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11th December 2002**

ICT Solutions for Rural Areas



AFORO IST-2001-37258
AGRI-FOOD ROADMAPS.

Information Society and Rural Development Evolution Scenarios

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inn**o**POLE





Index

- AFORO, Objectives, Consortium.
- AFORO, Roadmap Methodology (Univ. Galway)
- Roadmap Preliminary Results (ATB Bremen/Agromare)
- The future: FoodValue, ideas for an IP in the 6th FP
- Actual status.

AFORO – IST-2001-37258



AFORO
AGRI-FOOD ROADMAPS.
Objectives & Consortium.





Project Objectives

- A vision of the **key actions and an implementation model** to overcome the existing gap and enable, within the next five to ten years, the full participation of **Agri-food industries** into the digital economy.
- **Define the most demanded technological solutions, tools and methodologies** and specific **paths to make them effectively available for all** through concrete Implementation plan that can be used as input to the activities to be developed under the 6th Framework Programme.
- ICT solutions that facilitate the e-operation of business functions inside Agri-food industries
- **Identify the key actors in the agri-food domain and to outline the role** to be played by them. Although AFORO Network is presently including a wide variety of experience and complementary know-how, a big number of key actors are still to be identified and involved during the project development to achieve **maximum consensus on the AFORO roadmap and widening EU/NAS IST technology networking.**



Consortium

18 Partners
10 EU Countries
5 NAS & CH

Participant Roles (1)	Participant No	Participant Short Name (2)	Country
CO	1	INNOPOLE	Spain
CR	2	NYHERJI	Iceland
CR	3	AGROMARE	Spain
CR	4	NUI, GALWAY	Ireland
CR	5	ATB	Germany
MB	6	- MEGATREND 2000	Hungary
CR	7	OMEGAMEDIA	Portugal
CR	8	Democenter	Italy
MB	9	- ARA	Turkey
MB	10	- LESPROJEKT SLUZBY	Czech Republic
MB	11	- BIBA	Germany
MB	12	- SINTEF	Norway
MB	13	- TAMPERE Univ.	Finland
MB	14	- CATT	Austria
MB	15	- EWEN-GEORGIA	Georgia
MB	16	- SOFIA UNIV.	Bulgaria
MB	17	- EXODUS	Greece
MB	18	- EPFL	Switzerland

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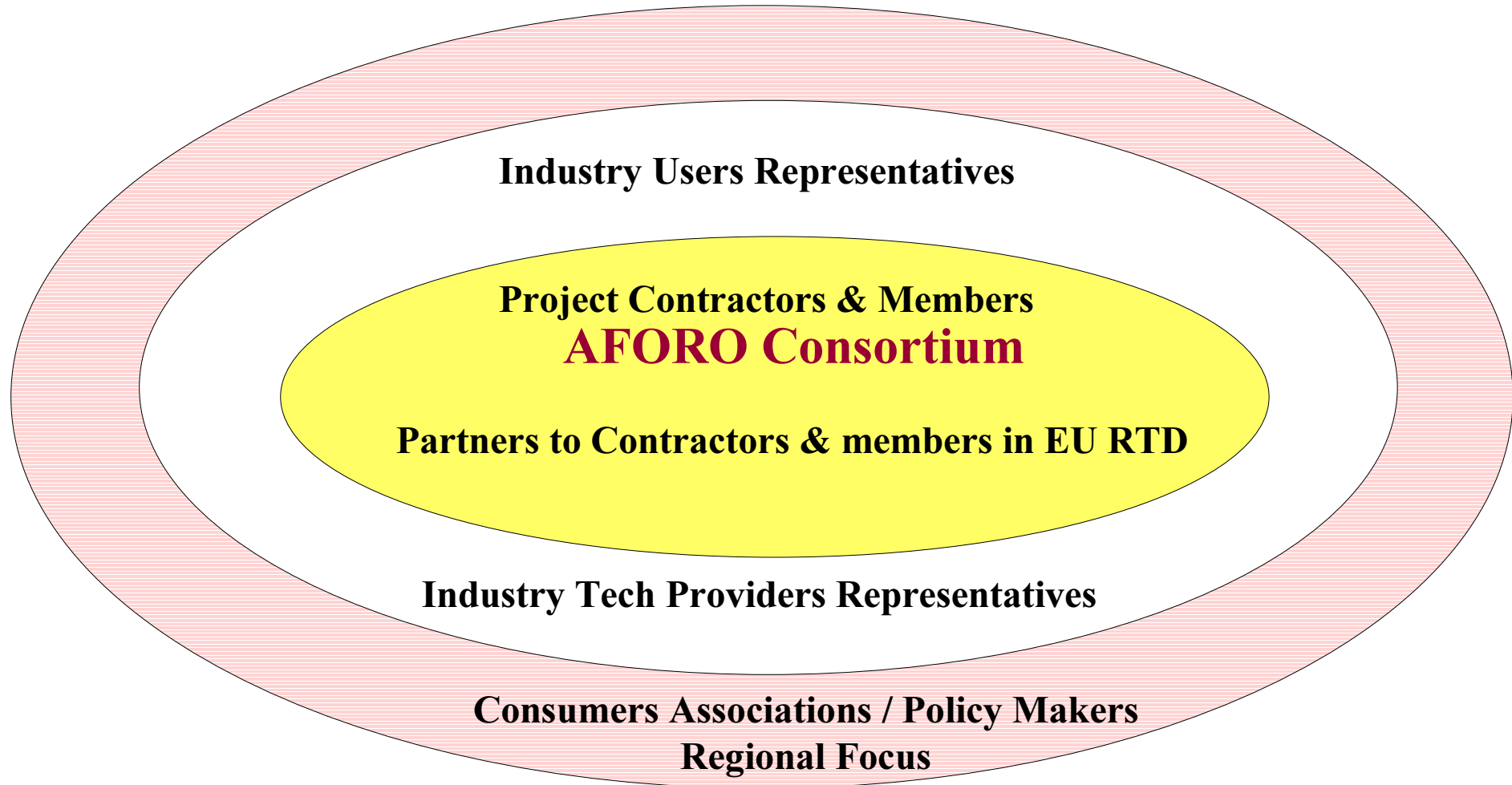
The Project I

	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
WP1 Establish Network - sectoral division	█											
T1.1 Examine the agri-food domain - division of agri-food domain into sectors.	█											
T1.2 Establish agreement on division and allocate partners to coordinate	█											
WP2 Roadmapping approach	█	█	█									
T2.1 Establish typology and ontology	█	█	█									
T2.2 Selection of existing studies at EU/NAC, National level.	█	█	█									
T2.3 Design of data collection methodology To collect the AS-IS scenario & TO-BE information		█	█									
T2.4. Questionairs design for distribution:		█	█									
T2.5 WWW based questionnaire		█	█									
T2.6 Definition of on the field activities			█									
T2.7 Methodology for data validation			█									
WP3 Data collect & Analysis of User needs by sector.Tech. independent		█	█									
T3.1 Results on actual PFV running projects coordinated by partners		█	█									
T3.2 Collect, coalate and synthesise information by sector		█	█									
T3.3 Compare and contrast AS-IS and TO-BE by sector			█									
WP4 Create Roadmap (Draft #1) based on business demands of each sector				█	█							
T4.1 Identify the key defining parameters of the products and markets by sector				█	█							
T4.2 Identify the current and future regulatory and standards constraints by sector				█	█							
T4.3 Agrifood Roadmap - Draft 1				█	█							
T4.4 Validate by testing on peers (project partners, RTD partners and Industrial key players) - Workshop				█	█	█						
WP5 Create Roadmap (Draft #2) based on technological capabilities available to each sector			█	█	█	█						
T5.1 Technology / Vendor evaluation			█	█	█	█						
T5.2 Identify the key defining parameters of the technology & establish technological "gaps"			█	█	█	█						
T5.3 Agrifood Roadmap - Draft 2						█						
T5.4 Validate by testing on peers (project partners, RTD partners and Industrial key players) - Workshop						█	█					
T5.5 Risk Assesment						█	█					
WP6 Roadmap results & Final Roadmap								█	█	█	█	█
T6.1 Business & Tech. needs/ based on current and future standards and regulations for next 5 years. Actual demands								█	█	█	█	█
T6.2 Business & Tech. needs based on current and future standards and regulations for next 10 years. A VISIONARY approach								█	█	█	█	█
T6.3 Implementation models definition.Rough IP for the next five years								█	█	█	█	█
T6.4 Research Program & Project Polfolio Management.								█	█	█	█	█
WP7 Dissemination									█	█	█	█
T7.1 Dissemination plan design									█	█	█	█
T7.2 Dissemination material preparation									█	█	█	█
T7.3 Development of dissemination actions									█	█	█	█
T7.4 Evaluation of results of dissemination campaign									█	█	█	█
WP8 Coordination	█	█	█	█	█	█	█	█	█	█	█	█

Project End Expected



Concentric Circles Approach





Roadmap Methodology



Contents

- Roadmaps – what are they and why do we need them?
- Roadmaps – concepts, principles and examples
- AFORO – roadmapping approach
- Agri-food: the domain, the network & the knowledge
- Agri-food: Business Needs & Constraints
- Agri-food: Technology
- AFORO Roadmap matrices
- Data collection
- Summary



Roadmapping

Some definitions:

- Road: “a path or route made to travel on”
- Map: “ a representation or model of the whole or part of an area”
- Roadmap: “based on the model of the territory show the path or route to travel on”
- A roadmap should indicate the routes, distances, locations and directions to get from one location to another

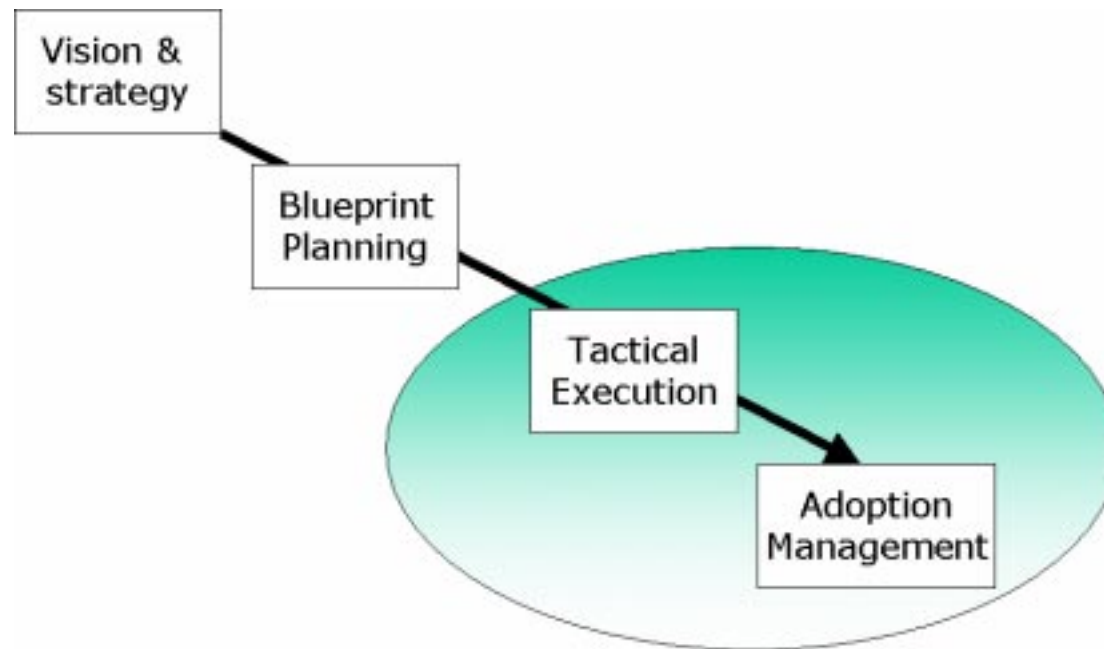


The need for roadmaps

- Generally a business needs to:
 1. Develop a strategy for achieving future competitive advantage and financial success
 2. Execute this strategy quickly and methodically to beat competitors to the desired markets
- Especially important in today's fast and digitally based economy
- Organisations need to be able to combine “vision” and quick “tactical execution”

Concepts

Strategic E-business Roadmap*



*Kalakota, R. and Robinson, M.: E-business 2.0 - Roadmap for Success. Addison Wesley, Upper Saddle River, 2001



Principles

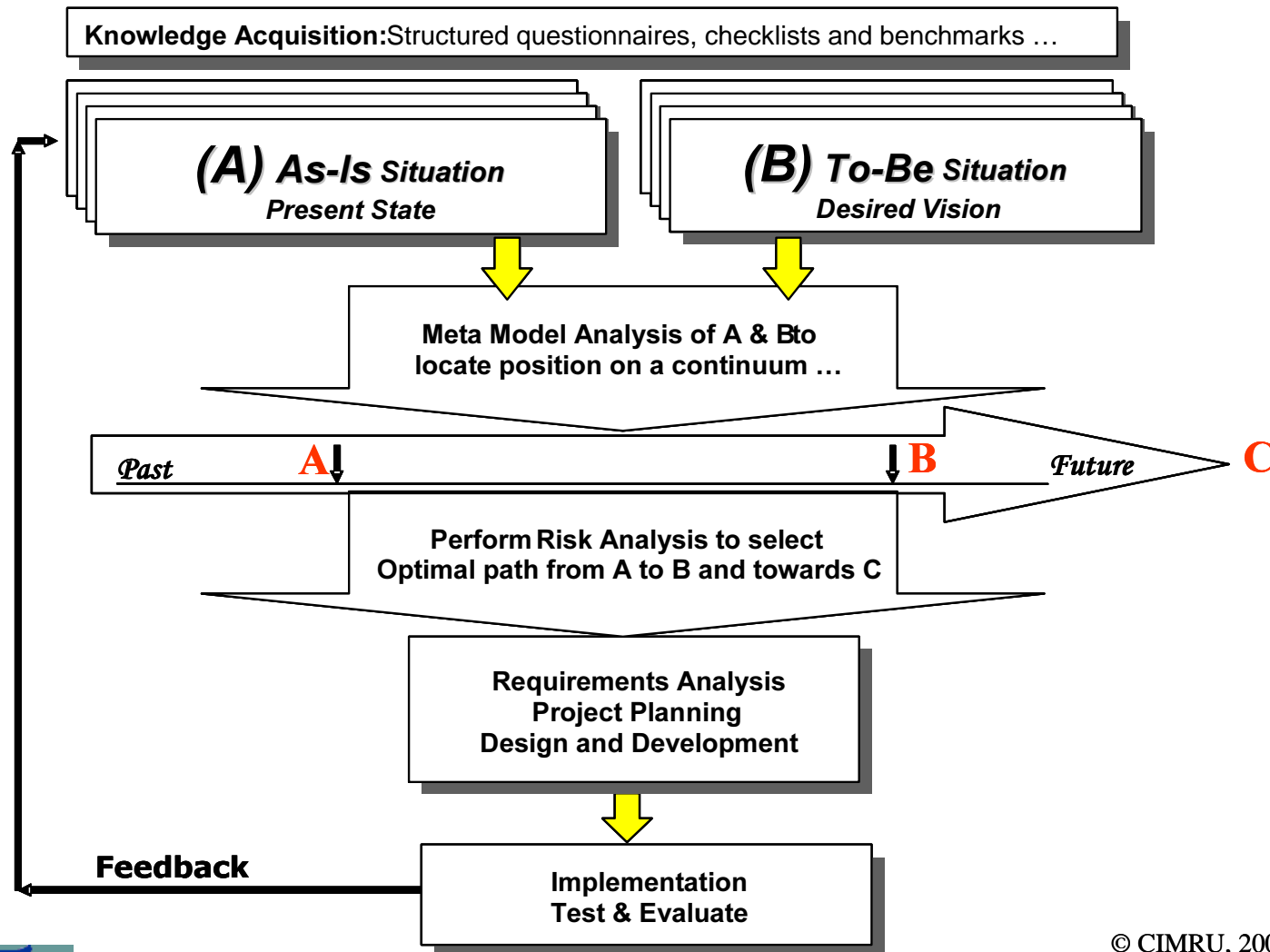
- Business roadmaps:
 - Time-based plans
 - Identify alternative paths for meeting precise objectives and needs
 - Focus resources on critical elements required to meet needs
 - Provide logical and consistent methods for organisations to decide where to focus & invest future resources



Examples

- Intelligent Manufacturing Technology Initiative (IMTI): collaborative development of critical manufacturing technologies.
- Partnership for Advancing Technology in Housing (PATH): accelerate the diffusion of new technologies into home building.
- Cognitive E-Business Roadmap: Phase based approach for development and integration of an e-business strategy

AFORO roadmap approach



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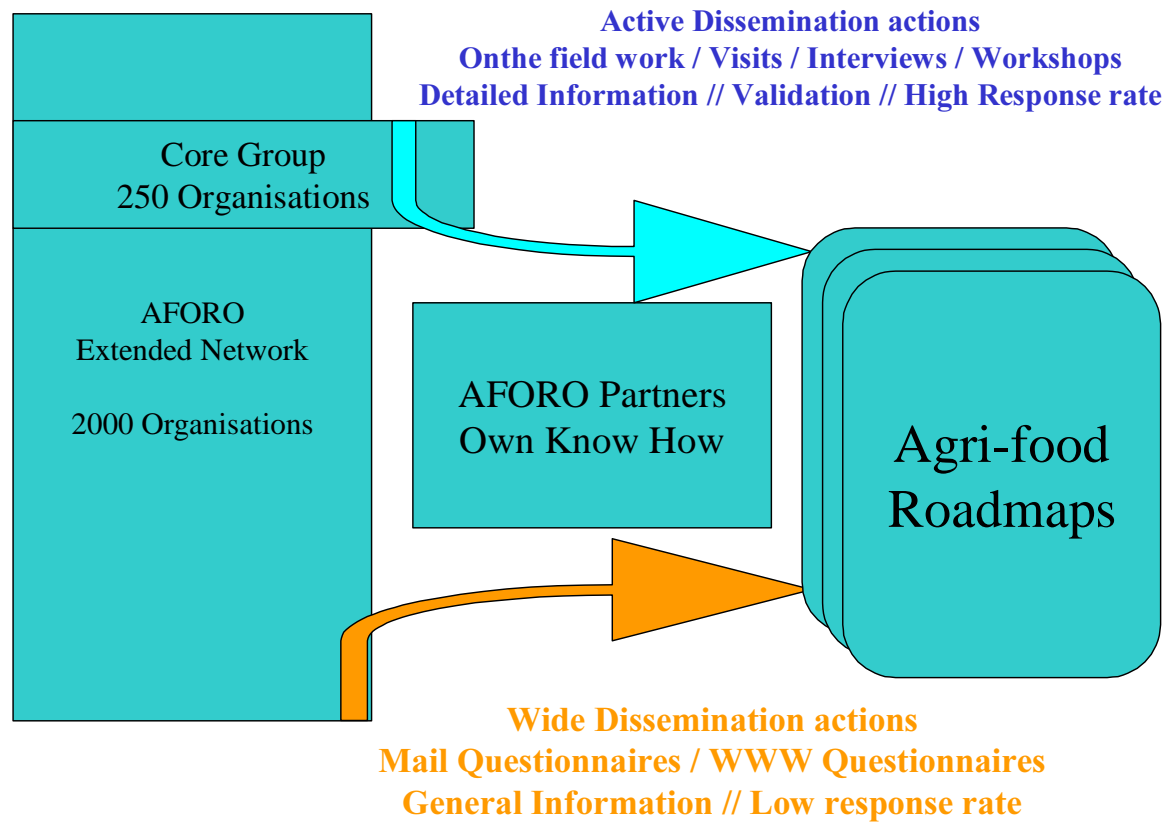


AFORO roadmap

- A vision and workplan to implement future RTD trends in the agri-food industry
- Agri-food domain is very large and diverse. Requires division into sectors of the domain
- Roadmaps are both communication and learning tools
- Establish business vision and the means to achieve it through digital means
- Capture the revolutionary visions of future technologies



AFORO: Establishing the Network





AFORO: Defining the Domain

- Agri-food covers many disparate sectors
- Need to maintain focus by splitting up
 - Primary Sources
 - Processed Food
 - Beverages
 - Additives, conservatives & flavours
 - Services & sales
- Also need to maintain adherence to **standard classifications** – i.e. NACE classification codes

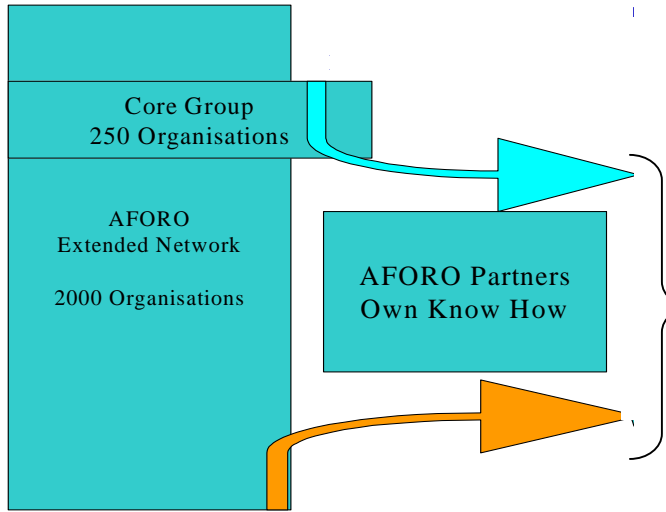


AFORO: Capturing the knowledge

- So much data, information and knowledge – the challenge is **to capture it in a standard and widely accepted form**
- Many models exist for representing organisations
- **Porter's Value Chain model** provides a standard and accepted solution – validated over 15 years
- Inbound Logistics, Operations, Outbound Logistics, Marketing and Sales, Service, Infrastructure, HR Management, Technology & Procurement.



AFORO: the network, the domain & the knowledge



The network has the knowledge of the domain

	Inbound Logistics	Operations	Outbound Logistics	Sales and Marketing	Service	Human Resources	Procurement	Infrastructure	Technology Development
Primary Sources	x	x	x	x	x	x	x	x	x
Processed Food	x	x	x	x	x	x	x	x	x
Beverages	x	x	x	x	x	x	x	x	x
Additives, conservatives & flavours	x	x	x	x	x	x	x	x	x
Services & sales	x	x	x	x	x	x	x	x	x



Establishing the business needs

- Business Needs = fn (TO-BE Objectives, AS-IS Objectives)
- Constraints: what may prevent an organisation from achieving objectives and satisfying their business needs
- Drivers: what are the motivations for achieving the business needs



Evaluate available and future technology

- Consortium recognises that the agri-food domain lags other industries
- Need to identify the technology that will bring agri-food in line with technology savvy industries
- Three technology aspects:
 - Existing technology: generic and agri-food specific current leading edge technology
 - Planned technology: generic and agri-food specific planned technology
 - Visionary technology: the long term vision of the “futuurologist”



AFORO – Agri-food Roadmap: The Matrix 1

Needs vs. Technology

		Technology						
		Tech1	Tech2	Tech3	Tech4	Tech5	Tech6	Tech7
Business Needs	Inbound Logistics	X						
	Operations				X		X	
	Outbound Logistics							
	Sales and Marketing					X		
	Service		X				X	
	Human Resources				X			
	Procurement	X						
	Infrastructure				X			
	Technology Development							X

Gaps represent business needs that have technology requirements

AFORO – Agri-food Roadmap: The Matrix 2

Technology vs. Needs

		Business Needs								
		Inbound Logistics	Operations	Outbound Logistics	Sales and Marketing	Service	Human Resources	Procurement	Infrastructure	Technology Development
Technology	Tech1	X						X		
	Tech2					X				
	Tech3									
	Tech4		X				X		X	
	Tech5				X					
	Tech6		X			X				
	Tech7									X

Gaps represent opportunities to exploit technologies in new areas



Data collection tools

- Questionnaire (including on-line version)
 - Created using partners knowledge and experience
 - Relating to business needs and constraints
- Analysis of existing studies and projects
- Technology survey
- Also available at www.aforo.net.



Questionnaire

Outbound Logistics

Sample:

Objectives	
Reduce the number of customer returns (caused by quality problems) and the costs for dealing with them. Provide quality and safety information to customers	<input type="checkbox"/>
Reduce finished goods inventory ^{xvii}	<input type="checkbox"/>
Increase delivery efficiency ^{xviii}	<input type="checkbox"/>
Increase the accuracy of shipment tracking ^{xix}	<input type="checkbox"/>

Objectives	Motivation	
Reduce the number of customer returns (caused by quality problems) and the costs for dealing with them. <input type="checkbox"/> Provide quality and safety information to customers	Globalisation/ Liberalisation	<input type="checkbox"/>
	Policies: Regulations, Industrial policy, Environmental policy	<input type="checkbox"/>
	Company history and culture	<input type="checkbox"/>
	Customer requirements	<input type="checkbox"/>
	Competitive pressure	<input type="checkbox"/>
	Long-term relationship with business partners	<input type="checkbox"/>
	Customer Relationship Management	<input type="checkbox"/>
	Value Chain Coordination	<input type="checkbox"/>
	Cost reduction	<input type="checkbox"/>
	Added value: Quality/Speed	<input type="checkbox"/>
As Is		



Analysis of existing studies and projects

Sample:

Nr.	1.	2.	3.
Title	Der Markt der Online-Kommunikation: Daten, Fakten, Daten, Fakten, Trends	Electronic Commerce - Elektronische Bestellsysteme im Internet: Realisierung eines datenbankgestützten Produktbestellsystems im World Wide Web mit einem Merchant Server	Anforderungen an Zahlungsverfahren im E-Commerce
Author	H.N	Strauß, Harry	Hentel, Joachim
Institution	FOCUS	Universität Konstanz - Fakultät für Verwaltungswissenschaft, Informationswissenschaft	Gabler Verlag
Source (www....)	www.medialine.de/marktanalysen		
Key words	online communication, e-commerce	Database, electronic order systems, customer to business, security systems	payment systems
Date	April 2001	February 1998	Apr-01
Publisher	FOCUS	Universität Konstanz - Fakultät für Verwaltungswissenschaft, Informationswissenschaft	
Location		Konstanz	Wiesbaden
Size (number of pages)	49	122	15
General description	General information about the internet economy. One figure about cost reduction in the food area (page 20 below)	This is about electronic based order systems with a practical realisation. Some information about the food sector	Description about general demands to payment systems
Positive	figure	some information about	relation to the food sector... too



Technology data collection

Sample:

FUNCTION	AS-IS				TO-BE		Main technology standards	Comments
	Computerised YES or NO	Level of Implementation (rank from 1-5)	Sector	System / Technology	Planned (1- 3 yr)	Visonary (5-10 yr)		
					Level of Implementation (rank from 1 - 5)	Level of Implementation (rank from 1 - 5)		
Payroll								
Accounting								
Scheduling								
Knowledge management								
Workflow management								
E-work								
Web Services								
Other (please specify)								



Summary

Questionnaires Establish objectives Establish business needs

Questionnaire
Inbound Logistics
Operations
Outbound Logistics
Marketing and Sales
Service

T2.4, 2.5

Objectives	Drivers	AS-IS	TO-BE
Inbound Logistics		x	x
Operations		x	x
Outbound Logistics		x	x
Marketing and Sales		x	
Service		x	

T2.4, 2.5

Objectives	Drivers	Business Needs (TO-BE - AS-IS)
Inbound Logistics		
Operations		
Outbound Logistics		
Marketing and Sales		
Service		

T4.1

Roadmap (Draft #1) Needs & constraints

Business Needs (TO-BE - AS-IS)	Drivers	Business Constraints

T4.3

Questionnaire

Questionnaire
Regulatory & Legal

T4.2

Establish legislative & regulatory constraints

Business constraints

T4.2

Project Evaluation

Project Analysis

T3.1

Technology Evaluation

Technology/ Vendor Evaluation

T5.1

Technology/Project Evaluation - results

Generic Technology	Product Name	Project/ Vendor	Hardware requirements	Operating System	RAM compatible

T5.1, 5.2

Business

Roadmap (Draft #2)

Business Need	Constraints	Generic Technology			
	
.....	x		x	
...	...		x		
...	...	x			
...	...				

T5.2, 5.3

Technology



Roadmap Preliminary Results



AFORO: Main activities performed

- General analysis and structuring of the area
- Analysis of current studies
- Questionnaire to identify the end-user needs
- Collection and analysis of the end user needs
- Analysis of the current technology
- Preliminary roadmap



Analysis end-users needs

Consensus on business needs

- **Food traceability and safety** over the whole European Market (value chain).
- **Interoperability technologies** enabling networked organisations including SMEs to participate in Single Food European Market
- **Better Market Knowledge** supporting innovative value-added products, process and business strategies
- European **logistics and service interoperability**
- European **agri-food information system** - technology, information on material base (e.g. seeds), RTD activities and results etc.
- Transformation of agrifood businesses into effective **collaborative organisations**
- ...



Technology Analysis

1. DEFINITION OF TECHNOLOGIES UNDER STUDY
 - 1.1 INTERNET
 - 1.2 INTRANET/EXTRANET
 - 1.3 WEB SERVICES
 - 1.4 E-COMMERCE
 - 1.5 EDI
 - 1.6 E-WORK
 - 1.7 E-LEARNING
 - 1.8 GROUPWARE
 - 1.9 ERP
 - 1.10 CRM / Helpdesk CRM
 - 1.11 ADVANCED ELECTRONICS
 - 1.11.1 GIS
 - 1.11.2 LOCATION BASED SERVICES
 - 1.11.3 ELECTRONIC SENSORS
 - 1.12 PORTAL TECHNOLOGY



Technology Analysis

- 2. ACTUAL DEVELOPMENT OF EACH TECHNOLOGY:
MAIN SYSTEMS AND COMMERCIAL PRODUCTS AND
VENDORS
 - 2.1. E-COMMERCE
 - 2.1.1. ACTUAL DEVELOPMENT
 - 2.1.2. MAIN INITIATIVES IN EUROPE
 - 2.2. INTRANET/EXTRANETS
 - 2.3. WEB SERVICES
 - 2.4. EDI
 - 2.5. E-WORK
 - 2.6. E-LEARNING
 - 2.7. GROUPWARE
 - 2.8. ERP
 - 2.8.1 HISTORY OF ERP
 - 2.8.2 ERP SOLUTIONS
 - 2.9. ADVANCED ELECTRONICS
 - 2.9.1. GIS
 - 2.9.2. LOCATION BASED SERVICES
 - 2.9.3. ELECTRONIC SENSORS



Technology Analysis

- 3. EXPECTED DEVELOPMENT IN NEXT 5 YEARS OF EACH TECHNOLOGY
 - 3.1 E-COMMERCE
 - 3.2 INTRANET/EXTRANETS
 - 3.3 WEB SERVICES
 - 3.4 EDI
 - 3.5 E-WORK
 - 3.6 E-LEARNING
 - 3.7 GROUPWEAR
 - 3.8 ERP
 - 3.8.1 ERP turns to ERP II
 - 3.8.2 FUTURE MARKET OUTLOOK
 - 3.9 ADVANCED ELECTRONICS
 - 3.9.1 GIS
 - 3.9.2 LOCATION BASED SERVICES
 - 3.9.3 ELECTRONIC SENSORS



Technology Analysis

- 4. VISIONARY TECHNOLOGIES. EXPECTED DEVELOPMENTS IN 10 YEARS
 - 4.1 WIRELESS ACCESS TO INTERNET (WI-FI)
 - 4.2 ADVANCED ELECTRONICS



The Future

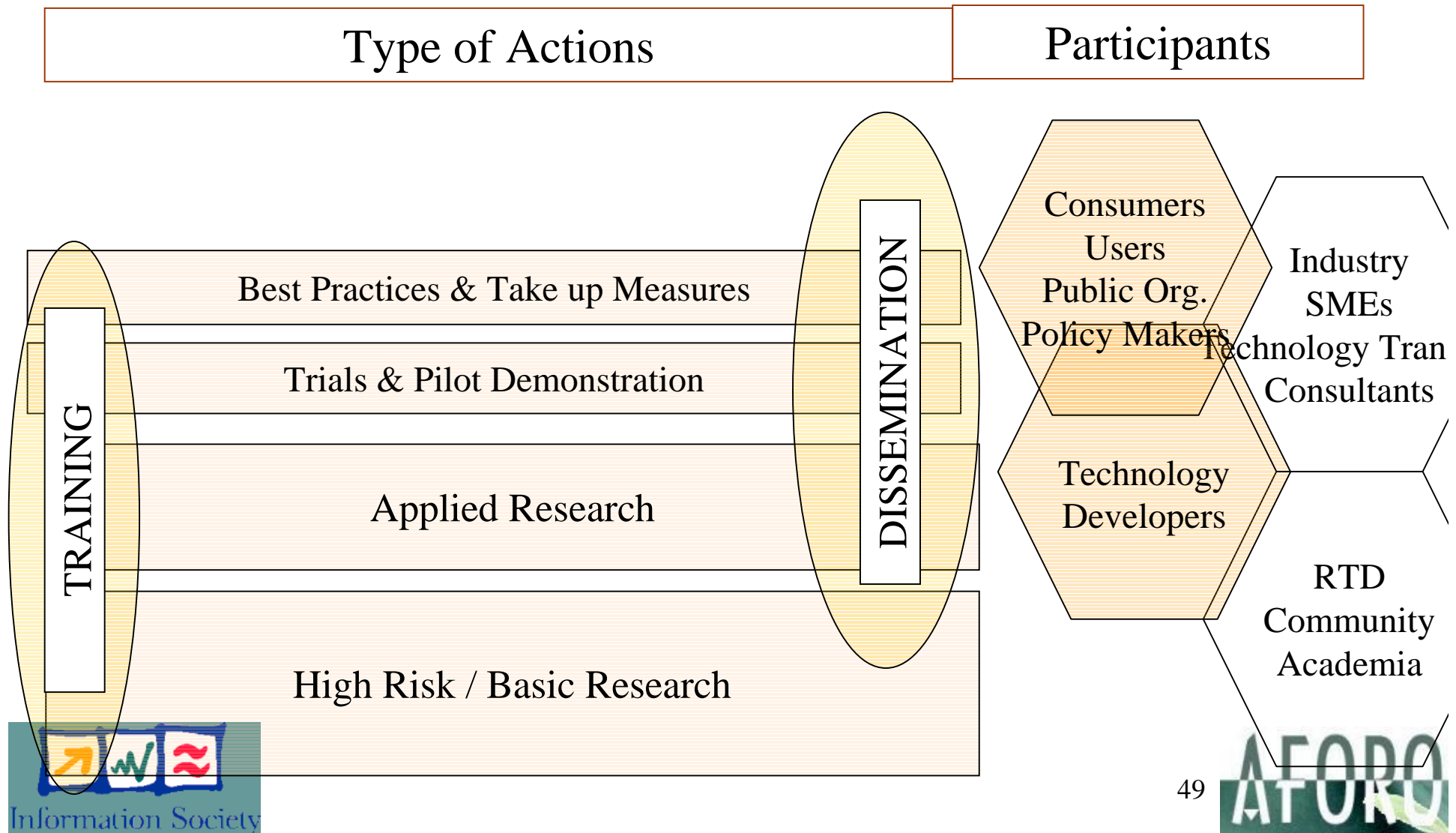


The Future

- **FoodValue Integrated Project:** A sensible plan to develop ICTs as defined in the AFORO Roadmaps.
- EoI designed, Draft IP proposal already prepared.
- Core Consortium built (some additional partners are welcome).
- “Accompanying actions” (NoE in AgriFood & ITs, small projects, other actions)

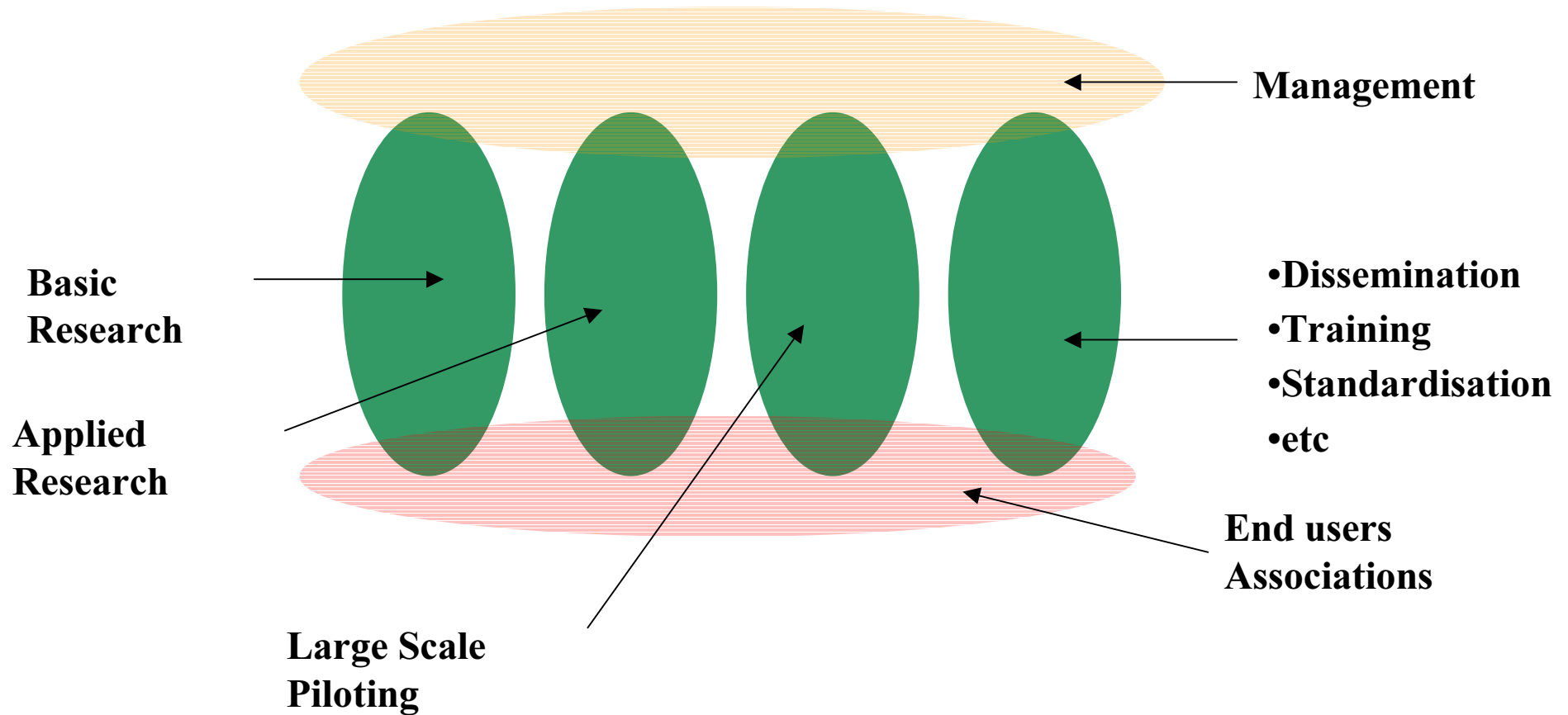


The Actual Structure





The FoodValue Approach





Thank you

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http://eoi.cordis.lu/dsp_details.cfm?ID=32670