

Open Source Software and Open Interoperability Standards at EDINA National Datacentre

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Overview of Presentation

- Introducing EDINA national datacentre
- Our thoughts on open source software and open interoperability standards
- Two case studies:
 - *Digimap*
 - *DIaD* (Data Integration & Dissemination)
- Conclusions



EDINA National Datacentre

- A not-for-profit national datacentre for tertiary education since 1995
- Based at The University of Edinburgh, Scotland
- Our mission...

To enhance the productivity of research, learning and teaching in UK higher and further education.

- Focus is on services, but also R&D
- Geo-Services and research team
 - Largest team within EDINA (~35 people)
 - OGC associate member since 1999
 - Substantial experience handling geospatial data on a large scale



Open Source Software

- EDINA tasked with pioneering research role – to enhance academic services through innovation
- OSS used throughout our production systems:
 - PostgreSQL+PostGIS
 - >450M geographic objects
 - MapServer, GeoServer, TileCache
 - 1.5M Maps/month generated
 - OpenLayers, MapFish
- OSS highly customisable, freedom to evolve
- Virtualised environments – no licensing restriction per processor cost, greater architectural flexibility
- But not suitable for *all* purposes...



Open Interoperability Standards

- Many of EDINA's systems implement Open Geospatial Consortium OpenGIS® interoperability standards
- While we do not offer public WFS/WMS services, we do make extensive use of:
 - WMS, WFS, SLD, GLS, KML, GML...
 - Through various mapping / data download clients
- Our subscription services protected by Shibboleth authentication (implementing SAML to provide single sign-on and attribute exchange) and are free at the point of use

Digimap – *a case study*



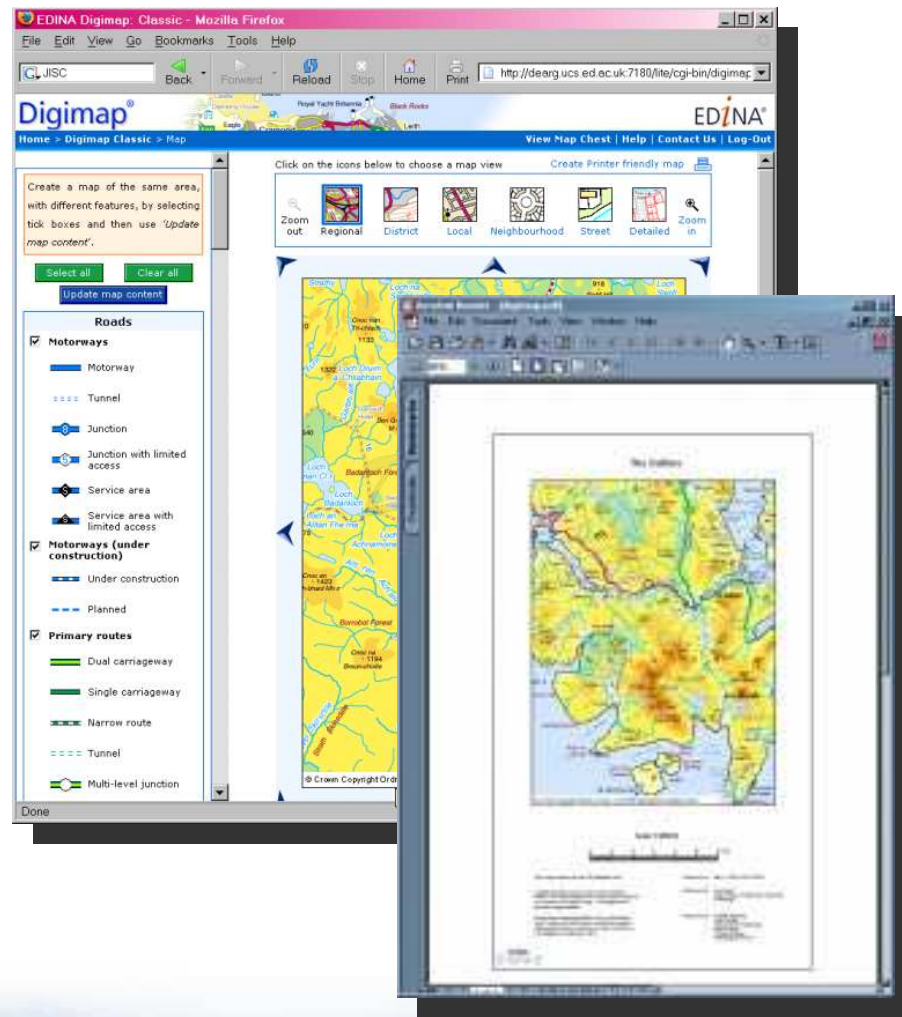
What is Digimap?

- An online mapping and data delivery facility
- Originally built to provide access to Ordnance Survey (GB) maps and data – a virtual map library
- Launched in 2000 – first time UK academia had access to this type and quantity of high quality data
- Subscription service with some 60,000 users
- Extended to now include hydrographic, geological and historic mapping and data
- Open standards and protocols heavily deployed by Digimap services – underpinned by a mix of both open source and proprietary software

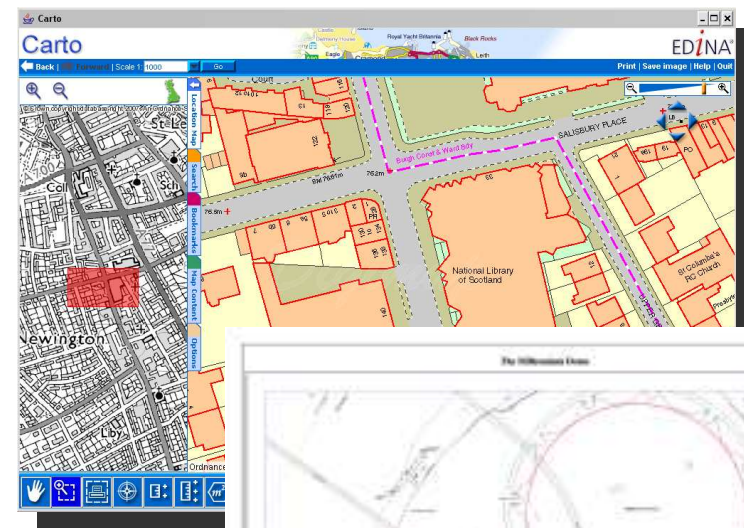


Digimap Mapping Facilities

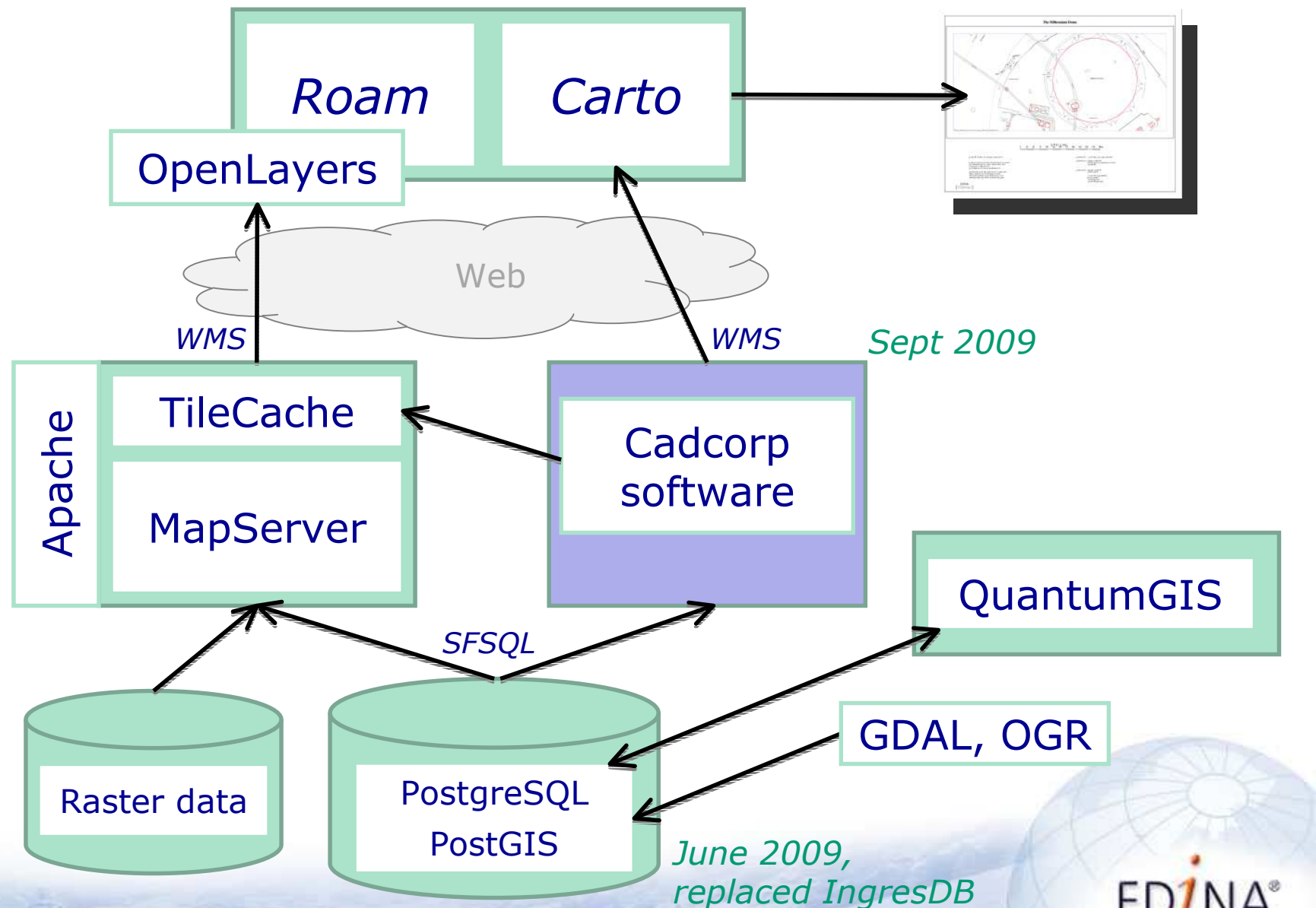
Classic / Roam



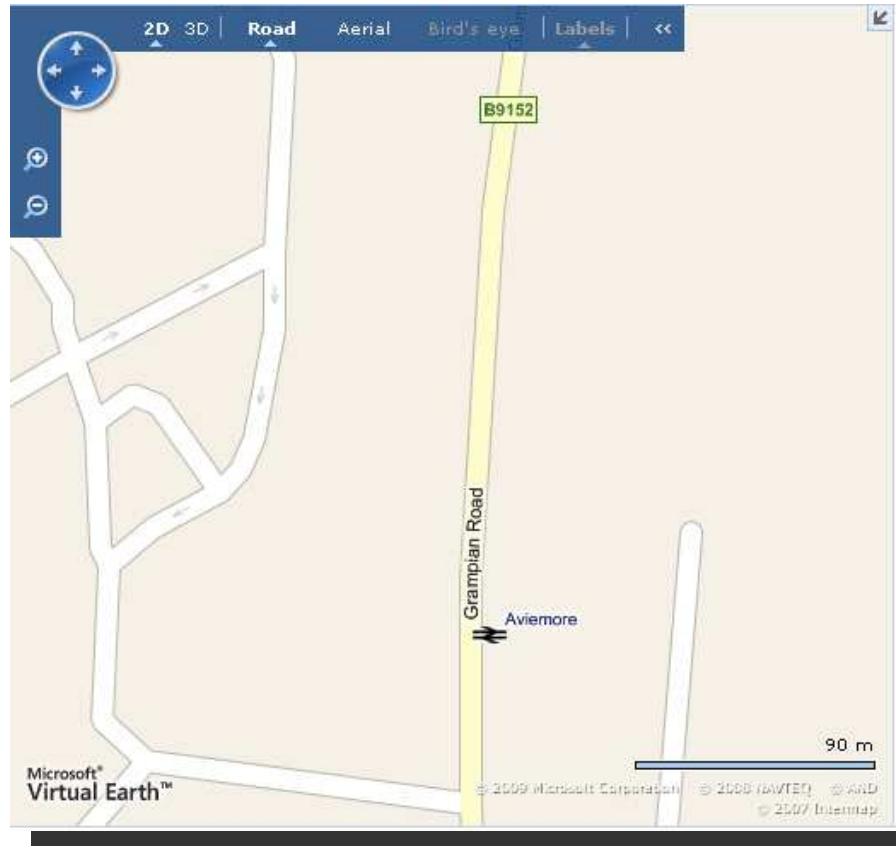
Carto



Digimap Architecture



Digimap and MS Live Search compared



Aviemore, Scotland



DIA D – *a second case study*

(Data Integration and Dissemination)



Data Integration and Dissemination

- An ESRC funded project exploring innovation in census data delivery mechanisms
- 'Geo-linking' the two most heavily used data sources:
 - Small area **statistics** from Census Dissemination Unit
 - Digital **boundary** datasets from UKBORDERS (WFS)
- Using...
 - Geographic Linkage Service (GLS) specification
 - Web Feature Service (WFS) specification
 - Open Source Software



Geographic Linking Service Spec.

- GLS provides a simple standardised way to exchange attribute information that applies to a geospatial dataset – CDU, ONS

- Two sets of operations:

1. *GetData* – retrieve attribute data, an XML file in a format known as GDAS

(Geographic Data Attribute Set)

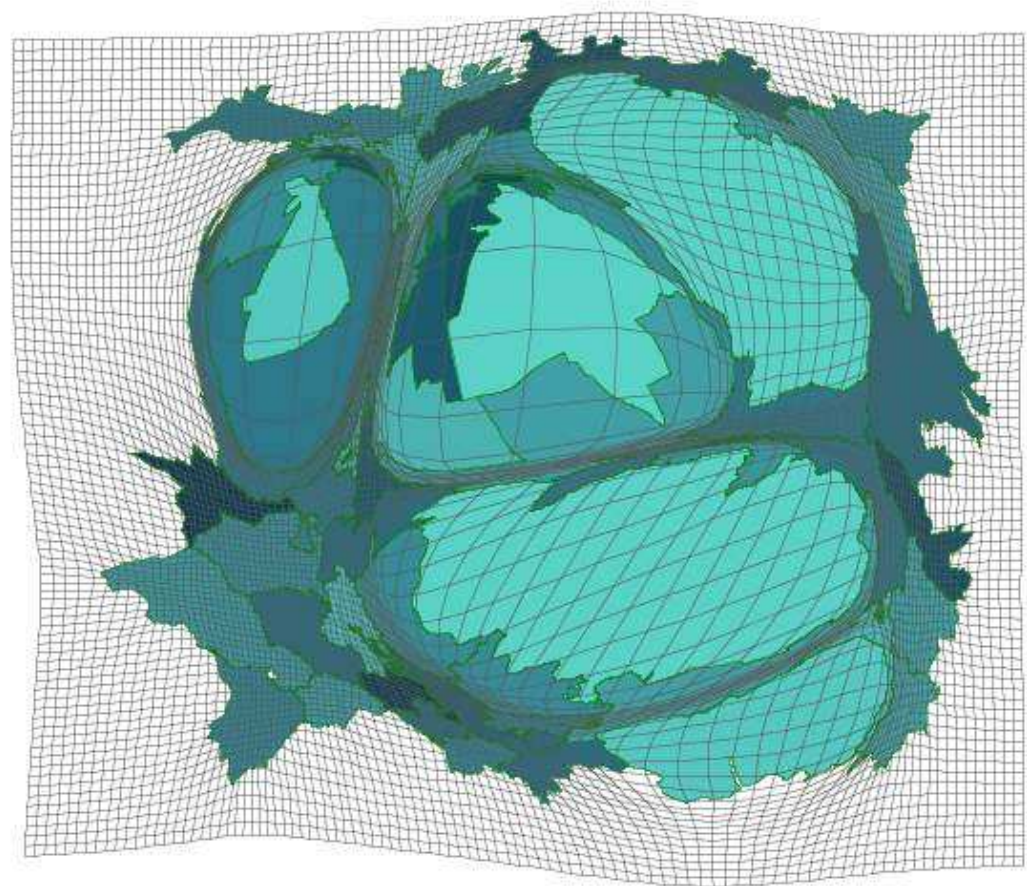
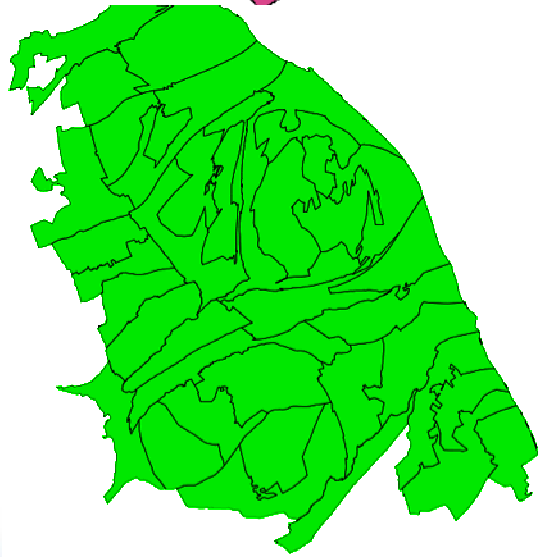
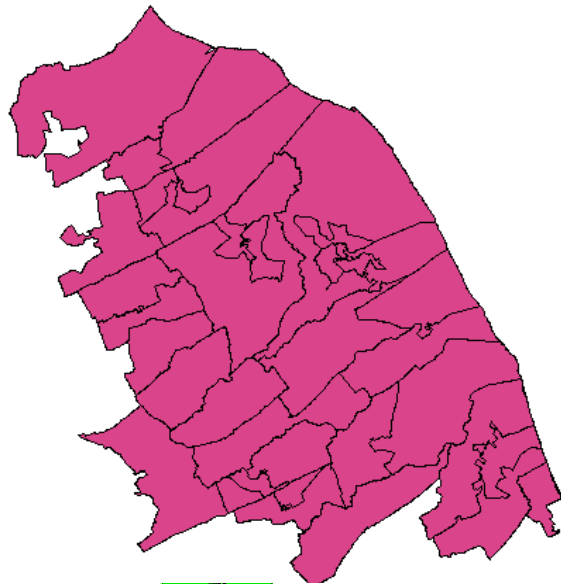
2. *JoinData* – Incorporate the XML file into a local spatial framework dataset. This dataset would normally be used to support mapping of this information



Open Source Software in DIaD

- DIaD implemented with Open Source Software:
 - OpenLayers / jQuery client
 - UKBORDERS (PostGIS → GeoServer WFS)
 - GLS implemented using OGR, outputs ESRI Shapefile
 - Cartogram generation with ScapeToad (<http://chorogram.choros.ch/scapetoad>)
- Plan to open source our own GLS code

Cartogram generation service



Cartograms generated via
DIaD Geo-linking service



Conclusions (1)

- Open source software vital for our operation
- Led our ability to provide robust, scalable services without additional licence costs but...
 - Proprietary software necessary for:
 - Plotting A0 maps, additional styling / bitmap symbols
 - GeoPDF with layer support etc
- Open standards have a definite role, vital for chaining open source products but...
 - They are not an end in themselves
 - Not always as mature (or static) as might wish and can evolve in short time periods!



Conclusions (2)

- From our **users'** point of view:
 - Services more functionality rich
 - Improved resilience
 - Fail-over and machine redundancy can be implemented through virtualisation and open source software stacks
- From our **funders'** point of view:
 - Improved service delivery whilst limiting recurrent costs
 - More flexibility, freedom to innovate
- EDINA now seeking opportunities to contribute back to Open Source community



Thank you

Any Questions?

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Case Studies

Digimap: <http://edina.ac.uk/digimap>

DIaD: <http://edina.ac.uk/projects>

