Where the Land Meets the Sea

Spatial-Computing Sandbox for Coastal Futures

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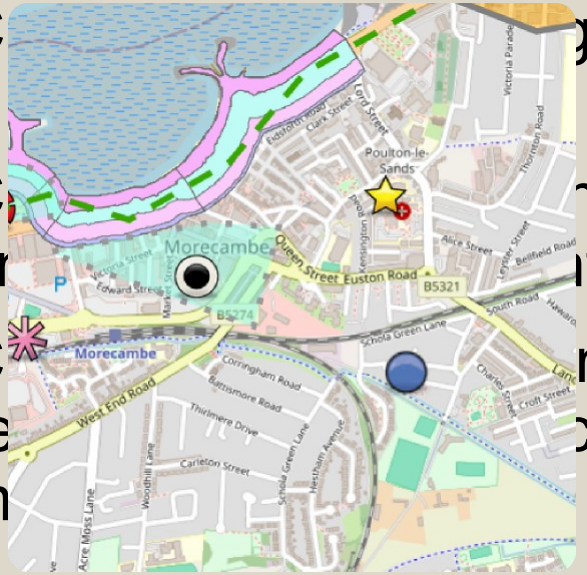
Coastal Planning Context & Challenge

- Shoreline Management Plans (SMPs)
- Long time horizons: 0–100 years
- Policy transitions & uncertainty
- Communities vs infrastructure?

Research Aims & Approach

- C… g fun… as
- C… mun… …ty?
- C… …ning… …coas…

MAP.SOCIAL



Community Mapping Platform - 1 year license.Anonymous mapping including annotation and image upload. Results exported as CSV. file for reporting.

TABLETOP GAME

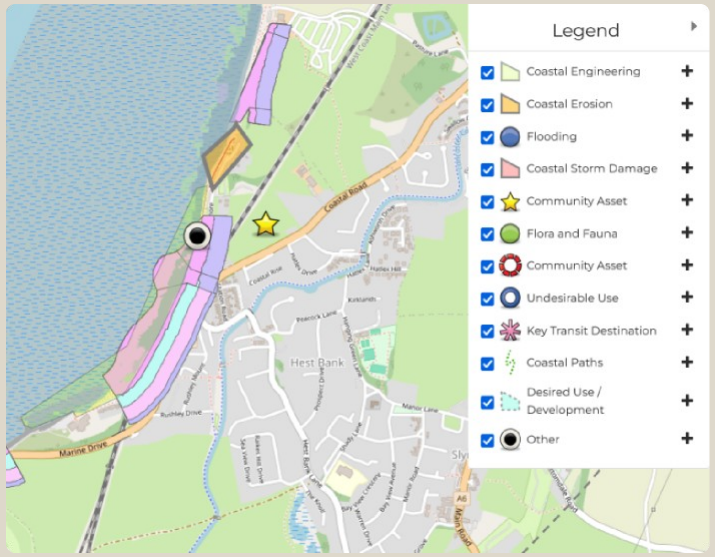
2x Copies Tabletop Game - consisting of 6x A1 game boards, card packs based on EA SMPs, counters and tokens. Hardboxes and Transport ready.

DIGITAL CHESSBOARD

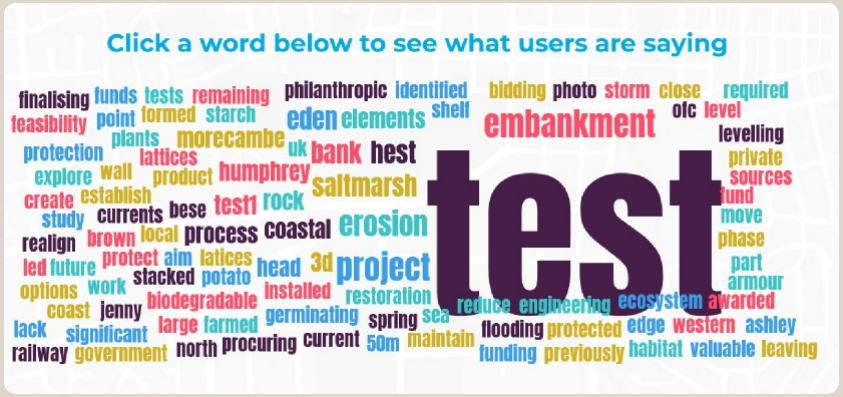
‘Digital Chessboard’ consisting of OfC sites, climate scenarios 2055/2105, coastal models and interactive ‘play pieces’ for interventions.

Tool 1: VGI Mapping Platform

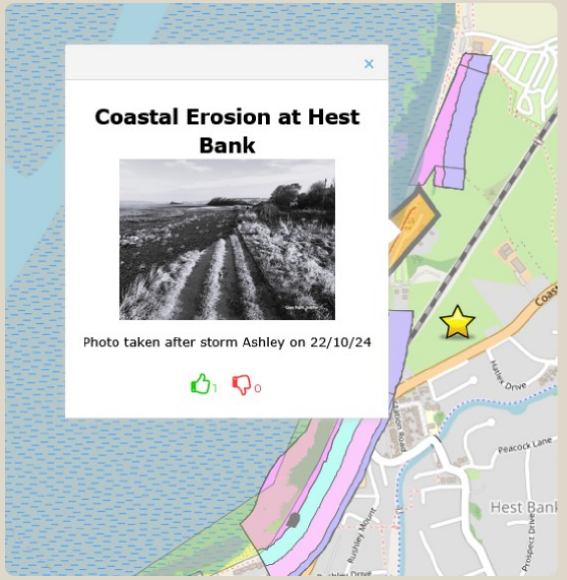
Label Catergories



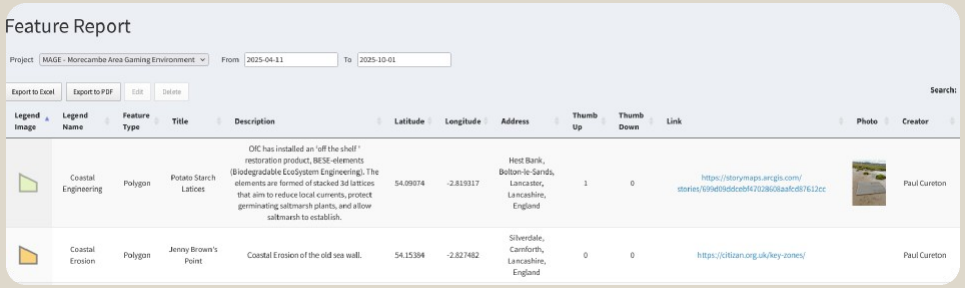
Live Word Cloud



Example Annotation



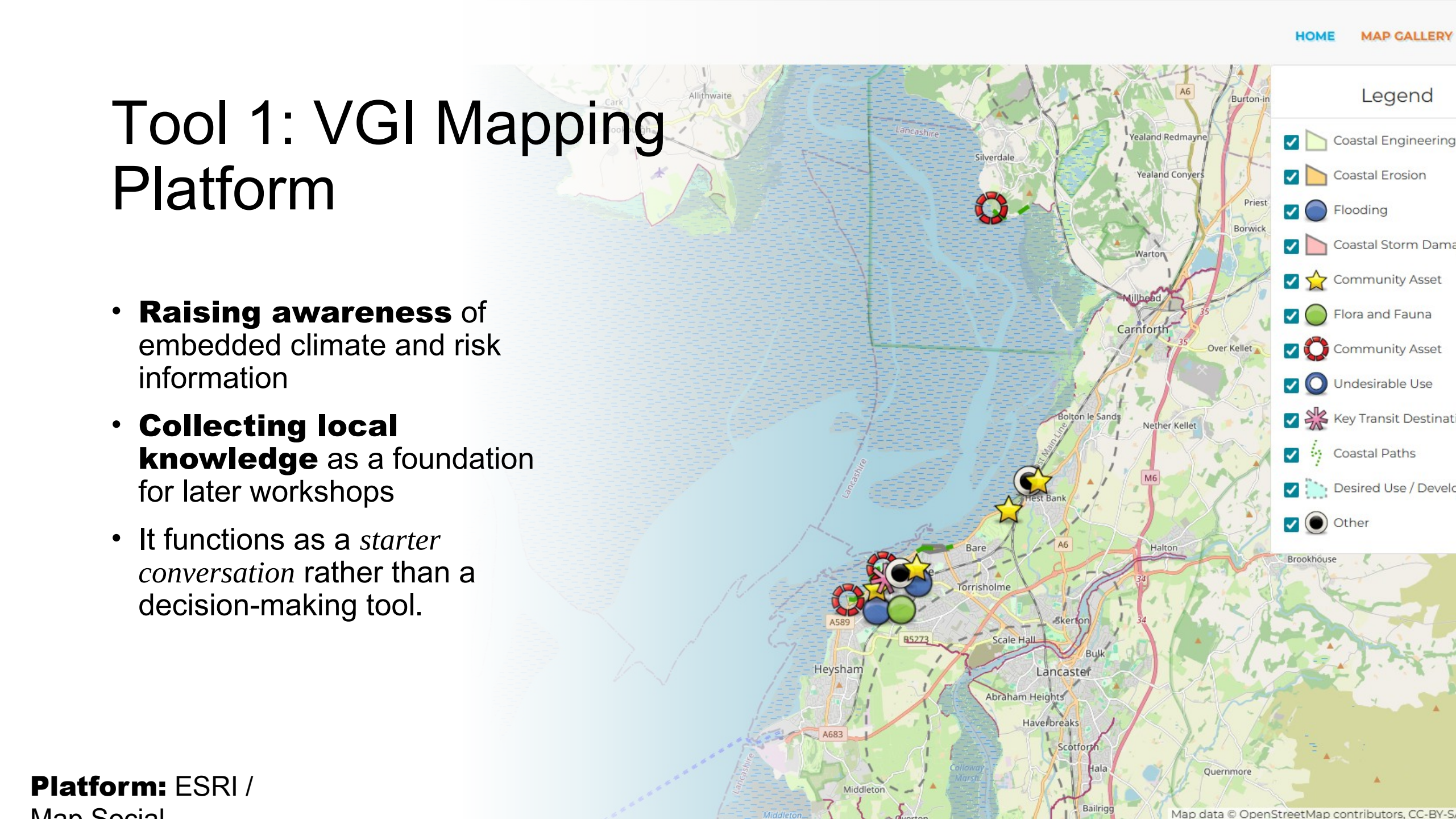
Feature Report



https://imagination.lancaster.ac.uk/project/lets-map-our-future-coast/

Tool 1: VGI Mapping Platform

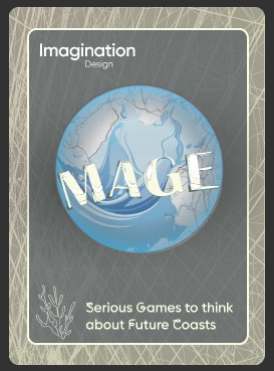
- **Raising awareness** of embedded climate and risk information
- **Collecting local knowledge** as a foundation for later workshops
- It functions as a *starter conversation* rather than a decision-making tool.

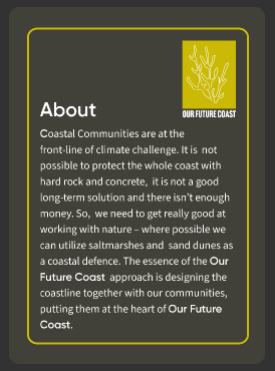


Platform: ESRI / Map Social

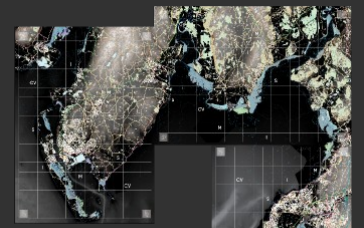
Tools 2: MAGE TableTop

Phase 2

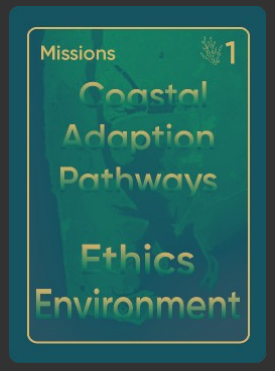


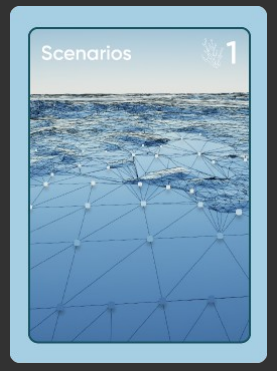


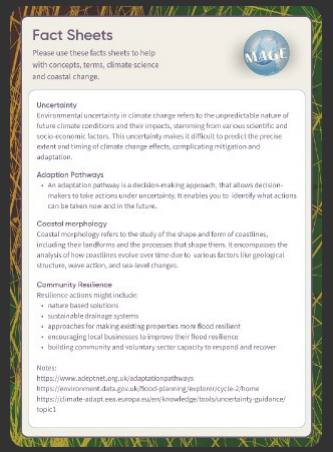
- Game Characters, inc. Sea Grass.

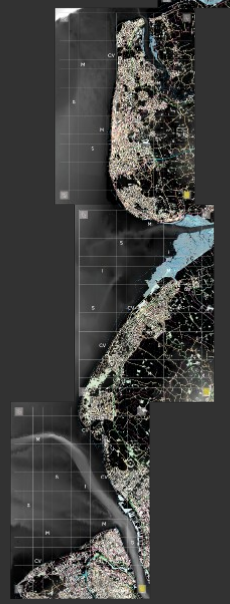


- All Connected Gameboards









- Cards: Community Values, Missions, Scenarios, Interactions. Game Fact Sheets.

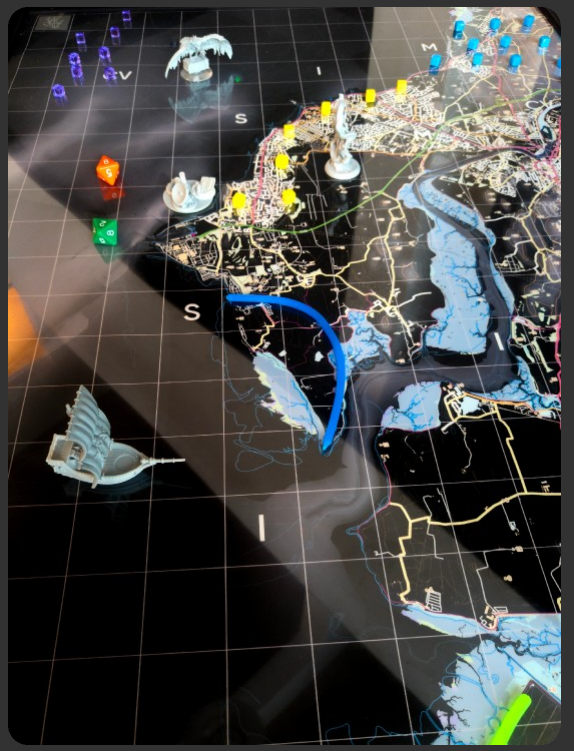
MAGE Tabletop Game System - Cards, Tokens, Characters and Game Map Boards (OfC) Extent.

FORMAT: maps, cards, tokens, characters

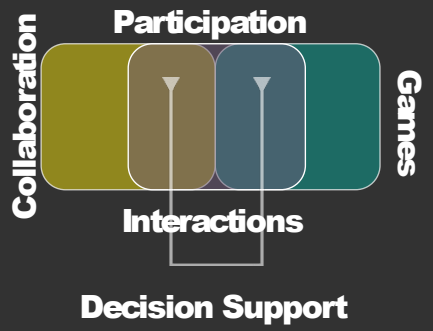
Tools 2: MAGE TableTop

Morecambe Reach Festival, LDCVS, 21/09/25

MAGE Tabletop 1st Engagement Event



Tools 3: The Digital Chessboard



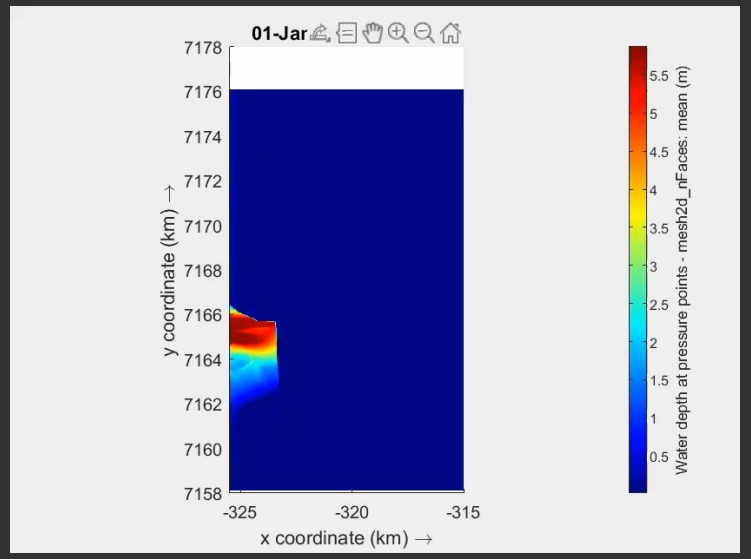
OUR FUTURE COAST

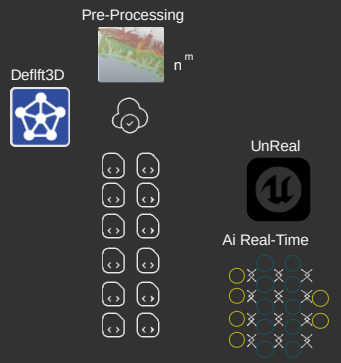
Research Team Paul Cureton (IL)Rob Delan
Qianhui Lin (SCC)

TECHNOLOGY: Delft3D FM, GIS & LiDAR, Unreal Engine, Interactive UI, physical play pieces

Tools 3: The Digital Chessboard

Phase 3





Tools 3: The Digital Chessboard

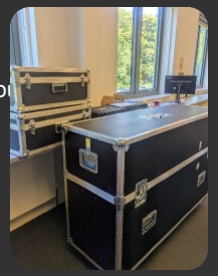
Phase 3

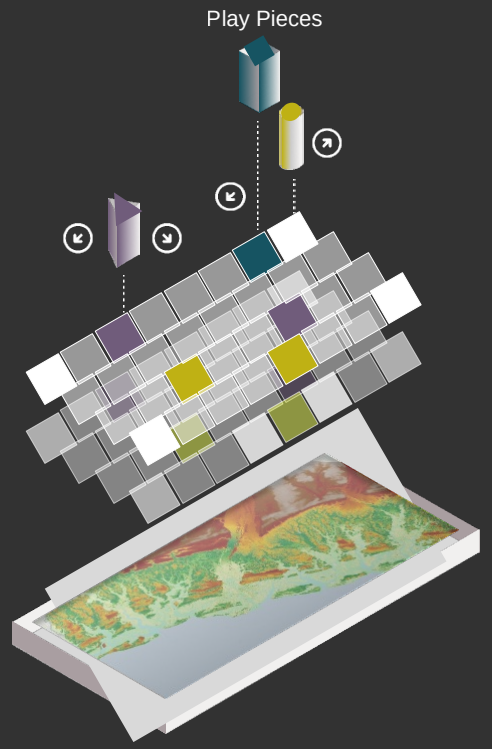
SITES

1. Hest Bank SMP: Chapel Hill to Hest Bank (Morecambe)
2. Walney West Shore adaptation is strongly needed here.
3. Sunderland Point - Mid Later next year.
4. Millom Marshes - a managed realignment site where options are unclear. OFC are already doing some adaptation work here, so it's another possible location to test a more collaborative approach.

MAGE Equipment

Flight Cases for Transport
2x 65” Touch Screens
2x Display Stands1x Mini-Compu
1x Computer Vision Camera
1x Camera arm
Touch Table ‘Play Pieces’





Gameboard 4k

Latest version

Walney Island
20/04/26
Development Stage

Time
Today
Storm 2014
2055
2105

Water Controller
MHWS
HAT
1% AEP
2% AEP

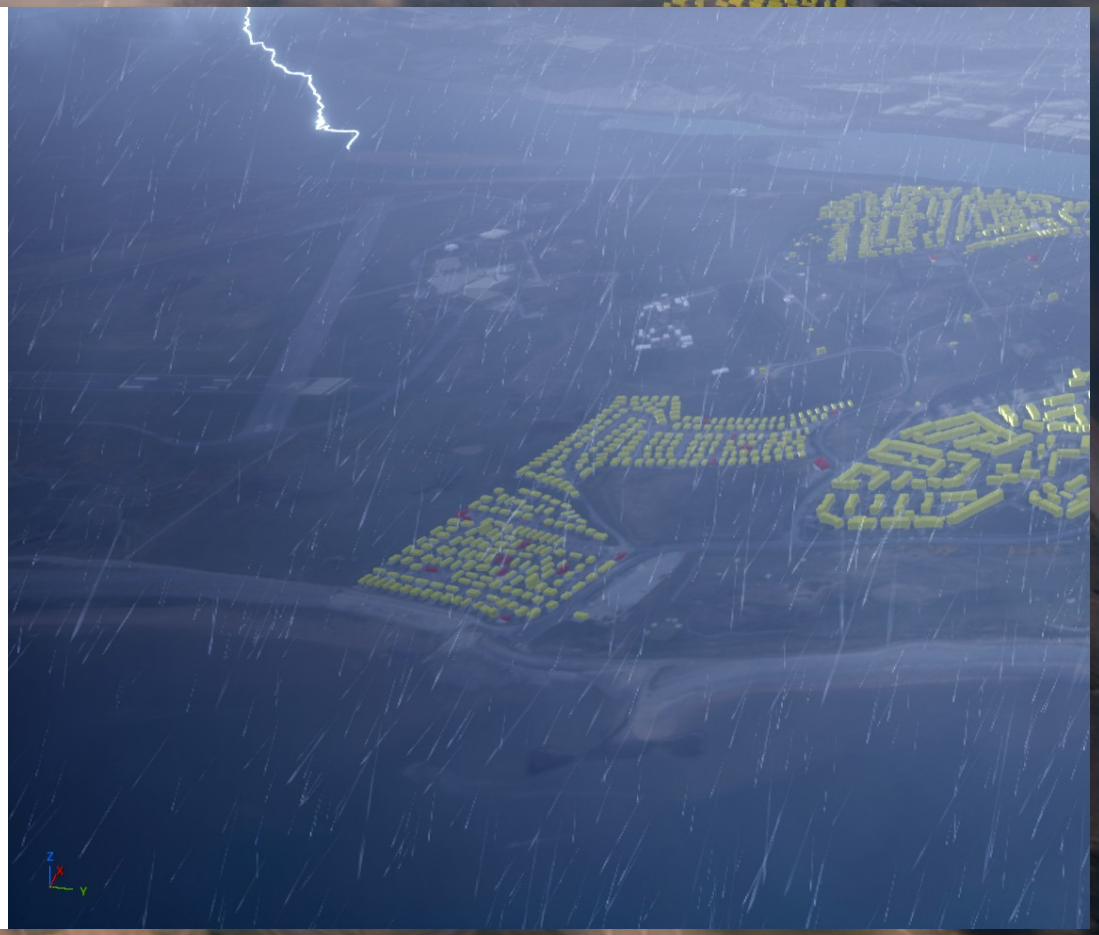
Weather Controller

Costal Interventions Buttons
Binary on/off=2 to the power of 5 Interventions x 2 Climates scenarios 2022/2100 = **64 Model Scenarios**

Costal Interventions
Further Development & Updating - i.e. Groyne Removal, Rock Armour, Salt Marsh etc...

Costal Intervention Explainer

Costal Intervention Activate Button

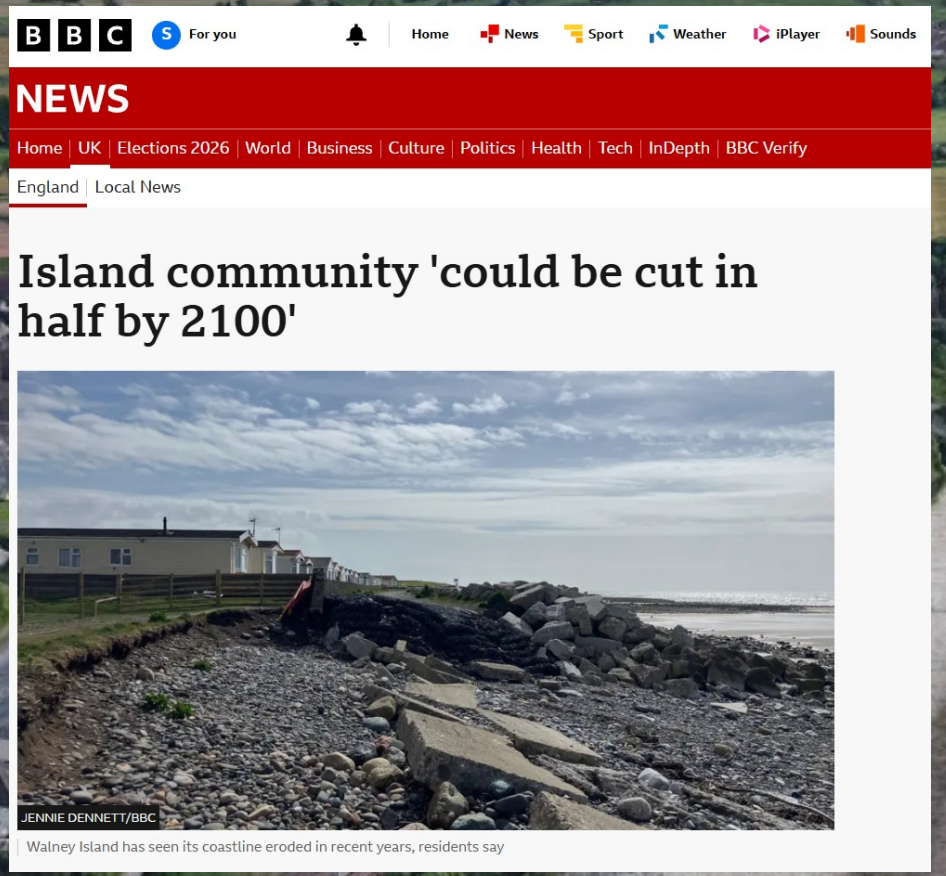


What MAGE Enables

- Makes uncertainty experiential
- Supports structured comparison between futures
- Bridges science, policy, and lived experience
- Exploration of **combined interventions**, rather than single solutions
- A shared spatial reference for discussion

Limitations, Ethics & Future Work

- Digital Chessboard currently requires specialist expertise & computing
- Lightweight modelling
- Ethical sensitivity of “what-ifs”



THANK YOU

MAGE Team

- Paul Cureton (PI), Lancaster University
- Rob Delaney, Lancaster University
- Runze Xia, Lancaster University
- Qianhui Lin, Lancaster University
- Elliot Hartley, GD3D
- Luigi Mussardo, BlueMilkMedia
- Marcio Boechat Albernaz, Deltares

Our Future Coast Team

- Elanor Brown
- Joseph Earl, Morecambe Bay Partnership
- Suzi Ilic, Lancaster University

Software Used

Deltares3D-FM, Git Enterprise, QGIS, ArcGIS Pro, CityEngine, Unreal, DJI Terra, Modify. Hosted on Azure.

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Data Supplied by Bluesky International (a Woolpert Company)
Ordnance Survey
Verisk
Environment Agency
Drone Operations by Paul Cureton.