CENTER OF EXCELLENCE

IN DISASTER MANAGEMENT
& HUMANITARIAN ASSISTANCE

Thoughts on Disasters, Management, Response Effectiveness and Technological Change

February 12, 2004

Points for Discussion

- Review of disaster types and trends
- Disaster Definitions as Background
- Disaster Response Measures and Challenges
- Challenges for Technology in Disaster Response
- Interim Conclusions
- Continuing Challenges

Natural Disaster:

A natural event with severe negative impact on people, property, services, infrastructure and the environment that exceeds the capacity of local or national authorities to respond

Flood, Tsunami, Earthquake, Hurricane Typhoon, Drought

Photo: FEMA

Compound Disaster:

A humanitarian emergency caused by natural events with greater, more complicated consequences on the affected population due to hazards of manmade infrastructure

Photo: FEMA

Complex Emergency:

A humanitarian crisis in a country or region caused or intensified by civil conflict, which leads to a breakdown of authority and social infrastructure, and which cannot be resolved except by political means

Photo: S. Burkle

Trends Affecting Natural Disasters

- More frequent extreme weather events
- Continuing urbanization concentrating populations closer to hazards
- Increasingly stressed and vulnerable ecology
- Emergence of compound disasters created by economic forces, technology and natural disaster events
- Growing political consequences for weak response performance


MITIGATION/
PREVENTION
PROTECTION
PREPAREDNESS
RECONSTRUCTION
The
Disaster
Cycle
DISASTER
REHABILITAION
RECOVERY
RELIEF/
RESPONSE

Disaster Definitions:

- **Disaster Management:** collective term encompassing all aspects of planning for and responding to disasters and involves management of both the risk and consequences of disasters.

Pre-event:

- **Preparedness:** Measures taken to reduce loss of life and other damage through delivery of prompt and efficient actions of response and rehabilitation
- **Mitigation:** Measures taken to reduce loss of life, livelihood and property by reducing vulnerability or modifying a specific hazard
- **Prevention:** Measures taken to prevent natural or human caused phenomena from causing disasters

Disaster Definitions (continued):

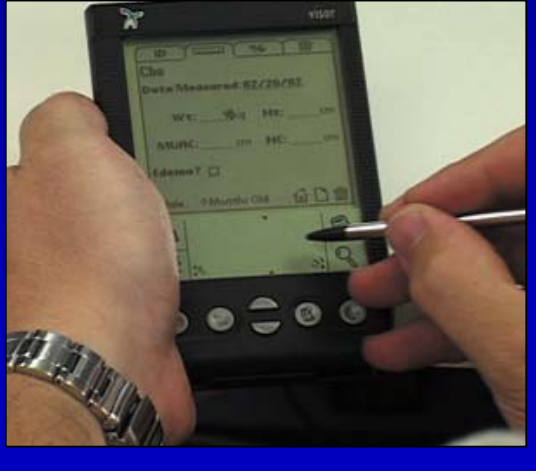
- **Disaster Management:** collective term encompassing all aspects of planning for and responding to disasters and involves management of both the risk and consequences of disasters.

Post-event:

- **Response:** Actions carried out when a disaster occurs to save lives, reduce suffering and reduce economic losses
- **Rehabilitation:** The restoration of basic services and early repair of physical, social and economic damage
- **Reconstruction:** The medium and long term repair of physical, social and economic damage resulting in return of affected infrastructure to a condition equal to or better than it was before the disaster

Measures of Effectiveness in Response

- Based on reliable data and assessment?
- Defined by quantifiable Measures of Effect?
- Well coordinated with other responders?
- Timely based on needs of victims?
- Effective in meeting victims' priorities?
- At lowest cost consistent with needs?
- Conducted with resources tailored to disaster response requirements?



Response Challenges:

Effective interventions should be "demand driven" based on reliable assessment of need.

- Informed Assessment from Reliable source?
- Assessment based on shared or established criteria?
- Response coordinated with local authorities using best techniques and resources?
- Is response timely based on needs of victims and meeting victim priorities?
- Does response promote long term recovery and economic development in affected region ?
- Are affected people informed as to what they can or should do to help themselves?
- Is response lowest cost consistent with needs?

Relief Coordination Issues

- Wholesale products to local civilian distributors (e.g. Korean Red Cross) or direct government assistance?
- Response priorities, military air transport, who pays?
- Who validates emergent requirements?
- What capabilities or resources should be turned over to local authorities?
- How will "transition" to other actors for continued recovery be planned?

Technology and Disaster Management

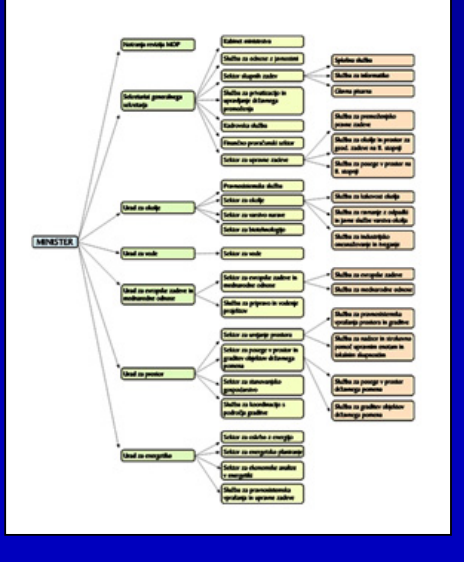
- What are the risks/costs and benefits?
  - For victims
  - Disaster Responders
  - Affected Stakeholders
  - Political Authorities

Conventional Principles of Technology Insertion

- The organization's culture must naturally support insertion
- Exhaustive requirement analysis is needed to ensure success
- You need broad high-level management support
- The information technology (IT) infrastructure must be accommodating
- "Build it and they will come"
- You need a lot of money to deploy technologies

Organizational support for transition

- Disaster imperative for quick response:
  - Perceptions/reality of aid support in crisis situation
  - Good information to decision makers
- Response must be "demand driven" to leverage limited resources for optimal effect.
- Must not threaten existing power structures
- Key areas of the system will benefit most; use them to change and convert from within



Detailed requirements analysis is required

- What is the problem to solve with technology? Implementation must fulfill, not divert original and ultimate goal
- Effort at detailed requirements analysis usually and quickly overcome by events
- Not the technology, nor the process, but successful application the key to success.

Broad high-level management support

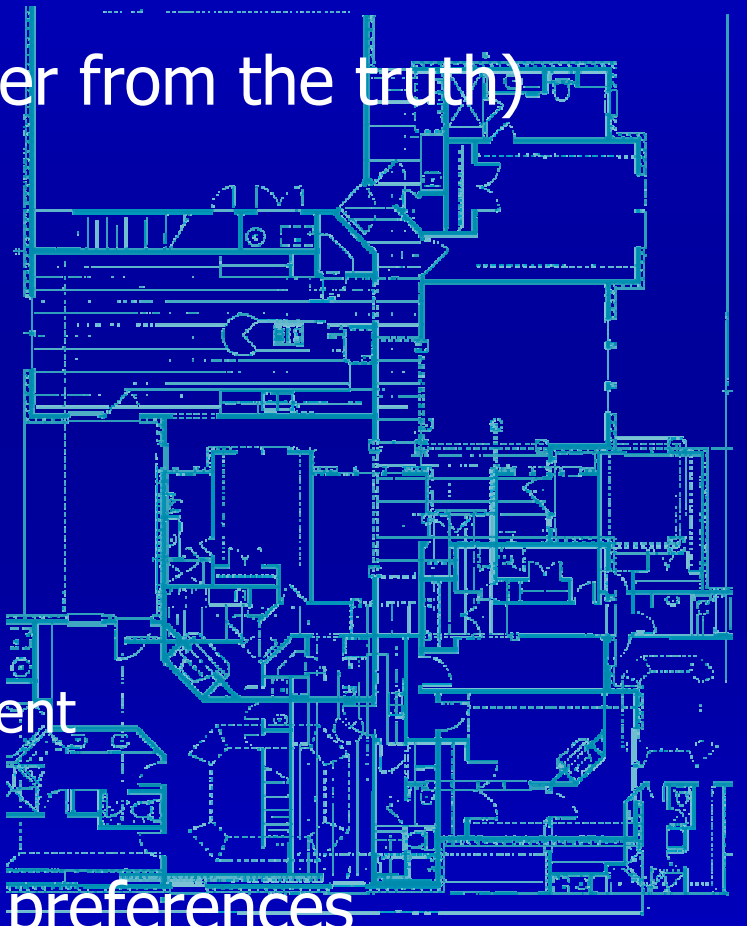
- Broad management support usually unattainable early on
  - Technology insertion disrupts power relationships – communications points and processes
  - Short term reduction in efficiency inevitable during integration
- Senior line management will have to defend and insist on tech transition effort at critical junctures

IT infrastructure must accommodate the change

- Make initiative fit the infrastructure
  - 19th century infrastructure will not absorb 21st century technology
  - Infrastructure change takes more time than applied technology
- Systems integration always harder than it seems
    - Education, uncertainty
    - Job Security
    - Resistance from entrenched IT personnel
- Need to integrate limitations & interests of existing and new partners
  - Relationships change as organizations evolve on different time lines

"Build it and they will come"

- No (nothing could be further from the truth)
- Technology must develop to receptive user audience
  - Deploy and test the technology
  - Convert users in the system through improved effective-ness and product improvement
- Performance needs should drive capability not design preferences



"You need a lot of money" (most do not have)

- Concept demonstration - can generate advocates, but costs time and money
- Target key areas for maximum gain
- Plan more effective systems integration
  - Phase deployment of technologies
  - Match technology to the environment
- Even with money, mass insertion disrupts performance.

Conclusions for Disaster Management:

- Evolutionary tech transfer is most viable
  - Acquired at the field level: user need drives process
  - Solves a clear problem impeding performance: problem analysis is done
  - System loss in technological change can be managed
- Field operators see the problems that technology can solve – no indigenous love of technology
  - Technology needs to meet the needs of recipients and collaborators – limited by culture and capacity
  - In complex change stakeholder consensus critical

Other interim conclusions:

- Technology is only one constraining variable in tech insertion: organizational culture and power dynamics are just as important
- Applications must be useful enough to overwhelm resistance or sophisticated and flexible enough to manage it
- Smooth technological transitions require discipline and easy access to resources not common in governments or disaster response organizations

Other interim conclusions (continued):

- Technology insertion when evolutionary:
  - Generates "bottom up" consensus/support
  - Improves current practices
  - Less disruptive to structures and relationships
  - Takes a lot of time
- Technology insertion when revolutionary:
  - Top down in support of external pressure to reform or a change in strategic vision
  - Can unpredictably alter organizations and partnerships
  - May change mission and require structural change of knowledge base

Continuing Challenges

- To define a mutually acceptable division of labor between local and national authorities
- To define the comparative advantage and doctrine of domestic military support in disasters
- To developing effective mechanisms and messages for public affairs communications before and during disasters
- To achieve transparent consensus on balance between risk and cost in mitigation, prevention and preparedness programs and activities
- To assure continuity/momentum in improving disaster management structure while maintaining capacity to respond as new disasters occur (technology insertion)
- To identify the most effective cost-efficient programs to achieve disaster management objectives


Thank You
Website:
http://coe-dmha.org