Pragmatic service development and customisation with the CEDA OGC Web Services framework (COWS)

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COWS Architecture

The CEDA OGC Web Services framework (COWS) emphasises rapid service development by providing a lightweight layer of OGC service logic on top of Python, a mature web application framework for the Python language. This approach offers developers a flexible service development environment without compromising access to the full range of web application tools and patterns: Model-View-Controller paradigm, XML templating, Object-Relational-Mapper integration and authentication/authorization.

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Application: UK Climate Projections '09 User Interface

http://ukclimateprojections-ii.defra.gov.uk

The UK Climate Projections 2009 are a set of probabilistic data products for the UK climate over the 21st century. The UKCP09 UI provides a rich, interactive user experience including map-based selections and outputs. The implementation integrates and extends Open Source GIS technologies including GeoServer, PostGIS, OpenLayers and TileCache. Where necessary new components have been developed using the COWS framework. A bespoke WMS dynamically extracts data from the UKCP09 datasets. The UKCP09 UI presents these layers from the COWS-WMS along with coastlines and geometries served by GeoServer. Back-end services for data extraction, plotting and processing are implemented as a WPS built on COWS. COWS-WPS processes range from short jobs, such as plot generation and small data extractions, to complex Weather Generator simulations that may take hours to complete. Each WPS Process is implemented as a Python module that executes in its own environment interacting with the WPS server through a well defined API. The COWS-WPS server supports a variety of process execution modes within this API. WPS Processes that require fast response times are executed synchronously within the application server or in a sub-process to avoid thread safety issues. For longer running WPS Processes COWS-WPS executes jobs asynchronously by passing them to a back-end scheduler (Sun GridEngine), allowing execution on a cluster of nodes.

Application: QESDI Data Portal

http://phobos.badc.rl.ac.uk/qesdi/

The QUEST Earth System Data Initiative (QESDI) facilitates exchange of data within the QUEST thematic programme. It provides access to a diverse range of data products produced within QUEST and complementary external datasets.

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