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Adjust and Implement the Transition Methodology in ADSM engagements

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Report of Project
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Supervisor: Maria Teresa Galvão Dias (Professor)

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Master in Informatics and Computing Engineering

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Abstract

Wipro Retail is a leading company in providing IT services to retailers. With a very significant presence in the retail business, Wipro Retail is considered one of the largest and most important companies in this area. Given the current financial situation and the most recent market challenges, it is imperative to analyze all the opportunities where there is potential to implement major improvements in the company processes.

Taking into consideration this scenario, Wipro Retail projected a series of refinements to the internal processes and respective methodologies. The project "Adjust and Implement the Transition Methodology in ADSM engagements" arises from this programme and as an initiative undertaken by the heads of Wipro Retail.

ADSM, which stands for Application Development Support and Maintenance, is the Wipro Retail department, which as the name implies, is responsible for the projects under the Support and Maintenance.

Transition is the name given to a phase that takes place in every IT implementation, to be precise, it corresponds to the phase that identifies the Transition from the team that implemented the solution to the team that will provide the support (ADSM team). Although still a subject of little knowledge of the general public, the Transition topic is currently a big word in IT businesses and its importance grows day by day, making the Transition a priority as regards the improvements policy for Wipro Retail.

Due to the nature of the project, with a strong theoretical component, the objectives are a study on the best practices in the area of IT Service Management, jointly with the acknowledgement of the current reality of the ADSM department in relation to the Transition phase. Moreover, there is also the objective of performing an extensive analysis of the most recent Transition methodologies contemplated in Wipro Retail and conclude these activities with the elaboration of a new Transition methodology oriented to the ADSM engagements, which as mentioned previously, is considered the final purpose of the project.

Resumo

Wipro Retail é uma empresa líder na prestação de serviços de TI para os retalhistas. Com uma presença bastante significativa no negócio de retalho, a Wipro Retail é considerada uma das maiores e mais importantes empresas nesta área. Tendo em conta a conjuntura financeira actual e a realidade dos mercados, é cada vez maior a necessidade de analisar todas as possibilidades onde puderão ser implementadas melhorias, tendo consciência que provavelmente essas melhorias irão ter influência tanto nos processos internos como nos externos.

Nesse sentido, a Wipro Retail projectou uma série de refinamentos para as suas metodologias internas e é no seguimento deste processo que surge o presente projecto - ajustar e implementar a metodologia de Transição nos compromissos ADSM.

ADSM, sigla para Application Development Support and Maintenance, é o departamento da Wipro Retail, que, como o nome indica, é o responsável pelos projetos no âmbito do Suporte e da Manutenção.

Transição é o nome dado a uma fase que ocorre em todas as implementações de TI, para ser mais preciso, corresponde à fase que identifica a *transição* da equipa que implementou a solução para a equipa que providenciará o suporte (equipa ADSM). Apesar de ser ainda um assunto de pouco conhecimento do público em geral, Transição é actualmente uma palavra cara para quem está ligado aos negócios relacionados com as TI e a sua importância está a crescer dia após dia, tornando a Transição uma das prioridades no que diz respeito à política de melhorias para a Wipro Retail.

Devido à natureza do projecto, com uma forte componente teórica, os objectivos passam por um estudo aprofundado sobre as melhores práticas na área da Gestão de Serviços de TI, juntamente com o reconhecimento da realidade actual do departamento ADSM em relação à fase da Transição. Além destes pontos, existe também o objectivo de realizar uma extensa análise das metodologias de Transição mais recentes consideradas na Wipro Retail e concluir estas actividades com a elaboração de uma nova metodologia de Transição orientada para os compromissos do departamento de ADSM, que, como indicado anteriormente, se apresenta como o propósito final do projecto.

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Abbreviations

ADSM	Application Development Support and Maintenance
ADM	Architecture Driven Modernization
AMIS	Availability Management Information System
API	Application Programming Interface
ASR	Annual Status Report
ASTP	Application Specific Transition Plan
ATA	Air Transport Association
ATP	Acceptance Test Plan
BA	Business Analyst
BCP	Business Continuity Plan
BDM	Business Development Manager
BIA	Business Impact Analysis
BLA	Business Level Agreement
BPO	Business Process Outsourcing
BS	British Standard
CA	Corrective Action
CAMS	Computerized Asset Management System
CAST	Computer Aided Software Testing
CBM	Condition-based Maintenance
CCTA	Central Communications and Telecommunications Agency
CEO	Chief Executive Officer
CI	Configuration Item
CMDB	Configuration Management Database
CM	Corrective Maintenance
CMIS	Capacity Management Information System
CMMI	Capability Maturity Model Integration
CMMS	Computer-based Maintenance Management System
CMS	Configuration Management System
COBIT	Control Objectives for Information and Related Technology
CSAT	Customer Satisfaction (Analysis)
CSI	Continual Service Improvement
CTQ	Critical To Quality
DD	Due Diligence
DM	Delivery Manager
DR	Disaster Recovery
EAI	Enterprise Application Integration
EAPM	Enterprise Applications Process Methodology/Model
EAS	Enterprise Application Solutions
EPD	Execution Process Document
ERP	Enterprise Resource Planning
FMECA	Failure Modes Effects and Criticality Analysis

FTE	Full Time Equivalent
HMSO	Her Majesty's Stationery Office
H/W	Hardware
IEEE	Institute of Electrical and Electronics Engineers
ISM	Information Security Management
ISO	International Organization for Standardization
ITIL	Information Technology Infrastructure Library
ITSCM	Information Technology Service Continuity Management
ITSM	Information Technology Service Management
itSMF	Information Technology Service Management Forum
ITSMS	IT Service Management System
IVR	Interactive Voice Response
JIT	Just-in-time
KAP	Knowledge Acquisition Process/Phase
KEDB	Known Error Database
KM	Knowledge Management
KPI	Key Performance Indicator
KT	Knowledge Transfer
MOM	Minute of Meeting
MR	Maintenance Request
MS	Managed Services
MTP	Master Transition Plan
ODC	Offshore Development Center
OEE	Overall Equipment Effectiveness
OLA	Operational Level Agreement
OLAP	Online Analytical Processing
ORDW	Oracle Retail Data Warehouse
ORIB	Oracle Retail Integration Bus
ORIM	Oracle Retail Invoice Matching
ORMS	Oracle Retail Merchandising System
ORPAS	Oracle Retail Predictive Application Server
ORWMS	Oracle Retail Warehouse Management System
PDCA	Plan, Do, Check, Act
PM	Preventive Maintenance / Project Manager
PR	Problem Request
PS	Primary Support
QA	Quality Assurance
QIC	Quality Improvement Council
QS	Quality System
RACI	Responsible Accountable Consulted Informed
RCA	Root Cause Analysis
RCM	Reliability Centered Maintenance
RFI	Request for Information
RFP	Request For Proposal
ROI	Return-on-investment
RTF	Run-to-failure
SACM	Service Asset and Configuration Management
SAE	Society of Automotive Engineers
SAP	Organisation SAP Database
SCD	Supplier and Contract Database
SCM	Service Catalogue Management
SDH	Solutions Delivery Head
SI	System Integration
SIP	Service Improvement Plan
SLA	Service Level Agreement

SLM	Service Level Management
SLO	Service Level Objective
SLP	Service Level Package
SLR	Service Level Requirement
SMIS	Security Management Information System
SMTD	System Maintenance and Technical Document
SOP	Standard Operating Procedure
SOW	Statement of Work
SQA	Software Quality Assurance
SQP	Service Quality Plan
SPM	Service Portfolio Management
S/W	Software
TMO	Transition Management Office
TPM	Total Productive Maintenance
TPS	Total Production System
UAT	User Acceptance Test
VBF	Vital Business Function
WSR	Weekly Status Report
WWI	First World War
WWII	Second World War

Glossary

Account Manager	A Role that is very similar to Business Relationship Manager, but includes more commercial aspects. Most commonly used when dealing with External Customers.
Active redundancy	A type of redundancy in which all redundant units are functioning simultaneously.
Active repair time	The period of downtime when repair personnel are active to effect a repair.
Activity	A set of actions designed to achieve a particular result. Activities are usually defined as part of Processes or Plans, and are documented in Procedures.
Agreement	A Document that describes a formal understanding between two or more parties. An Agreement is not legally binding, unless it forms part of a Contract.
Application	Software that provides Functions that are required by an IT Service. Each Application may be part of more than one IT Service. An Application runs on one or more Servers or Clients.
Audit	Formal inspection and verification to check whether a Standard or set of Guidelines is being followed, that Records are accurate, or that Efficiency and Effectiveness targets are being met. An Audit may be carried out by internal or external groups.
Availability	The probability that an item is available for use when required.
Best Practice	A proven Activity or Process that has been successfully used by multiple Organisations.
Business Continuity Plan	A Plan defining the steps required to Restore Business Processes following a disruption.
Configuration Item	Any Component that needs to be managed in order to deliver an IT Service. CIs typically include hardware, software, buildings, people, and formal documentation.
Continuous task	A task that involves some kind of tracking activity (e.g., monitoring a changing situation).
Corrective maintenance	The repair or unscheduled maintenance to return items or equipment to a specified state, performed because maintenance personnel or others perceived deficiencies or failures.
Deliverable	Something that must be provided to meet a commitment in a Service Level Agreement or a Contract.
Downtime	The total time during which the item is not in satisfactory operating state.
Failure mode	The abnormality of an item’s performance that causes the item to be considered to have failed.

Failure	The inability of an item to operate within the defined guidelines.
Guideline	A Document describing Best Practice, that recommends what should be done.
Human error	The failure to carry out a specified task (or the performance of a forbidden action) that could result in disruption of scheduled operations or damage to property or equipment.
Human performance	A measure of human functions and actions under some specified conditions.
Human reliability	The probability of accomplishing a task successfully by humans at any required stage in the system operation with a given minimum time limit (if the time requirement is stated).
Incident	An unplanned interruption to an IT Service or reduction in the Quality of an IT Service.
Information Technology	The use of technology for the storage, communication or processing of information.
Inspection	The qualitative observation of an item's condition or performance.
Key Performance Indicator	A Metric that is used to help manage a Process, IT Service or Activity.
Logistic time	The portion of downtime occupied by the wait for a required part or tool.
Maintainability	The probability that a failed item will be restored to its satisfactory operational state.
Maintenance concept	A statement of the overall concept of the product specification or policy that controls the type of maintenance action to be taken for the product under consideration.
Maintenance	All actions necessary for retaining an item or equipment in, or restoring it to, a specified condition.
Managed Services	Synonym for Outsourced IT Services.
Metric	Something that is measured and reported to help manage a Process, IT Service or Activity.
Mission time	The time during which the item is carrying out its assigned mission.
Overhaul	A comprehensive inspection and restoration of a piece of equipment or an item to an acceptable level at a durability time or usage limit.
Process	A structured set of Activities designed to accomplish a specific Objective.
Redundancy	The existence of more than one means for accomplishing a stated function.
Reliability	The probability that an item will perform its assigned mission satisfactorily for the stated time period when used according to the specified conditions.
Service	Providing something of value to a customer that is not goods.
Serviceability	The degree of ease or difficulty with which an item can be restored to its working condition.
Service Level Agreement	An Agreement between an IT Service Provider and a Customer.
Service Level Requirement	A Customer Requirement for an aspect of an IT Service.
Useful life	The length of time a product operates within a tolerable level of failure rate.

1 Introduction

1.1 Wipro Retail

Retail is a large and complex business area identified by the sale of goods to the general public [Oxf05]. Wherever there is a process of sale with a seller and a final buyer, and a product is exchanged between them in order to be consumed by the buyer, the process is considered a retail process.

Like other business areas, also the Retail business has evolved over time, with a crescent and continuous growth in terms of wealth and income for retailers and for those associated with them. Along with this panorama, also the complexity and quantity of information needed and shared has grown to higher stages, requiring the application of means to support it and leading the Retail business to a superior level.

These circumstances created, unsurprisingly, a great opportunity for the Information Technologies to emerge and bond with the retailers. And as result, the Industries history witnessed one of the major and prevalent relationships being established.

Figure 1.1: Wipro Logo.

In 2006, Wipro Technologies, the global IT Services arm of the multinational Indian company Wipro Limited, in a logical of broadening its business areas, took a step forwards the

Retail world by acquiring the Portuguese company Enabler, a leader in Oracle Retail Implementation and Consulting.

Enabler had its basis as the Information Systems division of Sonae Group, one of the biggest Portuguese retailers. With its high experience in Information Systems for the Retail business, in 1997 the company became independent of Sonae and within only two years it achieved the status of multinational, being recognized as specialist in the implementation of integrated solutions and effective support of retail systems, due to its reliable, first-class service and well engineered solutions delivered to the premier standard, on time and on budget.

Figure 1.2: Enabler Logo.

The crescent and consistent success and optimum feedback given by a vast suite of customers, with presence in more than ten countries worldwide ended up positioning Enabler as the top choice for Wipro's investment in the Retail business.

Figure 1.3: List of clients Wipro [WT10].

With the current name of Wipro Retail and experience and expertise of nearly 300 Oracle Retail consultants, the company offers Retail Services in the areas of Consulting, Application Development and Maintenance, and Process Improvement, having created a niche for itself in the Retail sector.

1.2 Context and Motivation

Wipro is the first CMMi Level 5 certified software services company and the first outside USA to receive the IEEE Software Process Award. It has currently around 95000 employees and had about EUR 3.5 billion in revenues in 2009 [Tec09]. It has interests varying from information technology, engineering, consumer care, lighting, and healthcare businesses and takes action in various industries.

One of those industry sectors is the Retail sector. Wipro Retail specialized in Oracle Retail Implementation and Consulting, has services including Consulting, Process Improvement and Application Development and Maintenance, gathering an enormous experience and expertise in this area.

The present work belongs to this last mentioned area, being inserted in the Wipro Retail department responsible for the support and maintenance related projects – the ADSM (Application Development Support and Maintenance) department.

In a global vision, the scope of the project is associated with the Transition phase, an existent phase in every Software Product life cycle, or more directly to the present project, in each Information System implementation.

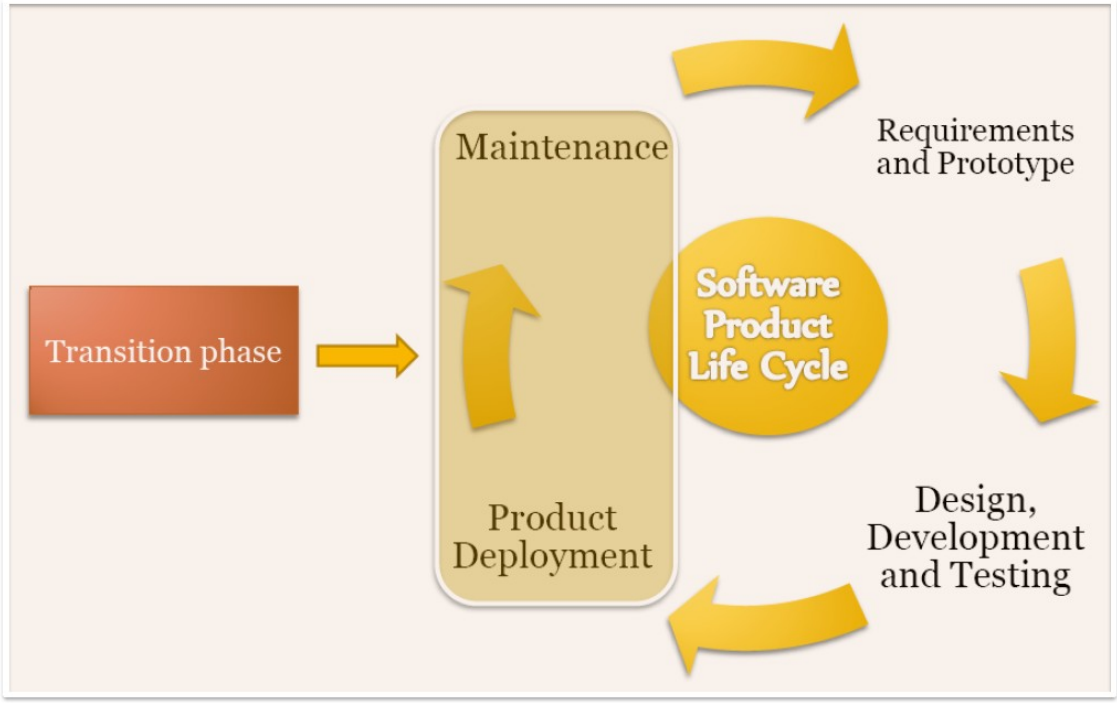

Figure 1.4: Localization of the Transition phase in a Software Product life cycle.

Transition Phase is the name given to the period that occurs during the shift of responsibilities from the team that implemented the Product (Implementation team for future reference) to the team that will be responsible for supporting, maintaining and performing additional developments to it (ADSM team).

In huge implementations like those under the scope of Wipro Retail, with durations in general bigger than 1 or 2 years, the amount of information and enclosed complexity of the applications and associated customizations are enormous, requiring a very well-defined planning and an explicit dedicated time to perform this knowledge transfer and prepare properly the new team to assume all the responsibilities and to be capable of controlling totally the entire implemented system. This process is called "*Transition*".

At the times of the present project, there are 3 different cases belonging to Wipro Retail's scope where the Transition can take place:

- **Wipro Retail Implementation team to Wipro Retail ADSM team:** The Implementation team finishes the respective implementation and the following support and maintenance will be provided by the ADSM team, therefore there will be a Transition from the Implementation team to the ADSM team;
- **Different vendor Implementation team to Wipro Retail ADSM team:** The product was implemented by a different vendor, but the client wants Wipro to perform its

support and maintenance, consequently there will take place a Transition from the vendor Implementation team to Wipro Retail ADSM team;

- **Different vendor Support team to Wipro Retail ADSM team:** The product is already supported by a different vendor, but the client wants to change this activity to Wipro, so in order to have Wipro assuming this responsibility, there will be a Transition from the vendor Support team to Wipro Retail ADSM team.

Nowadays the importance of how companies implement the Transition is so high that it has a consecrated section in every RFI (Request For Information), requiring a detailed explanation of the entire process and description of most of the aspects, playing a vital role in the selection of the proposals by the customers.

Being aware of the current market situation and respective needs for triumphing over the competition, Wipro Retail enforces the modernization and refinement of their own practices and ways of work, applying the most widely accepted best practices in IT Service Management and interrelated auditable standards, with the aim of certifying the organization in that area and consequently granting the company an additional edge point over the competitors.

In this way, in a conjunction of these two key factors, the Transition's rising magnitude and Wipro Retail's continuous progression, emerges the present project – Adjust and Implement the Transition Methodology in ADSM engagements – with the aim of fulfilling a growing internal need and give a valuable and advantageous point to Wipro Retail in future engagements.

Being an assumed project of extreme importance for Wipro Retail and in particular to the ADSM department, the assumptions of the project predict a vast knowledge on the Transition phase, aligned with a familiarization of the department's realities in the Transition process and a keen understanding of the best practices in the market – ITIL v3 (Information Technology Infrastructure Library) considered.

So, in order to achieve those marks the Project's planning foresees, among others, the following activities:

- A study period of the ITIL framework with particular focus on the Service Design and Service Transition volumes due to their higher affinity with the Transition procedures;
- An understanding of the current ADSM's modus operandi and intended direction through:
    - The attendance of several internal meetings and trainings, which subject matter is related with the Transition phase, processes or procedures, with ITIL framework or ISO 20000 standard, or with the conception of Proposals to customers, where the provided Services are ITIL aligned;
    - A series of interviews with ADSM personnel, mainly Implementation or ADSM Project Managers and ADSM Transition Managers. These interviews have also the purpose of collecting data on the Wipro Retail Projects, especially on the Transition phase and contributing on:
    - The elaboration of two Case Studies referring two distinct realities – a project where the Transition phase was too lightly considered and another one where the Transition was well deliberated, with a proper planning and subsequent improved performance;
- An extensive analysis of the existent Transition methodologies inside Wipro, namely the Lifeline methodology and the global Managed Services Transition methodology. Being an older methodology, the focus on the Lifeline won't be as extensive as on the

Managed Services version, but includes a review of the main activities and deliverables of each phase. On the other hand, for the Managed Services Transition methodology, the analysis implies a vast review of all included phases, with a complete look into the respective process and procedures, plus a scrutiny of the projected improvements and an assessment of potential aspects for refinements. In a concise description, the global Managed Services Transition methodology consists of four visible phases plus a hidden phase:

- **Transition Planning (TP)**: The initial phase, where it is planned and projected the tasks and activities for the following phases, defining the respective timelines and milestones and the required deliverables to the Customer;
- **Knowledge Acquisition Phase (KAP)**: It is considered one of the most important phases in the Transition period. This phase is characterized by the several sessions of knowledge transfer, where the Implementation team passes information about the implemented applications and existent environments to the ADSM team;
- **Secondary Support (SS)**: In this phase, the ADSM team "shadows" the Implementation team while it performs the normal Support activities, learning the daily routine. In the Secondary Support phase the Implementation team is still the accountable for the applications outputs and results, while the ADSM team delivers partial support, providing support on some second line issues.
- **Primary Support (PS)**: In this phase, the roles of the two teams exchange, with ADSM being now the responsible for the implemented system and respective outputs and providing complete support on the totality of the issues. In contrast, this time, the Implementation team stays in background, being available to help in case of any doubt or more complex situation.
- **Service Delivery Planning (SDP)**: Unlike the previous phases, the Service Delivery Planning is a hidden phase that occurs in parallel with the Transition phase and posterior Steady State. Its main purpose it to certify that all requirements for delivering the services properly are ensured.

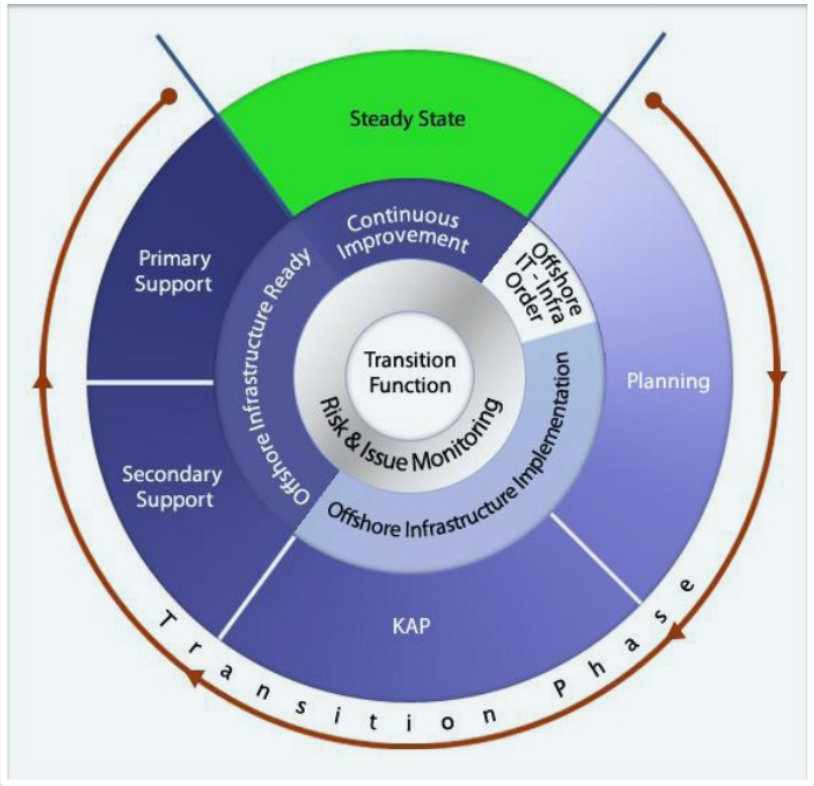

Figure 1.5: Global Managed Services Transition model [WT10].

Once these activities have been accomplished, the Project planned next step and also ultimate purpose of the Project, is to create an adjusted Transition methodology for future ADSM engagements, with basis on the recent and recommended global Managed Services Transition methodology, and, very important, also aligned with Wipro Retail ADSM reality.

The expectations for this new Transition methodology are high, with Wipro Retail's prospects for the future projecting the application of this methodology in the upcoming engagements and considering it will have great impact in the Transition's performance.

1.3 Objectives

The objectives of the present project are closely related with the context and motivation presented in the preceding sub-chapter. The Transition subject and the concerns/interests about it grow every day that passes. Aware of this fact, Wipro, which is always in the front line, with a strategic baseline of continuous evolution and growth, took actions to improve the internal organization and respective methodologies in relation to the Transition.

As result, the present project arises from the implementation of these improvements in one of the Wipro verticals, the retail vertical, which name is Wipro Retail. Being a subject typically managed by the teams related with the Support and Maintenance projects, the Transition topic is under the scope of the ADSM department in Wipro Retail and consequently, this project was proposed by this department.

So, accordingly to what was described in these lines and in the previous chapter and, additionally, taking into consideration the premise of the project – Adjust and Implement the Transition Methodology in the ADSM engagements – aligned with the mentioned requirements to proceed with this premise, the main objectives of this work are the following:

- To achieve a considerable understanding of the ITIL v3 framework and ISO 20000 standard, mainly in the areas related with the scope of the project. Specifically, in the end the author should acknowledge the several books and respective presented services, with a higher knowledge of the Service Design and Service Transition volumes, which are intrinsically more related with the Transition subject;
- To apprehend the current reality of Wipro Retail and ADSM department on the fields related with the Transition and translate it in Case Studies and in the present document. This perception should be achieved through the involvement of the author in the daily routine activities of the ADSM department and through several interviews with ADSM personnel, mainly Transition Managers and Project Managers who had close contact with the Transition phase in their respective projects. These actions aim not only to present information about the Transition phase, but also to give a particular point of view of the true reality of how Transitions are lived, not only considering the theory behind them;
- To analyze and expose the Lifeline methodology and the global Managed Services Transition methodology, with special emphasis on the projected improvements brought by the Managed Services version. With this study, the author should acknowledge the processes and procedures of each sub-phase of the whole phase of the Transition, namely the Transition Planning, the Knowledge Acquisition Phase, the Secondary Support, the Primary Support and the *out of sight* phase – Service Delivery Planning – being familiarized with the main steps of each one, recognizing those which are essential and mandatory and shall take place in every Transition. Also, as result of this study and of the analysis of improvements from the Lifeline methodology to the global Managed Services Transition methodology, the author should understand the path to pursue in the following engagements in order to adjust the current course of action to the desired and requested one.

Finally, taking into consideration the premise of the present project – Adjust and Implement the Transition Methodology in ADSM engagements – arises the following objective:

- Elaborate a new version of the Transition methodology for the ADSM engagements. This new version should be based on the knowledge collected over the preceding activities and should be presented in the form of a document, more precisely, following a structure of a guideline.

1.4 Report Structure

The present report is structured in six chapters.

The first chapter introduces the current work, with a presentation of its proponent, followed by a contextualization of the project, which purpose is to familiarize the reader with the project's subject and to allow him/her acknowledge the key concepts. The chapter continues with a foreword on the proposed objectives and closes with the present overview on the report structure.

Being a project done in the scope of the ADSM (Application Development Support and Maintenance) department of Wipro Retail and with expected impact in the future engagements of this unit, the second chapter is dedicated to the history of Maintenance, with a summary of its evolution and an analysis of the approaches taken over time, making reference to the different techniques and methods used in front of the various realities.

The third chapter presents the ITIL framework, which contains several of the best practices which are the bases for the Transition methodology, subject of the present work. In this chapter, there is a synopsis of the 5 books enclosed in the ITIL framework and it is carried out a study on the application of these volumes in the Maintenance, with special emphasis on the Transition phase.

In the chapter four, the document proceeds with the introduction and review of the Managed Services, the global Wipro framework to handle all the projects. In this chapter there is also an examination of the Lifeline methodology, which was a previous version more oriented to the Transition phase, and the report advances with a more refined analysis of potential improvements that could be implemented through some of the Managed Services orientations.

The chapter five presents two Case Studies done in order to obtain a deeper knowledge of the ADSM department and the respective experience of the personnel in Transition projects, particularly in the presence of two different realities (with and without the application of a specific Transition methodology).

The present report ends with a chapter dedicated to the conclusions of the project. It is performed a critical analysis of the several phases that compose it, assessing the objectives initially proposed and those met in the end, justifying eventual changes that took place during project execution. Following this, there is a reflection on future work, where it is presented both projects that may come in the wake of this project, as those which are result of the study and emerged over its course. In addition, this chapter embraces also a section with personal considerations about the project, with thoughts on its main aspects in a constructive approach.

2 Maintenance Process

2.1 The Beginnings of the Maintenance and its Evolution

A remarkable age in History was the Industrial Revolution. As it is ordinarily acknowledged, it began around 1750 [Ash48] and lasted until the First World War. There was not a single event that defines the beginning of this period, but a sum of numerous occurrences and innovations at the turn of 18th and 19th century that could justify the existence of this so called revolution.

During a period that last between 1750 and 1830, this revolution was confined only to Britain. Knowing their lead, the British restricted the export of machinery, workers and manufacturing techniques and all the know-how only to their empire. However Britain could not keep their "secrets" forever, and through highly offers and certain profitable opportunities, the other countries sought to lure the British know-how to them.

With inventions like the steam engine [Ash00, Stu24], the waterframe and the powerloom, the introduction of the factory system was accomplished and another industry was fated to come to an end – the domestic industry (enterprises operated by families). In the meantime, the iron industry was also being revolutionized, with the principal points in this case, being the introduction of the smelting by pit-mined coal and the application of the steam engine to blast furnaces.

It was a period of rapid growth for the production sector of the industries and it was to be expected that episodes of overproduction would occur. As this happened and stockpiles were created to keep the surplus, the first recognized "maintenance" approach was created – the shutdown maintenance [BH06].

Through the passage of the years, the machinery of that time suffered a successive increase of failures and when it happened, the production was halted for repairs. This caused the producer to lose his client and although repairs were made quickly as possible to resume production, a lost client was in general not recoverable. As result, the manufacturers intentionally started producing in excess and stockpile their goods and when they had enough backlogs of goods, they would shutdown their factory to repair or rebuild their machinery, normally for a period of one or two months. These kind of planned shutdowns were the first real planned maintenance and continue to be practice in our time. Actually, this scheme of overproduction and subsequent shutdown was continued as a maintenance practice well into the 20th century [BH06].

The turn of the 20th century radically changed manufacturing practices as well the manner in which maintenance was executed. There were two main events that contributed to this – the creation of the modern assembly line by Henry Ford and the First World War.

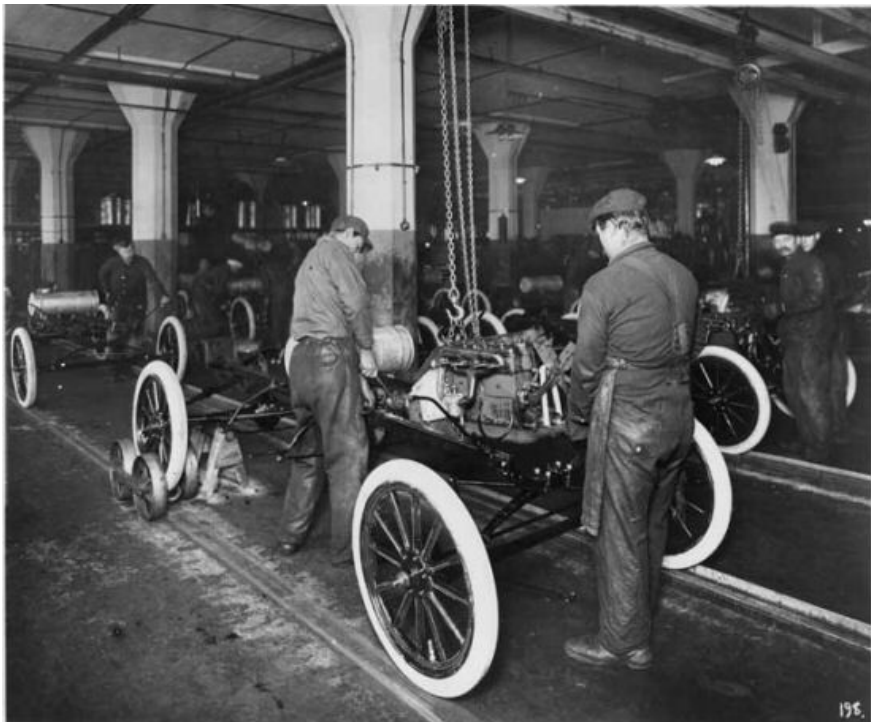

Figure 2.1: Henry Ford's assembly line [Lib13].

Before the 20th century, about 75% of the world's industrial production was concentrated in the Western Europe, with Britain accounting the biggest part, 20% for the United States industries and the remaining 5% for the rest of the world. All over the period that followed, Europe's percentage share of world industrial production progressively decreased, with the United States went ahead of the British for the first time and ever since.

Among the responsible for this, were Frederick Winslow Taylor, who refined the processes and tools used in the different stages of steel manufacture, what allowed workers to produce considerably more with less effort, and Henry Ford, who with the introduction of the modern assembly line, is considered the individual most responsible for the impressive productivity boost in the United States [Bod02].

In 1903 the Ford Motor Company was incorporated and built numerous different automobile models till the year of 1908. In that year, Ford presented the "Model T" and announced that this model would be the only automobile that he would produce. The time required to assemble each automobile from this model was about 728 minutes and Ford was producing about 100 of them a day. In the next years, Ford improved his assembly line and the production time dropped to about 93 minutes, at the same time the Ford Motor Company was growing and from 100 automobiles per day, it passed to around a thousand. Ford based his labor in the principle that assembly lines stoppages could not be tolerated and through a "planned maintenance" he could achieve the smooth and constant flow in his assembly line [For22].

At 1914, the First World War initiated and with it, profound changes came to the maintenance procedures. The First World War brought a new kind of war – the trench warfare. The troop mobility seemed somehow distant and this trench warfare took hold along many fronts. One of the roles of the aircraft, recently invented at the time, was of reconnaissance, identifying enemy trench locations to inform the artillery, but unluckily to them, the artillery of

the time had many difficulties to hit small targets like the trenches what resulted in frustration to the pilots who started to try to resolve the problems with their own hands. The use of fuselage-mounted machine guns and the drop of bombs by hand rapidly became a common practice.

The role of aircraft rose successively as the war evolved and with it also the numbers of aircraft being employed near the main fronts. That resulted in more hours in the air and consequently in more system failures, what in aircrafts tends to be fatal. This fact, mainly important to the pilots for the obvious reasons, turned them to be more cautious and led them to develop a kind of pre-mission checklist to ensure the plane was in condition to make a “safe” flight [BH06]. This occasional procedure evolved along the war into a common maintenance check-off sheet. After a while and by gathering the experience of lots of pilots, this maintenance check-off sheet became an indispensable document that would accompany every pilot and would be an essential guide to maintenance and repairs.

By the end of the war, the use of this document became a standard operation and a pre and post-flight obligation, for both military and nonmilitary aircraft. The First World War brought also the armored tank. Its idealization was envisioned by an English engineer that was sent to observe and report on the European theater. The engineer designed a tractor equipped with a protective box of armor plate and machine guns. When Winston Churchill, then British First Lord of the Admiralty, read the engineer officer’s memorandum explaining the armored tractor, he was positive that it could be mark the difference and be a key weapon.

Willie as it came to be known, built from a Holt Caterpillar Tractor, was the first armored tank, the Allied First World War tank. Willie could effortlessly overrun enemy positions, but its immobility caused to be it a death trap, making its reliability a critical issue. That made the tank’s maintenance a real important matter and end up with some refined modifications being applied to the tank. Every aspect of the tank was taken into account and their maintenance carefully respected. Engine oil was changed on a timebased schedule and fuel, air filter and tread replacements were basic maintenance actions.

The weaponry was wholly torn down, cleaned and reassembled daily in combat. These are a group of maintenance operations that were created originally with the military and are recognized as very important in the maintenance history [BH06].

Following the First World War, there was a calm period relatively to the ways in which maintenance was designed and executed. The United States saw their industry being totally influenced by the ideas of Henry Ford as he kept refining his assembly line and the others manufacturers followed him. Between 1920 and 1921 there was a depression, though it was short, it was an event that would affect the automobile industry and the hegemony of Ford in this industry. It was quickly forgotten by the public at large as a result of the growing economy that resulted from the spread of efficient mass production manufacturing techniques, but the depression period had an effect that last even after it.

The United States automobile market dominance met new elements, the General Motors and the Chrysler Corporation, joint to the until then solitary leader, the Ford Motor Company [Cha64]. This new competition brought innovation to some manufacturing practices and consequently improving efficiencies to this area.

In 1929 the major depression hit the stock market and many aspects of American life were changed significantly, including the manufacturing industry. The crash confirmed the trend toward concentration in the larger manufacturing companies and transformed that process since many of the small producers, even though they struggle immensely, they ended seeing their business end. The depression was a clear turn in the existent perspectives about the overproduction, the producers reviewed their mentality from manufacturing more and more to suit an insatiable demand for goods, to a more realistic approach where there was a scaled down market which had needs below the potential production existent at the time. When the depression was already less felt, the count of manufacturers was sharply inferior but on the other hand, the competition among the remaining was greatly intensified. In addition, the marketing side of the business gained more force and attention, but still not at the cost of technological development. What kept the main attentions was the competition to produce better

for less money. These were advantageous times for the consumer, where he had access to a large range of products, with good quality and competitive prices.

However those were times where the innovation in maintenance was minimal. The preoccupation in manufacturing in smaller quantities, but in superior and improved financed plants and the additional production capacity produced that went well beyond required, took the place for other concerns. Complications in production lines, though being some problematic, were a low level risk to either profits or sales and many plants operated with a very little number of maintenance personnel. The required maintenance personnel were brought accordingly to the situation to fix unexpected failures. It was typical to bring maintenance employees just for the time of a planned maintenance shutdown and shrink the staff when the phase was concluded [BH06].

Figure 2.2: Little Willie [Tan03].

The coming of the Second World War forced a change of the existent perspectives to a one more focused in the technology of manufacturing and more aware of a good maintenance.

With the war, came an ever-increasing demand on production and consequently manufacturing manpower shortages. This stimulated the technology of manufacturing to develop more mechanization to counterbalance the manpower insufficiency and to meet both the growing demand for war materials and consumer goods. In fact, the technological advances applied in weaponry manufacture were also applied by many enterprising individuals to manufacture consumer products. These events turned the reliability of equipment and production downtime a major concern to the manufacturers and with it, the need of high-quality maintenance to keep all operative the maximum time possible.

The appearance of the maintenance expert brought to organizations a new kind of maintenance programs, from that moment, planned, periodic and preventive programs were developed in order to improve this aspect of the manufacturing industry. Maintenance was no more a “reactive only” process, it took a position in the company’s business, requiring a well-thought plan and predictive resources. In the next years, many innovations were to come and over time, were progressively more the manufacturers who followed this step into this new kind of maintenance.

In 1926, Sakichi Toyoda founded Toyoda Loom Works, now known as Toyota Industries Corporation, which quickly became the Japan’s largest loom manufacturing operation at the time. Ten years later, Toyoda decided to expand his company in order to embrace an automobile manufacturing group. Kiichiro Toyoda, his son, was the one who took the responsibility for managing this new business in the company. Kiichiro Toyoda then traveled to the United States

to study the Ford Motor Company in Detroit and learn about the American automotive industry. With a close familiarity of the Ford production system and new additional ideas to put in practice, Kiichiro returned to Japan to not only adjust the system to smaller production quantities, but also to improve on the basic practices. Additionally to the smaller production capacities, the new implemented system managed to more accurately control the logistics of materials input to correspond with production consumption. Kiichiro developed a complete network of suppliers proficient enough to supply component materials when needed. Within the company, the system was referred to as JIT - just-in-time [Ohn88].

Following the Second World War, due to its devastating effects and the new government, the company was forced to completely change their structure and readjust all the plant operation they had. The new named Toyota Automobile Group created a sustainable operation regardless of severe lack of material and diminished financial capacities. Taiichi Ohno, the manager of machining operations, improved existing procedures to maintain assembly operations in a sustainable way. Ohno is recognized for the adoption of the assembly line production system, materializing a derived version from the book "Today and Tomorrow" first published in 1926 by Henry Ford, and the supermarket operating system used in the United States. This concept presented the basis of a continuous supply of materials like what happened in a supermarket, where there is continuous supply of goods to the consumer. With the quality innovations presented by Shigeo Shingo, a quality consultant hired by the company, and the integration of statistical process control techniques brought by William Edwards Deming, it was defined the TPS – Toyota Production System.

In the 1970s, a major supplier of the Toyota Car Company, called Nippon Denso, developed a new way to look into maintenance, under the idea of achieving the highest reliability from equipment in support of production, which was called Total Productive Maintenance [Ohn88].

"Total (all employees) Productive (creating greater return on investment) Maintenance (by caring for the plant and equipment so as to maximize its performance and output)"

[Ken06]

TPM had as base a partnership among the production staff, maintenance, engineering, and technical services towards the improvement of the called overall equipment effectiveness (OEE). TPM, which persists at our time, addresses the entire production system life cycle and construct a solid, shop floor-based system to prevent all losses. It is a program which seeks the perfection of zero breakdowns and zero defects, being the following indicated losses, the six main losses that TPM aims to eliminate [Mob02, Kel06]:

- Startup or restart losses;
- Equipment breakdown;
- Idling stoppages;
- Setup and regulations slowdowns;
- Reduced capacity;
- Quality-related losses;

For the Japanese, the TPM had five pillars that helped define the role of each employee in the partnership and were the basis of superior business practices for the maintenance operations [Mob02, RKM08, NAS00a].

1. *Improving equipment effectiveness*. This consists in continuously search for the previously mentioned six big losses, locating the causes for the inefficiency of some equipment or to implement improvements.
2. *Involving operators in daily maintenance*. The operators should be a part listened in the setting up of the maintenance activity. This aspect refers to the need of having operators integrated when the maintenance is planned and not exactly when it is performed or there is a maintenance procedure like maintaining equipment.
3. *Improving maintenance efficiency and effectiveness*. Here the idea is to let the operator be an active part in the collective domain of the maintenance department and the maintenance technologies, where the operator is enclosed in the planning and scheduling the maintenance activity, with intentions like the identification of a better preventive and predictive maintenance and definition of tool locations.
4. *Educating and training personnel*. This point is extremely important in the TPM approach [Mob02]. It concerns to every person in the company: Operators are trained to operate their equipment properly and maintenance personnel to maintain them properly. As operators will perform many of the inspections, execute machine tunings, and other preventive tasks, this preparation involves teaching operators how to perform those inspections and how to work with maintenance in a partnership.
5. Designing and managing equipment for maintenance prevention. TPM takes into account that equipment generally is an expensive asset and should be viewed as a productive asset for its entire life. Owing to this, the design of equipment that can be easily operated and maintained is a priority aspect in the TPM methodology. In concordance with previous points 2. and 3. ideas from operators and maintenance technicians are welcomed to help engineers identify, design and procure more effective equipment. Long-term costs can be reduced by evaluating the costs of operating and maintaining the new equipment during its life cycle.

In the 1960s, the Federal Aviation Administration from the United States launched a program to study the reliability in the industry in order to respond to the rapidly increasing maintenance costs, deficient availability and alarming effectiveness of traditional time based preventive maintenance. The base of the study was around challenging the traditional approach to scheduled maintenance programs, which conceived that every item on a part of complex equipment had an operating time limit at which absolute renovation is necessary to guarantee safety and operating reliability. Few years later, the U.S. Air Transport Association (ATA) presented a document entitled "Maintenance Evaluation and Program Development" for use with the Boeing 747 aircraft [MSG68]. In 1970, this document was adjusted to handle two other wide-body aircraft: DC-10 and L-1011 [MSG70] and in 1974 the United States Department of Defense requested United Airlines to prepare a detailed document where the processes used in maintenance programs for the civil aviation sector were meticulously expressed [Mou92]. As result, came out a report named “Reliability Centered Maintenance” [NAS00b]. The main conclusions of this work were that the idea of a strong correlation between age and failure rate is false and that for the majority of the cases a time based maintenance is not the correct approach [NAS00a]. From that moment, numerous other publications on the topic have appeared [NH78, Smi93, Aug99].

“RCM is a systematic methodology used to identify the preventive maintenance–related tasks necessary for realizing the inherent reliability of equipment at the lowest cost.”

[Dhi06]

The Reliability Centered Maintenance philosophy aims to institute design-related priorities that can help preventive maintenance in a successful way [WC01]. These preventive maintenance tasks should re-establish safety and reliability to their original levels in the occurrence of system or equipment deterioration. Another goal of this approach is to collect the data needed for design improvement of items with verified unsatisfactory original reliability. All these objectives are idealized to be accomplished with minimal total cost. An implementation of this approach should respect its principles [NH78]:

Principle I connotes that the concern of RCM is more directed to the maintenance of the system and equipment functionality than maintaining the functioning of individual components.

Principle II makes reference to the three types of maintenance tasks: failure-finding, time-directed, and condition directed. The first ones are concerned with noticing hidden functions that have failed to provide any warning of pending failures. The time-directed tasks are programmed as considered appropriate. The last ones are executed as the circumstances indicate for their necessity. Run-to-failure is a conscious decision in RCM.

Principle III means that RCM is concerned with providing consistency in the maintenance of all types of equipment.

Principle IV denotes that the aim of RCM is to maintain the inherent reliability of the product or equipment design. This means that maintenance at the best of times can only reach and preserve the planned reliability.

Principle V makes reference to the objective of reducing the rate of malfunctions or to get better secondary damage resulting from failure.

Principle VI means that RCM collects data from the final results and feeds it back to improve design and future maintenance.

Principle VII connotes that in RCM the safety is a top priority and should be ensured first of all, and then the next decisive factor is the cost effectiveness.

Principle VIII means that RCM is not excessively concerned with simple failure rate but highlights the connection between operating age and failures experienced in the field. More precisely, RCM takes care of failure statistics in an actuarial fashion.

Principle IX indicates that in RCM a failure could be either a loss of function or a loss of acceptable quality.

Principle X connotes that the maintenance tasks must be cost-effective and technically feasible.

Principle XI means that RCM is a key factor in maintaining equipment and system function, not just operability for its own sake.

After RCM first introduction many other maintenance programs emerged calling themselves RCM. In order to restrict this proliferation, the Society of Organization Alternatives 99 Automotive Engineers has developed and issued SAE JA-1011, which provides some level of standardization for the RCM process. This standard characterizes the RCM method as posing

seven central questions from which a wide-ranging maintenance approach can be defined [Dhi06].

Question 1: What are the functions and associated desired standards of performance of the asset in its present operating context (functions)?

In response to this question, there are several points that the process must assure. One is the definition of the operating context of the asset and another one is the identification of all functions of the asset or system. Also, it's necessary to attribute a kind of standard (a verb, an object and a performance standard) definition to all function statements, quantified in every possible case, assuring that the level of these performance standards are at the same level of performance sought by the owner or user of the asset or system in its operating context.

Operating context can be described as the situation in which the asset is operated. The failure management policy should be in accordance to the situation, even though if the equipment is similar.

"For example, a single pump in a system will usually need a different failure management policy from a pump that is one of several redundant units in a system. A pump moving corrosive fluids will usually need a different policy from a pump moving benign fluids."

[RKM08]

This example makes reference to often case where the protective devices are frequently overlooked, and oppositely in a RCM process all their functions should be identified. The last point says that the owner or user shall state the level of performance that the maintenance program shall be considered to keep up.

Question 2: In what ways can it fail to fulfill its functions (functional failures)?

The answer to this question can be expressed in a simple manner. The process must guarantee that for each function, all the possible failure states associated are identified. That way, listing functional failures is an easy task. For example, if a function is to keep production between 20 and 40 pieces, then functional failures might be related to the incapacity of producing more than an X number, or less than Y number.

Question 3: What causes each functional failure (failure modes)?

According to FMECA (failure modes effects and criticality analysis), the term failure mode is applied in the way that RCM makes use of the term functional failure.

However, the RCM community uses the term failure mode to refer to the incident that triggers functional failure. [RKM08] One standard criterion for a process that spots failure modes is that all failure modes likely to cause functional failures shall be identified and the method used to decide what constitutes that probable failure mode shall be acceptable to the owner or user of the asset. Another criterion says that the level of causation to detect a failure mode shall be one that makes possible to identify an appropriate failure management policy. In addition, lists of failure modes shall take account of failure modes that have occurred before, failure modes that are currently being prevented by existing maintenance programs and failure modes that have not yet taken place, however they are considered to be reasonably probable in the operating context. Also, these lists of failures modes shall include any event that is expected to instigate a functional failure, including deterioration, human error whether caused by operators or maintainers, and design defects.

Question 4: What happens when failures occur (failure effects)?

There are some criteria for identifying these failure effects. They shall explain what would go on if no particular task were done to take care of the failure. The failure effects shall include information about the failure, what kind of effects they provoke (on the environment, on production, on operations, on people) and what must be done to restore the function of the system after the failure. According FMECA, failure effects can be expressed in terms of the effects at the local level, at the subsystem level, and at the system level.

Question 5: In what way does each failure matter (failure consequences)?

In order to identify these consequences, the standard's criteria say that the measurement of failure consequences shall be presented as if no specific assignment was done to anticipate, prevent, or detect the failure. Moreover, the consequences of every failure mode shall be separated by hidden or evident failure modes and that this categorization process shall clearly differentiate events (failure modes and multiple failures) that have safety or environmental consequences from those that have economic consequences (operational and nonoperational consequences).

RCM assesses failure consequences as if nothing is being done about it. Some people are tempted to say, "Oh, that failure doesn't matter because we always do (something), which protects us from it." [RKM08] However, RCM is thorough, it checks the assumption that this action that "we always do" actually does protect them from it, and it checks the assumption that this action is worth the effort.

This clear distinction between evident and hidden failures, carried out at the beginning of consequence assessment, is one of the characteristics that most visibly distinguish RCM.

Question 6: What should be done to predict or prevent each failure (proactive tasks and task intervals)?

When selecting the failure management policies, this selection shall be performed as if no specific task is currently being done to anticipate, prevent, or detect the failure and take into account the fact that the conditional probability of several failure modes will increase with age, that the conditional probability of others will not alter with age, and even the conditional probability of others will reduce with age. In the failure management section shall be defined how to accomplish that every single scheduled task will be technically viable and worth doing.

"Scheduled tasks are tasks that are performed at fixed, predetermined intervals, including continuous monitoring (where the interval is effectively zero)."

[RKM08]

These tasks shall assure that in the case of an evident failure mode that has safety or environmental consequences, they will reduce the probability of the failure mode to a level that is acceptable to the owner or user of the asset. On the other hand, if it does not have safety or environmental consequences, the direct and indirect costs of performing the task shall be less than the direct and indirect expenses of the failure mode when calculated over analogous periods of time. If it is the case of a hidden failure mode where the associated multiple failure may cause safety or environmental consequences, the task shall decrease the probability of the hidden failure mode to a degree that will reduce the probability of the associated multiple failure to a level that is tolerable to the owner or user of the asset. In contrast if it does not have safety or environmental consequences, the direct and indirect costs of performing the task shall be less than the direct and indirect costs of the multiple failure plus the cost of fixing the hidden failure mode when considered over equivalent periods of time.

There are three common types of tasks that are regarded as to be proactive in nature, specifically, on-condition tasks, scheduled discard task, and scheduled restoration tasks.

An on-condition task is a scheduled task used to detect a potential failure; it is also known as predictive task, condition-based task, referring to condition-based maintenance (CBM) or condition-monitoring task, since the task monitors the condition of the asset. A scheduled discard task is task that involves discarding an item at or before a precise age limit not considering its state at the time. To be considered as a scheduled discard task it must have a clearly defined age at which there is an increase in the conditional probability of the failure mode under concern. Also, a sufficiently large proportion of the episodes of this failure mode shall happen after this age to reduce the probability of premature failure to a level that is acceptable to the owner or user of the asset.

A scheduled restoration task is a task that restores the capability of an item at or before a precise interval, despite its condition at the time, to a point that provides a satisfactory probability of survival to the end of another specified period. To be an acceptable scheduled restoration task, it shall be clearly defined an age at which there is an increase in the conditional probability of the failure mode under concern. Also, the task shall re-establish the resistance to failure (condition) of the component to a level that is acceptable to the owner or user of the asset. In addition, a sufficiently large proportion of the incidents of this failure mode shall take place after this age to reduce the probability of premature failure to a level that is tolerable to the owner or user of the asset.

Question 7: What should be done if a suitable proactive task cannot be found (default actions?)

This question shall be post under consideration of the unscheduled failure management policies. This policies must define what decisions shall be taken in a case like this, like deciding to let an asset run to failure, and the decision to change something about the operating context of the asset.

Since its first release and mainly in the 1990s, many companies have tried to apply the RCM approach. A big part of them realized many benefits to using RCM. Some of the important ones are shown in figure 2.3 [Mou92, Dhi99, Dhi02].

RCM can improve quality by delivering a clearer definition of maintenance tasks and objectives and an enhanced understanding of equipment capacity and capability. It also clarifies the equipment set-up specification and requirements and redefines equipment operating procedures.

There is greater cost effectiveness thanks to less unnecessary routine maintenance and elimination of expensive failures, using clear operating policies and more understandable guiding principles for acquiring new maintenance technology.

Another positive characteristic of this approach is the improvement of performance, achieved by an emphasis on the maintenance requirements of crucial equipment elements and the elimination of repair intervals. Moreover, the maintenance tasks are shorter and more focused what results in more economical shutdowns.

Also, a greater motivation of individuals and better teamwork is noticeable, brought about by the highly-structured group approach to evaluating and concentrating on maintenance problems.

The RCM approach prioritizes the safety and in that way it applies clear strategies for preventing failure modes which can affect safety or impinge upon environmental regulations. It also improves maintenance of existing protective devices and performs a methodical review of safety implication of each failure.

Another benefic characteristic of RCM is that it reduces life-cycle costs by optimizing the maintenance workloads and presents a more comprehensible view of spares and staffing requirements, and also improves the functional life of expensive items as a result of an increased use of on condition maintenance tasks.

In addition, all the maintenance data and knowledge held by individuals on the equipment is saved. The use of this comprehensive maintenance data base provides a better comprehension of the equipment in its operating context, what leads to more precise drawings and manuals and allows maintenance schedules to be more flexible to changing conditions.

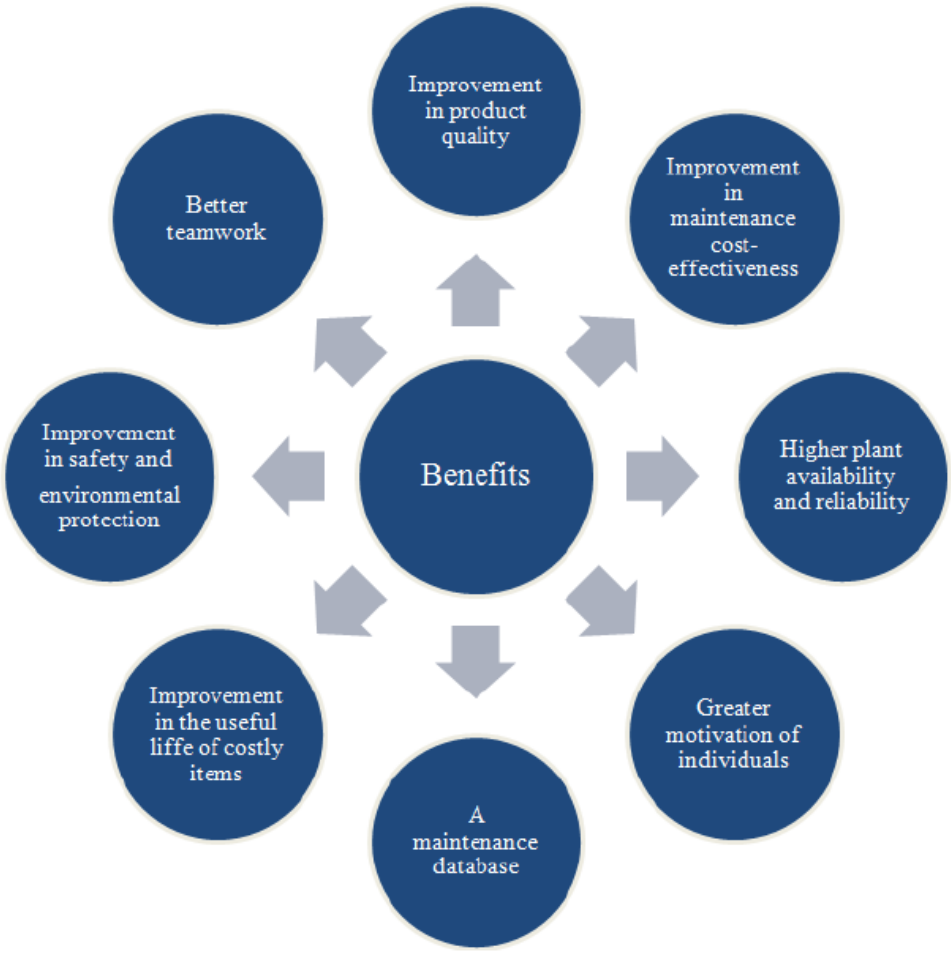

Figure 2.3: Important RCM benefits.

However, past experiences pointed out that sometimes the introduction of RCM has also resulted in failure, History illustrates cases of failure deriving from several situations [Dhi06]. The application of RCM, should be careful and well-planned, a superfluous or hurried RCM application may result in excessive emphasis on failure data or cause the analysis to be performed at a level below the required. Other pointed problems were related to the number of personnel involved in the application of RCM and when this implementation was only applied by the maintenance department.

Moreover, at the time RCM program was first developed, the majority of production engineers considered that machinery had a predetermined and limited life and required cyclic major renovation to maintain acceptable levels of reliability, but this assumption is nowadays considered invalid. If machinery and plant systems are accurately planned, installed, operated, and maintained, they will not break down, and their functional life is almost infinite. This new reality turns RCM a too expensive program to be implemented when comparing to the profits obtained from its application [Mob02, HP98].

In the course of time, several maintenance approaches emerged. Although, most of these were just adaptations from the previously seen TPM and RCM philosophies with a little amendment in details connected to company's business or to follow the trends in vogue, not adding a real value or innovation in the maintenance area. However, over time, the technologic evolution brought a component that remains since its first appearance and it is now essential for most companies – the Computer-based Maintenance Management Systems.

Managing the maintenance tasks in any service requires an effective organization. Also required is a precise, comprehensive and simply accessible Database of considerable information. Manual systems fail under the load of the vast quantity of information created and required by maintenance. With this fact into account and due to its ability to store, retrieve, analyze, categorize, and display huge amounts of data efficiently and accurately, the computer gained recognition as a powerful instrument for maintenance. A computer-based maintenance management system (CMMS) is an integrated suite of computer programs and data files designed to present its user with a cost-effective means to administer the considerable quantities of data that are created by maintenance and inventory control organizations. Additionally, these systems can provide the capability to successfully manage both the human and capital resources in a plant. CMMS is an instrument used to support in improving maintenance and associated activities. The CMMS only manages data that have been input to it or that it has generated as a result of data input, it does not control the maintenance operation [RKM08, WC01].

A CMMS implementation can bring many valuable aspects to a company, mainly to the maintenance department, through a set of programs and functionalities that properly applied can boost the operations in this sector. But while it is true that these systems manage vast amounts of data, they are still some points where these systems fail to manage the maintenance function. Many of the CMMS systems that are commercially available have limited management capability, they store massive amounts of data, manipulate the data, automate recurring tasks, and generate standard reports, but these alone do not provide all the tools needed to have an effective maintenance organization. An additional restriction on the success of a CMMS is self-imposed. The infrastructure and work culture in many plants and facilities limit effective management of the maintenance function no matter what improvements are attempted. The addition of a CMMS will have a restricted effect on the ability of maintenance managers to improve conditions. Moreover, CMMS systems fail as a management tool as a consequence of the way the system is implemented. Poor initial planning results in misdirected resources, longer implementation time, loss of interest on the part of key personnel, and underfunding of the project. Insufficient training or training at the wrong time results in misinterpretation and confusion for the users. This leads to a lack of confidence in the CMMS with the result being a diminished use. Inappropriate or deficient data initially loaded to the system results in inadequate information available from the system. This also results in a loss of confidence and again a lack of use. Accurate planning and implementation are the keys to a successful CMMS.

2.2 Maintenance of Computer-Based Systems

Today's maintenance has a worldwide cost in the order of billions of Euros. The maintenance practices are market driven, especially for the manufacturing and process industry, service suppliers, and other related processes [Zwe96]. As a consequence of this, there is an explicit need for effective asset management and maintenance practices that can influence in a constructive way success factors such as price, quality, proper delivery, or innovation.

Future will turn engineering equipment even more computerized and complex. The importance of software maintenance will increase significantly with further computerization of equipment, approaching, if not equalling or exceeding, hardware maintenance. Besides that, factors such as increased computerization and complexity will result in greater emphasis on

maintenance activities linked to areas related with cost effectiveness, quality, safety, and human factors [TT97]. Is increasingly necessary to have a creative thinking and to realize new strategies to recognize all potential benefits and turn them into profitability.

When associated to software, the concept of maintenance has a totally different meaning from the one it assumes in any other engineering area. Actually, in general, maintenance is intended as the process of keeping something in working order, in an operational state. The fundamental concept is the deterioration of an engineering artefact as a result of the use and the passing of time. Consequently the purpose of maintenance is to keep the artefact's functionality as what was defined and registered at the time of release.

This notion of maintenance logically does not apply to software, since software does not deteriorate with the use and the passing of time. On the other hand, from the first times of electronic computing, the need for adjusting a portion of software after delivery has been a constant presence. Change is the essence of routine maintenance and long-term evolution. The Lehman's laws of evolution [Leh80, Leh84] state that successful software systems are destined to modify over time. The need to adapt software to interact with external entities, like people, organizations, and artificial systems is another fact that also brings significant modifications. In reality, software is noticeably flexible and, for that reason, it is often alleged as the easiest part to adjust in a system [Bro87]. Any solutions that can advance maintenance productivity are certain to have a huge impact on software costs and the overall profitability of companies. Innovation in software technology of the last two decades has altered the computing scenery. However, in spite of all those investments, the cost of maintenance, rather than decreasing, is getting higher.

This process of making alterations to the software system or part of it to improve performance or other attributes, correct errors, or adapt to a deviation in the use environment can be defined as "Software Maintenance" [IEE91, Omd88]. In the early years of computing, software maintenance was only a little constituent of the overall software life cycle, but recently it has become a critical factor. Some references point that in 1955 the proportion of time spent on maintenance activities was about 23%, then in 1970 it increased to about 36%, and the calculation for 1985 was approximately 58% [Boe81, Ste81].

Following some of the facts and figures associated with software maintenance:

- About 70% of the overall software cost are software maintenance activities [Sta96].
- Over four fifths of the life of a software product is spent in maintenance [Cha86].
- Modifications and extensions requested by users report for over 40% of software maintenance activities [Sta96].
- A study presented by Hewlett-Packard accounted that about 60 to 80% of its software research and development staff members are occupied in maintenance of existing software [Col97].
- The maintenance of existing software can spend over 60% of all development related efforts [Sta96].
- It is estimated that for all software systems combined, the maintenance component of the overall effort is growing about 3% annually [Com79].
- A study performed by the Boeing Company reported that each year, on average, 15% of the lines of source code in simple programs are changed, 5% are changed in medium programs, and 1% are changed in difficult programs [Com79].

Companies expend more time on maintenance of existing software than on development of new software. In accordance with several studies, software maintenance accounts for the next percentages of total software costs: 90 [Erl00, Moa90], 75 [Eas93], 60–70 [Huf90, Por98], and

66 [Har87, TJ92]. Earlier studies reported the following percentages: 50 [LS81], 70 [Eas93], and 65–75 [McK84].

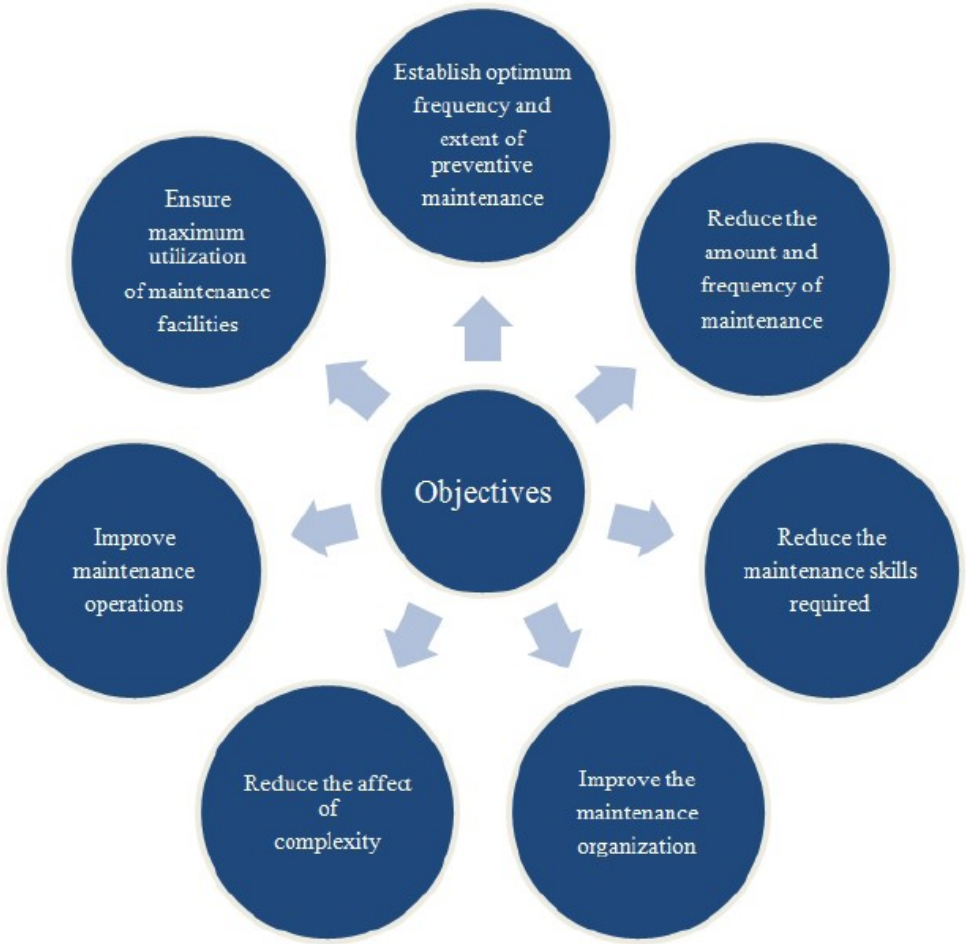

Figure 2.4: Important objectives of maintenance engineering.

These high maintenance costs have significant practical repercussions, as they limit the capabilities of IT department to bring new systems that might be of considered value to their companies. Outsourcing has emerged as a main strategy to address these problems and cut software costs. Outsourcing may be a cost-effectively reasonable alternative today, but it also has recognized negative consequences, such as the risk of losing power over the company's vital software assets, or not being able to react to change requests in an appropriate mode. Moreover as the global economic circumstances change, outsourcing is increasingly considered a less viable solution to software problems in the long term, given that today's software technology allows companies to develop and maintain software themselves in an efficient way, and therefore in the future fewer companies will outsource their software operations.

As a result, it could be argued that the rising magnitude of outsourcing is a sign of the failure of software technology to deliver solutions to assure the software needs in a cost-effective manner. In the past, the function of maintenance was identified with fixing errors in released systems. Nowadays, it is known that after the first release, software will pass through many complex processes. Service improvements are inevitable in the evolution of any successful software, as the business environment changes, users come up with more requirements. The first law of Lehman absorb this fact [Leh80, Leh84]:

"A program that is used in a real world environment necessarily must change or become progressively less useful in that environment".

It is common to find out that a large percentage of changes were made to meet ever changing user needs. How software can better support the work and increase productivity is a constant thought in user's mind. He reflects on how to reengineer existing software, in order to take benefit of technological advances such as new platforms and architectures, develop software structure, get in touch with new clients, or be successful in a new market.

Whether to enhance a program with a new user requirement, fix a bug, or support a new platform, to comprehend "change" corresponds to know how to apply a sequence of program alterations to satisfy a given cause of change. Each change may cause unpredicted ripple effects that cause the need for yet more changes. To be aware of this also means to recognize those impacts [EM01]. However changes are implicit in the perspective of long-term software evolution, which often leads to several releases of similar programs. Even though methods for effective management of software modifications must essentially concern to software component architecture and code, they should also see outside them to consider this historical perspective of changes that eventually take place to software. The real size and complexity of programs make change difficult. The difficulty of understanding and sustaining a program is proportional to its size and complexity, programming is intrinsically complex. Whether using a machine language or a high-level programming language, generally it is not possible to simplify a program below a certain threshold called as program complexity [Bro86].

There are two main factors that establish this complexity threshold:

1. The problem of the complexity and its solution at the conceptual level.
2. Programs can state a problem solution, but also can deliver a sort of issues related to answering a problem by a computer.

These two aspects raise a problem. Since they cannot be plainly separated one from one another in program components, they limit the possibility of using a conventional decomposition ("divide and conquer") in eliminating software complexity. Normally it's not possible to make software conform to the rules of a LEGO form, which is a common practice in hardware construction [Bas97, Ran99]. This problem of reaching pure decomposability is a significant distinction between hardware and software. Another main difference is that hardware is not changed as often and in such radical manners as software. The difficulty of cleanly sorting out components by means of decomposition inevitably encumbers changeability.

If possible, maintenance operations should not corrupt the reliability and the structure of the subject system, neither they should lower its maintainability, otherwise future changes will be gradually more complicated and costly to implement. But the observable facts show this is not the case for real-world maintenance, which often leads to the aging of the subject system [Par94]. This fact is presented by the second law of Lehman [Leh80, Leh84]:

"As an evolving program changes, its structure tends to become more complex. Extra resources must be devoted to preserving the semantics and simplifying the structure".

Any change that affects component interfaces or global system properties may unpredictably impact many components, what can turn a single change to be totally a challenge. Once a change has been introduced, it gets buried in the existing code, becoming almost indistinguishable. After some time, it becomes unclear which fraction of the code concern to

which source of change and its purpose to be there. Maintenance problems intensify during software evolution, due to the large number of changes that get implemented over time. This fact associated to the lack of documentation makes the potential future changes even harder. To accomplish higher levels of automation for control changes during evolution, it is needed to understand this process at architecture and code levels, where it is possible to repeat or undo changes at will.

In the early days of computing when the ground rules of programming paradigms were formed, the difficulty of program evolution did not collect much credit. Evolution problems and the suitability of different techniques to concentrate on them depend on any factors, such as the size of a software system, the type of similarities and differences among system releases, or quality requirements, such as reliability, memory consumption or time performance [CT01].

ISO [90091] presents three classes of software maintenance: problem resolution, which groups the detection, analysis, and rectification of software problems causing operational difficulties; interface modifications, needed to face the modifications that are made to the hardware system controlled by the software; functional expansion or performance improvement, which may be required by the purchaser in the maintenance phase. It is also recommended in this phase to try to apply all the changes following the same procedures used for the development of software. However, when solving problems, it is possible to use short-term repairs to reduce downtime, and only after implement permanent and higher changes. Second IEEE [12198] there is a fourth category of maintenance in addition to the corrective, adaptive, and perfective maintenance stated by Lientz and Swanson [Lie80]. IEEE defines them as follows [12198]:

- Corrective maintenance: reactive modification of a software product performed after delivery to correct discovered faults.
- Adaptive maintenance: modification of a software product performed after delivery to keep a computer program usable in a changed or changing environment.
- Perfective maintenance: modification of a software product performed after delivery to improve performance or maintainability.
- Emergency maintenance: unscheduled corrective maintenance performed to keep a system operational.

Next figure illustrates the associations that exist between ISO and IEEE categories.

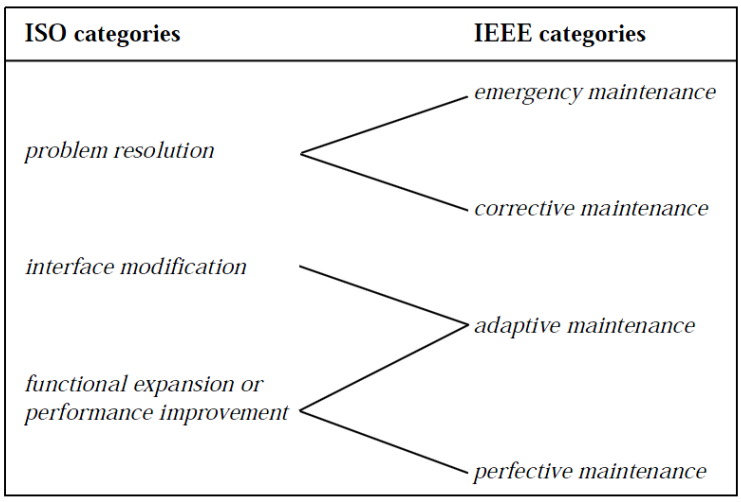

Figure 2.5: Correspondences between ISO and IEEE maintenance categories [CC00].

3 ITIL framework and its Application in Maintenance

3.1 Introduction

Maintenance has evolved and increasingly gained importance through the time. What was a secondary choice at the beginning is nowadays an extremely important element in a company's business and responsible for a large part of the income. Maintenance grew both in quality and specialization and its accomplishment became a profound contribution to the company's success. At the same time, the presence of the Information Technologies within the large companies is increasingly stronger. It has become gradually more acknowledged that information is the primary strategic resource that any organization has to manage. The evolution in this area brought to the organizations, the possibility for seeing their departments and services integrated, sharing information at different levels. More than ever, processes belonging to a department started to have influence in others departments caused by the flux of information that quickly spread between their services. This new reality brought the need of an implementation that could cover all the aspects and services within an organization, like the production or maintenance services. Between 1989 and 1995, the Her Majesty's Stationery Office (HMSO) in the United Kingdom on behalf of the Central Communications and Telecommunications Agency (CCTA) published a framework that illustrates the best practices in the IT service management. It is a framework that allows the administration of IT and all related services to have a continual focus on the constant progress and improvement of the quality of service delivered in this IT area, from both a business and a customer perspective. This characteristic is one of the key factors that turned ITIL a worldwide success and has contributed to its prolific practice and to the major benefits achieved by those organizations applying the techniques and processes all over their organizations. Some of these widely accepted benefits include [ACX07]:

- The improvement of user and customer satisfaction with IT services
- The enhancement on decision making and optimized risk

- The improvement of resource management and usage, directly leading to financial savings from reduced rework and lost time
- The improvement of service availability, resulting on increased business income and returns
- The improvement of time to market for new products and services

ITIL goes beyond to encourage the creation of regular channels of communication between service providers and service consumers to identify requirements and concerns regarding interconnected processes. The output of such exchanges are projected to form Service Level Agreements (SLAs) which clearly delineate what the business expects of the IT function (and in reality what the IT function can wait from the business taking into consideration these inputs and information) and the performance indicators in place to calculate fulfillment against the agreed terms.

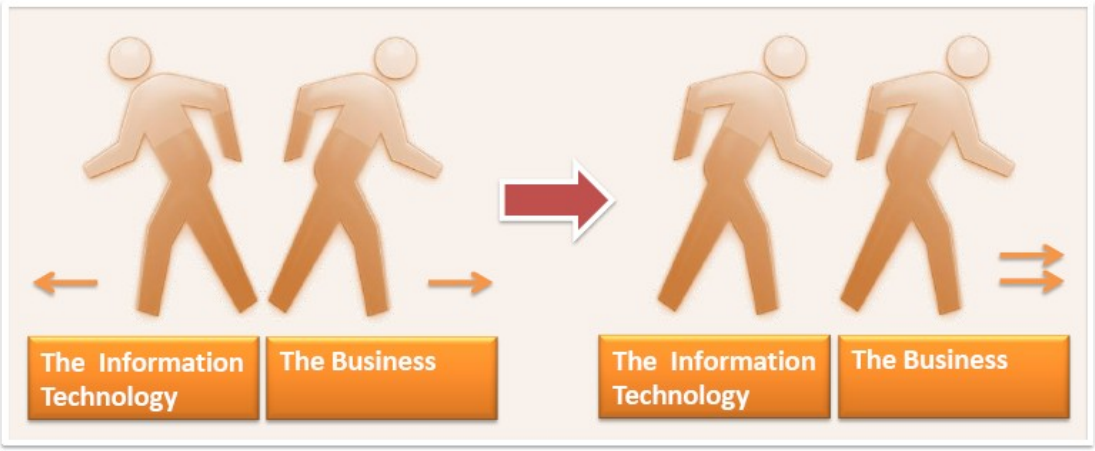

Figure 3.1: Aligning IT with the business.

The early use of this framework was primarily confined to the United Kingdom and Netherlands. Between 2000 and 2004, the second version of ITIL was published as a set of revised books. The initial version of ITIL consisted of a library of 31 related books associated to all aspects of IT service provision. This initial version was then improved and replaced by seven, more strongly connected and reliable books combined within an overall framework. This second version became commonly accepted and is currently used in many countries by thousands of organizations as the base for effective IT service provision. In 2007, ITIL V2 was superseded by an improved and consolidated third version of ITIL, consisting of five core books related to the service lifecycle, jointly with the Official Introduction, which covers the IT Service Management as a whole [ACX07].

"Service Management is a set of specialized organizational capabilities for providing value to customers in the form of services."

[ACX07]

Each one of the five base books is related to a stage of the service lifecycle. Initially there is a classification and study of business requirements in Service Strategy and Service Design, then a passage into the live situation within Service Transition, to live operation and expansion in Service Operation and Continual Service Improvement.

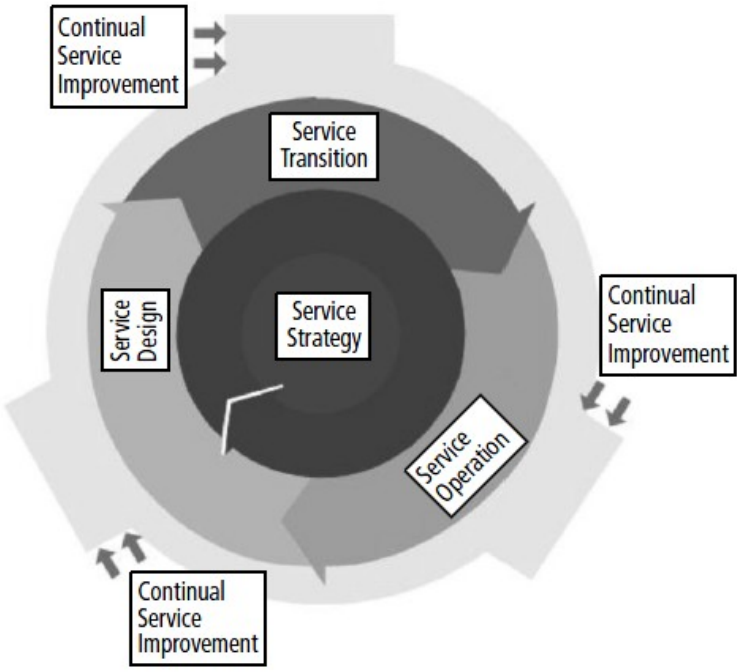

Figure 3.2: The Service lifecycle [ACX07].

What Does ITIL not Do?

ITIL does not center on a particular industry sector or restricted geographically, nor points who within the company is going to be responsible of implementing each process. ITIL does not address the manner of using the tools that are required to put into service these processes, and it does not offer organization or corporate certificates. ITIL offers a personal certification, but this certification does not guarantee service quality and this is a frequent misapprehension within IT organizations. Lots of vendors and consultants present services in restructuring ITIL, and numerous customers search for such guidance. Nevertheless, ITIL does not advocate an organizational structure, or have need of any specific management and it does not instruct any particular workflow design or process. Here is a quote from ITIL:

"For each of the processes described in this book, one or more roles are identified for carrying out the functions and activities required. It should be noted that organizations may allocate more than one role to an individual within the organization, or may allocate more than one individual role. The purpose of the role is to lace responsibility rather than to create an organizational structure"

[Gro07]

Before Adopting ITIL

Practice guides presented by ITIL are flexible and appropriate for a diversity of organizational contexts. Nonetheless, each organization is different and should have its specific

distinctive requirement. When implementing ITIL, an organization should be aware that ITIL cannot be adopted or straightly put into practice because it is not a set standard and it is not possible to use what ITIL says to the letter. IT is a service function granting value, effectiveness, and support to the organizations and its strategy. Enterprises should center on service and business performance development first and not processes. An organization should establish just as much as necessary processes to answer the question for any particular situation to avoid accumulating processes that don't add value or are not definitive.

The ISO 20000 Standard for IT-Service Quality Management

The ISO 20000 Standard suite offers a source for a quantifiable quality standard for ITService Management. It is the supplementary development of the former British Standard (BS) 15000. Hence the original orientation of the ISO 20000 standard was resultant from the BS 15000. On the foundation of the ISO 20000 standard companies can be audited and certified to attest the conformity with this international standard. Additionally the ISO 20000 promotes the realization of an integrated process approach for the IT-Service management within an organization. The standard comprises all characteristics which are pertinent to put into action an optimal service management. Hereby the standard specially focuses on the service providers prospects. ISO 20000 consists of two parts. The first slice encourages the implementation of an integrated process approach to successfully deliver managed services to meet the business and customer requirements (ISO 20000). The second slice is a policy of practices and explains the best practices for service management within the range of the first part. The purpose of the standard focuses on the presentation of a universal reference standard for all enterprises which provides services to internal and/or external customers. Owing to the great value of the communication between service provider and service recipients, one of the major objectives of the standard is the designation of a common glossary for the service providers and their customers. To ensure the terms of a defined quality of the IT-Services, the ISO 20000 Standard stipulates and describes the essential processes which an organization has to apply to grant quality proofed IT-Services. For that reason the ISO 20000 Standard describes a collection of management processes which are based on the ITIL processes and increase this process model. The ISO 20000 enables enterprises to put into service standardized processes for IT-Service management and supports the enhancement of the IT-Service quality management.

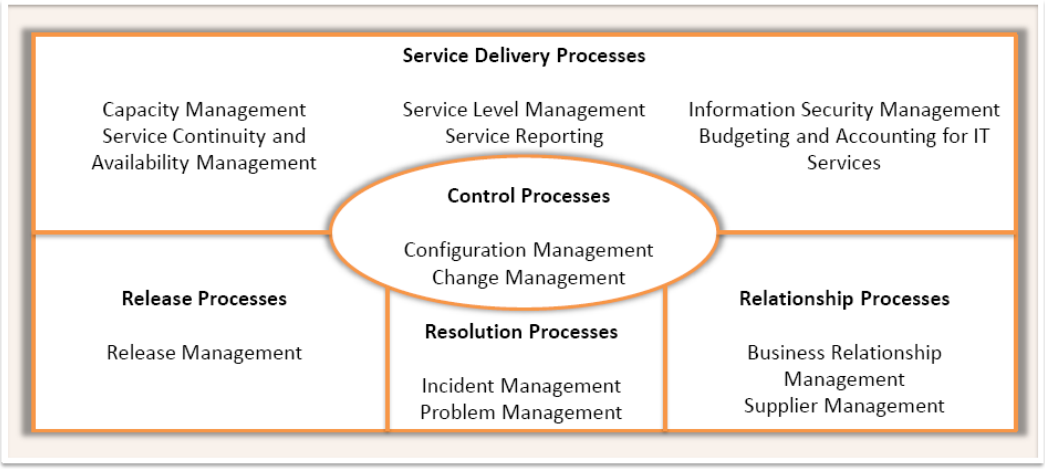

Figure 3.3: Structure of the ISO 20000 model for IT-Service Management (Adapted from: [Dis09]).

3.2 Overview of the ITIL v3 library

3.2.1 Service Strategy

The Service Strategy tries to achieve a profound understanding of customer desires. Therefore, to achieve success, the services provided must be perceived by the customer to deliver satisfactory value in the form of outcomes that the customer wants to achieve. A service strategy cannot be created or live in isolation of the self strategy and culture of the organization that the service provider belongs to. The service provider may exist within an organization exclusively to deliver service to one particular business unit, to service multiple business units, or may operate as an external service provider serving multiple external businesses. The value created by the adopted strategy must be sufficient to the customers and all of the service provider's stakeholders. The recognition of the existence of competition should also be considered by the Service Strategy. It should be aware that each side has choices, and how that service provider will differentiate itself from the competition. All providers necessitate a service strategy. For this reason, the Service Strategy publication sits at the base of the ITIL V3 lifecycle. It provides assistance to all IT service providers and their customers, to assist them operate and succeed in the long term by building a lucid service strategy, distinctively a precise perception of:

- What services should be offered
- Who the services should be offered to
- How the internal and external market places for their services should be developed
- The existing and potential competition in these marketplaces, and the objectives that will differentiate the value of what you do or how you do it
- How the customer(s) and stakeholders will perceive and measure value, and how this value will be created
- How customers will make service sourcing decisions with respect to use of different types of service providers
- How visibility and control over value creation will be achieved through financial management
- How robust business cases will be created to secure strategic investment in service assets and service management capabilities
- How the allocation of available resources will be tuned to optimal effect across the portfolio of services
- How service performance will be measured.

Financial Management

This process embraces the task and practices responsible for administering an IT service provider's budgeting, accounting and payment requirements. In financial terms, it grants the business and IT with the quantification of the value of IT services and the value of the assets which are the base of those services, and the qualification of active estimations. Responsibilities and actions of the IT Financial Management do not exist exclusively within the IT finance and accounting area. IT financial information is used by various segments of the organization. As

they need, they collect, communicate and preserve the financial data, enabling the spreading of information to feed vital decisions and activities.

Service Portfolio Management (SPM)

SPM is responsible for a proactive management of the investment that flows across the service lifecycle. This management involves the services in the concept, design and transition pipeline, in addition to live services identified in the different service catalogues and retired services. SPM is an ongoing process, which includes the definition of inventory services and validation of the portfolio data. It is also responsible for aligning, prioritizing and balancing supply and demand requirements and for allocating resources and charter services.

Demand Management

This process is a crucial facet of service management. A demand inadequately managed is a starting point of risk for service providers as consequence of uncertainty in its demand specifications. Excess capacity creates cost without generating value that grants a source for cost revitalization. The function of Demand Management is to recognize and influence customer demand for services and the provision of capacity to fill these demands. Viewing at a strategic aim this can engage analysis of patterns of business movement and user profiles. At a tactical level it can implicate use of differential charging to promote customers to use IT services at less busy times. A Service Level Package (SLP) defines the degree of service and warranty for a Service Package and is designed to satisfy the requirements of a pattern of business activity.

3.2.2 Service Design

This is an vital element within the business change process, Service Design is a stage within the overall service lifecycle that is responsible for the design of proper and innovative IT services, including their architectures, processes, policies and documentation, to meet current and future agreed business requirements. Service Design is responsible to design the services that meet agreed business outcomes and the processes that support the service lifecycle. Also, in the Service Design are identified and managed the risks and defined secure and resilient IT infrastructures, environments, applications and data or information resources and capability. Service Design produce and maintain plans, processes, policies, standards, architectures, frameworks and documents to support the design of quality IT solutions, having a big contribution to the overall improvement in IT service quality.

Service Catalogue Management (SCM)

The Service Catalogue makes available a significant resource of information on the IT services delivered to the business by the service provider organization, guaranteeing that business areas can perceive a precise, reliable picture of the existing IT services, their details and status. The end of Service Catalogue Management (SCM) is to present a single, reliable source of information on all of the settled services, and certify that it is widely accessible to those who have permission to access it. The main contribution for this data comes from the Service Portfolio and the business via either the Business Relationship Management or the Service Level Management processes.

Service Level Management (SLM)

Is from SLM responsibility to negotiate and document the suitable IT service targets with the business, and then to supervise and produce reports on delivery against the established level of service. SLM has the purpose of ensuring that all active services and their performance are calculated in a consistent, professional mode throughout the IT organization, and that the services and the reports produced are in accordance with the needs of the business and customers. The principal information provided by the SLM process consists of Service Level Agreements (SLA), Operational Level Agreements (OLA) and other support agreements, and the production of the Service Improvement Plan (SIP) and the Service Quality Plan.

Capacity Management

This process contains business, service and component capacity management all through the service lifecycle. It is essential and a key success factor in managing capacity to guarantee that it is considered at the design stage. The function of Capacity Management is to present a point of focus and management for the entire capacity and performance-related matters, relating to mutually services and resources, and to reach the capacity of IT to the agreed business demands.

The Capacity Management Information System (CMIS) is the foundation of a successful Capacity Management process. Information enclosed within it is stored and analyzed by all the sub-processes of Capacity Management for the provision of technical and management reports, including the Capacity Plan.

Availability Management

This process comes in order to present a point of focus and management for every availability-related issues, concerning to services, components and resources. It also ensures that availability targets in all fields are considered and achieved, and that they meet or exceed the current and future agreed requirements of the business in a cost-effective way. Availability Management aims to constantly optimize and proactively develop the availability of IT services and their supporting organization. There are two major aspects:

- Reactive activities: All events regarding service unavailability are monitored, measured, analyzed and managed beneath this process.
- Proactive activities: Improvement of availability through proactive planning, design, recommendation pass by this process.

These activities should take into account the reliability, availability, maintainability and serviceability at both service and component level, principally those supporting Vital Business Functions (VBFs). The Availability Management Information System (AMIS) is the base for this process and contains all of the measurements and information necessary to present the proper information to the business on service levels. Additionally, the AMIS also supports the production of the Availability Plan.

IT Service Continuity Management (ITSCM)

Since technology is a central part of most business processes, constant or high availability of IT is decisive to the endurance of the business as a whole. This is reached by establishing risk reduction measures and recovery options. In order to maintain the recovery capability in an

effective level, it is necessary to perform a ongoing maintenance. This is the main purpose of ITSCM. Along within IT services it aims to match the established needs, requirements and timescales of the business. ITSCM involves a group of activities throughout the lifecycle to make sure that, once service continuity and recovery plans have been created, they are maintained aligned with Business Continuity Plans and business priorities. The alignment between ITSCM policy strategies and ITSCM plans with business plans is the recipe to the success of an ITSCM process. A regular completion of Business Impact Analysis and Risk Management exercises can be the factor for its accomplishment.

Information Security Management (ISM)

This process needs to be taken into account within the whole corporate governance framework. Corporate governance is the group of responsibilities and practices performed by the board and executive management with the objective of providing strategic orientation, ensuring that the targets are achieved, guaranteeing that the risks are being controlled properly, and attesting that the enterprise's resources are used efficiently. The intention of the ISM process is to align IT security with business security and ensure that information security is well managed in every service and Service Management activities, such that:

- Information is accessible and valid when required (availability)
- Information is observed by or disclosed to only those who have permission (confidentiality)
- Information is complete, precise and protected against unauthorized alteration (integrity)
- Business transactions, in addition to information exchanges, are reliable (authenticity and non-repudiation).

ISM should preserve and enforce an overall policy, in concert with a suite of supporting controls within an integrated Security Management Information System (SMIS), aligned with business security guidelines and strategies.

Supplier Management

In order to support IT service goals and business prospects, the Supplier Management process should guarantee that suppliers and the services they provide are correctly managed. The function of the Supplier Management process is to acquire value for money from suppliers and to ensure that suppliers act upon the targets enclosed within their contracts and agreements, while meeting all of the terms and conditions.

The Supplier and Contract Database (SCD) is a fundamental source of information on suppliers and contracts and should include all of the information required for the management of suppliers, contracts and their associated services.

3.2.3 Service Transition

The function of Service Transition is to provide services that are required by the business into operational use. This action is a result of the passage of information from the Service Design to Service Transition that then transfers to the Operational stage every necessary element required for continuing operation and support of that service. If business circumstances,

assumptions or requirements have changed since design, Service Transition will be responsible to promote modifications to deliver the required service. Service Transition focuses on implementing all aspects of the service, not just the application and how it is used in standard circumstances. It needs to guarantee that the service can operate in predictable extreme or abnormal conditions, and that support for failure or errors is available. This requires enough understanding of the potential business value and who it is delivered to or judged by, the identification of all stakeholders within supplier, customer and other areas and the application and adaptation of service design, including arranging for adjustment of the design, where the requirement is detected during transition. Some of the principal processes to Service Transition, like the Change Management, the Service Asset and Configuration Management and Knowledge Management, are whole lifecycle processes and have impact across all lifecycle stages.

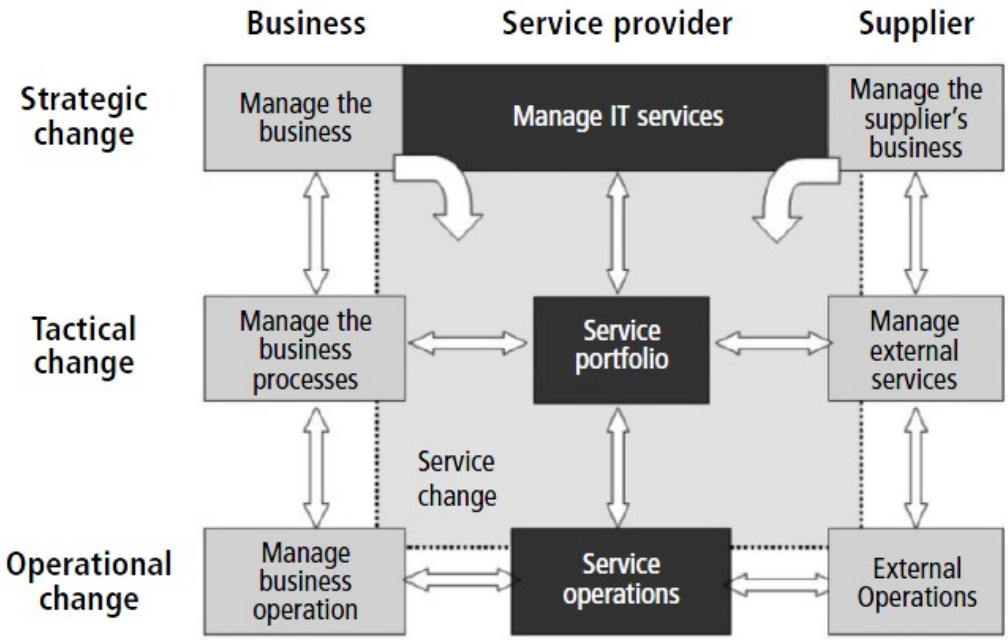

Figure 3.4: Scope of change and release management for services [ACX07].

Change Management

The purpose of the Change Management process is to guarantee that standardized methods are used for the proficient and prompt treatment of all changes, that all alterations are saved in the Configuration Management System and that overall business risk is optimized. Change Management ensures that modifications are recorded, evaluated, authorized, prioritized, planned, tested, implemented, documented and reviewed in a controlled mode. The process addresses all service change, which is the addition, modification or removal of an authorized, planned or supported service or service component and its associated documentation. Hence change management is significant across the whole lifecycle, having an impact to all levels of service management – strategic, tactical and operational.

Reduced errors in new or changed services and faster, more precise implementation of changes are delivered to the business by the Change management; it allows limited funds and resources to be focused on those modifications to accomplish greatest advantage to the business.

Service Asset and Configuration Management (SACM)

This process supports the business by providing precise information and control across all assets and associations that compose an organization's infrastructure. The purpose of SACM is to identify, control and account for service assets and configuration items (CI), protecting and guaranteeing their integrity all over the service lifecycle. The scope of this process also extends to non-IT assets and to internal and external service providers, where shared assets require to be controlled. To manage great and complex IT services and infrastructures, SACMrequires the use of a supporting system known as the Configuration Management System (CMS).

Knowledge Management

The purpose of Knowledge Management is to ensure that the right person has the right knowledge, at the right time to deliver and support the services required by the business. This delivers more efficient services with improved quality, clear and common understanding of the value provided by services and relevant information that is always available. This process is responsible in transforming raw and unusable data into valuable assets, what happens at the core of Knowledge Management, in the Data-Information-Knowledge-Wisdom structure. This is illustrated by the Service Knowledge Management System, holding important information and understanding derived from Asset and Configuration Data.

3.2.4 Service Operation

Service Operation is concerned in delivering established levels of service to users and customers, and to manage the applications, technology and infrastructure that support delivery of the services. It is only for the duration of this stage of the lifecycle that services really deliver value to the business, and it is the responsibility of Service Operation personnel to ensure that this value is delivered. Service Operation has the objective of managing conflicting goals like the internal IT view and external business view, the stability and responsiveness, the quality of service and cost of service, and the reactive and proactive activities. For each of these conflicts, personnel must maintain an even balance, as disproportionate focus on one side of any of these will result in poor service. Many organizations find it helpful to consider the "operational health" of services. This identifies "vital signs" that are critical for execution of Vital Business Functions. If these are within normal ranges, the system or service is healthy. This leads to a decrease in the cost of monitoring, and enables personnel to focus on areas that will guide to service success.

Event Management Process

"An event is a change of state that has significance for the management of a configuration item or IT service."

[ACX07]

An event may point out that something is not working properly, leading to an incident being logged. Events may also signify normal activity, or a call for routine intervention. Event management is related to monitoring, but in a different way. Event management produces and detects notifications, whilst monitoring verifies the status of components even when no events are taking place.

The detection of an event may occur by a CI sending information about that happening, or by a management tool polling the CI. Subsequent to an event has been noticed it may lead to an Incident, Problem or Change, or it may merely be logged in case the information is needed.

Response to an event may be automated or may require manual intervention. If actions are needed then a pre-programmed trigger message can alert support staff.

Incident Management Process

Incident can be defined as an unexpected interruption to an IT service, or a cut in the quality of an IT service. A failure of a configuration item is also considered as an incident, even if that has not yet impacted service. The goal of Incident Management is to re-establish normal service as soon as possible, and to reduce the undesirable impact on business operations.

Incidents are frequently detected by event management, or by users contacting the service desk. Incidents are categorized to classify who should work on them and for trend analysis. Additionally they are also are prioritized in accordance with the urgency and business impact. In case that an incident cannot be resolved promptly, it may be escalated. Functional escalation sends the incident to a technical support team with fitting expertise; hierarchical escalation connects proper levels of management. After the incident has been examined and diagnosed, and the resolution has been tested, the Service Desk should ensure that the user is satisfied prior to close the incident. An Incident Management tool is indispensable for tracing and managing incident data.

3.2.5 Continual Service Improvement

The purpose of the Continual Service Improvement (CSI) is to preserve value for customers through the continual analysis and enhancement of the quality of services and the overall development of the ITSM service lifecycle and essential processes. In order to progress each stage in the service lifecycle, CSI combines various principles, practices and methods from quality management, Change Management and capability improvement, as well as the current services, processes, and associated activities and technology. For most organizations the CSI concept has not advanced further than the discussion stage. For many organizations, CSI becomes a project when something has failed and severely impacted the business, but when the issue is resolved, the concept is quickly forgotten until the next great failure occurs. To be successful CSI must be embedded within the organizational culture and becomes a routine activity. The CSI Model provides a way for an organization to recognize and manage suitable improvements by contrasting their current position and the value they are giving to the business, with their long-term targets and objectives, and identifying any gaps that exist. This is done on a continual base to attend to changes in business necessities, technology, and to guarantee high quality is maintained.

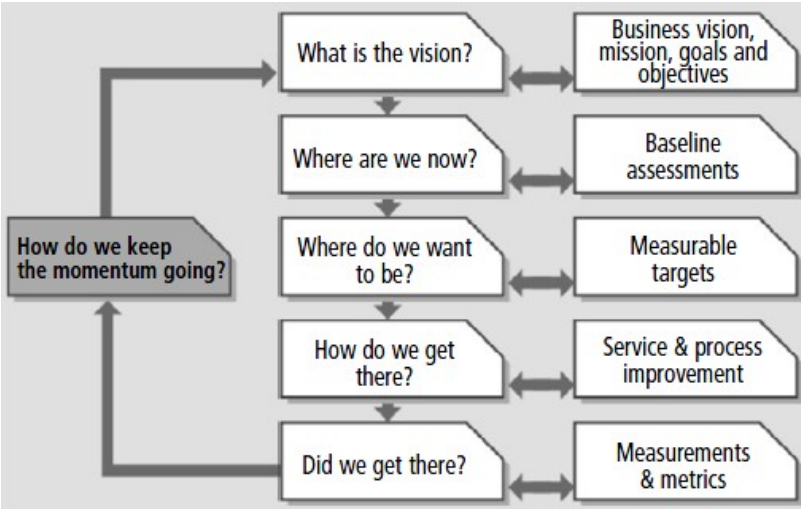

Figure 3.5: The Continual Service Improvement Model [ACX07].

7-Step Improvement Process

This process embraces the steps necessary to gather important data, analyze this data to spot trends and issues, display the information to management for their prioritization and agreement, and perform improvements. Each step is motivated by the strategic, tactical and operational objectives specified during Service Strategy and Service Design:

1. Define what you should measure

   A series of measurements should be identified that completely support the objectives of the company. The focus should be on classifying what is essential to satisfy the objectives completely, without taking into consideration whether the data is currently available.

2. Define what you can measure

   Organizations may discover that they have limitations on what can really be calculated, but it is useful to be aware that such gaps exist and what risks may be implicated as a consequence. A gap scrutiny should be performed between what is or can be measured and what is preferably required. This information can then be passed to the business, the customers and IT management. It is likely that new tools or customization will be required at some phase.

3. Gather the data

   This step is related with monitoring and collecting data. A mixture of monitoring tools and manual processes should be performed to gather the data needed for the measurements that have been established. Quality is the major objective of monitoring for CSI. Hence monitoring concentrates on the efficiency of a service, process, tool, organization or CI. The main point is on recognizing where developments can be made to the current level of service, or IT performance, usually by detecting exceptions and resolutions. However, CSI is not only concerned with exceptions. In case of constantly meeting a Service Level Agreement, CSI is also interested in determining whether that level of performance can be continued at a lower cost or whether it should to be upgraded to an even superior level of performance.

4. Process the data

This step consists of processing raw data to transform it into the required format, in general presenting an end-to-end point of view on the performance of services and processes, but often this is an activity that is overlooked. It is essential to recognize that data monitored and collected on a single infrastructure component could have a major impact on the larger infrastructure and IT service.

5. Analyze the data

   This analysis is responsible for transforming the information into knowledge of the events that are influencing the organization. Once the data is treated into information, the results can be analyzed to find if targets are being met and if there is the need of performing corrective actions and what their cost.

6. Present and use the Information

   At this moment it is possible to present the new information in a format that is simple to understand, which allows those receiving the information to define strategic, tactical and operational decisions. It is necessary to provide the information at the appropriate level and in the right manner for the planned audience. It should provide value, record exceptions to service, and emphasize any advantages that have been identified during the time period. It is essential to invest the time to realize specific business targets and translate IT metrics to reproduce an impact against these business targets. Often there is a gap between what IT reports and what is of concern to the business. Even though most reports have a tendency to focus on areas of deficient performance, good news should be reported as well.

7. Implement corrective action

   The knowledge apprehended is used to optimize, improve and rectify services, processes, and all other supporting procedures and technology. The corrective actions necessary to develop the service should be categorized and transmitted to the organization. CSI will spot numerous prospects for improvement and an organization will have to decide priorities based on their objectives, resources and funding available. The 7-Step Improvement Process is constant and loops back to the start.

Properly applied, organizations which already used this approach, saw a significantly improve in the quality of IT services delivered to the business. ITIL brought a greater alignment of IT services, processes and goals with business requirements, expectations and goals. It also improved business profitability and productivity, the quality of services and the service availability and performance, what leaded to increased business returns. Additionally, the support personnel became more aware of business processes and business impact and there was a decrease in overall management and support costs. However, there are still cases where the application didn't succeed and the implementation was considered fruitless. A believed cause for this happening is the lack of commitment by the management, resulting in few ITIL achievements. Other appointed cause is the time spent on complicated process diagrams which tends to increase when a new approach is being implemented and it's not the point followed by ITIL. The time spent with these complicated diagrams cause even another problem, which is the lack of necessary work instructions. Also, an excessive ambition allied to a disproportionate concentration on performance result in ignoring the quality and processes and to try implementing too many processes at once. Finally there is the integration problem. Some processes cross more than one department and if they are not both following ITIL at the same level, problems arise. There is necessary to review the entire ITIL framework and to understand how it relates with the organization's strengths and abilities [ACX07, Var05, Var07].

3.3 Conclusions

History has taught how a good and careful maintenance is benefic and contributes to the success of an organization. An uncontrolled and unsystematic work can deteriorate even the finest governance structural design. Business enterprises, whether private, public, profit, or non-profit, have realized this continuous fact. In the course of time many were the methods that appeared to face the reality or to seek for better solutions that could change that reality in something good for them. Some of those methods evolved into improved versions and their application was followed by many. Generally those implementations were financially burdensome and presented many complications related to the company's structure, but often, when they were totally achieved, the return on investment compensated the effort.

The need of a well-structured maintenance leads the companies to seek for a methodology that has a recognized structure and a map of services well-defined. To adopt a process discipline along with a doctrine of service, organizations of all categories are rapidly transforming the IT organization and its offerings in a suite of services. Implementation of the IT Infrastructure Library (ITIL) has spread to approximately 60 – 70% worldwide [Dub]. In the United States, 87% of companies with more than 10,000 employees have embraced ITIL [All]. ITIL is chosen over or jointly with COBIT, CMMI, and Six Sigma [Ant].

The adoption of service management policy is characteristic to each organization with important contextualization of each implemented process and function [Con08a]. Additionally to the great global adoption degree for ITSM doctrine and ITIL, in particular, the adopting organizations create a considerable number of new jobs requiring service management and process knowledge. One U.S. study of itSMF-USA (a practitioner organization) member companies presented that annually about 15,000 jobs are created having need of ITIL knowledge and skills [Con08b].

Given the importance of a high-quality maintenance, many companies decide to leave this department to other company specialized in this area, to ensure its class and success. Companies that are already specialized in the area of maintenance have the objective to keep improving their expertise and in order to fulfill that desire, try to accompany the most recent practices in the market and innovate in their own services. Since the energy and costs related with maintenance and improvement of aging software are now the leading expense of the whole software industry, it is imperative to apply state-of-the-art techniques and tools for working with legacy applications. Improved quality previous to delivery can reduce maintenance expenses. Combination of fault prevention, inspections, static analysis, and enhanced testing can cut maintenance costs. A number of the newer approaches consist of maintenance or renovation workbenches, which should be a routine activity prior to significant developments.

Given that many legacy applications include error-prone modules that are high in complexity and get an unbalanced portion of defect reports, it is necessary to take corrective actions before advancing with major changes. Normally less than 5 percent of the modules in large systems will receive more than 50 percent of defect reports [Jon10]. It is typically impractical to fix such modules, so once they are recognized, surgical removal followed by substitution is the regular procedure.

In our time, maintenance outsourcing has become one of the most prevalent types of software outsourcing. Generally, maintenance outsource agreements have been more successful than development outsource agreements and appear to have a smaller quantity of failures and litigations. This is due in some measure to the evolution of the maintenance outsource enterprises and partially to the fact that existing software is not prone to many of the forms of risk that are problematic for large development projects. Both maintenance and development are identical when it comes to the need for using high-quality project management practices, efficient estimating methods, and very sensible measurement of productivity and quality. While development outsourcing, in nearly 5 percent of contracts, ends up in litigation, maintenance

outsourcing appears to be less contentious as it presents fewer issues [Jon10]. At the present time, maintenance outsourcing seems to offer attractive economic advantages.

4 Managed Services - ITIL and ISO 20000 at Wipro

4.1 Introduction

Since its beginning, Wipro follows a path oriented to a continual optimization and improvement of all its processes. In this logic of thought, Wipro has created several methodologies to facilitate the achievement of multiple business values for its clients, such as flexibility during critical business situations, faster implementations of IT systems, more reliable maintenance, predictable levels of services, stronger integrations, among others.

It has been a continual evolution with gradual steps into more standardized and auditable practices in order to reduce the execution time of the processes while making them more cost-effective. Also, the application of standardized methods eases the quality certification process. This detail is very important, since it is a reference mark for all the customers who work or consider to work with Wipro.

In figure 4.1 it is presented the lines that guide Wipro in its commitments.

Figure 4.1: Spirit of Wipro (Adapted from [WT10]).

In this way, when Wipro builds a new methodology for its own use, the conception and design are based essentially on two points – the analysis of the references that are considered the best in the market at the moment of conception and from those, the selection of the ones that follow standards that can be auditable - as a rule, ISO standards.

In the scope of this project, more oriented to the area of Maintenance and Support, Wipro has developed and used for several years, a so called "Lifeline" methodology. In a succinct contextualization, this methodology was established based on ITIL version 2. As consequence, the methodology was built in order to optimize the tasks that the Service Provider (Wipro) has prioritized and not really the tasks that would produce the results the Customer wanted.

In the course of time, business ideals have suffered several amendments, and the concept behind this framework required a significant change. As of 2007, a third version of ITIL was published making reference to a new vision – the strategy delineated by an organization shall begin with customer's desired outcomes.

"Customers don't buy products, they buy the satisfaction of particular needs."

[WT10]

The factual meaning of this quote is that what the customer values is frequently different from what the service provider thinks he or she provides. Additionally this new model acknowledges that every service provider is subject to competitive forces.

Figure 4.2 shows the evolution from the ITIL v2 model to the ITIL v3 model, which presents a clear focus on the fact that the Improvements process is a Continuous process.

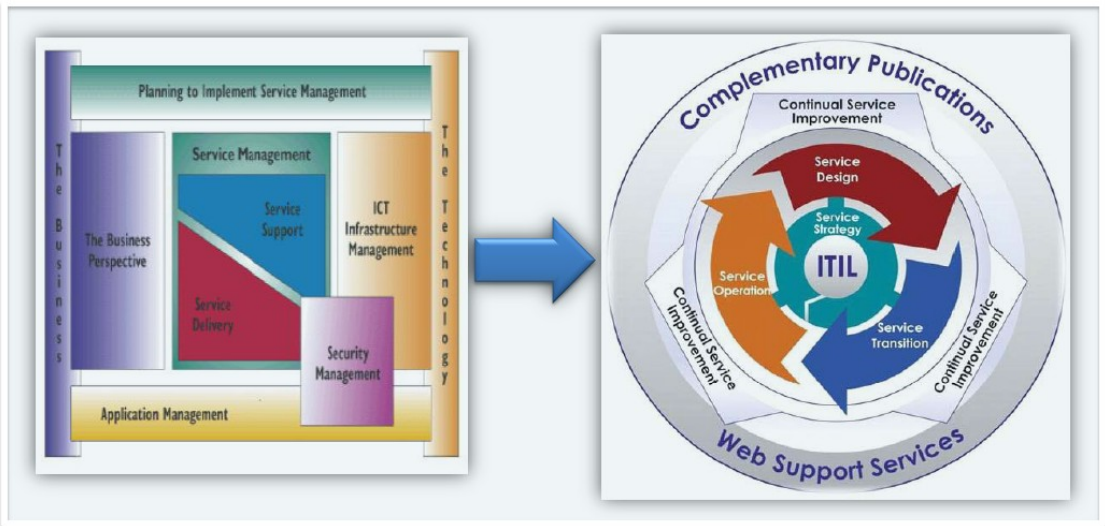

Figure 4.2: Evolution from ITIL v2 to ITIL v3 (Adapted from [WT10]).

Other noticed aspect between version 2 and version 3 was the evolution of its focus. While ITIL v2 had its focus on people and processes, ITIL v3 focus on services. As seen before, services by definition are

"means of delivering value to customers by facilitating outcomes customers want to achieve, without the ownership of specific costs and risks".

[WT10]

Figure 4.3: "What is a Service?" model (Adapted from [WT10]).

This alteration promoted changes in Wipro as well. In order to continue aligned with the best practices, Wipro has been endorsing a series of "updates" to their methodologies. The previous methodology dedicated to the Transition phase, called "Lifeline" has been now included as a specific section of the new "Managed Services" and its processes are being updated to be in conformity with this Services orientation, as well to respect ITIL v3 and ISO 20000 standards.

"*Managed Services*" is a new catchword in the IT industry and its definition varies across industry and across practices [WT10].

ITIL refers Managed Services as a perspective on IT Services that emphasizes the fact that they are managed [WT10]. However, the term Managed Services is also used as a synonym for Outsourced IT Services. And it is this definition that it assumes at Wipro as being classified as

"Outsourced management of IT Services, accepting specific responsibilities and risks, governed by outcome based agreement while delivering value to customers".

[WT10]

At a strategic level, Managed Services is identified by providing "Economies of Scale", i.e. flexibility in staffing levels and support windows. It also transfers the risk management ownership to the service provider and improves time to market for new products or services.

In terms of efficiency, Managed Services is characterized by supporting standardization of processes/tools and having a great capability in ADM (Application Development and Maintenance) activities, with a faultless availability of resources and access to the most recent technologies, which results in an increased agility to respond to change.

All these characteristics have the final purpose of bringing value to the customer, making it possible to significantly reduce overall cost, align costs to business the real demands/needs and provide service levels that match customer's business requirements.

Figure 4.4 presents the Global Managed Services model. The Managed Services model represents the entire process of an outsourcing project, considering all the planned phases from the beginning to the end of the project. To the image it was added a special layer to highlight the Transition phase, the basis of the present project, and its sub-phases, which will be better presented in later sections.

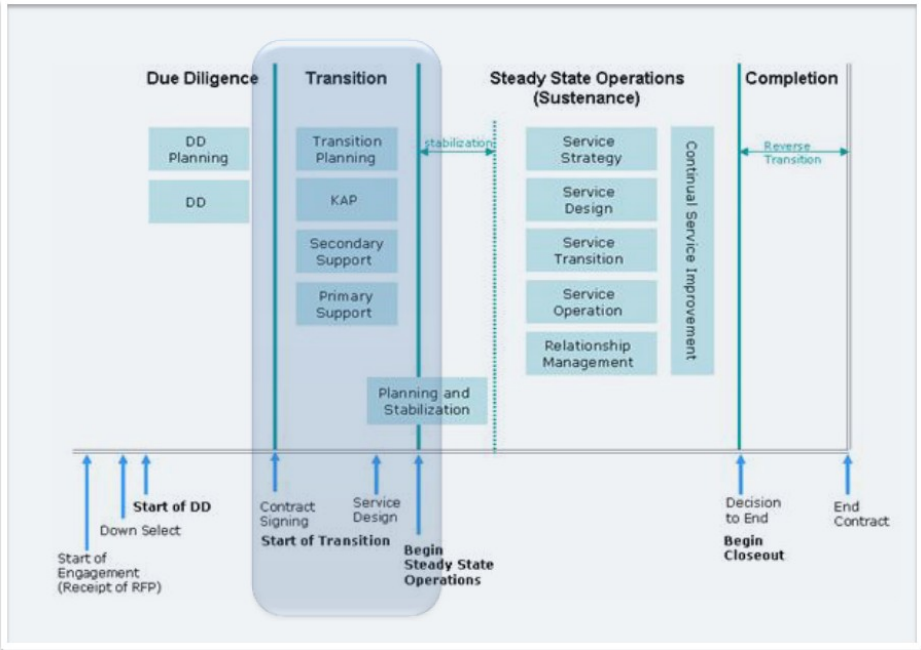

Figure 4.4: Global Managed Services model with focus on the Transition phase (Adapted from [WT10]).

In this chapter there is an extensive presentation and analysis of the two methodologies currently in the scope of Wipro Retail. The first one being presented (see Section 4.3), called "Lifeline Methodology" is the oldest version. The second methodology is the global version of the "Managed Services Transition Methodology" (see Section 4.4), considered an improved version of the Lifeline, but still in implementation across Wipro. Due to its high importance and reliability, the focus on the Manages Services version is higher, with an accurate study on each phase and a description of the projected improvements considered in this methodology.

In a concise approach, the objectives of this chapter are to perform a deep examination of the characteristics of both methodologies and considering that information to identify which aspects of each methodology should be kept for the newer version to be applied in future engagements of the ADSM department of Wipro Retail (see Section 6 and Appendix A).

4.2 Methods for Achieving the Objectives of the Project

In this section, the main objective is to present the methods and processes planned for achieving the intended results of the project. Aligned with it, this section has equally the purpose of exposing the means used for collecting all the data presented in this chapter and in the following one referring to the case studies.

One of the main sources of information was the documentation, mainly existent documentation for internal purposes. During the period of the project the use of documents was a constant since often it allowed clarifying emergent uncertainties in a quick way. Most of the documentation was documentation belonging to Wipro Retail. However, in relation to the Transition, especially to the global Managed Services Transition Methodology, the source was fundamentally documentation of other verticals, given that relatively to this topic, the other verticals enclose more experience and studies.

Among the documentation used, are:

- **Case Studies of Old projects**. To realize how Transition processes were performed and how they evolved. These documents had a great contribution in understanding the Lifeline methodology and its principles;
- **Case Studies of Ongoing projects**. To understand how the Transition is being performed currently. This helped recognize which recommended procedures are actually being applied and at the same time their real contribution to smooth the Transition process;

  Moreover, the study of these case studies was very important to realize the complexity of the Transition process. To note that most part of the case studies were from projects with durations bigger than two, three years and with Transition phases lasting, in average, around five, six months.
- **Current templates**. To identify which processes have templates, their level of definition and if they are updated. The study of these documents was fundamental to detect the templates that are not updated and mainly, the ones that are not Wipro Retail oriented;

  Moreover, the analysis of the Transition templates allowed the performance of an extra activity – To make a collection of the existent templates for the Transition, both the currently used by the ADSM personal, as the new and recommended ones which accompany the global Managed Services Transition methodology. As a last task, but also very important it was associated the most adapted template to the respective step in the new methodology (see Appendix A).
- **Training documentation**. Most of this documentation was done by internal experts. It helped to recognize the expected improvements and to identify the new tools oriented to the Transition phase;
- **Transition documentation**:
  - **Lifeline documentation**. To identify the basis of the Lifeline methodology, the several phases and respective deliverables. These documents were important to distinguish the different phases and their purpose;
  - **Managed Services documentation**. To understand the improvements projected by this new methodology in comparison to the Lifeline methodology, to identify the planned structure for the Transition and to analyse each phase in terms of activities, times and deliverables. The analysis of this documentation helped realizing the changes introduced by the third version of ITIL, the proposed improvements for each phase of the Transition and in which level is the implementation of this methodology.

Another method exploited was the use of interviews to Wipro personnel. Given the fact of being working in the ADSM department, most of the interviews were done with personnel of this department. However, whenever necessary, there was availability to arrange meetings with personnel of other departments or verticals.

Among the contacts made are:

- **ADSM personnel**. With the aim of understanding the daily routine of the team members and their role during the Transition phase. It was important to realize the reality of the ADSM department and how Transition is really lived;
- **Implementation personnel**. To recognize the current role of the Implementation personnel in the Transition process and to understand the level of communication between the ADSM team and the Implementation team. These interviews were

essential to find gaps in the communication between the two teams and were also vital in the process of creation of the case studies, having a great contribution for their achievement;

- **Wipro Retail Brazil / India**. During the period of the project, there were several occasions where there was an exchange of knowledge in order to align ideas and procedures in relation to the Transition scope;
- **Wipro – other verticals**. During the process of preparing proposals to potential customers, there were made several contacts with personnel of different verticals with the purpose of fusing the concepts and methodologies to be presented.
- **Transition Managers**. To clarify particular aspects of the Lifeline methodology and of the Managed Services Transition methodology, to obtain knowledge from Transition experts and to gain sensibility on this subject. The information acquired was crucial for the advance of the project and for recognizing which elements should be kept in the methodology built for the Wipro Retail engagements.

In addition, there was another method for acquiring information about the Transition subject matter – the **web-based system for quality of Wipro** for all its verticals. The access to this system allowed obtaining information about the global Managed Services Transition methodology and more precisely to visualize detailed information on each phase, which is intended to be consistent across all Transition executions.

4.3 Lifeline - The Previous Methodology for the Transition

"Lifeline©" was the Wipro Application Outsourcing Methodology for packaged implementation projects and other peripheral systems. It was developed by the EAS - Center of Excellence from different practices with contributions from senior consultants based on client requirements and experience in several outsourcing engagements. It was defined in order to be possible to customize it to meet specific requirements of various projects.

The methodology was tested on outsourcing projects of different industry verticals and different peripheral applications deployed along with SAP, Oracle Applications, Peoplesoft, and Seibel before being rolled out.

It was observed that there were no readymade templates available which could be deployed on projects to save time on implementation and improve quality of deliverables. Lifeline methodology was elaborated in order to provide these templates. The existence of templates saves enormous amount of time and guarantees a standard appearance and sense in all projects.

Lifeline provided the framework for applications outsourcing on an onsite-offshore model and was flexible to support multiple time zone operations of Enterprises with varied service level requirements.

The methodology is logically divided into six phases and each phase consist of tasks with specific deliverables. Lifeline provides pre-configured templates and check lists for all tasks which facilitated a standardized execution of projects and also considerably saved time in the transition of the support activities from the client's organization.

Lifeline is a methodology that could be adapted to any application outsourcing project (packaged implementation) and tasks and deliverables could be easily tailored to suit specific project requirements.

Overview of the Lifeline – Outsourcing methodology

Lifeline is a methodology structured in six phases: Planning and Diagnostic, Knowledge Acquisition, Parallel Perform, Steady State Transition, Steady State and Continuous Improvement. Each of these phases had well defined Deliverables, Key Tasks, Client Roles and Wipro Roles. For each Task were defined the inputs, the activities to be performed and the deliverables. As stated previously, one of the major problems was the lack of templates and they were for the first time created for this methodology – both tasks and activities had templates which could be tailored for specific project requirements.

This methodology has two other important characteristics: 1) It is based on onsite-offshore model and hence each task and sub-task which were carried out are classified accordingly; 2) It addresses the development of enhancements (both minor and major) which are part of any production support.

Planning and Diagnostic Phase

This phase marks the beginning of the engagement. Primarily, it addresses the tasks which are to be performed well in advance before the knowledge acquisition and support outsourcing for the application starts. The main objective of this phase is to get a complete overview of the client's applications as well as to assess the application offshore ability. This enabled Wipro to come up with desired project estimates for cost, resources, infrastructure, among others.

For this methodology it was defined that the salient issues that needed to be understood and covered during the planning and diagnostics were: Modules / Technologies that had been implemented, System Architecture, Clients' support requirements, Client's user base and Geographical distribution, Service level requirements, Project organization, Quality assurance, Request handling procedure, Timings of support provided, Escalation policy, Risk assessment, Key success factors, Liabilities, Reporting and finally, Out of scope applications.

Depending on the client's requirements, these inputs are used to develop a detailed Support Proposal / Statement of Work (SOW) defining the required support model and the Client-Wipro relationship.

The project is then officially kicked off and all the subsequent tasks were followed as per the Project Plan:

Table 4.1: Planning and Diagnostic's Tasks

Task	*Short Description*
Validate Proposed Engagement Plan	Elaborate the Engagement Plan based on the initial proposal and discuss with the client to verify if there are any changes required.
Validate Project Scope	Verify the inventory of the application under Support. Any addition / deletion to the inventory would qualify as scope change and should reflect in SOW.
Finalize Statement of Work	Finalize the SOW with the Client. Define the applications (ERP modules / bolt-on applications, interfaces to 3rd party systems) enclosed on the Onsite/Offshore Support and the SLAs for those
Define Application Specific Transition Plan	Wipro shall institute a transition team comprising of Wipro's onsite program manager, onsite application leads, onsite application team, ODC head, transition coordinator and team members. For each application, a team of Wipro engineers shall travel to respective locations for knowledge acquisition. This team will be responsible for building the knowledge base within the Wipro team. At the end of the transition phase, the Wipro team should be able to independently handle the development and support activities for the application.
Define Program Guide	The Program Guide is a summary document that provides team members (onsite / offshore) with an overall understanding of the Client Program. The Program Guide provides a program overview and defines the program objectives, scope, approach, organization, program management processes, and team-operating environment. The Program Guide also includes additional information that will ease new team members' transition to the program and serve as a reference document for existing team members. The Program Guide is a "living document" created and maintained by the program team. The Program Guide will be continually revisited and updated throughout the duration of the program. Suggestions for additions to this document should be sent to the Program Management Office.
Define Change Request Plan	The scope of the project can change during the support duration – enhancement requests, handling additional applications, extension of support coverage, addition of users, addition resources, among others. To address these Client requests, a change request plan has to be defined. The details of the Change request are provided by Client to Wipro.
Define Impact Analysis	Impact Analysis is done based on the Change Request form. A detailed document is prepared addressing how Wipro will handle the Change requested by Client. This will cover the new effort and cost estimates to handle the Change request.

Knowledge Acquisition Phase

This phase starts once the planning is done and engagement with client starts with Signed Statement of Work (SOW). Wipro appointed with the Customer a Knowledge Acquisition phase to understand the applications, modules, 3rd party systems, interfaces that were implemented and within the scope of the SOW.

The purpose of this phase is to have a formal period wherein consultants would study the client's business processes, implemented solution and existing documentation. This stage would start after the scoping (planning and diagnostic phase) have been done and the SOW has been accepted by the client.

Table 4.2: Knowledge Acquisition's Tasks

Task	*Short Description*
Baseline Application Specific Transition Plan	The Application Specific Transition Plan shall be baselined before the end of the Knowledge Acquisition phase. The activities that are covered in planning are: • Resource finalization and Ramp-up plan • Familiarization of the environment and systems • Training (if any) • Finalize Transition Deliverables and the Templates • Finalize knowledge acquisition & parallel perform plan • Prepare detailed KAP plan
Prepare draft System Maintenance Technical Document (SMTD)	Verify the inventory of the application under Support. Any addition / deletion to the inventory would qualify as scope change and should reflect in SOW.SMTD will define in detail the application understanding and will be a running document that will be updated periodically based on the knowledge acquired by the Wipro team during the engagement. SMTD will primarily contain the Functional, Business and Technical details of each application providing the details needed to facilitate the support and maintenance activities for the Client's systems where Wipro has been engaged as defined in the SOW. This document is a reference guide for the technical support team from Wipro to effectively carry out their activities in order to provide support and maintenance for Client's systems.
Prepare draft Execution Process Document (EFD)	Finalize the SOW with the Client. Define the applications (ERP modules / bolt-on applications, interfaces to 3rd party systems) enclosed on the Onsite/Offshore Support and the SLAs for thoseEPD defines in detail the process, methodology and various activities to be followed by Wipro during the engagement with the Customer as defined in the SOW. This document is a reference guide to provide input to the Customer management to understand the methodology and operational details adopted by Wipro to support the in-scope systems. EPD will be updated as and when there is a change in the process or other information as defined above during the engagement with the Customer.
Finalize plan for Parallel Perform	This activity involves finalizing the plan for the availability of infrastructure and the setup of the shadow support team and also plan for performing the shadow support. In this phase, the Wipro team will learn the existing fix procedures by observing the work of the current support team. Wipro team starts taking up maintenance and support of the applications along with Customer team. The support team would be formed at both onsite and offshore. The offshore team would be brought up to speed with the knowledge acquired.
Revalidate scope & perform impact analysis	These activities involve revalidating the project scope defined in planning & diagnostic phase along with the assumptions as against the knowledge that is gained in this KAP stage. Perform detailed analysis on impacted items in the SOW and conclude a revised SOW. At this stage the team will have gained sufficient knowledge about the existing system and will be capable of performing detailed impact analysis on the external dependencies and on the schedule. After completion of the detail impact analysis, calculate estimate impacts and revise the obligations / dependencies as mentioned in the SOW and the acceptance criteria.

Parallel Perform Phase

The primary objective of this phase is the setting up of necessary infrastructure required for the support and baselining the of System Maintenance and Technical Document (SMTD)

and the Execution Process Document (EPD). This phase should start after the knowledge acquisition phase have been completed. Simulation of critical / non critical request by shadowing existing support team should be done by then. Certain low priority / severity activities would be handled by the Wipro team during this phase, while the ownership would still lie with the Customer.

Setting up infrastructure and simulation of onsite / offshore co-ordination is carried out in this phase. Offshore training needs are identified and plan to train the consultant is rolled out.

Table 4.3: Parallel Perform's Tasks

Task	*Short Description*
Setup infrastructure for support	Plan for the availability of infrastructure during training and transition and for the infrastructure as agreed by the client for offshore facility. Estimate staff required for installing the infrastructure and acknowledge the infrastructure readiness with the Logistics team on site. This may be updated after WIPRO completes first two weeks of KAP.
Perform shadow support with existing support team	During this phase, Wipro team will resolve maintenance requests (MR) and enhancement requests (ER) under the guidance of the client representative. The Parallel Perform phase also involves activities like resolving Pilot MRs and Pilot ERs, prepare and review Pilot Status Reports and finalise SLA's for MR and ER.
Baseline SMTD	The System Maintenance Technical Document drafted during the knowledge acquisition phase shall be finalized before the end of the parallel perform phase. Document findings and learning in the System Maintenance Technical Document (SMTD) for the following contents. • System Configuration • Overview of the Applications & Interfaces • Third party vendors, tools & Interfaces • Enterprise Structure • Configuration Overview • Customized Components • Master Data • Standards & Conventions • Clients' Help Desk Strategy • Project Organization
Baseline EPD	The Execution Process Document drafted during the knowledge acquisition phase shall be finalized before the end of the parallel perform phase. Document findings and learning in the Execution Process Model Document (EPD) for the following contents. • The entire flow from raising a call till closing the call • Help Desk levels handling • Clear demarcation of responsibilities between different roles / levels • Resolving conflict between who has to resolve the problem • Logical flow between all the consequent levels • Intimating the status of the call to end user • Addition of roles in the logical flow process • Reconsidering all the possible support activities that the project entails

Steady State Transition Phase

Steady State Transition phase is required for ensuring confidence in the client by independently managing the support activity, having a fair understanding of the applications and

the business criticalities, arriving at the contract for ODC (Offshore Development Center) or offshore activity, and setting the communication channel for the Steady State activity.

Table 4.4: Steady State Transition's Tasks

Task	*Short Description*
Ramp-up support team	This task involves preparing the resource plan and ramping up resources for the Steady State phase as per Service Level Agreement or any of the equivalents. The number of positions may vary based on the size of the organization and the volume of the requests being handled. Some of the roles in the organization structure may be based at off shore based on the model preferred.
Own up and support for low priority calls	During this phase, Wipro team will resolve maintenance requests (MR) and enhancement requests (ER) under the guidance of the client representative. The Parallel Perform phase also involves activities like resolving Pilot MRs and Pilot ERs, prepare and review Pilot Status Reports and finalise SLA's for MR and ER.This task deals with owning up and handling low priority calls. Even though all the calls decided in earlier phases will be handled by Wipro, it will own up only low priority calls and the same information should be maintained by following chart. The Maintenance Plan shall be the detailed application level document prepared by Wipro and shall describe the Transition plan of the application, the Resource plan and the Training plan. It shall also contain the office structure to support the transition and the processes for technical requests, Maintenance requests and Enhancements. The metrics and measurements shall also be included in this document.
Finalize Call flow process	Call flow process will be finalized for handling low priority calls during this phase.
Revalidate SLA & Scope of enhancement requests	Based on the experiences in handling the calls in earlier tasks SLA has to be revalidated against the changed factors. Scope of enhancement requests can also be revalidated. SLA's would be measured on a monthly basis and compared with the norms and corrective action shall be taken by Wipro in case of slippages.
Finalize metric reporting	The activities in this task consist of preparing and finalizing metric reporting. Metrics are agreed upon to be measured and reported to measure the performance of the support activities handled by Wipro Following two kinds of metrics will be used for this purpose: • Metrics which are monitored at overall level • Metrics for support projects Metrics which are typically monitored at overall level are as follows: • Metrics for Support Calls / Tickets • Metrics for Maintenance Work • Metrics for Enhancements
Prepare Transition Score Card	Based application history & transition activity, Transition Score card will be prepared and will be used as reference for future engagements. This is not shared with the Client.

Steady State Phase

In the Steady State phase Wipro would provide entire support for Oracle Applications and would implement the procedures mentioned in the EPD / Program Guide. The support team would return to offshore and the on-site coordinator would continue onsite. The onsite Coordinator is responsible for client interaction, SLA norms measurement, client meetings and any other on-site support required to be given to offshore team. He would participate in ongoing reviews, planning cycles, discussion of reports from offshore. A best practice, which Wipro has

followed at various Customer locations, was that the Wipro team started collating all the issues reported from the day they start working on the bugs, problems and enhancements. These were logged in a knowledge base of the ticketing system. This knowledge base and the Production Support Operating Manual would help reducing the cycle time for subsequent production support activities.

Table 4.5: Steady State's Tasks

Task	*Short Description*
Resolve Issues as per SLA	In this task, Wipro owns up the call and provide support by resolving the support cases and enhancement request as per the agreed SLA. The task is categorized into sub tasks – receive a call, process the call, deliver the call and then close it. This process is a continuous one and will continue until the project is terminated.
Prioritize assigned service requests	This task is primarily the responsibility of the project manager who acts as the first line of contact with the Onsite team/Client. He has to analyze the issue raised and map the severity and complexity against the SLA norms agreed upon with the client. This is a key activity which has a significant impact on the speed and quality of the resolutions.
Monitor extent of enhancement requests and perform impact analysis	All maintenance requests would be monitored jointly and Wipro would perform and submit an Impact analysis report to the client to identify the extent of impact of the request on the ongoing operations. The impact study covers all technical and functional requirements impacting the project. This study helps to plan future activities for planning and co-ordination.
Periodic status updates	Wipro consultants would be preparing detailed weekly status sheets detailing the activities performed on the different tickets and the status of each call. The weekly status sheet has a detailed explanation of the effort consumed on each maintenance request and the progress achieved on each maintenance request. All the issues opened and closed against each Maintenance request are also detailed.
Period end metric reporting	Wipro has advanced tools to track all the issues and errors encountered during the issue resolution cycle. The quality process is a well defined one where all the solutions go through the Iterative cycle of Code review, Solution analysis and Unit testing. Detailed testing plans are defined to identify any loops in the solution. The errors are logged and tracked until resolution. This vast pool of data is later used for analysis purposes. A metrics report is then prepared to explain the level and quality of support provided. SLAs would be measured on a monthly basis and compared with the norms and Wipro shall take corrective action in case of slippages.
Coordinate issue resolution	The main objective of all these processes is providing adequate and timely resolutions to the maintenance requests. This can be achieved by having effective communication links between the Offshore and onsite team with crucial roles being played by the Co-coordinators at both ends.
Create knowledge repository	The knowledge gained during the project execution cycle is an important reservoir which needs to be captured and used for future use. There are different knowledge bank related repositories available where we can publish case studies, Key aspects of solution definition, any complex solution approach defined, among others. All these repositories are made available to members both within and outside the project so that effective knowledge sharing takes place.
Finalize knowledge retention plan	In this task, there are team brain storming sessions in order to align all the knowledge acquired. It is normal to elaborate case study documents and white papers about the experience and about the pros and cons of all processes.

Continuous Improvement Phase

In the Continuous phase, Wipro team would aim to improve processes, to identify improvement areas with a view to efficiently use the system and to provide cost benefits. This phase of Lifeline involves formulating the re-use plan. Identification of the reusable components related to maintenance requests and bug fixing is done. RCA (Root Cause Analysis) is performed for the issues which were recurring in nature. A training calendar is prepared and shared in the form of dashboard for cross training on different areas / modules. This would facilitate the effective support in case of absence of any member and rotation. Stability of support and continuous phase enabled less support cost which was then passed on to client as ROI (Return On Investment). Typical Continuous improvement phase would kick off after 3 to 6 months of Steady State Phase.

Table 4.6: Continuous Improvement's Tasks

Task	*Short Description*
Formulate reuse plan	This process is to formulate and design a reuse plan in order to use the existing wealth of resources, to ensure reduction in time to perform the activity and help in performing effective production support. These processes will help in standardization of deliverables and enable to maintain high level of quality.
Perform root cause analysis for recurring issues & fix source problem	This activity is primarily the responsibility of the consultant resolving the issue. The objective of this activity is to arrive at the root cause of the issue and address the issue at the root of the problem. This activity involves in-depth analysis of the problem in order to arrive different probable solutions and after due diligence provide the appropriate fix. This is documented to facilitate future use.
Finalize cross training plan	This activity is to prepare a training calendar and share it with the Project team members in the form of dashboard for cross training on different areas / modules. The schedule is prepared to plan and perform cross training of co-team members. This is to facilitate the effective support in case of absence of any member and rotation.
Perform impact analysis on improvement areas identified and pass on the benefits to the client	During the Continuous State, Wipro consultants should identify improvement areas in Business processes and system process. Upon identification, consultants should arrive at the probable solutions/setup changes/process changes to achieve the improvement. An impact analysis of the changes needs to be performed and the benefits arising due to the changes needs to be documented.

4.4 Transition nowadays and the Way to Go

Transition has gained more focus with the pass of time. At the present, it is a key factor to increase the win-ability factor during presales, with the costs playing a major role in outsourcing bid wins/losses. The Transition phase and the way it is executed brings an opportunity to establish credibility in the initial stages of the engagement with the Customer as it could be a first test of delivery excellence.

However this is often a hard task to achieve as frequently the Transition is not composed just of services, but also of ways of working and of other complicating conditions such as:

- Several geographic locations for a single customer;
- Dificulties with the *re-badging*;
- Delays attributable to visa processing or to other causes.

A deficient management of these conditions can result in a great expenditure both for the Customer and Wipro itself. At the same time, increased pressure both from client and internal management to keep costs down turns imperative to delineate a well-designed strategy for the Transition execution and to strike an accurate balance between cost and risk of failure.

In figure 4.5 it is presented the current Wipro Retail position in relation to the ways to perform the Transition. Currently, Wipro Retail still presents aspects of the "Traditional" form, but there are already characteristics of the "Advanced" mode, such as the proactive governance and a reduced involvement of SMEs (Subject Matter Experts).

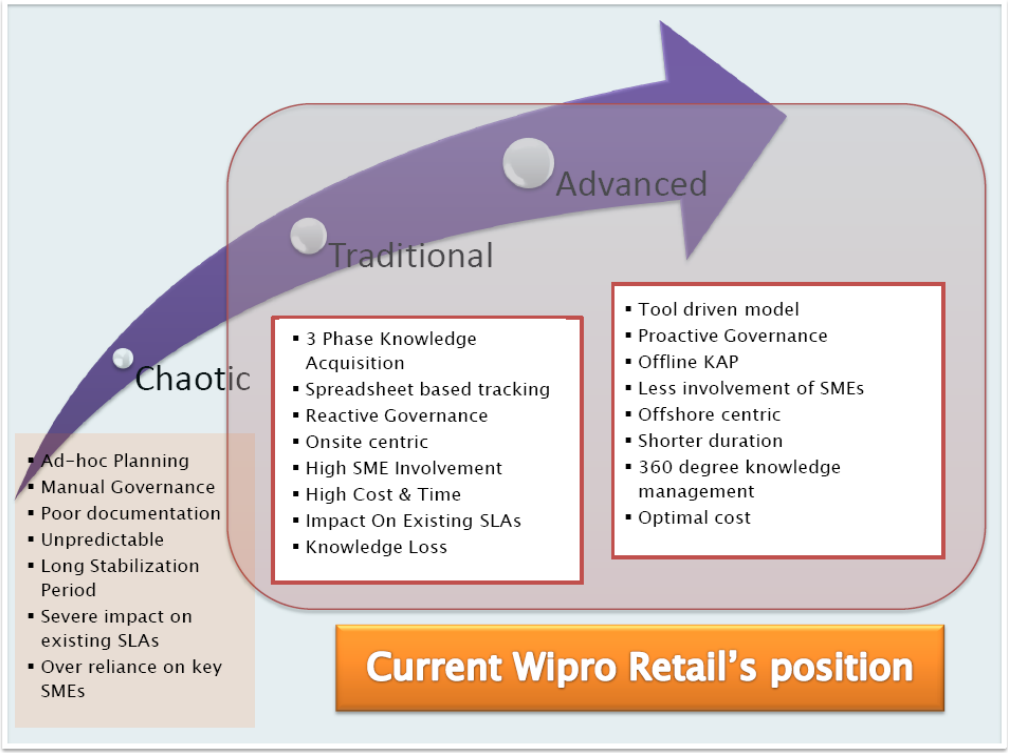

Figure 4.5: Transition phase: current Wipro Retail's position (Adapted from [WT10]).

Currently, Wipro doesn't have a comprehensive tool based approach in all its verticals. In relation to this project, which belongs to the retail vertical – Wipro Retail, the implementation is in progress, but whenever competition has one, it has an edge over Wipro.

Relatively to the Transition costs, an analysis [WT10] showed that, for instance, an Implementation project (from another vendor) with an average duration of a year requires a Transition phase of three to four months, which is considered too long and is starting to be considered a thing of the past in large deals [WT10].

Considering once more this example, a deeper analysis of each phase showed that the second phase, the Knowledge Acquisition Phase (KAP) is the period that requires more time to accomplish and at the same time, the one that presents more aspects for improvement [WT10]. From the twenty weeks of the Transition, KAP normally takes six to eight weeks to be

completed [WT10] (see Section 4.4.2). In relation to the other phases, there is also space for progress, with the Transition Planning (normally two to four weeks) and the Secondary Support (in general four to six weeks) phases presenting an equal level for improvements (see Section 4.4.1 and Section 4.4.3 respectively) and the Primary Support phase (generally four to six weeks) considered as the phase with fewer possibilities for refinements [WT10] (see Section 4.4.4).

As a result of one of the studies done for the present project, another point concerning the Transition challenges we noticed was the difficulty to delineate correctly all the phases when the situation involves larger and more complex transitions.

Another study [WT10] returned other points regarding the consistency in the approach. Ideally the tools and methods to perform the Transition should be well-defined and standardized, but it is still observed the use of multiple and different tools and methods across teams, which may be a result of the non-existence of a centralized repository/"*go-to*" entity for Transition specific tools. Moreover, the various verticals and services lines also have their slightly different approaches, artifacts and training schemas and the team formation is ad hoc. There is a centrally located VelociQ process toolset, but it is still not used consistently.VelociQ is the web-based system for Quality for all Wipro verticals. Its objective is to present consistent information for topics related with internal processes and procedures.

About the Transition Governance, which organization is presented in figure 4.6, it was found some subjects concerning the control and visibility that need refinement. In most cases this governance is made based on Excel sheets and there is no control / visibility on the transition progress at a vertical level. In addition, when vertical and multiple services lines are involved, the integration of these lines within the transition approach is not yet completely satisfactory.

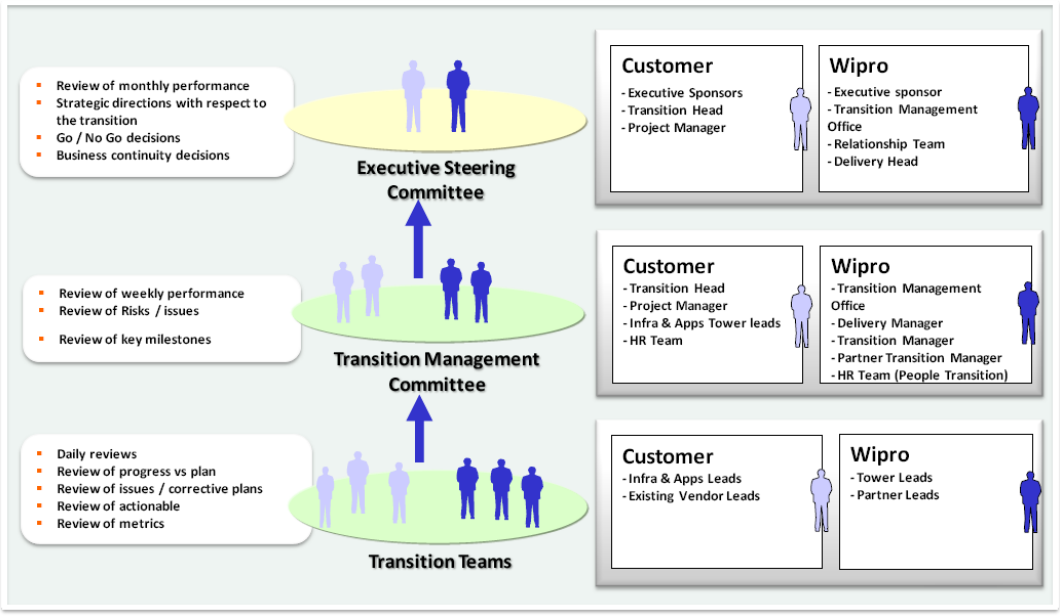

Figure 4.6: Updated Multilayer Transition Governance Model (Adapted from [WT10]).

As identified as a best practice, one of the first steps was to define a strong Governance model for the Transition and to delineate precisely the role of each person inside this model [WT10]. These actions aim to improve the time lost with the decision-making, which exists when this is not well identified and responsibilities are passed indefinitely from one person to another without decisions and actions being taken.

With the aim of answering these problems related with the Transition Governance, it is recommended that Transition Manager conducts periodical internal reviews for analyzing the Transition progress and discuss other risks and issues [WT10]. Transition Manager should ensure that these meeting are attended by all the required stakeholders. It is also advisable that Wipro's Transition Manager arrange regular meetings with the Customer's Transition Manager with the intention of aligning objectives and examining problems and solutions in an almost immediate way.

In figure 4.7 it is presented a snapshot of the current reality at Wipro Retail in relation to the Transition activities. This figure summarizes some of the results of the analysis and assessments done during the present project.

At the Transition Planning, the focus for improvements encloses the refinement of the templates for the Transition Plan, for the KAP (Knowledge Acquisition Phase) Plan and for the KAP sessions. The current templates don't correspond to the scope of Wipro Retail or are too incomplete. Also at the Transition Planning phase it should be enforced the practice of customizing the templates for the next phases, namely the SMTD (System Maintenance and Technical Document) and the EPD (Execution Process Document) in order to save time and work and to allow the teams concentrate on the main issues.

At the KAP phase it should be put into effect the recording of the meetings and other sessions of knowledge transfer and increase the number of simulations of risky situations ("Must Do" Scenarios), according to the RMP (Risk Management Plan). It should also be a regular procedure the creation of the KEDB (Known Error Database), since it is an essential tool for logging the issues and their resolution and consequently, allowing an easier and faster access to that information in future occasions. The questionnaires for KAP sessions in the scope of Wipro Retail are very incomplete or non-existent, so this is an essential point for improvements, since the use of pre-defined questionnaires allows to speed-up the attainment of essential answers. In order to improve the performance of the KAP phase, it is also recommended to use Governance tools for coordinating all the activities, such as Clarity [WT10], a particular tool with specifications for the Transition phase. It is also advisable to use Reverse Engineering tools and Code Analysis tools, such as Rational Asset Analyzer, Wipro Accelerator or Enterprise Architect [WT10], to facilitate the understanding of the customizations of Customer's applications.

Many of the improvements noted for the KAP phase are also valid for the Secondary Support phase, essentially the recording of sessions, the use of Reverse Engineering tools and the increase in risks' simulation. Moreover, it is recommended to increase the number of audits, in order to verify the proper application of the procedures and to rectify them if needed.

Primary Support phase also presents aspects which need refinement. From those aspects, the ones which need bigger attention are the "SLAs Simulation" and the "Implementation of TO BE processes", which are currently less followed and have greater impact in the Steady State phase, the phase subsequent to the Primary Support.

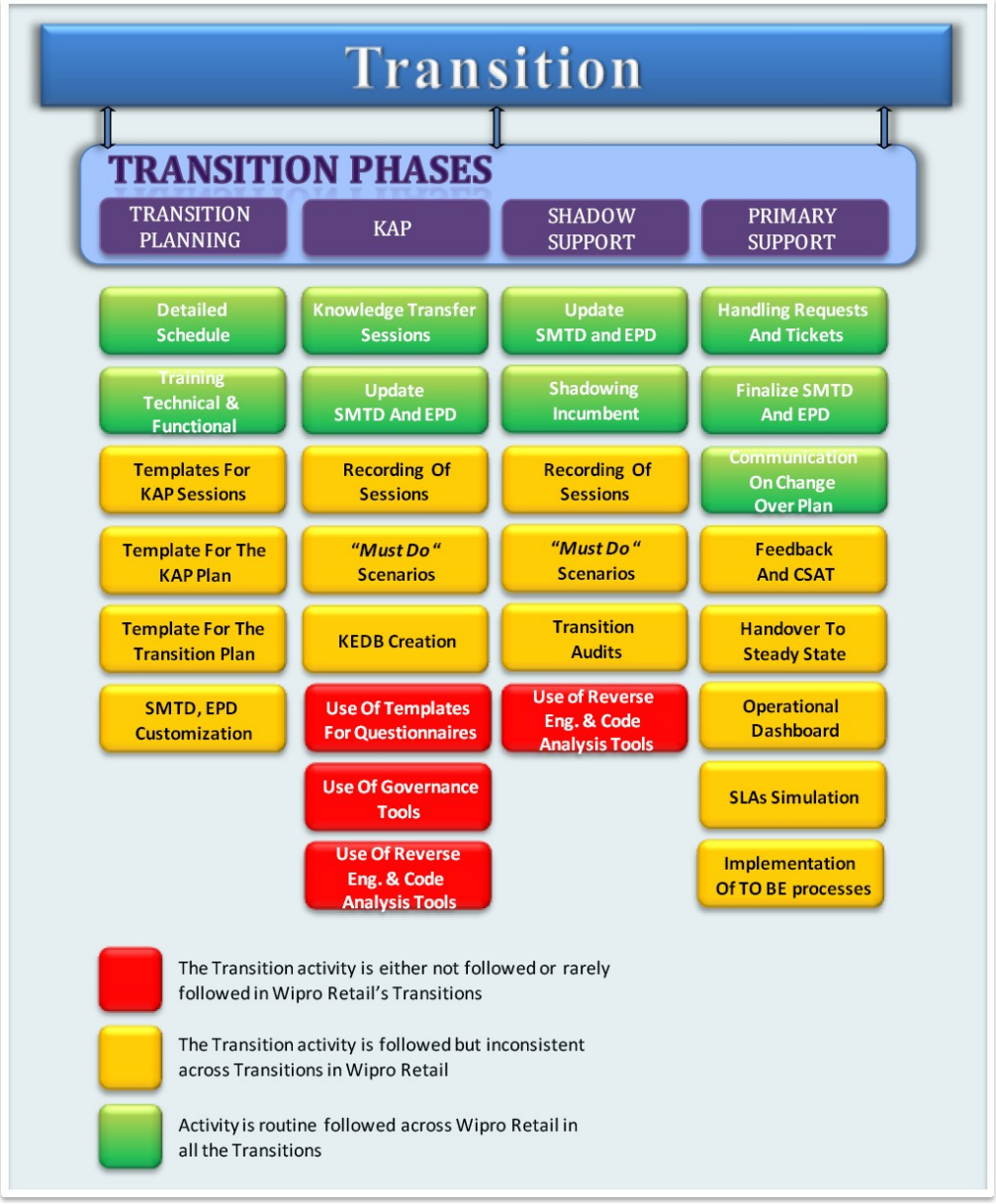

Figure 4.7: Snapshot of the current Wipro Retail's Transition Phase activities.

As seen above, there are still some aspects that need to be refined or even implemented. In the following sections, there is a more insightful look into each Transition sub-phase.

4.4.1 Transition Planning

The Transition phase starts with a sub-phase denominated "Planning". This in an essential phase where the plan for an effective transition will take place and where the procedures for transitioning services of the Customer's IT applications and services will be customized. This customization involves the mapping of the Customer's management processes and interconnected escalation procedures.

It will be at this stage that the milestones and baselines will be defined and also how they will be measured along the Transition phase, including the key drivers and the prospects that could be expected from the client management team.

Moreover, it is necessary to identify other aspects that will have influence even after the Transition. It is necessary to baseline the Scope of Work for the application and infrastructure support assessment, clarify how the implicit/undocumented knowledge will be documented through continued interactions with incumbent support team and identify the license issues that will have to be solved before the start of Steady State operations.

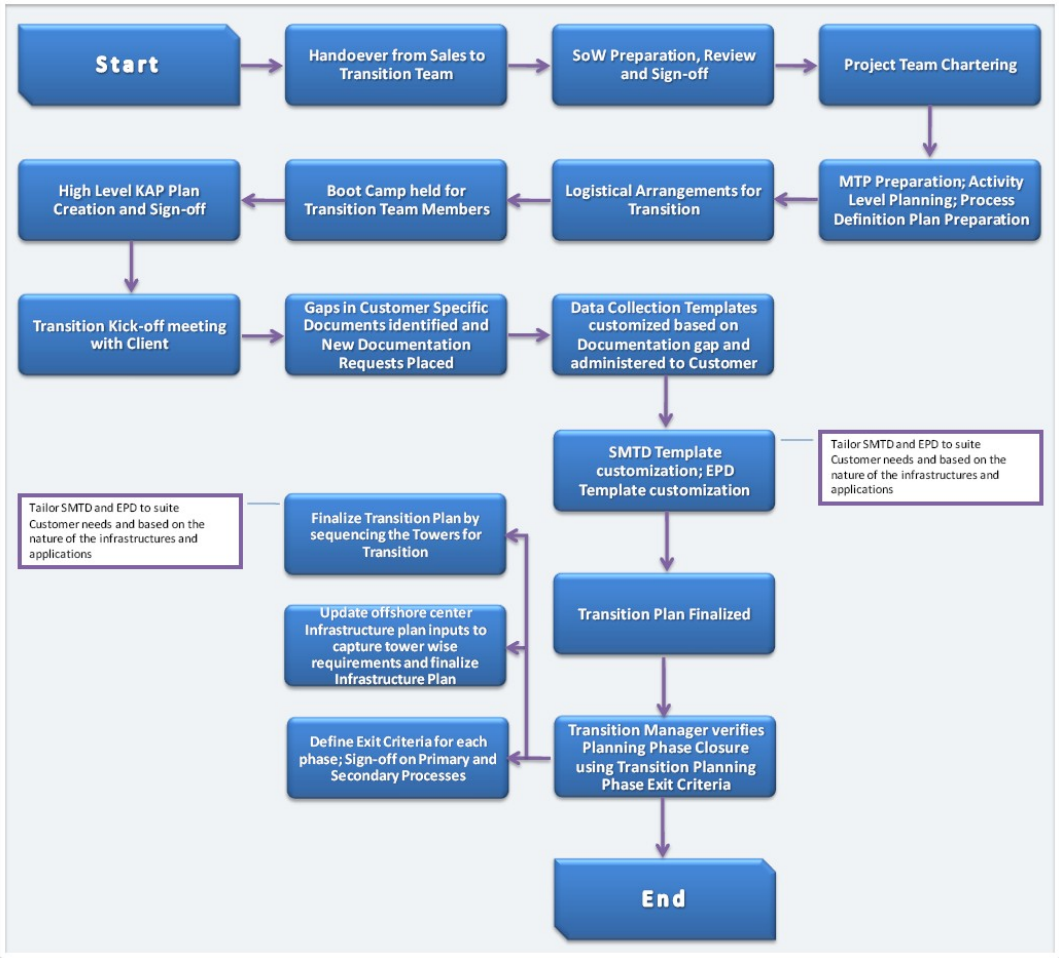

Figure 4.8: Transition Planning Process (Adapted from [WT10]).

Envisaged Improvements

Regardless of being a phase with fewer points to improve as stated previously (see Section 4.4), there are still some aspects that could enrich this phase.

The SMTDs (System Maintenance and Technical Document) are very important documents that will contain information on Functional, Business and Technical aspects of each application. One way of simplifying the process of elaborating these documents is to create pre-filled SMTDs that present a standard structure and enclose invariable data of the applications.

There should be also a detailed Transition template, so all the processes and steps would be accessible and the remaining information could be more easily added.

It is also important to have the entire necessary infrastructure ready for being used as required and to ensure that the Transition team has access to the several environments as sooner as possible.

Moreover, the trainings could be improved. Current trainings on Transition don't have a template or predefined guidelines and those could be defined, especially with the help of TMEs (Transition Management Experts). Also, currently, Transition teams have in most cases few TMEs. The presence of more TMEs in cooperation with other personnel with different capabilities (domain, functional and technical experts) could facilitate seamless transitions.

Transition Planning Envisaged Procedure

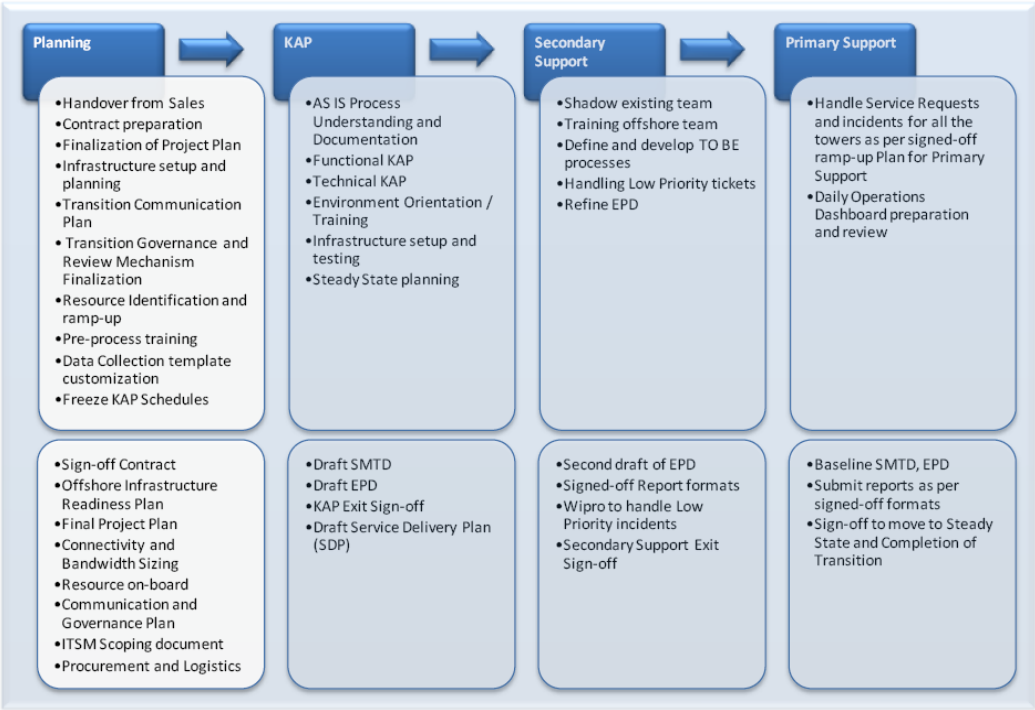

Figure 4.9: Transition Phase model with emphasis on the Transition Planning sub-phase.

Due Diligence Handover and Project Kickoff

In the beginning of this phase, it will take place two activities: the Project (Transition project) Kick-Off and the Handover from the Due Diligence phase. The Due Diligence phase is a previous phase where the main focus is the negotiation between Wipro and the Customer. In this phase (Due Diligence) Wipro exposes the followed procedures and strategies to cover the Customer's applications, infrastructures and other needs. The Project Kick-off will require the definition of the Transition organization structure, which includes the Transition Manager, the Program Manager, the Delivery Manager, a core team consisting of Tower Leads and the SQA (Software Quality Assurance) Manager.

Respecting these roles, it is necessary to clearly define the responsibilities and other roles for each team member or sub-groups.

The Transition Manager should conduct a Transition kick-off meeting, involving these teams and all relevant stakeholders. Also, this meeting should be attended by the Bid Manager, Delivery Manager, SQA Manager and other staff, if they have relevant information.

At this meeting, the Sales Handover Checklist should be used to go through the artefacts handed over by the Due Diligence team.

Contract Preparation

The Contract for the engagement will be prepared, reviewed and signed off with the Customer at this phase. According to the Service Delivery Planning procedure, Delivery Manager should validate overall scope and classify the processes and activities in range of the engagement and enclose them in the ITSM Scoping document, which presents clarity on all ITSM processes, thus the responsibilities and ownership of each activity are plainly understood and explained.

Transition Planning

Transition Manager is responsible for planning the transition approach in the Master Transition Plan, using the inputs from the Due Diligence, the location of the transition teams and the priorities defined by the Customer. He has also the responsibility of administering the transition range and defining the schedule and efforts in terms of personnel required for the Transition. In addition, he needs as well to receive Customer's signoff on the transition deliverables.

In general the MTP (Master Transition Plan) includes the Resource Plan, the Logistic Plan, the Governance Plan, the Process Definition Plan, the Execution Process Plan, the Phase Exit Criteria and the Schedule with the milestones for each activity. When completed, the MTP should be approved by Wipro's SDH (Solutions Delivery Head) and afterwards, jointly with the client, agreed and signed off.

The Resource Plan will present the number of personnel required and their respective distribution over the different phases of the project, including the *re-badging* plan. The Logistic Plan makes reference to the various contacts between Wipro and the Customer, mainly the Project Managers or the Business Analysts. It should also include planning concerning the work places for Wipro team. The Governance Plan indicates the arrangements for transiting the governance structure and the planning for periodic reviews on the overall status of the transition, showing the progress on main issues. These issues should be evaluated mutually with Customer's Transition Manager. The SQA Manager is responsible for defining the process documentation, including customized templates and checklists for the engagement and he has also the responsibility of aligning Service Management processes (that will be detailed in future EPD). The Execution Process Plan and Phase Exit Criteria treat the Transition deliverables and the criteria for moving into the next phase, which contains also an evaluation step. Each phase exit should be signoff with the client and recorded in the MTP. These activities should be specified in the Schedule section and the Transition Manager should validate them on their conclusion.

Team Ramp-up and Training

Team ramp-up and training are responsibilities of the Delivery Manager as well the definition of which management skill set requirements are needed and the number of resources required and their allocation.

This pre-process training is more oriented to the offshore resources and has its focus on behavioural training and summaries of client's cultural point of view and operational geographies. It should also include training on the necessary delivery skills with topics on ITIL

Awareness or required technologies and present a set of trainings on communications skills like accent neutralization or improving listening.

Boot Camp

Onsite team has the responsibility of identifying gaps in the documents provided by the client and issue new document requests to the client based on them, in order to obtain a complete list of required documents for the next phase – KAP (Knowledge Acquisition Phase).

Transition Manager, jointly with the Delivery Manager, is responsible for planning and carrying out a boot camp for the Transition team with focus on the following topics:

- Engagement overview
- Customer business orientation
- Customer expectations and soft skill requirements
- Roles and responsibilities of the project team
- Transition Plan, with a analysis of each Tower
- Tollgates and milestones
- Key extracts from SoW
- Identified risks and issues
- Documentation requirements
- Behaviours at Transition site

Transition Kickoff – Onsite

The Kick-off meeting should be planned by the Transition Manager to coincide with the travel of the Transition team to the Transition site.

This meeting should focus on the Client’s and Wipro’s responsibilities during the period of the Transition, on Wipro’s key resources and respective roles, on the proposed Governance structure, on the projected Transition Plan and on the documentation gap analysis report.

Planning for KAP

Each Tower Lead (person responsible for a Customer's application) should customize the respective data collection questionnaires and templates and pass them to the Transition Manager, so he can define the KAP Plan with the proper sequence for each application. When concluded this task, the Transition Manager should finalize the KAP Plan in conformity with the client.

It should also be performed a customization of the SMTD and EPD templates, in order to align them with the engagement needs. Additionally, there should be planned and documented the necessary training and its details (material, location, trainers, among others) as a result of an analysis of the RFP (Request For Proposal), DD Report and Customer’s infrastructure and applications.

Infrastructure Setup

The infrastructure planning should take place at the Planning phase. This generally includes a topic referent to the data connectivity (links, VPNs, routers, firewalls, among others) as well as for broadband connectivity (access from home or remote support for instance), a topic on voice infrastructure for ACD (Automatic Call Distribution), IVR (Interactive Voice Response) and VoIP (Voice over IP) equipments, details for the computing infrastructure like applications, licenses, tools, printers or laptops, and on other infrastructure like wall boards or projectors.

As a last task at the Planning phase and for its closure, Transition Manager should proceed with an internal tollgate review and then validate the Transition Planning Phase Exit Checklist.

Tasks:

Table 4.7: Transition Planning's Tasks

Task	*Responsibility*	*Template*
Handover from Sales to Delivery	Bid Manager, DD Manager	Sales Handover Checklist
Contract Preparation, SoW Sign-off	Bid Manager, DD Manager	SoW
ITSM Scoping	Delivery Manager	ITSM Process Scope
Boot Camp	Transition Manager	Boot Camp Template
Transition Planning	Transition Manager	Master Transition Plan; Process Definition Plan
Service Desk Setup	Transition Manager, Service Desk Tower Lead	-
Customization of SMTD, EPD, Data Collection Templates	Tower Leads	SMTD – Applications; SMTD – Infrastructure; EPD
Transition Review – Internal & Customer Review;	Transition Manager	Sample WSR (Week Status Report)
Completion of Planning phase	Transition Manager	Transition Planning Phase Exit Checklist

4.4.2 Knowledge Acquisition Phase

After validating the Planning Exit Checklist, it is officially started the KAP (Knowledge Acquisition Phase), even though its preparation has begun earlier. The main objective of this phase is to collect the knowledge of Customer's IT services and applications. In general, this knowledge transfer, from Customer team or incumbent vendor, is performed onsite by the Wipro team. The process of training the offshore team will occur at this stage as well.

This phase is characterized by several activities. It starts with the KAP Kick-off meeting, which gathers the different managers for this phase and defines the roles and responsibilities of Wipro team and Customer representatives. Next, it takes place one of the most important activities of all Transition process – the KAP Sessions – these sessions are a crucial element for the knowledge transfer, where it occurs at a great intensity and there is much information to pass.

At this phase, the Delivery Manager should also start planning for Service Delivery procedures and for Steady State operations and he should as well initiate preparations for the offshore team training. There is also the need of configuring the tools that will be used, in order to grant access to the teams and prepare them to collect all the information in a structured way.

Finally, there will take place activities related with grounding the next phase – Secondary Support – and to conclude this one, with a KAP review and its validation with the Customer.

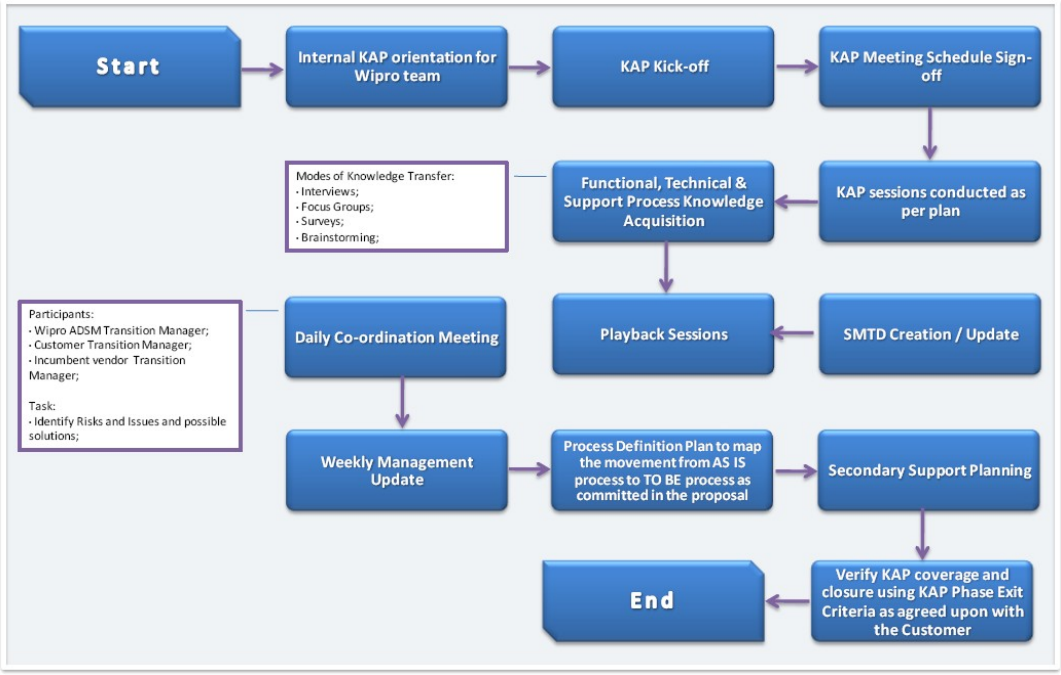

Figure 4.10: Transition KAP Process (Adapted from [WT10]).

Envisaged Improvements

KAP is one of the most important Transition's sub-phases, but also one that consumes much time to accomplish and therefore it has a higher priority in what refers to improvements in the Transition phase. Considering, for instance, the example presented in Section 4.4, where the Implementation project had duration of a year, for the respective Transition the KAP phase usually takes between 6 to 8 weeks. According to Wipro Retail's strategy, the objective is to reduce it to 3.5 to 5 weeks, a reduction in the order of 30%-45%. In this sense, several points were identified where it is possible to achieve an enhancement.

Starting at high levels of Governance, Transition Manager should adopt tools that help him in his tasks of managing the Transition in terms of resources, tasks and documents. For this process, the current recommended tool is Clarity [WT10], which provides a vast set of functionalities directed to this kind of management and is Transition oriented.

Management and control of the meetings is another activity with high importance in KAP. It is essential to have a greater number of recordings of the meetings. Often, information that was mentioned in a meeting is again stated in a posterior meeting due to uncertainties in that topic. There are already some collaborative tools like WebEX or Live Meeting [WT10] to help on this task. Other processes that should also be recorded are the SOP or other Support processes. This allows validating or reviewing information presented by Customer's or Incumbent vendor's SMEs in future moments.

Also, the use of more and better tools should be extended to other tasks related to Reverse Engineering, with the aim of improving the debugging, the analysis of the structure or the configuration of the functions of the applications. Current recommended tools are, for instance, Rational Asset Analyzer, Wipro Accelerator or Enterprise Architect [WT10]. One important aspect that should be take into account when choosing the tools to be used is to decide which resources are familiarized with, saving the initial time of learning that normally occurs. This

familiarization aspect should be considered in the applications too. It is a good practice to expose resources to similar applications with different clients, since it will improve the speed and the costs they take for their understanding.

The use of tools is related with a major point, the mechanization of processes where possible. Mechanization means Improvement, since the mechanization of processes usually speeds up its execution. So, oriented to this, there is another characteristic that could be enhanced - the use of templates and guidelines. Optimization of processes requires not doing unnecessary work like writing again and again the same texts in different documents or for different clients or thinking in questions for KAP meetings, when many of these questions are standard. It is possible and should be implemented the use of pre-filled SMTDs, improved KAP questionnaires as per Business Process & Technology and detailed guidelines for KAP with easy access from Wipro's network.

Moreover, there should be the consciousness that it is not achievable to know everything, so it is necessary to identify which, in fact, is significant to perform properly Secondary and Primary Support, using available knowledge (tickets, backlog, platforms and others). These elements should also be used to make a list of common incidents and problems in the portfolio prior to Secondary Support and plan for simulation, walkthrough and a discussion session on these.

At last, there should be a planning for helping to achieve SLAs as demanded. Activities that could help achieving this objective are [WT10]:

- The reformulation of IT processes when needed;
- The *re-badging* of personnel;
- The training of resources on applications Customer may need. Training should focus firstly on the elements of the Transition team that interact with SMEs (Subject Matter Experts) and only after extend the training to the rest.

Knowledge Acquisition Phase Envisaged Procedure

KAP Kick-off

KAP Kick-off is a meeting that reunites several Leads of the Transition process and of the KAP phase in particular. Generally it takes place at transition site and is attended by the Transition Manager, the Bid Manager, the SQA Manager, the Tower Leads and the Executive Sponsor.

It is usually a long meeting as a result of the many points that are required to be discussed. The first topic of discussion is to identify who has the knowledge or where it may be enclosed, normally documents or tools (Customer's or Incumbent vendor's processes, procedures, templates), and how to obtain access to those elements and other type of resources as labs, servers or discussion groups. Moreover, it is essential at this meeting that roles and responsibilities both of Wipro team and Customer / Incumbent vendor get agreed.

After these questions are answered, the focus should be redirected to finalize the KAP plan, defining a proper schedule taking into consideration Customer's / Incumbent vendor's SMEs and Wipro's onsite and offshore team. This schedule should include the next meetings and the accurate schedule for the transition of each application of the implemented solution.

KAP Sessions

This activity is one of the major bases of the Knowledge Transfer process. The objective is to pass detailed knowledge from the Customer or Incumbent vendor team to Wipro Transition

team, through class room sessions, demonstrations and others tools like support guides, support handbooks or process and procedure manuals.

Recording tools and collaborative tools such as LiveMeeting [WT10] should be an integrated part of all sessions and demonstrations carried out. They allow a more collaborative work and the chance of recording the activity for future utilization/visualization if required.

The intended knowledge is enclosed in 3 main components – Functional, Technical and Support Process. The first one, the Functional Process, normally comprises domain and business process overview like the mapping of batch jobs or business cycles. The Technical Process makes reference to the technical aspects of all identified towers and to the IT Infrastructure Landscape – details on equipment like servers, desktops or storage, details on software, on warranties, on spares and on tools. The third component of knowledge is referent to several aspects of the Support process – In & Out of Scope activities, SLAs, On Call support model, interfaces and handoffs with 3rd party vendors, severities handling process, incident analysis, escalation process, service window, seasonal activities and information on contacts.

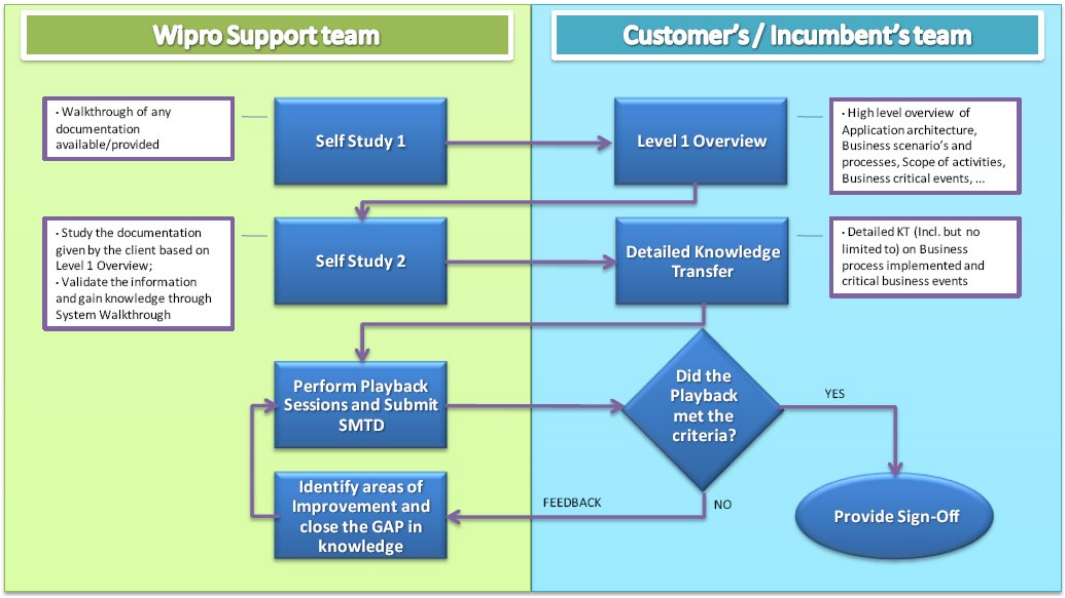

Figure 4.11: Interaction between Wipro and Customer / Incumbent vendor in KAP Process.

These three different components of knowledge should be recorded in the main documents – SMTD and EPD. These documents are also final deliverables for the Customer and they should mention the repositories that contain the sessions where that information was gained.

Planning takes into account a series of Playback sessions where the Wipro team exposes the knowledge apprehended and validates with the Customer all the information collected during the previous sessions.

Additionally, Wipro's Transition Manager and Customer's / Incumbent vendor's Transition Manager should have daily meetings for coordinating the KAP Sessions. Their task is to ensure that sessions have the right extent and cover all essential points, recognizing risks and identifying solutions for them. It is also responsibility of the Transition Manager to supervise the knowledge transfer between the onsite team and the offshore team, defining daily discussion sessions using video conferencing, passing documents obtained, ensuring access to Customer repository and intranet and planning meetings between SMEs from both sides using the right tools. Moreover, the Transition Manager should analyze the knowledge collected and

compare it with the initial plan, scheduling meetings with Wipro and Customer top management to present the status of the Transition and, revising the plan if necessary.

Table 4.8: Techniques for KAP

Techniques for KAP	*Interviews*	*Focus Groups*	*Surveys*	*Brainstorming*
Purpose	Used to learn about a particular segment. Very effective when discovered new Customer segments and there are few hypothesis as to execute their needs.	Primarily used to gather a collective point of view from several key stake holders at same time to test if a certain hypothesis concerning their needs is true.	Often used to measure Customer needs and priorities on a scale large enough to draw statistically valid information to base business decisions upon.	Used to generate, clarify, validate and consolidate ideas.
Advantages	• Very focused • Excellent for clarification & definition of terms • Can be conducted telephonically or in person • Flexibility • High response rate • Forms the basis for focus group interviews	• Very focused • Excellent for clarification & definition of terms • Can be conducted with various segments • Flexibility • High response rate	• Access to a large audience • Getting diverse views • Helps in arriving at statistical conclusions	• Very focused • Lots of ideas generated in a short time • Generates buy in as everyone has contributed • Team effort
Challenges	• Time consuming • More costly to conduct • Can be influenced by interviewer bias • Typically smaller samples • Positive response bias • Questions have to be well defined	• Time Consuming • Moderate Cost • Can be influenced by moderator bias • Typically smaller samples • Group can be influenced by dominant personalities	• Selecting the audience • Framing the right questions • Getting adequate response	• Setting the context • Setting the ground rules • Suspending judgment • Final short listing of ideas • Need expert facilitator who is good in encouraging and moderating participants

Service Delivery Planning

In relation to the Service Delivery Planning, normally it is in the KAP phase that preparations start being taken, accordingly to the ITSM Process Scope document defined during the previous Planning phase. Delivery Manager is responsible for planning the activities for Steady State operations and for all procedures related to the Service Delivery and enclose them

in the Service Delivery Plan. From this moment, this document should accompany the Transition and be refined along the following phases.

Team Ramp Up and Training

Delivery Manager is also the responsible for ensuring the training of the offshore team. At this phase, the training is identical to the one mentioned at the previous sub-chapter (4.4.1 – Transition Planning) and it consists in preparations for dealing with the client. For those who did not receive the training until the moment, Delivery Manager should certify that they receive the right training (on delivery and Customer support skills, accent alignment and neutralization, communication and listening skills, behavioural training and overview of Customer's operational geography and cultural perspective).

Additionally, if not concluded yet, Delivery Manager should finalize the analysis of the necessary skill requirements and update the number of resources required for delivering the services properly if the prospects suffered changes.

Tool Configuration and Integration Information

Transition Manager should request access to tools and relevant Customer's IT infrastructure for the Wipro team. It is necessary to perform an assessment of the Customer tools to evaluate their level of customization and their capacity to generate reports and analyze other metrics required during future phases, mainly the Steady State phase. Also, it is essential to verify the existence of a Knowledge Base for the current Service Desk team and validate if it can be used by Wipro team for incoming operations.

Wipro team should verify the practicability of using Wipro recommended tools to record and replay happenings to more complete and rapidly understand SOP (Standard Operating Procedure) processes like ticket receipt, break-fix code movement, making a release, among others. This replay helps to validate the understanding of processes and to obtain the signoff from the Customer for using those tools in their environment.

Tools used in the Secondary Support and Primary Support should be well-known by the Wipro team. It should be verified that the team is familiarized with working with the tools and can execute the requested processes related with the support or enhancements scope.

KAP Closure and Planning for Secondary Support

Being such an important phase, KAP closure requires an extensive review of the knowledge obtained. Transition Manager should meet with the Customer to validate the information acquired related to the 3 components of knowledge – Functional, Technical and Support Process and receive the sign-off on the updated SMTD and EPD.

It should be also created from several sources like ticketing tool or dashboarding tool, a catalogue of frequent incidents and problems as well less common incidents and add it to the Secondary Support plan, which should be built with the tasks for this next phase.

Moreover, it should be finalized Customer SME visit plan to the (ODC) Offshore Development Center that, if applicable, will be a responsible part of the Secondary Support.

Tasks

Table 4.9: Knowledge Acquisition Phase's Tasks

Task	*Responsibility*	*Template*
Detailed KAP Planning	Transition Manager	KAP Plan
Knowledge Transfer (Functional, Technical and Support Process)	Tower Leads	Business Process to Application Mapping; SMTD – Applications; SMTD – Infrastructure; EPD; AS IS Process Assessment Questionnaire
Service Delivery Planning	Delivery Manager	As per Service Delivery Planning Procedure
Weekly Management Updates	Transition Manager	Sample KAP Tracker; Sample WSR
KAP Sign-off	Transition Manager	Master Transition Plan; Process Definition Plan

4.4.3 Secondary Support

Secondary Support is a phase where the Wipro team starts delivering support, but at a secondary level, not being accountable for the applications outputs and results. Wipro team shadows the Customer/Incumbent vendor team by simulating non critical issues, acting as a second line support since the current incumbent team is the first line contact and will own the responsibility for the support issues.

The main activities of this phase are related with the preparation for providing real support to the Customer. Wipro team should observe and learn IT Service Support from the Customer/Incumbent vendor team and be target of trainings at various levels like process awareness or tools configuration. These trainings should occur both onsite and offshore and the knowledge transfer should be ensured by both parts of the Wipro team.

Figure 4.12: Secondary Support Process (Adapted from [WT10]).

Envisaged Improvements

Secondary Support has a lower scope for speed-up relatively to the KAP phase, but a higher scope in comparison to the Transition Planning or Primary Support, having an expected improvement of around 10% to 15% [WT10]. So, considering once more, the example presented in the introductory part of this chapter (see Section 4.4), with an Implementation project lasting a year, the Secondary Support, in that case, takes, in average, 4 to 6 weeks to complete and the objective is to reduce it to 3 to 5 weeks [WT10].

Several improvements identified for the Secondary Support phase are identical to those presented in KAP Improvements section, mainly those linked to the use of tools – concisely, reverse engineering tools for analyzing the applications and their structure, process capturing tools for registering information on SOP or other Support processes, governance tools like Clarity for helping Transition Manager handle the Secondary Support management and collaborative tools for Knowledge Transfer processes.

Moreover, other improvements that were recognized were the possibility of running Secondary Support earlier and partially in conjunction with KAP and become aware of critical incidents prior to Secondary Support.

Secondary Support Envisaged Procedure

Secondary Support Activities

The logging process should be taken into account by Wipro SMEs (Subject Matter Experts) since the first moments. They are responsible for analyzing and identifying the entire request logging process, since the arrival of the call or request, continuing with its resolution and finally with its closure. Wipro SMEs should also spot potential activities, which may not take place even once in this period of Secondary Support and prepare alternative environments where these activities can be tested and their result registered.

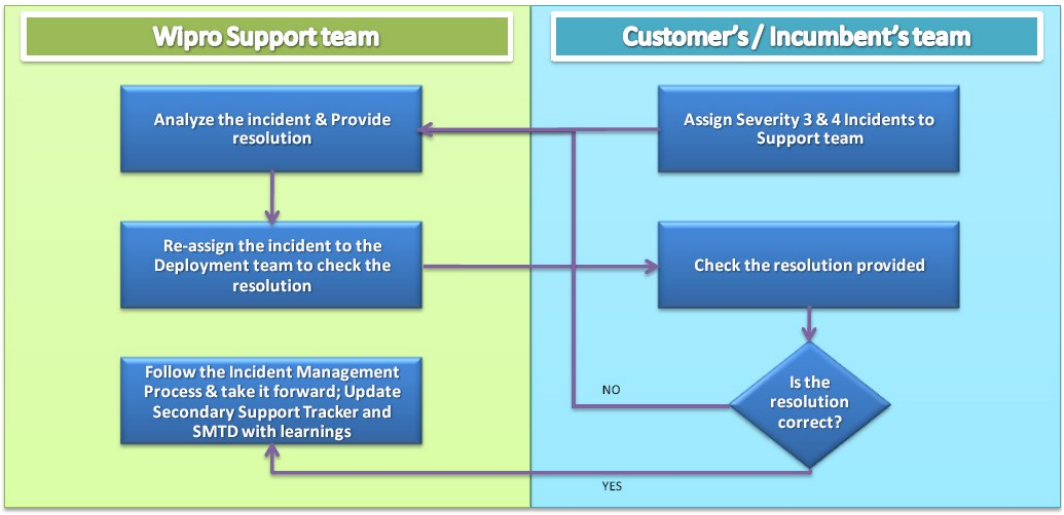

Figure 4.13: Interaction between Wipro and Customer / Incumbent vendor in Secondary Support Process.

When the Transition is performed both offshore and onsite, the onsite elements of the Wipro team should communicate and transfer knowledge to the offshore part using different means, including collaborative tools (as referred on 4.3.3).

Along this phase, there should be a refinement of the SMTD (System Maintenance and Technical Document) and EPD (Execution Process Document), firstly by the Tower Leads and next, by the Transition SQA (Software Quality Assurance)/Process Manager, comprising all the lessons learnt by them or by Wipro SMEs.

Transition Manager has the task of coordinating the integration process of Customer tools with Wipro tools, defining the complete Tools framework and ensuring its testing in the end. He should also initiate preparations for the next phase – Primary Support, defining along with Customer the operations structure for the sub towers, ensuring that on call connectivity for 24/7 or 24/5 support has been established and defining the ramp up plan for tickets handling by the Wipro team for this phase.

Delivery Manager is responsible for supervising the set up of the network infrastructure and ensuring that is properly tested from offshore. He should as well examine and signoff with the Customer the formats for the reports.

Tasks

Table 4.10: Secondary Support's Tasks

Task	*Responsibility*	*Template*
Shadowing of incumbent team and Process training	Tower Leads	SMTD – Applications; SMTD – Infrastructure; EPD;
Secondary Support Sign-off	Transition Manager	-

4.4.4 Primary Support

Subsequent to Secondary Support comes the Primary Support phase. Like in Secondary Support, both teams are present and work in parallel. However, in this phase roles of the Incumbent team and Wipro team exchange, becoming the Incumbent team as the “shadow” and Wipro Support team as the Primary and End-to-End responsible. Primary Support phase is a simulation of Steady State.

During this phase, the Wipro team starts treating tickets both onsite and offshore as it will happen at the following phase – Steady State. The incumbent team provides escalated support and will be present to help the Wipro team, even if sometimes not necessary, to achieve the agreed SLAs, workload and defined documents.

Finally, this phase marks as well the final stage of the Transition, with the Transition’s closure sign-off with Customer and the handover to the Delivery team.

Figure 4.14: Primary Support Process (Adapted from [WT10]).

Envisaged Improvements

In comparison to the other phases, Primary Support has a lower scope for improvements, with a current execution time already considered very good. However, there is still space for improvements, so, according to Wipro Retail's strategy, it is expected improvements in the order of 5% to 10%. Considering, yet again, the example presented in the initial part of this chapter (see Section 4.4), where the Implementation project had a duration of a year, in those cases, the Primary Support usually takes four to six weeks to accomplish, so the aim for improvement would be to reduce it to approximately 3.5 to 5.5 weeks.

Like the previous phases, mainly KAP and Secondary Support, one of the major improvements that could and should be implemented, is the use and the automation in the use of tools to help in tasks like the management of activities, the saving of information or the interactions between teams.

Another improvement for this phase is the implementation of a higher number of SLAs simulations. These simulations, being performed at earlier stages and properly monitored and assessed, can lead to more learning and with that, to an enhanced performance by the team.

Finally, besides these points, there is another which can be improved – the communication process between Wipro and Customer, i.e., there should be a higher number of interactions between both parts with the intention of having a faster and more precise response to doubts that could appear from both sides.

Primary Support Envisaged Procedure

Primary Support

During this phase, Wipro team should handle tickets, both incidents and requests, as agreed in the ramp up plan and onsite and offshore teams should share the responsibility of handling them. This handover of tasks and status should take place at the end of the respective days or shifts and be defined by both teams. As issues are reported and identified, Wipro SMEs should register them on the Technical Issue Log for posterior analysis or quick help.

Like in Secondary Support, Wipro SMEs have the mission of identifying potential activities which may not take place during this Primary Support phase. And, for those activities, they are responsible for preparing an alternative environment where those activities can be tested, keeping the status of their progress. Additionally it should also be performed several tickets audits to ensure that processes are being executed properly.

During Primary Support, there are two situations that should be aim of continuous attention. The first one occurs if there is a large difference in efforts taken in Secondary Support in comparison to Primary Support. The second situation occurs if it is noticed a considerable amount of client interaction. These two situations require to be examined and discussed as soon as identified in order to elaborate contigency plans to cover them.

Daily operations dashboard should be disseminated and internal reviews should be handled on a daily basis. The focus of these operations review is to assess performance against the different metrics like high severity incidents or issues faced, among others.

Wipro team should elaborate the agreed reports and update the SMTD and EPD, with validation of the Transition Manager and final sign-off with the Customer.

Wipro should carry out internal tollgate review, at least three days before the phase conclusion.

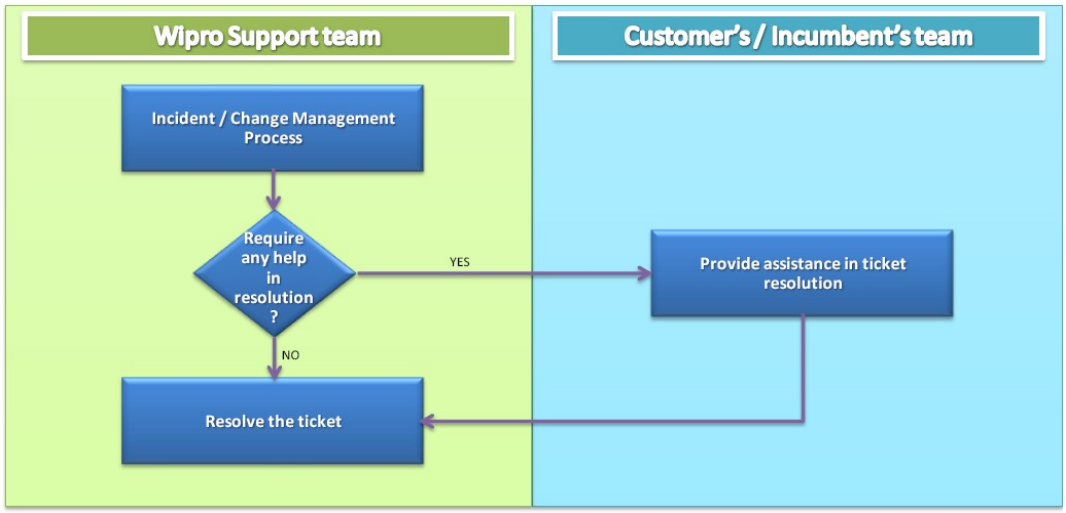

Figure 4.15: Interaction between Wipro and Customer / Incumbent vendor in Primary Support Process.

Finalize Service Level Requirements and Credits

Delivery Manager is responsible for collecting the information captured in the phases until the moment – KAP, Secondary Support and Primary Support. Then he should finalize the SLRs (Service Level Requirements) and the SLCs (Service Level Credits) based on that information and, in the end, sign-off the SLRs and SLCs with the Customer.

Another task of the Delivery Manager is to identify SLA Baselining Requirements. This can be a hard assignment since there are several situations that complicate it:

- No established measurement tools available currently to trace and register the SLA;
- Scope does not contain End-to-End processes;
- Dependency on third party vendors/partners for overall performance;
- Scope of work varies from existing support team to Wipro Support team;
- Size of team varies from existing support team to Wipro Support team;
- Unclear incident and performance targets;
- Unavailable historical data for at least 3 recent months;
- Wipro's first time providing the service or Customer's inexperience outsourcing it. In these cases, SLA should be baselined in which conditional targets are planned within a pilot SLA, which is supervised and corrected in the course of a service warranty period normally for the phase of stabilization;

Nonetheless, Delivery Manager should finalize those SLAs and, in accordance with them, update the Contract.

Finally, Delivery Manager should arrange some inputs for the next phase – Steady State, concluding the SLA ramp up plans.

Completion

Customer Satisfaction Survey

Satisfaction study over the whole Transition project should be performed using the Transition Customer Satisfaction Survey (CSAT) form within 1 week of closing the project. This task is responsibility of the Transition Manager, who should also save all the feedback from the key stakeholders who had contact with Wipro during the transition (Customer/Incumbent Vendor Transition Manager, Project Head and others). In relation to the comments from the Customer, CSAT actions will be taken and closed by Delivery. Transition Team should capture learning from Customer feedback and bring them into practice in future occasions.

Dissemination of Learning

Towards the end of Primary Support phase, Wipro team should check the "Lessons Learnt" document and for each tower update information on positive aspects and on others less positive which can be improved, for future reference.

Customer Sign-off

When Transition is complete, Transition Manager should obtain a sign-off from the Customer, approving the move of Wipro team to the Steady State.

Delivery Sign-off

The Delivery Manager should also obtain Customer sign-off on the deliverables (preferably, Delivery Handover Checklist sign-off on email), certifying that all Transition deliverables have been met.

Tasks

Table 4.11: Primary Support's Tasks

Task	*Responsibility*	*Template*
Primary Support	Team Lead (Primary); Transition Manager (Secondary);	SMTD – Applications; SMTD – Infrastructure; EPD;
Daily Operations Review	Delivery Manager	Daily Operations Dashboard; Technical Issue Log;
Finalize Service Level Requirements and Credits	Delivery Manager	-
Finalize Ramp Up SLAs for Stabilization	Delivery Manager	-
Transition Completion Sign-Off	Transition Manager; Delivery Manager;	-
CSAT Feedback and review	Transition Manager	CSAT Survey Form
Dissemination of learning	Transition Manager	Lessons Learnt
Delivery Signoff	Transition Manager	-

4.4.5 Service Delivery Planning

Service Delivery Planning is a hidden, but essential phase that occurs in parallel with Transition and posterior phase of Steady State. It starts being planned and drafted at the sub-phase of KAP in Transition, having revisions along the Secondary Support and following Primary Support and it is refined, updated and completed during the Steady State.

The purpose and main objective of Service Delivery Planning is to ensure the right preparation for executing the activities related with the IT Services. Moreover, it will be used as an operational manual of details for handling every aspect of delivery and it is a single document with links to all related artefacts of Service Delivery.

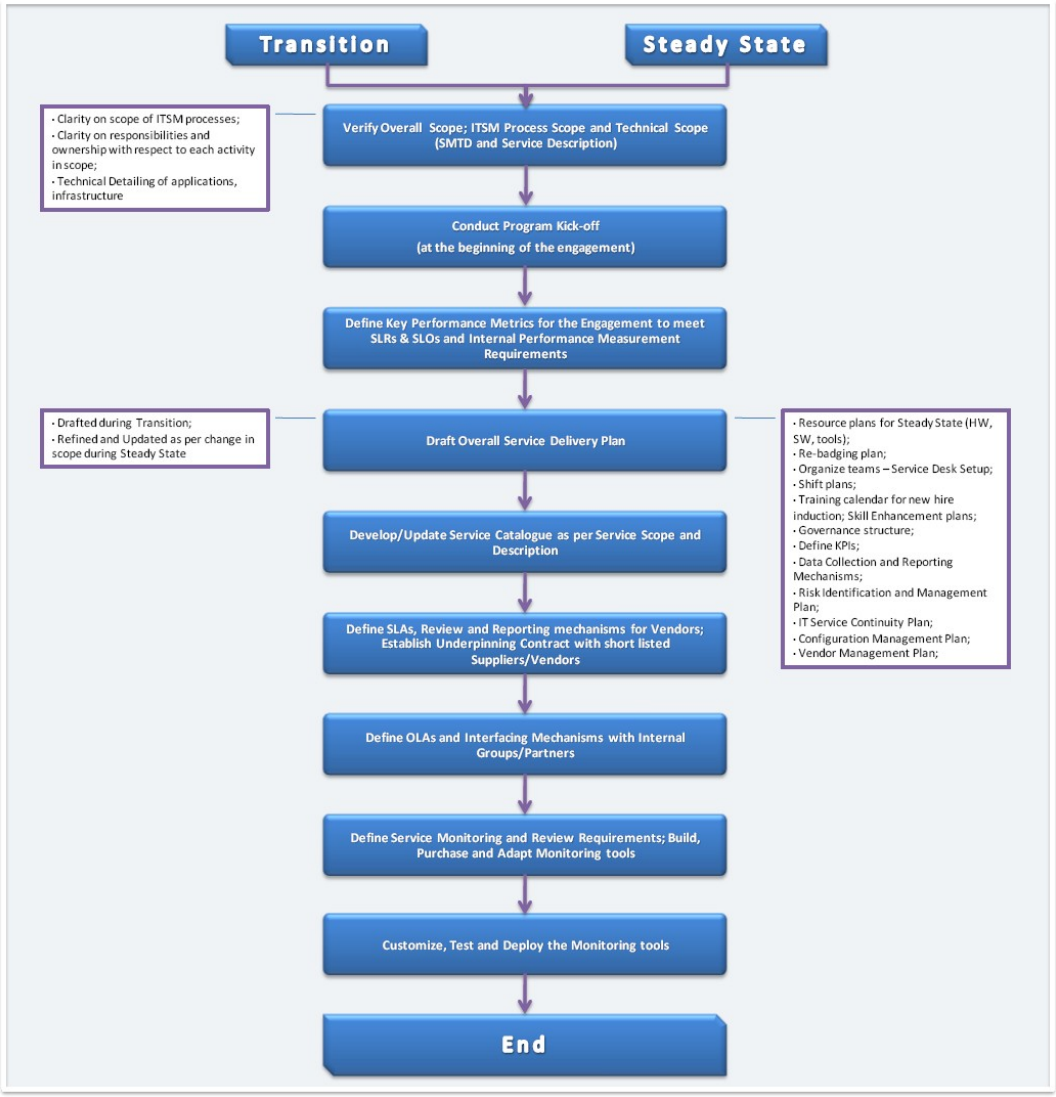

Figure 4.16: Service Delivery Planning Process (Adapted from [WT10]).

Service Delivery Planning Envisaged Procedure

Main activities

In spite of not being mandatory, it is recommended to start Service Delivery Planning during Planning sub-phase of Transition, with the pre-elaboration of the ITSM Process Scope document. This will allow performing the process in a smoother manner and let it have a longer and beneficial period of maturation.

Verify Overall Scope

Delivery Manager should identify the ITSM process scope and enclose it in the ITSM Process Scoping Document in order to ensure transparency on each of these processes and therefore to guarantee that the responsibilities and ownership of all activities are plainly understood and easily recognizable. Furthermore, in relation to these processes, the document should only include the activities and tasks that were defined as deliverables in the range of the

SoW. However, if these activities and tasks differ tower wise, process scoping could be done tower wise.

This document should also comprise the technical scope of the engagement, embracing the technical specifications of the infrastructures and applications and defining the responsible for each activity.

After concluding the ITSM Process Scoping, Delivery Manager should direct the document to the Process/SQA Manager for review and in the end being approved by Service Delivery Head.

The expected organization structure should be defined and made available. It should include the identification of the several leads from diverse practices/ horizontals and verticals and the formation of various teams like the Service Desk and Prime Resolver Groups.

Conduct Program Kick-off

Program Kick-off meeting should be led by the Delivery Manager and count with the presence of the teams and all applicable stakeholders, that could be internal support teams, teams from multiple verticals and locations and all practices/horizontals that are related with the project. The mandatory participants are the Service Delivery Head, the Delivery Manager, the SQA Manager, the Account Manager, the Transition Manager and the Onsite and Offshore Program Managers and Project Managers. The main purpose of this meeting is to identify and share the vision, objectives and team structure.

At the meeting it should also be defined the methodology for performing the program and the key metrics for measuring the performance. These metrics should be based on the organizational and Customer Critical to Quality (CTQ) parameters and take into consideration the Program organization and the Governance structure.

All the decisions and documents identified at the meeting should be documented in the Minutes of Meeting template and be communicated to all relevant stakeholders, keeping them informed on the actionable till their closure.

Additionally, Delivery Manager could use the identified documents for Service Delivery Plan preparation.

Draft Service Delivery Plan

Similarly to the ITSM Process Scoping document, the Service Delivery Plan is one of the responsibilities of the Delivery Manager, who needs to schedule a meeting for a table review of the Service Delivery Plan. This meeting should count with all mandatory participants, including the Process/SQA Manager who will smooth the progress of the table review as Review Team Leader. It is responsibility of the stakeholders to ensure that all relevant interfaces are embraced in Service Delivery Plan and to confirm their commitment during Service Delivery Plan review. On the review closure, the Service Delivery Plan needs to be approved by the Service Delivery Head and subsequent to this approval, the document still needs to be aim of document control as per Control of Documents Procedure.

- Normally Service Delivery Plan contains the following subject matters:
- Program Overview
- Scope of Services
- ITIL process scoping

- Resource (Hardware, Software, Human) Plan, including Customer supplied items. Hardware and Software to be acquired from the Customer should be validated prior to use. If present in the contract, Human resource planning should also take the *re-badging* into account.
- Organization Structure
- Governance Structure (as per Governance Guidelines)
- Roles and Responsibilities
- Training Plan
  - Skill Matrix to assess training requirements
  - Training calendar
  - Induction manual for people who have newly joined
- SLAs and KPIs, where
  - KPIs for the engagement can be provided directly by the Customer based on their Critical To Quality parameters where there are no penalties associated and/or
  - KPIs are defined or derived based on the SLOs to be met. These act as sub process goals in order to achieve the final SLO and/ or
  - KPIs are defined in order to meet organization's internal performance measurement and reporting requirements.
- Methodology for introduction of New/Modification of Service and End of Service
- Shift Plan
- Tools and Methodology Plan
- Quality Process Plan
- Risk Identification and Mitigation. The risks identified at the time of Transition should be consulted and re-assessed.
- Supplier/Third party contact details

In addition to the Service Delivery Plan, it should be appended the Availability Plan, the Capacity Plan and the Service Continuity Plan as per the scope of the engagement. It should also be defined the reporting formats for periodic status updates to the Customer and prepared the On Call roster template.

Define/Update Service Catalogue

The purpose of Service Catalogue is to gather in one place, in a reliable and uniform structure, all the information on all the contracted services, and to ensure that this information is available to those who have permissions to access it. In general, Service Catalogue includes service component details or Configuration Items (CI) details for which service is provided, specifications on all the IT Services delivered to the Customer and information about the interactions/relationship to the supporting services/components.

Revisions to Service Delivery Plan

Along the phases, Service Delivery Plan will face adjustments due to several factors that require consideration in its scope. Within these factors, there are:

- The receipt of new or modified Service Requests;
- The end of a service;
- The changes in one or more processes as a result of Internal Audits or Assessments or as recommended in Project Monitoring Reports (PMRs), Quality Improvement Council (QIC) and/or Management Review Meetings (MRMs);
- The release of new norms or standards in Internal reference tools or guidelines;
- The improvements in a service caused by new or modified actionable;
- The conclusions of Root Cause Analysis (RCA);
- The mitigations or contingency plans defined in Risk Management.

These revisions to Service Delivery Plan should be version controlled and they must be saved and kept for any eventual need.

If the sections of the Service Delivery Plan are related with the Quality Process Plan or with SLAs and KPIs, they need the review of the respective Process/SQA (Software Quality Assurance) Manager and consequent approval of the Service Delivery Head. If they are related to other sections, they can be directly approved by the Service Delivery Head.

Define Underpinning Agreements and OLAs

Inherent to the Service Delivery Planning and included in the Service Level Management procedure, there is the task of establishing the contract with the Supplier/Vendor. It should also be defined the Underpinning Agreements based on delineated SLAs.

It should as well be established the OLAs with Internal teams and other partners and it is recommended to define these with a higher level of strictness in comparison to the SLAs agreed upon with the Customer.

Enable Service Monitoring and Review using Tools

Tower Leads are responsible for identifying and assessing opportunities of automation of services in what concerns service monitoring and review. They should also gather information on Customer tools and on their integration requirements, and on tools required for enabling Service Support and Service Delivery, which normally embrace incident management tools, monitoring tools, testing tools, configuration management tools, governance tools, reporting tools, among others. This compilation of information generally occurs during the KAP sub-phase of the Transition and the customization, testing and deployment of these tools will follow it, getting concluded during the Steady State phase.

It is responsibility of the Delivery Manager to identify the required tools for automating the service reporting requirements. In the case of Customer / Incumbent vendor tools being capable of performing this task, Delivery Manager should consider the option of using them as they currently are.

Tasks

Table 4.12: Service Delivery Planning's Tasks

Task	*Responsibility*	*Template*
Program Kick-off	Delivery Manager	-
Creation and Maintenance of Service Delivery Plan	Delivery Manager	Service Delivery Plan; Risk Management Plan; Tools Plan; Shift Plan;
Prepare Training Plans	Delivery Manager	Skill Matrix; Training Calendar; New Joinee Induction Plan; Training Record;
Hardware / Software Resource Identification and Testing	Tower Leads	Infrastructure Readiness
Draft Reporting formats	Delivery Manager	Sample Weekly Status Report;
Define Underpinning Agreements and OLAs	Delivery Manager	As per Service Level Definition Procedure
Enable Service Monitoring and Review by building, purchasing and adapting tools	Tower Leads	-

5 Case Studies

5.1 Introduction

In this section of the report dedicated to the description of two case studies done based on the present project, with the purpose of collecting real data about the benefits and improvements obtained by using and following a well-designed methodology and at the same time reflect and identify where there are other opportunities for improvement.

The first case makes reference to a Customer where the Transition between the Implementation team and the Support team occurred, initially, without the application of a specific methodology, and later with the introduction of some points of the Lifeline methodology (see Section 4.3). In this case, the Transition took place from the Wipro Implementation team to the Wipro ADSM team.

The second case presents a different Customer where it was followed many principles and guidelines of the global Managed Services methodology (see Section 4.4). As in the previous case, there was also a Transition from the Wipro Implementation team to the Wipro ADSM team. However, in this case, it was the first part of a bigger Transition that happened from Wipro to the Customer.

5.2 Case Study A: A Customer without the application of the Managed Services Transition Methodology

Customer

The present case study introduces a customer with basis and head-office in the Italian city of Padua, but also with branches at the cities of Udine and Bolzano. Its main business is the Food Retail and it operates mainly in the North-East of Italy. Last year reports (2009) present Retail sales approaching €4 billion and store numbers of 1,636, even though Retail sales fell by 5.7% in the course of the last year as a result of the difficult trading situation.

The Challenge

The project involved systems implementation of the ORMS (Oracle Retail Merchandising System) for Merchandise Management, ORIM (Oracle Retail Invoice Matching) for Invoice Matching, ORWMS (Oracle Retail Warehouse Management System) for Warehouse Management System and ORDW (Oracle Retail Data Warehouse) for Data Warehouse.

Another aspect of this project was the very high level of customizations required by the Customer for the modules. In order to deliver a more oriented response to the Customer needs and to leverage the capability of the Customer to better compete in the market, it was asked to Wipro to make many adjustments to the OR (Oracle Retail) version that, at the time, didn't have the functionalities required. In what concerns Transition, this was a very significant detail, since it increased the degree of the type of knowledge that remained with the person responsible for that adjustment.

The present case study makes reference to a project which lasts for ten years, with progressive implementations of different modules and several sub-projects for customizations of those modules.

Transition

The main point of the Transition in this case is the fact that it started without being based in any methodology or planned procedure, and even though that there was the consciousness that it should be gradual and documented, the "I-have-to-finish-this" pressures led to a less organized Transition, since it was not defined as a mandatory process.

Actually, in early stages, support and maintenance were done by the Implementation team, with them being responsible for taking care of the issues and performing the Batch operations and the client was paying an extra for these tasks. With time these maintenance activities grew in terms of intensity and quantity leading to a moment where the implementation activities were almost not advancing. At that moment, becoming conscious of the need of changing the situation, there was an attempt to divide efforts between Wipro Portugal Implementation team and Wipro Brazil Implementation team, but it was fruitless as the Brazilian team was not able to answer the majority of the tasks and it ended up in an overload for the Portuguese team.

With that, it was realized the need of a dedicated team for performing the maintenance of the systems and as a result Wipro and the Customer arrived to an agreement to start a new contract for the ADSM scope.

This moment marked a new point for the Transition. From this moment on, it was established the need of passing the knowledge about the Customer environment to the incoming Wipro ADSM team. However, as stated before, the process was not smooth and encountered many difficulties to surpass. Due to the lack of planning the teams tried to pass immediately to the phase of Knowledge Transfer without proper scheduling, which has produced few good results. Both teams arranged meetings with each other to analyze Customer's applications and environments, but these did not have a predefined organization and often what was presented was just overviews of the main subjects with little being kept by the ADSM team. In a few words, the results of the meetings were practically tiredness and frustration for both teams.

With the realization of this fact and with the request of the client to implement the application SeeBeyond, a integration server for enterprises, for introducing EAI (Enterprise Application Integration) in their systems, Wipro ADSM by the orientation of the ADSM Manager started the planning and implementation of the Lifeline methodology in this project.

The first step was the definition of the entire plan for the following stages. This planning involved the definition of an adequate schedule for each phase and the alignment of several degrees for the Knowledge Transfer sessions, identifying reasonably when and how much information should be passed from one team to another.

In the second step, it was decided a point related with the documentation – to make obligatory the writing and presentation of reports, in a monthly basis, of the stage of the Transition and of the status of the deliverables to the client. Hence, progresses could be observed and the remaining tasks could be more easily recognizable. Related to this, another improvement was implemented – the creation of a KEDB (Knowledge Error Database), which helped in the access to issues resolution data, and the elaboration of the SMTD for each application plus the EPD for documenting the existent processes, which facilitated in making the information more uniform and consistent.

Following these decisions, it was also established that the implementation of SeeBeyond would pass directly to the ADSM team for a bigger familiarization of the team since the beginning. Nevertheless, the Implementation team would be always available as "shadow" team to help in any circumstance.

The change in the way of how Knowledge Transfer sessions were performed brought good results, recognized by both parts. The new strategy of performing sessions with man-to-man passing knowledge or pair-programming made it faster for the ADSM personnel to engage with the Customer's applications and principally, with the enormous amount of customizations that were implemented by the Implementation team. There was even a set of technical trainings done on Customer's site with the aim of familiarizing the ADSM personnel with all Customer's environments, with final results being considered very positive. However, due to the extensive costs of those trainings, the number of these sessions was limited.

These improvements led to sooner transfer of responsibilities from one team to another and the teams were almost always mindful of the need of it being a gradual progress. The less critical services and issues were the first to be transfered, then was the interfaces, which had a higher criticality, but were repetitive and could be quickly learned. Finally, all the levels of issues and all the tasks related with Customer's applications maintenance services were transfered.

With the processes stabilized, there was again an attempt to pass some of the tasks to teams in different geographic locations, more precisely, from the Wipro Portugal ADSM team to the Wipro India ADSM team. This process occurred in an audit format, with the Portuguese team sending known requests/issues for the Indian team for them to answer, but the level of productivity and response was very low and within time it was discontinued.

Nowadays, there are still implementations being carried out and the processes between Wipro Portugal Implementation team and Wipro Portugal ADSM team are in a Steady State and take place smoothly. However, there are still some gaps to fill and that are in course like the complete map of the interfaces and the repository of technical and procedural information.

Transition Lessons Learnt

In this section are presented the lessons learnt during the execution of the Transition. As stated in Section 4.2, the following information is a result of the data gathered during the several interviews.

Table 5.1: Case Study A: Transition Lessons Learnt – What went well

What went well
Learning was very positive when the offshore went onsite
Man-to-man Knowledge Transfer sessions were more productive
The creation of the KEDB made it faster to access issues resolution data
Planned knowledge transfer by phases was crucial for its accomplishment
Elaboration of reports created a sensation of job done and progress
Relationship with the client always a priority

Table 5.2: Case Study A: Transition Lessons Learnt – What can be improved

What can be improved
More onsite sessions to improve and accelerate the learning on Customer's environments
Increase the number of man-to-man Knowledge Transfer and pair-programming sessions
Initiate the process of creation of the KEDB earlier than the Transition phase
Plan extensively the knowledge transfer
Customize the SMTD and EPD in the Planning phase
Create a repository for technical and procedural information since the beginning of the project
Apply tools to help in the Transition Governance and homogeny of the information
In case of having teams on different locations, perform side-by-side Knowledge Transfer sessions

Customer opinion

Despite of having some difficulties with the passage of tasks and responsibilities between internal teams, Wipro always takes as higher priority its relationship with the client, so all the requests and needs were attended as requested. As a result, the Customer opinion was and still is of great contentment with the services presented, with CSAT (Customer Satisfaction Analysis), a questionnaire given to the customer, being always above 6.5 points in a total of 7.

5.3 Case Study B: A Customer with the application of the Managed Services Transition Methodology

Customer

The second case study concerns to a North-American customer with businesses in different areas, more precisely, grocery, pharmacy and supply chain. With its headquarters in Minnesota but with a nationwide network of 2.412 retail stores (as of 2009), the present Customer offers a large variety of grocery retailing formats and products to their clients from coast to coast. Additionally, this Customer provides a substantial range of grocery supply chain and business services to approximately 2.200 other independent retailers and during the last years, it has been acquiring lots of companies, expanding their business in terms of value and territory, having achieved a total of net sales in the order of $45 billion.

The Challenge

The present project had its beginning in 2007 with an OR implementation for various modules, namely, ORMS (Oracle Retail Merchandising System), ORIB (Oracle Retail Integration Bus) and Integration and the first release implementation went live in late 2009.

In terms of the ADSM scope, the negotiation began in early 2009, with Wipro presenting its Transition methodology and support to the client. However, the Customer always stated the desire of being responsible for the Support and demanded the help of Wipro in preparing them to that activity. Nonetheless, when there were few days left for the Go Live (moment which defines the end of the Implementation project) they recognized that their internal team was not prepared for ensuring the support, the Customer made several contacts with Wipro in order to have Wipro assisting the internal team at the Transition phase. Concisely, the Implementation project had a length of approximately two years and the Transition phase lasted nearly six months.

The main objectives settled by Wipro with higher reference to the Transition were:

- Processes aligned with ITIL Service Transition Methodology
- Joint Transition Governance
- Proactive training on support scenarios in Oracle Retail
- Comprehensive evaluation of the quality of knowledge transferred and acquired
- Key metrics to measure and report transition progress
- Early identification and retirement of risks

As a last note, it is important to point that the present case makes reference to a particular case of Transition in Wipro Retail engagements, involving two sub-Transitions (from the Wipro Implementation team to Wipro ADSM team and from the Wipro ADSM team to Customer team). This situation involved additional difficulties to surpass and a more complex challenge to excel.

Transition

Unlike the previous case study, in this one the Transition was planned since the beginning and followed a global version of the Managed Services Transition methodology.

Therefore, the initial phase was marked by a collaborative planning of the following phases, with several interactions between the Customer and Wipro, where the Customer requested some adjustments to the initial schedule presented by the Wipro ADSM team due to costs terms and prior Customer delays on decision-making. Also in this phase it was presented the strategy for the vital knowledge transfer with a 7-step approach. Succinctly:

1. Pre-Requisite test: With the aim of validating mandatory skills before the training, and also to assess the initial level of each trainee.
2. Overview of Standard product support (Base): In order to present the ADSM typical activities on the domain as well as requiring training on product, technology and process.
3. Focus on Customizations: To facilitate the knowledge transfer on modifications performed specifically for the Customer by the Wipro Implementation Team.
4. Intermediate review: In order to assess the knowledge acquired and underline additional training needs.
5. Hands-on: With the intention of allowing personnel understand the previous trainings and learn with real situations, practical exercises were planned for the team based on testing environment or another Wipro environment.

These 5 steps were essentially planned for the KAP (Knowledge Acquisition Phase) phase, but two more were defined and intended for the subsequent phases:

6. Shadow Support: Wipro ADSM team would help the Customer team on carrying out Support operations. Additionally, the ADSM team would answer any further knowledge transfer requirement and assist in the validation and enhancement of the quality of service.
7. Final Test: In order to assess if the Customer team is ready for taking on the responsibility of assuming the support service.

In relation to the Planning, there was also the definition of the Communication Plan, where it was noted the associations between the Customer part and the Wipro part, making reference to who talks to whom and when this contact should take place. The Planning phase also marked the introduction of another improvement – the customization of the SMTD and EPD right on the initial times of the Transition. This allowed a more unstressed update of these documents on the following phases and therefore a higher quality of its content. Moreover, in the Planning phase it was also defined the effective transition metrics needed to conclude each Transition phase (with Phase Exit Checklists) and to evaluate the knowledge transferred using both quantitatively as well as qualitatively metrics. The quantitative measure involved the number of sessions handled, illustrations, demos, live examples during the KAP and Secondary Support and the quality measures were the results of the evaluation, and which level was attained by collaboratively working with the Customer for the different stages of transition.

As this Transition case was particular, involving two sub-Transitions (from the Wipro Implementation team to Wipro ADSM team and from the Wipro ADSM team to Customer team), it was defined as well that for any doubt of the Customer team, they would interact only with the Wipro ADSM team and in case of any particular need, it should be the ADSM team that would relate with the Wipro Implementation team.

As accorded in the planning, the KAP phase initiated with an assessment of the Customer team, evaluating the capabilities and knowledge of each person in the OR modules that they will be responsible for. Following this measurement, Wipro Implementation team gave trainings on the different implemented OR modules, namely, the ORMS and the ORIB. And in light to these trainings, the team also presented trainings with focus on the Customizations, with these ones being attended also by the Wipro ADSM team in order to capture particular knowledge that they may not have.

At the end of these sessions, it was scheduled the next dates for the denominated Playback Sessions, where the Customer team exposed what they have learnt and the Wipro teams, both Implementation and ADSM, clarified the doubts that emerged.

As recommended in the Managed Services Transition methodology, these sessions, the Normal and Playback, were recorded using tools for the case, in order to facilitate the access and review of the information and to share it with other personnel who may need. Besides this, it was also created, since the Planning phase, a global KEDB using a Customer tool and others, one for each stream, using Excel documents, which were updated and assessed every week.

The last activity during the KAP phase was the defined as Hands-on. As mentioned earlier, this activity consisted of practical exercises on specific known incidents elaborated by the ADSM team for evaluation and at the same time, learning of the Customer team in real situations, in spite of being in testing environment or other particular Wipro environment for the task.

Relatively to the Secondary Support, known also as Shadow Support, it was a short phase, mainly owing to the request of the Customer to anticipate the Primary Support as they wanted to be responsible and accountable for the applications support as sooner as possible and had the idea that were completely prepared for assuming it.

However, with the recurrent ask for help and transfer of issues to the Wipro ADSM team, the Customer soon realized that his team was not ready for taking control of all situations and requested a period extension to Wipro. This extension lasted till the moment that the Customer team was able to solve about 90% of the issues and 100% if critical.

The project has progressively reached the proposed objectives, with solid follow-up on established KPIs and proper handovers. At the end of the project, the Customer team was

plainly aware and comfortable with the entire service model. Moreover, all service lines were achieving their goals and reporting against the agreed SLAs.

Transition Lessons Learnt

In this section are presented the lessons learnt during the execution of the Transition. As stated in Section 4.2, the following information is a result of the data gathered during the several interviews.

Table 5.3: Case Study B: Transition Lessons Learnt – What went well

What went well
Intensity of the trainings were good
Assessments were a constructive tool for monitoring knowledge acquired
High presence of personnel onsite helped smoothing all the processes
Man-to-man sessions were productive
Trainings on customizations improved the learning
Planned offshore training increased the Offshore team knowledge in a faster way
Communications between Transition teams at the different levels were good
The use of tools and creation of the KEDB helped in the access to important information and in its uniformity and consistency
The customization of the SMTD and EPD in earlier stages of the Transition allowed to deliver them with enhanced quality
Risks analysis and management was effective
Deliverables were completed on time
Attention to the importance of the Transition was high from both parts
Transition phases, deliverables and checklists were precise and constantly tracked and reviewed

Table 5.4: Case Study B: Transition Lessons Learnt – What can be improved

What can be improved
Negotiation should take less time
The access to Customer's environments should be granted earlier
Assess the skills and technical knowledge of the personnel that is going to perform the Support prior to Transition
Create a production support environment at the beginning, and not only when needed, since it is highly probable the need of it in the training sessions
Have 3rd party vendors staff for helping with 3rd party vendors applications
Perform more *Shadow* activity in certain areas if not positive of having the Customer team completely familiar with those areas

Customer opinion

Since the beginning that the present project followed a well-defined line, with its proposed objectives being accomplished as it went forward. The planning and implementation of the Transition have received countless compliments by the Customer and this contentment was reflected on the Customer satisfaction analysis and on the several emails received by the Wipro ADSM team.

The following statements were among the comments given by the Customer:

- "We liked the approach to training – the intensity was good"
- "We liked the Assessment process (…) It was good to have multiple assessments and measure progress at various phases"
- "The management team did an excellent job of managing expectations – we were always informed, knew the status, risks and issues"
- "The team's follow through is impeccable – they could all be relied upon to get the work done"
- "The team's knowledgeable on the applications was excellent"
- "The team was professional, enthusiastic, good natured, diligent and hardworking"
- "Transition metrics took a while to get started, but once started they were a good measurement tool"

5.4 Conclusions on the Case Studies

The two Case Studies presented in this chapter were chosen, naturally, due to the difference in the way the Transition was handled. The first one, without the application of the Managed Services Transition methodology and the second one with the majority of the process following the global version of this methodology. However, the selection of these two cases was also based on the similarity in terms of quantity of information handled and the number of applications implemented in the Customer, aligned with the high complexity of the customizations. In addition to these factors, the first case was also chosen because it is a project that is still active and still has customizations being implemented. As a result, there is the possibility of this particular case be the origin of another internal project in the scope of the Transition, by analyzing the project and defining a strategy for the future interactions between the Implementation team and the ADSM team, which when happens still are not as smoother as they could be.

From the analysis of the two Case Studies, the main visible point is the real improvement obtained by having all the Transition process defined and, very important, having a time limit to perform it. The presence and application of a proper and specific methodology for the Transition improved the entire process, particularly, when the methodology was an enhanced one (Managed Services Transition methodology), but it was also crucial, to consider a specific time period to execute the complete Transition process, without going over phases.

Following a methodology implies creating and following a structured plan, with well-defined timelines, milestones and identified deliverables. Respecting the methodology and the inherent plan forces the schedules to be accomplished and the deliverables to be delivered on time, which with pre-customized templates can be more straightforwardly fulfilled. This was noted mainly with the completion of two of the most important deliveries to the Customer – the SMTD and the EPD, which were delivered in each phase, each time with more information and quality and without delays.

The Managed Services Transition methodology puts in practice a clear Governance model, where the hierarchies and roles of each person are transparent. This helps assigning the right role to the right person and makes it clear to find the person who talk to when needed. As seen principally in the second case, this procedure was essential for the success and ease of the knowledge transfer and equally for the efficiency of the management of the entire Transition process.

In a similar way, it was also very important in both cases, the creation of the Database for known errors and their respective solution (KEDB). Since it was implemented, it was noted the

progress in terms of response time in answering and solving incidents and additionally it was also used as central base of information for everybody to access, what made the project's information more uniform and consistent.

With the introduction of the Managed Services Transition methodology, there is a more intensive focus on the risk management, with a continuous examination and search for those risks which can impact both the Transition as the overall services. This analysis helps preventing these risks to happen and to set the resolution action in case of their occurrence. In relation to the Case Studies, this procedure was more visible in the second case, where a right risk management since the beginning of the Transition helped the Wipro ADSM team to handle the Secondary Support more steadily and to pass this knowledge to the Customer team when they took the Primary Support.

Finally, the last considerations taken from the present cases are related with the reports. In both two cases, the presentation of reports worked as a symbol of progress and as an element of motivation for the teams, and at the same time, the Customer was pleased to acknowledge the work was being done. In spite of having to take time to elaborate those reports, the fact is that seeing the milestones being achieved and the tasks being accomplished, jointly with the Customer's recognition and gratitude, stimulated the team to keep working at a higher level and to accomplish all the proposed goals.

6 The Transition Process aligned with Wipro Retail's Reality

In this section of the report are presented several considerations which led to the final product of the project – the new version of the Transition methodology oriented to the ADSM engagements. These considerations are based on the knowledge collected over the activities performed during the period of the project, which were already presented in the preceding chapters.

The Transition process assumes different characteristics as appropriate. So, taking this fact into consideration, the way how it is executed should as well be in accordance with the reality it represents.

In the scope of Wipro Retail, the Transition process arises from three different realities:

- (1) Wipro Retail Implementation team to Wipro Retail ADSM (Application Development, Support and Maintenance) team;
- (2a) Different Vendor Implementation team to Wipro Retail ADSM team;
- (2b) Different Vendor Support team to Wipro Retail ADSM team.

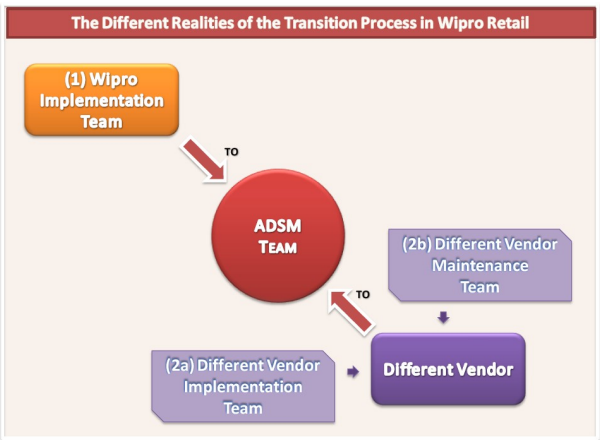

Figure 6.1: The Different Realities of the Transition Process in Wipro Retail.

This fact is really important since it has a substantial impact in the proper approach to the Transition and the truth is that in Wipro, neither the Lifeline methodology, nor the Managed Services Transition methodology take this critical fact into account. So, considering Wipro Retail presents three different realities, also three different approaches should be made to the entire process of the Transition.

The first considerations are related with the complexity and difficulty of the execution of the Transition in the three cases.

The first case considered is the Transition from the Wipro Retail Implementation team to the Wipro Retail ADSM team. From the three cases, this situation is the one with expected lower complexity and difficulty, since the information is always inside Wipro, there is a compatibility of the processes and procedures to be applied and also because there is a bigger tolerance between the two teams. Following in terms of complexity and difficulty is the case of the Transition from a Maintenance team from a different vendor to the Wipro Retail ADSM team. In this case, due to the contact being made with another vendor, the level of exigency suffers a great increase, with the tolerance between teams being very low and the presence of the customer being a constant. In relation to the case, where the Transition is from the different vendor Implementation team, this case has a lower intensity in terms of difficulties, since it is expected that in this situation, at least some of the maintenance processes are already stabilized and some of the essential tools, such as the KEDB (Known Error Database), enclose already some information.

The third and last case is the most complex and difficult. The Transition from a different vendor Implementation team to the Wipro Retail ADSM team requires all processes to be performed in their plenitude, given that it is unlikely that the Implementation team have already created or prepared some conditions for the Support and Maintenance activities. Like the previous case, the contact being made with another vendor and probably also a competitor, makes the exigency very high and the tolerance very low. In this case all the recommended activities must be performed to minimize the probability of risks and incidents the possible.

In spite of being two different cases, the two last cases referring to situations of Transitions from a different vendor, are presented in the above figure as partially connected (2a and 2b). This is explained because both are Transitions from a different vendor, the approaches to both situations are similar and most important, because they involve more than the execution of the Transition. Most of the times, a great performance of the Transition in these situations can release new opportunities for more projects between Wipro Retail and the Customer. It is essential to demonstrate a professional behaviour and to present constant developments in order to gain the credibility and confidence of the Customer. Moreover, this behaviour is also vital to enforce the cooperation of the other vendor, who otherwise may present an attitude of indifference and consequently slow the processes.

The next image illustrates and explains the different levels how the activities should be faced.

Hidden	· The activity can be done *out-of-sight* of the Customer, taking advantage of work already done.
Recommended	· It is recommended to perform the activity and to highlight its importance to the Customer, ensuring the respective validation .
Essential	· The activity is essential for the right performance of the Transition and for gaining the accreditation of the Customer.

Figure 6.2: How to approach each activity in the Transition process.

With the intention of helping in the appreciation of which points justify a higher attention and care in each phase, the following figures use the levels illustrated in figure 6.2 to present the recommended approach in relation to the three Wipro Retail realities.

Transition Planning (Activities)	Wipro Implementation → Wipro ADSM	Other Vendor (Maintenance) → Wipro ADSM	Other Vendor (Implementation) → Wipro ADSM
1. Collect all data / information from the Due Diligence Phase.	Hidden	Essential	Essential
2. Prepare the Contract and the SoW (Statement of Work)	Essential	Essential	Essential
3. Start customizing and writing the MTP (Master Transition Plan)	Hidden	Essential	Essential
3. (+) Also define the Communication Plan	Hidden	Essential	Essential
3. (+) Also define the PDP (Process Definition Plan)	Hidden	Essential	Essential
4. a) Start defining the KAP Plan	Hidden	Essential	Essential
4. b) Kick-off the Transition with the Customer	Recommended	Essential	Essential
5. Communication of the Transition Manager to the team of project's details	Hidden	Essential	Essential
6. Each Tower Lead should prepare Questionnaire about the Tower they are responsible for.	Hidden	Essential	Essential
6. (+) Should also be fulfilled the AS IS Process Assessment Questionnaire	Hidden	Recommended	Essential
7. Start customization of the SMTD and the EPD	Recommended	Essential	Essential
8. Create / Define the Phase Exit Checklists	Hidden	Essential	Essential
9. Taking into consideration the Questionnaires (A1.6), finalize the MTP, defining the Transition sequence for the Towers	Hidden	Essential	Essential
10. Elaborate reports of the Transition Planning and present them to the Customer (Word version)	Recommended	Essential	Essential
11. Check Transition Planning Phase Exit	Hidden	Essential	Essential
11. (+) Check the Transition Planning section in the Transition Internal Audit	Hidden	Essential	Essential

Figure 6.3: Transition Planning activities for the three realities of Wipro Retail Transition engagements.

In the first case, Wipro Implementation to Wipro ADSM, there is the possibility of performing the Transition Planning phase almost in an unnoticed form to the customer. Since the project is already in "control" of Wipro Retail, the planning and definition of the activities and milestones for the Transition can start earlier and not only at the final moments of the Implementation project. Notwithstanding, it is recommend to inform the customer of the existence of this phase and of the respective achievements during its execution. A constant communication with the Customer is important to strengthen the relationship and to keep the confidence in a high level.

In relation to the other two cases, the approach should be very different. All the activities must be performed and notified to the Customer in order to ensure that all requirements are taken into consideration and all the preparations are set.

More particular considerations about the Transition Planning phase can be found at the Appendix A, section A.1.

Knowledge Acquisition Phase (Activities)	Wipro Implementation → Wipro ADSM	Other Vendor (Maintenance) → Wipro ADSM	Other Vendor (Implementation) → Wipro ADSM
1. KAP Kick-off meeting with Customer and the Transition team	Essential	Essential	Essential
1. (+) Start filling the "Business Process to Application Mapping"	Hidden	Recommended	Essential
2. (+) Update the RMP (Risk Management Plan)	Hidden	Recommended	Essential
2. Finalize the KAP Plan	Hidden	Essential	Essential
2. (+) Validate the "Business Process to Application Mapping"	Hidden	Recommended	Essential
3. Perform the KAP Sessions	Essential	Essential	Essential
3. (+) Analyze the ambiguous answers	Essential	Essential	Essential
3. (+) All the sessions should be recorded	Essential	Essential	Essential
3. (+) Wipro Transition Manager and Customer / Incumbent Transition Manager should have daily meetings	Hidden	Recommended	Essential
3. (+) Wipro team should update the SMTD and EPD	Hidden	Essential	Essential
3. (+) Update the RMP (Risk Management Plan)	Hidden	Recommended	Essential
4. a) Perform Playback Sessions	Recommended	Essential	Essential
4. b) Define the Secondary Support Plan	Hidden	Essential	Essential
5. Elaborate reports of the Knowledge Acquisition Phase and present them to the Customer (Word version)	Recommended	Essential	Essential
6. Check KAP Phase Exit	Hidden	Essential	Essential
6. (+) Check the KAP section in the Transition Internal Audit	Hidden	Recommended	Essential
7. Validate Secondary Support Plan with the Customer	Essential	Essential	Essential
7. (+) Validate with the Customer the KAP Phase Exit	Recommended	Essential	Essential

Figure 6.4: KAP activities for the three realities of Wipro Retail Transition engagements.

In relation to the Knowledge Acquisition Phase, the approach in the Wipro to Wipro situation is more similar to the other situations than in the previous phase. This happens because it is recommended to inform the Customer about all the main steps required to have a successful knowledge transfer. In all the three cases, the Customer must be aware of the importance of this phase and be conscious of the required period and substantial efforts necessary to achieve the intended results.

However, in the first case, it is expected to have already some "work" done, since documents such as the "Business Process to Application Mapping" or the "Risk Management Plan" should be already partially filled by the Implementation team. Other aspects that facilitate the KAP in the first case are the access to the information and help of the Implementation team by the ADSM personnel. Being a Wipro to Wipro process, it is possible for the Managers of each team to organize in parallel the schedules of the respective team for the different activities.

In relation to the other two cases, the exigency in the KAP is similar to the exigency in the Transition Planning. Once again, in order to ensure the right performance of the Knowledge Transfer sessions, the execution of all tasks and the overall functioning of the KAP phase, it is recommended to follow all the activities considered for this phase. The activities marked with "Recommended" and not "Essential" in the second case, Different Vendor Maintenance team to Wipro ADSM team, are due to the expected existence of similar documents created by the Incumbent team. If the documents exist, they should be aim of analysis to verify their level of completion and be completed as required. If the documents don't exist, the activities are mandatory and should be executed as a normal procedure.

More particular considerations about the KAP phase can be found at the Appendix A, section A.2.

Secondary Support (Activities)	Wipro Implementation → Wipro ADSM	Other Vendor (Maintenance) → Wipro ADSM	Other Vendor (Implementation) → Wipro ADSM
1. Sign-off the Secondary Support to initiate it	Essential	Essential	Essential
2. Accompany the Incumbent team in the resolution of the incoming trouble tickets	Essential	Essential	Essential
3. Analyze the RMP (Risk Management Plan), also known as FMEA (Failure Mode Effect Analysis) and the KEDB (Known Error DataBase)	Recommended	Recommended	Essential
3. (+) Find risks / incidents that were not tested and test them	Recommended	Recommended	Essential
4. Wipro team should update the SMTD and EPD	Hidden	Essential	Essential
5. Define the Primary Support Plan	Hidden	Essential	Essential
6. Elaborate reports of the Secondary Support and present them to the Customer (Word version)	Recommended	Essential	Essential
7. Check SS Phase Exit	Hidden	Essential	Essential
7. (+) Check the SS section in the Transition Internal Audit	Hidden	Recommended	Essential
8. Validate Primary Support Plan with the Customer	Essential	Essential	Essential
8. (+) Validate with the Customer the SS Phase Exit	Recommended	Essential	Essential

Figure 6.5: Secondary Support activities for the three realities of Wipro Retail Transition engagements.

In relation to the Secondary Support, the main activities of this phase must be also communicated to the Customer. Like in the KAP phase, the Customer must be aware of the

processes that will take place during this phase and reports of the global status and developments should be made and delivered to him.

In order to ensure the ADSM team acknowledge all the customizations done for the Customer's solution, the Implementation team and the ADSM team must solve the issues in a side-by-side approach. It is normally a smoother process when the teams are both from Wipro, with the knowledge being passed without obstacles. Usually, in this case both teams act proactively to pass or to receive information.

When the Transition is from a non-Wipro team to a Wipro team, the knowledge transfer occurs in a lower frequency. This situation happens because normally it is only the Wipro team being proactive to receive the knowledge and the other team just act in response to Wipro actions.

So, in these cases, with the aim of improving the Secondary Support process, it is recommended to follow all the activities expressed. The activities considered will enforce the minimization of risks and ensure more knowledge is passed.

More particular considerations about the Secondary Support phase can be found at the Appendix A, section A.3.

Primary Support (Activities)	Wipro Implementation → Wipro ADSM	Other Vendor (Maintenance) → Wipro ADSM	Other Vendor (Implementation) → Wipro ADSM
1. Sign-off the Primary Support to initiate it	Essential	Essential	Essential
2. New tickets go directly to the Wipro team	Essential	Essential	Essential
3. Analyze if there was a significant increase of help from the Incumbent team in relation to the Secondary Support phase	Hidden	Recommended	Essential
4. Analyze the RMP (Risk Management Plan), also known as FMEA (Failure Mode Effect Analysis) and the KEDB (Known Error DataBase)	Hidden	Essential	Essential
4. (+) Find risks / incidents that were not tested and test them	Recommended	Essential	Essential
5. Update the KEDB with issues / incidents	Hidden	Essential	Essential
5. (+) Update the SMTD and EPD	Hidden	Essential	Essential
5. (+) Update the RMP (Risk Management Plan)	Hidden	Recommended	Essential
6. Elaborate reports of the Primary Support and present them to the Customer (Word version)	Recommended	Essential	Essential
7. Deliver the CSAT (Customer Satisfaction Analysis) to the Customer	Recommended	Essential	Essential
8. Fill the Lessons Learnt document	Hidden	Recommended	Recommended
9. Perform Audits	Recommended	Essential	Essential
10. Check PS Phase Exit	Hidden	Essential	Essential
10. (+) Check the PS section in the Transition Internal Audit	Hidden	Recommended	Essential
11. Validate with the Customer the PS Phase Exit	Essential	Essential	Essential
11. (+) Sign-off the Transition Closure with the Customer	Essential	Essential	Essential

Figure 6.6: Primary Support activities for the three realities of Wipro Retail Transition engagements.

At the Primary Support the situation is similar to the previous one. However, in this phase, the communication with the Customer gains a higher importance. Taking into consideration that the ADSM team is now the responsible for all the outputs of the Customer's system, it is essential to keep the communication flow more active and declare all the progresses and achievements in a daily basis. It is important to show the evolution and positive aspects since the moment the ADSM is the accountable.

It is evident that this should gain more force if the respective case is not a Wipro to Wipro situation, otherwise it could be interpreted as a conflict point between teams of the same "nation", and be considered a prejudicial aspect by the Customer.

In relation to the execution of activities in this phase, the approaches are comparable to the previous cases. If it is a Transition between Wipro teams, several tasks can be performed in a smoother way and unnoticed to the Customer. If the situation is one of the other two cases, all the activities must be communicated to the Customer and performed by the ADSM team in order to ensure that all requirements are being looked after and measures to achieve the objectives are being taken. As stated for the previous phases, the "Recommended" mark in the second case (2b), in relation to the documents, implies a verification of what was already performed and created by the Incumbent Vendor Maintenance team.

More particular considerations about the Primary Support phase can be found at the Appendix A, section A.4.

To note that for the hidden phase Service Delivery Planning there is no figure, since it is already a hidden phase for the Customer.

7 Conclusions and Future Work

7.1 Evaluation of Results

Reached the end of the period dedicated to the execution of the present project, it is the time to assess its results, taking into consideration the proposed objectives and initial prospects and analyzing their progress and status of accomplishment. Due to the high level of exigency associated to this project, it is obligatory to perform a critical analysis of the final outcomes, examining every point with a judicious eye.

The first point to be analyzed is related with one of the initial matters of study for this project – the application of the best practices ITIL v3 and respective ISO 20000 standard. Assuming ITIL v3 as the set of practices to follow in both internal processes and external engagements is leading Wipro Retail a step forward in the way for winning more projects. In addition, the upcoming ISO 20000 certification is considered as an important measure to gain accreditation before other potential clients, increasing their levels of trust and confidence in Wipro Retail. However, the study on this framework and on the market, mainly through the participation in the RFI proposals and on the preparations for the case studies, also pointed other fact – in spite of being a differentiation factor between small and big companies, the truth is that in big deals, it is almost an assumption that companies follow ITIL and it is virtually considered as an universal language between them in terms of Service Management. In other words, the main conclusion that can be retained on this point is that, currently, in greater contracts, ITIL is more like a necessary way to be competitive, than a differentiator in relation to other big companies.

Notwithstanding, ITIL brought many benefits internally to Wipro Retail. With its best practices, the results were better productivity and increased cost-effectiveness, and it is acknowledged by the personnel that it streamlined many of the internal processes. At the present time, the majority of the personnel are aware, at least, of the main terms and processes comprised in the ITIL framework, what improves the communication and the integration of personnel in different areas.

In relation to the Transition, the presence of ITIL was also positive, contributing to the improvement of several processes. The Service Design volume had effect essentially on the Transition Planning and on the Service Delivery Planning phases. In relation to the Transition

Planning, the ITIL guidelines helped refining the planning in general, increasing the attention given to the need of "thinking" in everything before acting. In relation to the Service Delivery Planning, this point was also noted, but the biggest impact was on the Service Catalogue and Service Level Management, with a complete realignment with the ITIL principles. The Service Transition volume had a great influence in the procedures related with the Knowledge Transfer activity and with the Change Management, improving, respectively, the ways the information is passed and the control on every required change. It should also be stated that the Continual Service Improvement volume had a positive impact on the perception of the Transition, reinforcing the idea that the Transition, like other services, is a continuous process and the search for improvements should be a constant.

Considering the second objective, related with the understanding the reality of Wipro Retail and ADSM department on the fields related with the Transition, it is viable to say that this objective was also achieved. During the period of the project, the student was involved in several internal activities and trainings, where the learning concerning not only the Transition phase, but also other domains of the ADSM department were a constant. Associated with this objective, it was also proposed the elaboration of two case studies, presenting two different situations related with the Transition and the use of methodologies in its execution. Through the study of documents belonging to the respective cases and recurring to interviews with personnel with great influence in the way those Transitions were performed, it was possible to accomplish this goal. These two case studies introduce an overview over two important cases to Wipro Retail and can be used to present the cases internally, helping in their improvement and exposing the advantageous of the application of the Transition methodology for improving the entire process. To note that this objective was achieved with additional success owing to the findings (potential future projects) that emerged during the several activities inherent to its execution.

The third point, related with the analysis of the two last Transition methodologies in the scope of Wipro Retail, was achieved with success as well. Through the study of several internal documents, jointly with complementary training and the access to the Wipro Technologies' web-based quality system, it was possible to perform an extensive analysis of these two methodologies, with special focus in the newer Managed Services Transition methodology as it emerged in the sequence of a global line of internal improvements. The objective was considered accomplished since the analysis of both methodologies was concluded with success, presenting a description of the activities in each phase and delineating the proposed improvements from the previous methodology to the new one. However, the main result of this study is related with the final purpose of this project – the elaboration of a new version of the Transition methodology more oriented to the ADSM engagements, since the study allowed to have a more comprehensive conscious of what should be taken from each methodology and what should be added to this new version.

In relation to the last objective, mentioned in the previous lines, it was also achieved. As a result of the preceding activities, it was possible to collect the necessary information / knowledge about the Transition phase, the ITIL principles and the reality in Wipro Retail ADSM department, to define a new version oriented to the engagements lived in this unit (see Appendix A). Considering the three different possibilities of engagements in the scope of Wipro Retail, this methodology presents different characteristics according to the reality contemplated (see Chapter 6). This is considered a major achievement in terms of improvements for Wipro Retail engagements.

To note that, at the moment, some *products* of the present project are already being applied in current Wipro Retail engagements, with substantial impact in the Transition process which is being performed in a major customer in South America. The work related with the compilation of templates and respective association to the activities of each phase is being distributed to the Wipro Retail Transition Managers. The spreading of this collection has the aim of facilitating the management task and of starting to improve the Transition process right away.

Finally, accordingly to what was stated in the preceding lines and presented along the present report, it is possible to affirm that the objectives for this project were accomplished.

7.2 Future Work

One of the bases for the present project is related with its application in the near future. The new version of the Transition methodology is planned to be put in practice in the following engagements, even if with the supervision of the ADSM Manager and Transition Manager and with a progressive impact in the way the Transition is done at the moment. The plan is to implement the new ideas with moderate steps, assessing the results, advancing if positive and taking corrective measures otherwise.

Other future work is related with the case studies. During the process of creation of the case studies, specifically in the first case, the one with reference to the project without the application of the Managed Services Transition methodology, it emerged the problem associated with the normal handovers that still take place in that project. As result, the situation was highlighted and kept as a base for a new project, where the objective will be the definition of a methodology to improve the handover process between the Implementation team and the ADSM team.

The success of the study of these cases arises another potential work, the possibility of performing other case studies and taking lessons and conclusions from them, or, as in this case, even find problems that may need attention.

More related with the new Transition methodology, there is the potential work related with the creation of templates. Several activities in the Transition don’t have a defined template yet, or it is too old or not aligned with Wipro Retail’s scope. This can be a very important point for taking another step in the improvement of this phase. Moreover, also related with the Transition phase and considered a gap in the current methodologies, is the prospect of using more Transition oriented tools. The use of tools, which may have functions aligned with the Transition, can save time in several ways – can help writing reports, can help organizing the milestones, can help structuring the phases, can help recording information, among many other possibilities, which currently pass by Excel sheets.

7.3 Personal Considerations

As first thought comes out the sensation of self-realization in having done this project. In spite of initially not being aware of the topic, that fact contributed as a stimulus to face the unknown. The personal knowledge about the company proposing the project was also a strong point to intensify my motivation and the truth is that the environment lived in the ADSM department, fortunately surpassed my expectations.

The daily routine was also a positive surprise to me, with the possibility of participating in multicultural meetings, where I had the chance to watch the exchange of ideas among people with vast experience on the subject matters and to argue in any case I thought it would be positive. This routine was always an incentive for me to work harder and to prove that the confidence and appreciation of my work were valid. One of the moments that I cherish with more contentment was my participation in the RFI proposal. It was a very important document and knowing that it was a key element for Wipro Retail winning the project in cause, is very rewarding.

Other positive aspect was the possibility of organizing my time and planning the course of my project, with my supervisor always present for assessing it and helping in any required situation, letting me always comfortable to ask her any doubt or advice. In fact, I found this

aspect as a common characteristic among the ADSM personnel, who constantly presented availability for meetings or to clarify any question.

Since the beginning I tried to apply what I was learning in my own way of working, seeing that the topics were in most cases about Planning and ways to improve it. The fact is that planning every step from the beginning and keeping updating it to align it to the circumstances, had a great influence in the final output of the project and allowed me to manage the situations without creating moments of stress.

In relation to the main subject of the project, the Transition phase, the feeling is of closeness and will to defend its importance in every assignment. Doing this project allowed me to realize the value that the Transition has in every Wipro Retail engagement and to understand the need of performing it in improved ways. Knowing the results of my project will impact the current reality in what concerns the Transition, and, most probable in a positive manner, is very gratifying for me. It was undoubtedly a very enriching experience, where I had the opportunity to realize how much the Functional knowledge is important and not only the Technical one, to learn a lot about the ITIL framework and respective ISO 20000 and to be aware of the current main requirements in today’s business.

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Appendix A: Wipro Retail Transition Methodology

A.1 Transition Planning

1. Collect all data / information from the Due Diligence Phase.

- Responsible: Bid Manager, Due Diligence Manager
- This information should be in accordance with the template "Sales Handover Checklist" available at: http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/checklists/chmsshover.xls

2. Prepare the Contract and the SoW (Statement of Work)

- Responsible: Bid Manager, Due Diligence Manager
- The SoW template can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmssow.doc

3. Start customizing and writing the MTP (Master Transition Plan)

- Responsible: Transition Manager
- The MTP template can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmsmtpln.doc
- **(+) Also define the Communication Plan** available at: http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmscmpln.xls
- **(+) Also define the PDP (Process Definition Plan)** available at: http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmspdpln.xls
  - **NOTE:** Only use the PDP to define the current status of the ongoing processes. Using it completely is unnecessary and will spend too much time.

4. a) Start defining the KAP Plan

- Responsible: Transition Manager
  The KAP Plan template is available at: http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmstkappln.xls
- **A sample of the KAP Plan can be found at:** http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmskapplns.xls

b) Kick-off the Transition with the Customer

- Responsible: Transition Manager
- **NOTE:** This meeting should take place at the moment of arrival of the Wipro team to the Customer's site.

5. The Transition Manager should communicate to the team the following points:

- Overview of the engagement

- Responsibilities of each person
- Tollgates and milestones

6. Each Tower Lead should prepare Questionnaire about the Tower they are responsible for.

- Responsible: Tower Leads
- There are templates available for several **Applications** (Check if required are available). Can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmstdca.zip
- There are templates available for several **Infrastructures** (Check if required are available). Can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmsdci.zip
- **NOTE:** The majority of the templates are not Wipro Retail oriented.
- **(+) Should also be fulfilled the AS_IS_Process_Assessment_Questionnaire** available at: http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmspaq.xls
- **After completing both Questionnaires, send the documents to the Incumbent team so they can start answering it.**

7. Start customization of the SMTD and the EPD

- Responsible: Tower Leads
- The SMTDs can be found at:
  Applications:
  http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmssmtda.doc
  Infrastructure:
  http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmssmtdi.zip
- The EPD can be found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmsepd.doc
- **NOTE:** The SMTD templates are not Wipro Retail oriented.

8. Create / Define the Phase Exit Checklists

- Responsible: Transition Manager
- The templates can be found at:
  Transition Planning:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/checklists/chmsttppexit.xls
- **KAP:**
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/checklists/chmstkappe.xls
- **Secondary Support:**
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/checklists/chmstsspexit.xls

- **Primary Support:**
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/checklists/chmstpspexit.xls

9. Taking into consideration the Questionnaires (A1.6), finalize the MTP, defining the Transition sequence for the Towers

- Responsible: Transition Manager
- The MTP template can be found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmsmtpln.doc
- **(+) Update the RMP (Risk Management Plan)**
  The RMP can be found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmsrmpfmea.xls

10. Elaborate reports of the Transition Planning and present them to the Customer (Word version)

- Responsible: Transition Manager
- The templates for Weekly Status Report:
  Excel version:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/guidelines/gumstwsr.xls
  Word version:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Sustenance/guidelines/sample/gumssuwsr.doc

11. Check Transition Planning Phase Exit

- Responsible: Transition Manager
- The template for the Checklist can be found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/checklists/chmsttppexit.xls
- **(+) Check the Transition Planning section in the <u>Transition Internal Audit</u>** found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/checklists/chmstia.doc

CONSIDERATIONS

- **Boot Camp** and **Training** activities are not considered in Wipro Retail Transition Methodology, due to the high level of expertise of WR personnel in the general areas of WR engagements;
- **Process Definition Plan template** should only be used for updating the status of the processes, since the other information kept is also present in the MTP (where it is mandatory);
- **Data Collection Questionnaires templates** are very important, but there are not questionnaires Wipro Retail oriented. The creation of these templates is highly recommended in order to save time and work in future engagements;

- **SMTD templates** are very important, but there are not SMTDs Wipro Retail oriented. The creation of these templates is highly recommended in order to save time and work in future engagements;
- The creation of a **MOM (Minute Of Meeting) should be mandatory** for all meetings.
  The MOM template can be found at:
  http://channelw.wipro.com/velociq/qs/template/tpmom.xls

A.2 Knowledge Acquisition Phase

1. **KAP Kick-off meeting with Customer and the Transition team**
   - Responsible: Transition Manager
   - This meeting has several **purposes**:
     - **Identify:**
       - Who has knowledge;
       - Documents or tools that contain knowledge;
     - **Obtain access to all necessary information:**
       - Labs, servers, discussion groups, KEDB (Known Error Database)
     - **Define roles and responsibilities of Wipro and Customer**
     - **Define / Conclude the Schedule for the KAP**
       - Next meetings
       - Transition of each Application
   - **(+) Start filling the "Business Process to Application Mapping"**
     The template (and sample at the same time) can be found at:
     http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/guidelines/gumstbpam.xls
   - **(+) Update the RMP (Risk Management Plan)**
     The RMP can be found at:
     http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmsrmpfmea.xls

2. **Finalize the KAP Plan**
   - Responsible: Transition Manager
   - Apply the findings and results of the Kick-off meeting
   - Template KAP Plan available at:
     http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmstkappln.xls
   - **(+) A sample of the KAP Plan can be found at:**
     http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmskapplns.xls
   - **(+) Validate the "Business Process to Application Mapping"**
     The template (and sample at the same time) can be found at:
     http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/guidelines/gumstbpam.xls
   - **In the end, sign-off the KAP Plan with the Customer**

3. **Perform the KAP Sessions**
   - **NOTE**: At this moment, the Questionnaires (A1.6) should be already answered by the Incumbent team or at least, partilly answered
   - **(+) Analyze the *ambiguous* answers**
   - **(+) All the sessions should be recorded**
     - There are some tools recommended for this task: Ex: WebEx, Live Meeting
   - **Order of the sessions:**
     - **1. Surveys and Questionnaires** (Overview over the Functional, Technical and Support Process knowledge)

- **2. Focus Groups** (Acquire more specific Functional knowledge)
  - Followed by new Questionnaires to resolve potential doubts
- **3. Interviews** (More focused on Technical and Support Process knowledge)
- **4. Pair *Programming*** (Also for Technical and Support Process knowledge but with special emphasis on the customizations)

- **(+) Wipro Transition Manager and Customer / Incumbent Transition Manager should have daily meetings to update:**
  - **PDP (Process Definition Plan)** template available at: http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmspdpln.xls
    - **NOTE:** Only use the PDP to define the current status of the ongoing processes. Using it completely is unnecessary and will spend too much time.
  - **KAP Tracker** template (and also Sample) available at: http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/guidelines/gumstkaptra.xls
- **(+) Wipro team should update the SMTD and EPD**
  - The **SMTDs** can be found at:
    Applications:
    http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmssmtda.doc
    Infrastructure:
    http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmssmtdi.zip
  - The **EPD** can be found at:
    http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmsepd.doc
    - **NOTE:** The SMTD templates are not Wipro Retail oriented.
- **(+) Update the RMP (Risk Management Plan)**
  The RMP can be found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmsrmpfmea.xls

4. a) Perform Playback Sessions

- Responsible: Tower Leads
- Validate all the knowledge acquired
- With:
  - **Focus Groups**: To overview all the sectors
  - **Pair Programming**: To demonstrate specific knowledge over the main customizations

b) Define the Secondary Support Plan

- Responsible: Transition Manager
- **NOTE:** There is no template for the Secondary Support Plan

5. Elaborate reports of the Knowledge Acquisition Phase and present them to the Customer (Word version)

- Responsible: Transition Manager

- The templates for Weekly Status Report:
  Excel version:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/guidelines/gumstwsr.xls
  Word version:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Sustenance/guidelines/sample/gumssuwsr.doc

6. Check KAP Phase Exit

- Responsible: Transition Manager
- The template for the Checklist can be found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/checklists/chmstkappe.xls
- **(+) Check the KAP section in the Transition Internal Audit** found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/checklists/chmstia.doc

7. Validate Secondary Support Plan with the Customer

- **(+) Validate with the Customer the KAP Phase Exit**

CONSIDERATIONS

- **KAP Sessions: Two new types of sessions** (not considered in the global Managed Services Transition Methodology)**:**
  - **Pair Programming:** Has a strong impact in the understanding of code and therefore in understanding specific customizations
  - **Questionnaires:** Helps preparing the Incumbent team for the sessions
    - Should contain the main questions about the applications / infrastructures / environments
    - Allows to make sessions to clarify the answers
- **Create the Secondary Support Plan template**. Secondary Support Plan is a very important document. Having a template for it can save much time and work.

A.3 Secondary Support

1. Sign-off the Secondary Support to initiate it

- Can be at the moment of the review of the SS Plan (A2.7)

2. Accompany the Incumbent team in the resolution of the incoming trouble tickets

- **Steps:**
  - **1)** Low level tickets pass to Wipro team
  - **2)** Wipro team proposes a solution. Result:
    - **2.1)** Incumbent team **agrees** → Wipro team **implements the solution**
    - **2.2)** Incumbent team **disagrees:**
      - **2.2.1) Incumbent team explains the solution**
      - **2.2.2) Wipro team proposes new solution**
  - **3)** Migrate the solution to Production
  - **4)** Update the KEDB with the issue / incident
    KEDB template can be found at:
    http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmstkedb.xls

3. Analyze the RMP (Risk Management Plan), also known as FMEA (Failure Mode Effect Analysis) **and the KEDB (Known Error Database)**

- The RMP template can be found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmsrmpfmea.xls
- KEDB template can be found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmstkedb.xls
- **(+) Find risks / incidents that were not tested and test them**

4. Wipro team should update the SMTD and EPD

- The **SMTDs** can be found at:
  Applications:
  http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmssmtda.doc
  Infrastructure:
  http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmssmtdi.zip
- The **EPD** can be found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmsepd.doc
- **NOTE:** The SMTD templates are not Wipro Retail oriented.

5. Define the Primary Support Plan

- Responsible: Transition Manager
- **NOTE:** There is no template for the Secondary Support Plan

6. Elaborate reports of the Secondary Support and present them to the Customer (Word version)

- Responsible: Transition Manager
- The templates for Weekly Status Report:
  Excel version:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/guidelines/gumstwsr.xls
  Word version:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Sustenance/guidelines/sample/gumssuwsr.doc

7. Check SS Phase Exit

- Responsible: Transition Manager
- The template for the Checklist can be found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/checklists/chmstsspexit.xls
- **(+) Check the SS section in the Transition Internal Audit** found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/checklists/chmstia.doc

- **8. Validate Primary Support Plan with the Customer**
  - **(+) Validate with the Customer the SS Phase Exit**

CONSIDERATIONS

- **Create the Primary Support Plan template**. Primary Support Plan is a very important document. Having a template for it can save much time and work.

A.4 Primary Support

1. Sign-off the Primary Support to initiate it

- Can be at the moment of the review of the PS Plan (A3.8)

2. New tickets go directly to the Wipro team

- **2.1)** Wipro team **knows the solution** → Wipro team implements the solution
- **2.2)** Wipro team **doesn't know the solution**:
  - **2.2.1)** Ask the solution to the Incumbent team **AND** See and record the resolution process
- **2.3)** Migrate to Production
- **2.4)** Update the **KEDB** with the issue / incident
  - KEDB template can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmstkedb.xls
  - Update the **TIL (Technical Issue Log)**
    TIL can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmsttil.xls
  - **NOTE**: TIL is just to regist the issue, not to complete with the resolution, because it already exists at the KEDB
  - Update the **DOD (Daily Operations Dashboard)**
    DOD can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmstdod.xls
  - **NOTE**: Just use the last sheet in the DOD template.

3. Analyze if there was a significant increase of help from the Incumbent team in relation to the Secondary Support phase

- There **was not** → Keep the **good work**
- There **was** → Take **corrective** measures

4. Analyze the RMP (Risk Management Plan), also known as FMEA (Failure Mode Effect Analysis) **and the KEDB (Known Error Database)**

- The RMP template can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmsrmpfmea.xls
- KEDB template can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmstkedb.xls
- **(+) Find risks / incidents that were not tested and test them**
  Ex: Related with the SLAs

5. Update the KEDB with issues / incidents

- KEDB template can be found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmstkedb.xls
- **(+) Update the SMTD and EPD**
- The **SMTDs** can be found at:
  Applications:
  http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmssmtda.doc
  Infrastructure:
  http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmssmtdi.zip
- The **EPD** can be found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmsepd.doc
  NOTE: The SMTD templates are not Wipro Retail oriented.
- **(+) Update the RMP (Risk Management Plan)**
- The **RMP** can be found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmsrmpfmea.xls

6. Elaborate reports of the Primary Support and present them to the Customer (Word version)

- Responsible: Transition Manager
- The templates for Weekly Status Report:
  Excel version:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/guidelines/gumstwsr.xls
  Word version:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Sustenance/guidelines/sample/gumssuwsr.doc

7. Deliver the CSAT (Customer Satisfaction Analysis) to the Customer

- The CSAT is available at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmstcsat.xls

8. Fill the Lessons Learnt document

- The Lessons Learnt template can be found at:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmstlld.xls

9. Perform Audits

- The audits have the purpose of assessing if the procedures are being taken accordingly to what was / is defined.
- The **Audit Report** template is available at: http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmsaudrep.xls
- **NOTE**: The audits can be performed at any time during the PS

10. Check PS Phase Exit

- Responsible: Transition Manager
- The template for the Checklist can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/checklists/chmstpspexit.xls
- **(+) Check the PS section in the Transition Internal Audit** found at: http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/checklists/chmstia.doc

11. Validate with the Customer the PS Phase Exit

- **(+) Sign-off the Transition Closure with the Customer**

CONSIDERATIONS

- **Technical Issue Log –** Use it only for registering the issue. Do not complete it with the issue resolution since the resolution is also in the KEDB (where it is mandatory)

  OR

- **Add Issue No., Date of Receipt to KEDB**, and **Only fill this document.** Otherwise it is replication of information and repetition of work.

- **Daily Operations Dashboard** – Only use the last sheet, named "Dashboard", in order to have a statistical Database to present internally and to the Customer. The other sheets are too complex in comparison to what (benefits) can be taken from them.

A.5 Service Delivery Planning

1. **Define the ITSM Process Scoping document**
   - Responsible: Delivery Manager
   - The **ITSM Process Scoping** template can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmsitsmsd.zip
   - After its conclusion, the document should be reviewed by the SQA Manager and approved by the Service Delivery Head

2. **Conduct Program Kick-off**
   - Responsible: Delivery Manager
   - This meeting **should be attended by**:
     - Delivery Manager
     - Service Delivery Head
     - SQA Manager
     - Account Manager
     - Transition Manager
     - Onsite Program Manager
     - Offsite Program Manager
     - Program Managers
   - The **purposes** of this meeting are:
     - Share the scope and objectives of the Project
     - Present:
       - The global structure of the Wipro team for the Project and structures of respective sub-teams;
       - The methodology to follow;
       - The metrics to measure the performance;
       - CTQ (Critical To Quality) parameters;
       - Organization of the Program.
   - **Use the MOM** to save records from the meeting and to share them with all the stakeholders
     The MOM template can be found at:
     http://channelw.wipro.com/velociq/qs/template/tpmom.xls
   - **Use Video Recording** of the meeting, in order to have an easy access to the information shared in the meeting
     Tools Ex: WebEx, LiveMeeting

3. **Draft the SDP (Service Delivery Plan)**
   - Responsible: Delivery Manager
   - The **SDP Plan template** can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmssdpln.doc
   - There are some **documents that can help** in the creation of the SDP:
     - **Shift Plan** available at: http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmssftpln.xls

- **RMP (Risk Management Plan)** available at: http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmsrmpfmea.xls
- **ITSM Process Scoping** available at: http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmsitsmsd.zip
- **Skill Matrix** available at: http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/templates/tpmssa.xls
- **SLA & KPI Definition** available at: http://channelw.wipro.com/velociq/qs/Managed_Services/Sustenance/templates/tpmssuslakpi.zip
- **SLA document** available at: http://channelw.wipro.com/velociq/qs/Managed_Services/Sustenance/templates/tpmssusla.doc

4. SQA Manager reviews the SDP

- Responsible: SQA Manager
- The **SDP Plan template** can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmssdpln.doc

5. Arrange a meeting with the Delivery Manager, SQA Manager and Service Delivery Head in order to approve the SDP

- Responsible: Delivery Manager
- The **SDP Plan template** can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmssdpln.doc

6. Define / Update the Service Catalogue

- Responsible: Delivery Manager
- The **Service Catalogue template** can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/Sustenance/guidelines/sample/gumssusc.xls

7. Define the OLAs (Operational Level Agreement) with internal teams

- Responsible: Delivery Manager
- The OLAs should be defined with a higher level of strictness in comparision to the SLAs
- **NOTE**: There is no template for the OLAs. However, it is possible to adapt the **SLA Tracking Spreadsheet template**
- The **SLA Tracking Spreadsheet** is available at: http://channelw.wipro.com/velociq/qs/Managed_Services/Sustenance/templates/tpmssuslakpi.zip

8. Analyze the tools required for:

- Service Monitoring;
- Incident Management;
- Testing;
- Configuration Management;
- Governance;
- Reporting;
- **(+) Use the Tools Plan template for saving this information**
  - The **Tools Plan template** can be found at: http://channelw.wipro.com/velociq/qs/Managed_Services/common/templates/tpmstpln.xls

9. Elaborate reports of the Service Delivery Planning and present them to the Customer (Word version)

- Responsible: Delivery Manager
- The templates for Weekly Status Report:
  Excel version:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Transition/guidelines/gumstwsr.xls
  Word version:
  http://channelw.wipro.com/velociq/qs/Managed_Services/Sustenance/guidelines/sample/gumssuwsr.doc

CONSIDERATIONS

- **Start the SDP at the Transition Planning phase and not at the KAP phase**. The global Managed Services Transition methodology presents some inconsistencies in this topic. Here it is considered that SDP starts at the Transition Planning phase when the ITSM Process Scoping document starts being defined.
- **Skill Matrix template** – Use **only** the **Current Tech Skills** and **Required Tech Skills** sheets, since the others are not Wipro Retail oriented.
  Required Pro Tools Skills and **Current Pro Tools Skills templates** should be created for the Wipro Retail scope.
- **Online reference to the Infrastructure Readiness template is wrong**, instead it is the Incident Record template.
- In the global Managed Services Transition methodology, **Tools Plan template is not considered** for the **Tools Analysis** activity**, but should be considered**, in spite of being necessary to adapt the template for the Tools under the scope of Wipro Retail.