



DSS Tools Validation Document

Author: UCY



FARM: Fostering Agriculture
Rural Development and Land Management



Executive Summary:

The purpose of this document is to provide a clear understanding to all partner organizations and other interested readers of the validation procedure and questionnaires of the FARM DSS tools.

Contents

Executive Summary: 2

1. Low fidelity validation 4

2. High-fidelity prototypes validation 6



1. Low fidelity validation

For low-fidelity prototype validation, we send some questions to all the partners in order to get their thoughts. Partners found the functionality adequate. They said that it is a very general approach, but this leaves space for adapting the systems to different crop and fruit types. They also suggested taking into consideration the weather-specific information (e. g. irrigation, fertilization), and also the soils.

Is the presented functionality adequate and suitable? Are there suggestions for any additional functionality? Should some of the functionality be removed?

Please give your reply here.

The functionality seems to be adequate. It is a very general approach, but this leaves space for adapting the systems to different crop and fruit types. However, the consideration of weather-specific information is very important (e. g. concerning irrigation, fertilization), but the soils are another significant parameter which has to be taken into account for any agricultural crop plant. So, the functionality according to consider soil information should be integrated adequately.

We also asked about the differences between Mobile and Desktop prototypes and their differences. Partners responded that we need to think about the screen size and the interaction methods (mouse, touchscreen, etc). In general, though they wanted the 2 tools to be similar with the same functionalities.

There will be two different prototype tools: (i) the mobile optimized version; (ii) the desktop web version. How should we distinct them? Which functionalities should go to each? Should the homepage change in the two versions? Should they have different quick access buttons? Should they accommodate different shortcuts to functionalities?

Please give your reply here.

Usually, the design of the different prototypes should be as equal as possible. A mobile tool may require some other elements as a desktop application (in terms of software development), however, this should not lead to two “very different” apps. The functionality for the mobile prototype should more or less look alike the desktop version. The homepage should only be different concerning those aspects that are different in the design and the functionality (if there are differences due to technical requirements).

Anyway, it should be taken into account that a mobile tool, running on smartphones, requires eventually another user interface – or even an adapted interface – in comparison with the desktop version (smaller display, no mouse, etc.). But the perceptibility of both applications should be preserved as much as possible.

Our next, and last question was about the soil. We asked some more information regarding the information that we need to provide. Partners answered with some important parameters such as type, humidity and pH value.

It was suggested that we add the parameter of “Soil” into consideration in the DSS. What functionality could that be? What should we be taking into consideration (soil quality, chemicals, etc)?

Please give your reply here.

As mentioned above, soil information is very important. The question is, to what extent, or level of detail soil information should be integrated. This does not necessarily mean that very specific parameters (such as cation exchange capacity and others) should be integrated, but at least:

- the soil type (sand, silt, clay),***
- humidity of soil (available moisture),***
- and possibly the pH value.***

Even the soil type would represent, e. g., the dependence of the soil, in which the plant grows, and resulting necessities according to watering.

Maybe, the functionality should be implemented in such a way that, if information is not available, the app will even work.

When choosing soil for N plant cultivation, it is necessary to study its agrochemical properties before planting.

When fertilizing a plant, it is always necessary to know what nutrients the plant lacks that are not present in the soil.

For example, sandy loams and light to medium loams, which contain more than 100 mg/kg of mobile phosphorus and potassium, have a pH value of more than 6.0, and humus more than 2.00%, are the most suitable for sea buckthorn.

The field must be well worked, the growing weeds are eradicated and prepared for planting the plants.

Considering the agrochemical properties of the soil, it is fertilized with organic and mineral fertilizers, paying attention to the lack of individual nutrients in the soil.

After further research and communication with the partners we decided on the things that we need to adapt or change and we continued with the high-fidelity prototypes.

2. High-fidelity prototypes validation

For the high-fidelity prototype validation, we had a questionnaire. Most people answered that using these tools would enable them to accomplish agricultural tasks more quickly and also that it would improve their performance. The majority also responded that these tools would enhance their effectiveness and it would make it easier for them to accomplish their agricultural tasks. Furthermore, only one person thought it will be more difficult to accomplish their task with the use of the tools while another one thought it will not make any difference. The rest of the people that have answered the questionnaire believed that it would be easier to accomplish their tasks with the use of the tools. All of them found the prototypes and therefore the potential tool easy to use, clear and understandable.

For the final section of the questionnaire, we used the User experience Questionnaire, a fast and reliable questionnaire to measure the User Experience of interactive products. The scales of the questionnaire cover a comprehensive impression of user experience. Both classical usability aspects (efficiency, perspicuity, dependability) and user experience aspects (originality, stimulation) are measured. We can clearly see that in all predefined categories, our tools were above average and most times good or excellent.

