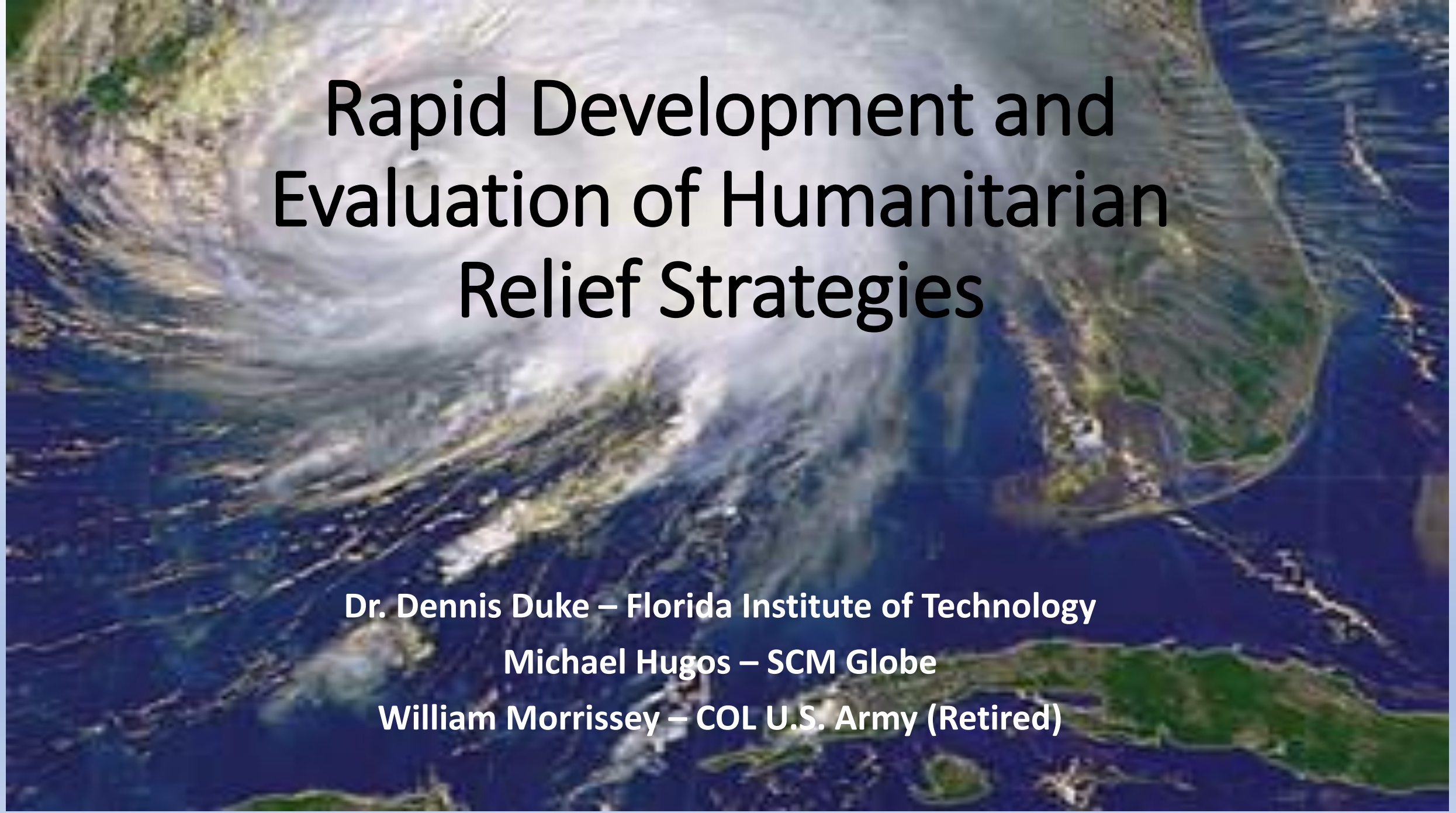


Rapid Development and Evaluation of Humanitarian Relief Strategies

Dr. Dennis Duke – Florida Institute of Technology

Michael Hugos – SCM Globe

William Morrissey – COL U.S. Army (Retired)

Purpose of Presentation

To Propose a Methodology that Offers Managers and First Responders an Opportunity to:

- Develop Strategies
- Establish Metrics
- Improve Team Communication and Coordination
- Practice Situational Awareness

Prior to the Onset of Any Type of Emergency

Methodology

- Devoid of political interference
- Comprised of **virtual eLearning** that can be remotely attended by representatives from different agencies who may be called upon to work together
- Includes **virtual exercises that would simulate crisis scenarios**
- Provides 30,000 foot view of disaster area allowing participants to develop **“situational awareness”**
- Allows **real time learning and decision making** based upon metrics derived from simulated crisis scenarios
- **Takes advantage of “Lessons Learned” from previous experiences** to improve content and substance

Humanitarian Disasters

2011 Tsunami
Japan

Create an environment that is ***"… a chaotic, possibly hostile, environment where every passing minute could mean another life saved. The nature of the situation ensures that the business of transporting humanitarian aid is highly unpredictable. Logisticians often have little or no notice of what and how much material they must move, not to mention when and where it is to go."***

Gooley, T.B. In Time of Crisis, Logistics is on the Job." Logistics Management and Distribution Report, 38:82-86.

2017 Puerto Rico
Hurricane Maria

2017 Houston. Texas
Hurricane Harvey

Volunteers in the "Cajen Navy" during hurricane Harvey

Outline

Different disaster situations present different challenges

Problem: Lack of Experienced Humanitarian Logisticians Available for Disasters

- Some Initial Definitions:
  - Supply Chains Commercial & Humanitarian
  - Disaster Phases and Types

Solution:

- Develop Virtual Training Modules
- Collect Metrics

Supply Chain Management (Commercial)

"the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party providers, and customers."

Council of Supply Chaim Management Professionals (CSCMP)

Humanitarian Supply Chain Management

"…the process of planning, implementing and controlling the efficient, cost-effective flow of storage of goods and materials, as well as related information, from the point of origin to the point of consumption for the purpose of alleviating the suffering of vulnerable people. The function encompasses a range of activities, including preparedness, planning, procurement, transport, warehousing, tracking and tracing, and customs clearance."

Thomas, A., and Kopczak, L. (2005) From Logistics to Supply Chain Management : The Path Forward in the Humanitarian Sector. Fritz Institute, San Francisco, CA.

Factors Unique to Humanitarian Logistics

- Disasters often occur in less developed regions which usually have inadequate infrastructures and are far away from major traffic lanes
- The consumer of the final product is not the customer of either the supplier or carrier
- The logistics modeling employed in a disaster **should combine elements of both military and commercial applications**
- The political environment makes famine relief different from commercial logistics especially when the operation is an emergency situation.
- **Distribution networks must be established quickly** with minimum organizational support

Factors Unique to Humanitarian Logistics

"inventory management in relief operations is unique in that the value of commodities are much greater than the inventory carrying costs. Having food available and moving it as rapidly as possible is much more important than holding minimal stock levels."

Thomas, A., and Kopczak, L.

Problem: Humanitarian Personnel Turnover

"organizational culture and high employee turnover create an environment in which there is a lack of institutional learning. Once a crisis is dealt with, humanitarian heroes are immediately assigned to the next mission, rather than taking the time to reflect and improve ….[and] while the logisticians have a remarkable track record for getting the job done under the most adverse and extreme circumstances, the lessons learned from one disaster to the next are often lost [because] turnover of field logistics personnel is as high as 80% annually"

Thomas, A. Humanitarian Logistics: Enabling Disaster Response. The Fritz Institute. P. 71.

We have to train more humanitarian logisticians!

Types of Humanitarian Disasters

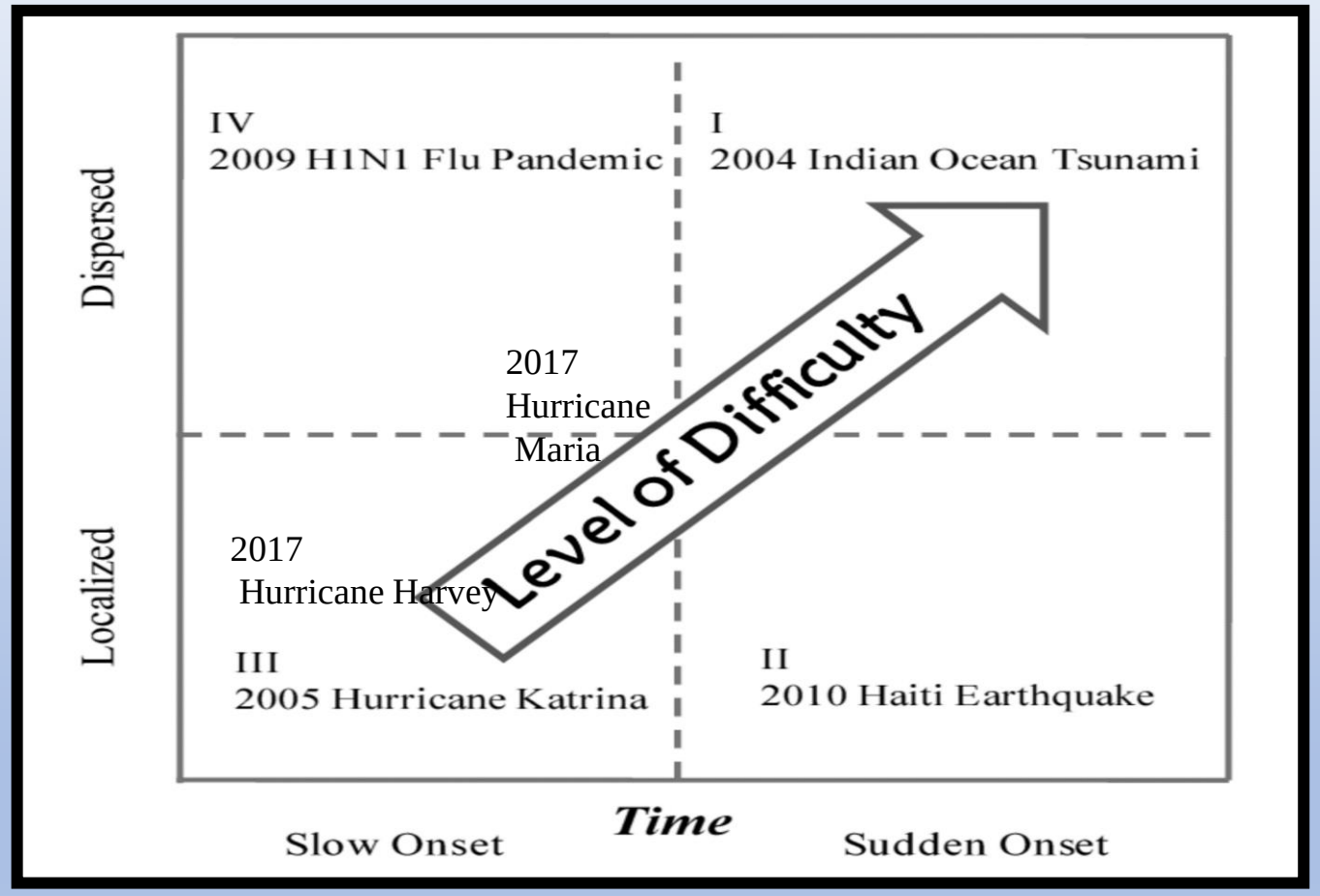
	Natural	Man-made
Sudden-onset	Earthquake Hurricane Tornadoes	Terrorist Attack Coup d'Etat Chemical leak
Slow-onset	Famine Drought Poverty	Political Crisis Refugee Crisis

Explaining Disasters (from van Wasserman)

Humanitarian disasters are "… disruptions that physically affect a system as a whole and threaten priorities and goals"

- Disasters that are slow to form allow time for logisticians to develop plans for supply chains and identify suppliers
- Disasters that are rapid in their onset provide little reaction time for any coordination between the military and any relief agencies.

Classification of Disasters



(from Apte 2009)

- Localized or widespread disasters with slow onset allows for more preparation time
- Localized or widespread disasters with sudden onset allow no time for training
- Rarely do disaster recovery plans address the development of prepositioning strategies regarding the placement of warehouses, the identification of distribution centers or the establishment of preferred delivery routes

Different types of disasters call for different types of training

Phases of a Disaster

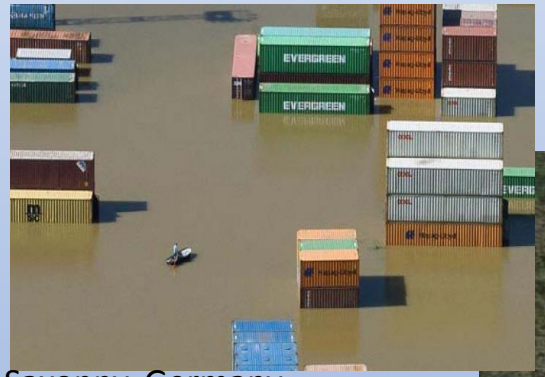
Pre-Disaster
Prevention activities, mitigation and preparedness

Response
Life saving, search and rescue, medical care, basic needs

Recovery and Reconstruction
Basic facilities, infrastructure, livelihoods

Training in Pre-Disaster and Response phases reduces costs in the Recovery and Reconstruction phase

Grimma, Germany



Saxonny, Germany

Dresden, Germany

Passau, Germany

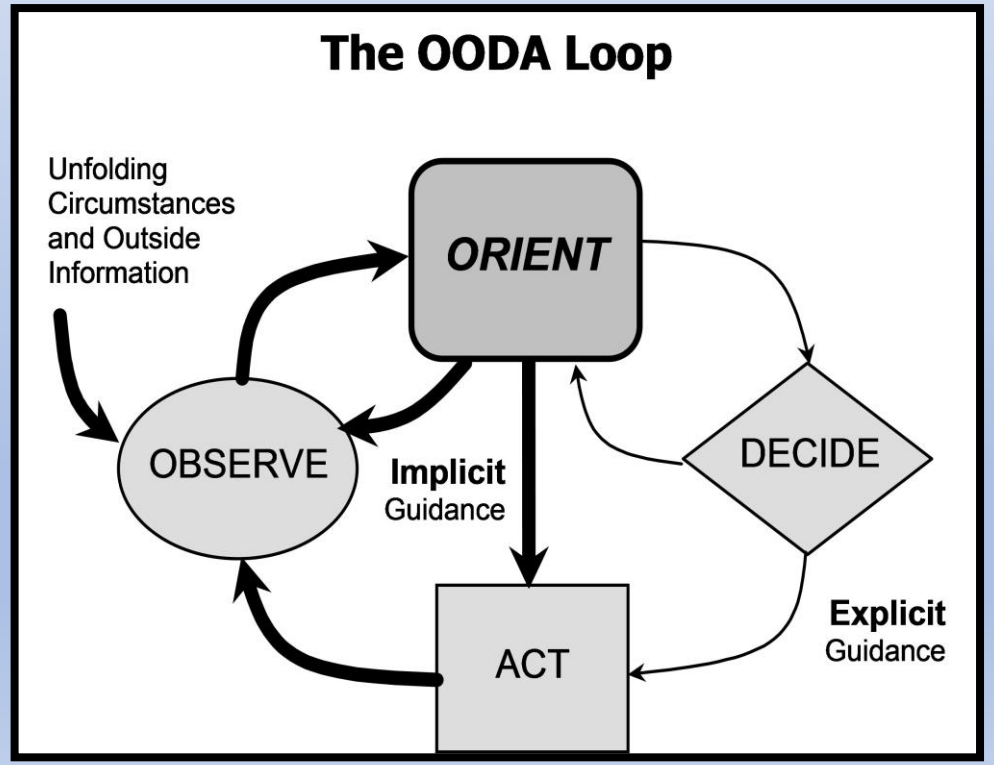
Floods in Europe 2013

Pre-Disaster Phase

- Individual Physical Preparations
  - Develop various escape routes and survival plans
  - Familiarize oneself with procurement vehicles that can be used
  - Identify storage facilities capable of holding supplies
  - Develop an implementation plan
    - Define specifics as to who, what, where, when, how
- Organizational Preparedness
  - Insure adequate capacity is available at various facilities
  - Make resources (people, supplies, equipment, etc.) are available to enable effective and efficient relief operations
- U.S. DoD – Manual for Civil Emergencies

Response Phase

- Develop Situational Awareness
  - Becoming aware of the events and conditions in the disaster area
  - Learn to use information from satellite, aircraft, ground vehicles, individuals on the ground, etc.



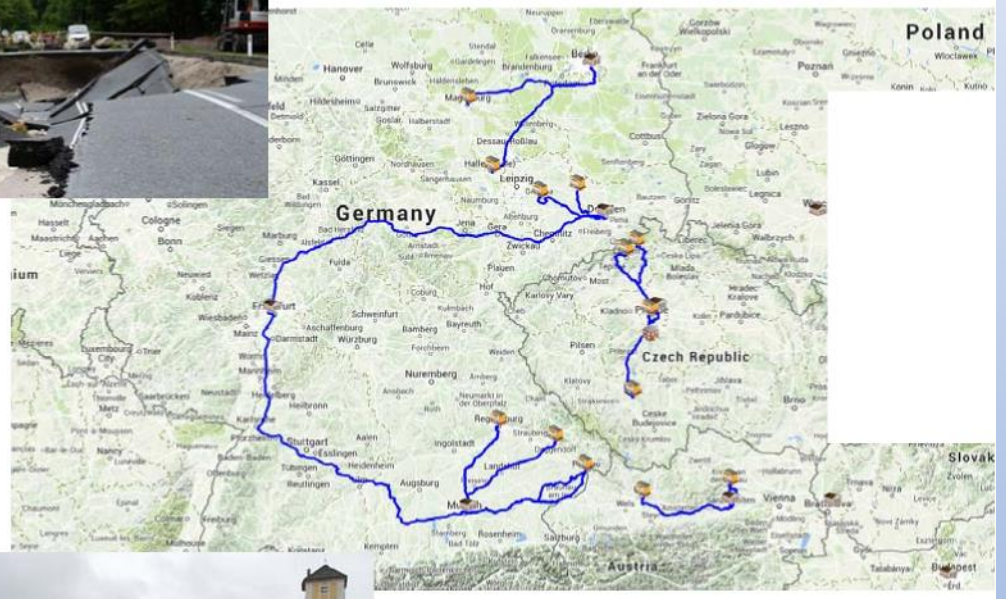
Observe – collect and communicate relevant data.
Orient – make sense of the data observed by placing it in context appropriate to the situation
Decide – make decisions in a particular situation
Action – put the decisions into action

Developed by Col. John Boyd USAF

Disaster Response Depends on Supply Chains

"...disasters are the embodiment of randomness... This is the ultimate execution of a sophisticated supply chain, particularly from an algorithmic planning basis. ***Every other supply chain is based on predictability.***"

- *(Sowinski, 2003:19)*



The more cities, counties, townships, parishes, prefectures, provinces, and states involved in a disaster the larger the number of people who want to be involved with decision making.

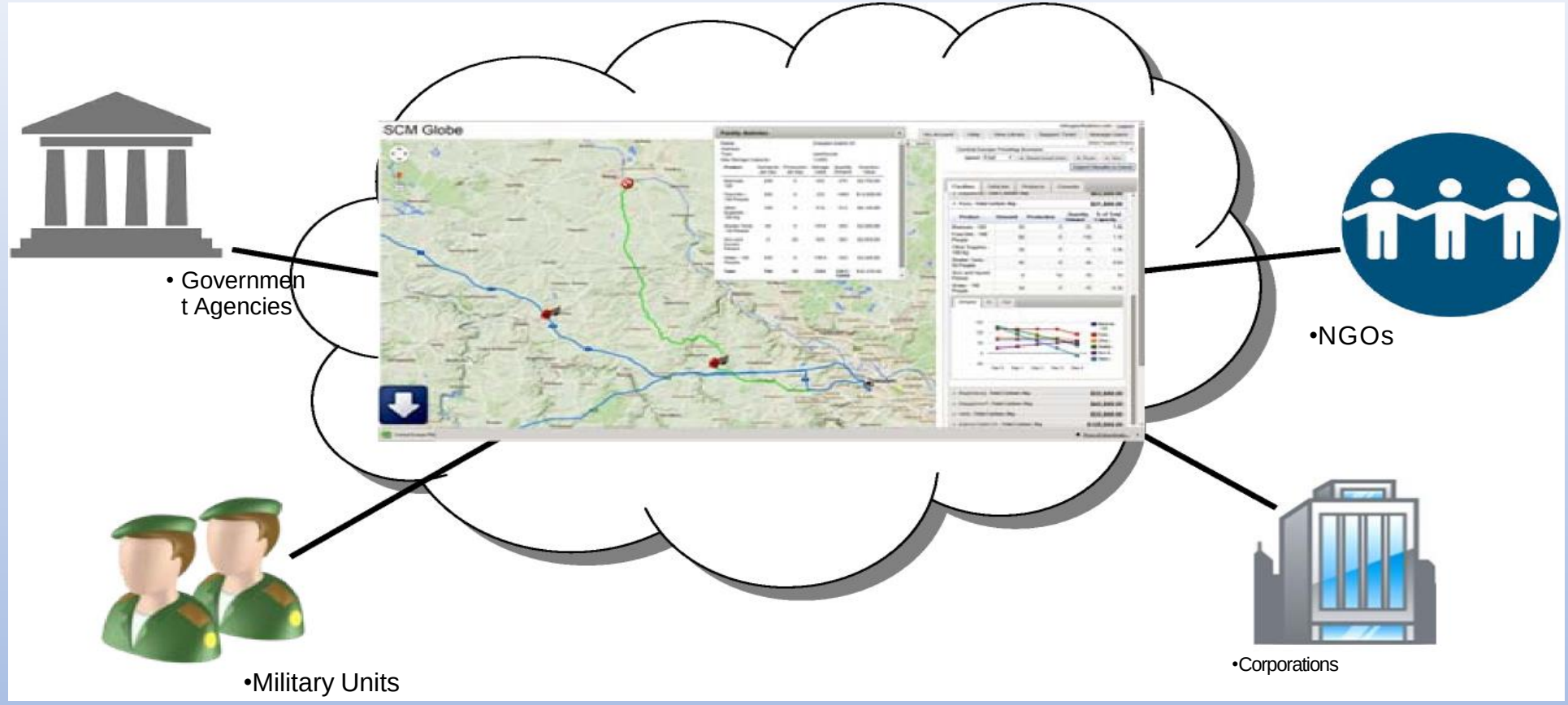
Required coordination between government agencies, military units, NGOs and corporations becomes more challenging, causing frustration among decision makers who are ultimately responsible.

Realistic Training for all participants is needed!

Realistic Group Training Sessions

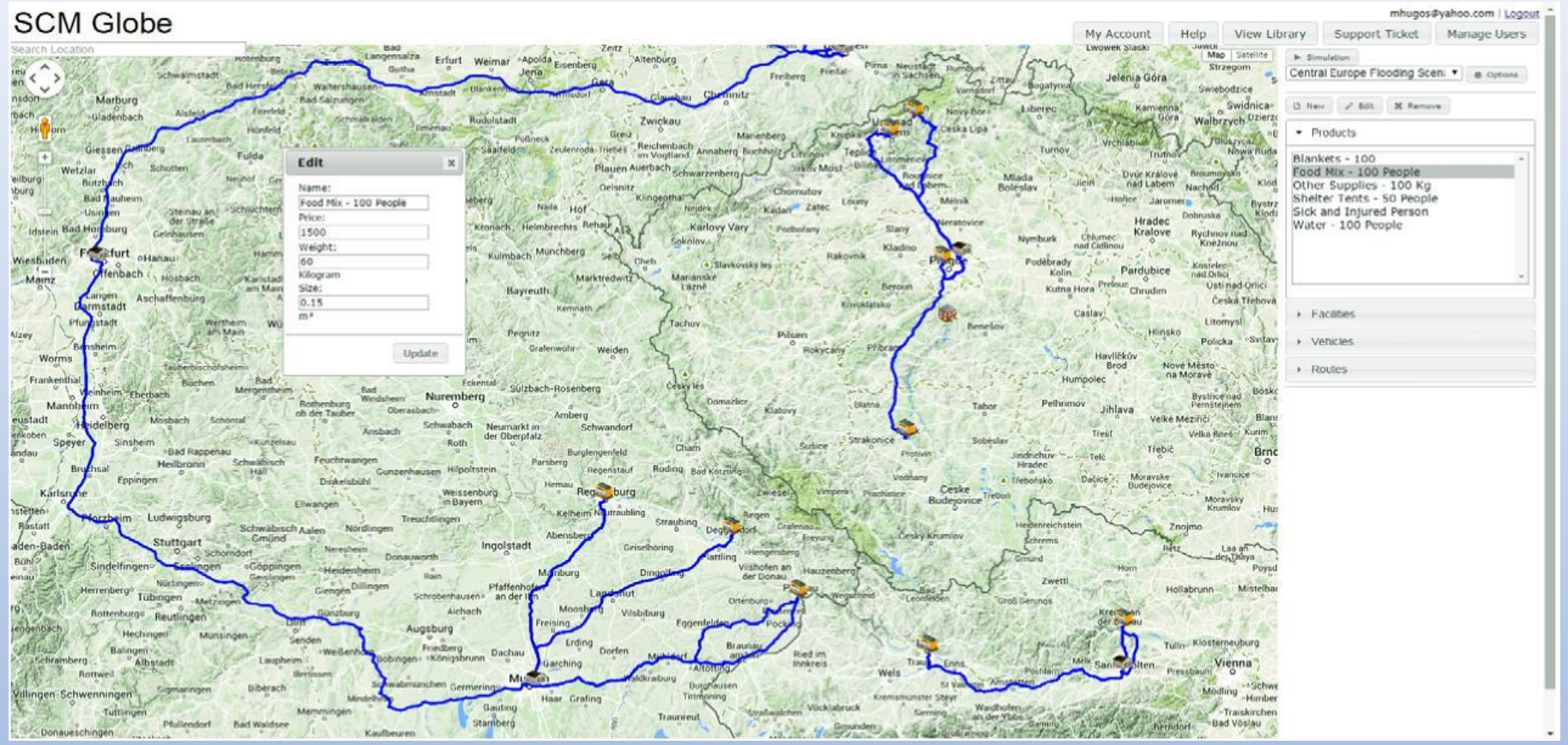
- Periodic Training sessions help Humanitarian Managers and First Responders to:
  - Familiarize themselves with the peculiarities of a geographic area
  - Effectively react to commands given by established protocol
  - Demonstrate and reinforce their decision making skills as it relates to their specific role in the echelon
  - Develop a working team relationship
  - Build confidence in themselves and are more apt to suggest creative solutions
- Training sessions expose participants to a wide range of realistic scenarios
- Help to develop situational awareness – a critical skill for making decisions in crisis management

Cloud-Based Supply Chain Training Platform



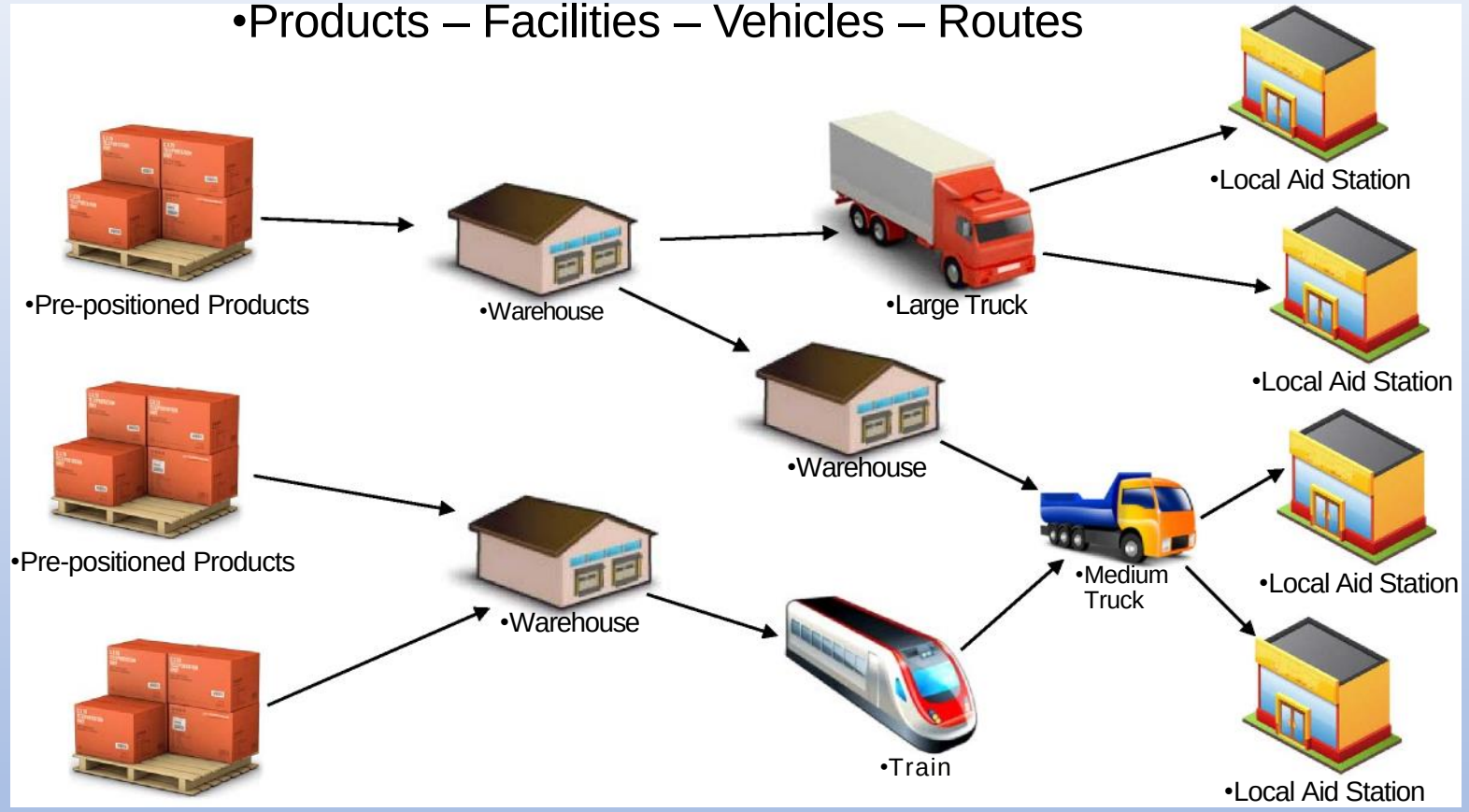
- Cloud-based training platform accessible with standard PCs, laptops, tablets
- Supply chain modeling and simulation engine for all to use together online
- People learn about supply chains – and about *coordination between different disaster response organizations*

Situational Awareness Promotes Coordination

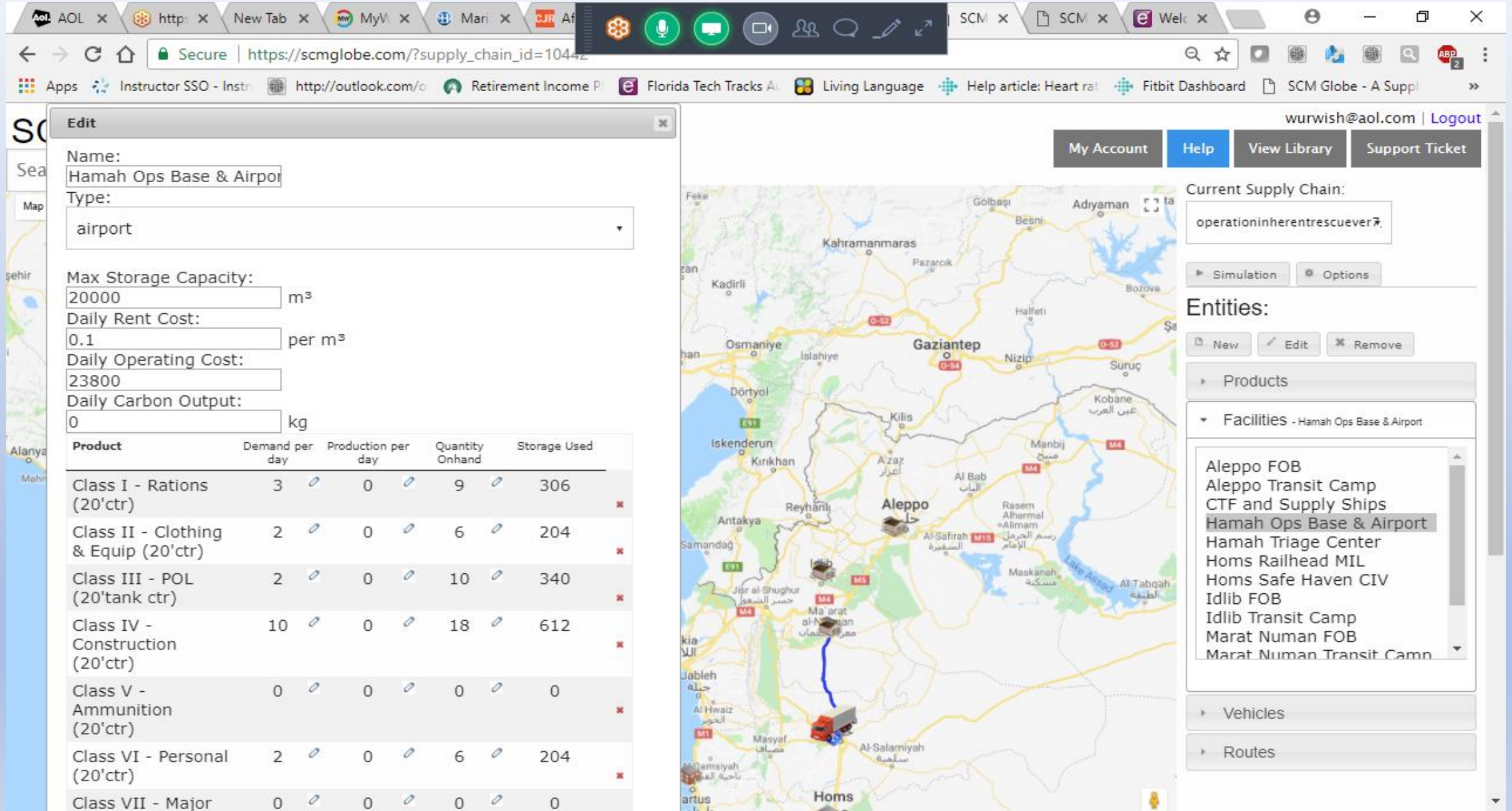


- Map-based user interface provides clear geographical context in which to quickly understand different kinds of detailed data – ***situational awareness***
- Enables all parties to see what is happening, explore options, reach consensus
- Consensus makes coordination among all parties much more effective

Collaborate Online to Build Supply Chain Models



- Define different combinations of products, facilities, vehicles and routes
- Place them on the map to build different supply chain models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Class II - Clothing & Equip (20'ctr) 2 0 6 204
Class III - POL (20'tank ctr) 2 0 10 340
Class IV - Construction (20'ctr) 10 0 18 612
Class V - Ammunition (20'ctr) 0 0 0 0
Class VI - Personal (20'ctr) 2 0 6 204
Class VII - Major 0 0 0 0
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Aleppo FOB
Aleppo Transit Camp
CTF and Supply Ships
Hamah Ops Base & Airport
Hamah Triage Center
Homs Railhead MIL
Homs Safe Haven CIV
Idlib FOB
Idlib Transit Camp
Marat Numan FOB
Vehicles
Routes
Gaziantep
Aleppo
Homs
Kahramanmaras
Adıyaman
Osmaniye
Dörtyol
Iskenderun
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Antakya
Reyhanlı
Manbij
Al Bab
Nizip
Suruç
Kobane
Jableh
Masyaf
Al-Salamiyah
Maskanah
Lake Assad

Establishing Metrics for Disaster Relief

Facility Statistics

Name: CTF and Supply Ships

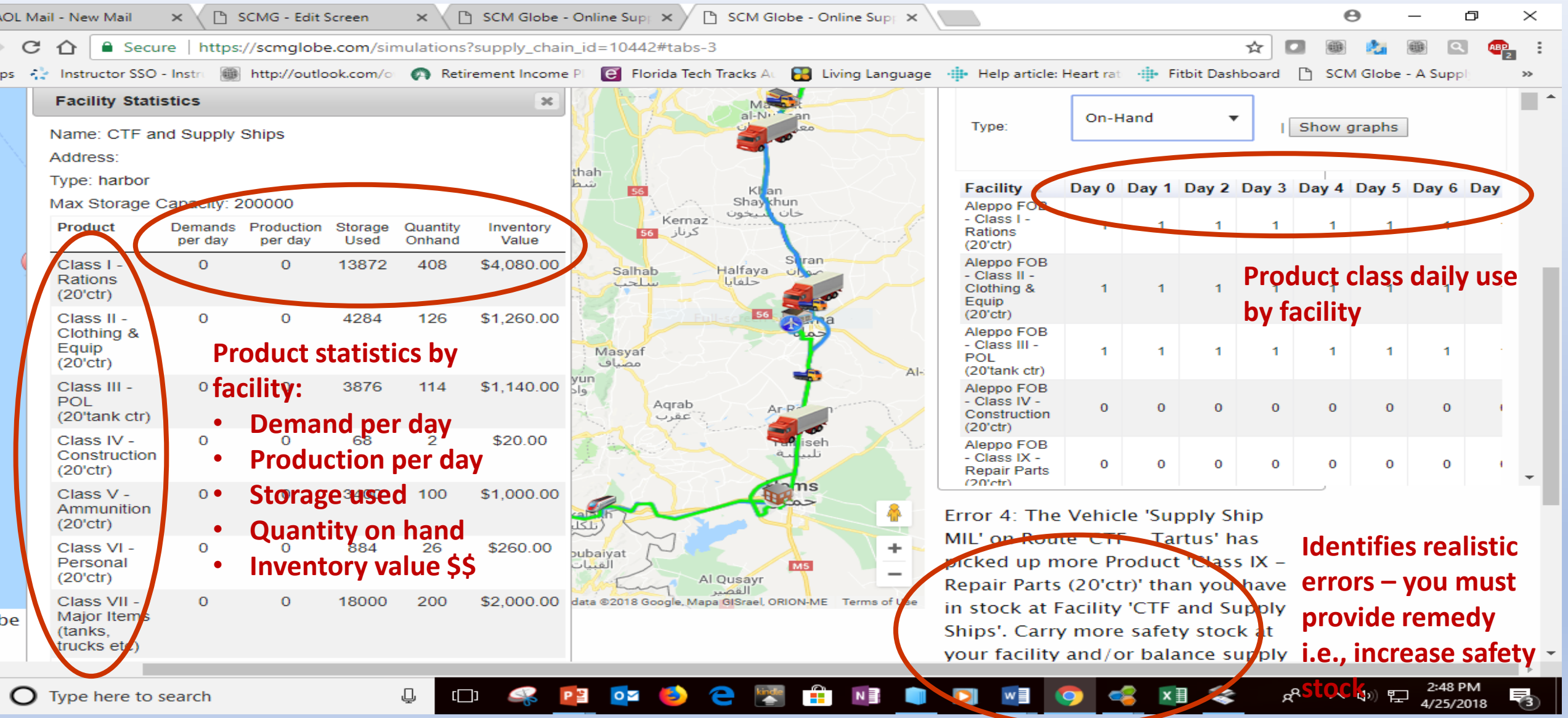
Address:

Type: harbor

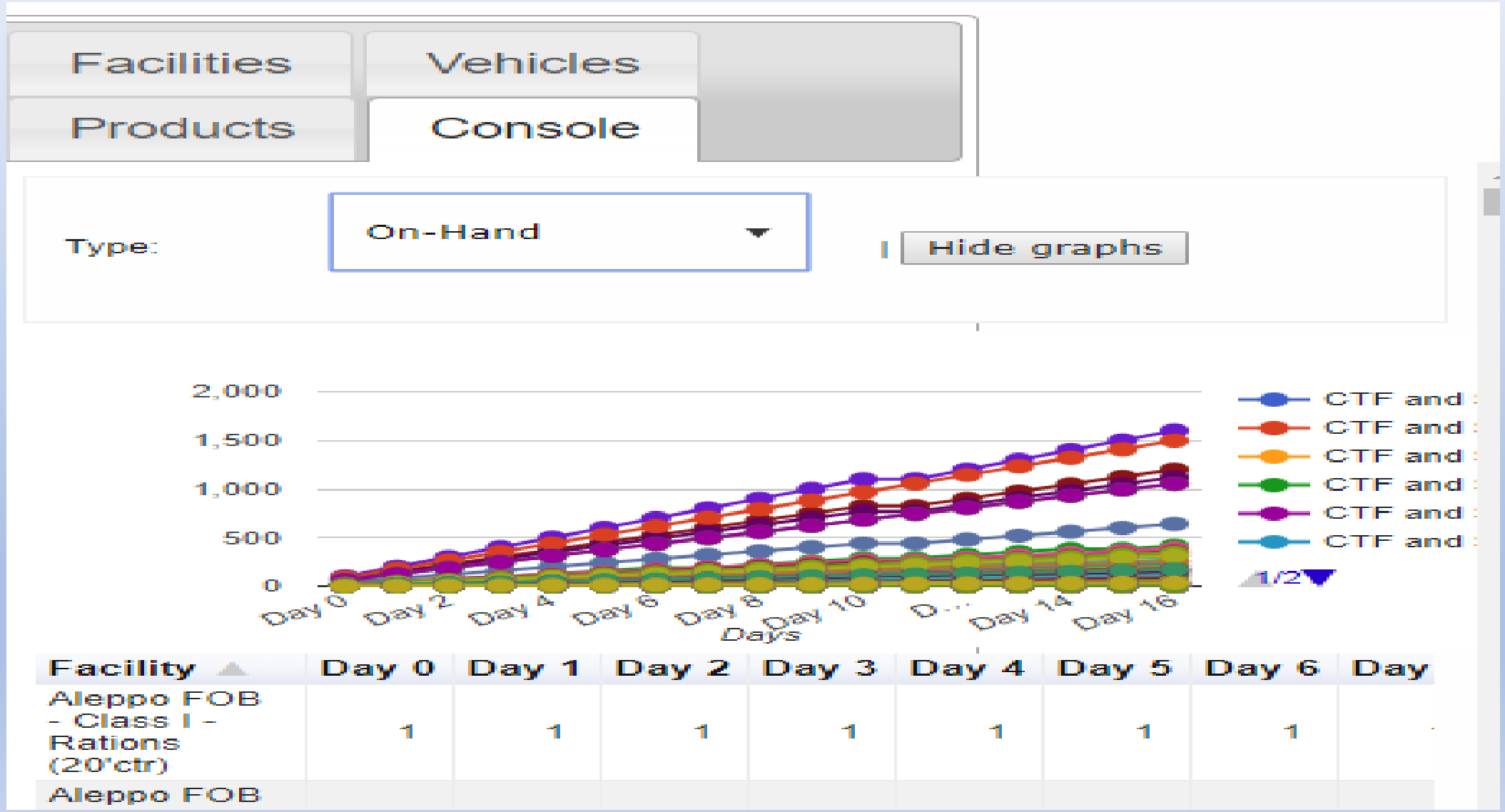
Max Storage Capacity: 200000

Product	Demands per day	Production per day	Storage Used	Quantity Onhand	Inventory Value
Class I - Rations (20'ctr)	0	0	13872	408	$4,080.00
Class II - Clothing & Equip (20'ctr)	0	0	4284	126	$1,260.00
Class III - POL (20'tank ctr)	0	0	3876	114	$1,140.00
Class IV - Construction (20'ctr)	0	0	68	2	$20.00
Class V - Ammunition (20'ctr)	0	0	3400	100	$1,000.00
Class VI - Personal (20'ctr)	0	0	884	26	$260.00
Class VII - Major Items (tanks, trucks etc)	0	0	18000	200	$2,000.00
Class VIII - Medical (20'ctr)	0	0	1496	44	$440.00
Class IX - Repair Parts (20'ctr)	0	0	-680	-20	($200.00)
Class X - Non Military (20'ctr)	0	0	68	2	$20.00
Water (20'tank ctr)	0	0	3400	100	$1,000.00
Aviation Fuel (20'tank ctr)	0	0	5304	156	$1,560.00
Total	**0**	**0**	**53972**	**1258 / 200000**	$12,580.00

Establishing Numerical Metrics for Disaster Relief

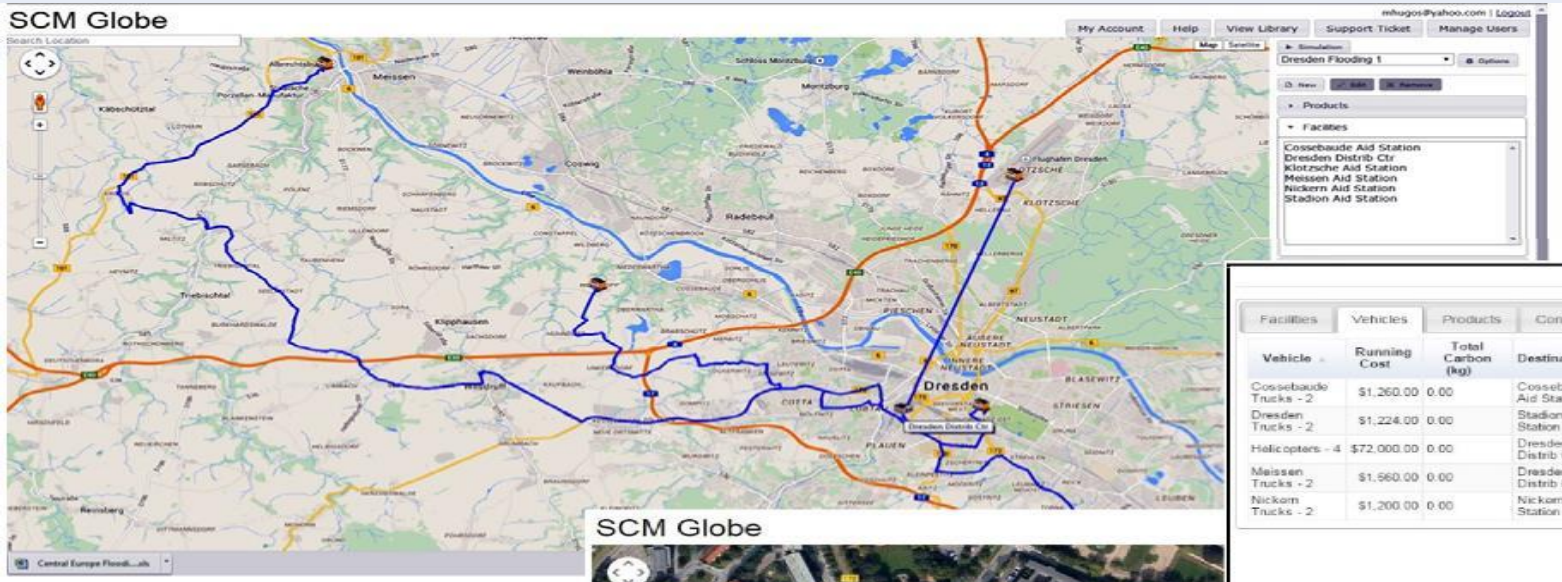


Establishing Graphic Metrics for Disaster Relief

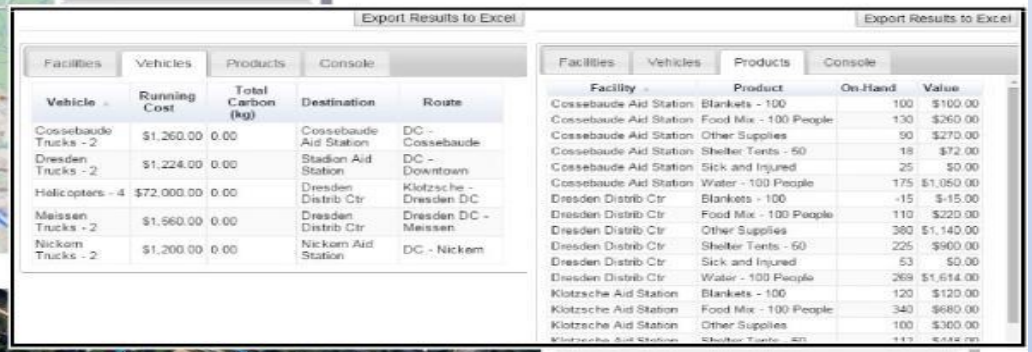


Facility	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day
Aleppo FOB - Class I - Rations (20'ctr)	1	1	1	1	1	1	1	
Aleppo FOB								

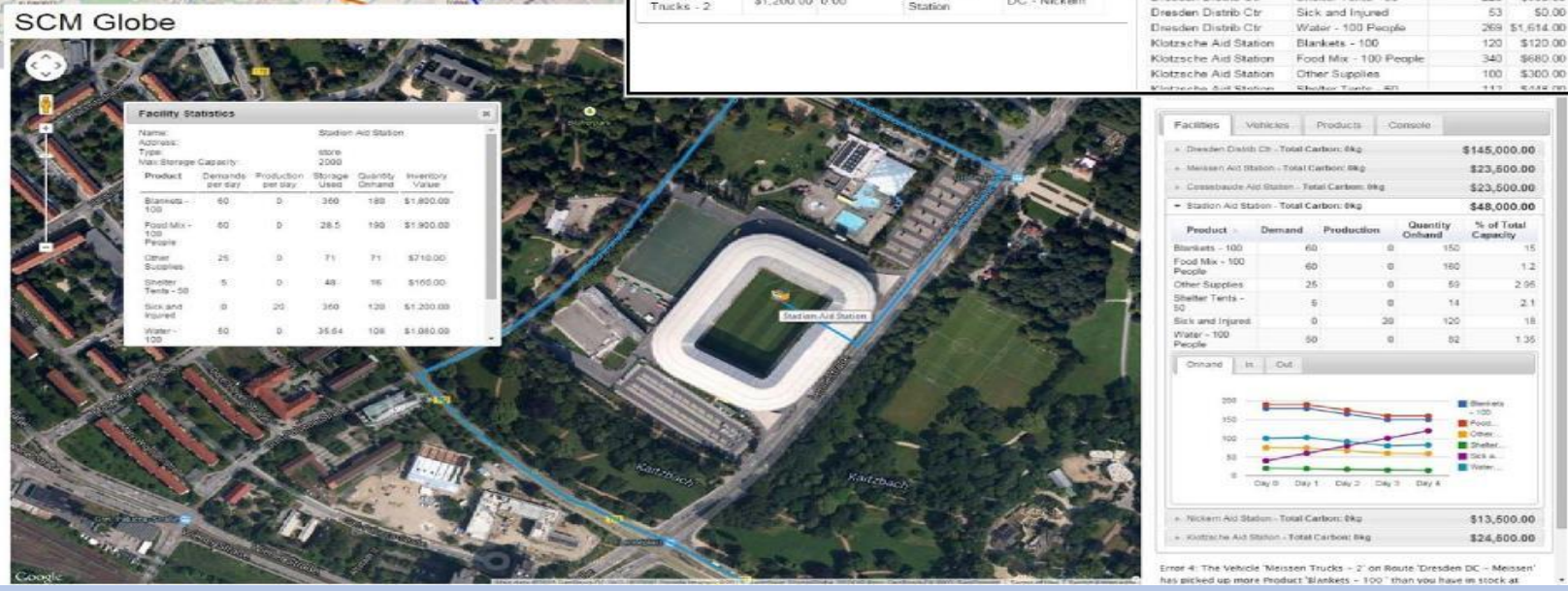
Plan for Pre-Positioning and Phased Response



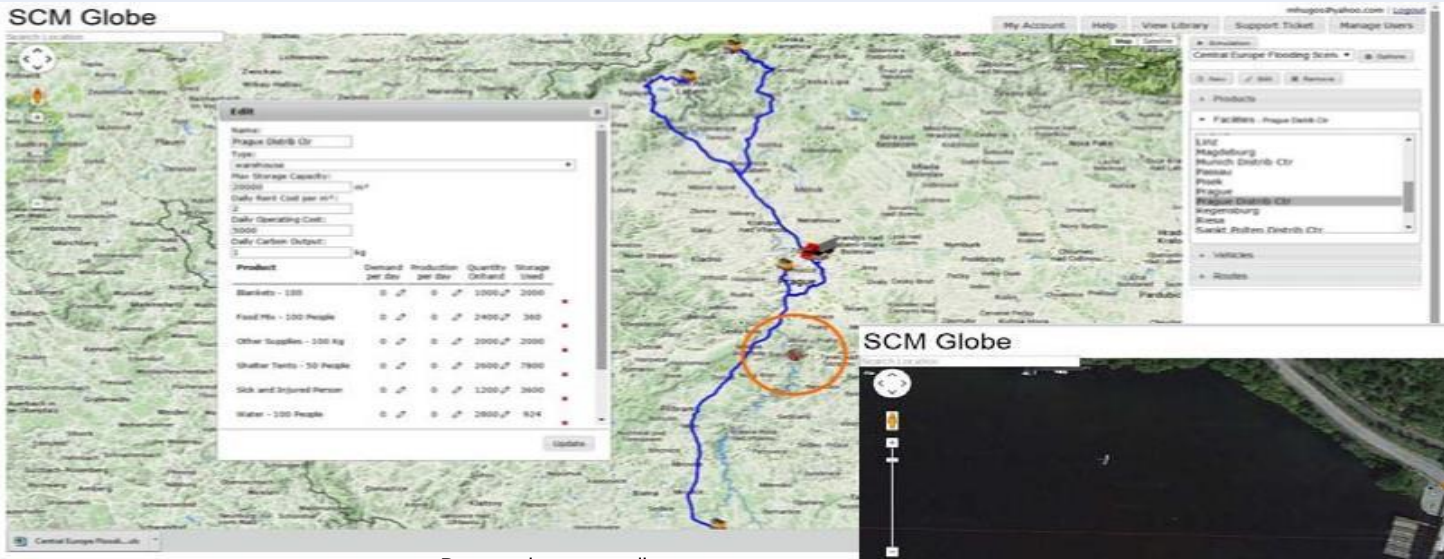
Do detailed planning for individual cities and likely flooding disaster areas – analyze simulation data



Examine local sites for best places to establish aid stations and simulate how local aid stations will support expected demand

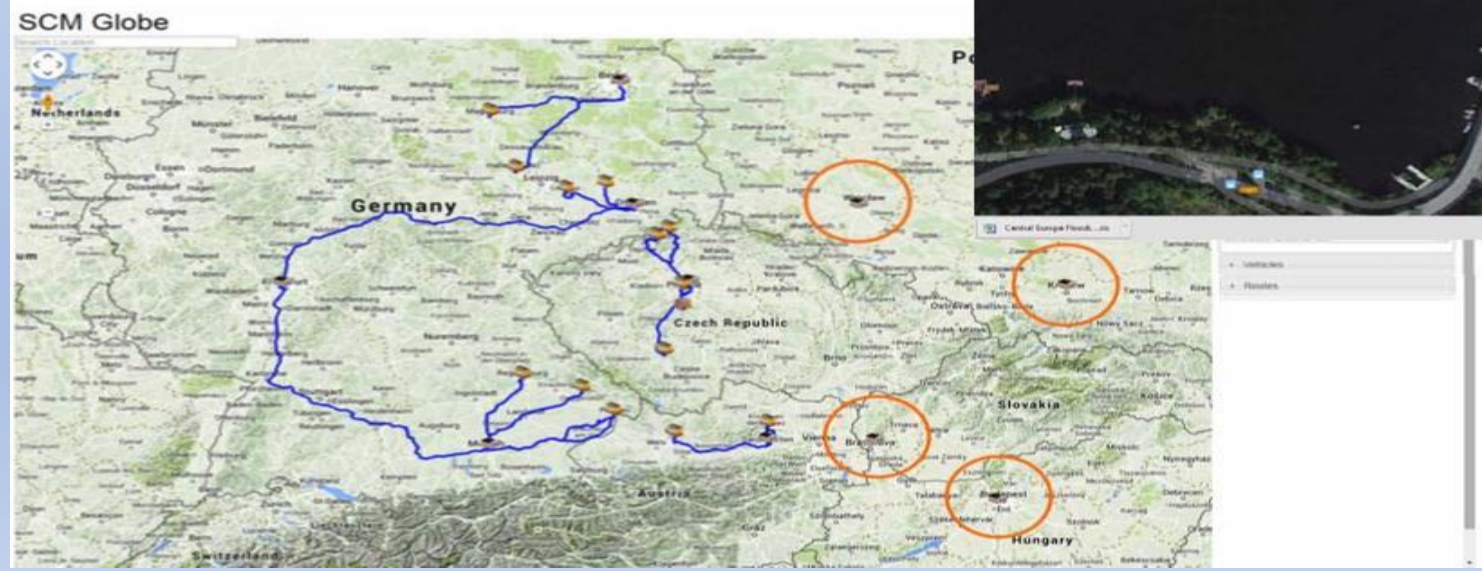


Learn to Manage Surge Capacity when Needed



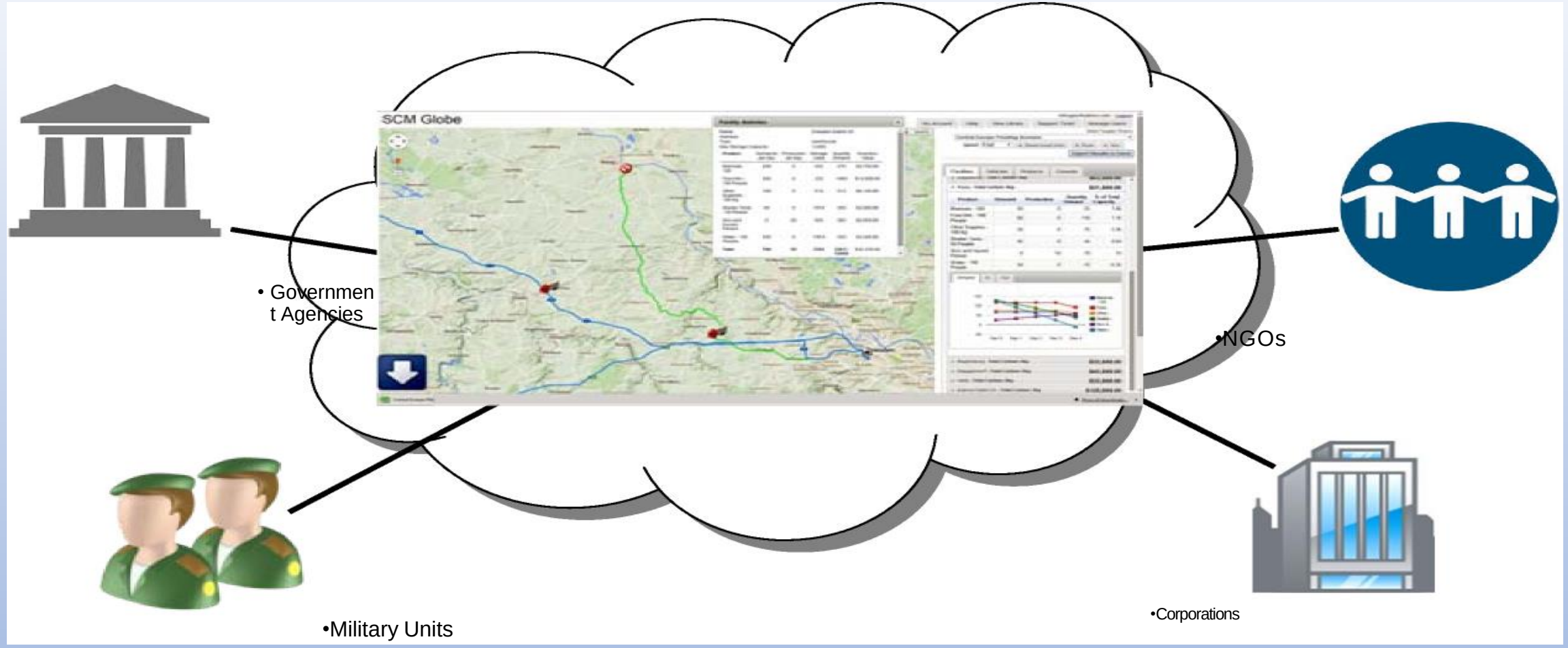
•Dam on river may collapse...

Challenge disaster response teams to deal with sudden unexpected developments midway into the training exercise



Need far more supplies and equipment than originally planned – where will resources come from? What is best way to deliver them?

Training Becomes Real-Time Cooperation



- When everyone can see what is happening, and everyone can see the best courses of action, consensus emerges quickly – simulations show the way... .

- Peer group pressure can drive effective coordination when there is no centralized command and control... nobody wants to seem uncooperative or incompetent!