"Applepicking' and 'Have you bean there?": Will they solve the loss of genetic diversity?

Both climate change and the increasing global population pose a threat to many ecosystems. Identifying and mapping new and rare species could be one of the solutions to tackle those issues and ensure food security (Cope *et al.*, 2012).
Therefore, in line with sustainable development goal (SDG) 2.5 which *inter alia* involves the management of diversified seeds and genebanks at the national, regional and international level, we believe that it is important to increase the public awareness of genetic diversity loss (SDSN, 2012).

New and existing crop species are needed for the purpose of improving yields to sufficiently feed the world's population.

Many solutions have been already proposed, though, more action is needed. Hence, to maintain genetic diversity and enhance the knowledge about the value of genetic crop diversity we need the contribution of citizen scientists' initiatives .

Recognizing the crucial role that existing technologies play in nowadays life, we suggest developing applications in the form of games that will stimulate citizens awareness, and help scientists conserving genetic diversity, while they are having fun playing with it and receive satisfying rewards for their aid.

Besides, we are strongly convinced that educating firstlly children, then young teenagers and adults is of pivotal importance. That is why we idealized two applications. The first one, *APPlepicking*, uses pictograms and visuals to target children (and their parents). The second app, *Have you bean there?*, targets youths or adults and it is more complex because it will engage the users in taking pictures of a species when they collect seed, aiming to contribute to the genebank. Also, the app provides the users with other qualitative and quantitative information such as taxonomy. Both of those applications will be directly connected to the existing genebanks.

Short description of the App:

APPlepicking/ APPel

Goals:
- Inventory of different species of apple trees (e.g. in the Netherlands) and found old or new species.
- raise awareness among children about genetic diversity in food crops and in general. Children get points when they discover a tree. In case of a new tree they get more points.

Target group: children (and their parents)

Scale: The Netherlands/ the States

- Kids finds an apple tree at a random location, the location will be saved in the app and the scientists can identify what kind of variety is at that location. Possibly, imaging techniques can assist in identification
- The previous is translated in a creative story that motivates children to 'save and discover new and lost family members of their tree friend, which is the main character in the game'.
- The benefit for scientists is that different varieties (in situ) will be mapped.
- The app has a GPS which is linked to a database to determine the location of the tree (a comparison to existing in the database)
- More points awarded for finding new or old species.
- Additionally, children learn about biodiversity and form the basic in understanding the importance of genetic diversity

<u>How to play the game?</u>

*A talking tree will delivery a story about his family been threatened by a disgusting enemy who has disseminated his family members through the streets before cooking them for his apple taart . It will ask the help of children to chase after the enemy and find out where his relatives are with the promise of offering a travel to a funfair (e.g. Efteling) for the whole family if they will find all of his members. The **goal** of the game is to save the family of the apple tree. Children will try to find apple trees in real life. The variety will be determined by image recognition. You can only play the game if you are surrounded by apple trees, you need to find them physically.The family members represent different varieties of high stammed apple trees.*

References

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