CASE STUDY / CONNECTED PUBLIC SAFETY

IRIS: Building an early connected public-safety platform

Live GIS in the field. Broadband in patrol cars. An integrated suite ahead of its time.

Beginning in the early 2000s, IRIS—the Incident Response Information System—brought current chemical-plume GIS data to responders in Oregon's Hermiston/Umatilla region. Over an eight-year program, it grew as an integrated suite of software and hardware: broadband wireless, OPS Console, cameras, field devices and emergency-center systems. After the proof of concept was proven, I served as Project Manager / Senior Project Manager throughout the program's continuing development, expansion, deployment, training and operation.

450+ FIELD DEVICES

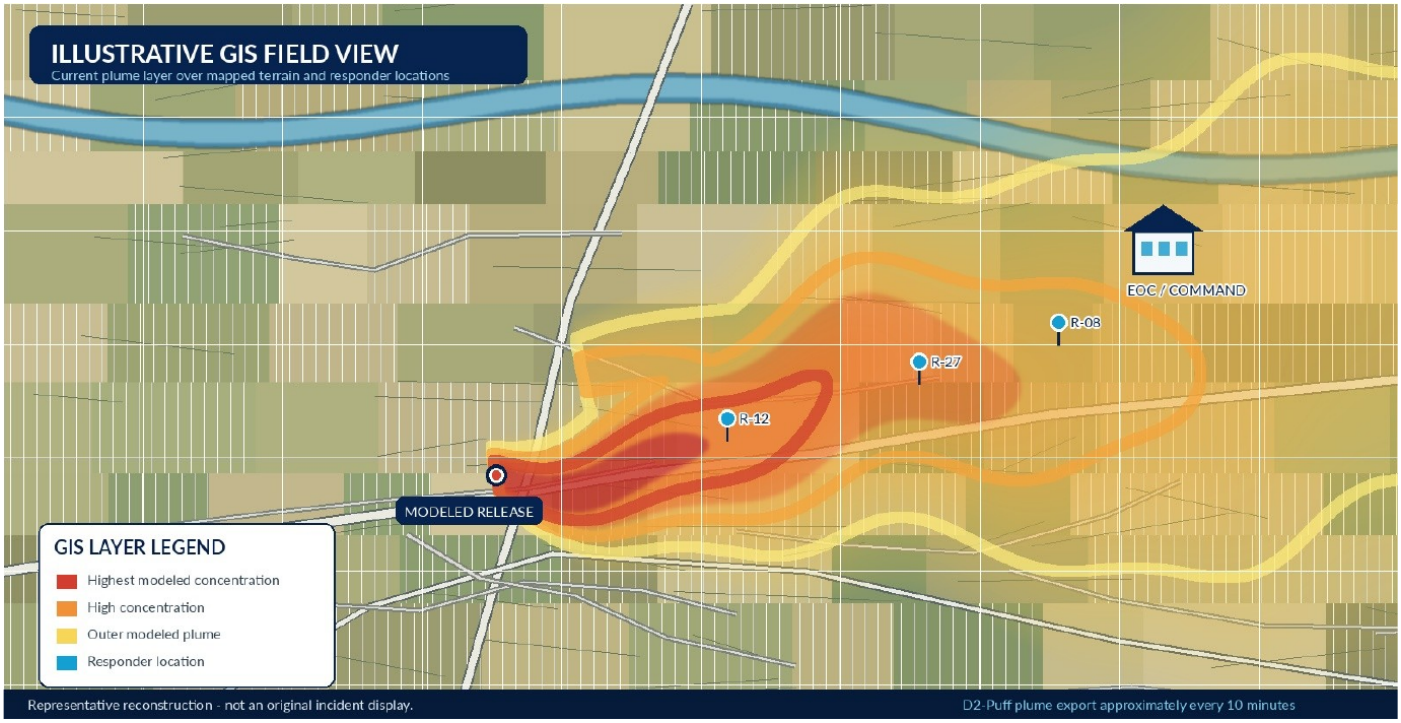
400 laptops + 50+ rugged handhelds

HIGH-SPEED BROADBAND IN POLICE VEHICLES

Officers used ruggedized laptops in patrol cars—not just voice calls and short messages.

My role across the program

While completing my Computer Science degree, I architected the original plume-to-field solution, directed adaptations by D2-Puff and SoloField developers, and built the connecting software. I later conceived and developed OPS Console; held major technical, project and integration responsibilities in the wireless/video expansion; created the complete IRIS training program; and trained all first responders. Operational support grew with every deployed component—not only after construction ended.



Illustrative GIS reconstruction—not an original incident display. IRIS delivered the current plume layer itself, rather than only a verbal description of the hazard.

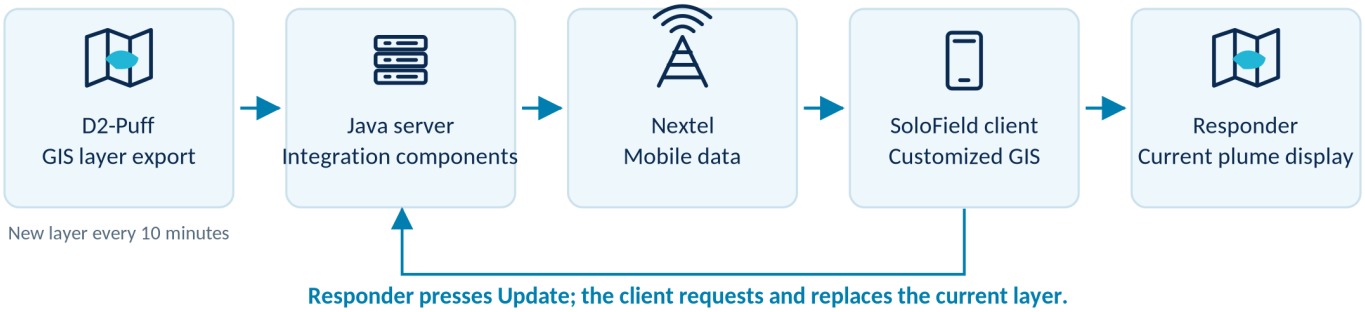
CONTEMPORARY PUBLIC RECORD | READ THE ORIGINAL COVERAGE

Government archives and technology publications documented IRIS, field computing and the regional deployment. Open the source links on page 5. [1] [2] [3] [4] [5]

01 / ORIGINAL PROOF OF CONCEPT

Current plume data, where responders needed it

The original proof of concept preceded the regional Wi-Fi network. I connected the modeling and GIS environment to field users over Nextel mobile data, using a Java integration server and a customized SoloField client.



The capability also ran on Windows desktops at emergency centers and on field laptops.

My architecture and integration ownership

I designed the end-to-end solution, defined the data flow and interface requirements, and developed the Java server and connecting client/server components.

I directed the required product changes, integrated the complete chain and proved that the current plume layer could reach responders under actual field and bandwidth constraints.

Collaboration with the product teams

D2-Puff developers added the GIS-layer export capability in collaboration with me and under my requirements and technical direction.

The SoloField team collaborated on the necessary mobile-GIS adaptations. Those product contributions were integrated into the overall solution I architected and developed.

A current GIS layer—not a verbal description

D2-Puff refreshed the plume file approximately every 10 minutes; the Java server ran independently. The responder's update request retrieved the latest file and replaced the displayed layer against mapped terrain and satellite/aerial imagery. The same capability was replicated on emergency-center desktops and field laptops.

PROOF BEFORE INFRASTRUCTURE

The working concept helped establish the viability of the larger program. Federal funding then supported further software development, handheld purchases, regional broadband, cameras and emergency-center integration. Each capability joined the live environment as it was deployed; expansion and operational support continued together.

Extraordinarily advanced for its era

The achievement was the integrated operational capability: current modeled GIS data reaching people in the field through early cellular service, rugged computers and customized applications. It worked before smartphone-based field workflows and broadband mobile access became routine. Contemporary reports described real-time plume-map delivery, rugged handhelds and two-way field communications. [1] [2] [6]

02 / PRODUCT CREATION + SOFTWARE ENGINEERING

OPS Console: my software product within the IRIS suite

OPS Console was a separate creation developed after the original proof of concept and incorporated into IRIS. It brought responder, resource, incident and patient information into a coordinated operational application.

CONCEIVED. DESIGNED. DEVELOPED. COMPLETED.

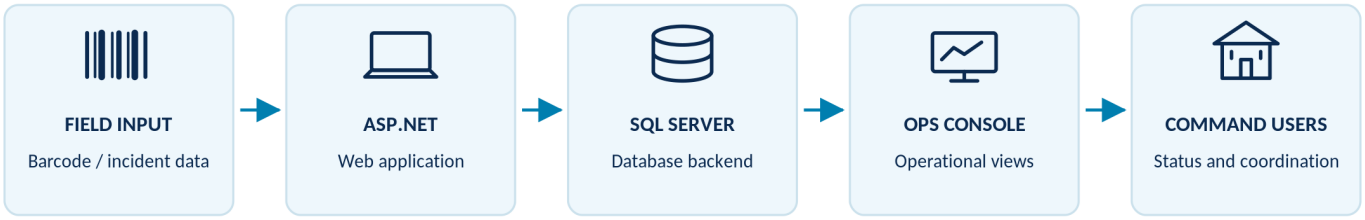
I originated the product concept, defined the workflows, designed the application and wrote the software. I led another developer during part of the effort, then resumed direct development and personally completed the application.

ASP.NET

Web application and operational workflows

MICROSOFT SQL SERVER

Database backend



An original software product, integrated into the broader IRIS operating environment.

Operational functions

RESPONDER ACCOUNTABILITY

Registered and tracked responders so command staff could see personnel status and availability.

TEAM + RESOURCE STATUS

Presented team availability and operational resource status within the incident picture.

INCIDENT COORDINATION

Connected field updates with the operational information needed by command personnel.

BARCODE-ENABLED TRIAGE

Used barcode-based identification and triage workflows to capture and organize casualty information.

PATIENT TRACKING

Provided visibility into patient status and movement across the response workflow.

SHARED OPERATIONAL VIEWS

Made current status available through the console rather than leaving it scattered across separate reports.

From requirements to working software

My ownership covered the product concept, application design, hands-on coding, development direction, integration and completion. I carried the product from the initial idea to a finished operational application.

Validated for emergency use

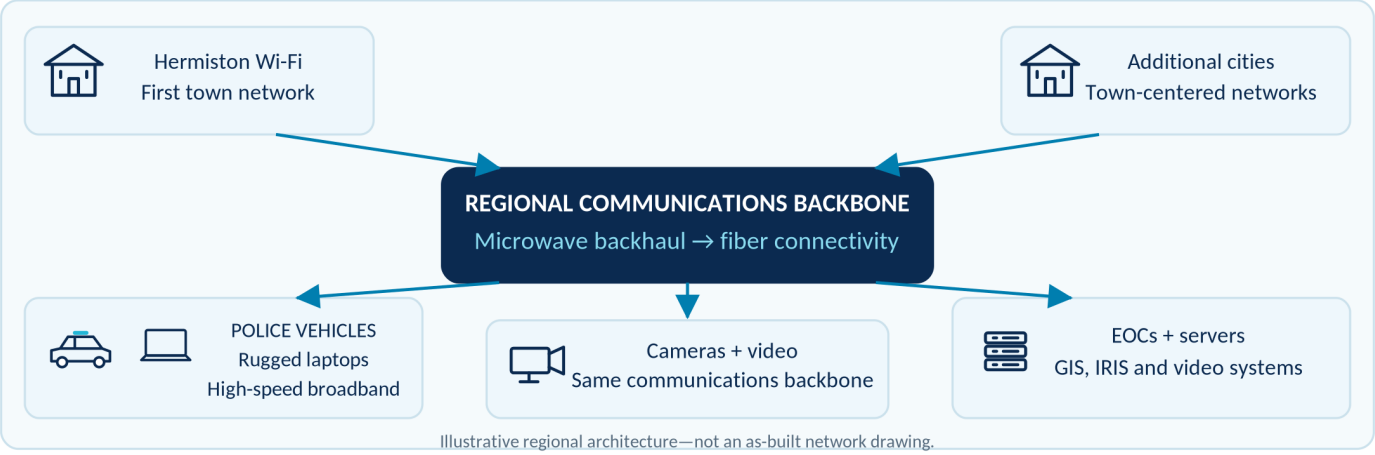
OPS Console was used in formal exercises, tested and ready for an actual incident. The chemical emergency for which the system was prepared did not occur.

Public reporting described an operations console for responder and team visibility, alongside IRIS handheld and barcode-enabled response capabilities. [1] [4]

03 / BROADBAND WIRELESS + CAMERAS + VIDEO

Broadband in patrol cars. A growing regional backbone.

The broadband buildout began in Hermiston and expanded to additional cities. Police officers used high-speed wireless on ruggedized laptops in their vehicles. Town-centered Wi-Fi networks were backhauled by microwave into fiber, while cameras and digital video shared the same communications backbone.



Illustrative regional architecture—not an as-built network drawing.

ONE OF THE LARGEST REGIONAL WI-FI NETWORKS OF ITS TIME

A distributed, multi-community public-safety deployment. Contemporary coverage documented the regional wireless infrastructure, digital video, field computing and agency connectivity. [2] [3] [5]

My major role in delivery and ongoing operation

TECHNICAL PROJECT LEADERSHIP

Held major project responsibilities across expansion, deployment and integration, coordinating agencies, vendors and technical contributors.

SYSTEMS INTEGRATION

Connected the operational requirements across wireless links, microwave/fiber backhaul, servers, GIS, applications and field devices.

HANDS-ON TROUBLESHOOTING

Diagnosed and resolved problems across software, servers, connectivity, cameras, devices and real field conditions.

FIELD + DEPLOYMENT SUPPORT

Supported sites, agency users and field systems as more communities and capabilities joined the environment.

CAMERA-SERVER RESPONSIBILITY

Operated the digital-camera server and supported camera/video systems as the installation expanded.

LAW-ENFORCEMENT VIDEO SUPPORT

Retrieved, extracted and prepared incident video for police, turning the networked camera system into a practical investigative resource.

EXPANSION AND MAINTENANCE WERE CONCURRENT

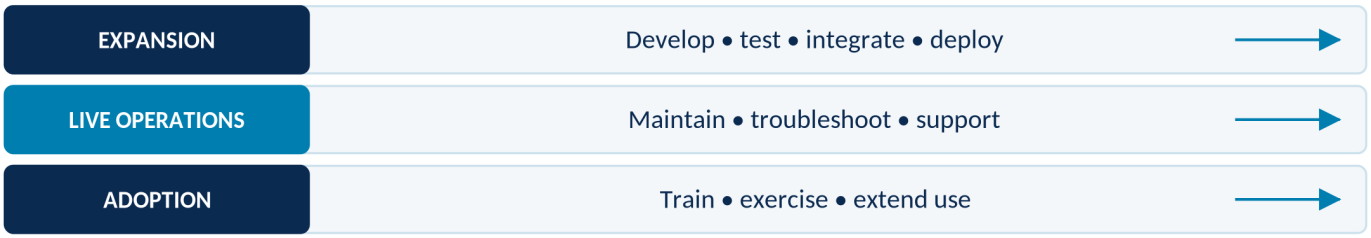
Cities were added. Cameras were added and expanded. New applications and devices entered service. Each operational addition became part of ongoing maintenance and support while the next work continued.

The infrastructure buildout was collaborative. I led major technical/project and integration work; other contributors performed site construction, network installation and specialist administration.

04 / TRAINING + CONTINUOUS OPERATIONS + PUBLIC RECORD

Central throughout.
One evolving operational environment.

Across the eight-year program, I remained central to the work as IRIS grew. Development, field deployment, user training, expansion and operational support overlapped. Every component moved from testing into integrated use—and then into the environment that had to keep working.



New capabilities entered service while expansion and support continued in parallel.

I built the training program

I developed the IRIS training program and personally trained all first responders on use of the complete suite—not only plume viewing or handheld operation. Training connected the software, field and emergency-center workflows to operational readiness.

I supported the complete environment

My support crossed wireless sites, microwave/fiber connectivity, servers, GIS, plume delivery, OPS Console, cameras/video, handhelds, laptops and agency users. As responsibilities consolidated, I became the primary day-to-day technical support resource.

The result was not a collection of isolated products: it was an exercised, integrated public-safety environment that kept expanding while remaining operational.

INDEPENDENT CONTEMPORARY COVERAGE

Read the original reporting. Government archives and technology publications document IRIS and the regional deployment; the linked articles remain publicly accessible. The Microsoft item provides contemporary platform context.

[1] SECURITY MAGAZINE

Emergency Responders Rely on Handhelds

IRIS, plume maps, rugged handhelds and barcode-enabled field workflows.

READ ORIGINAL SOURCE >

[2] U.S. DOJ / OJP — NCJRS

Hermiston Puts Mobile Computing to the Test

Government-hosted abstract of the Law Enforcement Technology report: mobile GIS, handhelds and regional wireless.

READ ORIGINAL SOURCE >

[3] NEXTGOV / FCW

One big wireless net

Regional wireless, Proxim equipment, GIS, digital video and Nextel.

READ ORIGINAL SOURCE >

[4] GOVERNMENT TECHNOLOGY

Oregon Protects Communities From Deadly Chemical Weapons With Massive Wi-Fi Network

D2-Puff, operations-console functions, cameras and command-center coordination.

READ ORIGINAL SOURCE >

[5] WI-FI PLANET

Wireless Watches the Gas

Multi-community deployment, long-distance Proxim links and local Wi-Fi access.

READ ORIGINAL SOURCE >

[6] MICROSOFT / TDS

TDS named a Windows Mobile 2003 launch partner

Contemporary rugged mobile-computing platform context.

READ ORIGINAL SOURCE >

Representative prior professional experience of Vlad Erofeev. VERO Consulting was not the original contracting entity. Illustrations are explanatory reconstructions, not original system screenshots or as-built network drawings.