Introduction Framework Development

How to combine overall architecture and practical prototyping?

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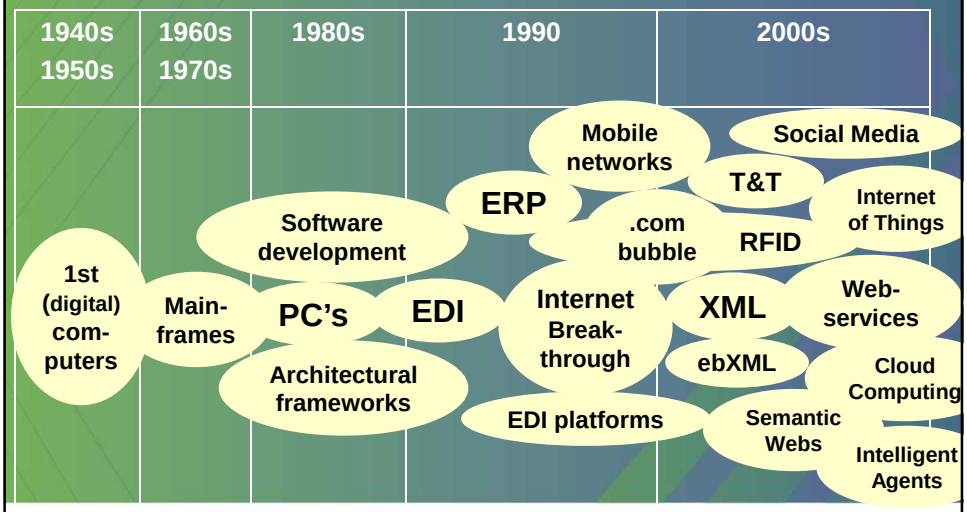
Context: some highlights ICT development



Context

- Explosion of applications
- Shift from architecture-driven to implementation-driven approaches
  - centralized ➔ decentralized
  - sequential ➔ incremental prototyping
  - greenfield ➔ legacy
  - common goals ➔ diverse interests
- Great, but…
  - Complexity and fragmentation
  - Reinventing the wheel

Key challenge regarding the methodology

How to combine overall architecture and practical prototyping?

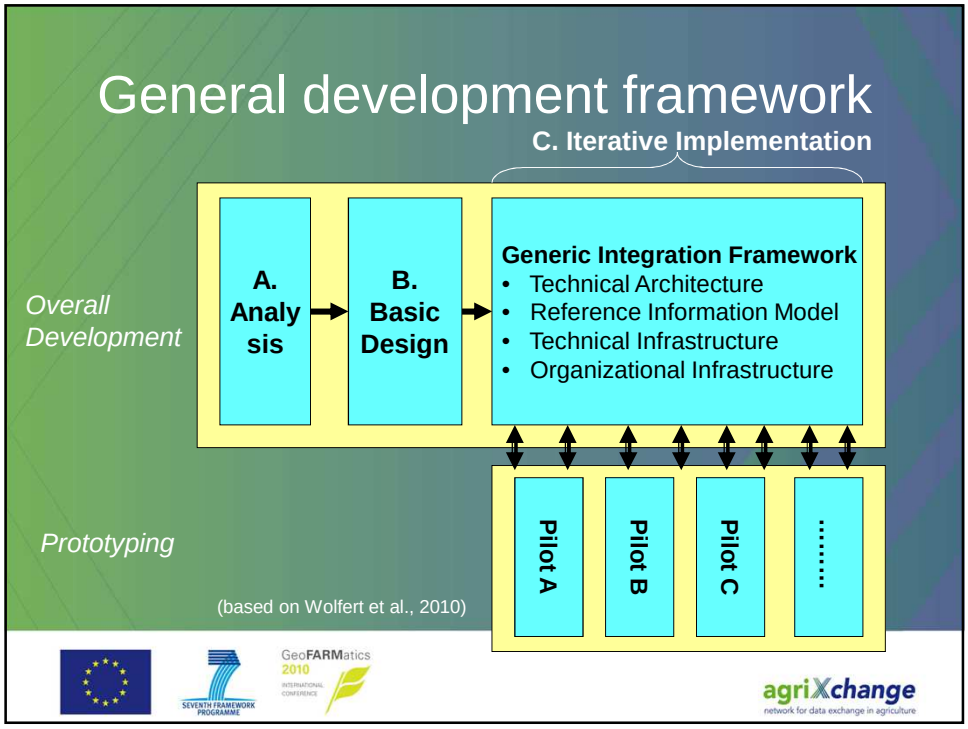
Objective agriXchange WP4

- to develop a reference framework for interoperability of data exchange in agriculture in the EU

The framework is used as a core vehicle to combine overall architecture and practical prototyping in use cases

What is a reference framework?

Architectural framework	• A systematic taxonomy of concepts of how to organise the structure of information models • Define the required types of information model types in different views and at various levels of abstraction, and show how these are related.
Reference model	• A predefined information model that captures 'recommended practices' and that is used as a 'frame of reference' (i.e. blueprint, template) to construct company-specific information models
Reference framework	• **Combination of an architectural framework and a reference model** • **Serves as a frame of reference for modelling specific use cases** • **Continuously updated with designs developed in use cases**


General development framework
C. Iterative Implementation
Overall Development
A. Analysis
B. Basic Design
Generic Integration Framework
• Technical Architecture
• Reference Information Model
• Technical Infrastructure
• Organizational Infrastructure
Prototyping
Pilot A
Pilot B
Pilot C
.....
(based on Wolfert et al., 2010)
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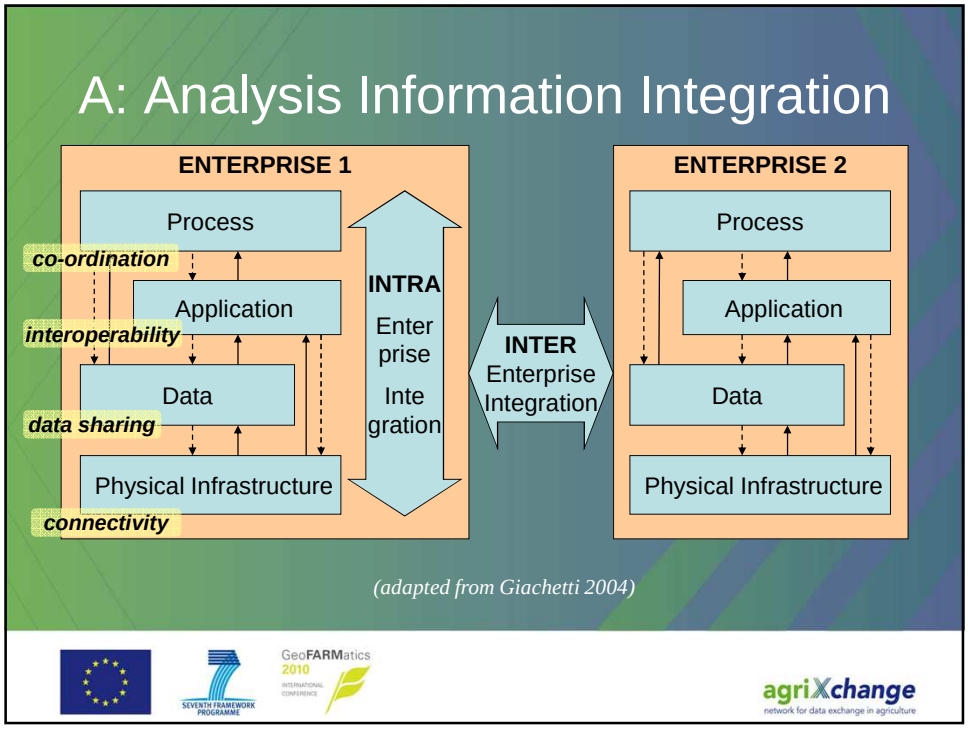
A: Analysis Information Integration
ENTERPRISE 1
ENTERPRISE 2
Process
Application
Data
Physical Infrastructure
co-ordination
interoperability
data sharing
connectivity
INTRA
Enterprise Integration
INTER
Enterprise Integration
(adapted from Giachetti 2004)
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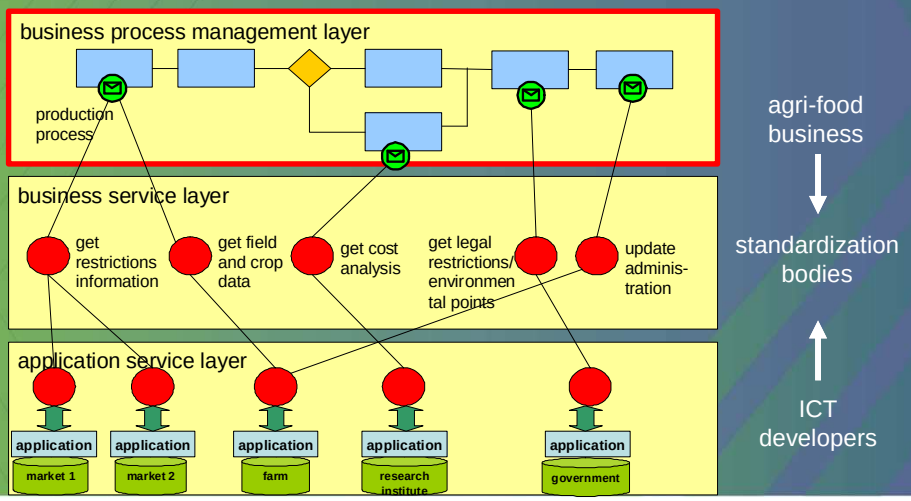
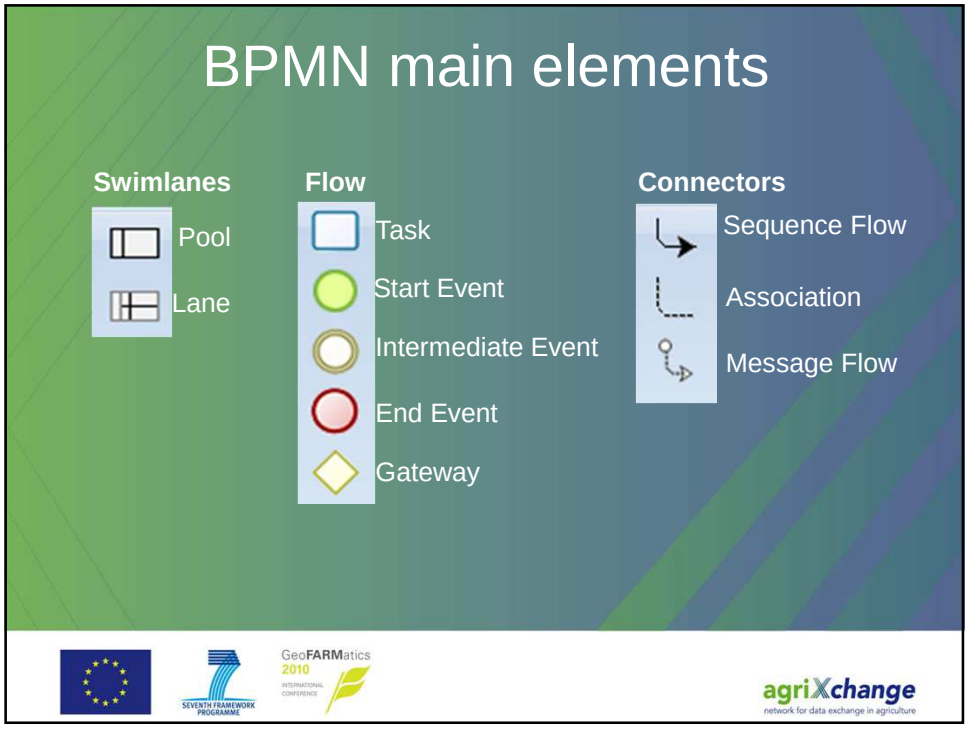
Analysis: method

- Overall Analysis
  - Based on State of the Art inquiry (previous session)
- Use Case Investigation
  - Updating of LPIS (Land Parcel Identification System)
  - Geo-farmer and fertilizing
  - Animal registration
- Template
  - Text
  - Supporting graphical models

B: Basic Design: SOA-based




BPMN main elements
Swimlanes
Pool
Lane
Flow
Task
Start Event
Intermediate Event
End Event
Gateway
Connectors
Sequence Flow
Association
Message Flow
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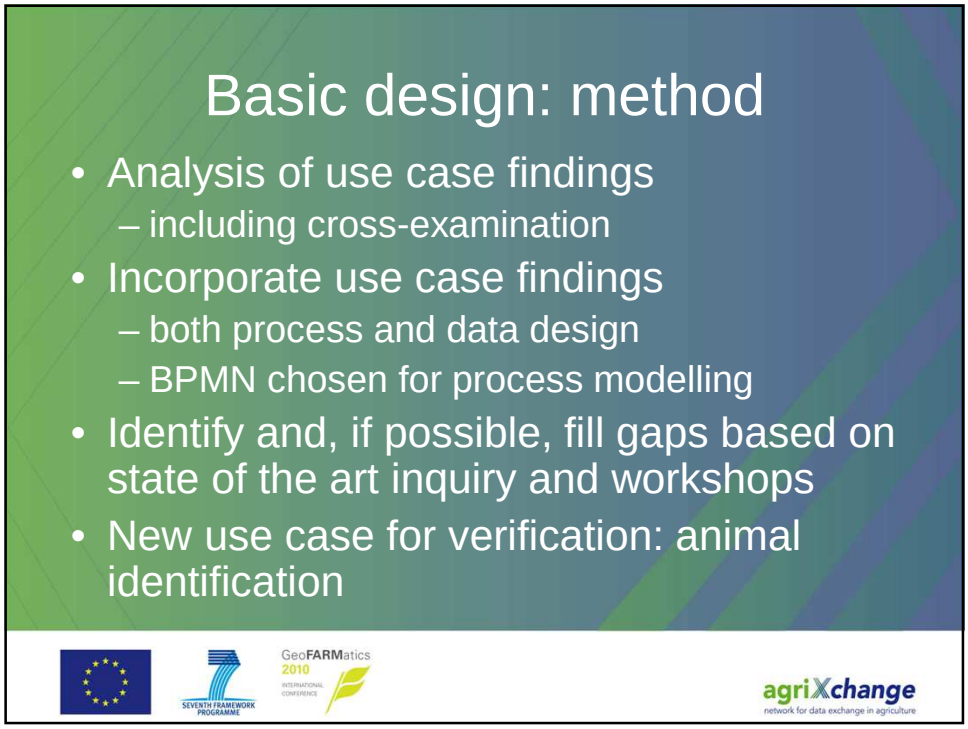
Basic design: method
• Analysis of use case findings
– including cross-examination
• Incorporate use case findings
– both process and data design
– BPMN chosen for process modelling
• Identify and, if possible, fill gaps based on state of the art inquiry and workshops
• New use case for verification: animal identification
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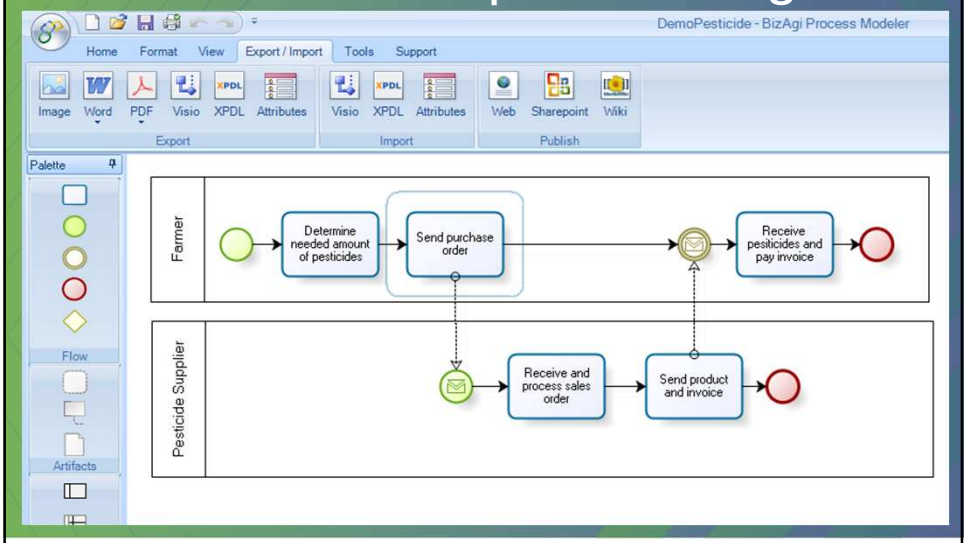
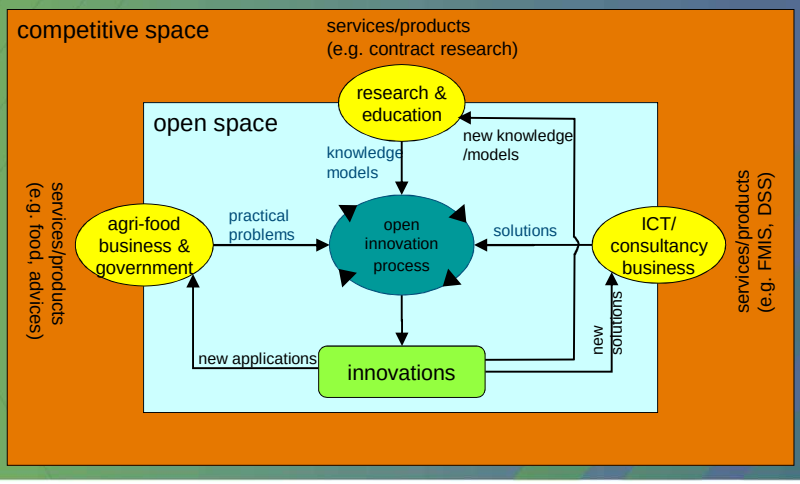
BPMN example in BizAgi



C: Iterative Implementation by Living Labs



Use Cases

- Updating of Land Parcel Identification Systems (LPIS)
- Geo-farmer and fertilizing
- Animal registration

Thank you for your attention!