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System governance: the missing link in IT governance

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IT governance is an important tool for the effective management of IT. IT governance currently concentrates on three dimensions - investment, change projects, and service delivery - but misses the critical element of system quality.

System quality is very broad. It covers fitness for purpose, viability, supportability, risks, compliance with regulations, and compliance to technical standards. System governance is a comprehensive framework for measuring and improving these system qualities. The benefits of this are:

- Improved shareholder value because IT systems are managed as business assets.
- Improved business IT relationship because IT infrastructure requirements are translated to measurable goals.
- Improved return on investment on IT infrastructure investments because management can track and enforce use of new infrastructure.
- Reduced project failures because technical and compliance issues are identified earlier.
- Reduced cost of compliance with regulations and internal standards because these are managed within an efficient framework.
- Reduced long-term risks and costs due to fragmentation of standards because management have visibility of the degree of compliance.
- Improved measurement of IT's performance in its role as stewards of business systems, which is particularly valuable for governing outsourced contracts.

This paper describes system governance, its benefits, its uses, and the services and tools required to implement it within the organisation.

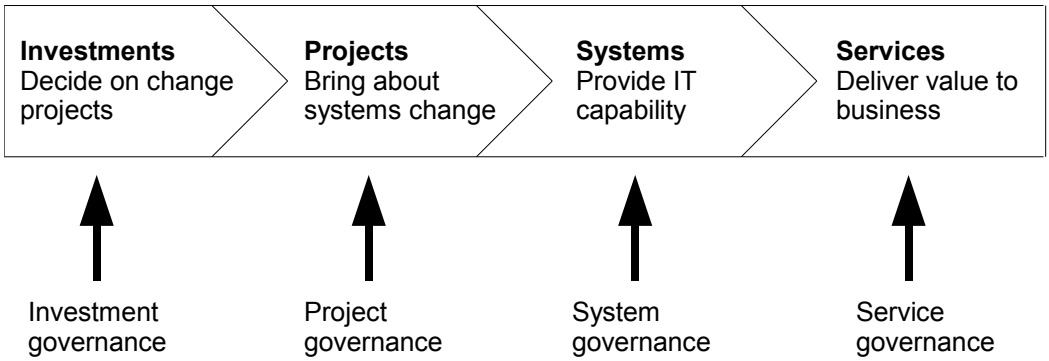

Diagram 1. System governance complements governance of IT investments, projects and services.

1. IT GOVERNANCE

Governance is the process of overseeing management. It includes monitoring, co-ordination, and enforcing policy. It makes the organisation accountable and maintain its intended direction.

In IT, governance is applied to:

- Investment decisions.
- Change projects.
- Service delivery.

These are important to the effective management of IT, but miss one vital component. They do not address the business systems themselves. Diagram 1 illustrates the relationship between investment, project, system and service governance.

System governance involves setting standards for systems, and measuring and managing compliance to the standards. The standards encompass every relevant quality of the system. Appendix A contains a list of criteria which illustrate the breadth of standards that can be managed.

Without system governance, an IT organisation will implement systems that do not meet long term needs. As corporate objectives and technology standards evolve, an increasing number of systems become non-standard, and management will have no way to assess and improve the situation. The complexity and risks of IT will increase, and fitness for purpose will decrease.

IT governance that covers only investment, projects and services will not solve these problems.

2. BENEFITS OF SYSTEM GOVERNANCE

The high-level aims of system governance are to align systems to corporate strategy, and to mitigate risk, for the long term. This is complementary to project governance, which is a short term activity.

The greatest benefit of system governance is the hardest to measure. IT systems represent a large proportion of a typical business' assets. System governance maintains and increases the value of these assets, to contribute positively to shareholder value. System governance stops IT becoming a liability.

System governance provides a framework for communicating and measuring technical standards, in a non-technical way. This helps the IT organisation justify investment in IT infrastructure. In return, company executives have a tool for guiding and measuring IT's performance in its stewardship of systems. System governance provides transparency and accountability which fosters good relationships between IT and business.

Often IT infrastructure investments deliver little return because they are not broadly used. System governance provides a mechanism for measuring and improving take-up of new infrastructure. This improves return on investment (ROI) and reduces the risk associated with fragmented infrastructure. To illustrate this, examine the list of criteria in appendix A, and consider two questions:

- How much additional shareholder value will be created if all systems meet these criteria consistently?
- How much risk is the business taking if systems do not meet these criteria consistently?

Currently system qualities are managed inconsistently, using the best efforts and disjointed procedures of a variety of specialists. System governance reduces the effort required to manage quality, and improves the quality and consistency of advice. Specialist staff can be freed to work on new and value-adding activities, and spend less time on routine assessment.

In outsourcing contracts, system governance can define and measure the service provider's stewardship of systems. It can ensure systems are high quality and up to date at the end of the contract. It can even be used to ensure that systems improve under the care of the outsourcer.

The documentation produced as a by-product of system governance is an excellent tool for sharing knowledge of systems across the organisation.

System governance provides insightful assessments of project compliance. This in turn helps projects to mitigate technical risks early in the project life cycle, and to identify preferred technical solutions easily.

To summarise, the tangible benefits of system governance are:

- Reduction of risk and cost due to fragmentation of standards.
- Reduction in the number of project failures, by spotting technical issues earlier.
- Improved ROI on infrastructure investments.
- Reduction in the cost of compliance to technical standards.
- Provision of a mechanism for controlling service provider's stewardship of outsourced systems.

The intangible benefits are:

- Improved shareholder value as IT systems are managed as business assets, not liabilities.
- Improved business IT relationship.
- Freeing up key technical staff for more value-added work.
- Sharing knowledge of systems.

3. SYSTEM GOVERNANCE BASICS

3.1 Systems

System governance immediately raises the question "what is a system?"

There are no precise rules for how systems should be defined. The best way of defining a system is as a set of IT functionality that is managed or used independently of other systems.

System governance does not require a lengthy process to define an inventory of systems. It can start with a simple list of the most obvious systems. As a more refined view of the systems evolves, systems can be added, subdivided, combined and removed to best reflect how management wishes to view them.

System governance builds an inventory of systems so that the systems can be managed as business assets. This is different from system architecture, which considers systems as the units of design and which models information storage, functionality and information flow between systems. For this reason, the systems within a system governance inventory may be different from the systems within a logical system architecture model.

3.2 Criteria

System governance is based on a set of criteria which represent the system qualities relevant to management. In any organisation, this is likely to be a mixture of industry standard criteria, and criteria specific to the organisation. Appendix A contains an example list of criteria.

The criteria provide a broad characterisation of a system's quality. Any one criterion could be expanded in great technical detail. The purpose of system governance is not to replace detailed analysis where this is required, but to provide a tool for carrying out top-level analysis and providing visibility to management.

Each criterion requires a weighting which represents its relative importance to the organisation. It is useful to arrange criteria into groups, and then divide weighting first by group and then by individual criterion.

The significance of each criterion needs to be expressed in non-technical terms. For example, a criterion relating to database versions needs to be expressed as a requirement to retain company information on viable and low-risk technology.

The significance of the criteria and their weighting must be agreed as the basis for system governance.

3.3 Grades and impacts

Each criterion is associated with a series of grades, which represent degrees of compliance. This might involve only two grades: compliant, or not compliant. Some criteria benefit from multiple grades, for various degrees of compliance. Each grade requires a score which indicates what proportion of the criterion's weighting the grade attracts.

Rules for calculating impacts need to be established. These might be simple rules, such as

> "If the system has no disaster recovery capability, the system will not be available if the computer facility is lost."

They might be complicated rules, such as

> "If this is a business critical system and the system has no disaster recovery capability, the business will be significantly impacted if the computer facility is lost."

Each impact requires a severity, a description, and a recommended resolution.

3.4 Assessment

Once criteria, grades, rules and impacts are established, each system can be graded against each criterion. Each grading requires a free-text explanation of why the grade has been applied.

3.5 Validation

Validation is an independent check that the assessment process has been correctly followed. It is not a check that the answer given is factually correct.

The person making the assessment needs to be knowledgeable about the system and able to vouch for the accuracy of the response. However, even a knowledgeable person might misunderstand a criterion, or award a grade without giving sufficient evidence for why the grade should be awarded.

The validation process checks that the criterion has been answered, and that the grading for the criterion reflects the free-text explanation.

3.6 Analysis

An analysis of the assessment responses can deliver:

- An objective measure of the system's compliance to agreed criteria - how "good" it is.
- A list of impacts, with their severity and recommendations - what problems there are and how to fix them.
- An auditable document which describes the system's compliance to each criterion - from the free-text explanations.

System governance is not a one-off activity. The criteria should be retained for use on other systems, and the assessments for comparison purposes. This allows a body of information to be built up to support different aspects of system governance.

3.7 System governance framework

A simple system governance process could be based on spreadsheets and word processor documents. However, system governance will benefit from a more sophisticated framework which includes:

- High quality criteria and grades.
- In-depth rules.
- High quality recommendations.
- Processes for assessing systems and validating assessments.
- Reporting capabilities, both for individual assessments and cross-system summaries.
- Versioning of criteria to allow assessments to be migrated to new standards.
- Versioning of assessment responses to allow comparisons to be made at future times.
- Accessibility of information to all relevant parties.

Later sections describe services and tools that can deliver these requirements.

4. SYSTEM GOVERNANCE USES

System governance touches many different IT activities. All of these use the same system governance processes and information.

4.1 Project risk reduction

System governance can reduce technical risks within projects.

Assessing a proposed design highlights areas of non-compliance. The recommendations allow the project to quickly select appropriate design improvements. This reduces rework later in the project, or the costs and disruption associated with implementing non-compliant solutions. It also frees technical specialists from routine assessments, and allows them to concentrate on problem areas and value-adding activity.

The assessment can be repeated occasionally during the project, and finally once the system is implemented.

4.2 Systems selection

Some projects require selection of a system from a number of competing options. The business needs to know which is the best option, and what the impact of each option would be.

System governance can perform some of this assessment. System governance does not assess options for their commercial benefit, but assesses options for their fit with the business' standards and desired qualities.

This aspect of selection is very important, but is time consuming and expensive for both customer and vendor. It can be made much quicker and cheaper by repurposing the system governance criteria into a request for information (RFI), and validating and analysing the responses using the normal system governance processes.

4.3 Application portfolio management

The main benefits of system governance come when it is applied on an ongoing basis to all systems within an application portfolio.

This need not be an onerous task. New systems can be assessed against the governance criteria as a part of their project process. Existing systems can be assessed as a low priority task.

This overall assessment can then be used to answer critical questions:

- Which systems pose a risk and would benefit from preventative work or retirement?
- What new IT infrastructure investments will provide the best return in improving compliance, alignment and risk reduction?
- Which systems provide a good foundation for future work?

An overall assessment is especially useful where large scale systems change may be required, for example as a result of mergers or acquisitions.

Assessments can be further analysed to show compliance to different groups of criteria. For example, identifying the systems with high fit to business strategy but low fit to technical standards is a better indicator of the value of preventative maintenance than merely seeing which systems have a low score.

4.4 Performance measurement

System governance provides an objective measure of the performance of the IT organisation's role as steward of the business' systems.

System governance can set and measure performance objectives for an in-house IT function, or for a service provider for outsourced systems. Using an assessment service from an independent third party is particularly useful for outsourcing.

Performance measures can be set to maintain or increase overall scores, and reduce the number and severity of outstanding impacts.

This use of system governance also provides a basis for justifying spend on IT infrastructure. IT infrastructure is notoriously difficult to justify because it is not understood by company executives and cannot be justified on simple business benefit. A performance measure based on system governance gives an objective basis for expenditure.

Performance measurement must allow for gradual evolution of governance criteria.

4.5 Benchmarking

A body of assessment information allows an individual system to be assessed against other systems within a portfolio.

Taking this further, assessments against standard criteria allows a business to benchmark itself against industry peers. This provides an objective measure of comparative performance, and suggests where further investment is required.

4.6 Compliance management

From time-to-time, businesses have new needs to demonstrate compliance. A few years ago, businesses needed to carry out audits for year 2000 compliance. In the UK, similar audits have been required for the data protection act and for Euro processing.

An existing regime of system governance greatly simplifies new compliance requirements. It provides both a list of systems and a set of processes. The new area of compliance can be added as a criterion, and managed alongside other criteria.

4.7 Formal documentation

Comprehensive management-level documentation of all systems is produced as a by-product of the system governance process. This is of great value as a body of knowledge.

Sometimes this is required in its own right, for example to support a change of responsibilities, a merger or acquisition, or as preparation for outsourcing.

4.8 System governance as part of an IT dashboard

System governance can contribute to overall IT reporting, often know as an "IT dashboard". System governance metrics such as average compliance and number of high severity issues balance out the short term measures of IT spend and delivery. This could show, for example, whether overall compliance is being maintained despite the pressure of business projects.

5. SYSTEM GOVERNANCE SERVICES

There are a number of areas where specialist service providers can assist the system governance process.

5.1 System governance training and consultancy

A service provider can provide training in the concepts and practices of system governance, and help businesses apply it to get value in their specific circumstances.

5.2 Provision of standard criteria

A service provider can provide well-crafted and insightful criteria, to avoid an organisation having to create their own.

5.3 Tailoring of criteria

Although organisations will want to base their system governance on standard criteria, each organisation will also have some criteria specific for their industry, business strategies, and technology.

A service provider can create these new criteria and integrate them into the overall set of criteria.

5.4 Assessment services

Assessment is a straightforward process, but requires a reasonable degree of expertise and familiarity with the criteria. At times it will be more effective to use a specialist service to carry out assessments.

This decision can be made on a case-by-case basis. For example, general project assessments could be made by project teams themselves, but using a specialist service to assist during product selection.

When systems have been outsourced, a service provider can provide an independent assessment.

5.5 Validation services

Validation checks that the assessment process has been correctly followed. It is not a check that the answer given is factually correct.

Validation services provide consistency and quality where assessments have been carried out by different parties. It could, for example, be used to check that responses provided to an RFI do indeed answer the question and are correctly graded, though it cannot vouch for the accuracy of the potential vendor's statements.

5.6 Analysis and action plans

The system governance framework provides impacts and recommendations based on an analysis of responses.

Significant assessments, such as an annual reassessment of an entire portfolio of applications, would benefit from specialist attention to ensure that the analyses have been applied correctly, to sense check the results, and to help interpret and prioritise recommendations.

5.7 Benchmarking

Using system governance for benchmarking requires an external body to collate information from multiple organisations and compare the results for benchmarking.

6. SYSTEM GOVERNANCE TOOLS

6.1 Requirements for a tool

System governance is an information-intensive process, and benefits from IT tool support. The most significant benefits of using an IT tool are to carry out the following quickly, accurately and cheaply:

- Manage the storage, maintenance, distribution and versioning of criteria, rules and assessments.
- Calculate scores and impacts.
- Provide reports of the assessment process and the results of assessment.
- Provide reports comparing assessments with previous assessments of the same system, with other systems, or between systems of different companies.
- Calculate the impact of changing the set of governance criteria, highlighting where additional assessment needs to take place to manage compliance to new or amended criteria.

An IT system would also have to:

- Secure access to the information so that only authorised people can read and amend criteria, rules and assessments.
- Make the information available over standard network infrastructure, preferably as a web-based application.
- Provide a facility to import and export data to and from other tools using standard formats.

Other aspects of IT governance are heavily process oriented, and benefit from workflow tools to enforce and measure processes. System governance is less process-oriented and does not require significant workflow functionality.

6.2 Hosted service

A system governance tool could be delivered as a hosted service. The benefits of this are:

- It removes any installation and operation requirement. All data and processing is managed by the service provider.
- The service provider can secure data for long-term analysis.
- Standard criteria, rules and impacts are instantly available.
- New versions of criteria, rules and impacts are readily available.
- Benchmarking and other comparative analysis is possible.
- Information can be shared with colleagues, partners and service providers.

A hosted service needs to provide particularly good facilities for securing access to the information. It also needs to allow each organisation to use different sets of criteria, while maintaining what similarity there is for comparative analysis.

Most organisations will be best served with a hosted service. Some organisations may prefer to use a tool in-house, as a matter of policy or convenience. The system supporting the hosted service should be made available as a packaged application, and there should be simple methods of moving data between an in-house instance and a hosted service. This would allow an organisation to start using a hosted service and if necessary migrate to an in-house service in the future.

6.3 Generic platform

A tool to support system governance provides many facilities that would be useful in the governance of other assets and other types of assessments. In this way, a system governance tool should be considered a generic platform, with potentially many uses outside system governance.

Andrew Clifford is a co-founder of Metrici Ltd. Find out more about the system governance services and tools that Metrici provide at http://www.metrici.com.

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APPENDIX A - EXAMPLE SYSTEM GOVERNANCE CRITERIA

System information	
System name	The name or names for the system.
System description	A high-level description of the functions of the system.
Business area	The business unit or business units which use the system.
User access	Who the users are and how they access the system.
Business owner	The person, role, or group within the business organisation who own the system.
System vendor	The vendor of the system, and whether they are considered strategic and viable.
IT owner	The person, role or group responsible for the day-to-day IT management of the system.
Breadth of use	How much the system is used within the organisation.
System use	
System life cycle	Whether the system is currently being run, and whether it will be run in the future.
Task alignment	How closely the system functions align with the needs of the users' tasks.
Business automation	The extent to which the system automates manual activities.
Business importance	Importance of the business processes supported by the system.
Automated interfaces	Whether the inputs and outputs of the system are manual or automated.
Reporting requirements	The reports produced by the system, and how often these change.
User acceptance	How well the system is accepted, used and trusted.
System service	
System performance	How quickly the system runs, and whether a slow system has any impacts.
Service availability	Whether there are disruptions to the system service.
Information accuracy	How well the system maintains the accuracy of information.
Service level agreement	Whether a service level agreement (SLA) is in place for the system, and whether the system service meets requirements.
System risks	
Data confidentiality	The confidentiality of the data within the system.
System security	The measures to prevent unauthorised use and unauthorised access to the underlying data.
Business recovery plans	The plans to recover the business activities that are supported by this system if a disaster occurs such as the loss of a facility.
System recovery plans	The plans to recovery the system if it is unexpectedly disrupted.
System development	
Functional stability	How often minor changes are required to the system.
Test quality	The availability of test plans for existing functionality and test processes.
Test facilities	The facilities available to test the system.
System autonomy	The extent to which the system can be run and changed independently of others.
Ease of reporting	How easy it is to develop reports out of the system.
Ease of interfacing	How easy it is to develop automated interfaces to the system.
System technology	
Technology description	The main technology components used to support the system.
System location	The physical location of the system.
In-house standards	How well the system fits within the organisation's technology standards.
Technology viability	The long term viability of the technical components that support the system.
Server sharing	Whether the system runs on a shared servers, its own server, or requires multiple servers.
Capacity and scalability	The amount of data that the system can be stored or processed, and how easy it is to change this.

This is only a summary. It does not provide a full explanation of each criterion. In reality, each criterion needs to be associated with a number of other pieces of information:

- A description.
- Its significance, a non-technical statement of why we care about this.
- The question to ask as the basis for assessment.
- Criteria to assess whether the question has been answered.
- The relative weight for the criterion.
- A set of grades and their scores.
- Rules, impacts and recommendations.

As well as measurable criteria, this list includes some "information only" criteria which give background information about systems, but which are not graded.