AMPC

AUSTRALIAN MEAT PROCESSOR CORPORATION

Remote Operations (Gamification)

AMPC Project 2021-1134 Remote Operations Gamification – Stage 1

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1.0 Executive Summary

Australian Meat Processing Corporation (AMPC) (and the industry) have an innovation vision, and support R&D program, to eliminate all Work Health and Safety (WHS) incidents from processing operations. Where possible dangerous tasks will be semi or fully automated. Where automation is not currently viable (either due to technology limitations or ROI), semi-automated/remote solutions will be developed that will remove the operator from dangerous tools and implements. Where semi-automated solutions are not viable then the remaining hands-on tools will be made as safe as possible (i.e. BladeStop and Guardian).

AMPC has created a 5 stage 'Remote operations (operators in control rooms of off-site via gamification)' roadmap (refer 2.1 ToaP image 1) to deliver the following primary goal of: at the conclusion of all development stages Australian beef processing facilities have operational staff undertaking scribing activities without being adjacent to the carcase and holding onto the scribe cutting saw; and secondary goals of the following: a desired achievement in these areas: (1) develop an on-line training tool for current and pending processor operational staff, (2) develop a public (end of Stage 2) offering that enable future possible employees to obtain a different understanding of processing roles within beef plants, (3) provide an alternative way to renumerate staff based on cutline placement accuracy and speed, (4) provide a wider pool of staff suitable for the task, and or, a role for light duty staff, and or, staff with less mobility and (5) evaluate if the task can be performed remote from site.

This project is focused on Stage 1 development scope only (refer 2.1 ToaP image 1). The final output was to create a beef scribing minimum viable product (MVP) experience, with the aim of not only engaging and training industry members but non-industry 'gamers' alike to immerse themselves in and almost forget that they are undertaking a beef scribing activity and focus on beating both their own accuracy/time scores and that of others, globally, who have registered to play the game.

The following 3 key high-level outputs for this stage 1 of the project was defined and used as milestone tracking:

1. Develop a gaming interface for beef scribing and demonstrate the system operational to AMPC staff.
2. Develop a 'gamer' option for the interface that enables competitions to be undertaken within the interface.
3. Recommendations on Stage 2 developments and improvements (including potential investment requirements)

A Wunderman Thompson 'double diamond' design thinking framework was applied as a project methodology, it covers 4 phases of human-led design (discover, define, develop, and deliver). Each phase was critical in informing the next and allowed Wunderman Thompson to take clear, strategic steps in the concepting and decision-making process.

In the 'discovery' and 'define' stage, a rigorous strategic process was applied to: 1.extract all the barriers that may hold us back from delivering a solution to fulfil our goals and objectives; 2. explore and align on what interactive solutions inspire everyone to deliver our goals; and 3. Integrating and reviewing many different perspectives and approaches to ensure AMPC and extended stakeholders have a good mix of partners and solutions for testing with target audiences (refer to Appendix 8.2-8.5 for full strategic process output).

At the end of the 'define' phase, AMPC identified 'large touchscreens' as the preferred and focus technology for Wunderman Thompson's concept development. Beyond assessing the total project objectives, Wunderman Thompson created a digital experience concept criteria (refer to Appendix 8.1) based on the stakeholders' perspectives and what Wunderman Thompson deemed as best practice, this was used throughout the project milestones to assess the concepts and User Experience (UX) and User Interface (UI) of the game development.

In the 'develop' phase, the 'Aspirational' criteria was highlighted as requiring additional investment to meet the expected highly interactive gamification concept, compared to other industry gaming experiences. Wunderman Thompson embarked on a journey to scope, ideate and present alternative cost options to showcase ideas that could deliver the highest aspiration gamification options this included: slow motion and high resolution 8x quality Beef Carcass video capturing, live-streaming footage of carcasses on operation floor, premium gamification effects (responsive and integrated pop-ups and sound effects), and touchscreen hardware options (refer to Appendix 8.6).

In the 'deliver' phase, the 'Beef Scriber Game' MVP experience for user-testing was built. A game that is focused on a step-by-step educational journey on beef scribing, particular cuts and gamifying the action through relevant scoring based on accuracy and speed. The creation of the MVP was based on a specific budget so designs, game logic, and integration is based on that investment level. Recommendations to deliver higher aspirational bells and whistle to ensure a highly interactive and polished gamification output required additional investment and are recommended for the next MVP iteration. The final MVP experience has delivered a structured and interactive game logic that pushes the user to conquer game levels from easy to highly complex with the time restrictions. Due to the complex nature of the Beef Scribing operation additional features such as hints and pop-up tips have been integrated into the game to ensure the user stays engaged and continues gaming and learning.

The system and experience used an optimized technology stack and scalable architecture so that it runs efficiently; ensuring new features, improvements and enhancements can be added to the future releases easily and effectively. After a 3-month User Acceptance Testing (UAT) approach, multiple improvements were applied to ensure the experience delivered was one that would take the user on a step by step journey of understanding and enabled them to jump straight into the game to interact, play and engage in their own way.

In conclusion, a full gaming MVP has been developed and optimized through the testing process with by WT and AMPC. The next requirement is for the MVP to tested with the end-users with a mix of key audiences, devices, environments, and incentives. This should be done via 1:1 testing and through the analysis of the in-built game Content Management System (CMS) platform that tracks the human behaviour in-game.

2.0 Introduction

AMPC (and the industry) have an innovation vision, and support R&D program, to eliminate all WHS incidents from processing operations. Where possible dangerous tasks will be semi or fully automated. Where automation is not currently viable (either due to technology limitations or ROI), semi-automated/remote solutions will be developed that will remove the operator from dangerous tools and implements. Where semi-automated solutions are not viable then the remaining hands-on tools will be made as safe as possible (i.e. BladeStop and Guardian).

Gamification was identified as a potential way to engage, educate, train and attract target audiences to the industry and specifically Beef Scribing. This project scope was to focus on how gamification could be used to create a digital experience that would deliver to set goals and objectives as detailed in this report.

2.1 Project Description

AMPC's 2020-2025 Strategic Plan identifies both within the Advance Manufacturing and People and Culture programs that:

i)   Removing staff from dangerous operations, via Hands-Off processing (Adv. Mft.)
ii)   Carcase Primal Profitability Optimisation, via accurate processing (Adv. Mft.)
iii)   Digitisation, via acquiring product information and leveraging data insights (Adv. Mft.)
iv)   Attraction, via demonstration and developing a wide range of operations (People & Culture)
v)   Retention, via improving working conditions and making tasks exciting (People & Culture)
vi)   Development, via developing tasks that require higher skills and intellect – operational & technical (People & Culture)
vii)   Safety and Wellbeing, via reducing the high-risk nature of processing operations (People & Culture), are all foci of AMPC, and that this one innovation theme will aim to make a significant impact upon all seven.

The key goal for this project's innovation theme is a successful development to enable operational staff to undertake beef scribing without having to hold onto the beef scribing saw, plus deliver to any other goals with the context of the above seven (7) strategic plan touch points.

A final ideal outcome for Stage 1 & 2 (refer to ToaP Image 1) nt is an engaging game that is compelling for industry and non-industry 'gamers' alike to immerse themselves in a beef scribing activity and focus on beating both their own accuracy/time scores and that of others, globally, who have registered to play the game.

Accuracy and Time

Although not essential for Stage 1, due to consideration of the secondary goals, emphasis has been placed on evaluating a successful outcome against the primary goal. For the primary goal to be realised, timely and accurate cut locations need to be established for remote operations to be realised.

Taking too long to undertake the cut location placement in practice will require multiple operational staff to be placing the cut marks on alternative carcasses. Although this is not a deal breaker it begins to introduce additional labour costs (OPEX) and interface costs (CAPEX) to the solution. It is expected that an initial target of placing five cut lines on a carcase within 20 seconds is a viable industry average processing speed target for stage 1.

Placing the cut lines in the wrong location can have disastrous results of obtaining maximum possible value from the carcase. It is excepted, but still to be refined, that an accuracy of +/- 10 mm would be consistently more accurate than current operational staff. Hence any interface developed must enable a 'gamer' to place a cut line with this level of accuracy.

Innovation Competition

AMPC is anticipating operating an innovation competition with this (and other) innovation themes. Following a widely practiced approach of other innovation investors (such as DARPA), AMPC where possible will support several providers with unique approaches during Stage 1 (and 2).

Development Path (and adoption / path to market)

To provide guidance in the AMPC proposed stages of development for this area of innovation, AMPC has developed the following Theme on a Page (ToaP) (refer to image 1) for the total project overview.

Image 1: Theme on a Page (ToaP)
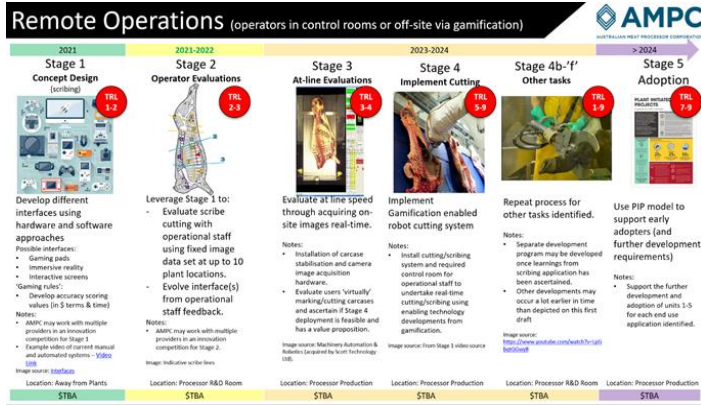
Additional information can be found at these two links:

1. https://www.linkedin.com/pulse/gamification-increase-meat-processing-efficiency-attract-starling/?trackingId=%2FQXJ%2Fsk%2BS9%2BnaJYtkjt5Fw%3D%3D
2. https://www.linkedin.com/pulse/gamification-increase-meat-processing-efficiency-attract-starling-1c/?trackingId=2hsUl%2F1yRiePVkdO9ETomA%3D%3D

2.2   Purpose & Focus

This project focuses on further developing solutions, and approaches, for semi-automated / remote solutions, with the first task being evaluated that of beef scribing. The Innovation Theme on a Page (see above in 2.1, Image 1) was developed for this program of work and shows both the proposed development stages of the area as well as implementing an innovation competition where more than one provider may be supported in the early stages to evaluate different approaches to the primary goal and secondary goals of Remote Operations via Gamification.

3.0 Project Objectives

3.1 Primary Goal

At the conclusion of all development stages Australian beef processing facilities have operational staff undertaking scribing activities without being adjacent to the carcase and holding onto the scribe cutting saw. Ideally operators are based in a control room.

3.2 Secondary Goals

Other focus areas for desired achievement include: (1) develop an on-line training tool for current and pending processor operational staff, (2) develop a public (end of Stage 2) offering that enable future possible employees to obtain a different understanding of processing roles within beef plants, (3) provide an alternative way to renumerate staff based on cutline placement accuracy and speed, (4) provide a wider pool of staff suitable for the task, and or, a role for light duty staff, and or, staff with less mobility and (5) evaluate if the task can be performed remote from site.

To evaluate the current offering of exo-skeleton solution and ascertain:

1. Develop a gaming interface for beef scribing and demonstrate the system operational to AMPC staff.
2. Develop a 'gamer' option for the interface in Objective 1 that enables competitions to be undertaken within the interface.
3. Recommendations on Stage 2 developments, budget, third party inputs, expected interface using resulting accuracy and carcase marking cycle times.

4.0 Methodology

At Wunderman Thompson we utilise a 'double diamond' design thinking framework which covers 4 phases of human-led design (discover, define, develop, and deliver). Each phase is critical in informing the next and allows us to take clear, strategic steps in our concepting and decision making process. It draws on an array of proven tools and methodologies to achieve the best outcome for each project we undertake – our methods and tools have been honed across thousands of experience transformation projects globally.

For AMPC, the double diamond framework allowed us to dive deeper to uncover the needs, barriers and considerations of the operators and industry businesses. This all helps to inform and create a seamless and compelling online game experience that will ensure to train, engage and enable beef scribing.

Double Diamond Experience Concept Roadmap
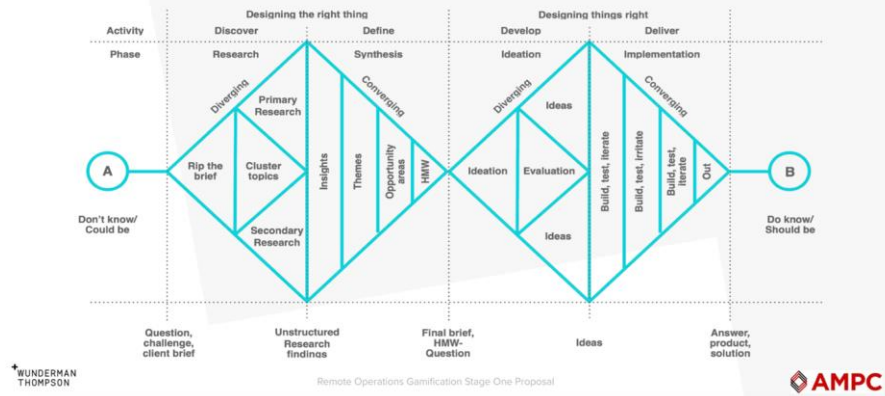
DISCOVER

Aim

- To gain an understanding of the beef scribing process, its operators, industry and the problems and challenges we need to solve for.

Activities

- Stakeholder kick-off
- Immersion + Understanding:
  - review all relevant AMPC documents including: research, reports, strategy documents, previous R&D work, etc
  - conduct stakeholder and relevant audience Q&A/interview sessions
  - Network, desktop, case study and industry analysis
  - Target audience segment understanding (current and potential employees)

Outcome

- Documentation of key audience insights (operators, recruits etc), findings and initial uncovered implications for processors, industry and recruitment/HR.
- Go/No decision will be founded on whether there is adequate intelligence and data to inform a successful define stage.

DEFINE

Aim

- Leverage key insights from phase one to identify strategic areas of opportunity that will define our focus for our remote operations gamification concept exploration.

Activities
- Synthesising the information from Discovery into problem or opportunity statements. Focus on ensuring all the knowledge we gained in the previous phase is distilled into actionable insights.
- Insights and gamification/ideation strategy creation
- Technology exploration / analysis and recommendations
- Key stakeholder alignment session (if required)
- CX/UX/UI journey mapping

Outcome
- Documentation and creation of strategies, approaches, technologies, journeys and rationale based on operational processes and target recruits insights gathered in phase 1: Discovery.
- Go/No decision will be based on strength of strategic solutions, confidence in intelligence gained to commence concept exploration and likely user impact.

DEVELOP

Aim
- To create as many ideas as possible to enable out-of-the-box thinking that will deliver to our primary overarching goal and relevant project objectives
- Develop a low fidelity prototype to review, test + learn approach and align on to move into creation of MVP

Activities
- Take the problem or opportunity statements from the Define phase and ideate on potential solutions for the problem.
- Ideation workshop (review of 2-3 high level concepts with key stakeholders)
- Grouping and refining of concept ideas
- Creation of low-fidelity prototypes to test
- Tech feasibility and business value prioritisation
- Define the experience and key user flows of product
- Define the visual language and identity, and any relevant comms

Outcomes
- Concept and prototype preferred engagement/training tool based on learnings from above activities
- Go/No decision will be based on feedback from prototype testing, qualitative feedback on UX and quantitative data on accuracy and efficacy.

DELIVER

Aim

- Creation and ready to launch MVP (Most Viable Product) based on low fidelity prototype created in DEVELOP phase for user-testing

Activities

- Revise and finalise the experience and key user flows of product
- Revise and finalise the visual language and identity, and any relevant comms
- Constant testing and learning with key stakeholders (ideally users, however, this was not possible) to make sure that the solution we develop is still the best and most effective one.

Outcomes

- A launched and tested Most Viable Product (MVP) game
- Documentation of learnings from skateholder testing, recommendations on future versions updates and approach for user-testing launch; Includes completion of required AMPC milestone reporting
- Go/No decision based on user feedback, ease of implementation, operating feedback.

Commented [JT1]: State what MVP is furtherup in the document

5.0 Project Outcomes

5.1 Beef Scriber MVP Considerations applied to deliver experience

- MVP / digital activation development focus is to be executed on large touch-screen hardware with optimal resolution (as selected by AMPC) to create as close to reality experience of interacting with a beef carcass as possible.
- The digital activation must be able to be installed at various plant locations and after initial installation present as a "plug and play' experience, with minimal steps to perform a reset, and simple troubleshooting instructions.
- After initial installation the activation must be able to perform the core functionality on a local computer without a total reliance on internet connection. Internet connection is still required for user profile storage and retrieval, leader board display, to refresh content and update software.
- We believe a solution built with open-source web application technologies also provides for a plain path for continuous refinement, testing, learning and optimisation. Additionally, this allows for a secondary audience to experience the game using consumer hardware such as iPad, touchscreen laptops and desktops with a mouse (which due to Covid grew in importance).

Commented [JT2]:

Commented [JT3]: What are these?

Commented [GB4]: @Joe Guario Does it make sense to introduce this here?

Commented [JG5R4]: @Georgia
Sure, I'll reword a little

5.2 Beef Scriber MVP Game Built

Interface data set

The interface has been developed using a set of 20 two-dimensional beef side images taken from a processing plant and created into a moving series on the operation line.

User interface (main interaction)

An introduction and tutorial level has been introduced for training and education on the specific cuts, accuracy, and timing requirements and how to interact with the game (See Image 1 and 2 for references). The focus of the introduction and training tutorial level interface is to enable an operator to practice 'placing the scribe lines' on different carcase images, and the system highlight how accurate each scribe location was (based on the AMPC marked up carcase scribe locations).

Images 1: Introduction interface examples below:
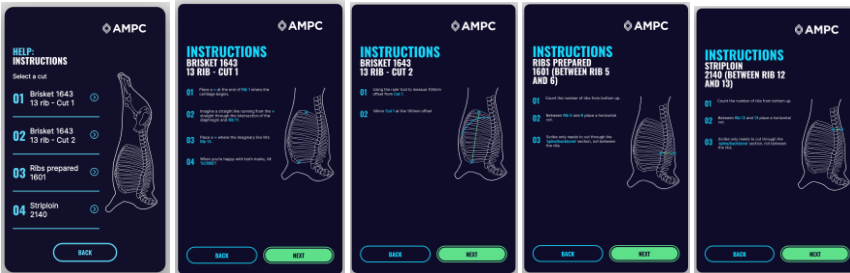
Images 2: Tutorial interface examples below:

Gaming Mode

The gaming component was introduced to motivate and inspire users to return to play rover and over again, whilst also giving us a way to track and document results of the varying individuals. The levels go from beginner to intermediate to professional, the game complexity increases through the variation in carcasses, the accuracy of the start and end points, plus a time limit is added.

On the assumption that all carcases were marked within the time period and within +/- 5-15mm, then the 'gamer' will progress to the next round, where a time limit is applied. The next round requires the gamer will be required to accurately scribe all 4 cuts with a total of 20 seconds between carcasses, and they keep going until they get more than one cut wrong where they will then need to start from the start again, they will not proceed through to the next level until they accurately scribe within the time limit set.

All results of individual scores are recorded in a leader board that has a geographical, individual (site) and company view (See Image 3). This leader board has been designed to be future proofed for a local leader board per location and the ability to enable global.

Image 3: Leader board

Detailed 'In game' step by step instructions on how to play (see images 2 for screens):
Accurately scribe 4 key cuts across varying beef carcasses, and as you progress through the levels complete this within the time limit set. Testing your accuracy and speed!

Across all levels you will be introduced to 4 different cut types (Brisket 1643 Cut 1, Brisket 1643 Cut 2, Ribs Prepared 1601 and Striploin 2140). For each cut you will need to accurately select the cut's start and end point and then scribe away!

If you have selected the cut's start and end point correctly, you will win a score. The more accurate you are, the higher the score you will obtain on each carcass.

As you progress through the game levels, the game complexity gets harder, plus a time limit is added, so make sure you quickly learn how to judge and make that cut.

Accuracy and Time Stage 1 target KPIs à Place 4 cut lines on a side of beef within 20 seconds to a +/- 10mm accuracy.

Hint / Tip: If you get stuck. Turn on hints
Once you're playing, you will see the 'lightbulb' hint button.

When you tap this button green circles will appear to direct you on the start and end cut points. Make sure you tap as close to the centre of the circles as possible.

Best to not use the hints too much because they will reduce your score each time….so use it sparingly and have fun.

Gaming experience functionality and link

The Front-end development team built the HTML (Java Script and CSS) to ensure the UX and Interaction designs were applicable for all users across multiple devices (NB: due to the development process being conducted during Covid lockdown periods, testing of MVP on large touchscreens was not possible, therefore, functionality was redesigned to enable multiple devices enabling greater future applications). MVP was built using Web application technologies to full-screen run on a "technically" modern web browser. The use of HTML and JavaScript frameworks enabled us to deliver an optimised user interface, animation, gaming logic and special effects, and an open-source scripting language and database for content, profile and game management.

All visual components developed for the platform are modular, reusable, and flexible enough to make them efficient to maintain and extend.

All technology platforms chosen, and hosting solutions implemented were recommended due to their security nature along with the features provided.

Coding was managed by the Git distributed version control system to increase traceability, clarity, and access control, which allowed Developers to collaborate, and ensure when needed to be able to roll back any defective sections without having a knock-on effect.

MVP has a built-in CMS to report on user statistics, after a period of multiple user interactions, detailed reports can be exported for overarching and optimisation analysis.

The Libraries used: ElectronJS and React

In addition to the above elements, these considerations were factored in the development and functionality:
- Hardware specifications need to align closely with the content requirements. It must allow for high-definition graphics, animation and visual effects and fluid game interaction.
  - Hardware specifications need to align with plant office environments, be easy to install and dismantle, transportable and simple to turn-on.

Staging link experience of final MVP experience is: https://beef-scriber.vercel.app/#/

For all user testing and/or using the experience please following the game steps and instructions. It is not compulsory to create a login however we recommend that users do to ensure tracking is activate for future optimisations.

Hosting is current set within https://sheet.best/, this subscription has been set up on the free level. Once the finalisation of the next testing phase is complete, we will need to supply further details and update the hosting option.

Refer to Appendix 8.7 for the full gaming interface screens of game and 8.8 for key game kick-off instructions.

Quality Assurance Testing

Testing of all delivered work has been completed in this phase with multiple-stage process. Internal checks within the Wunderman Thompson team to validate code quality, maintainability, and efficiency. This also ensured all functional goals are met as defined in previous phases.

Project goal Assessment

From the additional project goals (see section 3.2) the short-term was achieved, however, as highlighted the medium and long-term goals require thorough user-testing and this testing needs to be a combination of 1:1 and group testing with a researcher viewing the user desirability, viability, and overarching integration. Testing an MVP requires testing with actual users before finalising full recommendations for future US/UI and build enhancements.

Improvements

The Agile method cycle of release and test allowed Wunderman Thompson and AMPC teams to discover key areas of improvements in the optimisation of UX which led to the main objective of the gaming experience of ensuring users to want to engage, play and interact with the game.

During the UAT game development phase, Wunderman Thompson created a backlog list of improvements recommendations to consider in future releases. Refer to Appendix 8.9 for full list of backlog improvements based on this first internal stakeholder testing period.

6.0 Discussion

Large touch-screen technology was the focus for this MVP, however, due to Covid the practicality of installing the large screens into multiple processing plants for testing was stalled. Therefore, the MVP experience expanded to include functionality for multiple devices, however, with the same content, logic, and assets.

Thus, if we were to start this process from the beginning again WT would recommend variations in the UX/UI and assets to deliver to an optimal mobile / desktop first experience.

Incentives / rewards for the leader board, we recommend including this as part of the launch program. The approach can vary across plants and need to be communicated across the plant to motivate initial participation.

Multiple languages or sub-titles for translation, due to the many cultures and backgrounds in the industry translation options should consider and factored into the next development.

7.0 Conclusions / Recommendations

7.1 User-testing and future MVP optimisations

The game has been built in a way that can easily be enhanced, adapted, and tested. Once the game is tested with further end-users it is recommended to implement further improvements to a future MVP release that will enhance the gamification aspect (i.e, audio and further visual) and evolution of the game levels to include more product-specs and/or extend through to other roles/operations i.e. Sheep Trimming.

To date the User Assurance Testing approach has only been conducted with AMPC and Wunderman Thompson stakeholders which has led to multiple MVP improvements being applied already. The key next step in this MVP development and optimisation is conducting end user-testing across multiple processing plants (with JBS looking to be the first partner to activate this), and with relevant industry event participants. Wunderman Thompson recommend the following testing techniques and approaches to be conducted, recorded, and analysed for full future MVP optimisation understanding:

1. Application of the large Touchscreen in processing plant high-traffic locations (this is to test the experience as it was intended with a focus on the interaction with the realistic carcass size and in a social environment);
2. Leader board formalised with the application and communications of incentives (i.e. company leader board with corresponding prizes for winners during particular timeframes);
3. Multiple device testing (the goal of this is to understand the variation of the experience interaction with touchscreen versus mouse and the impact of the removal of the realistic size of the carcass);
4. Multiple and structured user-testing analysis. We recommend a formalised UAT testing process with multiple 'Beef Scribing' expertise levels and varied audience profiles. This is to understand and analyse the varying results, with the goal to identify what enhancements are required to deliver an experience that meets both our key primary and secondary goals.

5. Analysis of the in-game integration based on profiles created. MVP has a built-in CMS to report on user statistics, after a period of multiple user interactions we can look at running analysis reports that looks to understand how often users come back to use the experience, does their skills improve due to engaging with the experience, does their knowledge of beef scribing change, are they more inspired to work in beef scribing or other areas of the business and so forth. All of this data can be used to inform the next phase of the project plus assist us in recommending what the next iteration of the MVP should be.

6. Full testing analysis reporting, we recommend that all the above method outputs and results are combined to develop an overarching analysis report for next release optimisation strategy and development plan.

Additional future iterations inclusions:

1. Content capture in 4k displays with capacitive touch, with a backed high-end gaming server to handle the graphics, all to create an ideal gameplay that is fluid and smooth as precision of the cut is essential.

2. WT suggest UAT on the actual hardware and pre-configuring it prior to delivery with a large proportion of user-testing, making for a much smoother and easier installation.

3. WT recommend each local computer is explicitly built with the game play requirements as the benchmark.

4. WT suggest a 4G/5G Wi-Fi modem router (with pre-paid sim) attached to each installation.

5. Touchscreen functionality and experience was the priority for development and experience purchases. Web application was also enabled to function as intended on portable tablet devices and desktop screens using touchscreen, mouse and cursor input. However, this secondary device focus can be optimised further and should be in the next iteration.

6. Multiple language versions and/or subtitle translation options need to be considered.

7.2 Ongoing and Testing Support

A tailored support program and proposal will be formulated once specific requirements are confirmed and requested by AMPC team. This program will look to include digital support, infrastructure, testing analysis, management, and optimisation recommendations.

Commented [GB6]: @Joe Guario I think we need to update this to be a few options i.e. full large touchscreen experience with the commentary as feature ed here; then hardware of the masses i.e. any touchscreen excluding mobile maybe??

Commented [JG7R6]: @Georgia ok

8.0 Appendices

8.1 Stage 1 Concept Criteria (to assess and select idea for next phase)

Aspirational	Usability (Interface + interaction)	Gamification	Realistic	Future Proof
Is the concept something that will aspire our audience to want to participate?	Is the experience user friendly? Does it make you want to come back and play again? Is the interaction with the experience easy to understand?	Is it an experience you want to come back and play again and again and again? Is the reward for playing compelling to ensure longevity?	Does the experience replicate real life beef scribing environment? Does it look like a real carcase? Does it truly train on the actual scibring operation?	Is the concept going to deliver an experience that will meet our primary and secondary goals? Is it something that could build to become the interface for the long-term?

8.2 Discovery & Define Strategic Journey Summary Outputs

Broad Analysis

In this session we are going to take look at three broad areas of understanding that are critical for the success of this project.

1. The macro forces at play

2. The training process and procedures/skillset of the job

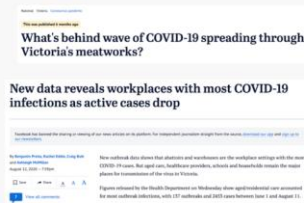3. Who we need to consider in developing this solution

1. BRAND, INDUSTRY AND CATEGORY

2. BEEF SCRIBING (TRAINING & PROCESS)

3. OUR AUDIENCES

◇ AMPC

Impact of Covid

COVID-19 had a huge impact on the meat processing industry, driving a heightened awareness of the industry but also of the health and safety practices in place. The understanding that the environments are dense with operators caused concern in the public domain and highlighted the industry as one of the most impacted by COVID-19.

What's behind wave of COVID-19 spreading through Victoria's meatworks?

New data reveals workplaces with most COVID-19 infections as active cases drop

Coronavirus

◇ AMPC

Shifting needs of Australians

As a result, consumers have shifted their expectation and needs around the products they're buying.

"People in Australia are more focused on the 'buy local' message, for several reasons, which are not always ethically motivated. They are keen to support their local retailers in an economic sense, but they also believe food grown closer to home is fresher and of higher quality."

When purchasing meat, consumers want info on production practices

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◇ AMPC

Technology driving change

Due to health and safety as well as other risks, there has been a drive to create this change and embed a new way of working in the overarching meat processing process.

The introduction of technology and digital tools is seen as one which will help to address many challenges faced across the industry and moreover it will help to drive better yield and ensure the safety and wellbeing of staff is looked after.
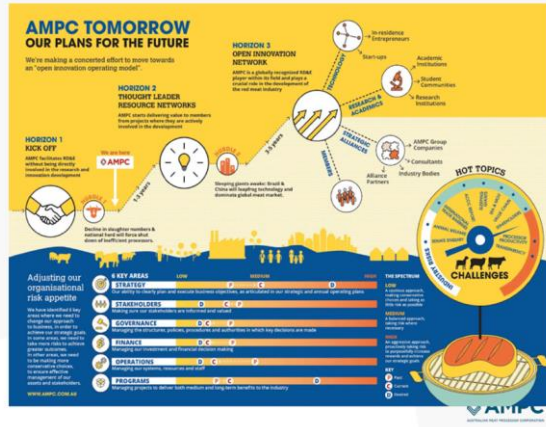
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◇ AMPC

Role of AMPC

There is a clear and defined roadmap for AMPC to have a alst and profound impact on the industry as a whole, the transformational approach will ensure that the role of innovation and technology is central to the future success of the industry as a whole.

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Uncovering the key opportunity

OBSERVATIONS

1. Huge technology innovation push and need in the industry
2. AMPC has a huge role to play over the next 5-10 years in helping drive innovation, progression and efficiency
3. General industry work safety lack of awareness / focus
4. General lack of awareness of the innovation, progressive thinking / importance of the industry to Australia and the world
5.

OPPORTUNITY

Opportunity 1
Showcase the measurable impact AMPC is aiming to have on the industry by demonstrating the transformational projects that will influence key functions of the business.

Opportunity 2
Implement strategies and initiatives which will highlight the progressive nature of the AMPC and how this will influence the entire industry to evolve.

Opportunity 3
Position AMPC as driving innovation, progressive thinking and in doing so highlight the organisations importance to the broader australian meat processing industry.

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◊ AMPC

High Risk of Wastage

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The overarching process with Beef scribing holds high risk, in terms of the losses that can be made if an operator misreads a carcass or makes a mistake.

Human error is a large factor that gets in the way of positive yield, hence the need for automation will help to limit the loss and create a more efficient production process.

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4-5 Critical Cuts (on average)

There are 4-5 critical cuts that are necessary in order to produce the right selection of product, these 4-5 cuts are technical and difficult to accurately select. The margin for error is small and if errors are made it can go on to impact the rest fo the carcesses yield.

The need for training, to both support identifying and perfecting where and how the cuts should be made is an opportunity.

NB: a maximum total of x cuts across some product specs, this will be a consideration in the overarching concepting.
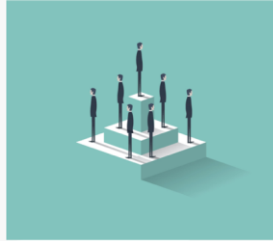
20
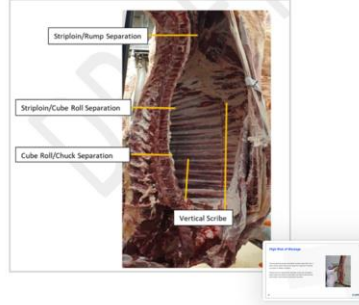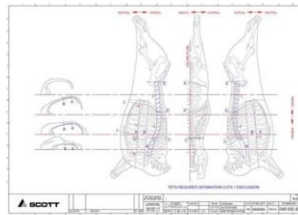
Hierarchical Structure

The industry and the processes are still entrenched in a very hierarchical structure on the production floor. There is a sense of do your time to get to the top and in some cases a 'military' style approach informs the culture.
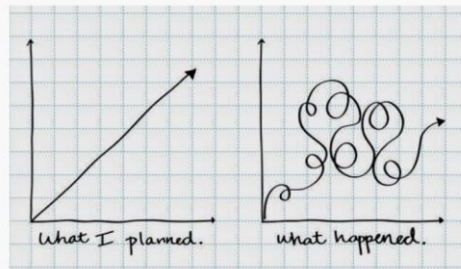
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21

Lack of Structured Training

While there are good training stages that help new recruits develop further through the EBA and 9 grade system, on the job training faces challenges where time is a contrasting factor and the opportunities to focus on development are limited.

what I planned.   what happened.

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No Clear Recruitment Approach

23

The approach to structured recruitment practices seem to be limited as such, the way recruitment is handled today is based of a see who we can get versus proactively driving recruitment initiatives to find the right talent and skills for the specific jobs.

While there are bursary initiatives in place with certain universities, these are limited in the level of awareness and advertising placed behind them.

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Uncovering the key opportunity

OBSERVATIONS

1. Errors in this role can be life threatening
2. None of the process is automated or utilises digital in the majority of areas
3. The training and recruitment process is quite manual and fluid
4. Retention and attraction to the industry is an issue
5. Career progression understanding is limited
6. If beef scribing operations were working at consistent optimal accuracy and speed profitability would increase for all plants
7. Beef scribing is a highly skilled and require a unique mix of mental intelligence and physical strength
8. Beef scribing is niche, max 120 employees in Australia

OPPORTUNITY

Opportunity 1
Introduction of technology will help to make drastic improvements in the accuracy and efficiency of the scribing process.

Opportunity 2
Improve the training and recruitment approach to finding the right talent by introducing more effective means to find talent and showcasing the benefits/potential within this career path.

Opportunity 3
In the long-term inform a fully automated, remote working environment that removes the risks associated with the job today but makes the requirements/needs of the role more accessible to a broader cohort of individuals.
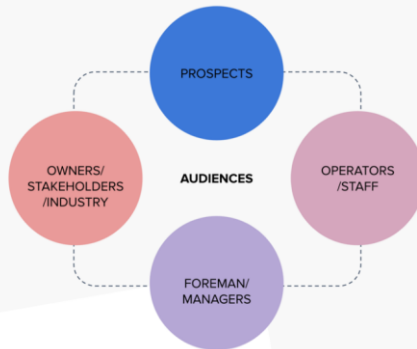
Semi-automated to fully automated

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Broad Audience Set

26

We have identified 4 broad areas from our discussions and interviews with stakeholders.

PROSPECTS

OWNERS/
STAKEHOLDERS
/INDUSTRY

AUDIENCES

OPERATORS
/STAFF

FOREMAN/
MANAGERS

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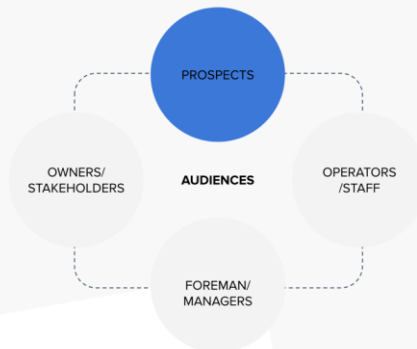AUSTRALIAN MEAT PROCESSOR CORPORATION

Prospects

27

Prospects offer the most opportunity to help drive positive transformation in the industry.

While there are barriers to how we identify and reach this audience before they come to us, once they are engaged and actively considering a role with the industry they are not impacted by the current process and reality, meaning they'd be the most open to change.

There is an opportunity to drive training and development with this group and ensure that they are set up for success, shown the positive career opportunities that lie ahead and are rewarded with recognition and accomplishment.
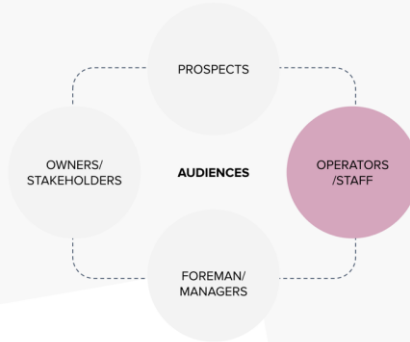
PROSPECTS

OWNERS/
STAKEHOLDERS

AUDIENCES

OPERATORS
/STAFF

FOREMAN/
MANAGERS

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Operators

28

Operators provide another opportunity however the barriers that exist with audience are more difficult to overcome.

They are a group under pressure to deliver a certain amount of product throughout a very time pressured day, they have limited breaks and limited opportunities to learn/train.

They have a very established understanding of their role and the demands that come with it and rely on their current ability/skills. Training them with new skills will be difficult and requires them to step away from their duty.
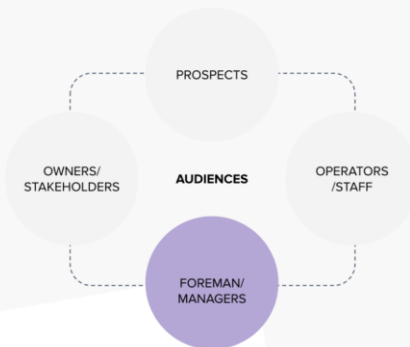
PROSPECTS

OWNERS/
STAKEHOLDERS

AUDIENCES

OPERATORS
/STAFF

FOREMAN/
MANAGERS

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Foremen/Managers

29

With foremen and managers there is a need to reframe their existing expectation and understanding in order to approach training and development in a different way.

There is a need to deploy the training methodologies to this audience in order to build a culture and understanding of its benefits, helping to create a trickle down effect that will ensure the rest of the workforce understand the benefits.

However, there is a risk that this audience see the new approach.technology as a threat to their job and we will need to take them on a journeys as to the benefits and opportunities it brings.

PROSPECTS

OWNERS/
STAKEHOLDERS

AUDIENCES

OPERATORS
/STAFF

FOREMAN/
MANAGERS

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Owners / Stakeholders

30

With owners and stakeholders there is a need to ensure that this new way of working is embedded as part of the overarching business culture.

Technology is always daunting when it is unknown and at time can seem alien to many, hoover if the need for this offering is embedded and instilled from the top down it will create a collective sense of investment for all to adopt and embrace the change.

PROSPECTS

OWNERS/ STAKEHOLDERS

AUDIENCES

OPERATORS /STAFF

FOREMAN/ MANAGERS

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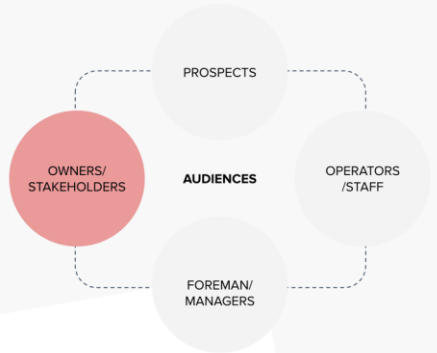
Uncovering the key opportunity

OBSERVATIONS

There is many key gatekeepers to the progression of adapting any new methods to beef scribing so we need to all be on the journey together.

AMPC and owners / stakeholders are equipped with the knowledge required to assess what technology and gamification solution is right

Key to the success of this project is the positive impact on the bottom line for owners

OPPORTUNITY

Short-Term
To build an understanding and appreciation for the long term value that a gamified beef scribing experience can deliver for the future of recruitment, training (and in turn safety) and retention within meat processing industry.

Medium-Term
To test and implement a gamified training experience that will help to upskill and evolve the value-chain associated with the beef scribing process as well as transform the ongoing support and development initiative in palace.

Long-Term
To utilise gamified technology to influence and inform the relevant stakeholders from training through to automated, remote operations within the beef scribing profession.

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IN SUMMARY

For stakeholders, creating a solution that supports their business needs, enables future ambitions and helps improve retention and recruitment.

For existing users, make it engaging and empower them to upskill, learn and improve development.

For recruits, make it an aspirational industry, exciting and a rewarding experience.

10years - if we dont have 80% of work force in control rooms. Millennial discussion

Opportunity to further establish and showcase the role of AMPC in helping to transform, modernise and evolve the industry.

Driving positive change at an industry level means AMPC can effectively transform the beef scribing process as a whole. Through initiatives that work through the value chain there is opportunity to influence training & development, processes and safety.


1. BRAND, INDUSTRY AND CATEGORY

2. BEEF SCRIBING (TRAINING & PROCESS)

3. OUR AUDIENCES

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8.3 Implementing Gamified Learning Through Experiences

34

TWO PARTS TO THE TASK

Enable our key audiences to better understanding of the beef scribing process, Kolb's EL theory we will will help simplify and accurately depict the 5 key cuts and utilise experience to encourage learning.
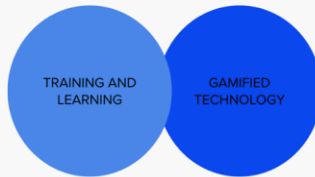
Utilising the power of technology to drive an engaging gamified experience that will engage users and inspire them to learn more, engage more and get rewarded,

TRAINING AND LEARNING

GAMIFIED TECHNOLOGY

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PART ONE
EXPERIENTIAL LEARNING

35

Kolb (1984) theory of experiential learning discusses the key components of learning-by-doing, how it works and the characteristics which contribute to meaningful practice.

As a widely-accepted theory, educators can use incorporate the model to support teaching practice and learner experience.


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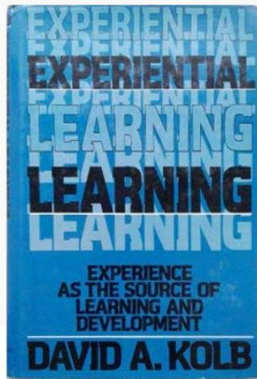
PART ONE
ELT FRAMEWORK

36

Concrete experience (CE): This is the action phase. Students are encouraged to try-out the action and have a new experience.

Reflective observation (RO): This is the observation phase. Students are encouraged to intentionally reflect on their experience from multiple perspectives and the factors involved (e.g. environment, stakeholder, context, outcomes)

Abstract conceptualization (AC): This is the integration phase. Students are encouraged to integrate the experience (action and result) into existing knowledge schemas and with existing theory. As a result, a new concept is formed and can be applied to future experience(s).

Active experimentation (AE): This is the hypothesizing and trial phase. Students are encouraged to hypothesize what will happen and try the action out by making decisions and solving problems.

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37
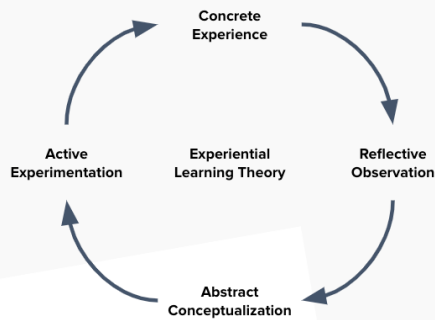
PART ONE
WHY ELT IS SO EFFECTIVE

When it comes to practicing what is learned or just studying written material, **retention of information past two weeks more than doubles with practice (68% compared to 29%)**

With the growth of AI in the workplace, **millennials recognize that they need more (and different) training to keep up**

A low supply of highly skilled workers means that **experiential learning, on the job, is the new normal** when it comes to training your workplace

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PART ONE
WHAT ARE THE MAJOR BENEFITS

Develops employee's capacity to adapt to new situations

Bridges the gap between theory and practice

Provides your individuals with a safe space to fail

Allows for accurate assessment of skills

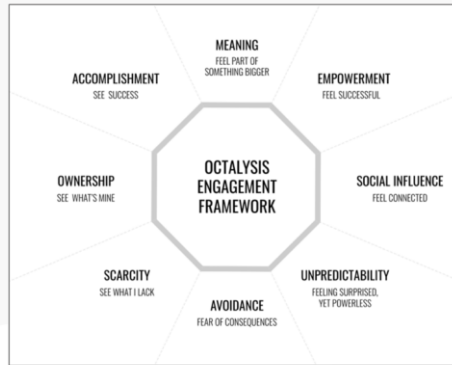**Delivers ROI for the company as a whole**

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PART TWO
Octalysis framework

One of the most powerful engagement tools (and trends) today is gamification. At its most basic level, it could be as simple as integrating points, badges and leaderboards. However, in order to motivate people you need to engage them at an emotional level and giving them a badge for something that they have no emotional connection to will not give them any satisfaction or encouragement

The Octalysis engagement framework provides a human centric design model that identifies the 8 core drives for human motivation. It helps define ways to motivate a user through an interactive experience.

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MEANING
FEEL PART OF SOMETHING BIGGER

ACCOMPLISHMENT
SEE SUCCESS

EMPOWERMENT
FEEL SUCCESSFUL

OWNERSHIP
SEE WHAT'S MINE

OCTALYSIS ENGAGEMENT FRAMEWORK

SOCIAL INFLUENCE
FEEL CONNECTED

SCARCITY
SEE WHAT I LACK

UNPREDICTABILITY
FEELING SURPRISED, YET POWERLESS

AVOIDANCE
FEAR OF CONSEQUENCES

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PART TWO
Octalysis framework - 8 core drives

Epic Meaning & Calling	Development & Accomplishment	Empowerment of Creativity & Feedback	Ownership & Possession
User believes they are contributing to something greater than their own personal goals	The intrinsic motivator of making progress, developing skills and eventually overcoming challenges. EG: points, badges, trophies, leaderboards and challenges	Engages a person in a creative process, where they have to repeatedly figure things out and try different combinations. EG: points, badges, trophies, leaderboards and challenges	Users are motivated by a sense of ownership and innately want to make what they own better. People take a sense of pride in what they own or in what they have created

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PART TWO
Octalysis framework - 8 core drives

Social Influence & Relatedness

Positive social elements that drive people.

EG: mentorship, acceptance, social responses and companionship as well as more negative drives such as competition and envy

Scarcity & Impatience

Assign high value to things user perceive as being less available to drive want and need for it

Unpredictability & Curiosity

When you do not know what is going to happen, there is a sense of anticipation and your brain is engaged to find out what is next.

Loss & Avoidance

This core drive is based on the avoidance of something bad happening.

EG: failing to complete a task on time will result in a negative outcome

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PART TWO
THE POWER OF TECH EXPERIENCES

Emerging technology allows users to fully immerse themselves into experiences and interact with products in new and exciting ways. But beyond this, digital allows for the creation of interactions that can be measured and tracked, tailored to the individual users wants and needs, and drive behaviour change through rewarded repetition.

Interactive engagement

Emerging technology such as AR/VR has meant that it is easier than ever to create interactive digital experiences **that allow users to fully immerse themselves** into different environments, changing the way they **interact with, and complete specific tasks.**

Measurement and tracking

Digital platforms allow for accurate **analysis of engagement and usage**, giving organisation the core information they need to **maximise the value out of any platform.**

Methods such as A/B testing surfaces different scenarios to different users to see what is engaging, and what isn't

Personalisation

As the user engages with a digital experience, **the content and interaction shifts to meet their individual needs.**

This could be either driven by the user initial details when logging into the experience, or based on inputs and makes choices on their journey.

Gamification

Gamification is the application of **game-design elements and game principles in non-game contexts**. It can also be defined as a set of activities and processes to **solve problems by using or applying the characteristics of game elements.**

In the role of behavioural change, gamification advocates change through repetition of interaction, and chasing level based rewards.

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8.4   Interactive Technology Experience Solutions Exploration

VR Painting & Drawing

What is it?
- Similar experience to Google Tilt Brush: Room-scale, 3D-painting VR application
- Using VR controllers, the user is able to draw in 3D environment
- Open-source. Works across multiple devices

How could it be used?
The technology could be leveraged to create a VR gaming experience where the user is asked to draw lines on a 3D meat carcass indicating where specific cuts would be made. Users would be scored on their accuracy and ranked accordingly.
This could only be used as a training tool for short amounts of time, as VR headsets become tiresome when used at length.

WUNDERMAN
THOMPSON

Teleoperated Robotics

What is it?
- Using VR and AR technology to remotely control robotics
- Could also be controlled through regular computer interfaces (mouse, touchscreen)
- Allows operators to control equipment without having to physically be there

How could it be used?
Teleoperated robotics could be used in the scribing process where the controller is working remotely, using physical interfaces such as a computer mouse, joystick, or connected gloves, to control robotic arms in the abattoir to scribe the meat. Considerations around applied pressure through remote operations will also need to be considered on both ends of the experience.

WUNDERMAN
THOMPSON

Augmented Reality

What is it?
- Interactive and 3D experiences placed in the real-world
- Typically mobile based experiences that allow 3D objects to be engaged and interacted within the comfort of the users home
- Hugely gamifiable. Eg: Pokémon Go; and extremely scalable through existing digital platforms and experiences

How could it be used?
Being mobile / web based, an AR experience can be as portable as the user needs. Users would be able to explore a 3D carcass in their own environments through their phone, interacting, moving and spinning it right in front of them. They could be prompted to draw with their fingers where the appropriate cuts would be, and be scored based on speed and accuracy.

Another way of leveraging AR is to give the user mock tools and devices, but simulate the real world experience through a virtual lense.

WUNDERMAN
THOMPSON

Interactive Touch screens

What is it?
- Interactive screens that allow users to interact with and control digital content

How could it be used?
Users would be able to explore a live carcass by touching and dragging on the screen, interacting, moving and spinning it right in front of them. They could be prompted to draw with their fingers where the appropriate cuts would be, and be scored based on speed and accuracy. This type of interaction can easily be replicated by simpler interfaces including a mouse or joystick.

WUNDERMAN
THOMPSON

8.5 The Creative Brief

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THE CHALLENGE

The beef scribing process is incredibly technical, demanding and requires a certain and particular set of skills.

There is a need to further enhance the understanding of technology in the future of the meat processing industry across education, training, safety, retention, automation and remote operations.

Our challenge is two fold:

Secondly, how we ensure this gamified experience can work towards developing and informing the long-term ambition of semi-automate operated automation.

How we translate and mirror the real world experience of beef scribing in a virtual, gamified interface that can accurately and realistically imitate the experience, helping to train and upskill individuals on the processes.

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THE OPPORTUNITY

Our opportunity is to develop a gamified experience that can work towards delivering the long term ambition of AMPC within remote operations.

Develop a gamified experience leveraging the right technology solutions that can transform the current understanding of beef scribing, helping to train, upskill and enable individuals to feel excited about the process and reward them for their engagement and progress.

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THE BRIEF IN BRIEF

THE ASK:
In the short-term; A technology experience that can demonstrate to industry about the potential of in this space around the 5 key cuts first and foremost.
In the medium; an interface that can help to train and attract prospects and operators.

THE CHALLENGE:
Translate and mirror the technical real world experience of beef scribing in a virtual, gamified interface that can accurately and realistically imitate the experience, helping to train and upskill individuals on the processes.

KEY INSIGHT:
For users, there is a desire to understand the beef scribing process better and as a result to upskill themselves and learn about the process and requirements in a interactive and interesting way.

For stakeholders, there is a need to showcase the benefits of technology to the industry and showcase how through technology will help AMPC and plants reach their long term ambition.

OUR OPPORTUNITY:
Develop a gamified experience leveraging the right technology solutions that can transform the current understanding of beef scribing, helping to train, upskill and enable individuals to feel excited about the process and reward them for their engagement and progress.

STRATEGIC PLATFORM:
A gamified beef scribing interface that is exciting, rewarding and one you'll never want to stop playing.

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WHAT DOES SUCCESS LOOK LIKE?
1. This experience must be exciting and engaging that you don't want to put it down.
2. Stakeholders must see this technology and feel excited by the potential.
3. This platform must be realistic, believable, speedy & accurate.

MANDATORIES:
1. Create a gamified experience to demonstrate the 5 cuts in the beef scribing process at first
2. The interface must look and feel real, like you're engaging with a real carcass.
3. When you draw/imitate the cutting process the line must be like-for-like i.e. where you draw you cut
4. The experience must not exhaust your body.

◈ **AMPC**

8.6 Hardware review and options

Option 1: overview
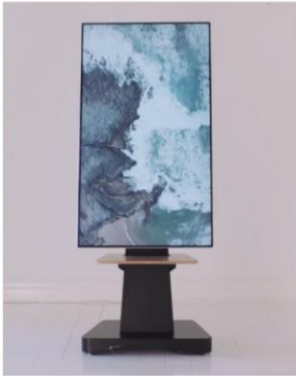
55" 4K Touch Screen with stand pictured

❖ 4K Ultra HD touch screen
❖ Portrait orientation
❖ Thin 8mm bezel
❖ Premium edge-to-edge toughened glass
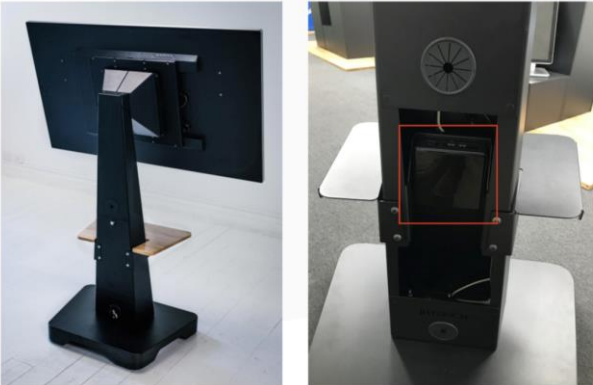❖ PCAP 10 point multi-touch
❖ Brightness 350 nits

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Option 1: overview

◇ AMPC

Option 1: PC integration

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Option 1: specifications

SCREEN

❖ 55" 4K Ultra Slim Bezel Touch Screen Monitor -
  Commercial grade, suitable for 24/7 operation
❖ Pure-flat design, premium edge-to-edge toughened
  glass, silver trim, - Projected capacitive (PCAP)
  10-point multi-touch technology,
❖ 3840 x 2160 (16:9 widescreen) 4K resolution,
❖ Built-in stereo speakers (rear speakers)
❖ Portrait orientation (can be landscape too)
❖ 3 years warranty

STAND

❖ InTouch INTS Mobile Floor Stand
❖ Australian designed and manufactured
❖ Robust steel construction with a durable
  powder-coat finish (black) - Heavy weighted base
  for stable operation
❖ Smooth movement on discreet rolling castors
❖ Unique modern design with internal cable
  management
❖ Optimised to suit INTS550 55" touch screens
❖ Portrait orientation
❖ Angle may be fixed directly vertical, or at 15
  degrees backward tilt

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Option 1: quotation: total for 4 = $63,628

Description	Quote details		Amount
Hardware – based on purchasing equipment for 4 x units. Equipment includes touchscreen, computer, graphics cards, cabling/accessories, stand and built in speakers. Quote does not include delivery or install at this stage as these costs will need to be determined upon location/s confirmation.	**Tech / Equipment**		
	4 x 4K 55" Touchscreen		$25,536
	4 x INTS Stands		$4,960
	4 x Wooden stand shelf		$832
	4 x PC & Graphics Cards		$24,800
	4 x PC Cables & Stylus/Device		$2,000
	4 x Inbuilt Speaker* (rear speakers)		included
		TOTAL	$58,128
	Optional		
	*If front speakers are required, a soundbar can be integrated to the stand. Please add $250 per stand if required.		n/a
	Project Governance		
	Technical consultation & hardware logistics. 2 days		$3,500
	Sourcing & administration		$2,000
		TOTAL	$5,500
		Grand Total	$63,628
Exclusions at this stage:	- Delivery / shipping - will be determined upon location/s confirmation. - Installation - will be determined upon location/s confirmation. - Ongoing maintenance & tech support for locations		

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Option 2A: overview

55" 4K Touch Screen with free stand as picture

❖ 4K UHD touch screen
❖ Portrait orientation
❖ Measurements: 455 (D) x 260 (W) x 485 (H)mm
❖ PCAP 10 point multi-touch; haze coating on the glass
❖ Non-glare glass

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Option 2B: overview

55" 4K Touch Screen with Kiosk base

❖ 4K UHD touch screen
❖ Portrait orientation
❖ Measurements: 455 (D) x 260 (W) x 485 (H)mm
❖ PCAP 10 point multi-touch; haze coating on the glass
❖ Non-glare glass

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Option 2A: quotation total for 4 = $52,456

Description	Quote details		Amount
	Tech / Equipment		
	4 x 55" Samsung 4K Capacitive Multi-touch screen		$23,610
	4 x Free Standing Stands		$3,950
	4 x PC & Graphics Cards		$16,200
	4 x PC Cables & Stylus/Device		$1,996
	4 x Inbuilt Speaker* (rear speakers)		included
		TOTAL	$45,756
	Optional		
	*If front speakers are required, a soundbar can be integrated to the stand.		n/a
	Please add $556 per stand if required. 4 x Proctective road cases		
	- House/protect all hardwares and freesatnding display stand add $6200 for all		
	Project Governance		
	Technical consultation & hardware logistics. 2 days		$4,700
	Sourcing & administration		$2,000
		TOTAL	$6,700
		Grand Total	$52,456
Exclusions at this stage:	- Delivery / shipping - will be determined upon location/s confirmation.		
	- Installation - will be determined upon location/s confirmation.		
	- Ongoing maintenance & tech support for locations		

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Option 2B: quotation total for 4 = $69,456

Options	Description	Quote details		Amount
	OPTION 2	**Tech / Equipment**		
		4 x 55" Samsung 4K Capacitive Multi-touch screen		$23,610
		4 x Free Standing Stands		$3,950
		4 x PC & Graphics Cards		$16,200
		4 x PC Cables & Stylus/Device		$1,996
		4 x Inbuilt Speaker* (rear speakers)		included
			TOTAL	$45,756
		Optional		
		*If front speakers are required, a soundbar can be integrated to the stand.		n/a
		Please add $556 per stand if required. 4 x Proctective road cases		
		- House/protect all hardwares and freesatnding display stand add $6200 for all		
		Project Governance		
		Technical consultation & hardware logistics. 2 days		$4,700
		Sourcing & administration		$2,000
			TOTAL	$6,700
			Grand Total	$52,456
	Exclusions at this stage:	- Delivery / shipping - will be determined upon location/s confirmation.		
		- Installation - will be determined upon location/s confirmation.		
		- Ongoing maintenance & tech support for locations		
		4 x Portable Kiosk		$17,000
		- Concept\design & drawings		
		- Portable with wheels		
		- Branded vynal wrapping		
		- Build of housing in accordance to designs		
			Grand Total with Kiosk Stand	$69,456

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8.7 Full Game Interface Screens

As of 28/2/2022
[Figma Link](#)
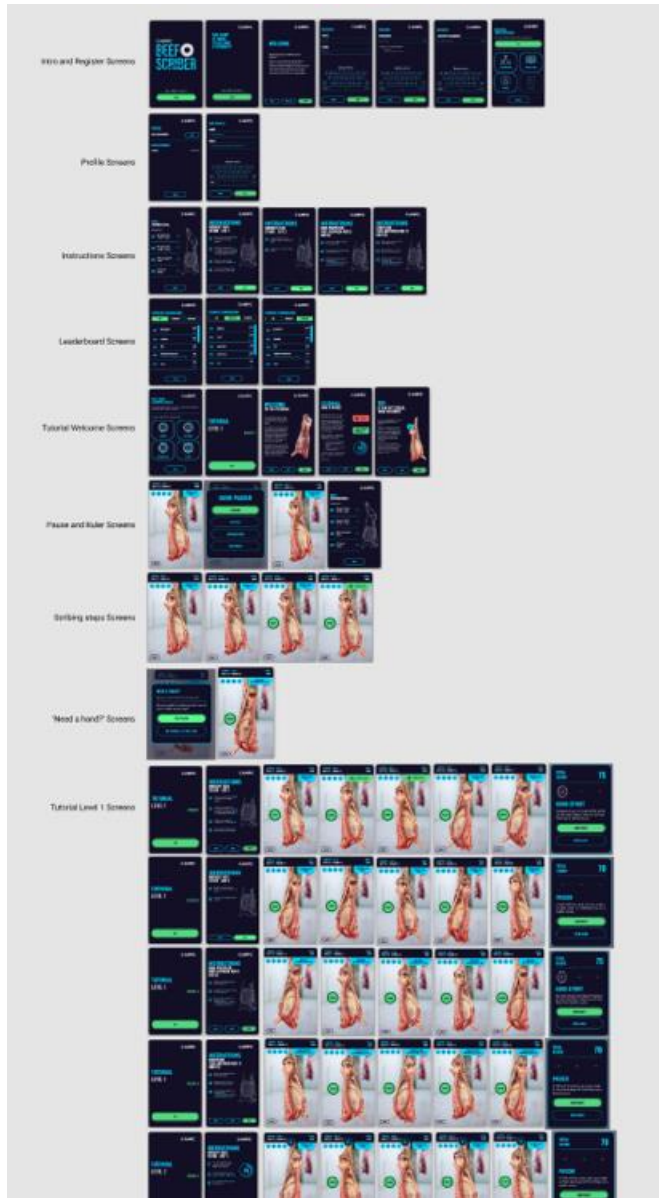
8.8 In-game Instructions and Tutorial details

Introduction interface examples below:
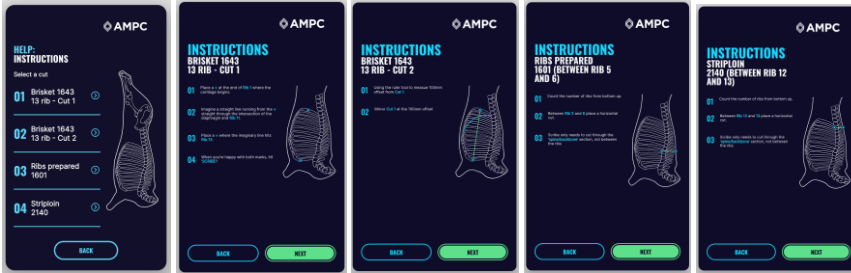
Tutorial interface examples below:
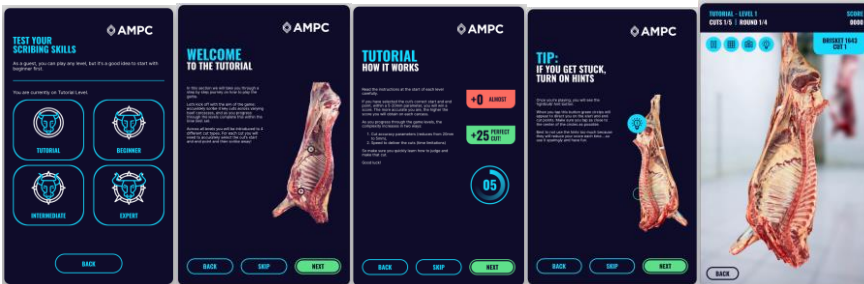
8.9 Backlog of Improvements