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An ABC-Based Approach for Operational Business-ICT Alignment

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Abstract
This paper focuses on Business-ICT Alignment at the operations level by means of an Activity-Based Costing approach. The Service and Technology Operations are defined as cost drivers for the Business and Service Activities by using analytical production functions (so-called profiles). It is explained how Service Level Agreements are the boundary conditions for determining these profiles. Managing the profiles ensures operational Business-ICT Alignment, especially for Capacity Planning and Cost Management and comparative Total Cost of Ownership evaluation purposes. Two Case Studies illustrate the methodology.

Keywords: Business-ICT Alignment, Service Level Agreements, Information Management, Capacity Planning, Evaluation, ICT Cost Management

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1. Introduction

Business – ICT (*Information & Communication Technology*) Alignment is an ongoing concern in ICT Governance literature. Although a lot has been published already on this subject, many research questions remain, such as:

- What is a workable definition of Business – ICT Alignment?
- Can Alignment be demonstrated and/or measured in some way?
- What methods and techniques exist to establish Business – ICT Alignment in practice?

Most of the literature so far has focussed on the Alignment of Business strategy and ICT strategy. It is clear that Alignment is needed for other Information Management Areas, such as operational Alignment. This paper contributes to the understanding of operational Business – ICT Alignment and is organised as follows. First, Alignment is discussed in the context of a generic framework for Information Management (Maes 1999, Maes 2003). In particular the framework distinguishes different layers of Alignment, including strategic as well as operational Alignment. Next, an analytic methodology for operational Alignment is developed. This methodology is based on Activity-Based Costing (ABC) and relies on some basic results from capacity planning and performance management of computer configurations (Overweg 1993). The paper concludes by presenting two case studies. Finally some other applications of this methodology are briefly discussed.

2. Business – ICT Alignment and Information Management

'Alignment' has become an important principle in managing the relationship between Business and ICT (In this paper the term 'ICT' is preferred over 'IT' since Information & Communication are considered to belong together in a dual atomic fashion). Some contradictory definitions have been developed in literature (Maes 2000), relying mainly on synonyms such as 'balance', 'coordination', 'fit' (Venkatraman 1984), 'linkage', 'harmony', etc… Recent literature (Maes 2000, Benson 2004) tried to refine the notion of Alignment and makes the distinction between

- Strategic Alignment
- Structural (also called functional) Alignment
- Operational (also called internal) Alignment

These notions supersede the classical framework for Business – ICT Alignment such as the one proposed by Hederson & Venkatraman (Henderson 1993). Instead, modern Information management frameworks (fig. 1) consider Information & Communication as a concept that is making a bridge between Business and Technology (Maes 1999, Maes 2003). Information/Communication is different from Technology: examples are the way how "data" only become "information" once they get a "meaning", and how "software" becomes a "system" once it gets a meaningful usage. Such an approach is matching very well the current evolution towards Service-oriented architectures, where the Information and Communication Services (such as Web Services) are precisely located in the middle column of this framework.

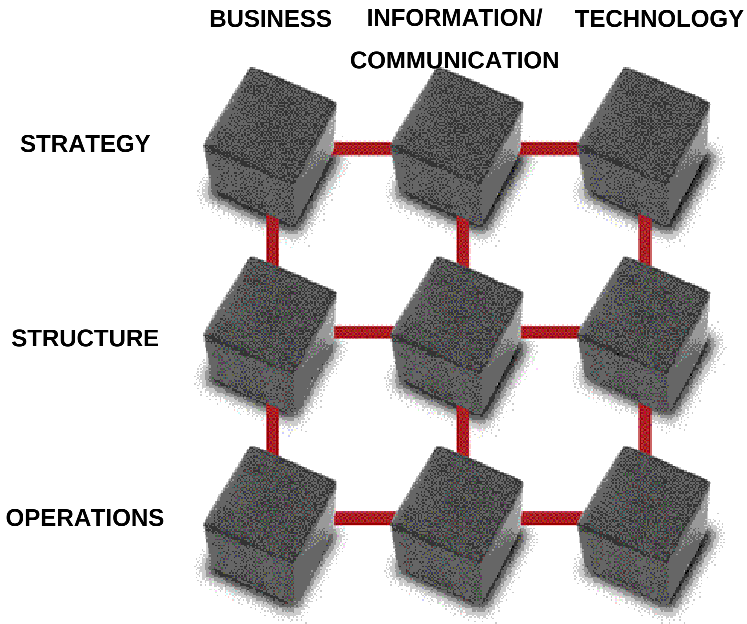

fig. 1 Information Management Framework (Maes 1999)

Because of the introduction of such a "bridging" factor in the framework, it becomes easier to discuss Alignment practices. An interesting analysis was made in (Maes 2000), where several open issues for future research in Business – ICT Alignment (including the elaboration of operational Alignment) have been identified.

One way to define 'Alignment' in a somewhat negative way could be the following:

"Alignment is avoidance of mismatch"

This definition is inspired by the technique of matching strategic "maxims", as introduced by Weill and Broadbent (Weill 1998). Adopting this definition implies that every technique that contributes to the avoidance of mismatch, is a technique that has the capability to improve the Business – ICT Alignment. Examples are:

- The matching of Business and IT maxims for strategic Alignment (Weill 1998). Ongoing research is extending this technique to include the proper IC (Information & Communication) maxims.
- The model transformation techniques used in Model Driven Architecture by the *Unified Modelling Language* (UML 2.0). This approach has the ambition to achieve structural Alignment (also indicated as architectural Alignment in (Maes 2000)) by matching Business models and Information Models, and transform these models into Technical Implementation Models in a seamless way by means of forward engineering. This approach relies on meta-models/ontologies such as proposed in (Osterwalder 2003).

This paper will propose one possible method that can be used for Business – ICT Alignment at the operations level. As explained in the Information Economics literature (Benson 2004) this kind of Alignment should ensure that ICT spending is focussed on what is actually needed to meet the operational requirements. Therefore this methodology will focus on using cost- and production functions to provide seamless transformations at the operations level between Business activities, Information/Communication activities (the actual IC Services) and Technological activities (the usage of ICT components). In the management framework it means the focus of this methodology is on horizontal Alignment at the lowest row of the management framework (fig 2.)

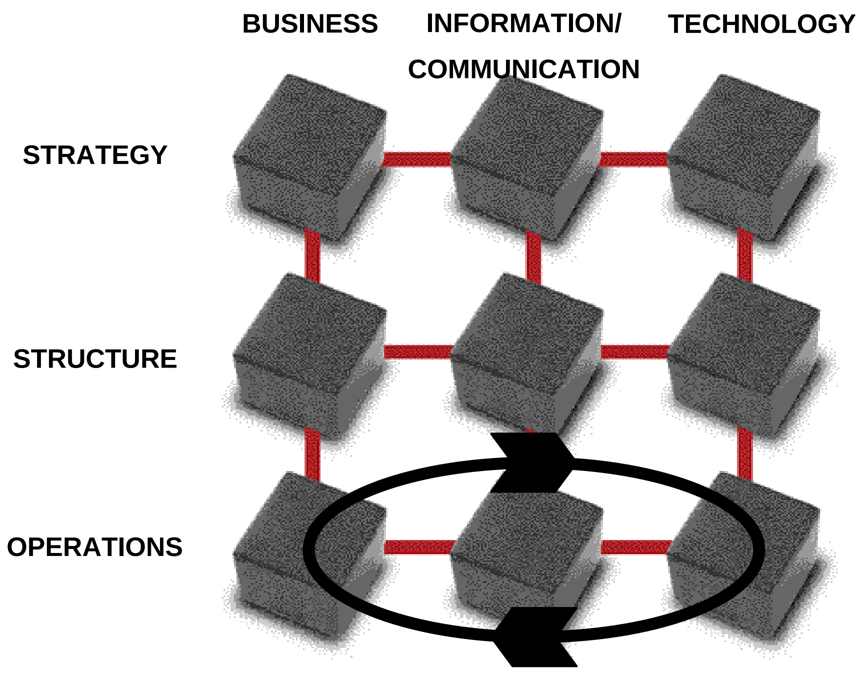

fig 2. Operational Business – ICT Alignment

Other techniques for the analysis of Internal Alignment may exist (Benson 2004), such as the identification of cost portfolio's for each column in the management framework. However, a primary contribution of the methodology in this paper is the fact that it includes functions that make the Alignment visible in the form of analytical economical functions. These functions enable also a better (comparative) evaluation of the cost-efficiency of the Information & Communication Services.

3. Activity – Based Costing for ICT Operations

The development of cost- and production functions will be guided by one of the newest cost-based accounting techniques, *Activity-Based Costing* (ABC). In a simplified definition, ABC tries to identify first the activities that are the actual cost "drivers". Next the resource-consumption of these activities are measured to find an analytical expression (such as a matrix function) that explains how much resources are used by some activities, and for which reasons. One of the benefits of ABC is its ability to make cost structures more transparent also to non-financial managers, stimulating them for optimisation and continuous evaluation and improvement.

There have been several attempts to apply ABC to ICT-costing (Gerlach 2002). Most of these approaches translate Business "metrics" into resource consumption metrics (such as, translate "number of orders" directly into the "*number of processor instructions* (MIPS)" that are needed. Such an approach may be very misleading, as it does not explain what kind of "Service" is actually rendered for these "MIPS". An order might be processed online, in a transaction, or, alternatively in a Web-Service where the order is represented as a message expressed in the *eXtensible Markup Language* (XML) format, or through an e-mail based process, or even simply in a Batch process. The simple order-to-MIPS translation fails to provide any useful insight on the reason why some MIPS are consumed for some Business activities, because it doesn't show the reasons why some MIPS-capacity is used for certain purposes.

So an intermediate type of activity should be identified to explain the resource consumption better. The information management framework, and its 3 columns in particular, provides clear guidance on this aspect. The "orders" are an activity in the Business column, whereas the "MIPS" represent a technical processor activity, in the Technology column. What is needed is the intermediary Service activities from the middle column. Before exploring the activities in detail, the following generic requirements can be formulated for "activities" in ABC:

- each activity should be quantified preferably by only one type of unit
- each unit type should be a good quantitative representation of the level of activity in each activity
- the units should be easy to measure in an accurate way

3.1 Activities and production functions in the Information Management framework

In the Information Management framework, the following types of activities can be identified along the columns:

1. **Business activities,** represents activities that achieve actual Business objectives. Business activities can be quantified in terms of **Business units** (which are also called revenue generating units, or natural forecasting units, or *Business Metrics of Interest* (BMI) (Kaminski 2003)). Examples could be: the number of purchase orders to be processed, the number of accounts to be managed in a retail banking environment, the number of policies in an insurance organisation, the number of customers, and so on. Business activities clearly belong to the left column in the Information Management framework.

2. **Technological activities** represent the technology resources. Technically speaking, they represent pieces of hardware under the control of some particular operating system or systems software. Examples are: *Central Processing Units* (CPU), Disk Storage, Printing, Networking, and so on. These activities are measured in terms of time-consumption (e.g. CPU-time), space-consumption (e.g. Disk Storage) or material consumption (e.g. Print Pages). The technological activities are positioned in the right column in the Information Management framework.

3. **Service activities** are essentially software Services which are primarily determined by the availability of Service layers of software, also called software shells in (distributed) operating systems (examples are: command interpreters, batch processing facilities, database management systems, transaction monitoring systems, presentation Service systems, message queuing systems, web browsers, mail Services and in particular today: web Services (Menascé 2002)). The Service activities are quantified in terms of **Service units**. Typical examples are: the number of commands that have been issued, database transactions, messages, web page requests, etc… The Service activities are in a way the "bridging" activities in the middle column of the Information Management framework, as discussed before.

In order to apply ABC, the activities must be considered as cost drivers, and must be translated into their related "resources" (where this term is used in a generic micro-economical meaning for a moment). The most straightforward approach consists of trying to find the analytical production functions, that express the activities (or rather the units that quantify them) in function of the resources (again expressed in the appropriate units) which they consume:

$$\text{Activity} = F(\text{Resources})$$

The challenge consists now of expressing the Business activities and Services activities each in turn as production functions. These functions are also called "**profiles**", because they characterise the resource consumptions of the activities. This leads to the following definitions:

- A **Business profile** is a production function which expresses for each Business unit type the required number of Service units for all the involved Service activities. The Business activities are hence considered as the cost drivers, and the Service units as resources in these profiles.

- A **Service profile** is in turn also a production function that gives for each Service unit type the required number of technical units for all the technical activities that are involved. This time the Service activities are the cost drivers and the technical units are the resources for these production functions.

3.2 Business Activities and Business Profiles

The profiles can be expressed in analytical forms, using the following matrix notations which can easily be implemented in any spreadsheet environment (Overweg 1993):

A[mxn]	denotes a matrix A with m rows and n columns
A(i,j)	denotes the element of the A-matrix positioned on row i and column j

In case the parameter b represents the number of Business activities, a Business plan for some planning period consists of a vector of Business activities quantified in Business Units:

$_t$ B[1xb]	is the matrix of the Business unit forecasts for a planning period of time t. An element $_t$ B(1,i) denotes the number of Business units of type i expected to be needed during the period t (for example, next month, or the next year).

The Business profiles turn out to be very simple functions. In most cases they are linear production plans (i.e. have constant returns to scale) and can be expressed as a matrix that maps Business units on Service units. Assuming the parameter s denotes the number of Service activities, this leads to the following notation:

$_t$ BP[bxs]	the matrix representation of the Business profile that is valid during the planning period t. Hence $_t$ BP(i,j) denotes the number of Service units of type j consumed by one Business unit of type i.

The reason why these profiles are in practice linear production functions can be found in some fundamental laws of computer performance and capacity planning (Menascé 2002), such as *Little's law* and the *Interactive Response Time law*. In abstraction these laws can be expressed as:

$$responseTime(R) \approx \frac{population(M)}{throughput(X)}$$

The response time R is the turnaround time for a Service transaction (i.e. the execution of one Service unit) and the throughput X is the number of Service units executed during some time interval (and hence in fact the actual Service units). In this way, the Service activities correspond to what is known in computer performance as "workloads".

Now comes an essential point: in most administrative Business activities either the response time R or the throughput X is dominant in the Business value of these activities. In fact, very often the response time is bounded by a ***Service Level Agreement*** **(SLA)** which gives an upper bound to the response times of Services. The population M is often "number of customers" or "number of jobs (such as orders)", meaning they are the quantified Business activities, the Business units. Hence, in case the response times are bounded, these performance laws indicate a ***linear*** functional relationship between the Business units (represented by the population M) and the Service units (represented by the throughput X). This is already a first illustration of how Service Level Agreements act as a boundary value to fix the relation between the Business activities and the Service activities (and hence establish Alignment between these two types of activities). In practice, the Business professionals responsible for the operations typically negotiate the SLA's in function of an optimal Business value.

Once the Business profiles have been determined, it is straightforward to transform the Business forecasts into Service forecasts by means of a simple matrix multiplication:

$${}_t B[1xb] * {}_t BP[bxs] = {}_t S[1xs]$$

where

${}_t S$ [1xs] is the matrix that contains the forecasts of the number of Service units for the planning period. An element ${}_t S(1,i)$ denotes the number of Service units of type i expected to be needed during the period t.

3.3 Service Activities and Service Profiles

The next step to align the operational activities along the principles of ABC consists of expressing the Service activities as the cost drivers, and the technical activities as the resources for the production functions.

Amazingly enough, it turns out that these production functions are again linear functions, although this time they may include a fixed cost (such as a minimal number of resources that is required, typically a minimal amount of memory, or disk storage) and a variable cost (per execution of a Service unit). This is again caused by another fundamental law of computer performance (Menascé 2002), the so-called *Forced Flow Law*, which states (in a simplified way) that each Service unit execution corresponds to a number of "visits" to specific devices in a computer configuration. The so-called *visit ratio* is nothing but the linear relationship between the number of Service units and the number of visits to a device (which is in turn proportional to the actual resource consumption). So the variable part of the Service profiles is given by the visit ratio's. The fixed part is related to technical overhead. Conform to the principles of ABC this overhead should be clearly defined and kept minimal.

This is the analytical formulation of the Service activities and profiles, if w denotes the number of technical activities:

$_t$ SP[sxw] the matrix representation of the variable part of the Service profile that is valid during the planning period t. Hence $_t$ SP(i,j) denotes the number of technical units of type j consumed by one Service unit of type i.

$_t$ SO[sxw] the matrix representation of the fixed part of the Service profile that is valid during the planning period t. Hence $_t$ SO(i,j) denotes the fixed number of technical units of type j consumed by Service process i.

The forecast in terms of technical units (technical resources) is then given by:

$$_t S[1xs] * _t SP[sxw] + I[1xs] * _t SO[sxw] = _t W[1xw]$$

where

$_t$ W [1xw] is the matrix of the technical unit forecasts for the planning period and I[1xs] is a matrix consisting of all elements equal to 1.

In practice, sometimes the actual service profiles are not calculated in detail, and alternatively *operational benchmarks*, that have been published by technology vendors, are used to determine whether a particular technical configuration can actually execute the required amount of Service units. This alternative procedure will be illustrated in the first case study.

It is fundamental to observe again the role of the *Service Level Agreements*. The optimal Service profiles can only be determined when the target Service levels are defined. This can easily be seen from the following abstract example. Compare two computer configurations, whereby configuration A may be a heavily centralised configuration, whereas configuration B may be a distributed configuration with more (but slower) servers. The typical performance behaviour (as expressed by the response time in function of the throughput) is the following (fig 3):

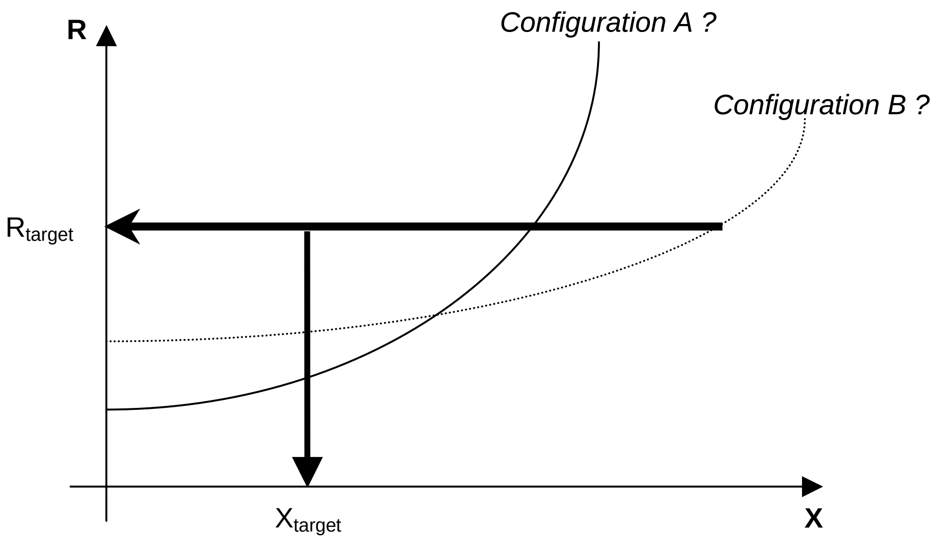

fig 3. Performance behaviour and Service Levels

The question which of the two is the “better” computer configuration cannot be solved without some boundary conditions again. In fact, when the target response time is the one indicated in fig. 3, configuration B may be the best as it realises more throughput X. However, if the target throughput has been identified as indicated, configuration A may be the best one, because it gives a better response time for the same target throughput.

It is clear how the “optimally aligned” Service profiles can only be obtained through clearly defined (and carefully negotiated) Service level agreements.

A last remark on Service activities. It is well-know from computer performance analysis how the visit ratio’s (and hence the Service profiles) may help to characterise the actual Service activities (the “workloads” in performance management). So, the process of determining the optimal Service activities is intimately related to the determination of the Service profiles. A simplified example may help to clarify this: measurements of the Service profiles may help to determine whether some Web-request is rather “lightweight”, “medium weight” or “heavyweight”. The Business professional doesn’t need to be involved in this decision: A business professional only wants to know the final definition: a “light” Web-request is one that does not consume more CPU-time then some given upper limit, and the same for other resources (for example).

This is very similar to what happens to public Services in general. Take the example of a postal system. Clients use the Services of the post-offices (mailing of letters, packets, telegrams, etc...) to get their Business done (advertising letters, deliveries of units sold, etc...). The clients do not care how the Services are provided by the post-company. The only thing they need to know to make their decisions is what Services are being ordered at what prices. Such as, a “light” mail has dimensions and weight smaller than some given limits. Likewise, the post officers do not need to know the client reasons for using the Services in order to produce their Services. They only needed the quantitative information (planned Business volumes, and the translation of these volumes in required Services) to plan the Service providing function.

In summary, the methodology that is presented in the paper uses explicitly the three colums of the Information Management framework. Business activities, Service activities and technical activities are characterised and related to each other by means of analytical production functions: the Business profiles translate Business units into Service units, whereas the Service profiles translate Service units into Technical units. The middle column plays a prominent role in this methodology and acts as a bridging element to ensure the proper Alignment of the Business and ICT activities. The alignment is established in the first place by means of the seamless interrelations between the activities. Moreover, the optimisation of the profiles, the production functions ensure a further optimal alignment. One example could be the minimal usage of CPU-resources, in case when this technology becomes the bottleneck in a configuration. The following picture summarises the operational Alignment elements (fig 4.):

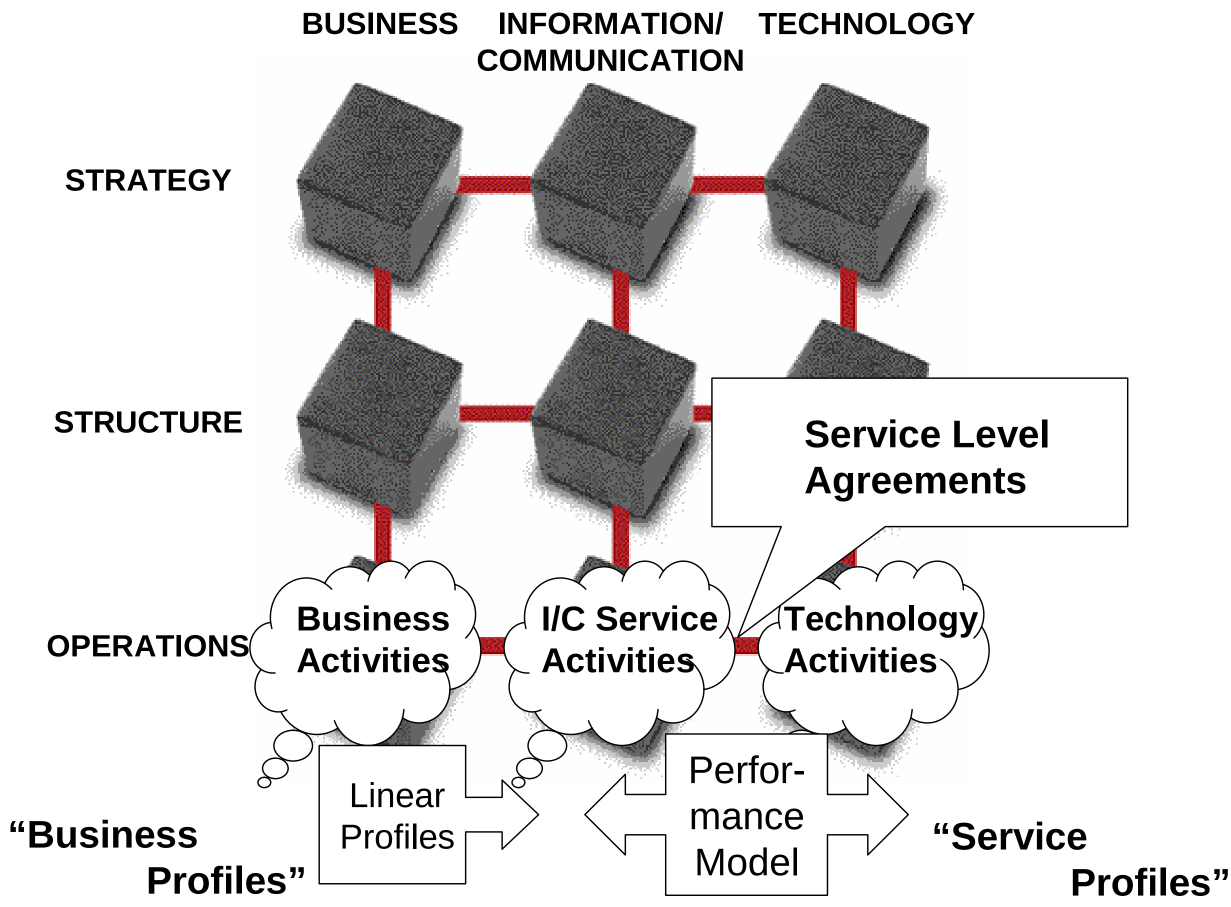

fig 4. Operational Alignment Elements

4. Case Studies

The proposed methodology has been applied already in a number of European organisations, typically banking, insurance and telecommunication organisations whose Business is largely driven by transaction services. Two concrete (simplified but realistic) case studies, based on these experiences, illustrate the methodology and the way how it can be applied in pratice.

4.1 ERP Implementation Case Study

ERP systems are increasingly used as the basis for administrational infrastructures. The capacity planning of these systems is crucial for the Business performance of the organisation. This case study is based on the planning of a concrete SAP R/3 implementation, but gives only part of the total Alignment process, yet enough to illustrate the ABC concepts.

First it is important to understand the key SAP Service activity, as expressed in the official SAP Sales and Distribution Benchmark, which is largely available through the Internet. One SAPS is defined as the execution of a "medium" financial transaction in the SAP R/3 system, processing an order with 5 order-line steps. The SLA-boundary conditions are defined in terms of a maximal (external) response time of 4 seconds per dialog step in the SAP transaction.

The Business activities can be aligned with the SAP R/3 modules. This is a reality in many SAP implementations: the Business activities are merely aligned with the different ERP functional domains. In the simplified case study, three functional domains are considered:

- Financial Administration
- Personnel Administration
- Project Management

For each functional domain, "light", "medium" and "heavy" users are identified, in the first place based on how intensive they use these modules. One parameter to detect the different types of users may be the average "think time" between two transactions, i.e. the time between ending the previous transaction and starting a new transaction.

For each functional domain, the number of users is used as the Business unit, to quantify the Business activity. In this case study, this might be the Business Forecasting matrix for a one-year period:

$$
{}_{t}B[1\times 9]=\begin{bmatrix}100\\50\\10\\50\\20\\0\\20\\10\\5\end{bmatrix}\begin{bmatrix}financial\_light\\financial\_medium\\financial\_heavy\\personnel\_light\\personnel\_medium\\personnel\_heavy\\project\_light\\project\_medium\\project\_heavy\end{bmatrix}
$$

All nine Business activities must be translated into the single SAPS Service activity. The Business profiles might look as follows:

$$
{}_{t}BP[9\times 1]=\begin{bmatrix}0.05 & 1 & 4 & 0.1 & 2 & 6 & 0.5 & 4 & 20\end{bmatrix}
$$

This profile in fact says – in a numerical way - that a “medium” personnel module user “weights” twice as much as a “medium” financial module user, which is equivalent to 1 SAPS. In this case, the matrix multiplication results in a total SAPS Service activity of

$$ {}_{t}S[1\times 1] = [290] $$

This profiles reveal already some interesting facts: elaboration of the details of this calculation will show how project management is responsible for roughly half of the Service activity, financial administration is next with 1/3 of the activity load, whereas personnel management is 1/6 of the total activity.

The determination of the computer configuration can now be based on the SAP Sales and Distribution Benchmark results, such as published by various technology vendors. Most vendors publish tables which indicate how many SAPS their configurations can deliver (at most). A comparative study, of course, taking into account the evolution of the activities, is sufficient in this case to determine the appropriate configuration, since the SLA’s are implicitly contained in the definition of the SAPS.

4.2 Educational Web Service Case Study

The second case study is based on the experiences with a new-generation type of E-learning systems based on Web Services, called E^3 , the *Eiffel Education Environment* (De Backer 2002). Unlike classical learning systems based on CD-ROM-distribution or Web Pages (implemented in traditional Websites), all student interaction happens in E^3 through a .NET-based encapsulation of an object-oriented compiler for introductory software teaching to first-year students in Economics and Applied Economics. The Total Cost of Ownership improvements caused by E^3 were dramatic, and can be summarised as follows:

	Party	
TCO reductions	Student	Educational Staff
Lower Equipment Costs	X	
Lower Software Costs	X	X
No Installation Costs	X	
No Installation Support Costs		X
Flexible Access to the E-Learning application (any thin client Web Browser)	X	X

Better reliability of the E-Learning application	X	
Lower Software Distribution Costs		X
Flexible maintenance of the E-learning software and exercises		X
E-Learning environment can reach more students		X

However, (and very typically when switching to Web Services,) the stability and scalability of the server is crucial, since the first-students really rely on E^3 , especially in study periods for preparing exams. The ABC-based approach helps here again.

First the Service activities are determined. These can be obtained from the E^3-collaboration diagram (fig. 5), and there are basically 3 Services:

- S1: Consulting & filling in exercise forms (Exercise.aspx)
- S2: Compilating (the actual batch Web Service Compile.asmx)
- S3: Downloading successfully compiled programs (Run.aspx)

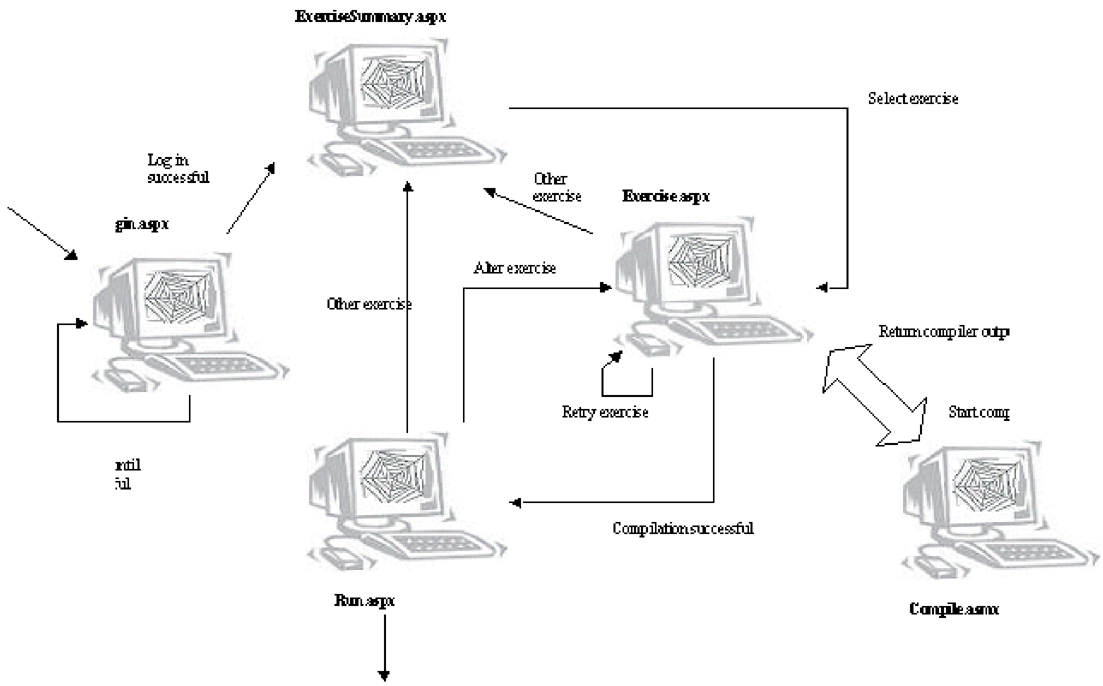

Fig 5. E^3 collaboration chart

The technical resources are primarily CPU (measured in Milliseconds of CPU-time, standardized on Pentium III 500 Mhz single processor) and Disk Storage (measured in Megabytes of disk storage). The profiles show a concrete Alignment of the technology with the Services:

- S1 is not very processor-intensive, because of the technology of active server pages. The long-run disk storage is more impacted because the students need to be able to drop exercise-forms and consult them later again. This explains the large amount of disk storage in the fixed part of the Service profile.
- S2 is very processor-intensive, as most object-oriented compilers. Moreover, the compiled code takes a lot of storage, because it includes the run-time environment to ensure a student never has to install anything locally on a workstation. The storage-consumption was dramatically reduced by flushing every night the compiled code (not the exercise forms).
- S3 is not very processor-intensive and does not require additional storage because it is based on the code produced by S2.

The Service Levels are fixed to a 2 second response time for S1 and S3, whereas the turnaround time for compilation is typically 10 seconds. This results in the following Service Profiles:

$$_{t}SP[3\times 2]=\begin{bmatrix}1500 & 3\\ 8500 & 10\\ 1200 & 0\end{bmatrix}$$

and

$$_{t}SO[3\times 2]=\begin{bmatrix}550000 & 1400\\ 1500000 & 600\\ 250000 & 50\end{bmatrix}$$

The fixed part of these profiles contains the CPU and storage requirements to run the environment. Finally the Business Activities and Business Profiles should be determined. In this case study, in first essence the Business activity is students making exercises. In a more detailed analysis (which is needed when the environment will be used on a larger scale) the teacher activities must be included also. So it is sufficient to know how many students are typically working online on the environment. Observation revealed that peak-activity showed 60 concurrent students (out of a population of 700 first-year students). So

$$_{t}B[1\times 1]=[60]$$

Each student is typically doing 10 exercise-form consultations, 6 compilations and 2 downloads during a session, which results in the following Business Profiles:

$$_{t}BP[1\times 3]=[10 \quad 6 \quad 2]$$

One form of operational Alignment consists of permanent monitoring of these profiles and see how the profiles improve (e.g. less compilations, due to less compilation errors). Determining the capacity is now a straightforward analytical exercise:

$$_{t}S[1\times 3]=[600 \quad 360 \quad 120]$$

and

$$_{t}W[1\times 2]=[6404000 \quad 7450]$$

This must be interpreted as follows:

- 7.45 Gigabyte of Disk Storage is needed to run this education environment
- 6404 CPU-seconds are needed on the reference processor. During a typical 8-hour shift, a processor can deliver 28800 CPU-sec, or – in reality – at most 90% of this. As a result the average CPU-utilisation due to this environment is 24,7%

From this analysis it is clear that with the current student population the E^3-environment can run safely on a Pentium III 500-Mhz processor, with sufficient disk storage (for example, minimum 20 GByte).

The alignment elements in this analysis are the following:

- variations (such as a growth) in the student population is immediately reflected in the corresponding Service and Technology demands.
- Changes in the (student) profiles feed back both to students and teachers important information on how this environment is used in practice.

In fact, currently the E^3-environment will be extended with didactical agent capabilities to further optimise the educational value.

5. Discussion

This paper presented an analytical instrument to establish and monitor some aspects of operational Alignment in the Information Management framework. In essence it was shown how the ABC-mechanisms can be used to ensure that the appropriate ICT technical resources are meeting the Business operational requirements.

The same instrument can be used for Cost distribution and Cost monitoring. Indeed, another matrix transformation can transform all forecasts of units in cost elements. In the example of the SAP-implementation, it means that ICT-management has several options to distribute the costs:

- Cost distribution on the basis of the Technological Activities, which means *distribute the IC processing on the basis of CPU-time, DISK-space, etc…* It is clear that users will not like this kind of cost reporting.

- Cost distribution on the basis of the IC Service Activities: *set a rate per "SAPS"*. This is in fact similar to what happens in many public Services (such as the analogy with the postal Service). Of course, users will only accept this kind of cost distribution if their Service levels have been met.

- Cost distribution on the basis of Business Activities: *Set a rate per Business User of an SAP R/3 Module*. Business professionals will prefer this largely, because it allows them to match the Information & Communication Technology and Service Costs with their perceived benefits, and have the optimal cost Alignment from their perspective.

The distribution of the costs in an Actvity-Based Costing approach allows organizations also to benchmark themselves against other, similar, organizations. Optimization of the profiles results in an optimization of the costs, one important side-result of successful operational Alignment.

The methodology that is presented in this paper is fairly easy to develop even in a large-scale organizations, such retail banking, insurance or telecom operators (Grift 1998). Experience learned that on average 1 person can manage well the administration and implementation of this methodology, even in fairly large organizations (having thousands of users). No particular specialized technology is needed to implement this methodology, except some well-managed spreadsheets. Although it may seem that the proposed ABC-method is only applicable to centralized ICT-environments, it is straightforward to extend the methodology in distributed environments (Overweg 1993).

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An ABC-based approach for operational Business – ICT Alignment

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Abstract: This paper focuses on Business-ICT Alignment at the operations level by means of an Activity-Based Costing approach. The Service and Technology Operations are defined as cost drivers for the Business and Service Activities by using analytical production functions (so-called profiles). It is explained how Service Level Agreements are the boundary conditions for determining these profiles. Managing the profiles ensures operational Business – ICT Alignment, especially for Capacity Planning and Cost Management and comparative Total Cost of Ownership evaluation purposes. Two Case Studies illustrate the methodology.

Keywords: Business - ICT Alignment – Service Level Agreements – Information Management – Capacity Planning – Evaluation – ICT Cost Management

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