Wearables and the farmer

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Abstract: Most farming operations involves using your hands, but often the farmer need to have an ongoing communication with other persons, equipment or supportive systems as he goes along. That's why wearable computing has caught interest amongst organizations and companies servicing farmers.

Wearable computing technology is a new class of emerging technologies which – before you start scratching the surface - typically fall in the class of smart glasses or smartwatches. These devices allow for hands-free operation, and enable you to wirelessly link to your existing smartphone or tablet. But there is so much more under the surface than meets the eye.

At SEGES (former Knowledge Centre of Agriculture) we are running a project with a twofold aim:

a) To what extend can we connect existing databases and supporting systems to wearables for context dependent information delivery and/or registration of data?

b) To what extend are farmers willing to wear wearables?

We are working with a broad selection of wearables such as

- Smart glasses which means Google Glass,

- Smart watches including Moto 360, Pebble and Pebble Time[1] and Apple Watch[1],

- Hearables which at current means wireless headphones The Dash[1],

- Smart rings and gloves which at current means Proglove.

The field of wearables develops at a high speed, and it can be expected to see devices and technologies take the scene of attention at the Peak of Inflated Expectations on the hype curve (Fenn & Raskino, 2008) for thereafter temporary (or forever) disappearing into oblivion until the technology matures to become useful in practice. Google Glass is an example of a device falling into Trough of Disillusionment on the hype curve, while Oculos Rift and Microsoft HoloLens are climbing to the top.

Realizing these mechanisms, our work focus primarily on identifying needs that can be fulfilled using wearables and the development of API's to handle communication between existing databases and system and new devices. In cooperation with Business Academy Aarhus, we have – with Google Glass as defining concept - identified potential use in a number of areas:

- Delivering context relevant information - 11 examples,

- Monitor and control technical equipment – 6 examples,

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[1] Hands-on are awaiting that these devices can be purchased

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- Multimedia supported communication between persons – 11 examples,

- Locating equipment, animals and people – 7 examples,

- Context aware alerts – 6 examples,

- Data collection on the spot – 7 examples.

As a proof-of-concept, we have developed an app for Google Glass, so the farmer looking at a cow, can ask Google Glass to lookup information about production level, health record and pedigree for that cow.

For product success no matter what kind of wearable, the benefits must hugely outweigh the effort to adopt and disadvantages such as the risk of distracting the user from the real world. Norman (2013) explains that when technologies are used to supplement our activities, when the additional information being provided is of direct relevance, our attention can become more highly focused and our understanding and retention enhanced. When the additional information is off target, no matter how enticing it is, that's the distracting and disruptive side. Answers to both a) and b) have to be positive, before it is relevant to consider wearables for farmers.

Therefore, through tests in practice, we are screening how different wearables fit into the farmer's various work situations and acceptance of the farmer. We are doing these screening focusing on six factors that according to Buenaflor & Kim (2013) play a key role in the acceptance of technology: fundamental needs, cognitive activity, physical aspect, social aspect, demographic characteristic and technical experience.

These tests are done using whatever standard apps come along with a device. It is too risky up front investing resources in developing farm specific apps, without knowing whether the farmer will ever wear the wearable. This approach besides filtering for lack of acceptance also gives valuable feed-back with new ideas for use in practice: When a farmer experience what technology can do, he will often come up with ideas how technology could cover his specific needs.

At current, we are in real farming situations screening use of Google Glass, and have planned screening use of Moto 360 & Pebble smartwatches and the Dash hearphones in first part of 2015. Depending of readiness for market, other of mentioned devices will also be screened.

References

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