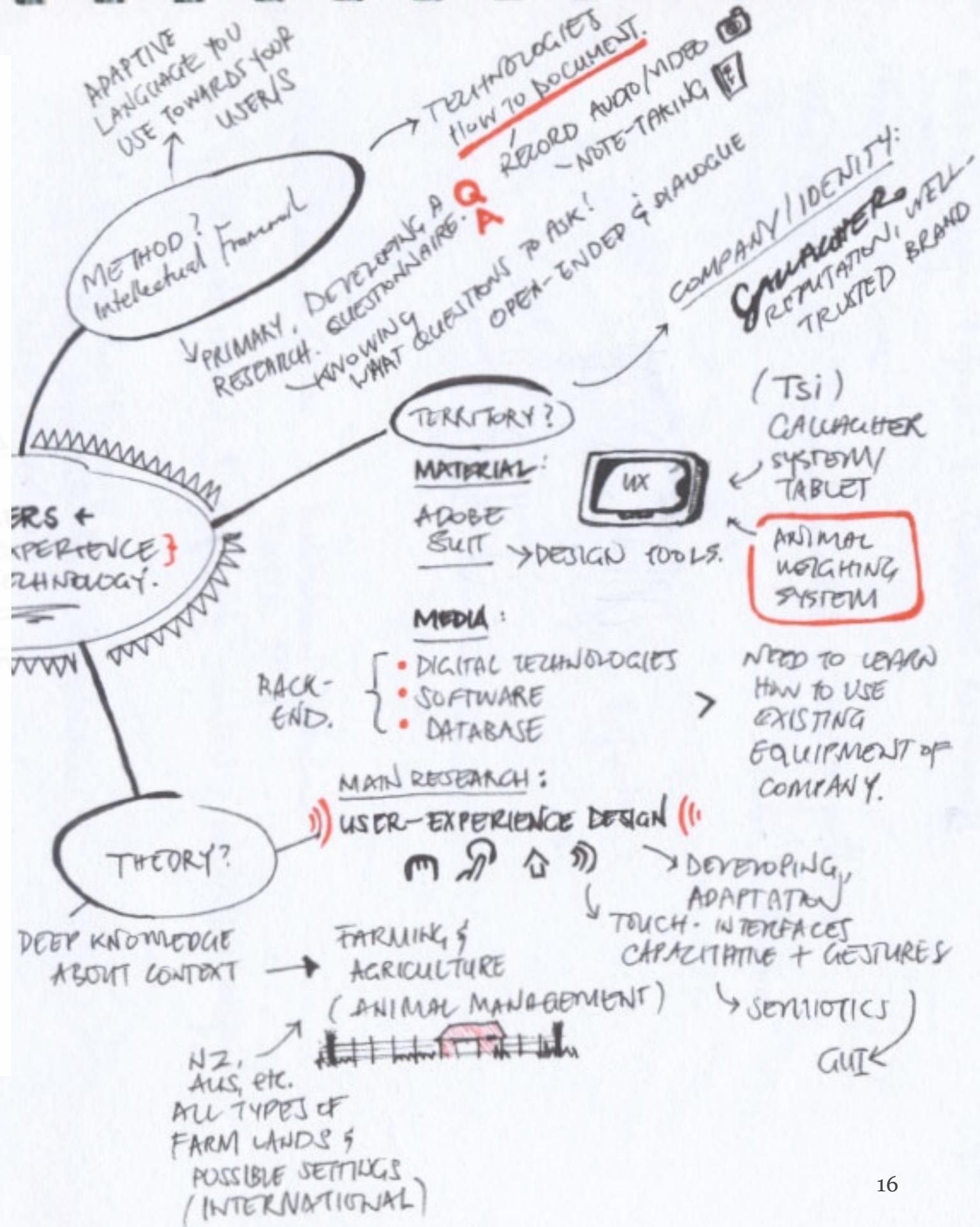
Garrett (2011), page 35

Research Question

Can a new graphical user interface design of Gallagher's state of the art digital device the 'TSi' enhance the end user experience farmers currently have in the field?

Project Objectives

- Work with TSi specialists and observe farm workers and their environment to develop a comprehensive understanding of the products and problems. This will enable preparation of a requirements specification describing design issues, customer interests and product requirements.
- Develop a comprehensive understanding of state of the art for the field of animal management screen-based products and related fields of graphics-based interfaces (hand held readers, weigh scale indicators, etc.)
- Incorporate feedback into the final design proposal.
- Analyse data and prepare material to communicate findings and establish foundation for design.
- Generate, develop and prototype Gallagher specific GUI designs for screen based weigh scale products with specific emphasis on TSI. Undertake user testing to validate and refine design.
- Produce design specifications that comprehensively describe final design in terms of graphic treatments, interactivity and usability.



Design Role

- To understand the current way the company approaches research and development of a product and adapt to this environment.
- Explore new avenues with state of the art through a series of critical analysis of the existing GUI and information architecture.
- To apply user-centered graphic design aesthetic approaches specifically appropriate for farmers and the farm environment with an emphasis on usability, desirability and experience.



Scale of Project

This task fits under an umbrella within a larger project involving co-creation with the Gallagher development team and stakeholders, therefore the focus is on proposing a new GUI design that becomes a starting point for the overall redesign of the TSi. Primarily my task for the project as a designer fits

under the discipline of UI design, but for this to be effective a thorough understanding and application of UX methods is needed. User Experience as a discipline and a role encompasses the whole process relating all those involved in the project and is an essential foundation for User Interface design.

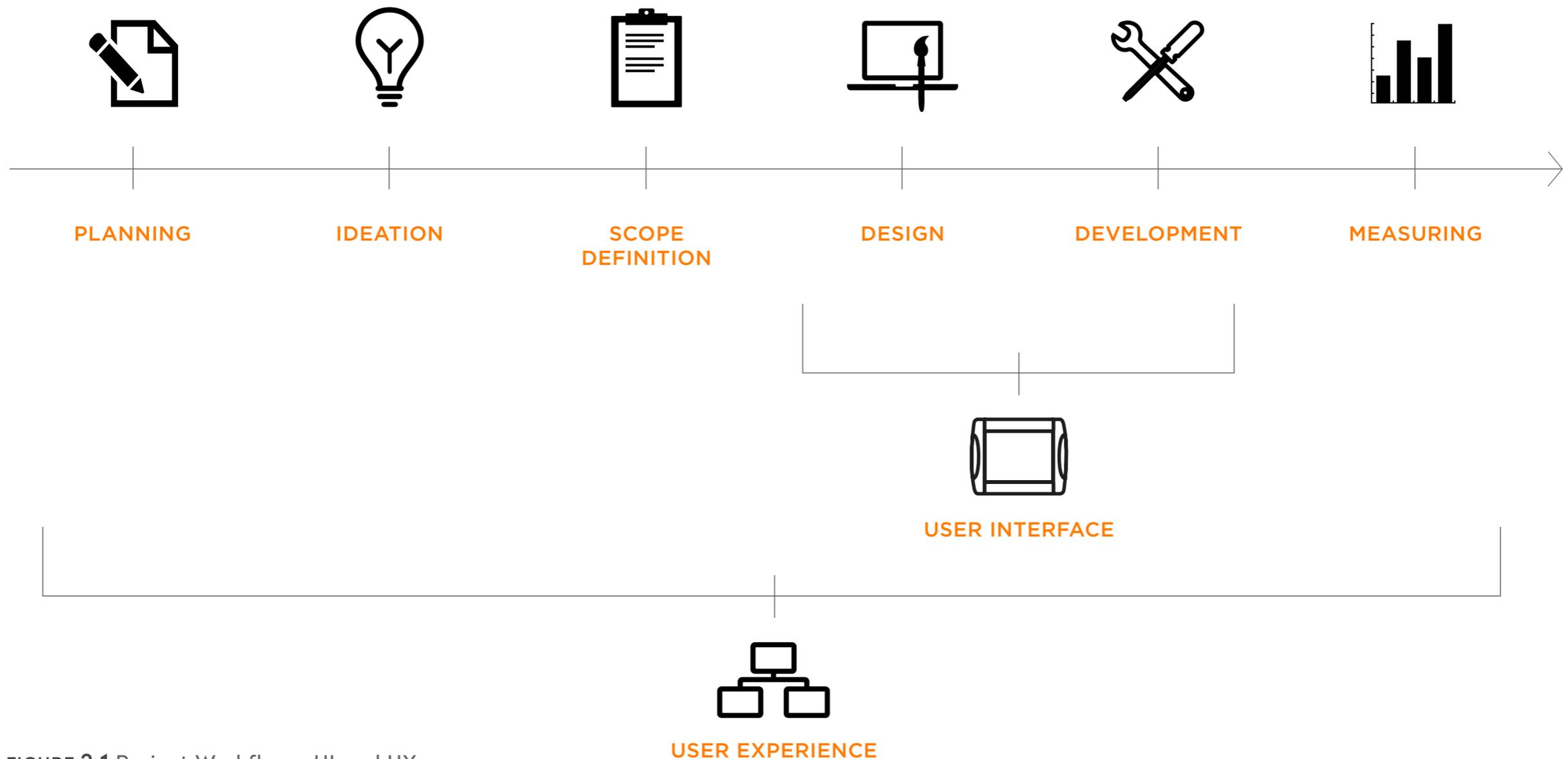


FIGURE 2.1 Project Workflow - UI and UX

Methods & Processes

The following UI and UX methods were used for this research project and will be explored throughout the exegesis.

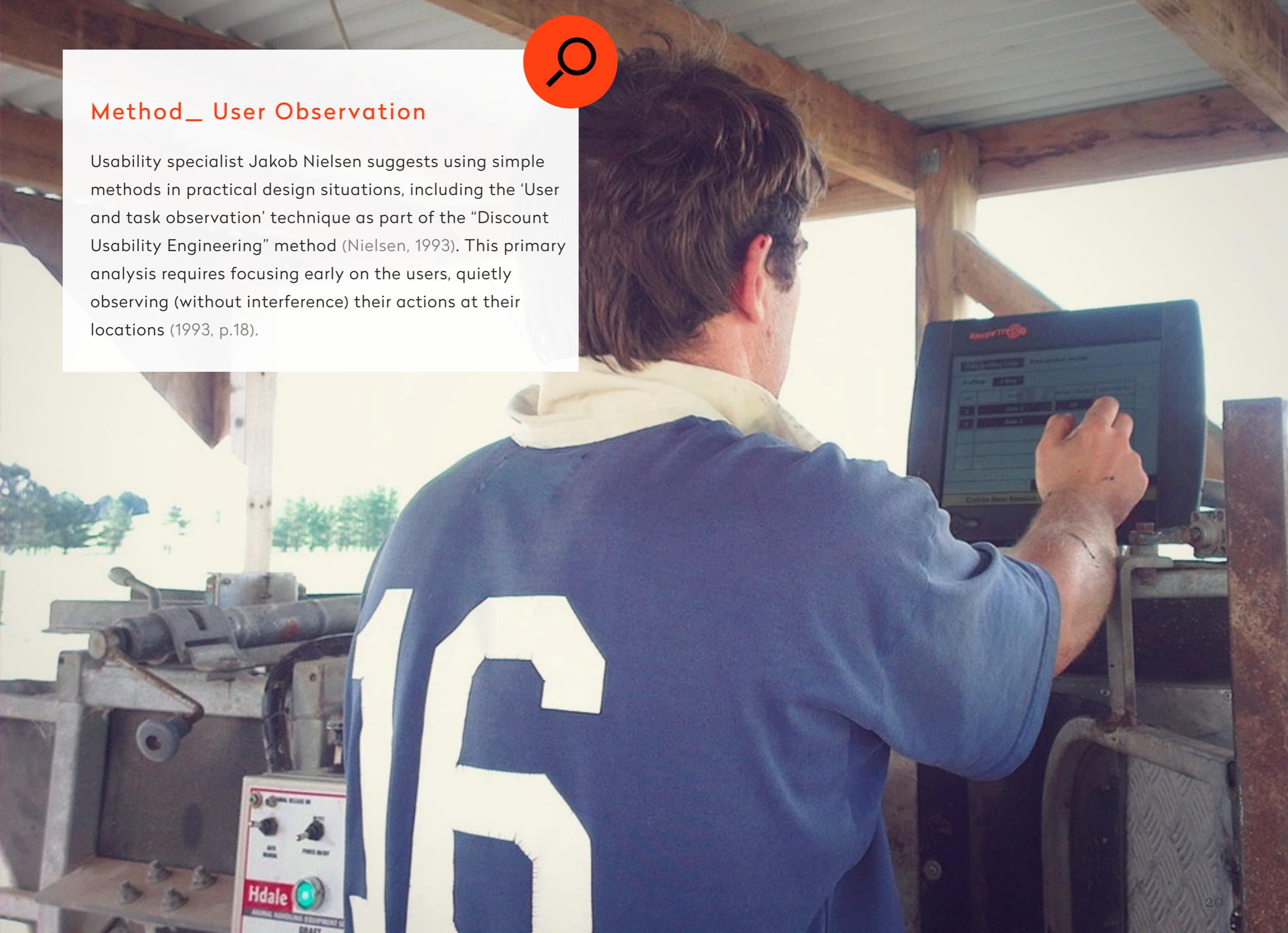


FIGURE 2.2 Methods & Processes used



Method_ User Observation

Usability specialist Jakob Nielsen suggests using simple methods in practical design situations, including the 'User and task observation' technique as part of the "Discount Usability Engineering" method (Nielsen, 1993). This primary analysis requires focusing early on the users, quietly observing (without interference) their actions at their locations (1993, p.18).



Palmerston North



Wainuloru



GALLERY 2.1 Farm Visits with existing customers
Common yard setup

Te Kopl Rd



Farm Visits

Farm visits attended in the months of March and May (2013) across the Waikato, Wairarapa and Palmerston North regions were organised with Gallagher. The objectives were to observe the existing customers of the TSi and how it was currently used in the users' environment.



Kaituna



Overview_ Farm Visits

Observation notes and feedback from the 5 farmer's observed throughout the 2-day road-trip in May (2013).

Farmer A

- Male, mid 40s, Self-taught, mid-high computer literacy
- Overall has a great experience with the TSi
- Suggests a better page for individual animals

Farmer B

- Male, mid 30s, self-taught, young, high computer literacy
- Owns a smartphone - 'Galaxy S4'
- Extensive knowledge on farming management systems
- Suggests having a portable companion for the TSi
- Suggests smartphone capabilities added to Gallagher products

Farmer C

- Male, mid 60s, taught by son, low-computer literacy
- Mainly an Angus breeder
- Still uses orange notebook (analog) to keep track of information

Farmer D

- Male, late 30's, mid-computer literacy
- Owns an old Nokia phone
- Has 4 farms. main one covering 300 acres
- Uses TSi for sheep, beef and deer weighing
- Has owned TSi for 12 months
- Requests the latest software
- Suggests a timeline feature to compare different weight gains

- Has never used the TSi manual, learns by trial and error
- Uses the TSi once-twice a week on average
- Prefers to use a pen/pencil rather than fingers with the TSi

Farmer E

- Male, mid 40s, advocate, advanced-power user
- Has used TSi for 3 Years
- Previously used Tru-test (competitor) product before the TSi
- Weighs around 10,000 Lambs/Year
- Has a team of 27yo, 36yo, 70+yo who all use the TSi
- Weighs Lambs 500 (group) per week
- Don't know enough about system as yet, eager to learn more
- Recognises the TSi speed as "very slow"
- Owns a smartphone - 'Galaxy S3'
- Used to high-speed performance with current technologies
- Has a 'follow your nose' experience

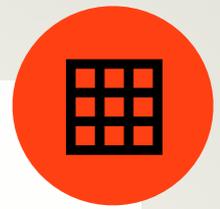
- "Next logical step is not always obvious"
- Has never used the TSi manual
- Has difficulty with 'filtering animal' feature
- Highly analytical approach to tasks
- Suggests adding smartphone capabilities

Summary

Most of the farmers visited were young, advance users or at least within range of an assistant that knows how to operate the TSi. Their main uses varies and range from basic weighing to advanced features such as 'drafting' showing that the TSi has a complex set of features and is highly customisable to suit the user. The overall review of the product was of high quality and this is primarily due to the fact that there is no direct competitor the the TSi system. There are a lot of suggestions about improving software performance and implementing technologies that are existing and familiar such as mobile technologies which is beyond the scope of this project. There were no minor issues or critiques about the interface itself but it was evident that the issues and concerns voiced were highly dependent on the existing design and structure of the content.

OWNER
OPERATOR.

"What I wish I could do with TSi?"



- START UP WIZARD / FIRST TIME USE
- TASK FOCUSED

- INTUITIVE
- QUICK (CASH REGISTER)

- TEMPLATES + DATA PRESETS

CORPORATE

LOW TECH

HI TECH

Method_ User Matrixes

Collecting data about the users are very commonly constructed into User Personas (sometimes called user profiles or user models). These are fictional characters that represent the needs of a multitude of real users. They assist in ensuring that the users are constantly in mind during the research and design process (Garrett, 2011).

Although creating personas is a common method used within UX, I wanted to explore a revised process or exercise where the personas were investigated further, focusing mostly on an existing customer base and looking at user behaviours.

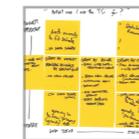
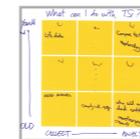
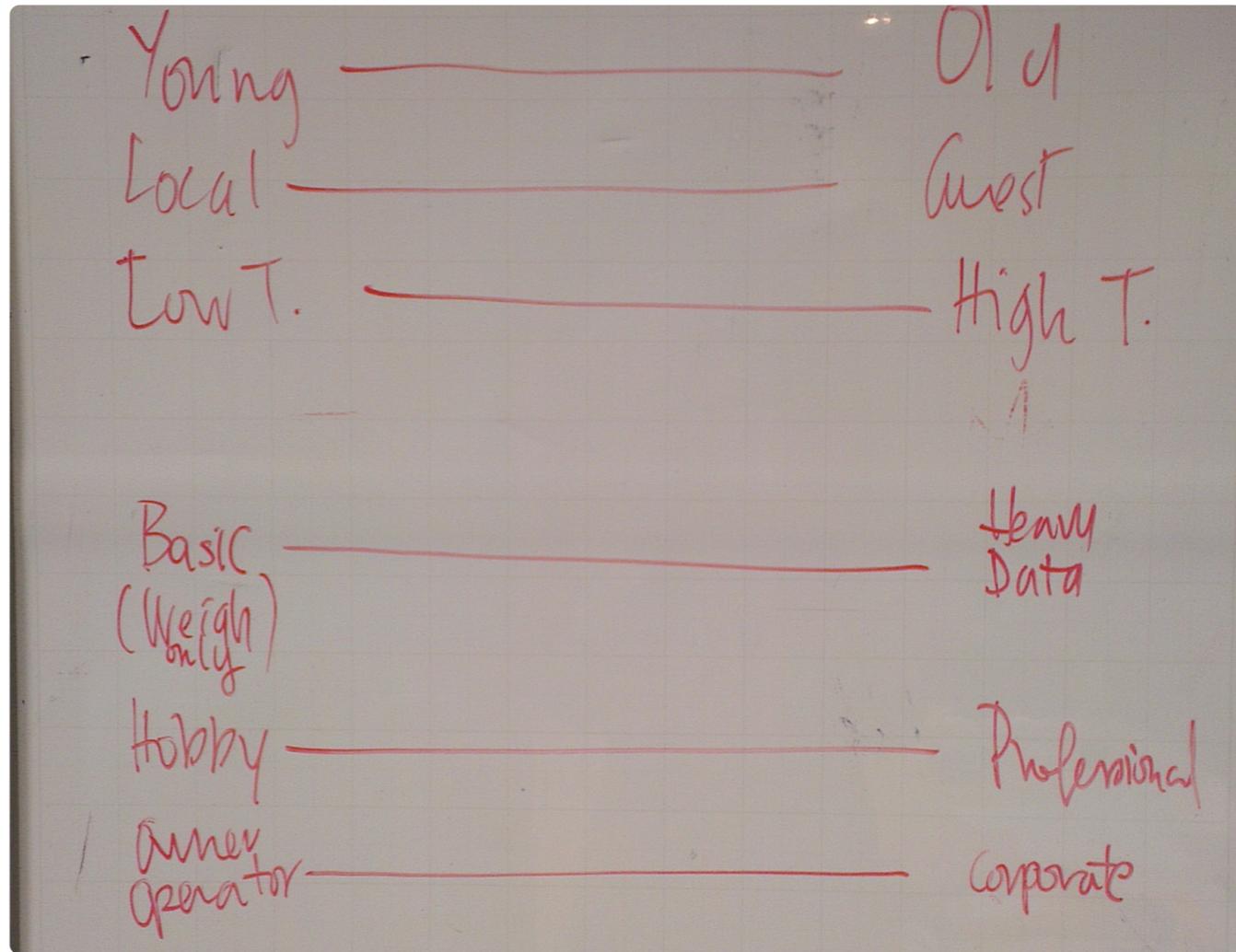
David Rollert a User Experience Design Consultant and UX strategist Stephanie Troeth suggest that we should design for multifaceted users by looking at modeling user groups through a matrix exercise. Defining key "dimensions" of customer groups through demographic, psychographics attributes and asking key questions such as "What can I use the TSi for?". Dissecting and filling in as much of the matrix as possible with appropriate answers through an iterative process based on existing knowledge of users, patterns become more evident, keeping in mind that these are still assumptions (Troeth, 2013).

Matrix Workshop

In June (2013) a group workshop was led at Gallagher headquarters, introducing and conducting the matrix exercise alongside stakeholders, development and marketing team.

GALLERY 2.2 Matrix Workshop with Gallagher team

Attributes about existing users identified



Overview_Matrix Workshop

The exercise began by instructing the participants to work on the matrixes together as a group, filling in the 9 boxes and answering a variety of questions with existing knowledge of TSi users. Started off by outlining important axis' on the whiteboard and testing out the first matrix sheet with chosen dimensions and asking the question: "What can I do with the TSi?". Then moved on to two more matrixes once the group became more comfortable and familiar with the exercise.

Notes

- New Zealand has sold 19 TSi's in the first year, followed by 40 then 80 devices.
- There is a need for pre-built example/customisable templates
- Novice - Experts and Low Tech - High Tech are the main dimensions identified.
- Windows CE6 is the operating system the TSi runs on which has no gestural/new touch interface capabilities.
- No major changes in the TSi's hardware besides the change from black frame to orange.

- TSi is ultimately TASK-oriented.
- TSi is context-ubiquitous. Demonstrating to users outside the agriculture industry could be used as a method of user testing.
- Products & Services - "people at the shop don't get it". How do we educate them/get them excited and comfortable selling the TSi?
- The ability to edit someone else's data, could be an issue. How can we limit/ remove as much human errors so people don't feel stupid/angry.

Summary

The exercise was useful in identifying the key attributes and dimensions for the target audience of the TSi. As a group we established that within the existing customer base, the most common users were the 'young and analytical'. Although these are the "ideal" customers for the product, catering the design to accommodate the 'old and novice' as well as those who assist in selling the product is also equally important.

2

Scope

With a clear sense of what we want and what our users want, we can figure out how to satisfy all those strategic objectives. Strategy becomes scope when you translate user needs and product objectives into specific requirements for what content and functionality the product will offer to users.

(Garrett, 2011, p. 57)

Existing Users - Target Audience

The main customer base of the TSi ranges from a multitude of users from farmers, to breeders and even veterinarians.

The existing target market are segmented into the following:



Stud Breeders



Contract Grazier



Dairy Farmer



Commercial Finisher



Commercial Breeder



General Farming

Animal Weighing Systems

The TSi is part of Gallagher's Animal Management System (AMS) division within the line of products in Animal Weighing and is currently the most advanced weighing and data collection system on the market.



Weigh Scale W210



Weigh Scale W610



Weigh Scale & Data Recorder W810



TSi

Basic - Clamshell series

Advance - TSi

Competition

The direct competitor of Gallagher is a company based in Auckland called Tru-Test, who directly deal with a similar line of products as Gallagher. Although they have a vast customer base and are well known, Tru-Test does not have a product that matches the capabilities and features of the TSi. Their most advanced animal weigh scale is the WOW!™ XR3000 and would be the closest competitor to the TSi (“Weigh Scales” 2013).

One thing that is worth noting about Tru-Test is that they have explored and introduced the use of mobile technologies into their systems. Utilising Android mobile operating systems to link data through to other agriculture sources and networks such as NAIT (National Animal Identification and Tracing). This recognition of mobile technologies is definitely an innovative step for the agriculture industry.



FIGURE 2.3 WOW!™ XR3000



FIGURE 2.4 EziWeigh7 Bluetooth®



**The sum of all constraints.
Here is one of the few effective keys
to the Design problem: the ability of
the Designer to recognise as many
of the constraints as possible [...]
willingness and enthusiasm for
working within these constraints.**

Design Q&A with Charles Eames
(Wunsch, 2008)

Project Constraints

Identifying relevant constraints of the project is the starting point. According to Moggridge (2007) “the constraints come from everywhere that matters to the project” (p.729) and designing with these in mind are crucial.

This research project had the following constraints:

Technology Constraints

The touch screen technology of the TSi does not support multi-touch and gestural interaction which are common features in today’s existing tablet technologies. This creates particular challenges to overcome that design must accommodate and create solutions for.

Specifications:

- Operating System: Windows CE6
- Typefaces used: Arial or Tahoma only
- Colours: 18-bit
- Screen size: 800 x 600 px with a 12” screen (diagonally)

Time Constraints

52-week period for the Master’s degree. This project required ongoing communication with the clients onsite (Hamilton) and offsite (through email, phone, video conferences) and adopting to the schedule of farmer’s when making user observation and farm visits.

Confidentiality Constraints

Due to the competitive environment of product development, the design concepts proposed throughout the project were restricted to the company’s internal staff and academic supervisors, this included user testing and review of the designs.



Rise of User Interfaces

In 1993 Jakob Nielsen stated that User Interface Design was a fairly new field of study that hasn't attracted much historical analysis, due to the fact that people have been preoccupied building and testing those interfaces. 10 years on, it remains true today in regards to documented information and analysis, but the progression in UI design led by tech giants Apple, Google and Microsoft have revolutionised and continually push the boundaries in interaction design.

“The mother of all demos”

Douglas Englebert took the stage in San Francisco on December 19, 1968 demonstrating “The mother of all demos” (Hicks, 2013) by introducing the ‘mouse’ which became the primary method of input for personal computers, this was headlined “The Demo that changed the world” (Moggridge, 2007, p. 30) influencing generation of technologists. This included Alan Kay who introduced the concept of the ‘Dynabook’ which we would recognise as a the first prototype tablet computer. Even though this concept never came into fruition due to technological constraints at the time, it was evident that Englebert sparked a chain of innovative thinking.

VIDEO 2.1 Douglas Engelbart presents for the first time the computer mouse (1968) Duration: 1’ 54”

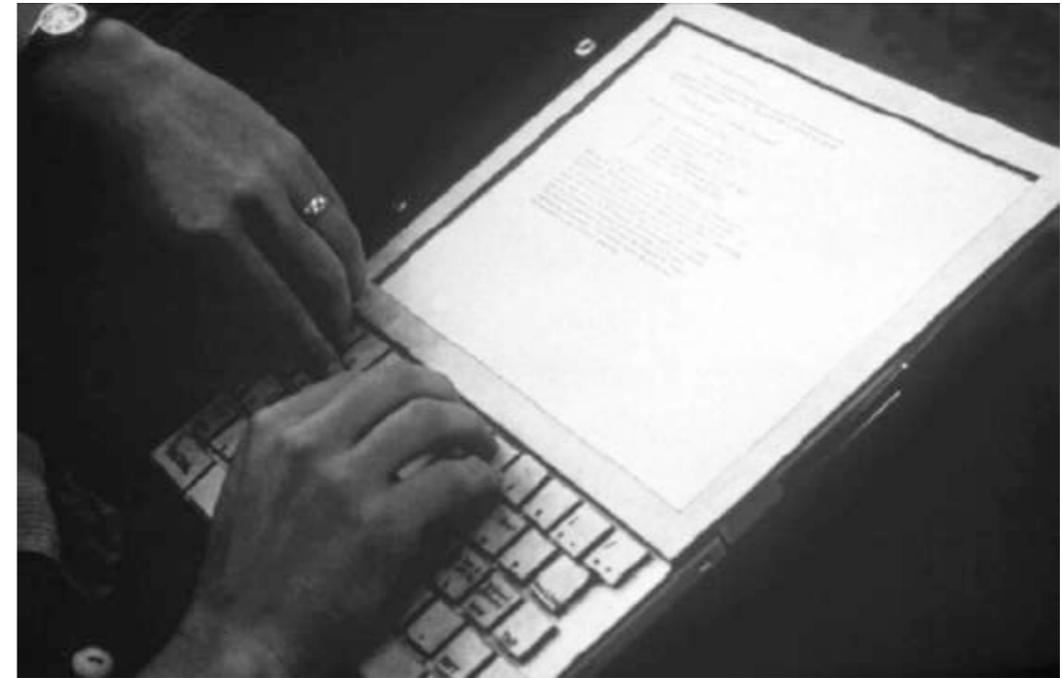
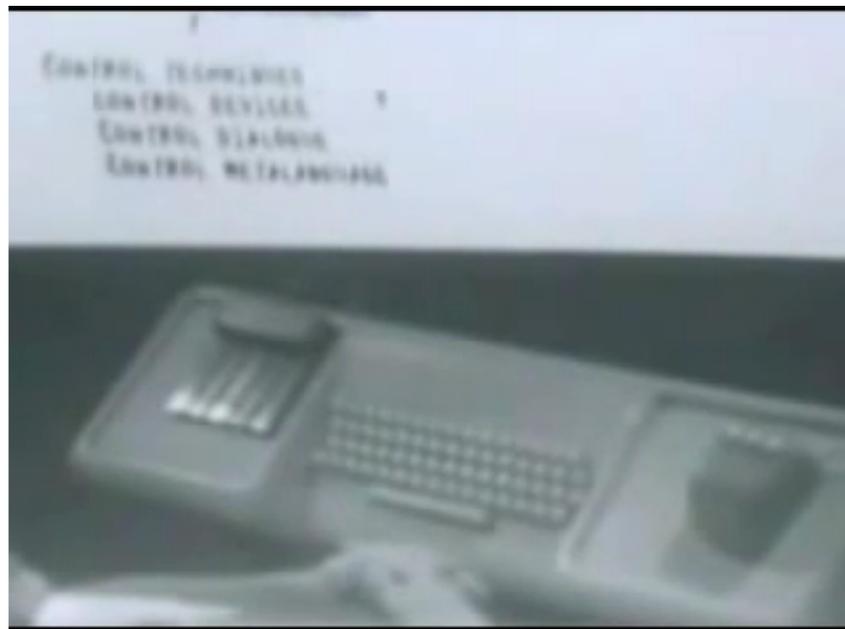
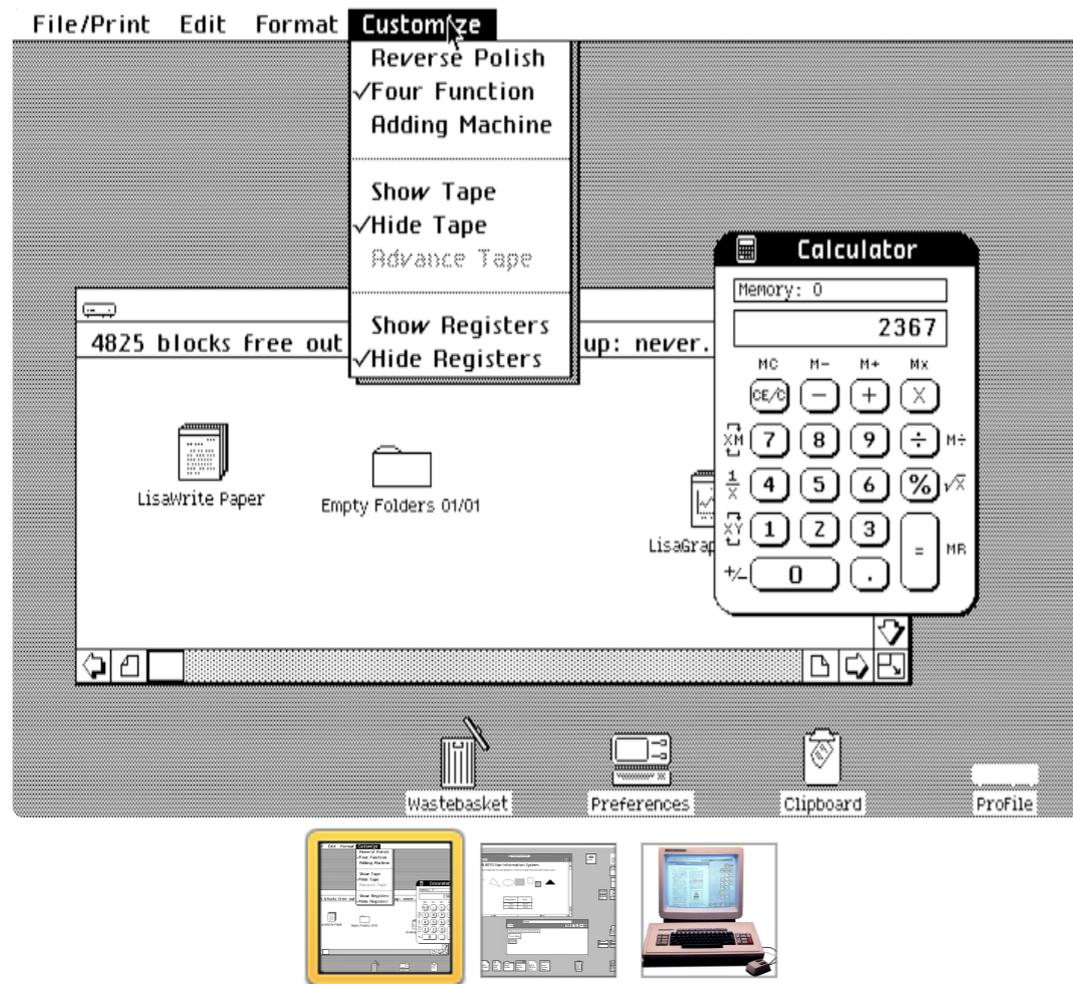


FIGURE 2.5 Alan Kay's Dynabook

The earliest signs of GUI was the Xerox Alto, inspired by Kay's Dynabook concept, the team at Xerox PARC completed a stand-alone, single-user desktop computer which introduced the WIMP interface – windows, icons, menus, pointer. This essentially defined every desktop GUI that is being used today. Desktop metaphors were used for the next 30 years and became a staple visual language for communicating to the user on the other end.

GALLERY 2.3 XEROX Alto and WIMP interface

Alto interface showcased a clear navigation system



Touch Interface

E.A. Johnson was believed to be the first person to develop the touchscreen in 1965 but it wasn't used for personal computing at this point. It wasn't until the late 2000s when Apple shook the mobile industry by introducing the first iPhone and touchscreen technology became enticing and commercialised to a widespread audience. With the announcement came a revolutionary interface and operating system at the time called "iPhone OS" which was later known as "iOS".

VIDEO 2.2 Steve Jobs introduces the first iPhone (2007)

Duration: 10' 01"



Although Jobs claimed to have invented “Multi-touch” (with a very public patenting announcement), the technology itself began in 1982 at the University of Toronto with computer scientist Bill Buxton who pioneered human-computer interaction and innovated the multi-touch tablet using capacitive technology (Erickson, 2012). This technology made multitouch pinch-and-zoom, smooth scrolling and gestural interactions a thing of the future, making the whole user experience smooth and swift.

Post-PC

In January 2010, only a few years after the iPhone’s introduction, Steve Jobs took stage once again to introduce another consumer electronic device – the iPad.



iPad creates and defines an entirely new category of devices that will connect users with their apps and content in a much more intimate, intuitive and fun way than ever before.

Steve Jobs (2010)

GALLERY 2.4 iPad generations

iPad Generation 1



'Skeumorphic' v. 'Flat design'

As iOS and Apple as a company dominated the technology industry with ongoing product development, so did the design of the interfaces. Apple's design chief Jonathan Ive known as 'the man behind Apple's magic curtain' (Cava, 2013) is primarily responsible for leading design development of Apple's products and even more so with its interfaces. 'Skeumorphism' emulates objects in the physical world by retaining ornamental design cues from structures that were necessary in the original object.

GALLERY 2.5 Skeumorphic Design



VIDEO 2.3 Apple introduces iOS 7 (2013) Duration: 7' 33"



Recently, Apple took a radical turn away from skeumorphism and followed the path of "flat design" with iOS 7 by replacing leather textures and ripped paper edges with minimalist, colourful and simpler icons. 'Flat design' is a minimalistic design approach that embraces the digital look and is content-centered. Common features are clean, open space, crisp edges, bright colours and two-dimensional/flat illustrations. Rather than bringing aspects of real life to an interface, this approach illustrates the clear separation between tactile objects and technology.

Microsoft took a massive leap in 2012 with user interface design by introducing the new operating system with **Windows 8 “Metro”**, simply relying on typography, spacing and colour and discarding real-life effects and superfluous styles flaunted at the time by their rival Apple (Fadeyev, 2013).

VIDEO 2.4 Windows 8 Viral Video Ad
Duration: 02' 47"



“ **The recently popularised “flat” interface style is not merely a trend. It is the manifestation of a desire for greater authenticity in design** ”

(Fadeyev, 2013)

From desktop metaphors to textured imitations of paper and leather towards flat, digital “authentic” design, user interfaces have developed immensely in the last 40 years. Design and technology are utilised to rapidly weave innovative solutions together to enhance the overall user experience. It is an exciting field to be situated in and although it is a space of ever-changing paradigms, the value and role of UI and UX designers have become more relevant and desirable.

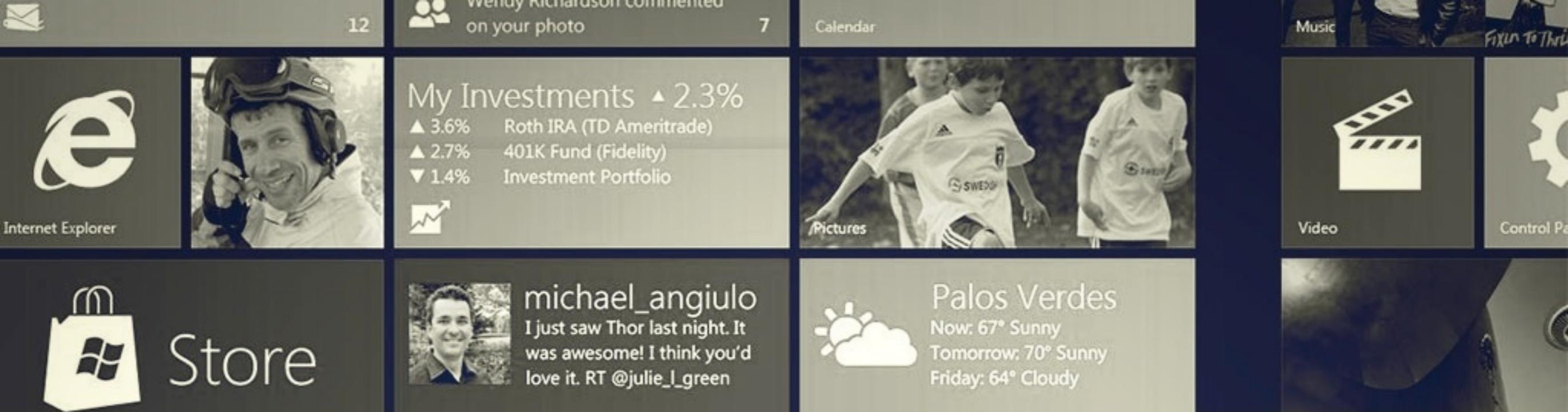
Relevance

The TSi was launched in 2007, the same year the iPhone was first introduced by Apple. Touch-interface technology was not a brand new or an innovative discovery at the time, but commercial value and desirability for personal devices became the topic of interest. It would be more relevant to compare the iPad directly with the TSi as they fit in the same category of 'tablet devices'. It's worth noting that the TSi was released before the iPad and wouldn't have had the Apple product as a reference for touch interface design. These two products both deal with new avenues of interaction and users have to adapt to the bigger real-estate in screen size, perhaps the biggest challenge was justifying that these devices were needed in the first place. How can these large, portable touch screens become useful tools for completing and achieving tasks?

The TSi was essentially designed by programmers and adding features that users required were the priority as ongoing updates became a constant task for the development team. This has caused a lot of issues with the overall usability and has slowed down the device's performance in the long-term. Understanding its purpose and its limitations from the start is important for the product's longevity and this required design thinking from the very beginning. 6-7 years later the UI has not changed dramatically and there's a lot of room for improvement. This is where appropriate methods of UI and UX are needed, first to understand what is existing in the state of the art and use this as foundation for the new structure and GUI.

Ideally, the initial thought for this project was to disregard both the existing software and hardware and design for what is relevant and current. In this case, a TSi application built on a tablet device (ie. iPad) for the farming environment with TSi's features and capabilities. But this project strictly required that the state of the art was to be revised and this meant that Gallagher hardware and software were non-negotiable. In reality, creating and supporting the infrastructure needed to support mobile technologies in rural areas is a bigger project in itself and is beyond the scope of this research project.

The next TSi will be built on Windows CE6, Microsoft's operating system targeted towards industrial handheld devices ("Windows Embedded", 2014). Although this system does not support gestural and multi-touch interactions found in most tablet devices, it almost benefits the TSi since it does not necessarily need these features to function well and get the job done. The trade-offs between the technology and the design is a challenge but the existing approaches and trends in UI design at this time can be utilised and applied to the re-design of the TSi. How can we create an advance and modern experience with the new TSi through a low-tech approach? Playing with skeumorphic and flat design aesthetic 'styles' is a starting point for proposing a new GUI. Even without the fancy and exciting gestural interactions and mobile features, the success of the product truly comes down to the right techniques in information architecture and ultimately comes down to the experience of the users.



Account Watchlist Go to Chart of Accounts >

Account	May	YTD
Entertainment (420)	0.00	1,553.60
Printing & Stationery (461)	0.00	121.66
Sales (200)	1,487.30	23,061.93



Lunch with Brad @ 12pm ⋮

2368 3rd Street, San Jose, CA 94107

A map showing the location of the lunch meeting at 2368 3rd Street, San Jose, CA 94107. The map includes street names and a red location pin.

San Francisco

Weather forecast for San Francisco showing a sunny day with a high temperature of 80°. A search icon is overlaid on the image.

Pacific flight 2

Status: Delayed / Wed, June 27, 2012

Depart San Francisco

SFO 7:09pm (sched. 5:20pm)
Terminal 4, Gate A3

Arrive Taipei

TPE 10:32pm
Terminal 2, Gate 50

↑ Navigate to SFO / 24 min

Check-out in 1 hour

A photograph showing the exterior of a hotel building with a large tree in the foreground. The text 'Check-out in 1 hour' is overlaid at the top.

Analysis_ Existing User Interfaces

Critical analysis of existing user interfaces of Apple, Google and Xero as main precedents.

Apple - (iOS 7)

According to the 'iOS Human Interface Guidelines' (iOS 7) the following themes are crucial for the design:

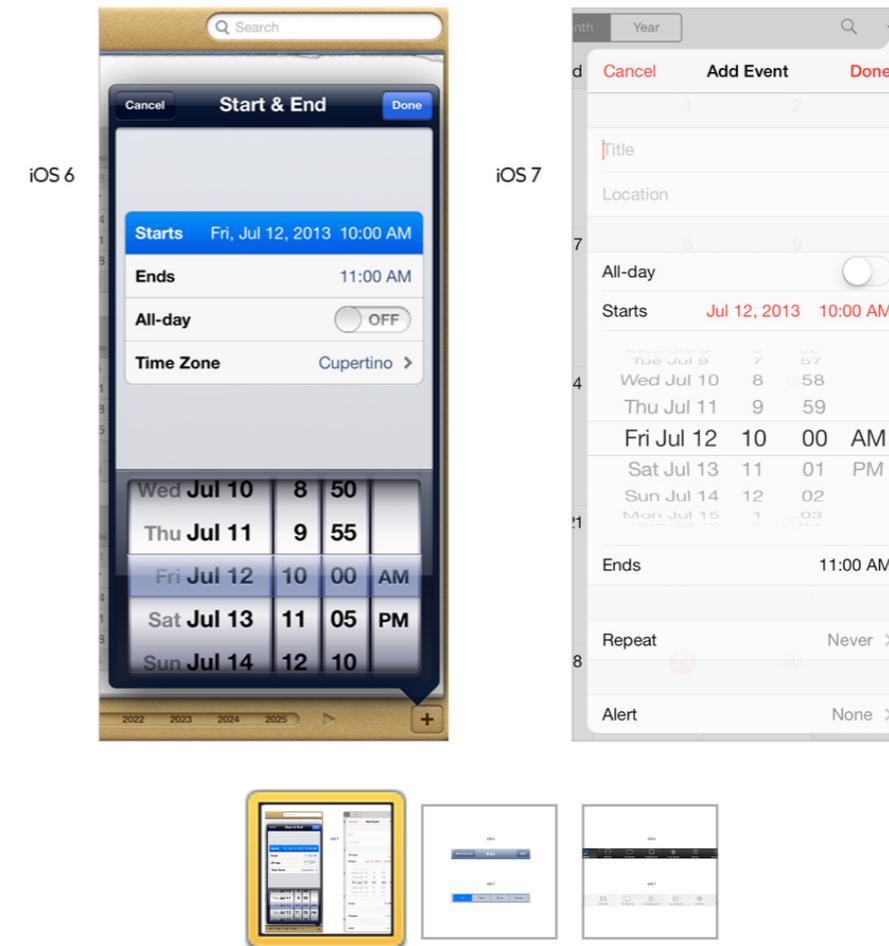
Deference: The UI helps users understand and interact with the content, but never competes with it.

Clarity: Text is legible at every size, icons are precise and lucid, adornments are subtle and appropriate, and a sharpened focus on functionality motivates the design.

Depth: Visual layers and realistic motion impart vitality and heighten users' delight and understanding.

Although Apple has set out these strict guidelines for iOS 7, the approach to visual treatment does not manifest the quality of the experience that their previous operating systems have showcased in the past. Apple has never created anything that looked similar to iOS 7 before and this has caused many longtime Apple users to feel blindsided by the bold new look (Epstein, 2013). iOS 7 appears to be a complete departure from the UI found in iOS 6 and earlier builds. Perhaps the choice to completely strip away skeumorphic elements have diluted the interface by confusing conventions with flat icons, transparent backgrounds and bright gradients.

GALLERY 2.6 iOS6 to iOS7

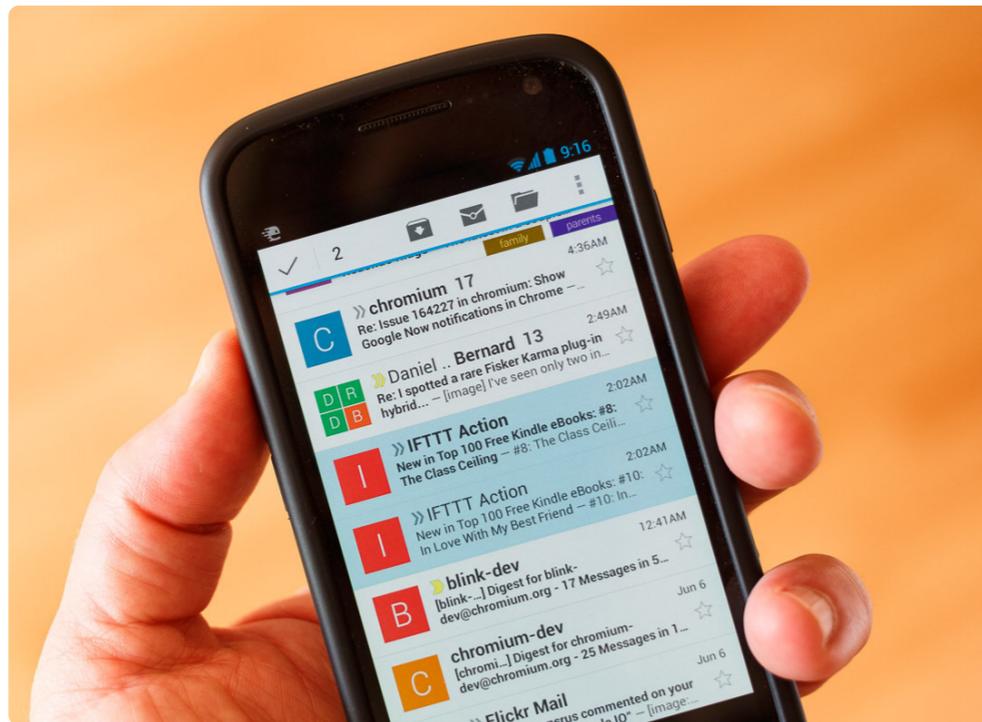


Google - Products & Services

In the past 3 years Google services have been moving towards a certain understated elegance. The company has started to embrace the importance of interface design and have introduced clean lines, airy typography, and liberal white space across their many platforms. By rediscovering an old idea of index cards, long-established design practices were used.

GALLERY 2.7 Google Products - UI

GMail app on Android operating system



“ **It’s not like we’ve invented a new way to organise information [...] we’ve actually tapped into one of the oldest pieces of graphic and information design around [...] They all have the same embodiments because they’re all reflections of a similar set of design problems.**

(Bohn and Hamburger, 2013)

Google's cards are plain, minimalist white rectangles, possibly an epitome of flat modernism, or just a subconscious move away from skeuomorphism. This approach to a cleaner interface has changed the way Google simplifies increasingly deep information. Google's cards represent the biggest of data in the smallest of packages.

The new experience introduced by Google is based upon three fundamental design principles:

1. Focus

To allow the user to focus on the task or job that they want to get done quickly and easily. This is achieved by removing unnecessary clutter and bringing to the forefront items and tools that matter. This is also achieved by simple additions such as adding bolder colours for call to actions or hiding certain navigation items when they're not in use.

By using these methods Google's UI is able to help its user subconsciously focus on the task that they are trying to accomplish, alleviating frustration from its user experience.

2. Elasticity

One of the biggest changes since Google started is the way that its users are accessing the web. The idea behind 'elasticity' is to allow users to have a seamless visual experience as they transition between different devices.

3. Effortless

Although the technologies used behind Google and its products are quite complex, they don't want to portray this complexity in their design. 'Effortless' is about keeping the look simple, clean and consistent.

Google has proven that design is an essential part of creating better user experiences and their existing products and services have showcased that even complex and comprehensive data can be beautiful.

Xero - Accounting Software

Wellington company Xero has also proven that data can be beautiful and can be enjoyable to interact with. “Xero is benefiting from seven years and \$200m of investment in developing a modern, global accounting platform that is free of legacy. No other new entrant has had comparable resources to create the breadth of platform that Xero has already delivered” (Market Release Commentary, 2013 p.2).

GALLERY 2.8 XERO Software - UI

Xero multi-platform on mobile and web (cloud)



VIDEO 2.5 Xero Touch: The mobile app for Xero accounting software Duration 2" 00'



Xero's simple interface, when combined with its tools for importing and classifying transactions automatically, make it possible for tedious tasks such as expense transactions to be done with ease. The dashboard on the web provides a simple, graphical view of the organisation's financial health along with an easy to use navigation structure for drilling down into the supporting data. As well as being on the web, the service is designed appropriately on mobile platforms and user data is all backed up in the cloud.

Head of Design at Xero Philip Fierlinger is responsible for advocating design as the main reason for the company's success, through design thinking Xero has flipped and changed the perception users have about accounting softwares. Boring, tedious tasks have become fun and even addictive.

Relevance

Apple, Google and Xero all benefit from each others successes and rely on each others services to stay relevant and current. This including software development as well as design approaches they take with user interfaces. Apple and Google both build and design for each other's operating systems (iOS and Android). Xero's mobile applications are also designed for Apple and Google products as well to reach a widespread audience and expand their customer base beyond New Zealand.

The TSi on the other hand does not directly rely on any of these technologies. Gallagher's development team have created their own software for the TSi built on a Microsoft product (Windows Embedded). This includes an office application for the PC called 'APS Office' which is used to transfer information from the TSi into user's PC's. TSi is not currently compatible with Mac operating systems and do not have mobile applications for iOS and Android.

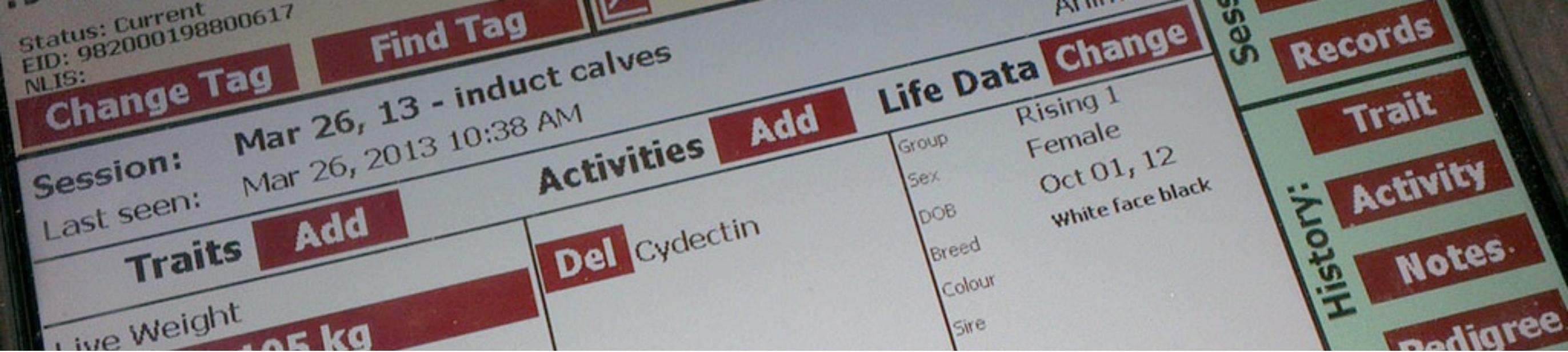
Despite the differences in technology and software, design principles are all indistinguishable when it comes to designing for mobile devices and having touch interfaces in mind.

Gallagher has laid out a set of guidelines when designing for weigh scales touch interfaces such as the TSi. These principles will be essential for the re-design of the new GUI and will be implemented appropriately to work within the software constraints.

Touch Screen User Interface Principles

The following principles must be adhered to when designing the Weighscale Touch Screen User Interface (Thompson & Luck, 2005 p. 1-2).

1. Interactive areas of the screen (i.e. buttons or options which respond when touched) must be at least fingerprint sized and must be spaced at least half a fingerprint apart.
2. Interactive areas of the screen must be distinguished from other (read only) areas by a specific colour. [E.g. all touchable buttons are the same colour and this colour is not used for read-only text or graphics.]
3. The touch screen background must use a bright colour and should incorporate a pattern. Reduces glare and hides fingerprints. Patterned background helps the eye focus on the image rather than reflections.
4. When the user touches any interactive area, they must receive immediate feedback (e.g. output a sound or change the button image to represent the "touched" state).



5. The time from touching an interactive part of the screen to receiving feedback must be minimised - e.g $< 250\text{ms}$. Unless the response is virtually instantaneous to the user, they will find the performance unacceptable and will attempt to redo action.
6. A cursor must not be displayed on the touch screen user interface. This changes the user's focus from touching the screen to trying to control the cursor.
7. The interface should mostly, if not exclusively, require only a single touch to activate a function. Double-clicking (or double-touching), as well as touch and drag should be avoided. Minimises learning required to use the interface. "Double-click" equivalents are timing dependent, hence harder to learn and repeat. Touch and drag more prone to failure than a single touch.
8. The entire user interface should use no more than 3 to 4 colours. Too much colour can make the interface look busy and detracts from the purpose of distinguishing key items by their colour.
9. Red and green should be avoided for items that show meaning by colour. A reasonable proportion of the male population are red/green colour blind.
10. Where possible, the position of touchable areas of the screen should reduce the amount of the screen obscured by the user's hand while attempting to activate that button.
11. The user interface must be consistent - buttons, labels or terms, position of similar data, activation of similar functions should all look and /or behave in the same way throughout the interface.



next chapter:

Chapter 3 - Design

CHAPTER 3

Design

In this chapter we explore the following:

1. Structure
2. Skeleton
3. Surface

1

Structure

After the requirements have been defined and prioritised, we have a clear picture of what will be included in the product. The requirements, however, don't describe how the pieces fit together to form a cohesive whole.

(Garrett, 2011, p. 79)

Loadbars not connected

:982000198800617

Status: Current
EID: 982000198800617
NLIS:

Change Tag

Find Tag



Session: Mar 26, 13 - induct calves
Last seen: Mar 26, 2013 10:38 AM

Traits Add

Live Weight
105 kg

Del Cydectin

Activities Add

Life Data Change

Group Rising 1
Sex Female
DOB Oct 01, 12
Breed White face black
Colour
Sire
Dam
Orig TAG
Live Weight
Curr ADG ---
Overall ADG ---

Add Note

Last Note:

Sorting has been disabled for this session

Collect

Collect

Stats

Record

Train

Acti

M

R

Session:

History:

Existing User Interface

This project focuses on the user interface of the TSi and the starting point is to analyse the existing interface and outline the key issues and concerns of existing users.

INTERACTIVE 3.1 Critical Analysis of TSi's existing UI - Main screen (YARD - Collect screen)

Layout The main screen is laid out in an inconsistent grid that separates certain elements in sections on the page, but accommodates for too much information in one screen.

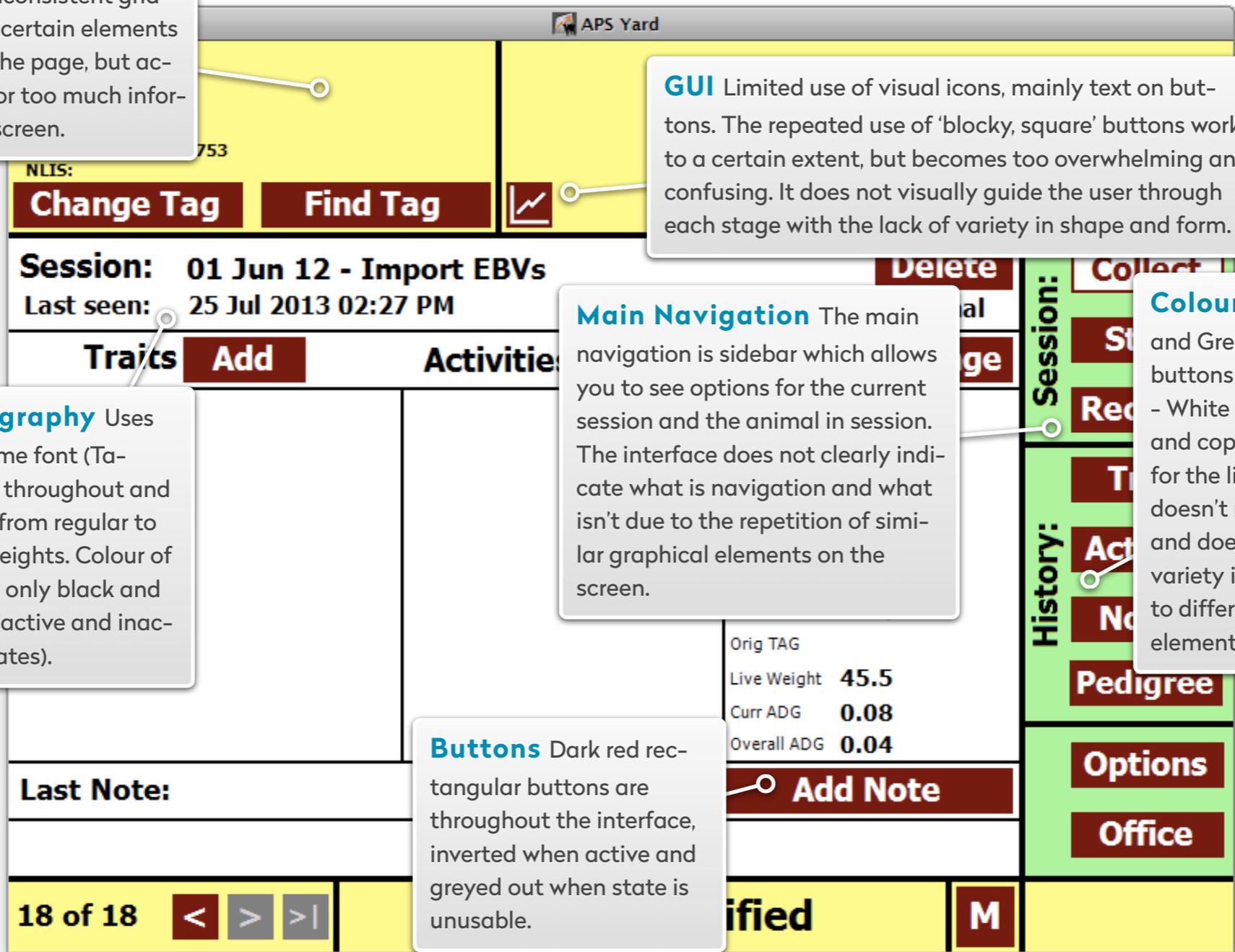
GUI Limited use of visual icons, mainly text on buttons. The repeated use of 'blocky, square' buttons works to a certain extent, but becomes too overwhelming and confusing. It does not visually guide the user through each stage with the lack of variety in shape and form.

Typography Uses the same font (Tahoma) throughout and varies from regular to bold weights. Colour of type is only black and white (active and inactive states).

Main Navigation The main navigation is sidebar which allows you to see options for the current session and the animal in session. The interface does not clearly indicate what is navigation and what isn't due to the repetition of similar graphical elements on the screen.

Colours Yellow, Red and Green are used for buttons and background - White and Black for text and copy. Palette works for the lighting but it doesn't reflect the brand and doesn't have enough variety in tone to be able to differentiate between elements on the page.

Buttons Dark red rectangular buttons are throughout the interface, inverted when active and greyed out when state is unusable.



Overview

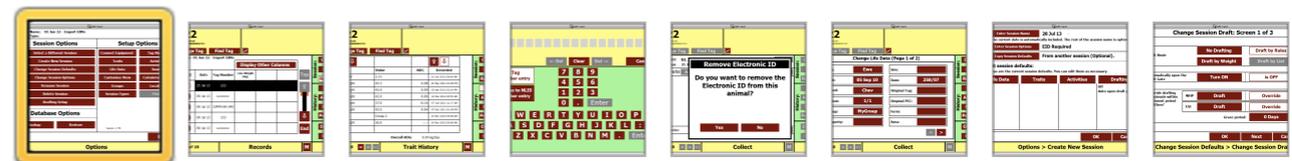
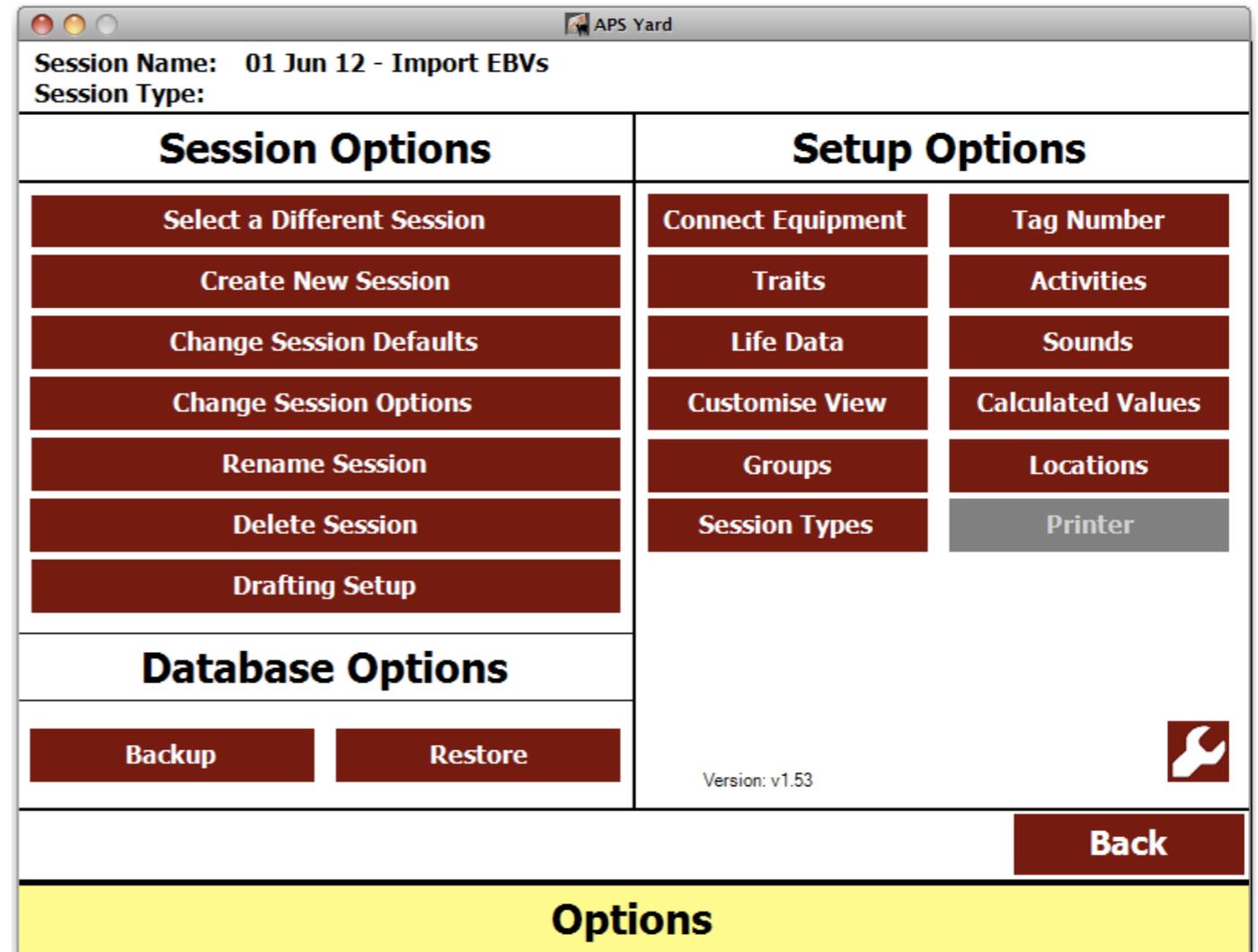
The TSi's existing GUI heavily relies on bold typographic buttons and lacks the use of other visual and graphical elements such as icons. This has made the interface very text-heavy and because there is a limited variety in the design of the buttons, it can get confusing for the user to determine which states are active. Language of the TSi is based on older systems and are appropriate conventions to stick with.

Lack of a persistent navigation has created a disorganised hierarchy with the content and its very easy for the user to get lost in the tasks and not know how they got there.

Variety of window layout and content structure means that users must adapt to each stage and does not allow for customisation or at least an ability for views to change. Inconsistent use of type size and weights as well as visual elements such as checkboxes, scrollbars, etc. have not been carefully considered for legibility.

GALLERY 3.1 TSi - Main Screens

Options Screen - This is essentially the main menu of the whole system





Method_ Mapping User Journeys

Understanding each stage of the user flow from screen-by-screen is critical for simplifying the complex capabilities of the TSi. According to Garrett "Information architecture is a new idea, but it's an old practice – in fact, you could say it's as old as human communication itself" (2011, p. 88). Information architecture is involved with how people cognitively process data and information of any product and attempts to make sense of this data through its presentation of individual screens.

TRAIT HISTOR
VIEW HISTOR (TRAI



CONTROLS

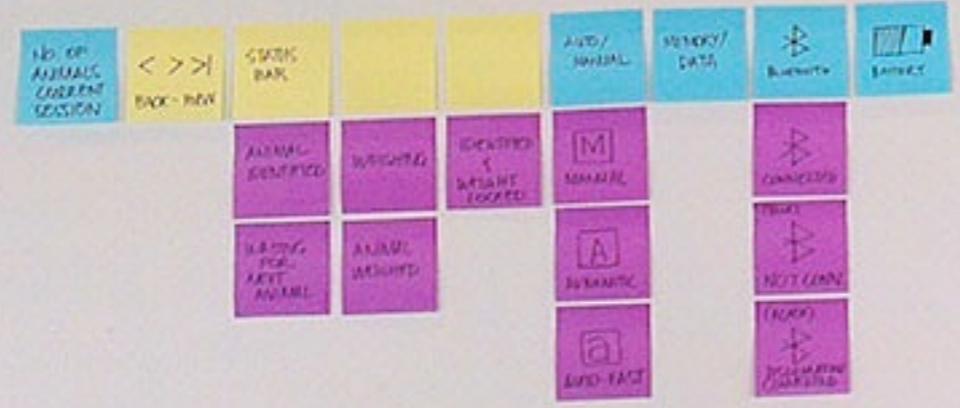


engineering

Keypads / Input



Status sidebar / navigation



Node Structure

It is critical to structure the content and organise in accordance to a navigation system to allow users to move through the content efficiently and effectively. By categorising and finding common patterns, grouping similar tasks and organising principles, user journeys can be simplified. Categories must be appropriate to the users (keeping in mind the use of conventions and appropriate metaphors).

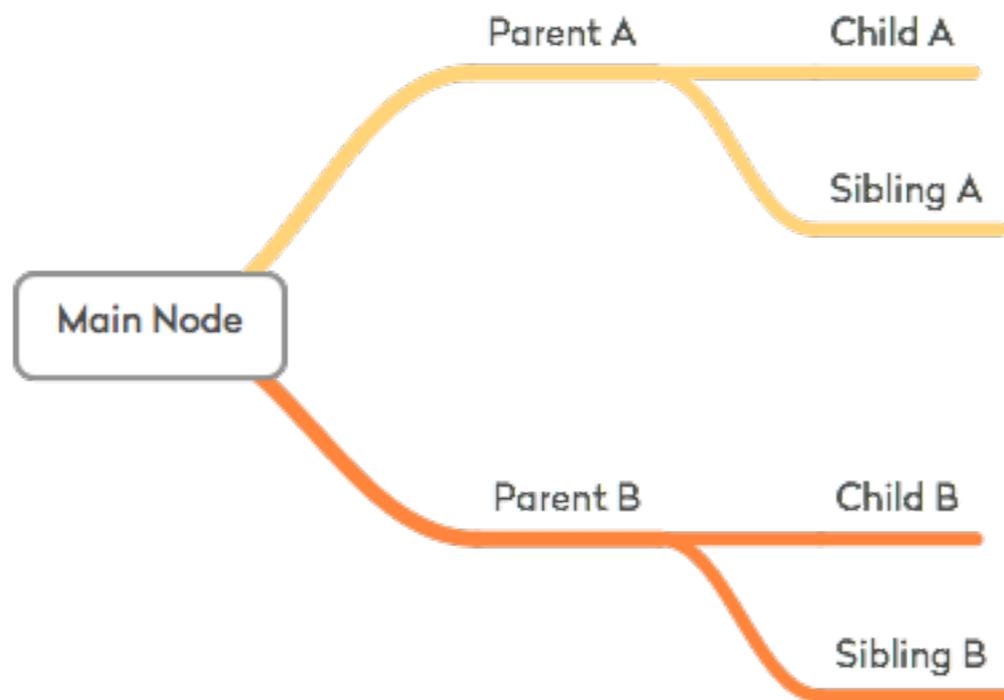


FIGURE 3.1 Structure of nodes

A basic approach to reconstructing and understanding information architecture is through nodes. This abstraction allows for explicitly setting the level of detail by simplifying it to the task name itself. Utilising a hierarchical tree structure each node has a parent/child linked with related nodes. Each node will lead all the way up to the main parent node of the entire structure, this approach is best understood by users and because software works with a similar hierarchical structure, this is an appropriate approach to take.

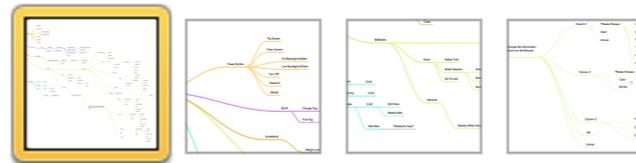
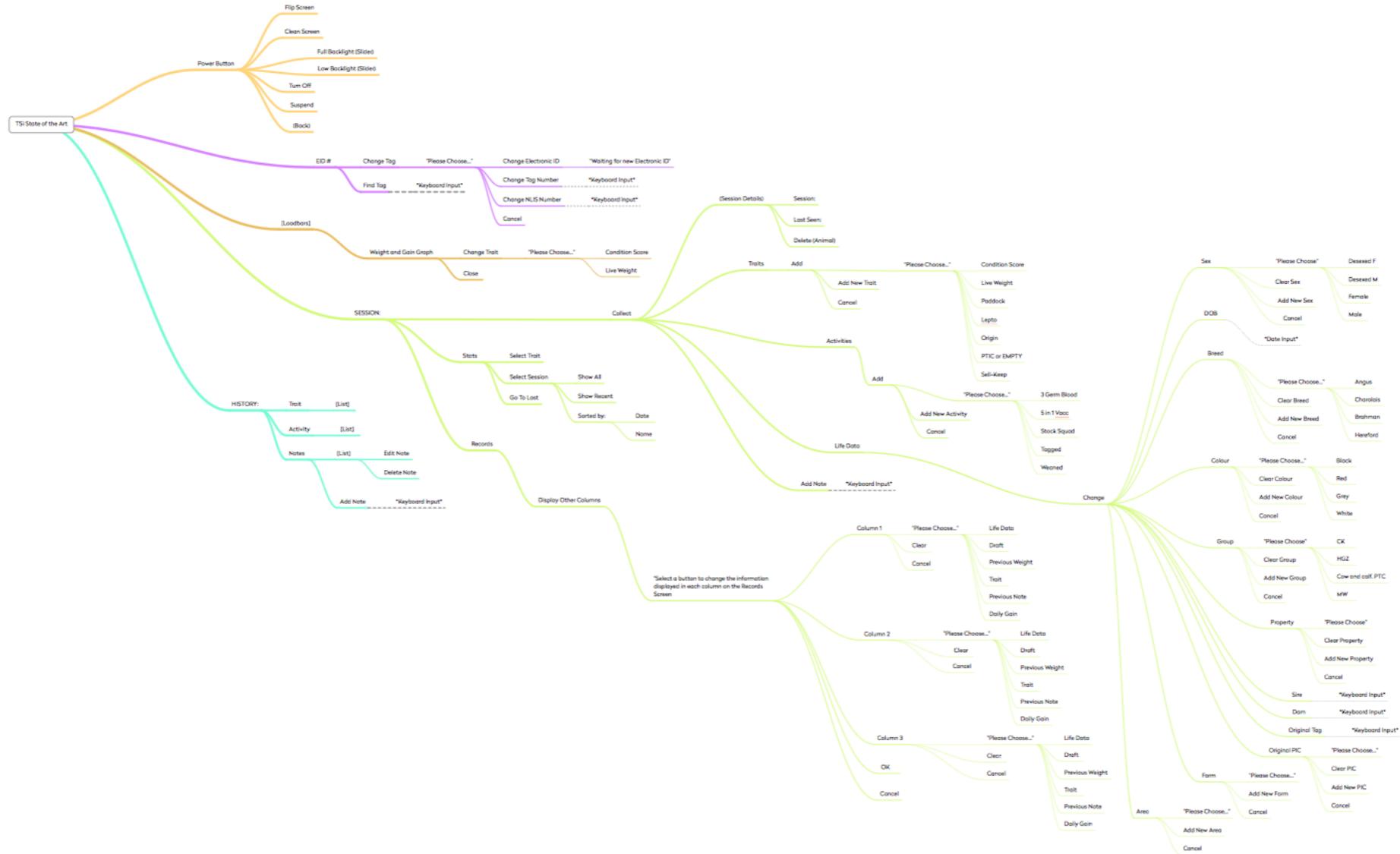


The most important sign of quality [...] is not how many steps the process took, but whether each step made sense to the user.

(Garrett, 2011, p. 91)

Existing Information Architecture

GALLERY 3.2 TSi - Existing structure (snippets)



Mapping Workshops & Exercises

Throughout the project, the information architecture and mapping of user journeys were continually revised. The starting point was to look at the existing architecture of the TSi, explicitly linking each node at every stage appropriately and getting an overview of the state of the art's current hierarchical structure. This exercise was first done in May (2013) with the Gallagher development team and a second workshop was led on June (2013). The workshops were attended by stakeholders and development team, and the exercise involved “talking aloud” - another usability method advocated by Nielsen (1993) as a way to communicate and point out existing issues. Each participant demonstrated to the group a path a user would need to take to complete a task on the TSi. This was done several times and resulted in many discussions about the existing issues, hidden features and how we could further simplify the architecture for the revised concept.

GALLERY 3.3 Mapping Workshops

Going through the mapping exercise with stakeholders and development team



Overview_Mapping Workshop

TSi's existing 'framework' were posted on the wall with screenshots of the screens and features at each level. Each participant at the workshop was given a post-it note with a task/activity/feature written on it, then walked the group through a typical user journey. Once the journey was decided the note was attached to the appropriate screen on the wall.

Notes

- 'Find' and 'Add' both 'CREATE' an animal. Misleading language for users and needs clarification.
- 'Draft Gate - Sound' feature is rarely used, not many people know or use it, TSi not loud enough to be used in the farm.
- Distance between user and the TSi is about 2m - 10m away, it must be seen from afar.
- Too many steps to get back to mains screens.
- Induction - an important and long process, lots of data processed in this activity, must be a better way of quickly assigning information to speed up the process.
- Collect screen focuses solely on 1 animal at a time.

- Less touching/interaction with the screen is actually better for the farmer.
- Products have grown around the TSi, they need to work together and be customisable and compatible.
- Need more ability to compare data for individual and groups/mob of animals.

Summary

Exercise highlighted the knowledge gap of the product and features that the stakeholders and development team themselves were not aware of. There were clear struggles identifying logical ways of getting to a feature/task through the screens displayed. A lot of repetition and redundant actions were discovered, this confused users mainly through the misuse of language and a weak hierarchical structure of content where information gets lost. It was difficult for a user to return to the previous screen because of the lack of a 'back' button and not having a persistent navigation system became evident through the exercise. At the end of the first workshop, gaps were identified and simplifying the architecture was taken to Gallagher once again for a second workshop as a follow up meeting.

2

Skeleton

The conceptual structure begins to give shape to the mass of requirements arising from. On the skeleton plane, we further refine the structure, identifying specific aspects of interface, navigation, and information design that will make the intangible structure concrete.

(Garrett, 2011, p. 108)



Method_ Rapid Iterative Prototyping

There are a number of ways to approach prototyping, according to Snyder (2003), there are a wide variety of techniques for designing, testing, brainstorming, testing and communicating user interfaces. some of the most common ones are:

1. **Wireframes** - defines a page layout showing where the content goes and determines page layout and navigation.
2. **Storyboards** - a series of drawings or images representing how an interface would be used to accomplish a particular task, similarly process to a flowchart but with much more detail and with supporting visuals.
3. **Paper Prototypes** - a variation of usability testing that involve representative users performing realistic tasks through paper versions of the interface.

Through a series of workshops at Gallagher and through independent studio back at university, the three approaches to iterative prototyping were used on an ongoing basis and were utilised to get feedback and review from the clients. There was no singular technique that was used the whole way through the design process as it was more important to adapt to the priorities and concerns at the time the designs were needed.

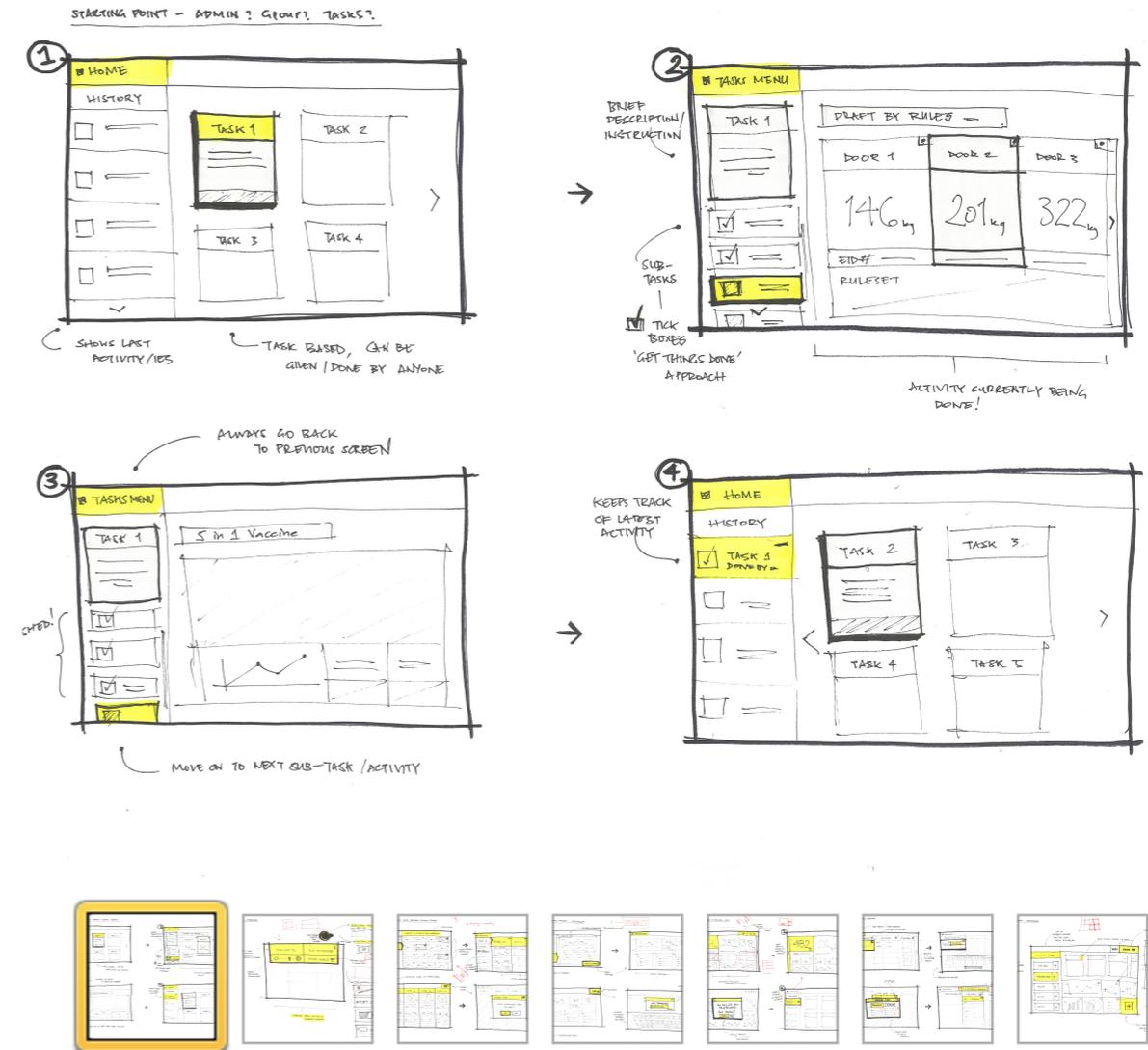
Initial Concepts

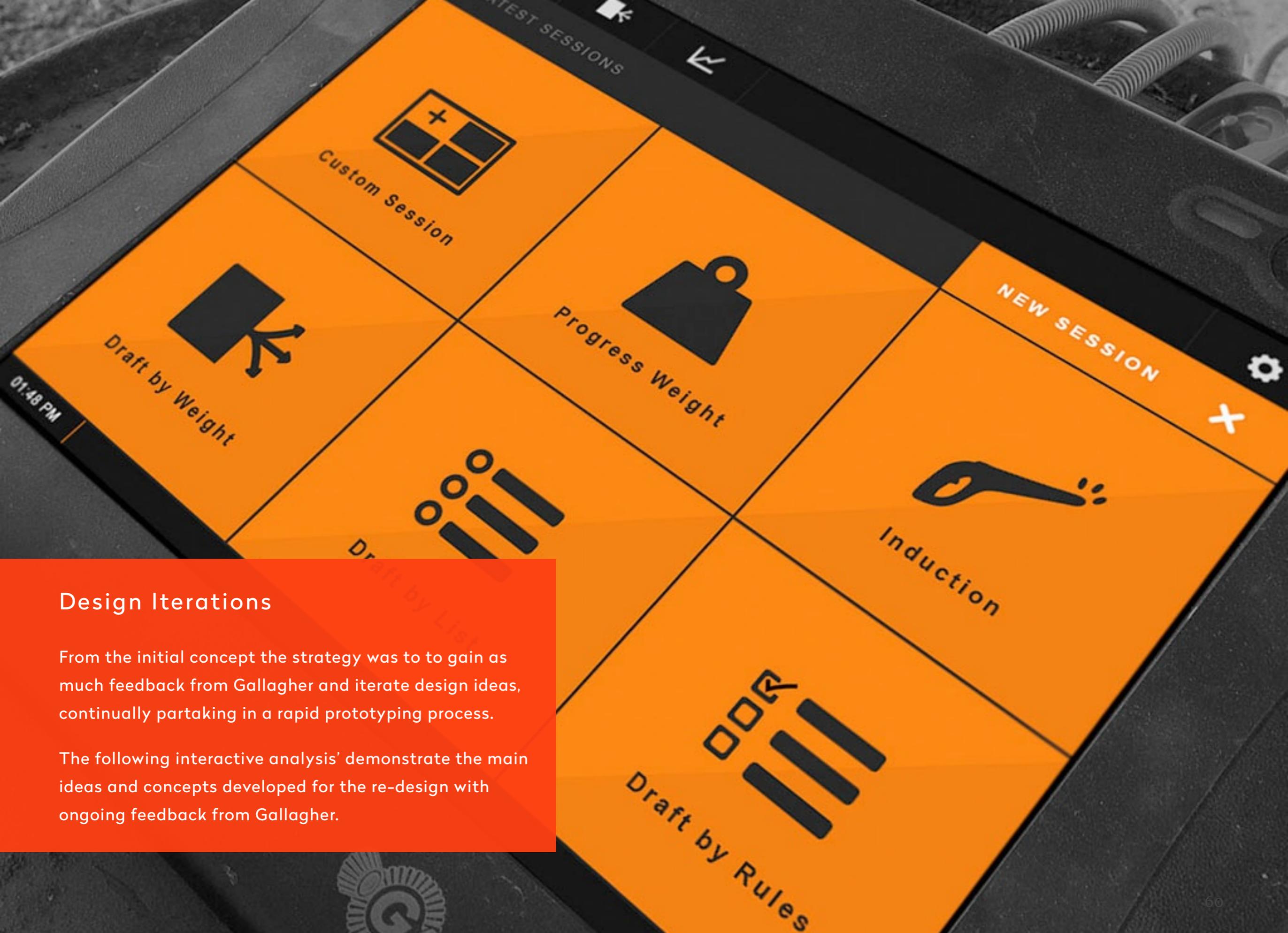
First set of sketches for the re-design were brought to the first workshop at Gallagher and shown to stakeholders and development team. These initial concepts were iterative and created rapidly, it was more important to come up with a lot of rough ideas to begin with and be open to a multitude of options.

Concept Notes

- Persistent navigation system that runs throughout the whole system so the user knows where they are and where they can go.
- Modular grid system that allows for the layout to have consistency and a strict structure.
- History/Activity menu that keeps track of the user's recent activities and tracks the tasks.
- Since the TSi relies heavily on tasks, segmenting common scenarios into activities and creating pre-set templates are proposed to speed up the starting process - "plug and play".
- Introducing custom graphical icons appropriate to the system as well as universal icons commonly used on other electronic devices for familiarity.

GALLERY 3.4 First concept ideas





Design Iterations

From the initial concept the strategy was to to gain as much feedback from Gallagher and iterate design ideas, continually partaking in a rapid prototyping process.

The following interactive analysis' demonstrate the main ideas and concepts developed for the re-design with ongoing feedback from Gallagher.

BIG Data and numbers are used to visualise information that farmer's need to see/want to see

Live Weight

 361970

496

Activities

3 Germ

+

Blood

+

5 in 1 Vacc

+

Stock

+

d

+

ed

+

ed

+

Visualise Data Introducing graphs and statistics that don't just look good but displays useful information

Typography Clarify information through appropriate use of typography, testing out different weights and sizes and differentiating between primary and secondary content

Current Daily Gain

Overall Daily Gain

Weight Gain

+5023

Navigation Menu Persistent navigation that is active in all screen states, allows users to stay informed and gives them the ability to return to previous states with ease.



Home icon, Settings gear, Back arrow, Start [A] Session, Bluetooth icon, Battery icon

Prototypes

The following prototypes were tested and demonstrated on individual iPads and were designed on Apple's Keynote program to simulate the scenarios. These were then tested with fellow designers at a critique presentation and shown to Gallagher team.

—
[See Media Folder]



INTERACTIVE 3.3 Modular Grids

INTERACTIVE 3.4 Templates

INTERACTIVE 3.5 Settings Menu



Exploring a structured layout that is strict but also flexible for customisation.

Common tasks and user scenarios are demonstrated through templates to save time and encourages exploration.

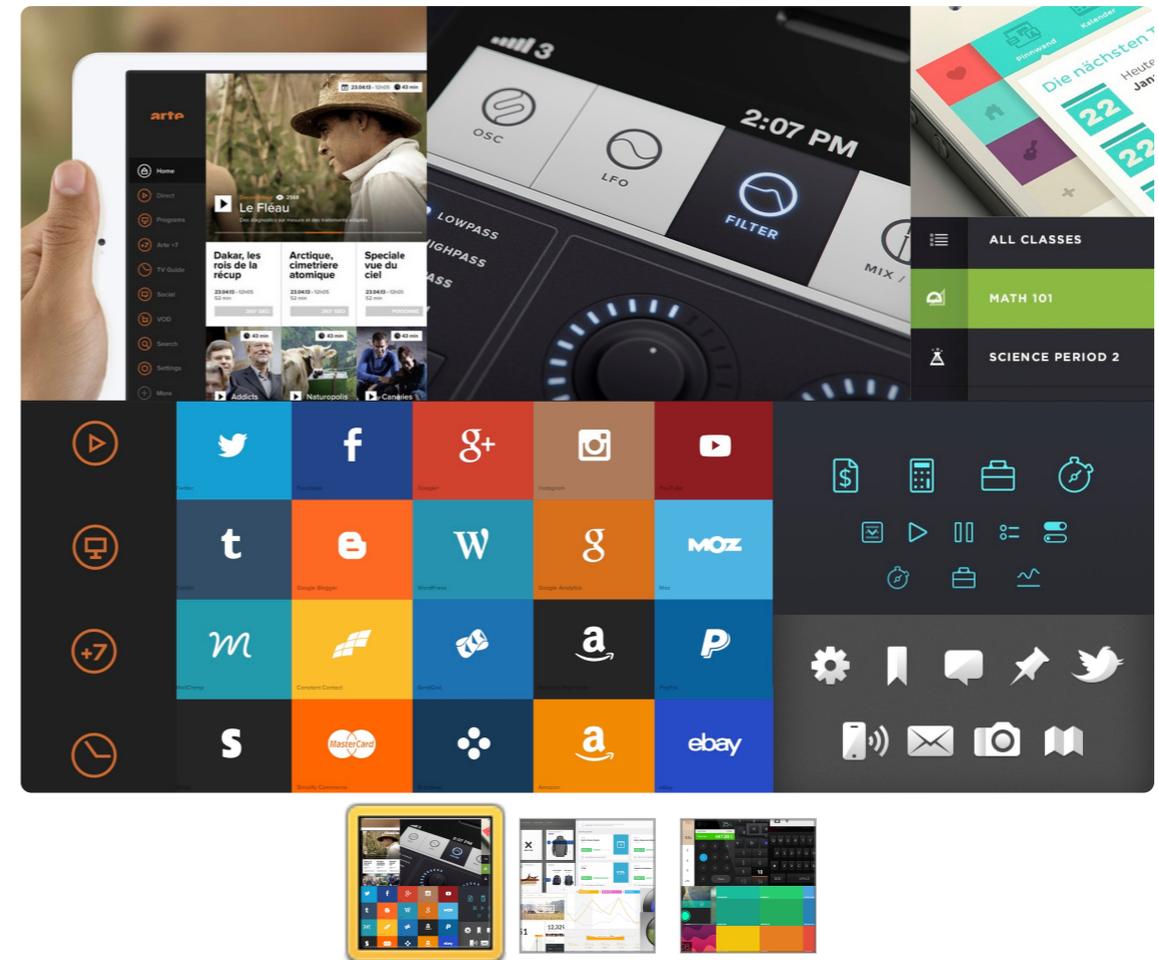
Simpler settings menu that overlays on top of current screen.

Development Notes

- Visually the design works but it's important to keep the user scenarios in mind, what do the users really want to do in this screen? Do the design elements on the interface accommodate for these tasks and activities appropriately?
- Orange? Is this the most obvious colour to use? How about introducing accent colours to compliment and break up the visual cues.
- iPad is a deceiving simulator since the design itself will have a different resolution and colours and typography will look different.
- Typeface needs to be Arial or Tahoma.
- Navigation system needs to be further developed. Is a 'home' button really needed?
- What are other designers doing? Research precedents.

GALLERY 3.5 UI Moodboards

Icons and navigation systems



User Scenarios

Throughout the development process, designing with specific user scenarios in mind was crucial. This required ongoing discussions with Gallagher and reflecting back on workshops and road-trips to evaluate and decide on which existing scenarios were worth exploring and which ones to introduce.

1. Creating a New Session (existing)

Sessions are the result of recording information on the TSi. Typically one session represents one days work on the farm, but users may record more than one session per day, also one session may last more than one day. Sessions are identified by a creation date and a session name. ("Gallagher SmartTSi User Manual", 2011)

2. Custom Session & Templates (new)

The existing TSi allows for session templates to be used, saved and copied but did not have the capability to customise a session.

3. Drafting (existing)

Drafting is an advanced feature of the TSi which allows farmer's to filter/group animals into customisable parameters. This in turn saves time and is one of the most powerful features (and one of the most unused features) of the TSi.

Draft modes control how animals are drafted. Draft modes are:

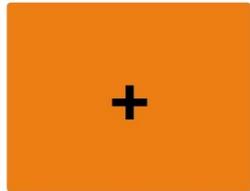
- **Draft by Weight** - When drafting by weight an animal is weighed and then drafted. Draft groups are setup as weight ranges. A weight range is defined by lower and upper weight limits. If an animal's weight falls inside a weight range the animal will be drafted to this group.
- **Draft by List** - A draft list enables you to specify a specific group of animals to be drafted off during a session. Draft groups defined within the draft list become the draft groups for this session.
- **Draft by Rules** - Enables drafting by almost any criteria, (e.g. Breed, ADG, previous drug treatments etc). Drafting by rules uses a set of rules (ruleset) to select specific animals. When a ruleset is added to a session it becomes a draft group. A draft group selects specific animals that meet the ruleset criteria.

GALLERY 3.6 Creating a Custom Session

Creating a custom Session

New Session

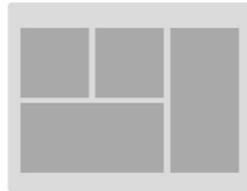
Custom



Templates



Progress Weight



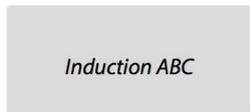
Drafting



Induction

Open Session

Latest Sessions



GALLERY 3.7 Session by Template - 'Progress Weight'

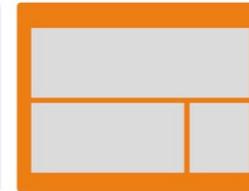
Choosing a template of pre-defined sessions

New Session

Custom



Templates



Progress Weight



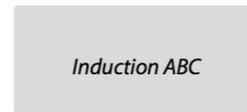
Drafting



Induction

Open Session

Latest Sessions



3x3 Grid Customisable modular grid structure gives users the ability to use 'modules' or tasks that they only want to use at a certain time.

Wide / Square / Graph Give users options with different views of windows and different types of data.

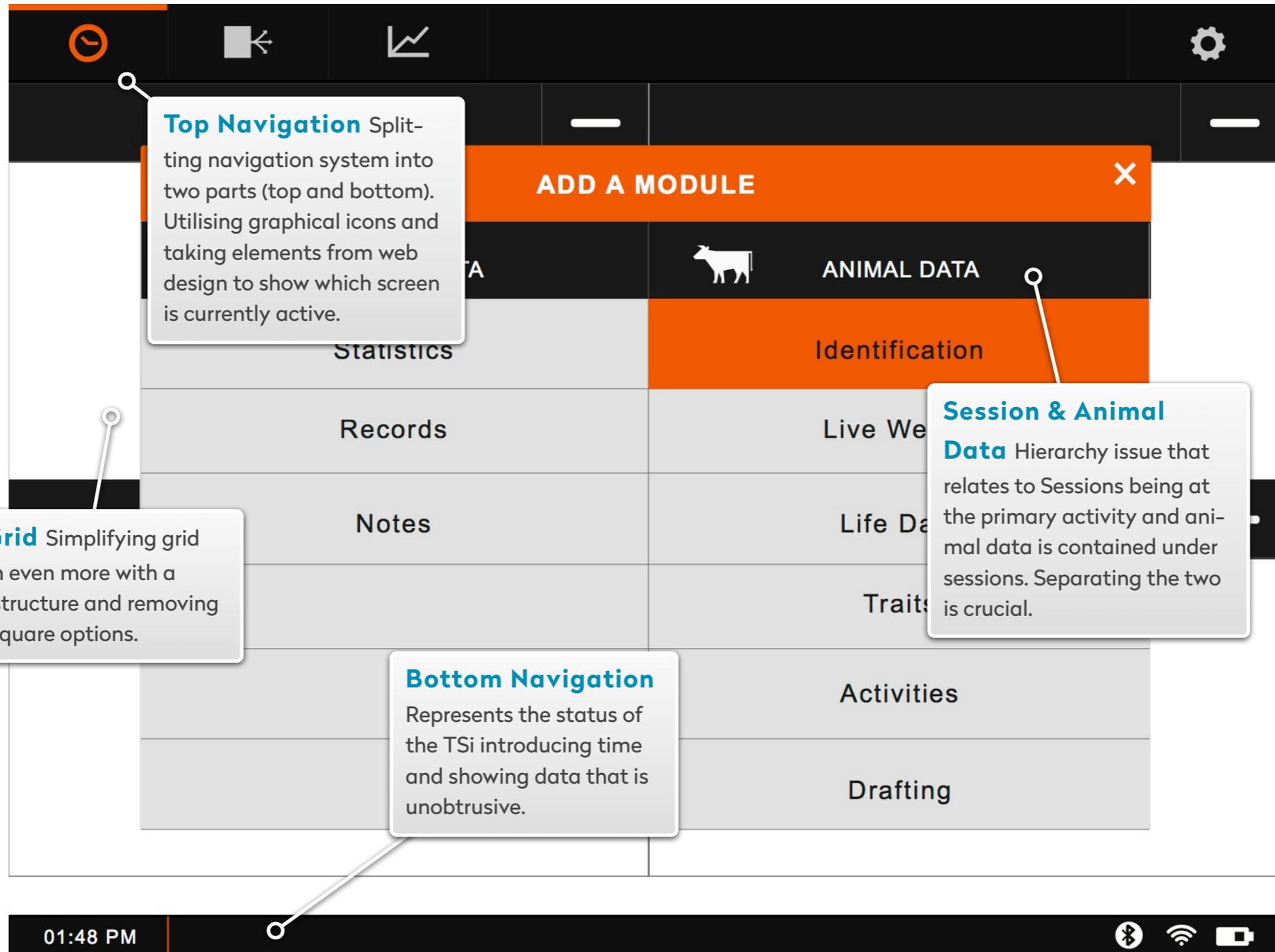
Module Options These are common user tasks and options

Choose a Module

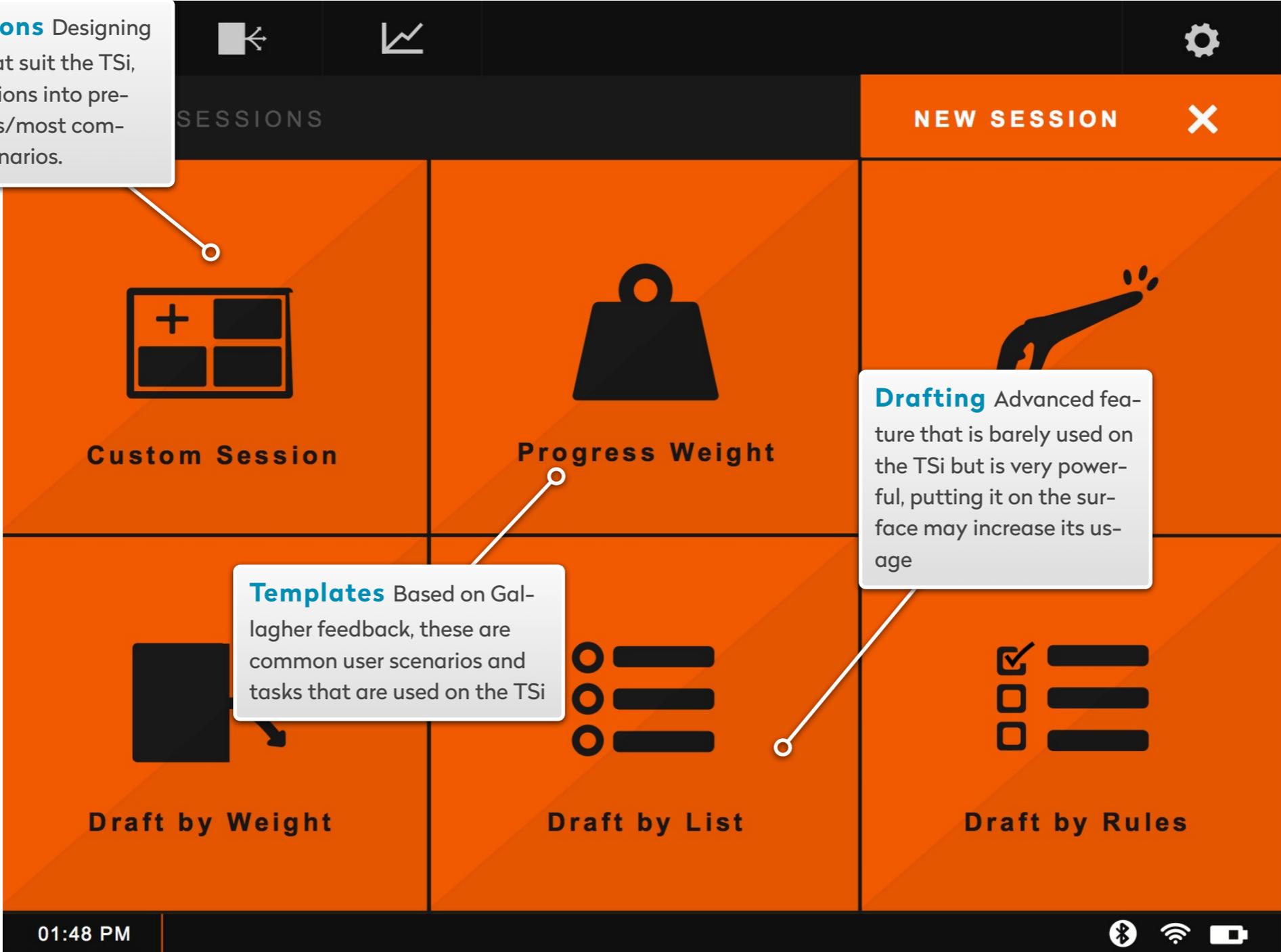
Wide	Square	Graphs
Live Weight	Traits	Average DG
Life Data	Activities	Pedigree Chart
Identification		

Live Weight

My Custom Session

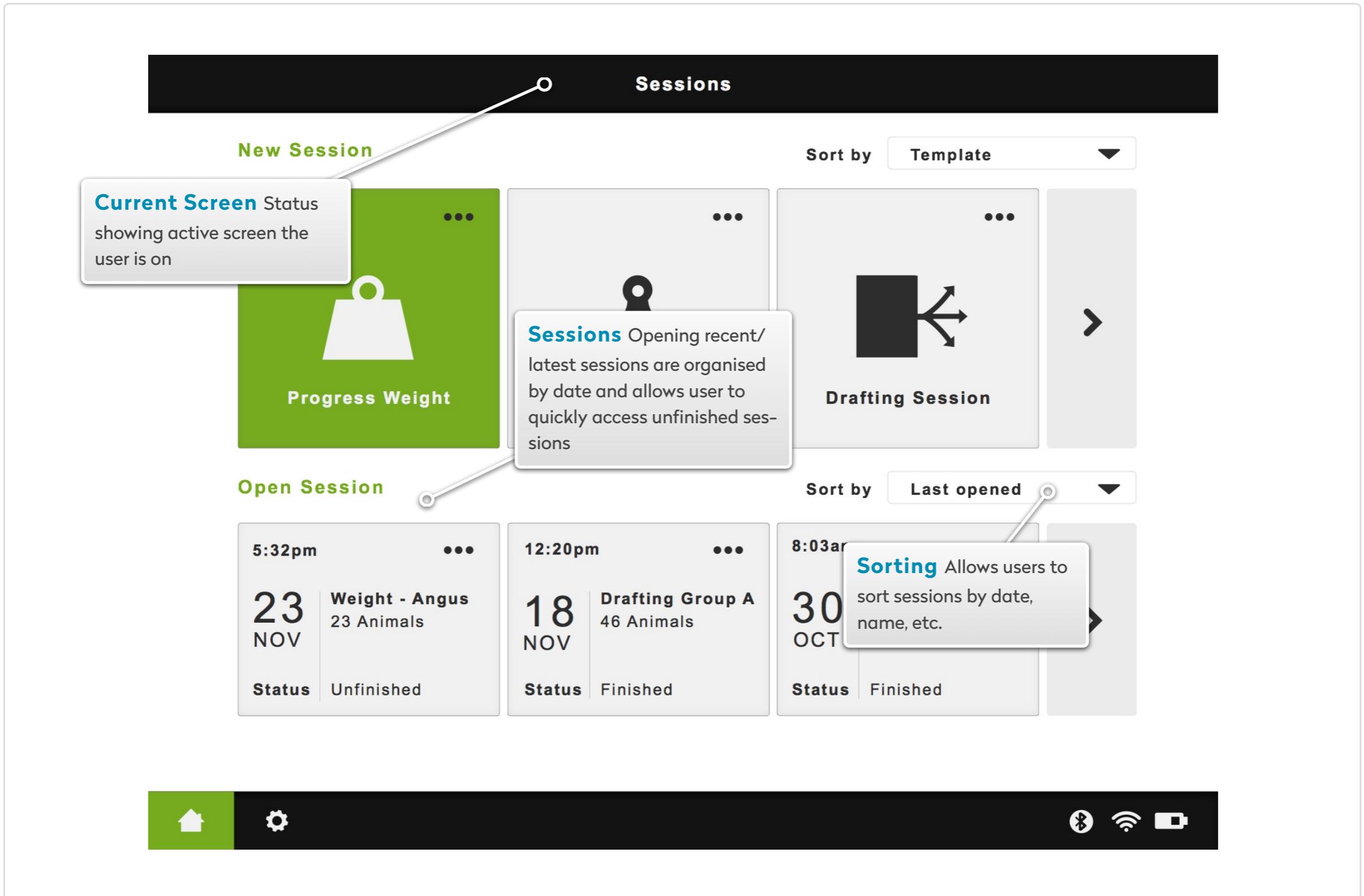


Custom Icons Designing new icons that suit the TSi, splitting sessions into pre-set templates/most common user scenarios.



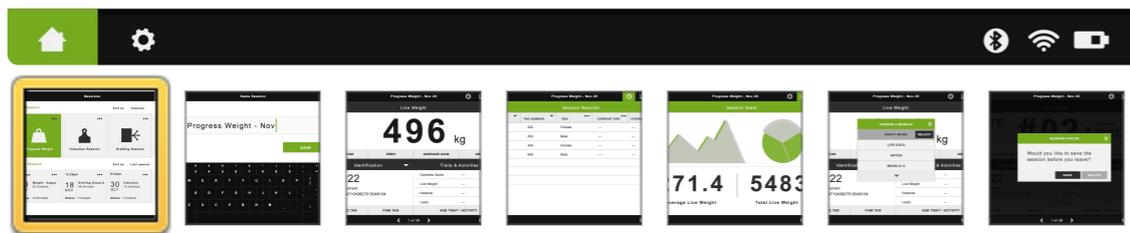
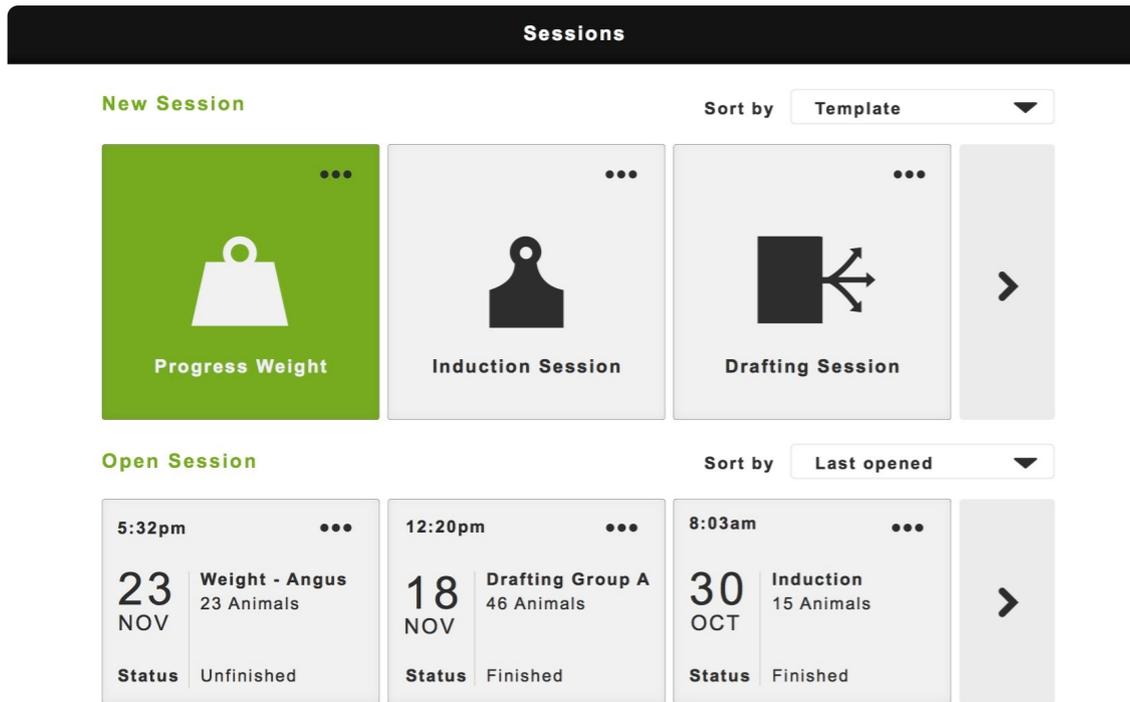
Templates Based on Gallagher feedback, these are common user scenarios and tasks that are used on the TSi

Drafting Advanced feature that is barely used on the TSi but is very powerful, putting it on the surface may increase its usage



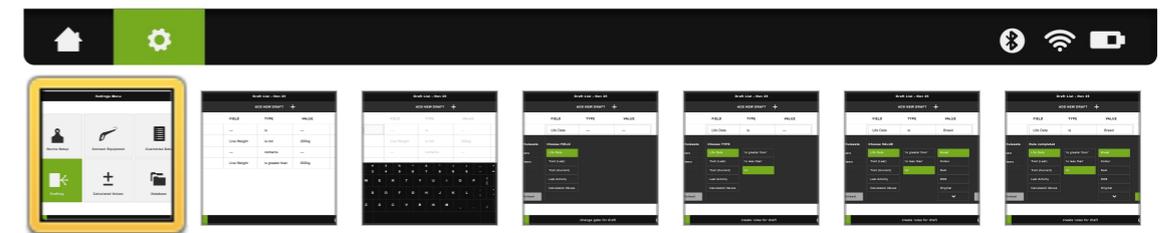
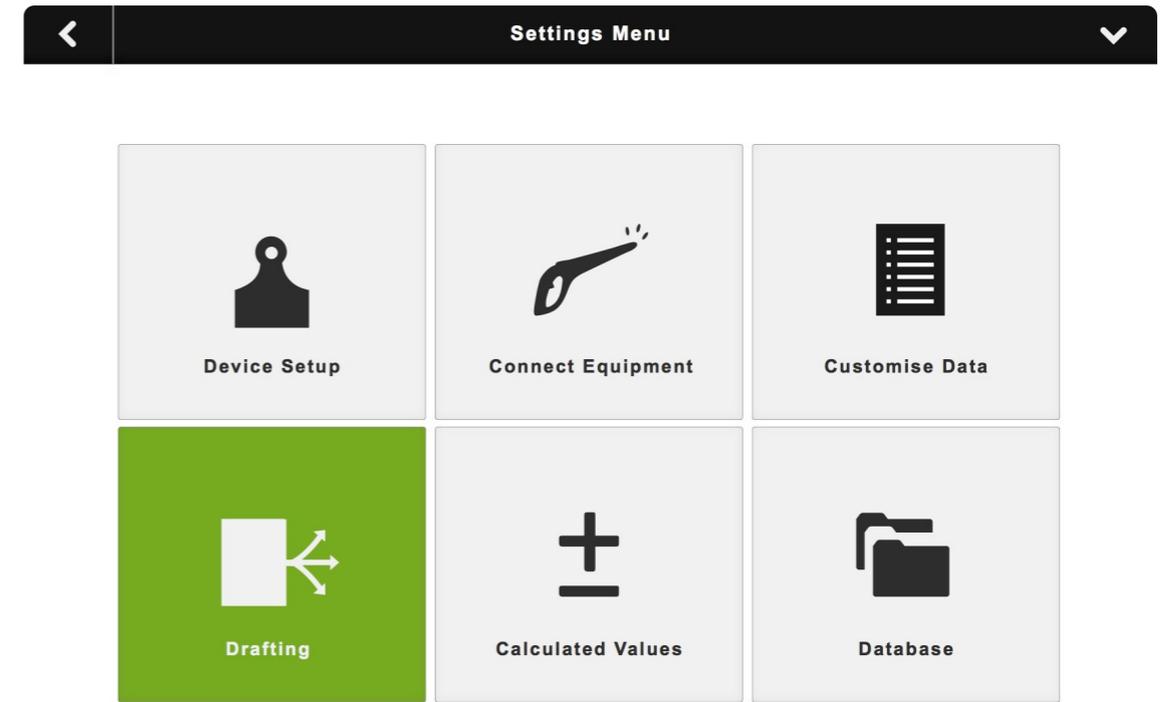
GALLERY 3.8 Starting a session by template - 'Progress Weight'

From home screen - 'sessions screen' choosing a template



GALLERY 3.9 Setting up Drafting

Starting from settings menu



The iterative process continued and last meeting with Gallagher on December (2013) allowed for one last review before finalising the design proposal for this research project.

Final Review Notes

- Giving options of different views on sessions screen, list, grid, detail views.
- Make buttons look like buttons, which are active/inactive, which ones are clickable?
- Are 4 modules on one screen enough?
- Colours - needs higher contrast between text and visual elements
- Home screen - does it need a higher level before sessions screen?

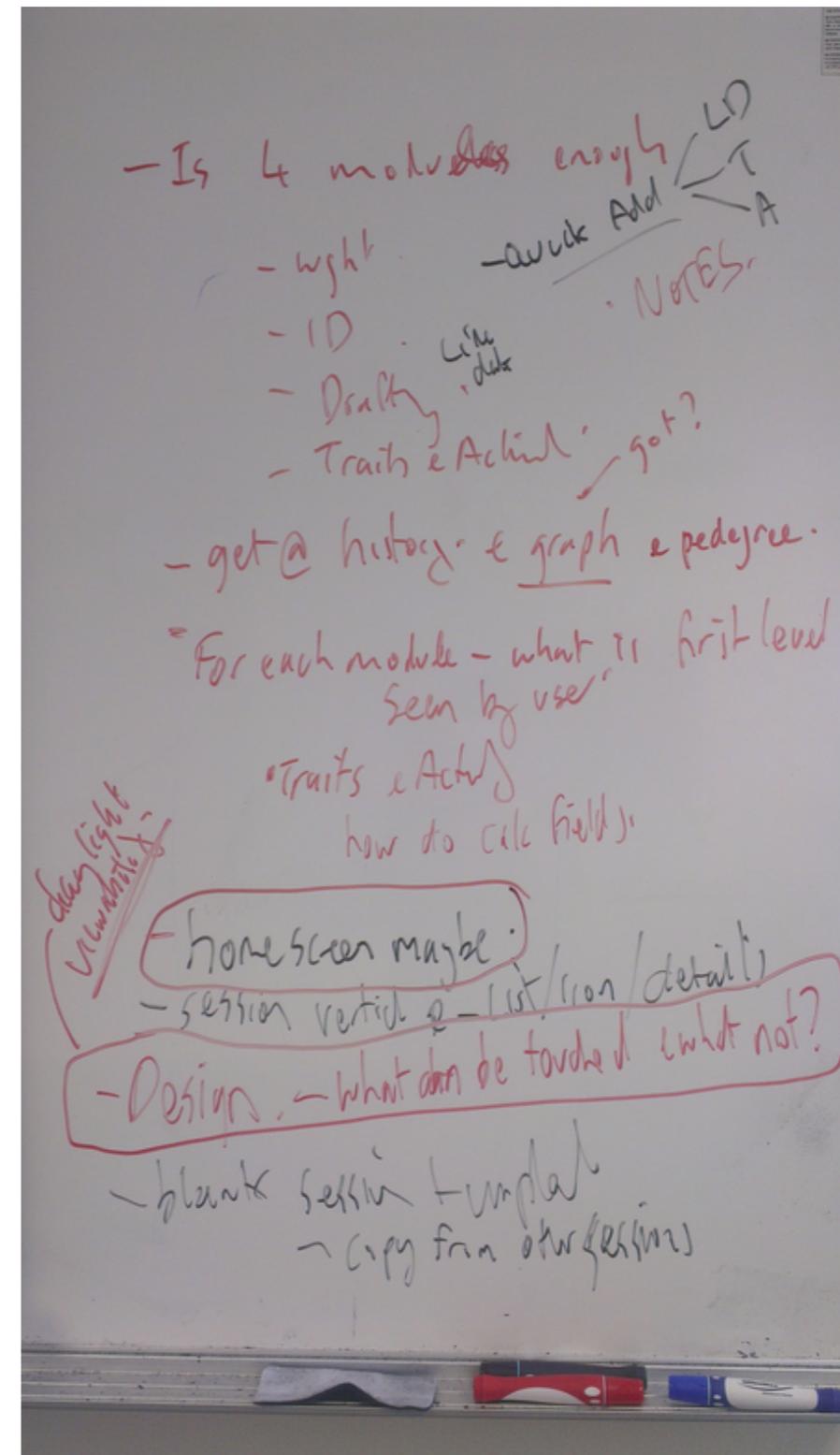


FIGURE 3.2 Final review notes (Gallagher)

3

Surface

At the top of the five-plane model, we turn our attention to those aspects of the product our users will notice first: the sensory design. Here, content, functionality, and aesthetics come together to produce a finished design that pleases the senses while fulfilling all the goals of the other four planes.

(Garrett, 2011, p. 133)

New Session

SESSIONS

Search

November 2013

23 FRI 2:35pm

Drafting Angus
35 Animals



18 WED 9:55am

Induction Session
for Farm A
61 Animals



15 SUN 6:23am

Grouping Session
143 Animals



31 FRI 2:35pm

Heifers
45 Animals



22 WED 9:55am

Induction Session
for Farm B
173 Animals



21 SUN 6:23am

Draft - Sunday
23 Animals



04 WED 11:25am

Production - Dairy
61 Animals



11 WED 11:25am

Treatments
54 Animals



12

Loadbars Connected

Final Design Proposal



User Interface Elements

- i. Navigation
- ii. Graphical Icons
- iii. Grid Structure
- iv. Visual Data
- v. Keyboard Input
- vi. Colours
- vii. Typography

navigation

Persistent top navigation to quickly access the main states on the TSi

Options

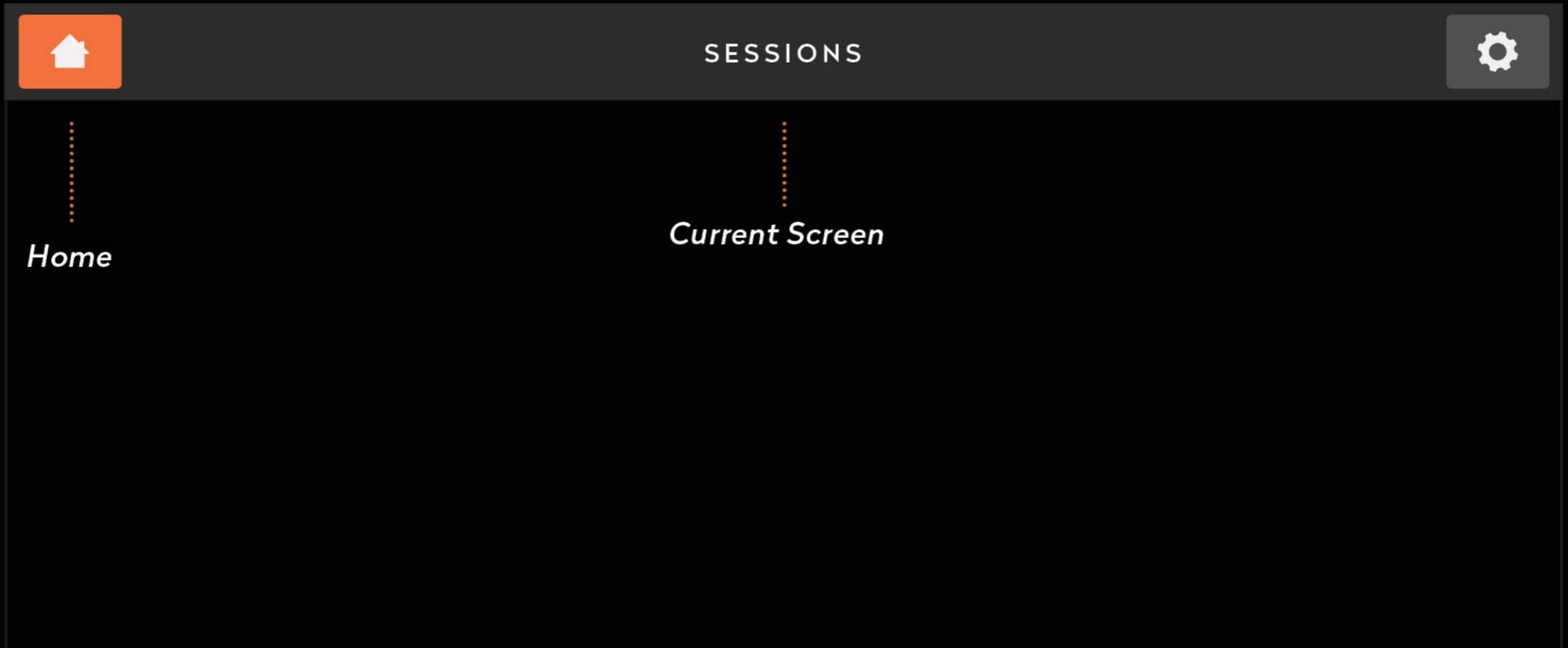


FIGURE 3.3 Top Navigation

Persistent top navigation to quickly access the main states on the TSi
Sub-navigation that is custom to the current active screen

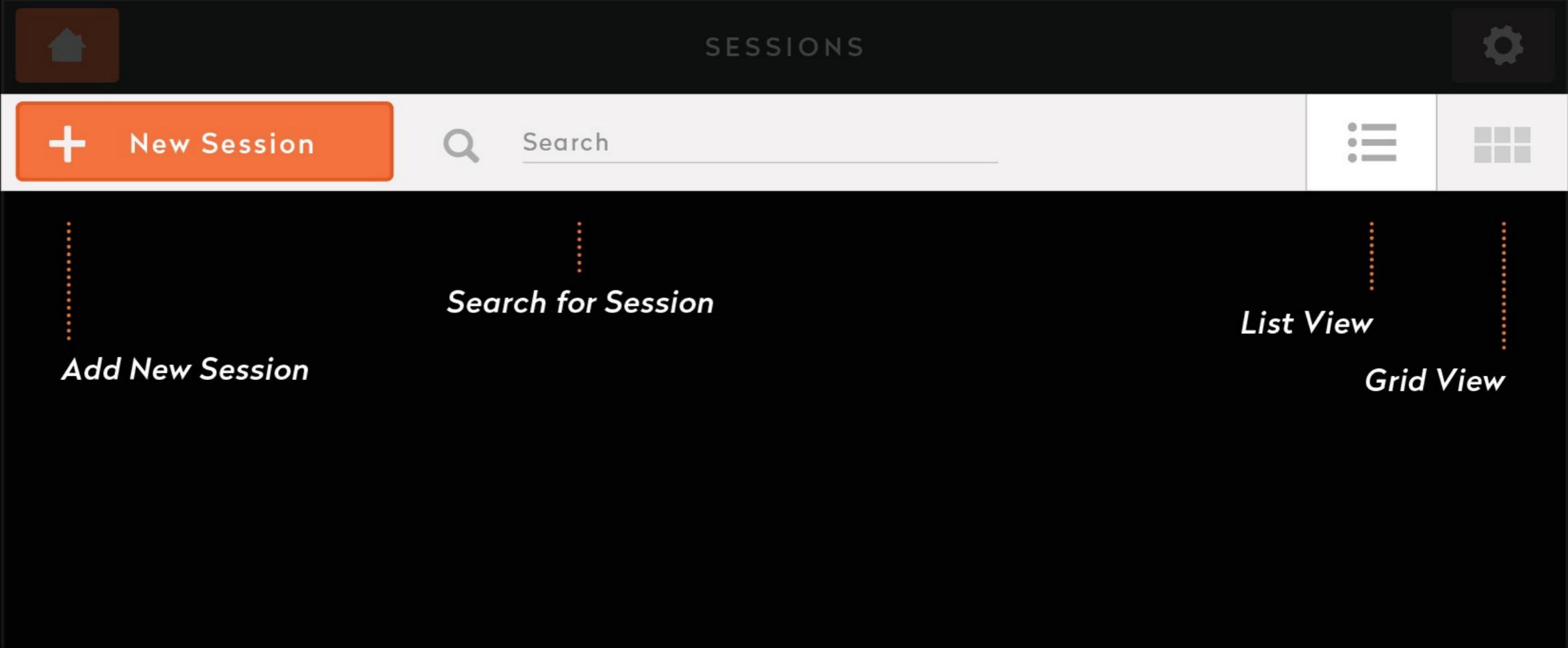
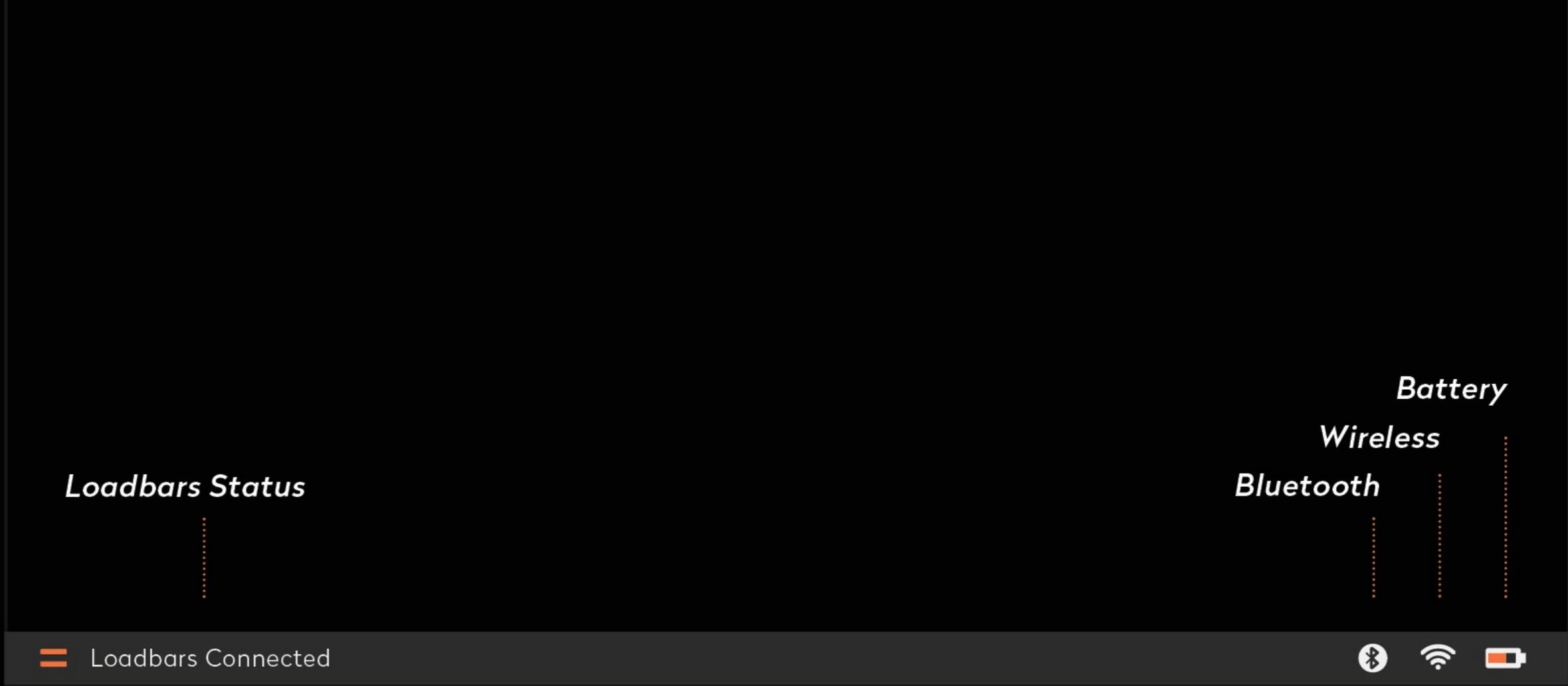


FIGURE 3.4 Sub-navigation



Bottom navigation to indicate and monitor device status

FIGURE 3.5 Bottom navigation

graphical icons

Universal icons, familiar to many and act as visual cues

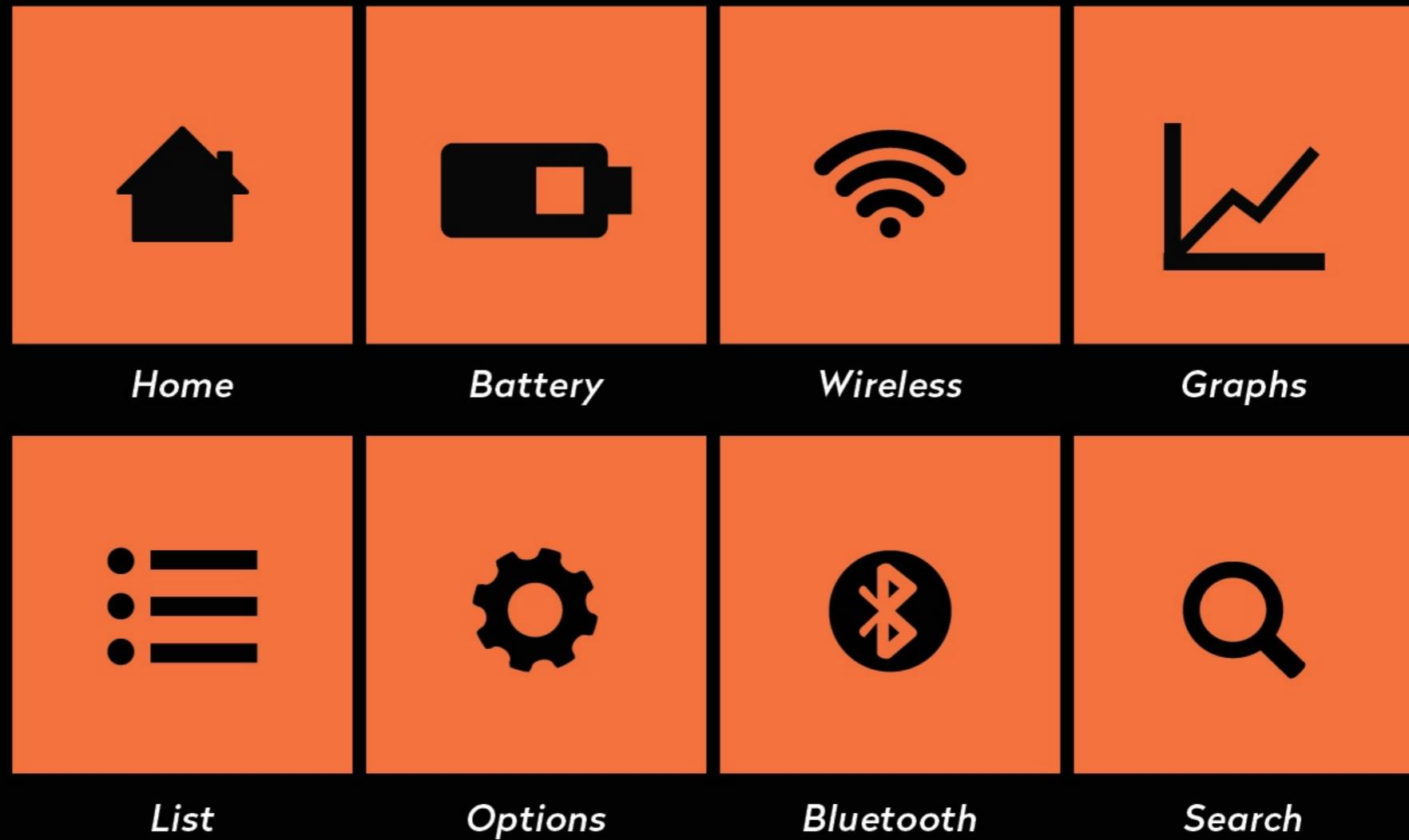


FIGURE 3.6 Graphical icons - universal

Custom icons, designed for TSi

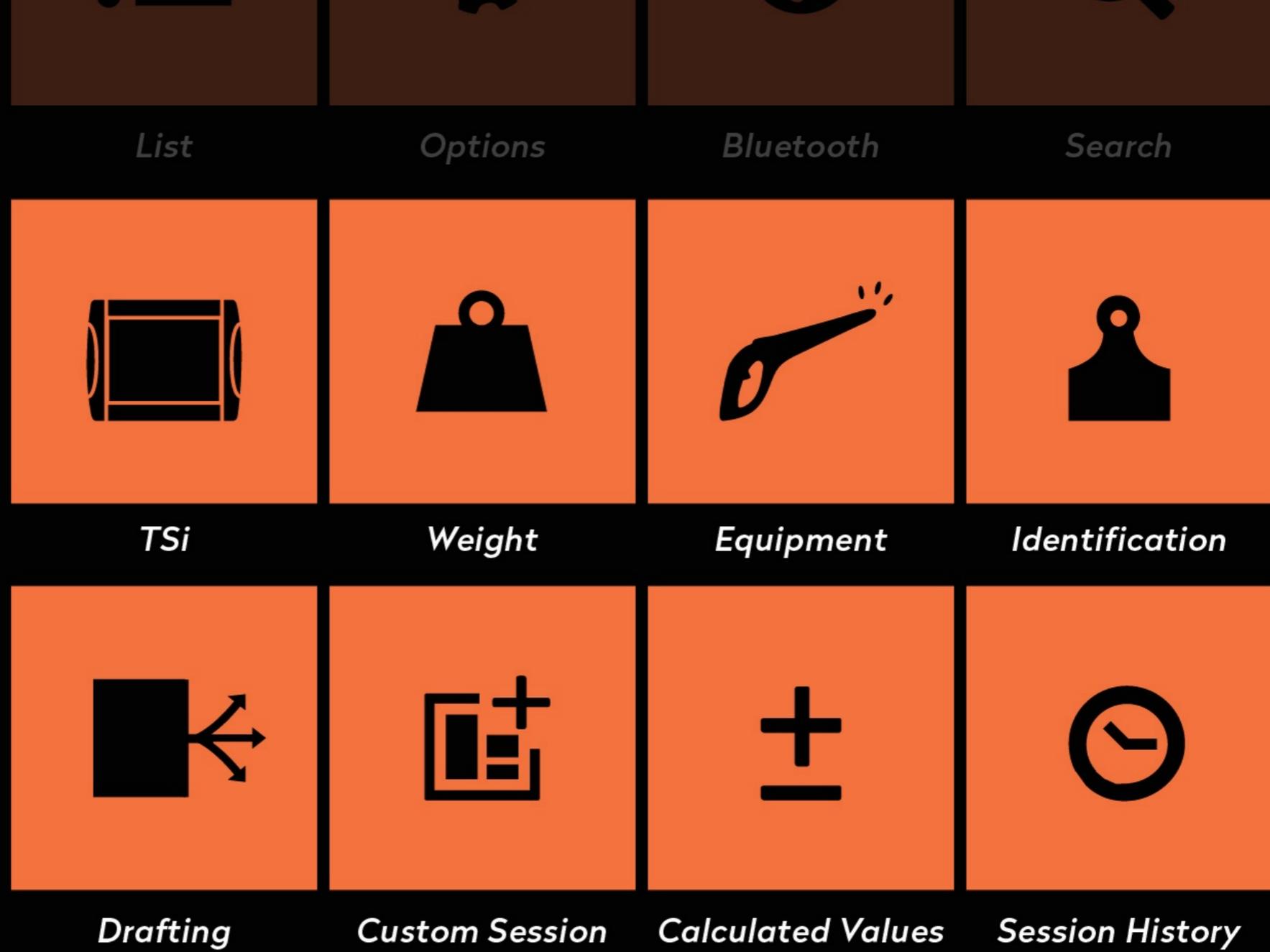


FIGURE 3.7 Graphical icons - custom

grid structure

Modular grid system allows for customisation

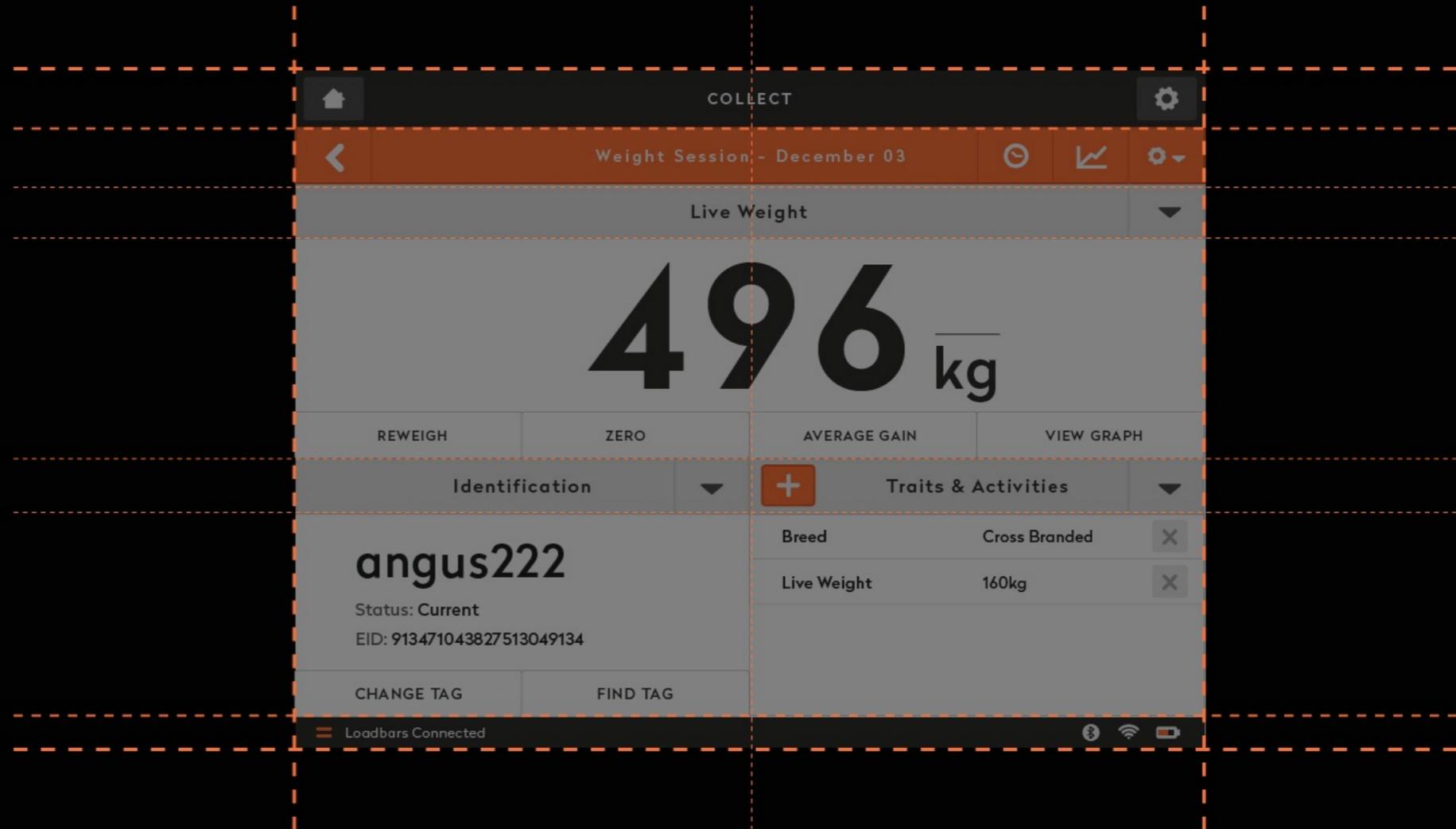


FIGURE 3.8 Grid structure

visual data

Graphs and Charts for analysis of data

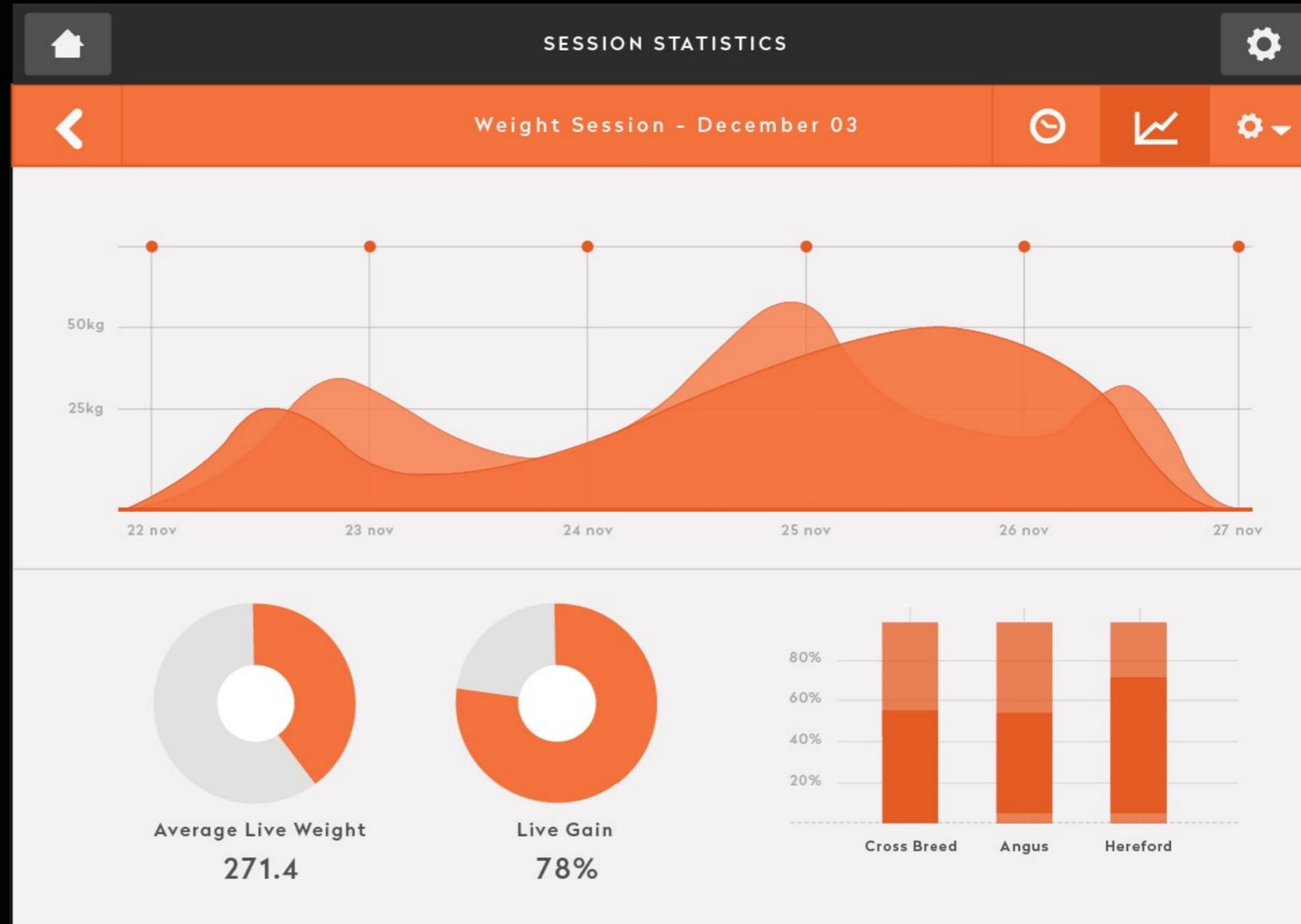


FIGURE 3.9 Visual data

keyboard input

Standard tablet keyboard design

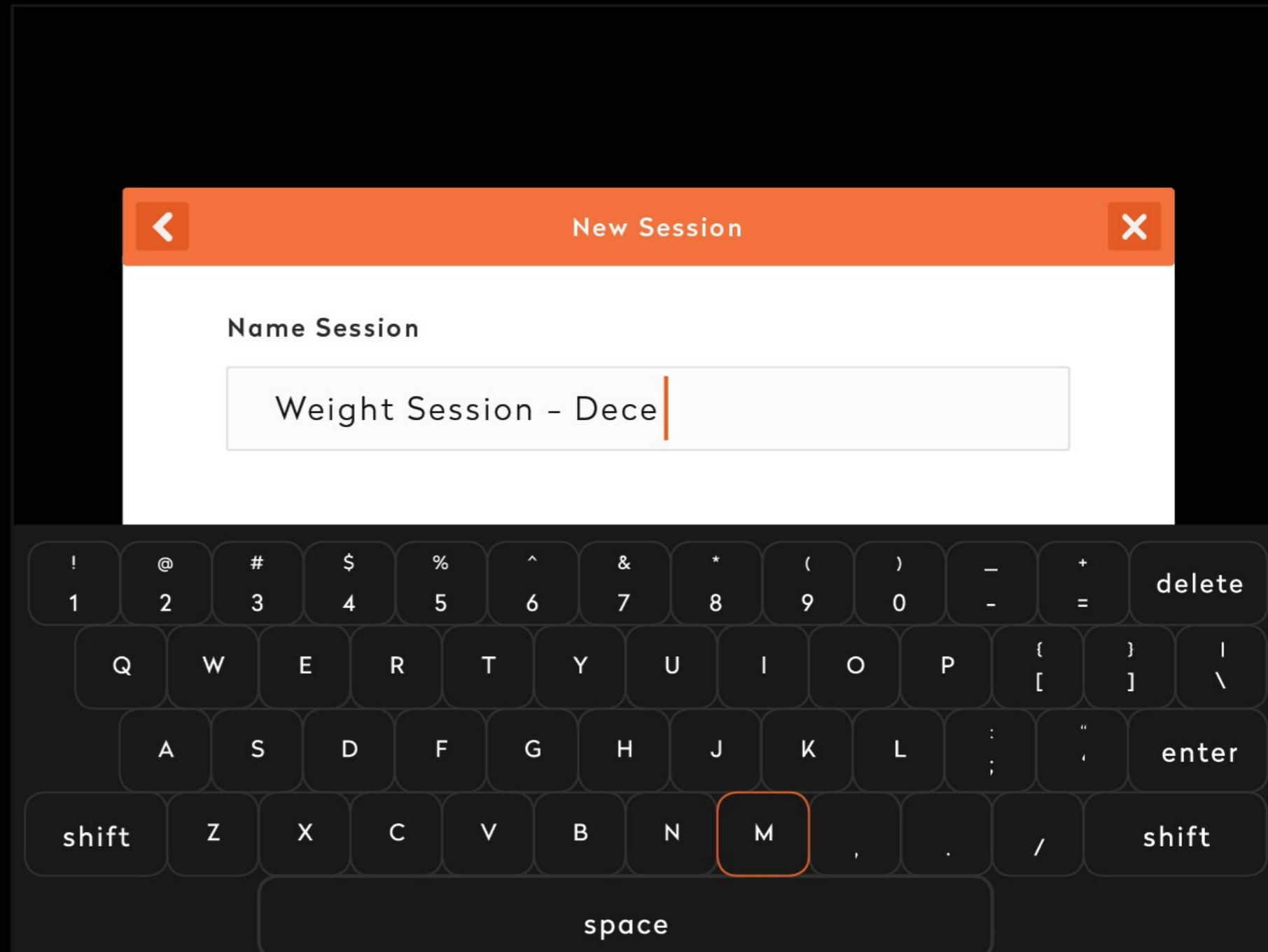


FIGURE 3.10 Keyboard input

colours

Consistent to Gallagher brand identity



FIGURE 3.11 Colours

typography

Goodbye Arial and Tahoma

496 kg

Radikal Light

Light

Radikal Medium

Medium

Radikal Bold

Bold

Notes

A Note is a short text description recorded for an animal. Multiple Notes can be recorded for each animal

Draft Mode

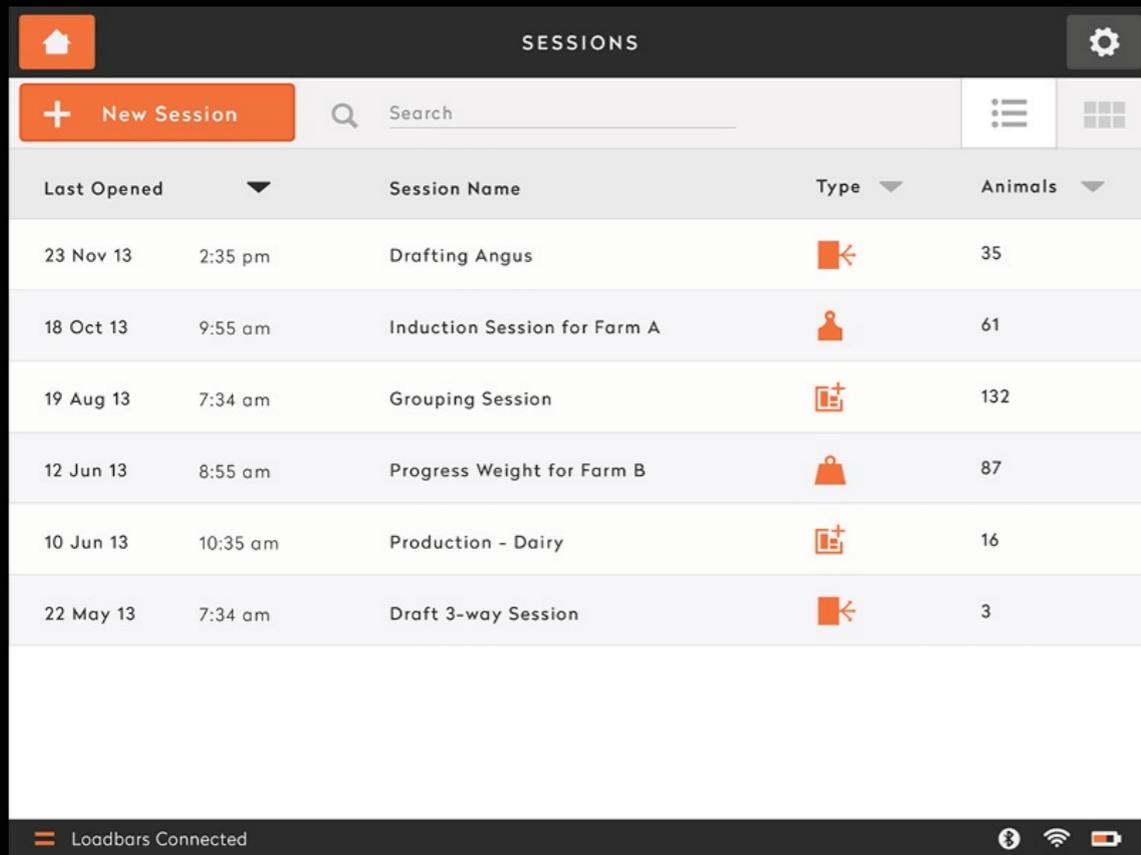
Values that are the recorded value for a Life Data field, (e.g. Male, Angus, Brown).

FIGURE 3.12 Typography

User Scenarios

- i. Creating a new session - by template
- ii. Creating a new session - custom
- iii. Setting up drafting

creating a new session - by template



SESSIONS

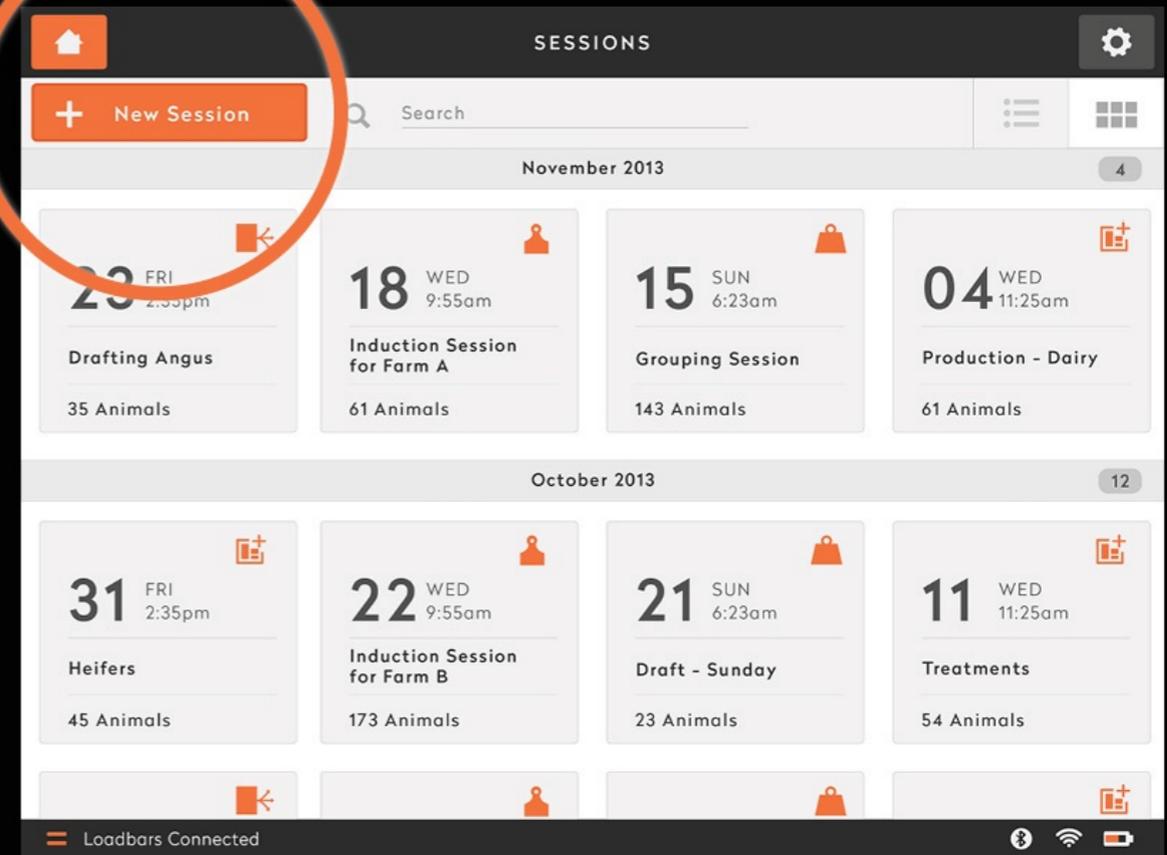
+ New Session

Search

Last Opened	Session Name	Type	Animals
23 Nov 13 2:35 pm	Drafting Angus	←	35
18 Oct 13 9:55 am	Induction Session for Farm A	👤	61
19 Aug 13 7:34 am	Grouping Session	📅	132
12 Jun 13 8:55 am	Progress Weight for Farm B	👤	87
10 Jun 13 10:35 am	Production - Dairy	📅	16
22 May 13 7:34 am	Draft 3-way Session	←	3

Loadbars Connected

session - list view



SESSIONS

+ New Session

Search

November 2013 4

23 FRI 2:35pm Drafting Angus 35 Animals	18 WED 9:55am Induction Session for Farm A 61 Animals	15 SUN 6:23am Grouping Session 143 Animals	04 WED 11:25am Production - Dairy 61 Animals
---	---	--	--

October 2013 12

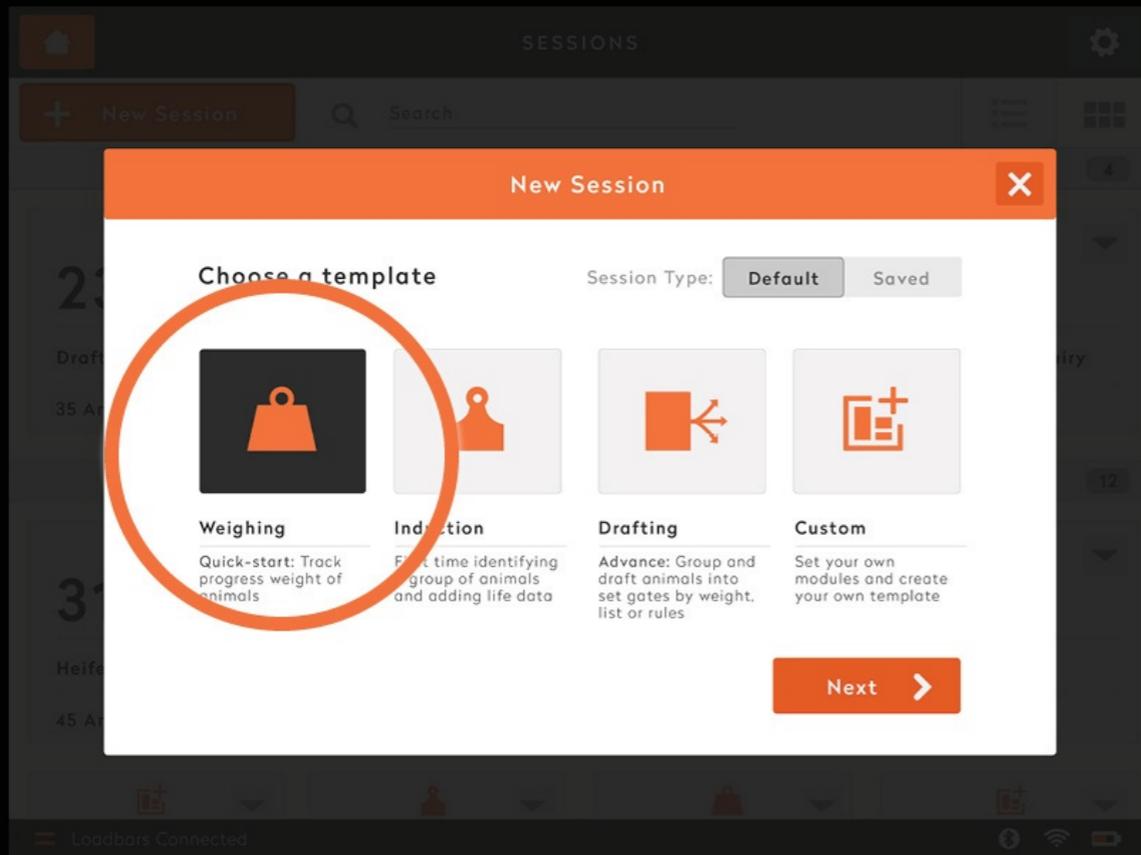
31 FRI 2:35pm Heifers 45 Animals	22 WED 9:55am Induction Session for Farm B 173 Animals	21 SUN 6:23am Draft - Sunday 23 Animals	11 WED 11:25am Treatments 54 Animals
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Loadbars Connected

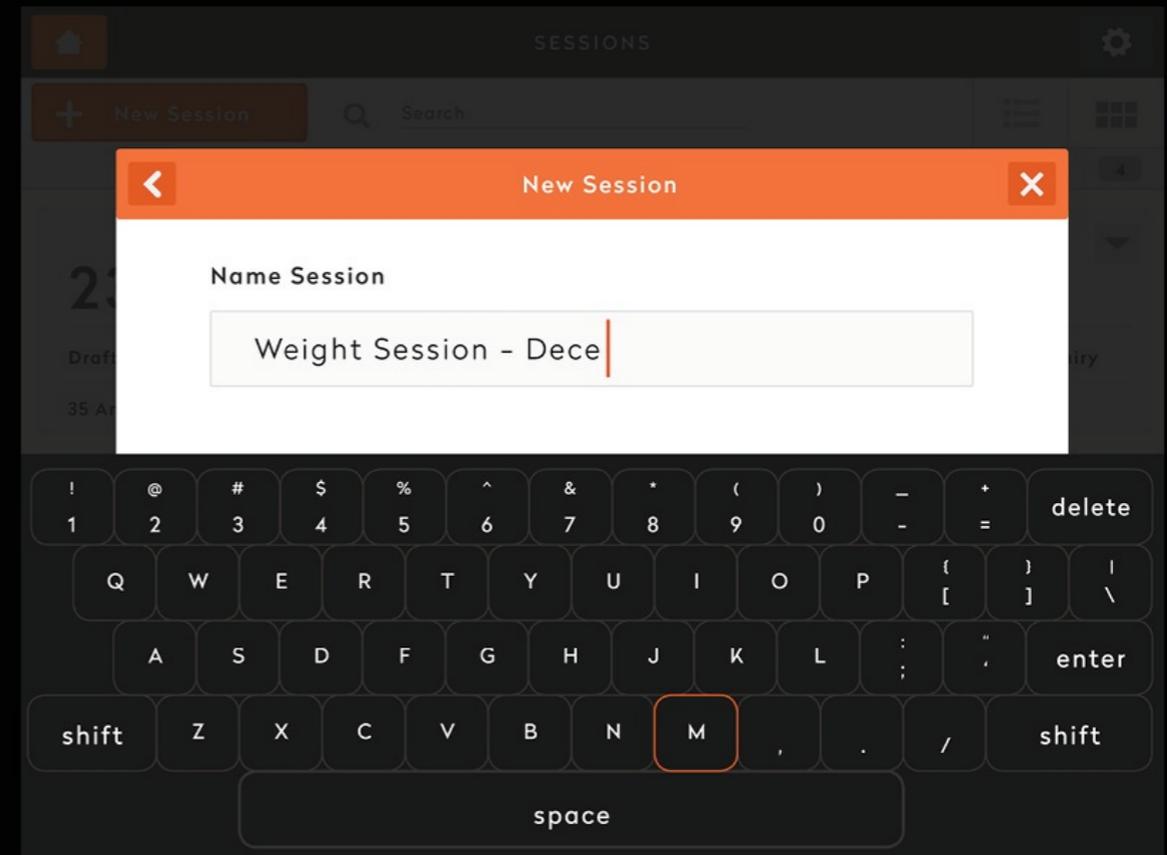
session - grid view

FIGURE 3.13 Creating a new session - by template I

creating a new session - by template



choosing a session template



naming/renaming session

FIGURE 3.14 Creating a new session - by template II

start session

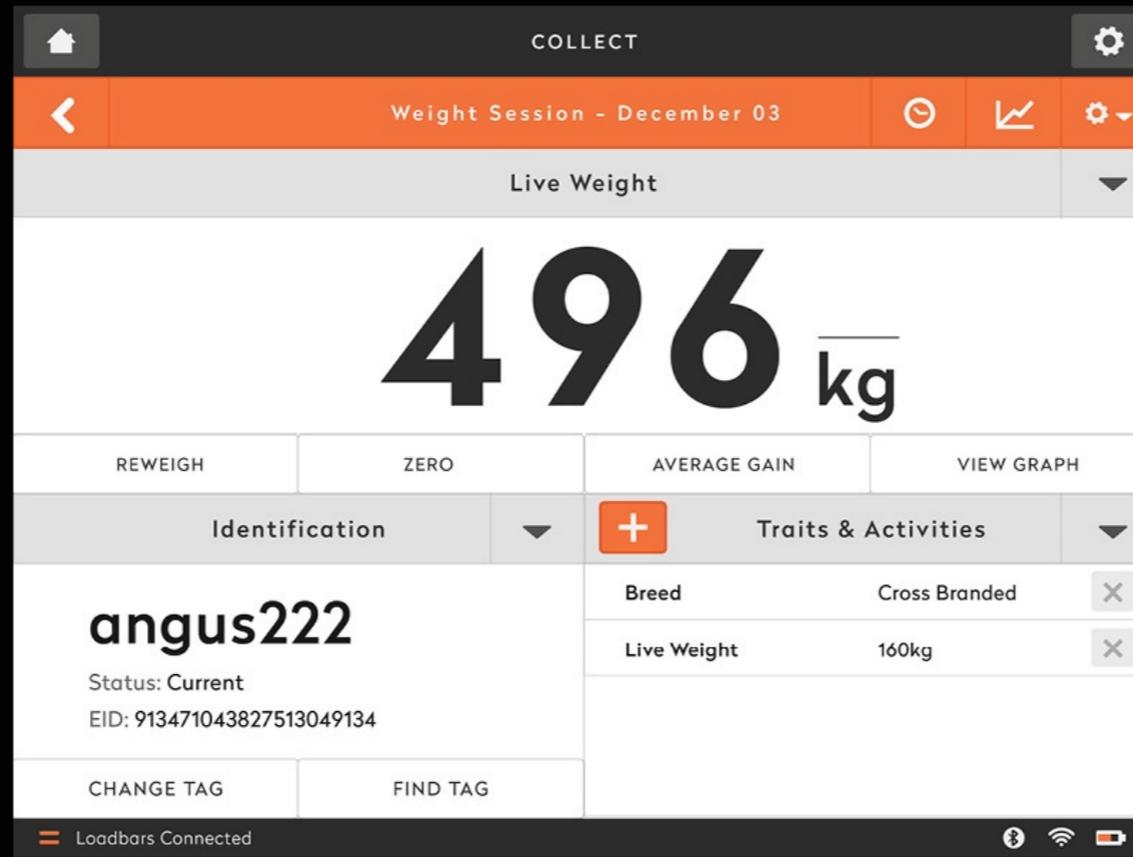
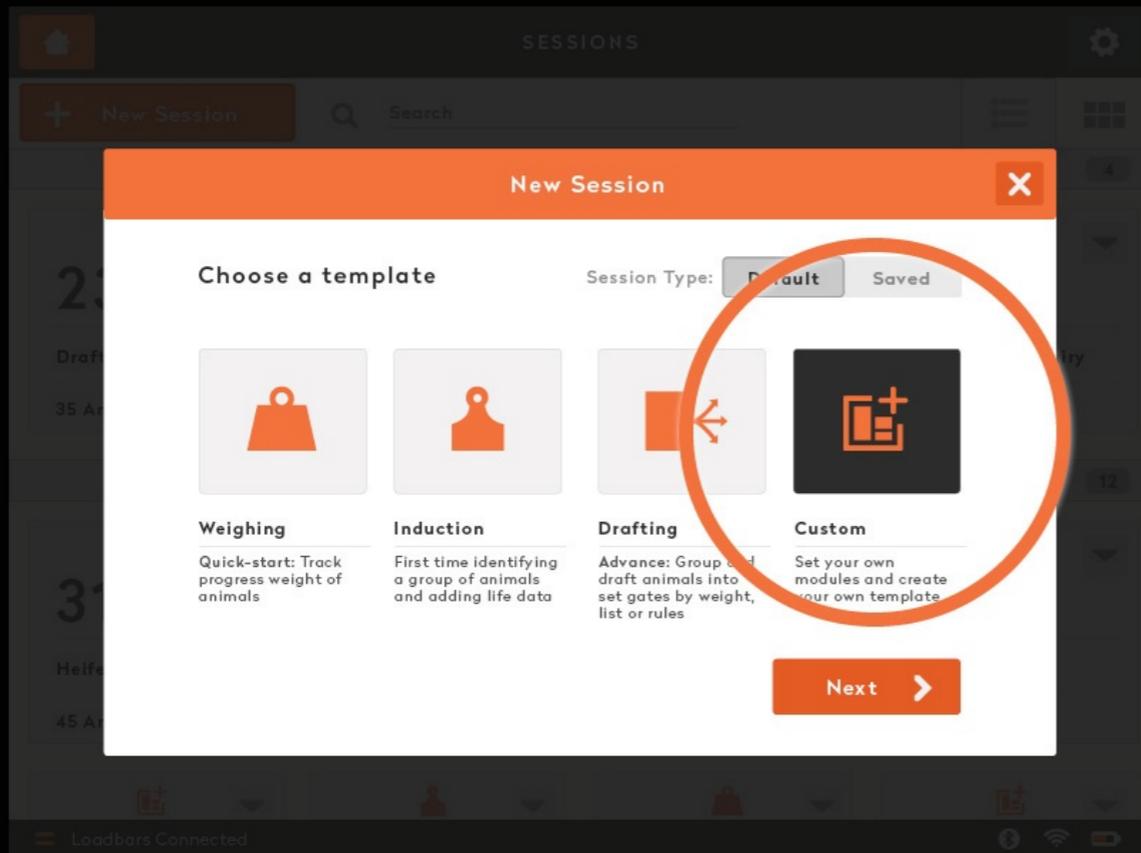
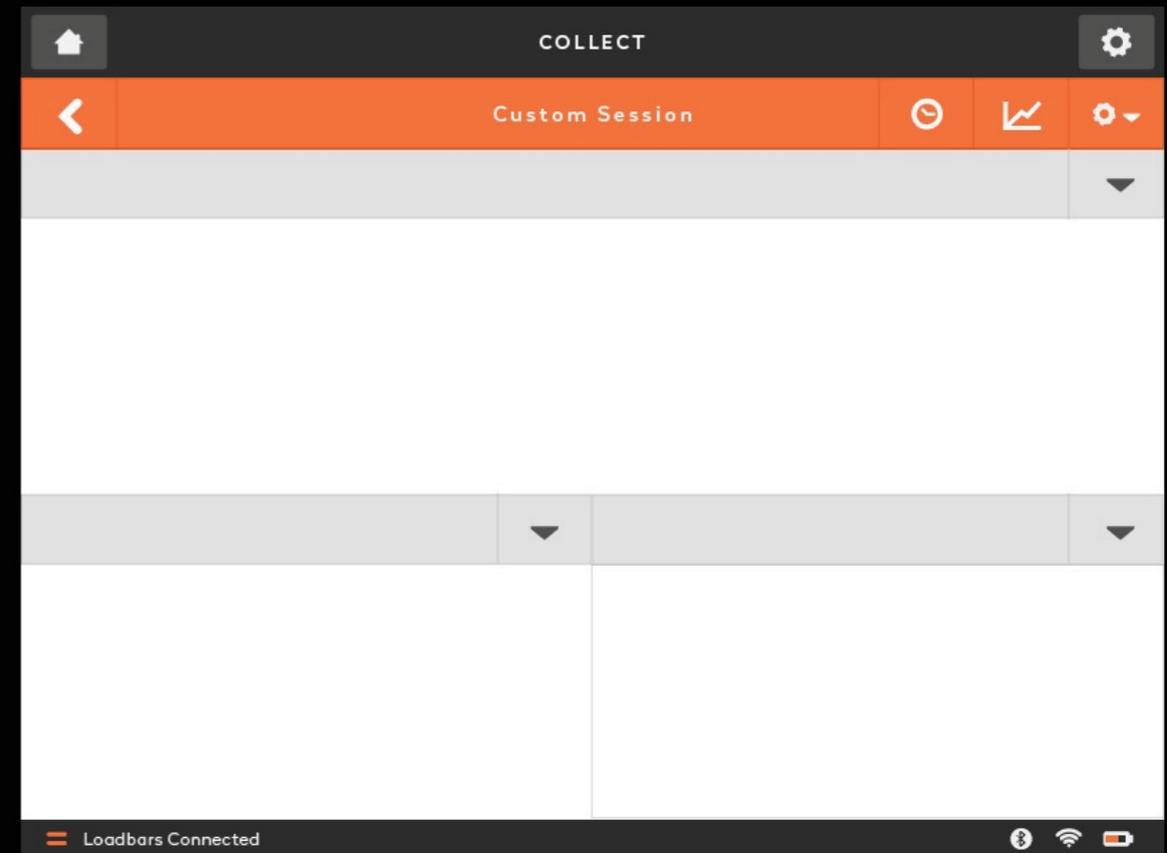


FIGURE 3.15 Start session screen

creating a new session – custom



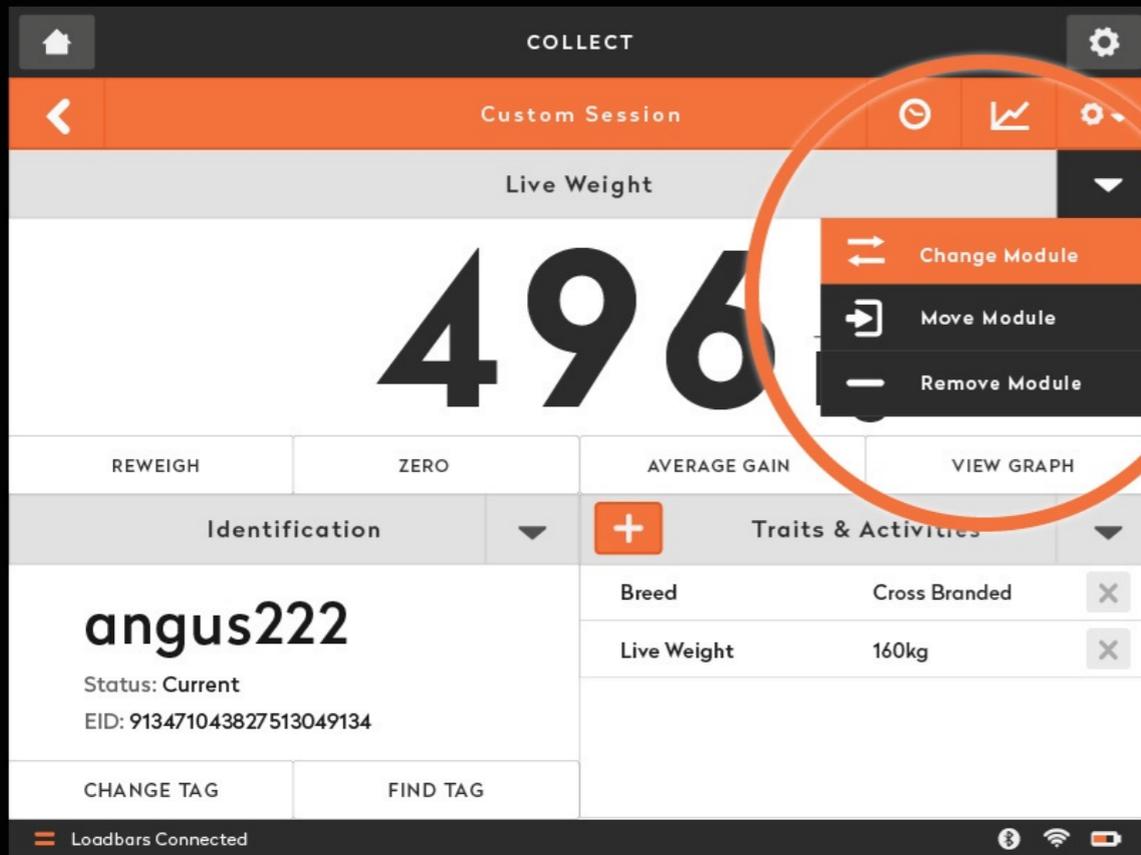
custom session template



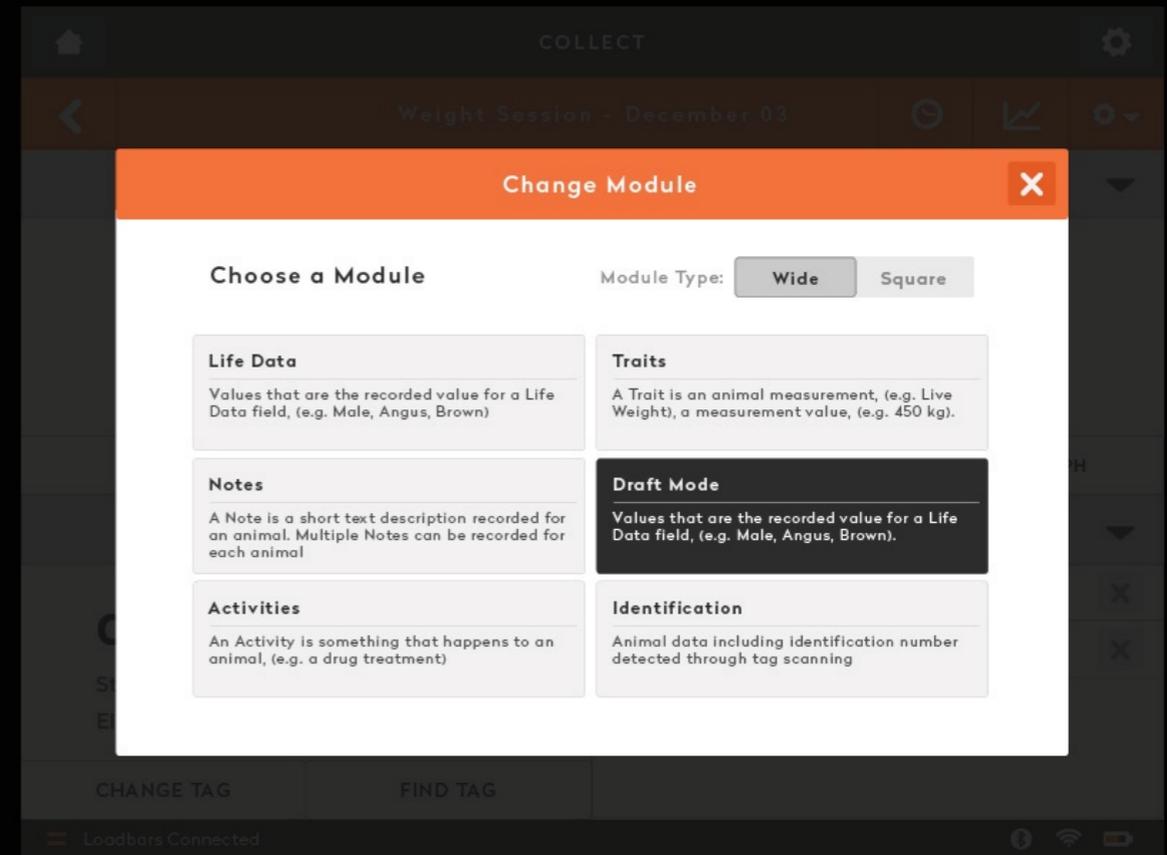
blank canvas

FIGURE 3.16 Creating a new session – custom I

creating a new session - custom



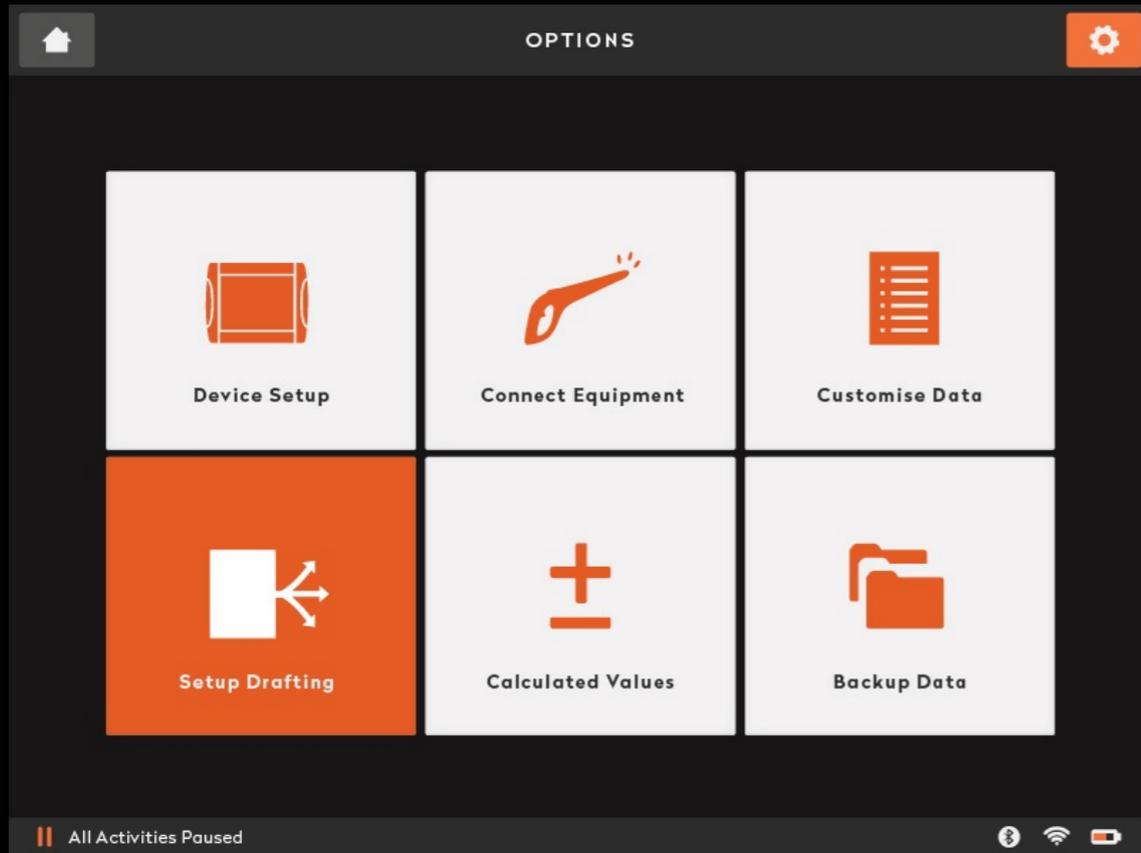
change, move, remove modules



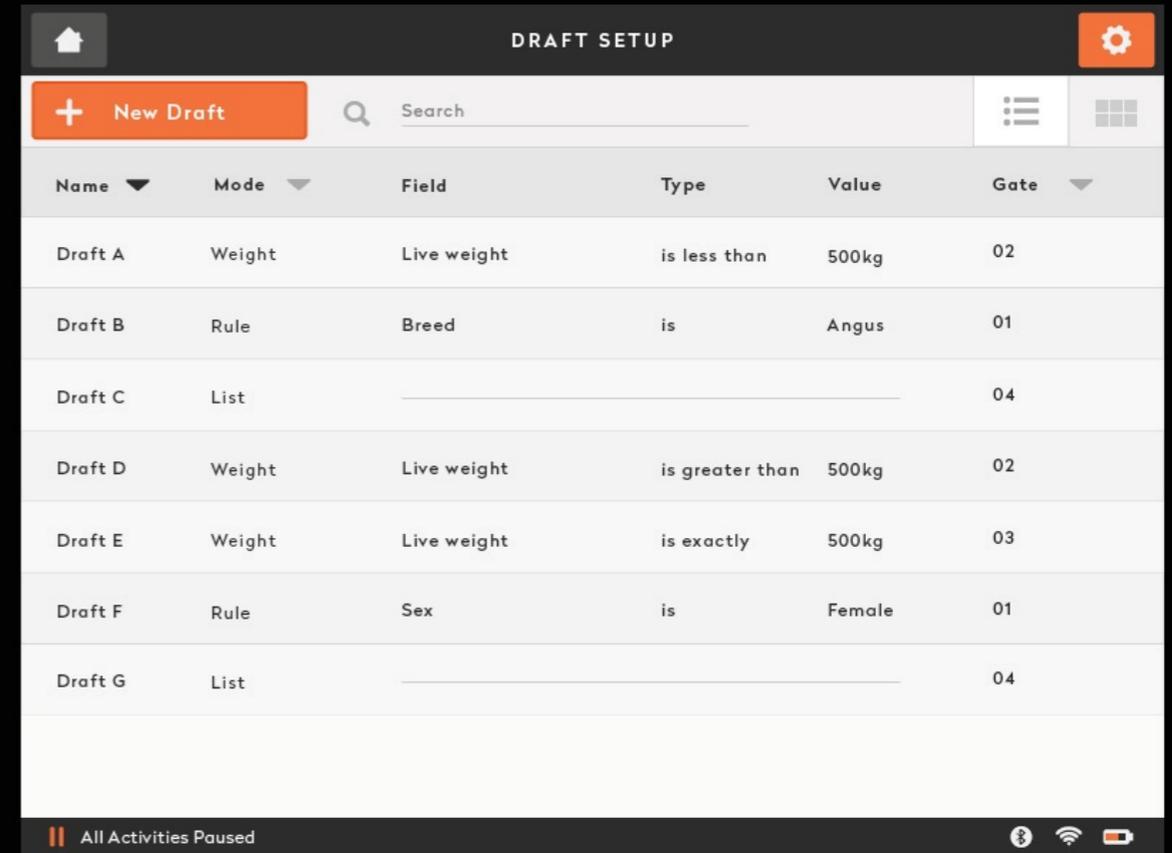
module options

FIGURE 3.17 Creating a new session - custom II

setting up drafting



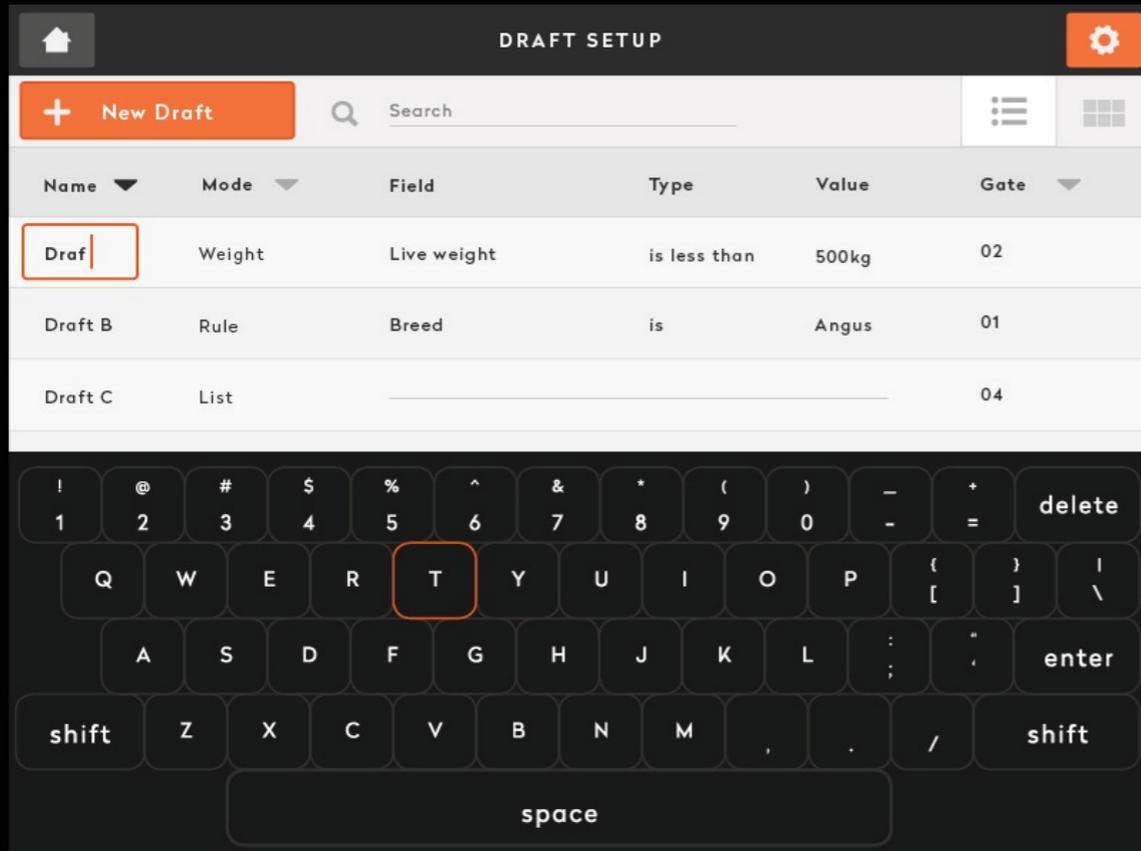
options menu - setup drafting



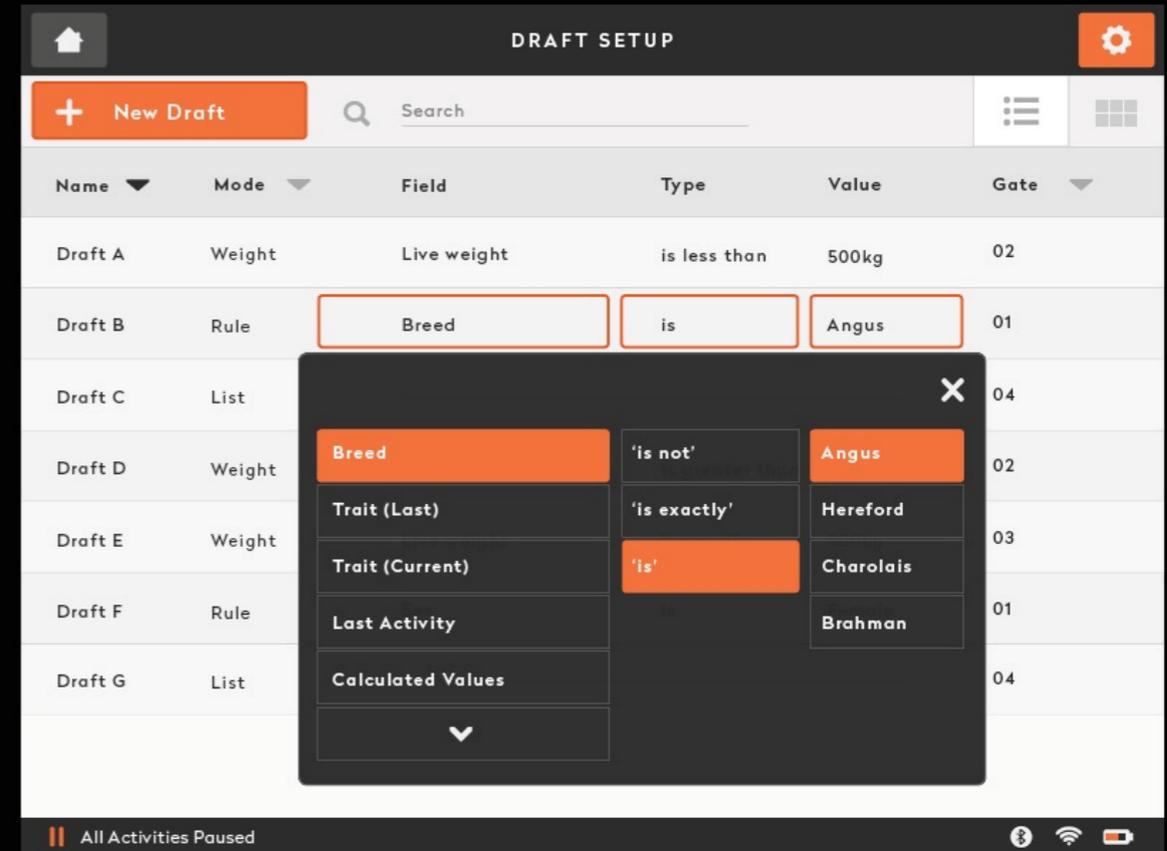
see all drafts

FIGURE 3.18 Setting up drafting I

setting up drafting



edit and input directly



setting up rules

FIGURE 3.19 Setting up drafting II

draft mode

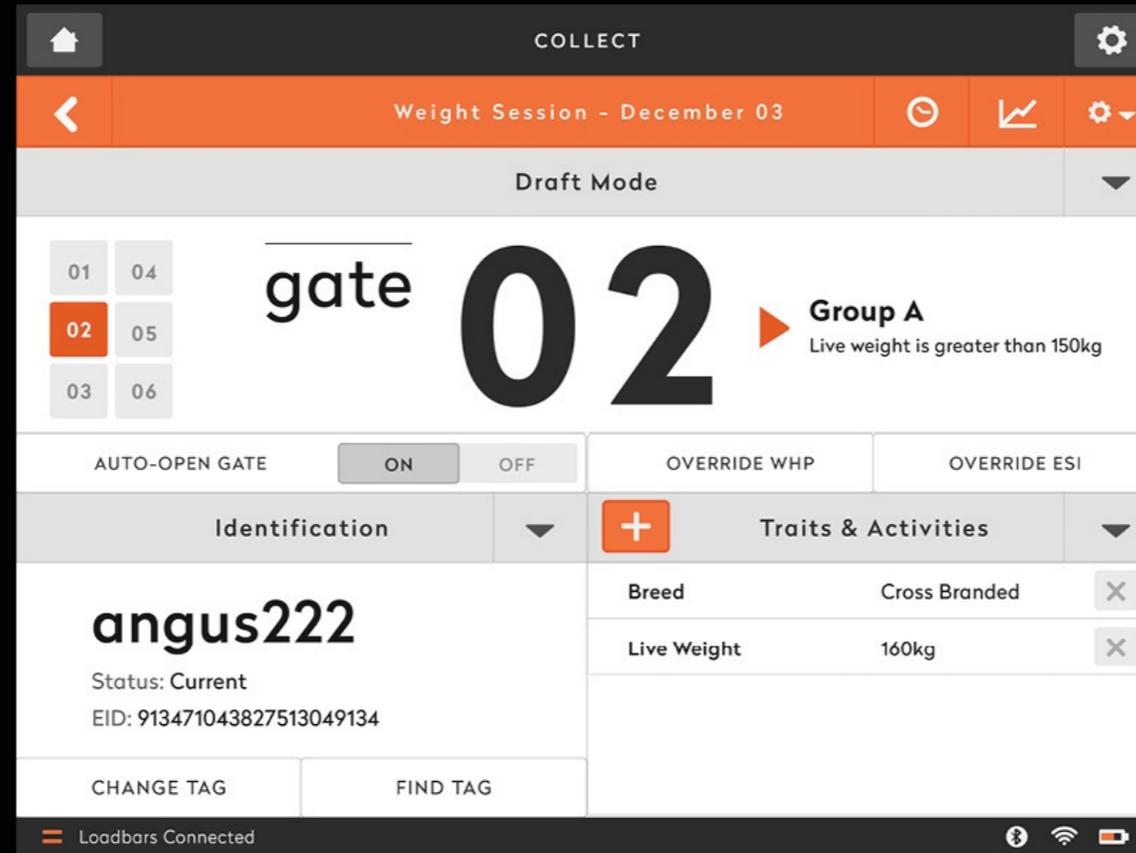


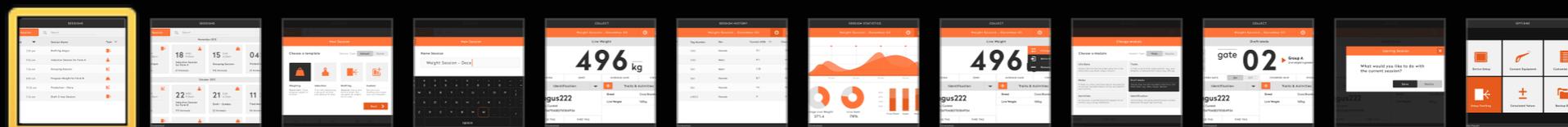
FIGURE 3.20 Draft mode

SESSIONS

+ New Session
🔍

Last Opened ▼	Session Name	Type ▼	Animals ▼
23 Nov 13 2:35 pm	Drafting Angus		35
18 Oct 13 9:55 am	Induction Session for Farm A		61
19 Aug 13 7:34 am	Grouping Session		132
12 Jun 13 8:55 am	Progress Weight for Farm B		87
10 Jun 13 10:35 am	Production - Dairy		16
22 May 13 7:34 am	Draft 3-way Session		3

☰
Loadbars Connected



CHAPTER 4

Conclusion

In this chapter we explore the following:

1. Conclusion to study
2. Ethics & Embargo
3. Appendices
4. Reference List

Conclusion to study

Technology transforms and changes so rapidly that designers, developers and all those involved in developing software and hardware must continually adapt to the ever-changing environment. The standards used for User Interface and User Experience design will constantly and iteratively be redefined and questioned as new devices and new ways of interactions are invented. Existing methods and processes will be tested and new ones will be exercised. It's important for designers to be able to follow these trends and continually question how we can craft beautiful experiences for the users of the products we design.

In my ideal world, design takes over — its role becomes more prominent in every aspect of business and is embedded from the very beginning and follows through right to the end of development. Design and technology together creates immersive and engaging interactions and experiences that transform the way we do our tasks, go about our daily lives and gets us excited about the next big innovation.

Gallagher's TSi is a state of the art device in the agriculture industry and as mobile, touch and post-pc devices become more common, there will be constant demand for the product to keep up with the technologies and features that currently exist. On a larger scale, this would include changes in infrastructure around rural areas and pushing for a wider spread in wireless networks and telecommunications.

We are designing for multi-faceted users and users themselves change, therefore it becomes crucial that transparency and 2-way communication between businesses and customers are practiced. Ongoing feedback from users and testing at early stages are key to improving products and allows room to build better relationships with customers. At the end of the day, the foundation and architecture of the design must demonstrate (that despite the rapid changes) the core principles of usability remains intact and users are put at the forefront.



Can a new graph
Gallagher's state o
'TSI' enhance the
farmers currently have

Final Examination (Feb 2014)

Ethics & Embargo



MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA

20 June 2013

Marjorie Roxas
3/81 Ghuznee Street
Te Aro
WELLINGTON 6011

Dear Joy

Re: "If it ain't broke, don't fix it"

Thank you for your Low Risk Notification which was received on 27 May 2013.

Your project has been recorded on the Low Risk Database which is reported in the Annual Report of the Massey University Human Ethics Committees.

The low risk notification for this project is valid for a maximum of three years.

Please notify me if situations subsequently occur which cause you to reconsider your initial ethical analysis that it is safe to proceed without approval by one of the University's Human Ethics Committees.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research."

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director (Research Ethics), telephone 06 350 5249, e-mail humanethics@massey.ac.nz."

Please note that if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to provide a full application to one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely

John G O'Neill (Professor)
Chair, Human Ethics Chairs' Committee and
Director (Research Ethics)

cc Assoc Prof Chris Bennewith
Institute of Communication Design
Wellington

Assoc Prof Claire Robinson, PVC
College of Creative Arts
Wellington

Massey University Human Ethics Committee
Accredited by the Health Research Council

Research Ethics Office

Massey University, Private Bag 11222, Palmerston North 4442, New Zealand T +64 6 350 5573 +64 6 350 5575 F +64 6 350 5622
E humanethics@massey.ac.nz animaethics@massey.ac.nz gtc@massey.ac.nz www.massey.ac.nz

Open Document (Dropbox): <https://db.tt/eUg6AY58>

Appendix D

MASSEY UNIVERSITY
Application for Approval of Request to Embargo a Thesis
(Pursuant to AC98/168 (Revised 2), Approved by Academic Board 17/02/99)

Name of Candidate: JOY ROXAS ID Number: 08540047
Degree: MASTER OF DESIGN Dept/Institute/School: COCA, MASSEY
Thesis title: REDEFINING 'STATE OF THE ART' - GRAPHICAL USER INTERFACE
REDESIGN OF GALLAGHER GROUP'S ANIMAL MANAGEMENT DEVICE (TS)
Name of Chief Supervisor: TONY PARKER Telephone Ext: 6259

As author of the above named thesis, I request that my thesis be embargoed from public access until (date) 28 FEBRUARY 2016 for the following reasons:

- Thesis contains commercially sensitive information.
 Thesis contains information which is personal or private and/or which was given on the basis that it not be disclosed.
 Immediate disclosure of thesis contents would not allow the author a reasonable opportunity to publish all or part of the thesis.
 Other (specify):

Please explain here why you think this request is justified:

GALLAGHER GROUP WAS DIRECT COMPETITORS THAT COULD SEE
THE DESIGN IDEAS AND CONCEPTS, CHANGES NEEDS TO BE SEEN
ON THE PRODUCT FIRST BEFORE BEING EXPOSED TO THE PUBLIC.

Signed (Candidate): [Signature] Date: 10/09/13

Endorsed (Chief Supervisor): [Signature] Date: 10/10/13

Approved/Not Approved (Representative of VC): [Signature] Date: 29/11/2013

Note: Copies of this form, once approved by the representative of the Vice-Chancellor, must be bound into every copy of the thesis.

Open Document (Dropbox): <https://db.tt/G6q4KqFD>

Appendices

Appendix 1 - List of Images

Figure 1.1. Gallagher. (2011). *TSi weighing and animal identification system* [Digital visualisation] Retrieved from <http://www.gallagher.co.nz/tsi/system.aspx>.

Figure 2.1. Roxas, J. (2013). *Project Workflow: UI and UX* [Digital visualisation].

Figure 2.2. Roxas, J. (2013). *Methods & Processes used* [Digital visualisation].

Figure 2.3. Tru-Test. (2013). *WOW!™ XR3000* [Photograph]. Retrieved from <http://livestock.tru-test.com/en-nz/indicators/wow-xr3000>

Figure 2.4. Tru-Test. (2013). *EziWeigh7 Bluetooth* [Photograph]. Retrieved from <http://livestock.tru-test.com/en-nz/indicators/eziweigh7-bluetooth>

Figure 2.5. (n.d.). *Alan Kay's Dynabook* [Photograph]. Retrieved from <http://history-computer.com/ModernComputer/Personal/Dynabook.html>

Figure 3.1. Roxas, J. (2013). *Structure of nodes* [Digital visualisation].

Figure 3.2. Roxas, J. (2013). *Final review notes (Gallagher)* [Photograph].

Figure 3.3. Roxas, J. (2013). *Top Navigation* [Digital visualisation].

Figure 3.4. Roxas, J. (2013). *Sub-navigation* [Digital visualisation].

Figure 3.5. Roxas, J. (2013). *Bottom Navigation* [Digital visualisation].

Figure 3.6. Roxas, J. (2013). *Graphical Icons - universal* [Digital visualisation].

Figure 3.7. Roxas, J. (2013). *Graphical Icons - custom* [Digital visualisation].

Figure 3.8. Roxas, J. (2013). *Grid structure* [Digital visualisation].

Figure 3.9. Roxas, J. (2013). *Visual Data* [Digital visualisation].

Figure 3.10. Roxas, J. (2013). *Keyboard Input* [Digital visualisation].

Figure 3.11. Roxas, J. (2013). *Colours* [Digital visualisation].

Figure 3.12. Roxas, J. (2013). *Typogarchy* [Digital visualisation].

Figure 3.13. Roxas, J. (2013). *Creating a new session - by template I* [Digital visualisation].

Figure 3.14. Roxas, J. (2013). *Creating a new session - by template II* [Digital visualisation].

Figure 3.15. Roxas, J. (2013). *Start session* [Digital visualisation].

Figure 3.16. Roxas, J. (2013). *Creating a new session - custom I* [Digital visualisation].

Figure 3.17. Roxas, J. (2013). *Creating a new session - custom II* [Digital visualisation].

Figure 3.18. Roxas, J. (2013). *Setting up drafting I* [Digital visualisation].

Figure 3.19. Roxas, J. (2013). *Setting up drafting II* [Digital visualisation].

Figure 3.20. Roxas, J. (2013). *Draft mode* [Digital visualisation].

Appendix 2 - List of Galleries

Gallery 1.1. Gallagher. (2013). *TSi existing interface* [Photographs]. Retrieved from <http://www.gallagher.co.nz/tsi/>

Gallery 2.1. Roxas, J. (2013). *Farm visits with existing customers* [Photographs].

Gallery 2.2. Roxas, J. (2013). *Matrix Workshop with Gallagher team* [Photographs].

Gallery 2.3. *XEROX Alto and WIMP interface*

- Image 1. (1983). *Apple Lisa*. Retrieved from <http://www.wired.com/wiredenterprise/2013/10/tech-time-warp-apple-lisa/>
- Image 2. (n.d.). *Alto interface showcased a clear navigation system* [Photograph]. Retrieved from <http://toastytech.com/guis/gv.html>
- Image 3. Harslem, E., Irby, C. Kimball, R., Smith, D. & Verplank, B. (1982). *The XEROX Alto personal computer*. Retrieved from <http://www.digibarn.com/collections/software/xerox-star/>

Gallery 2.4. Apple (2014). *iPad Generations*. Retrieved from <http://www.apple.com/>

Gallery 2.5. *Skeuomorphic Design*

- Image 1. Vredenburg, K. (2013). *Great Design Requires Skeuomorphic AND Flat Approaches*. Retrieved from <http://karelvredenburg.com/home/2013/3/23/great-design-requires-skeuomorphic-and-flat-approaches.html>

- Image 2. Abraham, T. (2010). *Usability Heuristics*. Retrieved from <http://www.tingzabraham.com/Information-Architecture/usability/usability-heuristics-part-2-match-between-system-and-the-real-world/>
- Image 3. Allen, J. (2012). *Paper by FiftyThree*. Retrieved from <http://www.148apps.com/reviews/paper-fiftythree-review/>
- Image 4. Eriksson, J. (n.d.). *76-Synthesizer-Concept*. Retrieved from <http://cargocollective.com/jonaseriksson/76-Synthesizer-Concept>

Gallery 2.6. Apple. (2014). *iOS6 to iOS7. iOS 7 UI Transition Guide*. Retrieved from https://developer.apple.com/library/ios/documentation/userexperience/conceptual/transitionguide/AppearanceCustomization.html#//apple_ref/doc/uid/TP40013174-CH15-SW1

Gallery 2.7. *Google Products - UI*

- Image 1. Shankland, S. (2013). *Gmail app interface*. Retrieved from http://news.cnet.com/8301-1035_3-57588211-94/is-the-new-gmail-app-interface-dumb-or-am-i-a-freak/
- Image 2. Ravenscraft, E. (2013). *Google search updated*. Retrieved from <http://www.androidpolice.com/2012/10/29/google-search-updated-brings-new-google-now-cards-and-voice-actions-yes-you-can-set-calendar-events/>
- Image 3. Zibreg, C. (2013). *Google rolling out new-look Gmail inbox with categories and tabbed UI*. Retrieved from <http://www.idownloadblog.com/2013/05/29/gmail-web-app-categories/>

Gallery 2.8. XERO. (2013). *XERO Software - UI* [Digital visualisations]. Retrieved from <http://www.xero.com/nz/>

Gallery 3.1. Gallagher. (2011). *TSi - Main Screens* [Digital visualisations]. Retrieved from TSi.

Gallery 3.2. Roxas, J. (2013). *TSi: Existing structure* [Digital visualisations].

Gallery 3.3. Roxas, J. (2013). *Mapping workshops* [Photographs].

Gallery 3.4. Roxas, J. (2013). *First concept ideas* [Digital visualisations].

Gallery 3.5. Roxas, J. (2013). *UI Moodboards* [Digital visualisations].

Gallery 3.6. Roxas, J. (2013). *Creating a custom session* [Digital visualisations].

Gallery 3.7. Roxas, J. (2013). *Session by Template - 'Progress Weight'* [Digital visualisations].

Gallery 3.8. Roxas, J. (2013). *Starting a session by template - 'Progress Weight'* [Digital visualisations].

Gallery 3.9. Roxas, J. (2013). *Setting up drafting* [Digital visualisations].

Appendix 3 - List of Video Material

Video 1.1. Gallagher. (2011). *TSi and the Gallagher Sheep Auto Drafter* [Video file]. Retrieved from <http://www.gallagher.co.nz/tsi/in-action.aspx>

Video 1.2. Gallagher. (2013). *Gallagher Corporate Video* [Video file]. Retrieved from <http://www.youtube.com/watch?v=I5ZjyGrqqt4>

Video 2.1. Englebart, D. (1968). *The first mouse* [Video file]. Retrieved from <http://www.youtube.com/watch?v=1MPJZ6M52dl>

Video 2.2. Jobs, S. (2007). *Steve Jobs introduces the first iPhone* [Video file]. Retrieved from http://www.youtube.com/watch?v=wGoM_wVrwng

Video 2.3. Apple. (2014). *Apple introduces iOS 7* [Video file]. Retrieved from <http://www.apple.com/nz/ios/>

Video 2.4. Microsoft. (2013). *Windows 8 Viral Video Ads* [Video file]. Retrieved from <http://www.youtube.com/watch?v=ckEGxTeEOtE>

Video 2.5. Xero. (2013). *Go mobile with Xero touch* [Video file]. Retrieved from <http://www.xero.com/nz/>

Appendix 4 - List of Interactive Material

Interactive 3.1. Gallagher. (2011). *Critical Analysis of TSi's existing UI - Main screen (YARD - Collect screen)* [Digital visualisation]. Retrieved from TSi.

Interactive 3.2. Roxas, J. (2013). *Version 1 - Introducing visual elements* [Digital visualisation].

Interactive 3.3. Roxas, J. (2013). *Modular Grids* [Digital visualisation].

Interactive 3.4. Roxas, J. (2013). *Templates* [Digital visualisation].

Interactive 3.5. Roxas, J. (2013). *Settings Menu* [Digital visualisation].

Interactive 3.6. Roxas, J. (2013). *Version 2 - Adding modules to allow for customisation* [Digital visualisation].

Interactive 3.7. Roxas, J. (2013). *Version 3 - New navigation system, darker interface* [Digital visualisation].

Interactive 3.8. Roxas, J. (2013). *Version 4 - Icons and Identifying common user scenarios* [Digital visualisation].

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