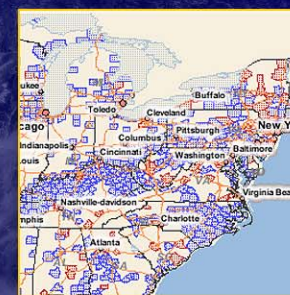
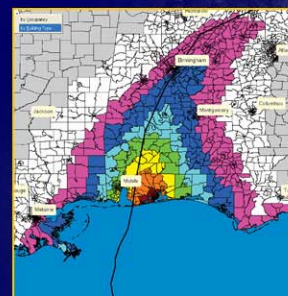


Building Partnerships to Reduce Hazard Risks

# 2005 National Earthquake Meeting



## State of the Art in Mitigation Planning

Joseph Rachel, FEMA Region IV



# FEMA

# Why Mitigation?

- People can better protect themselves and their communities
- Mitigation saves lives, properties and money
- Mitigation enhances individual and community well-being
- Mitigation can be easy, affordable and worth the investment
- You don't need to do it alone – FEMA and its partners have resources, tools, and expertise to help



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# Why Mitigation Planning?

- States and communities will be better able to identify and articulate their needs to federal officials.
- After May 1, 2005 FEMA-approved mitigation plans will be required for Non-Emergency Stafford Act assistance and Pre-Disaster Mitigation grant program project grant funds.
- New geospatial tools enable users to analyze risks and present results visually in a form everyone can understand



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# Hazard + Vulnerability = Risk

- **Haz-ard\**: a source of danger
- **Vul-ner-a-bil-i-ty\**: open to being damaged, i.e., what is at risk
- **Risk\**: possibility of loss or injury; the intersection of hazards and vulnerabilities



Risk Assessment answers: *“What would happen if a hazard event occurred in your community or state?”*



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# Proactive Mitigation Process



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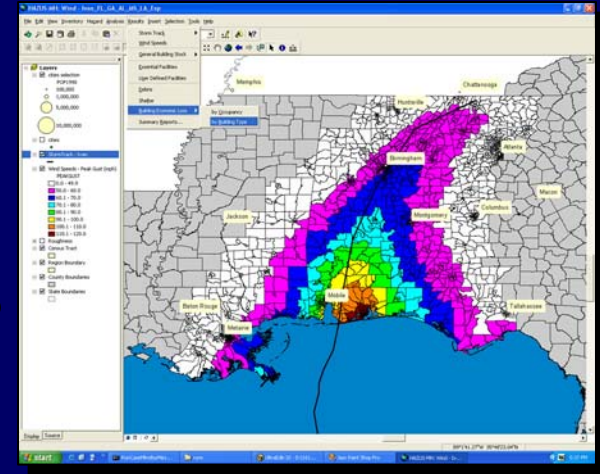
# Post-Disaster Mitigation

Federal, State, Local, and Private Partnerships for Safer Communities



# HAZUS GIS for Mitigation Planning

- Identifies the intersection of hazards and vulnerabilities in the built environment
- Visually displays risk scenarios to key decision makers and the public
- Calculates scientifically-defensible damages, economic losses, and mitigation benefits
- Facilitates a risk-based approach to the prioritization of mitigation projects that maximizes the return on investment



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# HAZUS Risk Assessment Tool

- Earthquake, flood and hurricane wind modules
- Developed in conjunction with the National Institute of Building Sciences
- Runs on ESRI ArcGIS 9.0 platform
- Largest extension of ArcGIS
- Over 200 data layers – all open source
- Active HAZUS Users Groups (HUGs) – over two dozen in the U.S. – [www.hazus.org](http://www.hazus.org)



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# HAZUS is a Collaborative Effort

- **Picatinny Arsenal**— Integrating HAZUS and SERIS command and control system for hazard mitigation and response planning
- **NAVFAC**— Uses HAZUS to analyze earthquake performance for critical buildings using NAVFAC-developed detailed building data
- **State of Hawaii and the Pacific Disaster Center**— Provided directed research three years ahead of schedule to include Hawaii in the HAZUS-MH release
- **NASA and NOAA**— Sharing predictive weather models and satellite data to improve the hurricane model, enabling near real time and multi-hazard use of HAZUS
- **ESRI**— Providing free demo software, discounts to HAZUS users, and on-going development of ArcGIS



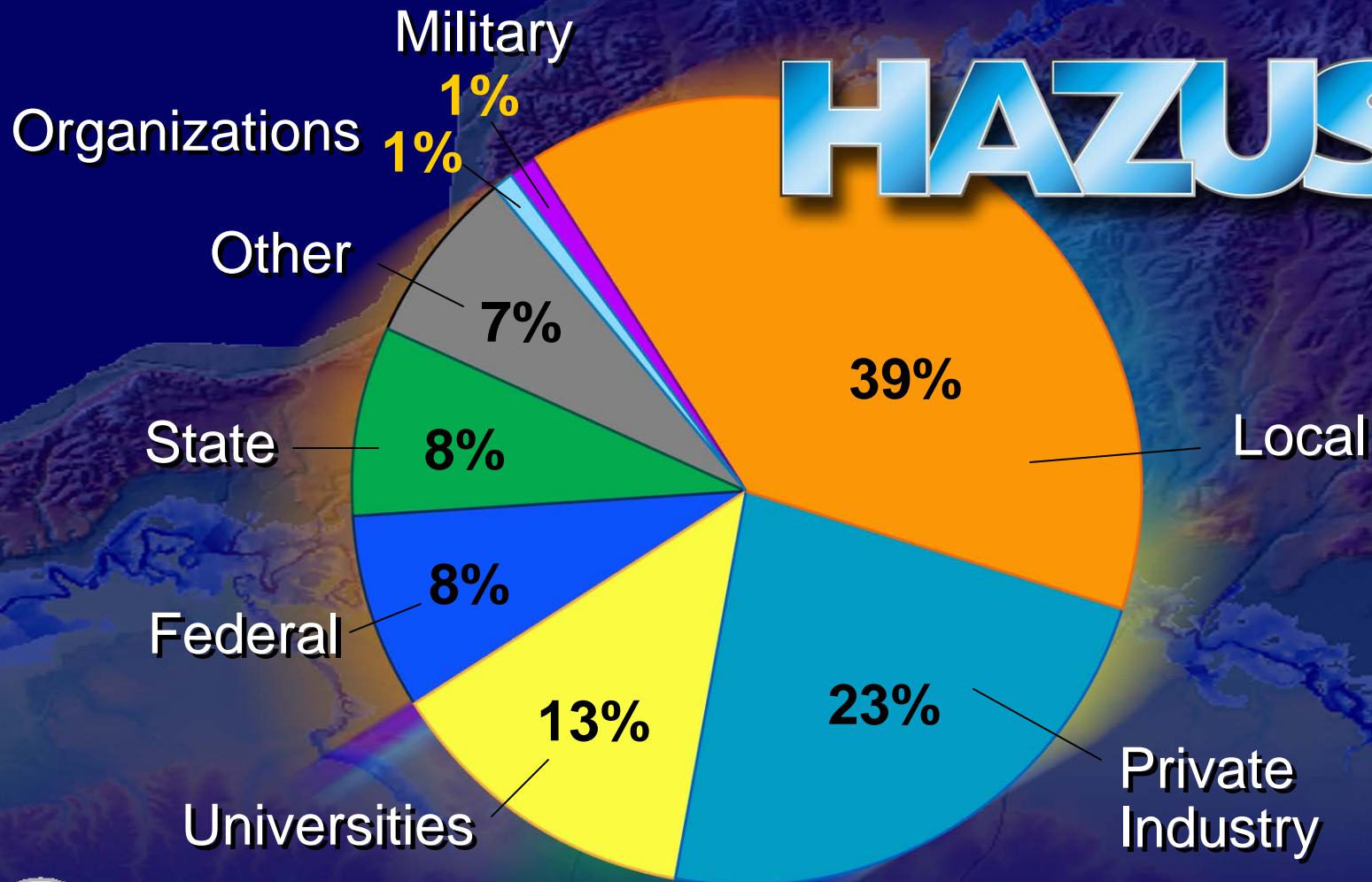
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# Who is Using HAZUS?

**HAZUS**  
**MH**



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# Who is using HAZUS?

- Over 4,200 users – tripled since 2000
- Used by 68% of states and territories for DMA 2000 Planning
- Used by 15% of participating localities in multi-hazard mitigation planning
- International users – Norway and Sweden pilot programs
- 19,600 users predicted by 2008



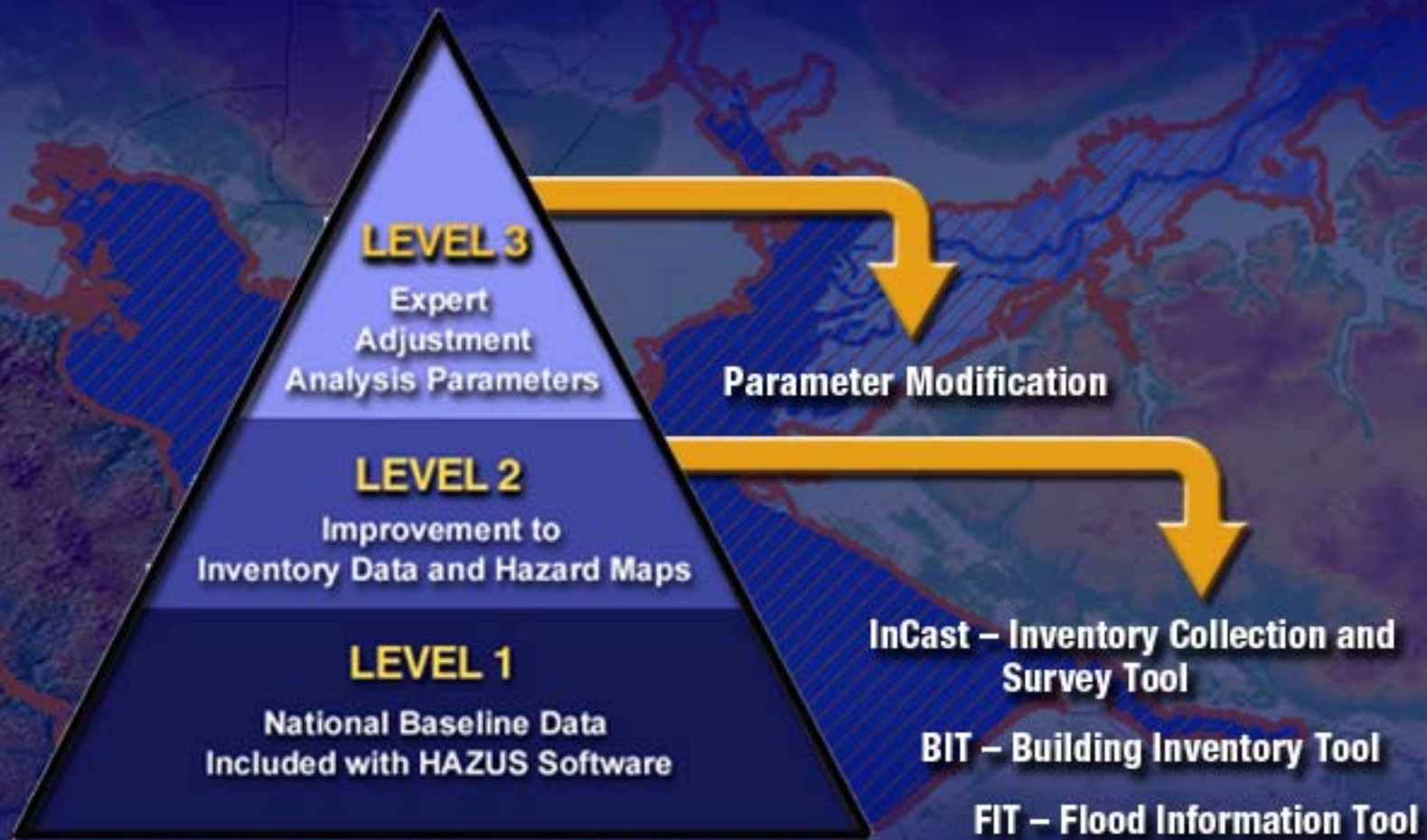
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# HAZUS Levels



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# Partnerships to Improve HAZUS

- **Partnerships for GIS Expertise**

- GIS Staff from data partners
- State and local government GIS Staff
- Universities' GIS Labs
- Local HUG
- [www.hazus.org](http://www.hazus.org)

**GIS expertise  
can help you  
improve  
analysis and  
performance**

- **Partnerships for Subject Matter Expertise**

- GIScience research and consulting
  - Engineering, Geology, Economics, Etc.
- Student internship opportunities
- State and regional centers of expertise
  - State geological surveys, research centers



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# Partnerships to Improve HAZUS

- **Partnerships for better data**
  - Local Tax Assessor – better data on properties and their values
  - Land Use Planning Department (including floodplain management)
  - Public Works Department – better data on public buildings, and water and sewer infrastructure
  - Transportation Department – better data on roads and bridges
  - Local Utilities – better data on telecommunications, electrical and gas infrastructure

Partnerships bring better data that improves the accuracy of your results



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# Summary

- Hazard research and geospatial data furthers our ability to identify, justify, and prioritize mitigation efforts
- HAZUS provides a risk-based approach rather than using vulnerability (i.e., what is at risk) as a proxy for risk
- HAZUS shows the return-on-investment for mitigation actions that help establish priorities and win approval from key decision makers
- Partnerships for data and GIS expertise are key to better risk assessments via HAZUS

## HAZUS – defining the path to safety



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