



Isotrope LLC, provides design, contracting, project management and support, regulatory guidance and peer review services in the field of radio communications facility development. Formed in 2010, Isotrope has managed projects including permitting and construction of towers and licensed radio facilities, design and construction of wired and wireless communications network systems, and radio frequency interference identification and mitigation.

Isotrope Wireless

Isotrope Wireless provides guidance on facility leasing, siting, design, permitting and construction for both the wireless industry and municipalities. Our services include: Design peer review, coverage analysis, alternatives analysis, compliance with FCC/FAA/OSHA regulations, interference prevention and remediation. We are experienced in litigation and negotiation of wireless issues.

Isotrope Consulting

Isotrope's communications engineering team has advised start-ups and settled businesses on system requirements development, protocol design, development and testing of new technologies in radio communications. examples - EPG project, RBDS protocol for proprietary application, improvement of a digital radio service's encoding of country identification code within constrained data space, SCADA telemetry design, studio and transmission facility design.

RFSigns.com

RFSigns.com is the authoritative source for high quality safety signs and markers for radio communications facilities. RFSigns products are standards-compliant and very durable.



Isotrope, LLC.

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Isotrope problem solving expertise includes but is not limited to:

Regulatory Compliance

- Wireless zoning
- Radio Frequency safety signs
- Radio Frequency safety studies
- Radio Frequency safety programs
- Signal interference and remediation
- FCC, FAA, and OSHA compliance

Facility Design and Construction

- Site acquisition
- Project management
- Studio facilities design and construction
- HD-Radio systems design and construction
- Transmitter facilities design and construction
- Radio automation systems, installation and maintenance
- Satellite uplinks and downlinks
- Facility control systems
- Microwave links



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Radio Communications Engineering

- Signal propagation studies
- Remote-Broadcast engineering services
- Communication protocol development and testing
- Peer review and expert testimony
- Standards development
- Field testing
- Drive testing and benchmarking
- Indoor and outdoor DAS benchmarking
- LMR and Public Safety communications measurement and coverage analysis
- BDA system design
- SCADA system design



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Recent Projects:

SCADA System Radio Link Engineering and Network Design, Fresno County California

As subcontractor to Caltrop, Inc, Isotrope performed all radio frequency engineering work in developing a network design for 40 site water and sewer system in Fresno County, California. Later, Isotrope was tasked with designing a 46 site SCADA system and redesigning the network to use DSL technology.

Radio Tower Project, Sheriff's Office, Massachusetts

A replacement radio tower was required in conjunction with the relocation of the county Emergency Operations Center to new facilities. The project involved determining the needs of the stakeholders in communications on the site, developing specifications for the new tower and antennas to be mounted on it, obtaining bids, obtaining permits, obtaining FAA and local airport approvals (site is on an airport), overseeing construction, and testing the final installation of cables and antennas.

Wireless Network Site Audit

A major wireless carrier was performing audits of its wireless facilities, seeking to obtain detailed wiring plans, floor plans and equipment inventories of the current installations in its base station facilities. One of the carrier's contractors was given 36 sites to audit on short deadline. The contractor turned to Isotrope to quickly mobilize and perform the audits. Originally tasked with half of the sites, Isotrope agreed to expand the scope when another subcontractor was unable to understand the configurations of the facilities and left the project.



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Wireless Performance Survey, State of Utah

In 2011, Isotrope conducted a 9000-mile drive test to map the availability of wireless telephone and data connectivity throughout the state. This project involved developing a test platform that would measure the performance of 5 commercial wireless networks and using the platform to conduct a mobile survey. The results were provided to the Utah Automated Geographic Reference Center as part of the federally funded Broadband Opportunities Technology Program. In 2013 Isotrope conducted the drive test again and produced a report comparing the 2011 and 2013 results.

SCADA System Upgrade Study, Water District, Massachusetts

The water district of this Cape Cod town was looking for an efficient way to provide better connectivity between its water system sites and the control point at the main office. In addition to basic SCADA (supervisory control and data acquisition) communications, there was an interest in providing security video. Isotrope evaluated the possible radio signal paths at various relevant radio frequencies and compared the conventional SCADA technology (using narrowband land mobile radio frequencies) with LAN (local area network) technologies on microwave frequencies.

Massachusetts Town Public Safety Radio System

Isotrope conducted an evaluation of public safety radio coverage and a point-of-failure analysis for a Massachusetts town.

Resort Radio System

In a private project for a resort in southeastern Massachusetts, Isotrope performed field testing and network design, and installation for a resort-owned four-channel trunked radio system to support the resort's high quality of service to its guests, replacing an unreliable wireless telephone push-to-talk network service and saving hundreds of thousands of dollars of wireless subscription fees over the projected life of the system.

Hospital Public Safety DAS System

Isotrope helped a large suburban Boston Hospital when it was required to enhance Public Safety radio coverage within their old and new structures. Isotrope designed and managed the installation of a cost effective DAS system.



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Isotrope Leadership:

David Maxson, WCP®, has been providing municipalities, industry and organizations with technical and strategic support on wireless matters for nearly three decades. An expert in modeling the coverage of personal wireless, broadcast, broadband and two-way radio communications, Mr. Maxson bridges the technical divide with plain-English explanations of matters important to regulators and operators of radio communications systems. He has testified before Congress on FCC regulatory matters, written numerous peer-reviewed technical papers on aspects of digital radio frequency communications and radio frequency safety, developed specifications and system designs for radio frequency communications, and testified in court on personal wireless communications matters. Mr. Maxson authored a technical book on the inner workings of digital HD Radio™ communications technology. Representing his company, he serves on wireless industry committees and on the National Radio Systems Committee – a standards-setting organization.

David Maxson was awarded the prestigious Wireless Communications Professional certification from the Institute of Electrical and Electronics Engineers (IEEE). This certification, earned by rigorous examination on Wireless Communications Engineering Technology, demonstrates the breadth and depth of Mr. Maxson's knowledge and experience with all aspects of personal wireless services engineering.



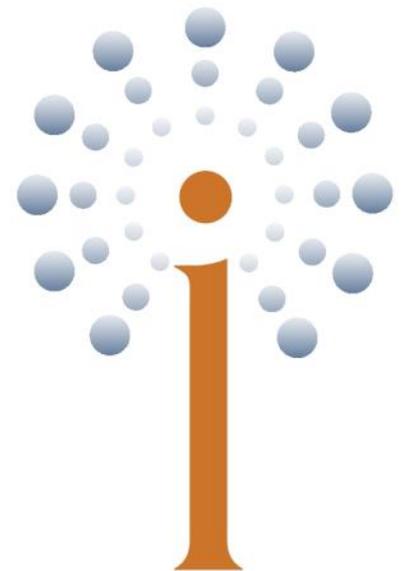
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Steve Riggs brings 3 decades of problem solving experience in wireless communications to the company. Steve Riggs was the Boston region Director of Engineering and Information Technology for Clear Channel's broadcast properties, where he served for nearly 20 years. Among his skill sets, Mr. Riggs has developed, organized and managed a variety of engineering projects, field measurements (fixed and mobile and airborne); communications facility design, construction, and proofing – including tower construction, antenna installation and testing, and physical plant development; standards compliance management and certification; and network development, provisioning and administration. In addition, Mr. Riggs is well-versed in radio frequency coverage mapping and in employing GIS technology to satisfy client requirements. Mr. Riggs also serves as a technical advisor to CodComm, Inc. Past experience includes stints at WCRB, Boston and WZBC, Boston College. It is this varied background that has given him the tools for “Thinking Outside the Sphere!”



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