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Operation of field trials and follow up activities to test functionality of technologies to improve quality, safety and traceability in fish supply chains

Tómas Hafliðason

Field trial operator, CHILL-ON

4th International Workshop "Cold-Chain-Management"

September 27-28, 2010, Bonn, Germany

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SCHOOL OF ENGINEERING AND NATURAL SCIENCES

FACULTY OF INDUSTRIAL ENGINEERING,
MECHANICAL ENGINEERING AND COMPUTER SCIENCE

Content

- CHILL-ON project
- Preperation of field trials
- Communication in field trials
- Risk assessment during the trials
- Follow up activities after the trials

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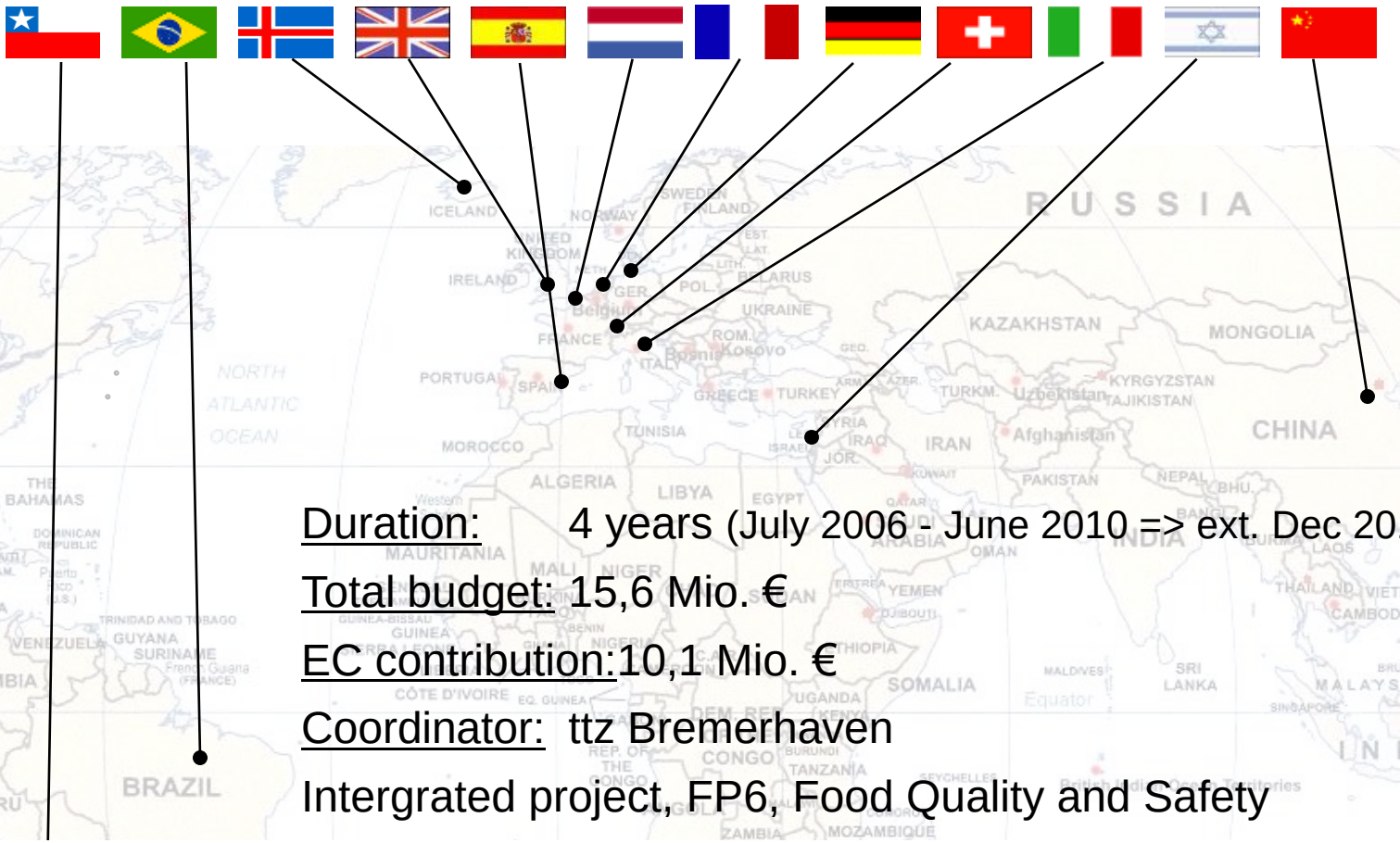
CHILL-ON Consortium
25 partners from 12 countries



Duration: 4 years (July 2006 - June 2010 => ext. Dec 2010)

Total budget: 15,6 Mio. €

EC contribution: 10,1 Mio. €

Coordinator: ttz Bremerhaven

Intergrated project, FP6, Food Quality and Safety

RTD

SME & Industry

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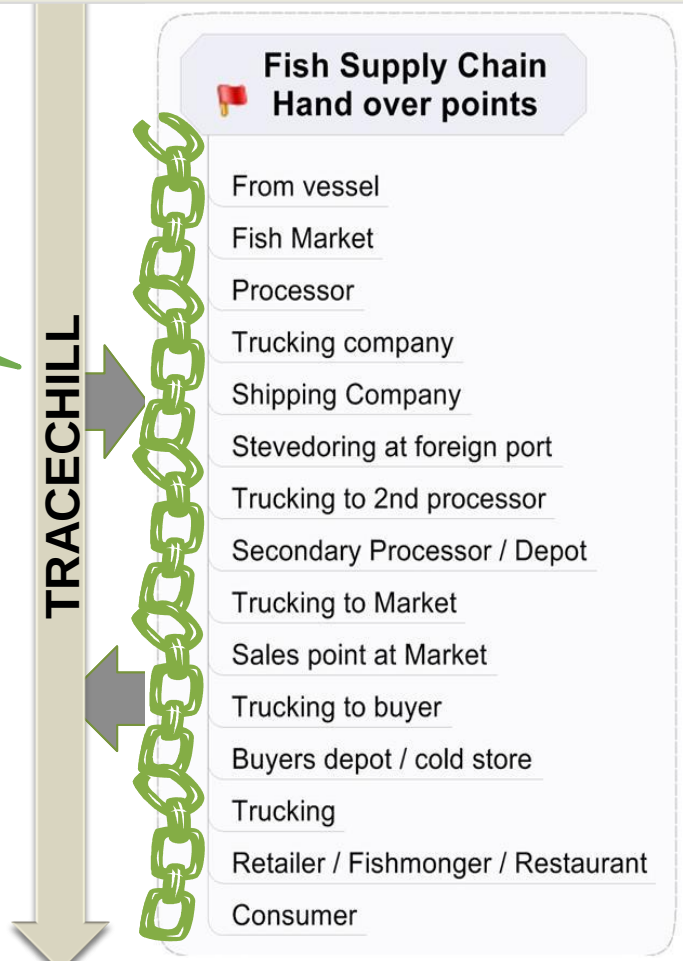
Real time temperature monitoring, geographic location and traceability system

Supply Chain Management & Decision Support System



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CHILL-ON Technologies

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Novel technologies to improve the safety, transparency and quality assurance of the cold chain

WP 7 Management Leader: ttz

WP1
Risk and Supply Chain Assessment
Leader: Wessex Institute of Technology

WP 2
Molecular Biological Detection Methods
Leader: University of Kent

WP5
Integration and Validation in Field Trials
Leader: University of Iceland

WP 3
Technologies for chilling and novel packaging
Leader : Matís

WP4
Information and Communication Technologies
Leader: Afcon

WP 6 Disemmination and Training Leader: tttz

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WP5 goal

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Validation of CHILL-ON technologies in field trials

CHILL-ON technologies

- a holistic concept
- stand alone technologies

Status

- Prototypes - still in the testing phase
- Ready for implementation
- Commercial products

Supply chains:

- *Poultry*
  - *Germany*
  - *Italy*
  - *Brazil*
- *Fish*
  - *Cod IS-> FR*
  - *Salmon, CSS NO-> FR*
  - *Hake - Chile*
  - *Tilapia - China*

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Mapping

- Important for background information
  - Temperature
  - Locations
  - Processes
- Explore full dynamics of the chain
- Create local contacts
- Explore boundaries of the chain

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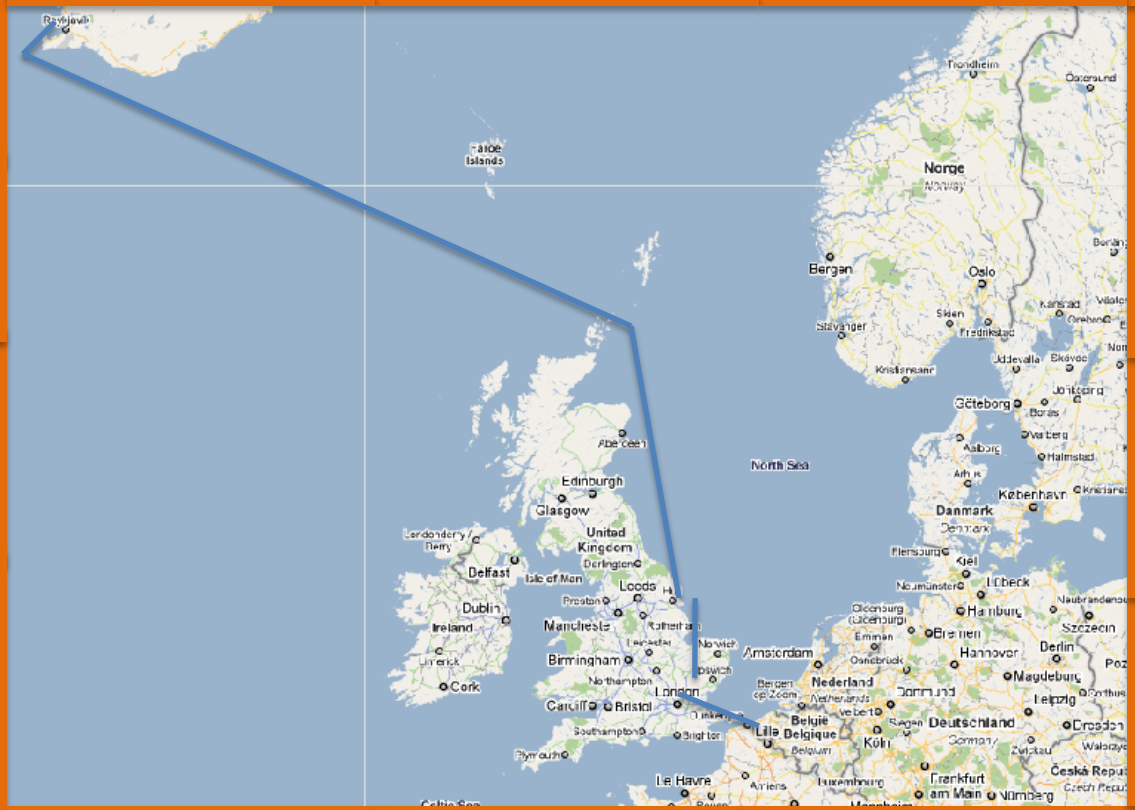
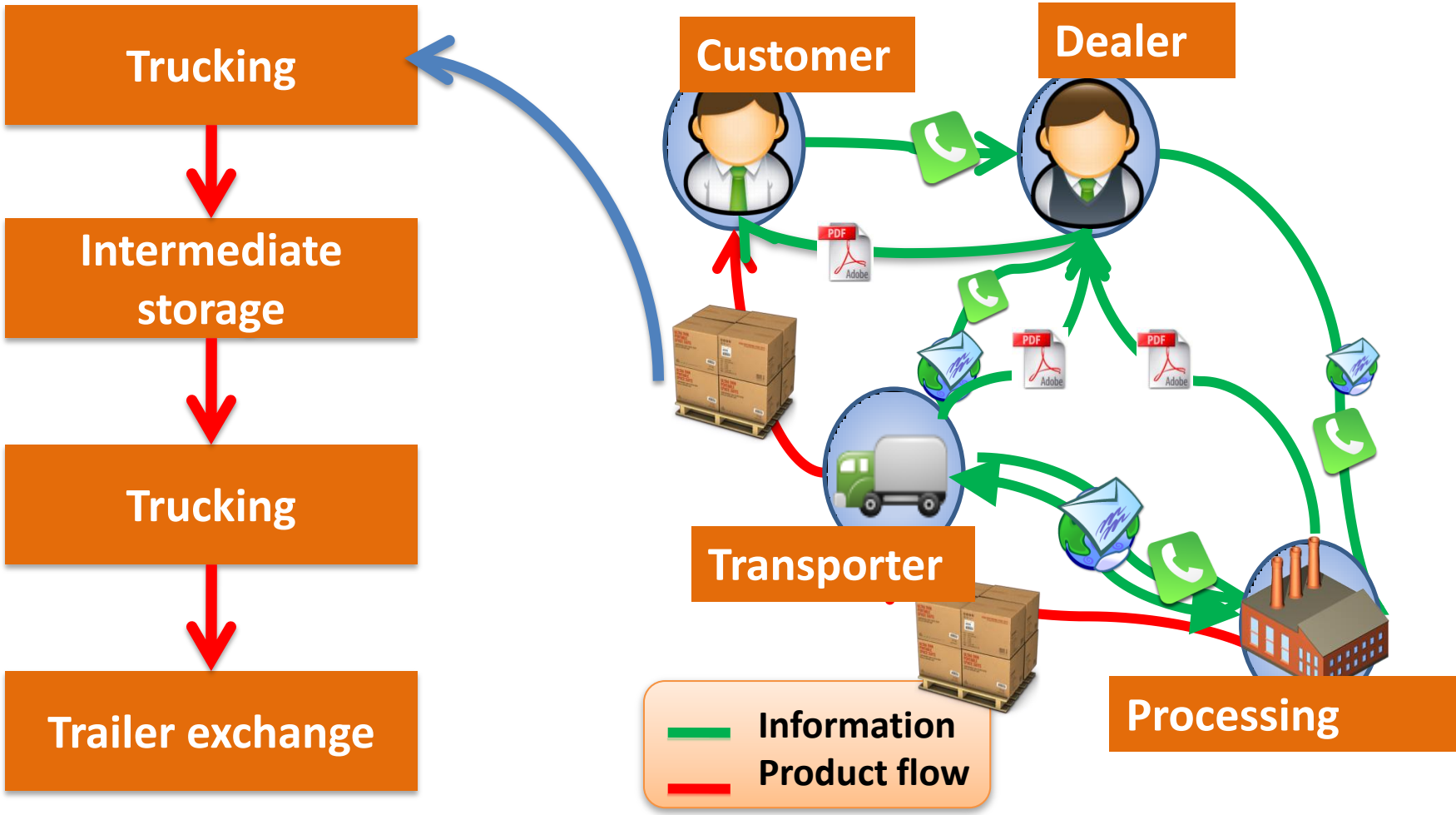
Fishing	Reception	Local distribution	Local storage	Trucking
Landing Fish market				Storage before trucking
Transport to factory				Unloading
Chilled storage at factory				Shipping
Processing and packaging	Chill storage before shipment	Loading	Transport to shipper	Storage at shipper

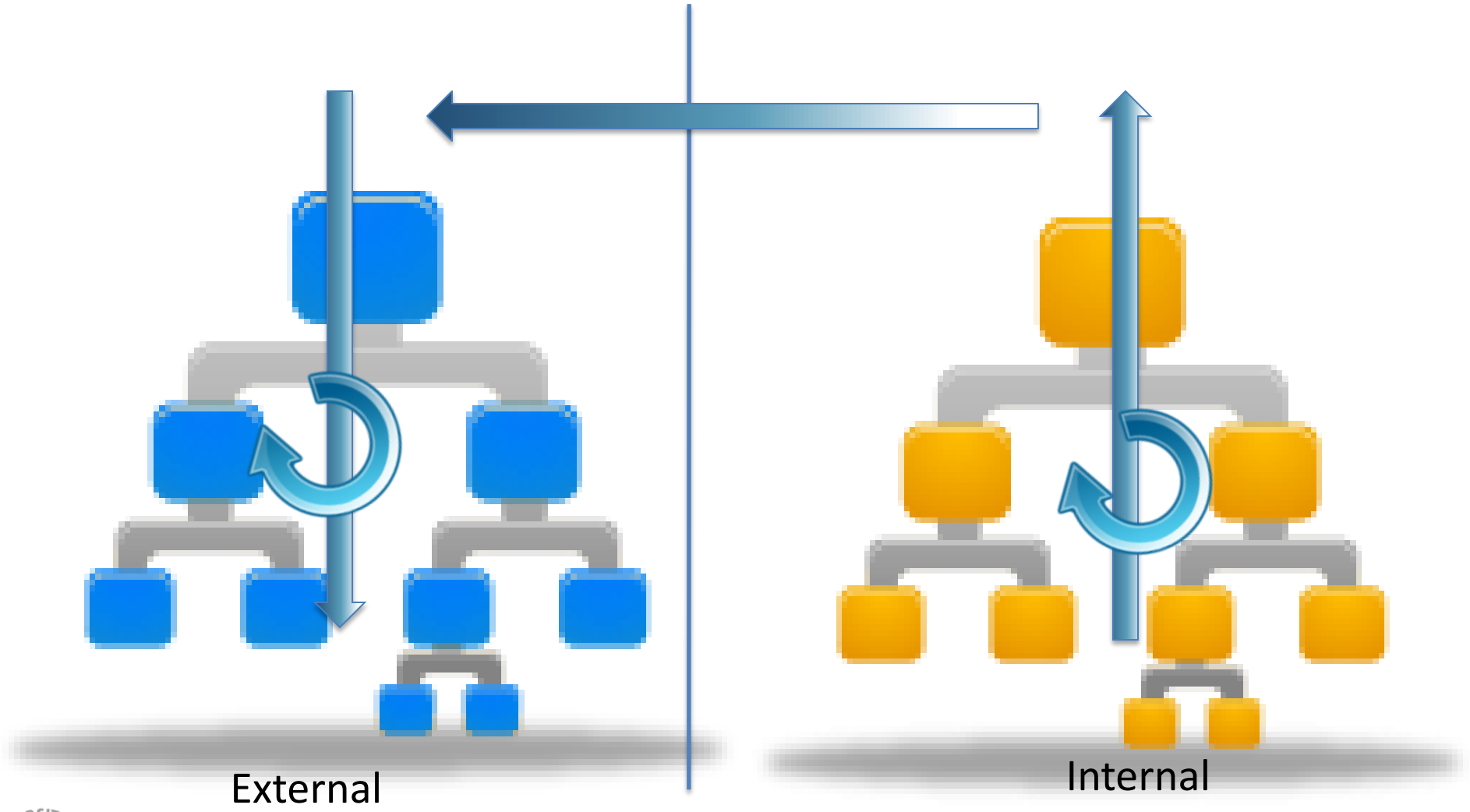
Current situation



Overview

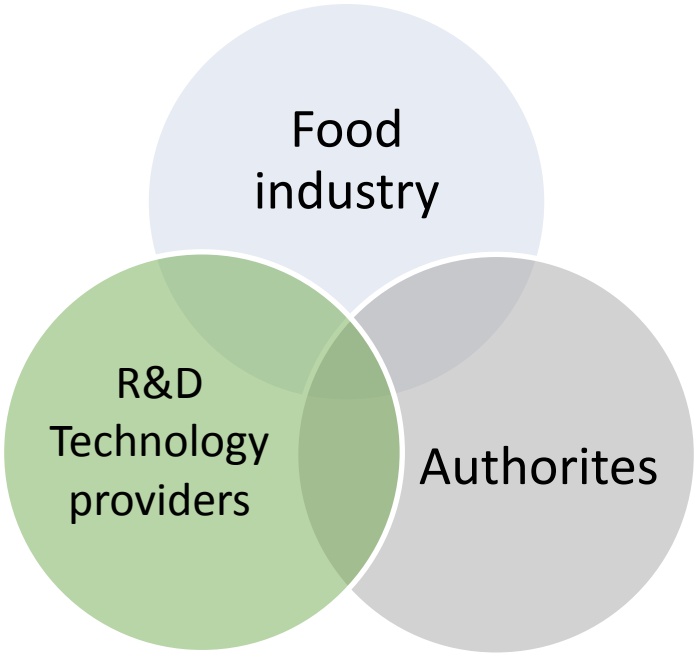
- 15 – 20 operators in the chain
- Different motivation in the supply chain
- Some legs of the supply chains are broken further down
  - Logistics
  - Processing
  - Fishing

Communication



Internal communication

Challenges	
Different countries	• Cultural barriers • Language barriers
Different scientific disciplines	• Lack of understanding • Isolation
Industrial partners	• Competition - IPR • Motivation • Committment



- Preparation for field trials
- Implementation and validation of technologies
- Integration, communication
- Complementary motives and mutual benefits of partners

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- Detailed agenda
- Detailed Expirmental plan
  - Detail techology used
  - Overview of the chain
- Validation goals
- Risk assessment
- Application sheets
- Iterative proccess

Wet trials of Cod - Nov 2009

Landing / market

Transport to factory

Storage in factory

Processing and packaging

Storage before shipment

Day 1 - Mon

Day 2 -Tue

Day 3 - Wed

Transport to shipper

Storage at shipper

Shipping to Westmen Isles

Storage

Shipping - ferry / truck

Arrival at Matís

Storage at Matis Simulated scenario

T Abuse Testing of HW + SW

Shelf-life study / Products -1 C

Microbial study

Day 4 - Thu

Day 5 - Fri

Day 6 - Sat

Day 7 - Sun

Day 8 - Mon

Days 9 - 15

Temp. logger

MMU

DAM

T-sensor

QMRA/SLP

OnVu TTI's

Micobiological testing

qPCR

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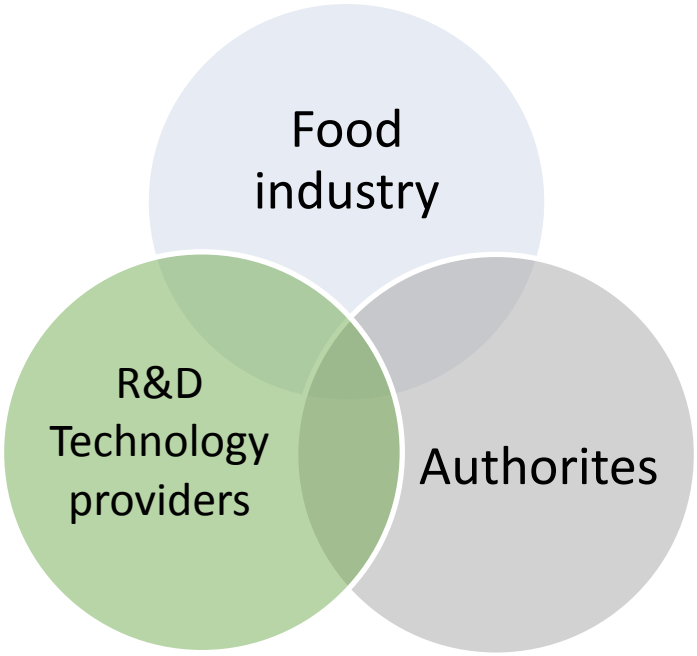
External communication

Challenges	
Different countries	• Cultural barriers • Language barriers
Different scientific disciplines	• Lack of understanding • isolation
Industrial partners	• Competition - IPR • motivation • committment



- Different motivation
- Limited link to the project
- Different opions with in a company
- Simplified message – direct to the point

“Whispering game”

Risk process

- Very important part
- Was not only nice piece on a pice of paper
- Live document iterated every time
- Contingency plans were frequently used

Step Analysis and Action Points - SAAP

Implementing technologies in field trials risk based approach

1. Conduct risk analysis
2. Determine action points
3. Establish critical limits
4. Establish monitoring procedures
5. Establish corrective actions
6. Establish record keeping procedures
7. Establish verification procedures

- Adapt the 7 steps of HACCP methodology
- Analyse risks in the process of implementing technologies
- Evalute all obstacles / Risk Assessment /Action points

➢ SAAP – based on preventive measures

Step Analysis and Action points							
Action point AP	Preventive Measures	Control measures	Target critera min / max Alerts	Corrective action / Contingency plans	Records	Responsible operator	Internal reference documents

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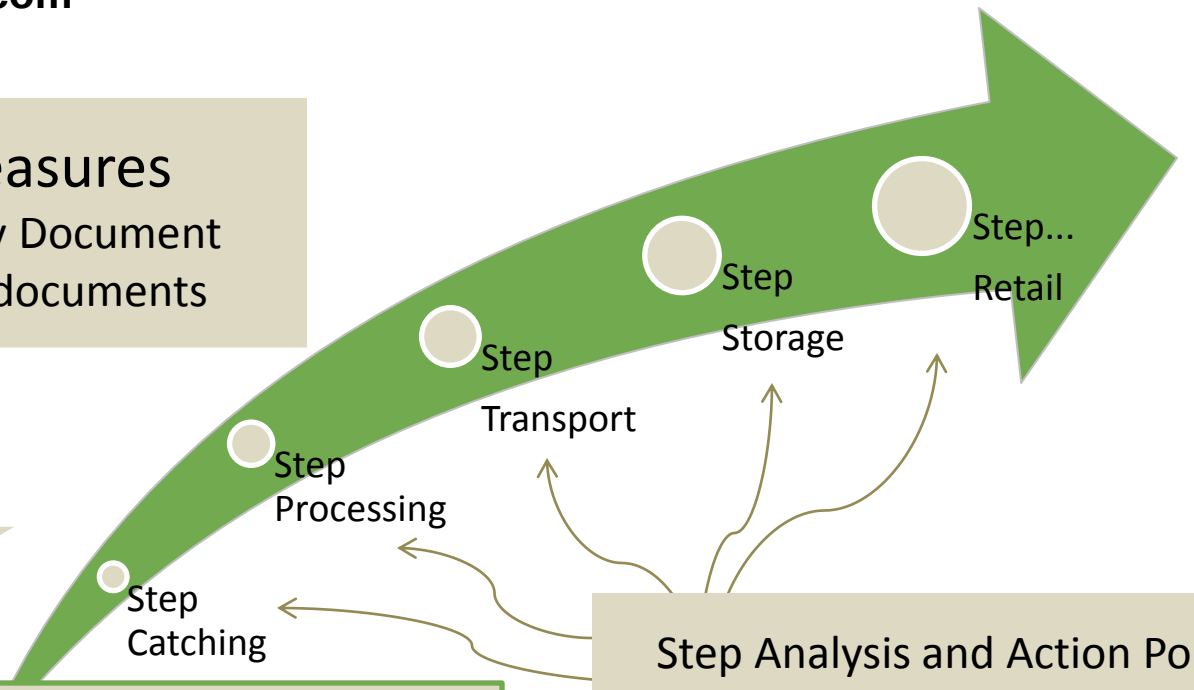
Establishment of Standard Operation Procedures (SOP) and TOR - Field trials scenarios

Preventive measures

Partner Responsibility Document

CHILL-ON reference documents



Step Analysis and Action Points

SAAP

- Assessment of the chains
  - ✓ Flow charts, process description,
  - ✓ Temperature mapping
- SOPs for technologies /Application sheets
- Allocation of technologies in each link
- Risk assessment - Contingency plans

TOR –Field Trial Scenarios

Experimental design

Validation goals

Example of risks

- Backup of systems
- Local communication
- Lack of products
- Participation of partners

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Follow up process

- Errors, events, fails, faults, ideas and etc registered during the trials.
- Carefully filed
  - Linked to partner
  - Linked to process
- Each run between
  - 30 – 100 records
  - 50 -100 pages of document
- All communication was registered
  - During and after

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Conclusions

- Mappings – not only for basic observation
- Communication – internal and external
- Communication – formal and informal
- Importance of follow up after the trials

Thank you,

Any questions?

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