

Final report

Project code:

Prepared by:

V.TEC 1702 – Innovation Scout Liam McNamara BG Solutions Group Limited

Date submitted:

10 October 2017

Innovation Scout

This is an MLA Donor Company funded project, co-funded by AMPC.

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

Table of contents

0	verview	. 3
1.1	Final Report	3
Р	roject objectives	3
Tł	he Pilot in Review (Connections and relationships)	. 3
D	elegate visits (MLA staff and the benefits of that)	14
Ke	ey discussion points	15
Ke	ey contacts/network	16
Potential project concepts16		16
5.1	Producer / Feedlot	16
5.2	Processing	17
5.3	Value Add / Co-Products / Packaging & Logistics	17
Α	ppendix A – newsletters	18
	O 1.1 Pi TI D Ki 5.1 5.2 5.3 A	Overview 1.1 Final Report. Project objectives. The Pilot in Review (Connections and relationships) Delegate visits (MLA staff and the benefits of that). Key discussion points Key contacts/network Potential project concepts 5.1 Producer / Feedlot. 5.2 Processing 5.3 Value Add / Co-Products / Packaging & Logistics. Appendix A – newsletters. The benefits of that is a state of the sta

1 Overview

1.1 Final Report

This report outlines the progress made during the Innovation Scout Pilot Program, from the period 15 March to 25 September 2017.

2 Project objectives

- 1. Identify promising European and UK innovation/R&D partners and providers for MLA and AMPC to partner with to provide solutions to problems and satisfy unmet needs.
- 2. Manage Australian Red meat industry interests (projects) in Europe.
- 3. Inform strategic innovation decisions being undertaken for the red meat industry.
- 4. Scout for new knowledge, market insights and innovation opportunities in product, processing and technologies that could benefit the Australian industry.

1 The Pilot in Review (Connections and relationships)

Austrade





Austrade have people all through

Europe and a very strong existing network that we are trying to tap me into. This network includes both innovative R&D companies and commercial companies.

After looking at both our organisation's mandates we identified a potential operating model that would allow us to work together in a mutually beneficial relationship. This model is illustrated below.



In Brief, this department of Austrade has 3 focus areas which include:

- Capital,
- Food processing and •
- Agri-tech •

Teagasc

Teagasc is the Irish Agriculture and Food

providing integrated research, advisory and training services to the agriculture and food industry and rural communities.

Teagasc have four primary programme areas:

Teagasc very receptive to the idea of collaboration with MLA/AMPC. Teagasc is very well funded and has a variety of research focus areas that could be useful to work with.



Animal and Grassland Research and Innovation	Crops, Environment and Land Use
Food	Rural Economy and Development

Project interests include:

- Increasing colour life by using a small and precise amount of carbon monoxide in the modified atmosphere packaging (MAP) mix.
- Using diagnostic ultrasound to predict loin (high value cuts) mass and hence volume and value.
- Hot boning out high value cuts to avoid cold shortening of these cuts resulting in more tender meat.
- Developing and evaluating methods for monitoring for micro-toxins and veterinary drugs within the meat tissue itself such as anthelmintic drugs.
- Understanding the factors that allow bacteria to survive and build resistance to food safety interventions understanding why bacteria adapt to certain stresses.

Meat Technology Ireland (MTI).

Meat Technology Ireland (formerly the Meat Technology Centre), is an industry-led initiative that is aimed at building a strategic research and innovation base for beef and sheep-meat processing in Ireland.

Meat Technology Ireland is an €8.1 million five-year research and innovation programme, developed by industry and co-funded by Enterprise Ireland and a consortium of nine beef and sheep-meat processing companies.

They have areas of interest not dissimilar to Australia's. These being:

- Genomics
- New markets and biomarkers
- Shelf-life and safety
- Meat grading
- Tenderisation techniques (reducing variability in tenderness)
- Health

The MTI is hosted by Teagasc at its Ashtown Food Research Facility in Dublin with Dublin Institute of Technology (DIT), Dublin City University (DCU), University College Cork (UCC) and the Irish Cattle Breeders Federation (ICBF) involved as research providers. The companies behind the initiative are ABP Ireland, Ashbourne Meat Processors, Dawn Meats Group, Dunbia (Ireland), Hilton Foods Ireland, Irish Country Meats, Kepak Group, Liffey Meats, and Slaney Foods International.

The opportunity here is to look at long term collaboration activities based or areas of interest that align with the Australian industry.

Frontmatec

Frontmatec develops world-leading customised **FRONTMATEC** solutions for automation in the food industry, other hygiene sensitive industries and the utilities industry.

Meetings in May and June identified multiple projects opportunities that were considered to have potential. Since these meetings four MDC project proposals have been submitted

- Frontmatec Primal Recognition Project scoping study (approved)
- Frontmatec Beef and Lamb Carcase Ink Jet Printing (Stage 1) (approved)
- Frontmatec BCC3 Proposal (approved)
- Frontmatec Chine Bone Removal Automation (under review)

Future projects that have been identified and will be subsequently submitted.

- Frontmatec Beef Boning Automation Identification Phase proposal currently on hold to be completed once the chine bone project has been completed.
- Boning room cutting automation Ink jet project using DEXA images to print cut lines on beef and lamb carcases. – Project proposal waiting to be informed by the Frontmatec Beef and Lamb Carcase Ink Jet Printing (Stage 1) Project.
- Boning room traceability Ink jet project using DEXA images to print on a carcase primal tracking numbers. Project proposal waiting to be informed by the Frontmatec Beef and Lamb Carcase Ink Jet Printing (Stage 1) Project.

Ink development work (new inks, including non-visible). On hold pending review of the proposed ink jet project.

Lely

Lely specialise in automation in the Dairy industry. Lely have installed some automatic feeders in beef cattle feedlots in Ireland and the UK but they have been for a smaller number of animals (approximately 500 head).



Through the MDC funding model there is the possibility of undertaking a 'scoping study' to understand what would be required by Lely to upgrade or upscale their machinery to be fit for purpose in the Australian setting.

Lely Luna (cattle brushes) are used in dairy cattle environments where cattle can use these voluntarily and because of this there is no added stress to the cow because they enjoy it.

A regional manager from Lely is moving to Australia late 2017 and MLA representatives will continue talks with him at this time to discuss further opportunities for investment and collaboration.

The opportunity is to install these into a feedlot setting to evaluate if they have any impact regarding dag removal and hence resulting in cleaner cattle leaving the feedlot.

Agri-Epicentre



Agri-Epicentre is a new UK government funded organisation designed to help provide engineering and precision agriculture solutions for the Agri-Food industry. Their aim to help farmers boost profitability by improving product quality and overcoming agricultural challenges through the use of new technology and smarter systems.

Currently Agri-Epicentre have 126 research and commercial partners. They have a large number of commercial members mean that there is a real effort towards industry focused outcomes rather than pure research. These members are from all along the supply chain.

Initial potential areas of interest that we discussed were:

Systems to monitor feed quality and/or responses to animal feeding in real time.

- Sensors to monitor live-weight gain and potential carcass characteristics in live animals.
- Use of drones and satellites within arable production.

A list of companies that would potentially suit the MDC and AMPC funding models has been drafted by Agri-Epicentre and these companies will be explored and met with during an event in October.

Devenish nutrition



Devenish Nutrition based in the United Kingdom provide nutritional solutions for the intensive livestock sector.

They are keen to get into the Australian market and are willing to invest in the right projects. They spend a lot of their revenue back into the business on R&D so I think they are a good company to look at (they came up with the first Omega 3 chicken launched by Waitrose).

Devenish have a Soil to Society approach, which seems to align with the whole of value chain approach taken by the Australian industry.

Identified a few areas that might be applicable to our industry are:

- Natural enrichment, through the feed, of meat products with Omega, Vitamin D and other key nutrients: First omega-enriched chicken launched by a major UK retailer, Waitrose in 2016, and now looking at pork and beef.
- Improved shelf-life and enhanced meat safety using a grass-extracted marker and camera system based on fluorescence, which detects gut spillage into the carcase and therefore reduces microbiological contamination (spoilage & pathogenic)
- Improved soil quality and grassland through slurry conditioning using a microbiological system (this originates in Australia)
- Rumen conditioning, potential link to beef quality
- By-pass starch and by-pass protein

9

V.TEC.1702 Innovation Scout

• Rumen bolus for early disease detection

Queens University –

Institute for Global Food Security – Agri-Food Quest

Agri-Food Quest have a very interesting model which is focused on Enterprise and industry outcomes rather than just research.

This is built of a three-tiered approach to providing outputs:

- Knowledge Library
- Innovation Engine
- Enterprise Catalyst

As a result, their outputs have very practical applications.

They have connections with many local and European networks. Follow up discussions and serious thought to develop projects would be worthwhile because they work in a number of areas.

Some of the interesting ideas that arose were:

- Use of Rapid Evaporative Ionisation Mass Spectrometry (REIMS) to identify product. There is some evidence that beef from different breeds can be differentiated.
- They have developed a pocket-sized Near InfraRed (NIR) technology that is connected via Bluetooth to a smartphone app to determine if a sample is authentic or adulterated (they did the on dried Oregano that was published in a popular Australian magazine).
- Block chain technology was mentioned as a possibility to follow up on.
- Rapid Evaporative Ionisation Mass Spectrometry (REIMS) and looking at its applicability in Australia for eating quality parameters. In particular, determining intramuscular fat, tenderness and flavour.



Grow through research

Rainbow Bee Eater

An Australian company called Rainbow Bee-Eater have a technology that utilises biomass and produces both syngas and biochar that can then be used as a boiler fuel as an alternative to the consumption of fossil fuels in Australian meat processing plants and feedlots. Their technology is called Echo2 and is pictured below.



Discussions with their managing Director Peter Burgess to understand if there is any suitability in the Australian meat industry have occurred. As it stands Rainbow Bee-Eater are progressing towards firmly contracting their first commercial demonstration project and will keep us abreast of any developments.

Fraunhofer Institute- Food Chain Management

Alliance (Germany).



Fraunhofer is Europe's largest application-oriented research organisation. Located in Germany but with offices across the globe, their research efforts are geared entirely to people's needs: health, security, communication, energy and the environment.

Fraunhofer has been focussed on building networks and is heavily involved in establishing high performance centres, innovation clusters and has built many strategic alliances with both industry groups, research centres and the commercial community. This meeting gives MLA the opportunity to tap into the German R&D community and understand what Germany is doing in other proteins outside of red meat and other industries entirely.

Fraunhofer have agreed to collect first information about experiences, competences and former projects in the institutes. They will highlight important areas that they think could have an impact in the next 5-10 years. Papers should be short (1 page). This is intended to develop a dialogue with the project managers.

The current topics being looked at first are:

- Food Technology,
- Packaging,
- Logistics, and
- Traceability.

The papers are expected for distribution to MLA and AMPC during October for perusal and comment/feedback. This approach gives us a good opportunity to engage with a vastly experienced network of institutions.

The Food Processing Initiative (Germany)

We met with Norbert Reichl who is the manager of the Food-Processing Initiative (FPI) located in Germany. FPI is a network organisation with approximately 120 members. The network covers the business sector as well as universities, research facilities and access to major organisations.



FPI aims to facilitate innovation through branding and cooperation in the whole food value chain. By doing this they are effectively trying to bridge the gap between research and the commercial sector.

The major opportunities here are:

- networking opportunities with established and innovative businesses and organisations in the food sector
- increased visibility through their network through events, website and fairs
- access to international conferences, meetings and network activities.

University of Bonn – Cold Chain Management (Germany)

The Cold Chain Management Group work within the, Institute of Nutrition and Food Science, in the Faculty of Agriculture, Institute of Animal Science.



Rheinische Friedrich-Wilhelms-Universität Bonn

The primary research focus of the group is the

development and implementation of innovative methods and models for the improvement of food safety and quality and the reduction of food waste in perishable food supply chains.

Their research topics include:

- Development and investigation of innovative technologies to improve food quality and safety and to reduce food waste
- Development of models to predict food quality, safety and shelf life
- Development of new approaches and methods to optimise hygienic, temperature- and packaging conditions in different food chains
- Product and process specific implementation of new technologies

There are three packaging projects that are going to be at the first instance explored. These are:

- Active packaging
- Intelligent packaging
- Optimisation of modified atmosphere packaging

Bonn have some products that are practically ready for use however, the retailers in Germany are not interested in proceeding for whatever reason. The next steps here for the Australian Industry would be to understand what benefits we expect to achieve by implementing some of these packaging formats as well as barriers to adoption in Australia.

Unibio

Unibio is a Danish biotechnology company with core competences within fermentation technologies.



Through their Uni-Loop technology they have developed Uni-Protein which has potential applications as an additive for long-life animal feed.

Key things to consider about this technology /product:

- Uni-Protein is developed in a natural process without any genetic manipulation
- Non-polluting product, as it is produced by a microbial culture with natural gas as the sole carbon and energy source (up to 52% reduction in CO2 emissions).
- Long shelf life and stable production process.
- Approved by the EU as an ingredient in animal feed without any pre-market authorisation.
- The high protein quality allows for a more efficient diet with less quantities required, minimising the nitrogen excretion.
- Tested as feed for salmon, calves, pigs, chickens, mink and blue fox with positive results in terms of acceptance and growth rates.

Conversations with their Chief operating officer has seen us agree that a good way forward for them would be to set up a small scoping study/ feasibility study based on the technology's suitability to Australian production systems, this would outline a clear pathway forward.

Agri-Food Bioscience Institute.



The Agri-Food and Biosciences Institute (AFBI) is a multi-

disciplinary scientific institute based in Northern Ireland that offers scientific services to a wide range of customers in the agri-food sector.

Opportunities with AFBI are:

- On farm work surrounding live animal sensor technology and further developing tools to determine the "Optimal Time to Slaughter" in Live Animals.
- Off Farm Hyperspectral imaging to define ossification.
- Off Farm Using marker compounds that are easily detected in meat as an indication of the pleasant flavour compounds that are present in meat.
- Off Farm Developing an organoleptic shelf life model for frozen meat.

The question is can the flavour work at the end of the supply chain go all the way back up the supply chain to the farmer to help make improved management decisions on farm?

2 Delegate visits (MLA staff and the benefits of that)

Industry delegates making trips into Europe and the United Kingdom gave face time to the scout which allowed spend time to be spent with them and to really understand their drivers.

Benefits were:

- Helped to understand their perspective on subject matter and their strategic direction.
- Ask questions that required an answer at the time rather than having to wait for a response to an email.
- Helped to shoot the breeze with someone else from the meat industry and have someone as a "sound board" to run ideas by in an informal manner.

Delegates were:

- Sean Starling (MLA)
- Darryl Heidke (MLA)
- Ian Jenson (MLA)
- Michael Crowley (MLA)
- Sarah Strachan (MLA)
- Richard Apps (MLA)
- Brad Mathers (AMPC)
- Peter McGilchrist (UNE)
- David Pethick (Murdoch)
- Graham Gardner (Murdoch)

3 Key discussion points

Long lead time is key, especially when dealing with research organisations rather than companies. Even when it seems that partnering on MDC projects is in a company's best interest, it still takes a lot of time and discussion to get them on board with the idea of coinvesting and the process by which this is done.

Building relationships is the most important thing early on. This being said, it would have been ideal to get more projects up and running early on, however we started by building relationships first to try and get long term value.

Having access to MLA and AMPC managers helps to understanding priority areas of both organisations. Communication in both directions is essential in ensuring that the areas that we are working on are the correct ones. It is not enough to find a good company that has an innovative product or technology but rather there is a need to ensure there is a market for this in the Australian red meat industry.

If this program was to be duplicated in other area of the world then it would pay to set up some architecture around the project to ensure that there is a process that could allow prospective companies to be "vetted".

This being the pilot and the first project undertaking this kind of work, there is an opportunity to improve the pipeline of information and set realistic expectations. There is a need to understand that the first few months are effectively a "seeding" period where connections are made and then followed up by executing on projects.

Communication with management teams of prospective partners is essential early on to ensure that they follow through with taking their project ideas for internal approval. And also to ensure they maintain trajectory on their projects. Organisations generally have a complete workload prior to connecting with what we are trying to achieve. I believe that they do not necessarily understand the funding model and so to ensure that they are fully across it, close interaction and relationship management is required.

Broadly, it seems that most countries experience the same pre-competition issues as Australian this include areas of environmental management, energy and resource efficiency, pollution management and packaging. The opportunity here is to investigate (through

15

these contacts being made) what interesting or innovative installations have been undertaken, then work on what the drivers for these were and the benefits and work with MLA/AMPC program managers to understand what would be suitable for Australian production systems.

4 Key contacts/network

Deliberately building this network and promoting this program resulted in multidimensional networking. Now other organisations are promoting us and what we are trying to achieve, giving us, substantial access and advantage moving forward.



5 Potential project concepts

5.1 Producer / Feedlot

- On farm advanced sensing technologies (AFBI)
- Omega 3 beef Nutrition (Devenish Nutrition)

- Bolus for health (Devenish Nutrition)
- R&D Milling and advanced nutrition research center (Devenish Nutrition)
- R&D team visit to Australia to explore opportunities (Devenish Nutrition)
- Feedlot Cattle Brushes (Lely)
- Sensors to monitor live-weight gain and potential carcass characteristics in live animals (Agri Epicentre)

5.2 Processing

- Fluorescent Bio-marker to detect gut spillage in processing (Devenish Nutrition)
- Beef Boning Automation Scoping Study (Frontmatec)
- Bone-in Lamb FQ Further Development (Frontmatec)
- Inkjet Stage 2 print cut lines on beef and lamb carcasses B/room traceability (Frontmatec).
- Inkjet Stage 3 printing carcass primal tracking numbers B/room traceability (Frontmatec)
- Fluorescence spectroscopy (Bonn University)
- Hyperspectral imaging for ossification (AFBI).

5.3 Value Add / Co-Products / Packaging & Logistics

- Converting methane to animal feed (Unibio)
- Parcelive advanced logistics tracking "packaging of things" (Hanhaa)
- Active Packaging (Bonn University)
- Intelligent Packaging (Bonn University)
- Echo2 Biomass into Boiler fuel (Rainbow Bee Eater)
- Rapid Evaporative Ionisation Mass Spectrometry for application in meat (Agri-Food Quest / Queens University)
- Cascading of products Re-aligning the concept of waste (Fraunhofer and Teagasc)
- Pocket size near infra-red (NIR) unit for traceability (Agri-Food Quest / Queens University)
- Long term frozen storage of beef and impact on and modelling of autoxidation/off-flavour formation (AFBI).

6 Appendix A – newsletters

Innovation Scout

Insights Newsletter #1

At a glance... MLA Department: Supply Chain Sustainability

Focus Area

 Driving adoption of innovation that improves management of water, energy, waste, greenhouse gas emissions, soils, and weeds.

The Issue

Increasing cost of boiler fuels and environmental impact of burning coal.

The Opportunity

Rainbow Bee-Eater Echo2

Key Advantages

- Converts organic residues to clean 'make and use' gas which fuels a close coupled high efficiency gas engine-generator and/or a hot water boiler or chiller.
- Can process a wide range of moist or dry organic residues from timber and food processing, broad acre and animal farming and urban green wastes.
- Australian Company
- Low operating Cost
- Technology can be modulated to suit heating requirements.
- Suitable for both processing plants and feedlots.





Project Highlights

Echo 2 Produces gas, electricity, heat, cooling

> Produces Syngas and Biochar

Low operating cost

Reduce waste disposal costs



Who to contact?

Peter Burgess

- Managing Director
- Rainbow Bee Eater Pty Ltd
- Melbourne, Australia
- Peter.burgess@rainbowbeeeater.com.au

Doug McNicholl

- Value Chain Relationship Manager, Meat & Livestock Australia
- dmcnicholl@mla.com.au

Innovation Scout

Insights Newsletter # 3

Australian Gover

MLA Department: Research & Development and

Building a solid network of providers across Europe in the Innovation space.

Increasing exposure to organisations that enable multi-dimensional networking.

Driving innovation through networks and building a channel for providers into

Working with Austrade to seek out companies and emerging technologies that

A significant network of Austrade representatives across Europe.

Already began to identify suitable companies for the model.

ant Co

AUSTRADE

At a glance...

Innovation

The Focus

the Australian market

could benefit the Australian Red Meat Industry.

The Opportunity

Key Advantages

Already identified companies.

٠



Highlights

Tap onto extensive pre-existing networks of companies and potential R&D providers

Shared focus areas include: - Food processing - Agri-tech

Developed a mutually beneficial operating model = a high willingness to collaborate



Who to contact?

<u>Liam McNamara</u>

- Innovation Scout
- BG Solutions Group
- Liam@bgsolutionsgroup.co.uk
- +44 7418 098 952

Image: (Above) Outline of the mutually beneficial operating model (MLA and Austrade)

Please note that the information in this document is intended for MLA and AMPC Staff and not for external circulation without the prior authorisation of the General Manager of Research Development & Innovation. All banners and logo's are used for informational purposes only.

Australia

Innovation Scout DONOR а m COMPANY MEAT & LIVESTOCK AUSTRALIA Insights Newsletter AMPC **Highlights** FRONTMATEC At a glance... **MLA Department:** Automation and Advanced Sensing What was done •MLA reps (S.Starling and D.Heidke & Innovation Scout L.McNamara) met with Frontmatec projects areas identified R&D team in Denmark in May 2017. •9 high value project areas were identified. for collaboration •Follow up meeting with Frontmatec team (Denmark) in June and 3 proposals submitted. The Opportunity . Collaborate and build a strategic portfolio of projects with a globally recognised leader in automation and robotics in the food industry. •To bring another technology provider into the Australian Red Meat Industry. Thus reducing reliance on single provider in this space. **Key Advantages Project proposals** •Adoption of concepts from other proteins - knowledge that exists within European Pork submitted by June 30. Industry into the Australian Red meat Industry •Recent merger of 5 companies give Frontmatec unique value proposition to Australian industry.



Image: (Above) BCC3 Beef classification system setup (Image courtesy of Frontmatec).

Who to contact?

Darryl Heidke

- Program Manager- Value Chain Technology
- Meat and Livestock Australia
- dheidke@mla.com.au
- +61 (7) 3620 5214

Liam McNamara

- Innovation Scout
- BG Solutions Group
- Liam@bgsolutionsgroup.co.uk
- +44 7418 098 952

Please note that the information in this document is intended for MLA and AMPC Staff and not for external circulation without the prior authorisation of the General Manager of Research Development & Innovation. All banners and logo's are used for informational purposes only.

Innovation Scout Insights Newsletter

At a glance...

MLA Department:

Feedlot Automation

What they do

- Lely specialise in automation in the dairy industry in Europe.
- Possible MLA interest areas:

⇒Cattle brushes

⇒Automatic feeding systems

The **Opportunity**

- To install Lely brushes into a beef cattle feedlot setting to evaluate if they have any impact regarding Dag removal and hence resulting in cleaner cattle leaving the feedlot.
- To understand if the automatic feeding system can be modified to suit required scale of Australian feedlots
- To bring outside technology into the Australian Red Meat Industry.

What's next

Lely have a regional manager - Gert Aerts, moving to Australia (Melbourne) in September.
 Feedlot and automation team to set up a meeting to see what opportunities exist.



Image: (Above) Lety brush in Dairy bam application Right: Lety Vector automatic feeding enuigment.





Potential Benefits of the

Lely Brushes

Quieter herd.

Durable.

Maximum cattle comfort.

Low energy consumption.

Stimulates blood circulation.

Clean and healthy skin.

Easy to install.

Maintenance free.

Equipped with overrun safety protection.



Who to contact?

Gert Aerts

- Regional Manager
- Lely International
- gaerts@lely.com

<u>Liam McNamara</u>

- Innovation Scout
- BG Solutions Group
- Liam@bgsolutionsgroup.co.uk
- +44 7418 098 952

Please note that the information in this document is intended for MLA and AMPC Staff and not for external circulation without the prior authorisation of the General Manager of Research Development & Innovation. All banners and logo's are used for informational purposes only.

Innovation Scout DONOR COMPANY MEAT & LIVESTOCK AUSTRALIA Insights Newsletter Δ D Where to? easasc At a glance... TEAGASC Sept 1 MLA Department: AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY **Research & Development** Target date to develop • strategy for Collaboration Who are they? opportunities. Irish Agriculture and Food Development Authority, providing integrated research, and advisory services to the agriculture and food industry. Four programme areas: assland Research ind Innovation Very interested in collaboration Close ties with industry Rural Economy and Development Food Relationship with European

companies (both commercial and research)

•

•

Hosting ICOMST 2017 - Opportunity to build network & tap into pre-existing networks.

MEAT TECHNOLOGY IRELAND

Who are they?

- Industry-led initiative to build a strategic research and innovation base in beef and sheep meat processing in Ireland.
- €8.1 million five-year research and innovation programme, developed by industry and co funded by Enterprise Ireland and a consortium of nine beef and sheep meat processing companies.

Where this all fits

There is significant cross over between the focus areas of MLA/AMPC focus areas and focus areas of Teagasc and MTI. Once we can identify and assess their capability in these areas, we should look to what collaboration opportunities exist to add value to the Australian Red Meat Industry.

Who to contact?

Opportunities to collaborate

Liam McNamara

- Innovation Scout
- BG Solutions Group
- Liam@bgsolutionsgroup.co.uk
- +44 7418 098 952

Please note that the information in this document is intended for MLA and AMPC Staff and not for external circulation without the prior authorisation of the General Manager of Research Development & Innovation. All banners and logo's are used for informational purposes only,

Innovation Scout

Insights Newsletter



AMPC

At a glance...



Beyond Nutrition

MLA Department: Nutrition / Value add / Food Safety

What they do

 Develop and supply quality nutrition products & solutions and new technologies to the Agri-Food Sector.

Opportunities for Australian Red Meat Industry

- Natural enrichment, through the feed, of meat products with Omega, Vitamin D and other key nutrients.
- Improved shelf-life and enhanced meat safety using a grass-extracted marker and camera system based on fluorescence, which detects gut spillage into the carcass and therefore reduces microbiological contamination (spoilage & pathogenic).
- Improved soil quality and grassland through slurry conditioning using a microbiological system (this originates in Australia)
- Rumen conditioning, potential link to beef quality
- By-pass starch and by-pass protein
- Rumen bolus for early disease detection

What's next

Follow up meeting with Devenish to map out collaboration direction.

Chicken with omega 3 from an enriched diet

We are introducing UK's first chicken as a source of omega 3, which as a key part of a balanced diet, help maintain normal heart, brain and vision function.

ART BRAN VISION a source of omega 3 for brain & vision

Image: (Above) Health claims for Omega 3 chicken from Waitrose. Right: Grass extracted marker and camera system to detect gut material on the carcas

Please note that the information in this document is intended for MLA and AMPC Staff and not for external circulation without the prior

authorisation of the General Manager of Research Development & Innovation. All banners and logo's are used for informational purposes only.

Highlights

Developed the Omega 3 chicken for Waitrose in the UK.

Keen to move into the Australian market.

Chlorophyllin marker to improve shelf-life and reduce pathogens on meat.



Who to contact?

<u>Liam McNamara</u>

- Innovation Scout
- BG Solutions Group
- Liam@bgsolutionsgroup.co.uk
- +44 7418 098 952



Innovation Scout

Insights Newsletter

At a glance...



MLA Department:

Nutrition / Environment / Feedlot management

What they do

 Unibio is a leading Danish biotechnology company with core competences within fermentation technologies.
 Through their Uni-Loop technology they have developed Uni-Protein.

Through their Uni-Loop technology they have developed Uni-Protein.
 Key points to consider:

- Potential applications as an additive for long-life animal feed
- Uni-Protein is developed in a natural process without any genetic manipulation
- Non-polluting product, as it is produced by a microbial culture with natural gas as the sole carbon and energy source (up to 52% reduction in CO2 emissions).
- · Long shelf life and stable production process.
- Approved by the EU as an ingredient in animal feed without any pre-market authorisation.
- The high protein quality allows for a more efficient diet with less quantities required, minimising the nitrogen excretion.
- Tested as feed for salmon, calves, pigs, chickens, mink and blue fox with positive results in terms of acceptance and growth rates.



Please note that the information in this document is intended for MLA and AMPC Staff and not for external circulation without the prior authorisation of the General Manager of Research Development & Innovation. All banners and logo's are used for informational purposes only.





Highlights

Turns natural gas into feed.

A natural, sustainable single cell protein (Uniprotein)

The only waste product from the production of Uni-Protein is clean water.

Crude fibre

N-free extract 7.6

Ash 550

Composition¹ (100% dry matter)

DONOR

COMPANY

Innovation Scout

Insights Newsletter





MLA Department:

On-farm / Feedlot management

What they do

- The Agricultural Engineering Precision Innovation (AgriEPI) Centre is a new UK government funded organisation (£17.7m) designed to help provide engineering and precision agriculture solutions for the Agri-Food industry.
- Delivering research, development, demonstration and training on precision agriculture and engineering for the livestock, arable, horticulture and aquaculture sectors.
- Their aim to help farmers boost profitability by improving product quality and overcoming agricultural challenges through the use of new technology and smarter systems.

Potential areas of interest:

- Systems to monitor feed quality and/or responses to animal feeding in real time.
- Sensors to monitor live-weight gain and potential carcass characteristics in live animals.
- Use of drones and satellites within arable production.

Large commercial membership means that there is a real effort towards industry focussed outcomes rather than pure research.

What's next

 Follow up meeting map out potential alignment of leading organisations in their network in all sections of the supply chain with the current and future challenges of the Australian Industry.

Image: (Above) Unibio U-Loop Technology Process Right: Composition of Uni-Protein.

Please note that the information in this document is intended for MLA and AMPC Staff and not for external circulation without the prior authorisation of the General Manager of Research Development & Innovation. All banners and logo's are used for informational purposes only.

MEAT & LIVESTOCK AUSTRALIA

Highlights

Industry focussed outcomes rather than pure research.

126 research and commercial partners.

Access to working farms and sites to test new technologies. developed.



Who to contact?

- Innovation Scout
- BG Solutions Group
- Liam@bgsolutionsgroup.co.uk
- +44 7418 098 952

Innovation Scout Insights Newsletter







Rheinische Friedrich-Wilhelms-Universität Bonn

MLA Department:

Food Safety / Cold chain Management

What they do

 The primary research focus of the group is the development and implementation of innovative methods and models for the improvement of food safety and quality and the reduction of food waste in perishable food supply chains.

Interesting work applicable to the Australian Red Meat Industry

- Intelligent packaging shelf life / spoilage indicators in / on the packaging to give a more accurate indication of shelf life.
- Antimicrobial packaging materials to improve shelf life.
- Meat spoilage predictors.
- Fluorescence spectroscopy to determine surface bacterial count.

What's next

- Bonn have some products that are practically ready for use however, the
 retailers in Germany are not interested in proceeding for whatever reason.
 The next steps here for the Australian Industry would be to understand what
 benefits we expect to achieve by implementing some of these packaging
 formats as well as barriers to adoption in Australia.
- Proceed with trial and identify commercial partners within Australia that would be interested in participation through either PIP's or industry funded projects.

Image: Right: An example of a spoilage indicator on the packaging of product (Not from the University of Bonn).

Please note that the information in this document is intended for MLA and AMPC Staff and not for external circulation without the prior authorisation of the General Manager of Research Development & Innovation. All banners and logo's are used for informational purposes only.

AMPC Highlights

Bonn have an interdisciplinary working group focused just on Cold Chain Management

Developing packaging solutions that could be used along the supply chain.



Who to contact?

Liam McNamara

- Innovation Scout
- BG Solutions Group
- Liam@bgsolutionsgroup.co.uk
- +44 7418 098 952

Innovation Scout

Insights Newsletter





At a glance...



FOOD-PROCESSING

INITIATIVE 🛛

MLA Department:

Research & Development and

Innovation

What they do

- Fraunhofer is Europe's largest application-oriented research organisation. Located in Germany but with offices across the globe, their research efforts are geared entirely to people's needs: health, security, communication, energy and the environment.
- Food Processing Initiative is a network organisation with over 120 members, which covers the business sector as well as universities, research facilities and access to major organisations.

The upside:

- Fraunhofer are more of a commercial research institution rather than a university style research institution.
- They are very aware of transferring knowledge across industries and as such actively look at work undertaken (such as the automotive industry) and look to where they can further apply their new knowledge and technology to other industries (such as food).
- They have a large network of companies that they do work with and for and as such can introduce us to a large network of providers.
- Both organisations are very interested to see where we can work together in the future and explore the possibility of different funding models (le. European public funding matched with MDC funding—should projects benefit both regions)

The downside:

 Fraunhofer gets 20% of its income from government, and this covers internal costs such as administration developing expertise and capability. It is nonprofit. They therefore might be unlikely to consider an MDC partnership alone.

Highlights

Vast networks of providers in Germany

68

specialist institutes (Fraunhofer)

Multiple cross- disciplinary Alliances such as for food.

The recommendation:

Discuss with Fraunhofer and FPI what the Australian projects of interest are now and into the future and see what they might facilitate through their network.

Who to contact?

<u>Liam McNamara</u>

- Innovation Scout
- BG Solutions Group
- · Liam@bgsolutionsgroup.co.uk
- +44 7418 098 952

Please note that the information in this document is intended for MLA and AMPC Staff and not for external circulation without the prior authorisation of the General Manager of Research Development & Innovation. All banners and logo's are used for informational purposes only.

Innovation Scout Insights Newsletter # 6





HAN HAA

Relevant areas:

Logistics Management

What they do:

 Parcelive is a real time parcel tracking system that allows users the ability to track the location, condition and security of their shipments irrespective of the scale, size or country.

Applicability to the Australian Red Meat Industry:

- Improve integrity across Australian product logistics networks both domestic and some export markets.
- Transparency in the supply chain means companies can now rectify inefficiencies.
- Could be used in conjunction with time temperature indicators (Intelligent packaging)

Features:

- Monitor the location of your shipments with GPS accuracy
- O Track temperature from -15c up to +50c, Pre-set a temperature range to trigger alerts
- Ø Monitor and verify relative humidity between 0-100%, Pre-set a humidity range to trigger alerts
- Monitor shipments drops of shock
- A live look on whether your shipment has tilted to exceeded a pre-set angle
- Verify that a shipment has not been opened, triggers alert when tracker is exposed to more than 4.0 LUX.

What's next:

- Discuss with Hanhaa the suitability for cold chain management.
- Investigate the potential for increased battery life to make it suitable for use in long haul freight (export markets > 30 days).

Image: Right: The Parcelive device (size is that of a post card).

Please note that the information in this document is intended for MLA and AMPC Staff and not for external circulation without the prior authorisation of the General Manager of Research Development & Innovation. All banners and logo's are used for informational purposes only.

AMPC

Highlights

ParceLive is connected by Hanhaa's very own mobile network and a world first for the logistics industry.

Potential to optimise networks

Dispute resolution



Who to contact?

<u>Liam McNamara</u>

- Innovation Scout
- BG Solutions Group
- Liam@bgsolutionsgroup.co.uk
- +44 7418 098 952

Innovation Scout

Insights Newsletter



At a glance...

PROVENANCE

Relevant areas:

Food Safety and Quality Assurance/Control (Integrity)

Who are they:

 Provenance is a UK technology company that is aimed at making products and supply chains more transparent and traceable.

What they do:

 Provenance is building a traceability system for materials and products using a data system called a blockchain. It is a data system for securely storing information - inherently auditable, unchangeable and open.

Benefits:

- Provenance data can be linked to any physical product through labelling, smart tags and through embeds for websites or apps.
- Provides truth and integrity along the supply chain.
- Links the physical with the digital.
- · Build consumer confidence in the origins of the products they consume.

AMPC

Highlights

Over 200 retailers and producers in the food and drinks industry use this software service to help prove the provenance of their products.

Producers in the US starting to use blockchain technology to trace their products from farm to fork.



Who to contact?

<u>Liam McNamara</u>

- Innovation Scout
- BG Solutions Group
 Liam@bgsolutionsgroup.co.uk
- +44 7418 098 952
- 1447416 098 95

Image: Right: The consumer using the app. Above: The Blockchain system (used in a 6 month Tuna pilot is South East Asia).

Please note that the information in this document is intended for MLA and AMPC Staff and not for external circulation without the prior authorisation of the General Manager of Research Development & Innovation. All banners and logo's are used for informational purposes only.

Innovation Scout

Insights Newsletter

At a glance ...



ADVANCED PACKAGING EXPERTISE

Relevant areas:

Packaging Innovation

Who are they?

 Parkside are a UK advanced packaging company that combine flexographic printing with lamination, laser and intelligent technologies to deliver advanced packaging expertise.

Their innovation:

 Parkside has collaborated with a UK seafood supplier, to create a first to market re-close pack for frozen foods.

The details:

- The pack design was created using a PET / PET laminate, which seals to APET and RPET trays.
- It also utilises Parkside's specially developed adhesive and Parkscribe laser Technology that allows the all-important re-close function in both ambient and freezer conditions without loss of adhesion, giving consumers a usable portion control pack.
- The packs are initially being developed for frozen prawns and will soon be available across a range of Northcoast products distributed to UK retailers.

Key success factors:

- Speed to market
- Food security through less spoilage, modern convenience requirements key in design.
- Cost effective, sustainable packaging
- Innovation in design and application.

Image: Right: The re-closeable packfor frozen seafood.





Highlights

First to market re-closable pack for frozen foods.

Re-close function in both ambient and freezer conditions.



Who to contact?

<u>Liam McNamara</u>

- Innovation Scout
- BG Solutions Group
- Liam@bgsolutionsgroup.co.uk
- +44 7418 098 952

Please note that the information in this document is intended for MLA and AMPC Staff and not for external circulation without the prior authorisation of the General Manager of Research Development & Innovation. All banners and logo's are used for informational purposes only.

Innovation Scout Insights Newsletter



AMPC

Highlights

Can roast a sausage while giving the appear-ance it has been fried

Potential health benefits

Provides an opportunity to stand out from the

competition, by repre-

At a glance... Relevant areas: Value Adding



What they do:

- The Kalle Group, based in Germany, is one of the world's leading suppliers of . industrially produced sausage casings.
- The product is designed to increase manufacturers profitability and provide a different method for preparing sausages.
- Kalle's Roasted Flavour sausage casings allow for the product to be roasted, while still giving the crispy appearance to suggest the sausage has been fried.

Competitive advantages include:

- Lower costs.
- Improve profitability.
- Greater product safety.
- Healthier product-differentiation.
- More flexible planning due to pre-production.



Who to contact?

- Liam McNamara
- Innovation Scout •
- . BG Solutions Group
- Liam@bgsolutionsgroup.co.uk +44 7418 098 952
- nished product comple sted flavor casing in us Please note that the information in this document is intended for MLA and AMPC Staff and not for external circulation without the prior

authorisation of the General Manager of Research Development & Innovation. All banners and logo's are used for informational purposes only.

pasted Flavour casing