

documents are available, but no value is created from an external perspective, because nothing could be delivered to the customer as is.

We can allocate effort to each requirement based on up-front effort estimation. With each requirement that is delivered within an increment the value of the project deliveries would increase by the amount of effort originally allocated to the requirement. The reasoning here is that the effort should correlate with our pricing. This certainly is not reality, however a good predictor for value generated. Why, after all, should one spend a large part of project effort on a small marginal value to the customer? If the value of delivered requirements is bigger than what was supposed to be invested in terms of engineering effort, the project is ahead. If it is less it is behind. The same approach is taken for schedule. Both parameters combined give an excellent predictor for time and cost to complete a project.

Return on investment (ROI) is important when it comes to justifying new development or introduction of new technologies or change of processes (see Chaps. 2 and 10). However, heterogeneous cost elements with different meaning and unclear accounting relationships are often combined into one figure that is then optimized. For instance, reducing “cost of quality” that includes appraisal cost and prevention cost is misleading when compared with cost of nonconformance because certain appraisal cost (e.g., module test) are components of regular development. Cost of nonconformance, on the other hand, is incomplete if we are only considering internal cost for fault detection, correction and redelivery because we must include opportunity cost due to rework at the customer site, late deliveries or simply binding resources that otherwise might have been used for a new project.

12.3.2 Cost Controlling in IT Services

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Concepts for measuring and controlling IT services costs are becoming progressively more important for IT service providers. Due to cost pressure, the need for business-process innovation and IT production-process improvement, service providers face the difficulty of measuring, calculating and controlling IT service costs at a fine-grained level. Traditionally, IT costs are treated like overhead costs or charged in terms of technical services as with CPU-time or network bandwidth consumed. However, managers who use IT services generally work with output units such as payroll transactions, credit risk rankings or invoices. In other words, IT cost accounting and measuring systems need to be redesigned to satisfy managerial requirements and to improve the use of IT technology in business processes.

In order to develop a service-oriented cost accounting and controlling methodology, a service provider must achieve the following:

- design transparent IT production processes and service catalogues
- build up capabilities for calculating both standardized and individualized customer services
- implement flexible profitability analysis by market segment, customer group and services

- integrate measurement, cost accounting and service-level management systems
- design and introduce service-based demand, capacity and cost planning systems

IT Service costing

This contribution illustrates how a service-oriented cost measurement and accounting system was applied to a legal entity of a German telecommunication provider during 2006. The portfolio offered consists of services for business-to-business relationships. Examples are bill calculation, presentment, fulfillment and payment processing, as well as treatment and collection processing. The total service volume is about 450 million transactions per year. To ensure an IT service-oriented cost accounting methodology, the company identified two main service categories that are subject to standardization and require a customer orientation:

- *Standard Service Elements*: SSEs are highly standardized IT services that can be produced for a wide range of customers. This IT service is characterized by standardized production flows and output units. For each SSE unit, the same applications and infrastructure components are used.
- *Service Elements*: SEs are combinations of application and infrastructure outputs that have been individualized for specific customers. The degree of automation and reuse for other customers is limited.

Due to high overhead / indirect costs, the service provider decided to use an ABC-approach (**activity-based-costing**) to allocate incurred costs to IT services. Fig. 12.3 depicts the complete steering logic. During the first stage of ABC, all costs must be allocated to resource centers which represent the basic elements of a cost accounting system. The resources include labor, equipment, telephone, licenses, hard and software. The separate collection of resource costs enables capacity and cost management at the resource level.

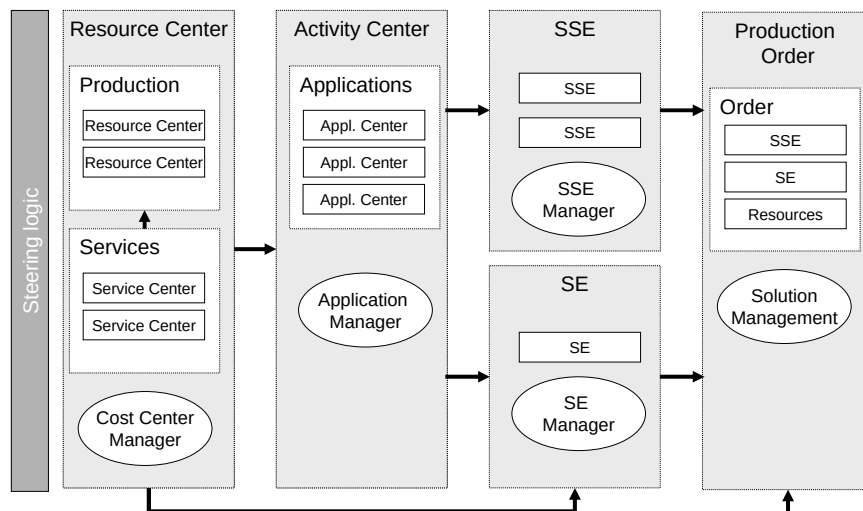


Fig. 12.3. Steering Logic for IT Service Cost Controlling

In the second step, all resource costs must be allocated to activity centers, SSEs and SEs or production orders. The ability to assign costs directly to SSEs / SEs depends on different influence factors. For example, labor costs for SSE-managers are directly assignable to single SSEs. However, application licenses are used to produce manifold SSEs and SEs, which is why an assignment to activity centers is necessary. Cost drivers are the link between resource and activity centers. Cost drivers mathematically model the allocation rate with respect to how the activity center uses different resources. For instance, the personnel time spent on maintaining and monitoring applications is used to distribute labor costs to activity centers. For this purpose, the centralized time-recording system Tick@ was used. Regardless, the whole assignment process is extremely complex. Other resource costs such as selling and administration costs must also be assigned, so that other cost drivers have to be identified as well.

In this case, activity centers describe the application landscape of the IT service provider. This point was particularly important, because the granularity level of activity centers determine calculation accuracy and measurement precision. In terms of management aspects, the application manager is responsible for the efficient use of resources.

The third step of the distribution process is to assign activity center costs to (standard) service elements, such as bill fulfillment or payment processing. SSEs are handled as cost elements. Activity drivers are the mathematical rate for distributing all activity center costs to cost elements. Because there are n:m relationships between (S)SEs and applications - one SSE can use multiple applications and one application can support multiple SSEs - a special activity driver was developed (see Fig. 12.4). The driver is based on transaction volumes and the aggregated capacity of the utilized activity center. Table 12.2 shows the calculation of five activity drivers.

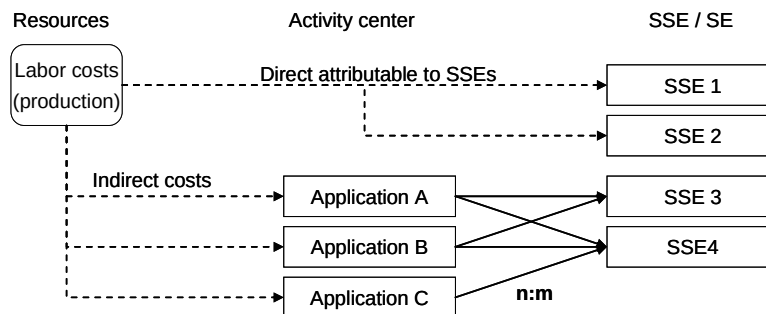


Fig. 12.4. Cost assignment relationships between activity centers and (S)SEs (IT-Services)

Table 12.2. Calculation of activity drivers

Activity center	SSE / SE	Transaction volume (T)	Activity driver (D)
Application A	SSE 1	100.000	33,3

Application B	SSE 2	200.000	66,6
	SSE 1	100.000	16,6
	SSE 2	200.000	33,3
	SSE 3	300.000	50,0

For example, if an application A is utilized by two standard service elements - one and two - the activity driver D for SSE 1 calculates as follows:

$$D_{A,SSE1} = \frac{T_{SSE1}}{\sum_{i=1}^n T_n} * 100$$

The final step is to calculate the dedicated production orders. Production orders are bundles of SSEs and SEs that are individualized for customers. In the end, production orders reflect the total cost of production and development processes for a bundle of IT services. The calculation contains all costs incurred by the affected application systems, personnel, facilities, electricity etc. – such as licenses costs, monitoring and maintenance costs (in the form of labor costs).

Project costs

Another challenge was to distribute project costs to resource and activity centers, as well as to service elements and production orders. The company decided to collect and distribute project costs at four different levels:

- resource-center level: at this level, all project costs for training employees or for designing and implementing a new steering logic are collected. Projects at this level affect more than one activity center or SSE.
- activity-center level: here, projects have a direct reference to one application. A link to one customer or SSE is not possible. Software development projects are a good example.
- (standard) service-element level: projects have a link to one IT service. For example, project costs for IT service engineering tasks.
- production-order level: project costs are attributable to one customer.

Results

The new IT controlling system, based on the ABC methodology, enables the management of the service provider to view the IT operations in terms of how IT resources are consumed in sourcing, production and delivery processes. This information helps the responsible managers to monitor and control different aspects of management, such as capacity utilization, optimization of production and marketing activities, as well as the emendation of sales activities and unit cost calculations. Another interesting “add-on” is that the budgeting process could be improved, because of the increase in the traceability and precision of information at the IT services level. In addition customer demands for IT services can be incorporated in the budgeting process.