# Engineering a Specialized Protocol QA for a Global Telecom Innovator

## Overview

A North American telecommunications vendor, known for mission-critical signaling and network analytics, required sustained quality assurance across complex telecom products. Each release demanded rigorous validation of signaling protocols, voice routing, and location accuracy, all of which are critical to carrier-grade reliability.

The client engaged R Systems to support its internal engineering teams with specialized protocol testing and validation services, working in close coordination across multiple ongoing projects.

The objective was clear: ensure product quality and release readiness across signaling, voice, and location-based services through structured testing and disciplined validation practices.

# Client’s Challenges



### Fragmented Assurance Across Signaling Protocols

Each release spanned SIP, MAP, Diameter, SS7, and VoIP, but validation occurred in silos. This fragmentation made it difficult to ensure consistent standards compliance, message integrity, and stable call flows across protocols.

### Uncertain Validation of Call-Location Accuracy

Voice-call location needed to be precisely identified using geolocation services and GIS, yet verification was uneven across scenarios---introducing risk in location-sensitive and regulated use cases.

### Inconsistent IVR and Toll-Free Routing Outcomes

IVR flows and toll-free routing behavior varied across configurations, creating uncertainty in call handling, response accuracy, and service continuity.

### Uneven Test Planning and Release Validation

With multiple projects moving in parallel, test planning and validation practices varied by team, limiting predictability and confidence in release readiness.

# Our Approach and Solution

Protocol-Level Quality Assurance for Carrier-Grade Telecom Systems

**QA Embedded in the Daily Build Rhythm**

R Systems' QA engineers worked inside the client's project teams, picking up testing as builds evolved and validating changes alongside active development.

**Test Plans That Guided the Work**

For each project, test plans were created and kept current, clarifying what needed to be tested, under which conditions, and how results would be validated.

**Hands-On Protocol and Service Testing**

Testing was carried out at the protocol and service level to check signaling behavior, call flows, and service reliability before release.

**Validation Carried Through to Release**

Test outcomes were tracked through the release cycle, ensuring issues were resolved and releases moved forward with confidence.

**Consistent QA Practices Across Projects**

Despite parallel workstreams, the same planning, execution, and validation practices were applied to maintain consistent quality.

# Business Impact



Through focused protocol and service-level testing, R Systems helped the client strengthen quality assurance across critical telecom offerings.

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|---|---|
| **Improved Signaling Reliability** | Consistent validation of SIP, MAP, Diameter, SS7, and VoIP protocols significantly reduced risk in carrier-grade signaling workflows. |
| **Accurate Location-Based Services** | Geolocation and GIS testing improved confidence in voice-call location accuracy for regulated and emergency-sensitive use cases. |
| **Stable Toll-Free and IVR Operations** | Systematic IVR testing ensured reliable call routing and predictable customer experience for toll-free services. |
| **Release Confidence Through Validation** | Structured test planning and validation supported informed release decisions and reduced post-release quality issues. |

# About Us



**5100+** Employees Worldwide

**240** Million USD Revenue

**23** Development Centres

Great Place To Work. Certified FEB 2025–FEB 2026

ISO 9001:2015
ISO 27001:2022

CMMI APPRAISED

HITRUST

SOC 2 TYPE 2

PCI DSS COMPLIANT

NSE

BSE

**Publicly Listed**

## Global Footprint

USA, India, Europe, APAC
Established in 1993

## Services

Digital Product Engineering (DPE), Custom Application, Mobility, Testing, Knowledge Services, Customer Experience

## Digital Technology

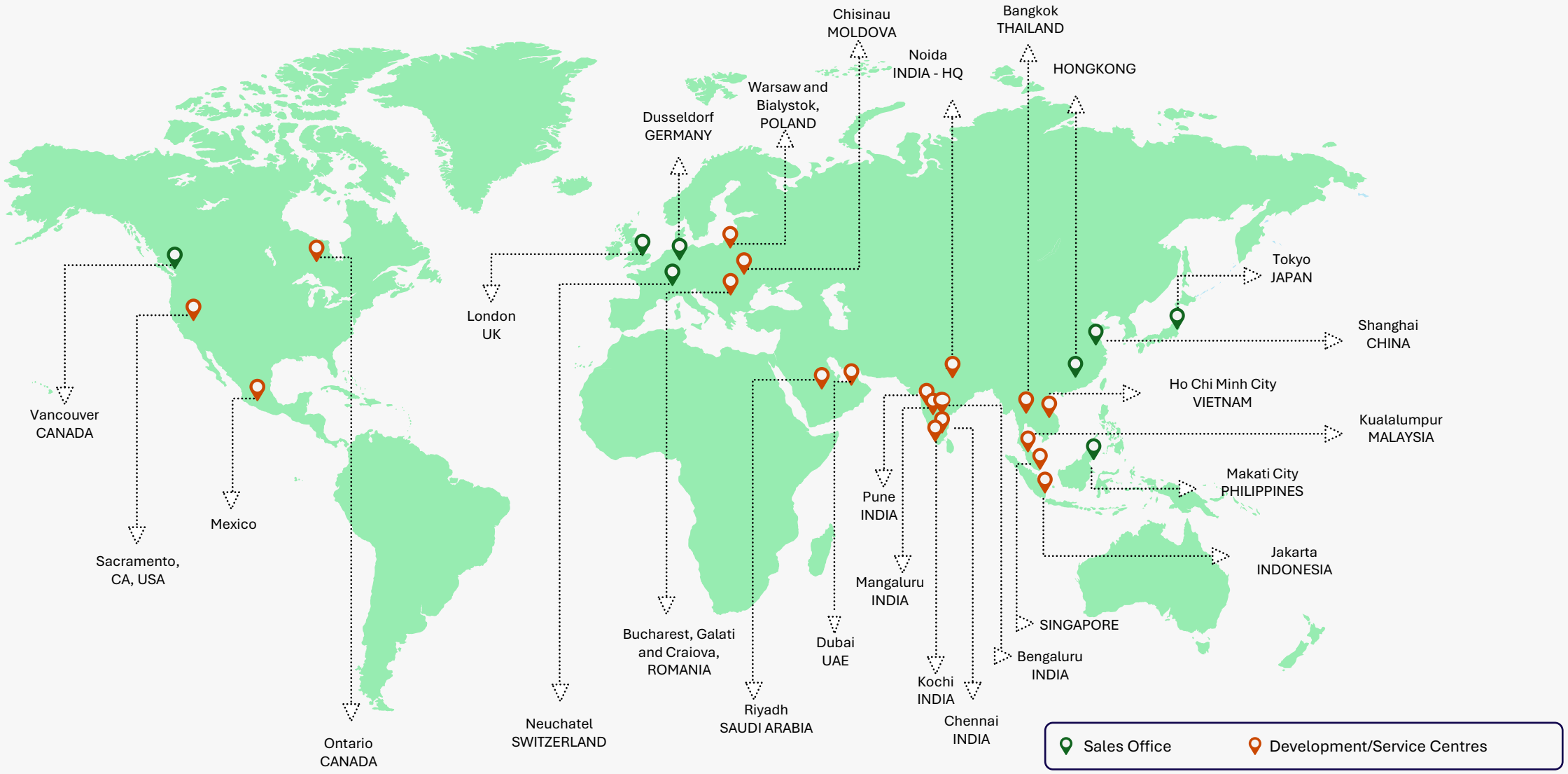
Cloud & DevOps, Data & Analytics, AI / ML, Embedded, Automation, Enterprise Packaged Services

## Verticals

Telecom & Media, Tech, Internet, and Platforms, Healthcare, Banking & Financial Services, Manufacturing, Logistics, Automotive, Public Services

# We Drive Tech-Powered Growth Globally

Protocol-Level Quality Assurance for Carrier-Grade Telecom Systems



# Parallel in execution. Precise by necessity.