Disaster and Failure Events Data Repository

NCST Advisory
Committee
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Problem Statement

- A comprehensive archival repository of disaster and failure data does not currently exist. Data that are gathered during and after an event may be lost or inaccessible relatively soon after.

- A repository is needed to preserve data to enable the study and analysis of the current event as well as future disaster events.

Repository Purpose

- The repository will serve as a national archival database where NIST and other organizations can store the results of the study and analysis of disaster and failure events.

- The results of these studies and analyses will lead to recommended improvements to codes, standards, practices and/or new knowledge.

- By making these data available, NIST hopes to enable the efficient dissemination of data on disaster and failure events.
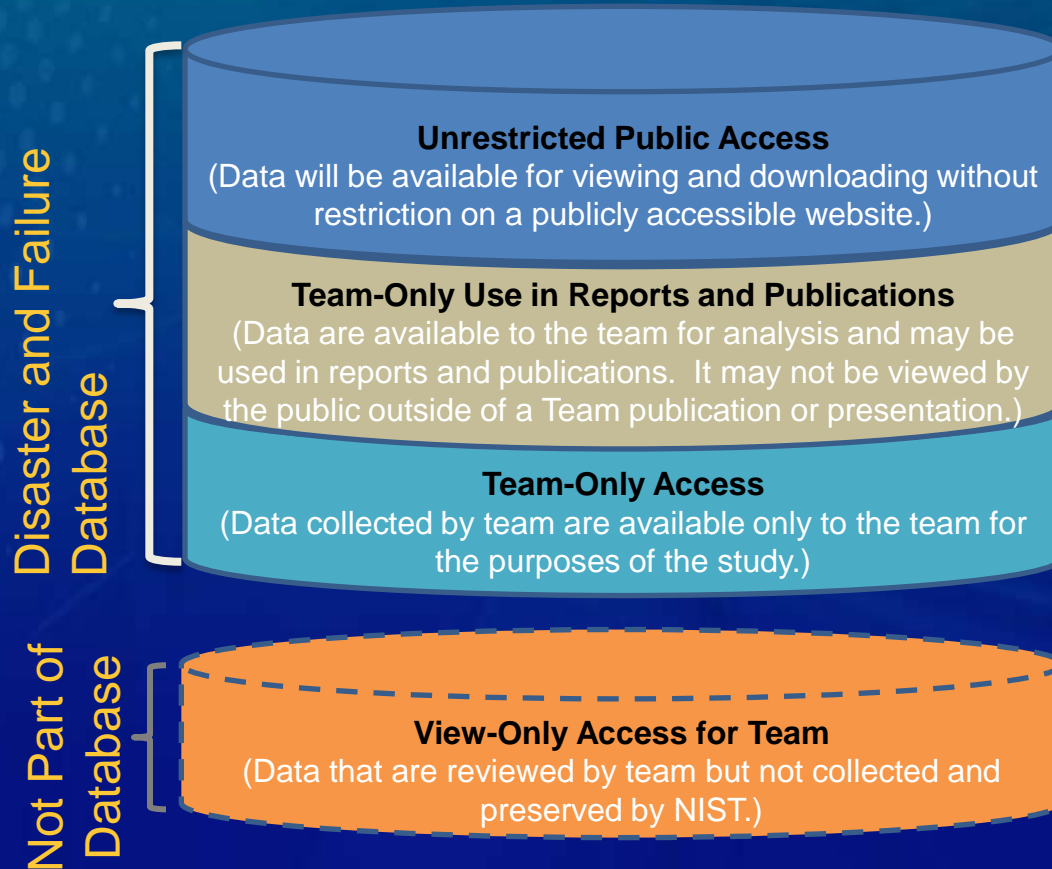
Repository Scope

- As the database grows, it will include data on significant hazard events; how buildings and other structures performed during those events; associated emergency response and evacuation procedures; and the technical, social and economic factors that affect pre-disaster mitigation activities and post-disaster response efforts.

Data Types
Site Documentation and Collection of Artifacts
Hazard or Threat Event Data
Safety and Performance Data
Design, Construction, Operation and Maintenance Information
Evacuation and Emergency Response Information
Findings, Conclusions and Recommendations
Changes to Standards, Codes and Practices Based on Recommendations

Levels of Access

Disaster and Failure Database

Unrestricted Public Access
(Data will be available for viewing and downloading without restriction on a publicly accessible website.)

Team-Only Use in Reports and Publications
(Data are available to the team for analysis and may be used in reports and publications. It may not be viewed by the public outside of a Team publication or presentation.)

Team-Only Access
(Data collected by team are available only to the team for the purposes of the study.)

Not Part of Database

View-Only Access for Team
(Data that are reviewed by team but not collected and preserved by NIST.)

NIST Repository Workplan

- Phase 1 – World Trade Center database
  - High level of interest in data collected
  - Goal of releasing before 10-year anniversary
- Phase 2 – Chile earthquake pilot
- Phase 3 – Full scale implementation

Phase 1 – World Trade Center

- Data previously released from NIST's 7-year investigation on the collapses of three buildings at New York City's World Trade Center

- Over 94,000 photos and videos

- Computer simulations

- Complete set of technical reports

- Repository created and managed by NIST

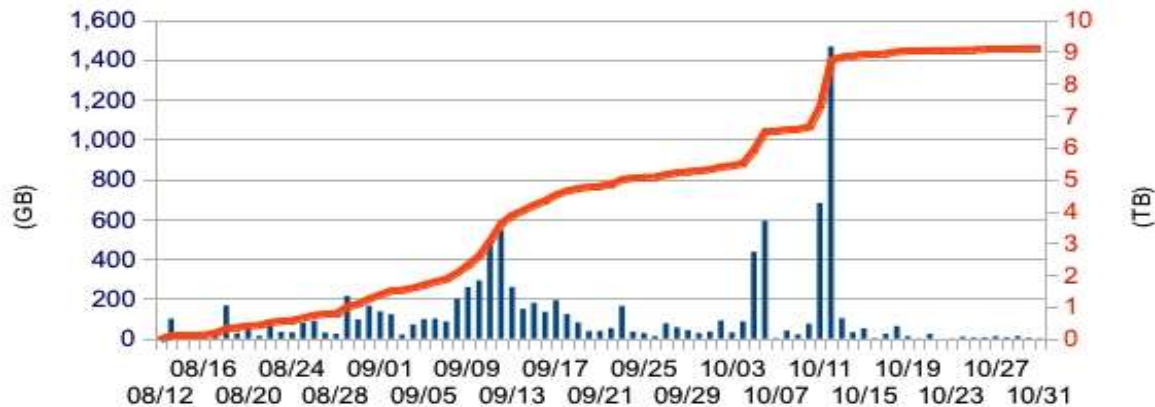- Website publically released in August 2011

WTC Repository Statistics

Daily Total Page Views
Aug 12, 2011 - Oct 31, 2011
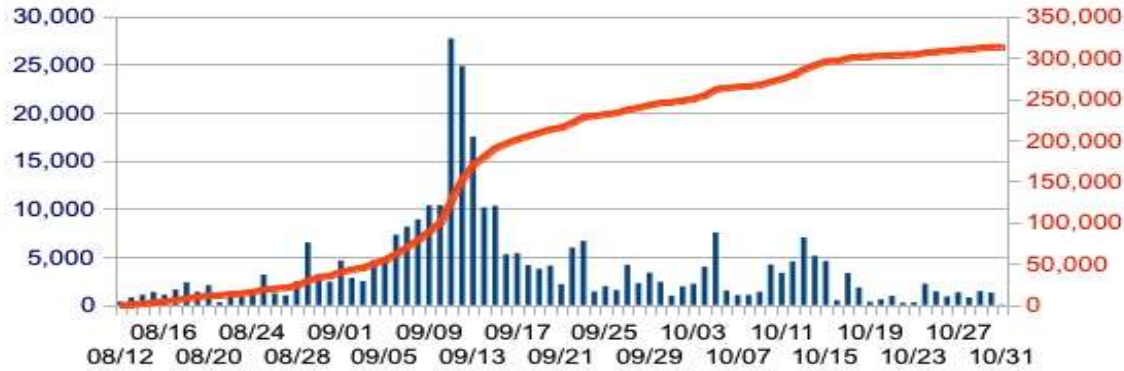
Daily Total Volume
Aug 12, 2011 - Oct 31, 2011

Phase 2 – Chile Earthquake Pilot

- Chile Earthquake database
- Recommendations for scaling-up to other earthquakes and disaster and failure events

Chile Earthquake Pilot

- Develop event-specific, web-based repository

- Data-rich event that will also support the National Earthquake Hazards Reduction Program (NEHRP)

- Opportunity to leverage 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)

Chile Earthquake Database Functional Requirements

- Ground motion (both directly recorded and derived)

- Building inventory (geospatial info, age, story height, occupancy, etc.)

- Structural drawings

- Photos, accompanied by appropriate descriptive details

- Mapped structural damage from damaged buildings

- Instrumented building response data

- Geotechnical information (soils reports, liquefaction study reports, etc.)

- Publically available literature

- Bibliographic information

- Links to other relevant websites

  NIST is in the process of obtaining permission for inclusion of copyrighted data in the repository

Chile Earthquake Pilot – Milestones

- System Design – January 2012

- Beta System Development – March 2012

- Production System Development – June 2012

- System Assessment – August 2012
  - Includes recommendations for scale-up of Phase 2

Principal Operational Components of Chile Repository

1. Spreadsheet parser for data ingestion
2. Photo processor for creation of metadata and repository collections
3. Data viewer for database browse, search, explore and download, and
4. Photo gallery viewer with keyword search

Phase 2: Key NIST Steps – FY 2012

1. Implement the HUB at NIST

2. Evaluate the effectiveness and performance of the HUB from an IT standpoint (security, data type testing)

3. Evaluate the HUB with different domains and other events (Joplin, Amarillo)

4. Provide results to the contractor to see if they can improve the HUB

5. Set minimum requirements for data to be accepted by the repository (quality, data formats, legal/copyright/use)

Phase 3 – Full-Scale Implementation

- Develop cost estimate to maintain, update, operate and improve accessibility of the repository

- Finalize user requirements and expand repository

- Populate with selected high-impact historical and future events

- Disseminate information to stakeholder / user community

- Maintain ongoing communication with stakeholder / user community

Contact Info

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