AMPC
AUSTRALIAN MEAT PROCESSOR CORPORATION

Sheep Primal Picking & Packing Training

Immersive reality - Sheep Primal Packing training program

As part of Remote Operations (Gamification) – Stage I

Project Code	Prepared by		Date Submitted
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Project Description

Following completion of the Beef Rib Scribing module as part of The **Remote Operations (Gamification) – Stage I**, AMPC commissioned the development of five additional digital training modules that build on the objectives of the Gamification Project. The third in the series was the Sheep Primal Picking & Packing module (The Project).

The Sheep Primal Picking & Packing project involves the design and development of a fully immersive virtual reality training application that teaches participants the basic skills of correctly identifying and packing a range of Sheep Primal cuts. A web-based extension of this training was also included within the project scope to optimise access amongst industry participants.

The specific objectives of the Sheep Primal Picking & Packing project were as follows:

- Facilitate highly realistic training of entry level associates to correctly identify and pack the right cuts into the correct boxes, to accelerate onboarding, minimise potential economic loss and reduce the risk of causing market access issues.
- Improve skill levels and worker health and safety amongst industry workers by training them to pick and pack correctly.
- Drive industry engagement amongst people both within and outside industry, to break down misconceptions around the type of work involved in meat processing and demonstrate potential career opportunities.
- Provide a tool that can be used in recruitment activities by meat processors

The specific deliverables of the Sheep Cuts Picking & Packing project were as follows:

- Develop a training and assessment application around correctly identifying and packing a range of Sheep Primal cuts.
- Develop a 'gaming' option within the app that enables skill levels to be developed and recorded through individual or group competition.
- Demonstrate the app to industry stakeholders, predominantly processors, and develop stage 2 plan for potential deployment and future development.

Project Content

The Project involved four phases:

Design phase:

- Hold project kick off meeting to define key steps and milestones for the project

- Map the sheep primal picking and packing process based on photos and video, interviews with operators and observation of actual plant during site visits

- Develop an outline of environment and UX to be built and get signed off by AMPC

Build phase:

- Build the 'Sheep Primal Cut Picking & Packing' learning stage, incoparating three elements:

    o Learn: display up to 37 individual sheep primal cuts along with the specs for each cut for participants to learn.

    o Quiz: review each of the 37 cuts and select the correct name from 4 possible answers (multiple choice)

    o Practice: stand at a conveyor and practice selecting cuts off the conveyor and placing them in the correct box

- Build 'Sheep Primal Cut Picking & Packing' game stage

    o Take the practice stage from the training module and build a gaming module that incorporates a series of time based execution challenges for sheep primal picking and packing.

    o Incorporate variable game paramaters that can be changed by the participant to make the training easeier / harder. These parameters include:

        ▪ Number of cuts to be coming down the conveyor

- Speed of conveyor
- Frequency and density of cuts on the conveyor
- Number of boxes to be packed simultaneously
- Constant or changing box lables

  o The task is then to identify the correct cuts from the conveyor and place them in the corresponding labelled box. A score is given for each cut accurately selected and put in the correct box.

  o A score is given at the end of each activity showing the correct number of cuts and % accuracy against the total selected.

  o The participant can repeat the game as many times as they wish until they achieve the desired score

- These two stages are then integrated to create an immersive sheep primal cuts application in virtual reality.

- On signing off this application, a web based version are developed
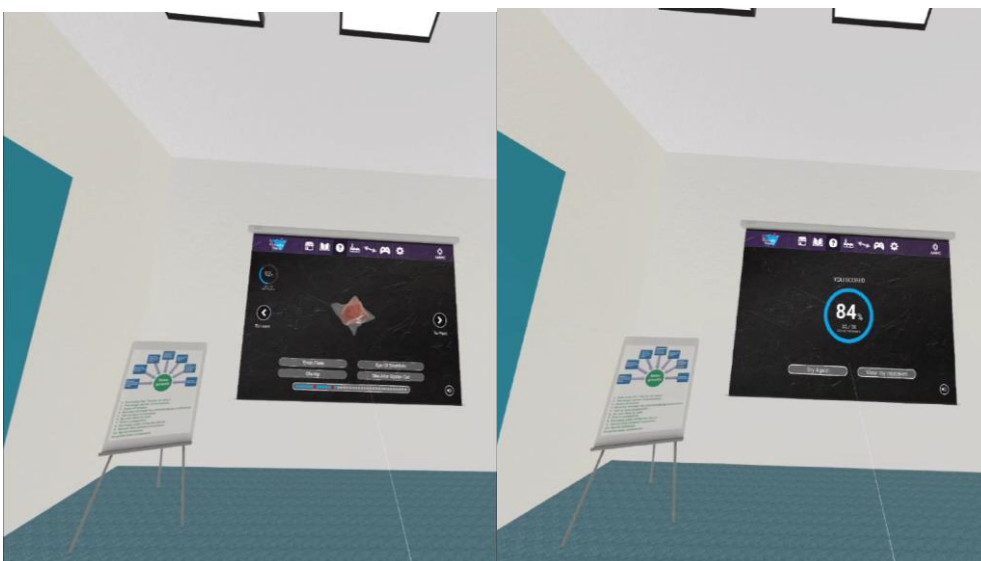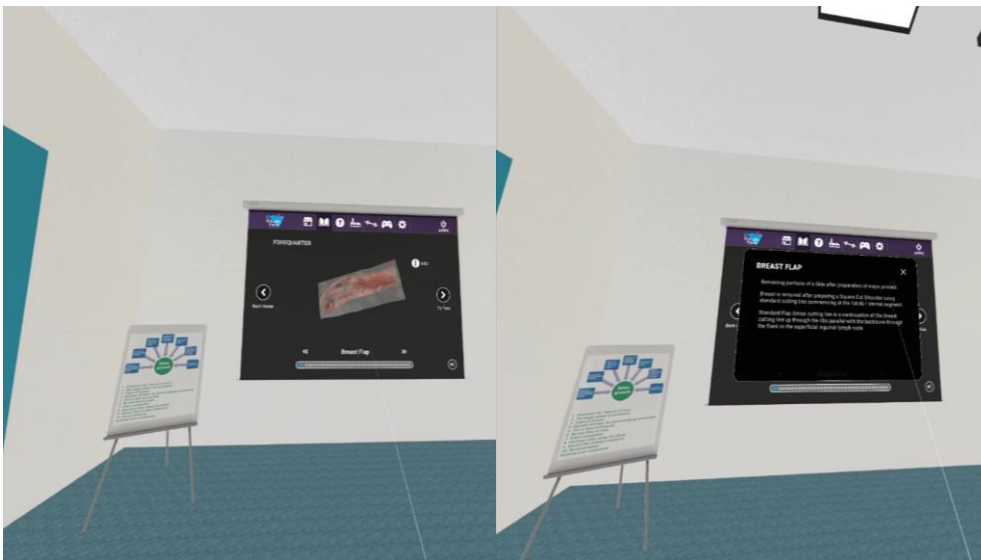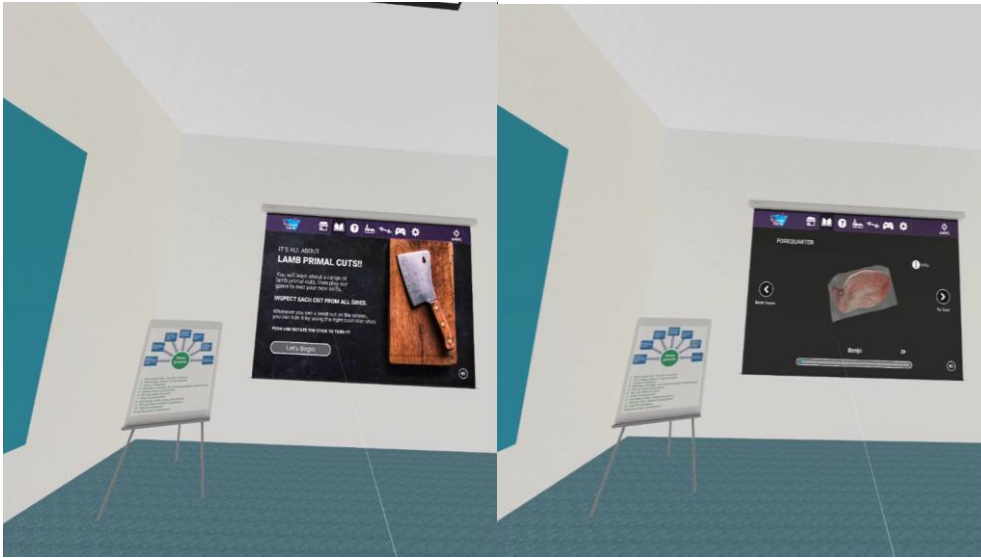
Deployment phase

- On completing the two applications - Sheep Primal Cuts (immersive & online) - work with AMPC's co-innovation managers to demonstrate the technology to key stakeholders across the industry.

- Work with AMPC's communications and field team to market and deploy the training and gaming modules in partner processing plants

- Build interest and commitment amongst processors to develop and deploy additional interactive training applications across the processing chain to build capability and reduce injury amongst processor workers.
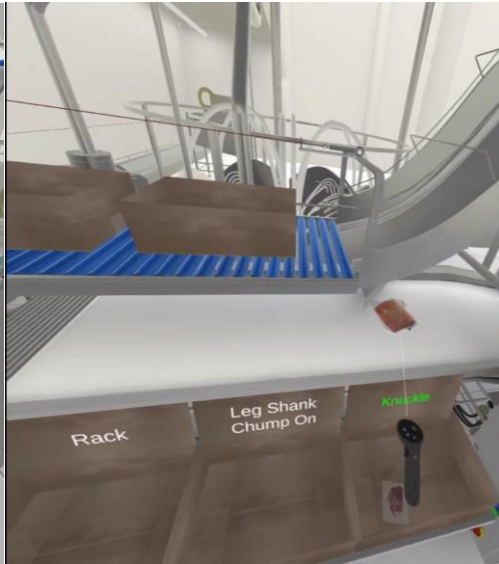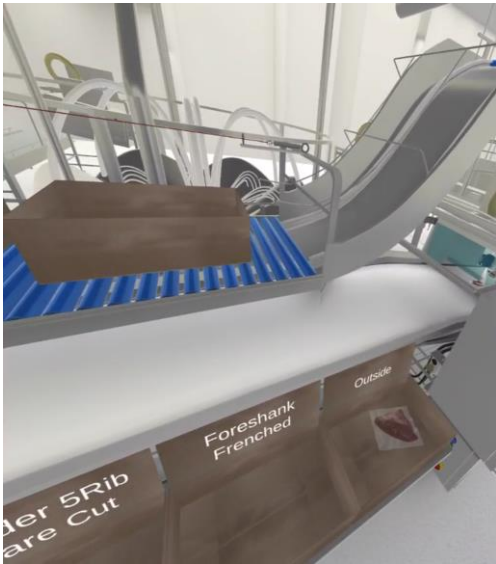
Project Outcome

The following outcomes were delivered at the end of the project:

1. Virtual reality Sheep Primal Picking & Packing application: a fully immersive and interactive training module delivered on portable, low cost, virtual reality devices, incorporatinig the following elements:
   a. Cut learning stage: 3D image and written specifications of each cut

   b. Multiple choice quiz on each cut

   c. Cut selection and packing practice stage

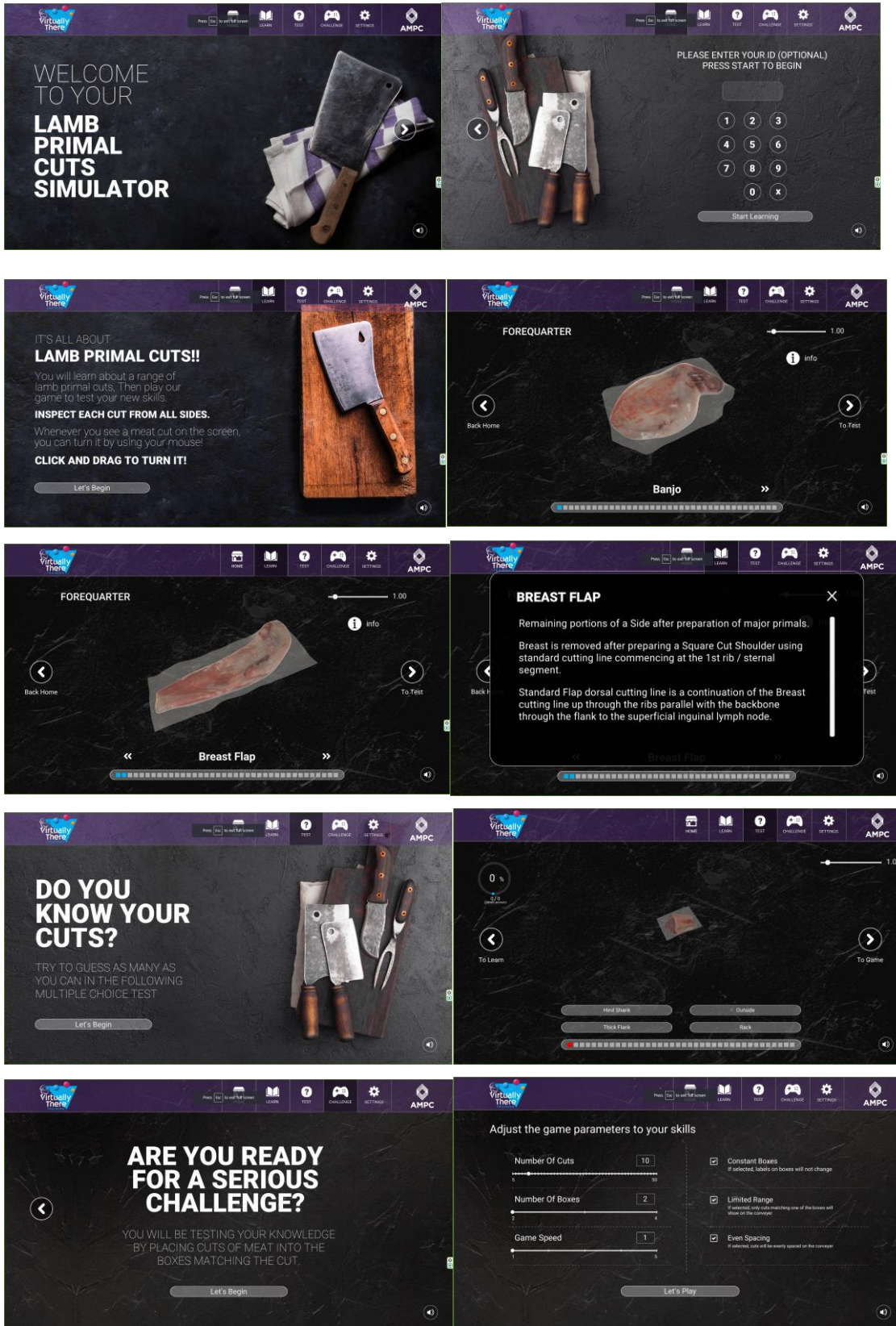   d. Cut selection and game stage (with multiple variables described above

Click on the link to view video:

https://www.dropbox.com/s/gjp1vgzhsq4rkah/20220913%20Lamb%20Primal%20raw%20video.mp4?dl=0

2. Online version of the Sheep Primal Cut picking and packing application

3. Demonstration to key processor stakeholders

   We have visited 16 processors over the last 4 months for demonstrations of the VR training modules developed to date, including the Sheep Primal Picking & Packing module. This is in addition to 5 processors visited in the 6 months prior.

   Four processors have agreed to run pilot tests of VR Training, which will run from Sept-Dec 2022

   In addition, 9 processors have expressed an interest in deploying and / or developing additional interactive training content

Benefit for Industry

The following benefits have been identified for the meat processing industry from this project:

Immediate development and deployment of a comprehensive suite of training modules

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

- Removing staff from dangerous operations, via Hands-Off processing (Adv. Mft.),
- Carcase Primal Profitability Optimisation, via accurate processing (Adv. Mft.)
- Digitisation, via acquiring product information and leveraging data insights (Adv. Mft.),
- Attraction, via demonstration and developing a wide range of operations (People & Culture),
- Retention, via improving working conditions and making tasks exciting (People & Culture),
- Development, via developing tasks that require higher skills and intellect – operational & technical (People & Culture),
- 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.

Of these, the Picking and Packing project as part of the **Remote Operations (Gamification) – Stage I** has demonstrated it relevance and ability to deliver immediate benefits to industry around Attraction, Retention, Development and Safety. This is clearly supported by the level of interest and inquiry across stakeholder groups at beef 2021, AMPC WHS conference 2022 and based on feedback from various plant visits throughout 2022 including:

- Processors: interest in developing a range of modules to train exisiting and future workforce (Retention, Development, Safety).
- Industry bodies: interest in accessing training modules as part of their skilling up of remote workforce (meat safety)

Contribution to development of automation

Strategic alliances with other technology and industry providers have been identified to work on the potential integration of different technologies (e.g. robotics with visualisation modules)

Useful resources

NA