

Engineering Management Field Project:

***Horizontal Integration, an AS – Telecom Network
Operations Case Study***

By

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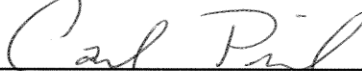
**An EMGT Field Project report submitted to the Engineering Management Program and the
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It is an innovative proposal for what is truly a paradigm shift in how the management strategy in the network operations department is executed at AS - Telecom.

To everyone who contributed to the research, much credit is due; please accept my sincere gratitude!

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To my family and friends, your love and support made this possible; thank you!

For questions or comments related to the material presented in this research, please email the author (Stephen Kekovole) at ASDASH.Telecom@gmail.com.

Executive Summary

Horizontal integration within the network operations department's Wireless Data, VoIP, and IP teams will greatly improve network availability and quality of service to AS – Telecom customers by empowering employees, improving communication, and eliminating duplicated functions and tasks.

The network operations department's Wireless Data, VoIP, and IP teams form the core of the internet, voice and data business of AS – Telecom. These teams monitor, maintain and service the backbone infrastructure ensuring adequate network availability and quality service to AS – Telecom customers. Though these teams function well as silos within their particular mandates, their activities transcend across their existing silos. If these activities are not coordinated and communicated well across all three teams, the result is loss of network availability and low quality of service to AS – Telecom customers. For example, work being performed by IP on the backbone routers, may impact the Wireless Data PCS sites and VoIP's PVG circuits.

The senior management at AS – Telecom identified the need to horizontally integrate these teams in order to improve communication, knowledge sharing, and complete situation awareness. This effort was undertaken to ensure that an activity within any of these functional units was well coordinated and communicated among all three units. Furthermore, it was approached with a view of minimizing the possibility of negatively impacting network availability and the quality of service to AS – Telecom customers.

This report is a blend of empirical learning that resulted from daily interactions with all levels of the impacted units for a period of a year and theoretical research based on various academic and industry observations on horizontal integration. The research spanned multiple semesters, starting in the fall of 2010 and concluding in the fall of 2011.

The research project was a tremendous success. I was able to redesign the three functional units into a new organization with three core functions:

1. Surveillance, network event ticket opening and notifications,
2. Network maintenance and upgrades
3. Process documentation

If implemented, the network operations department will see drastic improvements in service delivery to stakeholders and a \$ X,XXX,XXX reduction in operating costs per year.

Chapter 1 – Introduction

This chapter provides an overview of the project, scope, and purpose.

The horizontal integration of AS – Telecom’s network operations department will empower the employees of each core process through cross training of team members, knowledge sharing, improved communication channels, employee empowerment to make decisions, and management integration to the new organization. This is to be achieved by redesigning the three teams (Wireless Data, VoIP, and IP) from functional silos to a set of core processes.

There had been several failed attempts to achieve horizontal integration of these teams in the past. The first attempt was to reduce the levels of management within each silo so that information flow would be faster from the technicians on the floor to senior management in order to facilitate faster decision making on events.

Though this effort was successful in facilitating prompt/quick flow of information to management for decision making, it did not improve on the time that it took for decisions to be arrived at. This resulted in senior management being flooded with data that often made it difficult to make prompt decisions.

After the failure of the first attempt, the senior management at AS – Telecom made a decision to empower the employees to make decisions pertaining to their day to day work activity. This did improve service delivery but it limited the employee to function within his/her silo. Thus the issue of cross team barriers still existed resulting in conflicts between these three teams whereby activities on one team negatively impacted the others.

The senior management at AS – Telecom then decided to make another attempt to horizontally integrate these teams. My main goal was to evaluate each functional unit in terms of its primary

function, identify any performance gaps and problems, and finally horizontally integrate these functional units by redesigning them into a new organization based on core processes

Scope of work and expected outcomes

The main focus of this research paper will be to evaluate how to best integrate these teams based on the parameters below:

Each team will then be evaluated independently with a view of finding out:

- What are team's core processes?
- How do these core processes interrelate with the core processes of the other teams?
- Is there any duplication of functions across the teams?
- How does the team practice knowledge sharing?

To achieve the above goals, I will perform interviews via questionnaires with both the senior management and their reporting staff with a view of finding out the challenges they faced in the prior attempts to horizontally integrate these three teams.

A draft report about how to go about integrating these teams will be developed and subjected to a critique from all levels (from the floor technicians to the director of the Network Operations department).

A final report that has input from both senior management and the individual contributors will then be presented to the management of the Network Operations department.

Chapter 2 - Literature Review

This section of the report explores notable work related to the horizontal integration of organizations. The material was used as theoretical background and/or reference for the research.

The horizontal organization

According to Chung, Ronald K. in his May 1 1994 publication titled *The Horizontal Organization*; Horizontal organizations provide a clear view of how products and services flow from one department to another and eventually to the customer. Horizontal organizations have a good understanding of this business process without which it would be almost impossible for top management to function effectively.

Chung states that the principal benefit of horizontal management is that it facilitates smooth transition of intermediate products and services through the different functions to the customer. This is achieved by empowering employees, improving communication, and eliminating unnecessary work.

Instead of the multilayer reporting structure, the pure form of horizontal organization consists of two core groups, a group of senior management responsible for strategic decisions and policies, and a group of empowered employees working together in different process teams. The main objective is to change the staff's focus from coordinating and reporting, to the flow and nature of work, and to spend more time on activities that add value for customers.

Information in the horizontal organization is processed at the local level by process teams. Team members are typically empowered personnel from the respective functions working in the process.

Local problems can be resolved quickly by the process team, permitting the company to operate with flexibility and responsiveness in a continuously changing business environment.

Increased interaction of employees from the different departments fosters close working relationships and better communication. Employees from the different functions can obtain better understanding of each other's responsibilities, thus reducing costly conflicts arising as a result of misunderstanding and disagreement among the different departments.

The horizontal structure eliminates the need to devote resources to vertical communication and coordination. The internal machine of a flatter organization uses fewer resources.

Payoff for such cooperation goes beyond efficiency, improved work culture, and satisfied customers. Formulated correctly, it can become a strategic advantage for the company. The impact of a well designed program can lead to effective minimization of customer disputes.

Creating a Horizontal Organization

The pure form of horizontal organization is a two-tiered structure comprising of:

- Core group of senior management.
- Employees in process teams.

The key to achieving seamless horizontal integration among teams in an organization is to:

- Identify the disconnects
- Ensure that each process adds value from the customers' perspective.
- Eliminate any processes identified as non-essential to the attainment of business goals or customer satisfactions.

First, the core processes should be identified; resources should then be organized around these core processes. Process teams are formed by assigning employees from each department to a

process. With expertise from each of the departments, these process teams are equipped with the multi-disciplinary expertise to make daily operational decisions.

A final component of the horizontal organization is an appraisal and reward system that links team performance to customer satisfaction under the new structure. In most cases, the performance of process teams is measured and team members are rewarded as a group based on the specific performance objectives set with senior management.

It is also important to note that the transition from a vertical organization to a horizontal structure can be a significant challenge to management especially in cases where the change in corporate structure is accompanied by a complete change in corporate culture and value (Chung 1994).

Core Processes

According to Kaplan, R. B. & Murdock L. in their 1991 The Mckinsey Quaterly publication titled Core process redesign; Core processes are the three to four processes in an organization that determine the competitive success of the organization. Each consists of a set of interrelated activities, decisions, information, and material flows. In a radical departure from traditional thinking about organizations, these core processes cut across functional, geographic, and business units as illustrated in Exhibit I below.

Exhibit I Core process versus business system views

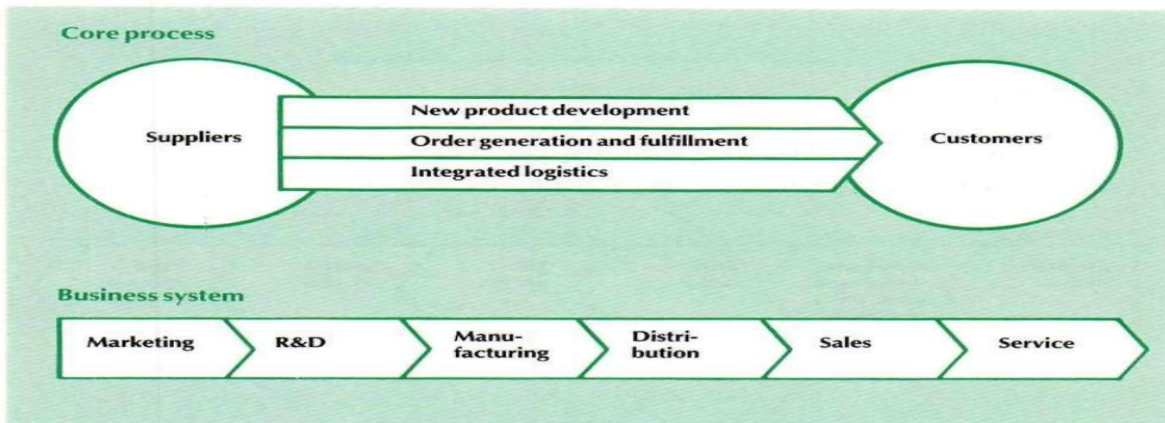


Figure by Kaplan, R.B., and L. Murdock. 1991. Core processing redesign.

Thus, a core process can be defined as a process that captures cross functional interdependencies, and links improvement efforts to a shared set of strategic objectives.

Benefits of horizontally redesigning organizations in terms of core processes

There are several benefits to thinking of an organization in terms of its core processes:

- First, it links improvement efforts to the overarching strategic objectives that drive competitive success. It enables senior management to focus the entire company's improvement efforts on a targeted set of high-leverage performance goals.
- Second, it incorporates the entire chain of related activities, crossing organizational boundaries, functions, and geographies, as well as incorporating suppliers and customers. Thus, it identifies the upstream activities that drive downstream performance.
- Third, it emphasizes cross functional measures so that performance across functions, rather than within functions, is optimized.

- And, finally, it encourages a results-oriented view of the business, such as total delivered cost or end to end cycle times. It develops an external view of the business, based on the perspectives of customers and suppliers, as well as a heightened awareness of competitors.

How to horizontally redesign an organization in terms of core processes

Though organizations are encouraged to take a broad based, structured, and phased approach when redesigning their functional units in terms of core processes, the approach of achieving breakthrough levels of performance improvement in an organization through core process redesign can be divided into four phases:

- The first phase identifies the core processes.
- The second phase defines the performance requirements, or objectives, for each core process.
- The third pinpoints causes of performance problems.
- The fourth develops the overall redesign vision and specific action initiatives.

1. Identifying processes

Organizations need to rethink their value chains and reevaluate their organization structures.

There is, therefore, considerable value in spending much time and effort at the outset in defining the core processes. They can be defined in a variety of ways, and it is important to remember that what is a core process to a firm in one industry is not necessarily the same even for its closest competitor. It is important to define core processes such that they drive the competitiveness of the firm for years to come.

There are also some principles that need to be applied when defining all core processes. These include:

- Process definition should address major strategic directions and key problems in competitiveness. The definition should make as much sense from an external (customer or supplier) as from an internal perspective.
- All major processes and information flows affecting throughput time, total cost, and quality should be included. It is necessary to capture major interdependencies and possible redundancies in functions and systems.
- The processes need to be defined at levels high enough that redesign can yield improvements, yet not so high as to be unmanageable.
- Though the core process view of a company seeks to optimize the interdependent activities and functions within a core process, dependencies across core processes should be minimized.

2. Defining performance requirements

Each core process needs to address one or two objectives of competitive success. These objectives or sources of competitive differentiation must be defined in terms of performance requirements, which measure key operating parameters such as throughput time, output quality, service levels, or total cost. These performance requirements may be customer driven or they may be financially-driven.

3. Pinpointing problems

After performance gaps are identified, a detailed diagnostic should be carried out to pinpoint causes of performance gaps in order to identify specific opportunities for change.

First a detailed mapping of process and information flows is developed to have an integrated look at both process and information flows simultaneously. This mapping process focuses on how

information is used in the process and how people interact with systems on both a formal and an informal basis.

Also to be used in conjunction with the detailed mapping of process and information flows is an analysis of the existing information and technical systems architecture. This analysis enables the organization to understand the architectural constraints on change it is about to effect. This is critical in developing a pragmatic change program because scrapping and rewriting core information systems all at once can be costly.

4. Developing a vision and execution

The organization has the dual objective of developing both a long term redesign vision and a set of specific change initiatives. Based on what was learned from the first three phases including; the set of performance requirements and performance gaps, the detailed understanding of existing processes and systems, and an understanding of competitors and other industry analogs, the organization should identify options and create the master plan.

Through an iterative process, the organization generates a comprehensive set of redesign options and evaluates them. Finally, the organization selects a set of specific short and long term initiatives that address all the key elements of work processes, information systems, and organization design and executes them in a timely and cost effective manner (Kaplan, R. B. & Murdock L.1991).

Chapter 3 – Research Procedure

This section provides the steps taken to complete the research.

My research on AS-Telecom's Network operations department's Wireless Data, VoIP, and IP teams will focus on redesigning these teams from performing as a cluster of sub organizations or functions each pursuing its own and often conflicting objectives to integrating activities within a limited number of core processes. Each core process will be focused on achieving one or two overall objectives of competitive success. In effect, each core process will aid in creating an operational and organizational transformation from functions to core processes.

The following steps were followed to complete the research:

1. Develop Problem Statement

As a first step we define the current business unit conditions and how these conditions act as a bottle neck to service delivery within the network operations environment. This is the situation (environment) that would be resolved by the plan we propose to horizontally integrating AS Telecom's Network operations department's Wireless Data, VoIP, and IP teams.

2. Understanding the Business

In the second stage, we perform research that is targeted at understanding what each business unit (functional unit) does. The five questions listed below are used to focus on the elements that add value to the whole organization.

- What is the unit's primary function and customer commitment?

- How is the customer commitment met?
- Who in the unit is responsible for meeting these commitments?
- Who are the stakeholders and what are their expectations?
- What constitutes success for the unit's operation?

3. Define performance gaps and pinpoint problems

In the third stage, we collect the data that is currently available to identify the factors that lead to performance gaps and identify specific opportunities for change.

4. Redesigning the three functional units to a set of core processes, documenting and reporting

In the final stage, we implement the information obtained from Steps 1 through 3, documenting it, analyzing it and finally drafting a report that puts forward a road map as to how AS Telecom's network operations department's Wireless Data, VoIP, and IP teams could best be horizontally integrated.

We rethink AS – Telecom network operations department's Wireless Data, VoIP, and IP units not as functional units but as a new organization based on core processes making sure that we address major performance gaps and key problems. We also ensure that major interdependencies and possible redundancies are captured; these include all major processes and information flows affecting throughput time, total cost, and quality.

Chapter 4 – Results

This chapter presents the research’s results. It is the outcome of the application of the methodology presented in chapter 3 – Research Procedure.

1. Problem Statement

The operations department’s Wireless Data, VoIP, and IP teams form the core of the internet, voice and data business of AS Telecom. These teams monitor, maintain and service the backbone infrastructure ensuring adequate network availability and quality of service to AS – Telecom customers and peers. Though these teams function well as silos within their particular mandates, their activities transcend across their existing silos; however their activities are not coordinated and communicated well across all three functional units resulting in loss of network availability and low quality of service to AS – Telecom customers.

2. Understanding the Business

The following questionnaire was sent to fifteen non-supervisory team members of IP, Wireless Data and VoIP units.

Respondent:	
Team:	
What are the unit’s primary functions?	
What are the unit’s customer commitments?	
How are the customer commitments met?	
Who in the unit is responsible for meeting these commitments?	
Who are the stakeholders and what are their expectations?	
What constitutes success for the unit’s operation?	
What are the hindrances to meeting customer commitments?	

These fifteen interviewees (five per team) were selected at random with a view of gathering the data needed as described chapter 3 in order to understand the functions of each unit:

From the responses received, the following could be deduced about each functional unit:

IP

What are the IP unit's primary functions?

- Testing and analyzing network and network facilities to include: power, communication machinery, software, lines, modems, and terminals.
- Advising supervisory Network Control positions of network communications failures and degradation.
- Arranging corrective action plans.
- Providing Tier I/II level troubleshooting, event management, and surveillance.
- Supporting AS – Telecom link, XXX, and GMPLS network systems to include Cisco 12000, 10000, 7500, 3600, 2800, 2600, and 2500 series routers; Cisco 6500, 3550, and 2950 catalyst switches; Avaya switches; Timeplex switches, OC192 to DS0 circuits.
- Troubleshooting IS-IS, BGP, EIGRP, OSPF, RIP, Sonet, PPP, HDLC, DS3/DS1, and Ethernet protocols.

What is the IP unit's customer commitment?

IP's commitment to its customers is to provide stable, reliable network availability and connectivity 97% of the time. This commitment factors in variables such as routine network maintenance, upgrades, and network outages due to circumstances beyond IP's control.

What are the IP unit's responsibility assignments towards meeting customer commitments?

Tier I (Network Control Technician I)

- Open tickets to facilitate event management.
- Surveillance

IP's tier I monitors via Netcool and Bulp the ongoing activities on the AS – Telecom link, GMPLS, and XXX networks for any anomalies, capacity constraints and failures. If an anomaly is detected, IP then notifies relevant supervisory Network Control positions.

Tier II (Network Control Technician II)

- Event management

In the event of an anomaly, failure or capacity limiting event, IP tier II institutes corrective measures. The team notifies the impacted customers, and then coordinates with all impacted internal teams to limit the effect on the customer by diverting the customer's traffic to other routes. The team also coordinates with the impacted teams to restore the network back to normal while keeping supervisory Network Control positions informed on the status and progress of the event.

- Maintenance

IP tier II supports and performs routine scheduled maintenance on the AS – Telecom link, GMPLS, and XXX networks to preserve network integrity and reliability. They also support break fix maintenance on the AS – Telecom link, GMPLS, and XXX networks in the case of unscheduled network disruptions.

- Troubleshooting

IP's tier II also performs the function of identifying and isolating chronic network failures and capacity limiting events.

Who are the IP unit's stakeholders and what are their expectations?

IP's stake holders include:

- AS – Telecom link customers
- XXX customers
- Peers (other telecommunication companies that share AS Telecom's network under peer network sharing agreements)
- AS Telecom's Wireless Data team
- AS Telecom's VoIP team

The above stake holders expect 97 percent network availability and stability and to be promptly notified of any event that may be customer impacting.

What constitutes success for the IP unit's operation?

- 97% network availability and stability
- Under 30 minute network event resolution (from event detection, notification of relevant positions and impacted customers, event cause isolation, to event cause fix).

What are the hindrances to the IP unit in meeting customer commitments?

- Lack of proper notification from VoIP and WDI on network impacting maintenance activities
- Lack of cross unit awareness on VoIP and Wireless Data side in regards to IP functions and customer commitments
- Lack of standardized process documentation

Wireless Data

What are the Wireless Data unit's primary functions?

- Tier 2 technical support for AS – Telecom National Transport Network Cisco routers and switches (IGX & BPX) in a 24x7 environment.
- Tier 2 technical support for technical support for variety of Cisco and Juniper routers.
- Tier 2 technical support for Juniper and Netscreen Firewalls
- Tier 2 technical support for Bridgewater AAA's
- Tier 2 technical support for Starent Home Agents
- Vendor Management of Wireless Data Infrastructure Platforms

What are the Wireless Data customer commitments?

Wireless Data's commitment to its customers is to provide stable, reliable network availability and connectivity 97% of the time. This commitment factors in variables such as routine network maintenance, upgrades, and network outages due to circumstances beyond Wireless Data's control.

Responsibility assignments towards meeting customer commitments:

Tier I (Network Control Technician I)

- Open tickets to facilitate event management.

Tier II (Network Control Technician II)

- Reporting

Wireless Data tier II verifies that all steps taken to resolve an event are documented in the notes of the Trams ticket; they also verify that trouble severity and study code have been updated correctly in the ticket. They notify relevant Network Control positions on TS1 & TS2 events, and pageable events within 15 minutes for proper notifications.

- Bridge management

Wireless Data tier II contacts relevant Network Control positions to establish a bridge if needed and chair the event isolation and resolution process from the beginning of the event to when the issue is resolved.

- Maintenance

Wireless Data tier II supports and performs routine scheduled maintenance on the AS – Telecom National Transport Network Cisco routers and switches (IGX & BPX), Juniper and Netscreen Firewalls, Bridgewater AAA's, and Starent Home Agents to preserve network integrity and reliability. They also support break fix maintenance on the above mentioned Wireless Data platforms and networks in the case of unscheduled network disruptions.

Who are the Wireless Data stakeholders and what are their expectations?

- Internal customers
- All AS – Telecom Wireless Data users
- Peers

What constitutes success for the Wireless Data unit's operation?

- 97% network availability and stability

- Under 30 minute network event resolution and minimize customer impact (from event detection, notification of relevant positions and impacted customers, event cause isolation, to event cause fix).

What are the hindrances to the Wireless Data unit in meeting customer commitments?

- Lack of proper notification from IP and VoIP on network impacting maintenance activities
- Lack of cross unit awareness on VoIP and IP side in regards to the Wireless Data unit's functions and customer commitments
- Lack of standardized process documentation

VoIP

What are the VoIP unit's primary functions?

- Tier II technical support for maintenance activities on AS – Telecom VOIP platforms and networks.
- Tier II technical support for the various AS – Telecom VOIP platforms and networks.
- Provide Tier 1 support for the Government Emergency Telephone System (GETS).
- Act as an SME in assisting with tools, applications, providing support for non-routine troubleshooting which may include roll and/or disconnect activities, and also be a liaison for long duration and escalated issues.

What are the VoIP unit's customer commitments?

VOIP's commitment to its customers is to provide stable, reliable network availability and connectivity 97% of the time. This commitment factors in variables such as routine network maintenance, upgrades, and network outages due to circumstances beyond VOIP's control.

What are the VoIP unit's responsibility assignments towards meeting customer commitments?

Tier I (Network Control Technician I)

- Open tickets to facilitate event management.
- Surveillance

VOIP's tier II monitors via Netcool the ongoing activities on the various VOIP platforms and networks for any anomalies, capacity constraints and failures. If an anomaly is detected, VOIP then notifies relevant supervisory Network Control positions.

-

Tier II (Network Control Technician II)

- Event management

In the event of an anomaly, failure or capacity limiting event, VOIP tier II institutes corrective measures. The team notifies the impacted customers, and then coordinates with all impacted internal teams to limit the effect on the customer by diverting the customer's traffic to other routes. The team also coordinates with the impacted teams to restore the network back to normal while keeping supervisory Network Control positions informed on the status and progress of the event.

- Maintenance

VOIP tier II supports and performs routine scheduled maintenance on the various VOIP platforms and networks to preserve network integrity and reliability. They also support break fix maintenance on the VOIP platforms and networks in the case of unscheduled network disruptions.

Who are the VoIP unit's stakeholders and what are their expectations?

- Internal customers to include IP and Wireless Data
- All AS – Telecom VoIP data users

What constitutes success for the VoIP unit's operation?

- 97% network availability and stability
- Under 30 minute network event resolution and minimize customer impact (from event detection, notification of relevant positions and impacted customers, event cause isolation, to event cause fix).

What are the hindrances to the VoIP unit in meeting customer commitments?

- Lack of proper notification from IP and Wireless Data on network impacting maintenance activities
- Lack of cross unit awareness on IP and Wireless Data side in regard to VoIP's functions and customer commitments
- Lack of standardized process documentation

3. Defining performance gaps and pinpointing problems

After reviewing and analyzing the data obtained from the questionnaire sent to the various teams, a short list of the common hindrances to each unit in meeting customer commitments was drawn. These were; lack of cross functional awareness, notification failures, and lack of consistent process documentation.

A second questionnaire was then sent to the fifteen respondents with a request for them to rank the identified common hindrances with a view of identifying which were the major and minor common hindrances to each unit in meeting customer commitments.

Hindrance To Meeting Customer Commitment	Major Cause	Minor Cause	Reason
Lack of cross functional awareness:			
Notification Failures			
Lack of standardized process documentation			

From the first and second questionnaires, it was deduced that:

- Lack of cross functional awareness

The lack of cross functional awareness was identified as the major cause of friction and tension among the three cross functional units. It resulted in frequent disruption of service delivery to stake holders and peers. The lack of cross functional awareness also resulted in functional units competing against each other without understanding how their activities impact the whole organization. As a result some functional unit’s attain high key performance indicators but at a high cost to the performance indicators on another unit.

- **Lack of process documentation**

The second major hindrance to meeting customer commitments was the lack standardized process documents. This has resulted in conflicts between functional units as to how to go about performing their core tasks. These functional units have separate process documents on how to perform similar tasks that are usually in conflict with each other. Each unit's process documentation was created based on how the activity would affect their respective unit with no regard or knowledge as to how these activities would impact the other functional units. As a result the activities of one functional unit on the network negatively affect the other functional units, resulting in unplanned disruptions to service delivery to customers and peers.

- **Notification failures**

It was discovered that notification of network impacting events mainly on the routine maintenance activities across the three units either was not made in a timely manner or was entirely missed. The main reason was that the groups that were responsible for notifications in each unit did not understand what impact their activities on the network would have on the other units. They also lacked the knowledge of how the other units went about notifying their customers of impending service interruptions due to routine maintenance and what were the service level agreements between those units and the customers in regard to notifications. This lack of understanding has resulted in functional units being penalized by their customers for late notification or no notification on service disruptions based on the service level agreements.

Primary research

Once the common hindrances were ranked, I conducted a primary research by having face to face interviews with the three current managers of IP (N.S), VoIP (R.B), and Wireless Data (C.P) with the view of finding out what was their assessment on the findings of the primary research.

The interviewed managers concurred with the findings of the primary research. They also reiterated that there was a need to create a common culture, common tools and common skill sets. In addition, the management also saw a need to reduce the number of tools utilized by all three lanes through the combining of similar network surveillance tools thus creating a more streamlined model.

4. Redesigning the three functional units to a set of core processes, documenting and reporting

After identifying the performance gaps and problems created as a result of the current situation, we examined each functional unit with regards to its primary functions which in turn were translated in to three core processes aimed at resolving the performance gaps and problems in the current environment as indicated by the primary and secondary research in part 3. These are:

Surveillance, network event ticket opening and notifications

- Consolidation to a single network monitoring tool

There is need to consolidate the network surveillance (Network monitoring) from the current two tool to one. IP and VoIP currently use one tool (Netcool) which has the capability to monitor the Wireless Data network assets. Using on tool would be helpful when time came for cross training across the functional units as team members would be learning how to use one system instead of multiple systems. This would also save money when it came to licensing as the organization will only have to pay for one monitoring system instead of two.

- Automation of network event ticket opening and notification

Though this function is currently being carried out by the tier I of each functional unit, I would be advisable to automate this function based on agreed guidelines as to what event would warrant a ticket to be opened, what event would warrant a notification to be sent out, and what levels of notification each event should trigger.

Some could argue that this would be costly to the network operations department. The figure that is brought up based on efforts by other departments to horizontally integrate is X million.

An analysis of each team reveals that 20% of the total work force in the three functional units is tier I. This translates to about 18 personnel across board.

The following formula can be used to estimate how much this group costs the network operations organization on a yearly basis:

$$XX \text{ (personnel)} * \$XX \text{ (per hour)} * XX \text{ (hours/per week)} * 52 \text{ (weeks/per year)} = \$XXX, XXX$$

This would mean that it would only take 2 years for the network operations department to have a return on their investment and thereafter have a \$XXXXXX reduction in cost of operations per year.

Network maintenance and upgrades (to include break - fix)

- Cross training of the various tier II teams on each other's processes and technologies

This would aid in creating cross functional awareness among members of the three cross functional units. It would also eliminate unnecessary completion between cross functional units.

Members of the existing functional units will also be empowered as their knowledge and skill levels of various technologies in the network operations environment would improve dramatically making them key assets to the organization as they would be able to perform tasks across the board.

The network operations department would also benefit by reducing its work force significantly through attrition. If the Consolidation of network maintenance and upgrades is successful, it is observed that the network operations department would function sufficiently with about two thirds of their current tier II personnel which stands at XX people. This translates to an attrition of 24 personnel resulting in a reduction of operation cost shown by the following formula:

XX(personnel) * \$ XX,XXX(per/year) = \$X,XXX,XXX

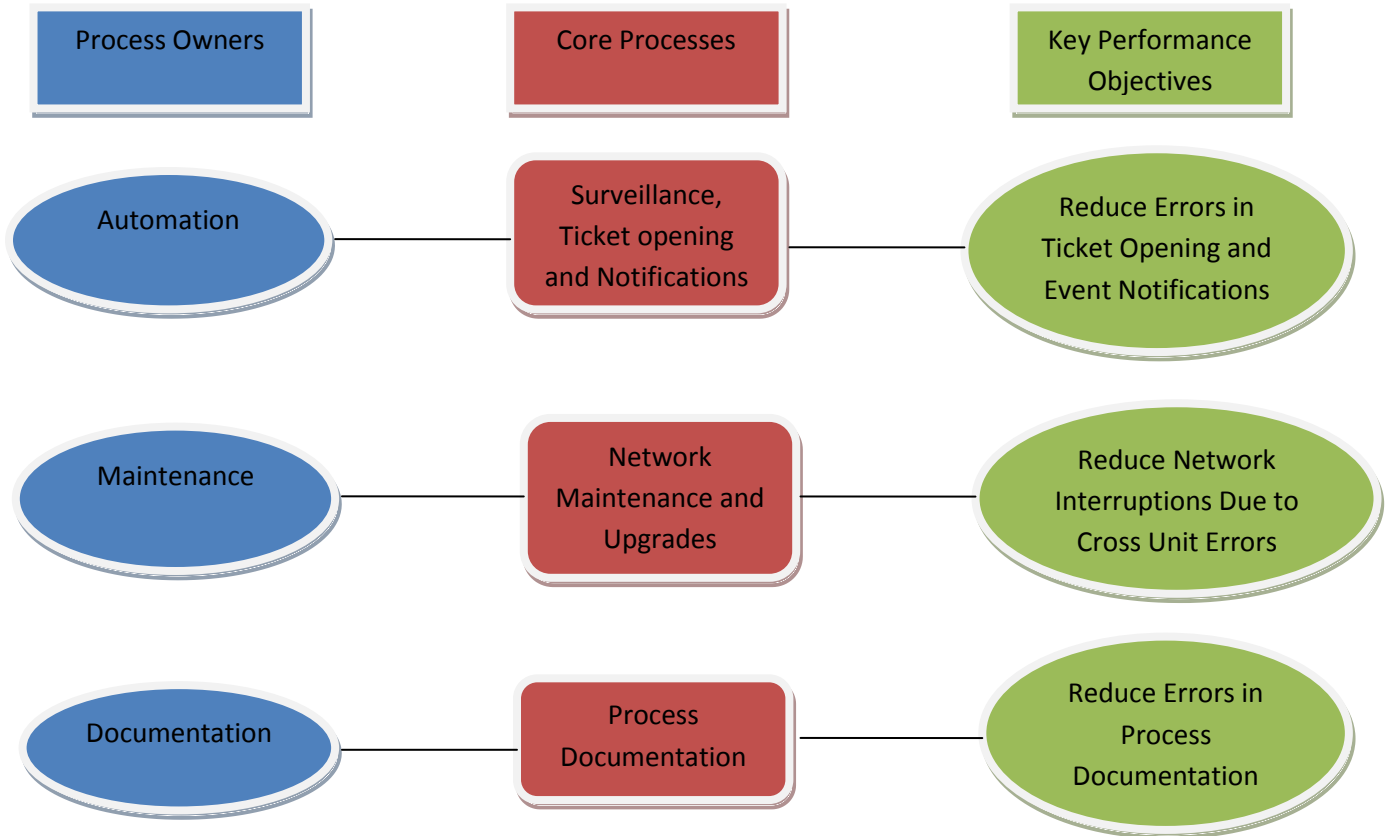
Process documentation

Having thorough and well vetted process documentations is paramount to the success of the new organization. It will aid in a seamless cross training processes and a high standard and quality of service that is provided to stakeholders to include peers. This can be achieved by:

- Consolidating already existing process documents from all three functional units
- Evaluating these documents to reflect the new organization outlook
- Developing of new process documentation as needed.
- Updating the new consolidated processes documentation as needed

The proposed new organization

NETWORK OPERATIONS



Conclusion

Horizontal integration of traditionally vertically integrated organizations is not an easy task.

Resistance to change may come from various vested interests including management that does not want to let go of their turf or have any encroachment on their portfolio of accumulated functions.

Individual team members could also view the new approach as hostile as they may be required to abandon their comfort zones and immerse themselves in uncharted waters in the cases where cross training is required. Senior management may find it difficult to justify the cost of various initiatives that may be essential for the horizontal integration initiative.

However, a horizontally integrated organization has benefits that supersede any of the prior mentioned objections to it. Its structure not only allows greater worker empowerment, but also makes communication throughout the organization an easier task. It requires fewer managers, is less bureaucratic, and can produce more cross-functional employees. My research on the AS Telecoms network operations department clearly indicates this. In the proposed structure, the department stands to gain in the number of cross functional employees through the cross training stage for the network maintenance and upgrade phase. There would be less bureaucracy as all members of all core process groups will have access to each other and to the same process documentation. It also eliminates communication barriers that are a result of the vertical structure.

Chapter 5 – Suggestions for Additional Work

This chapter presents ideas that can leverage the project described in this report. It also highlights areas that can be explored in order to improve on the new horizontally integrated network operations department.

1. Quantitative analysis on the automation process and staffing requirements

Performing quantitative analysis on the cost of the automation of the of network event ticket opening and notification process would provide clear picture of the costs involved rather than basing it of the experience of other organizations that have attempted to horizontally integrate. Also the quantitative analysis of the staffing requirements once the automation of network event ticket opening and notification process is complete would provide the accurate amount of savings in operation costs that the network operations department stands to make.

2. Designing an Appraisal System for horizontal organizations

Designing an appraisal and reward system that links team performance to customer satisfaction would ensure continuous evaluation of the new horizontal organization to ensure that the organization meets its goals and the strategic objective of the company as a whole. The performance of process teams should be measured and team members rewarded as a group based on the specific performance objectives set with senior management.

3. Examining the matrix organizational structure

Though my main focus on the project covered by this report was on horizontal integration, I do believe that the current situation in the network operations department could also be resolved by the matrix organization approach. The matrix structure combines functional specialization with

the focus of divisional structure and uses permanent cross functional teams to integrate functional expertise with a divisional focus. In a matrix structure, employees belong to at least two formal groups at the same time (a functional group and a product, program, or project team). The matrix structure allows technical and general management training across functional areas.

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