

Richard H. Rarey
Engineering Profile
Founder & Principal Engineer
Rareworks LLC

Professional Profile

Richard H. Rarey is an embedded systems architect whose career has centered on solving multidisciplinary engineering problems where hardware, firmware, communications, and human factors intersect. Through Rareworks LLC, he helps organizations transform technically ambitious ideas into dependable systems for transportation, public safety, accessibility, professional media, and advanced communications.

Unlike firms focused on a single discipline, Rareworks approaches engineering as an integrated systems problem. Rich is equally comfortable bringing up embedded hardware, developing firmware, architecting software, designing communications paths, integrating cloud and mobile technologies, or explaining complex technical concepts to executive stakeholders. This breadth has made Rareworks a trusted engineering partner for organizations facing projects that do not fit neatly into traditional engineering silos.

Rich is often engaged when projects span multiple engineering disciplines and conventional boundaries begin to break down. His strength lies in understanding complete systems—how embedded firmware interacts with hardware, how wireless protocols affect user experience, how digital signal processing shapes product performance, and how operational realities influence architecture. Rather than optimizing individual components in isolation, he designs systems that function cohesively under real-world conditions.

Signature Achievement: Accessible Emergency Communications

Software architect for a U.S. Department of Homeland Security demonstration that delivered Common Alerting Protocol (CAP) messages through existing FM Radio Data System (RDS) infrastructure to accessible receivers for people who are deaf or hard of hearing, demonstrating how nationwide accessibility could be improved while leveraging existing broadcast infrastructure.

Signature Achievement: Connected Mobility & Public Safety

Led embedded development for connected mobility and worker-safety programs using Nordic Semiconductor platforms, Bluetooth LE, BLE Mesh, LTE, GPS, Zephyr RTOS, and SAE J2735 messaging for intelligent transportation and public safety applications.

Signature Achievement: National Broadcast Infrastructure

At NPR, architected international streaming services, modernized mission-critical broadcast operations, and developed resilient automation, routing, recording, and distribution systems serving millions of listeners.

Signature Achievement: Audio Engineering & DSP

Designed digital signal processing solutions, professional audio workflows, and embedded audio technologies spanning broadcast, production, and automotive environments.

Signature Achievement: Systems Architecture & Rapid Prototyping

Guides clients from concept through deployable systems by integrating electronics, embedded firmware, Linux, networking, cloud services, and user interfaces into maintainable solutions.

Patents & Intellectual Property

- U.S. Patent No. 11,887,639 — Optical Identifier and System for Reading Same
- U.S. Patent Application US 2015/0098018 — Techniques for Live-Writing and Editing Closed Captions

Publications & Technical Contributions

Rich has contributed to the engineering profession through technical writing, industry publications, and educational resources, sharing practical engineering knowledge with fellow practitioners.

- Author, "In-Studio Audio Recording," NAB Engineering Handbook.
- Author, "Radio Station Streaming" (2015), Radio World.
- Author of technical publications and articles on Audio over IP (AoIP).
- Author of additional articles on broadcast engineering, streaming media, and digital media workflows.

Professional Credentials

Bachelor of Science in Communications, Ohio University (cum laude)

FAA Private Pilot

FAA Remote Pilot Certificate (Part 107)

Certified Broadcast Network Technologist (CBNT)

Certified Audio Engineer

Rich believes that advancing the engineering profession includes sharing practical knowledge with fellow engineers. His publications and consulting work reflect the same philosophy that guides Rareworks LLC: combine sound engineering principles with real-world experience to build systems that are innovative, reliable, and maintainable.

Representative Clients & Collaborators

- Tome, Inc.
- Valtech Solutions
- Ford Global Technologies
- SoundHound
- National Public Radio
- Georgia Tech
- Texas Public Radio
- U.S. Department of Homeland Security