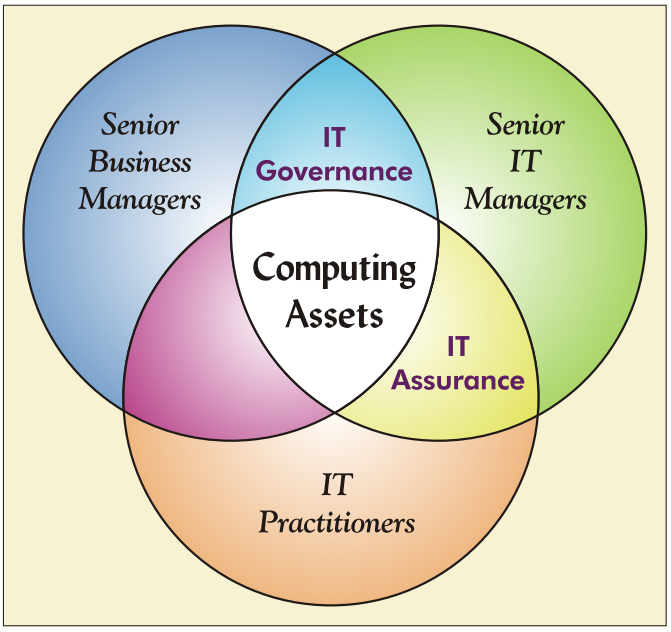
The Conservation of IT Assets

RG Solutions®

Introduction

Computing Assets are the installed computing resources that form the engine that powers the business processes. These assets are extensive and too important just to be left in the care of the IT Practitioner.

The computing environment has changed. The focus has been on new projects and expenditures while the backbone of the business has been neglected. There must be processes that ensure the effective use of these established resources. The competitive ability of the organization depends upon the effective delivery of these resources to the business processes.



Executive Summary

A Conservancy program comprises a diverse set of participants performing oversight and maintenance activities. All must be coordinated and supported by quality information that ensures an effective program.

Computing Assets

The computing environment of today is very different from that of a single proprietary system. It uses Best of Breed solutions with Commodity Systems and all performing as a single system. There can be many systems comprising many platforms all networked together as the single system. The evolution is a result of competitive pressures that were driven by costs and time-to-delivery requirements.

This type of environment is not only difficult to measure, but has become a "System of Babel". It does not possess common values or terminology that could assist in the process. While it might be complex, it is too valuable not to be effectively managed. The viability of the business could be at stake.

Conservatory Principals

There are three groups involved in a Conservancy program. The first is Senior Business Management and they have been mainly absent from the process, not because they want to, but because the

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information they require is not available. They need information in business terms that relate to business processes.

The second group is Senior IT Management. They have been more involved in the Conservancy activities but they have been neutralized. The complexity of the computing envelope has reduced managed capacity to one of system replacement. This is not cost effective.

The final group is the IT Practitioner. This group has declined in number and skills due to increased complexity and the lack of focus upon the process. The devolution of traditional tools to monitor software status has reduced this group to a glorified help desk staff reacting when a system summons (alerts).

Conservatory Information

The data that is available is extensive and unwieldy. It is technical in nature and must be transformed into quality information before it is of use to anyone but the IT Practitioner.

Another issue is that current techniques identify some systems for measurement while leaving others "naked". This prioritization is done out of necessity even though some unmeasured systems are integral to a composite "single" system. These techniques do not lead to effectively managed capacity.

To be effective, all systems must be continuously measured. The data collected must be transformed into quality system and/or business values that can be used in the Conservancy process. There must be business and system metrics to ensure the effective delivery of the resources.

Conservancy Activities

There are two main activities that must be supported:

- **IT Governance**: The oversight activities that are performed for the "Good of the Business".
- **IT Assurance**: The maintenance activities that are "Good for the Business".

The Governance activity is performed by the senior business and IT management. They are concerned with the capability to provide for the current and future requirements of a competitive business. They require metrics that relate to business processes and details of how they are used.

The Assurance activity is performed by the practitioner and senior IT management. They deal with individual systems that form functional or integrated processing groups. They are concerned with the effective and timely delivery of resources to the business. They require metrics that identify availability and delivery levels for the supported business processes.

Summary

The engine that powers the business processes has been neglected. There are many reasons, but they all center around the lack of time, tools, and methods to effectively manage the capacity.

To ensure the viability of the business, it is necessary to have a Conservancy program for the Computing Assets. Activities and participants within the program will require information that not only supports the activities but delivers quality values in terms that are familiar to the participants. RG Solutions® was designed for this.

RG Solutions®

Computing Assets

The entrenched computing assets of a business constitute the engine of functionality and activity. It is the vehicle to effect competition and growth. Without effective and timely delivery of these resources, there might not be a business.

Introduction

There is much discussion about the valuation of IT. The merits of portfolio management, Return on Investment, IT Governance, and other topics have been argued in great detail. This discussion has been a long time coming and has been embraced by the profession as a good thing. For virtually the first time an attempt is being made to establish IT's worth to the business.

However, if you review the material in detail a common theme begins to emerge: the processes and techniques being discussed generally deal with new hardware and/or software. None of the topics address the needs of the entrenched computing resources.

The current focus is on the mainstream "today" decisions, yet no methods are being established to conserve the assets that form the core computing capabilities of the business. The installed computing assets constitute the engine of functionality and activity for a business. Without effective and timely delivery of these resources, there might not be a business.

The reasons for this dearth of methods is due to the evolved nature and complexity of the IT assets. There are two reasons for this: the mainstream usage of Commodity Systems and the adoption of Best of Breed Solutions.

Commodity Systems

Since the introduction of "cheap" PC-like systems, IT groups have mainstreamed these systems into the computing environment. While these types of systems do not completely eliminate the need for specialized mainframe processing, they do replace common or standardized processing that was present within the mainframe. Proprietary vendor components are replaced with off-the-shelf hardware.

The use and acceptance of these systems have been generally favorable. The IT group gets quick off-the-shelf solutions, products that are state of the art, and most of all they are relatively cheap. This is all done with glorified desktop PCs.

However, there is a downside to these actions: reliability and complexity. What used to be a single function built into the reliable mainframe system (such as data communication links) is now a not so reliable generic server performing the front end function. In addition, the "server front end" might consist of more than one system, and quite possibly hundreds of systems.

This level of complexity (many and mixed systems) within the computing envelope has accelerated in recent years and has caught the IT profession off guard. All traditional methods for the management of system capacity is based on a single system and the measurements performed by a skilled practitioner. The old objective was the conservation of the computing environment, which it did. However, the old approach won't work today.

The introduction of Commodity Systems has created a whole new problem: the sheer number of systems to deal with. Granted, there are methods and means to deal

with the network and its well-being, but the actual systems within the network are ignored.

The main reason for the lack of products and methods to address the Commodity Systems is due to diminished need. An attitude of replacing "throw away" hardware has been prevalent, and the policy has been replacement not conservation. The times were good and hardware replacement was cheaper than the costs to manage systems. The net result was very little demand for improved methods to manage capacity. Traditional vendors migrated toward a reactive product offering that alerts when a threshold is reached.

Most systems today are no longer measured, but possibly "seeded" with software sensors to monitor activity. Some high profile systems may still be measured, but this is done with antiquated tools, restricted personnel, and a diminished skill set of the practitioner. With the consolidation of servers (many to one) the cost per system is rising beyond a practical replacement policy, and the need to measure systems has again become a requirement.

Best of Breed Solutions

The second aspect of the major system evolution is the use of Best of Breed Solutions. In the past, a computing environment would consist of a single vendor along with custom code for the processing. This is no longer true.

The Best of Breed Solutions are used to supplement or replace vendor supplied proprietary processing. These include many peripheral attachments that smaller vendors are more adapt in providing. The reduced cost and adherence to standards make them more attractive.

However, the Best of Breed Solutions are not restricted to hardware vendors, but also include new interfaces such as web portals, internet access, voice on IP, and others. There is no dominant vendor or implementation and some vendors do better than others. The competition is fierce.

The IT group gets the best solution for the business problem and generally at the best price. They get a turn-key solution provided and supported by the vendor.

What the IT group also gets is an implementation on a Commodity System that most likely will involve more than one system. They may also be acquiring a system that requires a skill set outside their ability or comfort zone.

System of Babel

While IT has done an effective job of providing timely low cost solutions, a "System of Babel" has evolved. The computing environment consists of many systems performing different functions, implemented with different operating systems and chip architectures, and all of them acting as a single system. In some cases, the central computing envelope may consist of several hundred systems networked together to form a single processing environment.

This evolution of the Computing Assets has created a new set of issues for IT and the business as a whole. First and foremost is the measurement of all interlaced systems within the computing envelope. The measurement of the parts will not only represent the whole, but will also identify internal "hot spots" that restrict computing.

Another issue is the measurement and evaluation of functional components within the environment. Multiple systems may be performing integrated end-to-end processing, or could form an array of systems for data retrieval. This type of processing must be evaluated as one entity even if they are composed of many systems and/or different platforms.

The final and most important issue is the measurement of the combined processing as it relates to the business. All individual system measurements must be consolidated and combined to the "single" system view.

Conclusion

The evolution of the Computing Assets has created a new paradigm for IT. It includes single/multiple system groups, distributed systems, networks, large numbers of systems, different platforms, and other complicating factors. Methods must be established that will deal with each component system as well as the whole, and all act together in the Conservation of the IT Assets.

Intelligent system measurement and management must again be the rule of the land.

Conservatory Principals

The Conservation of Computing Assets is too important to relegate only to the traditional practitioner. Senior Business and IT Management must become more involved and active in the process.

Introduction

The Conservation of IT Assets is not the sole responsibility of the IT Practitioner, but includes Senior Business and IT Management. To have an effective program it is necessary to establish responsibilities that each group will have in the Conservancy process.

Senior Business Management

Senior Business Management must be coopted into the Conservatory process for two reasons: they run the business and they own the check book.

Most senior members of management (outside of IT) have a vested interest in the computing assets. It is the engine of the business and must be managed and protected. These individuals know the business and need to understand how the computing resources relate to the business processes.

While business management is often misunderstood, they are mainly concerned about the value they receive for their investment. When they understand the value returned they are more willing to make additional investments.

Information must be business centric and in a form that allows them to understand the value of the computing resources. Metrics must be formulated that deal with capacity, volume, amounts, cost, and resource life cycles. Ideally most metrics will be based on monetary values. The absence of this type of information has been the traditional reason they have been absent from the Conservancy process.

Senior IT Management

This group has been the traditional focus of most activities. They are the natural leader of choice and must be the main advocate of any Conservancy program.

Like Senior Business Management, they are also concerned with the value returned from the installed assets. However, the value orientation is not just business related, but also a measure of the quality being returned. In some cases, equipment might still be of value to the business but it is of diminishing quality to IT.

IT Management has two types of metrics to deal with: business and computing. While the business metric is the most requested in any organization, it has been mainly absent. The reasons for this is simple, it is difficult to do. To have a valid business metric, it is necessary to map the activities present on one or more computing systems to the business processes.

It would seem like a simple thing to map system processes to business processes, but the complexity of today's computing envelope comes into play. There are different platforms, with different functions, and systems with different processing capabilities, all acting as a single system. Further, the information available on one system may be incompatible with other systems. At first glance it may seem like an easy thing to do, but in reality it can be very difficult if you

do not have the tools to perform the function.

In some cases the IT group has implemented a Charge Back system (at the behest of Business Management) to provide the business metric. This is not a metric because it does not measure and evaluate, it is a process intended to recover and control IT costs. As an alternative, a Costing system could be established in its place. This would provide a business metric with the primary purpose to understand costs, not to recover them (even though it can be used for that as well).

The other types of metrics deal with the computing systems. Most system metrics are based on a single system providing all the processing capabilities for the business. This model provides a single basis of measurement with all measurements in a single context.

These types of metrics are better defined, but the current models are coming apart due to the evolution that has occurred in the computing envelope. The computing envelope has changed and now consists of multiple systems of different types performing as a single system. This model now requires the integration of measurements on different systems, with different data, and all in different contexts. As a result, traditional system metrics have been discarded while the profession awaits new models to be developed.

It is necessary to establish measurements that can be used in formal metrics. Measurements must be made upon real items that provide the right measurement, and must be measured in the correct manner. If inadequate or incomplete measurements are made, the metric will be invalid.

There is also the constraint of resources. There are many traditional types of constraints: labor, budget, computing power, etc. However, there are new constraints that have to be faced: competition, out-sourcing, computing on demand, computing complexity, etc. These all have to be considered while managing capacity.

IT Practitioners

The evolution of computing in the last decade has had a great influence on the IT Practitioner's role in the Conservancy program. First and foremost there are few Practitioners remaining, and those that are left have diminished skills. There has not been much of a need for them and therefore they have not been able to practice and hone their skill set.

Another issue that must be faced is the increased complexity of the computing envelope. It is composed of many systems of varying platform types and speeds. The practitioner does not have the time, tools, or methods to address the needs of this kind of environment. As a result, a new model of system measurement and management has evolved: one of reaction.

Traditional tools and methods do not allow for the measurement and management of all systems within the computing envelope. To compensate for this shortcoming the traditional tools have devolved to providing an alert mechanism. Systems are seeded with monitoring software that have preset threshold values and the software then monitors the system. When the threshold is breached, the software will send out a phone, pager, or some other type of message in an attempt to get action. The practitioner then has to react to the alert.

The traditional practitioner has been reduced to performing an on-call help desk function. When the message comes in, remedial action for the system will be initiated. The problem with this approach is two fold: the business has already been impacted, and there is likely nothing that can be done at the time of the alert. The practitioner must again become ***proactive***.

Conclusion

There have been many changes in the past decade that have caused a major impact in the business of managing systems. These changes have moved the process of managing capacity from one of proactive management to one of reactive management. In many cases the Conservancy program is ad hoc and is based on actions/reactions from monitored alerts.

As a result, the Business Management has been excluded from the Conservation effort, and to a great extent the IT Management has been neutralized. The Conservancy program must be a continuous process that includes a broad spectrum of participants who actively promote and participate in the program.

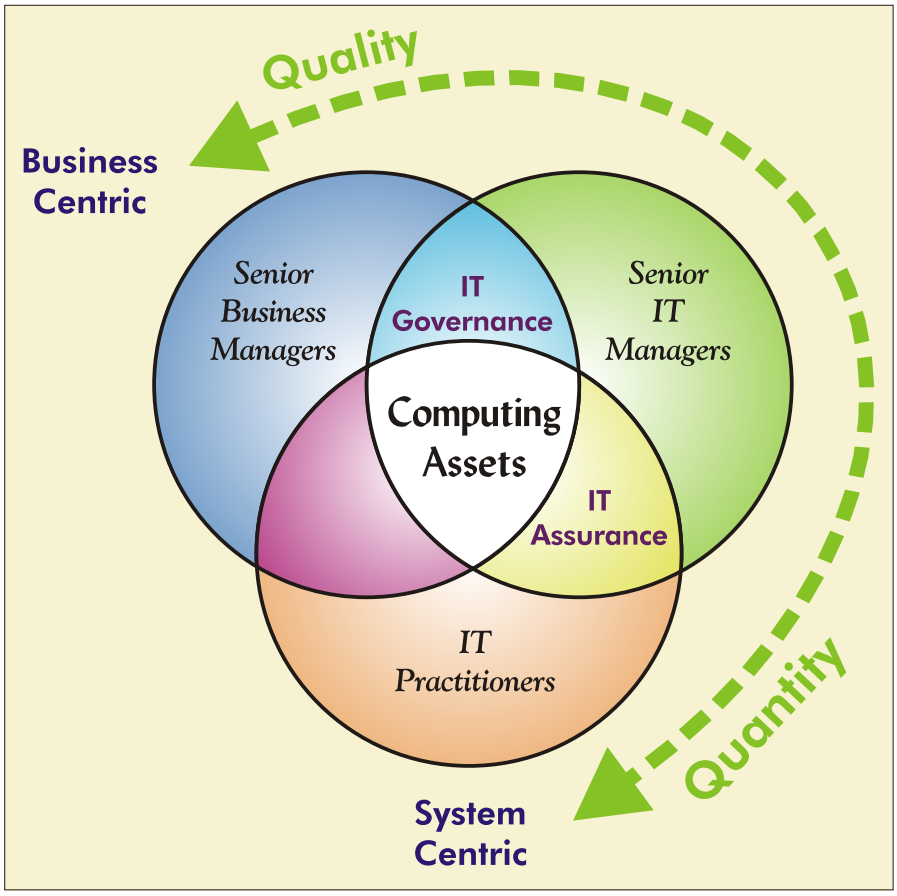
Conservatory Information

The data to measure and manage a processing environment is available today, but it will have to be refined to a purer content before its full potential is realized.

Introduction

The evolution of computing mandates that the type and quantity of information required for the management of systems be changed. There are many platforms, systems, and integration issues, but the information must be of high quality and appropriate for the process.

The data currently available on systems is extensive. However, the data is very low level in nature and must be transformed into higher quality information before it can be used.



Technical Data

The data available from any computer system is performance based and is system centric in nature. The measures relate to the processing environment and are provided in native values that are based on the system's architecture. Since the data is technically based, the traditional user of this data has been a technically skilled practitioner. They understand the architecture, processing, and "language" of the system.

The inherent techniques of managing system capacity is portable between platforms. However, the practitioner's skills do not share the same portability due to the barriers to entry presented by a system's architecture, terminology, and data.

Another issue is the development of metrics for a system. This has always been a problem due to the different approaches available and the scope and depth of data that is available. There is a basic set of measurements that is easily identified for any system. These may not be adequate for the intended metrics and may not be portable between platforms.

A final issue is the inability to integrate or consolidate data from different systems into a "single view". Measurements from different platforms do not readily "map" into each other. Even for systems that share a common platform, data consolidation may not be realized due to the different system contexts. It won't add up without some intervening process to normalize the data.

Volumes of Data

To effectively measure a system, it is necessary to collect large amounts of data. Detailed data must be gathered for all active processes, networks, devices, disk storage volumes, and other computing devices. This must be done all day and for every day (24 by 7).

The gathering of system data becomes more complex when more than one system is involved. The quantity of data is multiplied and the collection complexity is increased.

Once all the data is collected, the means to analyze and aggregate it for presentation must be addressed. Since the data is technical by nature, the traditional method has been to present it in its native technical form. This consisted of graphs, tables, and other means attempting to civilize the technical data so it can be presented in a business context. Regardless of the methods used, technical data can only be understood by a technician.

The answer to this dilemma is some form of data consolidation and normalization. The raw data itself does not easily lend itself to these activities because of different data contexts or platforms. Also, the traditional tools were never intended to perform these new types of activities.

A final issue of concern is the total amount of resources involved in the measurement activity. There are the obvious computing resources for analysis, but there is also the human aspect to consider. It takes effort to set up the systems, gather the data, analyze, and finally to present the results.

Data Requirement

What is required is a set of metrics to address the information requirements of the business. Once established, the collecting agents can be configured to gather the required data, analyze it, and finally to present it.

The set of metrics must be expanded past the traditional technical level and pushed into the realm of functional and business processes. This may require the collection and integration of non-traditional data to ensure that metrics are of value to the business.

Regardless of the data requirements, data must be collected at all times for all systems. A complete picture must always be presented.

The effective collecting of metric data requires a process that is automatic, continuous, self determining, low impact, and simple in nature. Once the data is collected, the process must automatically consolidate and normalize the data for presentation.

Data Transformation

Getting the data is the first issue to be faced. The form of the data as collected from measured systems is worthless to anyone but a skilled practitioner. However, it is raw material that can be transformed into higher context information. Careful thought must be given as to what information is required to support new business and system metrics, but it can be delivered to the process.

The resulting information must consist of data rich values that can be used by a wider audience. The process will incorporate a wide range of data, prior experience, knowledge, and feedback to refine the data to achieve the required information content. The system measurements will support the metrics. Just as the raw data is good for the technical practitioner, a value added form of information will be of value for all interested participants.

The volume and content of data will change as the information evolves. As the data is filtered and refined to a purer content, the amount of information required for evaluation is diminished. In other words, as the quality of information increases, the volume of information decreases. As the data becomes richer in value, the resulting information moves from a System Centric to Business Centric orientation.

Conclusion

The information required for asset conservation is no longer just for the traditional practitioner. There is a broader group of principals concerned with the well being of the assets.

Information must be developed to support their participation. It must be readily available and of sufficient quality that all will be actively involved in the Conservancy program.

Conservancy Activities

With increased reliance upon computing resources, the business must be more active in the management of those assets that comprise the engine that powers the business.

Introduction

The traditional Conservancy activities are usually performed only by the IT group. It consist of optimization, turning, and system augmentation. Is is generally centered around maintaining and extending the life of systems.

This was a valid objective in the past, but, with business processes having more reliance on computing resources, new priorities must be identified and established. It is important to identify two distinct activities. The first is a Governance action and is established for the "Good of the Business". The second is an Assurance action, and established so it is "Good for the Business".

IT Governance

IT Governance is the sharing of authority and responsibility between business groups for the effective allocation and use of the computing assets. This action is for the "Good of the Business".

The participants in the governance process dictates that information used must be business centric. That is to say, the information must be pertinent to the business processes and delivered in a context of business value.

The governance activity must address the needs of the business in regard to the established computing assets that are available. The main concerns center around the ability to maintain a competitive business advantage as well as to ensure the business will continue to function as a going concern.

Other issues deal more with perceptions rather than hard facts. These include whether the assets are delivering value for the money and if they provide customer and/or end user satisfaction. A final set of concerns are the fiduciary responsibility related to the cost of the assets and the effective strategic use of these assets.

The governance action has several mechanisms available for the measurement and control of these computing costs. Some traditional mechanisms such as budgets, procurement actions, project cost justification, and other similar activities have been used with limited success. The reasons vary, but most fail due to the simple fact these mechanisms are not meant to understand IT resources as they relate to the business processes. They are meant to control and justify the costs of the IT resources.

New metrics and methods are required to understand the value IT assets provide to the business processes they support. Details about business activities must be provided along with supporting cost information and this will allow for a true cost/benefit determination to be made. If management can understand the underlying costs of the business processes, they will be able to manage these crucial assets in a business-like manner.

There generally is a consensus in any business that IT governance is a good thing and should be done. So why isn't it done more? The reason is simple, it can be a difficult process to define and establish, and requires a commitment from the business to ensure the activity is consistently performed.

IT Assurance

IT Assurance is the activities and processes that are established within IT that guarantee the timely and effective delivery of the computing resources to the business. This action is "Good for the Business".

As with the governance action, the assurance action must have information that is business oriented. However, this information must be formulated and used in a manner that is system centric. It is critical that the activities on one or more systems are "mapped" to the business processes they support. This will ensure that appropriate cause and effect relationships are understood, can be prioritized, and managed effectively. It is absolutely critical to understand the effects of what a change to IT resources will have on the business processes before it happens.

The concerns of the assurance function are also similar to the governance function, but are based at a more technical level. The first and primary concern is the availability of the resources to the business. Should outages occur through either a resource failure or overload, the business will suffer. The length and extent of the outage will determine the actual impact on the business and could possibly result in lost revenue, business, customers, or all of the above.

Other concerns deal with the management of the assets. These are all on-going issues such as the end-to-end delivery of information, the effective delivery of information, and the other items related to the optimum use of the resources.

The IT group must have metrics to evaluate the effectiveness of the assurance process. These metrics will not only be used to evaluate the computing activity, but will also drive the other processes to ensure the effective delivery of resources to the business. This will include life cycle system management, tuning, system augmentation/replacement, and the other activities traditionally associated with the IT group.

The evolution of the computing envelope has complicated the assurance process. It was easier to ensure effective delivery of resources when there was only one system to deal with. The tools and techniques were well established. With the advent of hybrid computing environments that consist of many systems interlaced together, the process has become very complicated.

There is an absence of methods for use in the assurance activity. While there is still the ability to measure systems, these events are sometimes isolated and performed outside the assurance activity. Many times the measurements are ad hoc and based on some external influence or system alert. These measurements occur in isolation and are not part of an organized activity.

The IT group must have new methods and tools to ensure that all computing resources are effectively measured and managed. It is no longer enough to just deal with a single system in isolation. Actions must be established that measure the computing resource as used and are compared to the needs of the business. This involves the consolidation and transformation of data into new information that will assist in the assurance process.

Conclusion

The responsibility of managed capacity was exclusively the realm of the IT group. Due to the exponential increase in computing resources and the dependancy of the business on these resources, the senior members of business management must be actively involved in the process. They must participate in IT Governance.

At the same time, the responsibility of the IT group has changed in regard to the business. The competitive pressures now require that IT formulate actions that will ensure that the business has the computing resources available to perform its mission. The engine that drives the business must be well tuned and running at optimum levels.

RG Solutions®

The information needed to support a Conservancy program will range from a large amount of low level technical data to a small set of high quality business values.

Introduction

RG Solutions® is a product that fully supports the Conservation of IT Assets. Historically this product was similar to its traditional counterparts and dealt with managing system capacity. It was oriented around a single system. While the competition devolved into software monitors, RG Solutions® took another path and matured into a product able to address the new issues related to a complex computing envelope. It incorporates new and innovative techniques to handle the new paradigm.

The issues created by using the Best of Breed solutions and Commodity Systems were taken head on. Many different types of systems performing the function of a single system all had to be addressed. The changing environment required new methods for managing used capacity.

Algorithms and processing have been developed that allow for the integration of various data sources. Intelligence is applied to the standard data which results in quality information that is useful to any type of conservancy program.

It must be stressed that this program environment is not one of a graphical tool regurgitating data for analysis by a technical individual. IT is an environment of applied intelligence creating quality values that are based on knowledge rules. The result is high quality business values that are fewer in number but more meaningful to the recipients.

Data Basis

The source data is low level technical data that is available on all systems. The provided collection agents understand what is needed for effective IT Governance and IT Assurance activities. They perform the collection process automatically with a low impact upon the host system. No prior metrics or models are required before the collecting can begin. In fact, data can be collected while the downstream metrics are being formulated.

The agents do not collect all possible data, but only the data to be used for the effective business metrics. Business and application specific data generated by other processing are outside the scope of Agent. However, this data can be included as part of the data model and could become an integral part of any metric.

Data Formation

The centralized data consolidation and transformation is a proprietary process that applies prior or current knowledge to the collected data. Data from different sources can be combined, evaluated, and interrogated during the formation process. The result is high quality information that is more system and/or business centric.

The information formulation process is mature and uses advanced algorithms for its processing. The default results are immediately of value for the business. The measures permit the business to assess the effectiveness of the resources as delivered to the business processes.

While the default information is valuable, it is nothing compared to what can be created. The processing environment allows for the customizing of the formulation process. Raw computer data can be grouped such that it reflects system and/or business processes. Custom processing can be provided by the practitioner to create business specific values and in terms used by the business. It can move the system data to a business centric position

Information Delivery

The processing environment creates a diverse set of information that supports many types of metrics. The results range from very technically based values with large amounts of data, to a single value representing the entire processing of a system for a single day.

The data supports the IT Practitioner by providing both mid to low level types of information. At the mid level, information will be centered around the normalized attributes of the systems. These are the values that are present on any given system and provide generic quality values. As more detailed data is required for technical analysis, the practitioner has extensive data available and is provided in native terms. In all cases, the data required to perform the full scope of the practitioner's function is available for use.

For the IT Senior Management, high quality information is needed for the high level functions. Information must be such that function and system processing can be evaluated regardless of the underlying platform type or the number of systems involved. Quality values related to business processes must show how the system(s) deliver value to these processes. RG Solutions® provides this information as well as the ability to understand the contribution of individual system components in a consolidated or "single system" view.

A final type of information is for the Senior Business Management. This information supports metrics that are used to understand the effects of computing resources upon business processes and how these processes will support the organization's mission. This information is very business centric and is based on the business processes within the organization.

Summary

RG Solutions® allows for the creation of a broad range of information. It intelligently applies business rules to system data and presents the results in terms understood by the business. The results are less technical and more intimate with the business.

RG Solutions® was designed to support the IT Governance and IT Assurance activities that are required by business. To be of real value to the organization, information and processes must be all inclusive and continuous. That is to say, all required information is at hand, available at all times for all participants, and presented in terms all can understand.

For an effective Conservancy program, the related activities must have software that will gather the data, deliver it to a central location, transform the data into high quality information, and finally present the information in a manner that can be understood by all participants. This must all be done within a framework that is cost effective and does not have a major impact upon both computing and human resources. A tall order, but one that RG Solutions® lives up to.