



# The Blueprint of Relief

How the American Red Cross uses Geographic Information Systems (GIS) to map human vulnerability and scale disaster response.



# An emergency every eight minutes.

## The Cadence

**8**

Responding to a disaster every 8 minutes, ranging from multistate natural disasters to localized home fires.

## The Network

**80,000+**

Coordinating a workforce of more than 80,000 personnel and dispatching a core volunteer army of 40,000+ individuals.

## The Reach

**180**

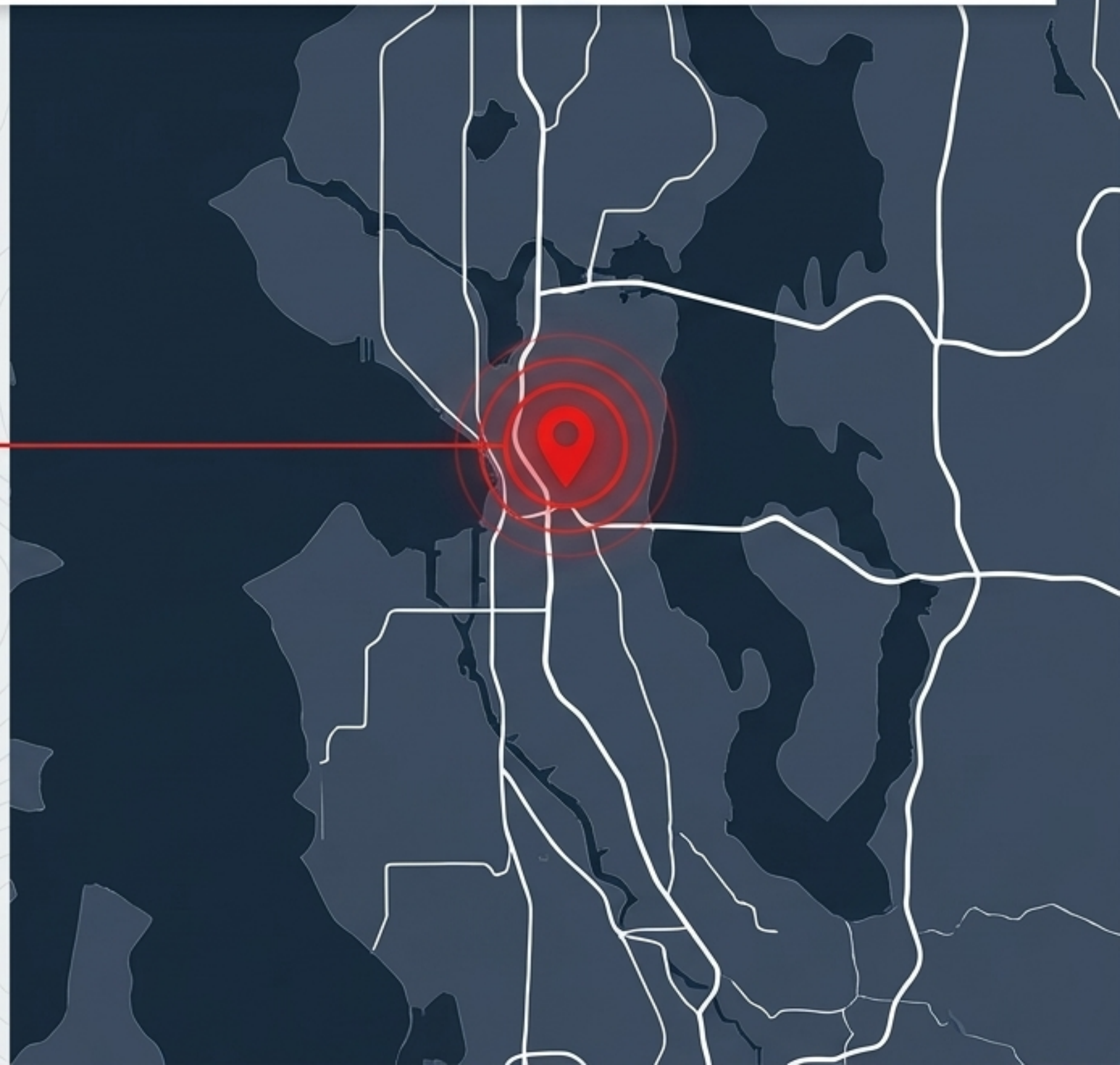
Collaborating as part of a global humanitarian effort alongside 180 national societies with one of the world's most recognizable symbols.



# The ultimate humanitarian question is always “Where?”



Clean water, safe shelter, and meals only save lives if they intersect with the people who need them. Before deploying a single volunteer, the Red Cross must first synthesize thousands of fragmented data points to pinpoint where the need is greatest, who is affected, and how to reach them.





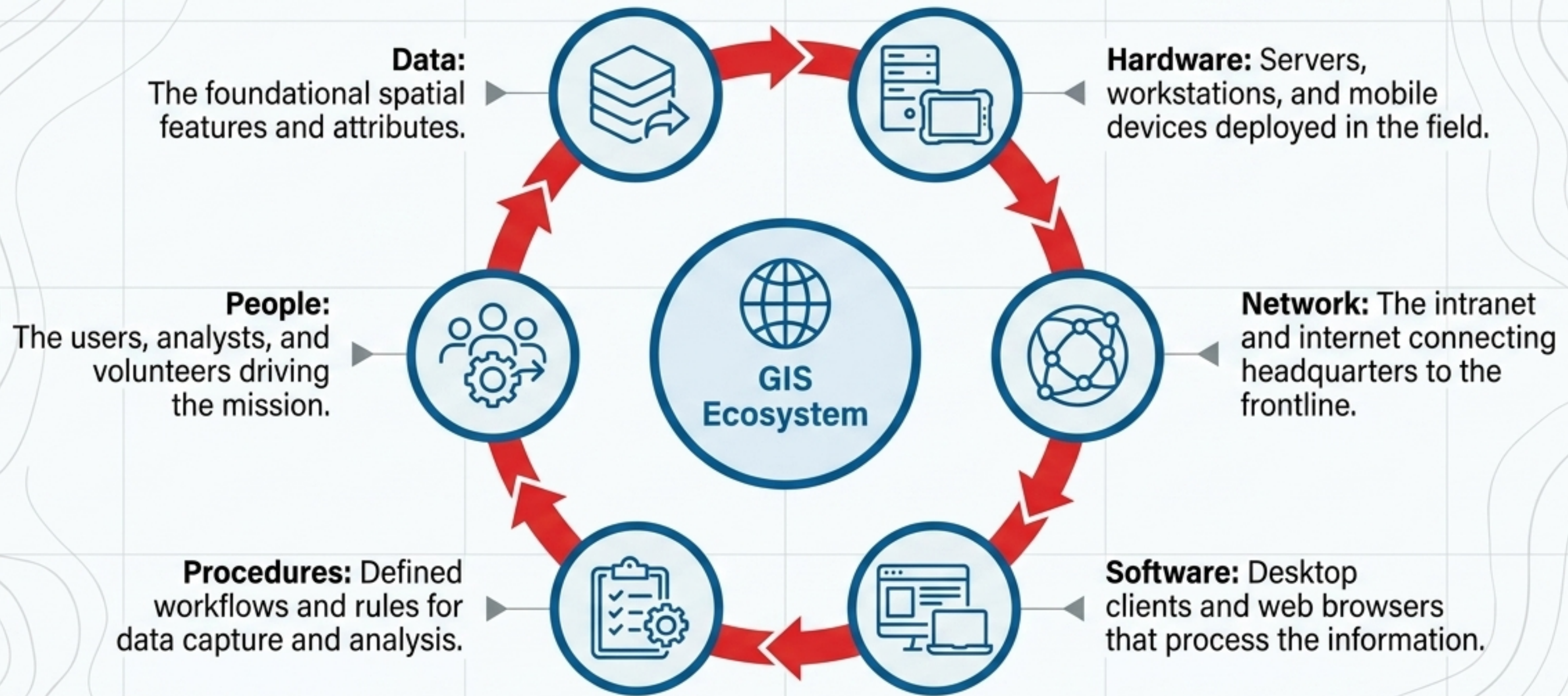
# Decoding GIS: Maps + Data



A Geographic Information System (GIS) is a specialized information technology. It transcends simple navigation by integrating raw facts and figures with spatial locations, transforming the “what,” “when,” “how,” and “why” into a visual understanding of “where.”



# The six interdependent systems of spatial intelligence.





# GIS synthesizes multiple sciences into a single operational view.



By integrating these diverse data sources—from satellite remote sensing of storm paths to on-the-ground surveying—GIS creates a comprehensive baseline for disaster preparedness and monitoring programs worldwide.



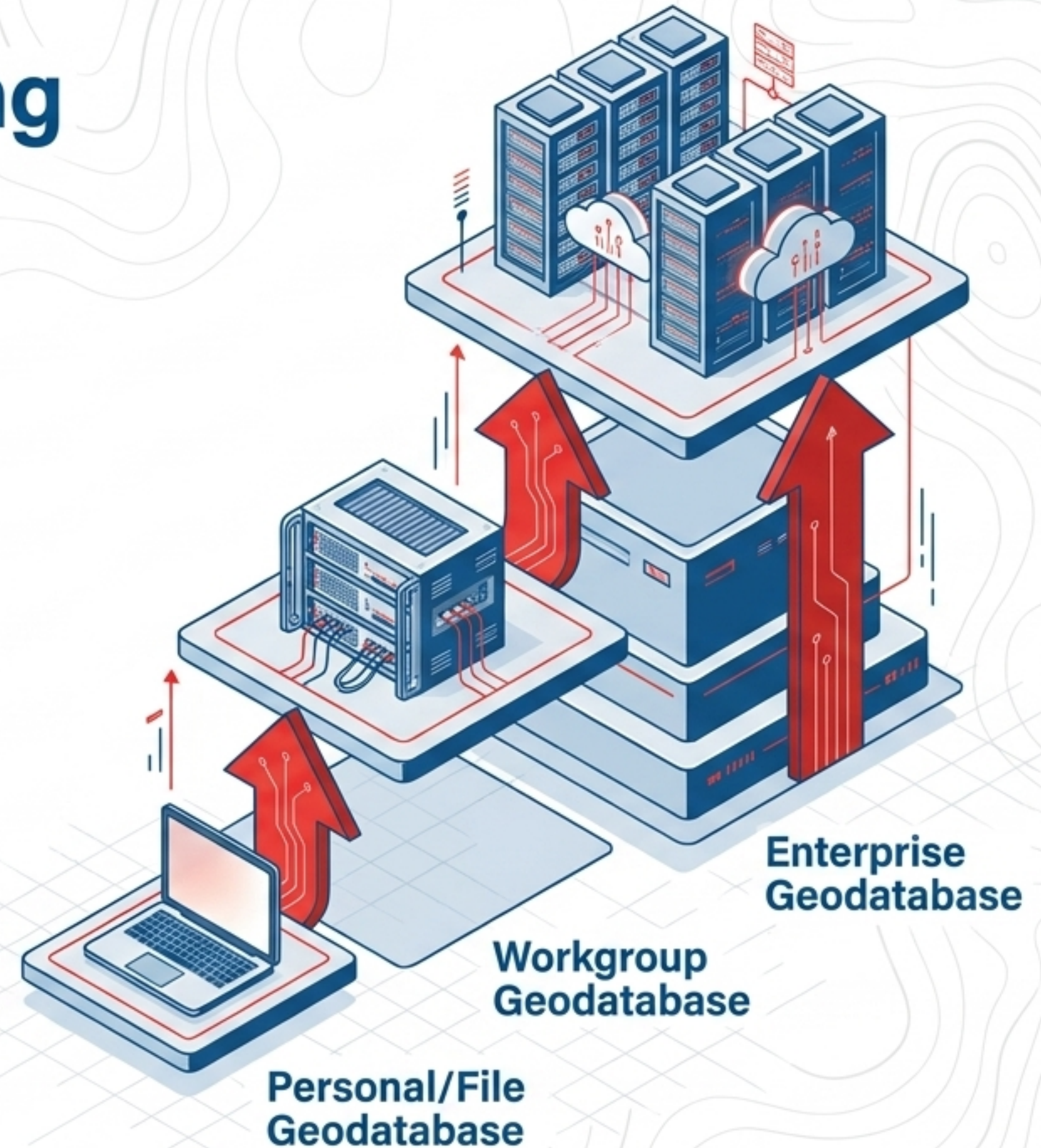
# The Geodatabase: Storing the world's complexity.

## Body

To manage this staggering influx of spatial and attribute data, GIS relies on Geodatabases (GDB). These range from small, localized files (Personal GDB) to massive, multi-user systems (Enterprise GDB).

## Insight

This scalable architecture allows a single Red Cross chapter to map local vulnerabilities while National Headquarters (NHQ) simultaneously coordinates a multistate hurricane response on the same foundational system.





# From raw data to life-saving logistics

**1. Capture:**  
Field workers log arriving evacuees at a shelter using mobile devices.

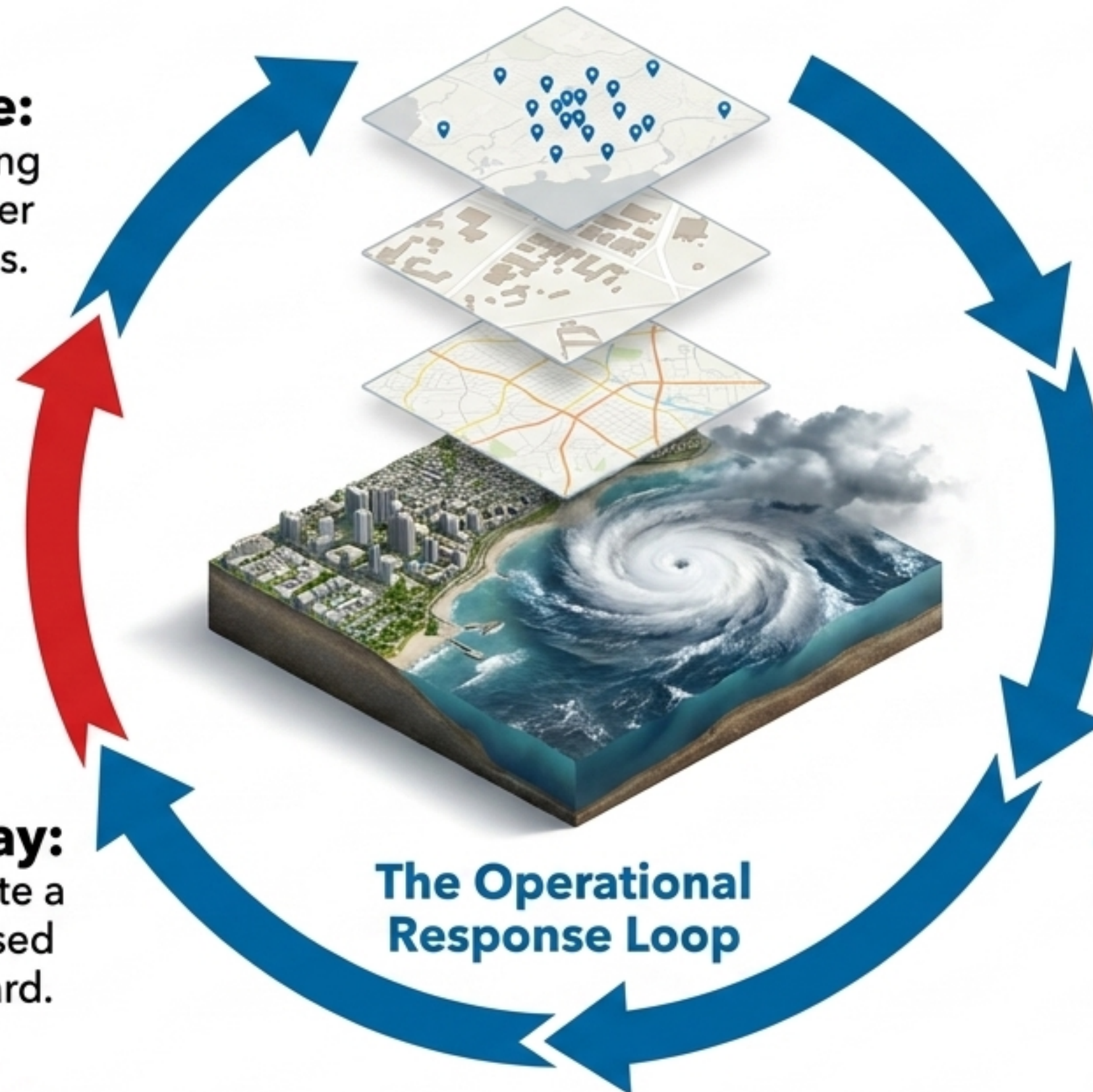
**2. Store:**  
Information syncs securely to the enterprise Geodatabase.

**3. Query:**  
Analysts ask the system: "Which shelters have high elderly populations?"

**4. Analyze:**  
The GIS identifies vulnerabilities, calculating required geriatric services or medications.

**5. Display:**  
The results populate a real-time, map-based dynamic dashboard.

**6. Output:**  
Operations dispatch specialized medical teams to the exact shelter coordinates.



**The Operational  
Response Loop**



# The Digital Transformation of the American Red Cross.

For 20 years, the ARC used GIS to create static maps for situational awareness. But recently, the organization executed a radical digital transformation strategy to replace paper-based inefficiencies with absolute operational transparency.

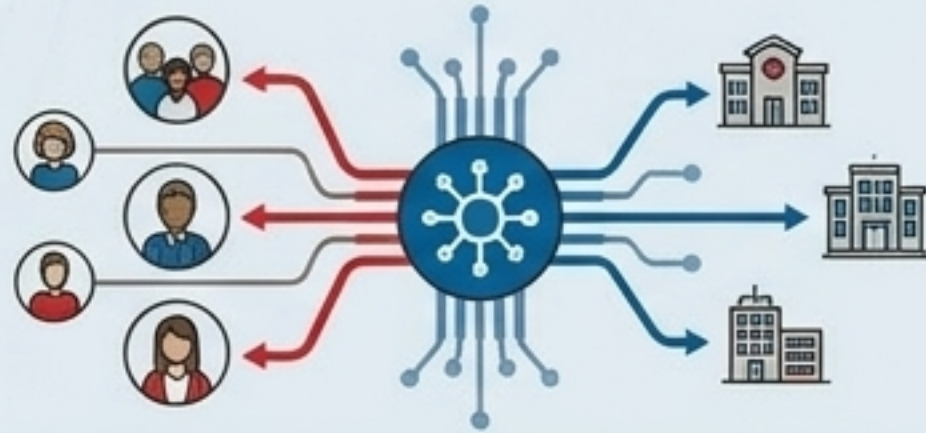
This leap in optimizing service delivery was so profound it earned the ARC the **2018 Esri President's Award**, recognizing a world-class geospatial solution that generates **unprecedented operational efficiencies**.





# The Architecture of Action

## The Red Cross Tech Ecosystem



**Tier 3: RC Hub (Transparency):** A two-way collaboration portal using ArcGIS Hub to share insights, evacuation routes, and shelter locations directly with partner agencies and the public.



**Tier 2: RC View (Synthesis):** The award-winning enterprise portal that synthesizes thousands of federal (FEMA, NOAA), state, and local data sources into one dynamic, real-time picture.



**Tier 1: RC Collect (Input):** Built on Survey123 for ArcGIS, empowering field workers to capture demographic and assessment data electronically on the fly.



# Ground Truth: Capturing realities realities on the fly

## Mechanism

RC Collect eliminates paper bottlenecks at evacuation shelters. As individuals arrive, workers electronically record their details, reasons for staying, and specific needs.

## Impact

By immediately connecting the dots in a dynamic map view, operations can instantly identify if a shelter requires targeted resources—such as organizing disability services for the elderly or arranging day care activities for a high volume of children.





# The Command Center: Synthesizing the bigger picture



## Mechanism

RC View is the foundational enterprise portal used by directors and operations teams to plan and execute service delivery.

## Impact

It answers the critical questions in real-time: What is the potential impact of a crisis? Who will be affected? By understanding exactly what resources are required, the ARC eliminates waste—deploying precisely the right number of personnel rather than guessing and over-deploying.



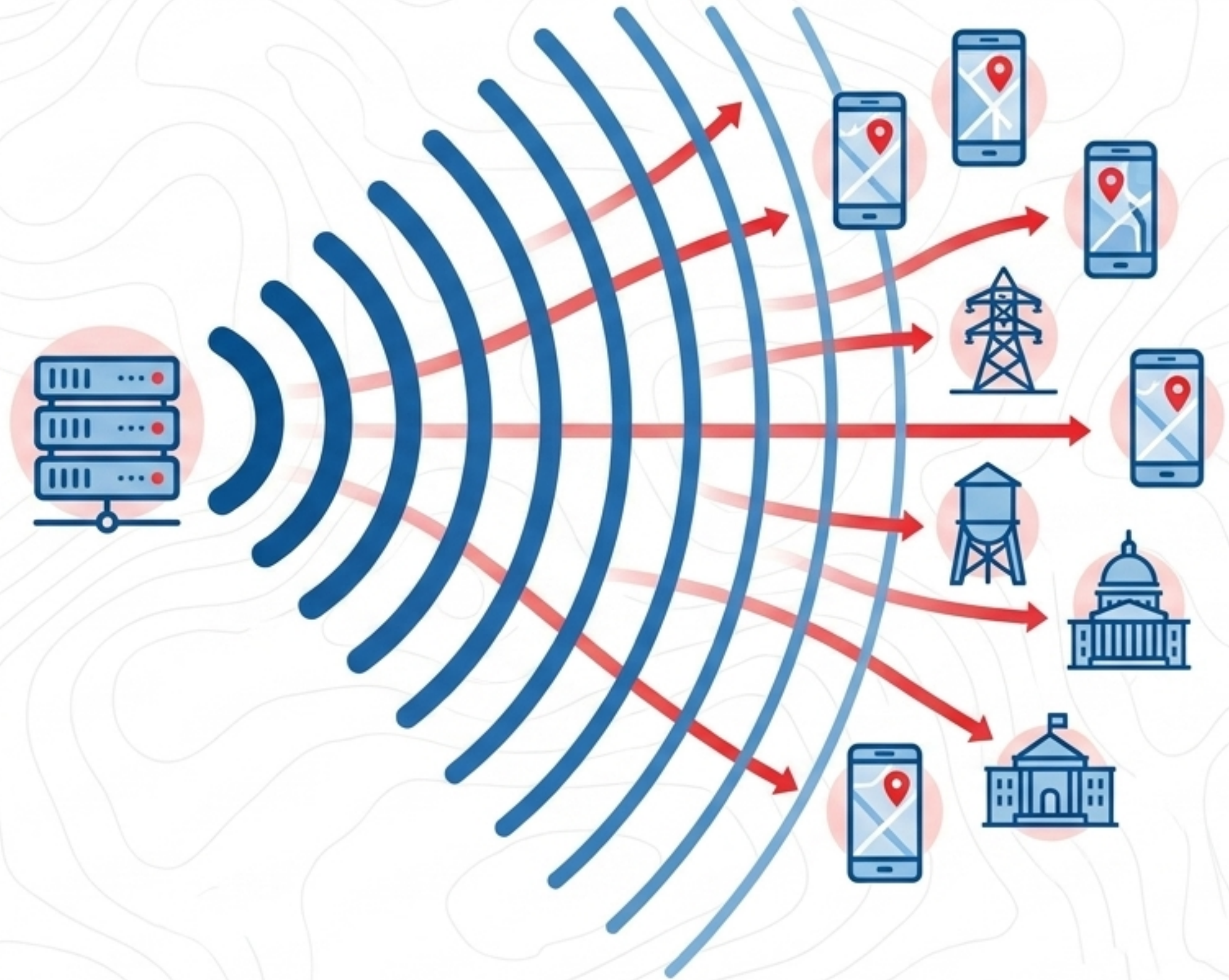
# Amplification: Returning insights to the community.

## The Insight

65% of Americans search online for emergency government information, but fewer than 10% find what they need.

## The Solution

RC Hub establishes a two-way communication platform. Early in a disaster, it pushes critical data—nearest shelters and evacuation routes—to the public. Post-storm, it provides ongoing service updates, like listings of distributed emergency supplies, amplifying the foundational GIS work across the broader community.





# The Dual Mission: Mitigation vs. Recovery

| Preparedness & Mitigation<br>(Proactive)                                                                                                |   | Response & Recovery<br>(Reactive)                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------|
| <b>Core Program:</b><br>The Home Fire Campaign.                                                                                         | ↔ | <b>Core Program:</b> Natural Disaster Relief Operations.                                                          |
| <b>GIS Application:</b> Mapping historical fire incidents and running Social Vulnerability Indexes to identify high-risk neighborhoods. |   | <b>GIS Application:</b> Real-time demographic tracking in shelters and dynamic resource allocation mapping.       |
| <b>Action:</b> Targeted door-knocking, education campaigns, and proactive smoke alarm installations.                                    |   | <b>Action:</b> Deploying financial assistance, emergency supplies, and specialized care to heavily damaged zones. |



# Grassroots Innovation: Mobilizing local talent

## Body

While National Headquarters (NHQ) maintains a dedicated geospatial technology unit for large-scale mission-critical maps via ArcGIS Online and Flex, local chapters drive localized innovation.

## Case Study

Following advice from a university professor, the San Diego chapter partnered with the Viz Lab at San Diego State University. This created a central hub for GIS map products run entirely by student interns and volunteers, building vital capacity for the Emergency Disaster Response team.

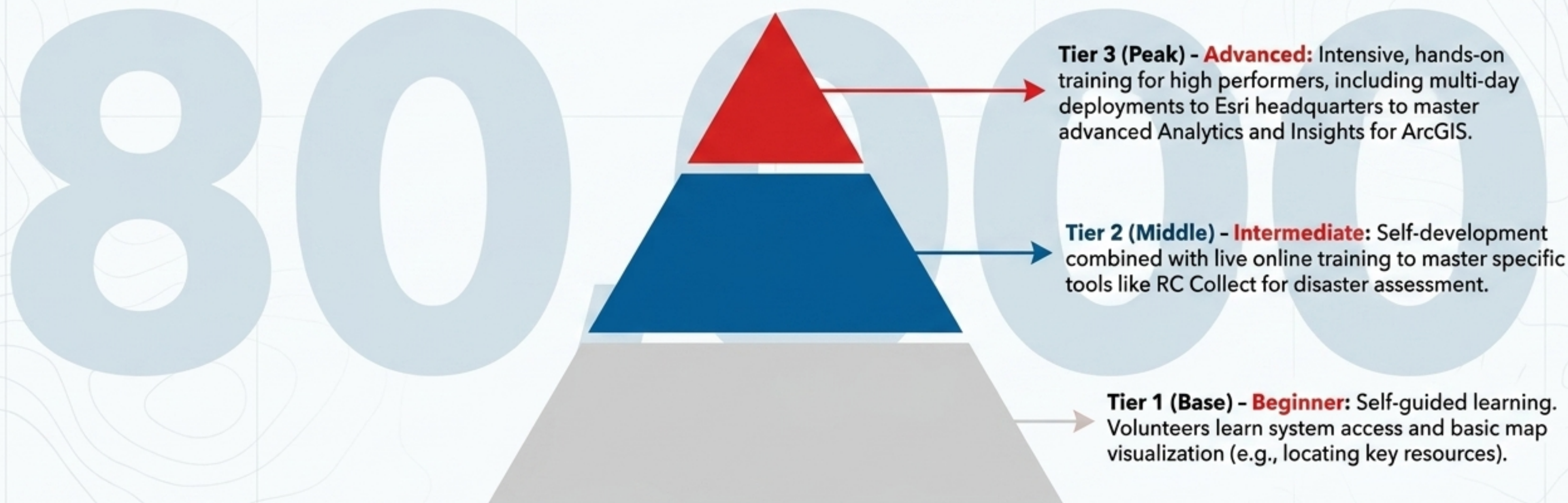




# Scaling capacity across 80,000 users.

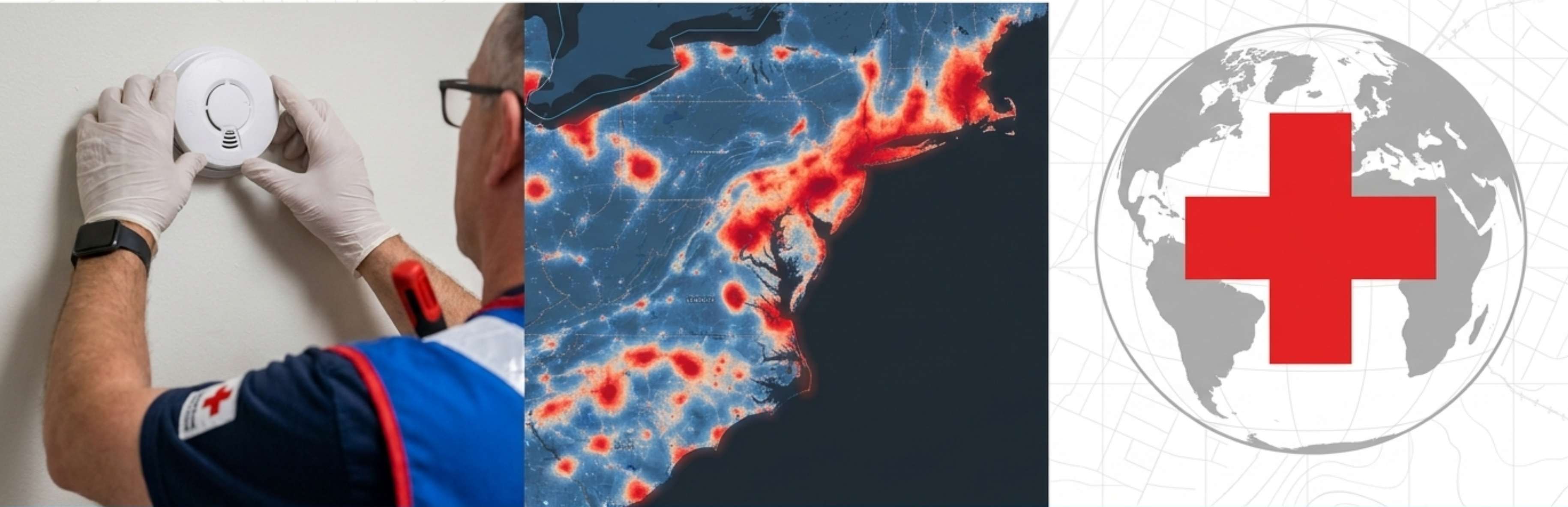
Having world-class technology is useless without adoption. The RC View Academy trains a diverse workforce with drastically different use cases.

The Pyramid of Capability





# The ultimate output is human impact.



From installing a single smoke alarm in a vulnerable neighborhood to routing life-saving supplies through the chaos of a multistate flood, Geographic Information Systems are no longer just a mapping tool for the American Red Cross. They are the digital blueprint for alleviating human suffering in the face of emergencies.