NOT-EQUAL

EPSRC NetworkPlus: Social Justice through the Digital Economy

Project Final Review Form

Please submit this form within one month of completing your project to **notequal@ncl.ac.uk**.

GENERAL INFORMATION	
Lead Applicant (PI): Leanne Townsend **Email address:** leanne.townsend@hutton.ac.uk **Job Title:** Senior Social Scientist **Department:** Social, Economic and Geographical Sciences (SEGS) **Organisation:** James Hutton Institute	**Co-Investigators (names and organisations):** Christina Noble (James Hutton Institute) Simon Robinson (Swansea University) Jen Pearson (Swansea University) **Supporting Partner(s):** Scottish Crofting Federation **Project Title:** Smart Small Farms **Project Reference Number:** NE66

1. SUMMARY

Please outline the research challenge and question your project aimed to address, in less than 100 words.

Smart farming technologies (SFTs) are most often adopted by large farms: the larger the farm, the more likely it is to benefit from (and be able to afford) technological advancements. Hence, whilst large farms enjoy the benefits of the digital economy, smaller farms are left behind and suffer competitive disadvantages. This represents an *agricultural digital divide* illustrating both winners and losers where the use of digital technologies is increasingly prominent. "Small Smart Farms" worked with crofters on the West Coast of Scotland to create pathways to accessing the benefits of digitalisation through the co-creation of prototype technologies.

2. APPROACH

Please provide a summary of the approach of your research project, including any deviations from your work plan, the reasons for this and how you addressed any issues.

In our project proposal, we aimed to 1) conduct participatory workshops with small-scale farmers to garner insights on the barriers and potential of SFTs for small-scale farming, and to co-produce ideas for prototype SFTs for use on their farms; 2) undertake rapid prototyping of SFTs based upon insights from the initial workshops; and, 3) conduct a second set of workshops to trial SFTs with farmers. Following the workshops, we aimed to communicate with farmers to obtain feedback on the trialling of prototypes on their farms.

We have had to deviate significantly from this workplan due to Covid-19. This includes project extensions finally bringing us to mid-November 2021 for the delivery of the project and project report. This has been necessary because a) we were unable to visit this remote rural community in person for a significant length of time, and b) because this is a rural community whose members were not experienced/confident with the use of online video conferencing tools, it was not possible to conduct any of our fieldwork online until the later stages. We eventually managed to arrange our fieldwork for the first week of October 2021. The prospect of only being able to conduct one fieldwork visit meant that we had no choice but to conduct the first part of the methodology online. This limited our outreach to potential participants; however, we were able to develop a working relationship with one crofter and community representative, and therefore decided to concentrate our research and prototyping on in-depth activities with this person, allowing for the collection of very rich and detailed data. Our first session with this participant (online) gauged the kinds of activity around a croft that could benefit from digital support. After this initial session Simon Robinson investigated four potential areas for innovation and developed two prototypes (a low-cost animal tag scanner and a simple poly tunnel temperature monitor) based on the information provided by our participant. During our in-person visit the prototypes were demonstrated, trialled on the croft and feedback was directly provided.

3. ACTIVITIES & OUTPUTS

Please list any outputs from your project to be entered in the Not-Equal Researchfish submission. These include events, publications, workshops, webinars, invited talks, media coverage and tools (please include links to open source, git-hubs if relevant) that have resulted from your project.

Please include the following for each entry:

Title: Trialing of SFT prototypes

Date: 6 Oct 2021

Type of Event: In-person (NW Highlands)

Number of People Reached: 1 (4 Included in the event)

Primary Audience: Crofter involved in co-design of SFT prototypes

Key Outcomes/Impact: Two prototypes were introduced based on previous online engagement and discussed. They were subsequently trialled on the croft and feedback was given directly on the utility and impact of each prototype. Feedback and discussion has continued since the project visit. Supply issues have impacted the creation of two of the prototypes suggested, but these are currently in development and will be trialled again with the same crofter after the project end date.

URL: Tag scanner prototype accompanying app:
https://play.google.com/store/apps/details?id=ac.robinson.animaltagscanner

4. INSIGHTS & IMPACT

Please describe the findings of your project and their significance in relation to potential or actual social impact.

During this project we have learned some important lessons concerning participatory research during a pandemic – especially where this concerns a remote rural community which is not particularly well connected or engaged digitally. We have learned how to adapt our research approach to embrace these challenges. We have produced a number of prototypes which are potentially transformational for crofters and other small-scale farmers. These will be further refined in the weeks following the end of our project.

5. REFLECTIONS & FUTURE DIRECTIONS

Please list the key highlights from your project, summarize any lessons learned from this work and outline any future directions or plans to continue activities beyond this project.

Key Highlights:
- Crofters and small-scale farmers can benefit from digital technologies if these are developed through a co-design process and with the needs of these farmers at the forefront.
- Useful areas for investigation uncovered so far include those which enable scanning and tracking of sheep tags, and the monitoring and redirecting of water based on temperature sensors.

Lessons Learned:
- Co-design research approach needs to take into account the possibility of unexpected events such as pandemics which may necessitate adaptability and redesign.
- It can be very challenging to engage with remote rural communities digitally, particularly at the initial stages.

Future Directions:
- More research is needed which includes small-scale farmers and crofters in the design of new technologies.

Further Information
If you have any further questions regarding this form, please contact notequal@ncl.ac.uk