RAPID NHERI
Natural Hazards Reconnaissance

Writing Proposals for and Using the RAPID Facility

Jeffrey Berman

Operations Director

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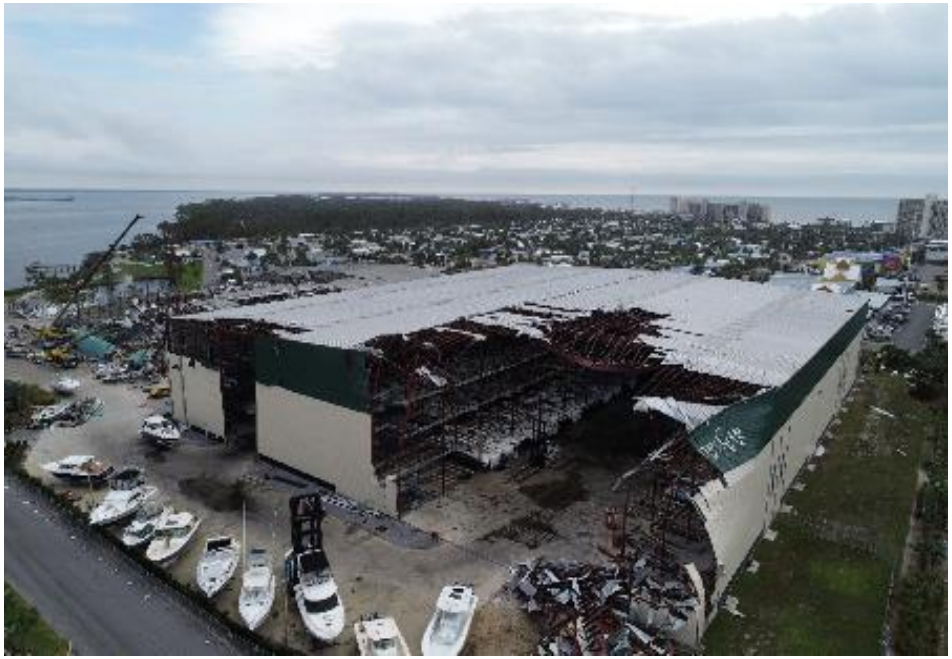
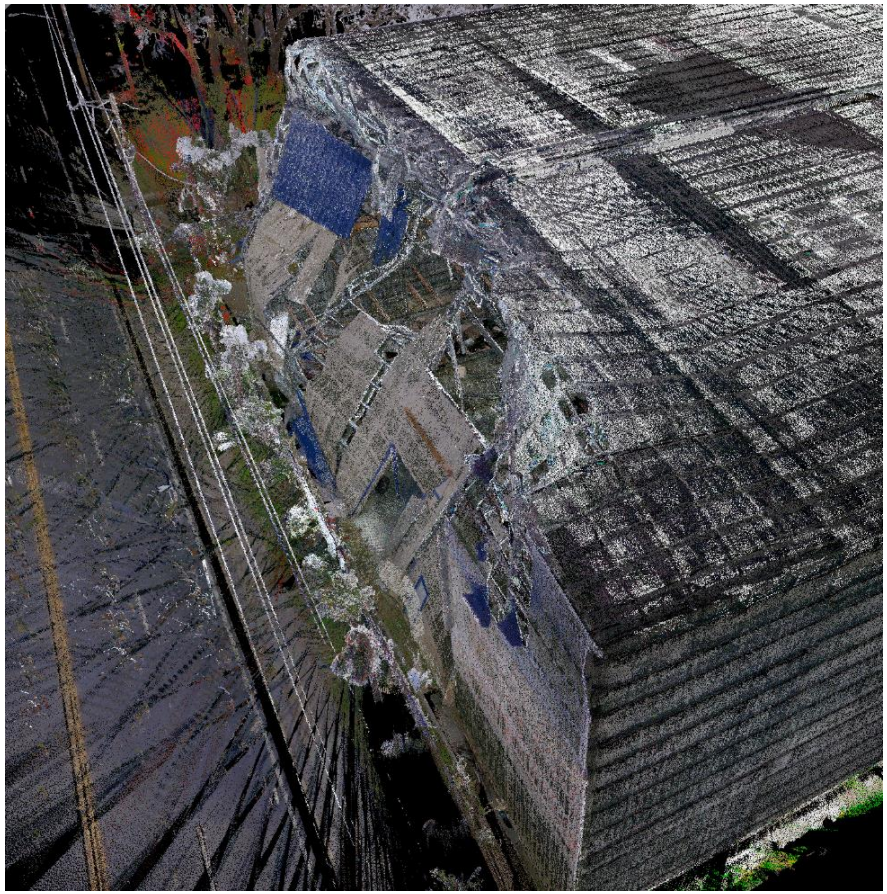
Writing NSF Proposals to Use RAPID

- For all proposals, contact us in the proposal preparation phase. We can:
  - Help with equipment selection/budget and project scope
  - Help identify areas to strengthen your proposal
  - Assist with budget planning
  - Provide standard text for the Facilities and Other Resources document
  - Provide standard text for the Data Management Plan



NSF RAPID Proposals

- Require Program Manager approval to submit
- Typically constrained to data gathering with limited funding available for processing and interpreting data
- Typically follow a natural hazard event or other significant event
- If after an even it is ***Best*** if they build on the findings of EER immediate reconnaissance (i.e., StEER, GEER, etc.)

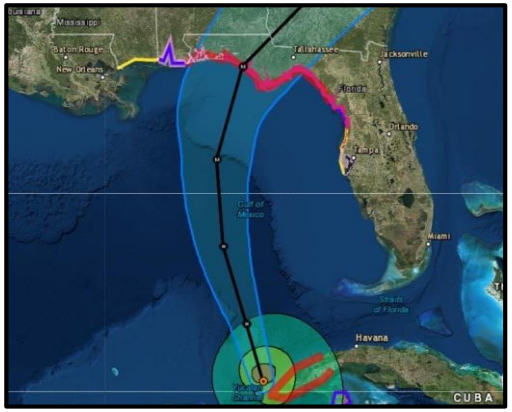


Other NSF Proposals

- RAPID tools can be used in any NSF program:
  - We have deployed tools for research in several programs in the ENG and GEO Directorates so far
- Integration of multiple NHERI components is a plus
- Consider opportunities to combine field observations, laboratory testing and simulation
- All data management plans should have data archived on DesignSafe

Targeted Research: Example

- Wind speed at collapse of a water tower in Mexico Beach, FL during Hurricane Michael



Targeted Research: Example

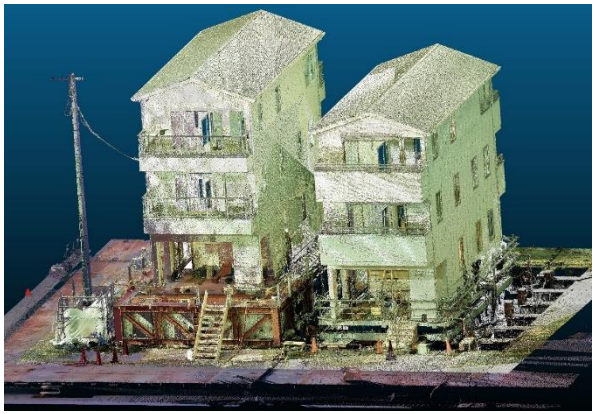
SFM and Lidar Data

Potential failure modes

Approximate member sizes along with specifications from the time period

Estimated wind speed at collapse

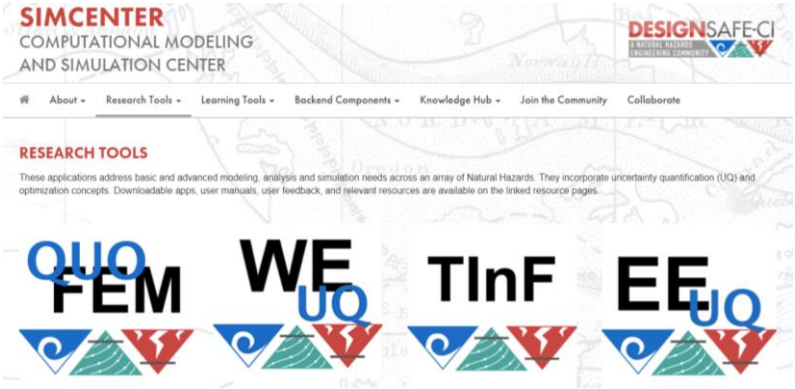
Field Observations



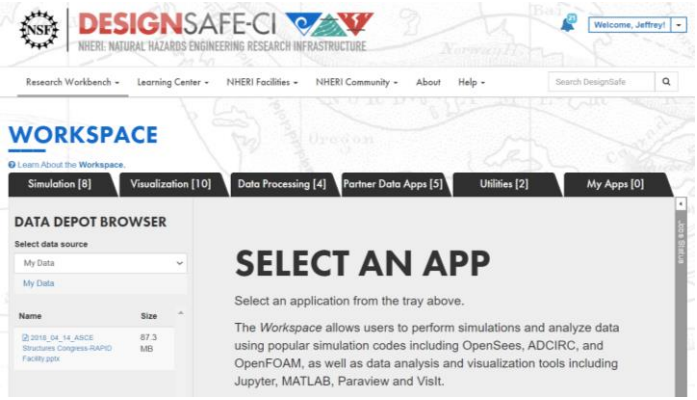
Laboratory Experiments

Solutions for Grand Challenges in Natural Hazards Engineering

Development of Simulation Tools



Computational Resources and Data Sharing



RAPID is Interdisciplinary

- We support fundamental advances in natural hazards:
  - Science (understanding the hazards)
  - Green and grey infrastructure impacts (structural, geotechnical and coastal engineering)
  - Social impacts
- We have co-PI's/Senior Personnel in all these areas that can assist with proposal development

The RAPID's Roles

- Maintain and calibrate equipment for you to use
- Provide staff assistance for use when necessary
- Assist with proposal preparation:
  - Advice
  - Integration with science plan
  - Provide budget information for RAPID equipment and staff
- Logistical support:
  - Arrange and assist with equipment delivery
  - RApp (RAPID App) to help with team organization/coordination

- ***Outside our scope:***
  - *Coordinating reconnaissance missions*
  - *Setting the scientific objectives for reconnaissance missions*
  - *Providing funding for reconnaissance*

Where can the RAPID Equipment be Deployed? (Anywhere!)

- Locations following natural hazards:
  - Priorities are wind events, earthquakes, and tsunamis but others possible
  - Immediate response
  - Recovery monitoring
  - Pre-event
- To supplement instrumentation at large-scale experimental facilities
  - Priorities are tests at other NHERI facilities
- Other uses we haven't thought of: Just ask
- Focus on short term deployments:
  - Longer term deployments possible
  - More than two weeks will require a user agreement to ensure equipment can be returned for high priority use if it is needed

Who can use the RAPID? (You can!)

- Open to anyone:
  - Academics, government agencies, private industry, etc.
  - Different rates for NSF vs. non-NSF (RAPID equipment is subsidized by NSF)
  - Different priority for equipment requests
  - **We aim to accommodate all requests**
- NSF Grants:
  - RAPID equipment can be requested for any NSF research
  - Reconnaissance possibilities:
    - RAPID grants
    - NSF supported reconnaissance organizations (GEER http://www.geerassociation.org/ , ISEER (https://hazards.colorado.edu/news/center-news/102)
    - Other NSF proposals

User Training and Site User Manual

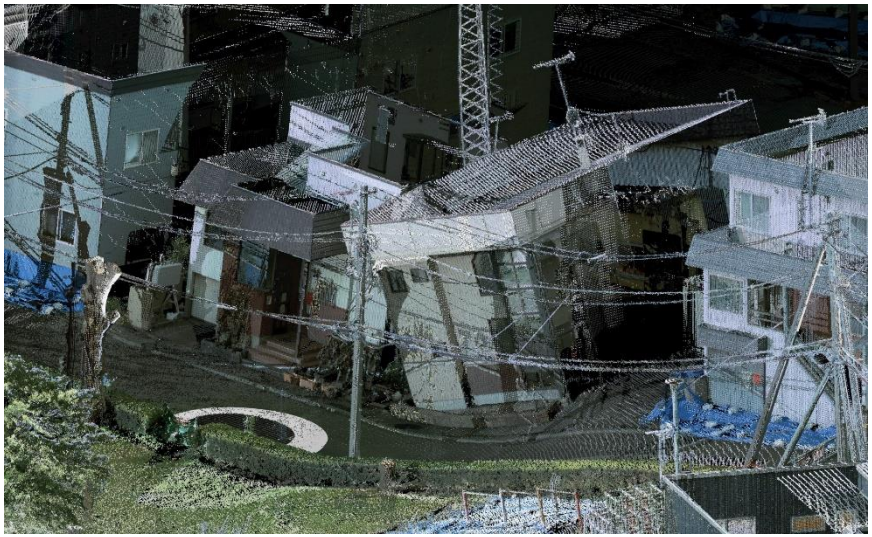
- User training:
  - Recommended but not required
  - 1-Day overview workshops
  - 4-Day intensive hands-on workshops (at RAPID headquarters in Seattle)
    - Creates cadre of RAPID equipment experts: Advanced Users
    - List of participants and expertise maintained on https://rapid.designsafe-ci.org/
- Customized training:
  - Special data processing workshops for users after data is collected
  - 1 on 1
- Site user manual:
  - On website

User Training Successes

- Workshop Participants Have Used RAPID Equipment in Reconnaissance
- Examples:
  - Alex Grant (USGS, GEER)
  - Navid Jafari (LSU, GEER)
  - Jack Montgomery (AU, GEER)
  - Erica Fisher (OSU)
  - Jonathan Hubler (Villanova)
  - Several Others!

What to Think About Before Requesting Equipment

- Is the project funded or is it in the proposal stage?
- Will our equipment meet your needs?
  - Review the available equipment and capabilities (https://rapid.designsafe-ci.org/equipment-portfolio/)
  - Ask us!
- Do you know how to use the equipment you want?
- Will you need field assistance from RAPID staff (required for certain equipment)?
- Will you need assistance processing the data (especially lidar data and development of point cloud models)?



How to Request RAPID Equipment?

- Steps:
  1. Go to the RAPID website at https://rapid.designsafe-ci.org/
  2. Determine the desired equipment from the equipment portfolio at https://rapid.designsafe-ci.org/equipment-portfolio/
  3. Check that it is available for the dates you want
     - See calendar/map on the RAPID website
  4. Complete the preliminary equipment request form at https://rapid.designsafe-ci.org/
  5. Wait for us to contact you (less than 24 hours)
  6. Work through scheduling, logistics, and rates with us
  7. Complete user agreement

RAPID Priorities for Equipment Requests

- The RAPID will make every effort to accommodate all requests
- When we can't, this table sets our priorities
- We have and continue to establish MOU's with other organizations that have similar equipment to help handle intensive drawdowns

User	Data Collection Activity				
	Near-Term Response to a Priority Natural Hazard[1]	Recovery Phase for a Priority Natural Hazard[1]	Experiments at NHERI Facilities	Other Natural Hazards	Other Applications
NSF Supported	1	2	2	3	3
Non –NSF Federal Agency	4	5	5	5	5
Other	5	6	6	6	6

[1] Priority Natural Hazards: Hurricanes, Tornados, Other Windstorms, Storm Surge, Earthquakes, Tsunamis, and Landslides

Equipment Delivery

- The RAPID will organize the shipping of equipment
  - It may meet you in the field
  - You may retrieve from the UW
  - Our staff may meet you with it
  - You may receive a hand-off from another reconnaissance team
- You will be responsible for some of the delivery costs
- The site user manual (coming to the RAPID website) will have detailed requirements
- The RAPID will help with import/export controls
  - Instrument specific
  - Limitations on certain countries

User Agreements and Insurance

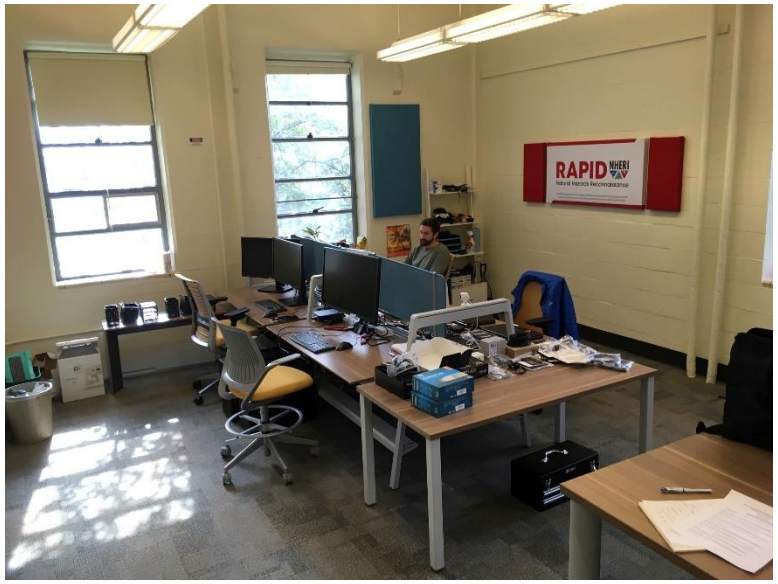
- Users are required to sign a user agreement:
  - Safe conduct
  - Read user manual
  - For equipment operated by you:
    - Transfer of liability to you (your agency and/or university)
    - Agreement to replace if lost or damaged in your care
- Insurance
  - RAPID's insurance will cover:
    - Use by our staff (including liability)
    - Equipment during shipping
    - Damage and loss in possession of users (who are listed on the User Agreement)
  - User's ***may*** need to:
    - Ensure your agency will cover liability
    - Most universities have general policies that will cover liability for any of your field research

User Rates and Fees

- Available on RAPID website
- Preliminary rates (NSF users, for illustration only):
  - Equipment: $5 (various cameras) to $516 per day (long range lidar)
  - RAPID staff in field: $750 per day + travel
  - RAPID data processing (see next slide): $76 per day
- 8% overhead on all costs
- Estimated typical mission cost:
  - Long range lidar + medium UAV for 5 days in field without RAPID staff:
    - Equipment: $2750
    - Shipping: $400 (conservative)
    - Overhead: $220
    - Total: $3370
- Most projects are less than $10k

Data Analysis and Processing

- Training, training, training….send us your students!
- Included for all NSF users at no cost:
  - Upload of raw (and registered) data to DesignSafe
- RAPID HQ at UW has:
  - High speed processing computers
  - 3D CAVE for visualization and inspection of data sets
- Additional processing options (point cloud development from lidar and/or images):
  - You or your students and associates come to RAPID HQ, or borrow a high-power laptop computer and work at your location
  - Work within the DesignSafe cloud environment
  - Ask us to process



Thank You

https://rapid.designsafe-ci.org/

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