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Understanding 'Relational' Resilience

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What is ARISE?

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Advancing Resilience and Innovation for a Sustainable Environment

ARISE is a project that aims to help communities identify, design, and evaluate ways to assemble community resources, build community resilience, and plan for a sustainable future.

KENT UNIVERSITY OF KENT AT CANTERBURY

University of Suffolk

UEA University of East Anglia

University of Essex

ESTUARY

PRIFYSGOL ABERYSTWYTH UNIVERSITY

Birkbeck UNIVERSITY OF LONDON

MANCHESTER 1824 The University of Manchester

Cefas

What is community resilience?

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What is it?

Resilience is the ability to anticipate, withstand, adjust to, and thrive after unplanned disruption or change.

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What is it?

Resilience is the ability to anticipate, withstand, adjust to, and thrive after unplanned disruption or change.

How do we think about it?

5 capitals: human, social, natural, physical, financial

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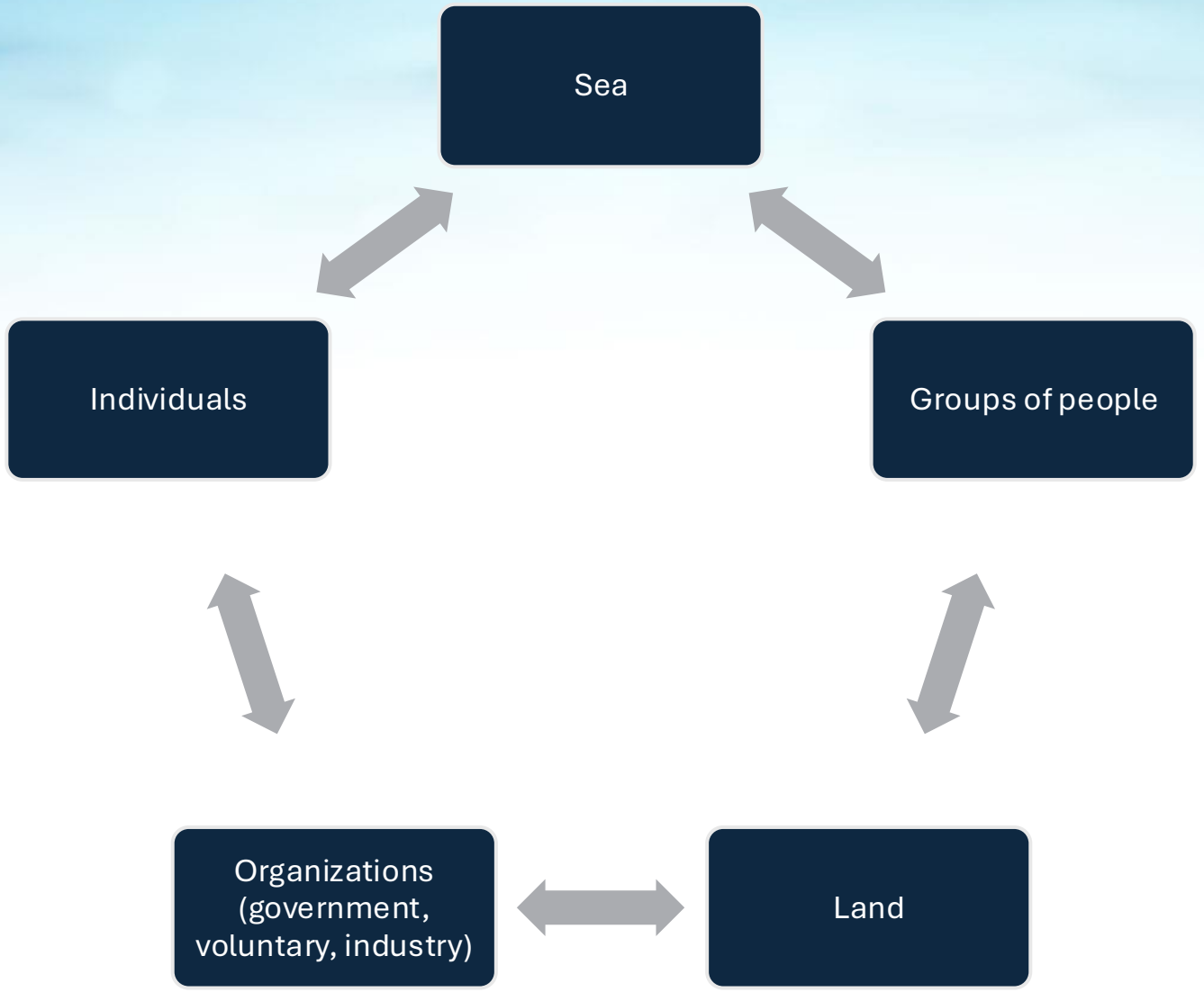

How might we help communities measure and understanding their 'resilience'?

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Project Aim

Develop a toolkit citizen scientist can use to capture and track markers of their community's resilience

This toolkit aims to be a collaboration between AI and humans - optimising workflow between the two

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Initial Work

Physical observation (data walks) visits to 16 sites across Norfolk, Suffolk, Essex, and Kent

For pilot walk, we used a structured survey to assess place-based indicators, including elements of heritage/culture, over three areas: **the commercial main street, a residential street, and a rural periphery space**

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Survey Development

Survey items are meant to capture multimodal data that could only be verified by in person observations

The 3 areas chosen are meant to explore the 5 capitals important for resilience

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Procedures

Prior to this walk-through, we randomly select 200 meters segments of the three defined areas

We have completed one set of systematic walk-throughs of each site

How do we validate this data and develop an optimised workflow?

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What is the ground truth?

We can compare our 'human gathered' observation notes/results to validate if commercial MLLMs can provide the same responses

Abascal, A., Vanhuysse, S., Grippa, T. *et al.* AI perceives like a local: predicting citizen deprivation perception using satellite imagery. *npj Urban Sustain* **4**, 20 (2024). https://doi.org/10.1038/s42949-024-00156-x

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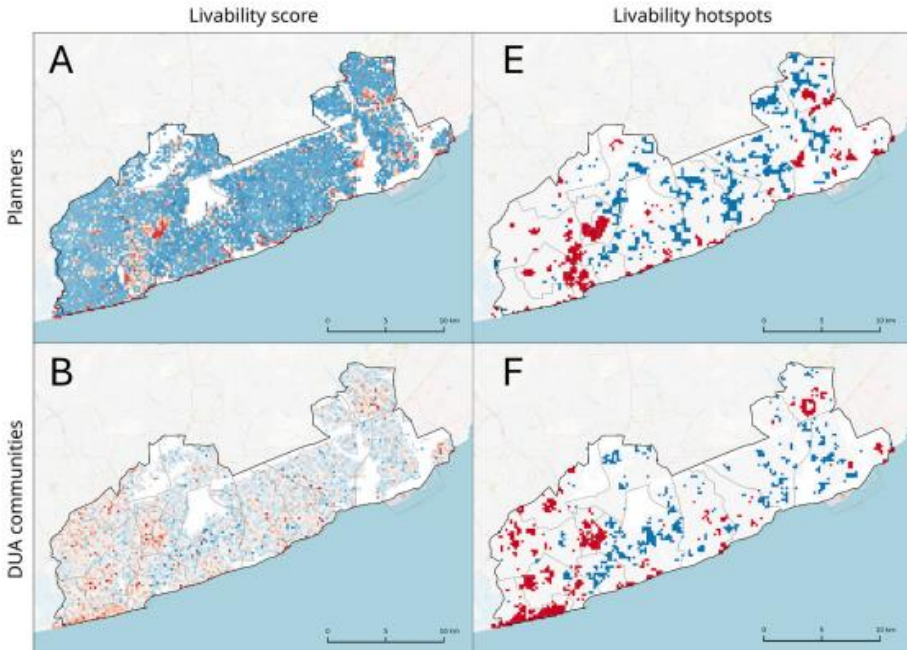
Macro data for causal links?



We can also use satellite imagery and data from the Office of National Statistics

Campomanes, F., Abascal, A., Oliveira, L.T. *et al.* Whose city is it? Mapping perceived urban livability with citizen-guided AI. *npj Urban Sustain* **6**, 16 (2026). https://doi.org/10.1038/s42949-025-00320-x

Howell, A., Wu, N., Bagchi-Sen, S. *et al.* Multimodal large language models, street view imagesand urban policy-intelligence: recovering the sustainability effects of redlining. *npj UrbanSustain* (2026). https://doi.org/10.1038/s42949-026-00380-7

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Who is using this toolkit?

While researchers have compared citizen scientist ideas of 'depravity' to see if AI and replicate this... that isn’t the point of this work

By tracking resilience, we want to explain and help to build it

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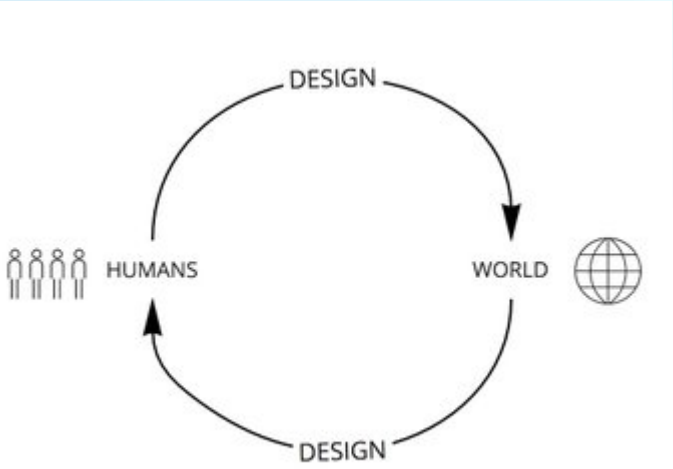

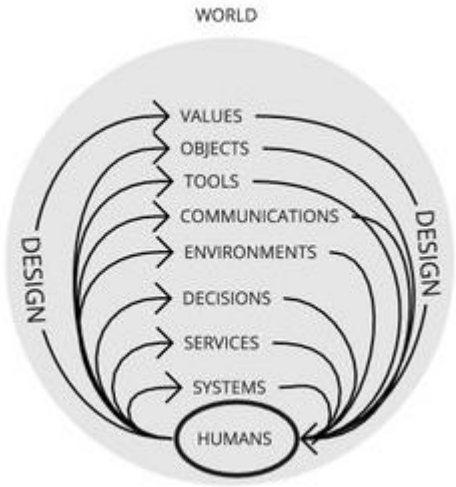

Ontological Design Approach

The idea that all design-led objects, tools, workflows, etc impacts humans

Frames development as 'being in the world' not as developing to solve a problem

Focuses on hermeneutic circling and 'acting back'

Image from @tara_campbell on X, https://x.com/tara_campbell/status/985660406063513605/photo/1

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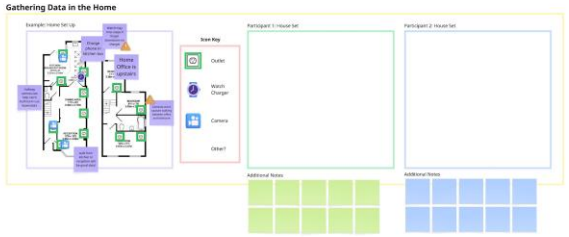
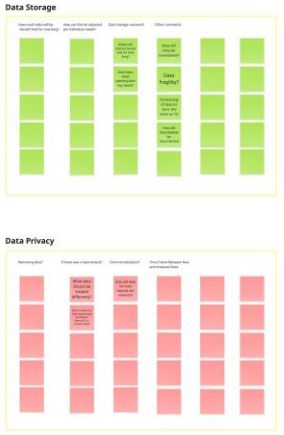
Following the Data Flows





Ontological design workshops done to help develop a complex AI system for monitoring Parkinson's symptoms