



Disaster and Failure Events Data Repository

Eric Letvin
Director, Disaster and Failure Studies Program
Engineering Laboratory
National Institute of Standards and Technology
U.S. Department of Commerce

NIST Repository Workplan

- Phase 1 – World Trade Center dataset
- Phase 2 – HUB technology pilot
 - Chile data set
 - Joplin data set
- Phase 3 – Implementation plan
- Update on post-fire data collection efforts and link to repository



Phase 2 – HUB Technology Pilot: Chile Data Set

- Develop event-specific, web-based repository
- Data-rich event that will support the National Earthquake Hazards Reduction Program (NEHRP)
- Opportunity to coordinate with the Network for Earthquake Engineering Simulation (NEES)
- NIST retained a contractor to assist with obtaining data previously collected by others (American Society of Civil Engineers - ASCE, Earthquake Engineering Research Institute - EERI, and Los Angeles Tall Buildings Council study teams)



Phase 2 – Chile Data Set: Schedule and Deliverables

1. HUB installed at NIST (September 2012)
2. Chile repository delivered by contractor, installed on NIST HUB and ready for internal use (October 2012)
3. Chile system design document and recommendations report delivered by contractor (January 2013)
4. Planned release of Chile data set on NIST's website (Spring 2014)
 - Task order awarded in September 2013.



Phase 2 - Joplin Tornado Dataset

- In development, to be released Spring 2014 on NIST's website running on NIST HUB
- Diverse data set
 - Structural drawings
 - Modeled tornado wind field
 - Geolocated photos and videos



Phase 2 - Joplin Tornado Pilot

The Joplin Data Repository [edit](#)

By [Eric Letvin](#), [Marc Lloyd Levitan](#), [David Ryan Mizzen](#), [Ann Christine Catlin](#), [Sudheera R. Fernando](#), [Nathan Daniel Boltz](#), [Ian David Williams](#)



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Published on

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Abstract

Following the May 22, 2011 tornado that struck Joplin, Missouri, the single deadliest tornado since official records began in 1950, the National Institute of Standards and Technology (NIST) launched an investigation to study the impacts of the disaster and make recommendations based on the findings of the investigation, as warranted, for improvements to codes, standards and practices related to the design and construction of buildings and to emergency communications . . .

This database has been created to supplement the NIST report of their investigation and findings, found [here](#). It is hoped that the public and researchers will use this data to help minimize the damage and loss of life in future tornadoes. It includes photographs, videos, maps, reports, drawings, and other documents related to meteorological conditions, warnings, and performance of buildings and other structures affected by the tornado.

What's in the database?

Many different types of data were collected throughout the investigation carried out by NIST and are stored in this database:



Photos



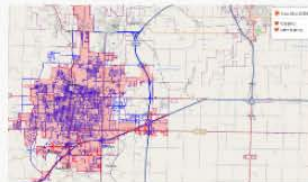
Drawings



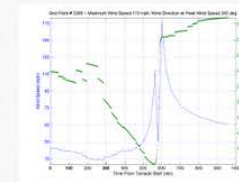
Documents



Audio-Video




Geographic Data



Wind Speed Study



Phase 2 - Joplin Tornado Pilot

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



Select File Type: [Photos](#) / [Joplin H.S.](#) / [NIST](#) [[New Directory](#)] [[Data view for this dir.](#)]

Photos

Locations: [\[Update\]](#) [\[View\]](#) Keywords: [\[Update\]](#) [\[View\]](#)


Sources: [\[Update\]](#) [\[View\]](#) Credit: [\[Update\]](#) [\[View\]](#) Collector: [\[Update\]](#) [\[View\]](#) Repository Reports Derivative Works Briefings

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	DSCN1744.jpg	2.83 MB	2013-02-16 19:04:23 [Nathan Daniel Boltz]	<input type="button" value="Delete"/>
	DSCN1745.jpg	2.50 MB	2013-02-16 19:04:36 [Nathan Daniel Boltz]	<input type="button" value="Delete"/>
	DSCN1746.jpg	2.86 MB	2013-02-16 19:04:26 [Nathan Daniel Boltz]	<input type="button" value="Delete"/>
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Phase 2 - Joplin Tornado Pilot

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Photos





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Locations: [\[Update\]](#) [\[View\]](#)

Sources: [\[Update\]](#) [\[View\]](#) Credit: [\[Update\]](#) [\[View\]](#)

Keywords: [\[Update\]](#) [\[View\]](#)

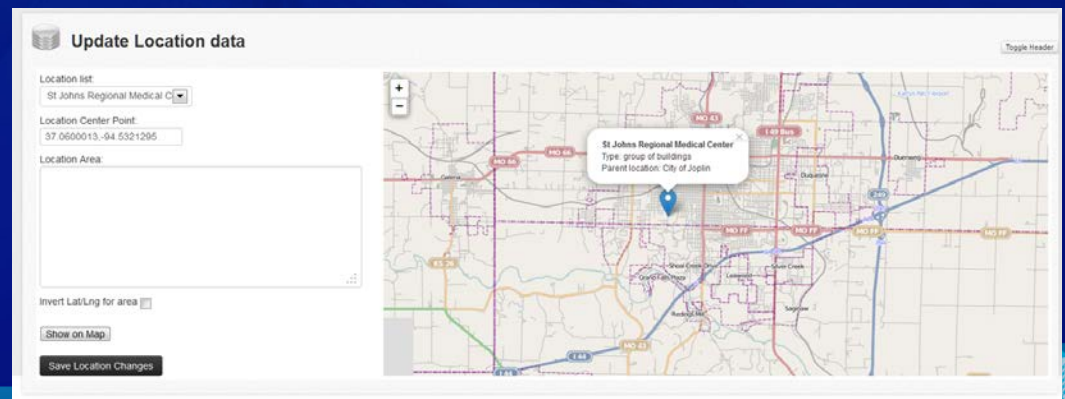
- Aerial
- Debris**
- Elevation
- Exterior
- Facade
- Interior
- Roof
- Surroundings
- Tree
- Vehicle

	DSCN1743.jpg	2.79 MB	2013-02-16	
	DSCN1744.jpg	2.83 MB	2013-02-16	
	DSCN1745.jpg	2.50 MB	2013-02-16 19:04:36	[Nathan Daniel Boltz] Delete
	DSCN1746.jpg	2.86 MB	2013-02-16 19:04:26	[Nathan Daniel Boltz] Delete



Upcoming Improvements to the NIST HUB

- Use Open Street Maps as map data source
- Enhance the mapping features
 - Better integration with ESRI shape files
 - Searching based on polygon boundaries set by user
- Searchable exploration for all files types
- Work to be completed in early 2014



Phase 3 – Implementation Plan

- System design document
 - Create standard taxonomy / ontology by hazard type
 - Set minimum criteria for data to be accepted by NIST
 - Determine geospatial needs
 - Define supported data types
 - Establish criteria for inclusion in repository



Phase 3 – Implementation Plan (cont.)

- Develop standard data collection systems for different kinds of events
- Select operating platform based on user requirements
- Populate with data from future events
- Develop plan to maintain repository
- Establish process for stakeholder outreach



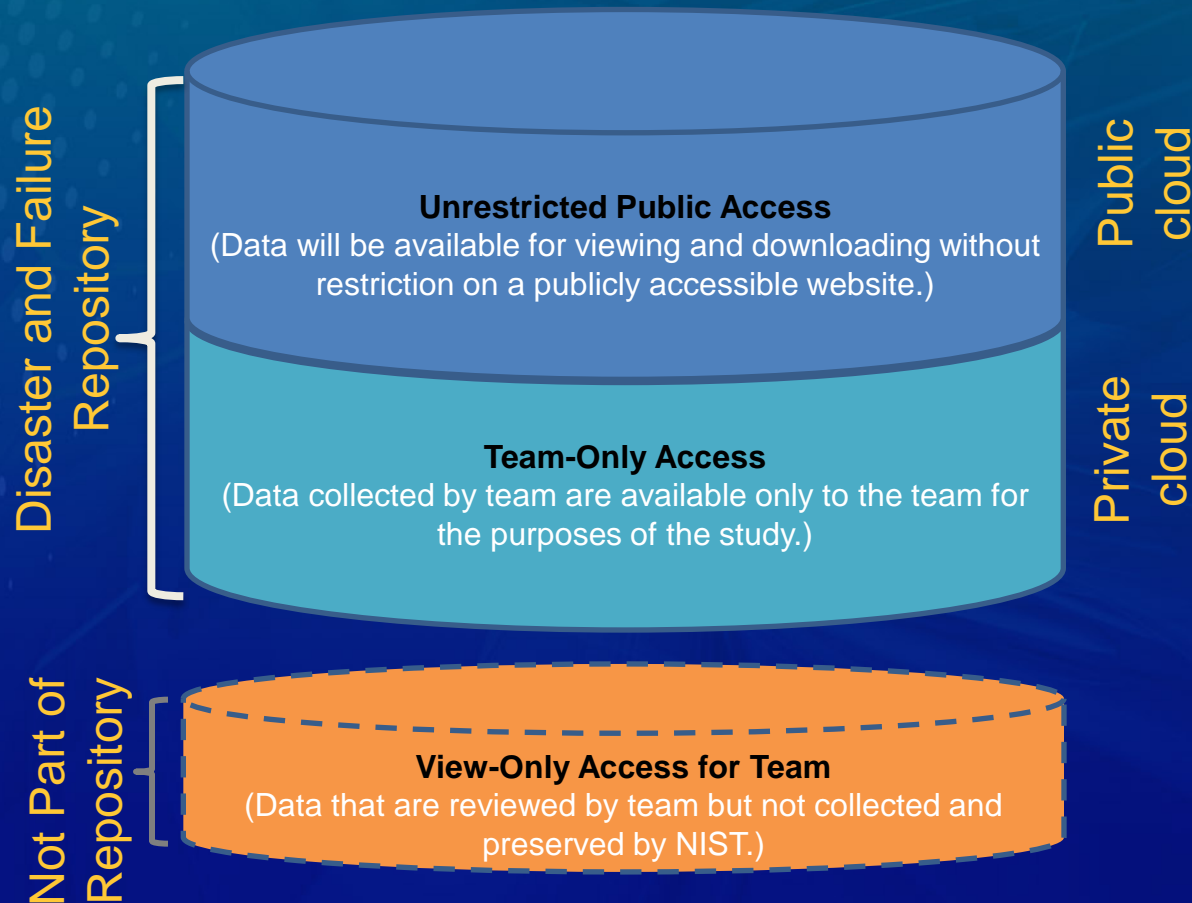
IT Infrastructure Preparation

- Currently upgrading infrastructure in preparation for repository
 - FY13: Implementing internal storage as foundation for internal side of repository
 - FY14: Implementing data collection solution to pull data into the repository from collection points
 - Must meet FISMA requirements



Short-term (FY14) efforts

- Process flow improvements from NIST internal to external HUB



Short-term (FY14) efforts

- Improve usability and effectiveness for Freedom of Information Act (FOIA) Requests
- Include data from Moore, OK tornado to NIST HUB
- Assure functionality for wildfire data



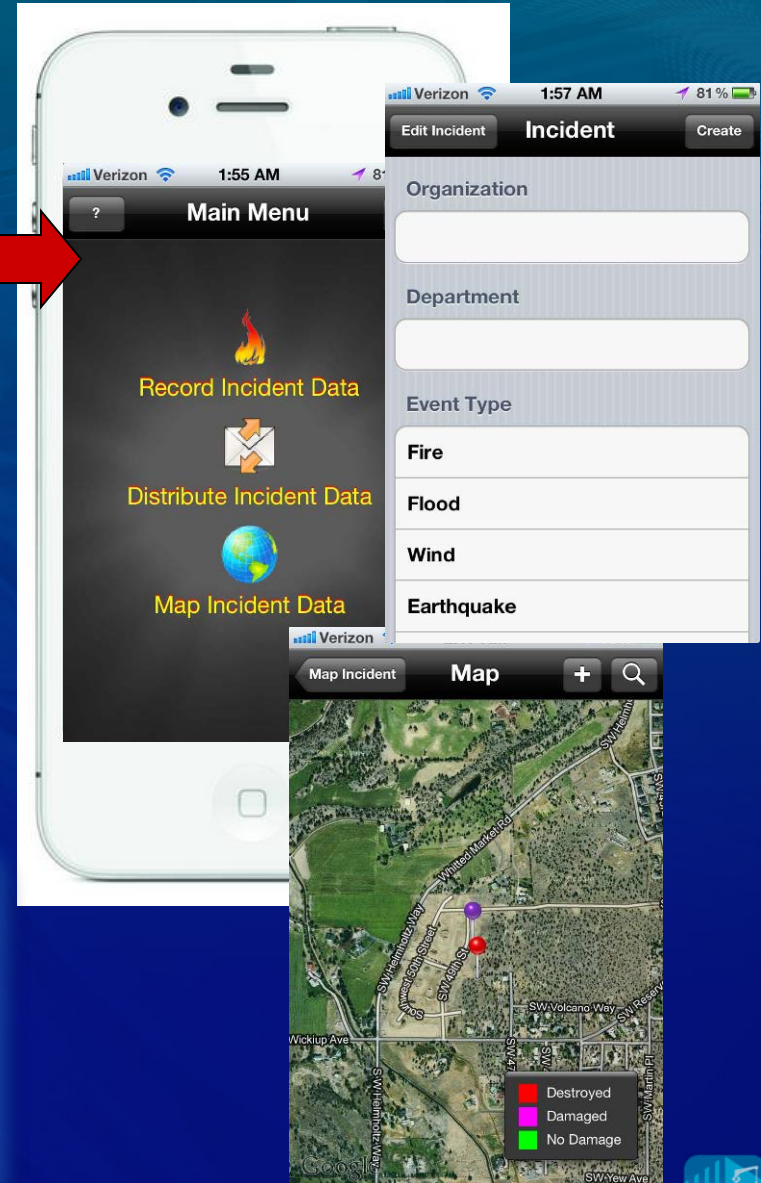
Hiring Strategy

- Engineering Laboratory to hire 3 staff members to support data requirements and special projects
- One of the duties of each of these three staff members will be to support the Repository.



Conceptual Post-Fire Data Collection

- Wildland-Urban Interface (WUI) 1 i-Phone application (Beta tested at Waldo Fire, CO)
- WUI 1 and WUI 2 manuals in 2014
- WUI 1 Training in CA 2013
- WUI data collection being explored with: Colorado/ Northern California/ Florida/ Georgia/ Virginia/ North Carolina



WUI 1 (damage in context of defensive actions)

WUI 2 (damage in context of defensive actions and exposure)

WUI Data Collection Needs

1. Identify how many homes and other structures we are losing to wildland-urban interface (WUI) fires every year
2. Group structures lost and their locations into their respective incidents in a standardized fashion
3. Identify structure, landscaping attributes, exposure, and defensive actions taken as part of quantifying hazard mitigation effectiveness (WUI 2)
4. Identify and characterize WUI hazards by documenting the pre-fire WUI built environment.



WUI Data Collection Concept

- Standardized methods (under development by NIST)



- Tools and Training (under development by NIST)



- Data Aggregation and QA/QC

Legacy data and new data for select incidents



- NIST Repository





Disaster and Failure Events Data Repository

NCST Advisory
Committee
December 11, 2013

Questions/Discussion

Eric Letvin
Director, Disaster and Failure Studies Program
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