FI-PPP USE CASE OVERVIEW: SMART FOOD AND AGRIBUSINESS

EXPLOITATION PLAN UPDATE

Brussels, 26 March 2012– presented by Sjaak Wolfert and Krijn Poppe
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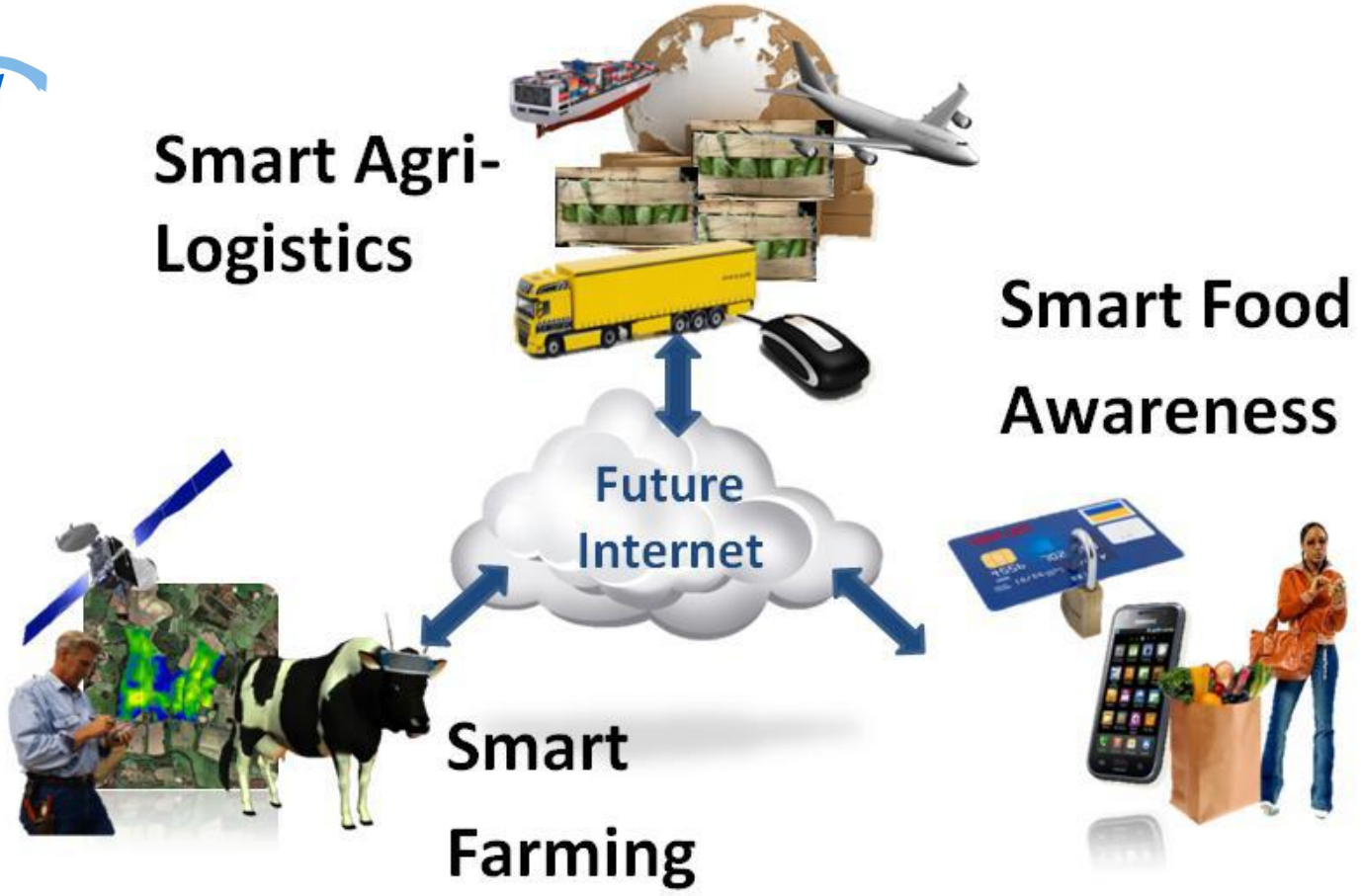
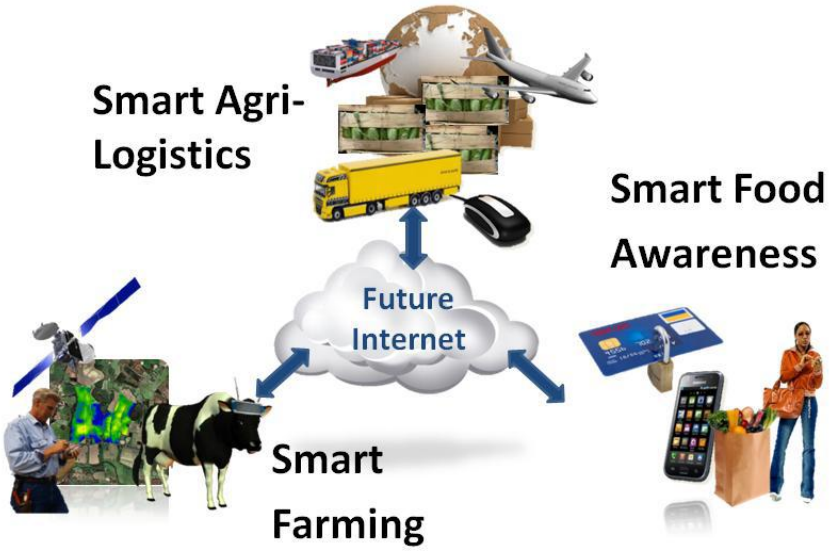


The challenges that the project addresses:

1. Smart Farming: to improve productivity and pest control in agriculture with reduced input of energy and chemicals
2. Smart Agri-Logistics: to improve food safety and food quality and to reduce ecological footprint and waste of food
3. Smart Food Awareness: to assist the public in developing healthy and sustainable food consumption

3 USE CASE SCENARIOS – 6 PILOTS

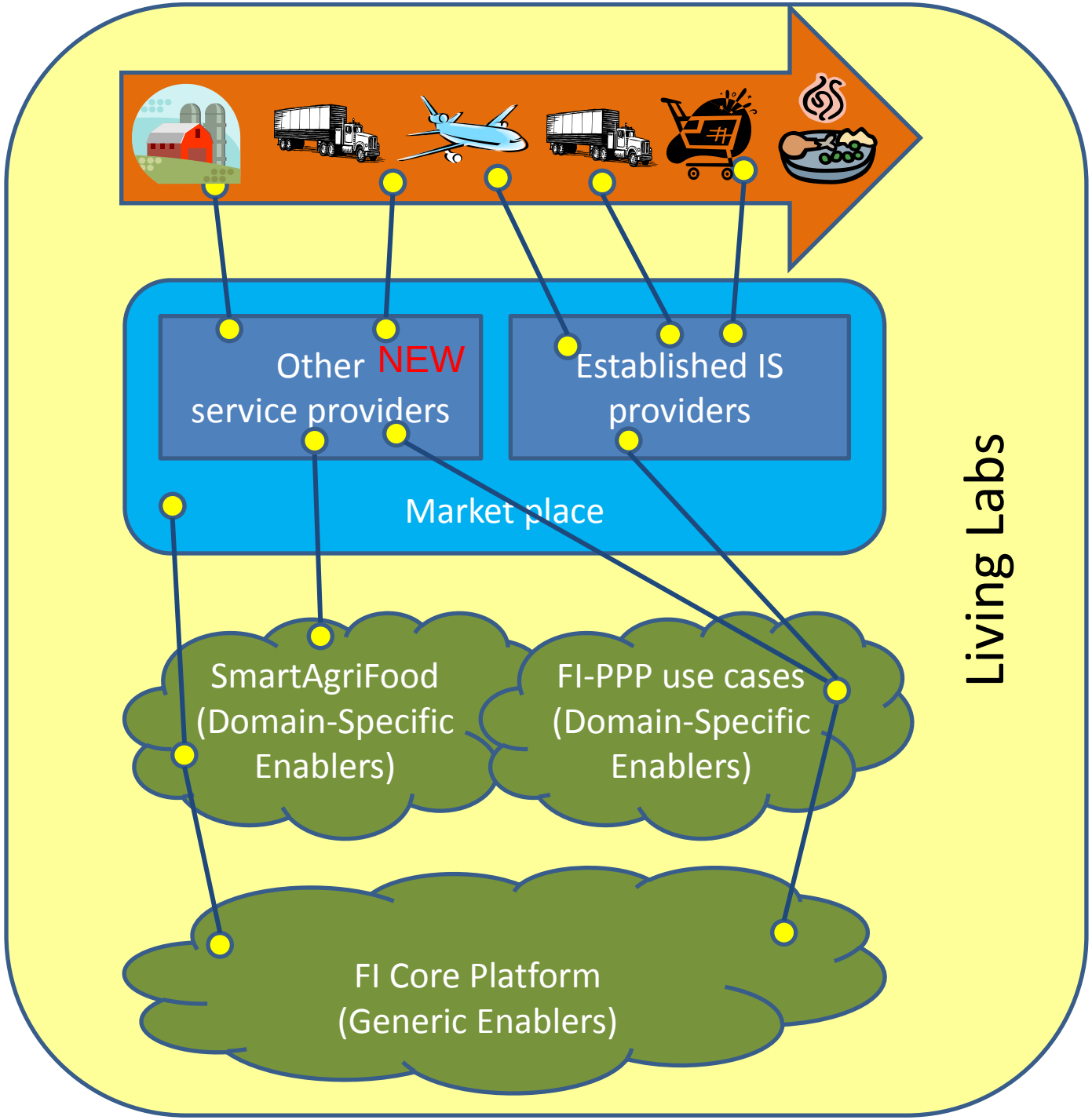
- Quality Controlled Logistics in the Flower SC
- Quality Controlled Logistics in the Fruits & Vegetables Chain



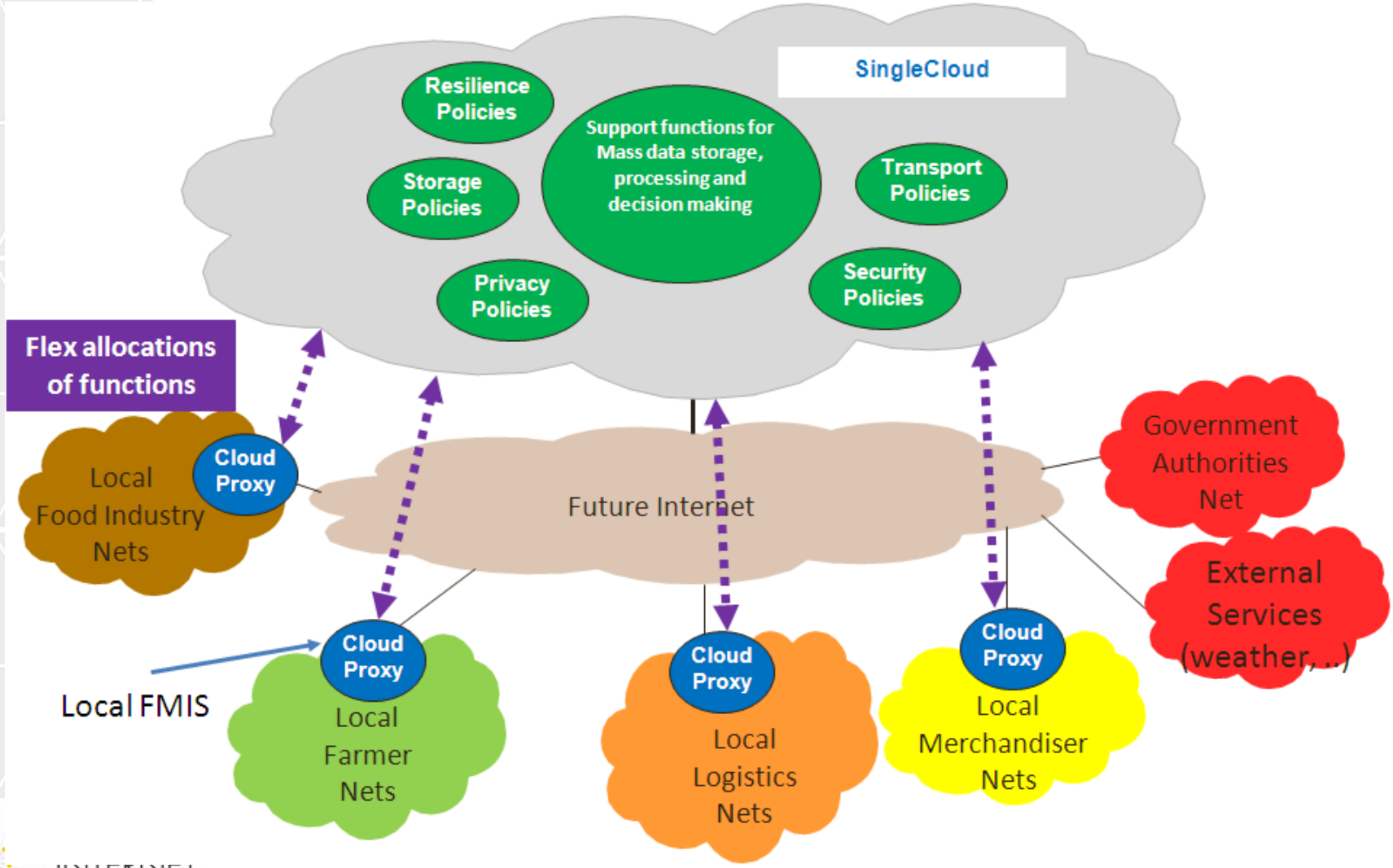
- Tailored Shopping Experience
- Tracking & Tracing for Meat Awareness

- Smart Spraying
- Smart Greenhouse Management

Towards FI-PPP Phase 2



VISION FOR FI APPLICATION POTENTIALS
HYBRID NETWORK ARCHITECTURE



EXPLOITATION PLAN TEMPLATE

For 3 use case scenarios, for 6 pilots:

- Identified result
- Market
- Competitors
- Customer needs and expectations
- Value Proposition
- Implications for client and end users

This presentation limited to the 3 use case scenarios

SMART FARMING

Identified results

- Open specification for Farm Management Systems based on a cross-vertical approach in FI-PPP
- Two harmonized pilots for greenhouse and machine/spraying management which can be handed over to a larger farmer community for validation and testing
- Farm Management Information Systems (FMIS) system using the FI-PPP design principles with generic enablers / modules being adapted to domain specific needs
- Contribution to a cloud-based vertical industry approach to obtain a large-scale momentum

SMART FARMING

Market

- Telecom carriers want to step into service offerings in for vertical industries
- End-users need cheap entry ICT solutions with low investment barriers
- Farmers need highly scalable farm management solutions which are interoperable in large regions or even globally
- Food industry needs to boost ICT investments to save production costs and to increase operational efficiency
- Farmers have to realize 50% reduction in pesticides in 2020
- there is a great need for tracking and tracing of inputs and quality of foods in the context of consumers food awareness, and for health and safety and in order to both prevent and respond to food emergencies

Thus Future Internet will create a framework that includes various actors and-services with new functionalities to address social, business, and policy objectives to optimize the use of plant protection agents in spraying operations, and create environmental benefits, transparency, and food security for society

SMART FARMING

Competitors

- Existing Farm Management Information Systems (FMISs)
  - proprietary solutions that mostly have their own specifications about the functionality they provide and the means to interwork with external services
- Spraying/Tractor management systems
  - on-machine systems with remote back-end management systems which collect monitor signals and provide support in case of machine break-downs and spraying management
- External service providers
  - Proprietary solutions for specific advisory services e.g. on crop protection, financial planning, etc.

SMART FARMING

Customer needs and expectations – farmers / employees

- Avoid possible crop and machine damages
- Produce more qualitative products by less pesticides
- Calculate the best amount for cultivating his products
- Cultivate the right product even without previous experience
- Organize resource management more efficiently
- Decrease the cost of investment
- Advertise his products effortlessly
- Be provided with technical support immediately
- Link easily with other stakeholders
- Better link with government and certification authorities
- Reduce tractor down-times and increase maintenance and repair cycles
- Optimize spraying volume saving costs and increasing revenue
- Take more responsibilities effortlessly and without a risk
- Open up new perspectives and positions

SMART FARMING

Value Proposition

- establish cloud computing and open service delivery platforms with on-demand pay-per-use
  - monthly service offering with a fixed flat rate or pay-as-use models
  - even pre-paid models are conceivable
- realizing new business opportunities for established and emerging application and service providers
- stimulate information flows between farmer communities without scarifying privacy or security
- Fulfil the desire for greater food awareness, transparency, e.g. on sustainability issues
- open specifications will get rid of closed solutions, reduce complexity and change industry and provide global footprints for a global agri-food business.
- ICT investment barriers will be largely reduced

SMART FARMING

Implications for client and end users

- expected higher dynamics and flexible adaptations of business processes
- more flexible payment models
- due to reduced complexity for operational staff we expect higher manpower efficiency.
- however training of staff is required for the use of new systems and information management

SMART AGRI-LOGISTICS

Identified results

- Open specification for Agri-Food Logistic Management Systems based on cross-vertical approach in FI-PPP
- Two harmonized pilots for flowers and fruit & vegetables which can be extended to a larger agri-food logistics community for validation and testing
- Logistic Information Solutions for the Agri-Food domain, with a special emphasis on fresh products management and asset management by utilisation of Internet of Things and Internet of Services architectures
- Definition of the specific standardisation needs for agri-food logistics;

SMART AGRI-LOGISTICS

Market

Smart Agri-Food Logistics focuses on the logistics flow from primary production (farm) to the market, i.e. the supply chain roles of outbound logistics, inbound logistics and logistics orchestration

Roles:

- Traders, in particular wholesalers, exporters, and importers;
- Producer Organisations, including auctions;
- Logistic Service Providers, in particular transportation companies and storage/transhipment firms;
- Suppliers of Logistic Assets (containers, crates, etc.)
- Retailers

These user groups are targeted both directly and indirectly via:

- ICT companies, in particular system integrators and software vendors;
- Consultancy firms, in particular logistic and business consultants

SMART AGRI-LOGISTICS

Competitors

- Existing suppliers of Logistic Information Systems for the Agri-Food domain, in particular:
  - Supply chain management software vendors
  - ERP-software for logistics management
  - Suppliers of RFID and sensor solutions
  - Vendors of agri-food specific supply chain software

However, expected results will

- help cross-industry vendors to include more easily domain-specific capabilities
- help suppliers that are specialised in the agri-food domain to better utilise generic internet technologies
- encourage the start-up of suppliers for dedicated domain-specific solutions

SMART AGRI-LOGISTICS

Customer needs and expectations

- flexibility in logistic processes and planning and early warning and pro-active control mechanisms
- temperature-conditioned transportation and storage (cold chains) and very short order-to-delivery lead-times
- global sourcing to ensure year-round availability
- ability to trace production information of products in transit
- advanced tracking and tracing and logistic planning capabilities
- Inclusion of phytosanitary and veterinary inspections
- proper collection and regional orchestration in logistic main ports and proper allocation mechanisms to connect aggregated demand with fragmented supply
- Handling and integrating large data amounts
- Affordable solutions for data intelligence

SMART AGRI-LOGISTICS

Value Proposition

- overcome current bottlenecks
- enables development and operation of affordable solutions independently from geographic locations and from specific implementation choices
- this will boost the application of intelligent information systems for logistics management in agri-food SC
- enhancement of new types of efficient and responsive logistics networks with flexible chain-encompassing tracking and tracing systems and informed decision support
- support a timely and error-free exchange of logistics information and provide functionality for intelligent analysis and reporting of exchanged data to enable early warning and advanced forecasting
- combine interoperability with flexibility and that are both sector-specific and suitable for SMEs

SMART AGRI-LOGISTICS

Value Proposition (2)

- Lead-time reduction;
- Better service levels;
- Less waste, better decay management;
- Lower inventory levels;
- Better utilization of logistics capacity;
- Reduction of GHG emissions and carbon footprint
- Better competitive position of European agri-food industry;
- Surgical response in case of food alert, for quick and precise recall/withdrawal of products;
- Better security of food products, avoiding fake products, illicit traffic or threats using food as vector;
- Enhanced regulation enforcement control of non-European imported products.
- Enhanced quality of the products
- Enhanced computer forensics

SMART AGRI-LOGISTICS

Implications for client and end users

- fundamental shift from defensive to pro-active management of the logistics from farm to fork
- big changes of business processes and supply chain cooperation, and consequently in the way information systems are used to manage logistics
- need for new supply chain tools that make the resulting complex, frequent and inter-enterprise information flows manageable
- Investment in infrastructure, to support the new tracing and information exchange solutions
- Organizational changes to adopt the new system's workflows

SMART FOOD AWARENESS

Identified results

- Tools for Food transparency and information flow
- Consumer pull scenario framework
- Retail push scenario framework
- A “Transparency Meat” pilot that could be extended on other food supply chains
- A “Tailored Information for consumers” pilot, that could be deployed on other retailers
- Consumer profile management
- Certification repository platform

SMART FOOD AWARENESS

Market

- retail sector
  - provide additional services for the final consumers
  - means to optimize warehouse management and operation resource
  - improve their response to sanitary and quality regulation and user demands
- final consumer
  - for making informed decisions in a quick way connected with personal interest
- ICT companies for retail sector
- Other supply chain stakeholders: producers, distributors
  - willing to strength links with their customers but also with the final consumers
- Certification companies
- Public entities
  - better and faster monitoring of the products' trace when critical alerts arise
- other distributing channels such as restaurants, caterers, etc.

SMART FOOD AWARENESS

Competitors

- Solution providers that provide mobile applications that gives additional information about the product, mainly based on barcodes
- Retailers have specific applications, especially about discounts and bonus, with limited support to the food information
- Some RFID-specific solution providers
- tools for information exchange among supply chain stakeholders (GT Nexus, Trace One, etc.)

In general, the situation is very fragmented and it lacks from a common, standard and wide approach, applicable to different products, retailers and contexts

SMART FOOD AWARENESS

Customer needs and expectations

- Final consumers
  - requesting additional information concerning the products to buy, not only about prize comparison but also on specific information about composition and origin, for example
  - Reducing the time and money spent
- Retail sector
  - competitive advantages in order to provide confidence to their customers
  - optimize their internal processes
  - quality assessment and regulatory compliance

SMART FOOD AWARENESS

Value Proposition

- Retail sector
  - create a completely new relationship with the final consumer by fitting their specific interests and tailoring their products/services to their expectations
- Consumers
  - additional support while shopping, fitting with their interests and expectations about food
  - direct contact with food producers can be supported
  - create an ecosystem for food information and awareness, boosting the concept of *prosumer*, i.e. a consumer able to create new services (based on templates and customization) that can be shared with other consumers with similar interests

SMART FOOD AWARENESS

Value Proposition (2)

- ICT providers
  - new tools based on the standard FI capabilities
  - improve the life cycle of the ICT systems
  - new business models are expected
- previous links on the supply chain
  - benefit of having direct access to the opinion of the final consumer
- New certification models
  - support the reliability and trust on the information provided

SMART FOOD AWARENESS

Implications for client and end users

- Retailers
  - additional infrastructure
  - quick identification of the products
  - access to information generated in previous steps of the supply chain
  - ‘Cloudification’ of these systems
- entire supply chain
  - open and interconnect their ICT systems
- ICT providers
  - apply the new concepts proposed by the FI community, creating new intermediate services based on the new capabilities

Smart AgriMatics 2012 INTERNATIONAL CONFERENCE

Theme:

The future use of ICT and robotics in agriculture and food business

Dates:

13-14 June 2012

Venue:

Forest Hill, Paris-La Villette, France

Website:

www.smartagrimatics.eu

SEVENTH FRAMEWORK PROGRAMME

Smart Agri-Food

ICT AGRI era-net

agriXchange
network for data exchange in agriculture

STANDARDISATION (PROVISIONAL)

Smart Farming

- Existing:
  - ISO11783 (AEF)
  - UN/CEFACT\TBG18
  - AGROVOC (FAO)
  - EU regulations/directives (e.g. INSPIRE)
  - (national) data standards, code lists
- Desired:
  - harmonization of national standards
  - Reference process models
  - Market platform (cf. appStore)
  - Software: common ICT standards for the 6 areas as defined by the Core Platform
  - Some domain-specific standards on top of that (e.g. geo-spatial software for agriculture)

STANDARDISATION (PROVISIONAL)

Smart Agri-Logistics

- Existing:
  - SCOR (Supply Chain Council)
  - GS1 (GLN, GTIN, etc.)
  - EPCglobal: EPCIS
- Desired:
  - More detailed agri-food reference process models than SCOR
  - Standards on product quality (freshness, etc.)
  - Software: common ICT standards for the 6 areas as defined by the Core Platform
  - Some domain-specific standards on top of that

STANDARDISATION (PROVISIONAL)

Smart Food Awareness

- Existing:
  - UN/CEFACT (eCommerce, eBusiness, etc.)
  - GS1
- Desired:
  - Standards on other product information (sustainability, origin, etc.)
  - Software: common ICT standards for the 6 areas as defined by the Core Platform
  - Some domain-specific standards on top of that