

# Information Sharing & ICT in Agri-Food Supply Chain Networks – a view from different perspectives

ICT-ensure workshop, 15 January 2009, Paris, France

Dr.Ir. Sjaak Wolfert – LEI Wageningen UR/EFITA  
The Netherlands



# Sjaak Wolfert – who am I?

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- MSc/PhD at **Wageningen University**, The Netherlands
  - Sustainable Agriculture: how to make it work? (2002)
- 2001 – now: senior scientific researcher at Agriculture Economics Research Institute (**LEI-WUR**)
- 2006 – now: President of the Dutch Society for ICT in Agriculture, Food and the Environment (**VIAS**)
- 2007 – 2009: President of **EFITA**

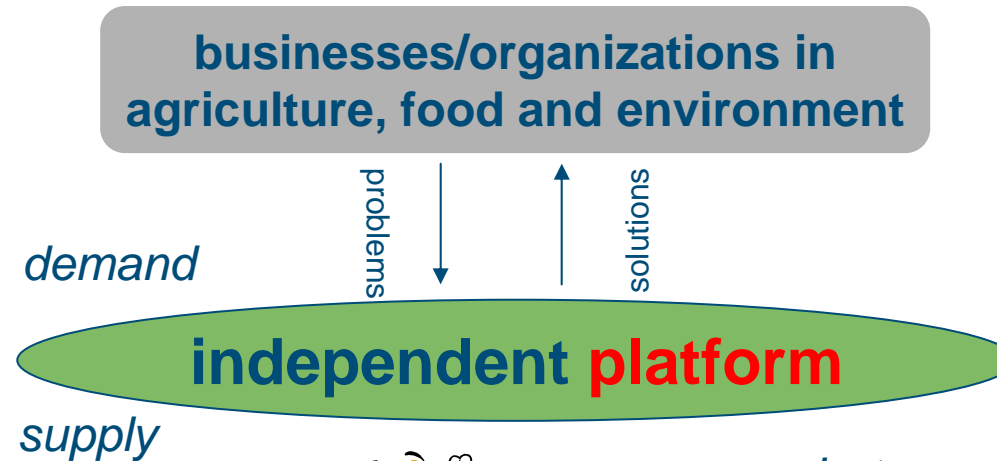


EFITA:

European Federation for Information  
Technology in Agriculture, Food and  
the Environment

Dr. Sjaak Wolfert  
*President*

# Role of EFITA

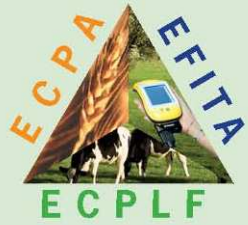


## what we are:

- **network** of agri-ICT-professionals
  - science-based
  - practice-oriented
  - interdisciplinary
- NMO's in 16 EU countries

## what we can (help to) provide:

- state-of-the art RTD
- workshops, seminars
- living labs
- contact persons
- (EU)-funding
- dissemination of knowledge/information
- ...

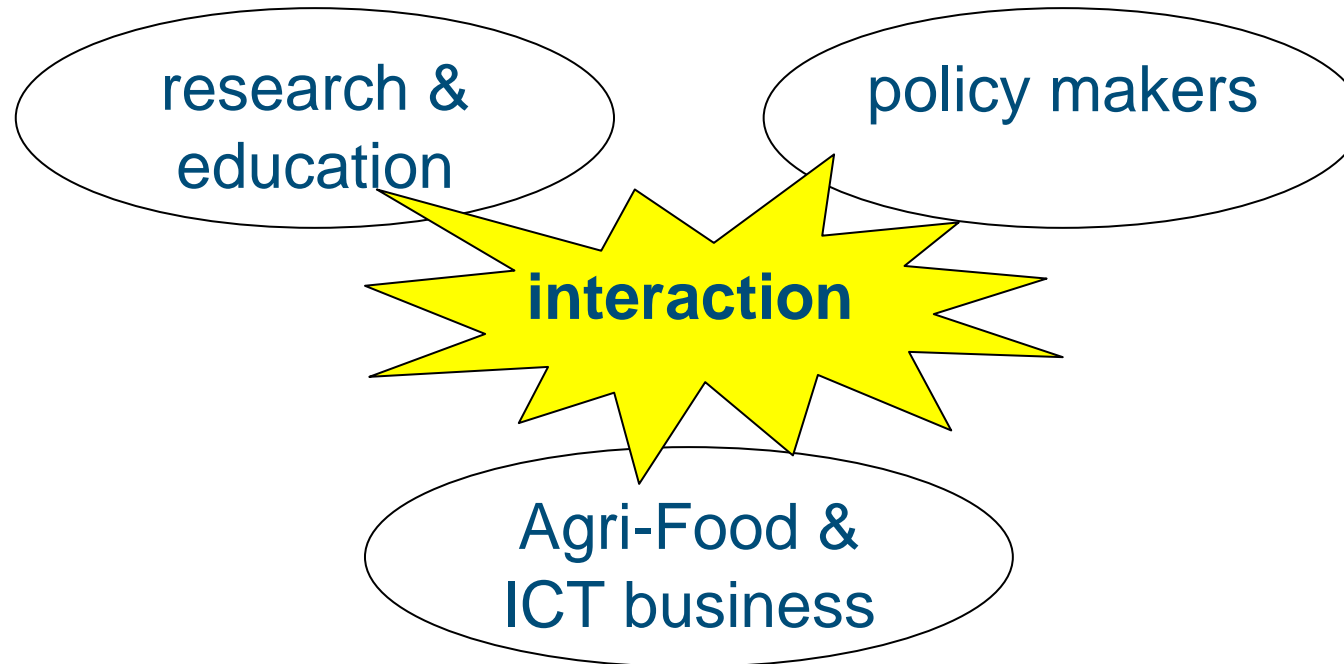


# Joint International Agricultural Conference

6, 7 and 8 July 2009, Wageningen



[www.jiac2009.nl](http://www.jiac2009.nl)



# Research Group – Management & ICT in AFSCN

- Dr. Sjaak Wolfert
- Prof. Adrie Beulens
- Dr. Wil Hennen
- Drs. Cor Verdouw
- Dr. Marco Verloop
- Ing. Henri Prins
- Drs. Tim Verwaart
- Ir. Ruud van Uffelen



# Key note

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**Business (process) is leading!**

# Presentation outline

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## Information Sharing in AFSCN

- Context and problem description
- Conceptual framework
- Some results from research
- Some experiences from the Dutch 'KodA' project
- Main challenges
- On-going developments: agriXchange



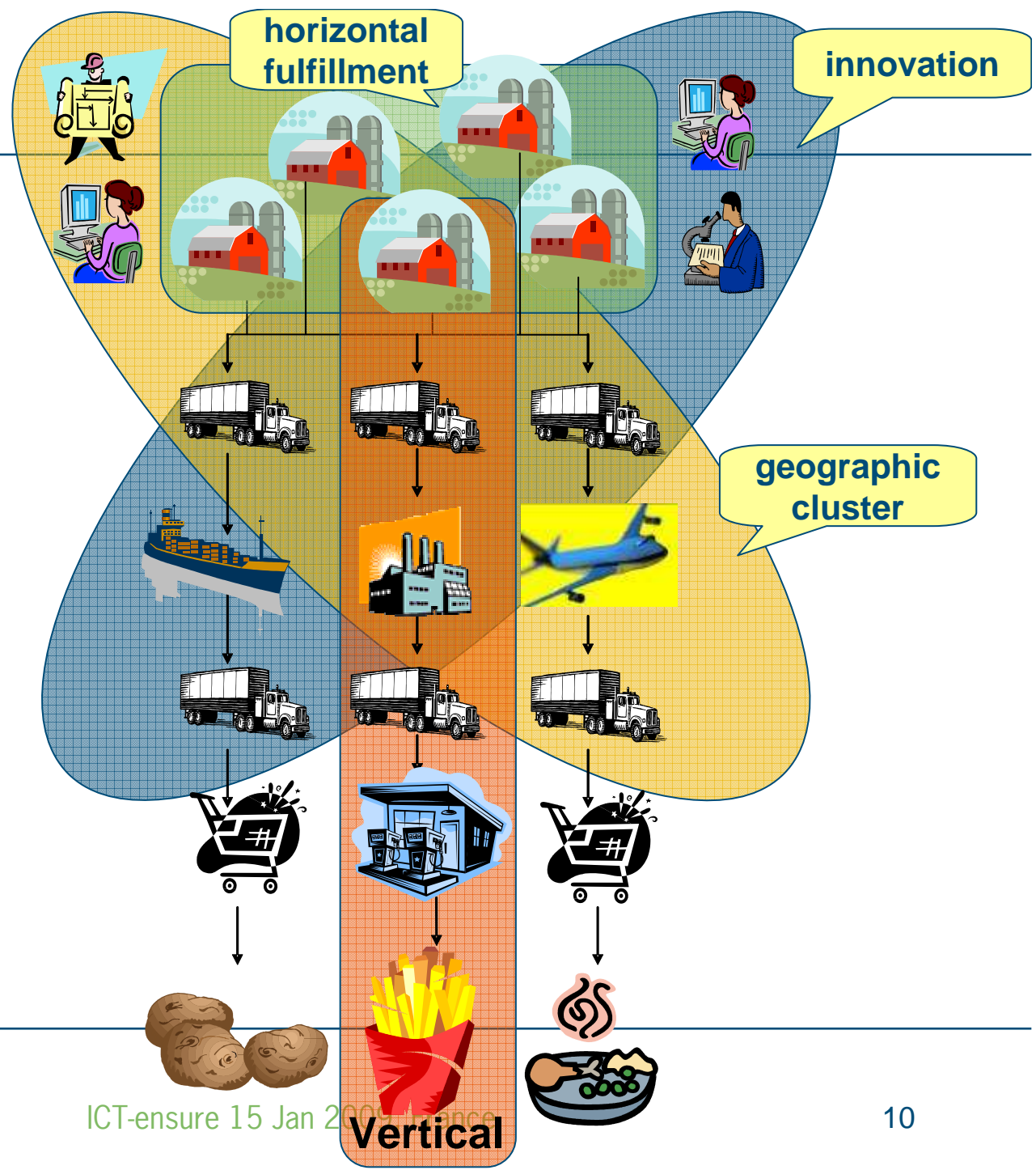
# Driving factors in agri-food business

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- Sector-specific characteristics include:
  - Fresh products
  - Seasonable production
  - Many SMEs, particularly at farm level
- Main challenges
  - 'license to produce'
    - consumers & society
    - food safety and transparency
    - sustainability
  - Global competition (EU, WTO)
  - Demand-driven
  - Innovation: knowledge-based production
- Operate in multi-dimensional, dynamic networks

# multi-dimensional Agri-Food Supply Chain Networks (AFSCN)

- information sharing for process control and communication
- ICT plays a crucial role



# Trends for information sharing

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- Information increasingly becomes a **competitive factor**
- Less focus on the product but more on the **service**
- **Spatial data** becomes more important
- **Open networks** in which users are more directly involved (see open innovation and living labs)
- Governments also part of open networks and stimulate **re-use of public information**

# Problem definition by example for pesticide application

## government/society

- environmental impact

- • *reduce environmental impact*

## food processor → consumer

- residues

- • *reduce [product]*
- *residues [d]*

pesticide information

## farm

- pe

- *reduce pests*
- *reduce costs*
- *apply site-specific*

- [costs/ha]
- [app/10m<sup>2</sup>]

***business processes are driving!***

# Problem of information sharing

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Problem of information sharing is NOT primarily about:

- software engineering
- database integration

but is about:

- **integration of information** that is generated by business processes
- information that is generated by an **installed base** of existing systems
- ICT and **organizational issues** that go hand in hand

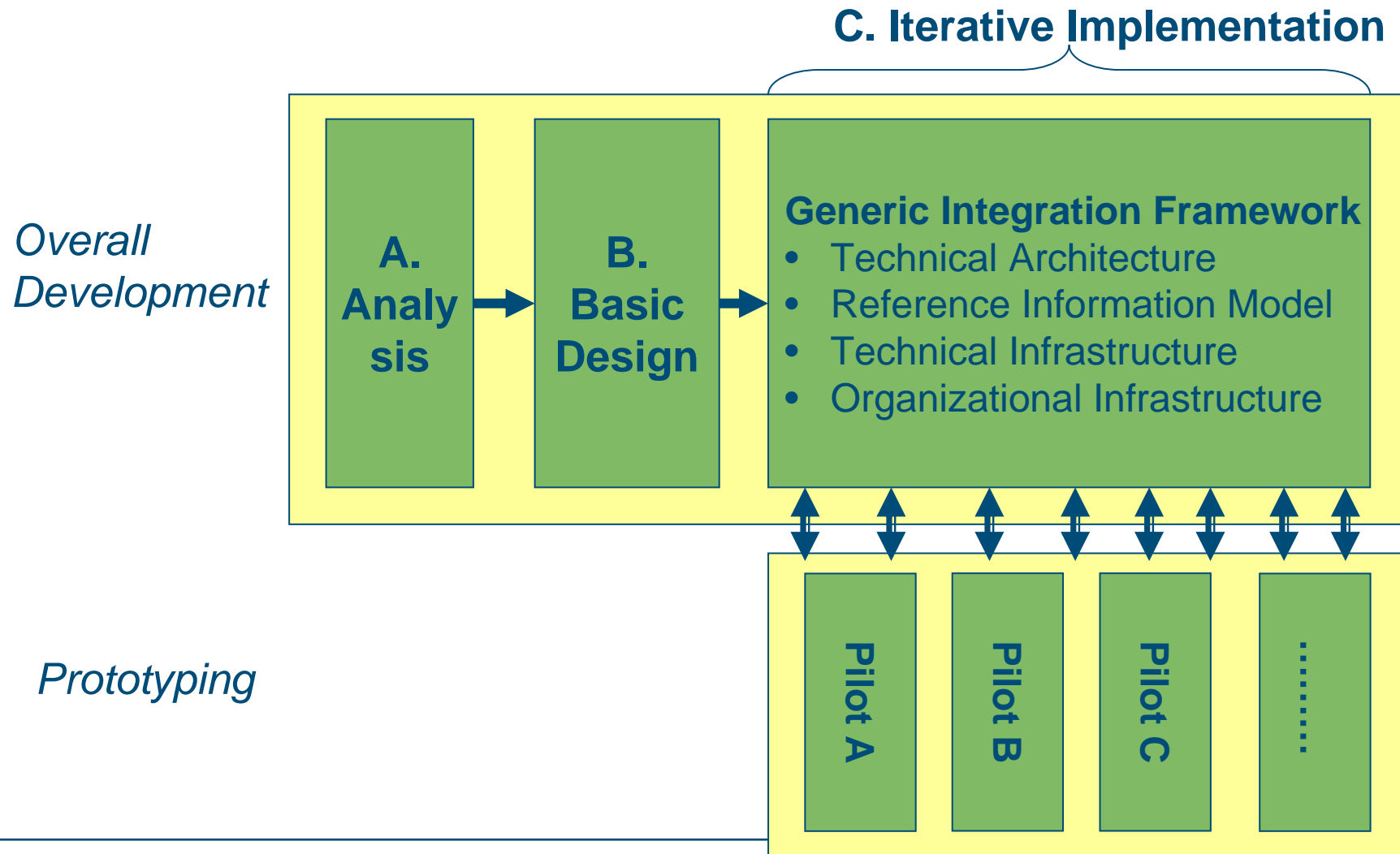
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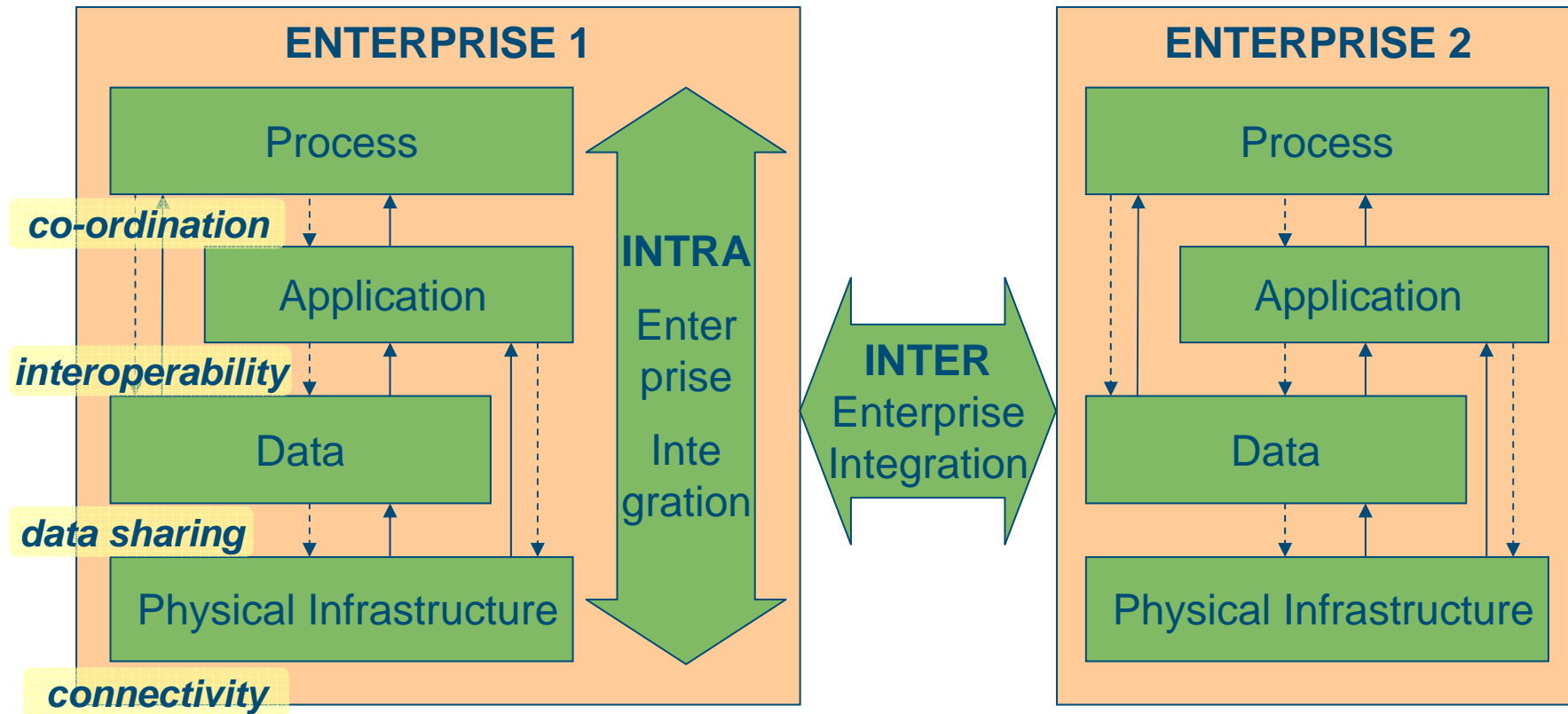
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# Framework for development



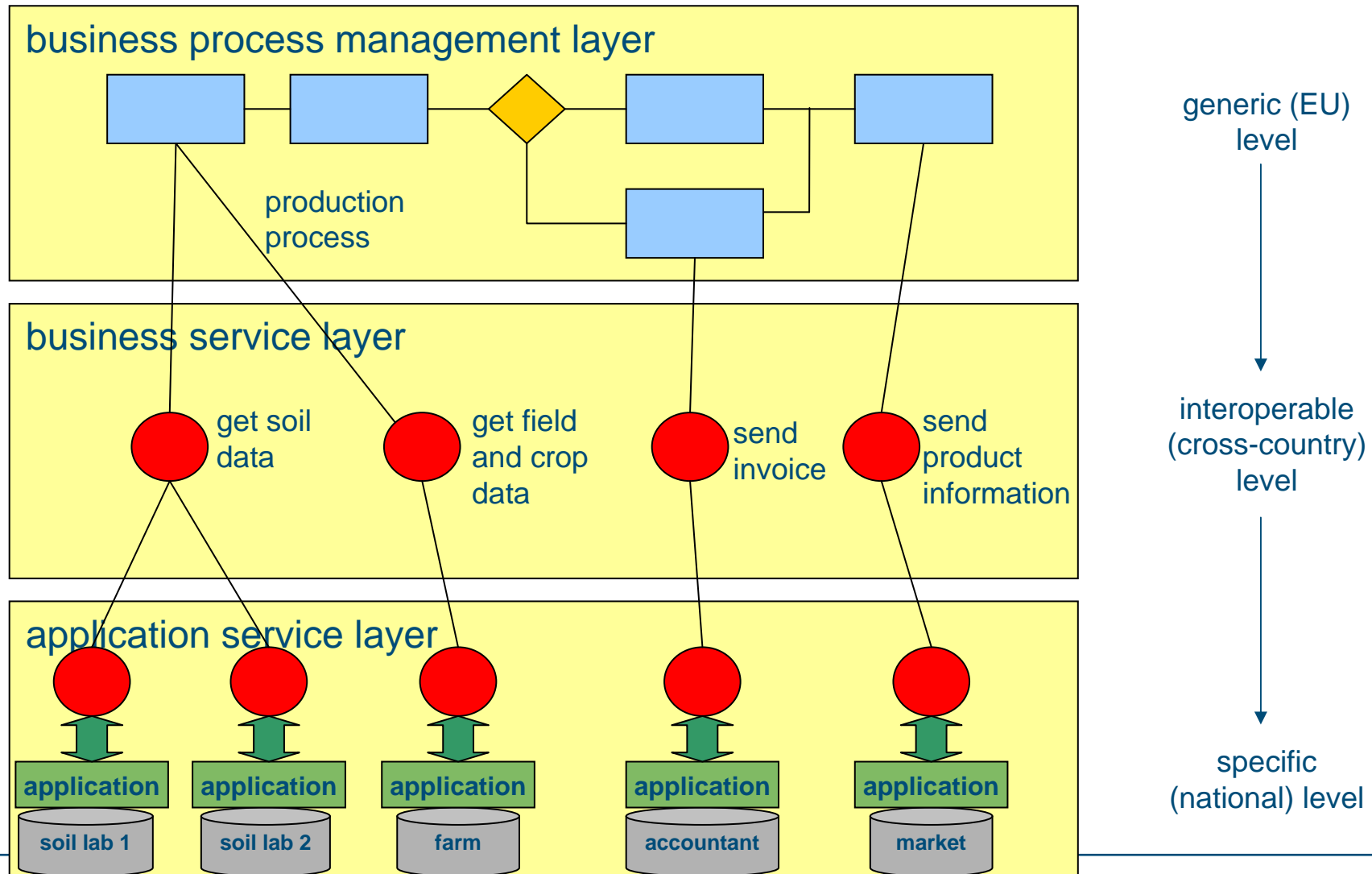
# Information Integration Analysis Framework



*Adapted from Giachetti 2004*



# 3-layered SOA architecture



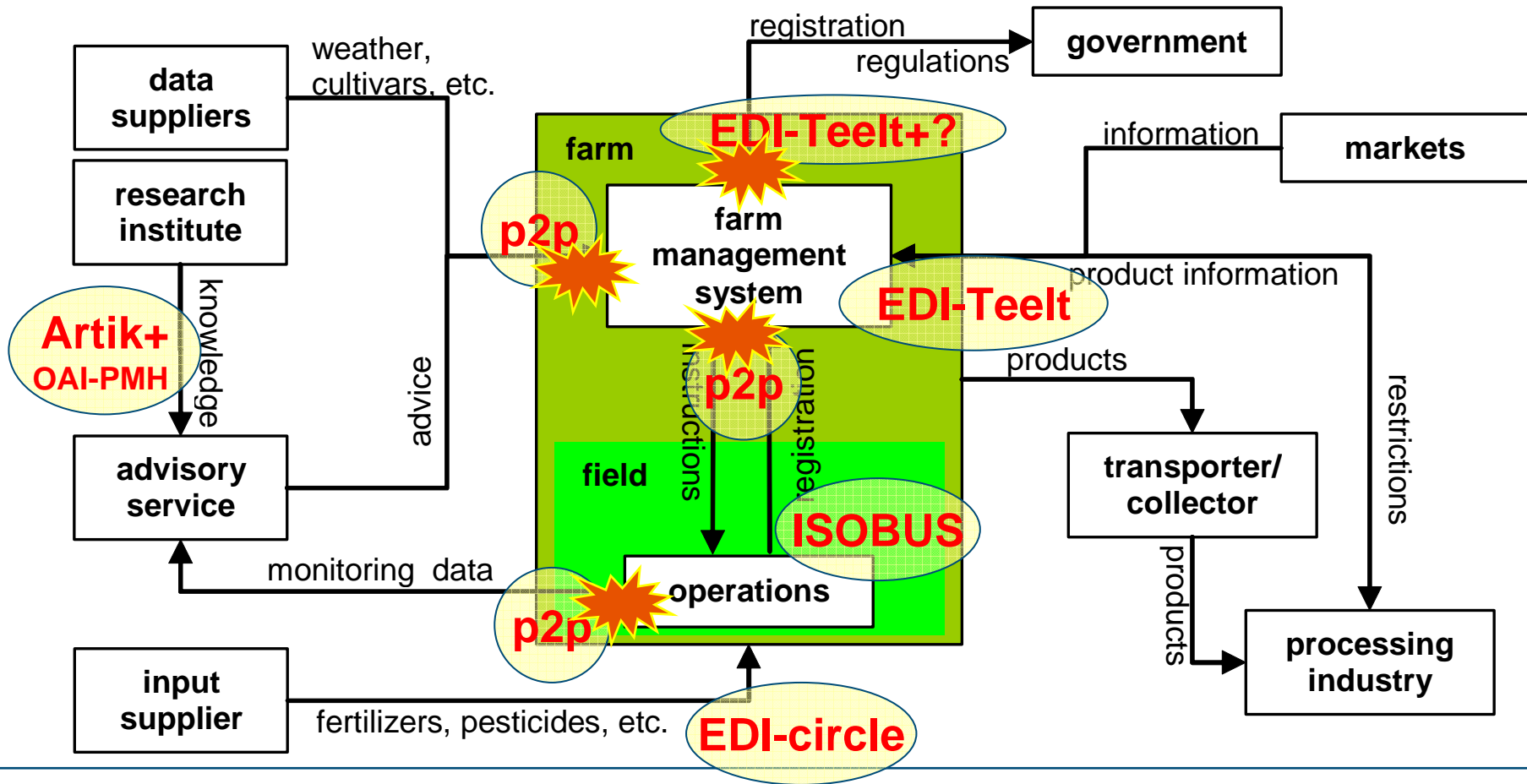
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# Current situation arable NL: many point-to-points



# Problems

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- choice of soft/hardware components is limited
- double investments in system components
- effort for collecting, converting and exchanging necessary data is large, while the possibility for making errors is high;
- difficult integration of scientific knowledge and farm-specific data
- decision-support is sub-optimal and as a consequence also decision-making;
- transparency and accountability requirements often lead to administrative burdens.

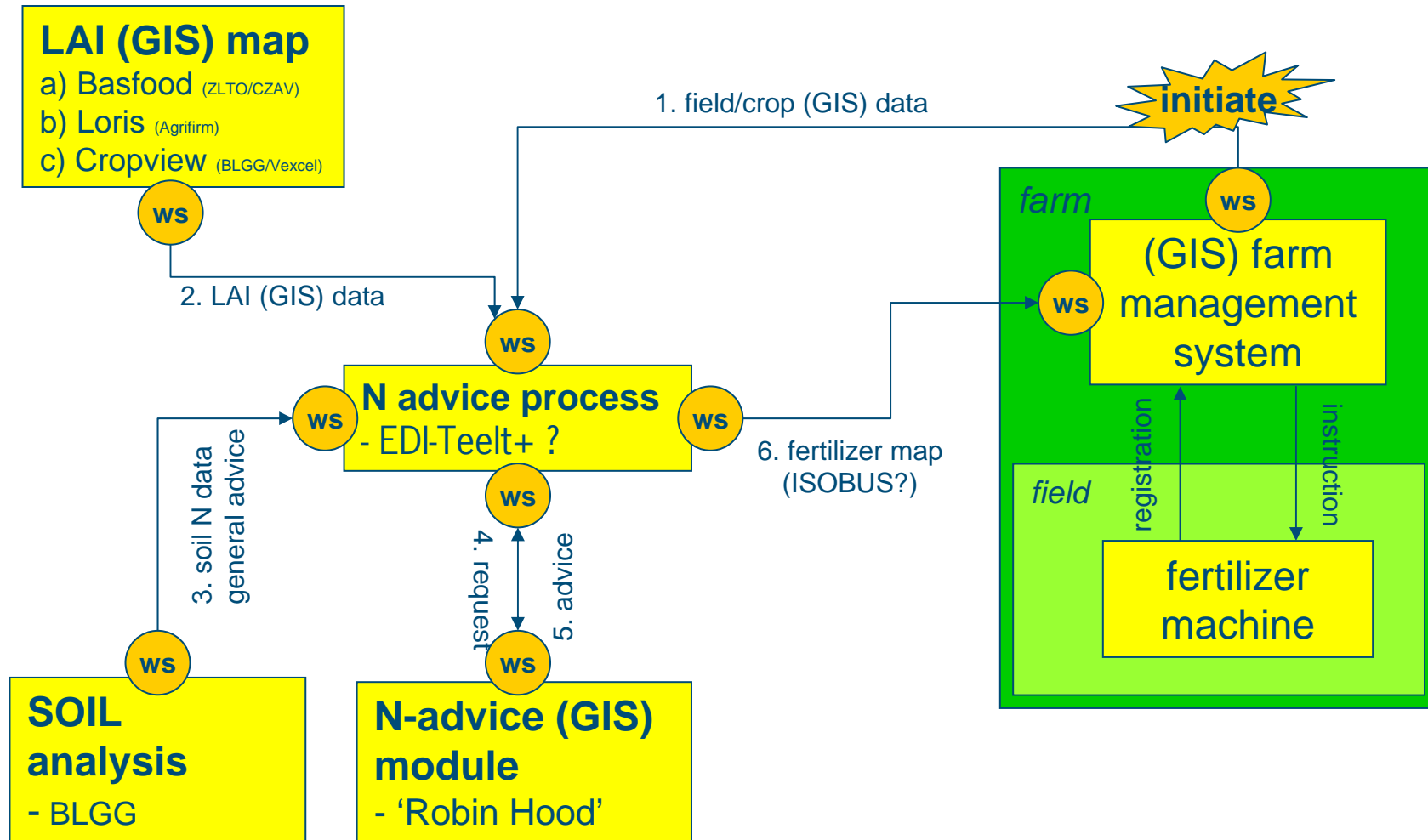
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## Information Sharing in AFSCN

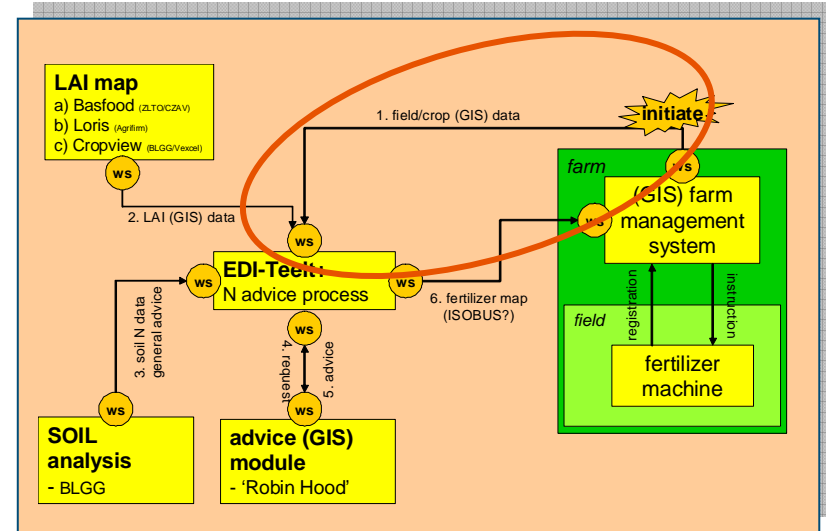
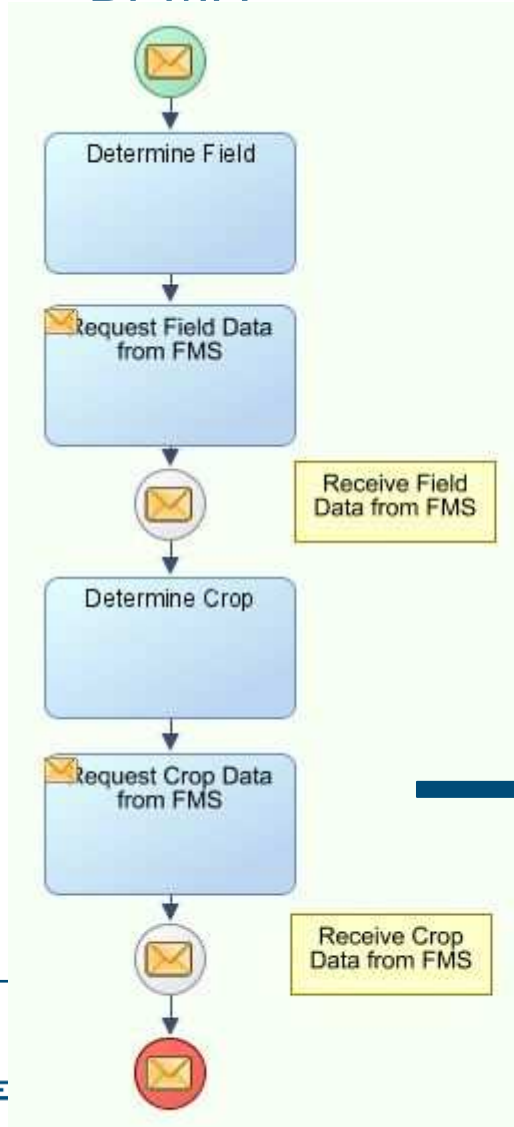
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# KodA I&S: geo-fertilizer advice



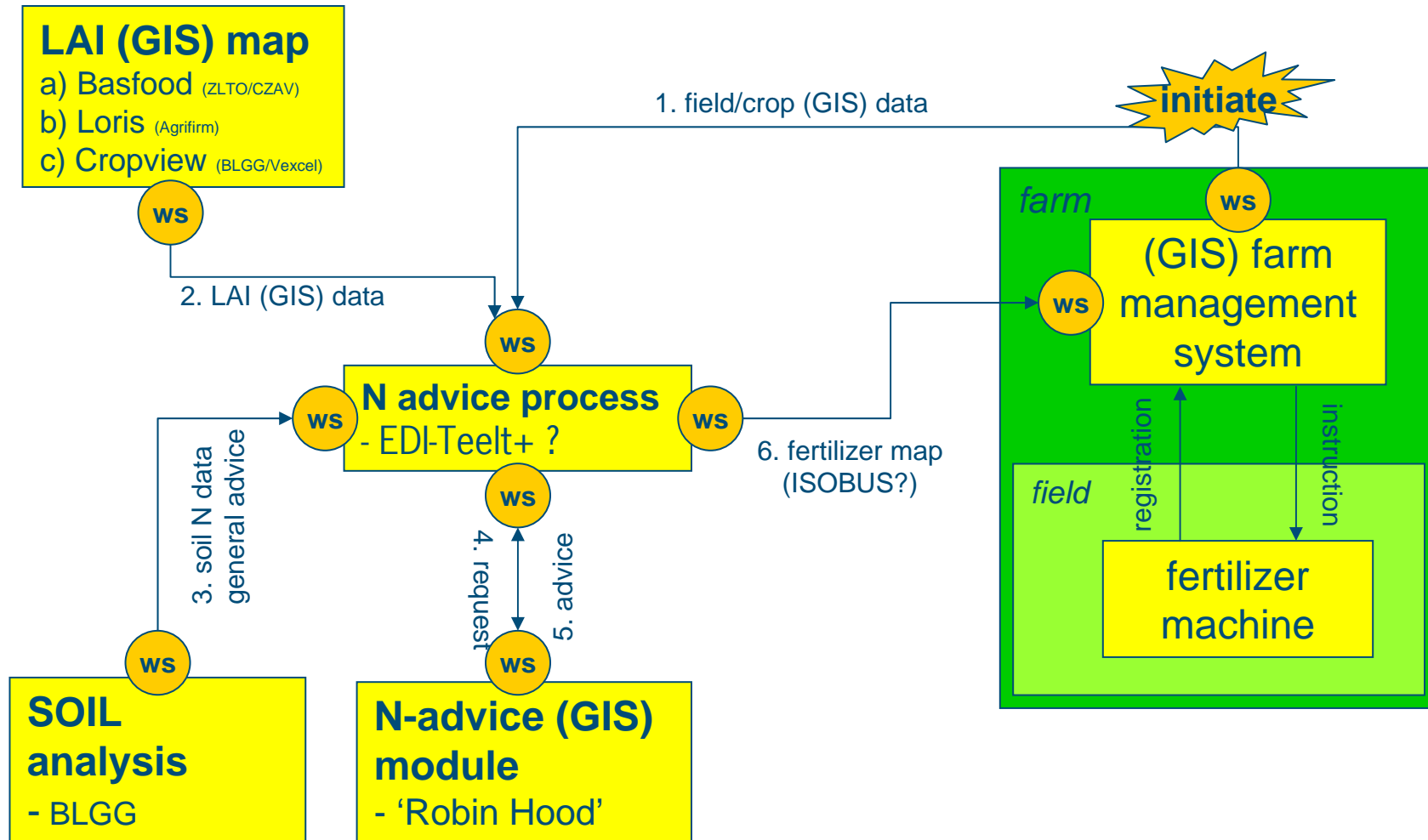
# Obtain field and crop data: BPMN to webservice

## BPMN



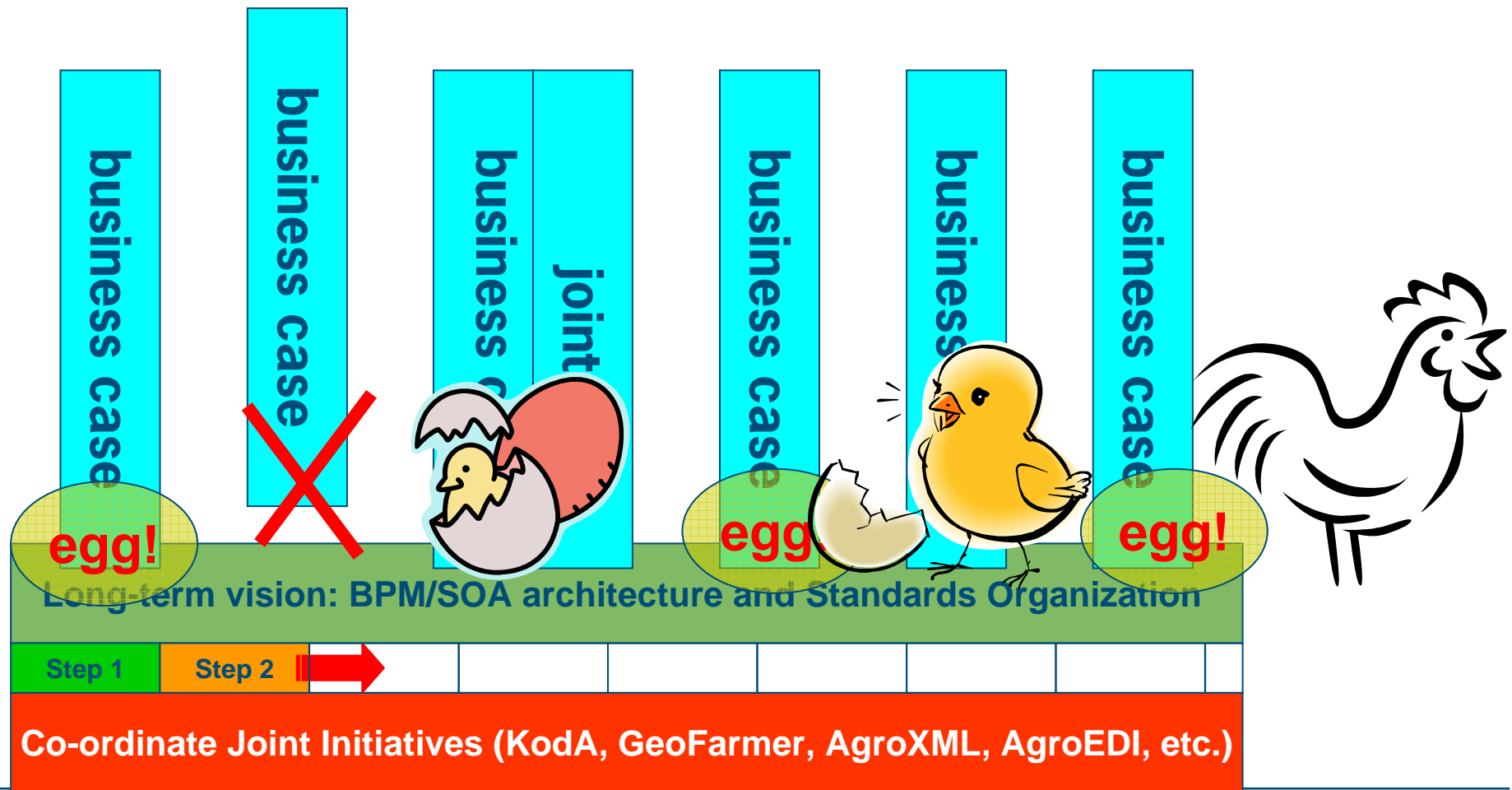
➔ BPEL code ➔ web service

# Keys for development

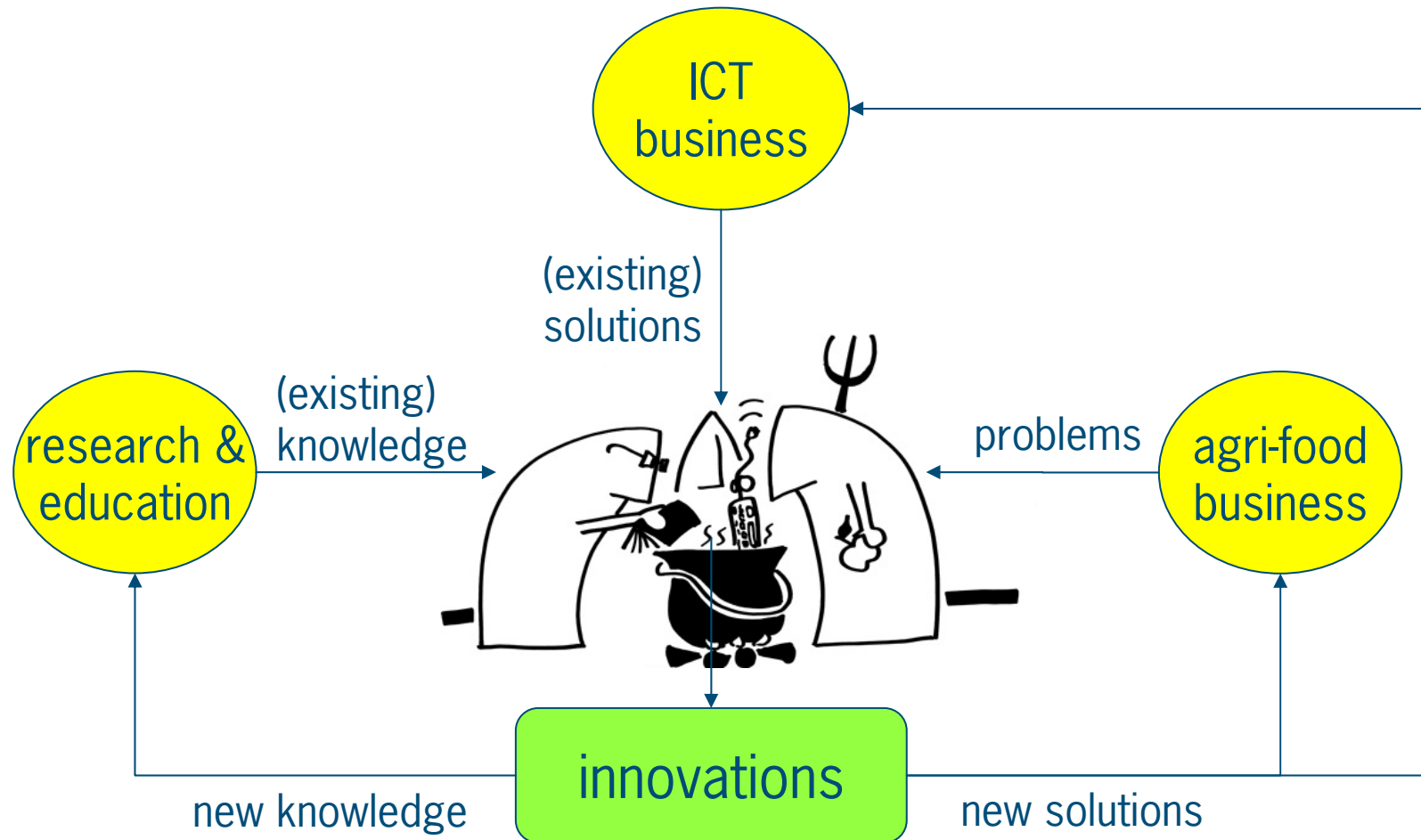




# Solving chicken-egg dilemma: a golden egg approach



# Living Lab Information Management in Agri-Food



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# Main challenges

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- How to construct **sector-specific SOA-architectures based on reference information models**, adopting existing, worldwide cross-industry standards?
  - How to use **business process management (BPM)** concepts, including 'best practice' models, to allow flexible configuration of specific processes integrations?
  - How to organize **broad commitment** (including the end of the chain!), to embed developments in sustainable institutional arrangements, and to **let it grow organically**? (Living Labs!)
- **Concerted Action** is needed for coordination and knowledge exchange in different sectors and in different countries at the international level

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# agriXchange (proposal FP7-KBBE-CSA call 15-Jan-09)

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Coordinate and support the setup of a sustainable network for developing a system for common data exchange in agriculture by

- establishing a platform on data exchange
- developing a reference framework for interoperability
- identify main challenges (SRA)

consortium of 14 partners from 11 countries (Sjaak Wolfert is coordinator)

# Thank you for your attention!

## Business (process) is leading!

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