



Food Industry and Universities

A model of Collaborative Knowledge-building

Bart Bruyneel
ICA Board Meeting, Gent
03/11/11

vandemoortele

AGENDA

- Who is Vandemoortele ?
- Challenges Vandemoortele is facing (and the food industry) :
 - Food and Health
 - Food and Biofuels
- How to cope with these challenges ?
- Where do universities fit in : case study

Vandemoortele:



European market leader in frozen bakery products
and margarines & fats

VANDEMOORTELE



European market leader in frozen bakery products and margarines & fats

- 5,000 employees
- 36 production sites
- In 12 European countries
- Turnover of around 1.300 mio €

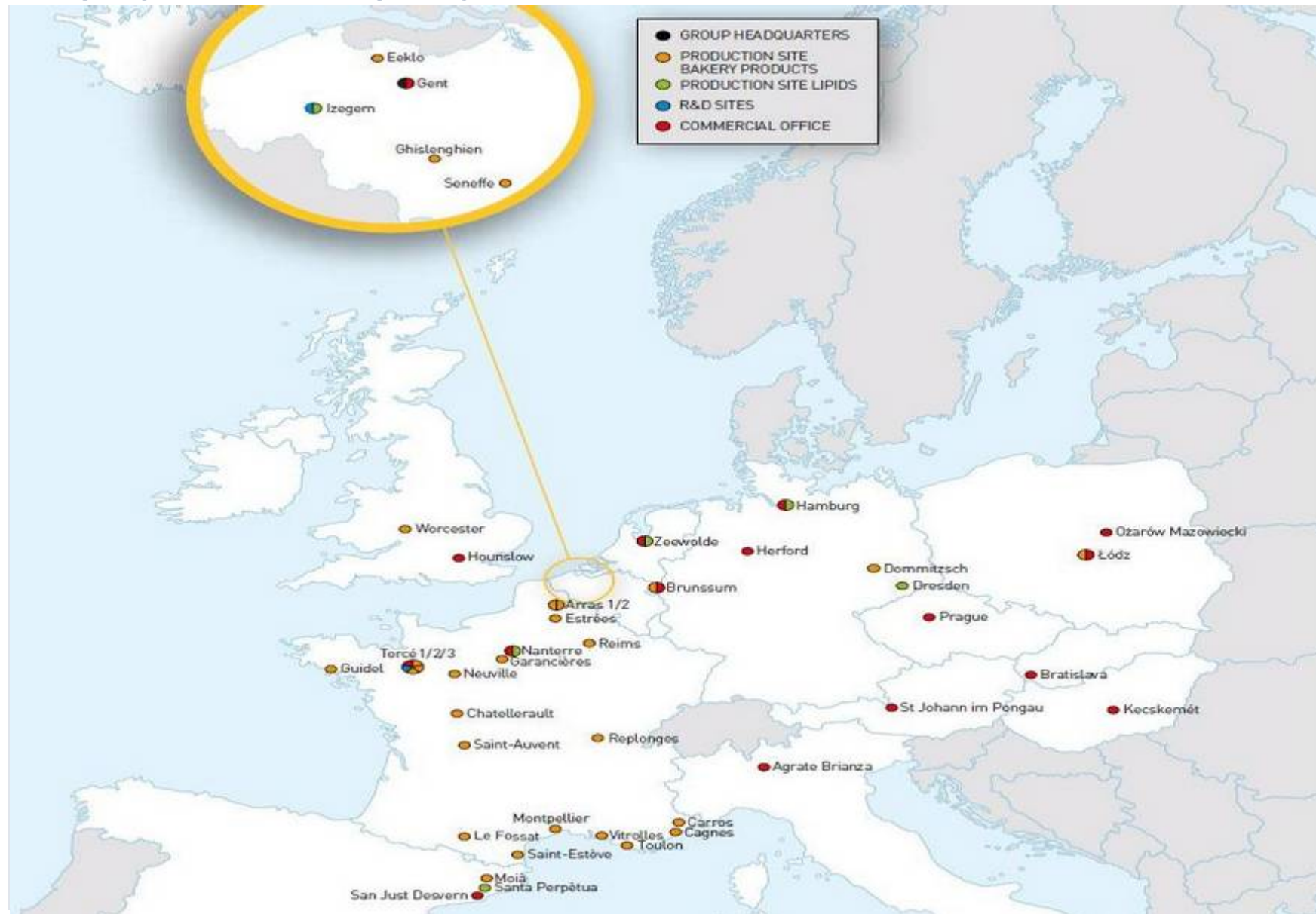


Mainly for retail and professional users

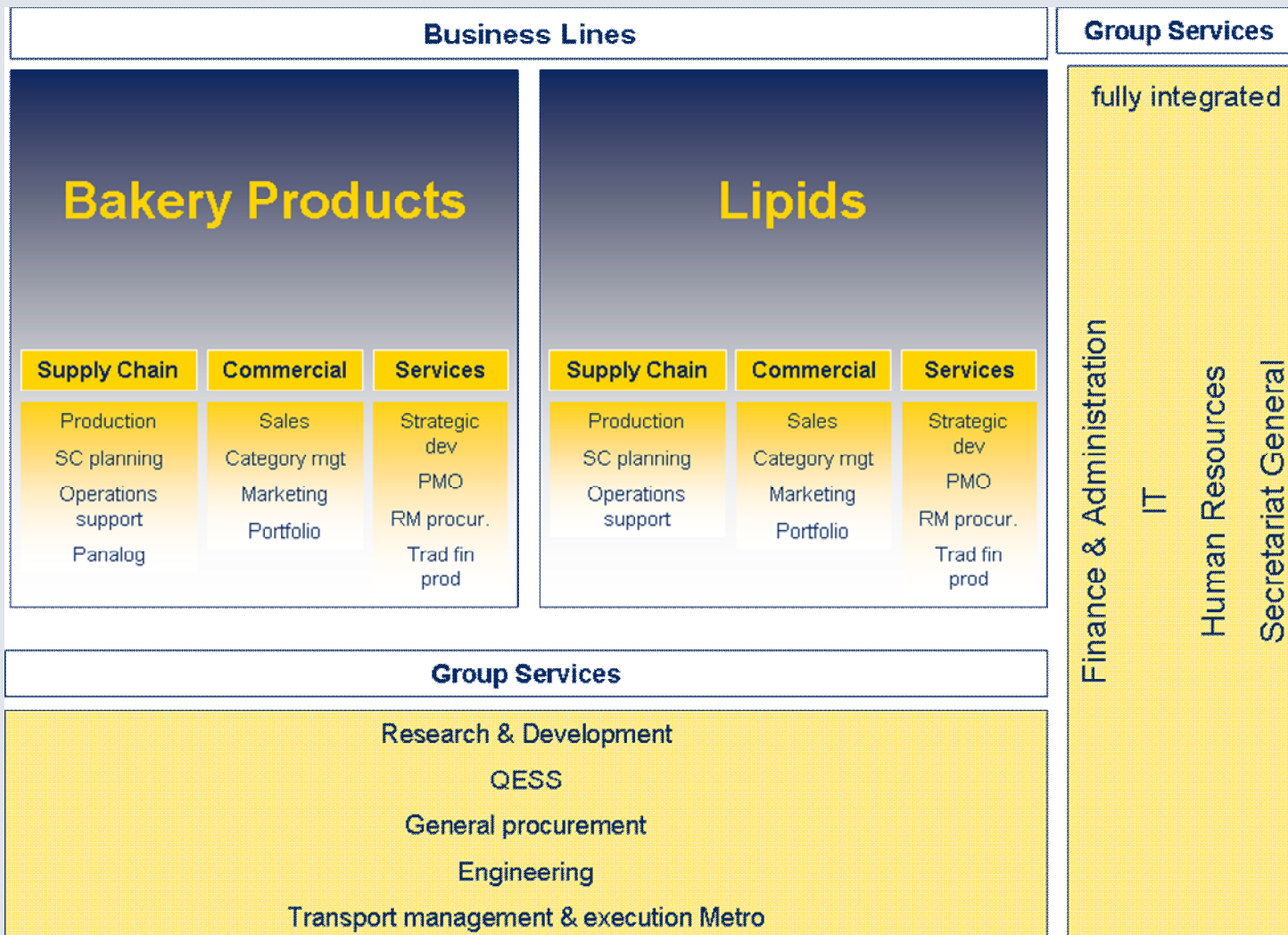
- Retail: via tailor-made house brands or own brands
- Professional users: artisan bakeries, food service and industrial clients



EUROPEAN PRESENCE



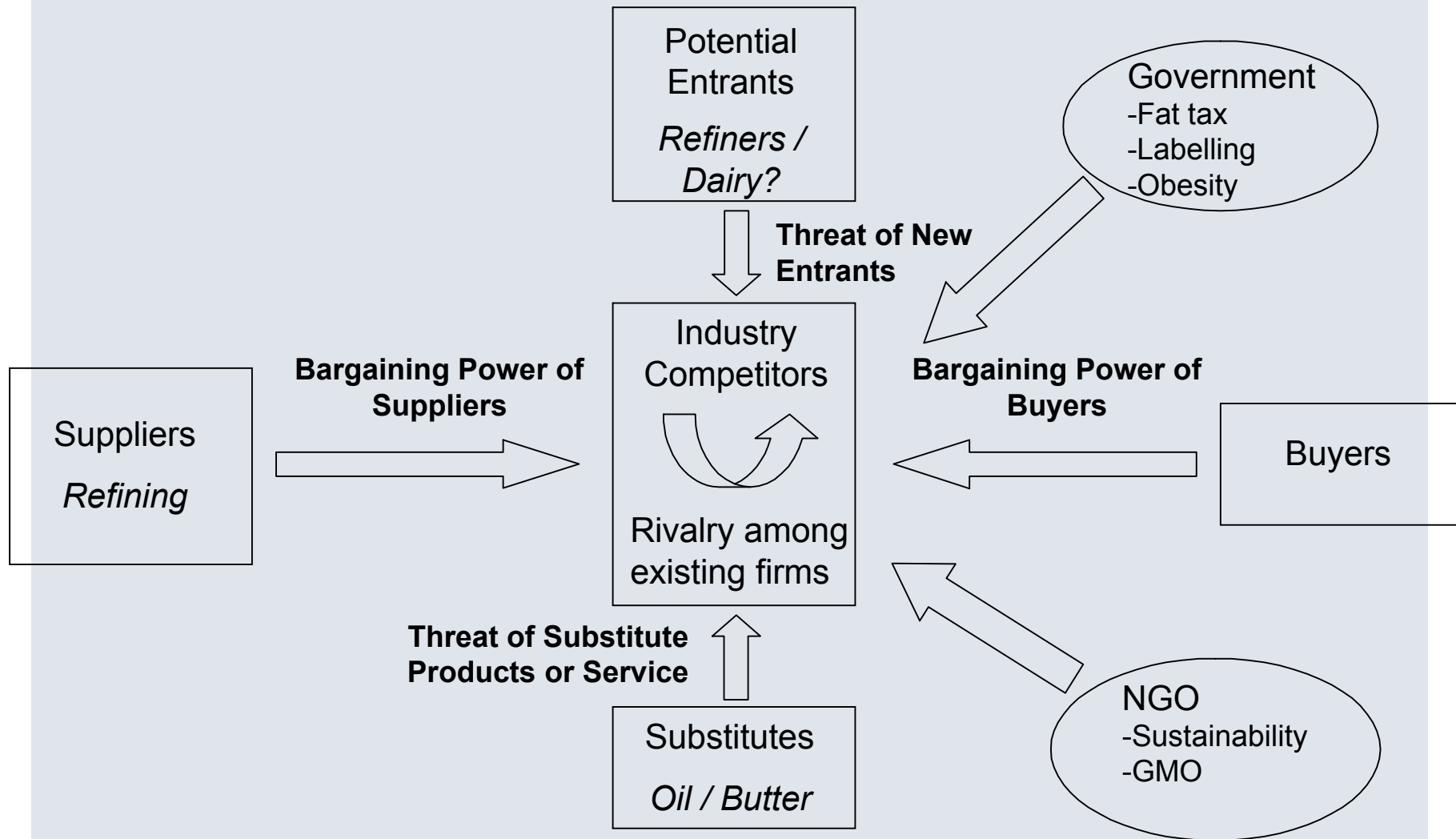
ORGANISATION



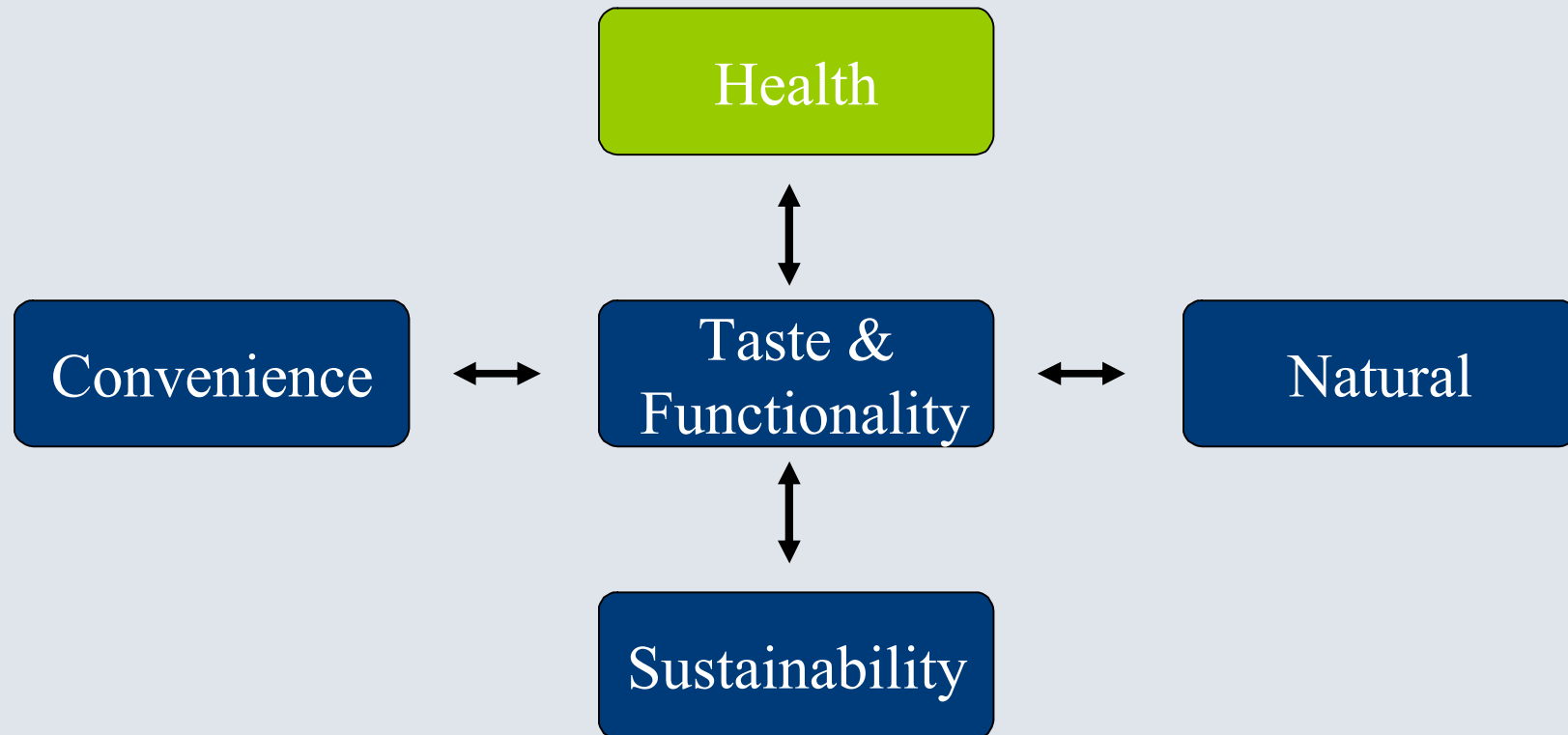
AGENDA

- Who is Vandemoortele ?
- Challenges Vandemoortele is facing (and the food industry) :
 - **Food and Health**
 - Food and Biofuels
- How to cope with these challenges ?
- Where do universities fit in : case study

FOOD AND HEALTH



TYPES OF TRENDS



FOOD AND HEALTH

- Fat as such is an issue :
 - Obesity, resulting in cardio-vascular diseases and type II diabetes
 - Saturated fats (SAFA-reduction)
 - Hydrogenation and trans
- Reaction of Government :
 - Fat tax in Denmark (2,15 €/kg SAFA)
 - Risk of European tax ???
 - Anti-obesity campaigns
 - Nutrition and Health claims regulation

FOOD AND HEALTH

The Nutrition and Health claims regulation has been published on 18/01/2007, but is still not fully approved :

- Contains annex with permitted nutrition claims
- Working document with all health claims (Article 13) that have received a positive assessment by the European Food Safety Authority (EFSA) is now available (from 5.000 to 200).
- Scientific evidence has to be clear.
- Number of claims limited.

⇒ Has slowed down innovation in the food industry the last 4 years.

FOOD AND HEALTH

- Less is more:
 - Low fat or Light
 - Low saturated fatty acids
 - Low trans fatty acids vs non hydrogenated

- Enrich:
 - Essential fatty acids
 - Plant sterol esters
 - Vitamins



FOOD AND HEALTH

Light

- Spreads (min 18%)
- Baking & frying (min 55%)



FOOD AND HEALTH

Low saturated fatty acids : typical values on fat



average: 65%

Range: 62% to 72%

average: 49%

Range: 40% to 60%

average: 29%

Range 20% to 40%

Average: 16%

Range 10% to 17%

Saturated fatty acids ↓

FOOD AND HEALTH

Low saturated fatty acids: typical values on fat



99%

Hydrogenated coco



average: 50%

Range 45% to 60%



Average: 16%

Range 11% to 20%

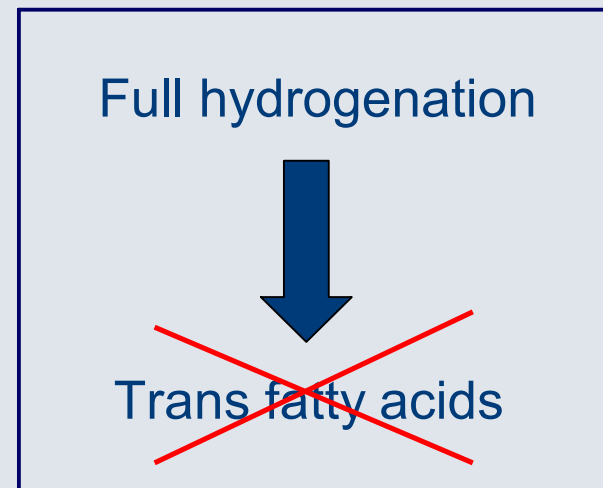
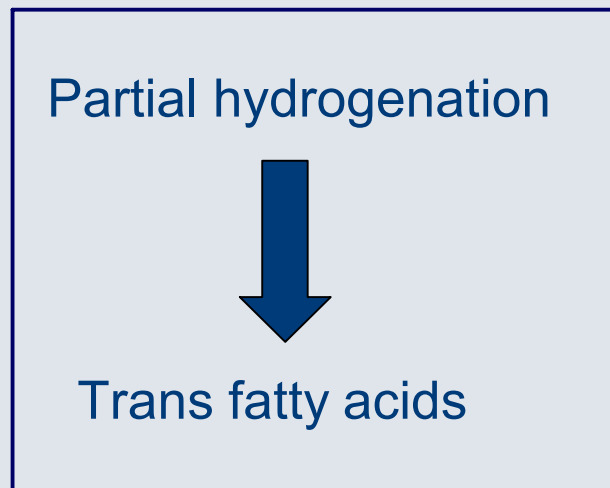
Saturated fatty acids ↓

FOOD AND HEALTH

Low trans fatty acids vs non hydrogenated: background

Non hydro means *non hydrogenated*

→ chemical modification: increase melting point + more solid



FOOD AND HEALTH

Trans free

No hydrogenated fats

Low in saturated fats



FOOD AND HEALTH

Essential fatty acids: LA (Omega 6) and ALA (Omega 3)

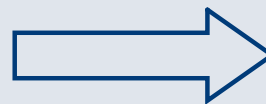
Omega 3 types:

- Long chain fatty acids (EPA + DHA)
source: fish or algae
- Short chain fatty acid (ALA)
source: rapeseed oil / linseed oil



fish oil

rapeseed oil



NOW:

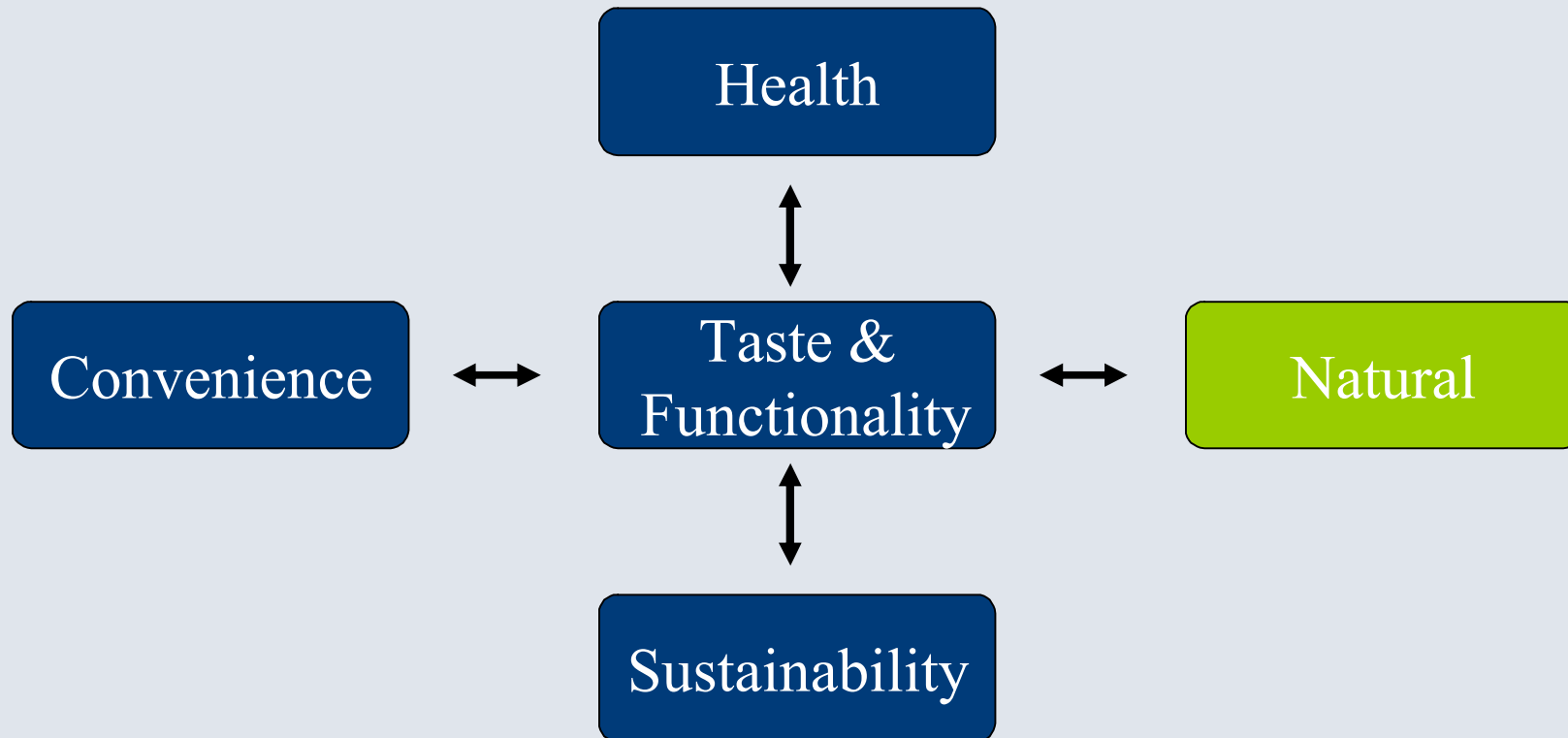
fish oil

rapeseed oil

linseed oil



TYPES OF TRENDS



FOOD AND HEALTH

- Organic gains interest, but remains rather niche
- Pure – natural products become more and more mainstream :
 - Clean 'E-free' products
 - No colorants, no additives, no conservation aids
 - Natural ingredients (lemon juice, sea salt)
 - No or less technical aids

FOOD AND HEALTH

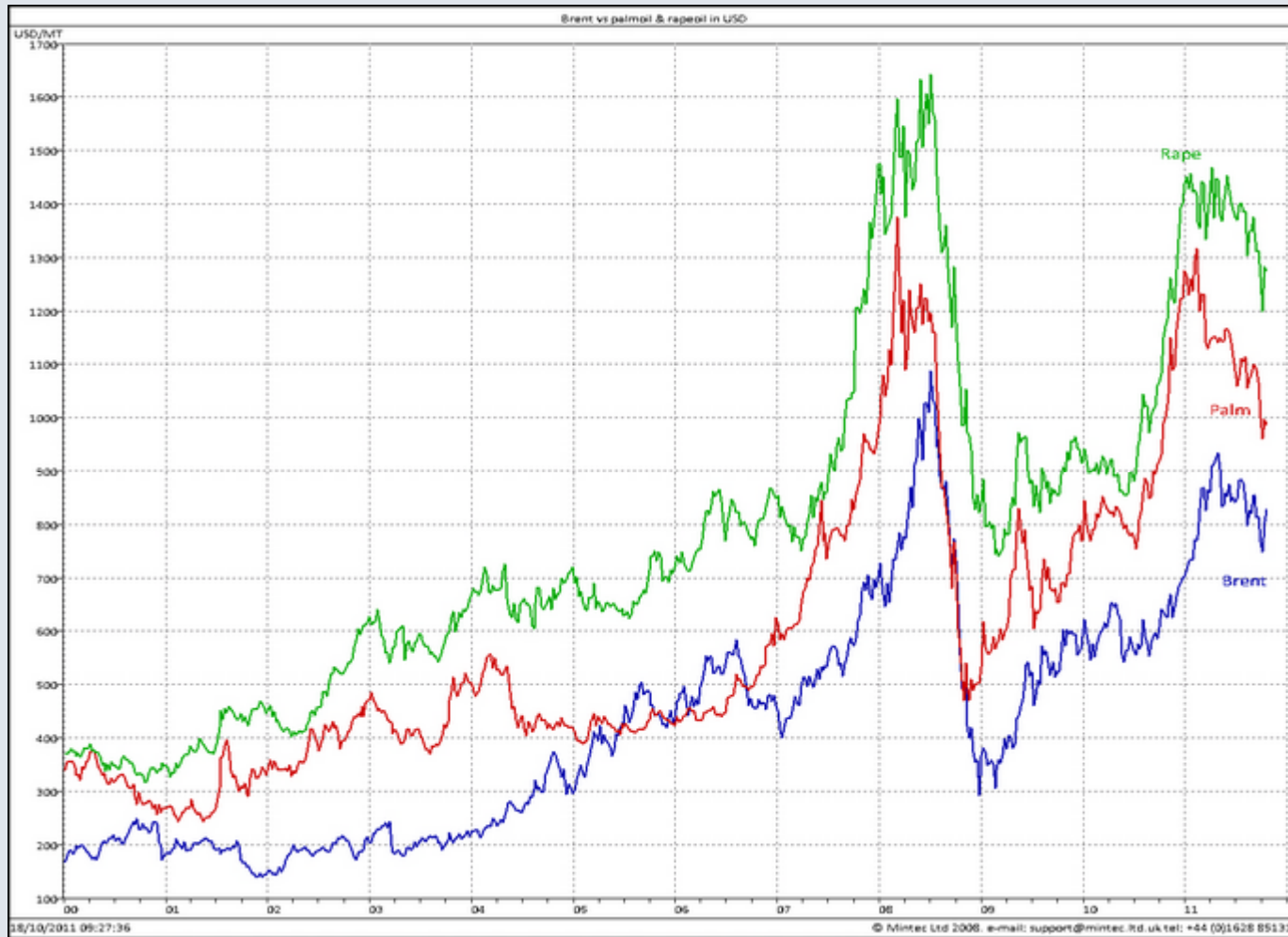
Natural ingredients
Organic



AGENDA

- Who is Vandemoortele ?
- Challenges Vandemoortele is facing (and the food industry) :
 - Food and Health
 - **Food and Biofuels**
- How to cope with these challenges ?
- Where do universities fit in : case study

FOOD AND BIOFUELS



FOOD AND BIOFUELS

- Crop utilisation for biofuels (Source : Oilworld) :
 - Germany :
 - 60% of rapeseed oil utilisation goes to biofuel
 - USA :
 - 40% of domestic utilisation of corn goes to bio-ethanol
 - 20% of domestic utilisation of soybean oil goes to biofuel
 - Brazil :
 - 30% of domestic utilisation of soybean oil goes to biofuel
 - Admixture in Brazil is now 5%, expected to increase to 20% in 9 yrs time

FOOD AND BIOFUELS

- % of oils used for biofuel

	2007	2008	2009	2010
EU27	26%	28%	32%	34%
Brazil	21%	25%	32%	34%

FOOD AND BIOFUELS

- Some Questions/Thoughts :
 - Mineral oil is too valuable to burn but
 - Will first generation biofuel bring better price stability to the farmer ?
 - Is it ethical to burn food ?
- Should we not look faster for second generation biofuels i.e.
 - Energy crops bred in area's not suitable for food
 - Waste

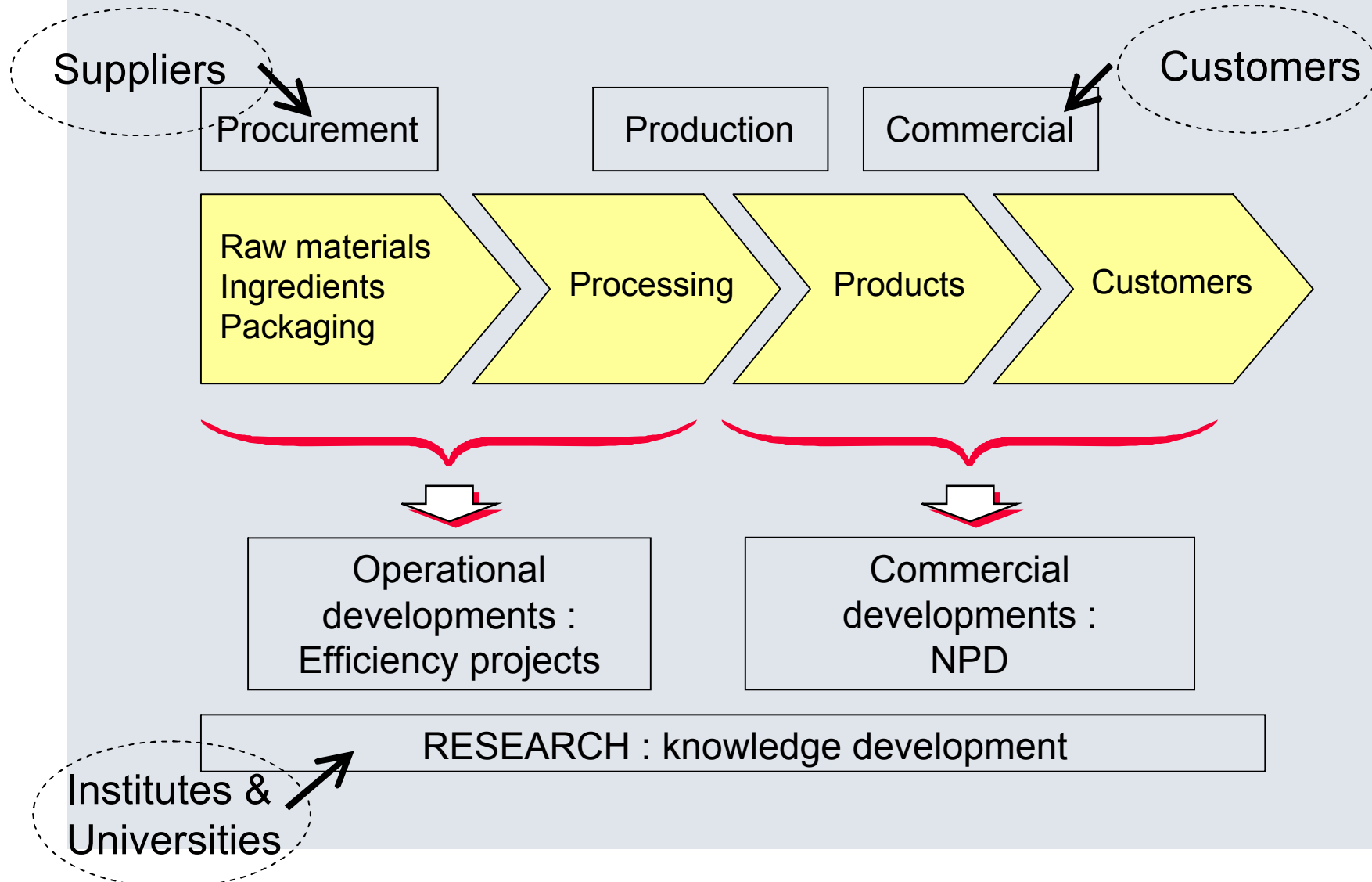
AGENDA

- Who is Vandemoortele ?
- Challenges Vandemoortele is facing (and the food industry) :
 - Food and Health
 - Food and Biofuels
- How to cope with these challenges ?
- Where do universities fit in : case study

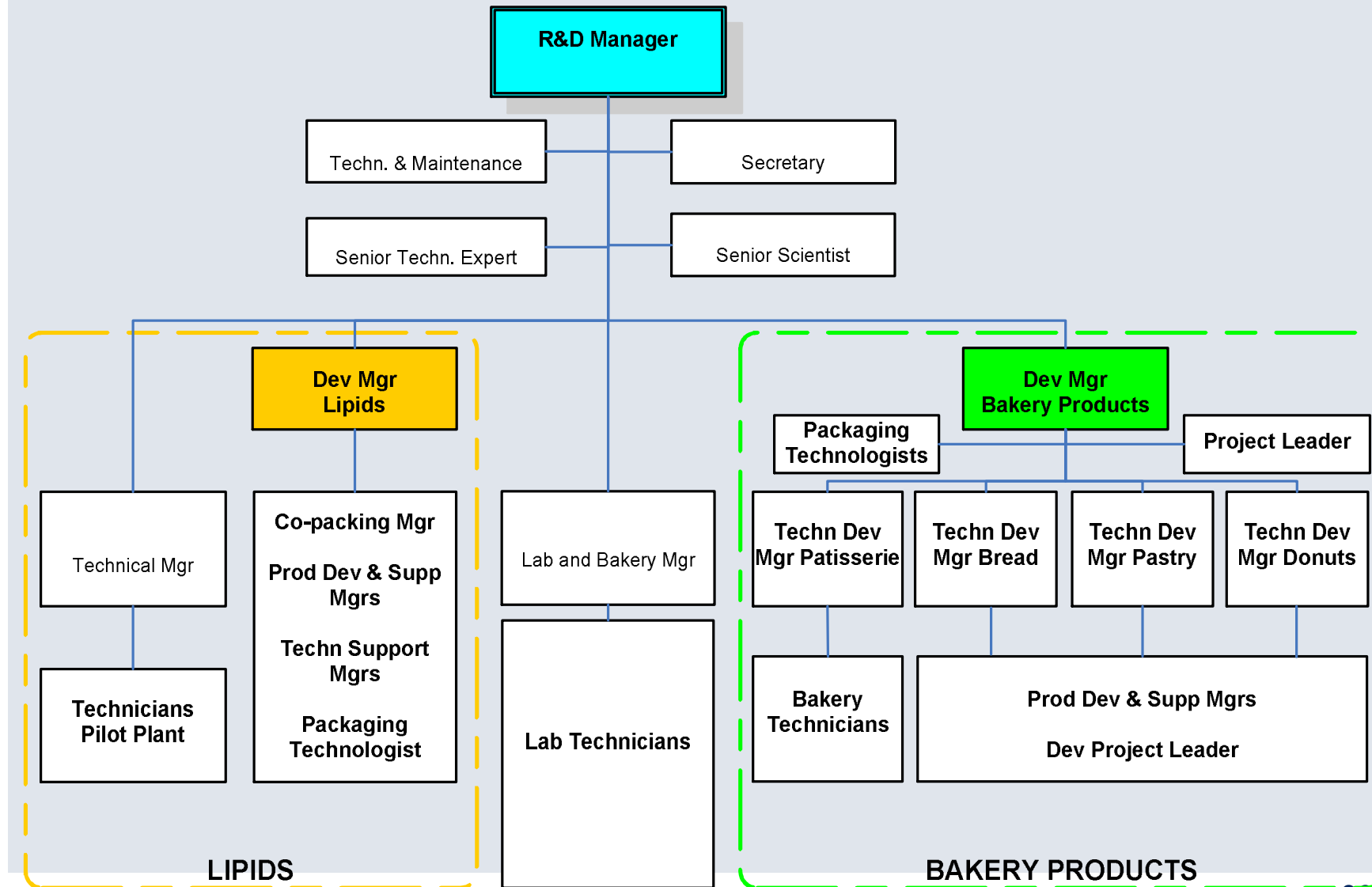
HOW TO COPE WITH THESE CHALLENGES

- Only possible by means of innovation
- What do we spend on R&D ?
 - % on turnover 0,4%
 - % on added value 1,1%
- Number of projects per year :
 - Oct. 2010 – Oct. 2011 : Total : 1129.
 - Lipids 37% ; Bakery Products 63%.
- Total number of people in R&D = 49,
of which 27 with University degree.

CREATION OF ADDED VALUE IN R&D



ORGANIZATION R&D 2012



AGENDA

- Who is Vandemoortele ?
- Challenges Vandemoortele is facing (and the food industry) :
 - Food and Health
 - Food and Biofuels
- How to cope with these challenges ?
- Where do universities fit in : case study

SOME EXAMPLES OF COLLABORATION WITH UNIVERSITIES

2000-2004 : Study with Prof. S. Renaud and Dr. Lanzmann
Inserm / University of Bordeaux
Prevention of Atrial Fibrillation recurrences by an
Alpha-Linolenic enriched diet.

2006: Study with Prof. Dr. A. Christophe
Ghent University Hospital
Improvement in the Plasma Omega-3 Index by
use of a Fish Oil-Enriched Spread.
Ann. Nutr. Metab. 2008 ; 53 : 23-28.

CASE STUDY : COLLABORATION UGENT - VANDEMOORTELE

- 2005 : Research agreement on healthier fats with the “Laboratory of Food Technology and Engineering”.
→ PhD student (2010).
Effect of acylglycerol composition on the macrostructural and functional properties of bakery fats and margarines.
- 2011 : IWT innovation mandate (application).
Fat functionality screening : development of a multi-scale methodology.
- 2012 : Start intensified long-term collaboration.

LONG-TERM COLLABORATION UGENT – VANDEMOORTELE

- ⇒ Creation of a “**Knowledge Centre Healthy Fats**”
with Prof. dr. ir. K. Dewettinck,
Laboratory of Food Technology and Engineering,
Department of Food Safety and Food Quality, Ghent
University, Belgium.

LONG-TERM COLLABORATION UGENT – VANDEMOORTELE

Selection criteria :

- Successful cooperation in the past.
- High scientific level :

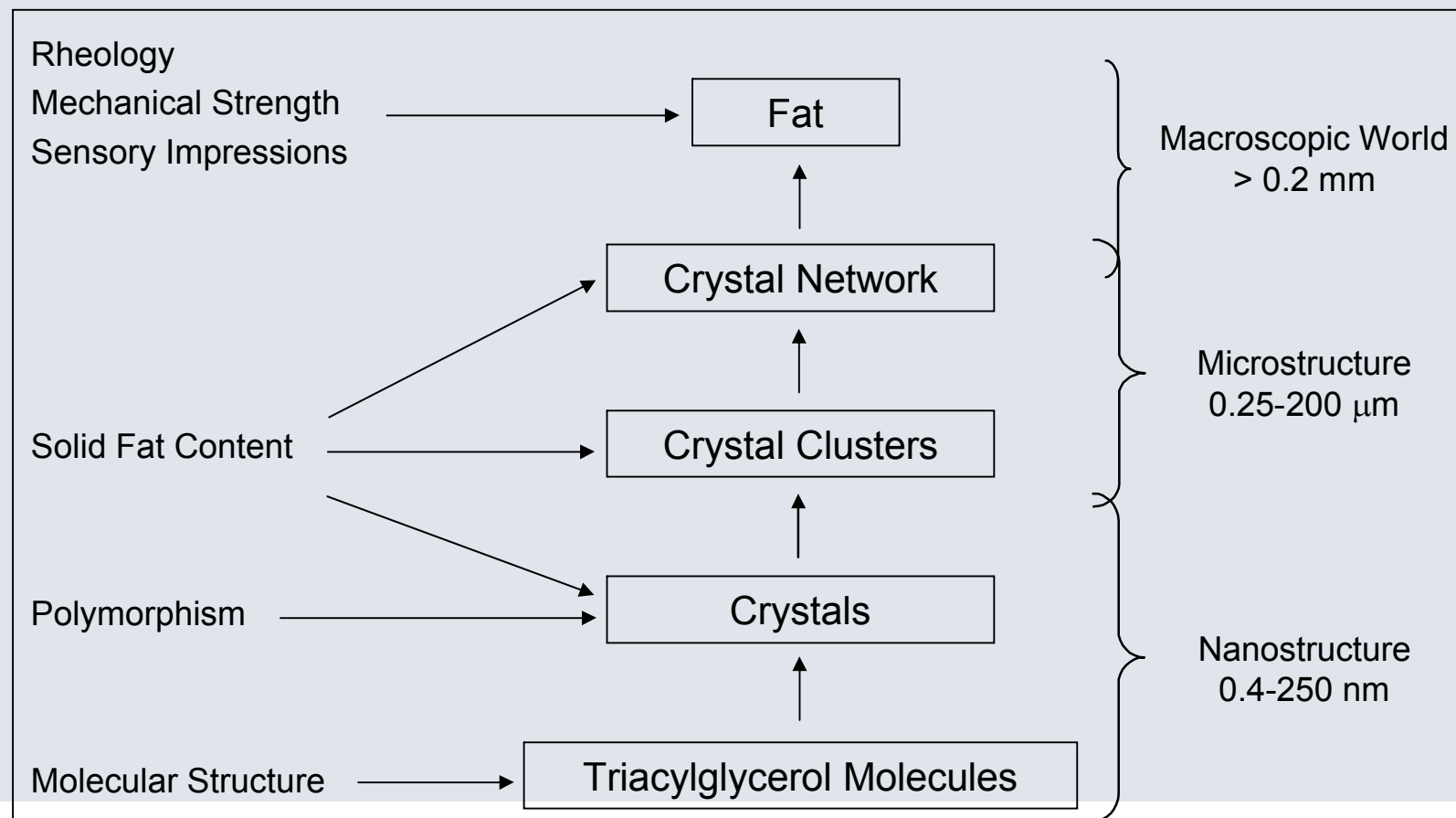
Web of Science search with key words “fat crystallization” – top 4 authors (2000-2011).

Author	Country	Number of publications	H-index (calculated on total amount of publications)
Marangoni, A.G.	Canada	44	27
Dewettinck, K.	Belgium	34	20
Martini, S.	US	22	8
Herrera, M.L.	Argentina	21	12

LONG-TERM COLLABORATION UGENT – VANDEMOORTELE

- General Objective :

Knowledge-based development of healthy fats and fat-rich products by investigating lipid functionality at different length scales :



LONG-TERM COLLABORATION UGENT – VANDEMOORTELE

- Outputs aimed at :
 - Fat reduction
 - Fat reformulations :
 - Lower saturated fatty acids
 - E-free
 - Improving product performance in applications.

LONG-TERM COLLABORATION UGENT – VANDEMOORTELE

- Practical framework :
 - Guest professorship to coordinate the centre.
 - Joint steering and operational committee.
 - Defining and setting up research projects with Vandemoortele in the front-row seat :
 - National : scholarships (IWT, FWO, Baekelandt), IWT-projects, Flanders Food, bilateral.
 - International : 7th framework EU projects.
 - Knowledge valorisation strategy and IP rights will be defined case-by-case.

QUESTIONS ?