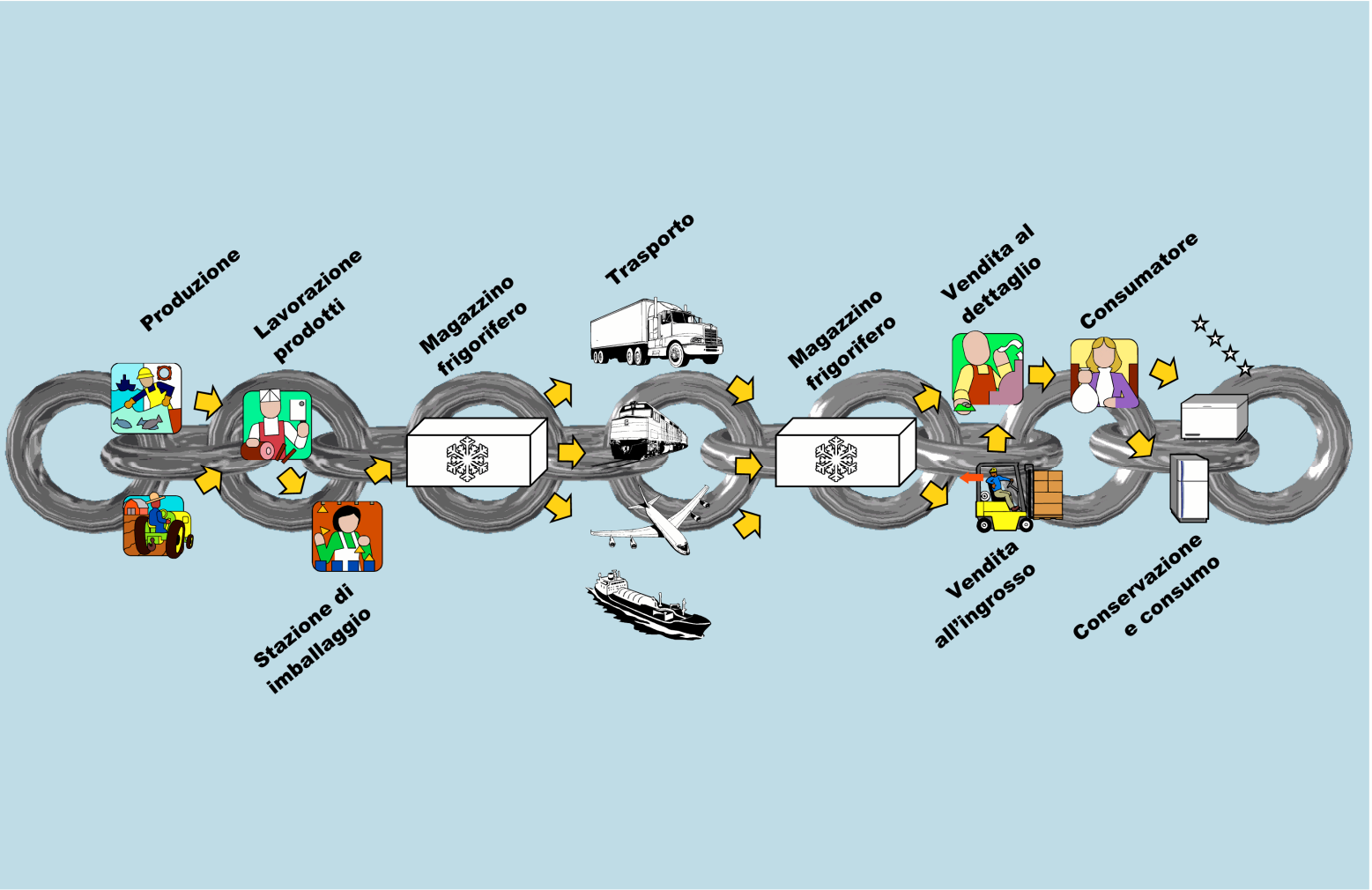
La Catena del Freddo: Logistica degli Alimentari alla luce delle Esigenze di Qualita' e Sicurezza

Partecipazione al PRIN:

Approcci e Tecnologie Innovative per la Pianificazione e la Gestione di Catene di Fornitura per Prodotti Alimentari con Caratteristiche di Qualità e Personalizzazione

- **Universita' di Genova**
- **Universita' di Trieste**
- **Universita' di Udine**
- **LIUC**

La Catena del Freddo



Project Goals

- It is proposes an innovative approach to model the supply chain management of fresh meat.
- The new evolving requirements due to many aspects (i.e. market, regulations, safety) require to design a solution able to react dynamically and to be redesigned quickly and effectively.
- It proposed an approach to develop a simulator as support for the logistics re-organization of this sector.
- It is important to evaluate the introduction of new enabling advances and even more the integration of already available technology infrastructures

Sector Evolution

- Social Political Evolution
  - Decrease of Population Consumption
  - Bovine Spongiform Encephalopathy, BSE
- Regulations
  - Quality, Safety and Traceability: UNI 10939 11020, ISO9000:2000, HACCP)
- Enabling Technologies
  - Electronic Tags, Web-Based Data Warehouses, Genetic Marking, GSM etc.

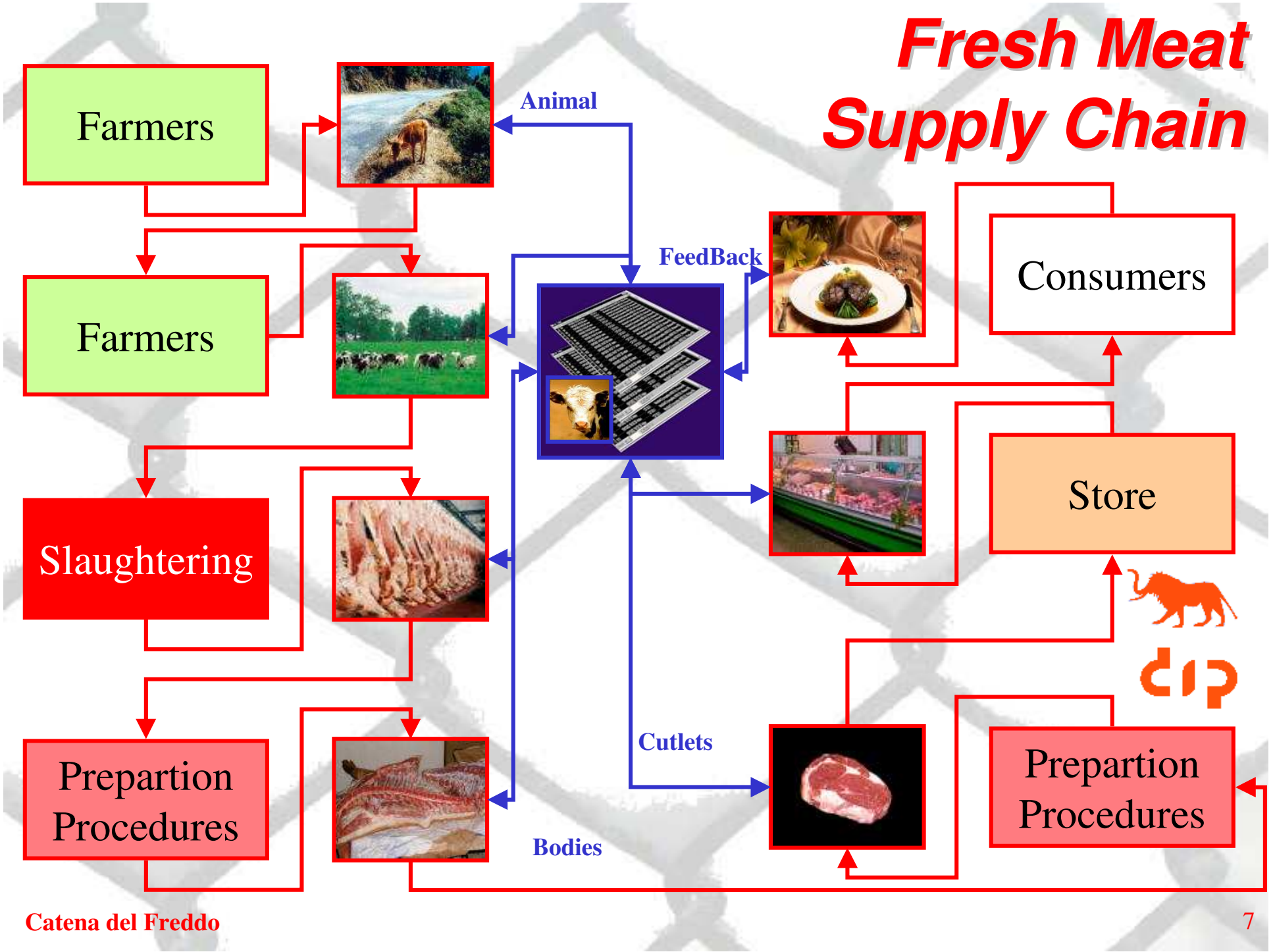
Development Phases

- *Analysis of Fresh Meat Supply Chain Processes and Logistics*
- *Technological Project and Integrated Solutions*
- *Development of a Pilot Architecture*
- *Architecture Experimentation*
- *Solution Identification & Installation*

Analysis of Fresh Meat Supply Chain Processes and Logistics

- In this first phase of research, an analysis is performed of the systems developed independently in this chain along with a verification of the relative development potential, in addition to integration guidelines. This phase is divided into the following activities
  - Process analysis
  - Survey of the present situation
  - Characterisation of Fresh Meat Storage, Transport, Treatment and Measuring Systems.
  - Characterisation of the Tracing Systems
  - Analysis of the Objectives and Indicators to be modelled
  - General Training in Modelling for Guaranteeing Involvement of Industrial Partners

Fresh Meat Supply Chain



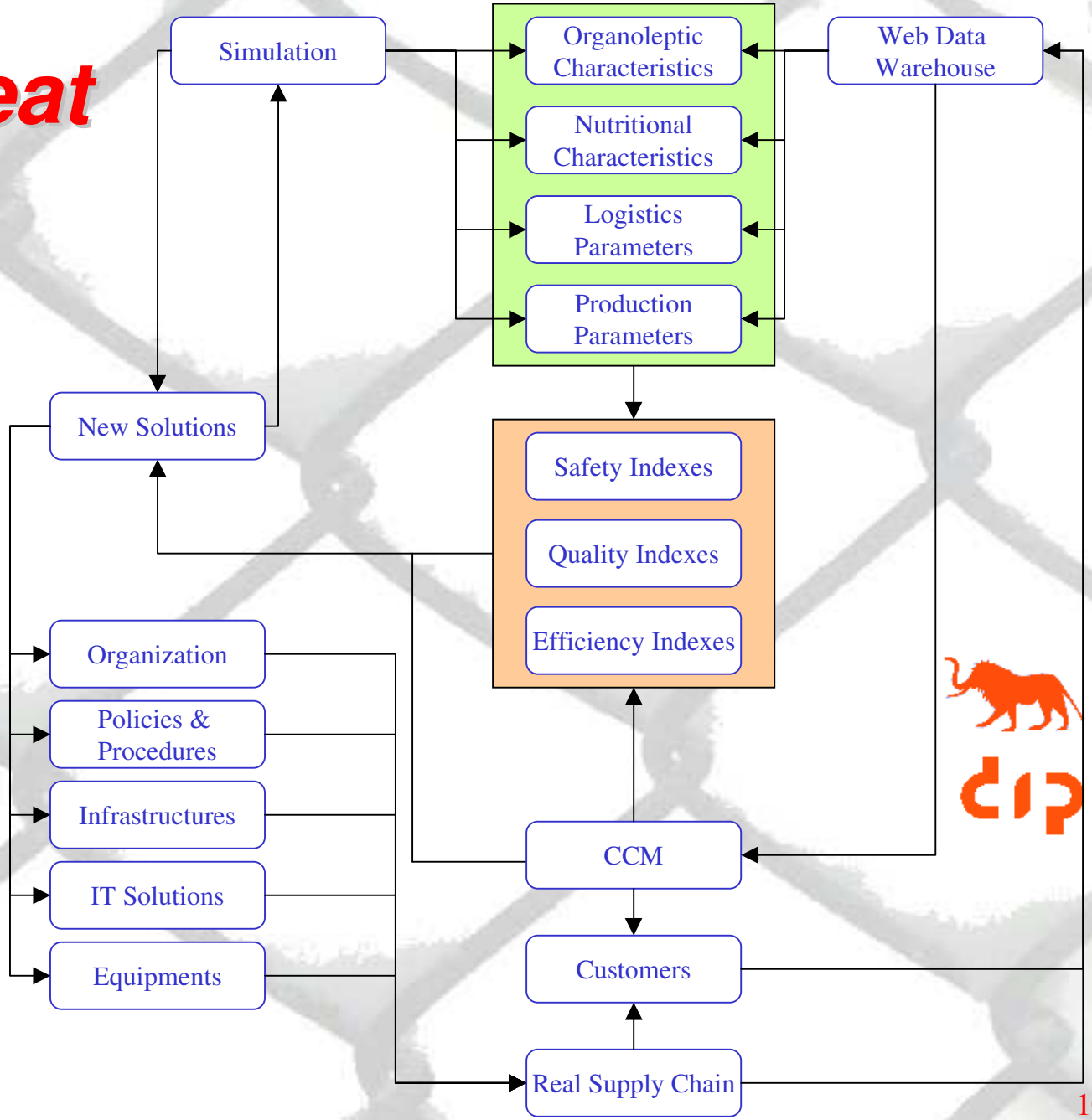
Technological Project and Integrated Solutions

- In this part the research is devoted to identify the best solution and to define the specific demonstration in order to measure their benefits in term of quality, costs and efficiency. This phase is composed by the following activities
  - Development Models of the Integrated Data Processing Solution
  - Integrated Logistic Platform Models
  - Integrated Quality Control System Models
  - Customer Control Management Models
  - Integrated Solution Simulation Model
  - Identification of the case being analysed

Development of a Pilot Architecture

- This phase is devoted to implement and install the new fresh meat supply chain solution in order to be able to start up the demonstration; the phase includes both new developments and introduction of innovative technology as well as integration of existing infrastructures. In effect in order to guarantee a reasonable timeline for being operative with the Demonstrator, is related to the availability of technology providers with good background in the application area as well as in teh technological framework

Simulation & Fresh Meat



Training Phase

- This step is devoted both to model accreditation as well as to solution implementation and demonstration operations; the material developed is available for further diffusion actions in new observers and partners interested in joining the supply chain pilot demonstrator experience.
- Ths development is composed by the following activities
  - Integration of the Solution for the Case being analysed
  - Process & Innovative Technology Integration
  - Integration of Information Systems
  - Testing of Proposed Solution
  - Training on Innovative Solutions for Industrial Partners

Architecture Experimentation

- This phase is devoted to the demonstration experiment and the measuring and reporting activities, including exploitation of results in the community. In effect this phase is composed by the following activities
  - Demonstrator start-up
  - Demonstrator Experimentation
  - Analysis of Acquired Experimental Data
  - Analysis for Drafting the Distribution/Extension Procedures

Solution Identification & Installation

- **Based on the obtained results is identified a solution for the boundary situation and it is installed keeping on-line the new available tools for guaranteeing dynamical update of the supply chain.**

Development Teams

- *Steering Group*: **it has responsibilities related to the General Direction, Management Issues, Strategic Decisions**
- *R&D Team*: **Group devoted to coordinate R&D Phase**
- *Implementation Team*: **group devoted to support start-up of demonstration phase**
- *Demonstration Group*: **it is devoted to accreditate the model, to define the final solution and to run the real demonstration**
- *Metrics & Review Team*: **group devoted to check the real performances and to review the effectiveness of the solution experienced in the demonstration**

Conclusions

- The use of innovative tools for introducing in food chains an advanced supply chain management is very important for guarantee competitiveness considering the quick evolution of these sectors.
- In relation to the case proposed, fresh meat, the European market is currently shrinking slowly due to several boundary elements (population is becoming old, new diet attitudes for young people, etc.) so considering all the requirements introduced by new regulation it is evident that the policies, procedures and infrastructures needs to be revised.
- The use of M&S is probably the only reasonable approach to support the redesign of this area, in order to be able to have a clear understanding of the consequences of changes on costs, quality and safety
- by Simulation it is possible in effect to drive the change guaranteeing an improvement in the efficiency and a complete control on costs.