Upgrade of the Meat Inspection exam generator

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1.0   EXECUTIVE SUMMARY

This project has upgraded the now outdated 2013 CDs of the trainer and student version of the Meat Inspection Exam Generator. This upgrade has not only improved the content but also produced a web-based resource that can be used on-line by Registered Training Organisations, meat inspection students, third party providers of meat inspection services and processing companies .

The purpose of the exam generator is to provide a resource for RTOs and others to generate exams to cover meat inspection topics. The exam generator allows a significant body of questions and images to be available to the industry. The exams generated consist of:

- multiple choice questions

- true and false questions

- short answer questions

- image questions of disease, conditions and dispositions.

The questions are coded against one or more groups e.g. ante-mortem ovine then sub-groups e.g. diseases and conditions. There is a further function that allows questions to be coded against the specific knowledge requirement of accredited Units.

Registered Training Organisations (RTOs) deliver both the *Certificate III* and *IV in Meat Processing (Meat Safety)* in every state of the Commonwealth. Enrolments are organized around employer requirements and no RTO offers scheduled meat inspector courses. This means that the RTOs are mostly delivering to geographically thin markets and having to prepare exams for a limited number of students at any one time.

In addition, students are usually completing these courses in self-paced fashion using distance education materials. This pattern of enrolments further fragments the number of students likely to sit a particular exam paper at any one time.

Thus, the exam generator with its bank of questions allows the assessor to set a number of unique test papers for any one topic with virtually no additional work. This increases the reliability of the assessments by minimizing the opportunity for collusion between students sitting for papers at different times.

The base created by this upgrade will allow for the future expansion of the exam generator to cover more topics. The upgrade will also allow for the coding of questions against the knowledge requirements of specific Units of competency. This feature will be of significant benefit to RTOs who need to prove compliance with the assessment requirements of the Meat Industry's Training Package.

The new format means MINTRAC can upgrade the data base of questions and images without the assistance of the consulting IT company. This means errors can be corrected promptly and additions made in a timely fashion.

The number of image questions in this version has been greatly expanded because the exam generator now has a direct link to the Disease and Contamination Image library and its 1200 images. All the images in the library can now be formatted into questions that require the disease or condition to be identified and the disposition that should be made by a meat inspector.

The additional function that the exam generator plays is one of standardising the assessment of competency across the nine RTOs active in the provision of meat inspector training. In the same way that a national training package and uniform training materials help standardize training so uniform assessment tools help make the training outcomes between RTOs consistent. This is important in giving Australian regulators and importing countries confidence in the standard of meat inspection training here in Australia.

2.0   INTRODUCTION

The industry trains approximately 120 meat inspectors a year and these trainee inspectors are spread across all the states of the Commonwealth. There are nine RTOs active in the provision of meat inspector training.

In 2013 the industry funded the development of a Meat Inspection Exam Generator which could produce knowledge tests on a range of subjects associated with the delivery of meat inspection training. This version of the exam generator was CD based.

The exam generator allows the RTOs to set and use theory assessment tools that have been reviewed by technical experts and are being used nationally. Because of the volume of the questions it means that the exam generator can produce unique exams to assess a student's knowledge on a particular topic regardless of the number of students working on a self-paced program.

There was a trainer and student version which used the same bank of questions that were randomly selected to created specific topic examinations. The students were able to produce trial exams for revision using the same data base that the examiners prepared their papers from.

This current project was funded by AMPC to revise the exam generator with the objective of producing an expanded data base of question and a resource for the industry, RTOs and students that was web based and could be accessed on-line.

3.0   PROJECT OBJECTIVES

The objectives of this project are:

- to support currency and consistency in the preparation of meat inspectors for the AEMIS system;

- to provide an accessible web-based resource which aligns with current end-user technological capability;

- to provide a resource that can be used to assess the competency and currency of meat inspectors and QA officers; and

- to provide a resource which can be maintained and updated at minimal cost for at least the next five years.

3.1 Support currency and consistency in the preparation of meat inspectors for the AEMIS system.

One of the functions of the exam generator is to assess the currency of the knowledge of meat inspection trainees preparing to operate in the export sector. The exam generator is able to assess the trainee inspector's knowledge of:

- inspection procedures

- diseases and conditions

- appropriate dispositions

- causes of contamination and the preventative measures

- the Australian Standard 4696:2007

- importing country requirements

- HACCP

- QA principles and practices

- Meat Hygiene Assessment.

RTOs across the country are able to access the exam generator and produce assessment tools consistent with those used by other RTOs.

An important additional feature of the exam generator is the ability to add questions and concentrate on specific areas e.g. bovine post mortem inspection and by making certain questions compulsory.

3.2 Provide an accessible web-based resource which aligns with current end-user technological capability

The new exam generator will sit on a web site and be accessed by the use of a password which will initially be issued by MINTRAC to RTOs, processors, regulators and employers of meat inspectors. The password will give these bodies a level of access which allows them to add questions and images to their own data base and make specific questions compulsory when they generate exams. They can share questions and images with MINTRAC and MINTRAC can, if considered appropriate, add these to the national data base.

The RTOs and employers of meat inspectors can then issue passwords to their students or employees that will give them a lower order of access to the data base. This level of access will enable them to generate exams from the national data base of questions and images. These exams can used by the students and employees to revise their knowledge of meat inspection and quality assurance.

3.3 Provide a resource that can be used to assess the competency and currency of meat inspectors and QA officers.

Employers of meat inspectors can gain access to the exam generator and develop site specific competency tests which focus on the relevant regulations, importing country requirements and specific diseases, conditions and dispositions. The exam generator data base consists of:

- multiple choice questions

- true and false questions

- short answer questions

- image questions of disease, conditions and dispositions.

The randomly generated nature of the exams means that there will be no need to have tired worn out exams that are used routinely to assess competency. Currently there are a number of employers already using the exam generator to assess the currency of the knowledge of prospective and existing inspectors.

3.4 Provide a resource which can be maintained and updated at minimal cost for at least the next five years

The new format enables MINTRAC, without referral to an IT consultant , to:

- add photos to the data base

- add or edit questions to the data base

- add new topics

- add new groups

- search for questions

- review the questions and images added by users

- recode questions and images.

There will be an ongoing demand to expand the data base of questions and images. There will also be a need to increase the number of categories of questions to meet the RTOs requirement to refine the coding of the data base. This will be able to achieved now without a major investment from the industry.

4.0 METHODOLOGY

This project used the following stages.

In **Stage 1** the team undertook the scoping of the project and developed a list of capabilities that the exam generator needed. The look and the and the feel of the exam generator was agreed with AMPC at this stage.

The end-users were identified as

- RTOs delivering meat inspection and quality assurance training to the red meat industry

- red meat processors

- regulators

- third party providers of meat inspection services

- meat inspection and QA students

- employed meat inspectors.

The levels of access permitted to each of these users group was decided at this time with MINTRAC maintaining overall system management while employers and RTOs will be able to add questions and images to their own data base.

The largest task was reviewing 1000 existing questions and developing a further 1300 questions to meet the requirements required to assess knowledge in the different categories. Similarly, a comprehensive review of the image library was undertaken by two technical experts who reviewed the images independently.

In **Stage 2** the exam building capacity of the system was developed with the processes for setting of exams and the capacity to add and edit questions developed .

In **Stage 3** user accounts and authentication processes were developed and the management rules and protocols established.

Stage 4 saw the integration of the image library and online exam systems with the link enabling the editing of disease and condition image questions.

The testing and trial with potential end users was **Stage 5** of the project. The exam generator has been modified in response to the feedback and this review and refinement will continue after the general release of the exam generator.

5.0   PROJECT OUTCOMES

The project has achieved the objectives that were set out in the contracted deliverables. The exam generator is a web-based resource which includes the following capabilities:

- students are able to generate trial exams (with answers) on any of the given topics as a means of revision

- RTOs will have an access level that gives them the ability to develop customized exams which can be completed by students either in print or on-line

- RTOs will have access to a marking guide which gives them the recommended answers to the questions

- RTOs will be able to add questions and images, delete questions but only in their own data base

- employers will have the capability to develop customized exams/checks to determine meat inspector currency;

- to import images from the Image Library as they are added

- to allow MINTRAC to add, edit or delete questions and add images from the Image Library .

6.0   DISCUSSION

In summary the project has created a web based exam generator and the trial release to users indicates that it meets its users current needs. However, the RTOs also indicated that the ability to tie questions to the individual knowledge requirements of accredited Units is going to be of increasing importance to them.

7.0   CONCLUSIONS/RECOMMENDATIONS

MINTRAC should maintain and modify the exam generator into the future with the priority activities being;

- the coding of questions so that they are linked to the individual knowledge requirements of accredited Units

- the addition of topics linked to accredited quality assurance Units not yet covered

- the addition of questions and images attached to the emergency animal diseases topic which is an area of increasing interest to regulators

- the ongoing revision of images and questions as requested by users

- the addition of images as they are made available to MINTRAC.

8.0   APPENDICES

This section should include any supporting documentation which has been referenced in the report. Each Appendix must be named and numbered.

8.1   Appendix 1

The SnapShot for the Model Meat Inspection Training.

8.2   Appendix 2

The results of the survey of the potential users.

Appendix 2 Review of the exam generator by potential users

No.	Issue	Resolution
1.	Ovine endemic disposition not covered	Questions recoded to capture these questions
2	The order for creating an exam paper is confusing and not logical/intuitive	The stages for creating an paper have been labelled and ordered so the process is ordered and easy to follow.
3	The selection of compulsory questions by scanning is difficult when there are too many questions in one section.	The potential for including a search function is currently being explored and this will enable user to target certain key words in questions.
4	Mapping to knowledge requirements for each Unit required not just the performance criteria	The functionality has now been included and over time this can be undertaken so all questions and images are also coded against the unit knowledge requirement. This is a really significant task and the requirement only became apparent at a late stage in the project. It has been started and will be completed for the major Units as part of an ongoing project for MINTRAC.
5	Coverage of the Certificate II core	This will be part of the ongoing development of the Exam Generator.
6	The excluding of questions or mandating of questions for all exams by an individual user should be a once off exercise not need to be done for each exam	This function is now moved to the an administrative exercise and need only be done once by the RTO