SUCCESS STORY
TURKCELL TURKEY

ERICSSON

BUILDING THE FUTURE

Creating a future-proof, technology agnostic network to serve every user across Turkcell's spectrum

MARKET-LEADING TECHNOLOGY

CUSTOMER PROFILE

With 34 million mobile subscribers and an annual revenue of TRY 12 billion, Turkcell is the leading mobile network operator in Turkey. It currently holds 46.8 percent of the market share within Turkey, with a further regional network extending to a total of 68.9 million users in 9 countries.

www.turkcell.com.tr

The Turkish mobile operator market is extremely saturated – mobile penetration exceeds 100 percent when the 0-9 year old user group is discounted. Most people use their mobile phones for instant messaging, social media and video streaming, however only around half of these users have 3G subscriptions, as 2G is still prevalent.

Turkish mobile users are very price conscious and expect the very best value for their money. This means the top operators, including Turkcell, need to constantly compete with the best coverage, performance and prices to retain loyalty.

The evolution of a network

In order to remain the leader of such a diverse market, Turkcell relies on a network that provides the best service quality to users across the entire radio spectrum. The Turkcell network already incorporates multiple radio standards including GSM, WCDMA/HSPA and most recently LTE to cater for 2G, 3G and 4G users.

On April 1 2016, the President of the Information and Communications Technologies Authority, Dr. Ömer Fatih Sayan, announced that a new LTE spectrum would be made available for 3G users in Turkey. This enabled Turkcell to offer 9.6 million of its subscribers the chance to upgrade to 4G connectivity.

This announcement of a new wave of customers occupying a new segment of the radio spectrum meant two things for Turkcell. First, greater capacity on the network would be required to accommodate new users. Secondly, the complex mix of radio standards in the Turkcell network would need to evolve even further to future proof Turkcell's technology against further developments.

Turkcell has been working with Ericsson since 1996, enough time for Ericsson to build up a market-leading project management capability and a rich wealth of roll-out experience within Turkcell's entire operational region. Therefore, when Turkcell saw the need to evolve their existing network technologies, Ericsson was already perfectly placed to upgrade Turkcell's network with new technology and transition smoothly from the legacy system.

A world-first solution

Turkcell and Ericsson had already started a continuous deployment project in 2015, focusing on an increase in capacity by rolling out WCDMA technology across the network with the Ericsson Baseband 5216 unit. "The 2G/3G mixed mode trial was very successful," said Elif Yenihan Kaya, Network Planning Director at Turkcell. "We then kept pushing Ericsson to provide the 3G/4G Mixed Mode."

A world-first technological solution, the Ericsson mixed mode solution, enabled Turkcell to run both GSM and WCDMA from one baseband board, and even incorporate new LTE technologies to accommodate users on newer radio bands.

> "The 2G-3G mixed mode trial was very successful. We then decided to have a triple standard mixed mode FOA together."
>
> **Elif Yenihan Kaya**
> Network Planning Director, Turkcell

> With the help of this technology we can give our customers more speed, more coverage, and more quality, and this puts us one step further ahead of the competition."
>
> **Gediz Sezgin**
> CTO, Turkcell

Turkcell therefore pushed forward with the LTE rollout, contracting Ericsson to upgrade the Baseband 5216 boards to support all 3 standards - GSM, WCDMA and LTE - on a single board. This quickly and easily delivered functionalities including Carrier Aggregation for LTE, combining both TDD and FDD frequencies as well as licensed and unlicensed frequencies, 4x4 MIMO and 256 QAM for LTE and Dual Band Multi-Carrier and 6 carrier/sector for HSPA.

The solution is modular and allows for flexible expansion of capacity, as well as the easy re-allocation of resources from one technology to the other. All of this perfectly meets Turkcell's needs to provide excellent mobile broadband performance in even the busiest network hotspots like city centers, business parks, transport hubs and public venues.

In the words of Gulay Yardim, Radio Network Planning Director at Turkcell, "Ericsson's new baseband units are future proof – they support capacity increase and new technologies like the Internet of Things (IoT) and 5G."

Thanks to previous projects, most of Turkcell's sites were already modernized, therefore a transition to the new Baseband 5216 units was smooth and efficient, even in complex site configurations.

Best-in-class coverage

Following the successful roll out of the new technology across Turkcell's network, it was immediately clear how big a step forward the operator had taken. Within the first hour of the new technology coming online, 1 million users had been migrated onto the new LTE bands, followed by 20 percent of the entire user base within 1 month.

The download speed numbers and KPI levels were equally impressive. The test revealed Turkcell's network in the Marmara region was giving users connection speeds 20 percent faster than the nearest competing operator. It also showed that Ericsson's best-in-class KPIs were maintained despite serving a customer base almost 4 times the size with the same number of base stations.

This world-first three-in-one technology approach also

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> **Gulay Yardim**
> Radio Network & Architecture Team Manager, Turkcell

delivered unprecedented savings on business and operational expenses for Turkcell. By enabling a more efficient hardware footprint and lower energy consumption, mixed mode functionality delivered a 20 percent reduction in total cost of ownership (TCO). "With the help of this technology we can give our customers more speed, more coverage, and more quality, and this puts us one step further ahead of the competition," explained Gediz Sezgin, Turkcell's Chief Technical Officer in Turkey.

As the first operator in Turkey and among the first in the world to implement this technology, Turkcell has gained control of a future-proof network fully ready for the coming challenges of high capacity, diverse user requirements and technological advances like Elastic RAN and IoT.

With more capital freed up for investment in new technologies thanks to the cost savings delivered by this project, Turkcell is ready for whatever new challenges the future might bring. As their long term partner and R&D collaborator, Ericsson is proud to be there to support them.

THE WORLD'S FIRST FULL MIXED MODE BASEBAND

Ericsson has been revolutionizing radio network technology for decades, and the Baseband 5216 unit represents the next leap forward in the management of multiple simultaneous radio standards.

Capable of supporting LTE (FDD and TDD), WCDMA, GSM and NarrowBand IoT on the same, single-board hardware platform, the Baseband 5216 provides operators with a future-proof solution and full flexibility in terms of how and when to migrate existing spectrum assets to LTE. Easy to upgrade and build to allow for anticipated growth in new bands of the radio spectrum, this stable and robust unit delivers much greater energy and cost efficiency, in a single-unit hardware footprint.

The unique Baseband 5216 also supports the Ericsson Cloud RAN architecture, which can be deployed in both centralized and distributed configurations and supports optimal coordination and virtualization techniques.

Innovative, revolutionary and future-proof, the Ericsson Baseband 5216 unit is paving the way for the complex, diverse mobile network operator of the future.

OVERVIEW

CUSTOMER

Turkcell, Turkey

CHALLENGE

- Support current diverse range of 2G, 3G, 4G users
- Make room for future growth of 5G users
- Rollout new network solution with minimal impact on user experience
- Retain technology leadership in Turkey

SOLUTION

- Baseband 5216 unit for 3-in-1 technology agnostic approach
- Leverage strong R&D relationship to install tech quickly and easily
- Continue work started in 2015 deployment project

RESULTS

- Best-in-class performance KPIs
- Best network coverage, 20 percent faster than closest operator
- Future-proof network ready for 5G, Elastic RAN and IoT
- Increased investment in new technologies thanks to opex savings

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