

DESIGNSAFE-CI

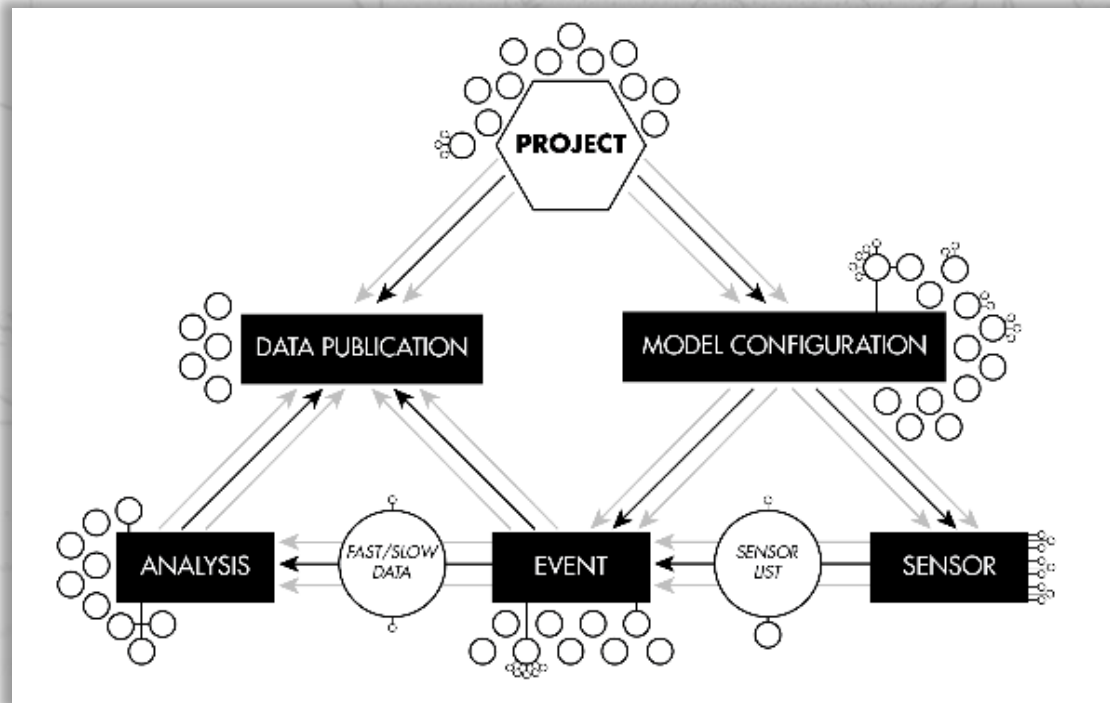
A NATURAL HAZARDS
ENGINEERING COMMUNITY



A DATA MODEL FOR LIFECYCLE MANAGEMENT OF NATURAL HAZARDS ENGINEERING DATA

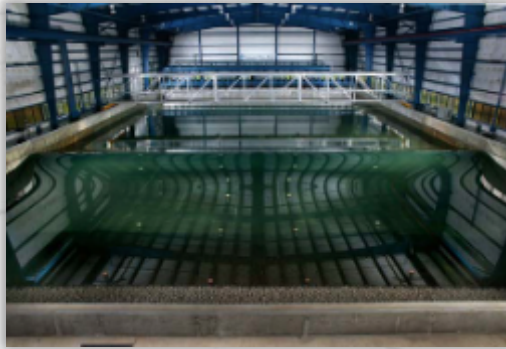
Natural Hazards Engineering Data

- Sophisticated experimental design
- Complex relationships



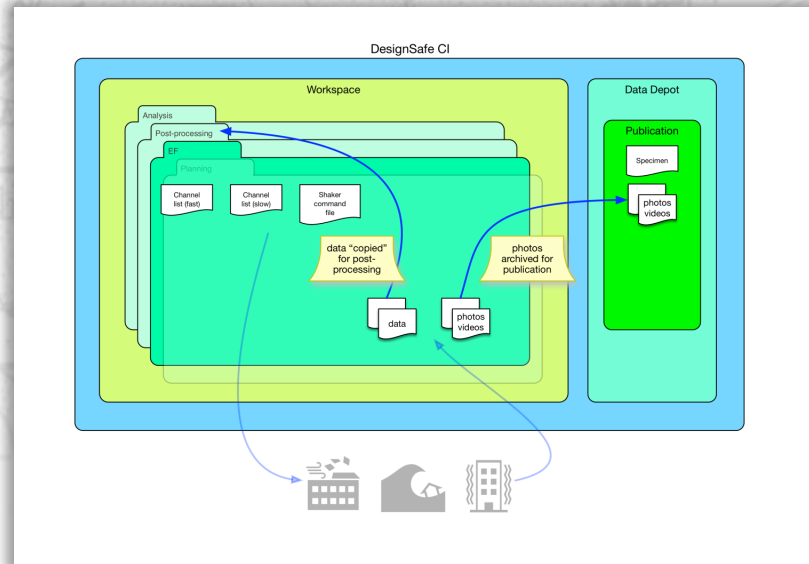
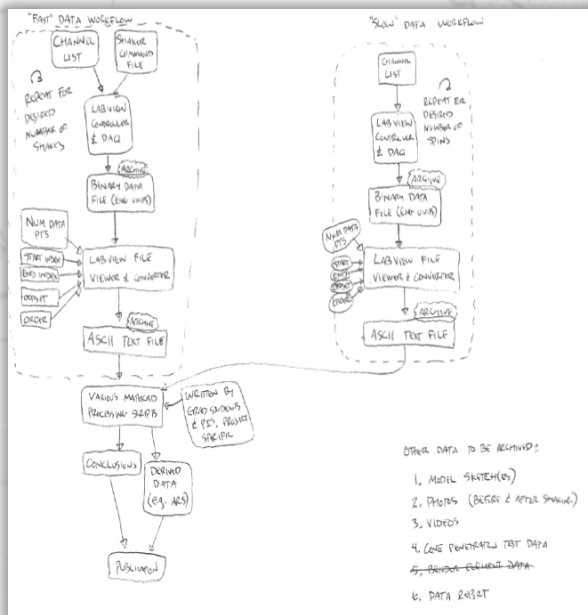
DesignSafe-CI

- Seven different experimental project types



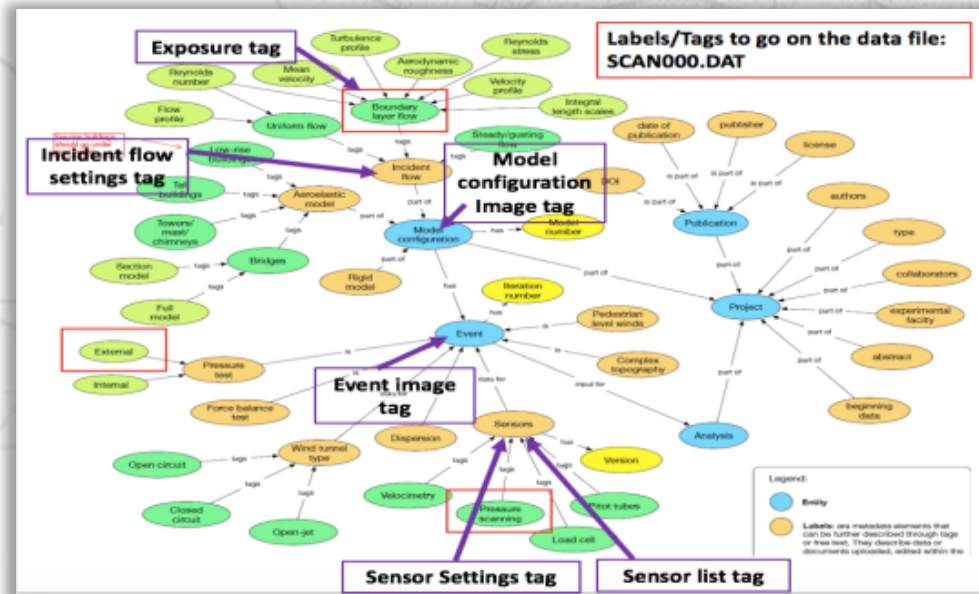
Modeling

- Draw workflows
- Equipment, processes, software, indispensable documentation



Modeling

- Analyze domain models to generalize entities
- Emphasize structure and provenance
- Document metadata



Progressive Curation: Project Creation

- Curate data throughout research process
- Minimal initial metadata
- Unique ID tracks with project through lifecycle

Create a New Project
[? Learn More](#)

? Project title(required)

Project Identifier:

PI

This value can be updated later on.

? Award Number:

? Project Type:(required)

Only **Experimental** and **Other** project types can be published.
We are working on implementing publication pipelines for the rest of the project types.
We can answer any questions through our Ticketing system or Slack .

Progressive Curation: Project Data and Documentation

- Files enter CI, fulfilling key data model entities
 - Model configuration
 - Sensors
 - Data output
- Transformation and analysis

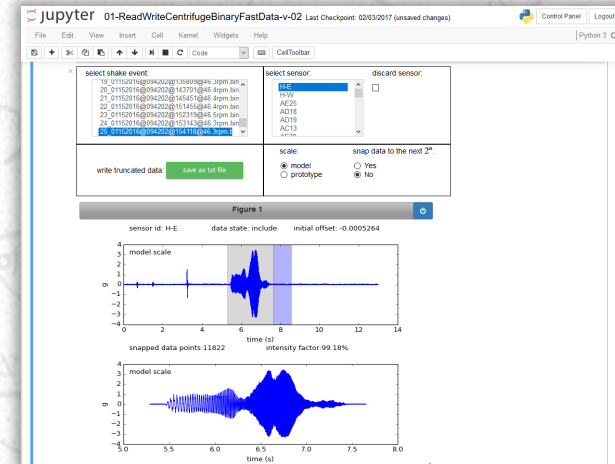
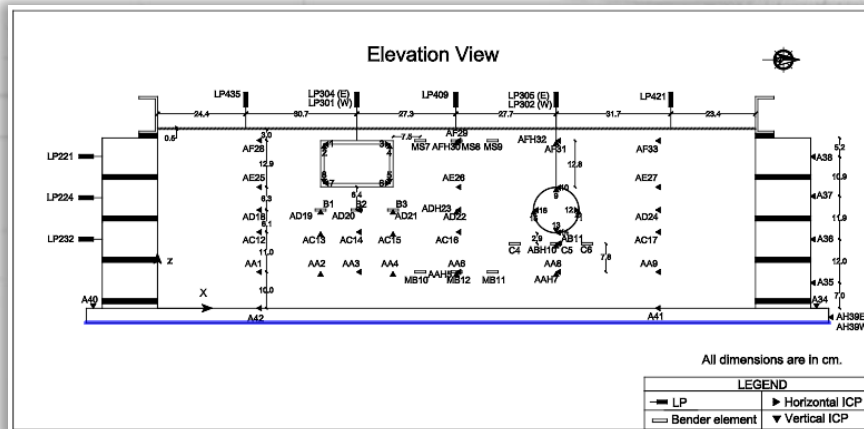


Table 7: The list of the sensors used in this study.

Sensor (XDCR) ID	X (cm)	Y (cm)	Z (cm)	I	J	K	Interface Channel	XDCR Serial Number	Sensitivity	Sensitivity Units	XDCR Range	XDCR Units	DAQ Range	DAQ Range Units	Excitation Value	Excitation Units
H-E	East shaker	-	-	-1	0	0	ICP1-0	6025	52.4	mV/g	100	g	5	Volts	2	mA
H-W	West shaker	-	-	-1	0	0	ICP1-1	6021	53.6	mV/g	100	g	5	Volts	2	mA
AA1	27.5	0.0	10.0	-1	0	0	ICP3-4	3166	106.5	mV/g	50	g	5	Volts	2	mA
AA2	45.0	-5.0	10.0	0	0	+1	ICP3-6	37003	48.8	mV/g	100	g	5	Volts	2	mA
AA3	55.0	0.0	10.0	-1	0	0	ICP3-5	96937	101.7	mV/g	50	g	5	Volts	2	mA
AA4	65.0	-5.0	10.0	0	0	+1	ICP2-2	6023	52.2	mV/g	100	g	5	Volts	2	mA
AAH5	82.6	0.0	10.0	-1	0	0	ICP2-4	3962	106.5	mV/g	50	g	5	Volts	2	mA
AA6	82.6	-5.0	10.0	0	0	+1	ICP2-3	37001	48.3	mV/g	100	g	5	Volts	2	mA
AAH7	110.1	0.0	10.0	-1	0	0	ICP6-2	3164	106.6	mV/g	50	g	5	Volts	2	mA

Progressive Curation: Categorizing and Linking

- Establish relationships
- Add further tags and description

Projects / Development of validated methods for soil-structure interaction analysis of buried structures / DigitalDataReport / csv-tables

DEVELOPMENT OF VALIDATED METHODS FOR SOIL-STRUCTURE INTERACTION ANALYSIS OF BURIED STRUCTURES

ID PRJ-1299 [Edit Project](#) [Manage Team Members](#) [Manage Experiments](#)

PI Ertugrul Taciroglu (etacir)




Created 2016-12-13T12:22:22.909000-06:00

Project Description

The seismic response of underground structures is a complex soil-structure interaction (SSI) problem in which two fundamental mechanisms are at play. Kinematic SSI is concerned with the motion of the structure in the presence of spatially variable ground motions and the interface pressure

[Show](#)

[Working Directory](#) [Publication Preview](#)

Name	Size	Last modified
 .ipynb_checkpoints	4.0 kB	5/23/17 12:32 PM
 sensor-id-table.csv Sensor Info Sensor Llist	12.3 kB	5/26/17 11:26 AM
 shake-event-id-table.csv Event Event Sequence List	2.1 kB	5/23/17 12:32 PM

Visualizing the Data Set

- Graphical tree diagram
- Integrated view of the research project

Relations
Model Sketches
Sensor List

Event Data: Fast Data - Processed (ASCII) Link to: Model Configuration Sensor List

Name	Size	Last modified
01_01142016@142113@142814@46.5rpm.txt	9.3 MB	5/23/17 12:31 PM
02_01142016@142113@144623@46.6rpm.txt	9.3 MB	5/23/17 12:32 PM
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05_01142016@142113@154433@46.2rpm.txt	9.3 MB	5/23/17 12:32 PM
06_01142016@142113@155045@46.2rpm.txt	9.1 MB	5/23/17 12:32 PM

Relations
Model Sketches
Sensor List

Event Data: Fast Data - Raw (Binary) Link to: Model Configuration Sensor List

Name	Size	Last modified
01_01142016@142113@142814@46.5rpm.bin	26.3 MB	5/23/17 12:31 PM
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Relations
Model Sketches
Sensor List

Event Data: Slow Data Link to: Model Configuration Sensor List

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01122016@135146.bin	644.1 kB	5/23/17 12:33 PM

Publishing Data

- Preview
- Pipeline

[Exit Publishing](#) Selection -- Review -- Metadata -- Agreement [Next](#)

Experiment Development of validated methods for soil-structure interaction analysis of buried structures

Development of validated methods for soil-structure interaction analysis of buried structures
Description: This experiment contains measurements made during a centrifuge test involving two culverts embedded in dense sand. One
[Show](#)

Experimental Facility: Center for Geotechnical Modeling, UC Davis
Experiment Type: Centrifuge
Equipment Type: 9m Radius Dynamic Geotechnical Centrifuge
Experiment Report: [Interactive Data Report](#)

Relations
Model Sketches
Sensor List

Event Data: Fast Data - Processed (ASCII) [Link to: Model Configuration Sensor List](#)

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Relations
Model Sketches
Sensor List

Event Data: Fast Data - Raw (Binary) [Link to: Model Configuration Sensor List](#)

Name
01_01142016@142113@142814@46.5rpm.bin
02_01142016@142113@144623@46.6rpm.bin

[Exit Publishing](#) [Previous](#) Selection -- Review -- Metadata -- Agreement [Request DOI & Publish](#)

AGREEMENT
I agree and understand that when I publish this data and receive a DOI that this will result in a locked, read-only publication that cannot be changed. If I have changes or revisions, this will result in a new DOI being created for the revised publication. I understand that my dataset meets the minimum metadata requirements per the [Data Curation and Publication Guidelines](#).
☐ I agree

Published Data

- Enable understanding and reuse

Experiment Development of validated methods for soil-structure interaction analysis of buried structures ^

Development of validated methods for soil-structure interaction analysis of buried structures

Description








This experiment contains measurements made during a centrifuge test involving two culverts embedded in dense sand. One culvert has a rectangular section and is flexurally stiff, and the other has a circular section and is more flexible. Experimental measurements include acceleration, bending strain, axial strain, and settlement. Raw data files are included in a binary file format, and processed data are included in an ASCII text format in prototype engineering units. Jupyter notebooks used to process the data files are included. A Jupyter notebook serves as an interactive digital data report.

Date of Publication: 2017-08-25T16:20:45.360000-05:00
DOI: doi:10.17603/DS2238Z
Experimental Facility: Center for Geotechnical Modeling, UC Davis
Experiment Type: Centrifuge
Equipment Type: 9m Radius Dynamic Geotechnical Centrifuge




Authors : Esmaeilzadeh Seylabi, Elnaz; Agapaki, Evangelia; Pitilakis, Dimitris; Stewart, Jonathan; Brandenburg, Scott; Taciroglu, Ertugrul;

[Citation](#) [Report](#)

[Event Data: Fast Data - Processed \(ASCII\)](#) [Link to: Model Configuration Sensor List](#)

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 01_01142016@142113@142814@46.5rpm.txt	9.3 MB	
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[Event Data: Fast Data - Raw \(Binary\)](#) [Link to: Model Configuration Sensor List](#)

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 02_01142016@142113@144623@46.6rpm.bin	22.2 MB	
 03_01142016@142113@151132@46.3rpm.bin	24.2 MB	

Relations

Model Sketches

Sensor List

Relations

Model Sketches













Sensor List

Preservation

- Maintaining structure, relationships, metadata

```
dc: title
  NHERI@UTexas Proof-of-Capability Testing Workshop: In-Situ Liquefaction Tests of Columbia-River Sand and Silt
  Deposits
dc: type
  collection
  experiment
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fedora: createdBy
  bypassAdmin
fedora: hasParent
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fedora: lastModified
  2017-03-31T21:01:04.542Z
fedora: lastModifiedBy
  bypassAdmin
fedora: writable
  true
ldp: contains
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  http://fedoraweb01.tacc.utexas.edu:8080/fcrepo/rest/project/event_01
  http://fedoraweb01.tacc.utexas.edu:8080/fcrepo/rest/project/model_configuration
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  http://fedoraweb01.tacc.utexas.edu:8080/fcrepo/rest/project/transfer_manifest_md5
prov: agent
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  Menq, Farnyuh
  Roberts, Julia
  Stokoe, Kenneth
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prov: organization
  Experimental equipment site specializing in dynamic in-situ testing using mobile shakers, UT Austin
  University of Texas at Austin
prov: wasAttributedTo
  Experimental equipment site specializing in dynamic in-situ testing using mobile shakers, UT Austin University of Texas at
  Austin
  Kent, Robert
  Menq, Farnyuh
  Roberts, Julia
  Stokoe, Kenneth
  University of Texas at Austin
```

Conclusion

+ Add	Published /		
My Data			
My Projects			
Shared with Me			
Box.com			
Dropbox.com			
Published			
Community Data			
Learn About 'My Projects'			
Name	Size	Details	
 Evaluation of Drainage for Liquefaction Remediation	23.6 MB		Details
 Testing of seventeen identical ductile reinforced concrete beams with various loading protocols and boundary conditions	23.6 MB		Details
 Large-Scale Laboratory Experiments of Wave Impacts on Vertical Cylinders	23.6 MB		Details
 Final Results - Deep Shear Wave Velocity Profiling for Seismic Characterization of Christchurch, NZ	23.6 MB		Details
 Development of validated methods for soil-structure interaction analysis of buried structures	23.6 MB		Details
 RAPID/Collaborative Research: Investigation of Reinforced Concrete Buildings Damaged in the Magnitude 6.4 Southern Taiwan Earthquake of February 2016	23.6 MB		Details