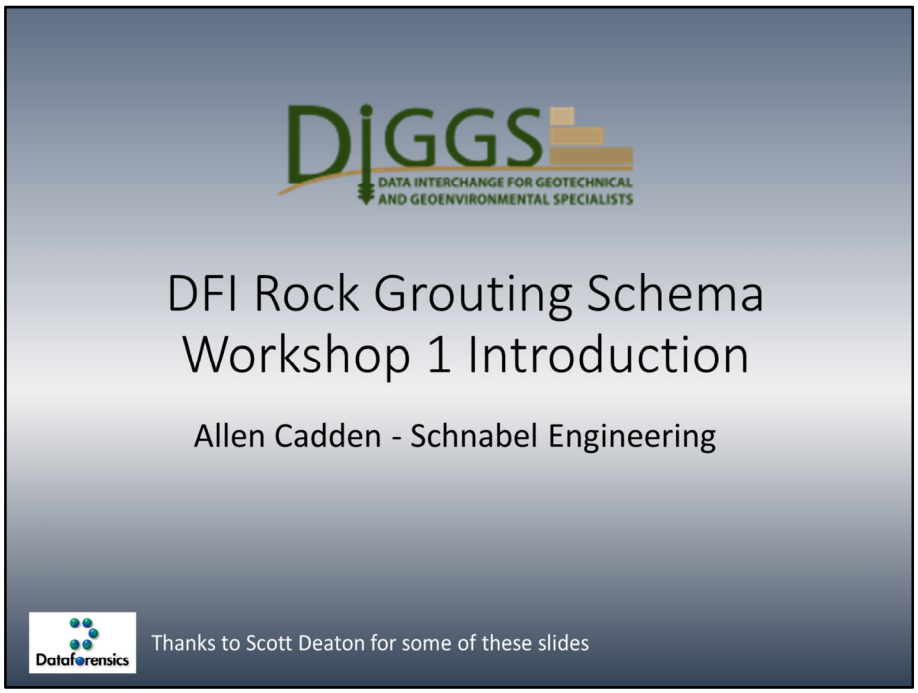
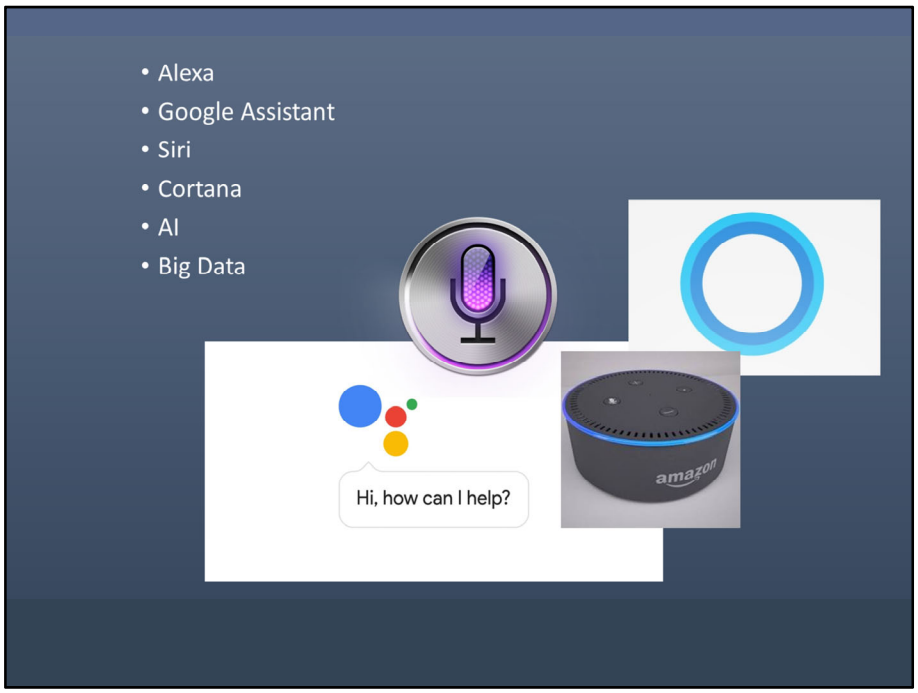

DiGGS
DATA INTERCHANGE FOR GEOTECHNICAL AND GEOENVIRONMENTAL SPECIALISTS
DFI Rock Grouting Schema Workshop 1 Introduction
Allen Cadden - Schnabel Engineering
Dataforensics
Thanks to Scott Deaton for some of these slides

DFI Special Project - Overview

- DIGGS was built to capture geotechnical data in linear elements such as borings thus we can capture grouting and ground improvement, deep foundations, and anchor installation data.
- As owners become more sophisticated, their expectations for data delivery in a timely fashion is ever increasing. Establishing industry standards for the data structure and transfer will aid everyone in the deep foundation industry to meet these needs from the point of acquisition through storage.
- This common structure will further allow experts at each step of the process to maximize their skills in handling and using this data for the betterment of the project and all team members involved, rather than converting data sets into usable formats.
- This project seeks to begin the integration of DFI technologies into this data transfer format and establish methods and authorities to manage the open source schema in the future; beginning with rock grouting.

DFI Special Project - Overview

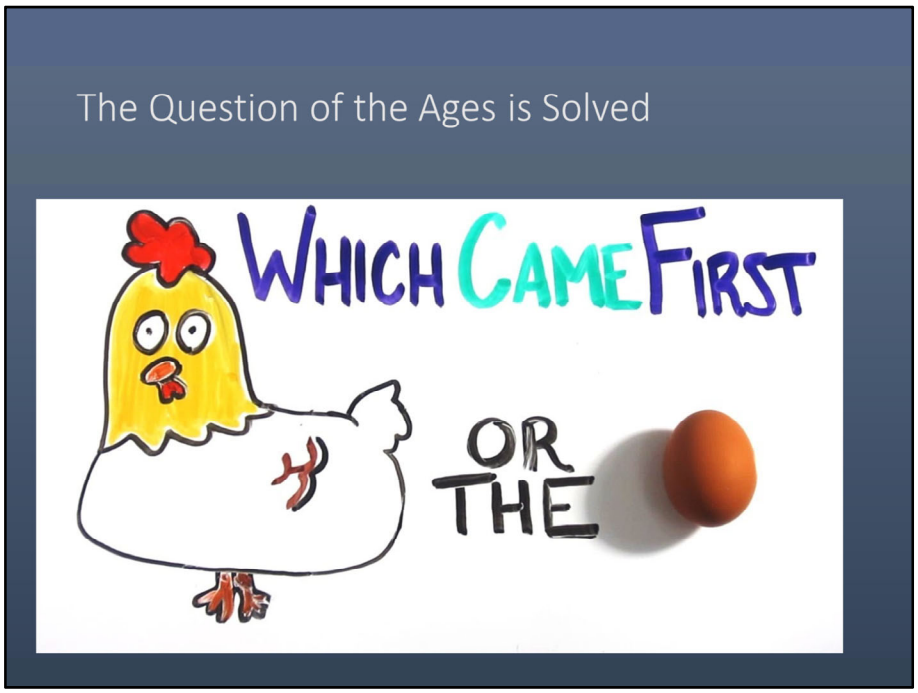
- Once the rock grouting schema is established every step of the process can be documented and data handling expedited, including:
  - background geotechnical data
  - grout hole location
  - drilling of the hole with MWD data capture already in place on many drills
  - packer setting and water testing data
  - grout injection and mix properties
  - closure tests
- Currently, many of the steps require paper capture, downloading of data from loggers, translation in spreadsheets or CSV file formats, and manipulation from one software package to another to achieve the proper interpretation and visualization.
- With this common structure, the data will be entered once and never touched again – reducing wasted time and error opportunities.



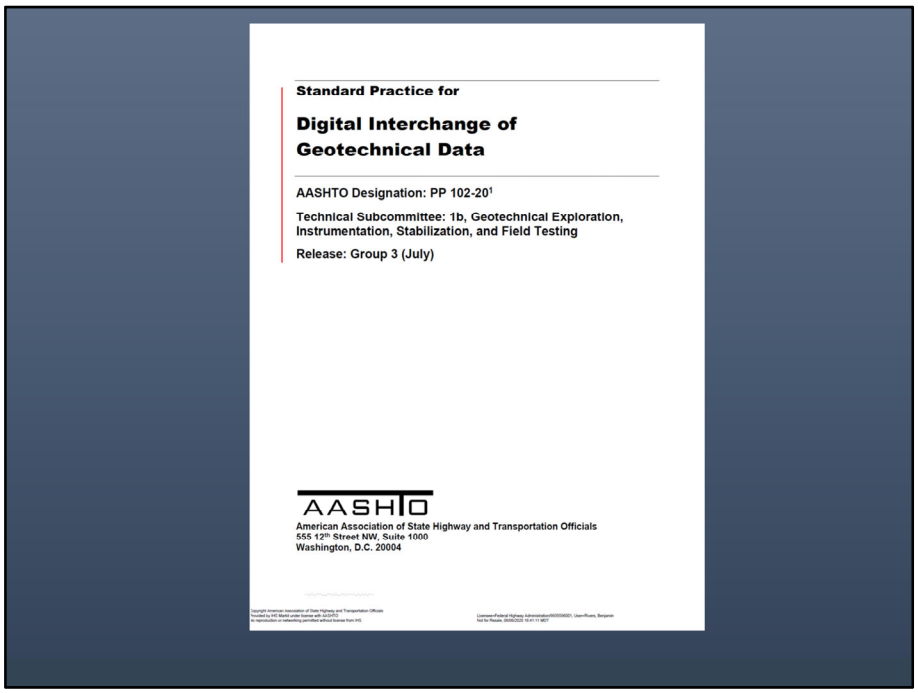
Technology is changing rapidly to make our lives easier
Technology in geotechnical engineering is also changing rapidly to make our work easier and more reliable and likely provide greater insights than we have time to generate now.
Data is a key component of making this all happen.
Work smarter – not harder.

Data is the future. Consuming it will be focus of project deliverables, performance assessment, and research going forward

DIGGS makes this possible



Rock grouting projects are ongoing all the time and several very complex proprietary systems have been developed to manage and visualize the data collected and control the process. For an owner, this is a double edge sword. This allows the project to be completed to a higher technological level, but also can be a challenge for the owner to manage and collect important data related to the project. - and with each project the different or evolving expectations from the owners can be challenging to the contractors.



Standard Practice for

Digital Interchange of Geotechnical Data

AASHTO Designation: PP 102-20[1]

Technical Subcommittee: 1b, Geotechnical Exploration, Instrumentation, Stabilization, and Field Testing

Release: Group 3 (July)

AASHTO

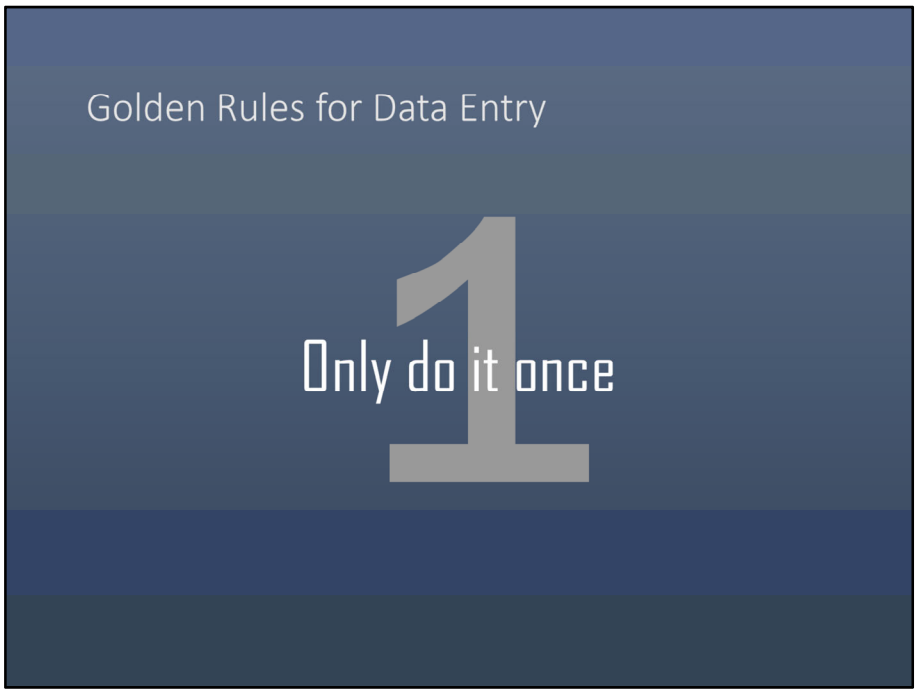
American Association of State Highway and Transportation Officials
555 12th Street NW, Suite 1000
Washington, D.C. 20004

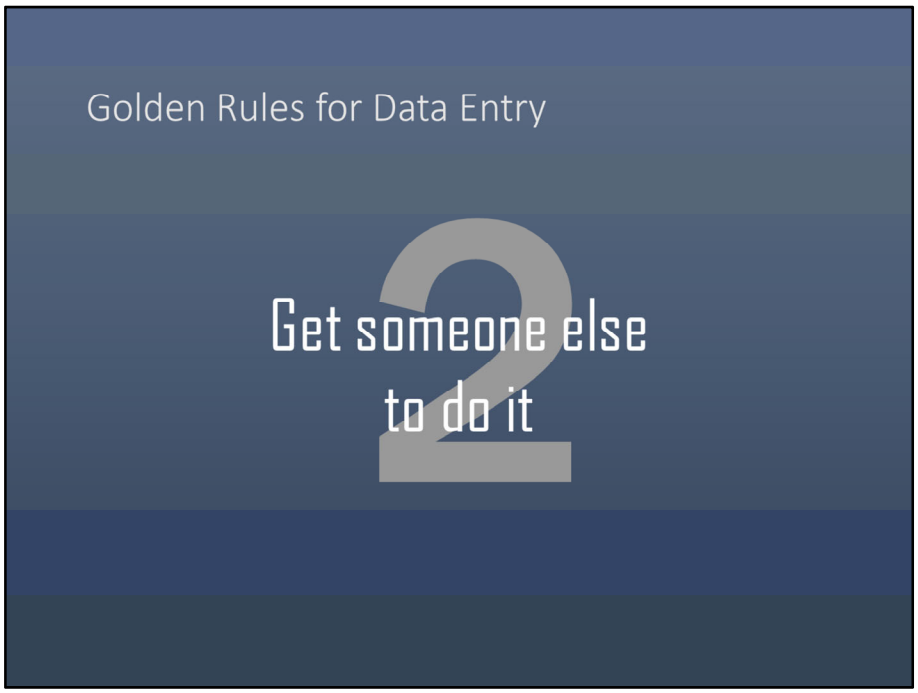
For geotechnical data exchange, we have addressed the Chicken or Egg question and AASHTO has adopted a provisional standard to require the test data to be delivered in DIGGS electronic format.

"This standard provides a consistent and efficient convention for geotechnical data transfer across electronic systems and software. The integration of this Standard within routine geotechnical practice allows for profound changes in workflow efficiencies and deliverables for project development, delivery, contracting, and acceptance."

5. DATA INTERCHANGE REQUIREMENTS

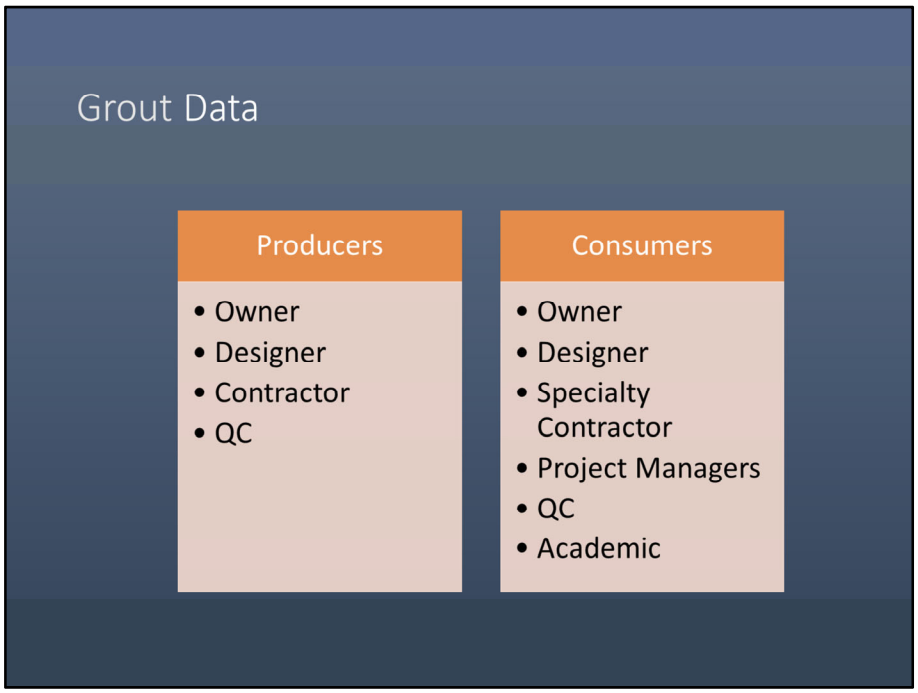
5.1. Data required per the reporting requirements under the AASHTO and ASTM standards listed in Table 1, or as specified by the Agency, and in general accordance with AASHTO R 13, ASTM D420, or other specified geotechnical-related field and laboratory testing objectives, **shall be electronically exchanged using the DIGGS schema**.


Golden Rules for Data Entry
1
Only do it once


Golden Rules for Data Entry
2
Get someone else
to do it

Data Interchange Standards

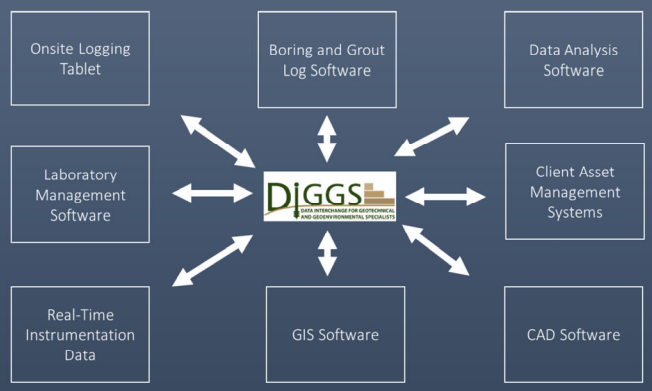
- Allows Data Producers to optimize their processes
  - Use software/platforms that best fits their needs
- Allows Data Consumers to utilize data
  - Use software that best fits their needs
  - Archive data in chosen storage systems



Every project generates data elements from many sources.
No software fits the needs of all consumers
Software must be able to share and communicate data

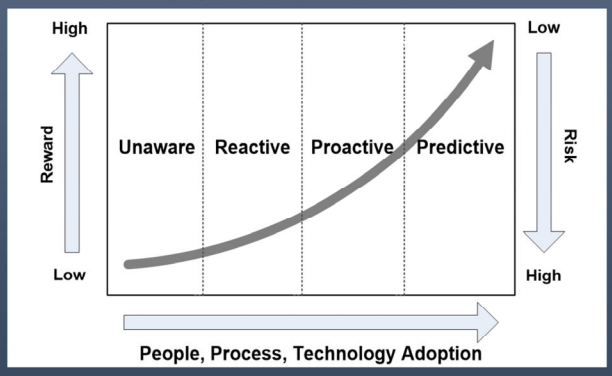
You don't want specialty contractors worrying about how to present the data in formats to make all users happy. And you don't want to have to pay for each producer to recreate the same data (and deal with the errors)

Streamline Processes

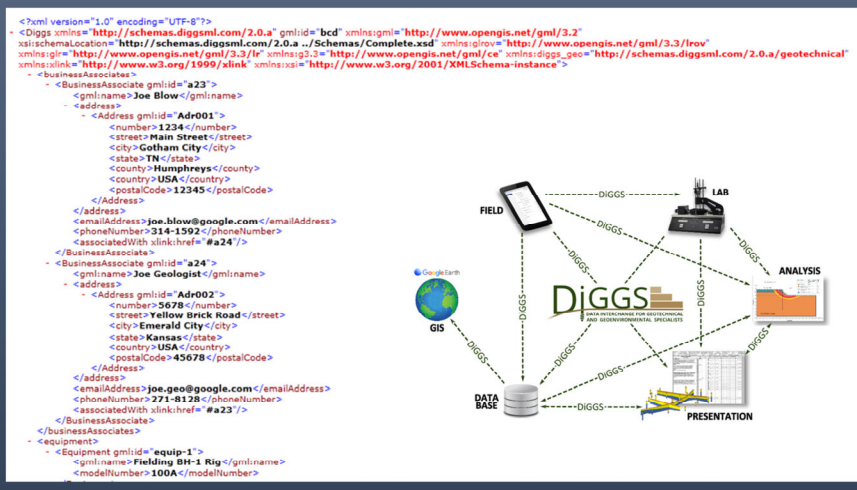


Data Management Maturity Model

Pareek, D. (2007) "Business Intelligence for Telecommunications"



15+ Yrs of Industry Efforts

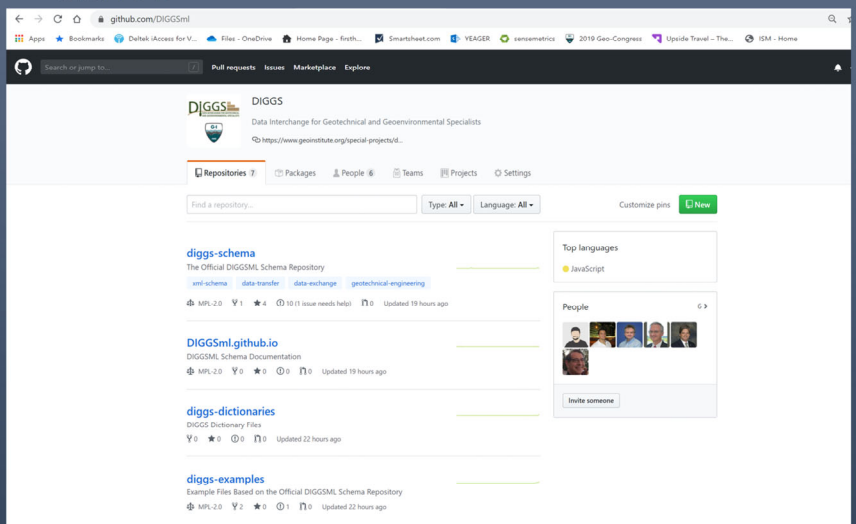


We have now moved from ASCII and spreadsheet files and proprietary databases to having a means to transfer data in a standard format used throughout our daily lives. XML. With the proliferation of the many devices capturing data, manipulating it, presenting it and string it.. We have to have a unified process for transmitting it from one point to another.

DFI Project Goals

- Build on 15 yrs of DIGGS development
- Expand the system to capture construction data (related to rock grouting)
- Use this as a means to broader understanding of the DIGGS system and benefits
- Extend what we learn here to other geo construction technologies.

GitHUB



https://github.com/DIGGSml/diggs-schema/wiki/Rock-Grouting-Schema-Development

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Now that you have the sample how do you share the generated data?
Welcome to the Data Interchange for Geotechnical and Geoenvironmental Specialists (DIGGS) website. We are looking for your involvement in the DIGGS community as we refine and implement DIGGS 2.0.

Agenda

- Workshop 1
  - Introduction
  - DIGGS overview training
  - Rock grouting data needs
    - Form Templates
    - Spreadsheets
    - Lists
- Workshop 2 (tomorrow)
  - Additional DIGGS Details; Q&A
  - Introduction of the DIGGS Rock Grouting Data Structure
  - Discussions
- Workshop 3 (TBD – Early October)
  - DIGGS Q&A
  - Review the Rock Grouting Schema and issues remaining
  - Discuss tool development and uses
    - Test w real data