



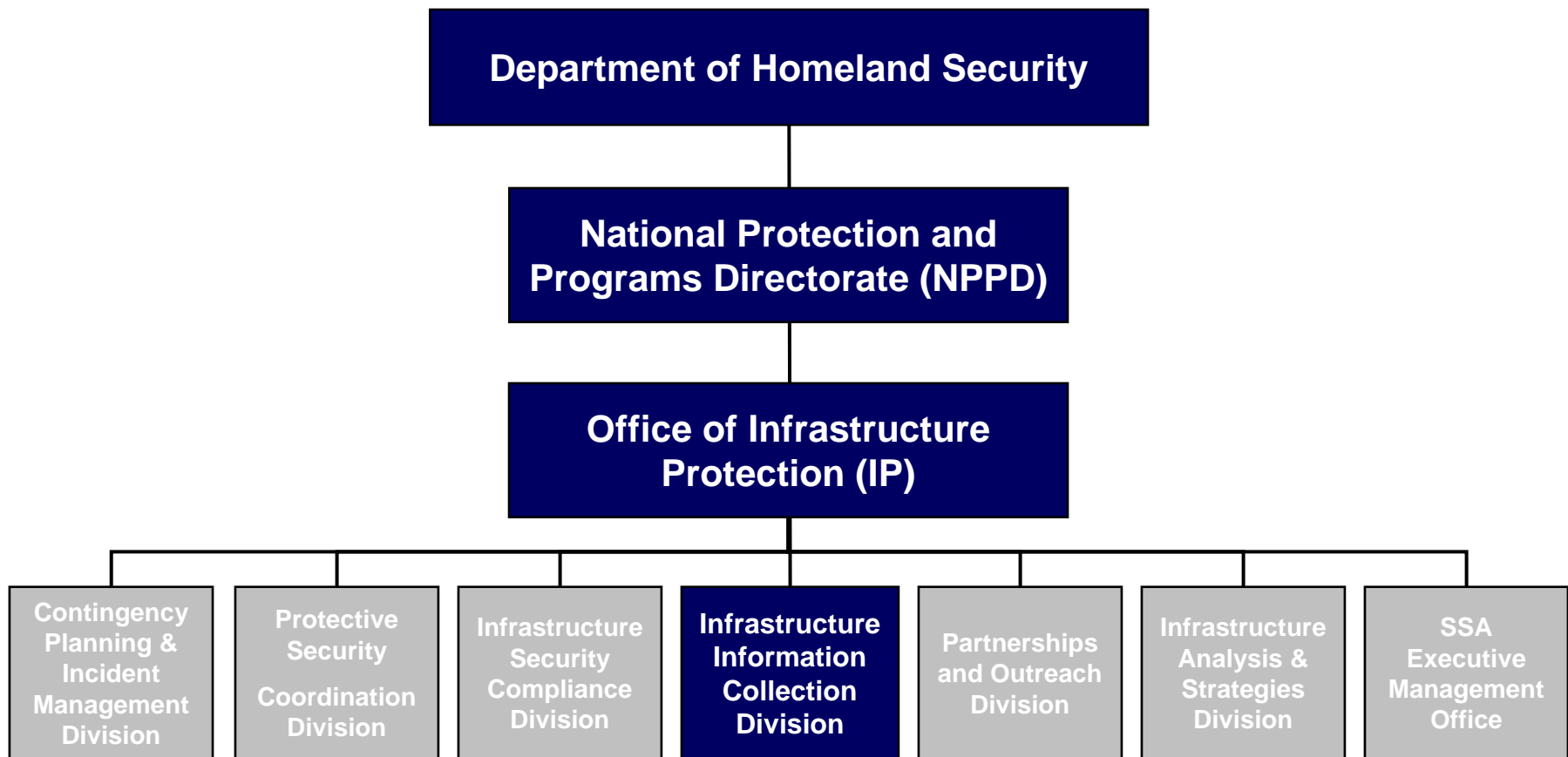
Infrastructure Information Management at DHS



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Mike Clements
Branch Chief, Operations Support Branch
Infrastructure Information Collection Division
Office of Infrastructure Protection
National Protection and Programs Directorate

The DHS Office of Infrastructure Protection



IICD's Vision and Mission

VISION:

- Provide DHS **Enterprise** solutions for the collection, protection and sharing of infrastructure data
 - **Create more relevant infrastructure information.**
 - **Develop persistent awareness** of the Nation's infrastructure.
 - **Enable timely and informed actionable decisions** to protect, secure, analyze, and restore the Nation's infrastructure.
 - **Enable protected access** to infrastructure information.

MISSION:

- Lead the Department's efforts to protect and provide **standardized, relevant, and customer-focused** infrastructure information to homeland security partners.



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Infrastructure Information Collection Division

IICD leads the DHS effort to gather and manage infrastructure data by developing partnerships and leveraging enterprise solutions in the following areas:

| Data Collection | Data Management | Data Visualization |
|---|--|--|
| <ul style="list-style-type: none">▪ Automated Web-based collection tools▪ Data integration system▪ Federal automated vulnerability and risk assessment IT tools | <ul style="list-style-type: none">▪ Data collection processes and requirements▪ Discovery and sharing of data▪ Data standardization and quality assurance▪ Common terminology to categorize infrastructure▪ Data protection and dissemination policies | <ul style="list-style-type: none">▪ 2D and 3D geospatial Web-based viewers▪ Static and dynamic geospatial data from multiple systems▪ Geospatial production▪ Remote sensing |



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Infrastructure Data Collection

Going to the Source



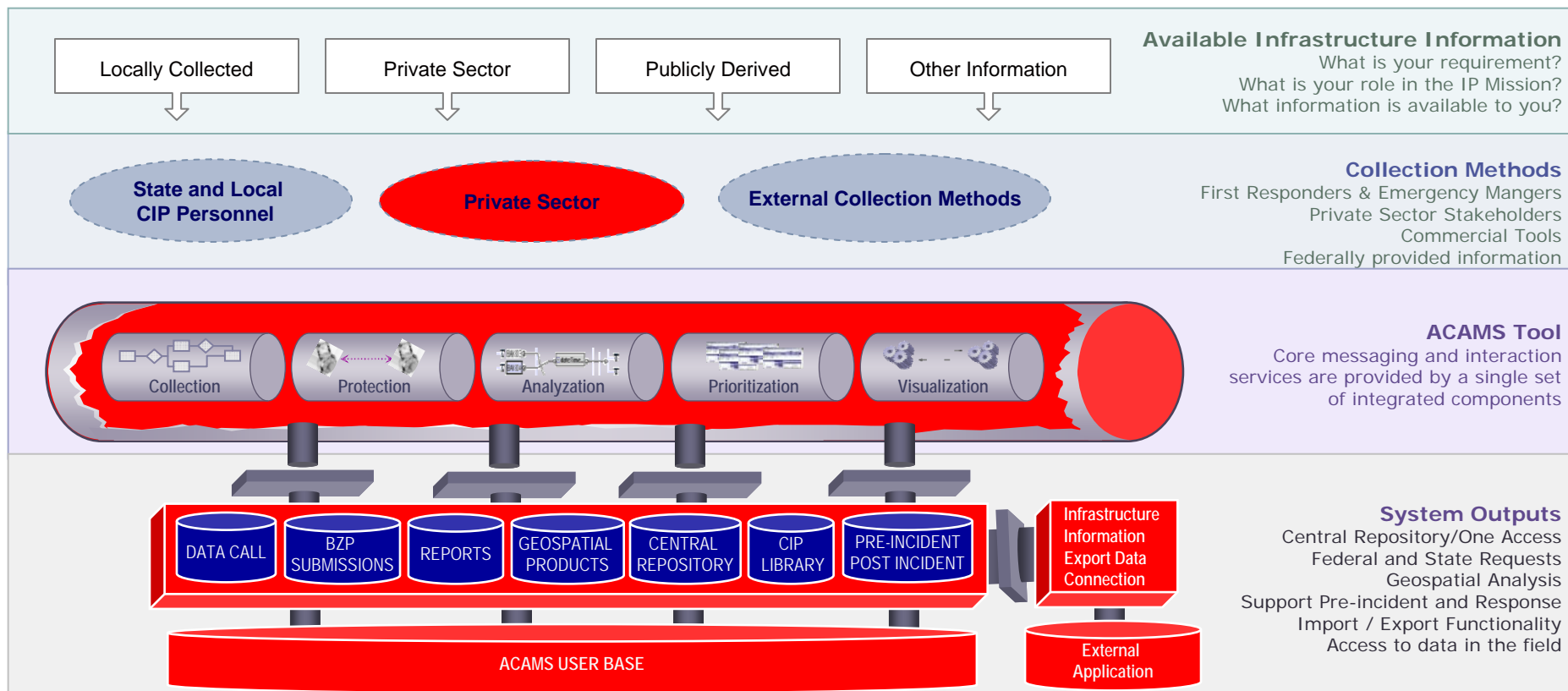
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Automated Critical Asset Management System (ACAMS)

- ACAMS is a secure, Web-based information services portal used to support infrastructure protection efforts at the State and local level
 - Allows users to manage the collection and effective use CIKR asset data based on organization roles
 - Provides access to a comprehensive set of tools and resources to assist in further analysis of the data
 - Focuses on pre-incident prevention and protection, assists in post-incident response
- Participation in ACAMS is voluntary and there is no cost for the State and local community
 - ACAMS is actively being used to store infrastructure data in 32 States
 - Approximately 3,800 State and local users are active members of the ACAMS community



ACAMS Business Process



Interoperability Goals:

External Analytical Tools



Handheld Devices



Scene of an Incident



Others....



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ACAMS User Benefits

- Private sector, local law enforcement and first responders are provided with a tool to enable infrastructure information sharing and to support the development of public/private partnerships
 - CIKR owners/operators are a key partner in planning and use of ACAMS
 - Successful CIP plans depend on Public/Private Partnerships (P³)
- Ability to gather detailed, accurate asset information pre- and post-incident vulnerability and protection planning
 - Assure the information supports both the “Cop on the Beat” / “Emergency Responder” and an Incident Commander during a major response effort
 - Incorporates private sector equities through close, regular coordination and cooperation
- Allows DHS to augment CIKR data collection through the activities of tens of thousands of emergency responders across the nation
 - ACAMS CONOPS assumes that processes to identify and catalogue CIKR is continuous and involves continuous standardized training
- Instructor-led and Web-based training available through DHS (IP and FEMA) to support ACAMS implementation
 - CIKR Asset Protection Technical Assistance Program (CAPTAP) instructor-led, Web-based, and Train the Trainer curriculums



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CIKR Asset Protection Technical Assistance Program (CAPTAP)

- **“It’s not just ACAMS Training!”**
- CAPTAP is specifically designed to assist State and local first responders, emergency managers, and homeland security officials understand:
 - The need for coordinated approaches to infrastructure protection
 - The **Risk Management Framework** as defined within the **National Infrastructure Protection Plan (NIPP)**
 - The value of building and fostering **Public/Private Partnerships (P³)**
 - Defining, identifying and cataloging infrastructure sites and systems
 - Protection of data/information via the **Protected Critical Infrastructure Information (PCII)** Program
 - Conducting pre-incident security enhancement planning
 - Conducting basic vulnerability assessments at infrastructure sites
 - **Automated Critical Asset Management System (ACAMS)** to support infrastructure protection program development, implementation
- The ACAMS team also offers a CAPTAP Train the Trainer program to build a CAPTAP training cadre within the State and local community



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Mr. Shawn Fitch
Senior Project Officer
shawn.fitch@dhs.gov
Tel:703-235-3912

Mr. Ricky Morgan
Project Officer, Training Lead
ricky.morgan@dhs.gov
703-235-3908

Mr. Rodel Arca
Project Officer, Communications Support
rodel.arca@dhs.gov
703-235-3913

C/ACAMS email and phone inquiries can also be sent to:

ACAMS-info@hq.dhs.gov

www.dhs.gov/ACAMS



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Infrastructure Visualization

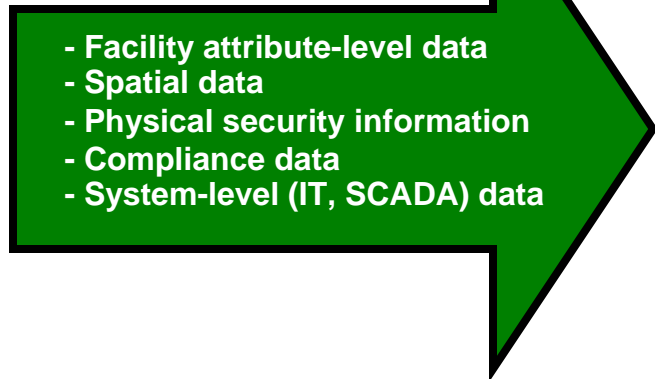
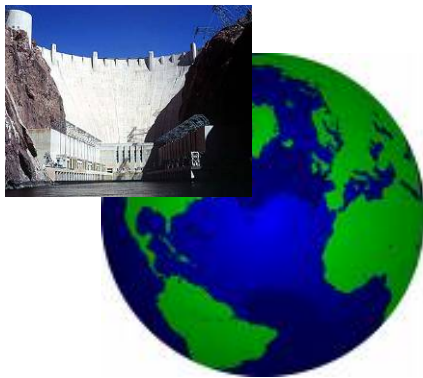
So What Do We Do With All That Data?



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Understanding Infrastructure Data

- Infrastructure isn't just a row in a table or some bytes on a server
 - Understanding where a facility is on the Earth helps understand how it relates to the infrastructure around it, how best to protect or respond in an incident
- DHS/IP is in the business of understanding all facets of the Nation's CIKR and providing the geospatial context to understand it



Infrastructure Information Management

- **Challenge:** In order to effectively understand and protect the Nation's CIKR, the infrastructure community must be able to **use** the vast stores of dynamic, constantly changing infrastructure data
- **Solution:** To address this challenge, IP is working with Federal, State, local, and private sector partners to build tools and capabilities to:
 - **Visualize** infrastructure data in a geospatial context
 - **Analyze** infrastructure data “on the fly”
 - Make analysis **accessible** to decision-makers and the infrastructure protection community by building value-added products

Presenting data geospatially provides context and meaning



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iCAV and DHS Earth

Putting Data to Work to Enable the Homeland Security Mission



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What is iCAV?

- Integrated Common Analytical Viewer (iCAV)
- Suite of Web-based geospatial tools accessing the **DHS Geospatial Information Infrastructure** to provide imagery, foundation-level infrastructure data, mission-specific data and dynamic situational information in a geospatial context
 - Uses ESRI software via the DHS Enterprise License Agreement
 - Includes a KML data service for use in Google Earth, MS Virtual Earth, ESRI ArcExplorer
 - Leverages OpenLayers to display map data newest generation of web browsers
 - Is standards based to easily integrate with DHS mission systems
- Built by the DHS Office of Infrastructure Protection in close coordination with the DHS Geospatial Management Office
- Leverages the Homeland Security Information Network (HSIN) and ACAMS for user verification and authentication
- Provided **free of charge** to the DHS enterprise and Federal, State, local, and private-sector partners across the country



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Who Benefits from iCAV?

- iCAV customers include a wide range of homeland security and infrastructure protection partners across the country who support both steady-state and contingency operations
 - DHS Enterprise (IP, I&A, National Operations Center and National Infrastructure Coordination Center)
 - Joint Field Offices
 - State and Local Fusion Centers
 - Other State and local users
 - Private Sector partners via HSIN Critical Sectors portal
- iCAV is the geospatial viewer for the Automated Critical Asset Management System (ACAMS)
 - Provides another point of access for State and local users, as well as private sector partners

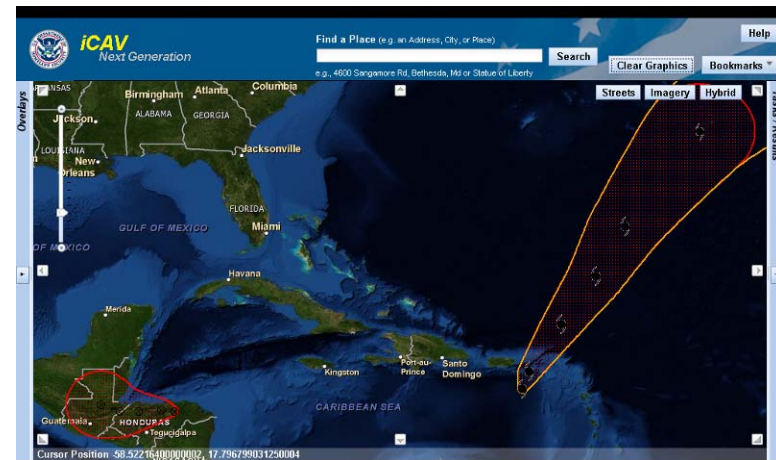
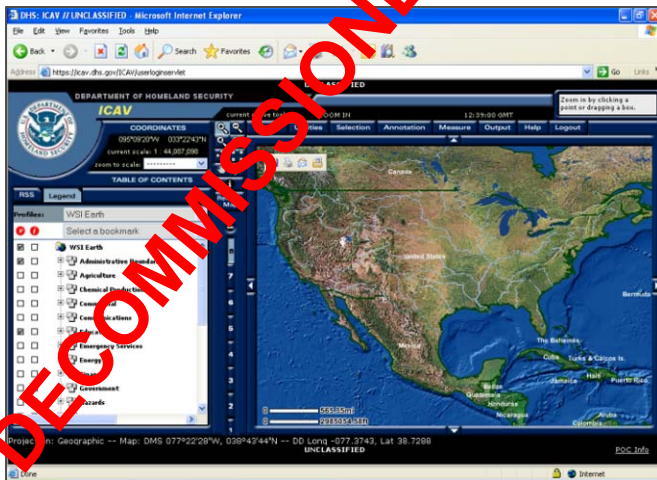


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iCAV Classic and iCAV NextGen

iCAV “Classic”

- First generation DHS Enterprise Geospatial tool with light analytical capability
- Built on National Geospatial-Intelligence Agency’s (NGA) Palenterra tool
- Provides access to Homeland Security Infrastructure Program (HSIP), 133-cities imagery, and Web-mapping services for dynamic, real-time data feeds



iCAV Next Gen

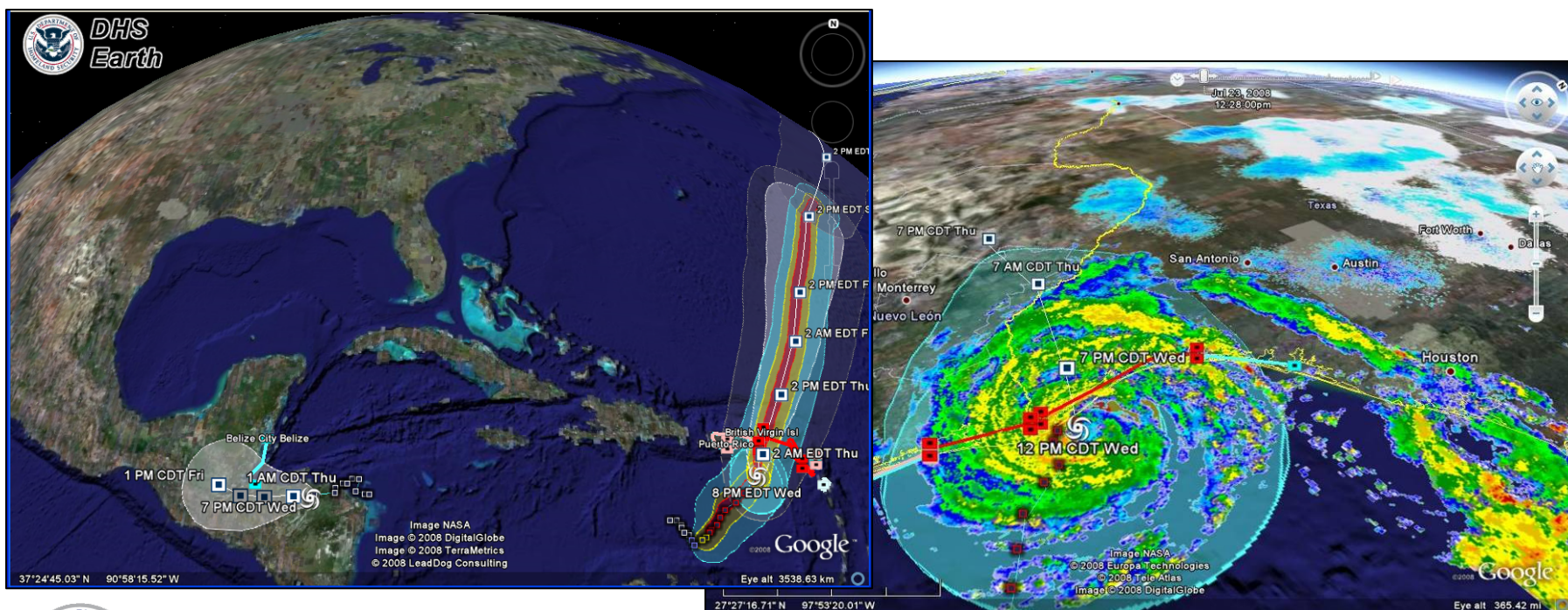
- Builds on the success of iCAV Classic by:
 - Improving user interface
 - Making data easier to find and use
 - Enhancing analytical capabilities based on needs expressed by users
- Deployed in May, 2009
- Web-based training available at www.jsrts.org/dhs/icav



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DHS Earth

- Based on Keyhole Markup Language (KML) file standard to leverage intuitive user interface, rapid data ingest, and visualization of 3D globe-based viewers
- Provides pure visualization capability and access to Web-mapping services to view real-time, dynamic situational feeds on top of HSIP data layers
 - Significant real-world use during recent hurricanes for situational awareness, remote sensing mission planning, and infrastructure impact visualization (maps and imagery)



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New Look for iCAV

- iCAV team developed a new iCAV Splash Page, <https://icav.dhs.gov>
- The one-stop shopping place for:
 - HSIN/iCAV account requests
 - Contact info (iCAV.info@dhs.gov)
 - Training link
 - News
 - Updates

Integrated Common Analytical Viewer (iCAV) - Windows Internet Explorer

https://icav.dhs.gov/

File Edit View Favorites Tools Help

Links CMW.com DHS Email Dictionary FedTraveler.com Gmail G-Maps Google Google Finance HSIN - EM New York Times NFC Post webTA OSB SharePoint

Integrated Common Analytical Viewer (iCAV)

U.S. DEPARTMENT OF HOMELAND SECURITY

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Home | Office of Infrastructure Protection | Infrastructure Information Collection | C/ACAMS | PCII Program | MTI

Account Access

- [Account Request](#)

iCAV Suite of Tools

- [iCAV NextGen](#)
- [DHS Earth](#)

iCAV Contact Info

- 703-235-4949
- iCAV.info@dhs.gov

Training

- [iCAV NextGen Online Training](#)

NextGen

Map showing Santa Monica area with two circular markers.

Welcome

iCAV is a secure, Web-based, geospatial visualization tool that integrates commercial and government-owned data and imagery from multiple sources.

News and Updates

[Readout of Secretary Napolitano's Remarks to the International Conference of Data Protection and Privacy Commissioners](#)



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Questions

Jim Fulmer

iCAV Team Lead

James.Fulmer@dhs.gov

703.235.4911

iCAV Information

iCAV.info@dhs.gov

703.235.4949



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Remote Sensing Support

Accessing mission critical situational awareness data to support decision making



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IP Remote Sensing

Purpose

Provide IP with an understanding of, and access to, Federal interagency remote sensing resources to enable infrastructure protection planning, response, and recovery activities

Mission

- Develop, maintain, and leverage partnerships and collaborative strategies, across interagency remote sensing networks to identify and collect resources to meet the needs of IP, State, local, and private sectors stakeholder
 - Serve as the NPPD/IP representative to the Interagency Remote Sensing Coordination Cell (IRSCC) Executive Committee. *The IRSCC is a formal body of Federal remote sensing experts providing critical coordination of the remote sensing requirements and capabilities throughout the prevention, preparedness, mitigation, response, and recovery spectrum of disaster operations*
- Develop infrastructure-related imagery analysis products on post event/incident imagery
- Build IP's remote sensing knowledge base and support improved awareness of Federal interagency remote sensing capabilities across the IP stakeholder community
- Provide expertise to the ASIP and other DHS and IP decision-makers



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Infrastructure Geospatial Production

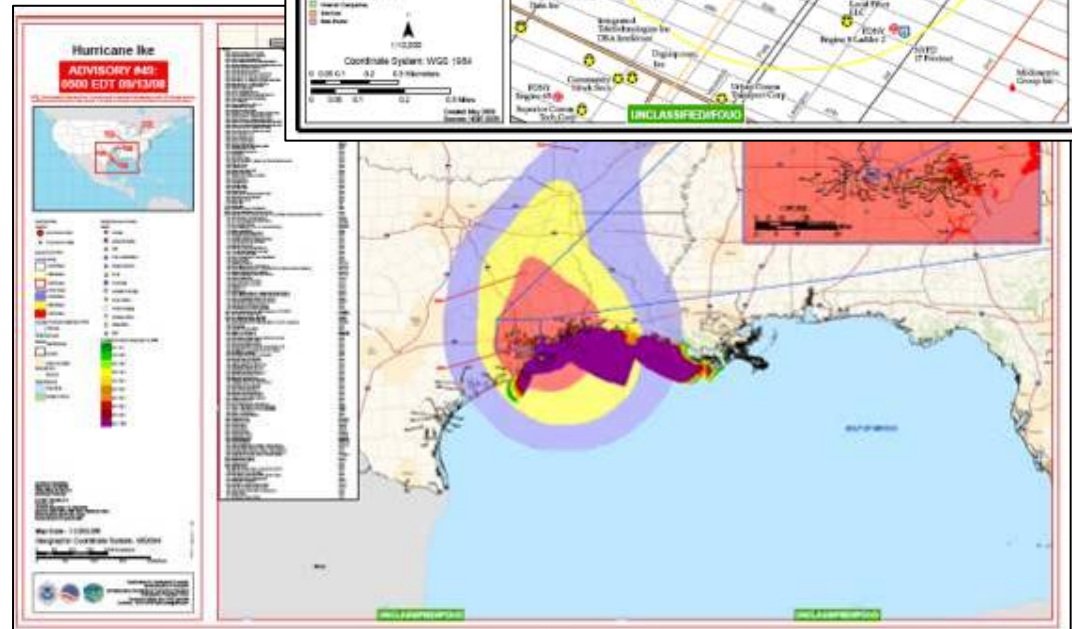
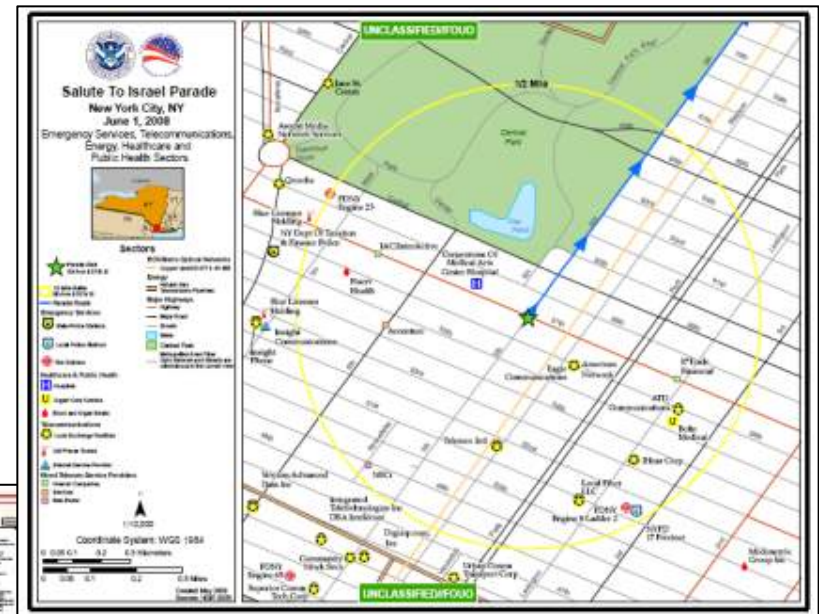
Creating the picture that says 1000 words (or more)



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Geospatial Production

- Provides tailored, requirement- and incident-specific mapping and imagery support:
- Provides event-driven situational awareness and steady state mapping for:
 - The President
 - DHS Secretary, Under Secretary, ASIP
 - State Governors
 - PSA's/ILO's
 - NICC
 - Private sector
 - State/Local Government
 - First Responders
 - PSA's
 - USCG
 - USSS



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Geospatial Production

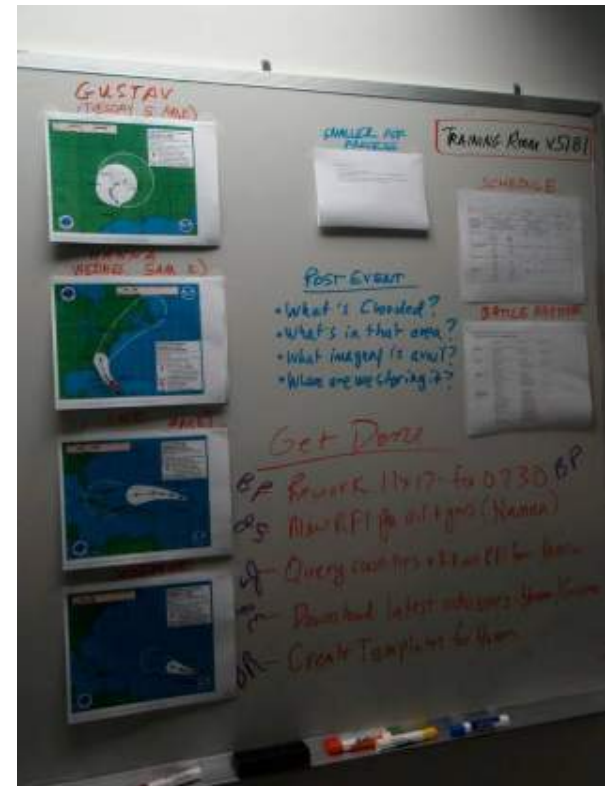
- Established in response to 2007 wildfires in Southern California
- Support three general types of events:
 - Terrorist Attacks
 - Natural Disaster
 - 2007: Hurricane Hanna, Tropical Storms Dean and Erin, California Wildfires
 - 2008: Hurricanes Ike and Gustav
 - Over 150 individual CIKR situational awareness products produced
 - Steady State
 - NSSE's/Special Events: Super Bowl, UN General Assembly, RNC/DNC
 - Specialized Products: Bomb Squad Maps, Nuclear Plant IOC Maps



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Emergency Production

- Focus is Critical Infrastructure and Key Resources
- Incidents of national significance
 - Natural, manmade, or technological hazards that produce catastrophic losses in terms of
 - Human casualties
 - Property destruction
 - Economic effects
 - Public morale and confidence
- Emergency response
 - Requirements driven production
 - Surge support
- Increasing interagency coordination on production efforts with National Geospatial-Intelligence Agency (NGA), Department of Defense (DoD)



Product Formats

- Map Templates

- 8.5"x11"
- 11"x17"
- Wall Maps
- Map books
- PDF, KML, other electronic formats

- Standard Layer Files

- Based on the 18 CIKR sectors outlined in the IP Infrastructure Taxonomy
- Standard:
 - Symbols
 - Label properties

- Standard Datasets

- HSIP
- EPA Risk Mgmt Program
- Tier 1 & Tier 2 datasets



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Geospatial Support Challenges

- Challenge: Providing timely situational awareness on map products
 - Response: **Coordination** with the NICC for infrastructure situational awareness. Utilization of online tools (GeoMAC/HurriVac) to gather current conditions.
- Challenge: Fulfilling all Requests for Map/Imagery Products
 - During the 3 week period of Hurricanes Ike and Gustav, over 300 requests were made
 - Response: Fulfilling multiple requirements at once. Employment of **web-based geospatial visualization tools** for rapid-response production.
- Challenge: Ensuring end users receive needed products
 - Response: Coordination with the NICC for product distribution. HSIN web portal use for wide audience dissemination.



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Homeland Infrastructure Foundation-Level Data (HIFLD) to the Regions

Leveraging the HIFLD Model for Regional Information Sharing Partnerships



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Homeland Infrastructure Foundation Level Data (HIFLD) Evolution



| PHASE 1 | PHASE 2 | PHASE 3 | PHASE 4 |
|---|--|---------|--|
| <ul style="list-style-type: none"> • HIFLD Start • Started with 3 organizations and 13 people • No common data usage or standards • PowerPoint and Clipart were standard | <ul style="list-style-type: none"> • HIFLD Now • Represents a Federal government "best practice" for interagency collaboration and partnership • Now 299 organizations and 2000+ members • HSIP Gold has become de facto standard | | <ul style="list-style-type: none"> • HIFLD Next • Federal / State Governments and Private Sector Partner collaboration within PSA areas • Bring coordinated Federal support to the states (states requested) • Improved HSIP data sharing |

Requirements Identification

- Identified requirement for increased and sustained collaboration between Federal, State, and local infrastructure protection stakeholders has been expressed by:
 - National State Geospatial Information Committee (NSGIC)
 - National Association of Counties (NACo)
- Identified requirement to strengthen Federal, State, Private sector partnerships remains
 - Continuing to mature partnerships on the protection and security fronts
 - Focus on data sharing, geographic information system (GIS) interaction and collaboration
- Identified requirement to provide infrastructure information prior to incidents to enhance preparedness, response, and recovery
 - Extend awareness and reach of Federal Infrastructure Protection resources is necessary for enhanced infrastructure protection
 - Regional program has the potential to save \$Ms spent on commercial data and redundant capability



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Capability Framework

- Capability similar to the national-level HIFLD Working Group, but focused at the State and local levels
 - Support efforts to provide geospatial data, information, and applications to State, local governments and to strengthen Federal, State, and local preparedness for homeland security and defense
- HIFLD regional workgroups will provide a venue to promote domestic infrastructure information gathering, sharing, protection, visualization, and spatial analysis among:
 - Federal representatives (PSAs, DHS I&A, FEMA, DoD, USGS, DOJ, EPA, DOE),
 - State GIS coordinators
 - State Emergency Operation Center (EOC) representatives
 - State Fusion Centers
 - National Guard Joint Operations Centers (JOC)
 - Academia
 - NGOs

HIFLD Phased Implementation

- ▶ **Phase I-III: Complete**
- ▶ **Phase IV Alpha: Information Gathering** (Store in Geodatabase/Shapefile)
 - Identify Federal Sponsors (DHS/IICD, DCIP, ISE PM) / Leads for each Area (PSA)
 - Prioritize PSA Areas for implementation based on resources (2-3 initially)
 - Identify PSA Area Participants and Collect Contact Information
 - Identify Regional / State Meetings that already exists (leverage)
 - Identify Regional Staffing
- ▶ **Phase IV Bravo: Layout Regional Meeting Schedule**
 - Layout Regional Themes and Venues
 - Layout Initial Agendas (thread – infrastructure data and GIS support to IP)
- ▶ **Evolve into Data and GIS Technology Integration Activities**



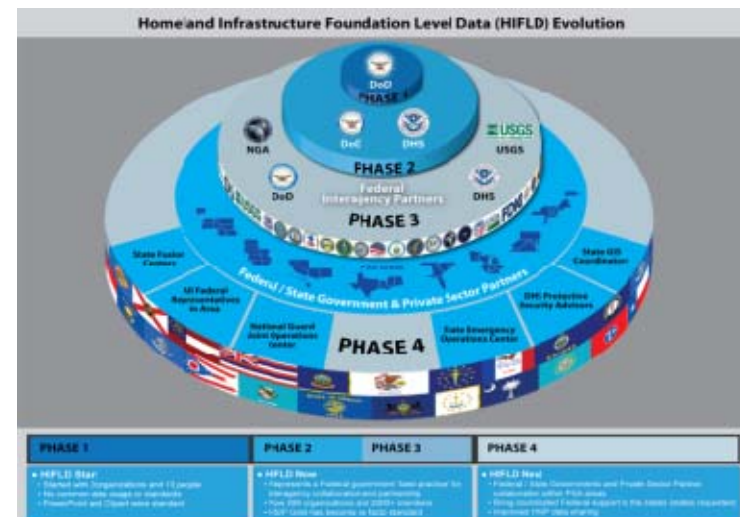
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Mission

- Advance the success of the national-level HIFLD Working Group by deploying a similar capability into the eight PSA Areas as part of a “HIFLD to the Regions” effort
 - Focus support on State and Local priorities and issues to:
 - Extend awareness and reach of Federal infrastructure protection resources
 - Increase and enhance regional CIKR information sharing and protection activities
 - Strengthen Federal, State, local and Private Sector Partnerships



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Goals

- Work with HIFLD members and contributing partners in the PSA Areas to promote domestic infrastructure information gathering, sharing and protection, visualization, and spatial analysis
 - Encompasses Homeland Security/Homeland Defense (HLS/HLD), Defense Support to Civil Authorities (DSCA), and “traditional” Emergency Preparedness, Response and Recovery
- Collect, manage, share, and provide geospatial support and foundation data to improve national Critical Infrastructure Key Resources (CIKR) preparedness
- Enable a better understanding of shared infrastructure risks, threats, hazards, and vulnerabilities to enable the effective and efficient allocation of resources where risk is greatest



Objectives

- Enhance situational awareness and support to Infrastructure Protection activities at the State and Local level
 - Integrate GIS efforts
 - Increase collaboration and dynamic sharing of data
 - Enhance support for Infrastructure Protection field operations
- Meet DHS Assistant Secretary for Infrastructure Protection's Guidance:
 - Provide better geospatial products and capabilities for Protective Security Advisors
 - Leverage remote sensing capabilities to enhance infrastructure protection
- Provide education and awareness of Federal data management and GIS efforts
- Contribute to the National Information Sharing Environment
 - Support Federal and State government geospatial data and information collection, management, and sharing



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Objectives

- Support Structured Data Management by continuously improving HSIP Gold infrastructure data and accelerating the build out of HSIP Freedom data sets
- Increase understanding and assisting in the resolution of regional data and technical requirements and issues
- Provide Continuity of Operations (COOP), or backup, data services across the country
 - Leverage Federal resources to ensure consistent, timely access to critical infrastructure data stores
- Reduce expenditures on data through sharing to save all of us money in the near-term and the long-term



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HIFLD to the Regions Team (as of 1 Dec 09)



- ★ Geospatial Analyst
- ★ Info Exchange Broker
- ▲ Supervisory PSA Area



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Questions



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