

Using CobiT and the Balanced Scorecard as Instruments for Service Level Management

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Introduction

In today's service driven economy, organizations are more and more relying on third- parties, also for a variety of IT (Information Technology) services. However, they are often not pleased with the service received and are sometimes dependent on third-parties whose future is uncertain, especially in this period of time characterized by economic decline.

This article will show how organizations can respond to this problem through Service Level Agreements (SLAs) and Service Level Management (SLM), supported by mechanisms such as CobiT (Control Objectives for Information and related Technologies) and the balanced scorecard (BSC). The main conclusion of this article is that an appropriate SLM process should be put in place in the organization and that, to avoid problems of not getting the service(s) required, service levels should be expressed in business terms. Implementing an SLM process is not an easy and quick task to perform and thus an approach using supportive mechanisms such as CobiT and the balanced scorecard may help in defining or fine-tuning the SLA(s).

The first part of this article provides some basic definitions of SLM and SLA and describes briefly the components of the SLM process. Furthermore, CobiT is introduced as a framework to support the SLM process. Finally, the balanced scorecard concept is tailored to measure and manage the SLM process.

Definitions of Service Level Management and Service Level Agreements

According to Sturm, Morris and Jander (2000), Service Level Management is 'the disciplined, proactive methodology and procedures used to ensure that adequate levels of service are delivered to all IT users in accordance with business priorities and at acceptable cost'. The instrument for enforcing SLM is pre-eminently the Service Level Agreement. 'A Service Level Agreement is a written contract between a provider of a service and the customer of the service. The purpose of the SLA is to establish measurable targets of performance with the objective of achieving a common understanding of the nature of and level of service required' (International Federation of Accountants, 2000).

Generally speaking, there are three basic types of SLAs: In-House, External, and Internal SLAs. The differences between those types refer to the parties involved in the definition of the SLA. The first and most common type of SLA is an In-House Service Level Agreement. An In-House SLA is an agreement negotiated between an in-house service provider, such as an IT department, and an in-house client or department, such as marketing, finance or production. The second most common SLA is an External SLA, a SLA between an external service provider (third-party) and an organization. Finally, an Internal SLA is used by a service provider to measure the performance of the groups within its own organization (Sturm et al., 2000). No matter what type of SLA is chosen, it should always be negotiated by an experienced and multi-disciplinary team with an equal representation from both the user group and the service provider. Many user group negotiators see the negotiations as a zero-sum challenge, going for maximum service levels at a minimum cost, whereas service provider negotiators seek to get the deal at any cost in order to gain market share, but with minimum effort and maximum margin. Seeking a balance between these two positions is a vital but very difficult job for a solid SLA and SLM.

A SLA is a necessity between a service provider and service beneficiary since a service can only be called "bad" or "good" if this service is clearly described. Moreover, it formalizes the needs and expectations of the organization and serves as such as a kind of "guarantee" for both parties. In this way potential misunderstandings are reduced and a clear view is given on the priorities around the service and the service delivery.

The SLA itself is in essence a document constructed around a number of core components (**Table 1**) discussed and agreed between an organization and the service provider. The term/duration and the scope/subject of the SLA define respectively the period of time that the SLA will cover and the (type of) services dealt with in the agreement. Here it is already important to identify also what the SLA will not be dealing with ("out-of-scope" or excluded elements). The service level objectives describe the levels of commitments around the different services that both the user group and the service provider agree upon: availability, performance (speed, responsiveness and accuracy), workload levels, security, maintenance, quality, To make sure that both the user group and the provider understand the service level objectives, it is crucial to make a distinction between the technical service levels and

the business service levels: while the business service levels express the required service into business terms, the technical service levels translate them into technical requirements. The service level indicators specify the metrics and statistics by which the service levels can be measured. Further, one should define who exactly will perform this vital exercise of measuring and how this will be done. When recording the metrics, it is important to take the “objective” metrics (the numbers) as well as the “subjective” metrics into account (such as the perception of the end-user group), which can be quite different from the hard figures and statistics. In many SLAs, only objective criteria and metrics are described and validated, which leads sometimes to furious and endless discussions between the service provider and the organization. Furthermore, non-performance clauses define what happens if the service provider does not meet the SLA objectives as stated (warnings, corrective actions, financial penalties, escalation procedures, etc.). Optional services (additional service components that are not normally provided at the time of agreement) can already be included and reporting and administrative procedures (roles, responsibilities, communication procedures, frequency of meeting,...) are to be defined. Review / Update procedures and processes should be included in order to enable the identification and proper implementation of any change required (e.g. other indicators, new technological evolutions, new organizational or service requirements, change in organizational strategy). Regular revisions of the SLA are a key factor for success, since organizations and their services are dynamic by nature. Finally, formal approvals should be included in the SLA (Sturm et al., 2000).

One should remember that the “all-inclusive” SLA does not exist. There will always be certain smart clauses for service providers when services provided fall below the stipulated levels. Subsequently, many organizations get enraged by the fact that their SLA does not protect them properly against “everything” and start blaming the service provider for “poor” service and “unfair” SLAs. However, they forget that the wider the scope of the SLA, the greater the cost of receiving the service. A balanced SLA is a compromise between the needs, expectations and requirements of the organization (user group) and the service provision capabilities and promises of the service provider, while at the same time protecting the service provider by limiting liability, identifying responsibilities and rationally managing user expectations.

Table 1 Some Essential Components of Service Level Agreement

Parties in the agreement	Security procedures
Definitions of terminology	Audit procedures
Term / Duration	Roles & Responsibilities
Scope / Subject	Optional services
Limitations	Reporting
Service Level Objectives	Administration
Service Level Indicators	Review / Update
Non-performance impact	Property
Maintenance	Legal
Pricing Mechanism	Approvals
Billing and Terms of Payment	

Service Level Management and Service Level Agreements through CobiT

CobiT stands for Control OBjectives for Information and related Technology and is developed by the Information Systems Audit and Control Association (ISACA). The CobiT Framework (2000d) defines 34 IT processes spread into 4 IT domains: planning and organization (PO), acquisition and implementation (AI), delivery and support (DS), and monitoring (M) (see Appendix). CobiT defines one high level control objective for each process and 3 to 30 detailed control objectives. These control objectives contain statements of the desired results or purposes to be achieved by implementing specific control procedures within an IT activity and provides a clear policy for IT control throughout the industry (IS Audit & Control Foundation, 2000b).

One of the IT processes identified in the framework is 'defining and managing service levels' (delivery and support domain). A summary of the control objectives for this IT process is shown in Table 2. These control objectives emphasize the importance of a SLA framework and the need to agree on the components of a SLA. Performance, monitoring and reporting procedures should be put in place and the contracts should be revisited regularly. Finally, the CobiT control objectives stress out the necessity of chargeable items in the SLA (to enable trade-offs between service and cost) and the need for a program to continuously improve the SLAs.

Table 2 Control Objectives for defining and managing service levels

<p>High-level control objective <i>Control over the IT processes</i> defining and managing service levels <i>that satisfies the business requirement</i> to establish a common understanding of the level of service required <i>is enabled by</i> the establishment of Service Level Agreements which formalize the performance criteria against which the quantity and quality of service will be measured <i>and takes into consideration</i></p> <ul style="list-style-type: none"> • formal agreements • definition of responsibilities • response times and volumes • charging • integrity guarantees • non-disclosure agreements • customer satisfaction criteria • cost/benefit analysis of required service levels • monitoring and reporting
<p>Detailed control objective 1 : Service Level Agreement framework Management should define a framework to promote the definition of formal Service Level Agreements and to define the minimal contents such as availability, reliability, performance, capacity for growth and levels of support provided to users. The users and the IT function should have a written agreement which describes the service level in qualitative and quantitative terms and defines the responsibilities of both parties.</p>
<p>Detailed control objective 2: Aspects of Service Level Agreements Explicit agreement should be reached on the aspects that a Service Level Agreement should cover (e.g. availability, reliability, and performance).</p>
<p>Detailed control objective 3: Performance procedures</p>

Management should implement procedures to ensure that the manner of and responsibilities for performance governing relations (e.g. non-disclosure agreements) between all the involved parties are established, coordinated, maintained, and communicated to all affected departments.
Detailed control objective 4: Monitoring and reporting A service level manager, responsible for monitoring and reporting on the achievement of the specified service performance criteria and all problems encountered during processing, should be appointed.
Detailed control objective 5: Review of Service Level Agreements and contracts A regular review process for Service Level Agreements and underpinning contracts with third-party service providers should be put in place.
Detailed control objective 6: Chargeable items Management should include provisions for chargeable items in the Service Level Agreements, making trade-offs possible on service levels versus cost.
Detailed control objective 7: Service improvement program A process to ensure that users and service level managers regularly agree on a service improvement program for pursuing cost-justified improvements to the service level. (IS Audit & Control Foundation, 2000b)

In order to respond to the management's need for control and measurability of IT, CobiT also provides Management Guidelines with tools to assess and measure the organization's IT environment against the 34 IT processes. These Management Guidelines (2000e) include Maturity Models (MM), Critical Success Factors (CSFs), Key Goal Indicators (KGIs), and Key Performance Indicators (KPIs) for each process.

A maturity model is a method of scoring that enables the organization to grade its maturity for a certain process from non-existent (0) to optimized (5). This tool offers an easy-to-understand way to determine the 'as-is' and the 'to-be' (according to enterprise strategy) position, and enables the organization to benchmark itself against best practices and standard guidelines. In this way, gaps can be identified and specific actions can be defined to move towards to desired position (to-be). When doing this maturity assessment, it is important to comply with the basic principles of maturity measurement: one can only move to a higher maturity when all conditions, described in a certain maturity level, are fulfilled. The maturity model for 'defining and managing service levels', of which a summary is given in Table 3, declares that an organization is at maturity level 1 for this process when there is awareness of the need to manage service levels, but that the process is informal. An organization achieves maturity level 5 when all service levels are continuously reevaluated to ensure alignment of IT and business objectives.

Table 3 Maturity model for 'defining and managing service levels'

0	NON-EXISTENT management has not recognized the need for a process for defining service levels
1	INITIAL / AD HOC there is awareness of the need to manage service levels, but the process is informal
2	REPEATABLE AND INTUITIVE there are agreed-upon service level agreements, but they are informal and not revised. Service level reporting is incomplete.
3	DEFINED PROCESS the service level agreement process is in place with checkpoints for reassessing service levels and

	customer satisfaction
4	MANAGED AND MEASURABLE performance measures are increasingly reflecting end-user needs, rather than only IT goals
5	OPTIMIZED service levels are continuously reevaluated to ensure alignment of IT and business objectives

(IS Audit & Control Foundation, 2000e)

The results of a survey performed by ISACA in 2002 revealed that the maturity level for 'defining and managing service levels' for most organizations is situated in the 2 to 2.5 bracket. Filtering the results by size, geography, and industry revealed that large companies, global working companies, organizations in the finance industry, and IT service providers achieve on average a higher maturity (between 2.5 and 3) in 'defining and managing service levels' (Guldentops, Van Grembergen and De Haes, 2002). These data can be very useful benchmarks for organizations when evaluating their own maturity in 'defining and managing service levels' against industry best practices.

CobiT's management guidelines also provide critical success factors, key goal indicators and key performance indicators that can be helpful when striving for a certain maturity level, e.g. achieving maturity in the SLM process. Critical success factors are the most important elements an organization can target to contribute to the IT process achieving its goals. Key goal indicators are business driven elements indicating *what* has to be accomplished. They represent the IT process goals. The key performance indicators are process driven, focusing on the *how*, and indicating how well the IT process enables the goal to be reached. The CSFs, KPIs and KGIs for 'defining and managing service levels' are described in Table 4.

Table 4 CSFs, KGIs, KPIs for 'defining and managing service levels'

Critical Success Factors	Key Goal Indicators	Key Performance Indicators
<ul style="list-style-type: none"> • Service levels are expressed in end-user business terms, wherever possible • Root cause analysis is performed when service levels breaches occur • Skills and tools are available to provide useful and timely service level information • The reliance of critical business processes on IT is defined and is covered by service level agreements • IT management accountabilities and responsibilities are linked to service levels • The IT organization can identify sources of cost variances • Detailed and consistent 	<ul style="list-style-type: none"> • Sign-off by strategic business unit that service levels are aligned with key business objectives • Customer satisfaction that the service level meets expectations • Actual to budget cost ratio in line with service levels • Percent of all critical business processes relying on IT covered by service level agreements • Percent of service level agreements reviewed at the agreed interval or following major change • Service level partners sign off service level monitoring information provided • Percent of IT services which 	<ul style="list-style-type: none"> • Time lag of resolution of a service level change request • Frequency of customer satisfaction surveys • Time lag to resolve a service level issue • Number of times that root cause analysis of service level procedure and subsequent resolution is completed within required period • Significance of amount of additional funding needed to deliver the defined service level

explanations for cost variances are provided • A system for tracking and following individual changes is available	meet service level agreements	
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(IS Audit & Control Foundation, 2000e)

There is an important cause-and-effect relationship between key performance indicators and key goal indicators. KGIs such as 'customer satisfaction that the service level meets expectations' without KPIs such as 'the time lag of resolution of a service level change request' do not communicate how the outcomes are to be achieved. And KPIs without KGIs may lead to significant investments without a proper measurement indicating whether the chosen SLM strategy is effective. Some KPIs will of course have a higher impact to specific KGIs compared to others. It is important to identify to most important KGIs for the specific environment and closely monitor the KPIs that contribute most to it.

Service Level Management through the Balanced Scorecard

One way of simplifying the SLM process is to use a balanced scorecard (BSC) (Hiles, 1999-2000). The balanced scorecard is developed by Kaplan and Norton in the 1990s. Their idea is that the evaluation of an organization should not be restricted to the traditional financial performance measures, but should also be supplemented with measures concerning customer satisfaction, internal processes and the ability to innovate. Results achieved within the additional perspectives should assure future financial results. Kaplan and Norton propose a three layered structure for these four perspectives: mission, objectives, and measures. To put the BSC to work, organizations should translate each of the perspectives into corresponding metrics and measurements that assess the current situation. These assessments have to be repeated periodically and have to be confronted with the goals that have to be set beforehand (Kaplan and Norton, 1992; Kaplan and Norton, 1993; Kaplan and Norton, 1996a, Kaplan and Norton, 1996b).

The generic BSC-framework can be translated to the more specific needs of an IT function, its projects, and its specific processes such as defining and managing service levels (Graeser et al., 1998; Van Grembergen and Saull, 2001; Van Grembergen, Saull and De Haes, 2003). Recognizing that IT is an internal service provider, the proposed perspectives of the generic balanced scorecard should be changed accordingly, with the following perspectives: corporate distribution, customer (user) orientation, operational excellence, and future orientation. A generic SLM balanced scorecard that can be used for measuring and managing the SLM process is shown in

Table 5. In building this generic Service Level Management scorecard, performance measures defined in Van Grembergen and Saull (2001), Van Grembergen and Amelinckx (2001), Hiles (1999-2000), and the CobiT Management Guidelines (2000e) were used.

Table 5 Generic SLM Balanced Scorecard

User Orientation How do the users view the Service Level Management process?	Corporate Contribution How does management view the Service Level Management process?
Mission To meet business requirements of users and to improve user satisfaction Objectives <ul style="list-style-type: none"> • service level performance • user satisfaction Measures <ul style="list-style-type: none"> • % of applications and operation services meeting SLAs • score on user satisfaction survey 	Mission To obtain a reasonable business contribution from SLM process Objectives <ul style="list-style-type: none"> • control of expenses for SLM • maximum effect on the business Measures <ul style="list-style-type: none"> • actual versus budgeted expenses • % of processes relying on IT covered by SLAs
Operational Excellence How effective is the Service Level Management process?	Future Orientation Is IT positioned to meet future Service Level Management challenges?
Mission Effective Service Level Management process Objectives <ul style="list-style-type: none"> • improvement of SLM process • efficient account management • efficient reporting of outages • efficient performance reports • efficient implementation process Measures <ul style="list-style-type: none"> • SLM maturity level • # failures to attend scheduled account meetings • # failures to provide outages reports in x hours • # failures to provide performance reports as agreed • # of late implementations 	Mission Develop opportunities to answer future challenges Objectives <ul style="list-style-type: none"> • permanent SLM training and education of IT personnel and end users • research into SLM Measures <ul style="list-style-type: none"> • SLM educational budget as percentage of total IT budget • % of IT staff and end users with completed SLM training • percentage of IT budget spent on SLM research

The *User Orientation* perspective represents the user's evaluation of the SLM process and captures the user satisfaction based on surveys and the attained overall service levels for both applications and operations. The *Operational Excellence* perspective represents the SLM processes employed to deliver the demanded services including it's the overall maturity level of the SLM process. The *Future Orientation* perspective represents the human and technology resources needed by the SLM process to deliver its services over time. The *Corporate Contribution* perspective captures the business value created from the SLM process with as major measure the percent of business processes covered by SLAs..

In building an organization-specific SLM balanced scorecard, a number of steps need to be followed. First, the concept of the SLM balanced scorecard technique has to be presented to senior management, IT management, and co-workers involved in the SLM process and then an SLM project team has to be established. Secondly, during the data-gathering phase, information is collected on SLM metrics. The metrics identified have to be Specific, Measurable, Actionable, Relevant and Timely (SMART). In this manner, the organizations avoids developing or accepting metrics for which accurate or complete information can not be collected or which lead to actions contrary to the best interests of the organization (Chaffey et al., 2000). Finally, the organization-specific SLM scorecard, based on the

principles of Kaplan and Norton, and a generic model as presented here, can be developed (Van Grembergen and Timmerman, 1998).

Essential components of the SLM BSC are the cause-and-effect relationships between measures. These relationships are articulated by two key types of measures: outcome measures and performance drivers. These outcome measures and performance drivers are the equivalent of respectively the key goal indicators and key performance indicators that are used in CobiT's Management Guidelines. This implies that CobiT's KGIs and KPIs could easily be used as basic components (measures) when building up a SLM balanced scorecard. The cause-and-effect relationships have to be defined throughout the whole scorecard: a higher SLM educational budget (future orientation) is an enabler (performance driver) to achieve a higher SLM maturity level (operational excellence) that in turn is an enabler for increased user satisfaction (user orientation) that eventually will lead to a higher business value through SLM (corporate contribution).

Conclusion

Service Level Agreements and Service Level Management are effective mechanisms for an organization to respond to the problem of not getting the proper service it requires. Establishing an efficient and effective SLM process is a quite complex and difficult task requiring experienced and multi-disciplinary resources. CobiT is certainly a useful and supportive mechanism for defining and implementing a mature SLM process, by identifying control objectives, maturity models, key goal indicators, key performance indicators and critical success factors. The generic balanced scorecard concept is also a useful instrument that through translation into a SLM balanced scorecard can simplify the SLM process. Both CobiT and the BSC can enable any organization to attain more balanced service level agreements and a more mature service level management process with as end objective the achievement of the business goals.

The authors wish to thank Marc Vael (KPMG Belgium) for sharing his expertise and constructive feedback during the development of this article.

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Appendix IT domains and processes identified in CobiT

<p>Planning and Organization</p> <p>PO1 Define a strategic IT plan PO2 Define the information architecture PO3 Determine technological direction PO4 Define the IT organization and relationships PO5 Manage the IT investment PO6 Communicate management aims and direction PO7 Manage human resources PO8 Ensure compliance with external requirements PO9 Assess risks PO10 Manage projects PO11 Manage quality</p>
<p>Acquisition and Implementation</p> <p>AI1 Identify automated solutions AI2 Acquire and maintain application software AI3 Acquire and maintain technology infrastructure AI4 Develop and maintain procedures AI5 Install and accredit systems AI6 Manage changes</p>
<p>Delivery and Support</p> <p>DS1 Define and manage service levels DS2 Manage third-party services DS3 Manage performance and capacity DS4 Ensure continuous service DS5 Ensure systems security DS6 Identify and allocate costs DS7 Educate and train users DS8 Assist and advise customers DS9 Manage the configuration DS10 Manage problems and incidents DS11 Manage data DS12 Manage facilities DS13 Manage operations</p>
<p>Monitoring</p> <p>M1 Monitor the processes M2 Assess internal control adequacy M3 Obtain independent assurance M4 Provide for independent audit</p>

(IS Audit & Control Foundation, 2000c)

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UAMS (University Antwerp Management School) has the ambition to be a “learning partner in management”, by offering a broad range of training programmes for future and current managers in the business world, in public services and social-profit organizations. The priorities cover optimal quality control, interactive teaching methods, an emphasis on research-based knowledge and best practice, an international orientation and a continuous adaptation of our programmes to the needs of the market.

About ITAG

The Information Technology Alignment and Governance (ITAG) Research Institute, was established in within UAMS to host applied research in the domains of IT Governance and business/IT alignment. The research centre is an initiative of Prof. dr. Wim Van Grembergen and dr. Steven De Haes. Both have research and practical experience in the IT Governance and Strategic Alignment domains. Recently, this team was reinforced by senior researcher Hilde Van Brempst.

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