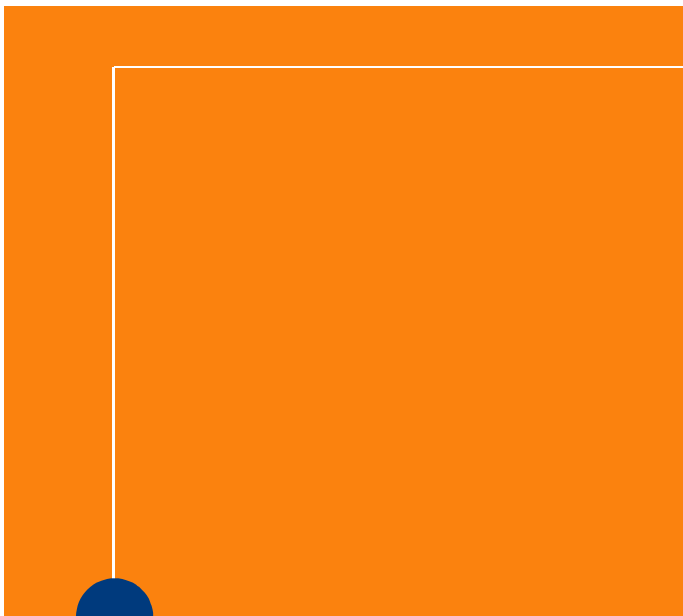




Managed Services and Outsourcing

May 2004



WHITE PAPER

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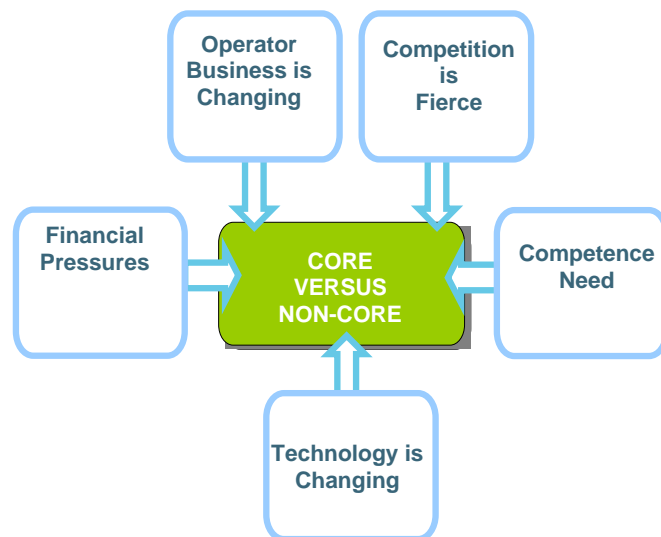
Introduction

This white paper collects Motorola's thoughts, concepts and world leading approach to Managed Services and Outsourcing of today's wireless telecommunications network operations. The information provided will be of great interest to network operators as they consider strategies to optimize CAPEX, manage OPEX, focus resources on new revenue generating service enablement or more generally evaluate the skills and resources required to operate their networks.

Business Drivers of Managed Services and Outsourcing

The wireless industry can never be accused of standing still; look back at the phenomenal growth over less than twenty years, the jump through several generations of technology and the resulting adoption of mobile phones by billions of people globally. Today, we see the wireless industry continuing to innovate, and operators transforming themselves as the margins on voice traffic erode, the drive for new service delivery, shortening time to market, customers wanting more for less, competition evolving globally and technology shifting while converging in ever shorter timescales.

The operators that run networks are looking at their businesses and deciding where to focus their effort for long term value creation from the assets under their control. The challenge is how to maximize return on their investments by creating meaningful differentiation in the market. The focus should naturally be on core competence and prioritization of scarce resources – both human and capital. In many cases it becomes a Service Co. versus Net. Co discussion.



In an increasing number of cases, the conclusion is that although the mobile network is core to the business, the network is not the core business itself!

This conclusion often leads to a more objective approach on how to run the network. Accepted and proven business solutions such as managed services and outsourcing can be employed in support of managing those elements of the network that are deemed non-core. Many operators are familiar with the benefits and rationale for managed services and outsourcing, many having already experienced the outsourcing of key business processes such as:

- Customer contact centers
- Billing systems
- IT
- Administrative processes

Most operators have already experienced the shift of IT from a core competency to a commodity.

However, in certain quarters, there remains a reluctance to look deeply into the network operations itself and find opportunities for cost and efficiency savings. Naturally there are concerns raised by the teams currently responsible for those managing the network.

One concern is centered on competence and knowledge. The question is whether vendors can provide the broad range of skills and expertise to manage the engineering, quality and performance demanded by a complex or converged network. It can be convincingly argued and demonstrated that solution providers and vendors understand exactly what technical expertise is required, and often can tap into global experience and world-leading IPR from their labs and development centers. Many of the tools used to provide these services derive from these sources.

A second concern is whether the operator would be vulnerable without a complete range of in-house technical skills. Motorola's position is that it is best practice for the operator to retain a small team of experts who can check, verify and audit the Service Level Agreements (SLAs) tasks being carried out by the third party provider. The operator reaps the benefit of scale – a handful of people fully utilized as opposed to a large and costly team that may not be fully utilized and need continual training and development.

Benefits of Managed Services and Outsourcing

Managed Services are those services which are rendered by a third party under contracted SLAs.

Outsourced Managed Services are a specific type of managed service which involves the transfer of people and/or assets from the served to the serving organization.

Service Level Agreements are written documents which defines the nature and quality of service that is to be delivered to the customer.

It is now being proven within the network operator community that managed services and outsourcing can be strong business tools at the network level to address:

- Reduction in OPEX
- Optimization of CAPEX
- Access to technical expertise and competencies
- Workload fluctuation, scale economies and critical mass
- Improved network performance and efficiency
- Enhanced service flexibility and integration of complexity

Reduction in OPEX

The financial pressures of debt load, slowing ARPU and AMPU, compounded by decline in penetration growth, mean that operators must address the bottom line by tackling network OPEX. Although cost savings can be achieved by process improvement, asset disposal and headcount reduction, these only tend to result in a few percentage points in saving – not enough to drive a sustainable increase in EBITDA. A review of analyses available from recognized telecoms strategy consulting organizations concludes that a properly structured and executed managed service and outsourcing contract will deliver between 15% and 20% OPEX savings, which in certain cases can have a real effect of increasing EBITDA by 8%.

Optimization of CAPEX

Just as OPEX should be reduced, CAPEX needs to be optimized to drive an increase in the bottom line. New CAPEX investments should be prioritized to new generation infrastructure, yet existing deployed infrastructure, despite being depreciated off the books, is still the cash cow that needs to deliver optimal ROI.

Access to Technical Expertise and Competencies

Mobile networks are complex systems. Maintaining a team to guarantee network service costs money, for recruitment and retention of the right people and in continual skills refreshment to keep up to date with evolving technology. In addition, there is the dilemma of how many people are required and how to scale the operations so that resources are optimally utilized. A key lesson from the IT world can be directly carried over as a model of how to solve these problems through managed services and outsourcing. In that model, it was critical to link up with a partner who has the ability and resources to guarantee the level of service required. The partner provided technical expertise and competencies, which meant that the enterprise itself could now devote time and effort to what is important to operating the core business and driving revenue.

Technology and Focus

As new technologies are introduced, it makes sense for operators to devote the brightest and best staff to developing and supporting the new high value, future revenue generating systems. Instead of diverting resources to try and balance the management of both old and new, it is possible to use a managed service or outsource arrangement for the legacy portion of the network. This can be continued through to 'end of life' management by a partner whose skills and expertise are dedicated to providing a lower cost but high-availability of old network systems. Conversely, a number of operators, primarily with greenfield operations or new licenses, have made the strategic decision to empower the network equipment and service provider to build and operate the network on their behalf to a set of defined SLAs and Key Performance Indicators (KPIs). This removes a barrier to market entry that is the recruitment and training of scarce technical resources.

Managing Risk

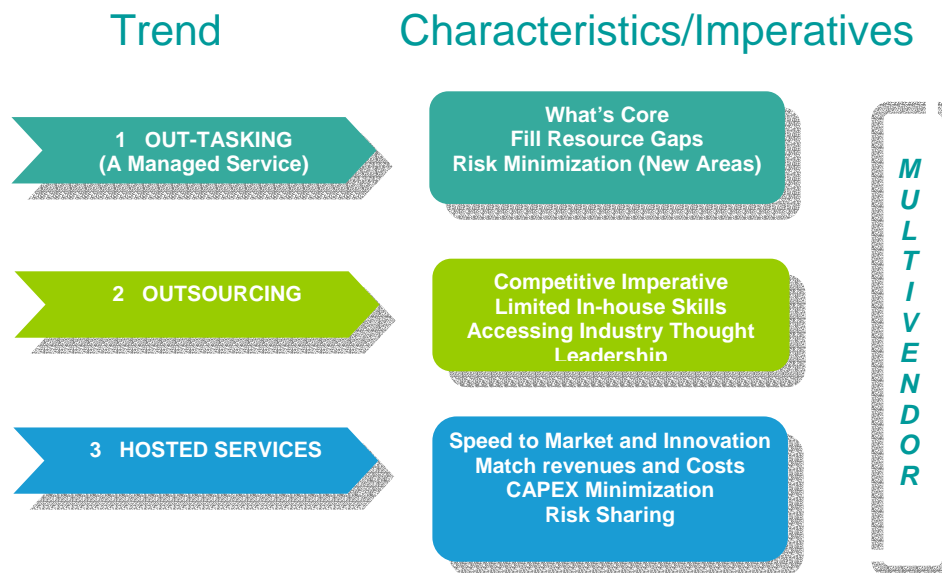
Managed services and outsourcing is seen across business sectors as a way of hedging against many forms of risk. For example, risk in new technologies can be reduced by using a hosted solution and workforce. As the technology or market demand increases rapidly, an outside partner may be able to upscale the solution more rapidly than the internal team. In this way, the managed service or outsource provider takes on the risk of providing a scaled solution and workforce to meet the demand. In this arrangement, the operator does not bear the capital expenditure. Instead, the operator typically pays according to usage. This continues until the operator decides on whether the solution should be internalized as a core part of the business, or functions satisfactorily as an ongoing managed service.

There are significant business benefits to implementing managed service and outsourced solutions within mobile networks, some of which are presented in the following table.

Cost Benefits	Business Benefits	Strategic Benefits
<p>Minimized operational costs though extensive, highly efficient tools.</p> <p>Minimized capital expenditure though maximizing utilization of equipment.</p> <p>Flexible cost structure for future growth.</p>	<p>Allows the operator to focus on the customer base and core competencies.</p> <p>Increased subscriber revenue through high performing network (quality; capacity; lower dropped call rate; increased network availability; increase in MoU).</p> <p>Better end-user experience from network.</p> <p>Transfer of risk to third party.</p> <p>Management and performance of sub-contractor passed to third partner.</p>	<p>Rapid access to technology developments with minimal risk.</p> <p>Leverage off economies of scale.</p> <p>Services one-stop-shop with accountability.</p> <p>Partnership with a financially stable and viable company.</p> <p>Flexible cost structure (for network expansion)</p>

Trends and Approaches

There are a number of distinct trends developing within the mobile telecoms 'outsourcing' industry. Unfortunately, the first trend is a misapplication of terminology. The word 'outsourcing' is an emotive word that is frequently misused to describe what is often a straightforward service delivered by a third party. Motorola, in line with many service partners, is using the following terms to clearly delineate what is meant by different service solutions.



Sources: Lucent, Ericsson, Motorola, Alcatel (Outsourcing in Telecoms Amsterdam March 2004)

Most operational challenges center on reduction in OPEX, optimization of CAPEX, access to technical expertise and competencies, improved network performance and efficiency. These can be effectively solved by a managed service or out-tasking of the particular functions concerned. As Jack Welch has stated:

“You shouldn’t have something in your back office that exists in someone else’s front office.”

Operators pursuing this track learn how to effectively out-task and become comfortable with the concept. Surely it is only a matter of time before more areas that are currently defined as ‘core’ (e.g. design, planning, and optimization) follow suit.

Outsourcing is sometimes hailed as a panacea for OPEX savings in telecoms networks. Although this may be the case, it is only attained where big, scale-achieving deals are struck. In reality, these deals are few and far between, often involving tens or low hundreds of transferred staff, rather than thousands. The right partner will continue to work with customers to select a service solution that best meets the business and operational need. It might be outsourcing, but we expect in most cases the best solution will be a managed service or out-tasked solution.

Hosting is already becoming a feature of the mobile telecoms network, particularly with billing and messaging platforms. If the ISP approach to managed services and outsourcing is followed, we will soon see application databases holding customer information (e.g. HLRs, MMS, and customer service), not just outsourced but physically hosted services.

The Reality

The range of providers with capabilities and expertise to address the service needs of network operators has grown significantly in the last few years. While we see big announcements from one or two infrastructure vendors about their having taken over the complete network operations of a customer’s network, the reality of the industry is that these deals involving thousands of outsourced staff and the transfer of total network operational responsibility are few and far between.

For some time now there has been a steady, but largely unappreciated stream of cell site-level tasks being provided as managed services or even outsourced. These have generally been at the level of civil work and base station deployment. More recently, we have seen this expand to include cell site Level 1 support and preventative maintenance. It leads to this question: *why can’t the contractor that services and supports other utility infrastructure also do base stations?* The contracts for these are generally being let at a local level to smaller service agents who specialize at the lower-skill, on-site tasks, although we have seen the world’s biggest outsourcing company, Flextronics, take on this level of work recently in Sao Paolo involving over 1,000 employees.

At the other end of the scale of cellular network operations, outsourcing the IT systems has been an accepted business practice for several years. More recently, we have seen moves from professional service providers to migrate the managed services and outsourcing solutions developed for ISPs and data network operators (e.g. network operations and billing) into the cellular OSS layers and BSS layers.

However, between the low level cell site layer and high level OSS and BSS layer is the bulk of the cellular network, most notably the high value tasks that provide and guarantee a high quality, high revenue generating, network operation. *Who has the broad range yet highly developed skills, expertise and knowledge to be able to manage these complex network elements and systems?* Operators may have heard one of the professional services Big Five describe networks operations as 'technical logistic challenges'. At a macro view that statement may be warranted, but as anyone who has ever built, operated, expanded and technically evolved a network knows, it is much more about working with parties who truly understand not only the technology, but also the demands of the business and its customers.

So whom can an operator turn to and trust? A number of vendors have stepped up to the mark, some bringing together professional service skills with extremely comprehensive technical capabilities to manage cellular networks.

Motorola is a recognized across the industry for providing high-value, cross-vendor services such as network planning, design, and performance management that provide a differentiating, revenue-enhancing quality of service to customers. We have many years of global experience in network operations. Therefore, we can provide a benchmark 'Discovery' consultancy service to help make an operation even better. We help identify priorities and alternatives to address these opportunities. Underpinning both this industry leadership and global experience, Motorola has a deep understanding of cellular technology, and of managed services and outsourcing. We are a receiver as well as a provider of managed services and outsourcing. We understand the engagement methodologies, how to deliver the service against a Service Level Agreement, and the strong link between network operations and specific strategy, which is essential to success.

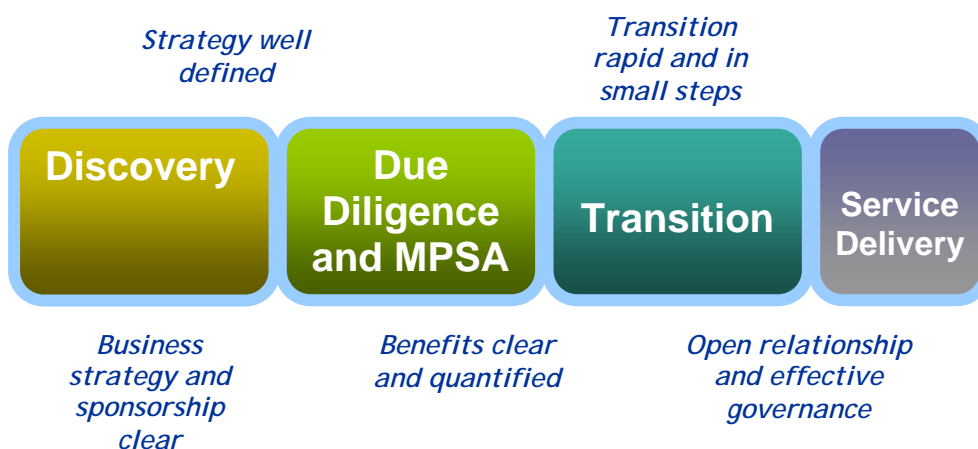
How to Succeed

Obviously, the first element of success is to have a defined strategy, both in the view of the overall business as well as how that may be supported by managed services. There is an argument that value creation should be kept in house, and the network is the last sacred cow when it comes to creation of value. We have already established that this view is evolving, that the network is not the business itself. Indeed, the mobile telecoms market is moving away from describing businesses engaged in running a mobile network as 'network operators' or 'carriers'. Surely, the businesses that successfully separate the design, implementation and management of their infrastructure from their core, customer-focused, service-driven resources will free resources and expertise to concentrate on the development and marketing of services that customers will value. This will deliver the sales that drive top line growth. Managed services needs to be a fundamental part of a long-term, value creating strategy.

The second element of success is creating a fact-based, objective view of the current level of performance, the definitions for success, and the time frame for these improvements. It is critical to have a thorough due diligence process to plant these stakes in the ground.

The third element of success is establishing the right type of provider relationship. The partnership should have a harmonized view of the strategic intent and success levers, especially with the C-levels in the organization. If there is sufficient up-front work to establish these principles, the legal and operational parameters of the agreement flow much more smoothly. These principles are touchstones for decisions made through the transition, and serve as a platform for the evolution of the service and relationship.

The fourth element of success is planning for the transition. Don't skimp on **any** aspect of this and make sure your provider doesn't either. Phased transitions can work, but speed is also vitally important to quickly realize the promised rewards. Start planning the transition early. It is not something to rush as the contract ink is drying. Collaboration and co-operation with your provider will produce a strong, fully understood and agreed plan. Treat the transition as a transition, where change is an anticipated daily occurrence. There may be hiccups along the way but remember to keep a steady focus on what is important – the quality of service your customers experience. Constant communication is the prime underlying factor that will drive success of the transition and during the time of the contract. Let's take a look at how Motorola makes this work.



Discovery: We draw on Motorola's world leading knowledge and global experience from supporting hundreds of mobile networks to provide benchmarking and best practice data. We tailor a specific solution focused on your needs, as understood through your strategy and your network. This may result in a recommendation for managing and maintaining a network element or providing a service to deliver a particular function, or it may be everything that should be retained in house. In our opinion, there is limited scope for where we could add value, based on current levels of network performance and business environment.

Reaching Agreement and Due Diligence: Both parties dedicate time and considerable effort to establishing the principles of the deal with pre-negotiation at a senior level. This is essential to building the close understanding and relationship upon which the deal will be successfully established. An important part of this process will be due diligence by both parties to ensure full understanding of capabilities and risks to be carefully managed to meet the Service Level Agreement. Fundamentally, the agreement and common understanding that underpins the contract need to be defined away from the negotiation table. There will of course be official contracts to sign at the end of this, which may contemplate penalties and rewards.

Transition: Motorola, as a recipient of, and provider of outsourced services, understands the complexities of the transition phase. We assign a dedicated team to the process, to provide continuity and expertise to the transition. We provide an overall program management template and work in concert to assess which items are important for the particular conversion. It is worth pointing out that the overall program considers all of the obvious aspects of the transition insofar as business and technical factors, but places substantial weight on the human factors in a change of this nature.

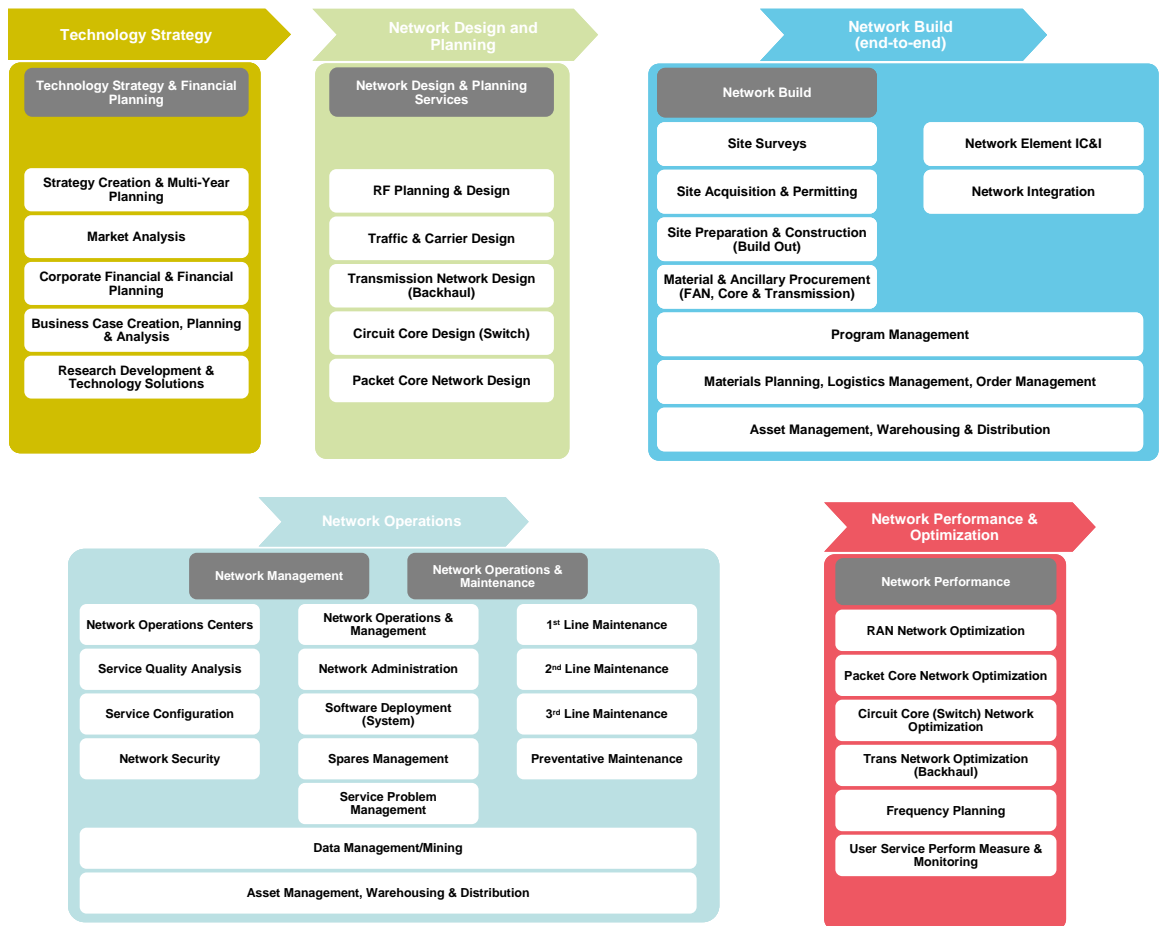
Heavy emphasis is placed on the communications plans: to employees, with the project team, and across the governance teams. This assists in the common understanding of issues and pace of the transition, and enhances resolution for issues as they arise.

Service Delivery: Motorola combines leading edge tools, highly trained and experienced people with best-practice processes. Motorola has deployed and operated wireless networks utilizing both Motorola developed products as well as verified and validated third party equipment and software. This experience in deploying, integrating and maintaining these networks has allowed us to build up a core of Managed Services expertise that is truly multi-vendor.

Motorola’s Proven Process and Tools

Service elements are delivered in line with KPIs defined in a specific Service Level Agreement. KPIs include network availability and network performance elements that are specified individually with agreed service levels. The managed services solutions described are custom designed from Motorola’s service portfolio to meet requirements for a seamless Integrated Managed Service.

Motorola will provide the full range of network services backed up by industry leading tools and processes that provide sustainable differentiated levels of improved performance in the following key areas:



Principles of Motorola Network Design Managed Service

Effective network planning is the cornerstone for a successfully implemented network and has a significant impact on both capital cost and operational efficiency. Based on extensive practical experience, Motorola has developed a suite of industry leading tools supported by processes that have been honed over the past 15 years to deliver an efficient network planning process that can be considered to be one of the most effective in the industry.

The fundamental principle behind the Motorola Managed Service Network Design module is advance planning. Importance given early in the design process to the integration of the key cost and value drivers that have most effect on the network, along with the technical and geographical constraints. Detailed technical factors affecting planning are well understood ensuring that consistent and effective results are obtained. Our years of experience across multiple technologies have been incorporated into the Motorola Network Design tool - NetPlan™, now in its seventh generation.

Principles of Motorola Network Build Managed Service

The key principle to the Motorola methodology used in the building and commissioning of networks is world proven, rigorous and structured project management supported by best-in-class tools, processes and hands-on expertise. Motorola selects teams and partners to ensure a balance between local knowledge, best practice and cost efficient resource, ensuring a successful deployment with low cost, efficient cycle time, and high quality.

Principles of Motorola Network Operations and Maintenance Managed Service

As wireless technology continues to develop, operators carry the financial burden of recruiting, training and retaining teams of technically skilled staff to operate and maintain their networks. Motorola's Network Operations and Maintenance Managed Services can reduce that burden by providing the right level of maintenance and support across the network when and where it is needed in an efficient and cost effective way.

The main principle for the Motorola Network Operations and Maintenance Managed Service is focus. The integrated approach achieves high network availability, reliability and quality along with reduced time and cost to restore service should a fault occur.

The key to this integration is the link between preventative and corrective maintenance, coupled with the importance of ensuring the appropriate routines are conducted in a timely and cost efficient way. Maintenance (planned and corrective) and inventory/spares management is achieved using industry leading tools combined with proprietary diagnostic tools and best-in-class process techniques.

These tools ensure that faults are minimized, and when they do occur they are quickly and efficiently identified, isolated and rectified. The OMC operators monitor all events and alarms, ensuring that problems are solved in the fastest possible time, often remotely. It is here that decisions on requirements for site visits are made - based upon the input from the various tools. Operators have direct access to the first and second line maintenance engineering community ensuring the right skilled personnel are deployed to rectify the problem with one site visit. The OMC operators have direct links to Motorola's integrated support infrastructure to allow second line support to the Customer Network Resolution Center (CNRC) and third line development engineers. OMC operators and the maintenance personnel are highly trained and experienced engineers who are capable of

resolving problems quickly. The established Motorola trouble ticketing system ensures problems are tracked to resolution.

The network operators rely on the OMC's management systems for the day to day running and monitoring of the network while the system administration function ensures the OMC continues to run at peak performance.

Principles of Motorola Network Optimization Managed Service

Continuous optimization is an important ingredient of an efficient, cost effective and successful network. Today's subscribers expect wire line quality from cellular networks. Effective optimization ensures that they do not suffer from poor call quality, lower quality of service for data applications, higher dropped call rates due to interference or poor handover performance. It has been clearly established across the industry that the quality of a network directly affects ARPU/AMPU, subscriber churn rates and customer satisfaction.

Motorola has developed and patented Intelligent Optimization Services (IOS) to provide a unique method of conducting optimization which takes networks to new levels of performance. IOS collects large volumes of real-time measurement data generated by real users of the network. IOS processes the data to give a different, more accurate perspective of the efficiency and performance of the radio network along with recommendations on how to optimize the network against real traffic patterns.

Conclusions

The telecom world is awash with challenges. The way forward is determined by the operator's strategy and definition of core competences and objectives. Managed services are one set of tools which may help improve efficiencies and sharpen focus to achieve those strategic objectives. In order to make that determination, it is important to understand the myriad of issues involved in a managed service arrangement, as well as applicability to a particular environment. Through a Discovery discussion, you can decide where or whether this is an idea worth pursuing. Motorola can help.

For further information visit:

www.motorola.com/networkoperators



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