

Role of the Chief Architect.

White Paper Resulting from Architecture Forum Meeting

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Edited by:

Dr. Gerrit Muller, Embedded Systems Institute

Mr. Eirik Hole, Stevens Institute of Technology

Input was provided by the following participants in the Architecture Forum:

Name	Organization
John Bagley	Raytheon
Mans Bjuggren	Micronic Laser Systems AB
Jan Morten Gimse	Kongsberg Defence & Aerospace
Trond Hegrestad	Kongsberg Maritime
Teun Hendriks	Embedded Systems Institute
Elisabeth Hetlevik	Kongsberg Defence & Aerospace
Eirik Hole	Stevens Institute of Technology
Kees Kooyman	FEI Company
Bjørn V. Larsen	Kongsberg Defence & Aerospace
JP Leblanc	Nokia
Hugo van Leeuwen	FEI company

Name	Organization
Sjir van Loo	Philips Research
Roland Mathijssen	Embedded Systems Institute
Gerrit Muller	Embedded Systems Institute
Thomas Ostrom	Micronic Laser Systems AB
Kari Sahlman	Nokia
Rolf Siegers	Raytheon
Martin Simons	Daimler
Andy Turner	Nokia
Odd-Bjørn Vatne	Kongsberg Defence & Aerospace
Arne Wegger	Kongsberg Defence & Aerospace

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1. Introduction

The term architect has been used for decades outside its original scope of buildings. The building architect is often used as metaphor to explain the role of the architect in technical systems ranging from cell phones to warships. Many professionals in these domains have a job title including the word architect (e.g. enterprise architect, client architect, system architect). Nevertheless, the role of the architect is perceived as being unclear or fuzzy. This perception triggered a discussion between professionals in the field, who either call themselves architects, or work closely with them.

The discussion gets even more complicated due to the size and complexity of the systems being created. Many of these systems are created by large engineering teams, guided by a team of architects. We decided to focus our discussion on the chief architect, the leader of the team of architects.

2. The architecting landscape

The chief architect performs a role in an environment where many parties are involved, all of them with their own responsibilities and interests. This environment of the chief architect is in itself complicated. Figure 1 is an attempt to visualize this environment as a map of the architecting landscape. This landscape will be different for every architect; however, the entities on the map are somehow present in most architecting landscapes.

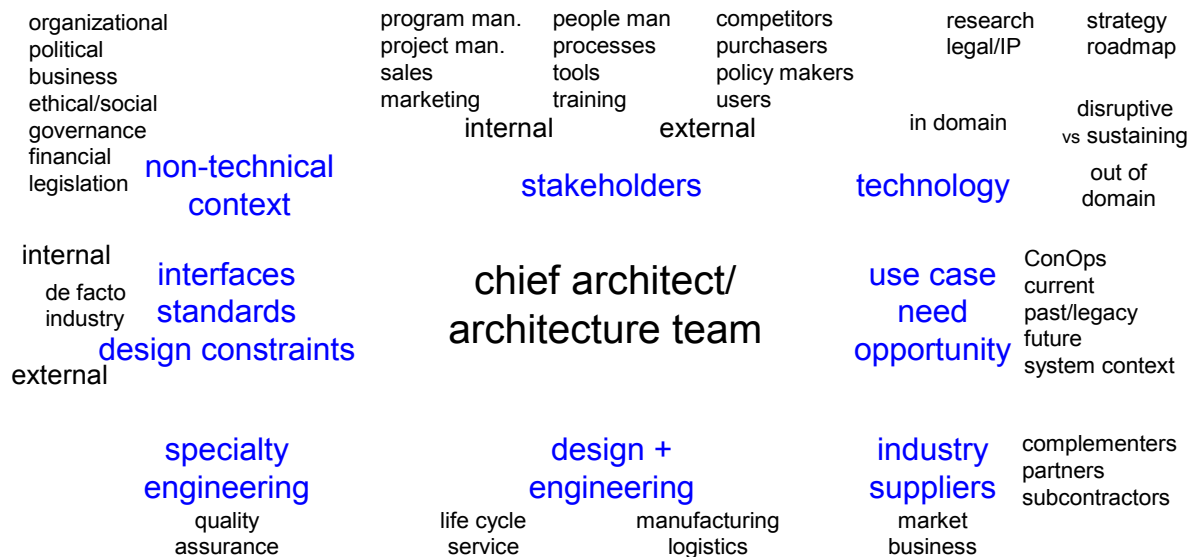


Figure 1, A map of the landscape surrounding the chief architect and the architecture team.

In the center of the map we show the chief architect. For larger system developments the chief architect will lead a team of architects. We will describe the landscape from the chief architects perspective, although we might as well substitute the team of architects.

Stakeholders. The chief architect deals with many internal and external stakeholders, with their own particular expectations, needs and concerns.

Technology. The chief architect is involved with in-domain and out-of-domain technology. Both types of technologies will evolve gradually (“sustaining”) or disruptive. The chief architect has to maintain a strategic overview, for example by technology roadmapping.

Use case, Need, Opportunity. The chief architect has to understand the operational needs of customers and users. This can be made explicit by use cases, ConOps, scenarios or stories. This understanding is historical (“legacy” consequences) as well as future oriented.

Industry, suppliers. The chief architect is involved in the supplying value chain, from COTS components to co-designs by sub-contractors or partners. Knowledge is required of the external market of components, knowledge and competences.

Design and engineering. The purpose of the architecting effort is to provide guidance for the design and engineering effort, such that the realization of the system meets the stakeholder needs. This guidance must respect the expertise of designers and engineers that have more in-depth knowledge of their discipline than the architects. The final engineering deliverable is a system that can be manufactured, ordered, maintained, installed and serviced.

Specialty engineering. Many specialty engineering disciplines are involved, such as quality assurance and reliability engineering.

Interfaces, standards, design constraints. The chief architect operates in an environment with many preconditions, such as internal and external standards and interfaces, and design constraints.

Non-technical context. The system creation takes place in a much broader environment, full of non-technical considerations, such as organizational, political, business, ethical/social, governance, financial, and legislation.

The chief architect and the architecture team are active in the entire landscape sketched above. The main responsibility in this entire landscape is the *guidance of design and engineering*. All other activities are characterized by a shared responsibility with other parties. The amount of effort spend in these activities depends strongly on the type of architect, system and market. We agree that this is generally applicable:

Principle 1:

The main contribution of the architect is guidance of the design to obtain a high quality system that fits well in the customer and business context.

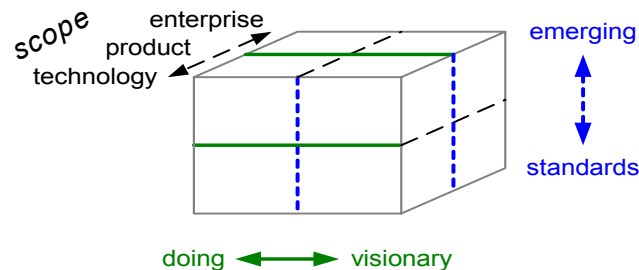


Figure 2, many different architects exist; this figure shows three relevant dimensions.

Figure 2 shows several dimensions of scoping the architect role. Architects in this space have different profiles (knowledge, personality, attitude, style) dependent on the specific coordinates in this space. Some architects are more visionary, while others are more pragmatic and oriented on results (“doing”). The need of the business for vision or doing is depends on factors such as company culture and product-market maturity. The same holds for the orientation of the architect towards standardization (stabilization) or emerging technologies (disruption). The third dimension that is shown is the organizational scope, from local technology focus to system level focus on the product to the broad enterprise scope. In general a business needs architects at all these scopes, although at broader scope levels fewer architects are needed.

The landscape shows that architects deal a lot with technology, while at the same time others have in-depth know how of technology: the experts. The amount of technology know how of architects and the amount of time and effort spent on technology triggered quite some discussion. What is the exact role of the architect in relation to technology experts and knowledge? The discussion converged towards the following principle:

Principle 2:

The architect knows:

- *What technology to select and why*
- *Where to elicit and involve technology expertise*
- *What the impact is of technology choices on system and context*

3. Style and responsibilities

One of the most frequently debated issues in architecting is the style of the architect in relation to the formal position of the architect:

- Should the architect have formalized power to be able to take up the architect responsibilities?
- Should the architect emphasize consensus and mostly focus on acceptance and support?
- Should the architect be leading based on acknowledged expertise?

Core to the work of architects is the relationship with many stakeholders. These stakeholders have all their own interests that often conflict with interests of other stakeholders. The architect functions in this force field on the basis of trust. Integrity of the architect self is crucial to operate effectively. Using formal power immediately negatively impacts trust and integrity of the architect. The operational space of an architect in many organizations needs to be achieved by showing results and value. When an architect has a proven track record, then the organization is more willing to give the architect credit and to follow more quickly.

Nevertheless many heated debates take place over the question whether the architect should have formal power. The background of these heated debates, where people argue in favor of formal power for the architect, is twofold: at the one hand the architect function is not bounded, instead it is highly overlapping, as we have seen in the previous section. On the other hand many organizations are organized in disciplines, where architects are perceived as threat. This threat perception is in fact a direct consequence of the amount of overlap. Negatively formulated, the architect is seen as meddler. Often this fear is further annotated with phrases like “the architect does all the fun work”. In other words, architects are often confronted with an existing culture and a given maturity of an organization.

The question for the architect in such circumstances (fear for architects) is how to achieve results, how to build up credit as architect. Some claim that architects need to have sufficient power and management support to overcome this resistance. Others prefer a somewhat more laborious approach, for example by solving system integration problems. In

most organizations where architects are missing, there are plenty of opportunities to provide value during system integration; the lack of architecting shows during system integration.

When we look at architecting efforts at more strategic levels, e.g. portfolio or product family policies, then another element enters into the style and responsibility debate: power and politics. How does the architect at strategic level survive, or better function, in highly political environments? Can the fact-based integrity-driven architect be effective when the surrounding managers play power games to achieve their individual interests?

Also for these questions we have to change viewpoints and consider the perspective of people opposing formal power of architects. Quite often we hear complaints from strategic architects that long term strategies always suffer from short term opportunities. Sometimes even the word sabotage is used in this context; the strategic architects complain that the doers use their de facto power to sabotage the ideas of the thinkers.

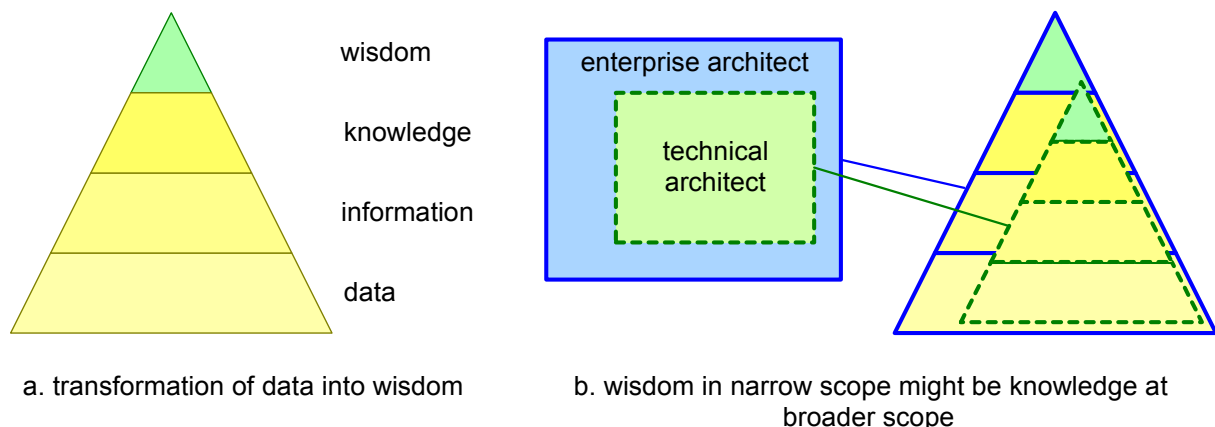


Figure 3, the impact of operational scope on architecting.

The scope of architecting impacts the way of decision making. One of the observations is that decisions taken in a limited scope are viewed differently from the broader scope. Figure 3a shows a pyramid with data at the bottom and wisdom at the top. Every step upwards is a reduction of quantity and at the same time enrichment in meaning. Figure 3b shows that what wisdom in a narrow scope is, might be part of the knowledge at a broader scope. For example, the use of some communication framework as .Net might be wisdom from technical perspective, while from business perspective the technical performance and functionality is

one of many considerations; at business level security, life-time or license issues may change the perspective sufficient to reach another decision.

When we look at scoping and perspective again the question arises about formal power: should the broader architect have formal power over the narrower architect? Again this is the same discussion, with the same considerations. Narrower in general coincides with more expert knowledge; why should the broader architect, lacking detailed knowledge, override the narrower architect with detailed knowledge. Or, vice versa, why should the narrower architect, lacking the bigger picture, override the broader architect with the big picture?

Two alternatives were mentioned for formal power:

- Provide an alternate reporting and escalation path
- Include the architect in the management team

An alternate reporting and escalation path helps to bring architectural considerations to management level. When the operational considerations (short term, time and effort) dominate, then this can be balanced through support of the alternate path. In IBM for example architects report to the Chief Technology Office (CTO).

Inclusion of the architect in the management team is an intermediate. Business decisions are often taken in the management team. When the architect is part of this team, then the architect has more direct impact on these decisions. The business decisions get more balanced when the architecting knowledge is brought into the management team. In many organizations the management team only has business, marketing and operational members. In order to be accepted as full member of the management team, the architect has to conform sufficiently to the management team style and has to provide clear added value to the team. Architects need quite some competencies to function as member of the management team. The profile offered by Bredemeyer [Bredemeyer 1999] offers Technology, Consulting, Strategy, Organization Politics, and Leadership as pre-requisites for the role. Note that when the architect is part of the management team, then the architect doesn't get formal power, but the architect can use the formal power of the management team.

The group of professional didn't reach consensus on the issue of formal power. However, they agreed that when architects have formal power, then it should be used extremely sparse.

4. Summary and conclusions

The role of the chief architect is very broad. The activities of the architect overlap with many stakeholders, where the value is that the architect creates and communicates the integral understanding of problems and solutions. This understanding is used for the primary responsibility of the architect: guiding the design to obtain a system that fits in the customer and business context.

The architecting role is present at many scopes and in many different circumstances. Both scope and circumstances influence the style and profile of the architect. Common to all architects is that they all know what technology to select and why, where to find technology expertise, and what the impact is of technology choices on system and context.

One of the hot debates in architecting is the question: Should the architect have formal power? No definite answer is provided for this question. It is clear that the use of power by architects is seen as risky, potentially damaging their integrity. Nevertheless, in some power-oriented organizations or organizational levels the architect may have to learn to balance power and integrity.

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