

# Index

## A

9/11 terrorism attack 1, 6, 134  
 access overload control (ACCOLC) 192-193  
 acoustic messaging 188  
 Actor Network Theory (ANT) 140, 143-146, 149, 151-153  
 agility 1-2, 4, 8-9, 103, 153  
 Air Quality Index (AQI) 217, 226  
 alarm congestion analysis 188  
 Amazon 100  
 ambient technologies 72  
 Analytical Hierarchy Process (AHP) 262-263, 275, 279, 285  
 automatic identification systems (AIS) 75, 152, 212, 261, 281, 283

## B

Base system controller (BSC) 193  
 Beaufort Wind Scale 215, 226  
 blogs 27, 37, 39, 85-88, 92-93, 232  
 Boxing Day tsunami crisis 85-86  
 Bureau for Crisis Prevention and Recovery (BCPR) 264-265, 280, 284

## C

California Department of Forestry and Fire Protection (CAL FIRE) 253  
 Capital Wireless Information Net (CapWIN) 97, 107  
 cartography 245-248, 250, 253, 258-259, 261  
 cell broadcast (CB) 188, 190, 192-196  
 cell broadcast (CB) technology 192  
 cell broadcast center (CBC) 190, 193  
 Clean Air Act 217  
 closed-circuit TV (CCTV) 72  
 collaborative improvisation 74, 79, 82  
 command centers 55-57, 67, 124, 263, 273

Common Alerting Protocol (CAP) 224  
 Common Operational Picture (COP) 248, 254-256  
 communication modelling 112, 119, 121  
 communicative roles 112-113, 119, 121, 127-129, 132  
 computer scientists 77  
 Control, Communication, Computer, and Intelligence (C4I) System 264, 266  
 control event (CE) 207  
 Core Meta-Model 158, 164, 181  
 cost-benefit analysis 191, 194, 196  
 crisis information flow management 94  
 crisis information mapping 85  
 crisis management 1, 9, 41, 43-46, 52, 54, 56, 87, 94-95, 97, 117, 134-135, 139-154, 159, 185, 197, 202-207, 211-212, 214, 227-228, 241, 246, 262-264, 268-271, 273-275, 277, 279-281, 283-284, 286  
 crisis management information systems 139-140, 142-145, 148-151, 206  
 crisis management organization 214  
 crisis management systems 141, 146, 205  
 crisis organizations 139-140, 142, 145, 148, 151  
 crisis relief-response process 156  
 crisis response 11, 27-28, 40, 52, 54, 83-84, 87, 97, 108, 134, 156-161, 163-165, 168-170, 173-175, 181-184, 201-202, 204-211, 213, 226, 229-230, 241-242, 260-261, 275, 286  
 crisis response systems 158, 161, 165, 204-205, 209-210, 286  
 criterion of key communication agent 120, 122-127  
 Cyclone Nargis 34

## D

damage assessment maps 254  
 DARPA Agent Markup Language (DAML) 89  
 data gathering 56, 99, 204, 207, 264  
 data packets 80

data sources 55-56, 58, 62-63, 65, 67, 205, 234, 240, 268, 274  
 decision support systems (DSS) 10, 42, 95, 262, 270, 272, 280-285  
 Department of Environmental Health (DEH) 255  
 digital combustion 59, 69  
 Digital Typhoon 209, 212  
 disaster legislation 13-14, 19  
 disaster management units 227  
 disaster preparedness 12-13, 18, 32, 87, 227, 229-230, 237, 257, 260  
 disaster victims 3-4  
 discipline 1-2, 7-9, 153, 207  
 distributed collaboration 43, 79, 82  
 dynamic control tasks 114  
 dynamic environments 66, 120, 133-134, 152

## E

eBay 100  
 Electronic Data Interchange (EDI) 268, 280  
 elimination methodology 191  
 emergency communications requirements 197  
 Emergency Data Exchange Language (EDXL) 224  
 emergency event scale 214  
 emergency management 1-2, 5-7, 9-12, 14-17, 19-20, 24-28, 40, 52-53, 55-56, 58-59, 68, 83, 85, 87, 102, 112, 114, 135-136, 138, 152, 154-155, 203, 205, 212, 214, 224-226, 229, 242, 245-253, 256-261, 280, 282, 285-286  
 Emergency Management Information System and Reference Index (EMISARI) 205  
 emergency management system (EMS) 1, 54, 96, 105, 110, 224, 249, 261  
 emergency response 6, 9, 13-14, 20, 23-24, 26-28, 56, 68, 70, 83, 94-95, 98, 112-115, 117-120, 122, 126, 129-135, 138, 140-141, 146, 149, 153-154, 198-199, 202-207, 209-213, 228-229, 241, 243-244, 247-250, 252-253, 281-282, 286  
 emergency scale 27, 214-215, 217-218, 220-222, 224-225  
 Emergency service and civil protection communities 191  
 emergency services 13, 45, 72-73, 96-97, 104, 135, 193, 195, 250, 261  
 emergency virtual teamwork 72, 74, 81-82  
 emergency warning system 188  
 environmental dynamics 263  
 Environmental Protection Agency (EPA) 217  
 ethyl chloride (EC) 59-65  
 evacuation planning 228, 230, 239-240

Extensible Markup Language (XML) 94, 183, 232, 241

## F

Federal Communications Commission (FCC) 96-99, 105-108  
 Federal disaster assistance payments 3  
 FEMA Target Capabilities List 2  
 FEMA Universal Task List 2

## G

geographic information systems (GIS) 35-36, 39, 75, 141, 152, 209, 227-233, 236-237, 240-261  
 geoinformation 227-230, 239-241  
 geospatial technologies 35, 227  
 geospatial tools 228, 245-248, 250, 252, 254, 256-260  
 geovisualization 243, 245-248, 250, 253-254, 258-259  
 Global Disaster Alert and Coordination System (GDACS) 224, 226, 234-235  
 Global Monitoring of Environment and Security (GMES) 229  
 global positioning systems (GPS) 36, 67, 75-78, 80-81, 229, 233, 237, 254  
 Global Security and Crisis Management Unit 241  
 Google 36, 99-100, 109, 227-237, 239-244  
 Google Earth 36, 227-237, 239-244  
 Google Maps 36, 234, 242-243  
 gross national product (GNP) 218-219  
 gross state product (GSP) 218, 222  
 group decision support system (GDSS) 41-43, 45, 52, 284

## H

hardware nodes 197  
 Health and Human Services (HHSA) 255-258  
 Helios software 34  
 high reliability organization (HRO) 15, 21-22  
 High Reliability Theory (HRT) 15-16  
 Homeland Security Presidential Directive (HSPD) 246  
 House of Quality (HoQ) 278  
 Hurricane Katrina 2, 5-7, 9-11, 14, 25, 27, 84-86, 93, 97, 100, 108, 141, 152, 202, 209-212, 222-223, 225-226, 230, 243-244, 246-247, 261, 282  
 hydrochloric acid (HCL) 59, 62

**I**

Incident Commanders (IC) 55-67, 118, 121-130, 249  
Incident Management Assist Teams 2  
incrementalism 15-16  
incrementalism, disjointed 16  
Index Ontology 88-94  
information acquisition 156-159, 175-176  
information and communication technologies (ICT) 84, 113-117, 130-132  
information data 66  
information management 34-35, 39, 95, 99, 117, 139-140, 142-143, 146-147, 149-150, 209, 212, 229, 235  
Information Management System for Hurricane disasters (IMASH) 209  
information technology (IT) 1, 4, 6-8, 12-18, 20-23, 25-35, 37-38, 40, 42-46, 48-53, 56-58, 60-67, 72-82, 85-91, 94-103, 105-118, 121, 128-133, 136, 139-141, 143-154, 157-163, 166, 168-170, 175-176, 178, 180-184, 188-193, 195, 197, 201-204, 206, 209-219, 221-222, 224-225, 227-234, 237, 239-241, 243, 245, 247-248, 251-253, 256, 258-261, 263, 266-268, 271-274, 277, 280-281, 284  
initial response (IR) 6, 207  
initiating event (IE) 207  
initiator 121-123, 126  
Institute for Crisis Management (ICM) 203  
instrumental orientation 146  
interactive maps 72  
Interagency Geospatial Preparedness Team (IGPT) 246, 261  
International Conference on Information Systems for Crisis Response and Management (IS-CRAM) 1-2, 9-10, 26-28, 52, 54, 68, 82-83, 97, 108, 154, 185, 198, 226, 242, 260-261, 282  
International Federation of the Red Cross and Red Crescent Societies (IFRC) 32, 39, 102, 252  
International Journal of Information Systems for Crisis Response Management (IJISCRAM) 97, 108, 241  
International Organization for Standardization (ISO) 87, 94  
Internet Engineering Task Force (IETF) 100, 104, 107-108  
inter-organizational information 157

**K**

Katrina crisis blog 85  
key communication agent 120, 122-127  
Keyhole Markup Language (KML) 228, 232-234, 242-243  
knowledge management (KM) 74, 148, 192, 201-202, 206-207, 209-211, 239  
knowledge management systems (KMS) 202, 207  
knowledge representation 85-86, 92

**L**

leadership 1-2, 5-8, 20, 42, 137, 192, 281, 285  
learning resource 79  
Linguistic separation 214  
Local Assistances Centers (LAC) 254-255, 257  
local disaster management 103, 229-230  
location tracking 72

**M**

main addressee 121-123, 126  
main speaker 121-124, 126  
Management Information Systems (MIS) 69, 262-263, 266, 273-274  
material safety data sheets (MSDS) 59, 64  
maximum effectiveness mode 263  
message boards 92-93  
Miskel, James 3, 10  
mitigation 13-14, 20, 45-47, 229-230, 245-252, 254, 258-259  
Mobile Internet 190, 197  
mobile penetration rates 188  
Modified Mercalli Intensity (MMI) 216, 226  
mudding through 15  
multilingual ontology 85, 91  
multiple criteria decision making (MCDM) 271  
multi-threaded work 56

**N**

Nasa World Wind 227-228, 231  
National Crisis Decision Support System (NCDSS) 262, 278-279  
National Flood Insurance Program (NFIP) 252  
National Incident Management System (NIMS) 211, 246-247, 249, 261  
National Mapping and Resources Authority (NAM-RIA) 235  
National Oceanic and Atmospheric Administration (NOAA) 216-217, 226, 230, 243, 252

National Response System 2, 8  
 Nationwide Emergency Services Network (NESN)  
   97-98, 100-105, 107  
 natural disasters 13-14, 25, 36, 87, 97, 153, 203,  
   224, 235, 246, 249, 260  
 networks of action 143, 152  
 networks of knowledge 140, 143, 145  
 non-governmental organizations (NGO) 32, 35, 40,  
   229  
 normalizing event (NE) 207-208

## O

Office for Co-ordination of Humanitarian Affairs  
 (OCHA) 33-34, 39  
 One Laptop Per Child (OLPC) project 30  
 ontologies 86-87, 89-90, 92, 94-95, 211  
 open network architecture 96  
 Operational Area Emergency Operations Center  
 (OAEOC) 250-251, 253-257, 259  
 Operation Chimera 210  
 Operation Last Chance One 252

## P

PalCom 72-76, 78-83  
 personal hygiene 88-90, 93  
 Personalized Multidisciplinary Information Seek-  
   ing and Retrieval Service (PMISRS) 164, 173,  
   182-184  
 pervasive computing 72-74, 81-83  
 pervasive computing technologies 72-74, 81-82  
 Philippine Institute of Volcanology and Seismology  
 (PHIVOLCS) 236, 243  
 police database 77  
 Post Katrina Reform Act of 2006 5  
 prediction and warning capabilities 13  
 problem sciences 29, 31, 38, 242  
 program evaluation review technique (PERT) chart-  
   ing 270  
 public awareness 13-14, 19  
 public communication services 195  
 Public Safety Spectrum and Wireless Innovation Act  
   98, 109  
 Public Safety Spectrum Trust (PSST) 98, 108  
 public wireless services 195, 197

## Q

Quality Function Deployment (QFD) 262, 264, 275,  
   277, 279, 283, 285  
 quality of decision 264

quality of service (QoS) 104, 171

## R

Radio Amateur Civil Emergency Service (RACES)  
   72-74, 81, 253  
 radio base system (RBS) 193-194, 196  
 radio report 79  
 recovery response (RR) 207-208  
 relief-response organizations 156-157, 174, 181  
 RELU-Risk project 45-46, 49-50, 52  
 resource-based view (RBV) 146  
 Resource Description Framework (RDF) 87  
 restoration event (RE) 66, 79, 103, 170, 207-208,  
   246  
 Richter Magnitude Scale 216, 226  
 risk analysis 12, 17, 19, 191, 194

## S

safety of hostages (SH) 272  
 safety of rescue team (SRT) 272  
 sensemaking 1, 5-8, 10-11, 15, 56, 69, 83, 154  
 sensor-networks 72  
 service descriptions (S-Desc) 170-171  
 short messaging service (SMS) based solution 195,  
   197  
 short messaging service (SMS) center 190, 193  
 short messaging services (SMS) 33, 37, 188, 190,  
   192-198  
 short term deployment 190  
 Simple Object Access protocol (SOAP) 178  
 Simputer project 30, 40  
 simulation exercise 58-59  
 situational analysis (SA) 207  
 situation-aware (SA) process 159, 175  
 situation-gap-use model 158  
 Slammer 210, 212  
 social network analysis 135, 143  
 socio-metric status 112, 119-120, 123, 125, 127  
 socio-technical knowledge 139  
 spatial data infrastructure (SDI) 36, 40  
 spatial interrelations 227, 240  
 Standardized Emergency Management System  
 (SEMS) 249, 261  
 Strong Angel III 209-210

## T

Technology Acceptance Model (TAM) 250-251,  
   258, 260  
 Telecoms Sans Frontieres (TSF) 32, 40

## **Index**

terminating event (TE) 207  
text message 60  
ThinkTank wGDSS 41-42, 45-51  
time-event charting (TEC) 270  
topical episode analysis 112, 119-122, 131  
topics, associations, and occurrences (TAO) 89  
topographical change 218-220, 222  
Triadic constraints 214

## **U**

unified emergency scale 27, 214, 218, 224  
UN Institute for Training and Research (UNITAR) 229  
universal service obligations 195-196  
UN Joint Logistics Centre (UNJLC) 32, 40  
unmanned aerial vehicle (UAV) 55, 58-60, 65-68, 70, 254  
unprocessed image 66  
U.S. anthrax attacks 14, 25  
U.S. Department of Agriculture (USDA) 255  
U.S. Department of Homeland Security (DHS) 1-3, 5-6, 11, 212, 217, 225, 249, 261  
U.S. Federal Emergency Management Agency (FEMA) 2-3, 5-6, 11, 217, 222, 225, 246, 251-252, 261  
U.S. Geological Survey (USGS) 216, 226, 246  
U.S. House Committee on Energy and Commerce 98  
U.S. Office of Emergency Preparedness (OEP) 13, 205  
U.S. Senate Commerce, Science, and Transportation Committee 98

## **V**

video feed 55-56, 58, 65, 67-68  
virtual globes 227-232, 241, 244

virtual teams 20, 26-27, 44, 46, 72-74, 81, 134, 157  
Visual investigative analysis (VIA) charting 22, 26, 37, 42-43, 55-57, 60, 67, 82, 100, 104, 107, 168, 170, 177, 182, 188-190, 192, 197, 199, 205, 207, 210, 231-232, 240, 253, 259, 270, 273  
voice over Internet protocol (VoIP) 99-100  
volume of very high resolution (VHR) 232-234, 240  
volunteered geographic information (VGI) 230, 240, 242  
Vulnerability analysis 13, 17, 228

## **W**

warning networks 192  
wearable devices 72  
web-based group decision support systems (wGDSS) 41-47, 51-52  
Web Ontology Language (OWL) 87, 89, 95  
Wikipedia 20, 40, 90-91, 94  
Wireless Internet Information System for Medical Response in Disasters (WIISARD) 67  
wireless networks 96, 98-99, 104, 107, 109, 188-190, 193, 197  
World Food Programme (WFP) 32-33, 37, 40  
World Wide Web Consortium (W3C) 87, 95, 224-225

## **Y**

Yahoo! Groups 36

## **Z**

zone of operations 192-194