

Telecom, Media & High Tech Extranet

21 themes for 21st Century telecom CTOs

Chief technology officers face a growing array of serious challenges as the new century unfolds. We highlight 21 of the most important issues that fixed and mobile CTOs should address.

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In an environment where market and technological changes occur at an ever-quickening pace, fixed and mobile telecoms chief technology officers (CTOs) face a variety of serious challenges as the second decade of the 21st Century progresses:

- Rising margin pressure and falling return on invested capital (ROIC)
- Globalizing and consolidating telecoms markets
- Increasing movement toward fixed and mobile cross-border operations
- Mounting evidence that service platforms and IT systems are becoming critical bottlenecks in time-to-market performance, quality, and cost reduction as well as the launch of new services
- Rising expectations among customers regarding service and quality performance
- Emerging-market vendors becoming increasingly important as Asian markets begin defining the industry's future operating model
- Over-the-top (OTT) players assuming permanent value-chain positions and gaining end-user relevance.

21 CTO THEMES

McKinsey & Company has identified 21 themes spanning the fixed and mobile industries that CTOs can pursue to address these challenges (Exhibit 1).

The first 15 themes primarily address fixed-line core, platform, and infrastructure issues, and five of them – lean network, cost benchmarking, zero-based budgeting, performancedriven culture, and green network – are relevant for both fixed and mobile operators. The remaining six themes cover mobile issues.

	Fixed (core and platforms)	Fixed (infrastructure)	Mobile
Quality	 Customer experience Eixed data usage growth via 		Granular quality steering
	content delivery networking		
Opex efficiency	3 Fixed network outsourcing	13 Lean approach with suppliers	18 Mobile outsourcing
	Lean in the network		
	Cost benchmarking		
	6 Network operations center optimization	Capturing value from outsourcing	21 Non-personal efficiency (rent and energy)
	7 Lean field force	 Fiber rollout capabilities (support office) 	
Сарех	Zero-based budgeting	refresh	
	9 Design-to-value		
Major trans- formation	10 Making CLM happen		19 Road to 4G
	Performance-driven culture		20 Network sharing
	Greennetwork		
Source: Team analysis			

21 themes for telecom CTOs

1. Optimizing network quality, customer experience, and network

performance. Somewhat paradoxically, even as incumbent telcos see the ability to capture price premiums wane, the importance of network quality continues to increase. However, while most companies monitor network performance at a granular level, few recognize its enduring connection to customer experience and perception. In fact, McKinsey research shows a strong link between voice service quality and customer perceptions of network quality. Furthermore, in these cost-focused times, companies need to find cheaper and more effective ways to invest in network quality.

To accomplish these goals, companies have to understand their current quality performance and customer perceptions, prioritize the drivers of positive customer experience, and determine the investments needed to achieve the required network quality and performance.

Two helpful tools here are:

- **Network quality impact modeling**, which enables operators to allocate funds to projects based upon comparative returns, sustainability (i.e., quick wins versus long-term fixes), and competitive impact
- **Subscriber acquisition/customer-retention cost modeling** enable marketers to prioritize their investments that are focused on acquiring new subscribers or retaining current ones.

2. Expanding usage in fixed data, TV, and OTT video via content delivery

networking (CDN) and network caching. Companies can increase the network load from OTT video and TV by making selected providers responsible for a sizable part of that load. This strategy can help them optimize network architecture while involving third parties, such as Internet service providers (ISPs) and broadcasters, as co-investors. At the same time, operators can also capture additional wholesale revenue from ISPs.

By using techniques such as network caching and CDN, operators can reduce one-on-one network downloading and hence, network load and form partnerships with broadcasters to share investments and build a large-scale, secure, single network infrastructure. One European operator established a partnership with a number of content providers to establish a content delivery platform that provides content in three formats: TV, phone, and PC/laptop.

3. Driving for best-in-class fixed network outsourcing. Operators can gain the most value possible from core network outsourcing and minimize risks by adopting fact-based negotiating tactics, choosing an optimal governance model and making sure that the deal makes strategic sense.

4. Introducing lean network efficiencies. In many cases, fixed and mobile telecoms operators have not fully realized the cost-reduction potential provided by lean tools and techniques, which not only can generate savings of from 10 to 15 percent on the addressable cost base, but also simultaneously improve overall operational quality levels. By taking an "end-to-end" process view rather than typical functional or categorical approaches, leaders can help ensure that the lean methodology gains traction in the organization, creating transparency regarding process bottlenecks and inefficiencies. This process should start with a diagnostic phase that covers network planning and implementation, operations, and management infrastructure. In the process, companies can identify unnecessary personnel travel and idle time, and other forms of operational waste that the organization can eliminate.

5. Employing cost benchmarking. A systematic benchmarking initiative can quickly help fixed and mobile players discover critical gaps in their performance and act to close them. All benchmarking activities should track processes from beginning to end, with deep-dive analyses being used in key functional areas, such as field force performance. At the end of the benchmarking process, teams should have a prioritized list of actionable recommendations the company can pursue.

6. Optimizing the network operations center (NOC). The network operations centers of many telecoms players face a variety of challenges, including having to deal with technology silos, unclear ownership of network issues, lack of institutional memory that forces teams to "reinvent the wheel" time and again, and others. Given the breadth of opportunities available, operators can often capture reductions of 15 to 35 percent in NOC-related costs. Potential actions include developing a clean-sheet NOC redesign, integrating NOC services on an end-to-end basis, and instilling a problem-solving, high-performance mindset within the center.

7. Creating a lean field force. Teams can take a holistic approach to boosting the operational efficiency of the network field force, focusing on daily, weekly, and annual capacity planning, work dispatching, and frontline execution. Key elements of the approach include creating a performance management system, adopting a continuous improvement ethos, and ensuring field force reporting accuracy by using advanced tools and techniques, such as GPS-enabled technician tracking.

8. Refreshing the zero-based budgeting approach. Applicable to fixed and mobile players alike, revisiting the organization's zero-based budgeting decisions using the latest insights and business priorities can reveal new opportunities to reduce investments and costs in areas where an operator's market share is below critical thresholds.

9. Introducing design-to-value techniques. Telecoms players can employ proprietary analyses and techniques to improve the amount of value their products deliver to customers, while at the same time, creating cost-efficient designs and calculating target costs.

10. Making lifecycle management happen. Teams can capture value by pursuing network lifecycle management (LCM) and rationalization – "stress testing" their LCM plans based upon the possible evolution of the external demand drivers by introducing different possible scenarios.

11. Fostering a performance-driven culture. The benefits of creating a performance-driven culture for both fixed and mobile players come from its ability to amplify subsequent improvement initiatives – in effect, supercharging them. However, as with most transformational approaches, "getting there" will require strong, visible commitment from company leaders, solid organizational planning and training, and communication clarity.

12. Building a green network. Going green is in many ways similar to going lean, since both strive to reduce energy usage and eliminate waste. Fixed and mobile operators can foster green networks by improving network energy and cooling infrastructure, and by installing energy-saving network equipment.

13. Introducing lean supply chain approaches. While many operators have already introduced lean thinking and processes in their own operations, some have neglected their suppliers that could benefit significantly from a lean transformation. Companies can standardize vendor reporting procedures and ways of working and communicating, while also introducing performance management techniques among supplier and contractor workforces.

14. Capturing value from outsourcing. Fixed-line infrastructure players can outsource network infrastructure and operation to contractors in order to optimize operating and capital expenditures (opex and capex). Making this outsourcing a success requires companies to explicitly split roles and responsibilities with the chosen contractors, establish clear reporting and interface models, and prepare, negotiate, and execute specific contracts and service level agreements.

15. Enhancing fiber rollout capabilities. As more incumbents either contemplate or proceed with rolling out fiber optic networks, a key – but sometimes overlooked – element of success involves creating a fiber network rollout support office. Done right, such an office can help teams quickly de-bottleneck issues and effectively track overall rollout process in a structured way.

One western European incumbent relied upon a fiber network rollout support office to make sure it met an aggressive rollout schedule. The office provided rollout expertise and thought leadership, ably supported the accelerated schedule, worked with several service providers while managing construction contracts, supported the fiber commercial launch, and worked with government agencies to realize a speedy rollout. As a result, the fiber network is projected to "pass" one million homes in its first year and 2.5 million in the target timeframe, keeping the project well on schedule.

16. Steering network quality performance and investments via micro-

markets. Mobile operators can make use of the rich variety of customer data they have on hand to improve their network quality and target investments on a site-by-site basis. Taking this type of highly granular review of network performance metrics, site utilization, and commercial performance will enable leaders to pinpoint spending requirements. For example, one operator compared its network site utilization to the untapped revenue growth potential of each site and found that roughly 20 percent of its sites were underutilized, but had high revenue growth potential; about 10 percent had excessively high utilization rates and required additional capacity; while nearly 55 percent were underutilized, but had limited upside revenue growth potential and thus, were candidates for capacity redeployment to congested areas.

17. Dealing with mobile data. Expanding by approximately 75 percent since 2008, mobile data usage at first glance seems like a solid success, but growing price pressure continues to erode customer revenue on a per-megabyte basis. Potential solutions include attempts to shape data traffic that include introducing usage-based and progressive-pricing and yield-management techniques, such as offering off-peak bundles. Operators are also attempting to offload traffic to alternative networks, such as in-home femtocells, public hotspots, or community WiFi networks. Others are upgrading their networks by accelerating the rollout of 3G technologies or investing in 4G LTE solutions.

18. Revisiting mobile outsourcing. By introducing optimized governance models, best-practice vendor relationship management techniques, and better negotiation and deal strategies, operators that revisit mobile outsourcing typically identify the potential for an additional 5 to 10 percent in cost reduction, representing 2 to 3 percent of total costs.

19. Choosing a path to 4G. The growing readiness of a variety of new mobile technologies can give operators access to large amounts of new network capacity with varied upgrade paths. Operators can seek to optimize their migration strategies in a number of ways. For example: Should they leap directly to LTE or continue building upon current 3G technologies, adding incremental 3G bandwidth expansions? Should they begin in rural or urban markets and will 4G enable them to win in new, value-laden customer segments? Operators could also consider participating in network sharing and investigate ways to optimize the cost of upgrading their networks.

20. Exploring network sharing. An increasingly relevant topic for mobile operators: Should they engage in network sharing with other mobile players? As more active network- sharing deals emerge, the challenges and benefits of doing so are becoming clearer. Furthermore, with the impending arrival of 4G LTE networks, more operators have become interested in active network sharing and equipment vendors have stepped up their introduction of new solutions that enable such deals. At the same time, experience to date highlights growing questions as to its feasibility and commercial implications, along with concerns regarding the best network-sharing negotiation strategies.

21. Improving non personnel-related efficiencies (i.e., rent and energy). While personnel wages and benefits represent a major network operating cost, other high-potential areas for cost cutting include site rental and energy costs. As a consequence, some operators are aggressively pursuing the renegotiation of rental contracts with an eye toward moving or eliminating those sites with the most expensive rental contracts. Considering network optimization, some operators are exploring base transceiver station (BTS) "hotels." These BTS hotels group the electronics from a number of base stations for antennae up to 15 miles away.

In terms of energy operating costs, some operators have active programs in place to identify sites with higher-than-normal power consumption and are adopting specific measures to reduce it. This can include adjusting air conditioning settings, making productivity upgrades to batteries and A/C systems, and adopting low-energy designs. Companies are also investigating the transfer of expensive third-party energy contracts to players that offer better terms and conditions.

Chief technology officers face a whirlwind of choices in the fixed-line and mobile industries, which are becoming more complex and challenging with the increasing sophistication of markets and the technologies employed in them. The 21 themes touched on here should resonate for any CTO seeking to understand the urgent issues with which they will be confronted in the 21st Century.

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