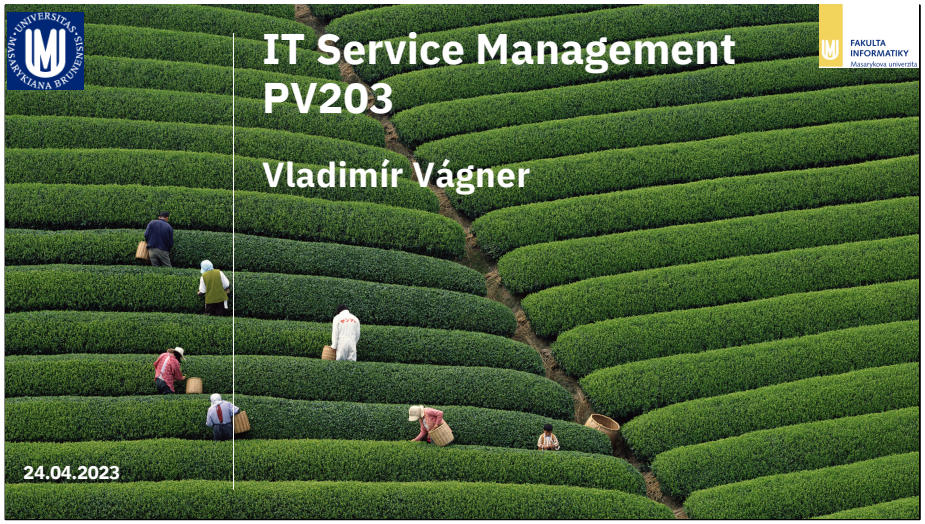
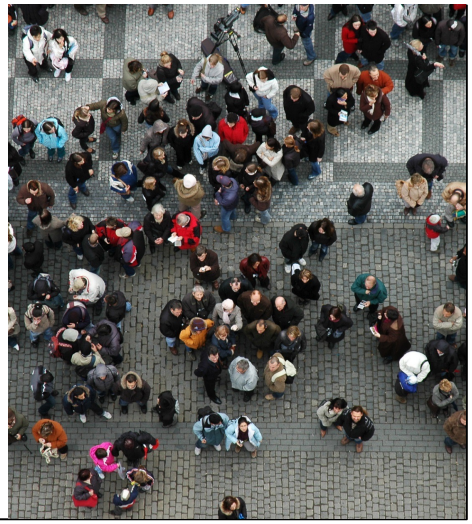

IT Service Management
PV203
Vladimír Vágner
24.04.2023

Lesson 7

What shall we discuss today?

- RACI model
- Service Levels
- Measurements
- Reporting



RACI model

A RACI chart, also known as a RACI matrix or RACI model, is a diagram that identifies the key roles and responsibilities of users against major tasks within a project.

RACI charts serve as a visual representation of the functional role played by each person on a project team. It balances the workload and establishes the decision-maker.

First introduced in **the 1950s**, RACI was originally called the "Decision Rights Matrix" and is also known as "Responsibility Charting." There are also other RACI variations, like RASCI, ARCI, and DACI. It is the only project management tool that deals with people and role.

RACI model

RACI models are used to manage resources and roles for the delivery of a piece of work or task.

- Only one person can be **ACCOUNTABLE** for any task. The person who is accountable for the task has the overall authority for the task – but they may not carry out individual pieces of work themselves.
- Any number of people can be **RESPONSIBLE** as part of the RACI model. These are the workers who will get the actual tasks done, and they will report to the Accountable resource about their progress.
- Sometimes resources are **CONSULTED** to get a task done. This might be a person within the organisation who has specific knowledge, or it could be a document store, or even an internet search engine. These resources need to be tracked to ensure they are available when required.
- Other resources need to be **INFORMED**. These resources are stakeholders who need to track and understand exactly how the task is progressing, or they may need an output from the task. Business sponsors, for example, will typically be informed about progress as part of a project.

When RACI is applied to service management processes, the process owner will be accountable for all the process activities, even if they are not responsible for carrying them out.

A RACI matrix is a very important tool that can help in the implementation and correct functioning of a process. The RACI matrix is mostly used to align the human elements in the process. Usually there are many different people involved in any process and they have differing responsibilities. A RACI matrix makes an explicit documentation of this and keeps as a ready reference to be used at different stages in the process. Here is how the RACI matrix can be utilized.

Responsible: This is the class of people who are ultimately responsible for getting the work done. This may refer to the individual workers that perform the given task or it could refer to the system in case the task is automated.
Accountable: This is the class of people that are accountable to oversee that the work gets done. This usually means the immediate manager overseeing the work.
Consulted: These may be subject matter exerts who need to be consulted at the time of an exception. There is a possibility that am unanticipated scenario arises in a process. These are the people who will do the thinking and suggest any deviations from the Standard Operating Procedure (SOP).
Informed: This is the class of people who have some interest in the performance of a given task. This may be a manager trying to control the execution of the task at hand. Also this could be an input signal to the other process.

Rules for using RACI Matrix

Only One Responsible and Accountable Person: It is essential that only one person be assigned the R/A roles. Having more than one person responsible for the same task increases ambiguity and the chances of the work not being performed. It could also lead to duplication of work and wastage of efforts and costs.

Having more than one accountable person again leads to the same problem. However, having only one person accountable also leads to a problem. If the assigned person is incompetent, the whole process may go for a toss. It is for this reason that there is often a hierarchy of accountable people in place.

Responsible-Accountable is Mandatory: The consult or inform roles are not mandatory for every activity. It is possible that some activities may not require them at all. But the responsible accountable roles must be assigned. Even if the system is performing the tasks automatically, someone must be made accountable to see that it does get done.

Communication with the Consultant: There must be a two way channel of communication with the consultant. This communication is itself a task and must be explicitly listed having its own responsible accountable persons. The important aspect is that the communication should be two-way. Hence one has to ensure that adequate follow-up is done and there is minimum time lag to complete the communication.

Inform the Required Stakeholders: This is a one way channel of communication. It is usually meant to be a signal for some other process to begin or as a control metric to ensure smooth functioning of the same process. Usually this is automated but needs accountability like other automated tasks.

Sometimes the extended version is used – **RASCI** matrix.

R - Responsible – Those who do the work to achieve a task. There is typically one role with a participation type of Responsible.

A - Accountable – Those who are ultimately accountable for the correct and thorough completion of the deliverable or task, and the one to whom Responsible is accountable. Typically, the Process Owner is Accountable for a process, and there must be only one Accountable specified for each task or deliverable.

S - Support – Resources allocated to Responsible. Unlike Consulted, who may provide input to the task, Support will assist in completing the task.

C - Consulted – Those who are not directly involved in a process but provide inputs and whose opinions are sought.

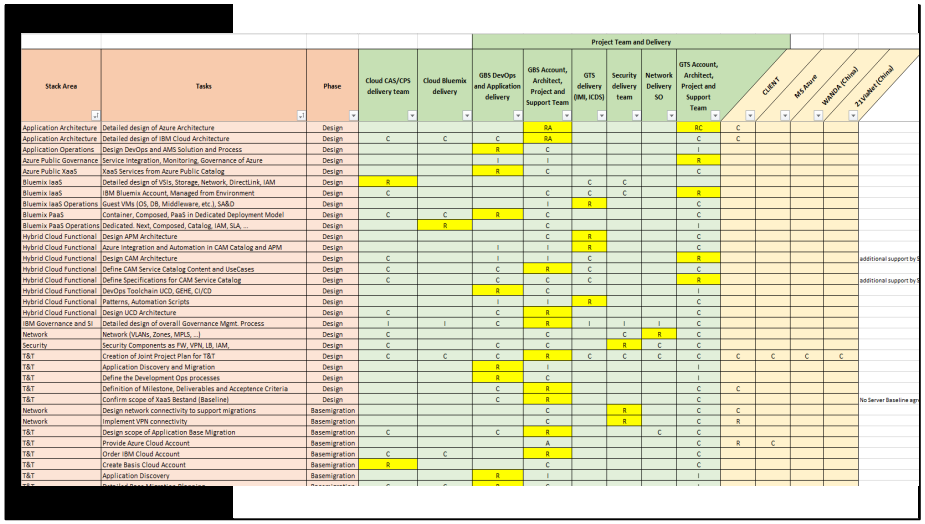
I - Informed – Those who receive outputs from a process or are kept up-to-date on progress, often only on completion of the task or deliverable.

RACI models

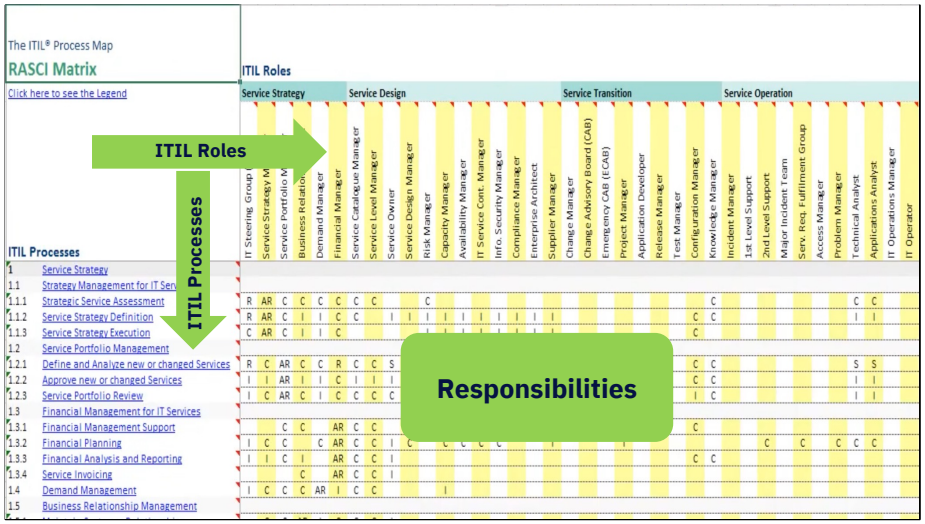
Map roles and responsibilities to processes and activities

	Service Design manager	Service Level Manager	Problem Manager	Security Manager	Procurement Manager
Activity 1	A,R	C	I	I	C
Activity 2	A	R	C	C	C
Activity 3	I	A,I	R,C,I	I	C
Activity 4	I	A	R	I	R,C,I
Activity 5	I	I	A	C	I

- **Responsible**
  - ✓ *Execution*
- **Accountable**
  - ✓ *Results*
- **Consulted**
  - ✓ *Expertise and perspective*
- **Informed**
  - ✓ *Communication*



			Project Team and Delivery												
Stack Area	Tasks	Phase	Cloud CAS/CPS delivery team	Cloud Bluemix delivery	GBS DevOps and Application delivery	GBS Account, Architect, Project and Support Team	GTS delivery (IMI, ICDS)	Security delivery team	Network Delivery SO	GTS Account, Architect, Project and Support Team	CLIENT	MS Azure	WANDA (China)	21Vianet (China)	
Application Architecture	Detailed design of Azure Architecture	Design				RA				RC	C				
Application Architecture	Detailed design of IBM Cloud Architecture	Design	C	C	C	RA				C	C				
Application Operations	Design DevOps and AMS Solution and Process	Design			R	C				I					
Azure Public Governance	Service Integration, Monitoring, Governance of Azure	Design			I	I				R					
Azure Public XaaS	XaaS Services from Azure Public Catalog	Design			R	C				C					
Bluemix IaaS	Detailed design of VSIs, Storage, Network, DirectLink, IAM	Design	R				C	C							
Bluemix IaaS	IBM Bluemix Account, Managed from Environment	Design	C			C	C	C		R					
Bluemix IaaS Operations	Guest VMs (OS, DB, Middleware, etc.), SA&D	Design				I	R			C					
Bluemix PaaS	Container, Composed, PaaS in Dedicated Deployment Model	Design	C	C	R	C				C					
Bluemix PaaS Operations	Dedicated. Next, Composed, Catalog, IAM, SLA, ...	Design		R		C				I					
Hybrid Cloud Functional	Design APM Architecture	Design				C	R			C					
Hybrid Cloud Functional	Azure Integration and Automation in CAM Catalog and APM	Design			I	I	R			C					
Hybrid Cloud Functional	Design CAM Architecture	Design	C		I	I	C			R					additional support by D
Hybrid Cloud Functional	Define CAM Service Catalog Content and UseCases	Design	C		C	R	C			C					
Hybrid Cloud Functional	Define Specifications for CAM Service Catalog	Design	C		C	C	C			R					additional support by D
Hybrid Cloud Functional	DevOps Toolchain UCD, GEHE, CI/CD	Design			R	C				I					
Hybrid Cloud Functional	Patterns, Automation Scripts	Design			I	I	R			C					
Hybrid Cloud Functional	Design UCD Architecture	Design	C		C	R				C					
IBM Governance and SI	Detailed design of overall Governance Mgmt. Process	Design	I	I	C	R	I	I	I	C					
Network	Network (VLANs, Zones, MPLS, ...)	Design	C			C		C	R	C					
Security	Security Components as FW, VPN, LB, IAM,	Design	C		C	C		R	C	C					
T&T	Creation of Joint Project Plan for T&T	Design	C	C	C	R	C	C	C	C	C	C	C	C	
T&T	Application Discovery and Migration	Design			R	I				I					
T&T	Define the Development Ops processes	Design			R	C				I					
T&T	Definition of Milestone, Deliverables and Acceptence Criteria	Design			C	R				C	C				
T&T	Confirm scope of XaaS Bestand (Baseline)	Design			C	R				C					No Server Baseline agre
Network	Design network connectivity to support migrations	Basemigration				C		R		C	C				
Network	Implement VPN connectivity	Basemigration				C		R		C	R				
T&T	Design scope of Application Base Migration	Basemigration	C		C	R			C	C					
T&T	Provide Azure Cloud Account	Basemigration				A				C	R	C			
T&T	Order IBM Cloud Account	Basemigration	C	C		R				C					
T&T	Create Basis Cloud Account	Basemigration	R			C				C					
T&T	Application Discovery	Basemigration			R	I				I					


The ITIL® Process Map
RASCI Matrix
Click here to see the Legend
ITIL Roles
Service Strategy
Service Design
Service Transition
Service Operation
ITIL Processes
ITIL Roles
ITIL Processes
Responsibilities

What is a role?

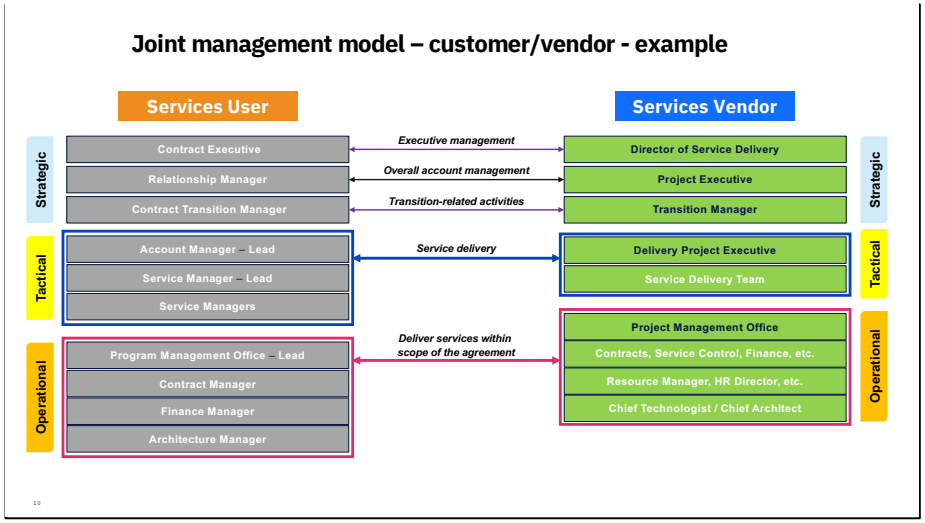
- **A set of connected behaviors or actions performed by a person, team or group in a specific context**
- **One person or team may have multiple roles**
- **A process defines the scope and responsibilities of a role**
- **May or may not be titled**

A role is a set of responsibilities, activities and authorities granted to a person or team. A role is defined in a process or function. One person or team may have multiple roles. For example, the roles of incident manager and problem manager may be carried out by a single person.
Roles are often confused with job titles but it is important to realize that they are not the same. Each organization will define appropriate job titles and job descriptions which suit their needs, and individuals holding these job titles can perform one or more of the required roles.

Generic Service Management Roles

PROCESS OWNER	PROCESS MANAGER	PROCESS PRACTITIONER	SERVICE OWNER
PO role SHOULD NOT be shared	**Operational management of a process**	**Carries out the process activities**	**Accountable for the delivery of specific IT service**
Defining the process strategy	Work with the process owner	Understands how their role links to services and creates value	Attends CAB
Assist the process design including metrics	Makes sure all process activities are carried out	Work with other stakeholders	Attends int. and ext. service review meeting
Process documentation assurance	Monitoring and reporting the process performance	Makes sure that inputs, outputs and interfaces are correct	Communicate with customers
Auditing the process	Appointing staff	Create and update records of their activities	Serving as SPOC
Process improvement	Work with service owner(s)		Participate in SLA and OLA negotiations
Polices and standards definition	Identify improvements		
Sponsoring the process	Makes improvements to process implementation		

CAB – Change Advisory Board
SPOC – Single Point of Contact
SLA – Service Level Agreement
OLA - Operation Level Agreement



RACI tool helsp to identify the positiong of specific roles and the relationship setup

Accountable roles

- Process Owners
- Service Owners
- Line Management
- IT Steering Group
- Change Advisory Board

These must-have roles are accountable for quality, results, conformance and continual improvement. They may or may not be operational. There is only ONE accountable role for each activity.

11

IBM

Latest Agile approach influences the ostion of Line Management!!!

Other RACI roles

Responsible roles

Persons or groups that execute one or more activities (actually do the work)

Consulted Roles

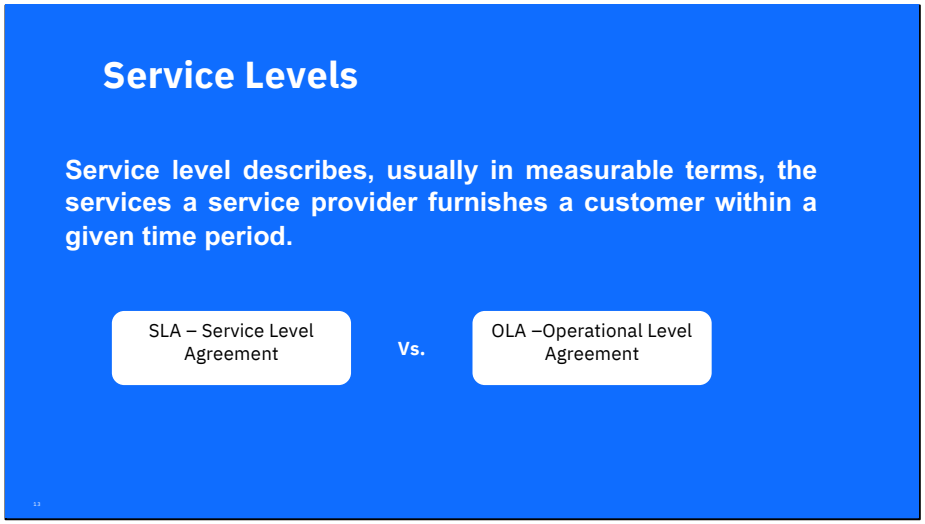
Provide specific expertise or perspective

Informed roles

Receive communication about the activity

Based on the circumstances, individuals or groups will likely play multiple “roles” for the same activity – sometimes simultaneously.

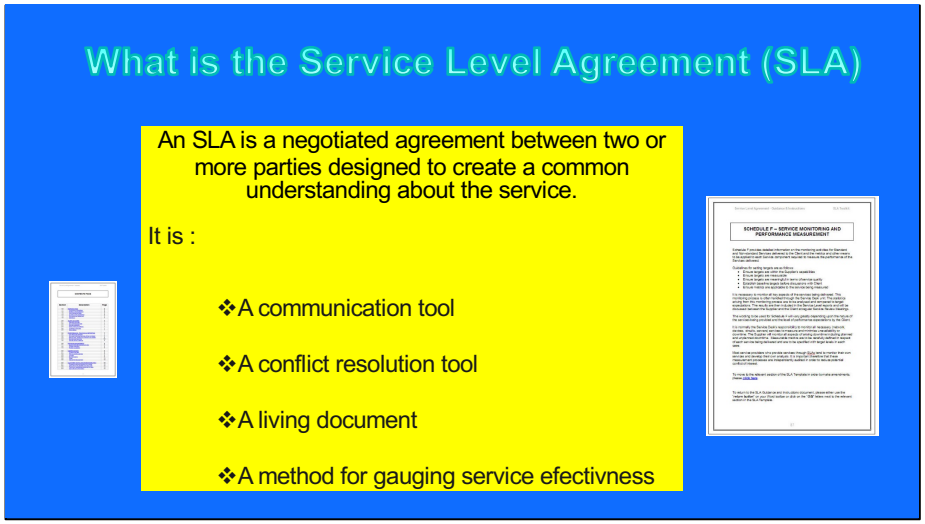
12



The ITIL 4 SLM practice defines the purpose of service level management as *"…to set clear business-based targets for service levels, and to ensure that delivery of services is properly assessed, monitored, and managed against these targets."*

Servicde Level should relate to a measurable business outcome. All too often the IT industry has used SLA targets as a way to capture numbers and figures that make no sense in a business context. By focusing on what the business wants as an outcome, your organization will be able to deliver services that add value rather than simply hit arbitrary metrics and targets.

The Service Level Agreement is basically a contract between a service provider and a customer. The agreement e.g. ensures that all the computer equipment will be well maintained.
When talking about OLA, it is an agreement between the internal support groups of an institution that supports SLA. According to the Operational Level Agreement, each internal support group has certain responsibilities to the other group. The OLA clearly depicts the performance and relationship of the internal service groups.



Service level is the metrics by which a particular service is measured. Service level is mostly used in the service-based industries. Service level provides the expectations of quality and service type and also remedies when requirements are not met.

Service level is an important component of any vendor contract. Service level includes all elements of the particular service provided and the conditions of service availability. The exact measurement related to service levels depends upon the type of service provided, volume of work, quality of work and the service provider. In some cases, there are multiple approaches to determine the service levels. Service level is often documented with the help of a service-level agreement, which describes in detail the level of service anticipated by a customer from a vendor. Most service providers have service levels and standard level agreements. A service-level agreement deals with the reliability, responsiveness, monitoring and escalation procedures related to service levels.
Service level measurement helps the involved parties to understand the level of service quality. With a service-level agreement in place, it protects all involved parties in the agreement. Service level helps in understanding the measures of the certain goals and indirectly helps in achieving the goals.

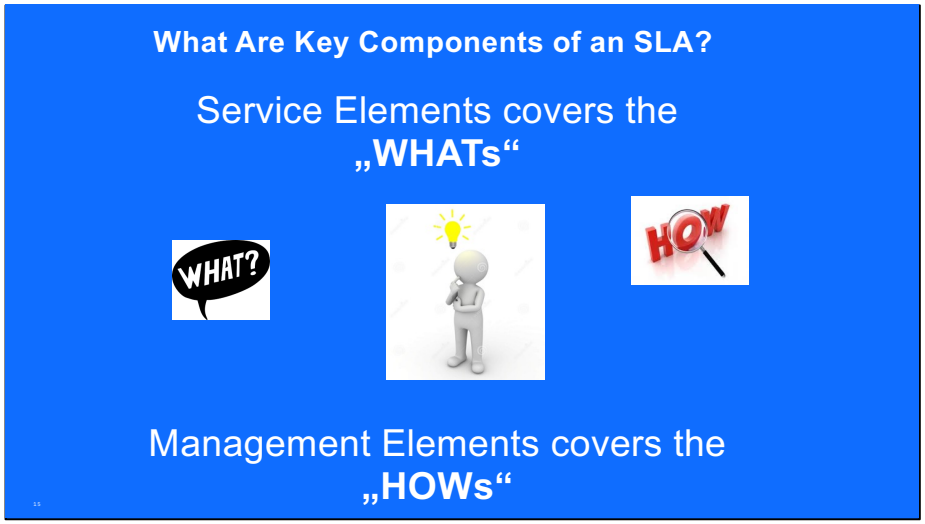
A Service Level Agreement (SLA) is the service contract component between a

service provider and customer. A SLA provides specific and measurable aspects related to service offerings. For example, SLAs are often included in signed agreements between Internet service providers (ISP) and customers.
SLA is also known as an operating level agreement (OLA) when used in an organization without an established or formal provider-customer relationship (very often it is used as internal agreement between different units).

Adopted in the late 1980s, SLAs are currently used by most industries and markets. By nature, SLAs define service output but defer methodology to the service provider's discretion. Specific metrics vary by industry and SLA purpose.
SLAs features include:

- Specific details and scope of provided services, including priorities, responsibilities and guarantees
- Specific, expected and measurable services at minimum or target levels
- Informal or legally binding
- Descriptive tracking and reporting guidelines
- Detailed problem management procedures
- Detailed fees and expenses
- Customer duties and responsibilities
- Disaster recovery procedures
- Agreement termination clauses

In outsourcing, a customer transfers partial business responsibilities to an external service provider. The SLA serves as an efficient contracting tool for current and continuous provider-customer work phases.



What Are Key Components of an SLA?
The SLA should include components in two areas: services and management.

Service elements include specifics of services provided (and what's excluded, if there's room for doubt), conditions of service availability, standards such as time window for each level of service (prime time and non-prime time may have different service levels, for example), responsibilities of each party, escalation procedures, and cost/service tradeoffs.

Management elements should include definitions of measurement standards and methods, reporting process, contents and frequency, a dispute resolution process, an indemnification clause protecting the customer from third-party litigation resulting from service level breaches (this should already be covered in the contract, however), and a mechanism for updating the agreement as required.
This last item is critical; service requirements and vendor capabilities change, so there must be a way to make sure the SLA is kept up-to-date.

Service Elements

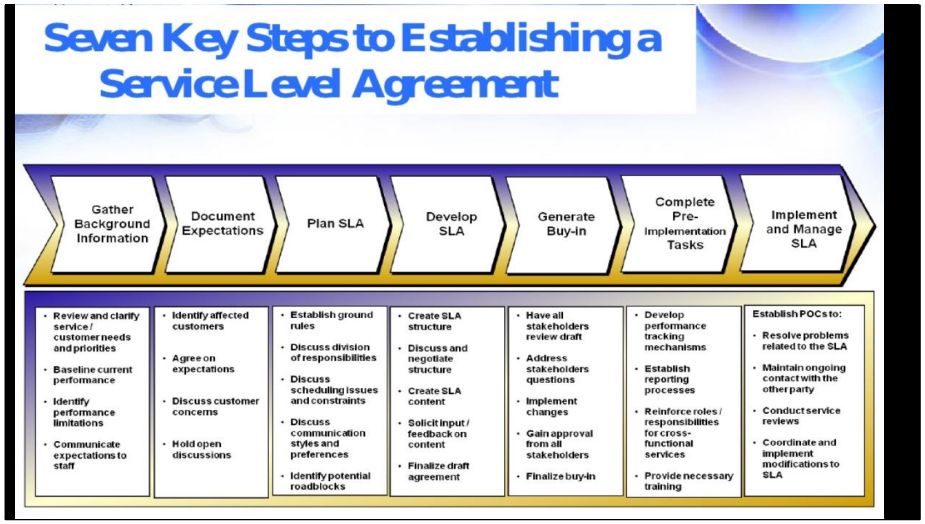
Service Elements communicates :

- ✓ (What) services to be provided (and/or NOT to be provided)
- ✓ (What are) the conditions of service availability
- ✓ (What are) the service standards
- ✓ (What are) the responsibilities of both parties

Management Elements

Management Elements communicates:

- ✓ How service effectiveness will be tracked
- ✓ How information about service effectiveness will be reported and addressed
- ✓ How service-related disagreements will be resolved
- ✓ How the parties will review and revise the agreement



What should I consider when selecting metrics for my SLA?

Choose measurements that motivate the right behavior. The first goal of any metric is to motivate the appropriate behavior on behalf of the client and the service provider. Each side of the relationship will attempt to optimize its actions to meet the performance objectives defined by the metrics. First, focus on the behavior that you want to motivate. Then, test your metrics by putting yourself in the place of the other side. How would you optimize your performance? Does that optimization support the originally desired results?

Ensure that metrics reflect factors within the service provider's control. To motivate the right behavior, SLA metrics have to reflect factors within the outsourcer's control. A typical mistake is to penalize the service provider for delays caused by the client's lack of performance. For example, if the client provides change specifications for application code several weeks late, it is unfair and demotivating to hold the service provider to a prespecified delivery date. Making the SLA two-sided by measuring the client's performance on mutually dependent actions is a good way to focus on the intended results.

Choose measurements that are easily collected. Balance the power of a desired metric against its ease of collection. Ideally, the SLA metrics will be captured automatically, in the background, with minimal overhead, but this objective may not be possible for all desired metrics. When in doubt, compromise in favor of easy

collection; no one is going to invest the effort to collect metrics manually.

Less is more. Despite the temptation to control as many factors as possible, avoid choosing an excessive number of metrics or metrics that produce a voluminous amount of data that no one will have time to analyze.

Set a proper baseline. Defining the right metrics is only half of the battle. To be useful, the metrics must be set to reasonable, attainable performance levels. Unless strong historical measurement data is available, be prepared to revisit and readjust the settings at a future date through a predefined process specified in the SLA.

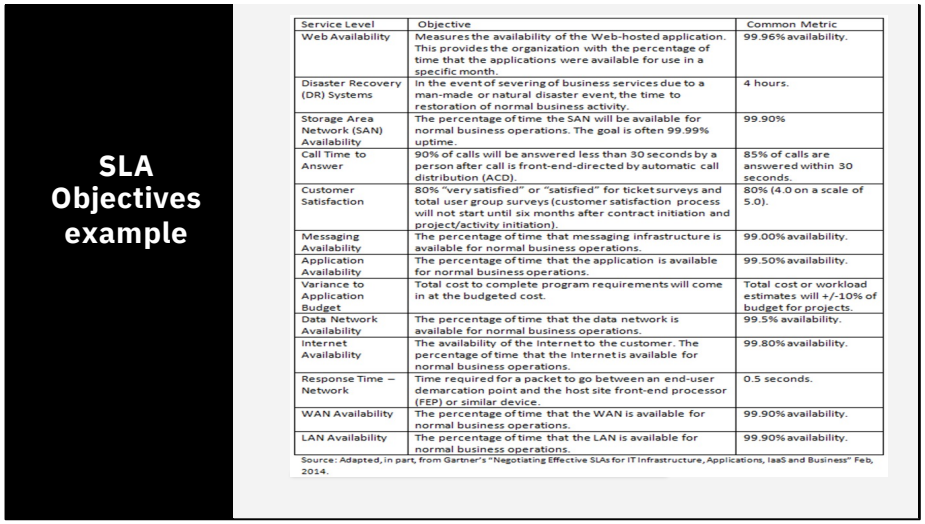
Factors that Affects The Timeline of SLA Implementation

- The service environment
- The proximity of the parties
- The span of impact of the SLA
- The relationship between the parties
- The availability of a model
- Prior SLA experience

The SLA should address the following ...

- A brief service description
- Validity period and/or SLA change control mechanism
- Authorisation details
- A brief description of communications, including reporting
- Contact details of people authorized to act in emergencies, to participate in incidents and problem correction, recovery and workaround
- Business or service hours (e.g. 08:00 to 17:00), date exceptions (e.g. weekends, public holidays), critical business definitions, ..
- Scheduled and agreed service interuptions, including notice to be given and number per period
- Customer responsibilities (e.g. security)

- Service provider liability and obligations (e.g. security)
- Impact and priority guidelines
- Escalation and notification process
- Complaints procedure
- Service targets
- Workload limits (upper and lower), e.g. the ability of the service to support the agreed number of users/volume of work, system throughput
- High level financial management details, e.g. charge codes etc.
- Actions to be taken in the event of service interruption
- Housekeeping procedures
- Glossary of terms
- Supporting and related services
- Any exceptions to the terms given in the SLA



Service Level	Objective	Common Metric
Web Availability	Measures the availability of the Web-hosted application. This provides the organization with the percentage of time that the applications were available for use in a specific month.	99.96% availability.
Disaster Recovery (DR) Systems	In the event of severing of business services due to a man-made or natural disaster event, the time to restoration of normal business activity.	4 hours.
Storage Area Network (SAN) Availability	The percentage of time the SAN will be available for normal business operations. The goal is often 99.99% uptime.	99.90%
Call Time to Answer	90% of calls will be answered less than 30 seconds by a person after call is front-end-directed by automatic call distribution (ACD).	85% of calls are answered within 30 seconds.
Customer Satisfaction	80% "very satisfied" or "satisfied" for ticket surveys and total user group surveys (customer satisfaction process will not start until six months after contract initiation and project/activity initiation).	80% (4.0 on a scale of 5.0).
Messaging Availability	The percentage of time that messaging infrastructure is available for normal business operations.	99.00% availability.
Application Availability	The percentage of time that the application is available for normal business operations.	99.50% availability.
Variance to Application Budget	Total cost to complete program requirements will come in at the budgeted cost.	Total cost or workload estimates will +/-10% of budget for projects.
Data Network Availability	The percentage of time that the data network is available for normal business operations.	99.5% availability.
Internet Availability	The availability of the Internet to the customer. The percentage of time that the Internet is available for normal business operations.	99.80% availability.
Response Time – Network	Time required for a packet to go between an end-user demarcation point and the host site front-end processor (FEP) or similar device.	0.5 seconds.
WAN Availability	The percentage of time that the WAN is available for normal business operations.	99.90% availability.
LAN Availability	The percentage of time that the LAN is available for normal business operations.	99.90% availability.

Source: Adapted, in part, from Gartner's "Negotiating Effective SLAs for IT Infrastructure, Applications, IaaS and Business" Feb, 2014.

What Kind of Metrics Should be Monitored?

Many items can be monitored as part of an SLA, but the scheme should be kept as simple as possible to avoid confusion and excessive cost on either side. In choosing metrics, examine your operation and decide what is most important. The more complex the monitoring (and associated remedy) scheme, the less likely it is to be effective, since no-one will have time to properly analyze the data. When in doubt, opt for ease of collection of metric data; automated systems are best, since it is unlikely that costly manual collection of metrics will be reliable.

Depending on the service, the types of metric to monitor may include:

Service availability: the amount of time the service is available for use. This may be measured by time slot, with, for example, 99.5 percent availability required between the hours of 8 am and 6 pm, and more or less availability specified during other times. E-commerce operations typically have extremely aggressive SLAs at all times; 99.999 percent uptime is a not uncommon requirement for a site that generates millions of dollars an hour.

Defect rates: Counts or percentages of errors in major deliverables. Production failures such as incomplete backups and restores, coding errors/rework, and missed deadlines may be included in this category.

Technical quality: in outsourced application development, measurement of technical quality by commercial analysis tools that examine factors such as program size and coding defects.
Security: In these hyper-regulated times, application and network security breaches can be costly. Measuring controllable security measures such as anti-virus updates and patching is key in proving all reasonable preventive measures were taken, in the event of an incident.

Example : IT Help Desk SLA

Your Company, Inc. IT Help Desk

Service Level Agreement

Provider of Service
XXX IT Help Desk staff

Type of Service
IT Help Desk primary first level support

Service Period
January 1, 20.. through December 31, 20..

Performance

In order to provide optimal first level support service to all departments, all problem and repair calls must be received by the Help Desk.

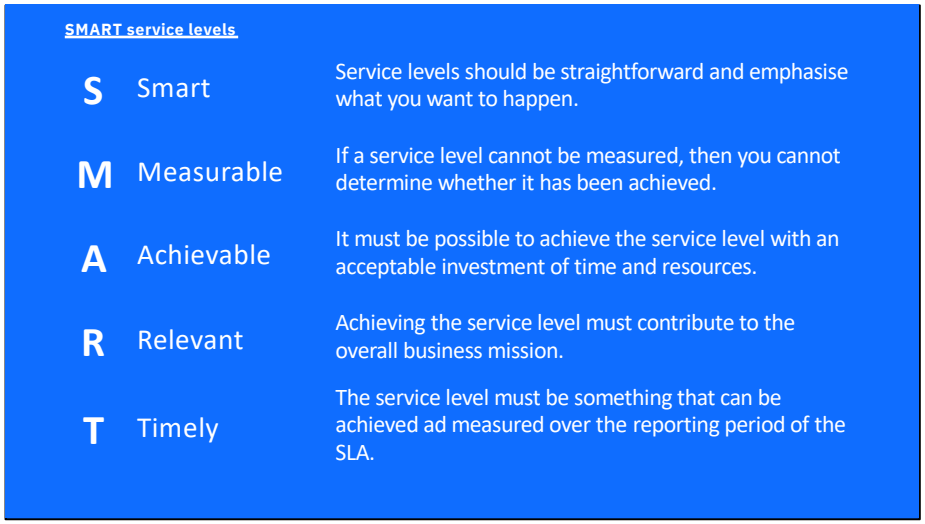
The company XXX IT HELP DESK will provide (Customer Name/Department Name) with the following support:

First level problem determination where

1. All problems will be recorded.
2. Problems will be resolved or assigned to the appropriate specialist.
3. Problems will be monitored.
4. Users will be notified of commitment times and any problems that occur in meeting the established commitment.
5. Problem resolution will be documented and available in report status.
6. Monthly reports will be provided.

A single point of contact with the XXX department for

1. Orders for new equipment.
2. Equipment moves, adds, and changes (Equipment includes personal computers, printers, and telephones).
3. Services such as data entry, building access authorizations, new computer user IDs and passwords, voice mail, Centrex lines, mainframe connections, file server connections, reports, and application program problems and requests.



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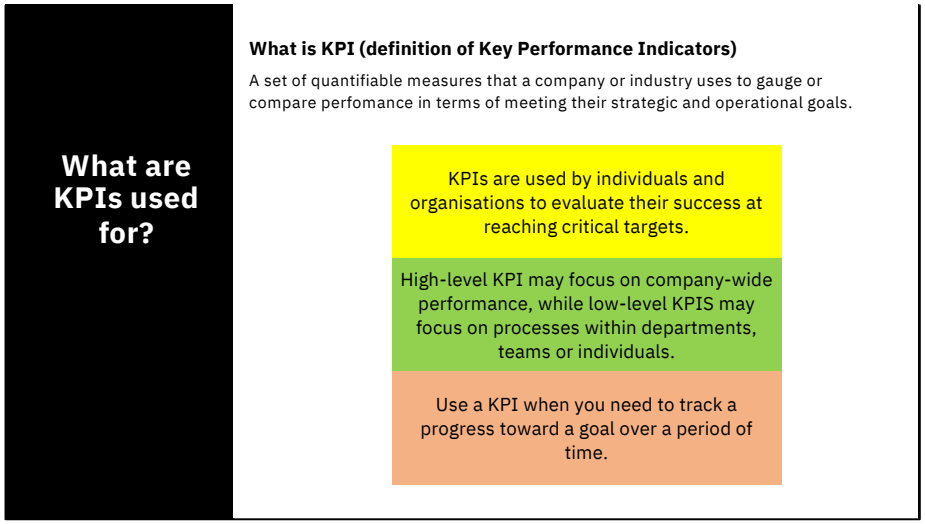
Service level measurement helps the involved parties to understand the level of service quality. With a service-level agreement in place, it protects all involved parties in the agreement. Service level helps in understanding the measures of the certain goals and indirectly helps in achieving the goals.

ITIL focuses on **three types** of options for structuring **SLA**: Service-based, Customer-based, and Multi-level or Hierarchical **SLAs**. Many different factors will need to be considered when deciding which **SLA** structure is most appropriate for an organization to use.



Key Performance Indicators (KPIs) are the critical (key) indicators of progress toward an intended result. KPIs provides a focus for strategic and operational improvement, create an analytical basis for decision making and help focus attention on what matters most. As Peter Drucker famously said, “What gets measured gets done.”

Managing with the use of KPIs includes setting **targets** (the desired level of performance) and tracking progress against that target. Managing with KPIs often means working to improve **leading indicators** that will later drive lagging benefits. Leading indicators are precursors of future success; **lagging indicators** show how successful the organization was at achieving results in the past.

Good KPIs:

- Provide objective evidence of progress towards achieving a desired result
- Measure what is intended to be measured to help inform better decision making
- Offer a comparison that gauges the degree of performance change over time
- Can track efficiency, effectiveness, quality, timeliness, governance, compliance, behaviors, economics, project performance, personnel performance or resource utilization

- Are balanced between leading and lagging indicators

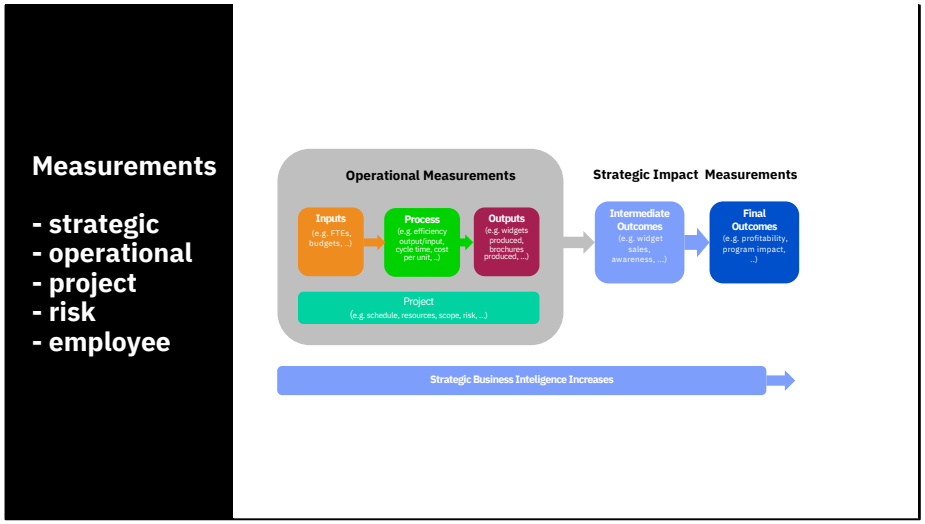
The relative business intelligence value of a set of measurements is greatly improved when the organization understands how various metrics are used and how different types of measures contribute to the picture of how the organization is doing. KPIs can be categorized into several different types:

- **Inputs** measure attributes (amount, type, quality) of resources consumed in processes that produce outputs
- **Process** or activity measures focus on how the efficiency, quality, or consistency of specific processes used to produce a specific output; they can also measure controls on that process, such as the tools/equipment used or process training
- **Outputs** are result measures that indicate how much work is done and define what is produced
- **Outcomes** focus on accomplishments or impacts, and are classified as Intermediate Outcomes, such as customer brand awareness (a direct result of, say, marketing or communications outputs), or End Outcomes, such as customer retention or sales (that are driven by the increased brand awareness)
- **Project** measures answer questions about the status of deliverables and milestone progress related to important projects or initiatives

KPIs vs. SLAs

KPIs and SLAs both provide beneficial information for organizations to use during the decision-making process. However, SLAs establish the baseline performance expectations and monitor the agreement and what's done to meet the expectations. Conversely, KPIs report on the efficiency or success in satisfying expectations or achieving organizational goals.

SLAs and KPIs have unique specific purposes. SLAs ensure performance metrics stay above a specific level of success. KPIs, however, promote optimal performance and help ensure improvements occur to deliver the expected results.



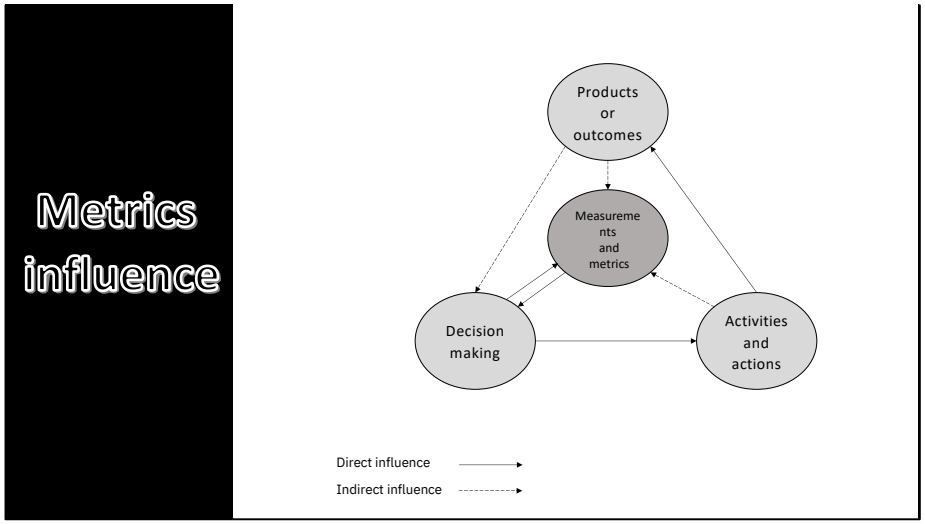
Every organization needs both Strategic and Operational measures, and some typically already exists. This Figure depicts strategic, operational and other measures as described below:

- **Strategic Measures** track progress toward strategic goals, focusing on intended/desired results of the End Outcome or Intermediate Outcome. When using a balanced scorecard, these strategic measures are used to evaluate the organization's progress in achieving its Strategic Objectives depicted in each of the following four balanced scorecard perspectives:
    - Customer/Stakeholder
    - Financial
    - Internal Processes
    - Organizational Capacity
- **Operational Measures,** which are focused on operations and tactics, and designed to inform better decisions around day-to-day product / service delivery or other operational functions
- **Project Measures,** which are focused on project progress and effectiveness
- **Risk Measures,** which are focused on the risk factors that can threaten our

success

- **Employee Measures**, which are focused on the human behavior, skills, or performance needed to execute strategy

An entire family of measures, including those from each of these categories, can be used to help understand how effectively strategy is being executed.



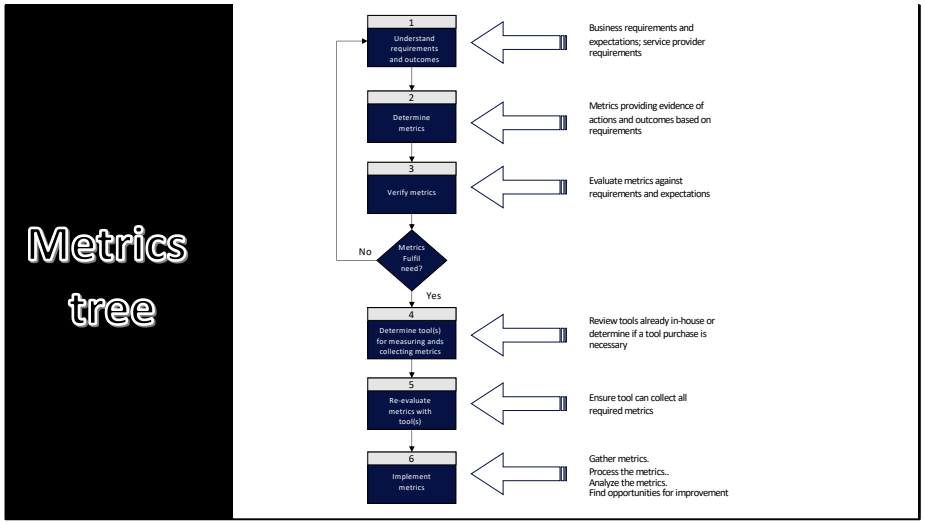
IT metrics are quantitative assessments that enable organizations to understand the performance of their IT initiatives. Key Performance Indicators (KPIs) are a subset of metrics to illustrate how effectively specific business objectives associated with IT performance are achieved.

What do IT metrics track?

Even when technology is not a core business of your organization, you can take advantage of vast volumes and variety of data to make well-informed strategic decisions. The strategic significance of IT metrics can be described in two domains:

Technology Performance. Data generated by connected technologies, IT infrastructure, and technology systems can be gathered, processed, and analyzed to identify technology performance. This information can be used to maintain efficiency of technology systems at lower costs.

Business Performance. This data also contains hidden insights on the impact of strategic choices on business performance. In order to drive the best business outcomes, IT must identify and analyze metrics that correlate highly with business performance.



Some important IT metrics and KPIs fall in the following domains and categories:

Operational Metrics

Operational KPIs help organizations track performance over a pre-defined period or in real time. These metrics are associated with a range of business functions. But, in the domain of enterprise IT, operational metrics focus primarily on the performance of IT resources and functions. These resources include the workforce, technologies and services used to conduct business operations or enable products and services to end-users. Examples of operational metrics include:

- **HR**: Workforce productivity, overtime hours, employee turnover rate, cost of hiring and training.
- **IT Infrastructure**: Infrastructure downtime, frequency of production deployments, number of workloads processed, capital and expense cost, resource availability.
- **IT Solutions and Services**: Service uptime, availability, reliability, cost per user, cost per user acquisition, network outages.
- **ITSM and Service Desk**: Service availability, First Call Resolution Rate, cost per contact, SLA breach rate, user satisfaction

Operational metrics overlap with a range of categories that focus on unique aspects

of organizational operations driven by technology. These metrics evaluate how the resources made available to various functions of the organization contribute to the overall business performance.

System Reliability

IT systems, including hardware infrastructure and applications, must operate reliably—every second of downtime incurs revenue losses. The metrics associated with system reliability help organizations evaluate historical performance and predict future performance. These metrics not only empower IT teams to perform upgrades and maintenance activities proactively but also give the business confidence to scale operations and pursue new business opportunities that rely on stable and reliable IT systems performance.

These metrics are mostly focused on the technology performance and require additional layers of analytics and correlations to evaluate correlations with the business performance. Common examples of system reliability metrics include:

- **Outages**: Mean Time to Resolve (MTTR), Mean Time to Failure (MTTF), frequency and schedule of planned and unplanned outages, redundancy levels for power and utility supplies, hardware assets
- **Network**: Capacity, latency, incidents
- **Procurement**: hardware resources that are not easily replaced by strategic suppliers and standard channels of procurement
- **Cost**: Operational and capital expenses, cost per user, cost per unit asset such as data storage
- **Security**: Data breaches and network infringements encountered and deflected, security policy adherence, cybersecurity awareness training drills and results

IT Support and Customer Expectations

Measuring user satisfaction helps organizations identify operational and performance issues within their organization and its IT resources. The IT service desk for instance, is established to ensure that IT services are delivered effectively to internal and external end users. The performance of the IT service desk has a direct correlation with organizational capacity to deliver the expected services and satisfaction levels of end-users.

Some common examples for metrics that track IT support and customer experience include:

- **Service Availability**: How readily is the promised service made available to the end-user, as per expected performance, quality and dependability. Repeated outages, recurring technical and security issues compromise service availability and hence, customer expectations of the service quality

- **Common IT Metrics**:
  - Mean Time to Resolve (MTTR) represents the average time taken to resolve a ticket.
  - Mean Time Between Failure (MTBF) represents the time between failures.
  - Mean Time to Failure (MTTF) represents the system uptime after a possible issue has been resolved.
  - These metrics must be evaluated collectively: a dependable service fails less frequently, resolves fast after a failure and remains available for prolonged duration.
- **Service Desk Metrics**: First Call Resolution Rate, Cost per Contact, Customer Satisfaction, Net Promoter Score, Agent Satisfaction

Service Level Agreements (SLAs)

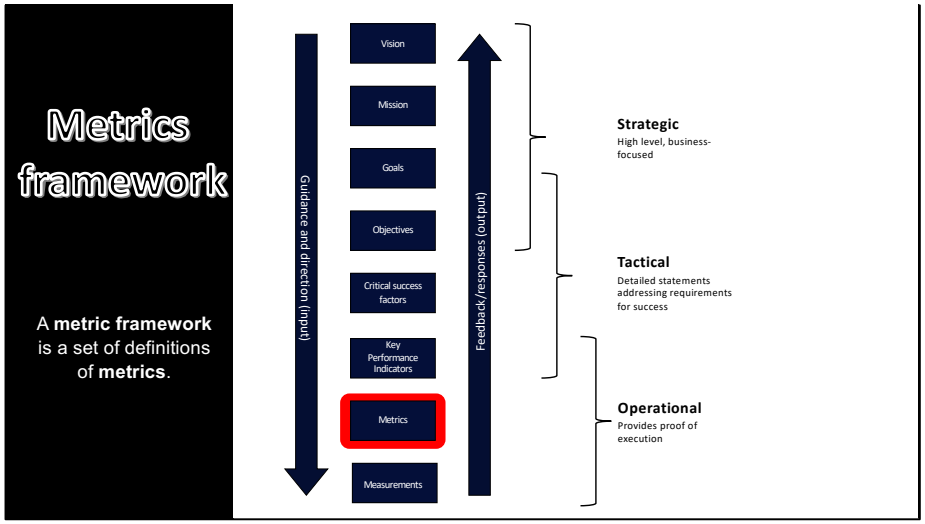
Most organizations procure a range of IT services and technology solutions. SLAs oblige vendors to deliver promised service levels defined by specific metrics. Failure to comply with these metrics not only penalizes vendors but also impacts end users and, therefore, revenue generating opportunities. It is therefore critical to identify the metrics that best describe the required performance levels. Examples of SLA metrics include:

- **SLA Compliance Ratio**: The ratio between number of incidents resolved in compliance with SLA and the total number of incidents
- **SLA Performance**: Uptime, Scale up/down capacity, response time, storage
- **SLA Verification**: Defect rates, technical quality, security, business results/KPIs, number of complaints

Financial Metrics

The performance of IT is a natural tradeoff with financial investments. It is therefore critical to evaluate the financial performance of an IT initiative. The optimal tradeoff between cost, performance, security and other ROIs should be considered with designing and evaluating IT metrics and KPIs. Some common financial metrics include:

- **Cost**: Cost of budget, budget variance, resource cost, maintenance and support expenses
- **Scheduling**: Scheduling variance and schedule overhead
- **Risk**: Legal, societal, and natural causes impacting business performance or ability to scale a product functionality and service to extended marketplaces



Finding the right IT metrics strategy is not about deploying sophisticated analytics technologies. It's about identifying the metrics that yield most insightful knowledge that can help align IT with desired business goals. Specifically, the chosen IT metrics and KPIs should help organizations find accurate and actionable answers to the following questions:

- How productive is the IT staff using the available technology resources?
- Are end-users and customers satisfied with the available services and support?
- How dependable is the performance of core products and technology solutions?
- Are the IT projects delivered efficiently and effectively?

Measurement formula - example

$$Availability\ [\%] = \frac{(AST - DT)}{DT} \times 100\%$$

AST = agreed service time
DT = downtime

There are hidden dangers here if both AST and DT are only loosely described. It is all too easy for differences in views to hamper understanding and this, in turn, may lead to an ambiguous set of commitments. AST is relatively easy to agree and from the outset should be revisited on a regular basis to ensure that it does actually mean what it says. There will often be times when the service provider has to rejig their service offering to support their customers, meaning that the original AST is now compromised. The onus would be on the SLM, to review consistently how customers are using services in relation to set expectations and instigate the necessary reworking of SLAs as appropriate.

If AST is relatively easy to agree and set, DT is a potential nightmare. Is it referring to a loss of service that affects all users? Is the scope intended to include a partial failure only affecting one person? Does it include maintenance time? How do we actually measure DT? Does the customer have the ability to measure this in the same way you can? Do they need to?

There is, of course, no easy answer away from the hard work involved in building a strong relationship with the customer. It is to no good end that an SLM creates a service level (for example, availability of service), measured only from a provider perspective, and then presents what appears to be a compliant service at the review meeting.

better to agree in advance the criteria for measuring the service levels that can be

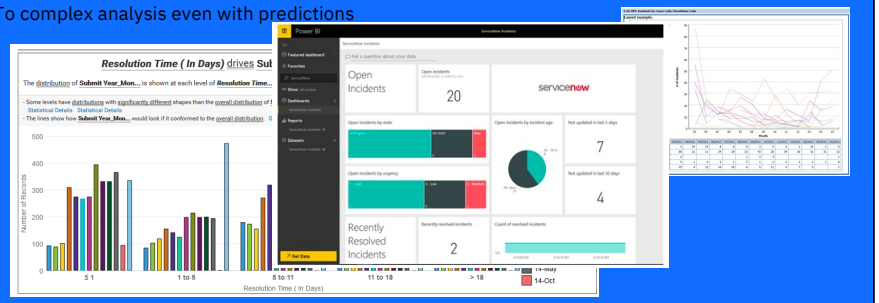
accomplished by the service provider, no matter how high-level or simple they may be, review them and make changes as appropriate

this approach of test-and-review will work for other commitments, too – reliability, security, support, capacity, throughput, response times and continuity. Service levels can be measured by both parties – and it must be stressed that both parties have a responsibility to do this – and create a base understanding to build on. I am not advocating changing service levels all the time; this would prove to be counterproductive. However, in the early life of an SLA, an approach of regular review and small changes on a frequent basis will provide long-term benefits for relationships and trust.

Results have to be reported – information is crucial for the overall success

The modern ITSM tools should provide integrated reporting functionality. Also online dashboard function is required.

To complex analysis even with predictions



KPI and SLA results visualization and “dashboarding” specific SW

Example – Tableau SW

What shall we talk about next?

ITSM future directions (May 2nd)

Do not forget about the visits to Kyndryl's center (April 18th and 25th at 16:00)

What about the exam?

Dates :

- May 23rd 16:00
- May 30th 16:00 (T.B.C.)
- June 20th 16:00