

The Definitive Guide to IT Service Metrics

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AND
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EXTRACT



IT Governance Publishing

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FOREWORD

Metrics. A word that strikes 'panic' in many service managers. It seems no matter where I travel or who I speak to, it is an area that is a constant question. 'What do I measure? How often? Do I just take the measures from ITIL® and use them – they are published, they must be right. Right? Right?' Inevitably, my response focuses on the practical, 'What is the goal? What hurts? What are you trying to change?' Until now, there really has not been a reference where the 'why measure this' question was answered.

Finally, *The Definitive Guide to IT Service Metrics* is a reference that is both common sense and practical. I think you'll find that the metrics included are useful and may not be so common. The strength of this volume rests in the justification and explanations for each metric. The formulas are simple (simple is good, simple is powerful...) which allows the service manager to manipulate and fit to their environment. The 'why' has a 'because.'

A word of caution — don't just jump to the metrics — read the opening chapters. The information provides the basis for the chosen metrics and how they are measured. Missing this will diminish the overall content and the full benefit will not be realized.

I'm honored to introduce the first volume of the Thought Leadership Series. It is a wonderful volume and sets the stage for many more to come.

Suzanne D. Van Hove, Ed.D., FSM®

CEO, SED-IT

PREFACE

This book is an invaluable addition to every IT professional's library. Metrics are an increasingly important tool for the management of organizations. All too often, a workforce jumps into action with a flurry of activities with no real thought as to what the outcomes need to be. The end result is a great deal of spending for no tangible service results. This book provides an excellent defense against spending for no gain in service. It provides insights to the proper design, implementation and utilization of IT service lifecycle process metrics as a means of monitoring and controlling IT service delivery. Of particular value is the incorporation of recommendations for applying metrics as operational performance decision support tools.

The authors have applied industry-standard frameworks to the design and implementation of IT Service Management (ITSM) metrics. Based on the ITIL® 2011 service lifecycle processes along with principles from ISO/IEC 20000 and the Project Management Body of Knowledge (PMBOK™), it is a guide to developing and using metrics as a means of monitoring and controlling the delivery of IT services. The book includes a wide variety of detailed metrics to enable quick and direct implementation. It also contains guidelines for developing customized metrics based on specialized needs of the business.

Toby R. Gouker, PhD, GSLC

Chancellor, SANS Technology Institute

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Preface

With the right amount of effort and determination, anyone can achieve some degree of success. However, to understand the level and extent of that success we need to be able to measure both our efforts and the results in order to know whether we have met or exceeded goals and expectations. The key to this understanding is found within the measurements and metrics collected during execution.

Metrics are the source of valuable information for any organization and can provide an abundance of benefits including:

- Demonstrating organizational maturity
- Driving and changing the behavior of the organization and staff
- Discovering opportunities for improvement
- Justification for change and the cost of change.

Having the information provided by metrics will help develop the knowledge necessary to improve decision making throughout the organization. Without metrics, decision making can become dependent upon knowledgeable individuals or, even worse, based upon guess work.

In order for any metric to provide benefit, we must understand our goals and expectations for the metric rooted in the success of the process, service, or product we are measuring. The goal(s) will give purpose and meaning for each metric and will help to justify the collection of data for the metric. The expectations help us understand the targets we must achieve for success. For our metrics, these targets are the Acceptable Quality Levels (AQLs) defined for each metric. An AQL should be established by the requirements documented for the process, service, or product (whether business or technical). Depending on the level of maturity, some organizations can clearly define their AQLs while others may need to collect initial metrics to baseline and then set trending goals for improvement. We provide AQLs for many of the metrics documented in this book. These are

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Preface

based on experience and feedback but, for the most part, they are nothing more than guidelines. In the end, you must determine your AQLs for each metric

Now that we have explained our thoughts concerning metrics and how important they can be, we want to make sure that you understand that developing, collecting, and reporting metrics is not a quick and easy effort to accomplish. While there are several organizations across the globe that have mature metrics capabilities, many that are already on the metrics path, and quite a few that are just starting; we want to make sure that there is an understanding of the struggles involved with achieving metric maturity. The most difficult part of developing metrics is dealing with different parts of the organization and the people involved. Understand that everyone has an opinion and that they will voice their opinion at either the right time or place. This will take time, patience, and compromise to create effective metrics. Other difficulties include tools, funding, and unknown requirements. Eventually, you will get past the development stage and come to agreement on a good set of metrics. We wish nothing but the best on this journey or that you are at least able to maintain your sanity.

So, as you move forward ensure that measurements and metrics are an early activity within your lifecycle and instill a positive and proactive mindset for these metrics. This mindset will help change the way your organization develops and manages the services offered. Remember this:

Finding problems and issues is a good thing: discovering opportunities is a great thing.

Create that positive mindset and use this book as a reference to create metrics for your services and environment. Then use these metrics to find opportunities to improve.

ABOUT THE AUTHORS

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Table of Contents

Chapter 1: Introduction	13
Chapter 2: Using Metrics.....	16
Understanding metrics	16
Defining metrics.....	19
Why do we need metrics?.....	20
Methodology for using metrics.....	20
Purpose for metrics (metrics tree)	25
Integrating metrics.....	26
Metrics reporting.....	27
Securing and protecting metrics.....	29
Calculations.....	30
Continual Service Improvement (CSI)	30
Chapter 3: Service Strategy Metrics	31
Strategy management metrics	31
Service portfolio management metrics.....	42
Financial management metrics	49
Demand management metrics.....	55
Business relationship management metrics	60
Chapter 4: Service Design Metrics.....	68
Design co-ordination metrics.....	68
Service catalog management metrics	79
Service level management metrics.....	89
Availability management metrics	99
Capacity management metrics	114
IT service continuity management metrics.....	123

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Information security management metrics	132
Supplier management metrics.....	154
Chapter 5: Service Transition Metrics.....	164
Transition planning and support metrics	164
Change management metrics.....	169
Service asset and configuration management metrics..	183
Release and deployment management metrics	191
Service validation and testing metrics	198
Change evaluation metrics	208
Knowledge management metrics	216
Chapter 6: Service Operation Metrics	224
Event management metrics	225
Incident management metrics.....	237
Request fulfillment metrics	248
Problem management metrics.....	257
Access management metrics.....	266
Service desk metrics.....	272
Chapter 7: Additional Metrics.....	278
Project management metrics	278
Risk management metrics	292
Data center metrics.....	299
References	305
ITG Resources	307

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CHAPTER 1: INTRODUCTION

We know change is inevitable. However, in many cases we don't seem to be fully prepared for the change. This is becoming more apparent in the Information Technology (IT) industries and organizations as changes in cultures and the working environment seem to meet greater resistance. Changing our technologies is relatively easy due to the rapid nature of change in our hardware and software and our willingness to apply these changes to remain up to date. Therefore, change is commonplace in any technology field; or is it?

Managing the infrastructure, both hardware and software, in our technology-centric world has commoditized the technologies and the skills to implement and manage the technologies. What we are not doing well is managing the business side of our technologies; and it's here that we find resistance to change. Managing technologies from the business viewpoint requires that cultural change in our mindset, attitudes, and methodologies. Higher levels of structure and discipline must become commonplace within our organizations to manage change from both the technology perspective and, more importantly, the changing business perspective. This requires new ways of managing the environment to create a service-oriented culture which provides value to the business while giving true purpose to the IT organization. And yes, we know you've heard this before and that everyone understands this 'service' mindset. Yet, we still struggle to get there.

We see so many individuals pushing back and rejecting service provision as just a new fad in the industry which will fade away like so many others in the past; but is it really fading away? The reason and justification stems from what is perceived as additional workload and burden on an already busy work day. Finding the time to develop and document metrics, implement and manage the tools to measure, and finally creating reports and meeting with the

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Chapter 1: Introduction

business regularly is difficult and as such, these activities are prioritized last. Ironically, a great deal of our measurements already occur; we just need to collect the measurements and metrics that provide evidence of our service provision. For example, look at how many measurements we use while driving our cars; we have the speedometer, a tachometer (measuring the engine's rotation), gas gauge, temperature gauge, oil pressure gauge, and so on; all used to measure the quality of our driving experience. We can find this in our IT environments as well. We just need the structure and discipline to change the way we work to provide good service and report the metrics showing our success.

As organizations begin down the service path, one of the more challenging areas, and the reason for this book, is the development of measurements and metrics that demonstrate value to the business and customers. IT has always had the ability to measure technology and performance but now we are asking IT to measure service provision and value to the business. In essence, we must now use our metrics to tell a story. This story must tell how the service is meeting the needs of the business and demonstrating value to either the internal or external customers using the evidence from our measurement activities.

While all measurements and metrics should provide value to the organization, in many cases a single metric provides limited, but valuable, information concerning performance. We see the power of a metric unleashed when combined with other metrics to give context and provide a complete picture of performance (further discussed in [Chapter 2](#)). Utilizing multiple metrics provides a greater understanding of the situation at hand and improves decision making when determining what actions to take.

This book contains several defined metrics to help tell that story of success and prove the value proposition offered by IT or a service provider. We provide several attributes for each metric including:

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Chapter 1: Introduction

- Metric ownership – both the process and the role
- Stakeholders – who uses the metric or receives value from the metric?
- Description – identifying the metric purpose and use
- Formula (when applicable) – basic formulas providing a starting point for measuring
- Acceptable Quality Level (AQL) – sets a target for the metric.

Our goal is not to have you use these metrics straight from this book but rather provoke thought and innovation in the creation and use of metrics to bring value to your organization and business. As you develop metrics for your organization, you will find many metrics can be used for multiple processes and services. The benefits found within these metrics offer opportunities to provide evidence of activities such as:

- Demonstrating service or process performance
- Trending metrics to understand both the past and possibly the future
- Justification for need or acquisition
- Establish baselines and comparing against the baseline
- Troubleshooting
- Improvement opportunities.

There are many other tasks and activities that will use these metrics to offer proof of actions taken or evidence of actions to take.

The metrics in this book can be used directly in your environment and can offer benefits to both the IT organization and the business. However, the innovation is found in developing and collecting measurements and then bringing multiple measurements or metrics together to tell the story of success based on factual evidence of execution.

We hope you find value in this book and share it with others. Enjoy!

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CHAPTER 2: USING METRICS

There are many ways to utilize metrics and get value from them and no one method is the best. The methods used to develop and implement metrics should be adapted to fit your needs and situation. Developing, implementing, and managing metrics goes well beyond simply purchasing a monitoring tool and collecting measurements. From our standpoint, metrics help us understand:

- Customers and their behaviors
- Industries and how they work
- The current environment (e.g. resources, budgets, locations, etc.)
- The infrastructure supporting services
- The value of the services provided
- Cost-justification for the service (comparing cost of the service to the benefits gained).

Therefore, a methodical process/procedure is required to understand these concepts in a concise and accurate manner that either provides or illustrates benefits to stakeholder groups.

This chapter will review areas that are important to consider when applying metrics. Use the considerations in this chapter to build your own methodology for developing and using metrics.

Understanding metrics

Be prudent when choosing the measurements and metrics as this can become unmanageable very quickly. This can lead to metrics becoming the invisible monster behind the scenes. We have a number of customers that have 10 or more tools to monitor and measure the environment; many tools with duplicate functionality and most of which are not utilized to the fullest extent. Instead, they have several tools utilizing partial functionality to monitor limited aspects

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Chapter 2: Using Metrics

of the infrastructure and services. This can be one of the more wasteful facets of IT; think about this waste:

- Limited use of very expensive tools
- A host of servers to run the tools
- Storage to collect and manage the data
- Agents distributed across the infrastructure
- Network bandwidth utilization
- Personnel (installation, maintenance, training, etc.) to manage all of the above.

The costs of underutilized or wasted resources add up very quickly and yet this is not always considered during design. Metrics are often considered during the 'service transition' phase which can lead to impulse decisions such as quick tool purchases to fill perceived holes.

When developing metrics the proper theme should be 'early and often'.

- Begin developing metrics early in the design phase to ensure all aspects of the design are measurable and what metrics can be collected.
- Review the metrics often and make sure they will continue to provide value through transition. This will accommodate any changes in build or design found during transition. This will continue through the lifecycle and throughout the life of the service.

Chapter 2: Using Metrics

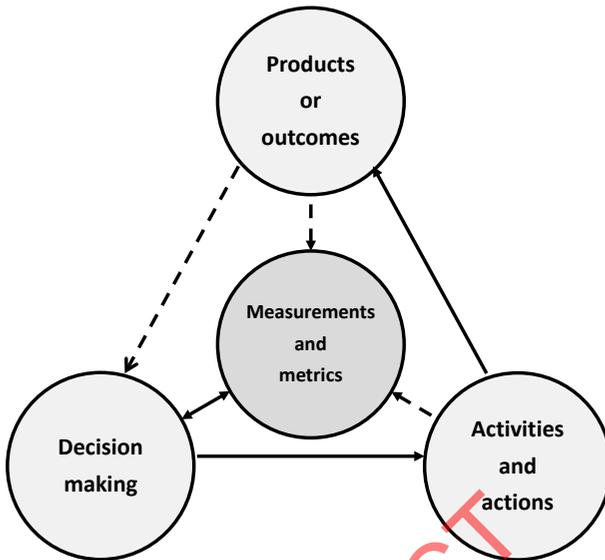


Figure 1 Metrics influence

Metrics can and should have an influence in the daily activities of the service provider. *Figure 1* demonstrates the sphere of influence metrics should have. Metrics are the centerpiece to ongoing successful delivery of services. Good decisions are made using experience gained from lessons learned and the measurements and metrics available. Those decisions form the measurable activities, and actions taken, to carry out the decision. Measurements from the activities and actions are collected and stored during execution. The activities and actions produce the measurable products or outcomes. The measurements and metrics are then used to:

- Improve the next set of decisions
- Improve the activities and actions increasing efficiency
- Ensure the products meet or exceed the requirements of the customers.

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Defining metrics

Before moving forward on any endeavor, it will benefit all stakeholders and participants to develop commonality in communication. This includes creating a lexicon to help everyone stay in the same mindset when discussing certain topics. Establish consistency in your terminology to prevent confusion and misunderstanding. Even simple wording can cause turmoil within a group or project. This is the same when defining measurements and metrics. Therefore, we suggest creating your own definition for these basic terms. Go online and take a look at how many definitions there are for words we assume everyone understands and see how confusion can grow so easily.

With that said, we have provided a few basic definitions to start you down the metrics path. There will be several other terms that will require definition but the terms below are just to get things rolling.

- A measure is a quantifiable expression of performance collected during the execution of activities.
- A metric is a specific measurement or calculation associated with performance. Metrics are applied as references for assessing variance as compared to a defined target. Some metrics may reflect Key Performance Indicators (KPIs).
- A baseline is a known state or performance level that is used as a reference for subsequent measurements. It consists of a set of well characterized and understood measurements including all the phases of a process and the results. Baselines provide:
 - A comparison between the 'as is' and 'to be' states
 - Used for trending performance over time
 - Can help set a benchmark (achievement target)
 - Allows predictive modeling ('what if?' scenarios)
 - A fall back point for change.

Chapter 2: Using Metrics

Keep terminology and definitions simple and concise to ease the learning curve and to improve communication. As new terms do come up, take a few minutes to stop and gain consensus on the meaning and definition of these terms. Then document them and move on.

Why do we need metrics?

Good, quantifiable metrics provide a wealth of knowledge for support and management of processes and for the delivery of services to the customers. They help us to recognize the value of our processes and services and the benefits gained by the organization when using these services. Benefits of metrics include:

- Establishing baselines
- Presenting improvement opportunities
- Providing an understanding of current performance
- Eliminating assumptions
- Decreasing waste
- Managing costs.

This list can be extended once we find additional benefits in metrics. The bottom line is that metrics should be a constant staple for all decision making.

Reliable metrics give stakeholders confidence in the use and performance of their processes and services. Metrics provide an understanding of current issues, pain points, areas of concern, and areas of success.

Methodology for using metrics

To create consistency across the organization, we recommend developing a framework to generate and implement metrics. Whether it is called a 'process' or 'procedure' doesn't really matter, the priority is maintaining consistency in the creation of metrics. *Figure 2* illustrates a sample framework to help get started with a methodology that will fit your organization's requirements. Gather requirements from business owners and from the service

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Chapter 2: Using Metrics

provider to understand all aspects of service provision. As part of the requirement, make sure AQLs are also collected. This will provide an understanding of the expectations which will eventually become the performance targets documented in the Service Level Agreement (SLA). Ensure all parties sign off on the requirements before continuing. The following points provide details for each step in the example framework found in *Figure 2*:

1. Based on the requirements, determine the metrics needed to provide performance information for the service, processes, outcomes, and the infrastructure. At this point, ensure the metric development activities are included in the Service Acceptance Criteria (SAC) which can be used as a quality checklist through the service lifecycle. These first two steps should occur early in your service lifecycle.
2. Once the metrics list is complete, distribute it to the business owners and members of the service provider to validate that the metrics will provide the necessary performance information. Take this through a formalized activity documenting:
 - All individuals who reviewed the metrics
 - All feedback
 - Actions items
 - Official approval (sign-off).
3. As part of design, review all appropriate tools to find if the capabilities to collect the metrics are available with the current toolset. There may be times when the current toolset does not have the functionality required to collect the measurements; if this occurs check if the vendor provides modules or upgrades that include your requirements. This will maintain the current toolset and manage the cost of an acquisition. This review should also consider if the current toolset does not provide the measurement

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Chapter 2: Using Metrics

functions required, in this case a tool acquisition may be part of the overall design.

4. Have a third party, usually an engineer, review the metrics and selected tools to verify that the measurements and metrics meet the requirements of the stakeholders. An engineer will provide the technical skills required to ensure the tools can collect the agreed upon metrics. This too should be a formalized activity following similar steps to Activity 3. Once this final review is complete, ensure all requirements for the metrics are included in the Service Design Package (SDP).
5. Implement the metrics through the 'service transition' phase to build, test, and deploy the metrics into production (service operations). As the service or process is built, all aspects of metrics collection must be included in the release. This will ensure the metrics are put through the same rigor of testing as the other parts of the release. This is critical if the tool requires agents to be deployed to other servers or through firewalls (based on the information passing through). These transition activities will reduce possible issues that could arise in the operational environment.

These steps provide areas of consideration when creating your metrics activities. As you develop your methodology make sure you follow the service lifecycle phases treating this new process as any other production process or service.

Chapter 2: Using Metrics

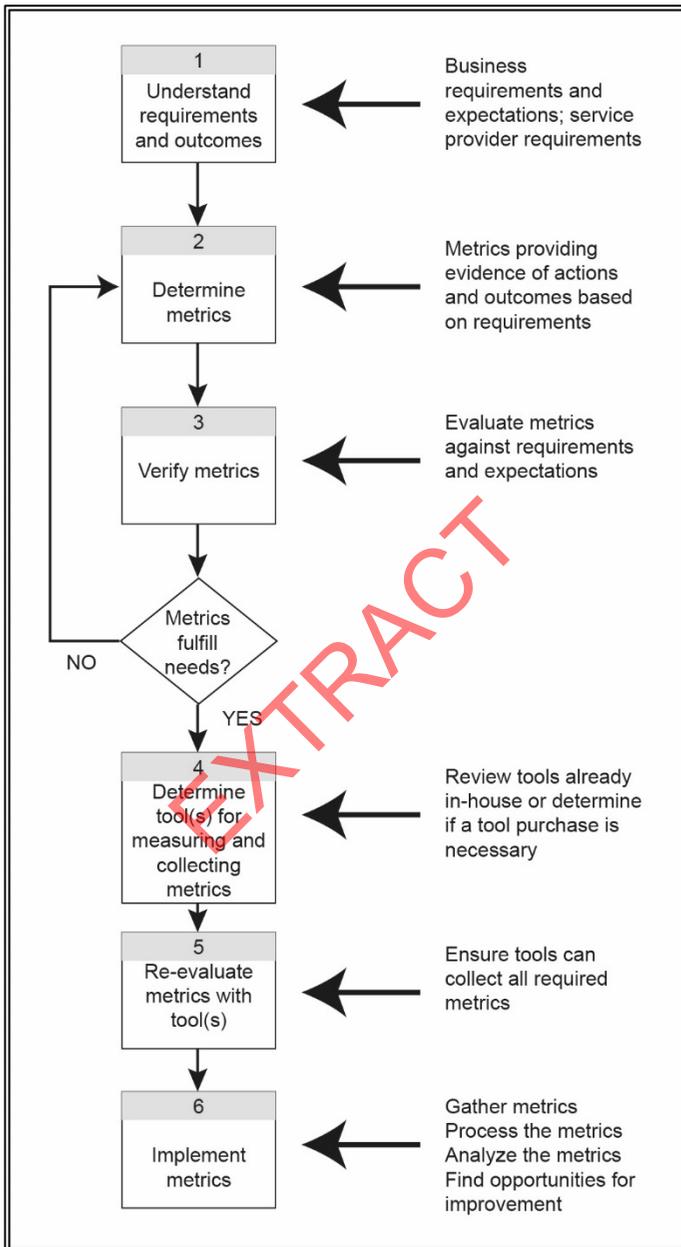


Figure 2 Metrics framework

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Chapter 2: Using Metrics

You may notice that the approach defined in *Figure 2* closely follows the Seven-Step Improvement process (found in *ITIL® v3 Continual Service Improvement (CSI)*). This process provides a simple methodology for managing metrics and is a good starting point to create your own method. The organization's vision and mission statements can be used to offer guidance to the activities and help ensure the measurements and metrics continue to provide value. The following is a quick recap of the Seven-Step Improvement process¹:

- Based on the business goals and objectives, services being delivered, and the methods used for delivery, define what should be measured. What should be measured are process activities and outcomes that are considered important for management decision making.
- Identify what actually can be measured with the tools employed, and performance data and information available in the knowledge base.
- Gather the metrics into defined repositories and check their integrity.
- Compile the metrics and apply them to the service delivery processes.
- Analyze the measurement results for validity (i.e. verify they measure what was intended to be measured), reliability (i.e. verify the measurements reflect actual performance characteristics) and accuracy (i.e. ensure there are no errors in the data or the calculations).
- Present the metrics results with summary conclusions indicated by the performance measurements.
- Implement corrective actions, including revised metrics as necessary to provide valuable decision support to the business.

¹ Cabinet Office (UK), *ITIL®*, *Continual Service Improvement* (London, England, The Stationery Office (TSO), 2011) 49-64

Purpose for metrics (metrics tree)

The variety of tools offered today provides extensive opportunities for collecting measurements. In fact, it is very easy to become overwhelmed with the amount of information available through these tools. Measurements and metrics require purpose; the organization must have a reason to collect and use measurements. This purpose can be found using the 'metrics tree' (*Figure 3*). The 'metrics tree' helps to establish measurement criteria and linkages to achieve success and provide purpose to your metrics. These criteria include:

- Focus on the vision and mission — ensure the vision and mission statements are consistently addressed throughout all levels of the 'metrics tree' as these provide the strategic direction of the organization.
- Maintain goals and objectives — maintain up-to-date goals and objectives as the organization continues to move forward and achieve successes. As goals and objectives are obtained, create new ones to keep the forward momentum.
- Develop Critical Success Factors (CSFs) — CSFs are required for an activity or project to accomplish the goals and objectives defined.
- Determine Key Performance Indicators (KPIs) — KPIs are quantifiable measurements in support of the CSFs.
- Select quantifiable measurements and metrics (customer requirements, outcomes, operational) — selective measurements and metrics provide the data and information needed to provide feedback and responses to the higher levels of the metrics tree.
- Identify intangible measurements — choose measurements and metrics that, while not monetary (tangible) by nature, provide insight into the softer aspects of a service or process. These can include stakeholder perception or comments, complaints, and compliments.

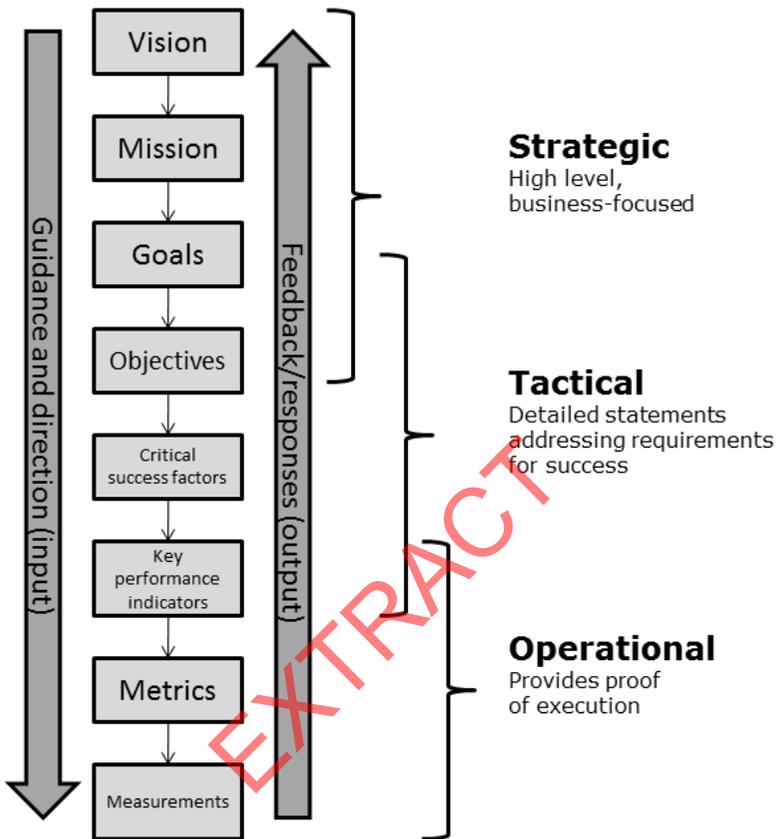


Figure 3 The metrics tree

Integrating metrics

By following the guidance above, you will begin to collect useful measurements and metrics from the tools that support your processes and services. While these individual measurements are important and have a purpose, in many cases a measurement doesn't offer full value by itself. Measurements and metrics should be integrated and combined to provide a complete picture of the situation at hand. Bringing these together creates context for these metrics which helps tell the story of success for our

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Chapter 2: Using Metrics

processes and services through the information gained from our efforts.

To fully understand all aspects of service provision, multiple metrics will provide both the purpose and meaning for the activities in support of our deliverables. These metrics will provide the evidence of the achievement of requirements and successful delivery of the expected outcomes. The combination of metrics will also help us understand whether a single metric is delivering good or bad news. For example, if metric 'A' shows a percentage increase in service desk calls, how do we know what it means? We need other metrics to support and bring clarity to metric 'A,' thus telling a story.

Metrics reporting

The value and benefits of metrics are delivered via a reporting structure. Reports provide the metrics information to stakeholders in multiple formats to address their needs and present the information in a usable manner. Of course, the basic requirements for reports must be understood and are derived from questions such as:

- Who is the audience?
- What information do they need?
- When do they need it?
- How do they get it?
- How will the report be used?
- What format do they prefer?

These questions must be asked for every report to ensure we are delivering the right information to the right audience. Developing a report questionnaire or standard report request will allow consistent information to be collected concerning the above questions. A good reporting structure will have a tremendous impact on customer satisfaction and communication.

For the most part, we use two basic mediums of report delivery: electronic or hard copy (paper). Today's preferred

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Chapter 2: Using Metrics

method is electronic as this provides greater flexibility in style, format, and usability. Electronic reports also offer an increased opportunity to measure report usage. These measurements include attributes such as:

- Number of hits per site
- Unique visitors
- Time spent on the report site
- Pages viewed per visit
- Most popular reports
- Most popular report pages.

The format of the report is also critical based on the diverse audience viewing the report. Again, electronic reporting can include basic reports, dashboards, drill-down reports, linked reports, etc., all of which increase the usage of reports by providing a more intuitive look and feel for the audience. This gives a more personal touch for each individual, allowing them to have basic customization features depending on the reporting tool.

Electronic reports also offer greater levels of information security and control. An issue we have seen is the number of individuals who have access to reporting tools to create ad hoc reports. While this is helpful to many people because of expediency, it also creates issues with security, standardization and communication (e.g., reports created and sent to anyone in and out of the organization). These uncontrolled reports (unknown number and audience) create an extremely large information and communication challenge. The organization can be sending mixed messages to their customers and stakeholders as one report may deliver 'good' news while another report on the same topic may deliver the opposite message. What message does that send, other than IT doesn't know what they are doing? We are quite sure that is not the message we want to deliver! To alleviate or prevent this issue, we recommend the following considerations:

- Standardize reporting (methodologies and formats)

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Chapter 2: Using Metrics

- Create a reporting group or team
- Limit the number of reporting tools
- Limit access to reporting tools (gain control)
- Create a reporting service and put it in your service catalog.

These steps will provide high levels of consistency for all reports which will also create an auditable methodology for report management as well as improve aspects of knowledge management. Improvements in reporting communication and security will increase the perception of the service provider with the customers and stakeholders. And once again, this is a measureable approach.

Securing and protecting metrics

Metrics are vital to the organization's success and therefore, should be handled as highly valued knowledge assets. With that said, metrics provide information, via reports, that can create incredible amounts of knowledge which should be part of the Service Knowledge Management System (SKMS). Ultimately, as a service provider your metrics are part of your intellectual property.

As such, the repositories containing the measurements and metrics should be managed and tracked as Configuration Items (CIs); thus following the same processes and procedures used to manage the important components required to deliver services. This will ensure that these repositories are:

- Part of the SKMS
- Secured with limited write and update access
- Backed up regularly
- Stored on network storage devices
- Part of the contingency plan
- Audited regularly to ensure accuracy.

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Chapter 2: Using Metrics

These steps will promote confidence in the data and information contained in the metrics repositories when making decisions or taking action.

Calculations

Many of the metric calculations found in this book are based on simplified formulas. While workable, these are not intended to be the 'end-all, be-all' calculations. As you mature your use of metrics, the formulas will evolve as additional measurements, new calculations, new/updated tools, or changes in technology all impact the methods used to calculate the metrics.

Metrics are normally calculated and presented in various forms such as numbers, ratios, percentages, and averages. These cover the majority of metric calculations in the industry and in this book. Flexibility is a key attribute to metrics with the ongoing changes in both business and technology that will require continued monitoring and review of the metrics for relevance. If you are using tools to collect measurements and calculate the metrics (the better solution in many cases), flexibility will be gained in the updates and upgrades provided by the suppliers. So, again, be creative and find ways to improve your measurements and metrics.

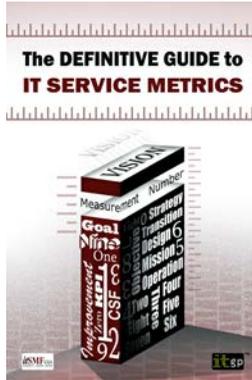
Continual Service Improvement (CSI)

All metrics have a role in CSI as they provide objective evidence of process or service improvement. Therefore, we do not have a CSI metrics chapter in this book. That, of course, doesn't mean that there are no CSI specific measurements or metrics. If you decide to develop CSI metrics, a good starting point would be to include CSI activities in all processes. As part of a process, a CSI activity will become inherent to the normal process flow providing regular opportunities to consistently review the process execution. This will create CSI measurements every time the process is executed.

<<< END OF EXTRACT >>>

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