

DIGGS SCHEMA OVERVIEW

DFI Rock Grouting Schema Workshop 1
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Outline

- What is DIGGS?
- DIGGS 101
- DIGGS Data Model
- Extending DIGGS for Rock Grouting

WHAT IS DIGGS?



What is DIGGS?

- Normative Document as a GML Application Schema
 - Normative document
 - provides rules, guidelines or characteristics for activities or their results.
 - GML Application Schema
 - Set of text documents in eXtensible markup language (XML) format that:
 - Defines data structure, objects and properties within the geotechnical engineering, geology, environmental and hydrology domains
 - Enforces rules for data organization
 - Objects derive from Geography Markup Language (GML) base types

What is DIGGS?

In addition to the application schema, DIGGS also includes/will include:

- Dictionaries (also in XML format) defining controlled terms and coordinate systems.
- Tools for assisting in the transformation or display of data in DIGGS format to/from other formats
 - Eg. Diggs feedback tool

So what do you do with it?

- The DIGGS schema defines the structure for how data is stored or transferred
- Data is carried in XML instance documents (files) or as text streamed “on the fly”. The text files/streams follow DIGGS’ schema structure.
- Primary purpose is to provide a standard for transferring data from one type of data system or application to another (eg. database to database, application to database, etc.)
- Can also be used for archival storage/retrieval of data.

What is XML?

- XML is tagged text:

- `<note>`
 `<to>Fred</to>`
 `<from>Jani</from>`
 `<heading>Reminder</heading>`
 `<body>Don't forget me this weekend!</body>`
 `</note>`

- Like HTML (tagged text for web pages), but:

- XML is designed to carry data – with focus on what the data is
 - HTML was designed to display data - with focus on how data looks
 - XML tags are not predefined like HTML tags are
 - Tags are defined within a schema document (XSD)

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Object

The screenshot shows the Microsoft Excel interface with the 'Developer' tab selected. A table is displayed in the worksheet, representing an XML structure. The table has columns A through H. The data is as follows:

	A	B	C	D	E	F	G	H
1	to	from	heading	body				
2	Fred	Jani	Reminder	Don't forget me this weekend!				
3								
4								
5								
6								

Annotations with arrows point to the following elements:

- Object:** Points to the 'note' icon in the top right corner of the Excel window.
- Properties:** Points to the 'to' and 'from' cells in row 1.
- Instance:** Points to the 'body' cell in row 1 and the 'Don't forget me this weekend!' cell in row 2.

What is XML?

- XML is the de facto standard for internet data transfer
 - Text-based (eg. human readable); self-describing; platform/software independent
 - Can accommodate complex data relationships and structures unlike other text-based data files (eg. CSV, AGS) or RDMBS'
 - Can be validated against schema to ensure conformance/standardization
 - Ubiquitous commercial and open-source tools available for validating, querying, processing, displaying, and transforming data



What is Geography Markup Language (GML)?

- XML grammar defined by the Open Geospatial Consortium (OGC) to express geographical features.
- DIGGS is built on GML (GML application schema)
 - Geologic/geotechnical data is inherently geographic data
 - GML has standardized Feature, Geometry data types
 - Allows for processing by GIS applications
 - Allows for display and manipulation of data over the Internet using web map services

What is DIGGS?

- DIGGS defines a structure that describes real-world objects and activities and their relations, that define the geotechnical/geoenvironmental domain
- DIGGS is extensible
 - Framework for adding additional sampling features, test procedures and measurement results not already included in the standard
 - Able to reference non-text data (photos, docs, etc.) as part of the transfer/data storage
- DIGGS does not specify procedures or reporting requirements, but instead is a framework that allows test specifications, procedures, etc. to be documented as part of the data transfer/storage.
- DIGGS is profilable
 - Can restrict the schema to enforce business rules for specific use cases

What is DIGGS?

- DIGGS Schema
 - XML files that describe how DIGGS “instance” documents (data files) are structured
 - Defines elements that are allowed
 - Defines element types and value restrictions, defaults, fixed values, etc.
 - Defines how elements are composited
 - Sequence (elements are required to occur in a specific order)
 - Choice (allows one of a group of elements to occur within a sequence)
 - Defines element substitutions
 - Defines namespaces (vocabularies used)