Brad Fisher
Kendall James

Thames Tideway Tunnel GIS: centralise, extend, enable and exploit information integration

Thames Tunnel

Creating a cleaner, healthier River Thames

Why London needs the Thames Tunnel

- **39 million m³** (10.3 billion gallons)**:** of combined sewage discharged to tidal River Thames in a typical year
- **50-60:** CSO discharges in a typical year
- **Environmental:** tides mean the sewage pollution and effects remain in the river for weeks, affecting dissolved oxygen, ecological health and habitats
- **Human:** frequency of CSO discharges is a health threat to river users who recreate on the river and walk along the foreshore
- **Legal:**
  - the UK fails to comply with the EU Urban Waste Water Treatment Directive
  - the Tidal Thames does not meet the UK Water Framework Directive Requirements

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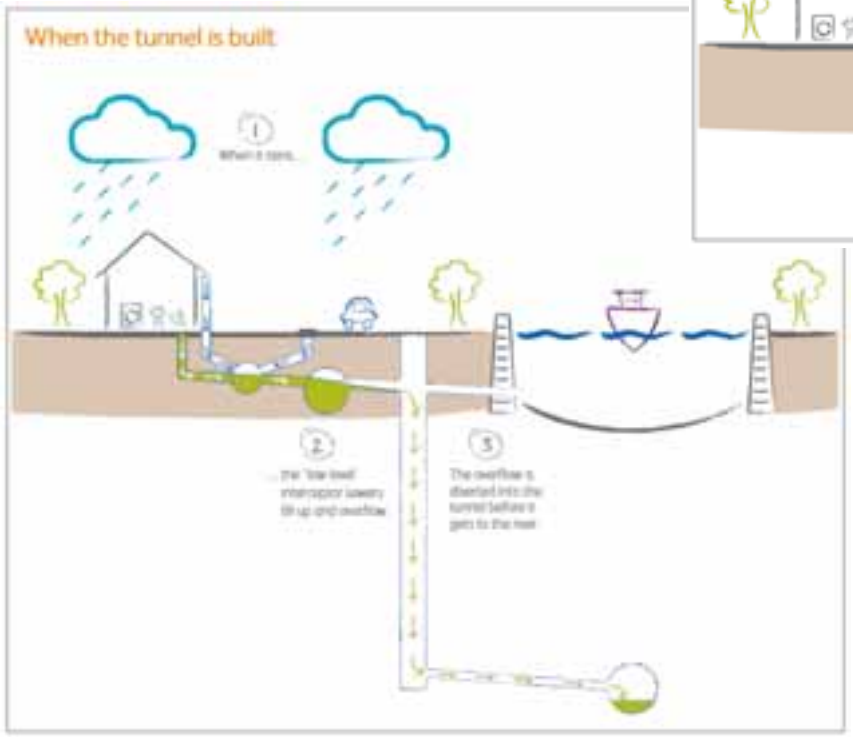
Problem / Solution Overview



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London Tideway Improvements

- Sewage Works Upgrades - £675m
- Lee Tunnel - £635m
- Proposed Thames Tunnel - £4.1bn

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The Thames Tunnel

- Through central London, broadly following path of river. Flows to transfer to Beckton STW.
- Major shaft sites for construction of tunnel and CSO connections to capture discharges.
- Construction scheduled to start 2016, for completion in late 2023.

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Meeting the challenges

- Use the existing sewer network to best advantage
- Maximise use of the river alignment for the main tunnel.
- Significant use of river for movement of construction materials.
- Provide mechanical ventilation to keep tunnel environment fresh (99.5% air released to be treated).
- Vertical alignment to minimise impact on existing infrastructure.

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Third Party Infrastructure affected by project

Tunnels: 45

River Walls = approx 20km

Bridges: 67

Utilities:

Gas mains: ~ 34km

Water mains = ~ 15km

Sewers: ~ 18km

Others include electricity and communications cables

In-river structures: 50

Buildings: 1,986 within 1mm settlement contour including 30 listed buildings

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Major Infrastructure Project

- A very c o m p l e x & l a r g e engineering project for a GIS to support.

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Primary role of GIS in Thames Tunnel is to support ‘informed’ decision making

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Many Stakeholders requiring Access to Information

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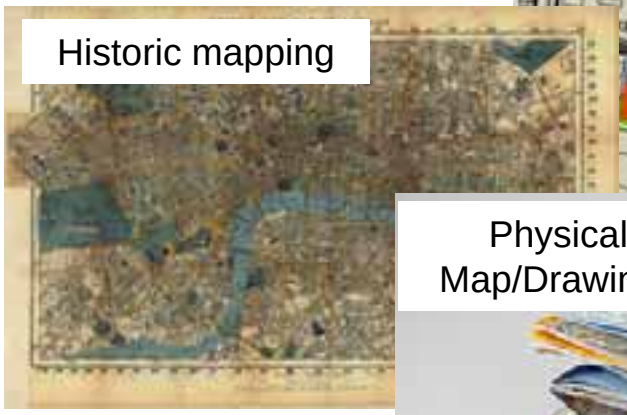
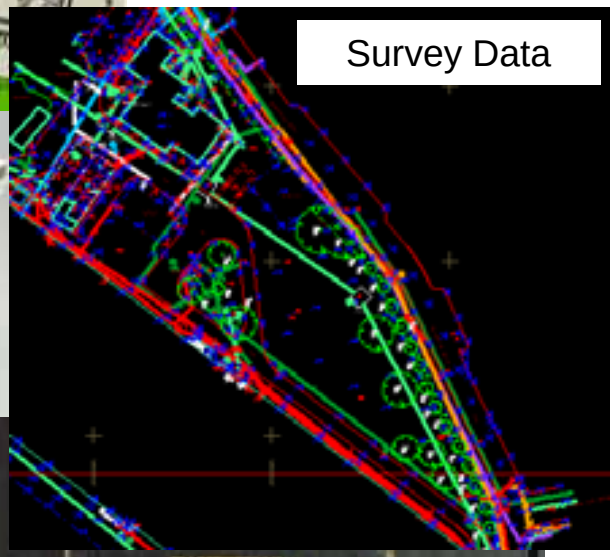
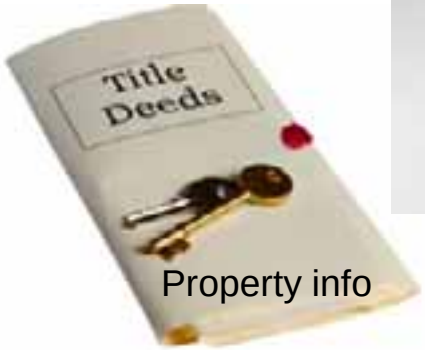
Many sources of data

Land use

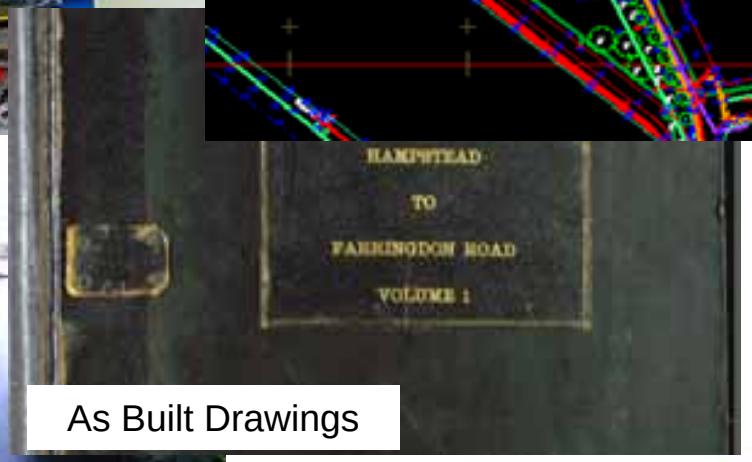

Historic mapping


Survey Data

Physical Map/Drawings



Property info



As Built Drawings

Photo's

Social networks

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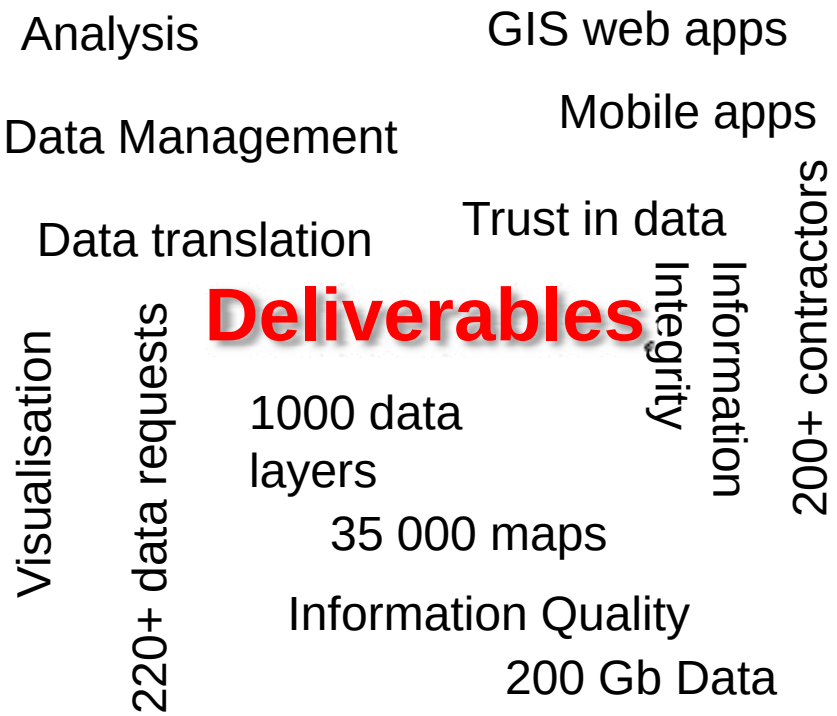
GIS Deliverables



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Land Use Classification

From this…

To this…

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Real time integrated information access

E

Collaborate

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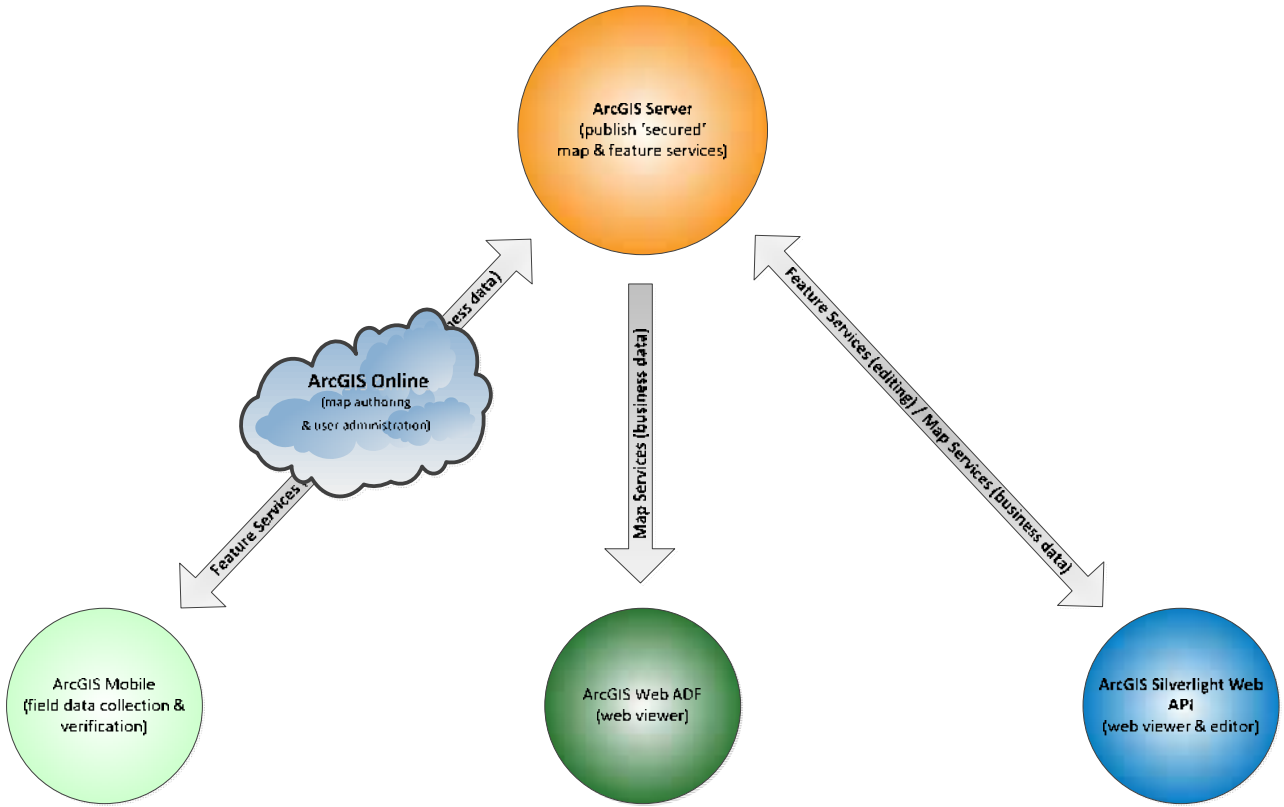
Integrated Solution



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Benefits

- Data Capture
  - Time saved on digitising and reworking
  - Data ownership and responsibility
- Improved ‘informed’ decision making
  - Access to information in real time
  - Field validation done in real time
- COTS Solution
  - nil development required

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Challenges

- Authoring of maps
  - Use ArcGIS.com rather than AGS Mobile Content Server
- ArcGIS for smartphone applications (Android & iOS)
  - Secured services initially not supported
  - Limited configuration
    - Limited map canvas configuration
    - Identify tool (WGS Coordinates)

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The Future

- Increased in mobile GIS
- Modular rather than holistic web viewers
  - Targeted at specific business requirements (workflows)
  - More ‘editing’ viewers
  - HTML5 Viewers
- Supporting BIM strategy
- Greater System Integration

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Demo

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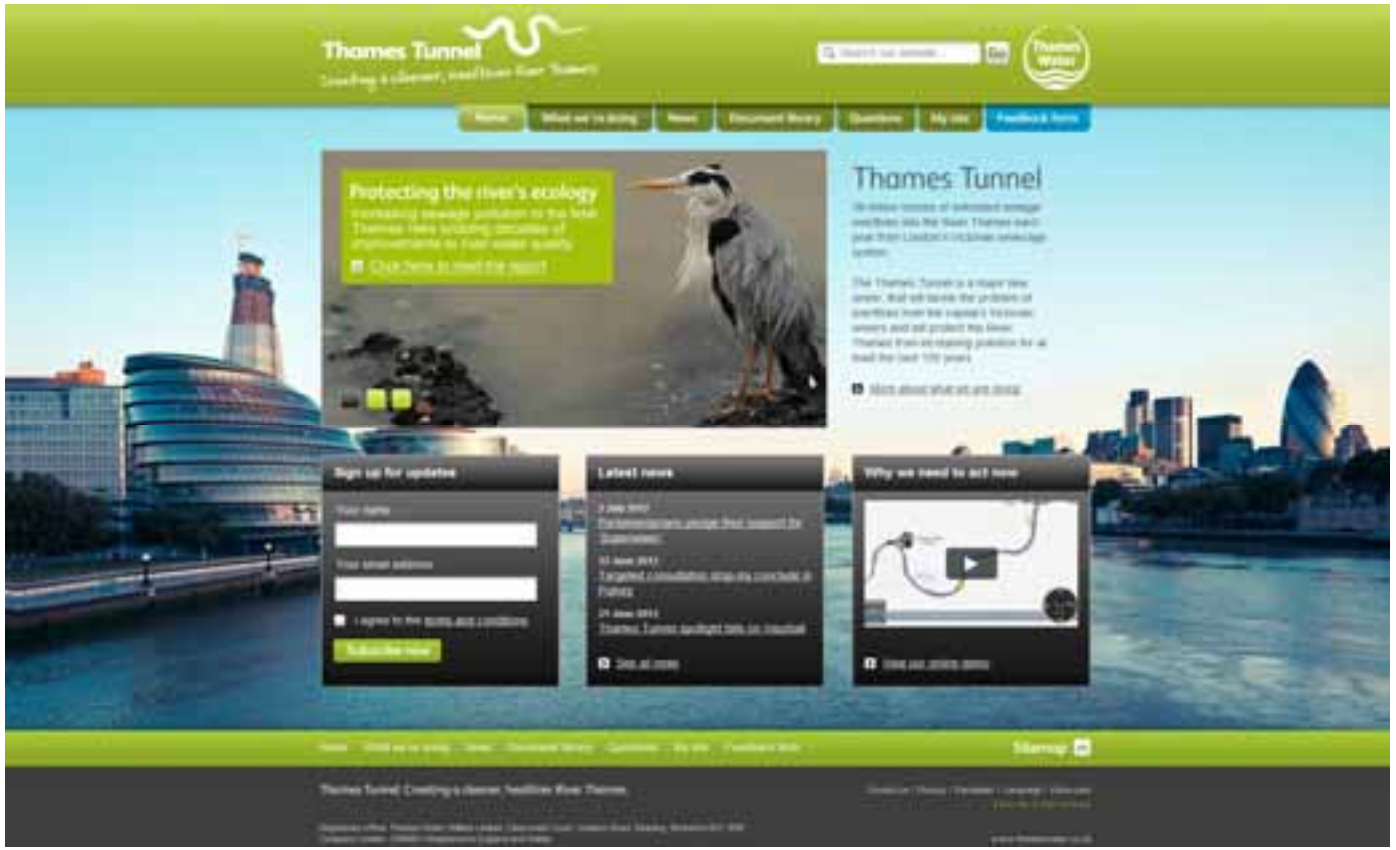
For more information

- http://www.thamestunnelconsultation.co.uk/



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Thank You

www.critigen.com **@critigen**

Brad Fisher
brad.fisher@critigen.com
@gisfish

Kendall James
kendall.james@critigen.com
@doylersa

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