Vegetable Industry Development Knowledge Management Sub Program

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Freshlogic Pty Ltd

Project Number: VG09147

VG09147

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Final Report

VG 09147 - Vegetable Industry Development Program
Knowledge Management Subprogram

Project completion date 30 June 2012

Prepared by:
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VG 09147
Vegetable Industry Development Program Knowledge Management Subprogram

This project was undertaken by:

Project Leader:
Steve Spencer (Director)

Assistance from other Freshlogic team members
Martin Kneebone (Director)
Sam Mishra (Research analyst)
John Kyriakopoulos (Software programmer)

The **purpose of the project** has been to enhance the provision of knowledge to growers and other industry participants engaged in the vegetable value chain and those engaged in the delivery of services to industry.

This project has been funded by HAL using the Vegetable Industry Levy and matched funds from the Australian Government

This report is dated 30 June 2012

Contents

1. Summary

The **purpose of the Knowledge Management (KM) sub program** was to enhance the provision of knowledge to growers and other industry participants engaged in the vegetable value chain and services to industry.

The **primary objectives of the KM sub-program** were:

- Findings and outputs from research are increasingly being applied by industry stakeholders in decision making.
- Industry is more effectively using findings and outputs from research to formulate policy and manage the image of the industry.
- Ensure two way information flow between industry members and industry development program / sub program service providers.

The **key activities** have been:

- Collating and classifying past HAL-funded R&D reports
- Collating and classifying various technical tools and business aids that have provided an extension of R&D outcomes and/or which enhance the ability of growers to apply technical knowledge within their business.
- Improving access to the outcomes of industry investment in research and development, through an on-line search engine that stores the reports and associated tools.
- Improving the on-line resources available to industry and AUSVEG as the peak industry body, through a new industry website that allow access to industry development information, resources and tools and facilitates improved communications between AUSVEG and industry.
- Working with the other sub programs of VIDP to make industry development information useful and accessible to industry

The **key outcomes** from the subprogram were the provision of significantly enhanced information platforms for industry through on-line resources. These platforms will ensure that growers and other participants have better access to information and tools for decision-making and are better informed about the operating environment for vegetable production, packaging and marketing.

The platforms developed and delivered in this sub program were transitioned to AUSVEG management at the conclusion of the project.

The KM program and other related sub-programs have helped redefine networks and relationships that are crucial to creating better information flows, feedback loops and ensuring information is more effective in reaching and benefitting people engaged in and servicing the vegetable industry.

2. Introduction

2.1 Overview of the VIDP

This final report focusses on the role and activities of an individual subprogram of the Vegetable Industry Development Program (VIDP). However, it is important to understand that each individual subprogram and activities occurring collaboratively between subprograms made a significant contribution to achieving the broader VIDP goal and objectives.

Program goals and objectives

The Vegetable Industry Development Program goal was "to provide knowledge, tools and insights to decision makers to improve the competitiveness of Australian vegetable growers in domestic and international markets".

This was achieved by addressing a number of program objectives, as follows:

- Program Objective 1: "A new generation of leaders are active in the industry"
- Program Objective 2: "Decision making in the industry is increasingly market driven"
- Program Objective 3: "Industry is more informed and understands the benefits and the qualities of Australian vegetable products, so as to optimise their path to market"
- Program Objective 4: "More growers are actively seeking to evolve their business models to meet new challenges posed by the market"
- Program Objective 5: "Findings and outputs from research are increasingly being applied by industry stakeholders in decision making"
- Program Objective 6: "Industry is effectively using findings and outputs from research to formulate policy and manage the image of the industry"
- Program Objective 7: "Levy payers are better able to provide feedback into the National R&D system"

Program structure

To achieve the goal and objectives, a structure involving a number of subprograms, along with a National Coordination role was utilised. Participating subprograms are detailed in table 1 below.

Table 1: Vegetable Industry Development Program Subprograms

Project number	**Project title**	**Organisation**	**Subprogram leader**
VG08040	Economic Research Services for the Vegetable Industry	Industry Data Economic Analysis	Ian James
VG09144	Vegetable Industry Development program – National Program Coordination	Rural Directions Pty Ltd	David Heinjus
VG 09145	Vegetable Industry Development Program People Development Subprogram	Dianne Fullelove and Associates Pty Ltd	Dianne Fullelove
VG09146	Vegetable Industry Development Program Consumers and Markets Subprogram	Freshlogic Pty Ltd	Martin Kneebone
VG09147	**Vegetable Industry Development Program Knowledge Management Subprogram**	**Freshlogic Pty Ltd**	**Steve Spencer**

Project number	Project title	Organisation	Subprogram leader
VG09149	InnoVeg Local Partnership Program- Coordinating Collaborative and Innovative Industry Development Products	RMCG	Dr Anne-Maree Boland
VG10117	InnoVeg – Tier 2 development products for delivery to the Vegetable Industry	RMCG	Dr Anne-Maree Boland
VG09161	AUSVEG Support to Vegetable Industry development Knowledge Management Subprogram	AUSVEG Ltd	Richard Mulcahy
VG09191	National Vegetable IPM Coordinator	Schofield Robinson Horticultural Services	Lauren Thompson

In addition to the above subprograms, there was a project titled "Collaborative Industry Organisations Support to VIDP" established. This was managed by Vegetables Program Manager Horticulture Australia Limited, Kathryn Lee and delivered by the organisations detailed in table 2 below.

Table 2: Organisations delivering the Collaborative Industry Organisations Support to VIDP

Project number	Project title	Organisation	Subprogram leader
VG10096	Collaborative Industry Organisations	Horticulture Australia Limited	Kathryn Lee
VG10097	Collaborative Industry Organisations – Queensland - Support to VIDP	Growcom	Margie Milgate
VG 10098	Collaborative Industry Organisations – New South Wales - Support to VIDP	NSW Farmers Association	Dr Alison Anderson Alicia Harrison
VG10099	Collaborative Industry Organisations – Victoria - Support to VIDP	Vegetable Growers Association of Victoria	Tony Imeson
VG10100	Collaborative Industry Organisations – Tasmania - Support to VIDP	Tasmanian Farmers and Graziers Association.	Nick Steel
VG10101	Collaborative Industry Organisations – South Australia - Support to VIDP	Virginia Horticulture Centre Inc	Mike Redmond
VG10102	Collaborative Industry Organisations – Western Australia -Support to VIDP	Vegetable Growers Association of WA Inc	John Shannon

The role of the Collaborative Industry Organisations Support project was to provide a conduit for outputs from each of the VIDP subprograms. Working with the InnoVeg subprogram the Collaborative Industry Organisations provided a delivery mechanism to industry for VIDP.

The remainder of this final report focusses specifically on the project VG09147, delivered by Freshlogic.

2.2 Knowledge Management sub-program

This project was undertaken to improve the access to information generated by industry development activities, and in particular the outputs and outcomes of investments in research and development activities using grower levies.

The formal objectives of the sub-program were:

- Findings and outputs from research are increasingly being applied by industry stakeholders in decision making.
- Industry is more effectively using findings and outputs from research to formulate policy and manage the image of the industry.
- Ensure two way information flows between industry members and industry development program / sub program service providers.

The measures of success of the sub-program included:

- Translation of research reports into practical outcomes for growers (e.g. business cases and targeted value added information).
- Customised program information made available through an upgraded AUSVEG website, which is easier to use, carries more relevant information and is designed to allow for tailoring to suit users' needs.
- Desktop research and links to other websites that contain relevant R&D outputs and outcomes.
- Innovative approaches to facilitating feedback from levy payers.
- Providing growers with better access to R&D outcomes that were relevant to them and gave better information on how to apply the results to their situation.

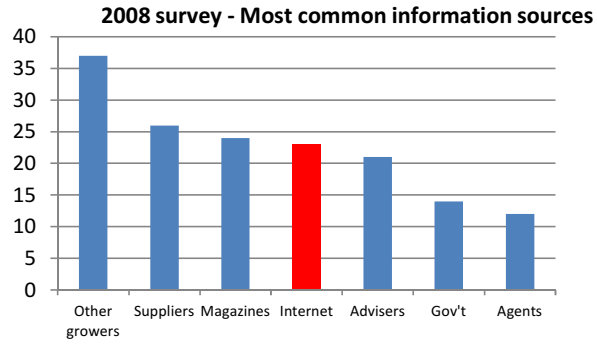
In the medium term the aim for industry is to have a better informed vegetables sector that can identify better ways to invest valuable R&D funds on issues and challenges that are relevant to the future profitability of the production enterprise and the competitiveness of the vegetables supply chain in Australia.

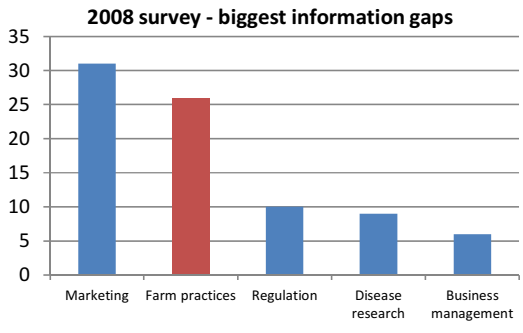
Background

A 2008 study (*Vegetable Industry Information Dissemination Stakeholder Research* by Concept Consulting - August 2008) which addressed the information sources and uses and the needs of growers had the following key findings:

- Growers used a wide range of information sources for their business decisions
- Information which is most critical to decision-making happens to be have the largest gaps – market information and technical/farm practices
- The internet had relatively low use as a source of decision-making information and tools, and the then industry site rated very lowly as a provider within that medium.

Prior to work commencing, AUSVEG operated with a sub-standard website, which featured:





- Limited search capability
- Limited document storage
- Limited scope for in-house maintenance of webpage content

There was at the time no single repository of the outcomes of R&D investments that could be readily accessed by vegetable growers.

This project sought to address the identified deficiencies in information resources available to industry and the capability of the industry site hosted by AUSVEG.

3. Method and activities

3.1 Components of the KM project

Information map

At an early stage of the project, Freshlogic developed an overarching map, which described the audiences, media and content which this industry development project would focus on. This took account of recent work done for HAL on understanding information needs, as well as the requirements of the VIDP.

Website

A requirement of the sub-program was to design and develop a suitable website platform that matched the industry demands and the needs of AUSVEG as the peak industry body.

At the commencement of the project, the existing AUSVEG website suffered from poor layout, a lack of currency of information, poor navigation and ineffectual communication of R&D outcomes to levy-payers.

Technical insights database

The major requirement of the sub-program was to improve levy payer and industry participant access to the outcomes of R&D investments. A new technical insights database ("TIDB") was developed in online format.

Other aspects

Successful implementation of this project has required a close working relationship with AUSVEG, as hosts of the new industry website and R&D database. Throughout the project the KM sub program worked closely with AUSVEG to provide maintain and expand site content and implement processes for updating site R&D resources. A more detailed methodology for each of these components in provided below.

3.2 Sub-program strategy

A number of elements of the overall KM sub-program were designed in a co-ordinated sequence to ensure overall effectiveness, and offer flexibility of the scope of each subsequent phase.

	Project quarters											
	Year 1				*Year 2*				*Year 3*			
	Q1	*Q2*	*Q3*	*Q4*	*Q1*	*Q2*	*Q3*	*Q4*	*Q1*	*Q2*	*Q3*	*Q4*
Information map												
Website design												
Website build & commission												
Database assembly (R&D)												
TIDB mobilisation												
TIDB expansion (R&D, tools)												
Database/site maintenance												
Website content upgrade												
Database automation												

3.3 Mapping the audiences

The target audiences for the proposed outputs of KM sub-program include:

Output	Primary users	Primary needs
Website (general)	• AUSVEG staff • Growers • Supply chain participants • Media • Industry service providers • Government	Various information requirements
Technical insights database	• Growers • Supply chain participants • Researchers • Service providers	Flexibility in means to access required information between browsing and a prompt search result
Website page content (industry development materials)	• Growers • Supply chain participants • Researchers • Service providers	Quick route to the required information sources presented in practical, easy-takeaway terms.

3.4 Website development and enhancement

A major deliverable from the project has been the development of a new industry website.

Approach

The approach taken in the development of the site in late 2009 and the first half of 2010 can be summarized as follows:

- Reviewed the existing website to understand purpose and shortcomings of the facility;
- Undertook desktop research of comparable agribusiness industry development and industry services bodies to assess site requisites and identify an on-line platform suitable to the needs of the vegetable industry;
- Developed a detailed website specification based on existing and potential requirements of an industry site.
- Undertook selection of a preferred developer, selecting from a list of developers that had recently developed websites in the agribusiness or related fields and delivered functionality comparable to that required in this development.
- The website specification was provided to a number of developers with relevant capabilities and experience – fully costed development proposals were received.
- Identified and evaluated submissions from potential developers based on criteria that would meet industry and AUSVEG needs. Selection of a preferred developer was made in consultation with AUSVEG.

- Appointed a preferred developer (LCubed) which provided a choice of development platforms to achieve the requirements. The Business Catalyst platform was selected based on a balancing of several factors which included:
    1. Ease of use of the content management system
    2. Cost of ongoing site hosting and maintenance
    3. Features and included functionality of the site software platform
- Undertook detailed development briefing, platform selection and design process with developer

Freshlogic project-managed site development on behalf of AUSVEG and industry to ensure objectives and timelines were achieved.

Site design and functionality

A key aspect of the site design was to support AUSVEG's objectives of re-establishing profile and industry leadership through the provision of services to levy-payers.

The development of a fully-functional website that could be managed and maintained directly by the organisation as a key communications platform was a major requirement of the organisation to improve the value to growers from their investments in levy funds.

Design

A number of design principles were developed by in conjunction with the web developers (LCubed) at an early stage in site development.

These were as follows:

Principle	*Attributes*
Positioning	• Professional industry presentation • Relevance to the whole of supply chain (grower to consumer) in imagery and language • Relevance to all industry stakeholders • Informative • Contemporary appearance
Personality	• Bold, striking appearance
Usage	• Ease of general navigation • Ease of navigation between open content and secure (member) content • Ease of identification of secure area information • Clarity of appearance of different areas of site content • Clarity of appearance of developments news and events • Critical homepage attractions within entry screen view • Ease of site management by AUSVEG
Value proposition	• There is plenty of information available • There is a need to frequently return for updates • Minimisation of clicks to reach useful information
Use of fonts and colour	• Consistency with the AUSVEG corporate and publication colours (defined blue, orange, green, grey) • Clear typeface easy to read

Functionality

Site functionality requirements included the following major items:

Issue	*Attributes*
Homepage layout	• To cater for access to AUSVEG and industry development information
News and updates	• Scope for time sensitive news items to be added and updated
Document storage	• Housing a large number of electronic documents on pages throughout the site for user access and downloading
Membership	• Membership registration • House and protect a database of site member details
Secure access	• Login access to specific pages based on site user groups (Grocers, Supply chain, Media)
Site search capability	• Specific technical database search functionality (outlined below in Section 3.5) • Full site search functions
Content management	• User management facilities to enable AUSVEG staff to maintain all content pages and site structure

An overview of the homepage layout is as follows:

Secure access

A key part of the site structure was the provision of a secure access zone in the site for levy payers and other supply chain participants. It was a policy directive from AUSVEG to **limit access** to the Industry development sections of the site to those industry participants with Login access.

Site maintenance and upkeep

Following the activation of the new AUSVEG website, until completion of this project, Freshlogic continued to manage various improvements to the functionality and layout of the website pages and to undertake necessary ad-hoc developments.

3.5 Technical insights database

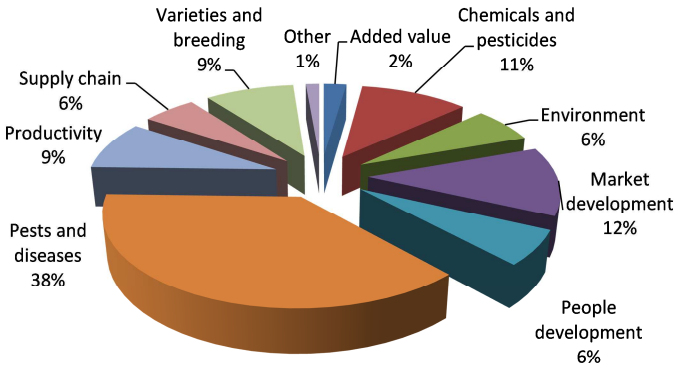
Purpose

The purpose of this phase of the project has been to create an electronic warehouse of all completed HAL-funded R&D outputs and relevant technical materials that will aid on-farm decision-making. A primary outcome was to ensure that this warehouse was searchable by specified criteria that would make the information more accessible to industry.

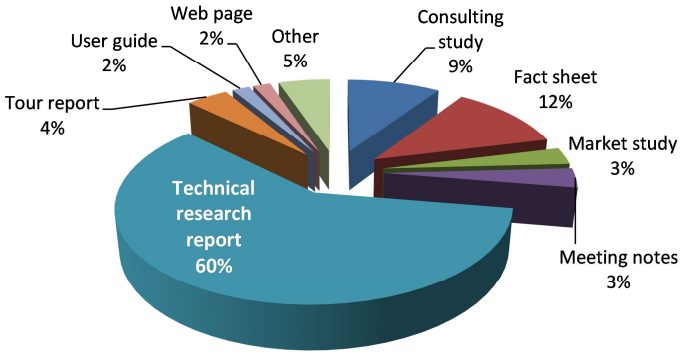
Resources

At the date of this report the technical insights database contains just over 1300 items – which comprise:

	Number
Completed HAL-funded R&D reports	958
Technical tools and aids	349
Total	1307



Focus area of available resources (May 2012)



Document types in database (May 2012)

The steps in development of a searchable database of the technical insights for industry were as follows:

1. We designed and developed a stand-alone offline database (this is referred to in this report as the "Access TIDB")
2. The Access TIDB was fully loaded with materials that were then to hand during March to May 2010
3. An on-line version of the database (referred to as the "WebAppDB") with identical search functionality was created within the website platform to mirror the functionality of the off-line version.

   This facility was designed during the web development phase with specific reference to the requirements for a search engine of document resources in an on-line environment. During this phase a number of "benchmark" on-line search tools were reviewed to identify features, presentation and performance issues.
4. Additions and updates to the database items were managed in parallel between the Access TIDB and the WebAppDB. This process is discussed further below.

Approach to the identification and collation of resource materials

The following steps were taken to identify, source and collate technical materials.

It became apparent at an early stage of the work that the original contractual requirement to only include R&D reports in the database risked omitting practical and useful tools and business systems that exist outside the HAL R&D system. In some cases these additional resources had been developed as a follow-up to completed R&D projects. We accordingly extended application of the database to capture such materials, which required no additional functionality in the database tools and could be catered for by a wider categorization of document types.

Research reports

- Past completed R&D projects were identified with the assistance of HAL using their HALO system. The completeness of listings was cross-checked against Vegetable Industry Annual Reports and other source materials.
- Electronic copies of past reports were assembled from HAL, AUSVEG and a wide variety of sources, including the leaders of various R&D projects.
- We established a basis for valid description, status and categorisation of past R&D reports, following the review of a large portion of these items.

Technical tools

The following steps were undertaken:

- Following upload of all available R&D reports into the database, Freshlogic liaised with a number of research leaders to identify technical tools that should be included in the Access TIDB and WebAppDB.
- These materials were evaluated with technical input and where appropriate were added to the Access TIDB and the WebAppDB, to ensure that the knowledge management system for vegetables provided greater relevance to users.
- R&D reports were then linked to the relevant technical tools to provide additional insights and practical applications.

Database design and functionality

The Access TIDB was developed by Freshlogic in Microsoft Access software, after an evaluation of a number of software platform options, such as SQL and Excel.

The key drivers of design of the Access TIDB were:

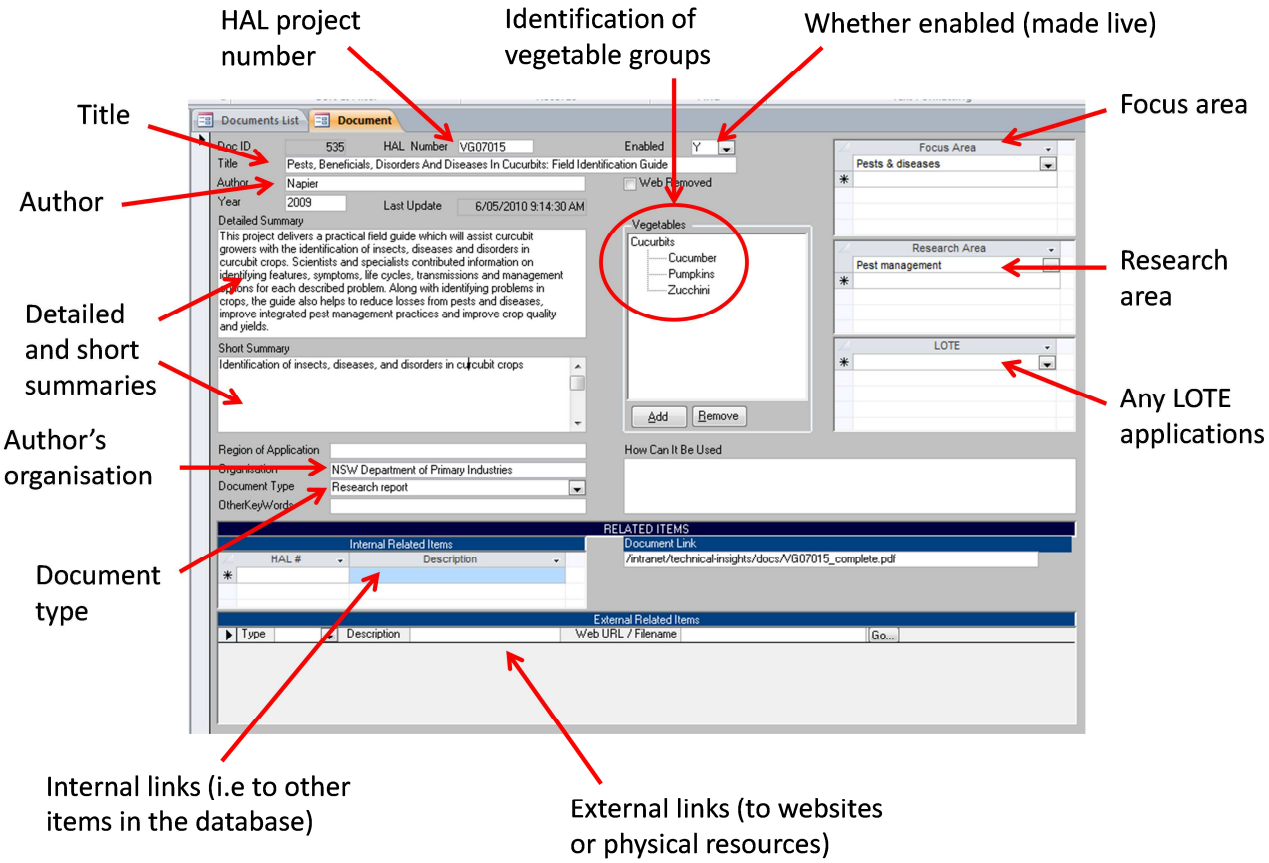
- The search functionality that would be required (in the eventual WebAppDB) – see the search functionality outlined below
- The relevant information required to meaningfully summarise the technical resources
- The need to cater for vegetables as individual *types* or as *groups* (which have related scientific species, common issues and threats or market relevance)
- The need to create “related item” linkages within the database so that a user could track connected, subsequent or preceding pieces of work, or tools that were a further application of research.
- The need to link certain items to external resources outside the database domain – such as housed on other industry or Government websites.

Précis

A key part of the early stage of the work was the development of a précis form as a database input form that would capture all essential details (as data fields) to ensure the above functionality requirements could be adequately met and that future flexibility would not be hampered.

The précis report has been used to date on R&D project outcomes for projects completed in the year 2000 and later. Earlier completed works have been catalogued as part of this work but have not been added to the Access TIDB.

An overview of the features of the précis is set out below:



Search engine functionality

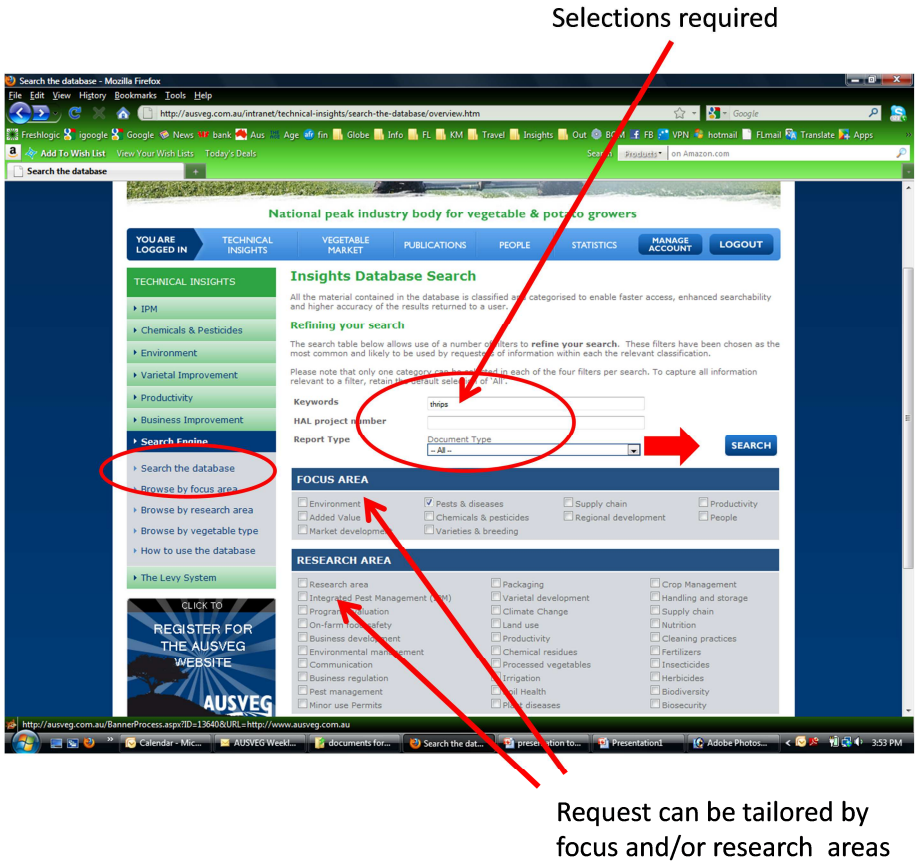
The on-line WebAppDB search engine was developed with functionality to allow the following:

Issue	*Functionality*	*Comment*
Provides scope for tailored search by one or more choices:	Options exist for search by: • Keyword • Vegetable type • Vegetable group • Document type • Focus area • Research area	Enables tailored searches for greater user flexibility to narrow the results.
Search by group items	Items that pertain to individual vegetable types would be included in results if their vegetable group was nominated in a search request	This provides greater flexibility to a user seeking like R&D or tool information
Report as	Option to view either: • Short summary • Detailed summary	The user has an option of viewing a detailed précis on presentation of search results
Download report option	The user has the ability to download an electronic PDF version of the report or document	
Order of results	The search results are presented in order for greatest practical application, which lists “tools” first (item number with a “TL” prefix) ahead of any identified R&D reports and in most recent date order.	
Links	Related item links (to either *external* items such as websites or a contact for hard-copy resources, or *internal* items within the database) are provided for further reference.	

The functionality has been enhanced and refined throughout the project based on feedback from users and the IAC.

Search engine functionality (continued)

The search engine interface that is housed on the site at the completion of this project is illustrated below.



Parallel database operations

A process for managing ongoing parallel updating of the WebAppDB with changes made to the Access TIDB was designed and programmed into the Access TIDB.

This was necessitated as Freshlogic did not obtain clearance from AUSVEG for direct access to the site administration functions of the website, due to policy constraints relating to privacy risks. An export and update routine was programmed into the Access TIDB to enable a smooth parallel update option which could be done by file transfer to AUSVEG for their upload of database changes and new electronic document additions (such as PDF versions of R&D reports and tools) to the WebAppDB.

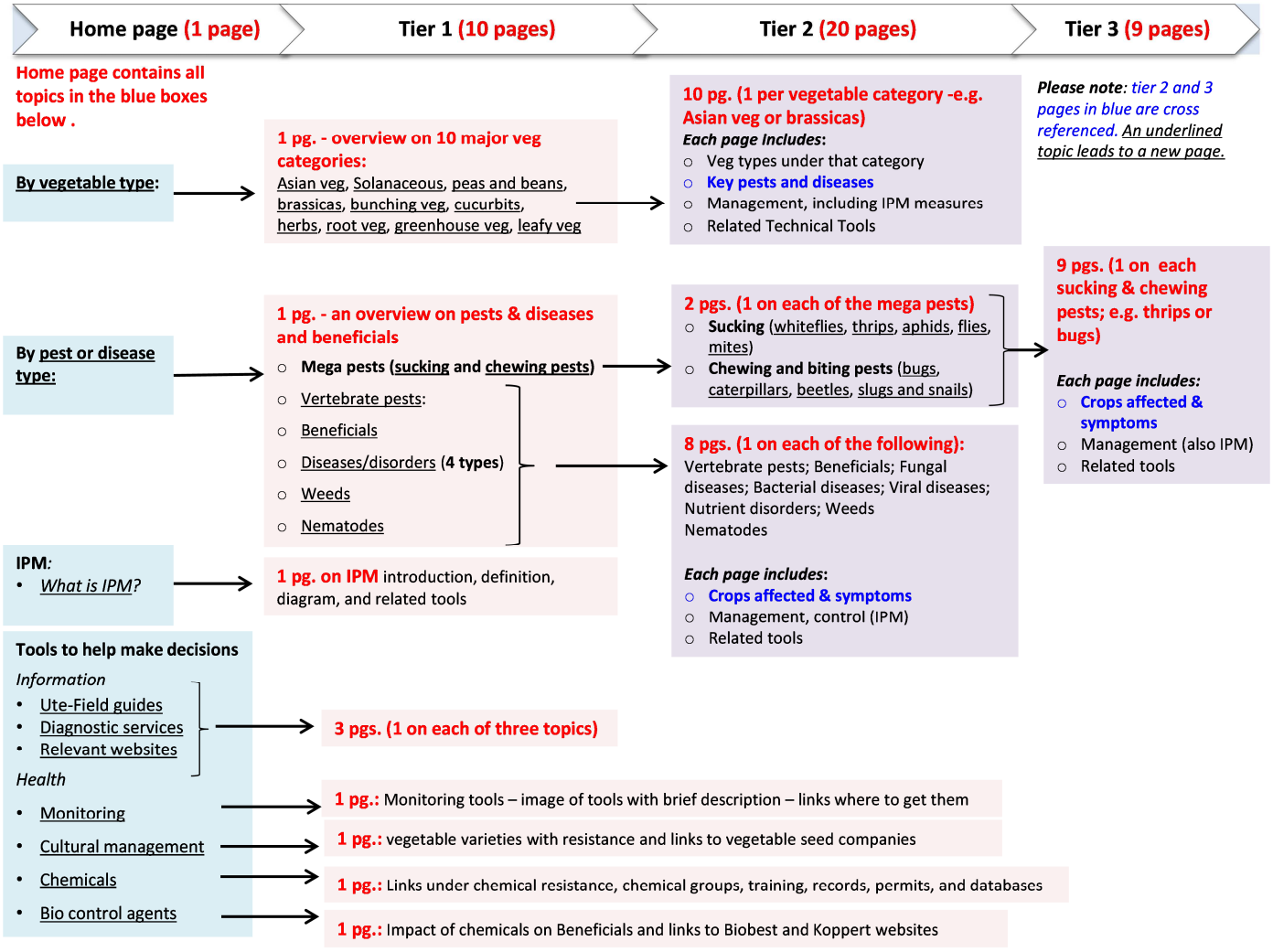
Since the launching of the "live" knowledge management database on the AUSVEG website, Freshlogic has continue to expand and maintain the database of practical tools/aids, in-progress and past R&D projects, and continued to pass updates to AUSVEG.

Supporting website content

A sub-site of technical resource materials pertaining to Pests and Diseases was developed to stand alongside the available materials contained in the WebAppDB. This work originated while the IPM sub-program was in operation and was identified as a useful adjunct to the depth and complexity of the various technical reports contained on the site. Given the significance of accumulated industry knowledge in relation to the management of pests and diseases, it was concluded that industry

access to the identification and solution of technical challenges in their businesses would be aided by better provision and linking of such materials.

Freshlogic prepared content according to a structure (set out below in a chart) to provide a substantial upgrade of technical website content covering pests and diseases, which is to be housed within the technical insights area of the site.



Detailed content pages in accordance with the above structure have been developed by Freshlogic and subjected to an external technical review by Alison Anderson prior to finalisation. These materials have now been loaded onto the AUSVEG website.

3.6 Transfer to industry

At the conclusion of this project the Technical Insights Database will be managed in-house by AUSVEG on behalf of the vegetable industry. This is without reliance on the development and transition processes created and managed by Freshlogic. The process created for ensuring consistency between Web-App and Access database versions of the TIDB are redundant, as the Access TIDB is no longer maintained.

The search-engine Web App within the existing AUSVEG site will be retained as the primary database of technical insights content.

Automation of technical insights database entry

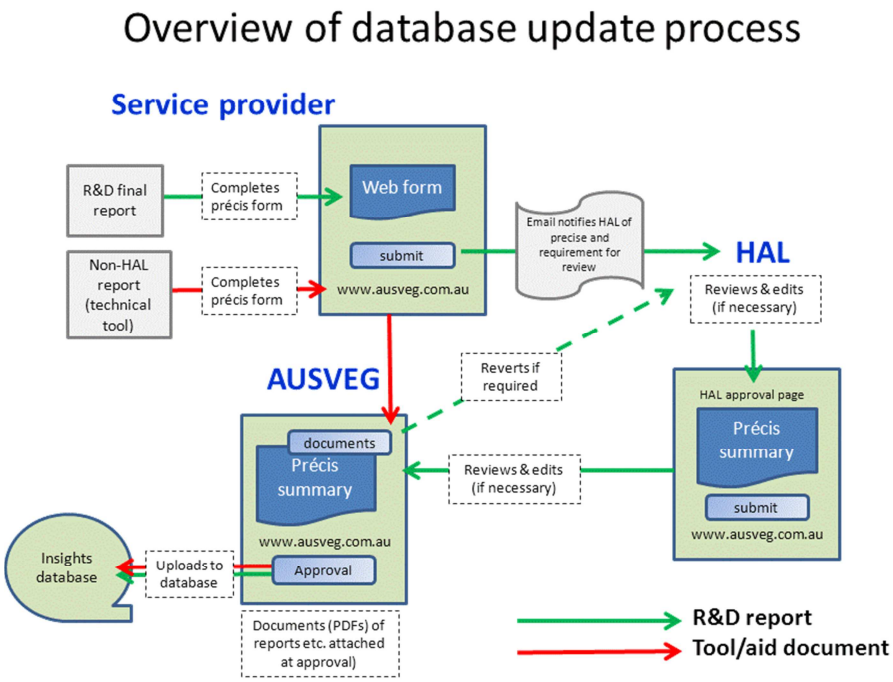
The process of preparing a project précis and uploading the précis and final report to the technical insights database has been automated to allow for ongoing maintenance of the database and resource after the completion of this project.

A process has been developed to allow for the on-line capture of **R&D reports summaries** at the completion of a project and submission of the final report to HAL.

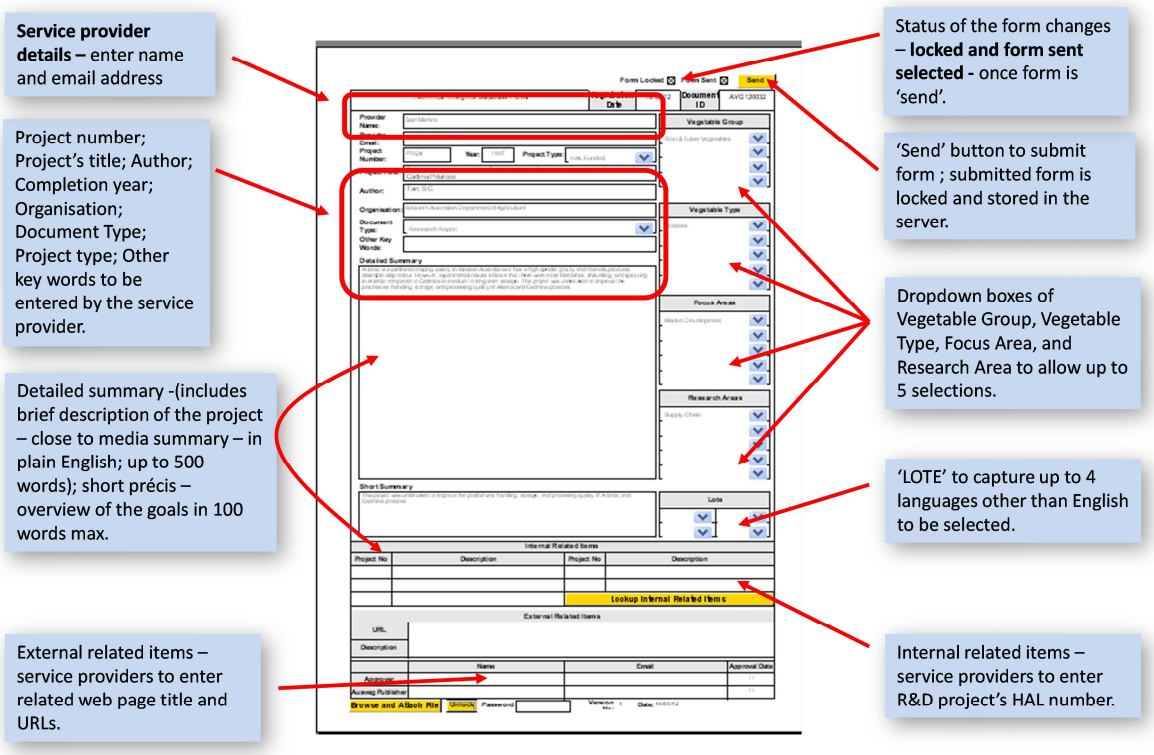
At the completion of a project a user (research project leader or HAL manager) completes **an on-line form** (sent by email to a project leader). The form collates project details consistent with the existing project précis. Related items (existing database items or links to external websites) are to be included in the data capture.

Design and implementation

The diagram below provides an overview of the automated database update and approval process for R&D projects (HAL-funded) and technical tools (non-HAL).



Details of the process are outlined in further detail in a user manual which has been provided to HAL and AUSVEG. Appropriate portions of this will be made available to users of the forms.



The new management system also provides for periodic maintenance of database contents to;

- alter contents based on feedback
- correct inaccuracies, or
- update other information details.

User guide

A confidential user guide has been developed by Freshlogic to assist HAL and AUSVEG in future management and maintenance of the WebAppDB. The guide contains an overview of the processes to be used internally within HAL and AUSVEG in relation to the management of the form capture platform and the maintenance of the database which is housed in the AUSVEG website.

This guide is designed to help HAL and AUSVEG users gain an understanding of the on-line technical insights capture, storage and database management system. The guide has been divided into four sections –

- An overview and introduction (important information for all users),
- Service Provider
- HAL approver
- AUSVEG approval and publishing

Selected parts of that user guide may be appropriate for use by HAL in provision of information to service providers to explain the process for the submission of final project reports, and as such would be included with other materials regarding those project administration processes.

3.7 Other activities

Working with other sub-programs

The Knowledge Management sub-program was closely integrated with all aspects of the VIDP. Information flows from Customers and Markets, People Development and Economics Sub Program have been augmented through the KM Sub Program.

A large part of the KM sub-program involved liaison with other subprograms and assisting them to provide information to industry through the online capability developed in this project.

The KM program and other related sub-programs have helped redefine networks and relationships that are crucial to creating better information flows, feedback loops and ensuring information that is more effective in reaching and benefitting people engaged in and servicing the vegetable industry.

The nature of these – in summary – is as follows:

Sub-program	Integration
Consumers and Markets	• Assisted in the structure and development for VegInsights reports • Developed website page structure and content
Economics	• Assisted in the definition of website content needs
People Development	• Assisted in the definition of website content needs • Assisted in the development and commissioning of an on-line tool
IPM	• Assisted in the development of an on-line tool

Limitations

There were two limitations that have impacted on the nature of the work undertaken by Freshlogic in this sub-program.

Issue	Impact on work tasks and processes
We were not able to gain site administration access to the "back-end" of the AUSVEG website	This required the development of programming to execute updates of the WebAppDB through file transfer rather than direct loading of database revisions.
We were not able to access web usage stats or develop a tailored means of reviewing website usage	We have been provided high-level site usage statistics only, and cannot form a view as to the patronage of the technical insights sections of the site.

3.8 Distribution

The purpose and use of the outcomes from this sub-program have been demonstrated and communicated to industry

Industry events

The new AUSVEG website and technical insights database have been presented and demonstrated at a number of industry events including:

- AUSVEG Conventions in 2011 and 2012
- PMA Fresh Connections 2011
- A number of meetings with AUSVEG strategic partners (aimed at service providers working with growers)
- A number of grower meetings
- 6 briefings to service provider company staff

Publications

The enhancements to the AUSVEG website and the functionality and available resources contained in the WebAppDB have been described in a number of industry publications and articles by AUSVEG as part of their communications activities. This has included coverage in the

- Vegetables Australia
- AUSVEG weekly updates

This coverage will be described in a separate report by AUSVEG on their VIDP activities.

Media coverage

AUSVEG secured media coverage through a number of channels promoting the availability of the searchable database of research and development resources.

4. Evaluation

4.1 Website use

It has not been possible for Freshlogic to gain user feedback through the website, nor to extract site and specific website section visitation pertinent to the sections of the site that relate to industry development activities.

Specific promotion to industry of the website resources and functionality was commenced in the final quarter of 2010, which limits the usefulness of such statistics prior to the commencement of that effort.

Site usage statistics

AUSVEG have reported that overall traffic to the website has increased significantly over the period of this project. The details of the usage reported from their website are contained in the final report for sub-program VG09161.

Survey for 2012 Convention

A survey of industry participants undertaken at the AUSVEG 2012 convention into the resources available through the VIDP showed the following:

- 67% were aware of the R&D database
- 71% of those aware of the database found the resource to be either useful or very useful

4.2 Website and database functionality

In the development of the specification for the industry website, a number of other sites were reviewed and evaluated. Key features at the time of this report are summarised below:

Industry and website	***Comparisons regarding site functionality***	***Comparisons regarding database search capability***
Grains (GRDC site at http://www.grdc.com.au/director/research)	The GRDC site is a formal Australian Government site which offers a flat presentation and does little to engage the user.	The searchable database uses filtering functions, providing the user with topics to commence a search, and filters across 4 areas (which vary per research area) to narrow the presentation of results. Précis research outcomes are provided in much longer form than on the AUSVEG site and research report downloads are not provided in the majority of cases. The resource contains both technical research and other extension and development aids.
Seafood (FRDC site search engine at http://www.frdc.com.au/research/reports)	FRDC has a large industry resources site. The FRDC site was developed in 2009 by LCubed who also developed the AUSVEG site.	The database provides a search of "publications" which include final R&D reports which include FRDC's FISH Magazine, factsheets, newsletters and project related publications. The functionality is basic – allowing key word search only, which can be narrowed by combining terms. Results are précised and research report downloads available[#].

Industry and website	*Comparisons regarding site functionality*	*Comparisons regarding database search capability*
Pork (Australia Pork site at http://www.australianpork.com.au)	APL operates a simple site with basic navigation. The site content is housed in a small number of sections which has resulted in the navigation being difficult to follow. Sub-sites are provided for certain producer and consumer programs.	There is no searchable database of findings. The R&D reports are listed on the website under research or focus areas, and précised summaries provided. Reports are not downloadable from the site, but can be obtained by emailing Australian Pork[#].
Dairy (Dairy Australia's site at www.dairyaustralia.com.au)	Dairy Australia offers a comprehensive site with accessible navigation which covers farm, market, trade and information resources. Due to the integrated industry structure (between DA, state DPI agencies and other providers) and the extent of the technical specialisms that have been developed, R&D outcomes are presented in practical form via a program structure that aligns with solution areas for producers.	The structure of program information and extension materials is such that a database of searchable resource materials is not provided or required. The technical materials (which are mostly presented in the form of extension aids and tools) are organised by program area. Sub-sites are used in some cases of significant resource areas – such as climate. The industry has invested significantly in calculators and tools to assist adoption of research outcomes. Research reports are available within this structure as supporting materials*.
Meat (MLA's site at www.mla.com.au)	MLA's site is very similar in structure and user engagement to that of Dairy Australia.	The functionality of the R&D report search is basic – allowing key word search only, which can be narrowed by combining terms. Results are précised but downloads are only available by emailing MLA[#]. Sub-sites provide research outcomes for nutrition and off-farm areas of research. In the latter case, the sub-site provides a listing of reports only, with downloads if required*[#].
Sugar (SRDC site search engine at http://www.srdc.gov.au/SearchReports.aspx	SRDC services R&D into sugar cane production, and has a similar site content to AUSVEG but on a smaller scale to its narrower role.	Basic functionality allows a search of all research reports, with scope to narrow by region or type of project. A précis of the research outcomes is provided in the results and a final report is available for download*[#].

* R&D results are freely accessible to any user of the site and are not restricted to levy payers

[#] There is no apparent linking of database items to show relevant related materials.

4.3 Publication readership

It has not been possible for Freshlogic to gain user feedback on publication content, nor to extract readership details to gauge the extent of "reach" of promotional and informational activities.

5. Implications

5.1 Key learnings and implications for Australian horticulture

A "one-stop shop" resource

The housing of all the vegetable industry development and industry services content in one website creates a "one-stop shop" for users and provides significant benefits for users by reducing search times. It is also an efficient use of industry funds, to provide all the resources and information in one location.

This project has put a large effort into collating and housing technical resources in a single website. This has been achieved with the collaboration and support of a number of service providers, who have seen the merit in this approach.

Practical aids more important

This project has increased the visibility of practical business aids for growers that have been developed using industry levy funds and government funds.

The KM project commenced with the objective of making available technical R&D reports to industry participants including levy payers.

Our early collation and review of materials suggested they would be of limited use to growers and their advisers in their current form. As the project proceeded, the content was extended to include practical tools and materials and extension aids that had been developed from the outcomes of R&D projects, as well as those developed by other providers.

As this project concludes, it is apparent that the vegetable sector remains well behind a number of other agricultural industries in making practical resources available and promoting the adoption of R&D outcomes. This work should be ongoing if the effectiveness of past and current investments is to be improved.

5.2 Challenges and opportunities, strengths and weaknesses.

This project has attempted to overcome an inherent weakness in the nature of technical resources available to the vegetable industry. The existing resources are largely technical R&D reports which have been developed by the research provider to meet research funding guidelines. The practically-oriented tools that explain outcomes and applications of this work are scattered. A "warehouse" resource is only as good as the materials that are housed within it.

The development of large on-line technical resource databases overcomes the lack of centrally available information but creates an ongoing challenge for industry to keep the resource relevant and useful to industry.

Future investment in the development of on-line technical resources should be oriented towards ensuring the available materials are as practical as possible to ensure easier understanding and application by growers and advisers. This will require ongoing monitoring of materials in practical use in the field and identifying and addressing gaps in the information.

5.3 Potential future initiatives

There is potential scope to apply the outcomes from this project to other parts of the horticulture sector. The online searchable database of technical knowledge could be extended to fruit and other categories by the addition of items to the same or duplicate database and where necessary extending or modifying the categorisation of database entries.

Cross-industry application into a consolidated database of findings may provide improved scope for benefits of R&D outcomes – as approaches and outcomes may have relevance from one category to another where facing similar technical, management or marketing challenges - and over time reduce the risks of duplication in investments.

The ongoing management and maintenance of the technical knowledge contained in the website engine will require an ongoing commitment of resources to ensure the resources remain relevant and that there is continuous improvement in the nature of the materials accessible through the online portal and other channels.

6. Recommendations

6.1 Website development

The AUSVEG website was developed on the Business Catalyst platform, which is a website software environment hosted by a unit of Adobe in the US. AUSVEG has a direct hosting agreement with Business Catalyst.

Freshlogic understands that at the time of this report, there are no website support arrangements in place between AUSVEG and LCubed or any other local website developer for general website support.

Over the period since the website going "live" Freshlogic has maintained a development support arrangement with LCubed to ensure:

- Ready access to development input in the ongoing management of the interface of the TIDB and the WebAppDB, and
- To manage extensions to site content and functionality which have included addition of features and content supporting other VIDP sub-programs
- To promptly repair any problems with site functionality.

As a prudent measure, it is recommended that arrangements such as the existing Freshlogic support arrangements with a web developer that has appropriate credentials be adopted by AUSVEG on an ongoing basis to provide the security of prompt site support and ongoing input on optimising use of the website for AUSVEG and industry benefit.

6.2 Technical insights resource

In view of the importance of maintaining the currency and relevance of the on-line technical database resources and related website content, there is likely to be a need for a dedicated industry services resource to manage the content available through the database.

This resource would ideally be required to:

- Liaise with industry service providers to identify and validate additional technical aids in use by industry and/or produced after the completion of R&D projects to supplement formal R&D reports;
- Periodically update and expand where necessary website page content – such as that created for the pests and diseases. This may include adding further sections to the current site for other technical areas to summarise available knowhow that has been the product of past R&D outcomes;
- Ensure the integrity of the database content including acting on feedback regarding the accuracy of the content (as regards wording of précis summaries, categorisation, and internal cross-referencing of materials);
- Identify and remove redundant materials;
- Develop newsletter material and news updates to support the communications activities of AUSVEG in promoting additions and changes to the available resource.

6.3 Program focus areas

At an early stage of this project, we identified a significant difference between the state of vegetable industry technical R&D outputs (and other R&D outcomes); and those of other agriculture industry sectors.

The table below shows the progression made in the structure of available resources. The proposed "destination" is in line with the achievements of leading industry service organisation as R&D providers, such as Dairy Australia and – to a lesser extent – MLA. This report recommends a continuation of work in this direction.

A better alignment of skills according to solution areas relevant to growers and other supply chain participants can be achieved by developing a stronger program focus in technical and business management areas. As shown below, this will require an ongoing development of practical aids for use in vegetable enterprises, lessening the dependence on technical R&D reports as an accessible resource.

	At the start of the KM work	**In 2012, the on-line database and website contains**	**Destination**
Primary interface	• R&D reports • Vegenotes	• Tools • Vegenotes • Technotes • Précised R&D learnings	• Technical programs • Business improvement programs
Support	• Various technical materials of state agencies	• R&D reports • Summary of technical knowledge in key areas (such as pests and diseases) • Business improvement programs • Links to external aids	• Tools • Technotes • Program leaders
Drivers of R&D investments	• Responses to calls	• Directions from the industry's strategic investment plan	• Prioritised focus areas, structured selection criteria
Background resource			• Précised R&D learnings

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