



Updating an Open Source SDI For Mobile Working.

Progress has little to do with speed but MUCH to do with direction.

WARNING:
There's a lot to take in!



Bannau
Brycheiniog



Paul Shapley
shapley

Geo-Technology, Graphic Design,
Cartographics, CGeog (GIS), FRGS

Edit profile

Brecon Beacons National Park Authority
 Swansea, Brecon
 01:48 (UTC -12:00)
 p.shapley@gmail.com
 <https://www.paulshapley.com>

Who am I?

Take your pick...

Student - Beach Lifeguard -
Chartered Designer - Circuit Board
Inspector - Planning Technician -
Cartographer - GIS Officer -
Chartered Geographer (GIS)

<https://www.paulshapley.com>

2023 – Celebrating 30th Year in Local Gov

Back Story...

- 2013 Foss4g – Nottingham – First QGIS (Cymru) Group Meeting at BBNPA (Brecon). (Shaun Lewis/Kevin Williams)
- 2016 I joined BBNPA from NPTCBC and began to tweak solutions and listen to ‘Users’ requests... half (already) very happy with QGIS. Other half... “why don’t we use ‘Google Earth’ (kml/kmz) for everything”.
- 2018 Introduced ‘ODK Collect’ for digitising suitable walks for people with varying disabilities. The walks were never completed. (ODK was shelved) too complex for volunteers.
- 2020 Pressure to use free ‘arcgisonline’ tools which became standard in the UK National Parks – Same time as ‘Covid’ lockdown made me extremely angry!!
- 2021/2 Started a GIS (Open Source First) Strategy for the Park (didn’t include arcgisonline...) No one complained! Thanks to ‘DataMapWales’ development.

**They wanted us to comply with the
'Partnership' rules...**

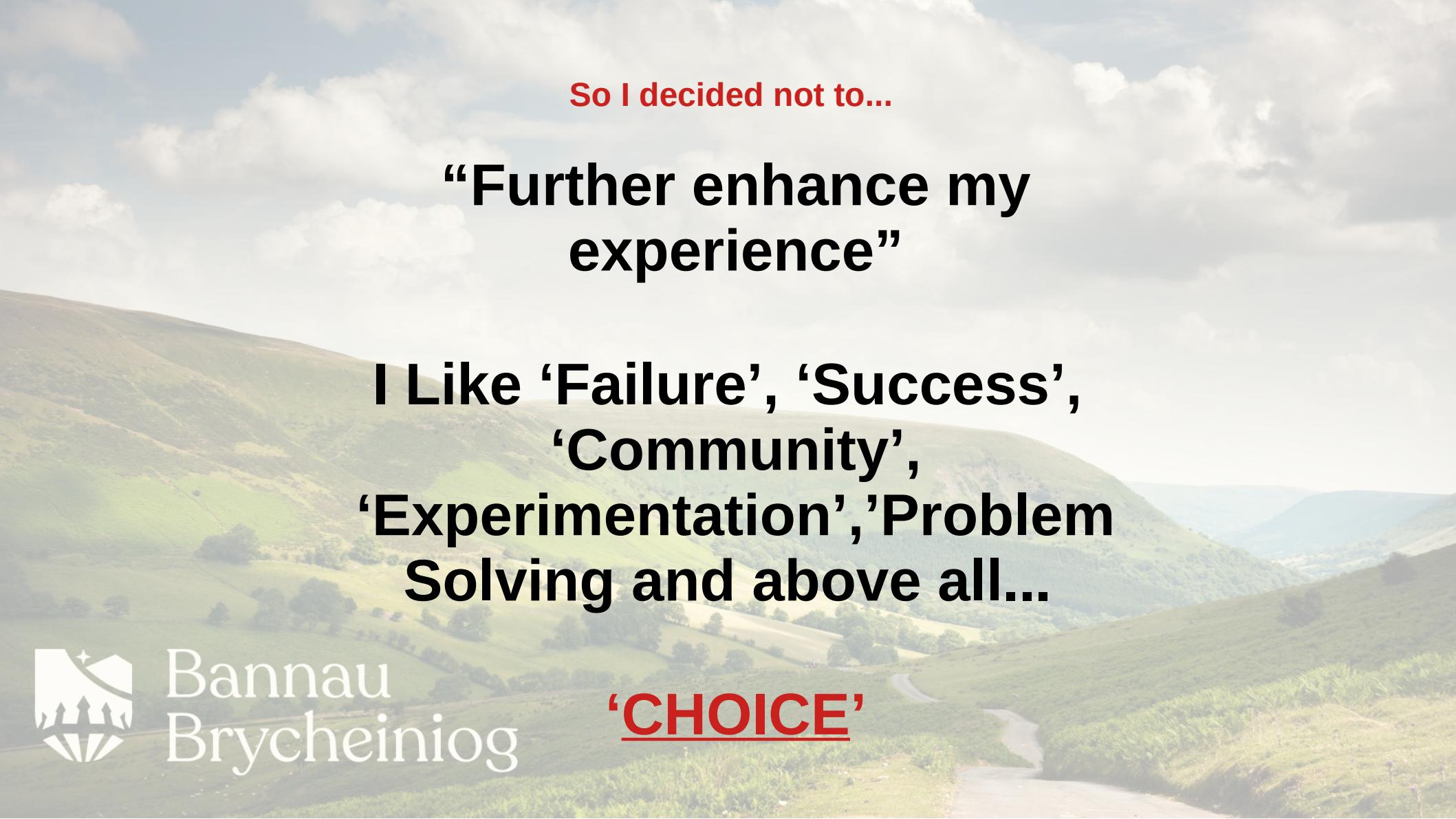
My Esri

Use this self-service portal as your single destination for managing your ArcGIS picks from the ArcGIS suite. Please take advantage of the available help resources and provide feedback so that we can further enhance your experience.

Sign in



B
Brycheiniog

The background of the slide features a wide-angle photograph of a rural landscape. In the foreground, there's a dirt road leading towards a valley. The valley is filled with lush green fields and dotted with small clusters of trees. Beyond the valley, more hills rise, covered in dense green vegetation. The sky above is filled with soft, white clouds.

So I decided not to...

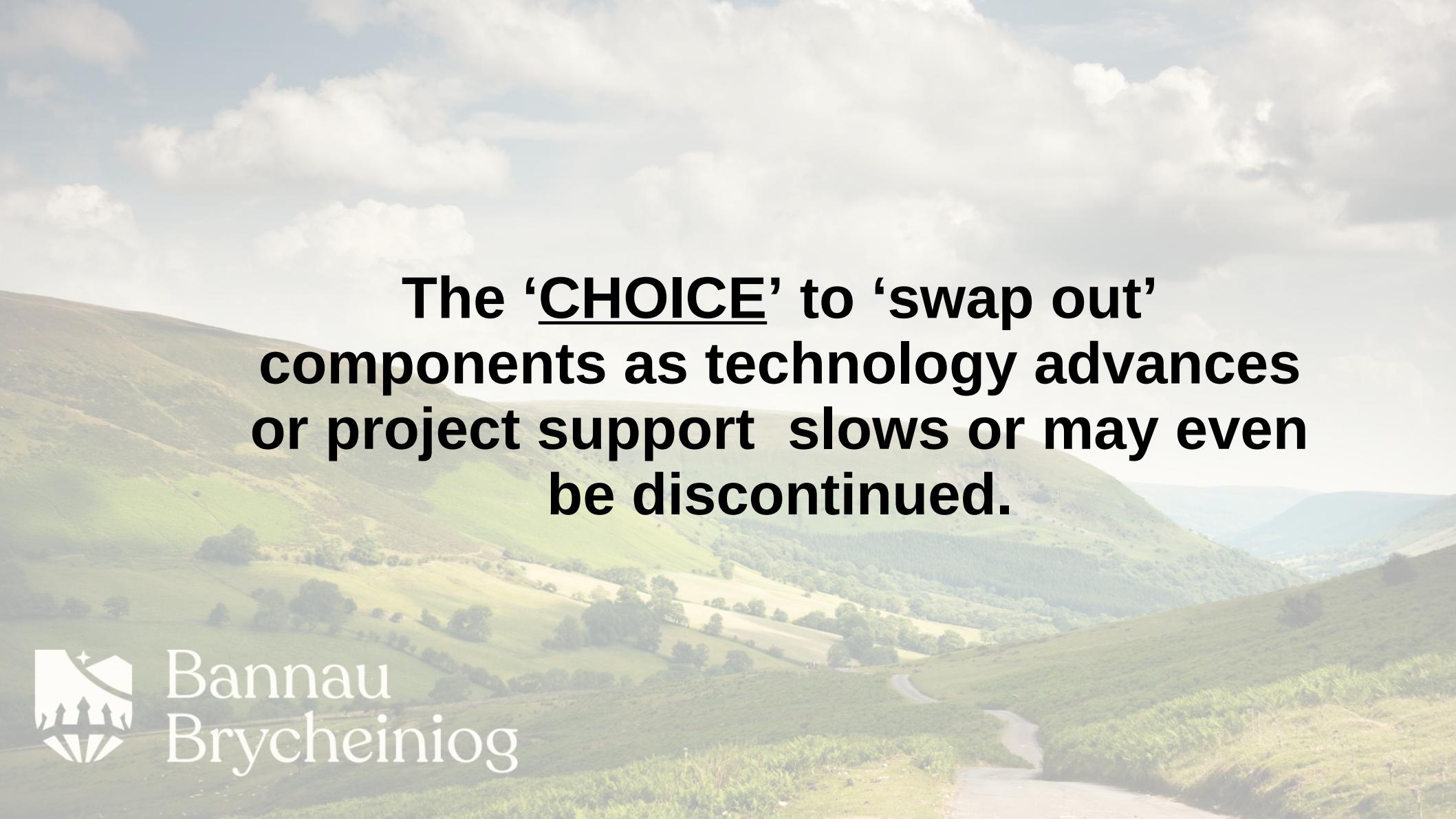
**“Further enhance my
experience”**

**I Like ‘Failure’, ‘Success’,
‘Community’,
‘Experimentation’, ‘Problem
Solving and above all...**

‘CHOICE’



**Bannau
Brycheiniog**



The 'CHOICE' to 'swap out' components as technology advances or project support slows or may even be discontinued.



Bannau
Brycheiniog

We needed to collect evidence

My rationale was simple. Evidence must be collected transparently using ‘Open Standards’ and ‘Open Data’ (wherever possible) and made available for scrutiny (reproducability) along with the algorithms used so that we can learn from the process and improve on it in future.

There are many free GI systems and cloud solutions which replicate standard algebra and remote sensing functionalities.

‘The Best Solution’

(It’s not a big budget problem... It’s an ‘attitude’ problem)



Decision was to keep development (in-house)

'Consultants' were expensive. They never reveal their methodology and never seem to be available when you have an urgent problem. If you want a 'change' made it's costly and they are more interested in ever bigger contracts and clients. Some ecologists had never used GIS Tools before.

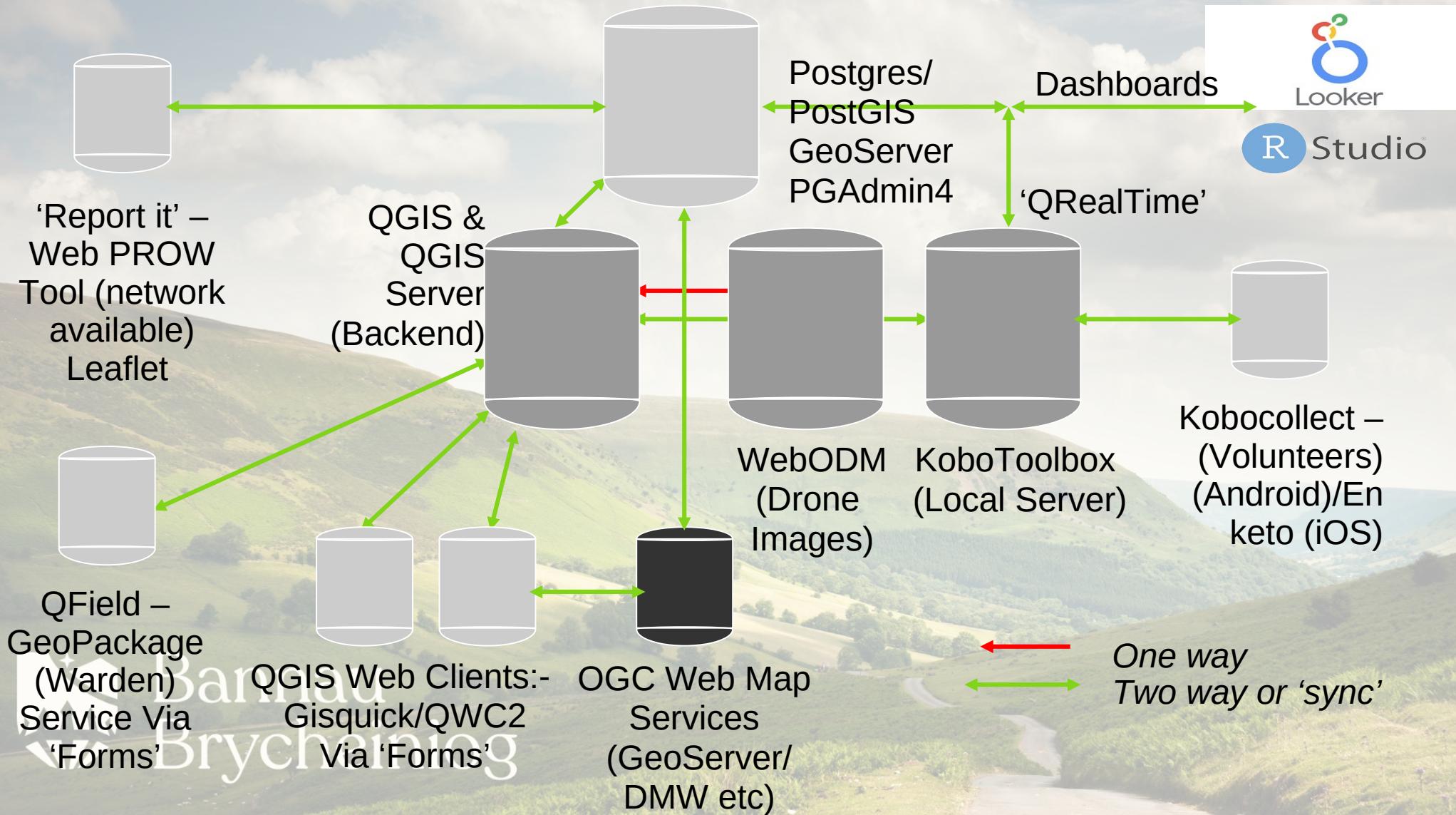
They constantly email you for data and how to do something.

I ended up doing some of the work for them

...how insanely stupid was I??



Bannau
Brycheiniog

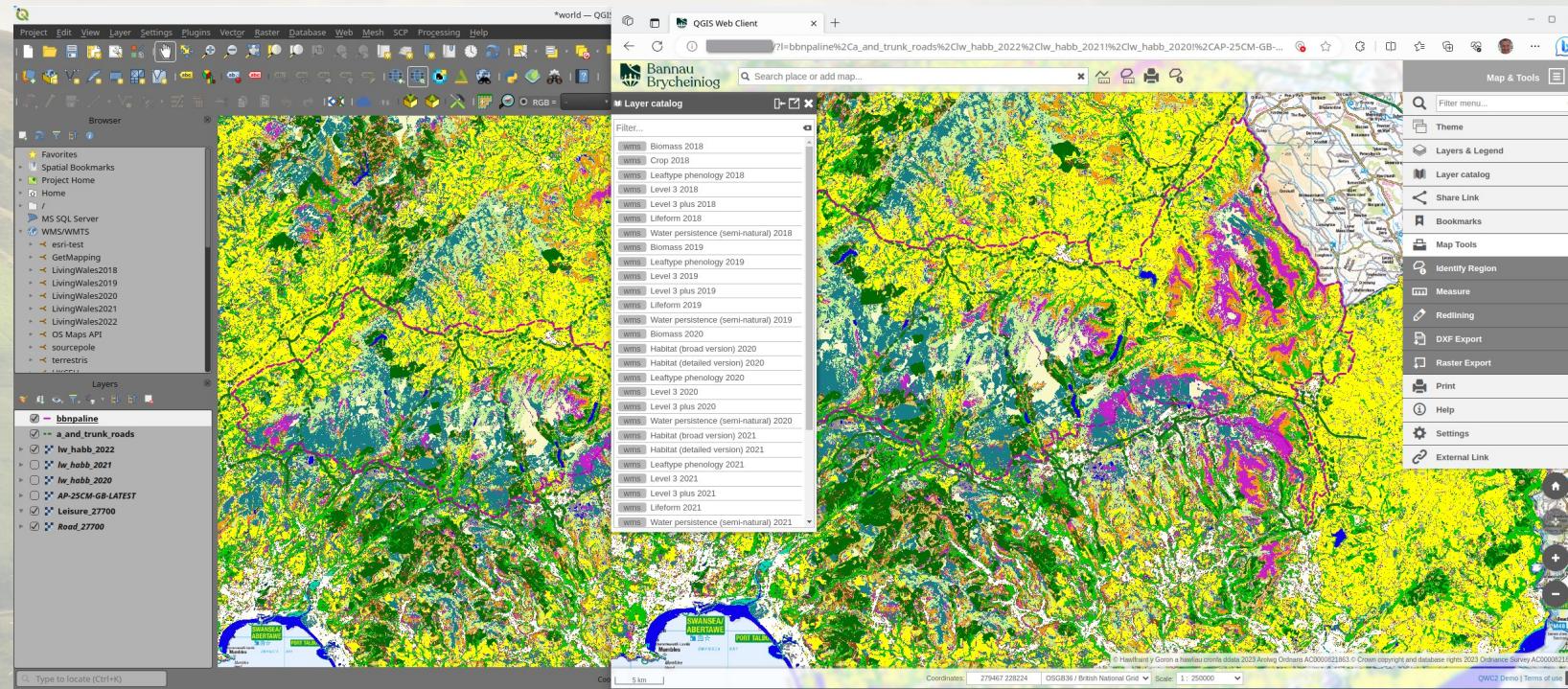


Let's take a closer look at the technologies?

QGIS – The backend ‘spatial analysis engine’ (no change here)

QGIS Web Client – Taking ‘QGIS Projects’ to the Web for the ‘**non-gis**’ user...

Meaning... you can embed maps in web pages or share and embed maps in social media.



Bannau Brycheiniog

Search place or add map...

Layer catalog

Filter...

- wms Biomass 2018
- wms Crop 2018
- wms Leaftype phenology 2018
- wms Level 3 2018
- wms Level 3 plus 2018
- wms Lifeform 2018
- wms Water persistence (semi-natural) 2018
- wms Biomass 2019
- wms Leaftype phenology 2019
- wms Level 3 2019
- wms Level 3 plus 2019
- wms Lifeform 2019
- wms Water persistence (semi-natural) 2019
- wms Biomass 2020
- wms Habitat (broad version) 2020
- wms Habitat (detailed version) 2020
- wms Leaftype phenology 2020
- wms Level 3 2020
- wms Level 3 plus 2020
- wms Water persistence (semi-natural) 2020
- wms Habitat (broad version) 2021
- wms Habitat (detailed version) 2021
- wms Leaftype phenology 2021
- wms Level 3 2021
- wms Level 3 plus 2021
- wms Lifeform 2021
- wms Water persistence (semi-natural) 2021

Layer Info

Habitat (detailed version) 2020

- Semi-natural grassland (unclassified)
- Juncus rushes
- Molinia grassland
- Young plantations/Felled/Coppice
- A Woodland and scrub (Unclassified)
- A1.1 Broadleaved woodland
- A1.2 Needleleaved woodland
- A2 Ulex dominated scrub
- B1 Acid grassland
- B2 Neutral grassland
- B3 Calcareous grassland
- B4 Improved grassland
- B5 Marsh/marshy grassland
- C1 Bracken
- D1 Dry dwarf shrub heath
- D2 Wet dwarf shrub heath
- E1.6.1 Blanket sphagnum bog
- E1.6.2 Raised sphagnum bog
- E1.7 Modified bog
- E3 Fen
- E4 Peat - bare
- F1 Swamp
- G Open Water
- H1 Intertidal vegetation Generic
- H1 Intertidal Bare Generic
- H2 Saltmarsh
- H6 Sand dune
- H6.5 Dune grassland
- H6.6 Dune heath
- H6.7 Dune scrub
- H8 Maritime cliff and slope (unvegetated)
- H8 Maritime cliff and slope (vegetated)
- I1 Natural rock exposure and waste
- I1.1 Inland cliff
- I2.1 Quarry
- J1.1 Arable crops
- Artificial bare surfaces
- Natural bare surfaces
- Semi-natural herbaceous vegetation (Unclassified)

Coordinates: 334500 239931 OSGB36 / British National Grid Scale: 1 : 250000

Layers & Legend

Map & Tools

5 km

© Hawlfaint yr Y Goron a hawliau crwnfa ddiada 2023 Arowg Ordnaid AC0000821863. © Crown copyright and database rights 2023 Ordnance Survey AC0000821863.

QWC2 Demo | Terms of use

QGIS Server 'Catalogue'

Is a QGIS 'Project'
Viewer. It displays
project files for sharing
online in QWC2



Bannau Brycheiniog

QGIS Server Catalog - Home Page — Mozilla Firefox

Import bookmarks... Getting Started Email - Paul Shapley ... GitHub - kobotoolbox... qgis/qwc2-demo-app... Adding triggers to Sp... To do list with proge...

QGIS Server Catalog

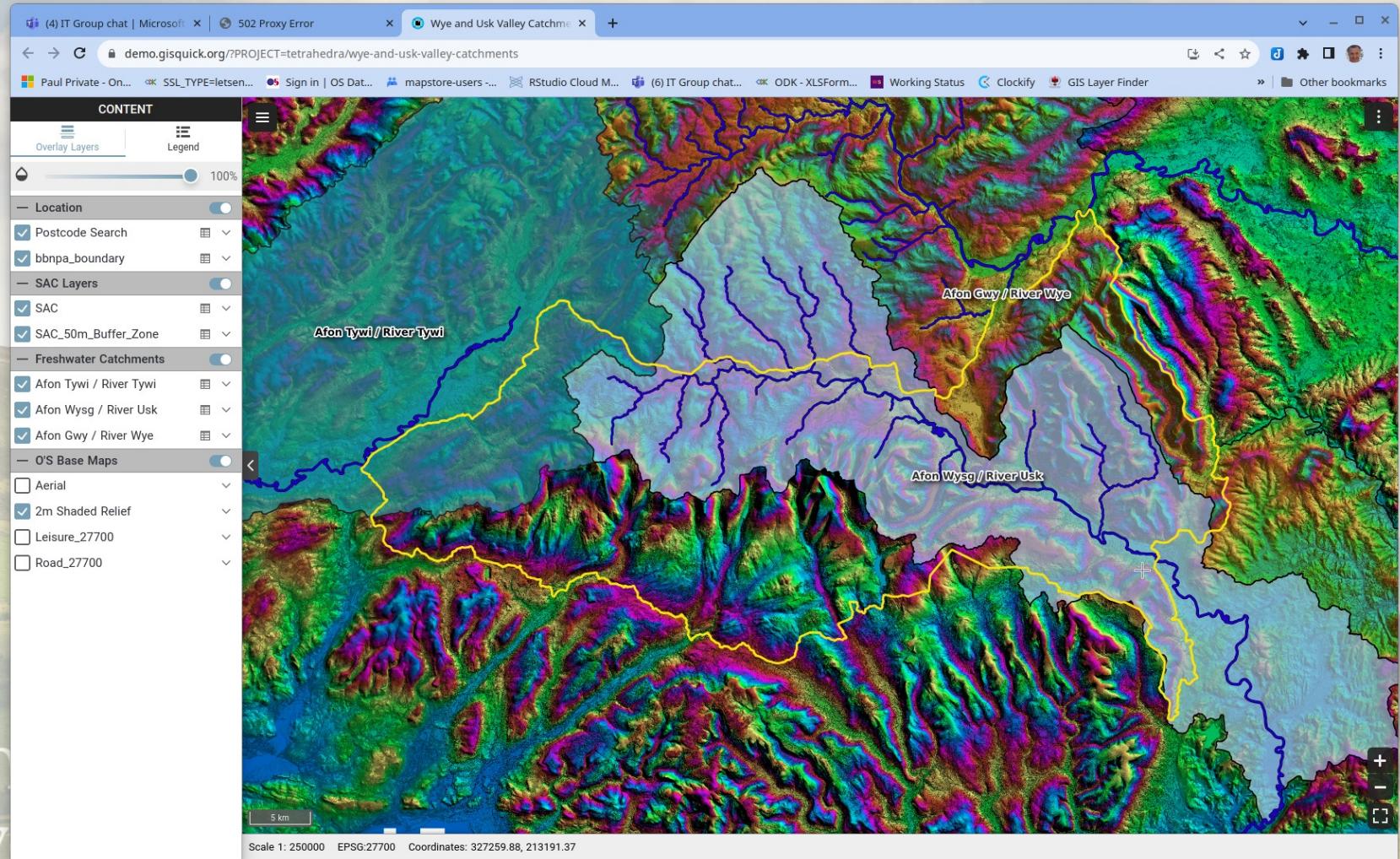
The screenshot shows a grid of six map projects displayed in the QGIS Server Catalog:

- OGITO City**: OGITO Noise Bochum - City. Shows a map of Bochum with various colored regions and labels like Guennigfeld, Wattenscheid-Mitte, Westenfeld, Eppendorf, Hoentrop, and Leithe. Includes METADATA and BROWSE buttons.
- OGITO City**: OGITO Noise Bochum - City. Similar map to the first one, also labeled with METADATA and BROWSE buttons.
- Untitled**: A map of Bochum and surrounding areas, including Herne, Wanne, and Bochum Nord. Includes METADATA and BROWSE buttons.
- Mapping Denai Lama**: Mapping Denai Lama. Shows a map of coastal areas with labels like Sentang, Paluh Sibaji, Pangan Cabau, Dena Bu, Ramunia S, Siderajip Dua, Ramunia, Karang Anyar, Siodadi Ramunia, Celandan, Lubuk Cemara, Ujung Rambung, and Besar II Terjun. Includes METADATA and BROWSE buttons.
- Mapping Denai Lama**: Similar map to the previous one, also labeled with METADATA and BROWSE buttons.
- GECCO**: GECCO. Shows a map of a rural area with labels like Allerheiligen, Leybeck, Tielje, and Sendenhorst. Includes METADATA and BROWSE buttons.

We've also
been testing
'GISQUICK'
' QGIS
Client...I'm
very
impressed
with support.



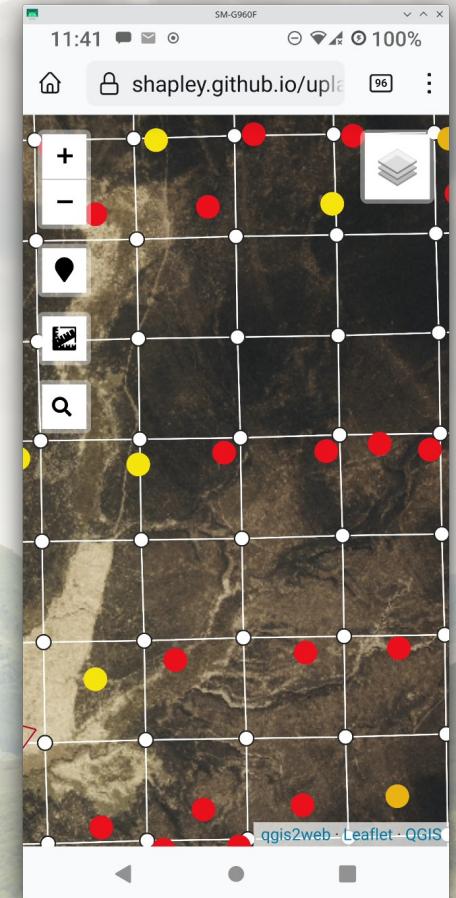
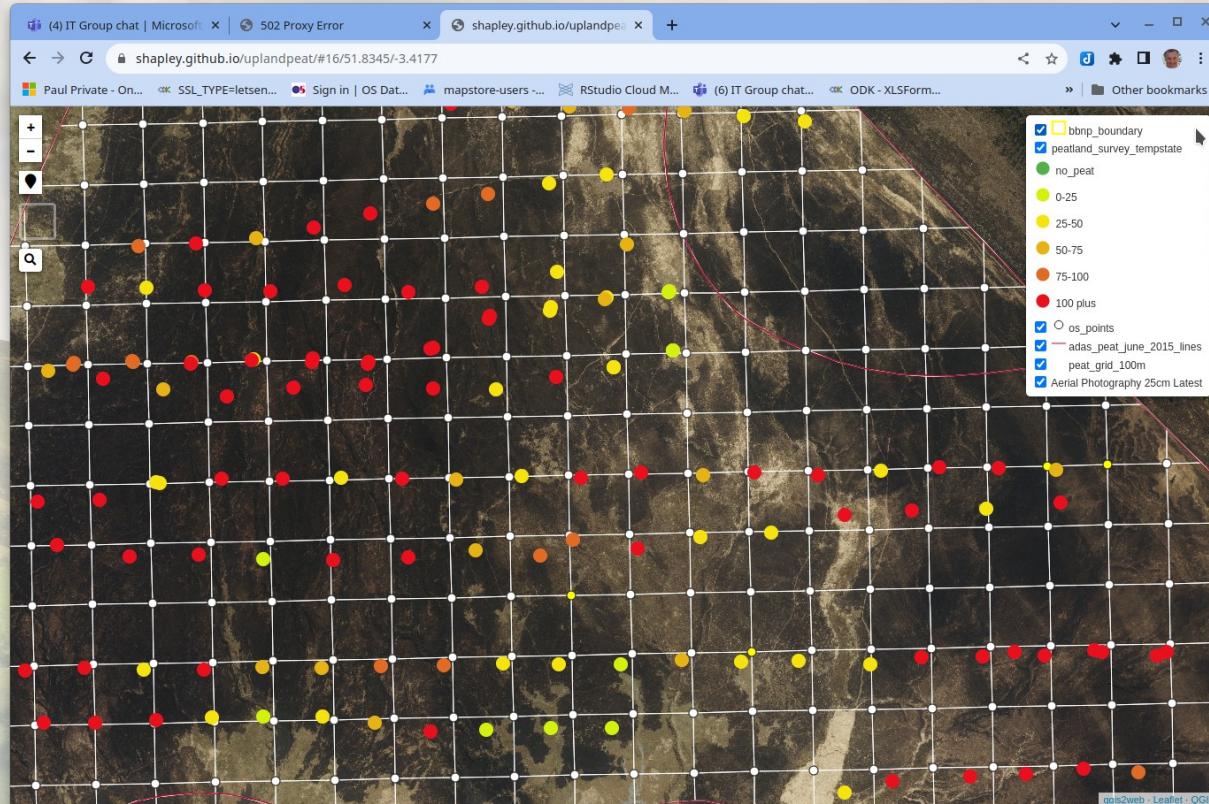
Barry University



We've
extensively
used
QGIS2WEB
QGIS Plugin
with Github
'Pages'...It's
quick to
deploy in less
than 30
minutes



Bannau
Brycheiniog



WebODM - OpenDroneMap

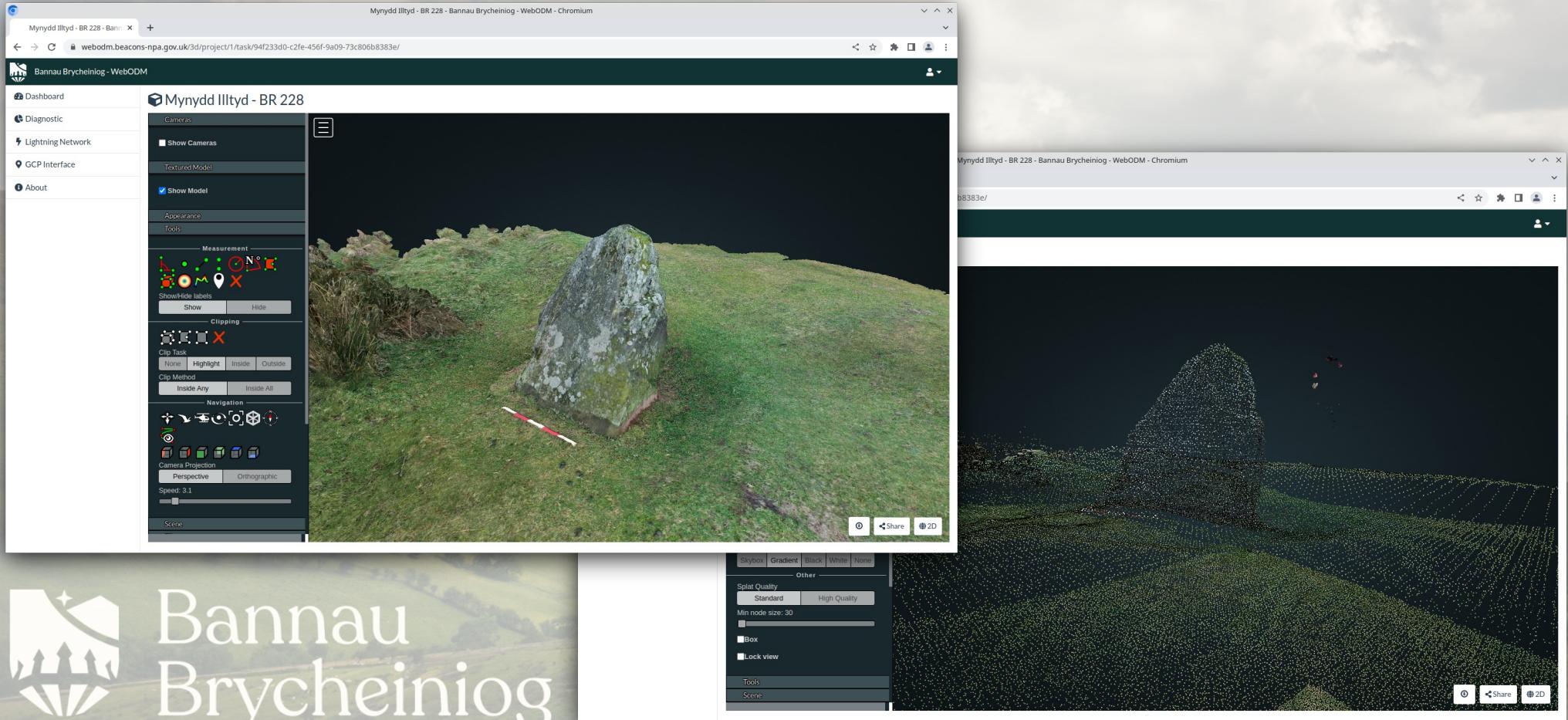
WebODM – Our new drone mapping portal. This portal is two-fold, it stitches the drone images into a mosaic and stores the resulting map and 3D lidar data for measurements and archive either in the portal itself or the resulting map data can be downloaded to use in QGIS.

<https://webodm.beacons-npa.gov.uk/login/>



Bannau
Brycheiniog

WebODM - OpenDroneMap



The image shows a screenshot of the WebODM software interface. The main window displays a 3D point cloud of a large, mossy rock situated on a grassy hillside. A textured model of the same scene is overlaid on the point cloud, showing the rock in its natural environment. The left sidebar contains various tools and settings:

- Dashboard**: Shows project status.
- Diagnostic**: Provides system information.
- Lightning Network**: Manages network connections.
- GCP Interface**: Integrates with Google Cloud Platform.
- About**: Displays application details.

Mynydd Illtyd - BR 228 is the active project name.

Tools section includes:

- Measurement**: Tools for distance, area, and volume calculations.
- Show/Hide labels**: Buttons for displaying or hiding labels.
- Clipping**: Options for clipping tasks (None, Highlight, Inside, Outside) and clip methods (Inside Any, Inside All).
- Navigation**: Tools for camera projection (Perspective, Orthographic), speed control (Speed: 3.1), and scene navigation.
- Scene**: Buttons for skybox selection (Skybox, Gradient, Black, White, None) and other scene settings.

Other settings include:

- Splat Quality: Standard or High Quality.
- Min node size: 30.
- Box: A checkbox for a bounding box.
- Lock view: A checkbox for locking the view.
- Tools and Scene buttons.

The top bar shows the title "Mynydd Illtyd - BR 228 - Bannau Brycheiniog - WebODM - Chromium" and the URL "webodm.beacons-npa.gov.uk/3d/project/1/task/94f233d0-c2fe-456f-9a09-73c806b8383e/".

Bannau Brycheiniog logo is visible at the bottom left.



Bannau
Brycheiniog

We've looked
at **WebODM**
For the
Monitoring
condition of
monuments

Mynydd Illtyd - BR 228

https://webodm.beacons-npa.gov.uk/3d/project/1/task/94f233d0-c2fe-456f-9a09-73c806b8383e/

Bannau Brycheiniog - WebODM

Dashboard Diagnostic Lightning Network GCP Interface About

Cameras Textured Model

Show Model

Appearance Tools

Measurement

Show/Hide labels Show Hide

Clipping

Clip Task None Highlight Inside Outside

Clip Method Inside Any Inside All

Navigation

Camera Projection Perspective Orthographic

Speed: 2.1

Scene Filters About

Mynydd Illtyd - BR 228

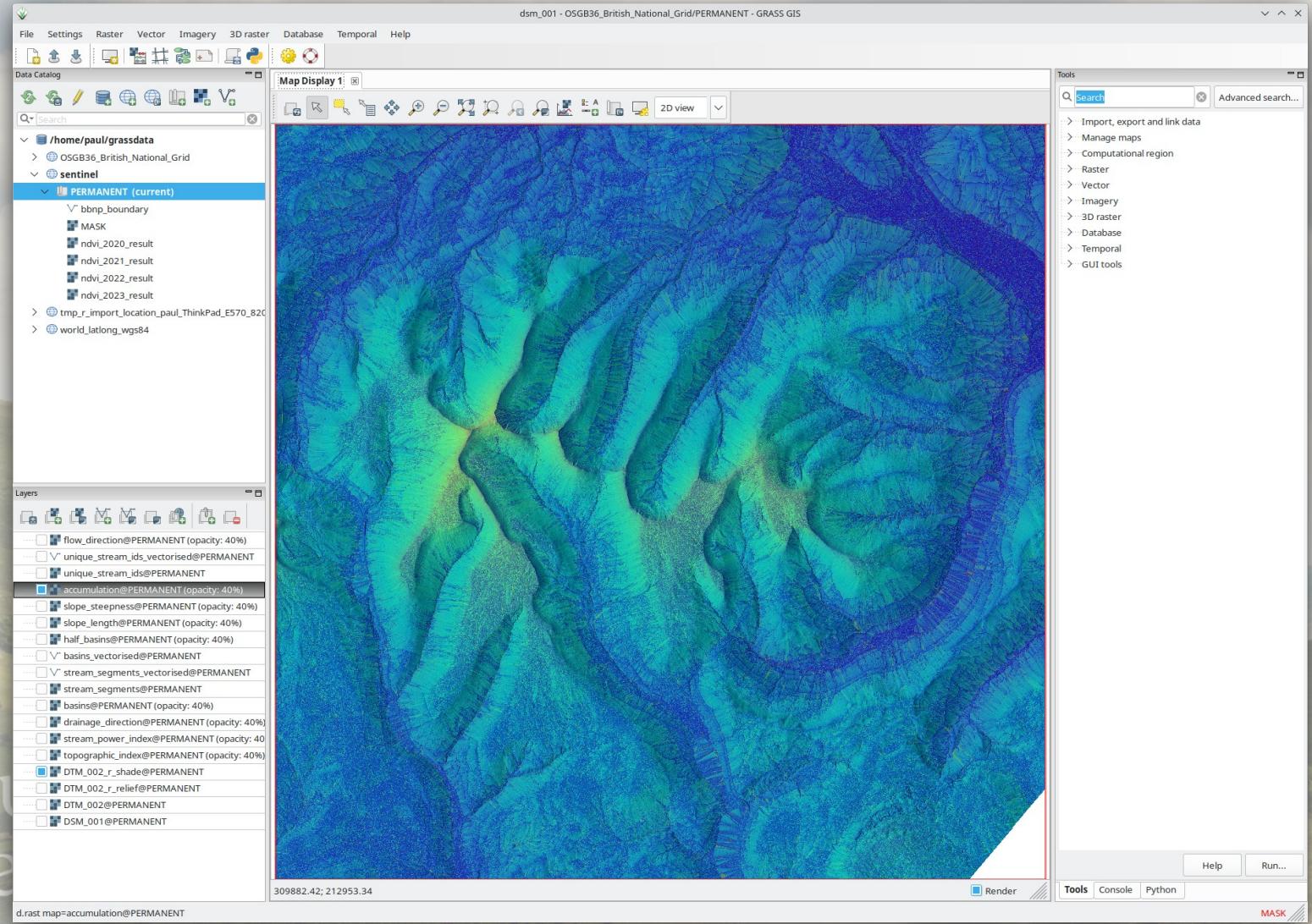
Share 2D

We also use The greatest modular GIS ever...

GRASS 8



Bannau
Brycheiniog

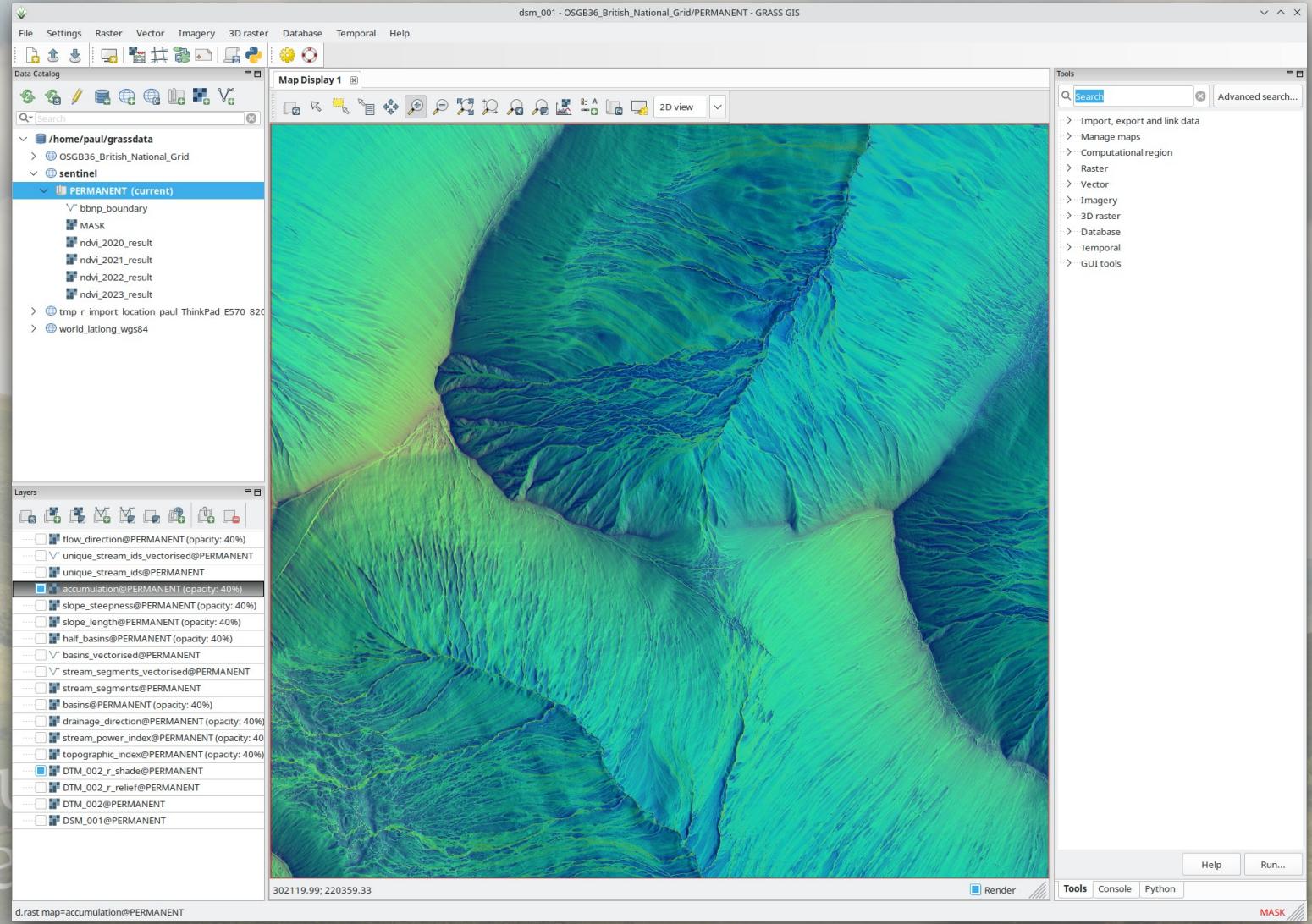


r.watershed

GRASS 8

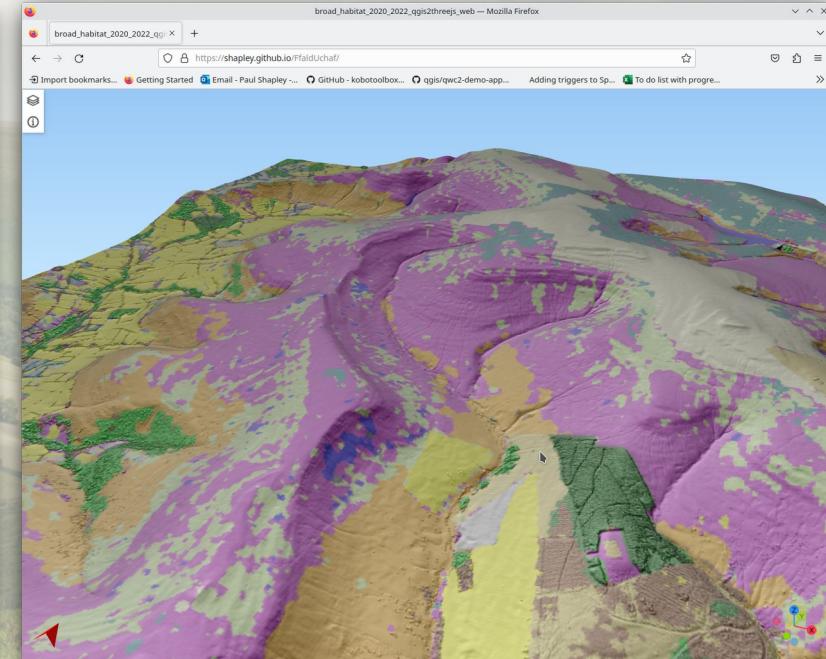
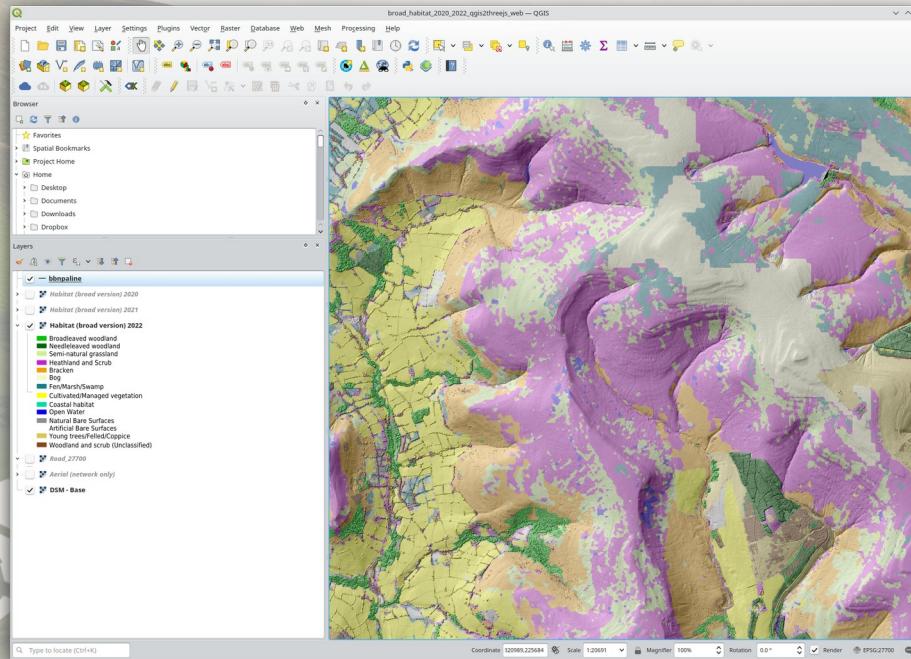


Bannau
Brycheiniog



QGIS – 3D View & threejs (LivingWales – Data Cube)

QGIS – 3D View & threejs – Improvements in QGIS 3.22 (and higher) allow faster rendering of 3D tiles of on a height basemap such as our new 1m DTM and DSM of the entire park. We can ‘drape’ flat maps over a 3D surface such as ‘LivingWales’ web services. <https://shapley.github.io/FfaldUchaf>



The Search for a ‘Mobile’ Tool

The ‘Problem’

Most areas away from main roads have little or no network connectivity, there were concerns about ‘Warden’ safety. They needed to see boundaries, and update ‘conditions’ in the field.

The solution was ‘QField’ and in particular the ‘GeoPackage’ we could pre-pack O’S maps on the device of choice together with a QGIS Project in the ONE package then ‘sync’ edits with the master QGIS Project back at the office. ‘QfieldCloud’ is the future option we prefer which will be locally held.



Bannau
Brycheiniog

Craig y nos - Grounds Management Tool

A simple concept, Break the park grounds up into 5m 'hexagonal' parcels (not shown here) with a 5m path network and manage the day to day actions that have been applied to each section where work has been done. This means that daily tasks can be allocated and tracked until complete. This utilises some 'WFS-T' features and operates in a network.



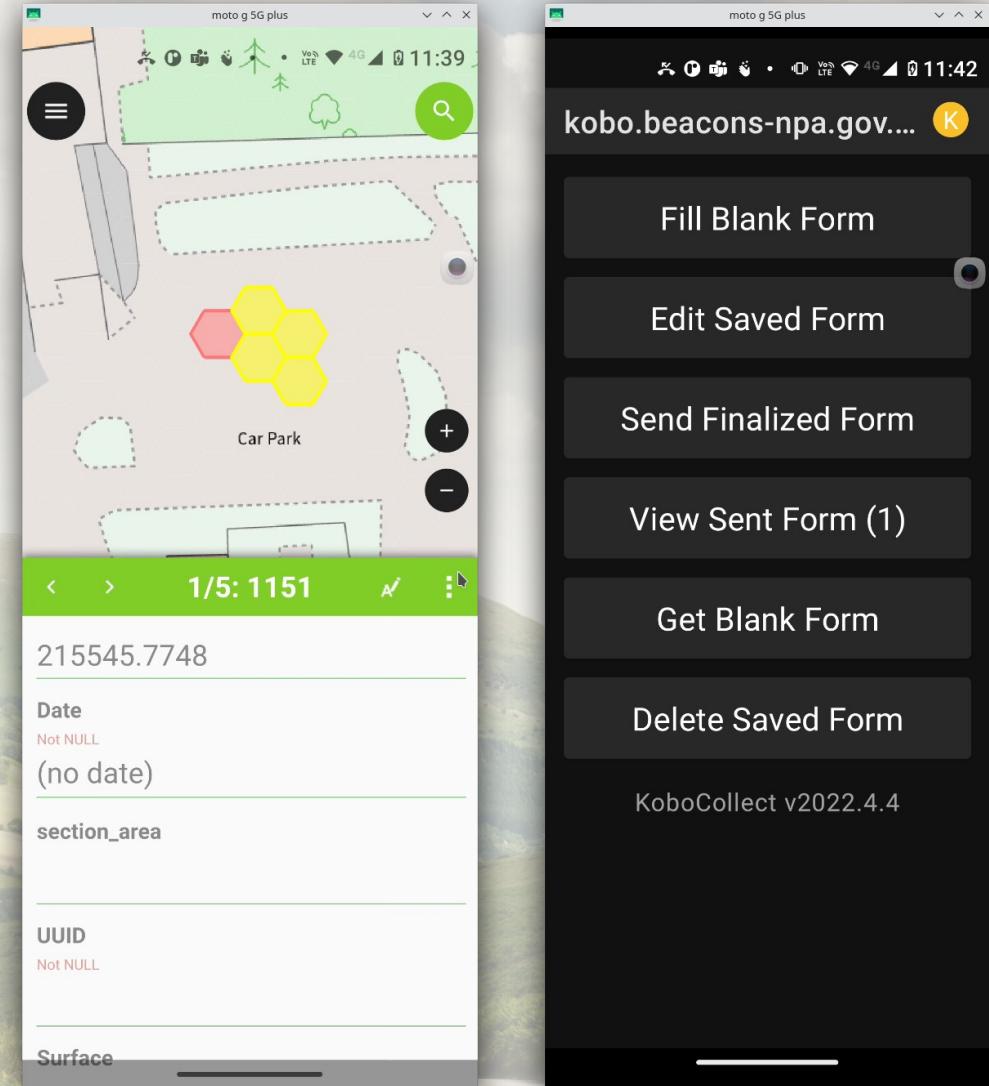
Bannau
Brycheiniog



Qfield & Kobotoolbox

QField & Kobotoolbox (local install) – Our new surveying tools, ‘**Kobotoolbox**’ is primarily for ‘non-gis’ users and volunteers and ‘**QField**’ for when you need to take a QGIS projects complete with layers, filters and symbology ‘packed’ onto your mobile phone out into the field to capture more data.

You can ‘sync’ changes when you return to the office.





Bannau
Brych

10:51 SM-G960F Survey: > 1

*** What is the percentage cover for heather?**

You selected 'heather' in a previous question

1-5%

6-10%

11-20%

21-50%

51-75%

76-100%

< BACK NEXT >

10:52 SM-G960F Survey: > 1

*** Condition Assessment Rating:**

4 = Excellent, 3 = Good, 2 = Moderate, 1 = Poor

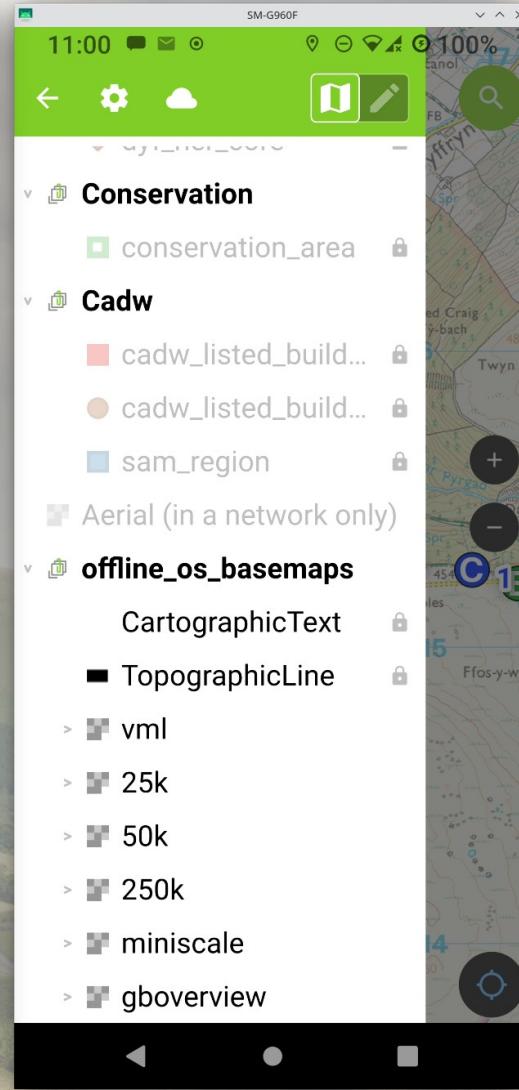
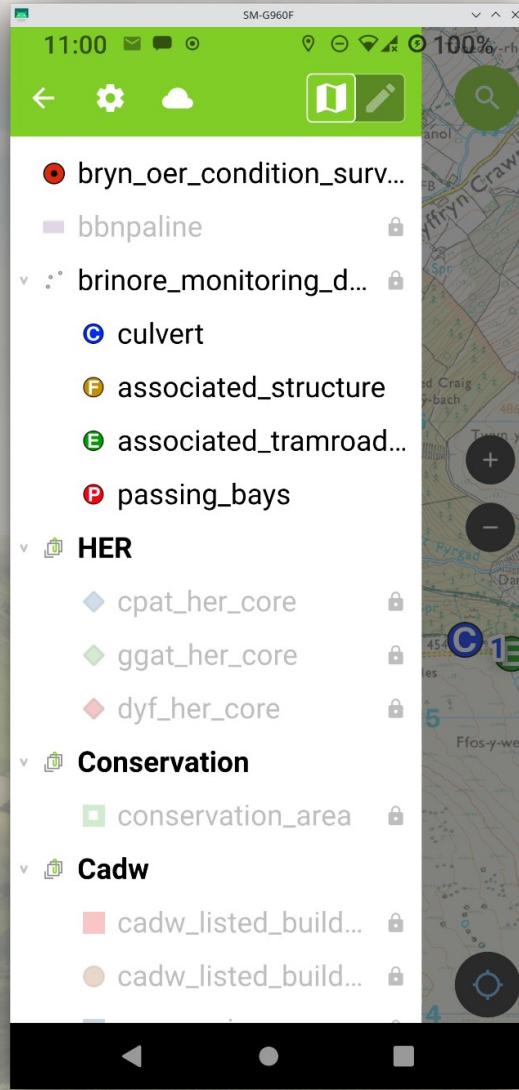
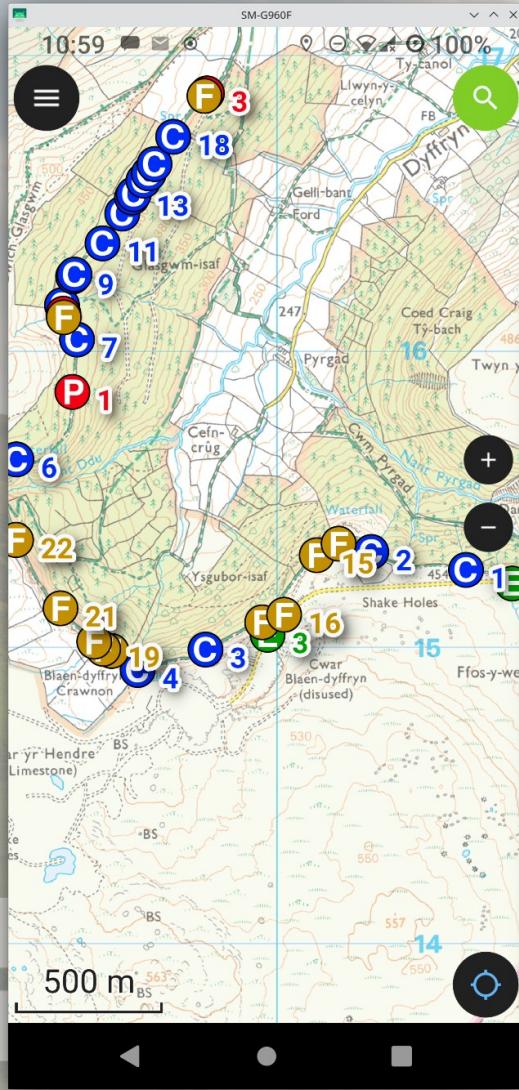
4 = Excellent

3 = Good

2 = Moderate

1 = Poor

< BACK NEXT >





Bannau
Brycheiniog

SM-G960F

11:01 100%

< > Daren-Ddu culvert :

from Trefil

Daren-Ddu culvert

Nos.

1

document

/storage/emula...urveyinfo.docx

OS Grid Ref.

SO10641526

Eastings

310640

Northings

215260

Lat

51.828783

Long

Print Layout

Headings

Edit

Share

Read Aloud

This screenshot shows a smartphone displaying survey data for a culvert named 'Daren-Ddu culvert'. The data includes the location 'from Trefil', the name of the culvert, its number (1), and a document link ('/storage/emula...urveyinfo.docx'). Geographical coordinates are provided in OS Grid Ref (SO10641526), Eastings (310640), Northings (215260), Lat (51.828783), and Long. At the bottom, there are standard mobile navigation icons (back, home, recent apps).

SM-G960F

11:02 100%

< surv...fo : Sign in to edit and save change... MAIN INDEX C CULVERTS Welcome back! Pick up where you left off: August 09, 2023 P PASSING B E EXTENSION TRAMROADS INDEX F ASSOCIATED FEATURES INDEX Print Layout Headings Edit Share Read Aloud

This screenshot shows a smartphone displaying a survey management application. The top bar shows the device as 'SM-G960F' and the time as 11:02 with 100% battery. The main screen displays a 'MAIN INDEX' section with links for 'C CULVERTS', 'P PASSING B', 'E EXTENSION', 'TRAMROADS INDEX', and 'F ASSOCIATED FEATURES INDEX'. A blue sidebar on the right side of the index section contains a 'Welcome back!' message, a note to 'Pick up where you left off:', and the date 'August 09, 2023'. At the bottom, there are several action buttons: 'Print Layout', 'Headings', 'Edit', 'Share', and 'Read Aloud'. The bottom of the screen features standard mobile navigation icons.

Some drawbacks?

There are some ‘workflow’ issues we’ve yet to sort out:-

- Workflow Integration
- Automated Workflows (FME Form/Flow)
- Modeling the Park ‘Eco-System’
- Metadata and Data on DataMapWales



Bannau
Brycheiniog

Some of the future 'Disrupters'

- ChatGPT
- OpenAI
- Google/Cesium3D
- AR/VR Advances
- Drones & Robotics

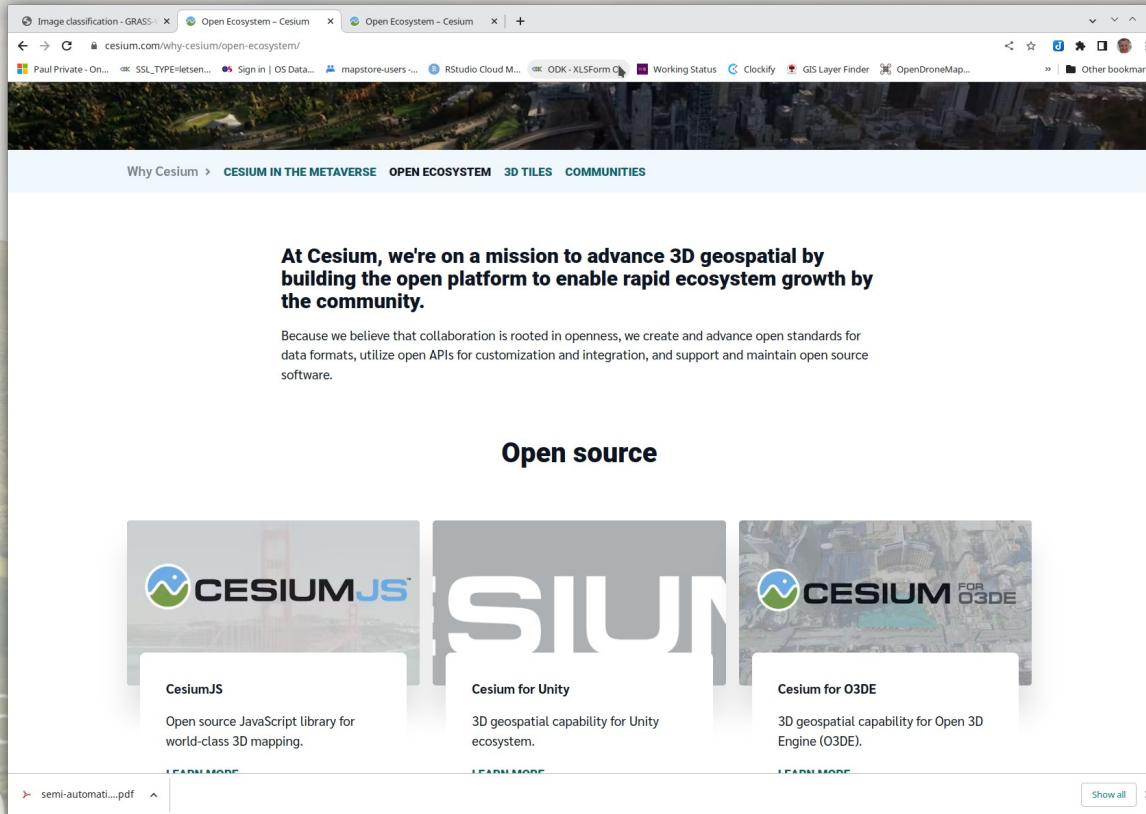
And many more advances...



Bannau
Brycheiniog

I'm looking currently looking at ...

Cesium, Jupyter Notebooks and 'R'



Bannau
Brycheiniog

In Summary...

I'm still learning after 30 years.

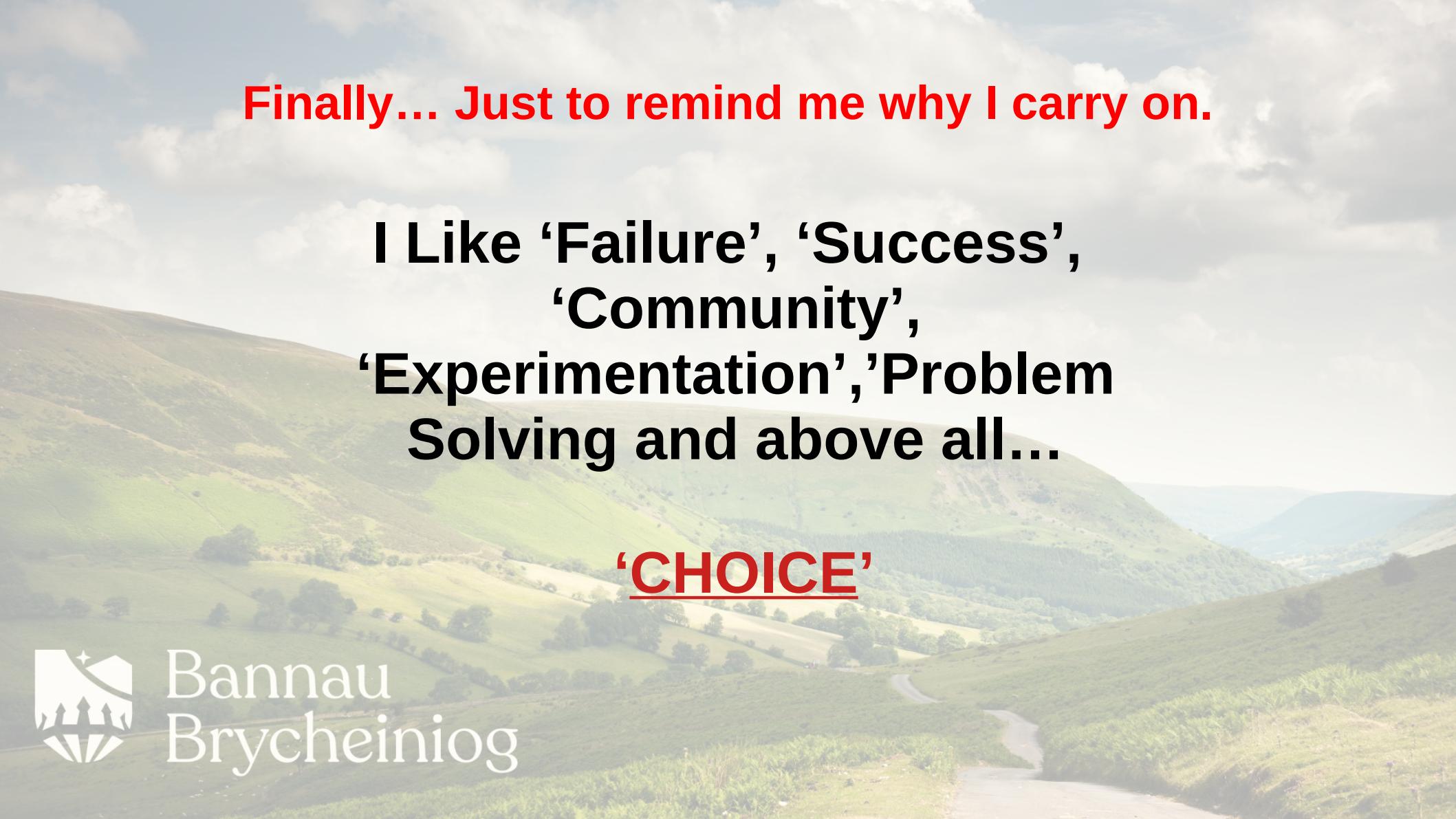
There isn't a perfect solution for everything we do.

Not everyone shares my enthusiasm (for spatial).

The skill sets for geospatial are dwindling (everyone wants the 'one button' solution on a iphone)



Bannau
Brycheiniog



Finally... Just to remind me why I carry on.

**I Like ‘Failure’, ‘Success’,
‘Community’,
‘Experimentation’,’Problem
Solving and above all...**

‘CHOICE’



**Bannau
Brycheiniog**