

FABRE-TP

“Sustainable Farm Animal Breeding and Reproduction Technology Platform”

TECHNOLOGY PLATFORM (TP)

Priority 8: Scientific Support to Policies

D 5.4 : Publishable Final Activity Report

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Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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Publishable executive summary

Animal agriculture plays an important role in European society. Optimised animal production systems can contribute to a safe, healthy and diverse diet, can help maintain sustainable human communities in more marginal regions of Europe and can facilitate reductions in our environmental footprint on the planet. A vibrant and effective animal breeding and reproduction industry is essential if Europe is to meet the future challenges of animal agriculture in a rapidly changing ecological, economic and social environment. Farm animal breeding and reproduction are a globally highly competitive, knowledge intensive sector. Currently, Europe has a major influence on the genetic make up of future animals and hence on the whole of animal production. European breeding organisations are major players in the global market and hence have a world wide impact.

FABRE TP, the **Sustainable Farm Animal Breeding and Reproduction Technology Platform (SSPE-CT-2006-004428)** has been set up to maintain and develop this technology sector for the benefit of Europe's future. In its first year of EU funding, FABRE TP has been developing a Strategic Research Agenda (SRA). In this period, the commitment for FABRE TP has been growing from 63 to 110 organisations. The SRA is based upon the Vision Paper "Sustainable Farm Animal Breeding and Reproduction – A Vision for 2025". Three types of effort have been undertaken to accomplish the SRA: expert group discussions, horizontal efforts, and country discussions. The results of the various discussions are available as separate Annex documents to the SRA.

The expert consultancy encompassed seven expert groups on farm animal species where there is a professional interest in breeding (cattle, sheep and goats, horses, pigs, poultry and aquaculture as well as dogs, honeybee, fur animals and rabbits). Furthermore, three expert groups on themes (safe and healthy food; robust, adapted, healthy animals; diversity and distinctiveness) and three expert groups on technologies (genomics, genetics, reproduction) have been set up.

The horizontal work has been taking place throughout the project. Society representatives are being consulted at various stages, and invited to the steering, working and expert groups. A technology transfer and education group have identified the need for international technology transfer and lifelong learning. A society meeting with NGOs and breeders has dealt with environment, ethics, consumer issues, third countries, social responsibility (Spring 2008). The sustainable breeding scenarios developed during the last seven years with the input of various groups of researchers, industry representatives and society specialists and representatives are being linked to the food area forward outlook efforts that are currently being developed. (Annex II).

FABRE TP has undertaken 34 country discussions. Representatives from the European Forum of Farm Animal Breeders, European Association for Animal Production, Genesis Faraday and Roslin have visited all EU countries, plus Iceland, Israel, Norway, Russia, Switzerland, Turkey and Ukraine, for a FABRE TP meeting to which the local organisers invited all interested stakeholders. These meetings have given voice to the numerous governmental, funding body, research and industry voices in Europe. Between 10 (Malta) to over 100 (Bulgaria) people have contributed to the SRA, relating the SRA to their national situation, and considering the initiation of a National Platform. The reports are available in Annex III.

FABRE TP has developed a specific easy reading SRA for policy makers, available in 28 languages.

In the spring of 2008 FABRE TP will present its Implementation Action Plan.

All expert group reports, country reports, various SRA versions, as well as a leaflet and poster are available from the web site: www.fabretp.org.

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Section 1 – Project Execution

1.1. Summary description of project objectives

The **objectives** of the project are:

- science/technology analysis related to opportunities for FABRE and setting priorities for the short, mid and long-term;
- capturing the relevant Horizontal Issues for FABRE SRA;
- development of scenarios for future development of animal breeding in a workshop, based on sustainability starting from SEFABAR results (www.SEFABAR.org) and input of Expert/Working Groups;
- organisation and consultation of stakeholders in all EU member states on the future opportunities and needs of Farm Animal Breeding and Reproduction;
- development of the SRA based on the science/technology analysis, Horizontal Issue analysis and stakeholder discussions;
- development and initiation of an **implementation plan for the SRA**;
 - taking into account: safe and healthy food; robust, adapted, healthy animals; balanced breeding; biodiversity, animal welfare, environment, world development, a competitive and distinctive Europe, and non-food benefits from e.g. recreation, animal biotechnology;
 - including: farm animals where there is professional interest in breeding, e.g. cattle, sheep/goats, equine, pigs, poultry, aquaculture, companion animals and other animals;
 - with the involvement and consultation of relevant stakeholders from: industry, farmers, the research community, public authorities, regulators, NGOs, politicians and funding bodies.

European farm animal (including aquaculture) breeding and reproduction are a knowledge intensive sector, with the major global players based in Europe, and with a huge impact on the animal food chain. Animal breeding and reproduction are at the top of the animal production pyramid and hence define the quality of all animals used in agriculture and aquaculture. The impact on farm animal production as a whole is great, because the breeding response is cumulative and sustainable. Efficient reproduction techniques, such as artificial insemination, allow genetic improvement to be rapidly and safely disseminated throughout the production chain.

1.2. Contractors involved

European Forum of Farm Animal Breeders
European Association for Animal Production
Roslin Institute
Genesis Faraday



1.3. Work performed and end results

Characteristics of European farm animal breeding are summarised below:

Farm Animal Breeding and Reproduction in Europe – Characteristics

- Farm animal breeding includes all animal species bred for a wide range of purposes.
- For breeding, animals meeting defined criteria are selected from animal populations.
- Farm animal species have been selected for desirable traits since they were first domesticated.
- Efficient reproductive techniques, such as artificial insemination, allow genetic improvement to be rapidly disseminated from the top of the breeding pyramid to benefit all producers and society as a whole.
- Animal breeding and reproduction are most effective when incorporated into herd and population management strategies.
- Balanced breeding requires a long-term sustainable vision developed jointly by breeders, scientists, and society.
- The added value of investments in genetics is cumulative.
- Breeding is knowledge intensive.
- An international farmers' organisation has established guidelines for data collection, farm management, and genetic evaluation to assist farmers and farmers' organisations.
- Breeding is society sensitive because it drives changes in the genetic makeup of animals and the use of new technologies (e.g. genomics, computing sciences).
- Genomics opens innovative prospects for sustainable animal production.
- A Code of Good Practice for Farm Animal Breeding and Reproduction Organisations is in place to encourage transparency and a dialogue of breeders with society.
- Breeding supports the health, feed efficiency, and welfare of farm animals as well as adequate management of animals and the environment.
- European animal breeders are world leaders in their sector.

A. Before the start of the project

On 20 April 2005 the setting-up of a Technology Platform for Sustainable Farm Animal Breeding and Reproduction was first discussed, followed by the initiation of an industry led steering and Working Group (May/June 2005), a web site (www.fabretp.org) (July 2005), the development of a draft Vision Paper (October 2005), and wide stakeholder discussions in the autumn of 2005. At March 2006, the FABRE TP was launched at the Salon de l'Agriculture in Paris, and its Vision Paper "Sustainable Farm Animal Breeding and Reproduction – A Vision for 2025" presented. The Farm Animal Breeding and Reproduction European Technology Platform, FABRE TP, brings together a wide range of interested parties to produce a vision of how livestock breeding might develop in the next 20 years, and constitutes the first step in achieving that vision. The management of over 110 organisations (small and large breeding industries and umbrella organisations, research organisations and universities, farmers' organisations in several animal species including fish and from 21 European countries) have signed for FABRE Technology Platform.

B. The project

This Specific Support Action FABRE TP has supported the next stages in the three-stage process of development of the Technology Platform (definition of a Strategic Research Agenda and implementation by stakeholders). Stakeholders' discussions in each of the EU member states highlight the typical country emphasis, roles of society, regulatory and other enabling factors.

B.1. Work Package 1 Expert Groups

Work package 1 deals with the detailing of specific species, technology and themes opportunities, gaps and priorities for the coming 5-25 years in farm animal breeding and reproduction. Annex I describes the results of 13 expert groups.

FABRE TP has set up **seven species groups** on cattle, sheep/goats, pigs, poultry, aquaculture, horses, other and companion animals. The diversity of species in Europe is reflected in their breeding programmes.

Three Expert Groups have been identified according to the themes: (1) food quality (safe and healthy food), (2) animal performance (robustness, efficiency, whole animal biology, animal and

environment, animal welfare and animal integrity) and (3) biodiversity and distinctiveness/balanced breeding.

In the development of the Vision Paper of FABRE TP, the Agenda for Research and Technology distinguishes a range of technologies of importance for farm animal breeding and reproduction. They have been divided into a subset of three technology groups: (a) animal breeding and quantitative genetics, (b) genomics (including bioinformatics), and (c) reproductive technologies. Three Expert Groups have been set up to consider these technologies.

Together, they form the set of **six technology / theme Expert Groups**.

The working group have defined proposals for core group members for the various expert groups, carefully taking into account a balance between country and industry/research representation, ensuring that scientific and professional excellence prevail, in order to ensure commitment from the other European expert group members to the greatest extent as possible. The work has been undertaken under auspices of the Science/Technology coordinator (Chris Haley), assisted by the EFFAB office.

A specific writing group has been assembled, consisting of the 4 project partners: Andrea Rosati, Chris Haley, Chris Warkup, Anne-Marie Neeteson, plus Volker Schulze (DGfZ), Anna Sonesson (Akvaforsk), and Ingela Velander (Danish Meat Association). They have studied the species report into detail, and compared them with the SRA0 draft.

This has resulted in

- an overview of the problem of stasis (what will happen if no research is undertaken)
- a gap analysis and overview of strategic research needs

B.1.1. Expert

The results of the 13 expert groups can be summarised as follows:



B.1.1.1. The problem of stasis

The indications of what will happen when no research is undertaken from the thirteen expert groups have carefully summarised into the following overview:

Why we need research

- 1) Without continued investment in appropriate and coordinated research in animal genetic and genomics Europe will face the following challenges:
 - Loss of competitiveness against lower cost imported food
 - Loss of our leading position in animal breeding
 - Inability to rebalance breeding goals as effectively as desired for the benefit of animal welfare
 - Inability to properly manage biodiversity and optimise land use
 - A lost opportunity to use science to achieve a significant reduction in the environmental footprint of animal agriculture
 - Missed opportunities to improve animal welfare
 - Missed opportunities to reduce human ill health through breeding animals for resistance to zoonotic diseases

- Inability to continue to meet consumers' needs for affordable, high quality and distinctive food products
- Inability to respond rapidly to a changing environment
- Inability to take advantage of new scientific knowledge in biology generally for the benefit of agriculture, the environment and society
- A lack of capability to understand the benefits and risks of new technologies
- A missed opportunity to gain from coordination, synergy and critical mass

2) We need to fill the gap between genomics/biology and application of this understanding in breeding in order to deliver:

- Competitiveness
- Balanced breeding goals
- Meeting consumer need, product quality, diversity, safety and animal welfare
- Optimised diversity and land use
- An enhanced environment

B.1.1.2 Gap analysis and strategic research needs

The thirteen expert group reports have been studied, and the following overview has been made of the gaps and strategic research needs to fill these gaps:

The development of new tools and understanding in biology and genetics provides the means to adapt to the changes, opening major opportunities for effective animal breeding. These opportunities can only be realised if tools, resources and understanding that are currently missing are developed and are disseminated and employed at the appropriate level within farm animal breeding pyramids.

The missing components that will allow us to bridge the gap between potential and realisation of course vary between different livestock species. We will not attempt here to elaborate the current status and the missing components in detail for each species (see SRA Annex I (2 page expert group reports)), but rather will provide an overview. In general realising the potential of breeding will require technical developments in broad areas:

- Tools and resources for genetics, genomics and reproduction
- Understanding of biology of individual traits and of livestock species and the systems in which they operate
- Improved identification and traceability
- Definition of traits and low-cost collection of more precise, comparable and appropriate data and information that allows genetic change to be implemented
- Integration of molecular genetic technologies into breeding programmes, especially for low heritability traits and traits associated with health, animal function and product quality
- Dissemination of this knowledge and the removal of bottlenecks to knowledge implementation at the appropriate level in a breeding programme.

The ability to fully exploit these developments will need an appropriate framework of enabling factors (such as education and training, together with appropriate regulatory structures that have societal support – see later chapters on these factors).

From the thirteen expert group reports the following Technical Research Priorities have been deduced:

Technology Research Priorities:

Reproductive Technologies

1. Improving the efficiency of basic reproductive technologies for implementation or dissemination of genetic improvements.
 - Improving AI and IVF capabilities and efficiency in a range of species
 - Improving current semen sexing technologies
 - Closed breeding cycles for species undergoing domestication
 - Improving cryopreservation of gametes, embryos and somatic cells
 - Improving biosecurity

2. Development of advanced reproductive technologies.
 - Derivation, maintenance and control of differentiation of livestock stem cells
 - Improved capability for use of GM technologies to generate new traits and new combinations of traits
 - Improved capability for nuclear transfer
 - Novel technologies for control of epigenetic factors

15-25 years

In vitro gametogenesis and selection

Phenomics

1. Development of improved tools and capability to measure and record traits.
 - Improved cost-effectiveness of existing measurement tools
 - Development of novel (to animal agriculture) measurement technologies
 - Agreed trait ontologies

2. Systems to capture and utilise relevant information throughout the production and supply chain.
 - Electronic Identification technologies
 - Genomic relatedness and traceability technologies
 - Electronic data capture, storage and retrieval systems
 - Data interchange and access protocols

Genetics

1. New genetic methodologies and tools to analyse interpret and predict.
 - Performance across a range of environments
 - Heterotic interactions across a range of genetic backgrounds
 - Non-linear relationships among traits
 - Population level interactions
 - Epistatic interactions

2. Improved tools to utilise quantitative information and/or molecular genetics information in selection.
 - Marker-Assisted and Gene-Assisted Selection
 - Genome-Wide Selection
 - Optimisation of diversity and heterosis in breeding systems
 - Optimised breeding programme design (including integration of reproductive technologies)

Genomics

1. Develop the basic tools for genomic research.
 - Finished genome sequence for chicken, cattle, pig, salmon and sheep (horse)
 - Draft sequence for duck, turkey, goat, trout
 - Bioinformatic tools for open-access annotation and interrogation within and across species
 - SNP panels (validated SNP panels with 0.5 to 1M SNPs for each target species)
 - Tools to analyse copy number variations (CNVs) such as BAC tiling arrays and high density SNP arrays
 - Transcriptomic tools
 - Other 'omics tools
 - Implementation of new sequencing technology for the analysis of farm animal genomes

2. Develop tools for the elucidation of complex genetic traits from genomic information.
 - Gene-gene interactions
 - Gene networks
 - Heterosis and epistasis
 - Epigenetic effects
 - Environmental interaction

Traits

1. We have identified as priorities traits that drive:
 - Safe and healthy food
 - Safe and healthy animals
 - Sustainable breeding
 - Social responsibility
 - A competitive Europe
 - A distinctive Europe
 - A diversity of benefits

2. The research needs, in broad terms, are:
 - Determine the genetic, other population and socio-economic parameters for novel traits and improved breeding goals
 - Identify the major genetic loci relevant to traits and to progress from QTL to identified causative polymorphisms
 - Dissecting the basic biology of genetic variation and its interaction with the environment underlying trait variation (and genetic change)
 - Understand the inter-genomic biology of traits for which there are population level interactions

B.2. Work Package 2 Horizontal Issues

In SRA1 the horizontal issues have been described, learning from the various experiences and work undertaken by the participants. They are being put in for discussion and have been discussed at the Stakeholder meeting 24 October 2007 in Paris.

A working group on technology transfer and education have identified the major issues in technology transfer and learning.

An ethical interview has been taken place.

Intellectual property rights have been defined during the course of the project.

The Society Meeting Spring 2008 has addressed the issues regarding scenarios, Ethics, Consumers Issues, Third Countries and Communication with Politics before a broad audience.

The various discussions have resulted in Goals in the SRA, and Actions in the Implementation Plan:

Global Responsibility and Competitiveness

Goal c: Address consumer demand

Goal e: Develop responsible ownership systems

Social Responsibility

Goal d: Attain full transparency

Goal f: Achieve a balanced, transparent regulatory framework

Goal g: Achieve constructive dialogue among stakeholders

Goal h: Improve the availability of information for Society

Diverse and distinctive Europe

Goal b: Respect and develop cultural values

Goal c: Build on regional values

Goal d: Ensure access to relevant knowledge

Implementation Plan

Action 5. Technology Transfer

Action 6. Education

Action 7. Socio-economic Research

Enabling Factors

a. Networking

b. Transparency – Communication – Dialogue

c. Regulatory Climate

B.3. Work Package 3 Country Discussions

Live discussions have been taking place in each EU member state, **plus** a number of other states that have asked for a FABRE TP discussion: Iceland, Israel, Norway, Russia, Switzerland, Turkey, Ukrain. In total 34 countries were visited in person, with attendencees ranging from a bit below 10 (e.g. Cyprus, Malta) to over 100 (Bulgaria, Turkey).

The visits have been taking place between January 2007 and June 2008 and were undertaken by Andrea Rosati (EAAP), Chris Warkup and David Telford (Genesis Faraday) and Anne-Marie Neeteson (EFFAB). The majority of the countries have been visited by Andrea Rosati. Other countries were visited by Chris Warkup or Anne-Marie Neeteson, alone or together or in the company of Andrea Rosati.

This effort was much appreciated by the member states, and the other countries.

It has provided very valuable discussion on the FABRE TP Vision and SRA from the country perspectives.

In each country a local organiser invited the relevant scientists, industry and governmental/funding agencies. The FABRE TP representative(s) presented FABRE TP and the SRA. The countries presented their priorities, and organisation. Then a discussion took place on the SRA and the specific country opportunities, challenges and needs.

These have been reported in 2-3 page reports by the FABRE TP partners, and sent back to the countries. The draft report was commented and improved by the attendants.

From each country discussion a range of projects/priorities is being identified. These have been summarised per item.

Furthermore, from each country, an overview is made of the state of animal production.

The reports are being gathered in FABRE TP SRA Annex III Country discussions together with the country priorities, which is available from www.fabretp.org. It is also put on the cd-rom that is being sent out together with the SRA and Implementation Plan.

B.4. Work Package 4 Website, Leaflet, Poster, Society Meeting, SRA and Implementation Plan

Web site

A web site has been set up: www.fabretp.org

It has e.g. a general opening page, pages explaining the platform, for the expert groups, the mirror group, the country discussions, the Strategic Research Agenda. The reports of the meetings are being put on the respective pages.

The website will serve FABRE TP after the funding of the project.

Leaflet and Poster

A leaflet has been developed and has been disseminated to European Commission, and at numerous meetings of FABRE TP or where FABRE TP has been presented.

A poster has been developed and is being printed on poster format. It will be disseminated to the European Commission and (in electronic form) to the members of FABRE TP.

The leaflet and poster are being made available from the website as pdf file.

Society Meeting

A workshop with society input has been developed during various telephonic meetings with the working group and the project partners.

The programme was announced in advance to over 500 society stakeholders, and to the FABRE TP interested persons and organisations in the database.

It was decided to keep the audience 'small' (up to 60 people) to get a good discussion and invite everybody to follow the conference via internet.

Angela van der Sanden of EFFAB and Andie Dimitriadou of EAAP have taken the organisation of the event on their shoulders. Andrea Rosati of EAAP and Anne-Marie Neeteson of EFFAB have invited the speakers.

SRA

The vision described in the Vision Paper must be converted into an agenda for research. This Strategic Research Agenda should focus on the opportunities and challenges identified in the Vision paper.

A small group of people have made a preliminary draft for the various chapters in the SRA, focusing on their own expert field. This, to provide a general overview of farm animal breeding and reproduction, the regional vs. the global focus, input for scenario building, opportunities and research base.

The SRA0 was a starting draft for discussion. The SRA1 has consecutively been sent to the expert groups, and was discussed at an expert group meeting June 2007 in Utrecht. The SRA2 was offered for discussion at a stakeholder meeting October 2007 in Paris. The member state discussions have in the practice been taking place from start 2007 to Spring 2008. Their input is based on SRA0 (for reasons of consistency).

The PreFinal was the available draft SRA for the steering and working group discussion February 2008 in Rome and the society meeting March 2008 in Brussels. It also includes the member state reactions of most of the country discussions. The remarks and the last country discussions have led to the Final SRA.

The SRA is being printed, put on cd-rom, and made available from the website.

Opportunities and Implementation

Global Responsibility and Competitiveness (1)

- Food Security and Sustainability
- Environment
- Consumer demand
- Competitiveness
- Ownership

Social Responsibility (2)

- Food Safety
- Product Quality
- Welfare and Health
- Transparency
- Regulatory Framework
- Dialogue
- Information for Society

A Diverse and Distinctive Europe (3)

- Farm Animal Genetic Resources
- Cultural Values
- Regional Values
- Access to Knowledge
- Data Collection and Selection Programmes

Implementation

- Reproductive technologies
- Phenomics
- Genetics
- Genomics
- Technology transfer
- Education (post-doc and lifelong)
- Socio-economics

Implementation Plan

The Implementation Plan describes the research efforts that need to be undertaken and the implementation that has to be put in place for Europe to maintain its leading role in animal breeding and reproduction, and to provide the European citizens with a diverse choice of affordable, safe and diverse quality animal foods, and the European landscape and culture with an attractive liveable countryside, a large sustainable variety of animal breeds, and tasteful local and typical animal food products.

The Plan is based on the Vision Paper for 2025, and the Strategic Research Agenda (SRA) which have been developed with over 1000 specialists in Europe.

	Strategic Research Agenda	Implementation Plan
Focus	Topics and themes	Activities and Actions
Definition of	Priorities	Steps to take (set of activities, incl requirements, timeframe)
Typical:	Same 'structure' throughout SRA and IP	
The SRA2 proposal contains*:	same content as SRA1 – structure that will enable IP definition	
Also	Structure is needed now to write clear brochure for extended audiences	

* including informal remarks from EC for improvement

For each goal within the four opportunities, a list of goals with tasks has been defined based upon the results in the working groups (expert, country, horizontal)

For each task:

- action (% academia/industry) and timeline
- human resources (available or to be developed)
- funding distribution (private/EU/national)
- funding amount
- type of activity

The Implementation Plan is being printed, put on cd-rom, and made available from the website.

Example:

1. Reproductive Technologies

Reproductive techniques have been used for decades to enable safe and efficient breeding and are indispensable for efficient animal breeding.

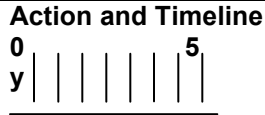

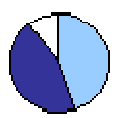

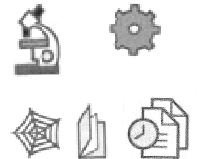
a. Basic Reproductive Technologies

The level of implementation of reproductive techniques varies between animal species and between countries. It is affected by e.g. infrastructural differences, differences in availability of the techniques (Artificial Insemination (AI), Embryo Technology (ET)) as a commercial service or because of lack of knowledge and practical methods in certain species, often due to anatomical and physiological limitations.

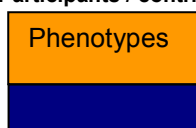





Reproductive techniques are important tools to optimise breeding programmes, allowing dissemination of genes of interest. Therefore it is important to fill the gaps of knowledge and further develop practical methods in order to facilitate the use of both old and new reproductive techniques thus enhancing the competitiveness of EU farmers and food producers.

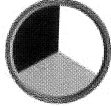

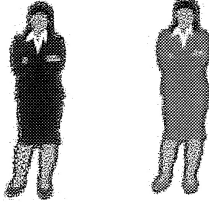
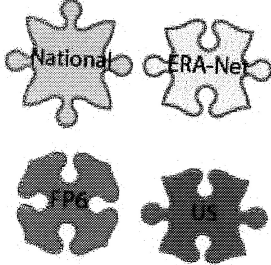
There is a need to coordinate the EU research agenda for an optimal output. Therefore, national and international policymakers and research funding organisations should be encouraged to develop a coherent yet flexible European research base in animal breeding and reproduction. The focus is on improving practical exploitation of reproductive techniques and domestication of aquaculture species:

- Improving AI and In Vitro Fertilisation (IVF) capabilities and efficiency in a range of species
- Improving current semen sexing technologies
- Closed breeding cycles for species undergoing domestication
- Improving cryopreservation of gametes, embryos and somatic cells
- Improving biosecurity.

Action and Timeline	Human Resource	Funding Distribution	Funding Amount	Type of Activity
				

Symbols used

Icon	Description
Participants / contribution 	The arrows describe start and duration of the project as well as the contributions needed from academia and industry. Orange stands for academia, blue for industry. The ratio of this contribution is depicted by the area ratio within the arrow.
Project Type 	Different types of projects might be needed depending on the envisaged activity: • Research projects: Projects ranging from frontier/basic research to applied, pre-competitive research which primary aim is to generate scientific and technical knowledge which can be further used for the development of new innovative products and/or improving the sustainability of existing production. These projects will benefit from collaboration efforts and networks.
	• Demonstration / Pilot project: Projects with the aim of demonstrating the industrial and economic feasibility, and the sustainability of a concept.
	• Studies: These projects, including surveys, feasibility studies, LCA or eco-efficiency analysis, aim at generating knowledge/information allowing stakeholders and decision-makers to make informed choices.
	• Network / Coordination: Networks and coordination projects will allow better coordination between stakeholders in a field, interdisciplinary cooperation, exchange of information and coordination between European and Member States level.
	• Training: Exchange/mobility of researchers, courses, projects influencing curricular programmes in Member States.
Distribution	Activity funding might come from different resources. While a general overview of available funding sources for different project types is given in Chapter 2.2, the pie charts describe the envisaged distribution of funding sources for each activity. A distinction is made between private or

	<p>industry funding (dark blue), European Union funding (white) and national funding (light blue). Possibilities for venture capital, if they exist, will be addressed in the text.</p>
<p>Funding amount</p> 	<p>Gives a scale for indicating the required resources for the total duration of the activity 1 stack of coins: < 5 Million € 2 stacks of coins: 5 - 15 Million € 3 stacks of coins: > 15 Million €</p>
<p>Human resources</p> 	<p>Activities require human resources with adequate training and expertise. A black symbol depicts that sufficient research expertise is or is likely to be available in Europe; a grey symbol means that such a skill base needs to be actively developed for a sufficient number of researchers.</p>
<p>Activities</p> 	<p>The Action Plan activities were selected based on the importance of the issue and the relevance to the overall challenges. It is often the case that other activities of relevance are already ongoing. New projects must build on such ongoing activities to achieve the best value. The puzzle pieces indicate whether significant, related and currently ongoing activities exist within the EU (FP6), at national level, in ERAnets, and/or in other regions of the world. More details of such activities are given in the description for each activity.</p>

Extra: Brochure in 28 languages

As an extra activity a summary brochure of the SRA and Implementation Plan have been made.

The summary, based on the SRA and Implementation Plan, gives an overview of FABRE TP in a bird eye’s view. Toine Roozen (Genesis Faraday) and David Garwes have compiled the summary, further aided by Angela van der Sanden (EFFAB) and Andrea Rosati (EAAP).

The English summary has been offered for translation to 27 country contacts, and has been translated into 27 other languages: Bulgarian, Croatian, Czech, Danish, Dutch, Estonian, Finnish, French, German, Greek, Hebrew, Hungarian, Icelandic, Italian, Latvian, Lithuanian, Serbian, Norwegian, Polish, Portuguese, Romanian, Russian, Slovak, Slovenian, Spanish, Swedish, Turkish.

This effort has been organised by Andie Dimitriadou (EAAP) and Angela van der Sanden (EFFAB).

The 28 language versions have been printed in one run according to the procedure that EFFAB have developed in previous EU projects, in which the language run is one of the four ‘colour runs’ of a brochure. In total we have 4000 copies, 100 in each language and 1300 in English.

They are being disseminated to our contacts (expert, country, society) together with the SRA and Implementation Plan. They are being put on the cd-rom we provide with it. They are being made available in a colour and black-and-white print version from the web site.

B.5. Work package 5 Management and Future

Terms of Reference

The coordinator has prepared a Terms of Reference and Code of Conduct. The first draft was presented to and discussed by the Steering Committee at the conference call of Friday 19 May 2006. It was agreed that this Code is important for the transparency of the Technology Platform, and for the work and preparations undertaken. The comments of the steering committee were agreed to be sent in within a week after the conference call. They have been worked out into the final Terms of Reference, which was agreed at the Steering Committee telephonic meeting of 2 February 2007. The Terms of Reference are available from the public website of FABRE TP: www.fabretp.org The Technical Annex of the SSA FABRE TP has been added to the Terms of Reference as document to be referred to. The Terms of Reference are effective as from 2 February 2007. They can be amended with agreement of two thirds of the members of the Steering Group.

Management

FABRE TP has been active before the start up this project (March 2005 and July 2006 respectively). At that time the structure of a working group, and a steering group has been developed. These groups have been meeting, and minutes or action lists of these meetings have been made. Furthermore, a writing group has been created for the writing of the Strategic Research Agenda. For practical reasons, at several stages of the project, combined meetings of these groups have been taking place. This was not planned originally, but it at several times it was the only practical possible way.

In the Spring of 2008 a meeting on the future of FABRE TP has taken place in Rome. At this meeting also the draft Strategic Research Agenda has been adapted, and the Implementation Plan has been further designed. This meeting consisted of all steering and working group members, thus providing a wide forum of stakeholders across Europe. They elected the chair of EFFAB as chair of FABRE TP for the time being of the EC project, and until the new structure and Board would be active.

C. After the project

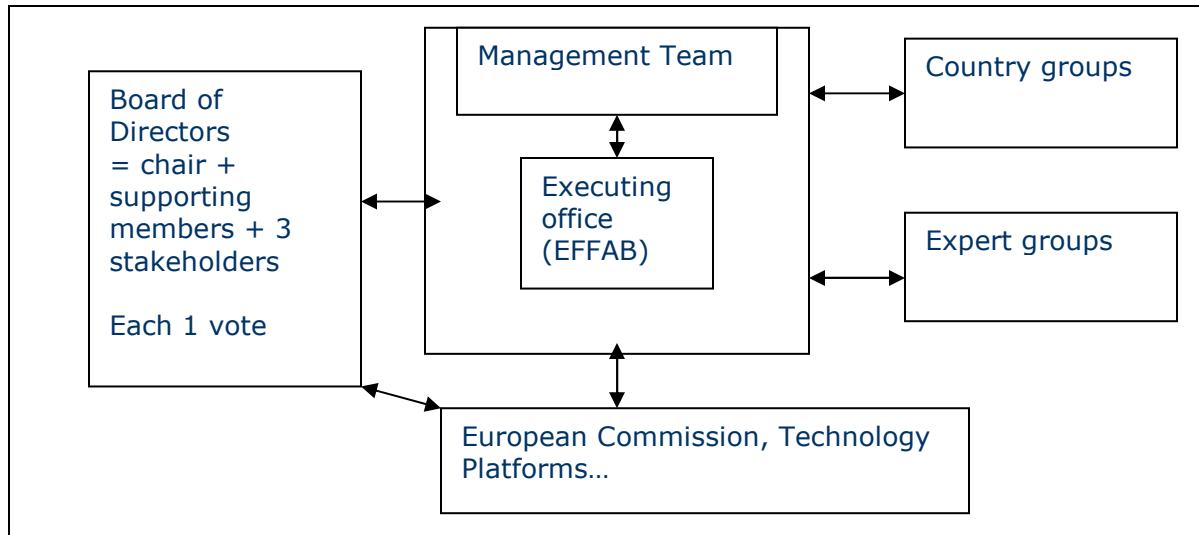
Business Plan FABRE TP

Aim One stop shop for Farm Animal Breeding and Reproduction in Europe, organising annual updates on research and implementation and initiating European efforts and activities. FABRE TP documents and their updates form the basis.

Level playing field

- FABRE TP is an EU recognised European Technology Platform.
- The (108) supporting organisations wish to continue as a cooperation between existing organisations, linking activities to existing meetings, in a practical yet fair way.
- The lean basic structure will be responsible for:
 - o One stop shop with web site
 - o Lobby
 - o Review and update
 - o Research.
- The following financing and organisation mechanism have been chosen:
 - o Industry led – office will be based at EFFAB. The Management Team will consist of EAAP, Genesis Faraday and EFFAB, and organise the daily activities and contacts with the expert and country groups.
 - o Financial support from and via general European breeding bodies and major research organizations (members).
 - o Board of Directors of members (50% industry, 50% research) plus three representatives from West, South and East Europe (one governmental, one research, one industry). Chair from EFFAB + each member + 3 stakeholders each 1 vote.
 - o Memorandum of understanding for the members.

- Stakeholder commitment letter from the stakeholders.



- Minimal annual funding required
 - Hours and office
 - Travel and web site/publicity.
- A separate FABRE TP account will be set up. The possibility of an EEIG will be studied.
- For additional issues, working groups will be set up. For these funding will be sought – working group members will deliver in kind (travel, hours etc).

One stop shop

- Central contact point (EFFAB).
- Web site - forum of FABRE TP, its expert and country groups.
- Database will be kept up to date.
- MT will meet/conference quarterly: plan activities, propose strategy/working groups + how to organise/finance these.
- Board of Directors will meet once per year and conference 2 x per year (more if needed). They will set out the general lines.

Lobby

- Representation will mostly take place via MT and Board of Directors (EC, other KBBE ETP).
- Management Team and Board members and assigned stakeholders can represent FABRE TP.

Review and update

- Each year, a round of research subjects, followed by a round of research prioritisation will be organised and communicated to EC.
- FABRE TP will meet at EAAP meeting and EFFAB meeting (biannually).
- Each expert group will have one core representative to organise updates in his/her area. Warkup of GF is the end responsible.
- Each country will have one representative to organise all the interested persons and organisations in his/her country. Rosati of EAAP is the end responsible.
- Reviews and updates serving regional or expert groups may be part of extra FABRE TP activities/working group.

Research

- Research update: see above.
- FABRE TP will study which means will improve European research performance and organisation, and implementation. These may result in extra FABRE TP activities/working group.

Board of Directors

Seats by appointment of the organisation:

- European industry umbrellas (3-4)
- European major research / governmental organisations (3-4)
- EFFAB chair and one seat

Seats voted by stakeholders (for 3 years):

West / East / South one industry one research one government.

Implementation Continuity Plan

Research update for EC

May 2008. All FABRE TP contacts have been asked to come with research items

June 2008. All registered FABRE TP contacts have been invited to vote for research items

July 2008. Weighed score will be sent to EC and disseminated among the stakeholders.

Annual gathering

August 2008. FABRE TP at general meeting EAAP Lithuania

Members and board

June 2008. Letters have been written to the indicated members, to invite them to sponsor FABRE TP

July/August 2008.

Individual consultation of the members, if desired

September 2008.

Implementation new FABRE TP structure (informal)

Installation Board members (of members)

Search for Board members North/West, East, South

Working Plan

Section 2

Plan for using and disseminating the knowledge

Section 1. Exploitable knowledge and its use

Not applicable for this project: all knowledge is freely available.

Section 2. Dissemination of knowledge

Overview table

Planned/actual dates	Type	Type of audience	Countries addressed	Size of audience	Partner/responsible involved
December 2006	Leaflet	General public	All	Web site	EFFAB
Various	Direct emailing	Stakeholders	All	500-900	EFFAB
Various	Power point	Stakeholders, government	UK, NL, Italy, Belgium	50-170	All
September 2007	Poster	General public	All	Web site	EFFAB
February 2007	Power point	Stakeholders, government	27 EU member states, Norway, Switzerland, Iceland, Israel, Ukrain, Russia, Turkey	15-120 per country	EAAP, GF, EFFAB
July 2006	Project web site	Stakeholders			EFFAB, EAAP
May 2008	Brochure 28 languages	Policy makers	All	4000 + electronic	EAAP, EFFAB, GF
June 2008	SRA	Stakeholders, policy makers	All	5000	EFFAB
June 2008	Implementation Plan	Stakeholders, policy makers	All	5000	EFFAB
July 2008	cd-rom with Vision, SRA + annexes, IP, brochure 28 l	Stakeholders, policy makers	All	2500	EFFAB
January 2007	Annex I Expert group reports	Stakeholders, policy makers	All	5000	EFFAB
May 2008	Annex II Horizontal issues	Stakeholders, policy makers	All	5000	EFFAB
July 2008	Annex III Country reports	Stakeholders, policy makers	All	5000	EAAP, GF, EFFAB
Various and after project	Presentation	Various (>15)	Various	1000	EFFAB, EAAP, GF

Section 3. Publishable results

Not applicable.