Outline

- Aragon Institute of Technology (ITA)
- ICT4LOG identified challenges.
- Supply Chain Collaboration: benefits, difficulties
- Supply Chain Collaboration: technologies, related projects
- Supply Chain Collaboration: conclusions
- Spanish National ICT4LOG Demo Center
- Contact
Aragon Institute of Technology (ITA)

The Aragon Institute of Technology is a non-profit Technology Center whose main objective is to promote competitiveness in the industrial sector and to support the growth of business sectors by means of the development, acquisition, adaptation, transfer and diffusion of innovative technologies in a multi-agent collaborative framework.

220 people
1000 clients/year
15M€ annual budget
1.7M€ annual investments
15,000m² Zgz/Walqa
National Knowledge Center (www.ict4log.eu)

- Generation, adaptation, transfer and diffusion of knowledge
- Applying ICT to solve logistical problems
- To develop collaborative and sustainable logistics
ICT4LOG identified challenges

- Challenges in eLogistics
- Collaboration in the Supply Chain
- Co-Modality / Multi-modality
- Sustainable Urban Logistics
- Humanitarian Supply Chain and action in emergency and natural disaster
Supply Chain Collaboration: benefits and difficulties

- Collaboration is a process of participation through which people, groups and organizations work together to achieve desired results.
- Supply Chain Collaboration: the common goal is to create a transparent, visible demand pattern that paces the entire supply chain. (Holweg et al.)

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<tr>
<th>Planning Collaboration</th>
<th>Yes</th>
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<tbody>
<tr>
<td>Type 1 Information Exchange</td>
<td>Type 3 Synchronized Supply</td>
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<tr>
<td>Type 0 Traditional Supply Chain</td>
<td>Type 2 Vendor Managed Replenishment</td>
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<tr>
<th>Inventory Collaboration</th>
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"Supply Chain Collaboration: Making Sense of the Strategy Continuum", Holweg, M., Disney, S., Holmström, J., Smaros, J. Center for Technology, Policy and Industrial Development, Massachusetts Institute of Technology and Judge Institute of Management; University of Cambridge, Logistics Systems Dynamics Group, Cardiff Business School, Cardiff University; and Logistics Research Group, BIT Research Centre, Helsinki University of Technology
Supply Chain Collaboration: benefits and difficulties

- **Benefits achieved through Collaboration**
  - Better customer service levels.
  - Reduction in inventory levels.
  - Elimination of bullwhip effect: linking inventory and replenishment decisions.
  - Better utilization of transportation resources: load factors, routing, traffic info. Improved sustainability.
  - Controlling risk for constrained components.

- **Difficulties in Collaboration**
  - Companies are reluctant to share information
  - Security when sharing the information
  - ICT integration in the supply chain needed
Supply Chain Collaboration: benefits and difficulties


1. Information Sharing: driving the collaborative supply chain
2. Collaborative Warehousing
3. Collaborative City Distribution
4. Collaborative Non-Urban Distribution
Supply Chain Collaboration: technologies

- Modelling, simulation, forecasting
- RFID (readers, labels, printers, doors), scanners, bar codes, 2-D codes, imageID: pallet and box identification, order preparation, delivery/pick up check
- Transportation: GPS and Galileo, GPRS and 3G.
- Urban and long distance freight transport. Real time scheduling for transport and warehouses.
- Adaptative Warehouse management systems WMS. ERP integration.
Supply Chain Collaboration: technologies

- IT Platforms, IT Security
- Next technologies in the IoT: miniaturization of sensors and low power communications infrastructures.
- Next middleware generation: FI PPP (FIWARE) and transport and logistics FINEST, INSTANT MOBILITY. SW Infrastructures to publish, discover, execute, and dynamically compose Context dependent services. Collaborative DDSS
Supply Chain Collaboration: related projects

- Demand Forecasting Carrefour Spain

- Information collection
- Preprocessing
- Forecasting Calculation
- Collaborative Supervision
Supply Chain Collaboration: related projects

- The Digital Business Ecosystem (DBE) is an FP6 Internet-based software environment in which business applications can be developed and used.
- It is a P2P OS middleware which allows easy and fast service delivery, discovery, composition and execution.
Supply Chain Collaboration: related projects

Modelled Logistics Processes (BPMN) with SOA execution capacities

Services Integration in “Enterprise Service Bus”
Supply Chain Collaboration: related projects

- **AIMTRAFFIC**: Using info provided by a urban fleet to make traffic calculations and forecastings in real time in urban areas.

- **SIT**: Capturing info from Zigbee WSN in freight trucks and makes data available to the complete Supply Chain for different services.
Supply Chain Collaboration: conclusions

- Collaboration improves performance of supply chains (potential reductions of >30% transport cost/pallet, >20% handling cost/pallet, 40% reduce lead time and lower >25% CO2 emissions/pallet, improved on shelf availability)

- Difficulties of collaboration relies on culture, security and lacks of integrated technology.

- Some Spanish and European projects has been presented in order to show how ICT technologies can help improve collaboration.

- Many steps ahead are necessary to reach synchronised supply chains but …

... ICT technologies will be one of the main enablers.
The National ICT4LOG Demo Center

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