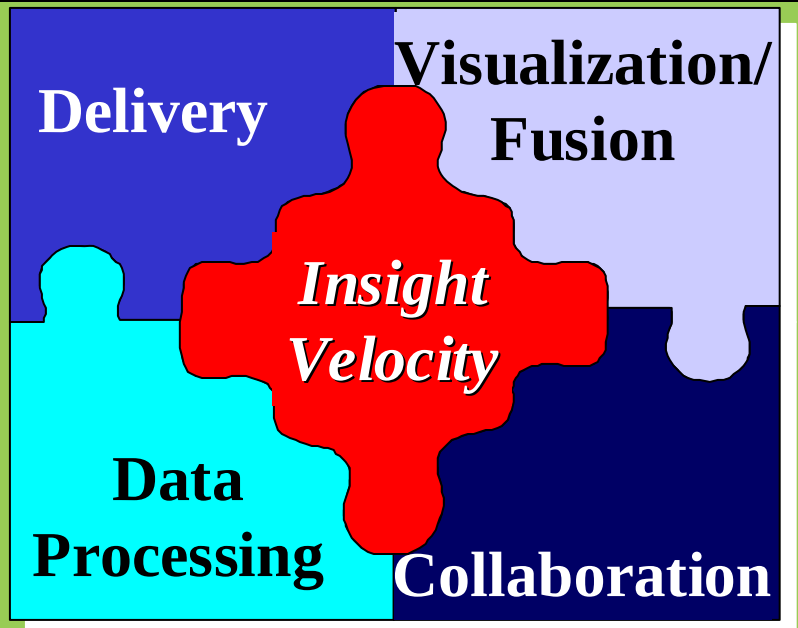
SAN DIEGO STATE UNIVERSITY

Homeland Security Master's Program
DHS S&T Conference, Jan. 14, 2008


SAN DIEGO STATE UNIVERSITY
Viz Center
Center for Information Technology and Infrastructure,
Homeland Security Master's Program,
Center for Homeland Security Technology Assessment
SDSU SAN DIEGO STATE UNIVERSITY
Bob Welty
http://citi.sdsu.edu
Eric Frost

Insight Velocity---Linking Policy and Technology for Homeland Security

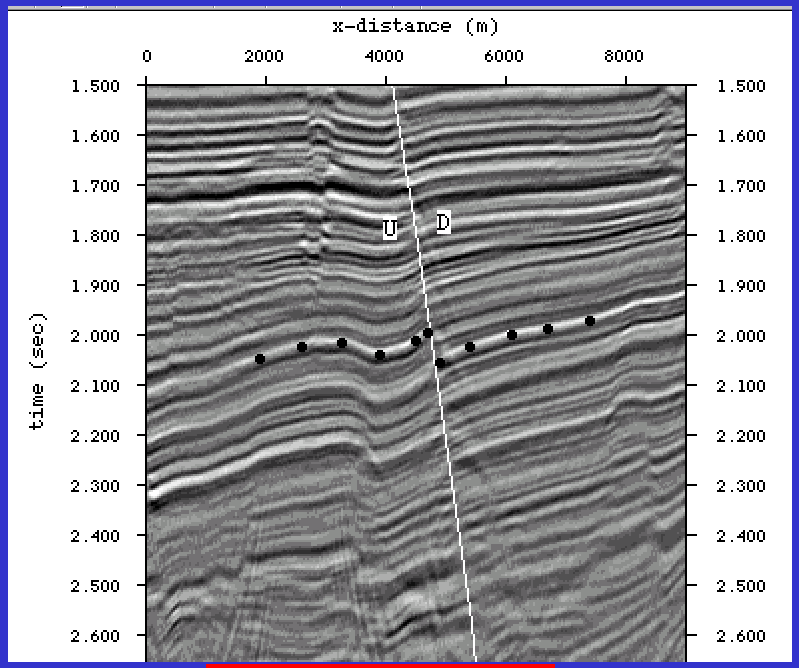
The Gating Factor to Improved Operational Efficiency and Financial Performance is ***the Rate at which Information is Consumed and Transformed into Knowledge and Action = Expert Bandwidth!***

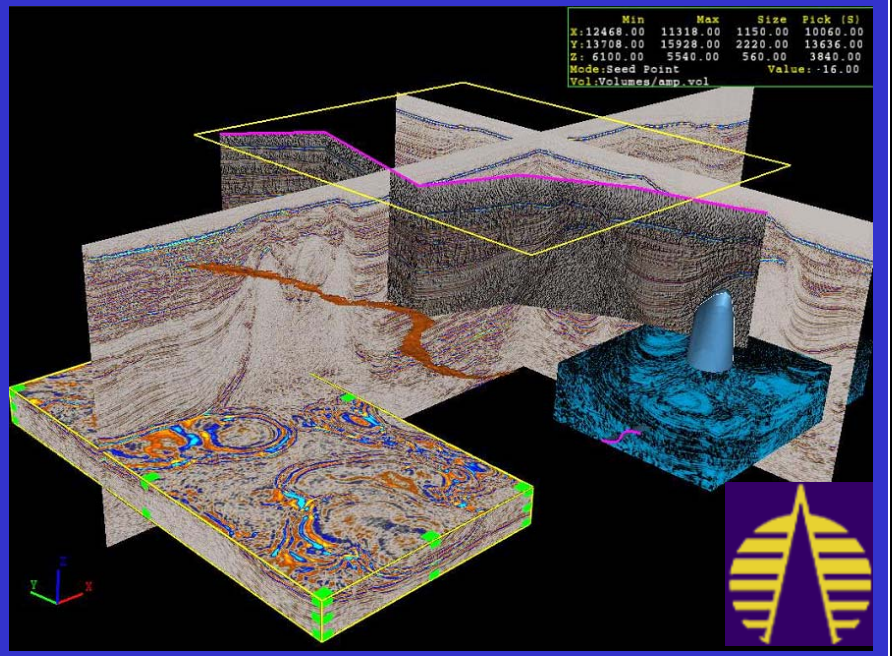


Scenario

√ Capital	*Plenty*
√ Opportunities	*Plentiful but Immature*
√ People	*Bandwidth* ***Limited***

Delivering Data and Voice and Location Globally, Tools and Insight to Help Empower Homeland Security





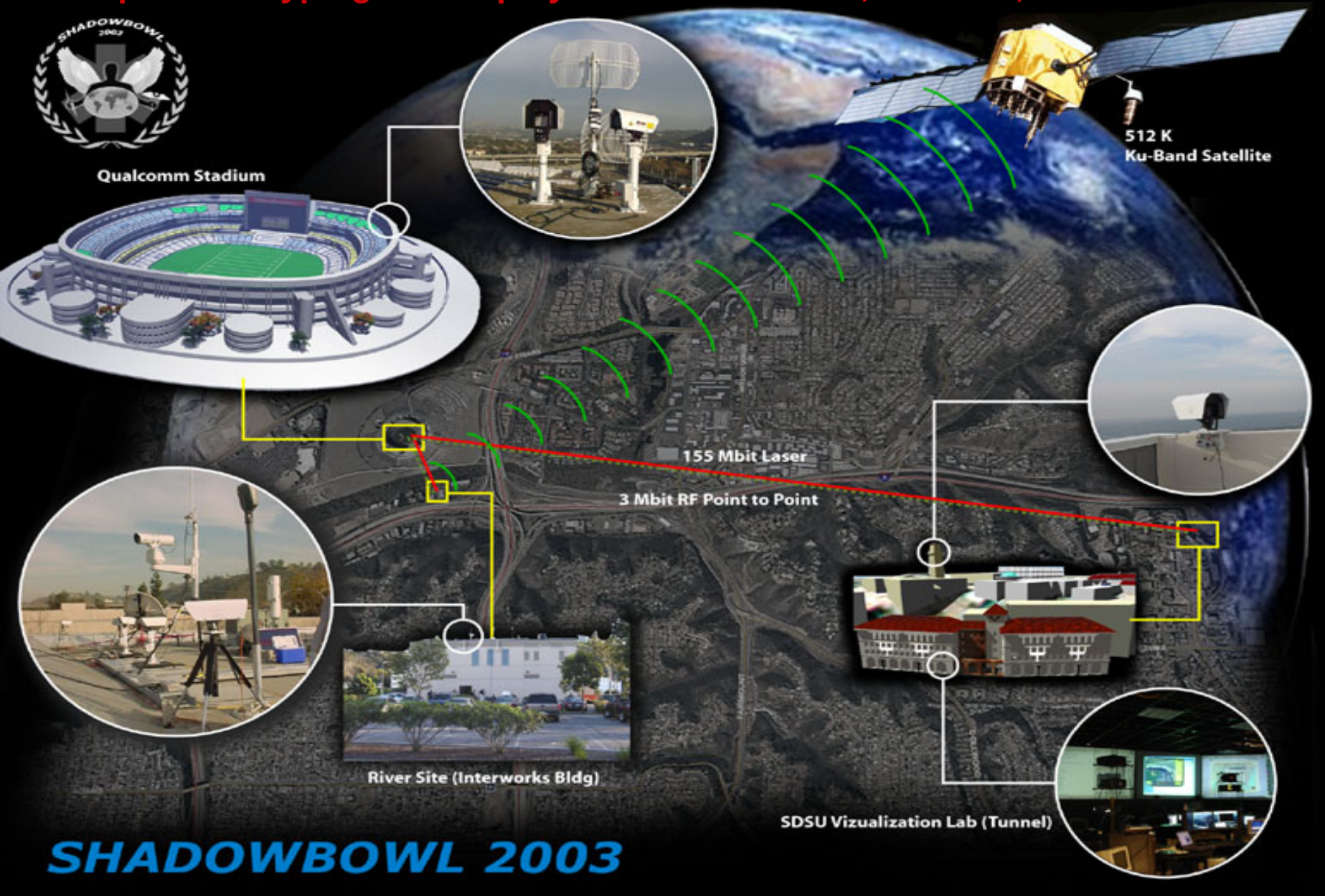
1993
100- MB
10% viewed
2-3 maps
12 months
800KB/month

400,000 fold productivity improvement

2004
400+ GB
100% viewed
Volumes
1 month
400GB/month

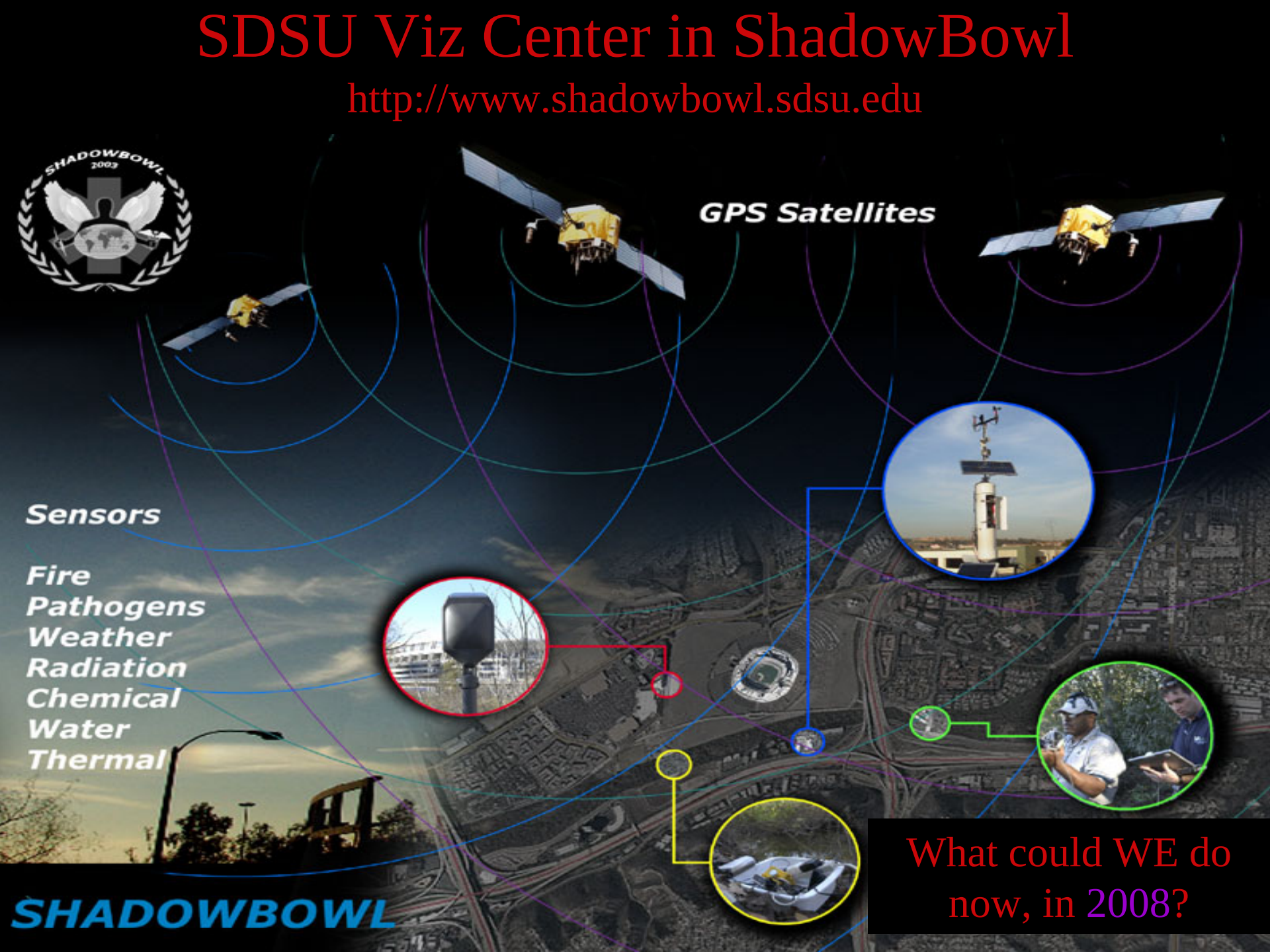
Ex: ShadowBowl Communication Networks

Rapid Prototyping and Deployment for Cameras, Sensors, and Data Fusion



SDSU Viz Center in ShadowBowl

http://www.shadowbowl.sdsu.edu



What could WE do now, in 2008?

Homeland Security Master's Program

Two Co-Directors, Eric Frost and Jeff McIllwain for academic program tied to Homeland Security research effort, Co-Directed by Eric Frost and Bob Welty.

Started in 2004 as Interdisciplinary Studies: Homeland Security major, blossomed into fully standalone program, entitled simply "Homeland Security Master's Program"

36 units, 4 core classes, strongly interdisciplinary, primary motivation for students is Public Service

Homeland Security Master's Program

Students from FBI, TSA, Federal Air Marshal, Fire, Law Enforcement, Public Health, Border Patrol, Navy, Army, Marine Corps, industry, NGOs, humanitarian focus

Leverages Location of Phone, Satellite System, Geospatial Datasets, Imagery, and Camera or Sensors Connected to Phone

Mash-up Example: Missing People (icon on image)

Using GeoFusion Imagery as Underlayer for any SQL Database

Disconnectedness defines danger.

Dr. Tom Barnett, The Pentagon's New Map, 2004

Comms first.

Dr. Sheryl Brown, CIO, United States Institute of Peace

http://www.strongangel3.net

SDSU Visualization Center

Example of Data Fusion for Making Decisions

Sensor Networks, Wireless / Optical Communications, Remote Sensing, Imaging, Data Fusion, Data Visualization, and Decision Support

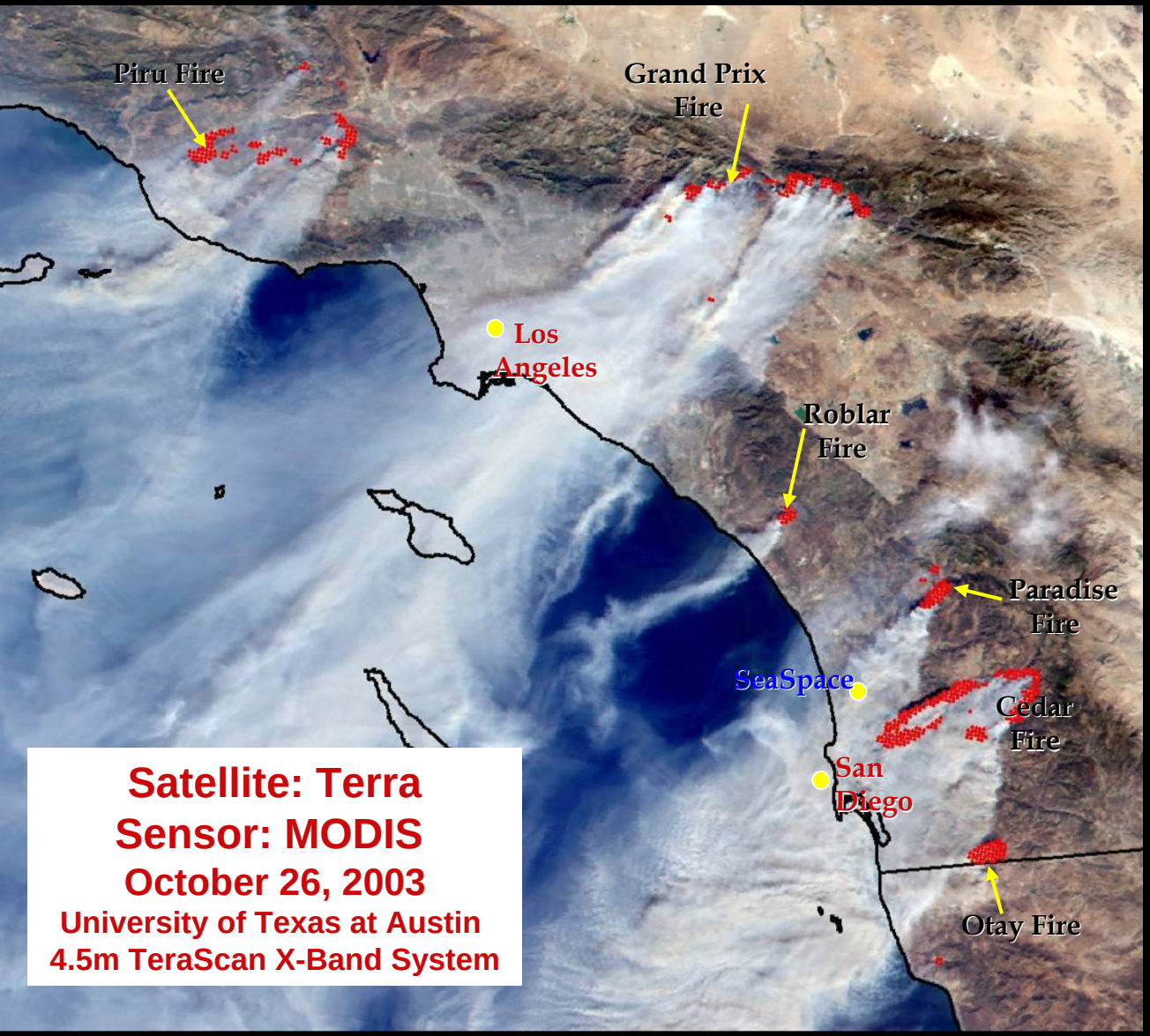
Viewing Airplanes, Boats, Cars, and Trucks all Together
3D Stereoscopic Images (two images---let brain do the work)

Very few such applications exist---
but leveraging gift of brain and how we see, understand, and make decisions that can assist in HADR

With technology of two images, taken either from simple phone, or phone with stereo-camera, or two phones each sending image.

Can produce high-quality virtual worlds

MODIS imagery for Tactical Fire Response



Vulcan Example:

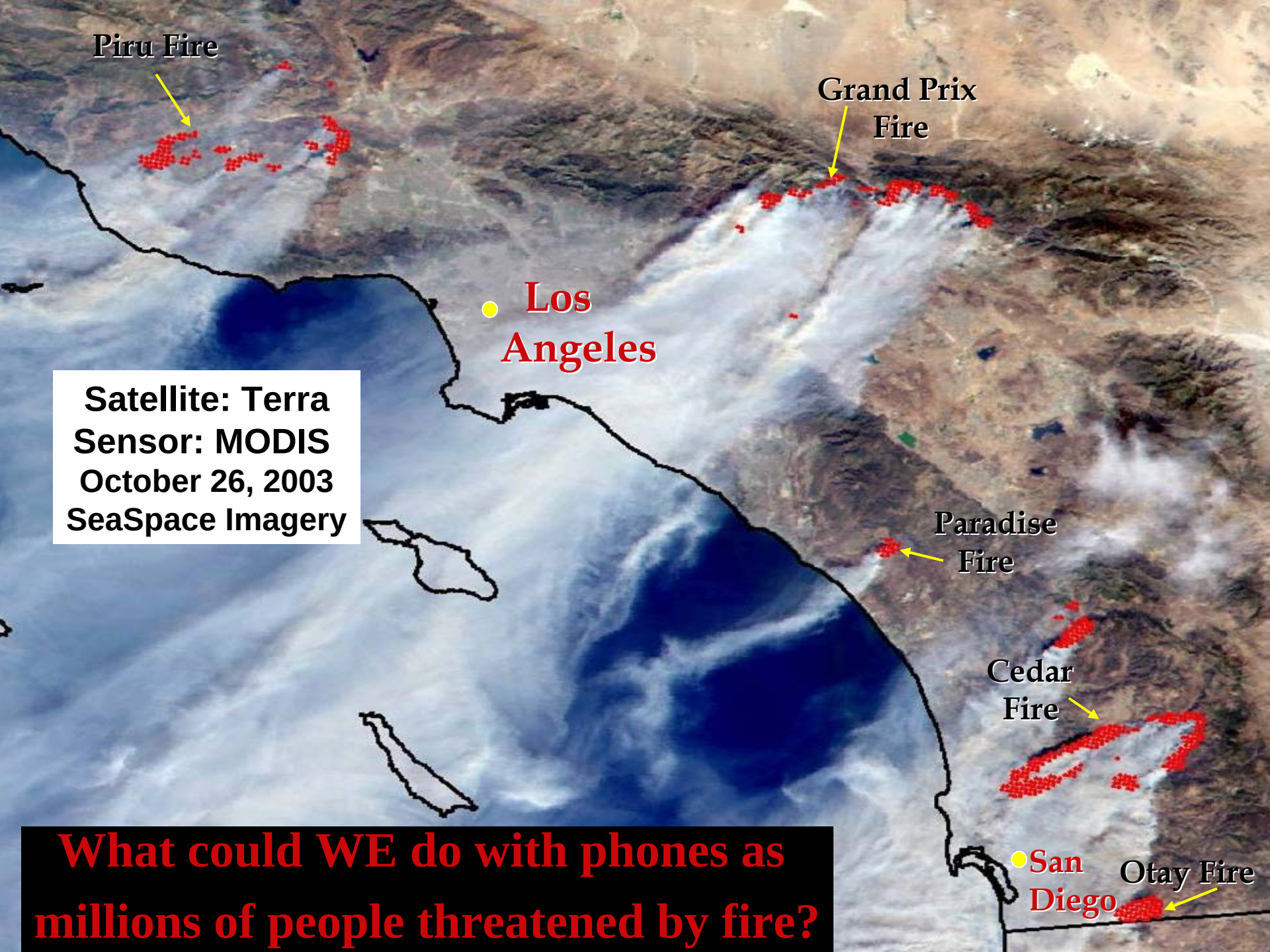
The Devastating Southern California Fires of October 2003

- Over 660,000 acres burned

- Over 2500 homes burned

- 24 Deaths

What can WE do For Rapid Fire Response?


Piru Fire
Grand Prix Fire
Los Angeles
Satellite: Terra
Sensor: MODIS
October 26, 2003
SeaSpace Imagery
Paradise Fire
Cedar Fire
San Diego
Otay Fire
What could WE do with phones as millions of people threatened by fire?