Recap of Objectives

- Developing community scenario(s)
  - Access to scenario data and info
  - Dissemination and repository of results
- Strategies to initiate integrated scenario simulations
- Form working group
Overall Concept

- **Goal:** Tool to aid disaster planning
- **Mechanism:** Develop a framework for simulating disaster scenarios
  - Based on a virtual coastal community that can create “scenarios” for simulations
  - Simulations will be validated through physical testing
How It will Work

• Complete data available for virtual coastal community on a shared website
• “Scenario manager” identifies a particular disaster scenario
• Modelers download data as input to their simulations
  - Initial data, or might be the results of a prior step in the modeling pipeline
• Results are uploaded back to the shared site and disseminated
• Many other scenarios can be formulated in the future
• Entire system will be developed as a framework
  - So it can be adapted to other coastal communities, real or virtual
Essential Elements

• What’s kinds of information should be included in the GIS layers for the virtual coastal community
  - Geophysical and geological data - bathymetry, topography, geology
  - Built environment - harbor facilities, buildings, roads, utilities
  - Demographics, human behavior (including consideration of effects on people of different ages)
  - Disaster planning, economics (land use, occupancy rates, etc.)
• We’ll also need all those types of expertise (plus IT expertise) in developing it
Discussions about Data

• Getting relevant data can be hard
  - Gonzalez offered NOAA’s help in obtaining bathymetry/topography data
  - Data must also be appropriate for the models and for comparison with physical experiments - need to involve this expertise too

• Why it needs to be a virtual or pseudo-real environment
  - Data isn’t complete for any real location at this time
  - Potentially dangerous to appear to be a particular real community

• Some data will have to be invented (or pasted in from other communities)
More about Data

• Will a virtual community be biased by what our models can/can’t handle?
  - That’s a real problem when individual modelers come up with their own data
  - *Group effort with multiple disciplines helps prevent this*
  - Should try to ensure that some of the really “tough problems” (e.g., particularly problematic bathymetry) are included

• Will be essential to have built-in feedback loop
  - *Continually improve fidelity/relevance of the data as well as the models*
Proposed Integration Schema, Revisited

- Seismic signals & tsunami generation
- Propagation
- Ground shake effects
- Warning
- Runup effects
- Evacuation
- Assessment, recovery & long-term effects
Possible Topics for Grand Challenge

- Could be pieced together from small pieces; or could start with a large project that gets subdivided
- Could focus on performance-based design assessment
  - E.g., for port structures
  - Should go beyond the single-event focus
- Could also go beyond ports to structures along the entire coastline - and focus on people rather than dollars
- Suggestions of “protecting the Nation’s shoreline”
- Could be more generally “protecting the Nation’s critical structures”
Virtual Community, Revisited

• The “grand” part of the challenge should be a real city that is well beyond our grasp (e.g., LA)
  - Our approach could be incremental
  - Starting with a virtual community that is a downscaled version of the real target
  - Gradually increase the fidelity as modeling capabilities and understanding improves
**Key Things to Remember for Proposal**

- Must identify fundamental scientific problems that couldn’t be addressed without NEES facilities
  - Should try to use multiple facilities (e.g., add scouring or instability problems)
  - Make it clear why large-scale facilities are really needed
  - Model a scenario physically as well as numerically
  - Leverage Dr. Katada’s existing system

- If **Grand Challenge**, need to address the social science aspects solidly
  - Loss estimation (social and economic) will be key for demonstrating impact

- Tech transfer component needs to be compelling