



Formulating and Implementing an HP IT program strategy using CobiT and HP ITSM

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In an increasingly competitive environment, the delivery of IT services needs to be articulated around standard management frameworks and best practices. This paper is based upon an analysis of a Hewlett-Packard (HP) Information Technology (IT) program and presents how the CobiT framework contributed to the enhancement of the formulation and implementation of the program strategy. The result of our study is a waterfall of balanced scorecard built on the goals and enablers specified in CobiT and a mapping to HP IT Service Management (ITSM) processes ensuring the instantiation of some of the aspects of the strategy.

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Abstract

In an increasingly competitive environment, the delivery of IT services needs to be articulated around standard management frameworks and best practices. This paper is based upon an analysis of a Hewlett-Packard (HP) Information Technology (IT) program and presents how the CobiT framework contributed to the enhancement of the formulation and implementation of the program strategy. The result of our study is a waterfall of balanced scorecard built on the goals and enablers specified in CobiT and a mapping to HP IT Service Management (ITSM) processes ensuring the instantiation of some of the aspects of the strategy.

1. Introduction

Nowadays, organizations are continuously refocusing their strategy and operations in order to successfully face the challenges of an increasingly competitive business climate. In this context, Information Technology (IT) has become the backbone of businesses to the point where it would be impossible for many to function (let alone succeed) without it. As a result of its increasing role in the enterprise, the IT function is changing, morphing from a technology provider into a strategic partner.

To support this radical transformation, various IT frameworks have been developed to provide guidelines and best practices to the IT industry [1]. In essence, these frameworks address either the domain of IT Governance (CobiT [2]) or the domain of IT Management (ITIL[3], HP ITSM [4], Microsoft MOF [5]).

When considering the Value Delivery Chain of an IT product and its associated services, it is necessary to adopt a model combining both notions of IT Governance and IT Management with a clear view over each domain's concerns and responsibilities

This paper presents the analysis of an HP IT program (referred to in the remainder of this document as HP-ITP) and presents how the guidelines and principles of those IT frameworks contributed to the enhancement of the formulation and implementation of the program strategy.

The structure of the paper is organized as follows. We first introduce the HP ITP program and present its current state in terms of its management function. We then present how the CobiT and the ITSM frameworks can be used to enhance and reformulate the current HP ITP balanced scorecard. We then present the reformulated scorecard and highlight the mapping between the various CobiT and ITSM processes selected. Lastly, we conclude this paper and present future work.

2. The HP ITP Program

The HP IT program is articulated around an IT software product and its associated services. Its goal is to develop a coordinated approach across the value delivery chain of its core product. The main drivers are to enable HP to win larger deals and to increase account control by addressing higher levels of management with the program value proposition and creating the best Total Customer Experience (TCE) in the industry.

To achieve this goal, the HP ITP focuses on three objectives. First and foremost: to enable HP to increase its revenue by focusing on HP ITP large deals and by increasing the sell of its core product. Second: best TCE, achieved through focusing on quality issues related to its core product as well as its support. Finally: to put in place an audit and control strategy, in order to address the two first objectives and be able to report adequately to upper levels of management.

To report on the two first objectives, the HP ITP program uses key operational metrics organized in a dashboard-like structure as presented in Figure 1. The structure allows drilling down on each metric to access more detailed information.

Revenue	ITP Product	ITP Product Support	
Big Deals	Reliability	Time to Resolve	
ITP Product Revenue	Completeness	Customer Satisfaction Index	

Figure 1: Current version of the dashboard-like structure presenting HP ITP key operational metrics

Three topics are presented through the dashboard, namely Revenue, ITP Product and ITP Product Support.

For each topic, the HP ITP team defined Performance Indicators such as Time to Resolve, Reliability etc. These indicators can consist of either one or multiple metrics. Reliability, for instance, is computed over a set of three metrics, Customer Satisfaction Index (CSI), Defect arrival rate normalized by revenue and Defect backlog. Along with the metrics, a color code ranging from green, yellow to red indicates the degree a severity of the status of each indicator.

To report on the implementation progress of its strategy to achieve the two first objectives, the program identified six “strategy areas” and provides status information and detailed achievement data for each of them as presented in Figure 2. As for the previous dashboard, users can drill down by clicking on the strategic areas to obtain further information. Color coding allows for a rapid assessment of the progress status.

Strategy Area	Status	Comment
Awareness		Advertisement campaign launched; dominant presence at conferences and other key events around the globe.
Business Development		Successful demand generation and lead generation campaigns in all regions
Sales force fitness		Dedicated sessions at American and European Conferences; solution selling training continues
Partners		HP ITP exposed to 3000+ account managers, training roadshow starting in the US; partner trainings across all regions
Product		Released HP ITP Product. Delay in Manufacturing Release to December. Staffing approved for R&D.
Support		Investing in advanced training including ITIL improve Time to Resolve.

Figure 2: Snapshot of the dashboard-like structure presenting HP ITP Program Implementation Status (How HP ITP is executing its plans)

The tool in its current form conveys important information to the higher levels of management allowing them to follow progress and to identify areas of problems.

Our analysis reveals that the strategy for putting in place the auditing and controlling framework has been developed in an ad-hoc fashion. In particular no formal guidelines have been used to select the type of objectives and key operational metrics used to assess the implementation of the program strategy. It is also not clear if the program has articulated a clear strategy to put in place in the organization such a controlling framework along with a review process for its implementation.

Our motivation in the remainder of this paper is to leverage the guidelines, principles and processes of the existing IT frameworks in order to reformulate, enhance and formalize the HP ITP strategy.

3. Reformulating the HP ITP strategy using a Balanced Scorecard

In order to relate the current HP ITP program strategy to existing IT frameworks, we reformulate the program strategy as a strategy map [6] presented in Figure 3. The strategy map presents in one diagram the various elements of the balanced scorecard [6] as well as the relationship between the different goals through a cause-effect relationship graph.

The strategy map shows how the objective of increasing the program revenue is enabled by achieving increases in product reliability and completeness as well as developing further partnership across the industry. We also see that to support revenue generation, the HP ITP program needs to improve its agility and adaptability which is largely supported by an efficient delivery of information.

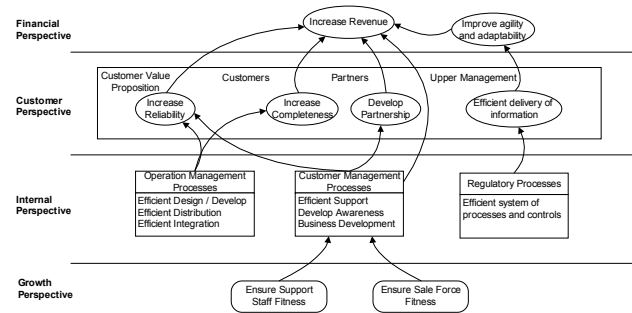


Figure 3: Strategy Map for the ITP VDC

We now present in more details the aspect of the reformulated Business Scorecard (BSC) focusing on the goals and measures for each perspective.

Table 1: Financial Perspective

Goal	Measure
Increase revenue	+ HP ITP revenue + Big deal

Table 2: Customer Perspective

Goal	Measure
Increase reliability	+ CSI on reliability + Defect arrival rate / normalized by revenue + Defect backlog
Increase completeness	+ ER arrival rate / normalized by revenue + Win/loss ratio due to product + CSI on usability + CSI on feature set
Develop partnership	+ Number of new partners + Number of training sessions
Efficient delivery of information	+ No information available

It has to be noted that no information on the measures used to assess achievement on the goal of “efficient delivery of information” was available at the time of this study.

Table 3: Internal Perspective

Goal	Measure
Support	+ Time to resolve + Customer satisfaction index
Awareness	+ Industry Analyst Rating + Number of success story + Advertisement coverage
Business Development	+ Demand generation + Lead generation

Table 4: Growth Perspective

Goal	Measure
Sales force fitness	+ Hours of training
Support staff fitness	+ Hours of training

By adopting a BSC approach, it becomes clear that the HP ITP strategic areas belong to different perspectives and the cause-effect relationship shows how they impact each other. This approach allows for a clearer separation of concerns between the strategic objectives allowing higher levels of management to appreciate the relationships between the various objectives and their importance.

For completeness, we have added objectives to the Internal Perspective such as design/develop and integration, etc. in order to link to the objectives of reliability and completeness (part of the Customer Perspective).

From an organizational point of view, it has to be noted that many functions are involved in the HP ITP program ranging from the R&D, support, sales, marketing, human resources etc. It is easy to see from Figure 3 how the objectives expressed in the internal and future perspective maps onto those organizational groups.

4. IT Frameworks and the HP ITP Business Scorecard.

Using a Balanced Scorecard (BSC) to reformulate the program strategy helped us to determine the four areas of key importance that contribute to increasing revenue generation:

- Delivery of HP ITP product to HP customers
- Support of HP ITP product
- Development of business opportunities in the HP ITP space

- Efficient delivery of information to upper management

To investigate current IT frameworks to understand how the program could leverage from them, we follow a two step approach. First, we investigate how CobiT can contribute to strengthen the current balance scorecard. We then turn to more operational frameworks for IT Service Management and identify the processes that would support the management of the support function.

4.1. HP ITP BSC and CobiT

CobiT [2] is designed to be an IT Governance aid to management in their understanding and managing of the risks and benefits associated with information and related technology. The framework identifies 34 information technology (IT) processes divided across the 4 Domains, a high-level approach to control over these processes, as well as 318 detailed control objectives and audit guidelines to assess the 34 IT processes.

Among the various processes in the CobiT Planning and Organization domain, the IT process Manage Quality (PO11) applies to the concerns of IT product quality. Some of the suggested Key Goal Indicators (KGI) are:

- Increased rating for customer satisfaction with service rendered.
- Decreased number of quality defects.
- Decreased number of non-compliance reports against quality standards.

These KGIs are indeed very much in line with the objective of Increasing Reliability for which specific measures have been defined by the HP ITP team.

Implementing the Manage Quality process will enable the HP ITP program to work towards its objective of “Fixing quality issues” from a product perspective. Doubtlessly, the R&D organization already will have quality control processes in place. CobiT suggests in its management guideline to assess their maturity levels and decide, based on the results and if necessary, on appropriate actions to align better with the strategic objectives.

When looking at the support side of the quality issue, the IT processes of Assist and Advise Customers (DS8) and Manage Problems and Incidents (DS10) of the Delivery and Support domain (DS) offer useful information.

The IT process of assisting and advising customers satisfies the business requirement of ensuring that any problem experienced by the user is appropriately resolved. It is enabled by a help desk facility which provides first-line support and advice. CobiT suggests the following detailed control objectives:

- Help Desk
- Registration of Customer Queries
- Customer Query Escalation
- Monitoring of Clearance
- Trend Analysis and Reporting

The associated KGI are as follows:

- Reduced average time to resolve problems
- Reduced repetitive inquiries on solved problems
- Increased user satisfaction with the effectiveness and efficiency of the help desk
- Increased user confidence in the services of help desk
- Improved efficiency measured by reduced help desk resource in relation to systems supported
- Percent of problems resolved at first contact
- Elapsed time per call.

The proposed KPI are:

- Number of repeat inquiries
- Number of escalations
- Number of inquiries
- Time to resolve inquiries
- Reduced trends in user inquiries requiring problem resolution
- Cost per call.

DS8 is very much in line with the program's objective of efficient support. Whereas the current team objective is to "improve support", CobiT provides much more detailed objectives and KGI that would help in better auditing and monitoring the support function. The ITP VDC "Time To Resolve" KPI would map to the KPI "Time to resolve inquiries" and the "[increased] Customer Satisfaction Index" would map to the KGI "Increased user satisfaction with the effectiveness and efficiency of the help desk". Once again, assessing the maturity level of that process as currently implemented by the ITP VDC team would be a starting point to better aligning with its objective.

Of course, as usual, the support organization closely interacts with problem management personnel. CobiT Manage Problems and Incidents process (DS10) aims at ensuring that problems and incidents are resolved and the cause investigated to prevent any recurrence. As for DS8, DS10 would enable the ITP VDC to better align to its business objective of solving quality issues. It should

therefore be audited and appropriate action should be taken to improve alignment.

Furthermore, the Acquire and Maintain Application Software (AI2) process part of the Acquisition and Implementation domain (AI) appears to be relevant to some degree to the objective of Completeness, especially in terms of the management of the feature set and user requirements.

Lastly, with regards to improving the delivery of information to upper management, the two first processes of the Monitoring domain, Monitor the Processes (M1) and Assess Internal Control Adequacy (M2) would both support the HP ITP program in achieving best practices. CobiT management guidelines suggest controls for M1 ensuring the achievement of the performance objectives set for the IT processes such as support etc. M1 is enabled by the definition of relevant performance indicators, the systematic and timely reporting of performance and prompt acting upon deviation. The related KGI and KPI provide measures to assess alignment with those goals. The controls suggested for M2 ensure the achievement of the internal control objectives set for the IT processes. It is enabled by the commitment to monitoring internal control, assessing their effectiveness and reporting on them on a regular basis.

Adopting CobiT for IT related processes would provide a consistent framework in which the management team could assess the risks and benefits associated with various aspects of information and related technology. It would then, through its maturity models and management guidelines, provide state of the art management recommendations that would enable the ITP VDC program to achieve better alignment with its objectives.

4.2. Implementing the BSC using HP ITSM processes

CobiT provides management with control objectives, KGI and KPI over specific processes but does not give implementation details for those processes. It is therefore necessary to turn to operational IT frameworks in order to figure out how to best implement them. The HP ITSM reference model [4] is an ITIL-based framework. It provides a coherent representation of IT processes and a common language for defining IT process requirements and solutions.

In this section, we identify the HP ITSM processes that would be likely to provide an implementation to the CobiT processes identified earlier on.

As presented in [1] and illustrated in Figure 4, it is possible to map CobiT domains onto HP ITSM domains.

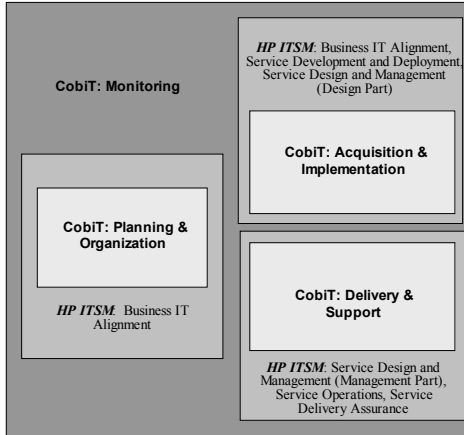


Figure 4: Mapping BSC, CobiT and HP ISTM

This starting point allows us to drill down further and identify the ITSM processes that would map onto our selected CobiT processes. But first, let's identify the domains of interest.

In order to achieve its objective of "fixing quality issues", we suggest that the HP ITP program articulate its strategy focusing on the domain of Planning & Organization, Acquisition & Implementation and Delivery & Support, focusing specifically on the following four processes:

- PO11: Manage Quality
- DS8: Assist & Advise Customers
- DS10: Manage Problems and Incidents
- IA2: Acquire and Maintain Application Software

DS8 maps directly to the Service Desk function of ITSM, the initial point of contact with the service provider for customers. DS10 maps onto incident, problem management processes. IA2 would map to the processes of release management and service build and test for its operational part and would in a way map to some parts of the customer management process with regards to capturing usability and feature set requirements. Finally, PO11 would find its instantiation in the IT strategy and architecture planning process as PO11 is much more organizational than operational, i.e establishment of a quality culture throughout the organization.

ITSM is not concerned with the monitoring aspect of CobiT and therefore does not provide adequate processes.

5. Rethinking HP ITP Balanced Scorecard in light of IT frameworks

As presented in the previous section, it is possible to reuse existing frameworks to extend and refine the current HP ITP scorecard. In a first step, we use the CobiT principles of KGIs and KPIs and their mapping to balanced scorecard to create scorecards based on the PO11, DS8, DS10 and IA2 processes. We then combine the initial cause-effect relationship model which the CobiT goal-enabler relationship to put the various scorecards in perspective using a cascade technique. The result is presented in Figure 5.

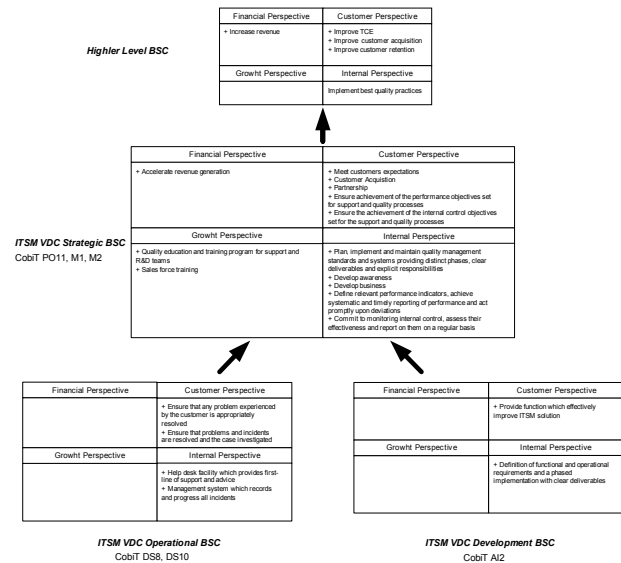


Figure 5: BSC cascade using CobiT KGIs and KPIs for ITP VDC program

The first BSC is the so-called Higher Level BSC. It attempts to formally capture the objectives under which the organization of the HP ITP program operates. Its financial perspective has for objective to increase revenue. The customer perspective focuses on improving the Total Customer Experience (TCE) as well as customer acquisition and customer retention. Internally, this means that the program should implement best quality practices.

Based on these objectives, the HP ITP program formulates its own BSC: the HP ITP Strategic BSC. This strategic BSC is defined as the enabler for the goals expressed in the Higher Level BSC. The Strategic BSC is formulated in part based on CobiT PO11 goals and enablers.

The BSC perspectives are organized as follows:

Table 5: Financial Perspective - Strategic BSC

Goal	Measure
Accelerate revenue generation	+ Increased ITP revenue + Increased ITP big deals

Table 6: Growth perspective – Strategic BSC

Goal	Measure
Quality education and training program for support and R&D teams	+ Average number of days of training in quality management
Sales force training	+ Average number of days of training in ITSM + Number of certificated personnel

Table 7: Customer perspective – Strategic BSC

Goal	Measure
Meet customer requirements (expectation)	+ Increased rating for customer satisfaction with ITP solution + Decrease number of quality defect reports against quality standards + Increase customer satisfaction on usability + Increase customer satisfaction on feature set + Increase customer satisfaction on reliability
Ensure the achievement of the performance objective	+ Consistent application of the right limited number of performance indicators + Increased number of process improvement opportunities detected and acted upon + Satisfaction of management and the governance entity with performance reporting + Reduced number of outstanding process deficiencies
Ensure the achievement of the internal control objectives	+ Index of senior management satisfaction and comfort with reporting on internal control monitoring + Decreased probability of internal control incidents + Positive external qualification and certification reports + Number of control improvement initiatives + Decreased number of security incidents and quality defects
Customer Acquisition	+ Rate at which program attracts customers
Partnership	+ Increased number of new partners + Increased number of training session

Table 8: Internal perspective – Strategic BSC

Goal	Measure
Plan, implement and maintain quality management...	+ Number of documented quality assurance monitoring and testing activities + Number of projects with documented and measured quality criteria + Decrease off defect arrival rate normalized by revenue + Decrease off defect backlog
Define relevant performance indicators	+ Time lag between the process deficiency occurrence and reporting + Time lag between reporting of a deficiency and action initiated + Ratio between process deficiencies reported and deficiencies subsequently accepted as requiring management attention follow-up (noise index) + Number of process monitored + Number of cause and effect relations identified and incorporated in monitoring
Commit to monitoring internal control...	+ Number and coverage of control self-assessments + Timeliness between internal control deficiency occurrence and reporting + Number, frequency and coverage of internal compliance reports + Number of timely actions on internal control issues + Number of control improvements stemming from root cause analysis
Develop awareness	+ Industry analyst rating + Number of success story + Number of advertisement coverage + Number of itSMF chapters where we have key role
Develop business	+ Number of demands + Number of leads

As suggested by CobiT, the strategic BSC is enabled by two balanced scorecards, one related to the operational aspects of the VDC, the other pertaining to its development aspects.

The ITP VDC Operational BSC is based on CobiT DS8 and DS10 and is organized as follows:

Table 9: Customer perspective – Operational BSC

Goal	Measure
Ensure that any problem experienced by the user is appropriately resolved	+ Reduced average time to resolve problems + Reduced repetitive inquiries on solved problems + Increased user satisfaction with the effectiveness and efficiency of the help desk + Improved efficiency measured by reduced help desk resources in relation to system supported + Elapsed time per call
Ensure that problem and incidents are resolved and the case investigated	+ A measured reduction in the elapsed time from initial symptom report to problem resolution + A measured reduction in unresolved problems and incidents + A measure increase in the number of problems avoided through pre-emptive fixes + Reduced time lag between identification and escalation of high-risk problems and incidents

Table 10: Internal perspective – Operational BSC

Goal	Measure
Help Desk facility which provides first-line of support and advice	+ Number of repeat inquiries + Number of escalation + Number of inquiries + Time to resolve inquiries + Reduced trends in user inquiries requiring problem resolution + Cost per call
Management system which records and progress all incidents	+ Elapsed time from initial symptom recognition to entry in the problem management system + Elapsed time between problem recording and resolution or escalation + Elapsed time between evaluation and application of patches + Percent of reported problems with already known resolution approaches + Reduced number of problems not controlled through formal problem management

The ITP Development BSC is based on CobiT AI2 and is organized as follows:

Table 11: Customer perspective – Development BSC

Goal	Measure
Provide function which effectively improve ITSM solution	+ Reduced ration of maintenance (patch) efforts relative to new development

Table 12: Internal perspective – Development BSC

Goal	Measure
Definition of functional and operational requirements and a phased implementation with clear deliverables	+ Average time to deliver functionality based on measures such as function point or modules + Number of change requests related to bugs, critical errors and new functional specifications + Number of production problems or disfunctionality per application and per maintenance change + Number of deviations from standard applications, unapproved design and testing reduced to meet deadline + Number of return modules or level of rework required after acceptance testing + Time lag to analyze and fix problems + Number or percent of application software effectively documented for maintenance

Finally, to complete our analysis, we capture the relationship between the balanced scorecard, CobiT processes and ITSM processes in an instantiation diagram presented in Figure 6.

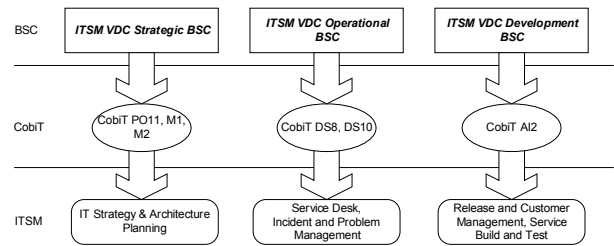


Figure 6: Relationships between BSC, CobiT processes and ITSM processes

6. Discussion

As presented in this paper, we have used the CobiT framework to enhance and reformulate the objectives of the ITP program. Essentially, our work was to identify how the initial description of the strategy and objectives of the program would map and be extended by the CobiT processes and related control objectives. This exercise was made relatively easy thanks to the structure of the CobiT framework which clearly presents the 34 processes and their related controls. The domain knowledge and depth expressed in the control objectives definition enabled us to complete the reformulation in a way that felt sound and inclusive.

Once the scorecard reformulated, the ability to map the CobiT processes onto the operational processes defined in the HP ITSM framework was key to demonstrate the feasibility of the reformulation. This mapping is a strong

link between the high level concepts of balanced scorecard and controls and the concepts used in IT operations.

To the best of our knowledge, similar work has not been published so far which makes it difficult for this work to be compared.

The focus of the paper was to present the outcome of our work rather than the process used to get to the result. We feel that the process we followed should be further refined and developed through similar analysis before publication. Further work will go in this direction.

7. Conclusion

In an increasingly competitive environment, the delivery of IT needs to be articulated around standard management frameworks and best practices. Based on the initial objectives set upon the HP ITP program and its strategy, we have shown how using the CobiT and the HP ITSM frameworks would enhance the formulation and implementation of the HP ITP program strategy. The result of our study is a waterfall of balanced scorecard built on the goals and enablers specified in CobiT and a mapping to ITSM process ensuring the instantiation of some of the aspects of the strategy. It is clear that the presented KGIs and KPIs might not be all measured and future work would include selecting the indicators that can be measured in the current instantiation of the HP ITP systems as well as bringing about some degree of automation in the reporting framework. Of course, as suggested by the CobiT management guidelines, the implementation of the defined strategy should start with an analysis of the maturity of the current processes. Finally, the knowledge gained through this experience has been useful for the HP ITP program to define the future feature set of their management solution. It is our conclusion that combining the CobiT framework along with the HP ITSM framework provides IT management with a strong solution to synchronize IT with business objectives.

8. References

1. M.Sallé, "IT Service Management and IT Governance: Review, Comparative Analysis and their

Impact on Utility Computing", HP Labs Technical Report HPL-2004-98, 2004

2. ITGI, "Control Objectives for Information and related Technology (CobiT) 3rd Edition", 1998.
3. itSMF, "IT Service Management, an introduction", 2004.
4. HP, "The HP IT Service Management (ITSM) Reference Model", 2003.
5. Microsoft, "Microsoft Operations Framework Executive Overview", 2002.
6. R.Kaplan and D.Norton, "The balanced scorecard: translating vision into action", Harvard Business School Press, 1996