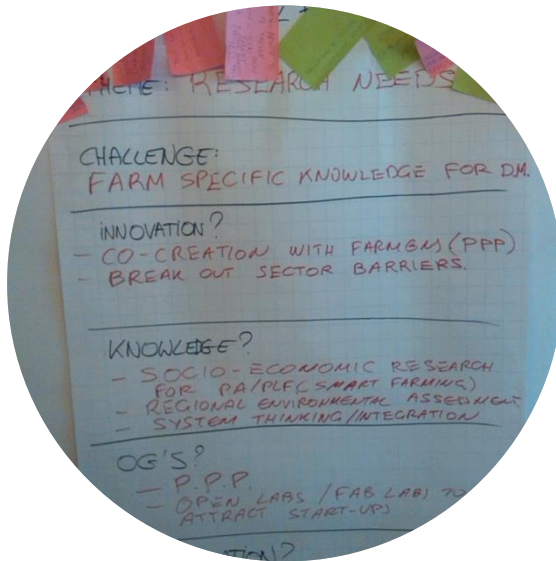


# Results of EIP Focus group on Mainstreaming Precision Farming

EFITA – ERANET ICT Agri workshop in Poznan

1<sup>st</sup> July 2015, Kees Lokhorst *et al.*



# 'Used definition'

- Precision Farming refers to a management concept focusing on (near-real time) observation, measurement and responses to inter- and intra-variability in crops, fields and animals.



# Question?

- How to organise the data capture and processing to mainstream the application of precision farming for an optimisation of inputs and yield?
- Try to identify the main reasons behind the current lack of adoption, and identifying the key barriers to the implementation of Precision Farming on European farms.

# Members of the EIP Focusgroup

## Experts:

Bahr, Claudia	Germany
Forristal, Dermot	Ireland
Fountas, Spyros	Greece
Gil, Emilio	Spain
Grenier, Gilbert	France
Hoerfarter, Rita	Denmark
Jonsson, Anders	Sweden
Jung, András	Hungary
Lokhorst, Kees	Netherlands
Mazur, Piotr	Poland
Mertens, Kristof	Belgium
Mottram, Toby Trevor Fury	United Kingdom
Nacke, Eberhard	Germany
Paree, Peter	Netherlands
Pastell, Matti	Finland
Pickel, Peter	Germany
Sileikyte, Egle	Lithuania
van den Borne, Jacob	Netherlands
Vangeyte, Jürgen	Belgium

## EIP-AGRI coordinating experts

Kempenaar, Corne  
Zarco-Tejada, Pablo

## EIPAGRI Service point

Debergh, Sophie  
Stubbe, Frank  
Gaetje, Emilie

# Expected tasks

- **Identifying** and **assessing** the different systems and use of data handling
- **Looking** at where compatibility issues need to be resolved
- **Collecting** existing/potential solutions to process and integrate large data volumes from sensors into user-friendly FMIS
- **Collecting** existing/potential solutions to integrating precision farming systems into small and medium-sized holdings.
- **Listing** fail factors that limit the use of techniques/systems by farmers and how to address these factors as well as **explore** the role of innovation and knowledge transfer in addressing these fail factors.

# First round: identify key topics

## >25 votes: themes of high importance

1. How to reach farmers?
2. Cost/benefit for farmer/business of PF (including business models)
3. Compatibility of PF data infrastructure. Processing large volumes of data. Data Friendly FMIS.
4. Ownership of the data

## 16-25 votes: lower importance

5. Strategy for PF systems in small and medium sized holdings
6. Support for advisors
7. Data storage and sharing and technical solutions
8. Research needs



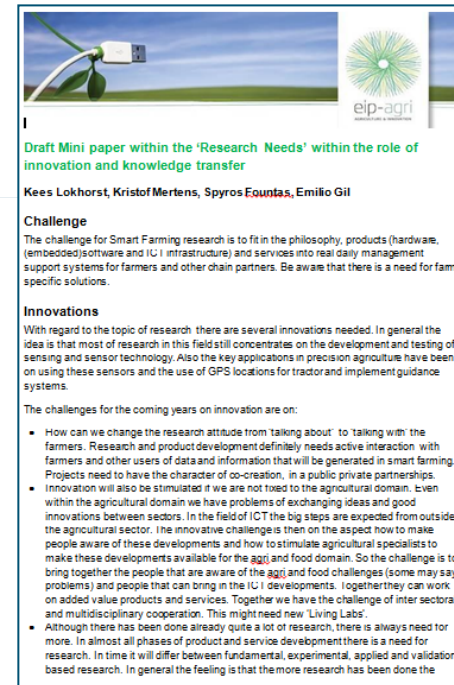
## < 16 votes: lowest importance and more general

9. Innovative incentives
10. Dissemination
11. Training for farmers
12. Traceability
13. Training of small and medium sized farm holdings
14. Farmers' attitude
15. Public acceptance: transparency
16. Retail
17. Role of media
18. PR
19. Complexity
20. Infrastructure
21. Other topics: lack of legal framework



# From mini-papers to EIP-report

- **Challenge** in a one-liner
- **Innovations:** what areas need new solutions? Perhaps there systems outside the farm world that could be transferred/adapted?
- What **research**/innovation is needed to work towards a solution?
- **Knowledge:** is there new knowledge necessary to provide the innovation
- **Operational groups:** suggestions on topics for OGs
- **Dissemination:** what can be done to spread these solutions?



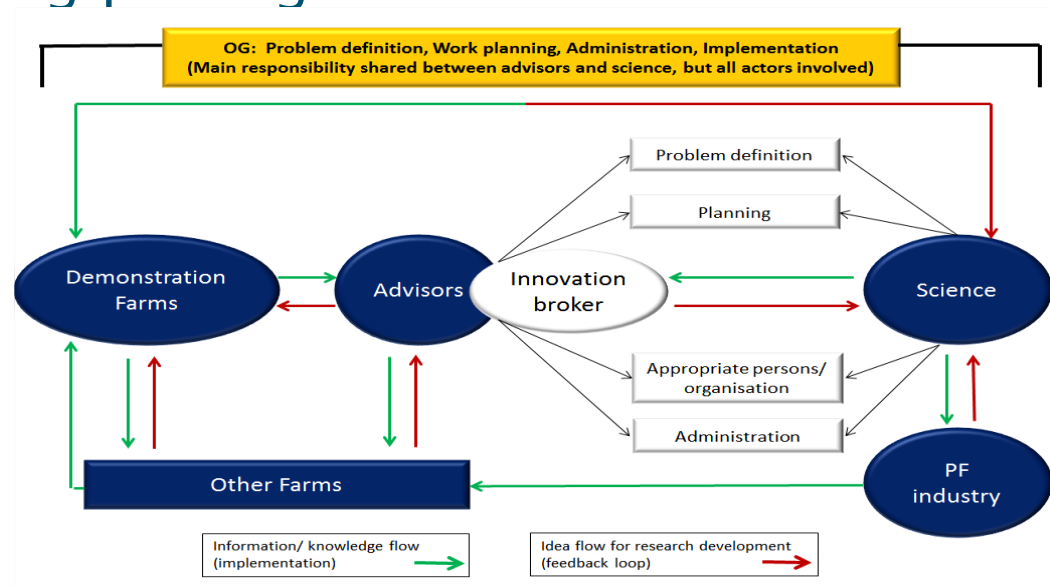
# 1 Why would farmers take up precision farming?

- How to **overcome** investment risk and perceived complexity, and to **discover** the specific benefits for the individual farmer.
- C: Farmers should be actively involved in **development** of PF tools to ensure clear benefits at farm level. **Training** in Precision Farming technologies for farmers is essential. Farmers themselves must drive the **demonstration** of appropriate technology.
- R: a **collaborative technology transfer initiative** is required. This would involve researchers, advisers, technology providers, and should have a clear focus on farmers' needs.



## 2 Support for advisers

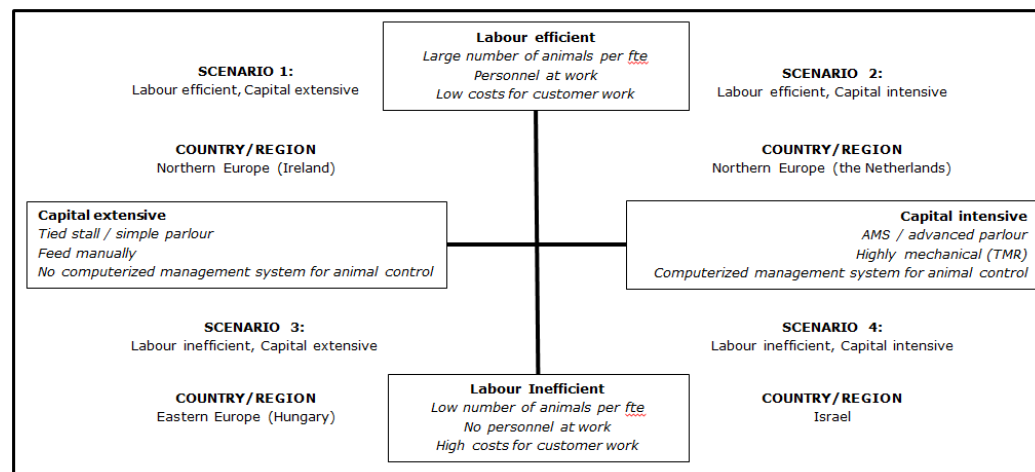
- advisers **should understand PF** so they can provide appropriate advice to farmers.
- C: development of **specific data analysis tools** with special emphasis on cost-benefits. Farm advisers will need to **connect** all members of the collaborative knowledge transfer initiative.
- R: Advisers need appropriate analytical support tools and focused training packages.



# 3 Cost-benefit analysis of PF

- The benefit of current PF to the farmer is not always clear. Some farmers **fear** that PF will bring additional costs and complexities, and new sources of technical problems.
- C: Stakeholders often **lack the tools** to calculate potential profits and benefits. Unclear **business models** of PF and associated costs and benefits. Take into account geographic regions and socio-economic variability across Europe.
- R: Validated PF decision-support models and analysis tools also for farm advisers and farmer trainings.

- Kamphuis et al., EU-PLF



## 4 Strategy for PF in small and medium-sized farms

- PF services could be offered to SME farms either by larger **neighbouring** farmers at lower cost or by companies as a **service**, or via other **business models**.
- C: **Regional training and awareness** for successfully reaching advisers and small and medium-sized farms.
- R: Need for PF tools that are designed for small and medium-sized farms, with the requirements of being easy to use, affordable and robust. Learning by doing. Customised advisory services need to be developed.

# 5 Technical solutions

- how to provide the PF community with technical solutions that can readily **apply agricultural knowledge** in closed-loop control systems. Solutions need to be **smarter** and **integrated** into the farm management system to support farmers in their decision-making.
- C: introduction and further development of
  - i) electric drives to facilitate precise electronic control of equipment and implements;
  - ii) Internet of Things to facilitate machine and processor communication;
  - iii) nanotechnology and biosensors;
  - iv) drones and autonomous platforms.

# 5 Technical solutions

R:

- generate 'as-applied' maps that can be combined with other data for making further management decisions.
- Farmers and cooperatives need to play a major role in innovation and in research of technical solutions.
- Solutions need to become smarter and integrated into farm management systems
- The added value of these solutions should be tested, validated and demonstrated in practice.

# 6 Data management and compatibility

- As modern farms are increasingly loaded with all kind of sensors, data management, data storage, data sharing and interconnectivity strategies are urgently needed.
- C: Adoption of **shared data** schemes exist but are not widely spread. **Compatibility** issues in PF are limiting the development of technology. Poor compliance with, **standards** for software development and data formats, limited data infrastructures on farms that are not designed for data sharing, and extensive brand protection by large companies.
- R: New business models for data management are needed; sharing and open-data sources should be developed to bring PF to the next level.



# 7 Research to boost innovation and knowledge transfer in PF

- Agriculture is **challenged** to produce more while conserving the environment and staying aligned with societal and regulatory developments. Innovation and 'regional' diversification are key to success. Research in itself is needed as a driving force of innovation.
- C: More applied and business driven research, involving farmers, advisers and supply chain partners, is needed. Relevant research should adopt a systems approach covering social, economic, environmental and technical aspects.
- R: Create 'Precision Farming living labs' and collaborative networks.

# Take home message

- data compatibility and handling are important issues
- utility of many PF applications has not been fully demonstrated
- missing cost/benefit analysis
- lack of user-relevant research at both basic and applied levels
- technology development will stimulate interactive innovation
- lack of resources that are necessary for business-driven innovation to enable a market uptake.
- PF needs collaboration of stakeholders in order to achieve widespread EU farm adoption.
- Operational Groups can stimulate and help spread the innovations

# Thank you for your attention

Info on website:

<https://ec.europa.eu/eip/agriculture/en/content/mainstreaming-precision-farming>



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