ICT-AGRI Call 2015
Enabling Precision Farming

16th February 2015

Content

1 Aim and scope of the call

Precision Farming is a key element in Sustainable Intensification, i.e. increasing food production with smaller environmental footprints. The defining characteristic of Precision Farming is the ability to operate on a narrow scale, e.g. individual animals, subsets of fields or individual plants. This is made possible by sensors to observe the state of nature, artificial intelligence to derive appropriate actions, automated machines to execute the actions and ICT to bind these elements together. Precision Farming can thereby contribute to solving the following main global challenges:

- Increase resource efficiency
- Reduce waste and emissions
- Increase animal/plant health and welfare
- Increase food safety
- Reduce human labour force

Although Precision Farming has been studied and developed for more than two decades, adoption of the technology in primary agriculture is still low. The extensive review of Precision Farming technologies in the ICT-AGRI 2015 Action Plan demonstrates that operational PF solutions need to include several inter-connected components. Another observation is that many of these required components are available as R&D results or on the market. There are, however, needs for research, development and innovation concerning the adoption of Precision Farming in primary agriculture.

There are obvious advantages of addressing these needs in transnational projects. A well-documented hindrance for adoption is the lack of compatibility of the components in a PF solution. Improvements of compatibility require standardisation, de jure or de facto, on the European and even international scale. The large development costs of PF solutions are a hindrance for profitable innovation by enterprises on a national or regional market. It is therefore vital to establish methods for adapting PF solutions to national or regional conditions regarding language, climate, data exchange, etc.

Further information is available in the ICT-AGRI 2015 Action Plan.

The aim of the ICT-AGRI Call 2015 is to fund transnational projects, which will contribute to enabling precision farming.

2 Definitions

The term “Precision Farming solution” means a combination of sensors, decision support, machines and ICT that facilitate operation on a narrow scale. It applies to livestock, field crops, orchards, green houses, etc.

The term “transnational Precision Farming solution” means that the solution is made ready for adaption to different national or regional conditions regarding language, climate, data exchange, etc.

The Precision Farming solutions addressed by proposals to this call may traverse different development and innovation stages during the course of the proposed project. This is described by the following nine Technology Readiness Levels (TRL) adopted by Horizon 2020 (for a detailed TRL description see http://en.wikipedia.org/wiki/Technology_readiness_level.)

- TRL 1 – basic principles observed
- TRL 2 – technology concept formulated
- TRL 3 – experimental proof of concept
- TRL 4 – technology validated in lab

- TRL 5 – technology validated in relevant environment
- TRL 6 – technology demonstrated in relevant environment
- TRL 7 – system prototype demonstration in operational environment
- TRL 8 – system complete and qualified
- TRL 9 – actual system proven in operational environment

The TRLs are related to common research, development and innovation terms as follows:

- TRL 1 – 5: Applied Research
- TRL 6 – 7: Experimental Development
- TRL 8 – 9: Pre-commercial Development

For this call the following definitions apply:

- A relevant environment is a commercial farm, orchard, vineyard, green house, etc. or similar at a research organisation
- An operational environment is a commercial farm, orchard, vineyard, green house, etc.

3 Themes and topics

3.1 Theme 1: Methodologies for transnational Precision Farming solutions

Projects are expected to address specific factors that presently hinder the adoption of Precision Farming in primary agriculture by developing methodologies that can be applied in PF solutions aimed for transnational use.

Projects must address one of the following topics:

1.1 Compatibility and interoperability of the components in PF solutions
1.2 Cost-benefit analysis of PF solutions

Theme 1 projects have the following characteristics:

a) **Interaction with Theme 2 projects.** Projects are required to offer methodologies being developed in an operational form to concurrent projects under Theme 2 within two years from the start of the project.
b) **Compatibility and standardisation.** The methodologies must be based on open standards (preferably existing standards), which ensures implementation applicability in any country.
c) **Industry and organisation involvement.** The project consortium may include one or more industry and organisation partners
d) **Exploitation.** The consortium must deliver an exploitation analysis or plan with the application and at the end of the project (the latter based on project results), including any plans for commercialisation of project outcomes.

The maximum funding of projects in Theme 1 is €300,000.

3.2 Theme 2: Implementation of transnational Precision Farming solutions

Projects are expected to address cases of implementing Precision Farming solutions in an integrating, multi-actor and interdisciplinary fashion. The aim is two-fold, firstly to achieve cases of operational transnational PF solutions, and secondly to derive common knowledge about implementing operational PF solutions from the cases.

Projects must address one of the following topics:

2.1 Variable rate application of fertilisers, water or pesticides
2.2 Controlled traffic farming (position controlled farm operations)
2.3 Precision Livestock Farming

Theme 2 projects have the following characteristics:

e) **Start and end TRL.** The consortium must clearly indicate the TRL of the Precision Farming solution at the beginning of the proposed project and as the expected outcome of the project.
f) **Transnational implementation.** The project must implement the PF solution in relevant or operational environments in each of at least three countries
g) **Compatibility and standardisation.** The PF solution must be based on open standards (preferably existing standards), which ensures implementation applicability in any country. It is recognised that work on open standards will take place concurrently with the integrating projects and it is therefore not mandatory to define the standards in the proposal.
h) **Industry involvement.** The project consortium may include one or more commercial partners, preferably but not necessarily SME
i) **Adoption.** The consortium must deliver an adoption analysis with the application and at the end of the project (the latter based on project results), including: Utility in different farming systems and geographical areas; compatibility with existing systems; social factors influencing farmer uptake; cost-benefit analysis.
j) **Exploitation.** The consortium must deliver an exploitation analysis or plan with the application and at the end of the project (the latter based on project results), including any plans for commercialisation of the Precision Farming solution.

The maximum funding of Theme 2 projects is €1,000,000.

4 General conditions

- Consortia must include partners from at least three countries providing funding to the call
- Partners from countries not providing funding to the call may participate on own funding
- The maximum duration of projects is 36 months
- Expected start of projects is 1st January 2016

5 Funding Agency regulations

Funding is subject to regulations of the national or regional Funding Agencies. Regulations typically affect:

- Ability to fund only consortium members from the agency's country (virtual pot)
- Ability to fund public or private bodies and/or different conditions
- Ability to fund only a part of the nine TRLs.
- Maximum funding per project

6 Researcher mobility and career

The ICT-AGRI ERA-NET is strongly committed to the principles of researcher career progression and researcher mobility in line with the objectives of the European Research Area. In line with this, applications are required to demonstrate a career development plan for all non-permanent researchers recruited to the prospective projects. Examples of training activities can include:

- Training through research (i.e., the knowledge and experience gained through undertaking the funded project)
- Secondments between industry and academia or between different disciplines (e.g., ICT and agriculture).
- Transferable skills training (e.g., IP management, grant writing skills, entrepreneurship, leadership etc.)
- Discipline-specific training (e.g., new techniques, training in the use of particular instruments etc.)

The examples given above are not prescriptive. The career development plan should be tailored for the project and to take advantage of the skillsets and resources of the consortium.

In addition, applicants are required to detail a plan to encourage applications from students and postdoctoral researchers in countries other than the host country (e.g., advertisement on Euraxess, circulation of advertisement through relevant European professional organisations etc.). The requirement here is to encourage and facilitate applications from outside of the host country. The final choice of candidate will rest with the host institution.

7 Open Access

Published scientific articles that are the result of full or partial financing from ICT-AGRI must be made freely available to all via Open Access in accordance with the *ICT-AGRI-2 open access guidelines,* available from the ICT-AGRI website.

Technical details, including standards for information exchange, must be published in appropriate fora as far publication is not in conflict with IPR rights as agreed by the consortium.

8 Call procedures

The funding of the call is provided by national funding agencies in a virtual common pot, meaning that each funding agency will only support project partners from the same country. The funding agencies, their available funds and their specific conditions are published on the ICT-AGRI website along with the online proposal preparation and submission system. Public and private organisations from countries not represented by a funding agency or not eligible according to funding conditions are welcome to participate in proposals with own funding.

The call is in two steps, pre-proposals and full proposals, followed by negotiation of contracts with the funding agencies supporting funded projects.

8.1 Pre-proposals

Pre-proposals are evaluated by the funding agencies on criteria concerning submission before closure, formalities of the application in relation to guidelines, eligibility for funding, relevance to the themes and topics of the call, excellence of the consortium and expected outcomes of the proposed project.

The funding agencies decide jointly on pre-proposals to be invited for full proposals. The number of pre-proposals selected for full proposals will be approximately the double of the expected number of funded projects. Due to the need for matching the funding requested by pre-proposals to the availability of funds on a national basis, ICT-AGRI reserves the right to suggest modification of budgets or modification of consortia.

8.2 Full proposals

Full proposals are evaluated by an independent panel of experts on criteria concerning relevance to the themes and topics of the call, excellence of the consortium, quality of the work plan and expected outcomes of the proposed project. The expert panel will make a joint recommendation for funding of projects. Funding decisions are taken jointly by the funding agencies, primarily based on the expert panel recommendations, but also with considerations to matching the funding requested by full proposals to the availability of funds. ICT-AGRI reserves the right to suggest modification of budgets or modification of consortia.

8.3 Negotiations of contracts for funding of projects

The consortium members of selected projects are funded directly by national funding agencies. The negotiations of contracts will follow immediately after the selection of projects to be supported.

9 Important dates

Open for submission of pre-proposals	16 February 2015
Close for submission of pre-proposals	24 April 2015
Open for submission of full proposals	30 June 2015
Close for submission of full proposals	31 August 2015
Notification of funding decisions	14 October 2015
Expected project start from	01 January 2016