What are the benefits of Geotechnical Data Interchange?

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Dataforensics
Challenge 1
What is Geotechnical Data?
Geotechnical Data

“facts or figures obtained from all phases of a geotechnical project, including derivations from other data

NOTE Facts and figures might include text, numbers and formulae.”

Source: BS 8574:2014 Code of practice for the management of geotechnical data for ground engineering projects
Data or Information

If you can process it into one or more formats

without re-inputting it

or

without using multiple cut and paste operations

You have data
You have information
Quiz - Have you been given Information or Data?
Data or Information?

PDF borehole log
You have Information
Data or Information?

An AGS data file  A DIGGS data file
You have Data!
### Borehole ID: BH-31

<table>
<thead>
<tr>
<th>Depth</th>
<th>Material Description</th>
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<tbody>
<tr>
<td>10</td>
<td>Asphalt</td>
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<tr>
<td>15</td>
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<td>20</td>
<td>LEAN CLAY, Fine clay</td>
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<td>25</td>
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<td>30</td>
<td>LEAN CLAY, Fine clay</td>
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<tr>
<td>35</td>
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<table>
<thead>
<tr>
<th>Sample Type</th>
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<th>RQD</th>
<th>Penetration (N Val)</th>
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<td>SPT-4</td>
<td>3-6</td>
<td>3.25</td>
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<td>SPT-5</td>
<td>4-10-15</td>
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<td>SPT-7</td>
<td>9-22-50</td>
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<td>SPT-8</td>
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Overview

Dataforensics hired by Ohio DOT to review OGE internal processes and consultant processes

Goals:
- Review and provide recommendations for how to improve OGE processes
- Identify where DIGGS fits into the OGE processes and consultants processes
Why do we care about data?

- How would you feel if you were told to re-type the N-Value for a single borehole 10 times?

- How reliable would that data be?
Typical Consultant Workflow

1. Layout Borings CAD
   - Check for Obstacles Google Earth
   - Locate Holes on Phone with KML File

2. Staff Engineer Stake Holes
   - Handwrite Sample Label
   - Handwrite Field Log

3. Manually Type Field Data into gINT
4. Type Locations into gINT

5. Survey Locations (Digital)

6. Manually Type Test Schedule
7. Handwrite Sample Data – Lab Sheet
8. Transcribe Test Data Excel
9. Manual Input Lab Test Summary in Excel
10. Transcribe Test Data gINT
11.
Three Golden Rules for Data Entry

1. Only do it once
Three Golden Rules for Data Entry

2

Get someone else to do it
Three Golden Rules for Data Entry

3

Do NOT put multiple pieces of DATA in the same field
Data Interchange Standards

- Allows Data Producers to optimize their processes
  - Use software that best fits their needs
- Allows Data Consumers to utilize data
  - Use software that best fits their needs
Geotechnical Data Producers

- Field Personnel
- Lab Personnel
- Design Personnel
- No software fits the needs of all consumers
- Software must communicate data
Geotechnical Data Consumers

- Consultants (for historical projects or teaming projects)
- Clients (DOT’s, USACE, large commercial/industrial clients)
- Contractors
- Different departments (e.g. within a DOT – pavement design, bridge design, culvert design, etc)
5 stages of data transfer
15 stages of data transfer
Streamline Internal Processes

Onsite Logging Tablet

Laboratory Management Software

Boring Log Software

Data Analysis Software

CAD Software

GIS Software
Benefits for Consultants

- Enables consultants to get DATA from clients (DOT’s, USACE, teaming partners)
  - Use data without re-inputting it – reduces costs!
- Eliminate redundant data entry internally
  - Fewer errors and reduces cost of internal processes
- Optimize your internal process for producing data
  - Don’t need to have a different process for each client/owner
  - More efficient, more reliable data, lower risk
- Do more design instead of data manipulation
Benefits for Owners

- More reliable data provided to owners
- Enables contractors to use DATA
  - Optimize construction, reduce risk, safer/more reliable
- Eliminate redundant data entry internally
  - Fewer errors and reduces cost of internal processes
- Optimize your internal process for producing data and sharing data among data consumers
- Reduce software integration costs
Status of DIGGS

- DIGGS version 2.5 released in 2018
  - Dataforensics has tested this extensively with ODOT’s data
  - ODOT has tested this extensively with ODOT data and consultants data
  - Dataforensics has tested this extensively with CPT data
## Keynetix DIGGS Conversion Tool

### Excel Sheet Preview

<table>
<thead>
<tr>
<th>R</th>
<th>S</th>
<th>T</th>
<th>U</th>
<th>V</th>
<th>W</th>
<th>X</th>
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### Table Details

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<th>Rock Core Method</th>
<th>Sampling Method</th>
<th>Latitude</th>
<th>Longitude</th>
<th>North</th>
<th>NAN</th>
<th>East</th>
<th>NAE</th>
<th>Plunge</th>
<th>Depth Log Page</th>
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<tbody>
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<td>SPT / NQ2</td>
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**Note:** The above table is a screenshot of an Excel sheet used for data conversion purposes.
Dataforensics DIGGS Conversion Tool
DIGGS Status

- Conetec is able to generate DIGGS files natively (CPT)
- FHWA has a project with WSP to develop a web-based tool for generating DIGGS data.
- Various other DOT’s and USACE are actively looking at requiring DIGGS
How Can I Begin Using DIGGS?

To generate DIGGS data automatically:
- You need an export mapping to export from your data structure to DIGGS

To import DIGGS data automatically:
- You need an import mapping to import from DIGGS to your data structure

For more information talk to me here at the conference or email me at sdeaton@Dataforensics.net
Data Management Maturity Model

Thank you to all the assistance provided by all Ohio DOT OGE personnel involved in the review process.

Special recognition is afforded to Chris Merklin, Steve Taliaferro and Paul Painter who have been instrumental in this review process.