

# Exposing geoscience data with SensorThings API

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**117th OGC Member Meeting**  
**Virtual – GeoScienceDWG | 8<sup>th</sup> December 2020**

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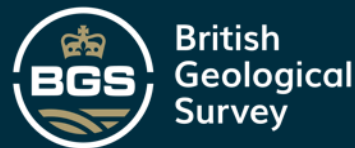
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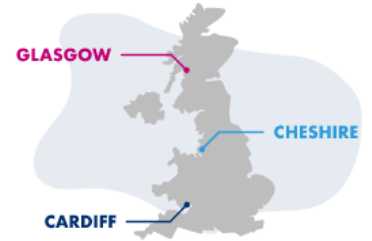


JOHN STEVENSON & EDD LEWIS

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# The Challenge



- UKGEOS (<https://www.ukgeos.ac.uk/>)
  - Network of observatories incl. Glasgow, Cardiff & Cheshire
  - Established to deliver essential new data from underground to better understand the system to improve geothermal energy, hydrogen, carbon capture and storage.
  - Will have 102 boreholes & >1600 sensors
  
- How best to deliver this data using open standards & FOSS tools?

# Solutions

- Sensor Observation Service using istSOS
- SensorThingsAPI using FROST Server
  
- SOS (One sprint)
  - Data was split between DB and istSOS
  - XML input & output
  - Difficulty with clients
- Moved to STA (Two sprints so far)
  - Better documentation
  - Partners using it
  - JSON based API easier to use

# Infrastructure and data transfer (ETL)

## ETL process:

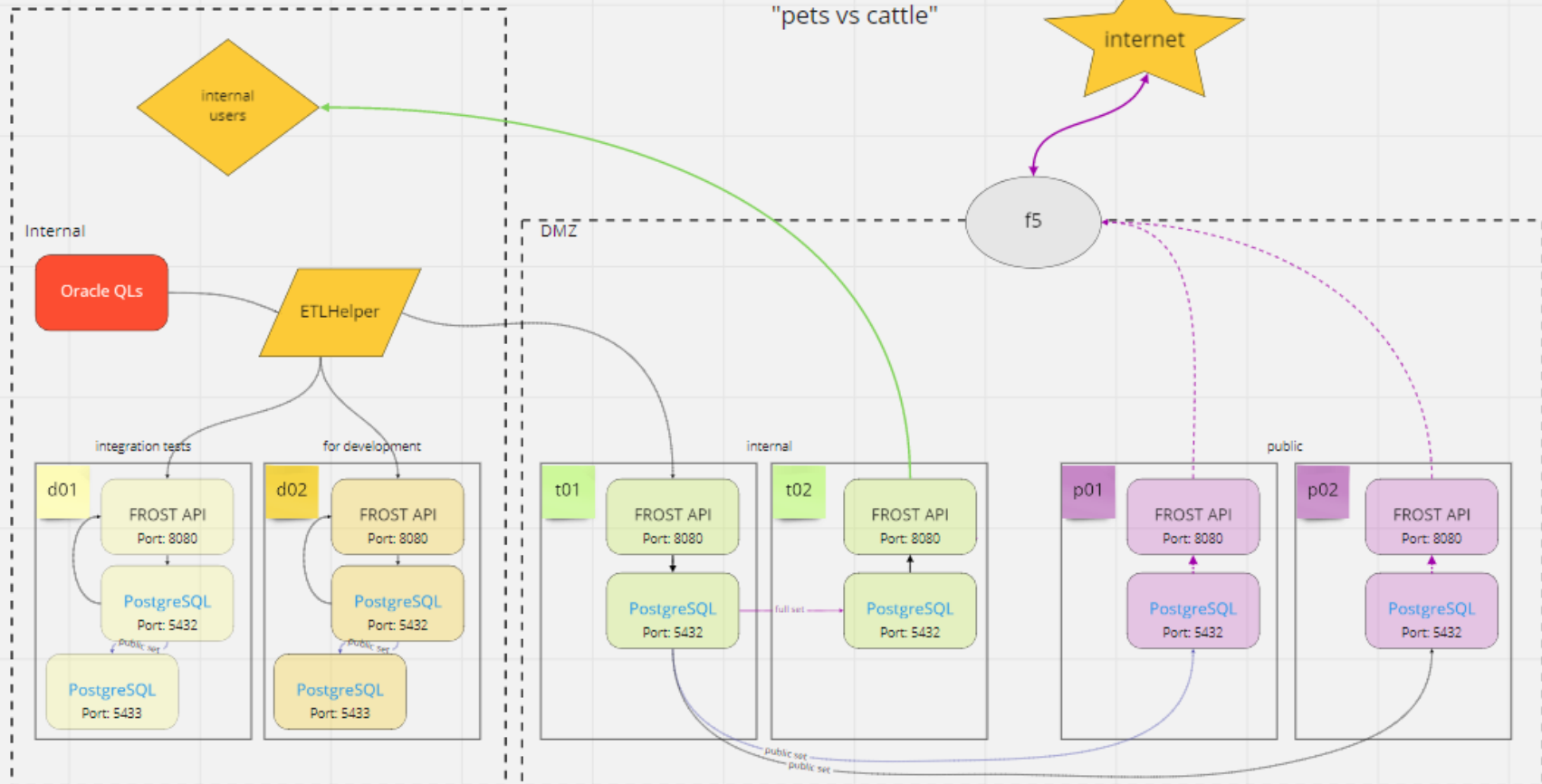
- Python script reads from views in Oracle database
- Uses our ETL Helper library: <https://github.com/BritishGeologicalSurvey/etlhelper>
- Migrate records that have changed in given time span
- Using asyncio gives 10x speed up
- Database – database transfer via pglogical with row filters

## Infrastructure requirements:

- Separate servers for internal and public use
- Data are pushed to DMZ (no pull)
- Each production server has redundancy
- IDs are the same in all environments
- The whole pipeline is covered by tests
- Single step transfer

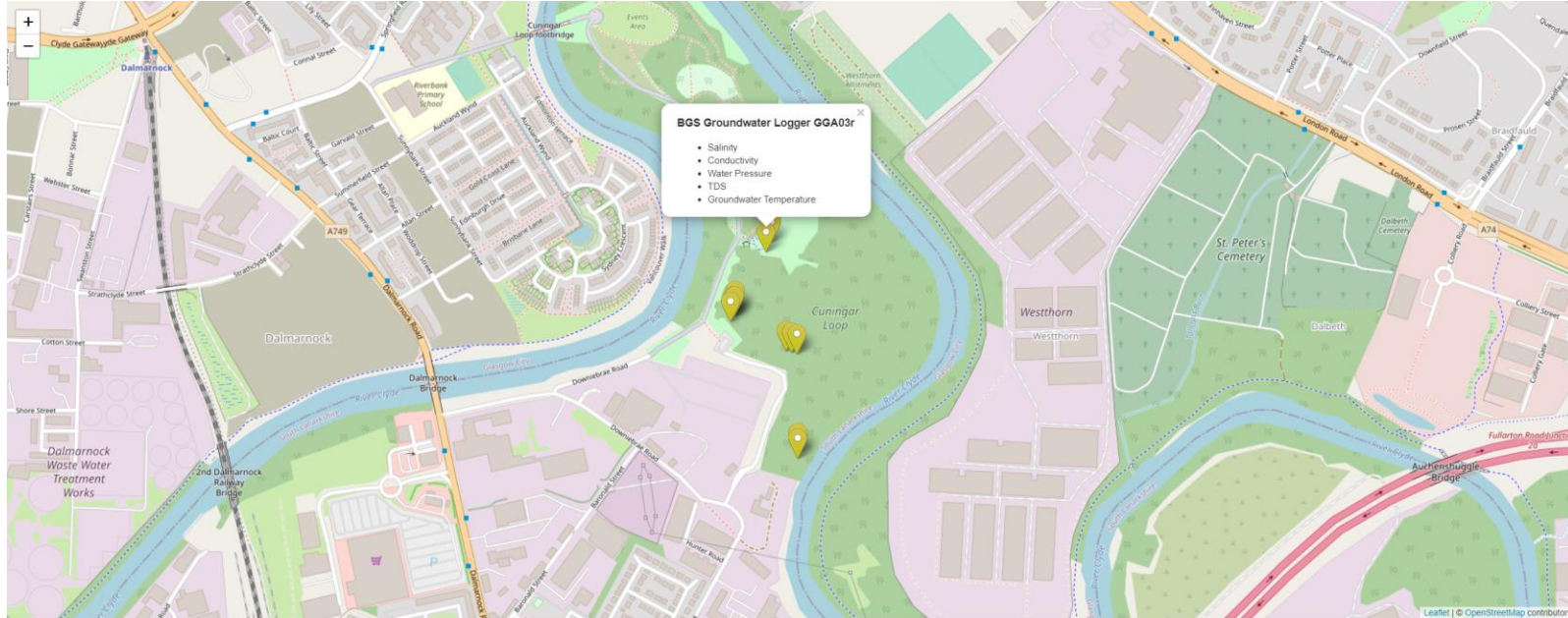
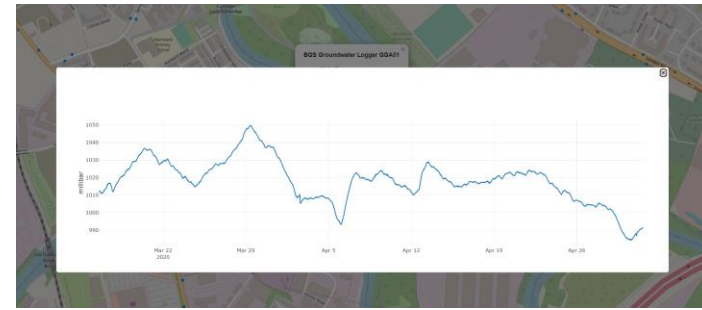


"pets vs cattle"



# Visualisation

- Using <https://github.com/DataCoveEU/STAM>
- Very easy to implement



# Next steps

- Publicly accessible API endpoint – Target Q1 2021
- Map & Data Visualisation built on endpoint (<https://github.com/DataCoveEU/STAM>) incorporated with UKGEOS website.
- Add geological data – logging
- Increase O&M alignment
- Expand to include other BGS sensor networks
  - <https://www2.bgs.ac.uk/groundwater/shaleGas/monitoring/vopDataSummary.html>
  - <https://www2.bgs.ac.uk/groundwater/shaleGas/monitoring/lancsDataSummary.html>
  - <https://www2.bgs.ac.uk/groundwater/datainfo/levels/home.html>



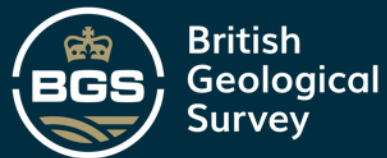
# Thanks

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- Liam Spencer
- Carl Watson
- Alan Douglas
- James Passmore
- Martin Nayembil

## Discussions and technical support from:

- Mickael Beaufils - BRGM
- Sylvain Grellet - BRGM
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THANK YOU

Any questions?

