Collaborative Geotechnical BIM technologies

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Holger Kessler - Team Leader Modelling Systems (BGS)
1. Current Challenges
   Ground Investigation Industry

2. R&D Project
   BIM for the Subsurface

3. Proposed Solution
   Collaborative Geotechnical BIM Suite
37% of project overruns cite ground problems as a major contributor

70% of public projects were delivered late and 73% were over the tender price

*National Economic Development Office*

*National Audit Office*
#1 – Constrained approaches to site investigation

Traditional Geotechnical Data Journey

R. Chandler, R. Hutchinson 1998

Linear / waterfall process

Inefficient desk studies & planning

Significant delays receiving data

Data re-entered multiple times

Data often not retained or reused
#2 – Limited availability of quality geotechnical data

How long does it take to get hold of the data - Days, Weeks, Months?
Current Challenges

#3 – Limited availability of subsequent Interpretation

Where is the Geology...
Global leader in Geotechnical Data Management and Geotechnical BIM software. Autodesk AEC Geotechnical Industry Partners, providing geotechnical data integration with AutoCAD Civil 3D

National custodian of geoscientific data with extensive experience & knowledge of 3D geological modelling methods. Over the past 10 years developed significant coverage of geological models.

World leading engineering, design and project management consultancy, proactive in leading the exploitation of BIM, experience implementing BIM on client projects and provide advice to the UK Government on its BIM strategy

Implement BIM Level 3 - iBIM
Apply BIM principles throughout the Geotechnical Data Journey

Geotechnical BIM

Historic data & 3D models utilised throughout

Centralised data repositories

Incremental data delivery and iterative refinement

Data reuse and collaboration

Geotechnical Data Journey - Transformed

P. Child, C. Grice, R. Chandler 2014
Implement a Geotechnical BIM Suite

**BGS (Cloud Hosted)**
- BGS National 3D Model
- Mapping Datasets

**Keynetix (Cloud Hosted)**
- Geotechnical Data Factual
- Geotechnical Data Interpreted

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**Standard Compliant Web Services**

**Internet**
- Integrate | Collaborate | Share

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**HoleBASE SI Desktop**

**HoleBASE SI Web Browser**

**3rd Party Systems**
Provide integrated access to BGS National Datasets

- DigMap Geology
- DigMap+ Engineering Properties
- GeoSure Ground Stability
- Flooding –Groundwater and Geological Indicators
- Non-coal mining hazard
- Mineral Resources
- Corrosivity
- Permeability
- Marine
- Geophysics
- Geochemistry & Contamination
- Seismology
- & more
Implement the BGS Geological Modelling Methodology

Map and DTM + Boreholes → Cross-sections

Geological Block model → Unit distribution → Fence diagram

H. Kessler, S. Mathers, H-G Sobisch, 2009
Enable engineer-driven, collaborative geological modelling

Proposed Solution

Improve collaboration throughout the wider supply chain

Drilling Contractors

Piling Contractors

Civil Engineers

???

Structural Engineers

Asset Owners

Project / Site Managers

Consultant Engineers

GIS Consultants

BIM Coordinators

Laboratory Technicians

CAD Specialists

Data Managers

Drilling Contractors

Clients
### Proposed Solution

#### Borehole Log BH137

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<th>Survey</th>
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#### Location Details

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Proposed Solution
1. Apply BIM principles to Ground Investigations
2. Implement BGS modelling methodologies
3. Extend existing models to include Interpreted data
4. Provide access to BGS mapping and geological datasets
5. Develop Cloud based geotechnical tools
6. Enhance existing Desktop applications
Questions?

Contacts

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