4 Continual service improvement processes

Many activities have to be completed to ensure continual service improvement (CSI) across the service lifecycle. Some of them could be regarded as processes in their own right but in order that readers get the full picture they have been pulled together into a single contiguous process: the seven-step improvement process.

4.1 THE SEVEN-STEP IMPROVEMENT PROCESS

Chapter 3 introduced the seven-step improvement process shown in Figure 3.4 and its interaction with the Plan-Do-Check-Act (PDCA) cycle and the CSI approach. The PDCA cycle provides steady, ongoing improvement, which is a fundamental tenet of CSI.

Figure 3.4 also shows how the cycle fits into the Data-to-Information-to-Knowledge-to-Wisdom (DIKW) structure of knowledge management. The integration of the PDCA cycle and the seven-step improvement process is as follows:

- Plan
  1. Identify the strategy for improvement
  2. Define what you will measure
- Do
  3. Gather the data
  4. Process the data
- Check
  5. Analyse the information and data
  6. Present and use the information
- Act
  7. Implement improvement.

4.1.1 Purpose and objectives

The purpose of the seven-step improvement process is to define and manage the steps needed to identify, define, gather, process, analyse, present and implement improvements.

The objectives of the seven-step improvement process are to:

- Identify opportunities for improving services, processes, tools etc.

- Reduce the cost of providing services and ensuring that IT services enable the required business outcomes to be achieved. A clear objective will be cost reduction, but this is not the only criterion. If service delivery or quality reduces as a result the overall impact may be neutral or even negative.
- Identify what needs to be measured, analysed and reported to establish improvement opportunities.
- Continually review service achievements to ensure they remain matched to business requirements; continually align and re-align service provision with outcome requirements.
- Understand what to measure, why it is being measured and carefully define the successful outcome.

It is important to note that improvements in quality should not be implemented if there is a cost associated with the improvement and if this cost has not been justified. Every potential improvement opportunity will have to have a business case justification to show that the business will have an overall benefit. For small initiatives the business case does not have to be a full blown report but could be a simple justification. The seven-step improvement process is not free-standing and will only achieve its desired outcomes when applied to technology, services, processes, organization or partners.

4.1.2 Scope

The seven-step improvement process includes analysis of the performance and capabilities of services, processes throughout the lifecycle, partners and technology. It includes the continual alignment of the portfolio of IT services with the current and future business needs as well as the maturity of the enabling IT processes for each service. It also includes making best use of the technology that the organization has and looks to exploit new technology as it becomes available where there is a business case for doing so. Also within the scope are the organizational

structure, the capabilities of the personnel, and asking whether people are working in appropriate functions and roles, and if they have the required skills.

4.1.3 Value to business

The value of the seven-step improvement process is that by monitoring and analysing the delivery of services it will ensure the current and future business outcome requirements can be met. The seven-step improvement process enables continual assessment of the current situation against business needs and identifies opportunities to improve service provision for customers.

4.1.4 Policies, principles and basic concepts

The seven-step improvement process puts a structure in place to enable continual assessment of the current situation against business needs and looks for opportunities to improve service provision, thus enabling the overall business to be more successful.

4.1.4.1 Policies

Many of the policies that support the seven-step improvement process are often found as a part of other processes such as service level management (SLM), availability management and capacity management. Examples of some of these policies are:

- Monitoring requirements must be defined and implemented
- Data must be gathered and analysed and its integrity checked on a consistent basis
- Trend reporting must be provided on a consistent basis
- Service level achievement reports must be provided on a consistent basis
- Internal and external service reviews must be completed on a consistent basis (internal is within IT and external is with the business)
- Services must have either clearly defined service levels or service targets that can be used to determine if there are gaps in the services provided
- Service management processes must have critical success factors (CSFs) and key performance indicators (KPIs) to determine if there are gaps between the expected outcome and the real outcome.

On a regular basis means that the activity is not done *ad hoc* but on scheduled dates such as monthly or quarterly. Most organizations review service achievement and service management process results on a monthly basis.

If a new service is being introduced, it is recommended to monitor, report and review much sooner than after a month. You may want to review the new service daily, as part of early life support, for a period of time, before changing to weekly and finally monthly reviews.

The following are additional CSI policies that an IT service provider should implement:

- All improvement initiatives must use the formal change management process
- All functional groups within IT have a responsibility for CSI activities. This might be only one person in the group, but the intent here is that CSI is not usually a functional group within an organization but that everyone has a hand in supporting CSI activities
- Roles and responsibilities will be documented, communicated and filled within IT.

When defining the CSI policies you may want to use a consistent template. The template in Table 4.1 is an example that documents the policy statement, reason for the policy and a definition of the benefits of the policy. If an organization has difficulty defining the reason for and benefits of a policy it should consider whether the policy is needed. If compliance to a policy cannot be monitored then the value of the policy must be in doubt.

4.1.4.2 Principles

Many service providers operate in a competitive environment and they need to continually assess their services against market expectations to ensure they remain competitive. Also, new delivery mechanisms (e.g. cloud computing) can introduce service efficiencies and need to be reviewed. The following activities should be regularly performed:

- Services must be checked against competitive service offerings to ensure they continue to add true business value to the client, and the service provider remains competitive in its delivery of such services.
- Services must be reviewed in the light of new technological advances (e.g. cloud deployment

Table 4.1 Policy template example

Title	Monitoring services, systems and components
Policy statement	IT and the business must agree on what to monitor and collect data for each service. This data should be aligned with the service level agreements (SLAs), operational level agreements (OLAs) and contracts.
Reason for policy	Provides input into CSI activities to identify gaps and improvement opportunities.
Benefits	Ensures agreement on defining what to monitor (work with SLM).
	Defines monitoring requirements for new services and/or existing services to support CSI activities.
	Identifies trends and gaps.
	Supports prioritization of improvement projects.

architectures) to ensure they are delivering the most efficient services to the customer.

4.1.4.3 Basic concepts

CSI is often viewed as an *ad hoc* activity within IT services. The activity is only triggered when someone in IT management flags up that there is a problem. This is not the right way to address CSI. Often these reactionary events are not even providing continual improvement, but simply stopping a single failure from occurring again.

CSI takes a commitment from everyone in IT working throughout the service lifecycle to be successful at improving services and service management processes. It requires ongoing attention, a well-thought-out plan, and consistent attention to monitoring, analysing and reporting results with an eye toward improvement. Improvements can be incremental in nature but also require a huge commitment to implement a new service or meet new business requirements.

This section spells out the seven steps of improvement, each of which needs attention. There is no reward for taking a short cut or not addressing each step in a sequential nature. If any step is missed, there is a risk of not being efficient and effective in meeting the goals of CSI.

IT services must ensure that proper staffing and tools are identified and implemented to support CSI activities. It is also important to understand the difference between what should be measured and what can be measured. Start small – don't expect to measure everything at once. Understand the organizational capability to gather and process the data. Be sure to spend time analysing data as this is where the real value comes in. Without analysis of the data, there is no real opportunity

to truly improve services or service management processes. Think through the strategy and plan for reporting and using the data. Reporting is partly a marketing activity. It is important that IT managers focus on the value added to the organization as well as reporting on issues and achievements. In order for steps 5 to 7 to be carried out correctly, it is imperative that the target audience is considered when packaging the information.

An organization can find improvement opportunities throughout the entire service lifecycle. An IT organization does not need to wait until a service or service management process is transitioned into the operations area to begin identifying improvement opportunities.

4.1.5 Process activities, methods and techniques

The seven-step improvement process is shown in Figure 3.4 and is discussed at the start of section 4.1.

Figure 4.1 shows the trail from metrics to KPI to CSF, all the way back to the vision where appropriate. Elements from this trail are used at points throughout the seven-step improvement process.

These are the seven steps.

4.1.5.1 Step 1 – Identify the strategy for improvement

Before any further activity can be started it is imperative that the overall vision is identified. What are we trying to achieve for the business as a whole? The questions we need to ask are: What initiatives does the business have that could be undermined by poor IT service provision? Or, more positively: How can improvements in IT enable the business vision to be achieved? The answers to
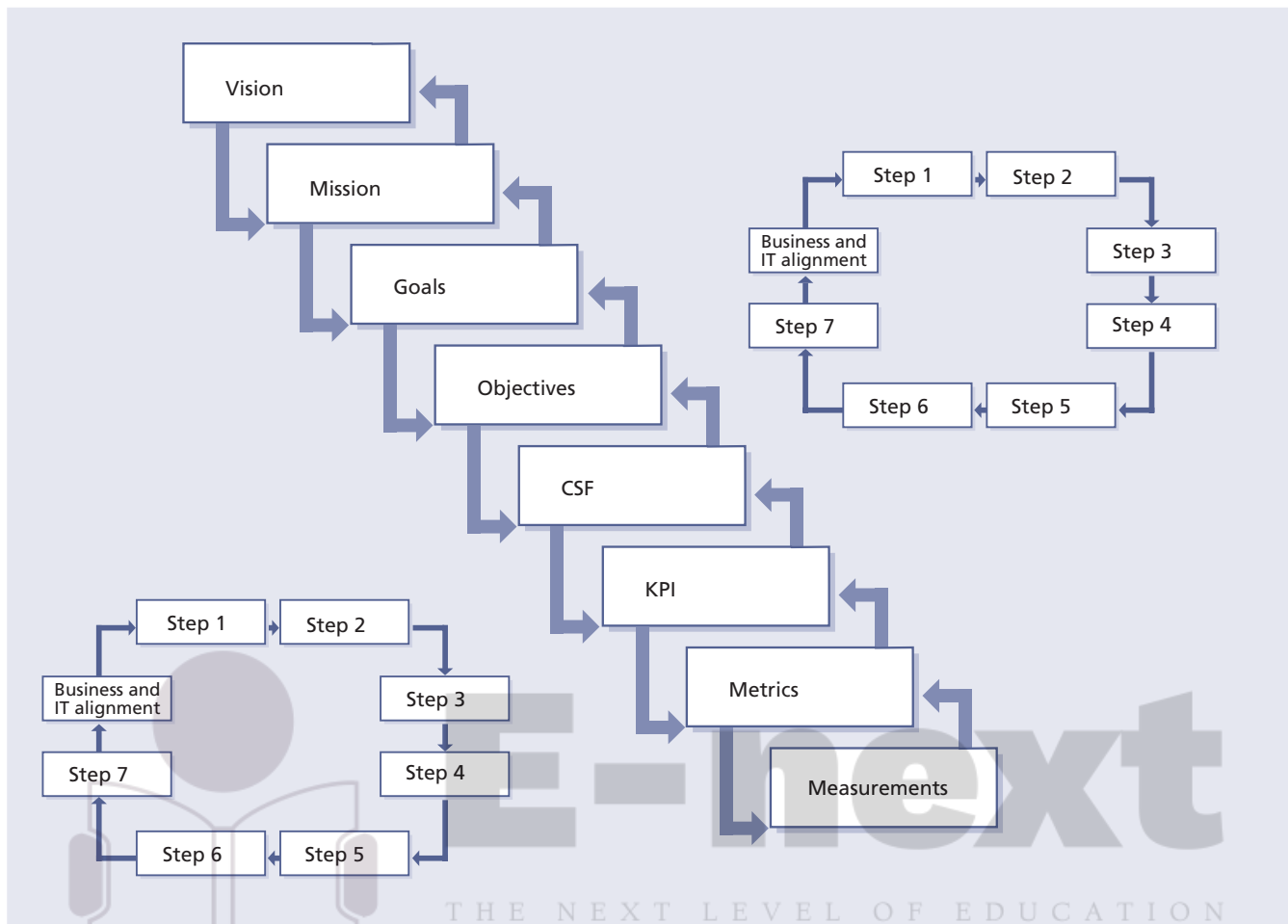
Figure 4.1 From vision to measurements

these questions will come from stepping through the seven-step improvement process.

What are the business and IT strategy and plans for the coming months and years? Why do we want to measure for improvement? The overall strategy should be assessed and analysed to see where we need to focus our measurements, for example. The technical and operational goals as well as the strategic goals need to be identified and assessed. The vision should not be to have state-of-the-art servers and desk-top computers, but to have state-of-the-art services that ensure and enable the overall business to perform as well as possible so it is not in any way constrained by the quality or cost of the IT services.

Like all the steps in the process, this should be revisited to reassess the potentially changing vision and goals. When revisiting this process we would apply any wisdom gained from previous iterations.

One of the potential sources for a revisit would be one or more initiatives raised and documented in the CSI register. Inputs for this step are:

- Business plans and strategy
- Service review meetings
- Vision and mission statements
- Corporate, divisional and departmental goals and objectives
- Legislative requirements
- Governance requirements
- Customer satisfaction surveys
- CSI initiatives as logged in the CSI register.

4.1.5.2 Step 2 – Define what you will measure

This step is directly related to the strategic, tactical and operational goals that have been defined for measuring services and service management processes as well as the existing technology and capability to support measuring and CSI activities.

In this step you need to define what you should measure; define what you can actually measure; carry out a gap analysis; and then finalize the actual measurement plan.

As stated previously, measurement will take place at service, process and technology levels.

Step 2 is iterative during the rest of the activities. Depending on the goals and objectives to support service improvement activities, an organization may have to purchase and install new technology to support the gathering and processing of the data and/or hire staff with the required skills sets.

Effective service measures concentrate on a few vital, meaningful indicators that are economical, quantitative and usable for the desired results. If there are too many measures, organizations may become too intent on measurement and lose focus on improving results. A guiding principle is to measure that which matters most. IT has never lacked in the measuring area. In fact, many IT organizations measure far too many things that have little or no value. There is often no thought or effort given to aligning measures to the business and IT goals and objectives.

As part of the measuring process it is important to confirm regularly that the data being collected and collated is still required and that measurements are being adjusted where necessary. This responsibility falls on the owner of each report or dashboard. They are the individuals designated to keep the reports useful and to make sure that effective use is being made of the results.

The overall step is too often ignored because:

- The process does not include this step. Too often people start gathering information without asking what should be collected in the first place and if we have the capabilities to do the measurements. Often what is going to done with the data later is not considered. This is common but poor practice.
- The IT organization thinks it knows better. When it comes to data, IT believes, incorrectly, that they know the needs of their customers. The reality is that neither the customer nor the IT organization sits down together to discuss what should be measured or to identify the purpose of the data in the first place. Even in organizations where SLAs have been signed, they often include measurement and reporting requirements that cannot be met. This always leads to significant customer dissatisfaction.
- Tools are very sophisticated and can gather myriads of data points. IT organizations get lulled into a false sense of security in the knowledge that the data will be there when they need it. Too often the tool is too powerful for the needs of the organization. It is like hammering a small finishing nail using a sledgehammer.

When the data is finally presented (Step 6) without going through the rest of the steps, the results appear incorrect or incomplete. People blame each other, the vendor, the tools, anyone but themselves. This step is crucial. A dialogue must take place between IT and the customer. Goals and objectives of the target audience must be identified in order to properly identify what should be measured and what can be measured.

Based on the goals of the target audience (operational, tactical or strategic) the service owners need to define what they should measure in a perfect world by:

- Mapping the activities or elements of the service or service management processes that need to be measured
- Considering what measurements would indicate that each service and service management activity is being performed consistently to determine the health of the service.

Identify the measurements that can be provided based on existing toolsets, organizational culture and process maturity. Note there may be a gap in what can be measured compared with what should be measured. Quantify the cost and business risk of this gap to validate any expenditures for tools. The actual definition of what you will measure will come from this analysis.

When initially implementing service management processes do not try to measure everything; rather be selective of what measures will help to understand the health of a process. Chapter 5 will discuss the use of CSFs, KPIs and activity metrics. A major mistake many organizations make is trying to do too much in the beginning. Be smart about what you choose to measure.

Question: What do you actually want to measure?

Answer: Talk to the business, the customers and IT management. Use the service catalogue as your starting point as well as the service level requirements (SLRs) of the different customers. This is the place where you start with the end in mind. What you should measure is that which is important to the business.

Compile a list of what you should measure driven by business requirements. Don't try to cover every single eventuality or possible metric in the world. Make it simple. The number of items you should measure can grow rapidly. So too can the number of metrics and measurements.

Identify and link the following items:

- Corporate vision, mission, goals and objectives
- IT vision, mission, goals and objectives
- CSFs, KPIs, metrics and measurements
- Service level targets
- Service provider personnel.

Inputs include (note some of these can also be input into other steps):

- SLRs and targets
- Service review meeting
- Service portfolio and the service catalogue
- Vision and mission statements
- Corporate, divisional and departmental goals and objectives
- Legislative requirements
- Governance requirements
- Budget cycle
- Measurement results and reports, e.g. balanced scorecard
- Customer satisfaction surveys
- Service operation plan
- Service models
- Service design package
- Budgeting and accounting requirements
- Benchmark data
- Baseline data
- Risk assessments and risk mitigation plans.

Every organization may find that they have limitations on what can actually be measured. If you cannot measure something, then it should not appear in an SLA.

Question: What can you actually measure?

Answer: Start by listing the tools you currently have in place. These tools will include service management tools, monitoring tools, reporting tools, investigation tools and others. Compile a list of what each tool can currently measure without any configuration or customization.

Question: Where do you actually find the information?

Answer: The information is found within each service, process, procedure and work instruction. The tools are merely a way to collect and provide the data. Look at existing reports and databases. What data is currently being collected and what data is being reported on? (These two things are often not the same although of course they should be.)

To produce the final definition of what you will measure perform a gap analysis between the data collected and the data being reported on. Report the gap analysis information back to the business, the customers and IT management. It is possible that new tools are required or that configuration or customization is required to be able to measure what is needed.

The following are some other potential areas for measurement:

- **Service levels**   As well as normal SLAs targets we may need to collect availability management measures such as mean time to repair (MTTR) and mean time to restore service (MTRS), which are also used by problem management.
- **Customer satisfaction**   Surveys are conducted on a continual basis to measure and track how satisfied customers are with the IT organization.
- **Business impact**   Measure what actions are invoked for any disruption in service that adversely affects the customer's business operation, processes or its own customers.
- **Supplier performance**   Whenever an organization has entered into a supplier relationship where some services or parts of services have been outsourced or co-sourced it is important to measure the performance of the supplier.
- **Market performance**   This ensures the services remain aligned with those being delivered by other service providers in the IT service delivery community.

One of CSI's key sets of activities is to measure, analyse and report on IT services and IT service management (ITSM) results. Measurements produce data, which should be analysed over time to produce a trend. This will tell a story that may be good or bad. It is essential that measurements of this kind have ongoing relevance. What was important to know last year may no longer be pertinent this year.

4.1.5.3 Step 3 – Gather the data

Key message

Gathering the data is synonymous with service measurement (see section 5.4).

Gathering data requires having monitoring in place. Monitoring could be executed using technology such as application, system and component monitoring tools as used in the event management process (documented in service operation) or even be a manual process for certain tasks. The accuracy and integrity of the data should always be maintained.

Quality is the key objective of monitoring for CSI. Monitoring will therefore focus on the effectiveness and efficiency of a service, process, tool, organization or configuration item (CI). The emphasis is not on assuring real-time service performance; rather it is on identifying where improvements can be made to the existing level of service, or IT performance. Monitoring for CSI will therefore tend to focus on detecting exceptions and resolutions. For example, CSI is not as interested in whether an incident was resolved, but whether it was resolved within the agreed time, and whether future incidents can be prevented.

CSI is not only interested in exceptions, though. If an SLA is consistently met over time, CSI will also be interested in determining whether that level of performance can be sustained at a lower cost or whether it needs to be upgraded to an even better level of performance because of changing business requirements. CSI may therefore also need access to regular performance reports.

However since CSI is unlikely to need, or be able to cope with, the vast quantities of data that are produced by all monitoring activity, they will most likely focus on a specific subset of monitoring at any given time. This could be determined by input from the business or improvements to technology.

When a new service is being designed or an existing one changed, this is a perfect opportunity to ensure that what CSI needs to monitor is designed into the service requirements (*see ITIL Service Design*).

This has two main implications:

- Monitoring for CSI will change over time. They may be interested in monitoring the messaging service one quarter, and then move on to look at human resources (HR) systems in the next quarter.
- This means that service operation and CSI need to build a process which will help them to agree on what areas need to be monitored and for what purpose.

It is important to remember that there are three types of metrics that an organization will need to collect to support CSI and other process activities:

- **Technology metrics** These are often associated with component and application-based metrics such as performance, availability etc.
- **Process metrics** These are captured in the form of CSFs, KPIs and activity metrics for the service management processes. These metrics can help determine the overall health of a process. KPIs can help answer key questions on quality, performance, value and compliance in following the process. CSI would use these metrics as input in identifying improvement opportunities for each process.
- **Service metrics** These are the results of the end-to-end service. Technology metrics are normally used to help compute the service metrics.

Question: What needs to be gathered?

Answer: You gather whatever data has been identified as both needed and measurable. Not all data is gathered automatically so manual procedures will have to be implemented as well. A lot of data is entered manually by people. It is important to ensure that policies are in place to drive the right behaviour.

As much as possible, you need to standardize the data structure through policies and published standards. For example, how do you enter names in your tools – John Smith; Smith, John; or J. Smith? These can be the same or different individuals. Having three different ways of entering the same

name would slow down trend analysis and severely impede any CSI initiative.

Question: Where do you actually find the information?

Answer: IT service management tools, monitoring tools, reporting tools, investigation tools, existing reports and other sources.

Gathering data is defined as the act of monitoring and data collection. This activity needs to clearly define:

■ Who is responsible for monitoring and gathering the data?
■ How will the data be gathered?
■ When and how often is the data gathered?
■ Criteria to evaluate the integrity of the data.

The answers will be different for every organization.

Service monitoring allows weak areas to be identified, so that remedial action can be taken (if there is a justifiable business case), thus improving future service quality. Service monitoring also can show where customer actions are causing the fault and thus lead to identifying where working efficiency and/or training can be improved.

Service monitoring should also address both internal and external suppliers since their performance must be evaluated and managed as well.

Service management monitoring helps determine the health and welfare of service management processes in the following manner:

■ **Process compliance**   Are the processes being followed? Process compliance seeks to monitor the compliance of the IT organization to the new or modified service management processes and also the use of the authorized service management tool that was implemented.
■ **Quality**   How well are the processes working? Monitor the individual or key activities as they relate to the objectives of the end-to-end process.
■ **Performance**   How fast or slow? Monitor the process efficiency such as throughput or cycle times.
■ **Value**   Is this making a difference? Monitor the effectiveness and perceived value of the process to the stakeholders and the IT staff executing the process activities.

■ **Volume**   To determine the loading and throughput on the service management processes (e.g. number of incidents or number of changes).

Monitoring is often associated with automated monitoring of infrastructure components for performance such as availability or capacity etc., but monitoring should also be used for monitoring staff behaviour such as adherence to process activities and use of authorized tools, as well as project schedules and budgets.

Exceptions and alerts need to be considered during the monitoring activity as they can serve as early warning indicators that services are failing. Sometimes the exceptions and alerts will come from tools, but they will often come from those who are using the service or service management processes. These alerts should not be ignored.

Inputs to gathering the data include:

■ New business requirements
■ Existing SLAs
■ Existing monitoring and data capture capability
■ Plans from other processes, e.g. availability management and capacity management
■ The CSI register and existing service improvement plans (SIPs)
■ Previous trend analysis reports
■ List of what you should measure
■ List of what you can measure
■ Gap analysis report
■ List of what to measure
■ Customer satisfaction surveys.

Figure 4.2 and Table 4.2 show the common procedures to follow in monitoring.

Note: Monitoring and event management solutions become, by definition, services in their own right and hence require continual assessment, effectiveness reviews, provisioning and change processes etc.

Outputs from gathering the data include:

■ Updated availability and capacity plans
■ Monitoring procedures
■ Identified tools to use
■ Monitoring plan
■ Input on IT capability
■ Collection of data
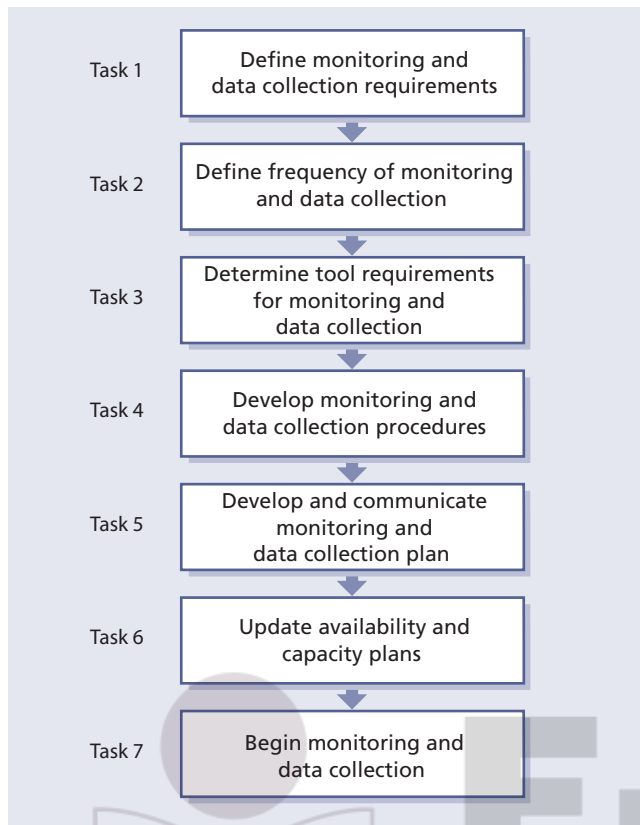■ Agreement on the integrity of the data.

Figure 4.2 Monitoring and data collection procedures

It is also important in this activity to look at the data that was collected and ask whether it makes any sense.

4.1.5.4 Step 4 – Process the data

This step is to convert the data into the required format and for the required audience. Follow the trail from metric to KPI to CSF, all the way back to the vision if necessary (see Figure 4.1).

Report-generating technologies are typically used at this stage as various amounts of data are condensed into information for use in the analysis activity. The data is also typically put into a format that provides an end-to-end perspective on the overall performance of a service. This activity begins the transformation of raw data into packaged information. Use the information to develop insight into the performance of the service and/or processes. Process the data into information (by creating logical groupings), which provides a better means to analyse the information and data – the next step in CSI.

Table 4.2 Monitoring and data collection procedures

Tasks	Procedures
Task 1	Based on service improvement strategies, goals and objectives plus the business requirements, determine what services, systems, applications and/or components as well as service management process activities will require monitoring.
	Specify monitoring requirements.
	Define data collection requirements, changes in budgets.
	Document the outcome.
	Get agreement with internal IT, customers, suppliers as appropriate.
Task 2	Determine frequency of monitoring and data gathering.
	Determine method of monitoring and data gathering.
Task 3	Define tools required for monitoring and data gathering.
	Build, purchase or modify tools for monitoring and data gathering.
	Test the tool.
	Install the tool.
Task 4	Write monitoring procedures and work instructions when required for monitoring and data collection.
Task 5	Produce and communicate monitoring and data collection plan.
	Get approval from internal IT and external vendors who may be impacted.
Task 6	Update availability and capacity plans if required.
Task 7	Begin monitoring and data collection.
	Process data into a logical grouping and report format.
	Review data to ensure the data makes sense.

Example of poor data management

An organization that was developing some management information activities asked a consultant to review the data they had collected. The data was for incident management and the service desk. It was provided in a spreadsheet format and when the consultant opened the spreadsheet it showed that for the month the organization had opened approximately 42,000 new incidents and 65,000 incidents were closed on the first contact. It is hard to close more incidents than were opened – in other words the data did not make sense.

However, all is not lost. Even if the data did not make any sense, it provides insight into the ability to monitor and gather data, the tools that are used to support monitoring and data gathering, and the procedures for processing the raw data into a report that can be used for analysis. When investigating the example above, it was discovered that it was a combination of how data was pulled from the tools plus human error in inputting the data into a spreadsheet. There was no check and balance before the data was actually processed and presented to key people in the organization.

The output of logical groupings could be in spreadsheets, reports generated directly from the service management tool suite, system monitoring and reporting tools, or telephony tools such as an automatic call distribution tool.

Processing the data is an important CSI activity that is often overlooked. While monitoring and collecting data on a single infrastructure component is important, it is also important to understand that component's impact on the larger infrastructure and IT service. Knowing that a server was up 99.99% of the time is one thing; knowing that no one could access the server is another. An example of processing the data is taking the data from monitoring of individual components, such as the mainframe, applications, WAN, LAN, servers etc., and processing it into a structure of an end-to-end service from the customer's perspective.

Key questions that need to be addressed in the processing activity are:

- What is the frequency of processing the data? This could be hourly, daily, weekly or monthly. When introducing a new service or service management process it is a good idea to monitor and process in shorter intervals than longer intervals. How often analysis and trend investigation activities take place will drive how often the data is processed.
- What format is required for the output? This is also driven by how analysis is carried out and ultimately how the information is used.
- What tools and systems can be used for processing the data?
- How do we evaluate the accuracy of the processed data?

There are two aspects to processing data. One is automated and the other is manual. While both are important and contribute greatly to the measuring process, accuracy is a major differentiator between the two types. The accuracy of the automated data gathering and processing is not the issue here. Nearly all CSI-related data will be gathered by automated means. Human data gathering and processing is the issue. It is important for staff to properly document their compliance activities, to update logs and records. Common excuses are that people are too busy, that this is not important or that it is not their job. Ongoing communication about the benefits of performing administrative tasks is of utmost importance. Tying these administrative tasks to job performance is one way to alleviate this issue.

Inputs to processing data include:

- Data collected through monitoring
- Reporting requirements
- SLAs
- OLAs
- Service catalogue
- List of metrics, KPI, CSF, objectives and goals
- Report frequency
- Report template.

Figure 4.3 and Table 4.3 show common procedures for processing data.

A flow diagram is nice to look at and gracefully summarizes the procedure but it does not contain all the required information. It is important to
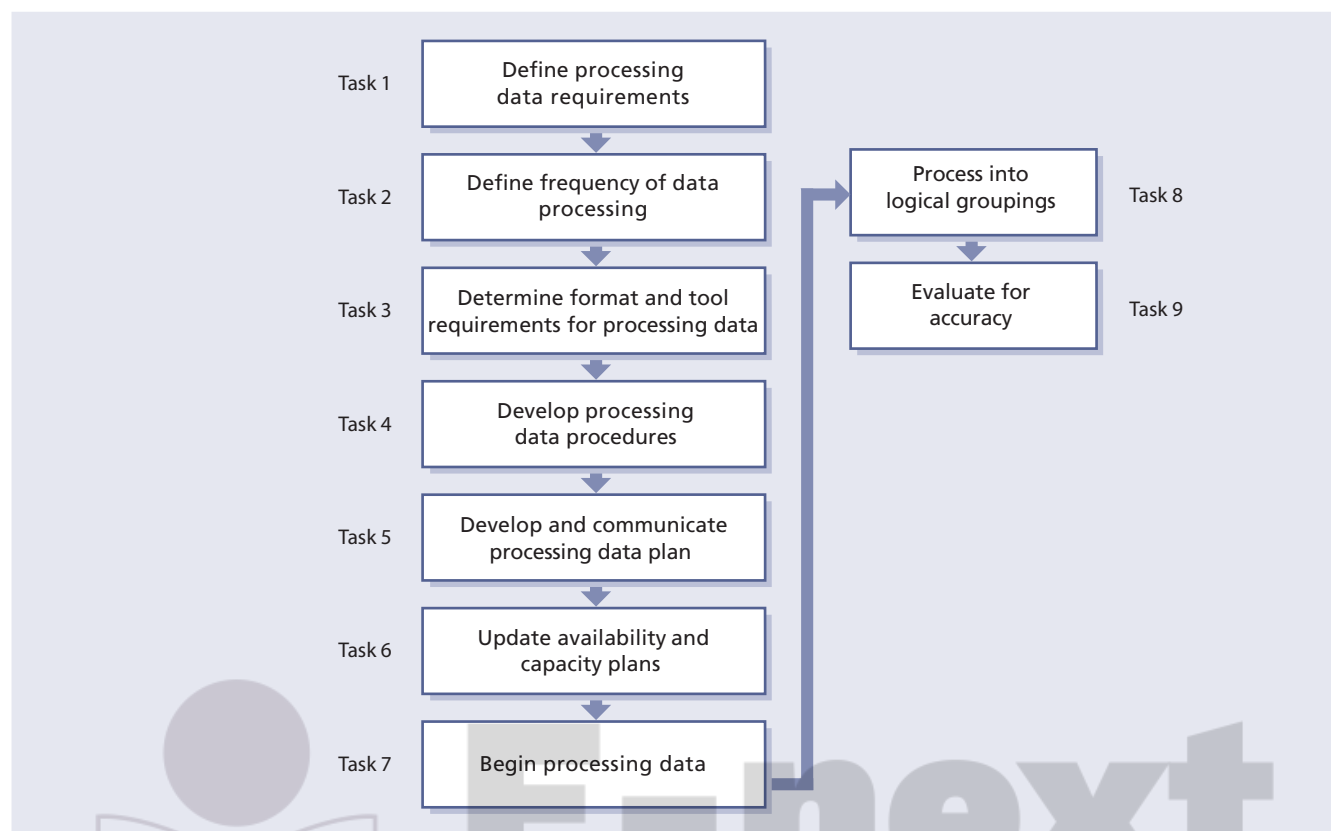
Figure 4.3 Common procedures for processing the data

Table 4.3 Procedures for processing the data

Tasks	Procedures
Task 1	Based on strategy, goals and SLAs, define the data processing requirements.
Task 2	Determine frequency of processing the data.
	Determine method of processing the data.
Task 3	Identify and document the format of logical grouping of data elements.
	Define tools required for processing data.
	Build, purchase or modify tools for measuring.
	Test tool.
	Install tool.
Task 4	Develop processing data procedures.
	Train people on procedures.
Task 5	Develop and communicate monitoring plan.
	Get approval from internal IT and external vendors who may be impacted.
Task 6	Update availability and capacity plans if required.
Task 7	Begin the data processing.
Task 8	Process into logical groupings.
Task 9	Evaluate processed data for accuracy.

translate the flow diagram in a more meaningful way so that people can understand the procedure with the appropriate level of detail, including roles and responsibilities, timeframes, inputs and outputs, and more.

While it is important to identify the outputs of each activity such as data and decisions, it is even more important to determine the output of the procedure, the level of detail, the quality, the format etc.

Examples of outputs of processing data from procedures include:

■ Updated availability and capacity plans
■ Reports
■ Logical groupings of data ready for analysis.

4.1.5.5 Step 5 – Analyse the information and data

Your organization's service desk has a trend of reduced call volumes consistently over the last four months. Even though this is a trend, you need to ask yourself the question: 'Is this a good trend or a bad trend?' You don't know if the call reduction is because you have reduced the number of recurring errors in the infrastructure by good problem management activities or if the customers feel that the service desk doesn't provide any value and have started bypassing the service desk and going directly to second-level support groups.

Data analysis transforms the information into knowledge of the events that are affecting the organization. More skill and experience is required to perform data analysis than data gathering and processing. Verification against goals and objectives is expected during this activity. This verification validates that objectives are being supported and value is being added. It is not sufficient to simply produce graphs of various types but to document the observations and conclusions.

Question: What do you actually analyse?

Answer: Once the data is processed into information, you can then analyse the results, looking for answers to questions such as:

■ Are there any clear trends?
■ Are they positive or negative trends?
■ Are changes required?
■ Are we operating according to plan?
■ Are we meeting targets?

■ Are improvements required?
■ Are there underlying structural problems?

In this step you apply knowledge to your information. Without this, you have nothing more than sets of numbers showing metrics that are meaningless. It is not enough to simply look at this month's figures and accept them without question, even if they meet SLA targets. You should analyse the figures to stay ahead of the game. Without analysis you merely have information. With analysis you have knowledge. If you find anomalies or poor results, then look for ways to improve.

It is interesting to note the number of job titles for IT professionals that contain the word 'analyst' and even more surprising to discover that few of these professionals actually analyse anything. This step takes time. It requires concentration, knowledge, skills, experience etc. One of the major assumptions is that the automated processing, reporting, monitoring tool has actually done the analysis. Too often people simply point at a trend and say, 'Look, numbers have gone up over the last quarter.' However, key questions need to be asked, such as:

■ Is this good?
■ Is this bad?
■ Is this expected?
■ Is this in line with targets?
■ Are there any side effects (whether positive or negative) on any other process, component of the system, or service?

Combining multiple data points on a graph may look nice but it is important to know what it means. There is a saying 'A picture is worth a thousand words'; in analysing the data one needs to ask, 'Which thousand words?' To transform this data into knowledge, compare the information from Step 3 against the requirements from Step 2 and what could realistically be measured from this step.

Be sure also to compare the information with the clearly defined objectives with measurable targets that were set in the service design, transition and operations lifecycle stages. Seek confirmation that these objectives and the milestones were reached. If not, have improvement initiatives been implemented? If so, then the CSI activities start again by gathering data, processing data and analysing data to identify if the desired improvement in service quality has been achieved.

At the completion of each significant stage or milestone, conduct a review to ensure the objectives have been met. It is possible here to use the post-implementation review (PIR) from the change management process. The PIR will include a review of supporting documentation and the general awareness among staff of the refined processes or service. A comparison is required of what has been achieved against the original goals.

During the analysis activity, but after the results are compiled and the trends analysed and evaluated, it is recommended that internal meetings be held within IT managers to review the results and collectively identify improvement opportunities. It is important to have these internal meetings before you begin presenting and using the information, which is the next activity of CSI. IT is a key player in determining how the results and any actions items are presented to the business.

This puts IT in a better position to formulate a plan of presenting the results and any action items to the business and senior IT management. Throughout this publication the terms 'service' and 'service management' have been used extensively. IT is too often focused on managing the various systems used by the business, often (but incorrectly) equating service and system. A service is actually made up of systems as well as other entities such as people and suppliers. Therefore if an IT service provider wants to be perceived as a key player, it must move from a systems-based organization to a service-based organization. This transition will force the improvement of communication between the different IT silos that exist in many IT organizations.

Performing proper analysis on the data also places the business in a position to make strategic, tactical and operational decisions about whether there is a need for service improvement. Unfortunately, the analysis activity is often not performed. Whether this is because of lack of people with the right skills and/or simply a lack of time is unclear. What is clear is that without proper analysis, errors will continue to occur and mistakes will continue to be repeated. There will be little improvement.

Data analysis transforms the information into knowledge of the events that are affecting the organization. As an example, a sub-activity of capacity management is workload management. This involves analysing the data to determine

which customers use what resource, how they use the resource, when they use the resource and how this impacts the overall performance of the resource. You will also be able to see if there is a trend on the usage of the resource over a period of time. From an incremental improvement process this could lead to some focus on demand management, or influencing the behaviour of customers.

Consideration must be given to the skills required to analyse from both a technical viewpoint and from an interpretation viewpoint.

When analysing data, it is important to seek answers to questions such as:

- Are operations running according to plan? This could be a project plan, financial plan, availability plan, capacity plan or even an IT service continuity management (ITSCM) plan.
- Are targets defined in SLAs or the service catalogue being met?
- Are there underlying structural problems that can be identified?
- Are improvements required?
- Are there any trends? If so, what are the trends showing? Are they positive trends or negative trends?
- What is leading to or causing the trends?

Reviewing trends over a period of time is another important task. It is not good enough to see a 'snapshot' of a data point at a specific moment in time, but to look at the data points over a period of time. How did we do this month compared with last month, this quarter compared with last quarter, this year compared with last year?

It is not enough only to look at the results; one needs to look at what led to the results for the current period. If we had a bad month, was it because of an anomaly? Is this a demonstrable trend or simply a one-off?

Trends are an indicator that more analysis is needed to understand what is causing it. When a trend goes up or down it is a signal that further investigation is needed to determine if it is positive or negative.

Without analysis the data is merely information. With analysis come improvement opportunities.

Example of the benefits of trend analysis

When one organization started performing trend analysis activities around incident management, it discovered that the number of incidents increased for a one month period every three months. When staff investigated the cause, they found it was tied directly to a quarterly release of an application change. This provided statistical data for them to review the effectiveness of their change management and release and deployment management processes as well as understand the impact each release would have on the service desk with the number of increased call volumes. The service desk was also able to begin identifying key skill sets needed to support this specific application.

Example of different ways of interpreting trends

A change manager communicates that the change management process is doing well because the volume of requests for changes has steadily decreased. Is this positive or negative? If problem management is working well, it could be positive as recurring incidents are removed, therefore fewer changes are required as the infrastructure is more stable. However, if users have stopped submitting requests for changes because the process is not meeting expectations, the trend is negative.

Throughout CSI, assessment should identify whether targets were achieved and, if so, whether new targets (and therefore new KPIs) need to be defined. If targets were achieved but the perception has not improved, then new targets may need to be set and new measures put in place to ensure that these new targets are being met.

When analysing the results from process metrics keep in mind that a process will only be as efficient as its limited bottleneck activity. So if the analysis shows that a process activity is not efficient and continually creates a bottleneck then this would be a logical place to begin looking for a process improvement opportunity.

Inputs include:

- Results of the monitored data
- Existing KPIs and targets
- Perceptions from customer satisfaction surveys etc.

4.1.5.6 Step 6 – Present and use the information

Key message

Presenting the information is synonymous with service reporting (see section 5.7)

The sixth step is to take our knowledge, which is represented in the reports, monitors, action plans, reviews, evaluations and opportunities, and present it to the target audience in a clear, digestible and timely way. Consider the target audience; make sure that you identify exceptions to the service, benefits that have been revealed, or can be expected. Data gathering occurs at the operational level of an organization. Format this data into knowledge that all levels can appreciate and gain insight into their needs and expectations.

This stage involves presenting the information in a format that is understandable, at the right level, provides value, notes exceptions to service, identifies benefits that were revealed during the time period, and allows those receiving the information to make strategic, tactical and operational decisions. In other words, present the information in the manner that makes it the most useful for the target audience.

Most organizations create reports and present information to some extent or another; however, it is often not done well. Many organizations simply take the gathered raw data (often straight from the tool) and report it to everyone, without necessarily processing or analysing the data. The report should emphasize and ideally highlight areas where the recipient needs to take action.

The other issue often associated with presenting and using information is that it is overdone. Managers at all levels are bombarded with too many emails, too many meetings, too many reports. The reality is that the managers often don't need this information or, at the very least, not in that format. It is often unclear what role the manager has in making decisions and providing guidance on improvement programmes.

As we have discussed, CSI is an ongoing activity of monitoring and gathering data, processing the data into logical groupings, and analysing it in order to meet targets, and identify trends and improvement opportunities. There is no value in all the work done to this point if we don't do a good

job of presenting our findings and then using them to make decisions that will lead to improvements.

Begin with the end in mind is habit number 2 in Stephen Covey's *The Seven Habits of Highly Effective People*.[3] Even though the book is about personal leadership, the habit holds true with presenting and using information. In addition to understanding the target audience, it is also important to understand the purpose of any information being presented. If the purpose and value cannot be articulated, then it is important to question if it is needed at all.

There are usually four distinct audiences:

■ **The customers**   Their real need is to understand whether IT delivered the service they promised at the levels they promised and, if not, what improvements are being implemented to improve the situation.

■ **Senior IT management**   This group is often focused on the results surrounding CSFs and KPIs, such as customer satisfaction, actual versus plan, and costing and revenue targets. Information provided at this level helps determine strategic and tactical improvements on a larger scale. Senior IT management often wants this type of information provided in the form of a balanced scorecard or IT scorecard format to see the big picture at one glance.

■ **Internal IT**   This group is often interested in KPIs and activity metrics that help them plan, coordinate, schedule and identify incremental improvement opportunities.

■ **Suppliers**   This group will be interested in KPIs and activity metrics related to their own services and performance. Suppliers may also be targeted with improvement initiatives.

Often there is a gap between what IT reports and what is of interest to the business. IT is famous for reporting availability in percentages such as '99.85% available'. In most cases this is not calculated from an end-to-end perspective but only considers mainframe or server availability or application availability; it often doesn't take into consideration LAN/WAN or desktop downtime. In reality, most people in IT don't know the difference between 99.95% and 99.99% availability, let alone other people in the business. Yet reports continue to show availability achievements in percentages.

What the business really wants to understand is the number of outages that occurred and the duration of the outages with an analysis describing the impact on the business processes, in essence, unavailability expressed in a commonly understood measure – time. Of course what the business is really interested in is what the service provider is going to do to prevent it happening again.

Now more than ever, IT managers must invest the time to understand specific business goals and translate IT metrics to reflect an impact against these goals. Businesses invest in tools and services that affect productivity, and support should be one of those services. The major challenge, and one that can be met, is to communicate effectively the business benefits of a well-run IT support group. The starting point is a new perspective on goals, measures, reporting and how IT actions affect business results. You will then be prepared to answer the question: 'How does IT help to generate value for your company?'

Although most reports tend to concentrate on areas where things are not going as well as hoped for, do not forget to report on the good news as well. A report showing improvement trends is IT services' best marketing vehicle. It is vitally important that reports show whether CSI has actually improved the overall service provision and, if it has not, the actions taken to rectify the situation.

Figure 4.4 is an example of an SLA monitoring chart that provides a visual representation of an organization's ability to meet defined targets over a period of months.

These are some of the common problems associated with the presenting and reporting activity:

■ Everyone (business, senior management and IT managers) gets the same report.

■ The format is not what people want. It is important to understand the audience and how they like to receive information. Some like the information in text format, some in graphs, some in pie charts etc. It is hard to please everyone, but getting agreement on the report format is a step in the right direction.

This is why many organizations are moving to a balanced scorecard or IT scorecard concept. This concept can start at the business level, then

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[3] Covey, S. (1989). *The Seven Habits of Highly Effective People*. Free Press, New York.

Period / Target	January	February	March	April	May	June	July	August
A						▨	▨	▨
B	▨	▨	▨					
C								▨
D				▨	▨	▨	▨	▨
E								
F					▨	▨	▨	▨

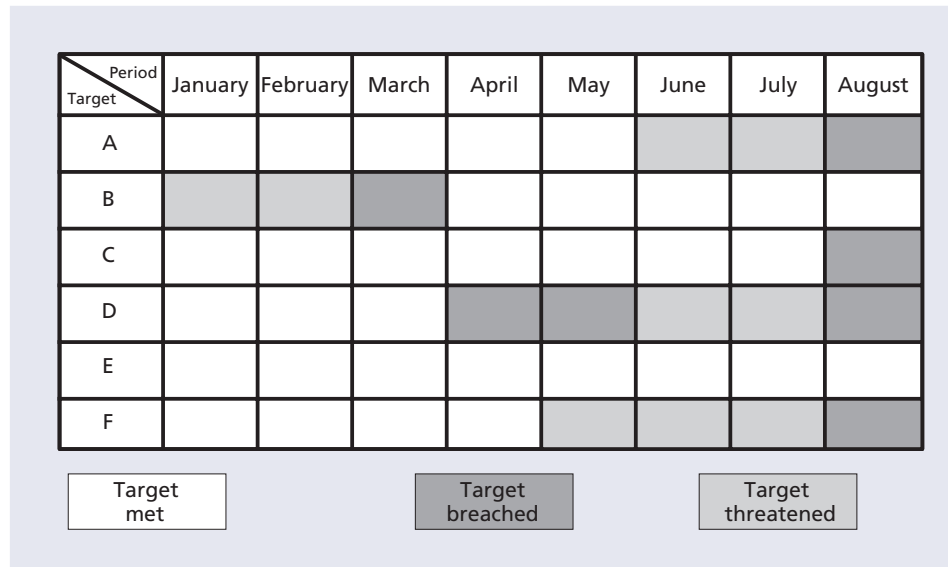| Target met	Target breached	Target threatened

Figure 4.4 Service level achievement chart

the IT level, and then functional groups and/or services within IT.

- Lack of an executive summary – the executive summary should discuss the current results, what led to the results and what actions have or will be taken to address any issues.
- Reports are not linked to any baseline, IT scorecard or balanced scorecard.
- Too much supporting data is provided.
- Reports are presented in terms that are not understandable. For example, availability is reported in percentages when the business often is interested in knowing the number, duration and impact of outages.

The resources required to produce, verify and distribute reports should not be underestimated. Even with automation, this can be a time-consuming activity.

When measuring and reporting, IT managers need to shift from their normal way of reporting to a more business view that the business can really understand. As discussed above, the traditional IT approach on measuring and reporting availability is to present the results in percentages, but these are often at a component level and not at the service level. Availability when measured and reported should reflect the experience of the customer. Below are the common measurements that are meaningful to a customer:

- Number of outages on each service, e.g. there were two outages this month on Service 1

- Duration of outages for each service, e.g. Service 1 outages lasted 179 minutes
- The impact of the outages to each business, e.g. Business 1 uses five services; there were 11 outages, whose total duration was 1,749 minutes. During this time the business was unable to generate revenue.

Inputs include:

- Collated information
- Format details and templates etc.
- Stakeholder contact details.

Note: The results from Step 6 may indicate the need for improvement initiatives. In all such cases use the CSI register to document the requirements and initiatives.

4.1.5.7 Step 7 – Implement improvement

Use the knowledge gained and combine it with previous experience to make informed decisions about optimizing, improving and correcting services. Managers need to identify issues and present solutions.

This stage may include any number of activities such as approval of improvement activities, prioritization and submitting a business case, integration with change management, integration with other lifecycle stages, and guidance on how to manage an ongoing improvement project successfully, and on checking whether the improvement actually achieved its objective.

Example of poor advice

An organization hired an expensive consulting firm to assess the maturity of the processes against the ITIL framework. The report from the consulting organization had the following observation and recommendation about the incident management process:

'The help desk is not doing incident management the way ITIL does. Our recommendation is that you must implement incident management.'

The reaction from the customer was simple. They fired the consulting organization.

CSI identifies many opportunities for improvement, but organizations cannot afford to implement all of them. As discussed earlier, an organization needs to prioritize improvement activities for its goals, objectives, return on investment (ROI), types of service breaches etc., and document them in the CSI register. Improvement initiatives can also be externally driven by regulatory requirements, changes in competition, or even political decisions.

If organizations were implementing improvement according to CSI, there would be no need for this publication. Improvement often takes place in reaction to a single event that caused a (severe) outage to part or all of the organization. At other times, minor problems are noticed and specific improvements are implemented in no relation to the priorities of the organization, thus taking valuable resources away from real emergencies. This is common practice but obviously not best practice.

After a decision to improve a service and/or service management process is made, then the service lifecycle continues. A new service strategy may be defined, service design builds the changes, service transition implements the changes into production and then service operation manages the day-to-day operations of the service and/or service management processes. Keep in mind that CSI activities continue through each stage of the service lifecycle.

Each service lifecycle stage requires resources to build or modify the services and/or service management processes, potential new technology or modifications to existing technology, potential changes to KPIs and other metrics, and possibly even new or modified OLAs or underpinning contracts (UCs) to support SLAs. Communication,

training and documentation are required to move a new or improved service, tool or service management process into production.

Example of improvement being implemented

A financial organization with a strategically important website continually failed to meet its operational targets, especially with regard to the quality of service delivered by the site. The prime reason for this was its lack of focus on the monitoring of operational events, service availability and response. This situation was allowed to develop until senior business managers demanded action from the senior IT management. There were major repercussions, and reviews were undertaken to determine the underlying cause of the failure to meet an acceptable quality of service. After considerable pain and disruption, an operations group was identified to monitor this particular service. A part of the requirement was the establishment of weekly internal reviews and weekly reports on operational performance. Operational events were immediately investigated whenever they occurred and were individually reviewed after resolution. An improvement team was established, with representation from all areas, to implement the recommendations from the reviews and the feedback from the monitoring group. This eventually resulted in considerable improvement in the quality of service delivered to the business and its customers.

Often steps are forgotten or are taken for granted, or someone assumes that someone else has completed the step. This indicates a breakdown in the process and a lack of understanding of roles and responsibilities. The harsh reality is that some steps are overdone while others are incomplete or overlooked.

There are various levels of management in an organization; when implementing improvements it is important to understand which level to focus their activities on. Managers need to show overall performance and improvement. Directors need to show that quality and performance targets are being met, while risk is being minimized. Overall, senior management need to know what is going on so they can make informed choices and exercise judgement. Each level has its own perspective. Understanding these perspectives is where maximum value of information is leveraged.
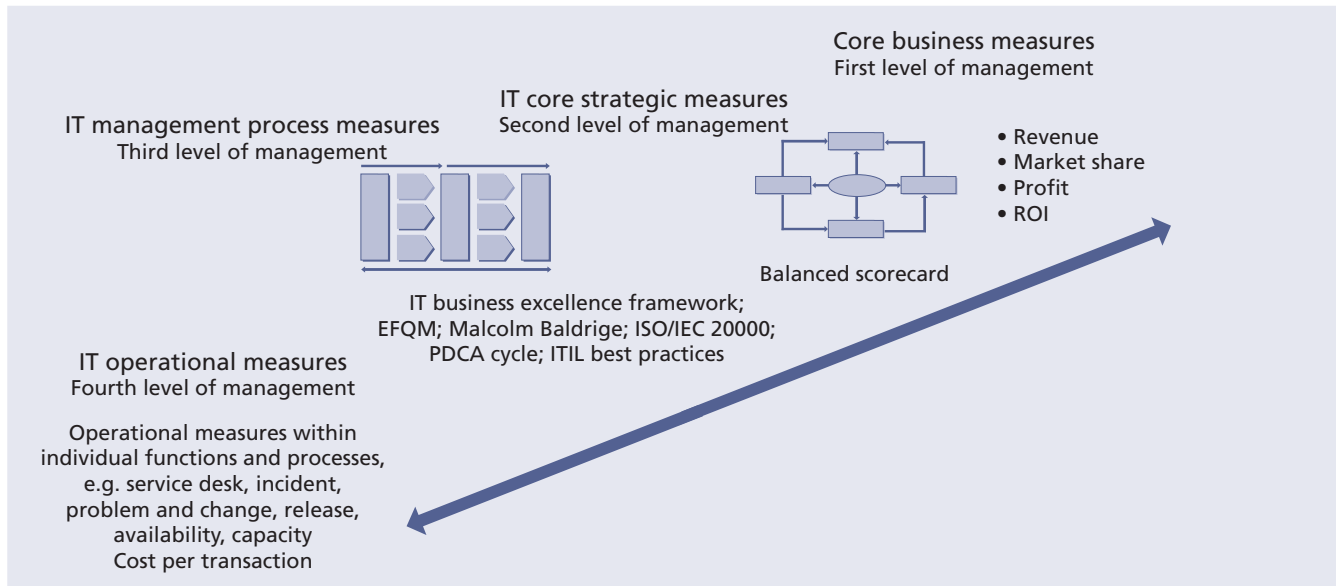
Figure 4.5 First- to fourth-order drivers

Understanding the level your intended audience occupies and their drivers helps you present the issues and benefits of your process in the correct manner. At the highest level of the organization are the strategic thinkers. Reports need to be short, quick to read and aligned to their drivers. Discussions about risk avoidance, protecting the image or brand of the organization, profitability and cost savings are compelling reasons to support your improvement efforts.

The second level of management consists of vice presidents and directors. Reports can be more detailed, but need to summarize findings over time. Identifying how processes support the business objectives, early warning around issues that place the business at risk, and alignment to existing measurement frameworks that they use are strong methods you can use to sell the process benefits to them.

The third level of management consists of managers and high level supervisors. Compliance to stated objectives, overall team and process performance, insight into resource constraints and continual improvement initiatives are their drivers. Measurements and reports need to market how these are being supported by the process outputs.

Lastly at the fourth level of the hierarchy are the staff members and team leaders. At a personal level, the personal benefits need to be emphasized. Therefore metrics that show their individual performance, provide recognition of

their skills (and gaps in skills) and identify training opportunities are essential in getting these people to participate in the processes willingly.

The four levels of management are shown in Figure 4.5.

Inputs include:

- Knowledge gained from presenting and using the information
- Agreed implementation plans (from Step 6)
- A CSI register for those initiatives that have been initiated from other sources.

Note: Implementing improvement is also discussed in section 5.1.2 and assessments are discussed in section 5.2.

4.1.6 Triggers, inputs, outputs and interfaces

Monitoring to identify improvement opportunities is and must be an ongoing process. New incentives may trigger additional measurement activity such as changing business requirements, poor performance with a process or spiralling costs.

Many inputs and outputs to the process are documented within the steps discussed earlier but examples of key inputs include:

- Service catalogue
- SLRs
- The service review meeting
- Vision and mission statements

- Corporate, divisional and departmental goals and objectives
- Legislative requirements
- Governance requirements
- Budget cycle
- Customer satisfaction surveys
- The overall IT strategy
- Market expectations (especially in relation to competitive IT service providers)
- New technology drivers (e.g. cloud based delivery and external hosting)
- Flexible commercial models (e.g. low capital expenditure and high operational expenditure commercial models, and rental models).

4.1.6.1 Interfaces

In order to support improvement activities it is important to have CSI integrated within each lifecycle stage including the underlying processes residing in each lifecycle stage. Each step of the CSI lifecycle will be involved in every one of the other lifecycle stages.

Examples include monitoring the progress of strategies, standards, policies and architectural decisions that have been made and implemented. Service strategy will also analyse results associated with implemented strategies, policies and standards.

Within the service design stage, monitoring and gathering data are associated with creating and modifying services and service management processes. This part of the service lifecycle also measures against the effectiveness and ability to measure CSFs and KPIs that were defined through gathering business requirements. It is during service design that the definition of what should be measured is produced. Service design analyses current results of design and project activities. Trends are also noted with results compared against the design goals. Service design also identifies improvement opportunities and analyses the effectiveness and ability to measure CSFs and KPIs that were defined when gathering business requirements.

Service transition develops and tests the monitoring procedures and criteria to be used during and after implementation. Service transition monitors and gathers data on the actual release into production of services and service management processes. Service transition develops

the monitoring procedures and criteria to be used during and after implementation.

It is during the service operation lifecycle stage that the actual monitoring of services in the live environment takes place. People working in the service operation functions will play a large part in the processing activity. Service operation staff provide input into what can be measured and processed into logical groupings, and then process the data. Service operation staff would also be responsible for taking the component data and processing it in the format to provide a better end-to-end perspective of the service achievements. Service operation staff analyse current results as well as trends over a period of time. Service operation staff also identify both incremental and large-scale improvement opportunities, providing input into what can be measured and processed into logical groupings. They also perform the actual data processing.

The seven-step improvement process receives and collects the data as an input. If there is a CSI functional group within an organization, it can be the single point for combining all analysis, trend data and comparison of results to targets. This group could then review all proposed improvement opportunities and help prioritize the opportunities and finally make a consolidated recommendation to senior management. For smaller organizations, this may fall to an individual or smaller group acting as a coordinating point and owning CSI. This is a key point. Too often data is gathered in the various technical domains never to be heard of again. Designating a CSI group provides a single place in the organization for all the data to reside and be analysed.

4.1.7 Role of other processes in gathering and processing the data (Steps 3 and 4)

All the ITIL processes have responsibility for continual improvement of the process itself. The process metrics will indicate where improvements or cost reductions can be made. Some of the key processes related to general improvement are documented below.

4.1.7.1 Service level management

The SLM process is fully documented in *ITIL Service Design*. It is important the CSI is involved in the

design of SLM and has a constant interface with the SLM team to ensure that measurable targets are created from which to identify potential service improvements.

The SLM process plays a key role in CSI activities and supports the seven-step improvement process by helping to drive what to measure and monitoring requirements, and by reporting service level achievements. This provides input into CSI activities and helps prioritize improvement projects.

SLM is essential in any organization so that the levels of IT service needed to support the business can be determined and monitoring can be initiated to identify whether the required service levels are being achieved.

If an organization is outsourcing its service provision to a third party, the issue of service improvement should be discussed at the outset and covered (and budgeted for) in the contract, otherwise there is no incentive during the lifetime of the contract for suppliers to improve service targets if they are already meeting contractual obligations and additional expenditure is needed to make the improvements.

SLM plays a key role in the data gathering activity as SLM is responsible for defining not only business requirements but also IT's capabilities to achieve them:

■ SLM needs to look at what is happening with the monitoring data to ensure that end-to-end service performance is being monitored and analysed.
■ SLM should also identify who gets the data, whether any analysis takes place on the data before it is presented, and if any trend evaluation is undertaken to understand the performance over a period of time. This information will be helpful in following CSI activities.
■ Through the negotiation process with the business, SLM would define what to measure and which aspects to report. This would in turn drive the monitoring and data collection requirements. If there is no capability to monitor and/or collect data on an item then it should not appear in the SLA. SLM should be a part of the review process to monitor results.

■ SLM is responsible for developing and getting agreement on OLAs and external UCs that require internal or external monitoring.

SLM supports the CSI data processing activity by:

■ Ensuring that the SLAs only incorporate measurements that truly can be measured and reported on
■ Negotiating and documenting OLAs and UCs that define the required measurements
■ Reviewing the results of the processed data from an end-to-end approach
■ Helping define the reporting frequency of processing and reporting formats.

4.1.7.2 Availability management and capacity management

Availability management and capacity management support the data processing activities of CSI by:

■ Providing significant input into existing monitoring and data collection capabilities and tool requirements to meet new data collection requirements, and ensuring the availability and capacity plans are updated to reflect new or modified monitoring and data collection requirements
■ Being accountable for the actual infrastructure monitoring and data collection activities that take place; therefore roles and responsibilities need to be defined and the roles filled with properly skilled and trained staff
■ Being accountable for ensuring tools are in place to gather data
■ Being accountable for ensuring that the actual monitoring and data collection activities are consistently performed
■ Being responsible for processing the data at a component level and then working with SLM to provide service level data
■ Processing data on KPIs such as availability or performance measures
■ Utilizing the agreed reporting formats
■ Analysing processed data for accuracy.

4.1.7.3 Event management, incident management and service desk

Event management, incident management and the service desk support the data processing activities of CSI:

■ Through incident management defining monitoring requirements to support event and incident detection through automation; incident management also has the ability to automatically open incidents and/or auto-escalate incidents

■ Through event management automatically monitoring events and producing alerts, some of which may require CSI activities to correct

■ Through event and incident monitoring identifying abnormal situations and conditions, which helps with predicting and pre-empting situations and conditions thereby avoiding possible service and component failures

■ By monitoring the response times, repair times, resolution times and incident escalations

■ By monitoring telephony items such as call volumes, average speed of answer, call abandonment rates etc. so that immediate action can be taken when there is an increase in contacts to the service desk; this is important for the service desk as a single point of contact; it also applies to those service desks that provide support via email and the web

■ By processing data on incidents and service requests such as who is using the service desk and what is the nature of the incidents

■ By collecting and processing data on KPIs such as MTRS and percentage of incidents resolved within service targets

■ By processing data for telephony statistics at the service desk such as number of inbound/outbound calls, average talk time, average speed of answer, abandoned calls etc.

■ By utilizing the agreed reporting format

■ By analysing processed data for accuracy.

4.1.7.4 Information security management

Information security management contributes to monitoring and data collection by:

■ Defining security monitoring and data collection requirements

■ Monitoring, verifying and tracking the levels of security according to the organizational security policies and guidelines

■ Assisting in determining effects of security measures on the data monitoring and collection from the confidentiality (accessible only to those who should), integrity (data is accurate and not corrupted or not corruptible) and availability (data is available when needed) perspectives

■ Processing response and resolution data on security incidents

■ Creating trend analyses on security breaches

■ Validating success of risk mitigation strategies

■ Utilizing the agreed upon reporting format

■ Analysing processed data for accuracy.

4.1.7.5 Financial management for IT services

Financial management for IT services is responsible for monitoring and collecting data associated with the actual expenditures versus budget and is able to provide input on questions such as whether costing or revenue targets are on track. Financial management for IT services should also monitor the ongoing cost per service etc.

In addition financial management for IT services will provide the necessary templates to assist CSI to create the budget and expenditure reports for the various improvement initiatives as well as providing the means to compute the ROI of the improvements.

4.1.8 Role of other processes in analysing the data (Step 5)

4.1.8.1 Service level management

SLM supports the CSI data analysis activity by:

■ Analysing the service level achievements compared to SLAs and service level targets

■ Documenting and reviewing trends over a period of time to identify any consistent patterns

■ Identifying improvement opportunities

■ Identifying the need to modify existing OLAs or UCs.

4.1.8.2 Availability management and capacity management

Availability management and capacity management support the CSI data analysis activity by:

■ Analysing and identifying trends on component and service data

■ Comparing results with prior months, quarters or annual reports

- Identifying the need for updating the requirement for improvement in gathering and processing data
- Analysing the performance of components against defined technical specifications
- Documenting and reviewing trends over a period of time to identify any consistent patterns
- Identifying improvement opportunities
- Analysing processed data for accuracy.

4.1.8.3 Incident management and service desk

Incident management and service desk support the CSI data analysis activity by:

- Documenting and reviewing incident trends on incidents, service requests and telephony statistics over a period of time to identify any consistent patterns
- Comparing results with prior months, quarters or annual reports
- Comparing results with agreed-to levels of service
- Identifying improvement opportunities
- Analysing processed data for accuracy.

4.1.8.4 Problem management

Problem management plays a key role in the analysis activity as this process supports other processes in identifying trends and performing root cause analysis. Problem management is usually associated with reducing incidents, but a good problem management process is also involved in helping define process-related problems as well as those associated with services.

Overall, problem management seeks to:

- Perform root cause investigation as to what is leading identified trends
- Recommend improvement opportunities
- Compare results with prior results
- Compare results to agreed service levels.

4.1.8.5 Information security management

Information security management relies on the activities of other processes to help determine the cause of security related incidents and problems. Information security management will submit requests for changes to implement corrections or for new updates to, for example, the anti-virus software. Other processes such as availability management (recoverability), capacity management (capacity and performance) and ITSCM (planning on how to handle crisis) will assist in planning longer term. In turn information security management will play a key role in assisting CSI regarding all security aspects of improvement initiatives or for security-related improvements by:

- Documenting and reviewing security incidents for the current time period
- Comparing results with prior results
- Identifying the need for a SIP or improvements
- Analysing processed data for accuracy.

4.1.9 Role of other processes in presenting and using the information (Step 6)

4.1.9.1 Service level management

SLM presents information to the business and discusses the service achievements for the current time period as well as any longer trends that were identified. These discussions should also include information about what led to the results and any incremental or fine-tuning actions required.

Overall, SLM:

- Conducts consistent service review meetings (internal and external)
- Supports the preparation of reports
- Updates the SLA monitoring (SLAM) chart
- Provides input into prioritizing improvement activities.

4.1.9.2 Availability management and capacity management

Availability management and capacity management support the CSI presentation activity by:

- Supporting preparation of the reports
- Providing input into prioritizing SIP or improvements
- Implementing incremental or fine-tuning activities that do not require business approval.

4.1.9.3 Incident management and service desk

Incident management and service desk support the CSI presentation activity by:

■ Supporting preparation of the reports
■ Providing input into prioritizing SIPs or improvements
■ Implementing incremental or fine-tuning activities that do not require business approval.

4.1.9.4 Problem management

Problem management supports the CSI presentation activity by:

■ Providing input into service improvement initiatives and prioritizing improvement initiatives
■ Supporting preparation of the reports
■ Providing input into prioritizing SIP or improvements
■ Implementing incremental or fine-tuning activities that do not require business approval.

4.1.10 Role of other processes in implementing improvement (Step 7)

4.1.10.1 Change management

When CSI determines that an improvement to a service is warranted, a request for change (RFC) must be submitted. The RFC will be prioritized and categorized according to policies and procedures defined in the change management process. Release and deployment management, as a part of service transition, is responsible for moving this change to the live environment. Once the change is implemented, CSI is part of the PIR to assess the success or failure of the change. All non-standard changes should be assessed by staff involved in CSI.

4.1.10.2 Service level management

The SLM process often generates a good starting point for identifying improvement opportunities – and the service review process may drive this. Where an underlying difficulty that is adversely impacting service quality is identified, SLM should, in conjunction with problem management and availability management, log an improvement opportunity in the CSI register. SLM will then be involved in the later review and prioritization

of the CSI register and in building appropriate SIPs to identify and implement whatever actions are necessary to overcome the difficulties and restore service quality. SIP initiatives may also focus on such issues as training, system testing and documentation. In these cases, the relevant people need to be involved and adequate feedback given to make improvements for the future. At any time, a number of separate initiatives that form part of the SIP may be running in parallel to address difficulties with a number of services.

Some organizations have established an annual budget line held by SLM from which SIP initiatives can be funded.

If an organization is outsourcing delivery of service to a third party, the issue of service improvement should be discussed at the outset and covered (and budgeted for) in the contract, otherwise there is no incentive during the lifetime of the contract for the supplier to improve service targets.

4.1.11 Information management

As indicated in the activities, the information required to understand what needs to be improved and by how much and when comes from many sources. It is important that to get a full and clear picture we gather and analyse all information. Some important examples are:

■ The service catalogue
■ SLRs
■ Monitored and reported SLA targets
■ Service knowledge management system (SKMS) and configuration management system (CMS)
■ Process metrics
■ Customer satisfactory surveys
■ Complaints and compliments
■ All data, information, knowledge produced by the process itself.

Much of the data and information will be initially gathered and held in technology-specific repositories but will need to be summarized and held as part of the SKMS for analysis and reporting purposes.

4.1.12 Critical success factors and key performance indicators

The following list includes some sample CSFs for the seven-step improvement process. Each organization should identify appropriate CSFs

based on its objectives for the process. Each sample CSF is followed by a typical KPI that supports the CSF. These KPIs should not be adopted without careful consideration. Each organization should develop KPIs that are appropriate for its level of maturity, its CSFs and its particular circumstances. Achievement against KPIs should be monitored and used to identify opportunities for improvement, which should be logged in the CSI register for evaluation and possible implementation.

Note that because of the nature of the seven-step improvement process, it has to be applied to appropriate processes, activities, technology, organizational structure, people and partners for the benefits to be realized. This means that the KPIs used to judge the success of the seven-step improvement process are actually the KPIs from the other lifecycle stages and processes to which it has been applied. As a result the examples given here come from other areas.

- **CSF**   All improvement opportunities identified
  - **KPI**   Percentage improvement in defects; for example, 3% reduction in failed changes; 10% reduction in security breaches
- **CSF**   The cost of providing services is reduced
  - **KPI**   Percentage decrease in overall cost of service provision; for example, 2.5% reduction in the average cost of handling an incident; 5% reduction in the cost of processing a particular type of transaction
- **CSF**   The required business outcomes from IT services are achieved
  - **KPI**   A 3% increase in customer satisfaction with the service desk; 2% increase in customer satisfaction with the warranty offered by the payroll service.

4.1.13 Challenges and risks

Challenges facing organizations when implementing CSI include getting the required resources to implement and run the process, and gathering the right level of data and having the tools to manipulate it. Another challenge is to get the willingness of the IT organization to approach CSI in a consistent and structured way. The challenge is to make that IT manager realize that there is another way, and get commitment from management to approach it in that better way. Another challenge is obtaining sufficient information from the business regarding improvement requirements and cost reductions. A further challenge is persuading suppliers to include improvement in their contractual agreements; this is especially relevant for outsourced services.

There are several risks that could prevent CSI from achieving the overall desired effect:

- No formalized approach to CSI and initiatives being taken on randomly in an *ad-hoc* manner
- Insufficient monitoring and analysis to identify the areas of greatest need
- Staff attitude such as 'We have always done it this way and it has always been good enough'
- Inability to make the business case for improvement and therefore no funding for improvement initiatives
- Lack of ownership or loss of ownership
- Too much focus on IT improvements without clear understanding of business needs and objectives.