

# Making Principles Work

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“Our differences are politics. Our agreements, Principles.”

William McKinley

**F**or all the importance attached to principles in architectures, some of the processes recommended for generating them seem rather cursory. This paper suggests formalizing the process and subjecting principles to regular reviews. The concept of candidate principles is introduced and recommendations are made to augment the principle development process.

## INTRODUCTION

*“Data is a corporate asset. Individuals and organizations have stewardship accountability for the data they collect, manage and publish.”*

In some form or other most architectures include principles: statements that assert the central values to be carried throughout the development of the organization’s systems. These principles should be contrasted with standards: standards have a direct application within the systems that are generated from the architecture. By inspecting the systems and using objective criteria, it is possible to verify that they conform to the standards. The effect of principles is more pervasive and less direct. Their effect can be seen in many places, but when the question is whether or not they have been followed that is always a matter of judgment.

A common analogy is to equate the principles in the architecture to the articles in the Constitution and standards to the laws enacted by Congress. The Constitution sets out general principles that have to be interpreted to changing circumstances. The Constitution protects free speech and guarantees freedom from unreasonable search and seizure. But since neither the telephone nor the Internet existed when the Bill of Rights was passed, what those terms mean today has to be interpreted and decided.

Some architectures do not have separately identified principles; most do. In practice, it is difficult to avoid incorporating values and beliefs into a document such as an architecture that is setting out general rules. If explicit principles are not identified, then the value statements

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are distributed throughout the document and are difficult to identify and articulate.

Conversely, writing principles highlights value statements; they draw attention to them and promote discussion. Principles are often the trigger for identifying conflict between members of the management team and in drawing out discussion of those issues some conflict is, if not resolved, at least identified before major investments in programs begin.

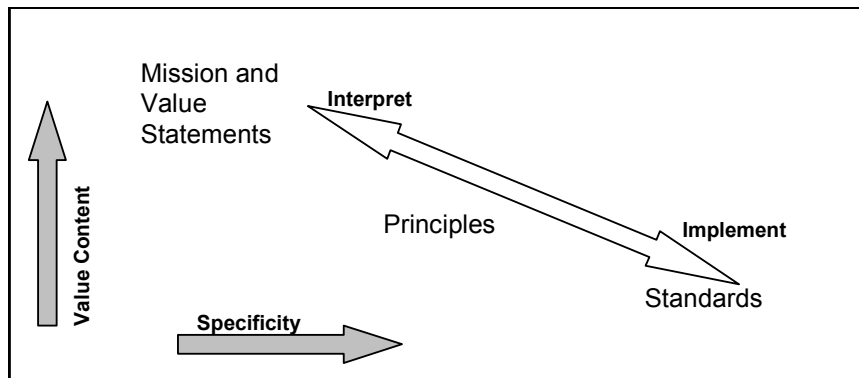


Figure 1 – Value Range of Principles

Even though authors recommend developing principles, they do so with caveats and cautions. Universally, they suggest that principles should not stand alone but should be accompanied by a rationale and discussion of implications. Most texts are also concerned that principles should not be motherhood. A common statement is principles should be arguable. That is, both the statement and some contrary statement should be reasonable positions to hold for some organization, even if not this one.

Despite all these good reasons for principles, and emotive appeals to constitutional theory, the actual result is often disappointing. For all the effort expended over the wording of these statements an outside observer is left asking what all the fuss is about. Why have these concepts been identified as principles, and what does the organization expect from them? In some cases you fear that principles have been developed only because at that point the methodology said now you do principles.

Very rarely do you find a discussion of what would be a good principle. Acceptance is based upon process: if these are the principles the group decided, and the process was good, then they should be accepted. This relativism needs to be challenged. There need to be objective tests of the validity of principles and of the process that is used to develop them.

## USES OF PRINCIPLES

Does, in fact, the choice of principle matter? Is it important to get them right? Perhaps not. The question assumes that one of the forms of a principle is better or more appropriate for the organization. In many cases, this assumption may not be true at all. There are principle statements that are no more than direction signs. Either choice, the principle or its contradiction, would be acceptable. The purpose of the principle is to ensure that everyone, managers and developers, act consistently and support each other.

In other cases, there is really no debate over a principle. The principle statement is a codification of assumptions and knowledge that is embedded in the organization, but has never surfaced as an official statement of policy. There is a risk here: past behavior may be a poor guide to the future. So long as this possibility is acknowledged and discussed, these principles usually give little cause for concern.

The difficult cases are those where a principle is consciously adopted that sets the organization on a path counter to its past behavior or culture. These principles can be the most important elements of the architecture framework, the ideas that give it form and purpose. It may take considerable effort and resources to make this change stick, and in the process there can be a loss of productivity as groups are reorganized, tool-sets changed, and behaviors unlearned. This cost is accepted because of the long-term benefits that are expected to follow. If such a principle turns out to be false it is worse than having done nothing as it erodes credibility for future initiatives.

## PRINCIPLES AND POLICY

Enterprise architecture principles are usually targeted at process and management issues. They typically define the policy framework within which technical decisions are made. In complex organizations those principles that directly support IT governance articulate best the management purpose of the architecture.

An example of a policy principle is the organization's position on internal development or package selection and customization. Where, for example, does the organization get strategic leverage from introducing customized code that it will have to maintain. Another example would be what is sourced centrally to get cost savings, vs. allowing local choice to meet business needs.

A second class of principles deals with architectural integrity, usually where compliance will incur an immediate cost, traded-off against longer term savings. This is the import of a principle that says, "*All applications are compliant with the corporate security architecture.*"

## NON-PRINCIPLES

Not all principles advance the governance of IT. This is not to say that they are wrong or do not need to be stated but that they are misplaced as principles of an enterprise architecture.

**System qualities.** If it does not cost anything it is better to have flexible, systems built from orthogonal, reusable components. Flexible, reusable, and orthogonal are principles of system engineering but probably not the issues you want management discussing when they are evaluating decisions against their architecture principles. It is likely that these qualities will become manifest in the solutions or systems architecture that will be used to implement the enterprise architecture.

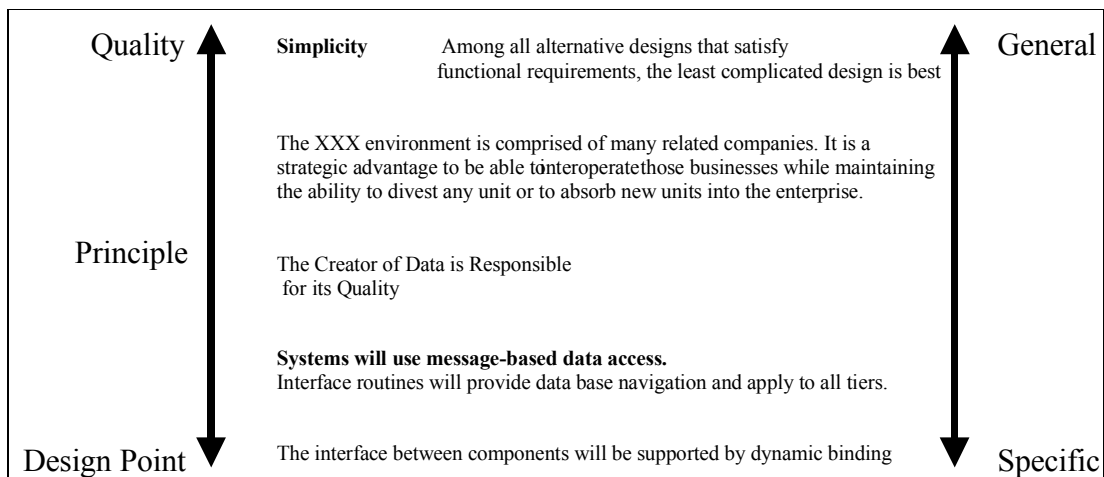


Figure 2 – Quality-Design Spectrum

**Design points.** These are statements that are too fine-grained or technology-dependent to represent management statements. An example would be a statement to the effect that “All applications will implement a common middleware tier”. This may well support a principle on data-sharing or one on “implementing only one solution for each requirement”. It is, however, a tactic to achieving that goal and dependent upon the technology choices available. With evolving interoperability standards, multiple compatible environments may be a more practical solution at some point.

**Vendor/systems decisions.** “We are a Windows environment”, is not, *pace* Bill Gates, a statement of principle but a statement of fact. There is some reason for that choice and the reason for adopting Windows may be a principle. In general, product and vendor choices are standards subject to review and amendment. Similarly, any constraints imposed by existing systems—*all run time systems leave a six hour window for batch processing*—need to be recognized in migration planning but are not value statements.

## CLASSIC PRINCIPLE DEVELOPMENT

The most commonly recommended process for deriving principles is a facilitated group discussion. Usually, the architecture team does some initial investigative work to identify possible, potential principles. This work is then taken to the steering committee, or some other nominated group, who are empowered to develop the final text. This may then be subject to senior management review and acceptance.

These workshops are often part of a methodology that emphasizes moving quickly through the early stages of the architecture design to generate a document that can be used as the basis for management acceptance of the plan.

This whole process carries considerable risk. Considering the importance principles may have in downstream decisions, this process describes a very cursory review. The architecture team prepares very little analysis of the principles and the quality of the result is very dependent upon the knowledge the review group brings to the room. Even where the group is highly knowledgeable about the domain under discussion, they may have limited exposure to implementation details that will have to be addressed.

## MANAGING PRINCIPLES

When a company starts doing architecture there may be many candidate principles. However at that early stage there may not be the information necessary to establish the validity of the principle. The following are some guidelines for creating a formal process to create a set of principles that have continuing value for the organization.

**Assign a validity or certainty index to each principle.** Over 80% means that this is a proven tested principle to which the organization is formally committed. Principles with an index between 60 and 80% are operating principles that are being used in the enterprise, but which require repeated validation. Principles with certainty less than 60% are not really principles at all but are rather candidate principles. Their validity is so uncertain that they are targets for design, but the design has to be reviewed extensively and alternative designs need to be considered.

**Identify specific tests that can be used to confirm the validity of the principle.** It is almost inevitable that when a principle is first identified its sponsors have in mind a situation where it will provide guidance. Often one or more of these can be found in the rationale. These can be used as test cases, though with the caution to be sure they are not special cases.

**Develop a benefits analysis.** Very few architectures provide an economic analysis of the benefits and costs of adopting the principle. Implication statements highlight some of the immediate consequences, but these also rarely have any cost justification associated with them. It is

more common to see a presentation of benefits than an adequate analysis of the costs.

A full reckoning of the relevant costs and benefits may not be possible. The nature of a principle is that only the direct and immediate consequences can be identified at the time the statement is made. But these at least should be worked through.

**Prototype the use.** As we move deeper into design and closer to implementation, value statements become more problematic. At some point these statements have to be bound to designs. It is important for the architecture group to quickly generate prototypes that demonstrate the application of the principles in systems or management processes.

**Provide tracability.** As the architecture moves from concept to specific program, the architects should provide tracability of the principles. Where is this principle being applied? What decisions fall within its scope? What were the direct costs or benefits to the project? What were the benefits to the enterprise?

**Revalidate periodically.** Principles are expected to be the most stable elements in the architecture only changing infrequently. However, companies are more malleable than nations and we should expect principles to change more frequently than the Constitution. Principles need to be reviewed and validated to ensure they are still true and relevant. This can be done on a calendar cycle or based upon the accomplishment of significant milestones. As well as retiring some principles this exercise is likely to identify issues of current concern where a well-crafted principle will fill a void.

The effect of adopting this approach is to position final agreement on principles in the middle of the architecture development rather than at the beginning. This may be unacceptable to some organizations that feel they need to get early acceptance of principles to get buy-in to the architecture program. However, the validity of principles cannot be confirmed in practice until experience in their application is gained. Organizations that insist on following a sequential process need to understand the risks that they run.

## **MANAGING CONFLICT**

Since principles set out general rules it is not unusual to find that in hard decisions two principles may be in conflict. For example, a global company may find itself with one principle that calls for universal solutions while another mandates local support for all purchased technology. What happens if the best functional solution is not adequately supported in one or more countries?

This conflict is not a criticism of the principles. Creative tension between principles, can be very valuable in helping the organization understand the

issues that it needs to address. What is interesting is the range of strategies that can be deployed to resolve the conflict.

**Dominant principles.** Sometimes it turns out that not all principles are equally important. Whenever a conflict arises it turns out that there are one or two principles that take precedence. One large company went to the extent of formalizing this by developing a prioritization of principles.

If there are dominant principles it is a signal to review the whole set and see if some of the others are not principles and can be downgraded to guidance notes.

**Decision-by-default.** This is like dominant principles in that one principle is followed and another ignored. Now however this is happening without any discussion or process. Often the choice is what is easier for the developers. Decision by default processes should always raise flags because the principles are not working to trigger a formal decision process.

**Split the difference.** This strategy attempts to get some benefit from both the principles. Often this is self-delusion as many of the properties identified by principles are unitary: as the saying goes, you cannot be a bit pregnant.

Over time an organization will develop a set of case law and precedents that resolve most issues. However a novel situation can always arise that requires consideration and review at the architecture policy board level and it is often these difficult cases that can lead to new understanding and breakthrough.

## SUMMARY

This paper suggests that organizations make two common mistakes when they develop architectural principles. First, they move too far away from policy issues. Second, they are not rigorous enough in identifying and validating the principles. The effect of these errors is to engender cynicism and devalue all the principles. Separating those principles that are strongly held from less certain guidance statements, the candidate principles described above, provides the flexibility to evolve and refine the architecture.