Challenges at the EDGE: Enabling Dynamic Geo-referenced Enterprise

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The Drive to Enabling Dynamic Geo-referenced Enterprises

- Defense And Intelligence Requirements To Better Support Decision Makers And Commanders On The Ground
  - Key: Network Centricity Accelerates Change
- Integrating Remote Sensing And Geospatial Processing Are Providing Immediate ROI On Applications In Private, Government And Commercial Enterprises
  - Key: “Island Living” Is Costly And Not Always A Paradise
- Falling Production Prices And Innovative Capabilities To Meet Growing Demands For More – And More Diverse – Geo-referenced, Rich Media Services Is A Continuing Trend
  - Key: Planning For Disruptive Technology Keeps People Focused On Adaptability

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Provisioning Geo-referenced Services Levies New Demands

- Aggregate Bandwidth-intensive Digital Media And GIS Applications Drive Processing And Storage Requirements
  - Motion Imagery And Other Surveillance Overlays On Mapping Data Drive The Need To Pull In A Lot Of Data Quickly.
- Applications That Have Traditionally Existed In Silos Must Be Bridged
  - For Expediency, At The Content Layer
  - For Extensibility, By Virtue Of Standards Adoption, Top-to-bottom
- Content Requires Consolidation And Integration To Enable Sharing Across The Enterprise, Most Particularly At The Points Of “Value Generation”, Which Has Traditionally Been The Last And Least Well Served
  - Sharing Has Always Been Problematic, Or Has Been Accomplished At A Snail’s Pace

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And New Demands Levy the Need for Geo-referenced Services

- Stakeholders Must Collaborate And Share Data To Create Value And To Avoid, Mitigate And Better Manage Risks/Crises: This Is A Recognized, Fundamental Requirement
- The Availability Of Commonly Shared Data Forms Enables And Triggers
  - Intra- And Inter-organizational Optimization Of Processes
  - Interoperation At A Systems Level
  - Scaling Of Architectures To Close Gaps
- Transnational Issues (Terrorism, Widespread Natural Disasters, And Epidemics) Are Driving Organizations Together To Better Prevent, Interdict And Respond
- Globalization Of Trade And Developing Transportation, Utilities, Water Treatment And Waste Management Are Recognized For Enhancing Standards Of Living, But Also Increase The Requirement To Support Remote Sensing And Geospatially-aware Controls

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Location-Based Services

- Entirely New Applications Are Filling Niche Needs In Highly Mobile Societies At The Convergence Of
  - Ubiquitous Rich Media Creation And Distribution
  - Embedded Geospatial Sensor Technologies
  - Affordable Wireless Infrastructure, Embedded In Ever-growing Numbers Of Products And Facilities
  - Small, High-resolution Display Technology
- A Fast Revving Evolution Of Location-based Services Is Upon Us:
  - Mobile Resources Can Be Managed And Reallocated In Real-time
  - Workers Can Be Equipped To Obtain And Provide Or Implement Solutions In The Field Or From Their Offices – Wherever They May Be
  - Information Contextually Mapped To Place Is Providing Enhanced Services And 'Richer' User Experiences
- Infrastructure And Capabilities Focused On The Needs Of 'First Responders' And Everyday People, Alike.

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Business Issues Driving Geospatial Integration with Digital Media Systems

- Organizations Have (And Are Creating) Lots Of Content…
  - *What And Where Is It?*
- Content Needs Analysis
  - *How Does It Relate Or Interpolate With What I Already Have?*
- Content Needs Consolidating
  - *Where IS Everything And How To I Stop Losses Of Assets?*
- Content Needs To Be Shared
  - *How Do We Increase "Metabolism" And Maintain Security?*
- Among Multiple Stakeholders, With Overlays Of Many Different Missions And Tasks Are Governed By A Maze Regulations And Specific Requirements
  - *How Are Workflow And 'Cultural' Differences, Particularly On An International Scale, To Be Addressed?*

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The Fundamental Problem to Solve: Heterogeneous and Legacy Systems

- Digital Media Systems: Capture, Encode, Log, Analyze, Edit, Distribute
- Geospatial Systems: Mensurate, Catalog, Annotate, Preserve, Disseminate
- ***Digital Media And Geospatial Inter-operation: Geo-referenced Information That Resides In On-Demand, Scalable, And Extensible Systems Are Needed To Perform Both In Order To:***
  - ***Sense And Respond To Novel Situations - Rapidly***
  - ***Accelerate Decision-making In Highly Ambiguous Situations***
  - ***Adapt And Reprogram Assets And Resources To Meet Critical Needs***
  - ***Emergency Operations Capable Of Preventing Horrendous Events And Of Responding To The Unpreventable***
  - ***Address International Interdependencies And Cultural Obstacles Through Visual Mediated Information Exchange To Create Instantaneously Shared Understanding Of Critical Events.***

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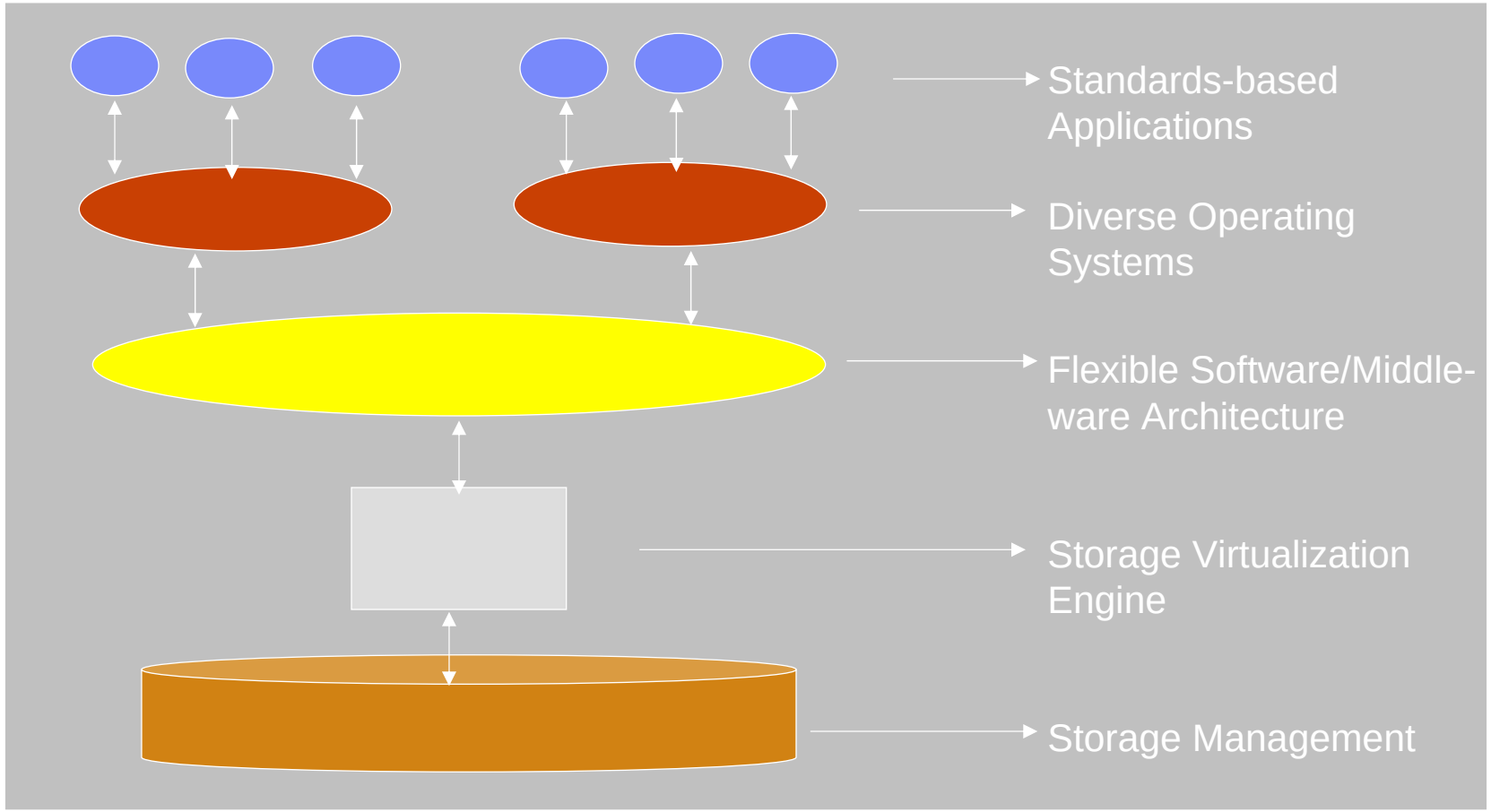
The Baseline Requirement to Meet Challenges at the "EDGE": *Highly Adaptable Systems*

Enabling Dynamic Geo-referenced Enterprises – Commercial, Private And Government – Requires Systems Designed For Adaptability And To Address The Unique Aspects Of Rich Media And Geospatial Information … From Conception To Implementation



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On Demand Ecosystems: Building with Business Partners

Successful Implementation Of Rich Media, Geo-referenced Systems Demand That We Stay Focused On Core Strengths And Work With Partners Who Embrace Standards In Their Areas Of Specialization

ESRI	Geospatial Mapping
	Rich Media Management
	Video Surveillance
	Video Surveillance
	Analytics
	Spherical Imaging
	WAN Video Management
	Transcoding
	Phonemic Indexing
	Data Federation
	Live Video/Geospatial Overlay Collaboration

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Taming the Integration of Geospatial Data & Unstructured Imagery Demands

- **Standards**
- **Security**
- **Scalability**
- **Integration**
- **Interoperation**

… and an *End-to-End Perspective*

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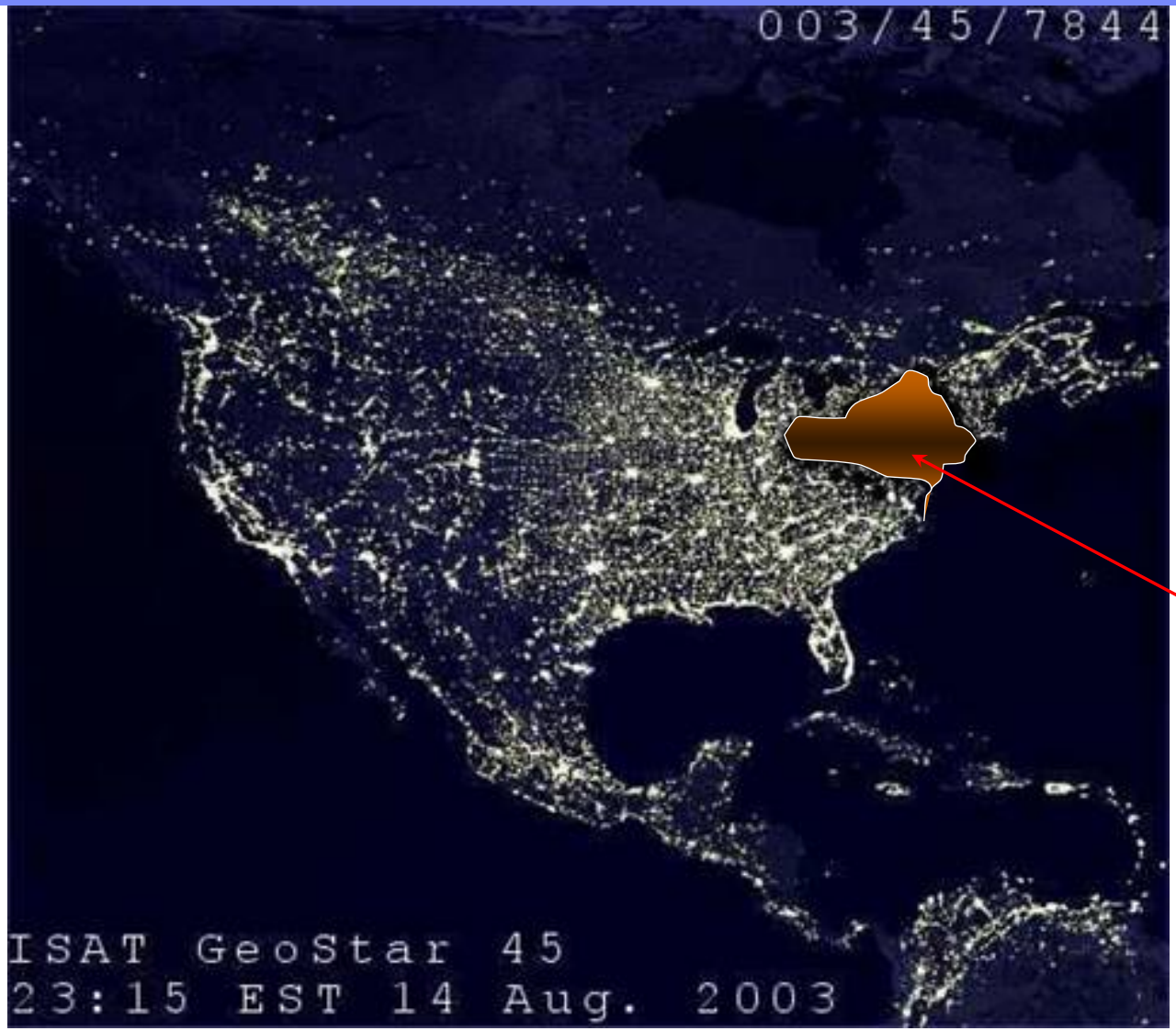
What Happens When Systems Fail To Interoperate?



Widespread Black-Out

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South Asia Tsunami – Banda Aceh

High Density Developments at Near Sea Level With Few Routes of Safe Retreat Were Fundamental Factors in the High Casualty Rates in Banda Aceh, Indonesia

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"No Warning, No refuge and No Route to Escape from the Tsunami"
Digital Globe Images (provided by Barkonas PBP)

Sumber Data : Posko Utama BAKORNAS PBP Banda Aceh/
DIGITAL GLOBE
Tanggal : Januari 2005

Gleebruk, Aceh Province, Sumatra, Indonesia Before (L) and After (R)

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Could the event have been prevented? No. Loss of life diminished? Yes.

- Pan-Pacific/Indian Ocean Coastal Warning System
- Modeling and Simulation of Earthquakes and Corresponding Tsunami's Integral to Urban Planning
- Population Settlement: Exclusion Areas, Stand-back, Street Orientation, Construction Methods/Materials

… and perhaps thousands of other ways

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Consider the Prospective Role of Rich Media and Geospatial Information Systems to Support South Asia Tsunami Recovery Requirements

- Pre- and Post-Event Imaging and Image-Based Maps
- Interoperable Logistics Systems
- Fixed and Rotary Wing Air Re-supply
- Food, Water, Fuel, Temporary Shelter
- Medical Support / Medications and Inoculations
- Grief Counseling
- Civil Engineering and Construction Staff and Equipment
- Relocation of IDP's
- Victim / Survivor Registration and Identification
- Responder Field and Operations Center Communications (VOIP, email, Video Instant Messaging)
- Emergency Deployment of Self-Contained, Generator-Equipped, Integrated RF and IP Communications (SATCOM, WIMAX, WIFI) System, Standalone Clients, Stable Server/Storage System
- Responder Training
- Core Response Suite of Capabilities
- …and much, much more

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What Happens When Sound Geo-referenced Planning Breaks Down?

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