# Citizen Science in the Digital Age: Connecting 'Unapplied Capacities' with 'Unmet Needs'

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# Outline

# 1.Introduction

# Objective

Building upon 2016 Fotheringham paper

Apply conceptual framework to new theme

Key Research Question:

How does Citizen Science (CS) relate to the digital economy? CDO objectives?

# What is Citizen Science?

Oxford Dictionary Definition (added 2014):

> citizen science *n.* scientific work undertaken by members of the general public, often in collaboration with under the direction of professional scientists and scientific institutions.

Practice or philosophy?

Common areas:

Positive Functions in Society

# 2. Citizen Science and the Digital Economy

# How Does CS Relate to the Digital Economy?

Preliminary nature of inquiry

Revolution of Web 2.0 and smartphones

'Unmet needs' and 'unapplied capacities'

New application for benefits of CS projects

What could this look like in 10 years?

# 3.    Method

# Method

Framework based on the role of participants in their respective projects

First examined ~30 projects, then inductively produced four categories and populated with the rest of the projects (n=145).

# 4. Framework and Analysis

# Four Categories of Citizen Science Projects

Active Data Collection

Passive Data Collection

Skilled Data Analysis

Unskilled Data Analysis

# Active Data Collection

Participants collect data

Usually have some knowledge of field

'Participatory monitoring'

Comprise the majority of projects surveyed (104 out of 145)

Overwhelmingly ecological in nature

# Passive Data Collection

Participants do not take specific actions to collect data

Usually monitoring some aspect of environment

Perhaps should not be considered as CS projects

Generally web-based

# Skilled Data Analysis

Participants use requisite knowledge to analyze data provided

Most commonly identifying objects in photos

Almost all created after 2010

# Unskilled Data Analysis

Participants analyze data; does not require specialized knowledge

Second most populous category (23 of 145)

Diverse subject matter

Most created after 2010

# 5. Case Studies

# Citizen Science Case Studies

Active Data Collection - eButterfly

Passive Data Collection - Safecast

Skilled Data Analysis - Agent Exoplanet

Unskilled Data Analysis - Old Weather

Platform - Zooniverse

# Private Sector Equivalents

Active Data Collection - Poimapper

Passive Data Collection - Google Traffic

Skilled Data Analysis - Unable to find example

Unskilled Data Analysis - reCAPTCHA

Platform - Amazon Mechanical Turk

# 6.    Discussion and Policy Implications

# Discussion

More avenues for connecting unmet needs and unapplied capacities as a result of digital innovation

Finding balance between open access and market incentives in policy making

CS can provide a guide in determining this balance and how to effect it

Opportunities for better leveraging human capital

# Lines for Further Inquiry

How could open data differentially benefit commercial interests?

How could the digital innovations discussed here be leveraged to increase end user innovation?

How could CS projects disrupt or become further integrated with existing systems that provide public goods?

# Questions and Discussion