

# CTRnet Digital Library for Disaster Information Services

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## INTRODUCTION

- **Inception:** Extension of The 4/16 Digital Library (<http://www.dl-vt-416.org/>): collected data & provided services relating to campus shooting at Virginia Tech (4/16/2007)
- **Goal:** Developing integrative approaches to collect, analyze, and visualize in a digital library environment to provide services to stakeholders

## WORK PROCEDURES, CONTENT, TECHNOLOGY

	Collect	Analyze, Visualize
Content	Web sites, images	Image similarity
	Tweets	Content, user profiles, patterns, frequencies
	Facebook content	Use of social media
	Focus group interviews/surveys	Use of social media
Technology	Crawler	CBIR algorithm/visualization
	Online tools, scripts, APIs	NLP toolkit, SQL, graphics
	Facebook app	Spreadsheets, graphics
	Brainstorming tool	Brainstorming tool, graphics

## VISUALIZATION OF CONTENT

- **Content-Based Image Retrieval (CBIR):** organize and visualize images based on their feature similarities
- **Word clouds:** show 20 most frequent words from tweets. Updated every 10 minutes

**(a) Japan earthquake; (b) Libya revolution**

Date: October 7, 2011 8:20 PM (U.S. EST)

<http://www.ctrnet.net/clouds>

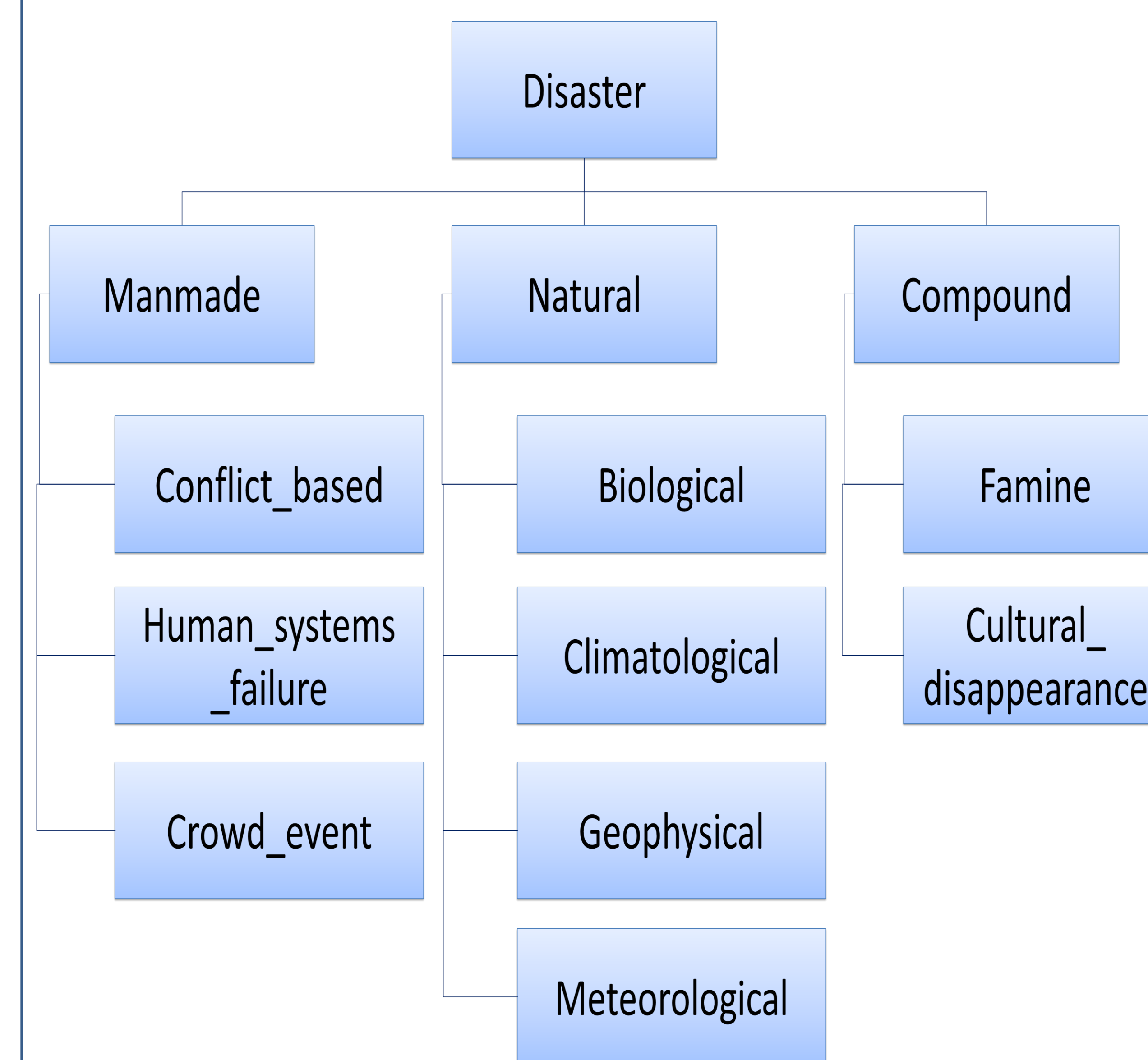
## WEB RESOURCE & TWEET ARCHIVES

- **IA (hosted by the Internet Archive)**
- **TW (Tweet archives hosted in a local server)**

Type	Events	IA	TW
Natural Disasters	Global Disasters Collection	X	
	Cyclone: Yasi	X	
	Storm: U.S. Mid-West	X	X
	Storm: U.S. South-East		X
	Tornado: Joplin (Missouri), and US tornados		X
	Hurricane Irene	X	X
	Typhoon: Ketsana	X	
	Typhoon: Quiel, Pedring, Nesat		X
	Floods : China	X	
	Floods: Pakistan, Philippines	X	X
	Floods: North Dakota		X
	Earthquake: Chile	X	
	Earthquake: Haiti (Anniversary), Japan	X	X
	Earthquake: New Zealand		X
	Earthquake: Spain	X	
	Earthquake: Virginia, Sikkim, Texas	X	X
	Wild Fires: Florida		X
	Volcanic Eruptions: Indonesia	X	
Man-Made Disasters	Volcanic Eruptions: Southern Chile, Argentine		X
	Protest: Swaziland, Uganda, United States		X
	Revolution: Bahrain, Egypt, Libya, Syria, Tunisia, Yemen		X
	Shooting: Brazil School	X	X
	Shooting: International School	X	
	Shooting: Northern Illinois University	X	
	Shooting: San Jose State University		X
	Shooting: Tucson ( Arizona)	X	
	Shooting: Virginia Tech April 16	X	
	Shooting: Youngstown College	X	
	Shooting: Norway	X	X
	Plane Crash: Russia, Indonesia, Nepal, East River Helicopter	X	X
	Mumbai Blasts		X
	Zanzibar Ferry Disaster		X

## CTR ONTOLOGY ENGINEERING

- Describe collected data from diverse sources
- Four disaster databases:
  - 1.EM-DAT International Disaster DB
  - 2.DesInventar Disaster Inventory System
  - 3.Canadian Disaster DB
  - 4.Richmond Disaster DB Project
- Converted to ontologies & merged into a single CTR ontology
- Total: 185 elements
- Plan to include additional aspects of disasters and crises: Response, Recovery, Preparedness, & Mitigation



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