



► “This [Telcordia Network Engineer] is one of the finest GIS telecom software solutions available. It’s open and very powerful. The network information is at the user’s fingertips.”

Krishna Kumar  
Qtel

## Engineering for Growth in the Middle East

### *Leveraging Geospatial Technology for Business Efficiency*

#### THE CHALLENGE

► Qatar ranks among the top three countries in the Arab world in terms of the numbers of computer, Internet, wireline, wireless, and broadband users, according to the International Telecommunication Union and the United Nations. Those numbers will increase dramatically over the next several years as the country’s telecommunications regulator, the Supreme Council of Information and Communication Technology (ictQATAR), increases the number of wireline, wireless, and VoIP service provider licenses.

That combination of continued growth and increased competition creates opportunities and challenges for Qatar Tel (Qtel). With wireline telephony, ADSL, fiber, and wireless networks throughout Qatar — and with WiMAX on the way — Qtel is well-positioned to sign up new business and residential customers. But the increased competition also puts more pressure on Qtel to improve its business efficiency, which affects its overhead costs and thus its ability to price its services competitively yet profitably.

Improving business efficiency is no small task for an operator that has 57.5 million customers in 17 countries across the Middle East, North Africa, and Southeast Asia. In Qatar alone, Qtel has more than 2 million mobile customers, and its triple-play customer base grew 61 percent in the first half of 2009. More customers means more infrastructure to inventory, particularly in fast-growing Qatar.

#### Working Smarter, Not Harder

Qtel started laying the foundation for greater efficiency in 1988, when it joined the Qatar government’s effort to implement a nationwide Geographic Information System (GIS) platform that would eventually serve a wide variety of government agencies, Communications Service Providers (CSPs), and other entities.

After seeing the benefits of GIS first-hand, Qtel started a pilot project to use GIS for mapping and managing its network. “As far back as 1991, Qtel realized the potential of GIS technology,” says Krishna Kumar, Head of GIS system and development.

In 1998, Qtel began converting more than 5,000 paper drawings of its copper network into electronic form for use with the GIS platform. At the same time, Qtel also trained a cross-section of its staff, on the ESRI® ArcGIS® Desktop application.

The benefits were immediate and enormous. For example, before the conversion, Qtel staff had to come into the centralized engineering office and spend hours finding a printed drawing of the network section where they needed to do work. They then had to make a copy of the drawing before finally returning to their remote office and the field — and only then could their work actually begin.

“It was a tedious process,” Kumar says. “It used to take days.”

Qtel also knew that it could improve its efficiency and responsiveness — and, in the process, its bottom line — even more. Like any other CSP, Qtel needed a highly accurate physical inventory repository — not just to understand what is deployed, but also to track what is actively in-service. The company recognized that duplication of planning work by different staff could be avoided as well. An accurate, continually updated database lets CSPs such as Qtel avoid that waste and thus free up capital that can be put to more effective use, such as developing innovative services to drive new revenue and attract customers.

Qtel also knew that a continually updated inventory would provide an accurate picture of its capabilities so that its marketing and engineering departments could immediately tell whether a new service or promotion could be launched quickly and cost-effectively, or whether it would first require deploying additional infrastructure in anticipation of increased demand. Those insights also help improve customer satisfaction because the network can handle the additional subscriber load that comes with a new promotion or service.

In addition to data accuracy, Qtel needed a more efficient end-to-end process for managing the network build — from work order generation and costing through construction and close-out.

## THE TELCORDIA RESPONSE

▶ To improve its business efficiency beyond what its basic GIS platform could provide, Qtel turned to Telcordia. Kumar and his colleagues were particularly impressed by Telcordia® Network Engineer, a network management system that uses geospatial information to provide a comprehensive foundation for designing, documenting, and managing network infrastructure. In 1999, Qtel began using Network Engineer to leverage its GIS investments.

---

▶ “It used to take planners months to know about the network, and they used to do it manually. Network Engineer helps our network planners do a faster expansion into the new area.”

**Krishna Kumar**  
Qtel

---

Qtel initially deployed Network Engineer for its fiber access network before quickly expanding its use in support of its copper infrastructure. To prepare for the deployment, Qtel spent 10 months converting all of its shape drawings and related network information into the spatial database engine, an indication of the project's breadth and complexity.

Today, Qtel is finishing another upgrade of Network Engineer, in line with its goal of keeping current with the latest available technologies the industry has to offer. Over the years, Qtel has worked with Telcordia to customize Network Engineer in a variety of ways to meet its business needs, highlighting the product's flexibility.

For example, Qtel already had an Enterprise Resource Planning (ERP) system that staff used to determine the availability of material and equipment needed for each project. "With the help of Telcordia, we now have an interface to this system, making the work order process seamless," Kumar says. That interface lets Qtel work more efficiently through real-time sharing of work order details and status directly between the ERP system and Network Engineer.

Qtel also customized Network Engineer by building a web-based application that lets users view — but not edit — information in Network Engineer. Designed with Telcordia's help, the web viewer enables fast access which helps make Qtel staff more responsive to customer needs.

The end result is that at any point in time, Network Engineer is handling approximately 1,500 work orders, highlighting Qtel's workload as it responds to growth in the capital city of Doha and the rest of Qatar.

"It was with all of your [Telcordia's] support that we have done it," Kumar says.

## THE RESULTS

► After nearly a decade of use at Qtel, Network Engineer has streamlined a wide variety of network tasks. Some examples:

- Qtel staff use Network Engineer to plan, review, and approve construction work. They also can access network information immediately in their office, so they now can spend the majority of their workday on upgrades, repairs, and provisioning and other tasks that improve customer satisfaction.
- Network Engineer allows Qtel staff to view the inside plant, such as the front of a rack to see if there's room for additional equipment. That visibility means they don't have to waste time trekking out to a facility to see what's available. "Most of the Qtel access network engineers seldom go onto the site anymore," Kumar says. "They use Network Engineer."
- Qtel's sales staff can access the system to determine which services are feasible for prospective customers, as well as for existing customers that want to add new services, such as MPLS. For example, Network Engineer makes it fast and easy to tell whether a customer is near a fiber backbone or in a building that already has a lateral, as well as how long it will take to provision service. "It helps them to very

---

► "With the help of Telcordia, we now have an interface to this [ERP] system, making the work order process seamless."

Krishna Kumar  
Qtel

---

quickly tell a key customer how much time it will take to get them service or whether it's available already," Kumar says.

- Network Engineer also streamlined Qtel's ability to add and restore service quickly and cost-effectively. For example, Qtel technicians can enter the GPS coordinates of a fault or a customer access point into their portable device so they can quickly find their way to that location. That responsiveness is particularly important to Qtel's enterprise customers and helps the operator maintain its competitive position. As new CSPs enter the market, Qtel can market its networks' high availability as a way to retain and attract enterprise customers.
- Qtel uses Network Engineer to support its wireless networks, such as by providing the engineering staff with information about fiber access to base stations. "We make them maps with Network Engineer to help support radio planning," Kumar says. "Most of the base station inside plant is documented in the system, as well."

As in the past, Qtel continues to leverage GIS to support the citizens of Qatar. The Qatar government solicited its help more than two decades ago because it saw GIS as a way to ensure that the building boom of the 1980s would cause minimal disruption to residents and businesses. Supporting today's growth as well with Network Engineer, Qtel staff can quickly develop a plan for diverting part of the network, such as in an area where road construction will dig up infrastructure, as just one example.

"It used to take planners months to know about the network, and they used to do it manually," Kumar says. "Network Engineer helps our network planners do a faster expansion into the new area."

Qtel is one of 55 government agencies in the country that 18 years ago formed a Center for GIS to share pertinent GIS information with other parties, such as contractors that need to know where copper and fiber are buried when building a road or upgrading water lines. Qatar had the concept of societal GIS back in the 80s, still in play today.

"This is one of the finest GIS telecom software solutions available," Kumar says. "It's open and very powerful. The network information is at the user's fingertips."



For more information about Telcordia Technologies, contact your local account executive, or you can reach us at:

**+1 800.521.2673** (U.S. and Canada)

**+44 (0)20 7632 4450** (Europe)

**+1 732.699.5800** (all other countries)

**info@telcordia.com**

**www.telcordia.com**

ESRI and ArcGIS are registered trademarks of Environmental Systems Research, Inc.

Copyright ©2010 Telcordia Technologies, Inc. All rights reserved.

MC-COR-CS-010