Technology Transfer in the Irish Food Sector

The Role of Teagasc

Declan J. Troy, Assistant Director of Research

FOOD INNOVATION GATEWAYS

Teagasc
Agriculture and Food Development Authority

The Irish Agriculture and Food Development Authority

Research and Innovation Landscape Map[37]

Outline of Presentation

- Mandate and Function of Teagasc
- Teagasc programmes, structure, resources, etc
- A shifting paradigm in Technology and Knowledge Transfer
- Actions to prime the effectiveness of Transfer
- What works and what needs a push
- Conclusions

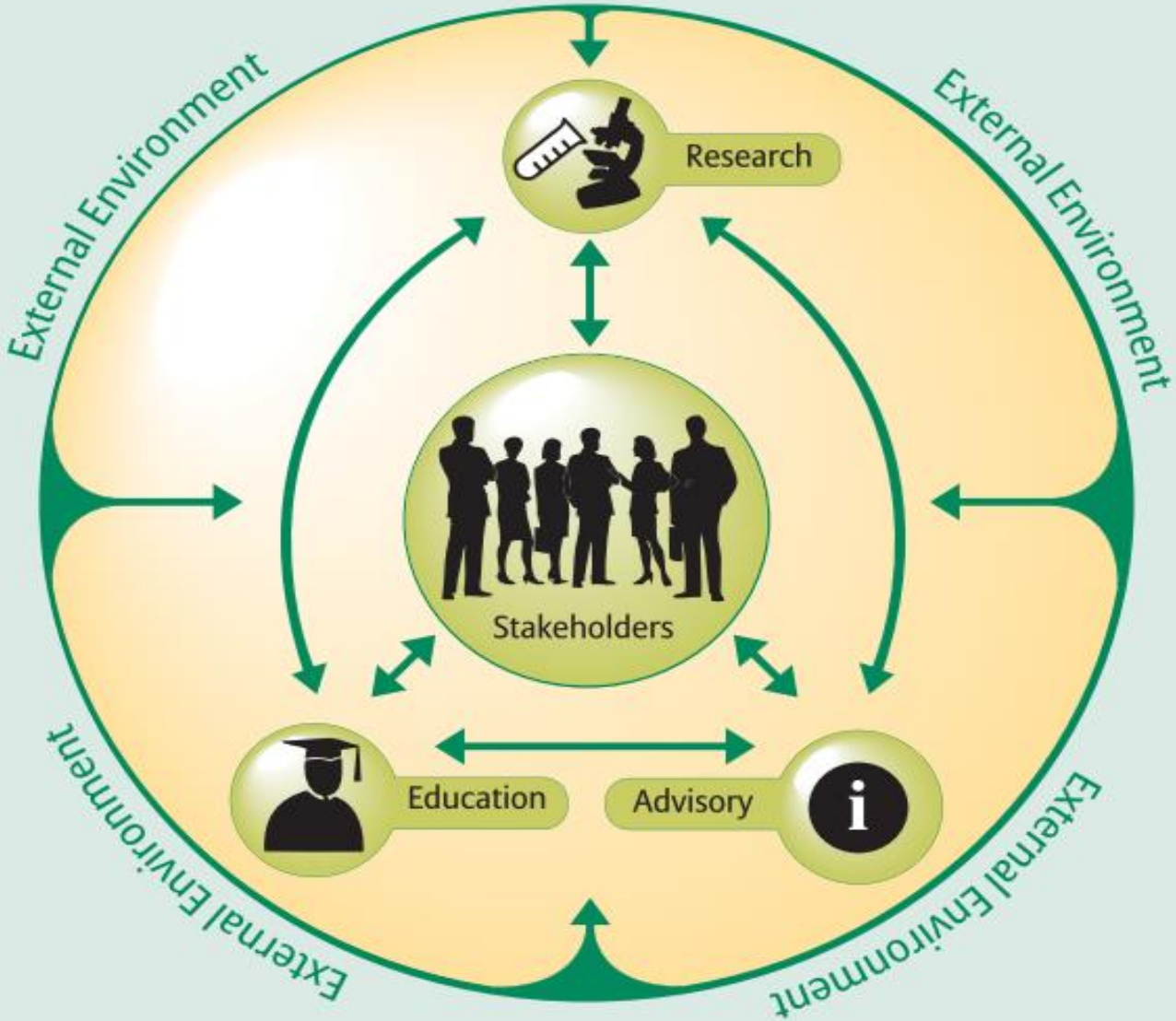
Teagasc Goals

Improve the competitiveness of agriculture, food and the wider bio-economy

Support sustainable farming and the environment

Encourage diversification of the rural economy and enhance the quality of life in rural areas

Deliver value for public money


External Environment
External Environment
Research
Stakeholders
Education
Advisory
External Environment
External Environment

….developed in the context of an analysis of key national, international and organisational driving forces that will impact on the Irish agri-food sector.

Cascades into business plans.

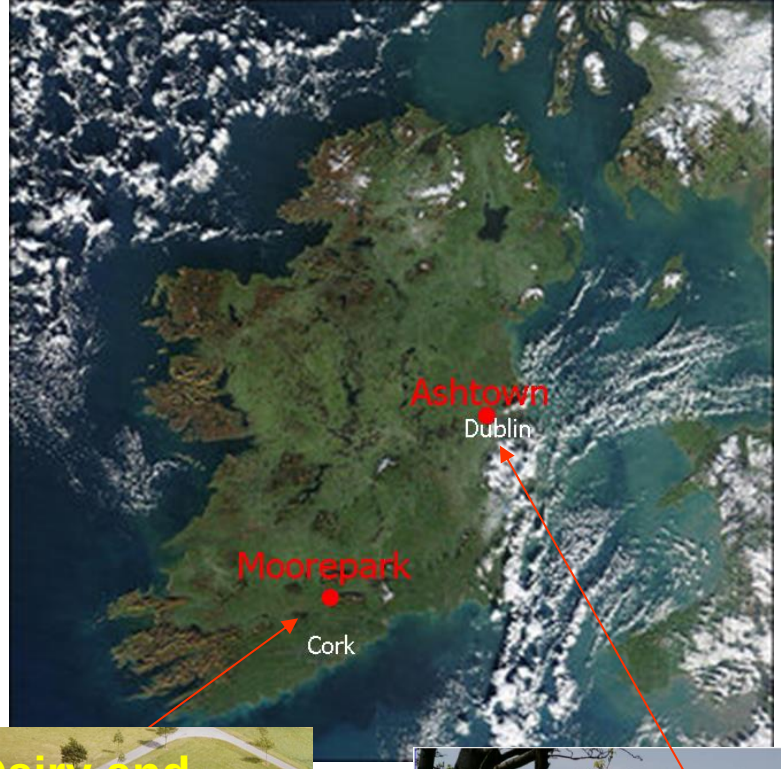
Teagasc Food Programme

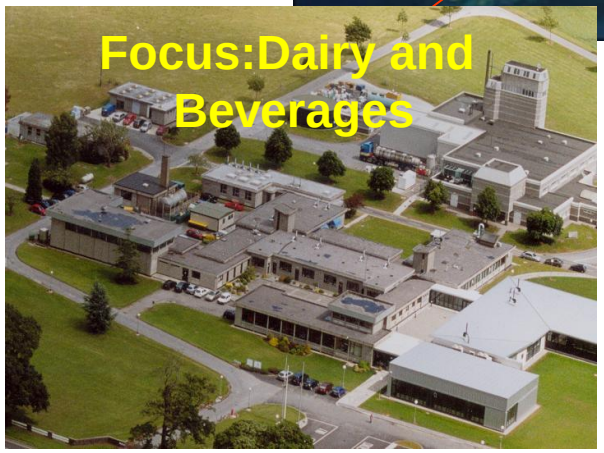
... Engages with over 300 food companies at our two research centres in Ashtown, Dublin and Moorepark, Cork ...

... publishes over 130 food related peer reviewed scientific publications per annum ...

... has state-of-the-art pilot plants, well-equipped and modern research laboratories ...

... employs 90 food scientists and 80 post graduate food students ...





Food Technology & Knowledge Transfer Strategy

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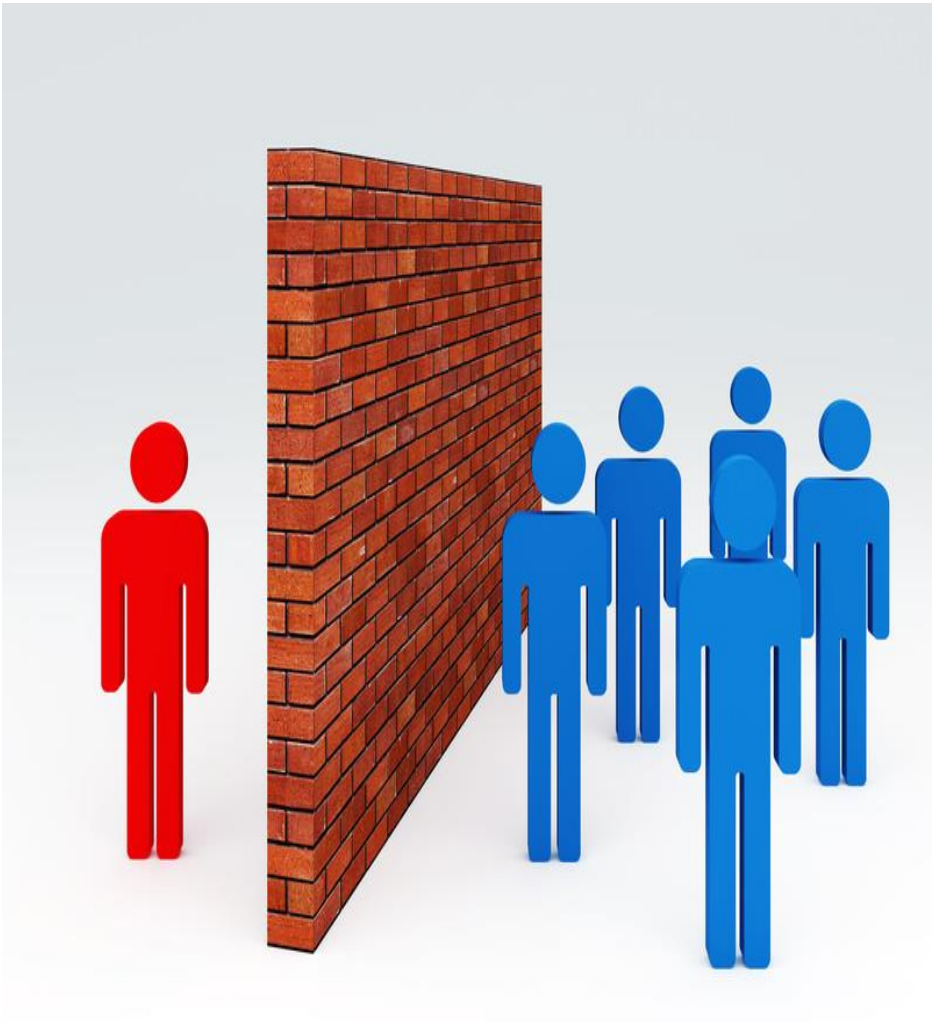
Barriers to effective TT

- Lack of spend by companies
- Talent investment
- Absorption capacity
- **Assimilate and understand new information**
- Cost and risk of getting involved
- Lack of time
- Fragmented industry and research community
- **Lack of effectiveness of interactions with scientists**
- **Lack of market knowledge**
- Lack of senior management commitment



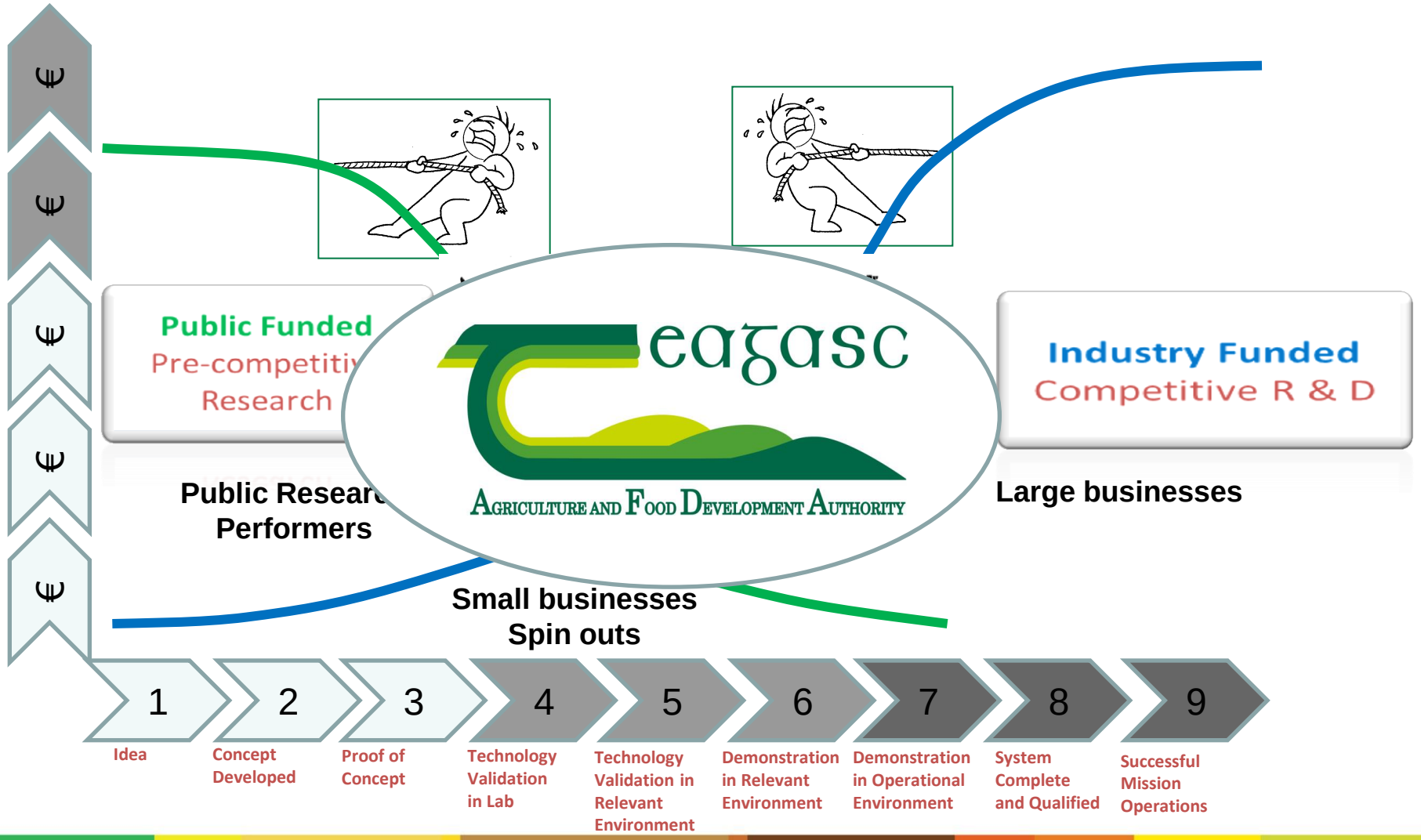
Specific Issues in Food Innovation

- Food is perishable
- Part of a complex chain
- Seasonable
- Consumer awareness
- Fragmented industry
- Retailer dominance
- Don’t touch my food (highly regulated)
- Conservative industry
- Low absorption capacity and low research and development spend of food sector
- Food innovation is highly contextual
- Must meet a consumer demand
- Consumer and industry conservatism

Key People and Supports Needed

- **Researcher – fully committed, aware of technological opportunity and our strategy, customer friendly and focused, entrepreneurial skills**
- **Industry- fully committed, solution focused, appropriate absorption capacity**
- **TTO- fully supportive, coordinated, empathic, time conscious, IP identification and management, a conduit to bring funded projects to commercialization stage, clear process, use of ICT**

Innovation Eco-system



Overall objective

"To implement a systematic, effective and flexible technology transfer process which supports commercial exploitation of our research outputs and scientific capability through various channels"

Central proposition : every researchers' responsibility

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www.teagasc.ie

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Technology Transfer Office

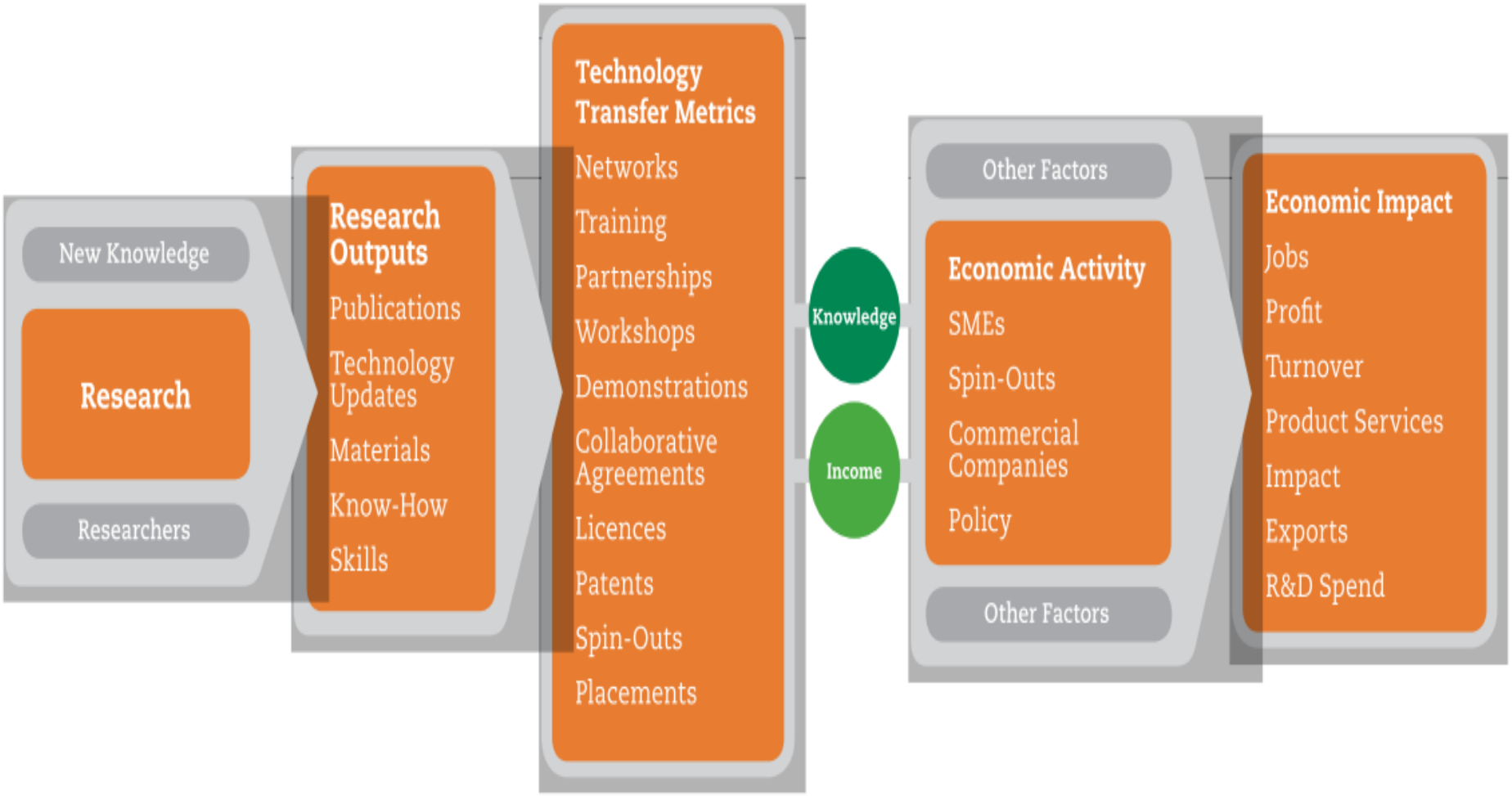
Intellectual Property

- Patents
- Licencing
- Collaborative research agreements

Food Industry Development Department

- Product development
- Specialist training & consultancy
- Marketing support
- Pilot plant facilities

Transfer Model



Technology Transfer Channels

- IP Exploitation (patents, licenses, spin outs)
- Collaborative Research Agreements
- Contract Research
- Strategic Partnerships
- Training
- Services
- Pilot Plant Leasing
- Partnerships
- Workshops
- Demonstrations
- Placements (in-company or in Teagasc)
- Customer Relationship Management System

FOOD INNOVATION GATEWAYS

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GATEWAYS

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Development of a Technology Marketing Portfolio

- The Portfolio is updated on a six monthly basis and is re-issued before a Food Innovation Gateways event.
- The feedback in relation to our Portfolio from companies is very positive.
- Web based, hard copy, USB, DVD forms available.
- The potential to develop an app and also to engage in more social media are being explored.

Technology OFFER

Technology UPDATE

Technology EXPERTISE

Technology SERVICE

Technology PROFILE

Technology CRM

Agriculture and Food Develop

ity

Education

Ph.D. in Analytical Chemistry, University College Cork 2003

B.Sc. Industrial Chemistry, University of Limerick, 1997

Career

2002–Present: Teagasc Food Researcher

1997–1998: R&D Chemist, Gerard Laboratories

1998–2002: PhD student – "Teagasc Walsh Fellow":

Expertise

- Analytical chemistry: Chromatographic separations, sample purification, mass spectrometry, biosensors and immunoassays.
- Residue analysis: Agrochemical, environmental, natural toxins and medicinal adulterants.

Selected Publications

1. O'Mahony, J., Moloney, M., McConnell, R.I., Benchikh, E.O., Lowry, P., Furey, A., and Danaher. M., (2011). Simultaneous detection of four nitrofuran metabolites in honey using a multiplexing biochip screening assay. *Biosensors and Bioelectronics* 26 (10), pp. 4076–4081.
2. Vinogradova, T., Danaher, M., Baxter, A., Moloney, M., Victory, D. and Haughey, S.A. (2011). Rapid surface plasmon resonance immunobiosensor assay for microcystin toxins in blue-green algae food supplements. *Talanta*, 84 (3), pp. 638–643.
3. Whelan, M., Kinsella, B., Furey, A., Moloney, M., Cantwell, H., Lehotay, S.J. and Danaher, M. (2010). Determination of anthelmintic drug residues in milk using ultra high performance liquid chromatography-tandem mass spectrometry with rapid polarity switching *Journal of Chromatography A*, 1217 (27),

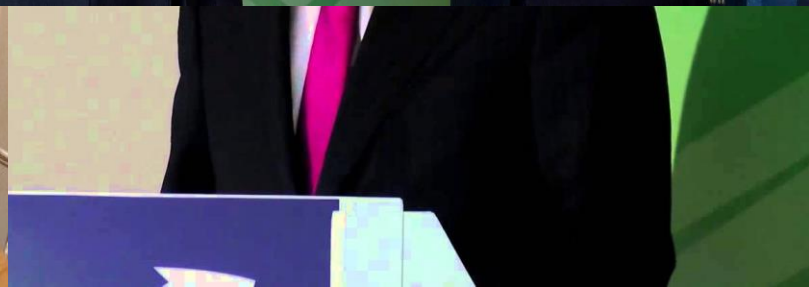
Developed the Gateways Events

- Four themed events (2 per year)
- 150-300 delegates
- **Next: Food for Health 10th Dec. Moorepark.**

Mapping of Teagasc key personnel, technologies and systems

- All our researchers have undergone in-depth interviews
- An in-depth “audit” of Teagasc technologies including its IP, infrastructure and expertise
- Researchers report all commercial and collaboration research projects direct to the TTO in a systematic and transparent fashion
- Revised and active contacts data base system
- All researchers regularly contribute to the updating of the Technology Portfolio by submitting new or modified Technology Offers, Technology Updates, Services and Expertise.

they hold much poten
ingredients. We offer
with applications acr
pharmaceutical, sport



NEW CHEESE TECHNOLOGY PLATFORM

Dr Tim Guinee

Teagasc has developed a new cheese technology platform (NCTP) that allows the manufacture of cheeses from reassembled milks formulated from dairy ingredients. The technology involves: manufacture of high protein dairy powders; preparation of reassembled milks by dispersion of the powders, milk fat and other ingredients in water-salt solutions; and gelation of reassembled milk using rennet, starter culture and/or organic acids. The resultant cheeses may be either cast cheeses (about 53% dry matter) formed by pouring the treated re-assembled milk directly into the final mould/package, and/or structured cheeses (over 60% dry matter) formed by further treatments of the cast cheeses. Advantages of the platform over conventional cheese manufacture include the absence of a whey release step, the complete retention of any materials such as colours and flavours; and a greater opportunity to innovate characteristics such as flavour, texture and cooking properties. The Irish Dairy Board (IDB) has licenced the NCTP for the development of white cheeses. Based on this technology, IDB has recently invested €20 million in Saudi Arabia, mainly relating to development of fresh white cheese and other cheese products for the local

Image courtesy of Bord Bia

OTHER CONTRIBUTORS AND COLLABORATORS: IDB Innovation & Technical Centre, Moorepark; Irish Dairy Board R&D.
FUNDING: IDB; Teagasc grant-in-aid; the NCTP was first developed during the course of a Dairy Levy-funded project and refined in a subsequent Enterprise Ireland-funded project mainly for rennet-curd cheese types.

Technology

CRM

Customer Relationship Management (CRM)

- **The purpose of CRM is to efficiently and effectively increase the acquisition and retention of important customers by selectively initiating, building and maintaining appropriate relationships with them.**
- **It allows us to:**

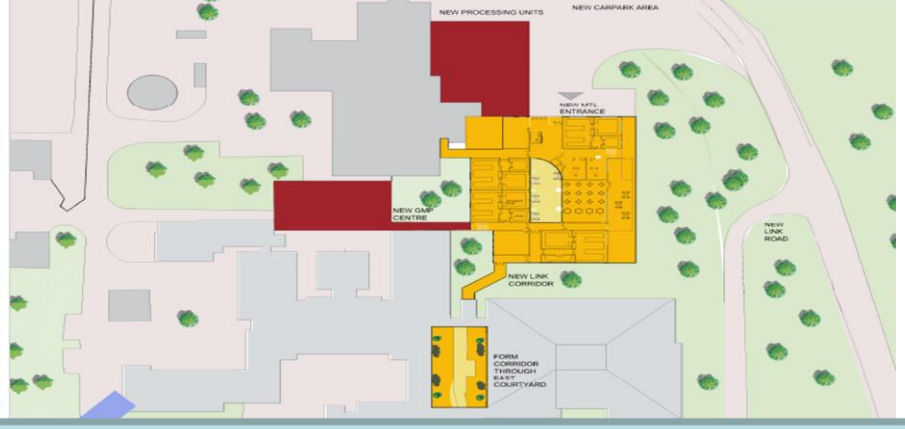
· **Understand key customer groups**
· **Define what customers need and value**
· **Target customer groups**
· **Tailor products and services for customers**
· **Refine channel strategies**
· **Measure customer activity in relation to marketing campaigns, new product introductions, etc.**

Technology CRM

MOOREPARK TECHNOLOGY LIMITED

Your partner in food product development

- Wet Process Unit
- Separation Technology
- Evaporation & Drying
- Cheese-making Unit
- Fat Technology Unit
- Food Technology Applications Unit
- Fermentation Unit
- Bio Functional Food Engineering Unit



Up to 20 secure labs and offices for food companies
A focus for dairy innovation and an attractor for FDI companies
A secure embassy equipped to each companies needs
Access to MTL allowing scale up of laboratory trials
Access to Teagasc and UCC scientists
An innovative environment needed for food HPSU's

National Food Hub

FOOD WORKS

CREATING GLOBAL FOOD ENTREPRENEURS

Bord Bia
Irish Food Board

ENTERPRISE IRELAND
where innovation means business

teagasc
Agriculture and Food Development Authority

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Modern Technology Transfer Offices

Conclusions

- **Complexity in system – Gateways Portfolio, CRM**
- **People focused- trustworthy, measures and incentivises, leadership development**
- **Dialogue initiated- Gateway events, accessibility of resources, promote awareness and successes, shared vision, increase mobility including students**
- **The "Valley of death" – collaborate with industry**
- **TTO bureaucracy – need to deliver impact, pro-active, easier to do business with, translational metrics**
- **National innovation landscape- collaborate with other agencies**
- **Senior management support and buy -in**

Engagement with Industry is a Core Activity

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