Start of a New Ecosystem

Mobily Case Study

SAMSUNG

"Following the successful launch of a 4G mobile broadband service, we are very pleased to keep working closely with Samsung to deliver enhanced mobile services to the Kingdom's people"

- Nasser Al Nasser, CTO, Mobily

Saudi Arabia is by far the largest telecoms market in the GCC[1], accounting for two thirds of the region's mobile subscribers and more than half its internet users. The Saudi Arabian market has been growing at an annual rate of nearly 10% for the past few years, and almost three quarters of its revenue is attributable to mobile services. A large factor in this growth has been the rise of high-speed mobile broadband services in the country, where monthly downloads regularly average 18 GB per subscriber.

Mobily's Challenge

Mobily, the brand name of Etihad Etisalat, took its first step in becoming Saudi Arabia's monopoly-breaking mobile operator when it won a tender against five other competing consortiums in the summer of 2004. Mobily launched commercial services in May 2005, and in less than 90 days, the company announced it had passed the one million subscriber base mark. By the end of Q1 2006, the GSM World Association described Mobily as the fastest growing mobile operator in the MENA region, marking the start of Mobily's rapid growth ever since.

Mobily pioneered with 3G services in 2006 and began to offer HSDPA mobile broadband in 2007. In 2008, as a complementary initiative, Mobily acquired Bayanat Al-Oula, a Data Service Provider with its own spectrum holdings.

By 2011, subscriber uptake had greatly increased, together with a rapid rise in data transfer rates. Mobily saw the market shifting and recognised the need for specific action. Faced with the need to decide on an appropriate evolution path, Mobily had to address three major criteria:

- **Efficient spectrum allocation:** Only limited unpaired spectrum was available in the allocated band; Mobily needed a solution to utilize this efficiently
- **Industry commitment & evolution path:** The chosen solution had to have global availability and strong R&D backing, plus capacity for future roadmap development
- **Rich user device portfolio :** Mobily needed to know that its network would have innovative devices available to it well into the future

Solution Overview

To address all three criteria, Mobily turned to Samsung in February 2011 to deploy its TD-LTE network solutions.

Mobily had been accustomed to procuring and operating Samsung's telecom equipment since 2009; this streamlined many processes. Moreover, migration was further simplified by using the same cell sites and recycling common hardware elements. Upon deployment only seven months after chosing Samsung, Mobily was able to considerably boost its previous network's throughput.

Samsung proposal incorporated the following:

- **Efficient spectrum allocation** by utilizing the unpaired spectrum with a TD-LTE implmentation
- **Industry commitment & evolution path,** with TD-LTE expected to be used in 25% of the world's LTE deployments. Samsung offered a future-proof solution with strong potential and prospects
- **Rich user device portfolio** with extensive TD-LTE CPE and dongle availability**.** Mobily's network could afford to grow as the ecosystem of smartphones and tablets developed

Through cost-saving efficiencies, forward-looking design and a strong user terminal range, Samsung addressed Mobily subscribers' requirements and reinforced Mobily's reputation for reliable innovation.

Efficient spectrum allocation

Making efficient use of the available spectrum was a critical constraint for Mobily. Paired spectrum (required for FDD-LTE) was unavailable to Saudi operators, so attention turned to Mobily's unpaired spectrum for quick and seamless migration to a more versatile solution.

Besides its usefulness for greenfield rollouts in unpaired bands, TD-LTE is well-suited for operators with restricted spectrum resources. No spectrum pairing is needed for air transmission, as is the case with FDD-LTE.

The choice of TD-LTE for Mobily was also based on the nature of Mobily's data traffic. With a growing majority of Mobily's users downloading much more than they would upload, a need for significant downlink capability had developed. For relatively short transmission distances, TD-LTE can accommodate such

[1] GCC: Gulf Cooperation Council (Saudi Arabia, UAE, Oman, Kuwait, Bahrain and Qatar)

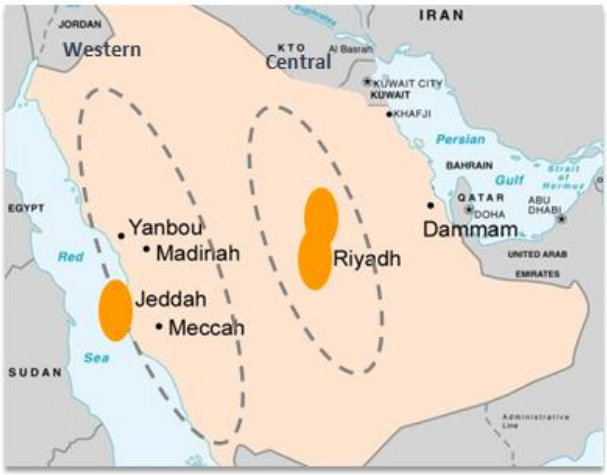
usage asymmetries on its links through flexible capacity allocation; the time slot allocated to each direction is simply adapted as needed. Again, this fit well with Mobily's focus on upgrading its network in key Saudi cities.

There were also certain cost savings to be realized with TD-LTE for Mobily. Additional expenditures were capped through hardware reuse (same digital units) and power sharing.

Samsung's network solutions presented Mobily with a unique means of transitioning to TD-LTE at its own pace, with minimal disruption. From a pilot of 6 initial cities in the Central and Western regions in September 2011, Samsung progressed its deployment and by July 2012 had upgraded Mobily's network in over 30 cities.

Samsung recommended the most appropriate solution for Mobily's low-latency, capacity-driven applications. The resulting TD-LTE deployments saw significant throughput increase. As a result, in Saudi Arabia's increasingly competitive and demanding market, Mobily's differentiation as a reliable innovator was reinforced.

Figure 1. Samsung TD-LTE migrations in KSA Central and Western regions (September 2011)



Industry commitment & evolution path

In recommending TD-LTE at the time, Samsung was mindful of key future drivers of the technology and its sustainability.

One driver was vendor commitment: Both chipset and infrastructure vendors were strongly backing TD-LTE through continuous investment.

A second driver was operator demand: Clearwire (USA), Vividwireless (Australia), Asiaspace (Malaysia) were promising future deployments. More significantly, there was strong Chinese and Indian operator commitment to TD-LTE.

The third driver was economies of scale: With no operational differences in system architecture above the physical layer, there was much to leverage in terms of TDD/FDD convergence, evolution of the 3G ecosystem and migration from other TDD technologies. In actual fact, the Global TD-LTE Initiative (GTI) had just been founded (February 2011) to drive these objectives.

In short, Samung's industry-backed TD-LTE network solution and its efficient execution allowed Mobily to differentiate and grow in its highly competitive marketplace.

Rich user device portfolio

When Mobily first engaged Samsung for network migration, there were no commercially available multimode TDD/FDD terminals (owing to chipset limitations), but Mobily was still able to select a device portfolio that met its market demands. Mobily's CPE subscriber base in 2011 outnumbered its USB Dongle base by over 9:1, which matched the widespread TD-LTE CPE availability at the time.

Furthermore, although FDD-LTE devices outnumbered TD-LTE ones at the time, the common architecture now makes this less important. In 2012, single-chipset devices with combined FDD/TDD support have been released, and it is expected that at least three major vendors will release TD-LTE smartphones by Q1 2013.

In addition, recent developments on TD-LTE global roaming are indicative of a near future of ubiquitous data coverage in both TDD and FDD bands.

It is testament to Samsung's forward-looking design, end-to-end optimization and close operator collaboration that its original TD-LTE deployments have since been expanded and Mobily's customers can now select from an ever-growing ecosystem of end-user devices, including the aforementioned forthcoming TD-LTE smartphones.

Evolution with Smart LTE Networks

In February 2012, Mobily requested an evolution of its network, according to planned roadmaps. Further base stations were commissioned for Samsung to deploy, together with all associated systems and network support services. Additionally, Samsung was engaged to establish managed services, ensuring high quality of service at all times.

In line with Mobily's initial projections of TD-LTE user uptake and the TD-LTE evolution path, Samsung would further

develop the Mobily network solution for more precise control of quality and scaling. In less than five years, the Saudi Arabian ICT[2] sector had become one of the most data-intensive in the region, and Mobily was focused on preparing itself for the future.

In response, Samsung proposed to launch its Smart LTE Networks, which follow cloud computing principles to enable centralized network management. Through the Samsung Smart Scheduler, connected via Ethernet to up to 500 cells, Mobily would be able to manage radio resources in real time.

Smart LTE Networks allow all connected base stations to work together. The Smart Scheduler receives coordinated radio channel information and sends back the most optimal resource allocation pattern for superior quality of service. Dropped call rates are lower because of reduced cell edge interference and smoother inter-cell handover, and throughput is boosted via capacity increases.

There are also direct operator benefits to Mobily. Total cost of ownership is lowered thanks to controlled maintenance, reduced cell site establishment and site rental expenses.

> "Samsung has been a great managed services partner for Mobily."
>
> **- Mohammed E. Alzaaidi, Director, Access Infrastructure, Mobily**

[2] ICT: Information Communications and Technology

About Samsung Electronics Co., Ltd.

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