INSTITUTO TECNOLÓGICO DE ARAGÓN

A service-oriented platform to achieve collaboration in the supply chain

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Agenda

- 1. Introduction
- 2. Technical solution
- 3. Validation

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4. Conclusions



(Paper word cloud)





INTRODUCTION

Questions with companies about collaboration.



INTRODUCTION

- One of the key factors in supply chain management is coordination
- Usually supply chain managers have poor visibility
- Decision problems gets complex
- Cost barrier for new members
- Critical for food supply chain

Real coordination needs:

- Integration of information flow
- Real collaborative framework





INTRODUCTION

- Food supply chains require high flexibility: availability
- Food supply chains require **agility** : perishability
- Main challenges:
 - Logistics Planning
 - Traceability



"transparency in the food supply chain is essential to guarantee food quality. "

- Key enablers of transparency
 - Information exchange,
 - Regulatory framework
 - Food quality and safety standards





TECHNICAL SOLUTION

ITChain project aims at creating an infrastructure for <u>catalog</u>, <u>publish</u>, <u>discover</u>, <u>perform</u> and <u>compose</u> <u>services</u> <u>dynamically</u> <u>mobility</u> and <u>context</u>-<u>dependent</u>, to facilitate interoperability of existing systems in the supply chain.



Services Integration in "Enterprise Service Bus"



TECHNICAL SOLUTION



Collaborative planning

Advanced response

Coordination to incidents

Improved real time decision-making

Event monitoring:

Learning from experiences





TECHNICAL SOLUTION

What is SOA:

- Service-oriented architecture (SOA)
- Service: is a self-contained unit of functionality
 - i.e.: services for temperature, stock, position

Why SOA:

- SOA makes it easy for devices to cooperate
- SOA can facilitate the integration with different platforms
- Includes other ideas: Service bus, Service composition...

Use of SOA:

- Accounting, finance, SCM, marketing.
- SOA in supply chain: Agility and Flexibility.





TECHNOLOGICAL SOLUTION

ItChain: Group of services





TECHNOLOGICAL SOLUTION

Platform design

- A service-oriented infrastructure to achieve interoperability for the domain of the value chain is proposed
 - ESB Services: Supports the exchange of information.
 - Mobility: Access and deployment of services in mobile devices.
 - Decision Support: Services in order to assist decision-making.
 - Connectors: Interaction with other systems.

Message interchange is addressed through **GS1 standards**

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Pilot validation 1 – Food retailer

- Auction centers of La Coruña and Irun
- National network for distribution.
- Information shared (examples)
 - Lots of fish bought
 - Quality of fish
 - Pending quantities to buy
- Scenarios:
 - Collaborative planning
 - Collaborative fish purchasing
 - Collaborative traceability





Pilot validation 2 – Transport company

National transport operator

- Planning:
 - Freight planning (number of trucks)
 - Order preparation
- Execution:
 - Transport and freight delivery information
 - Stock updating
- Load monitoring:
 - Geolocation
 - Sensors (temperature, image)







Pilot validation 3 – Fish company

Fresh fish from national providers and importers

- Planning:
 - Collaborative demmand forecast
 - Collaboration with transport agencies
- Execution
 - Coordination among agents
 - Stock sharing service
 - Traceability
 - Administrative processes





Simulation validation

- Supply chain simulation model
 - Increase the number of agents
 - Test in extreme conditions
 - Compressed time (200 days)





Simulation validation

Decision making alternatives

- Full inventory visibility
- Demand driven distribution
- Dynamic supplier selection

Simulation results

- Using ITChain platform:
 - Costs reduction up to 20%.
 - Transportation cost,
 - Inventory holding cost,
 - Order cost
 - Backorders penalty cost
 - Average inventory is reduced around 15%.





Conclusions

Benefits Collaboration

- Decision making
 - Planning
 - Coordination
 - Learning and understanding
- Inventory and cost reduction.

Visibility

- SOA applications
- Mobility technologies

Impact of a new technology

- Collaboration needs trust
- Prototypes and simulation improve trust generation





Contact



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