D.T2.1.1 WP2 OPERATIONAL METHODOLOGY TO CREATE A TRANSNATIONAL COLLABORATIVE INDUSTRIAL ENVIRONMENT

D.T2.1.1 CREA

Version 1

INTRODUCTION

The scope of WPT2, which is the core of the Trasfarm 4.0 project, is:

- To verify whether a collaborative open innovation environment, where companies, clusters, R&D performers and farmers are engaged in industrial joint undertaking and mutual cooperation, could accelerate the uptake of new solutions for precision farming by the end-users (primary sector);
- To address regional specialization in precision farming as recognized and effective driving force of the Smart Specialization Strategy.

After a preparation phase (AT2.1), where specific clusters'companies and model farms are identified and coached for the cooperation according to the joint technological agenda contained in the business plan (AT1.4), one pilot action consisting in 3 joint industrial undertaking actions (case studies) is sparked (AT2.2). The 3 case studies cover the 3 crucial innovation domains of precision farming (ref: EIP-Agri): new ISOBUS application (D221), remote and proximal sensing (D223) and big and smart data management (D225). Pools of engineers and R&D performers from Transfarm consortium bring some tech-concepts (based on previous research) to a TRL7 by final prototyping and tech optimization. For each case study, demonstration is carried in some model farms (D222-4-6). The collaborative open environment would let exchange individual specializations (in robotics, IT, geo-diagnostic, mechatronic) to bring innovations closer to end user market (CE farmers). Agronomic, technical, environmental, ethic and ISO standards validations is implemented in AT2.3. One Terms of Reference for transnational open innovation for precision farming and one Transnational business peer-reviews let the partnership understand the validity of the Transf@rm business model of tech transfer in PF, commercial value of joint cooperation and the perspective business deals to encourage exploitation.

WP2 OPERATIVE STRUCTURE

As mentioned above, the activities planned in the WP could be structured within this scheme:

- Preparation of activities and coaching of pilot action actors
- Implementation of Pilot actions in a transnational environment
- Verification of joint industrial undertaking in business and smart specialization

In the following paragraphs it will be presented every step in detail. The activities should performed with a day by day commitment, considering always a transnational collaboration among the project performers and participants. The reference partner for the activity will be CREA, it should be informed about each decision and work took by the PP.

Preparation of activities and coaching of pilot action actors

In this first step, the identification of the technology performers in the pilot actions is planned (D.T2.1.2). Each project partner should identify a pool of engineers that are available to work in a trans-collaborative environment within clusters or industrial partners. The expert identification should be performed by the searching of professionals in the PF contest, or with a solid background in the agricultural machinery industry. Important will be to consider also the motivation of people to work within the project aims. A multidisciplinary team with background in several engineering fields (e.g. mechanical, mechatronic, informatics or agronomy) would be desirable. The work commitment of the team should be at least minimum to reach the pilot fixed goals respecting the deadlines of the project.

The successive step will consist in the individuation of model farms where to test the PF individuated solutions (D.T2.1.3). These farms should be chosen considering them as a benchmark of the farming system of that particular region and considering the possibility to have a good interaction with the industrial players. Once farms are selected and agreed to the project, they should be branded with INTERREG CE billboards. We think that three farms for each partner involved in Pilot A. should be fine.

The activities of this part will end with a technical blog and e-bulletins about pilot actions to promote and highlight the interaction among companies, industries and farms achieved with the pilot action implementation (D.T2.1.4). It will important to point out the uptake of legitimization about PF across the CE innovator communities in Europe but also outside. This

will have an importance for the further dissemination of pilot actions information and to catch up the attention from possible stakeholders. The dissemination can be provided in form of technical sheets (template can be prepared by one partner) and via a public blog by each partner, explained the activities performed and the goal achieved.

Finally, surveys to assess the response of open innovation performers within the pilot actions activities will be performed to verify the willingness to adopt the new transnational model of collaboration by farmers (D.T2.1.5). This will be useful to understand the posture/response of different target groups individuated during the project activities towards the new model of tech-transfer explored. A template of the survey could be prepared by one partner and the spread via for e.g. Google surveys. A final report that summarize the answers get by the target groups is prepared then.

Implementation of Pilot actions in a transnational environment

This part will be the core of the WP2 activities, in which pilot actions will be implemented in a real scale scenario. It will consist in the constitution of PF case studies in the different field of application (ISOBUS, remote and proximal sensing and big and data management).

Tryouts of the technological systems for the planned activities will be performed in a trans-open innovation environment, with the participation of agronomists, Transfarm 4.0 clusters and farmers to bring innovation close to the market (D.T2.2.1, D.T2.2.5, D.T2.2.9). This will be performed to check the feasibility of the PF intervention. The PPs should be active in its promotion and try to involve strategic specialists for the achievement of these activities.

Two mini projects per each field are also planned (D.T2.2.2, D.T2.2.6, D.T2.2.10). Possible innovation hubs, preliminary project ideas and tech protocols to perform have been individuated (Table 1).

The tests will be performed during the cropping season under protocols and guidelines previously prepared from each partner (D.T2.2.3, D.T2.2.7, D.T2.2.11). A possible time plan for the activities could be:

- Pilot action 1 (ISOBUS): Test in demo farm of smart seedbed system in March, April 2021
- Pilot action 2 (remote and proximal sensing): Test in demo farm of the smart sprayer system during the growth season of vineyards/orchard farms, possible timeplan of the activities: May 2021 to August 2021

- Pilot action 3 (big data management): Test in demo farm of the smart cloud platform during the growth season of vineyards, possible timeplan of the activities: May 2021 to September 2021.

Once the activities are performed and the planned results are achieved, final report per each activity will be provided (D.T2.2.4, D.T2.2.8, D.T2.2.12). The transnational approach used to conceive the new smart solutions should be highlighted in the report, with particular attention with the cluster, farmers and tech performers collaboration. This will be important to understand the effects of a transnational collaboration for the achievement of PF development.

Table 1: Case studies, technological trajectories, tests and possible hubs for the pilot action activities

Case study	Technology Trajectory	Tests	Possible Hubs
One joint industrial undertaking to tests new ISOBUS application (case study 1)	PF mini project within the trajectory ISOBUS, likely 1. Smartseeding/seedbed preparation	Verify the functionality of devices in a real operation. It consists in the development of demo tests by selected model farms during cropping season. Tests developed for extensive agriculture like maize, wheat or more site-specific like vineyard.	Austria Poland
One joint industrial undertaking in remote and proximal sensing (case study 2)	PF mini project within the trajectory PROXsensing, likely 1. remote/proximal control automation for vineyard pesticides spraying	Tests in environment to verify the functionality of devices in a real operation. Sensors conceptualized in are installed on farming machines and tested in some model farms.	Italy Slovenia
One joint industrial undertaking in big and smart data management (case study 3)	PF mini projects within the trajectory BIGDATA & SmartDATA, likely 1. Acquisition of field data trought environmental sensors and elaborations of them with FIWARE platform	Test in environment to push industry standard for managing agricultural data & check effective use & sustainability of data extracted from IoT-powered precision farming. A pool of model farms concerned.	Austria Ungary

Verification of the joint industrial undertaking in business and smart specialization

The last part of the WP tasks consists in the verification of the impact of joint industrial undertaking in business and smart specialisation.

As first, a middle checkpoint is forecast with an interim event during the Maribor steering committee meeting. The debate will focus on thematic RIS3 focus groups, in order to discuss about the AT2.2 activities and evaluate a political vision around CE support schemes for regional systems operating in PF advanced manufacturing (D.T2.3.5). A report of this activity is required.

Once the pilot activities are achieved, the first step will be to deliver an evaluation of the improvements gained in the model farms thanks to the introduction of PF (D.T2.3.1). It is expected brief papers where are presented the results in terms of farms performances before and after PF implementation, highlighting positive and negative implications derived by the technology introduction. A comparative test during the pilot action would be advisable, where a control (state of the art of the farm) is compared with a tech solution (application of PF). This will allow to get unconfutable results necessary to build explanatory tables and graphs useful for the report. Of course, methodology to get the yield results should be presented in this report.

Secondly, analysis about the environmental tradeoff, social and labour ethical impacts and compatibility with international ISO standards have to be performed in order to evaluate the cross-cutting items requested by the market (D.T2.3.2). This could be done via an analysis of the impacts that PF entails. In addition to this examination, a cost/benefit analysis will be necessary to provide terms of reference for PF exploitation (D.T2.3.3). This will be done by clusters with the aim to spread PF among farmers.

As conclusion, a transnational business peer-review to assess impact and sustainability of transnational collaborative environment is expected (D.T2.3.4). The analysis should be focused on the importance of a transnational collaborative environment to bring innovation to the market, and whether this model works.