

EXCERPT FROM WHITE PAPER

The role of the architect

Analyze customer needs and translate them into requirements



The Cercle CESAM
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Analyze customer needs and translate them into requirements

Extract from the chapter **Black box architecture** of the white paper "The role of the architect"

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Preamble

The analysis of the customer's needs and their translation into requirements that breaks down into 2 main stages:

1. Prioritize the needs of the actors of the system by defining beforehand, in close interaction with the leaders of the project of evolution of the system concerned, explicit criteria of value and risk, to bring out the highest priorities that are appropriate to consider,
2. Decline the needs into system requirements by first formalizing the functional and technical requirements of the system by adhering to a standard requirements statement framework, then organizing them into hierarchies of functional requirements and technical requirements by guaranteeing their traceability with the needs.

THE ESSENTIAL

The architect defines a **list of prioritized needs** in order to **maximize the value/risk ratio** of the system. It is the basis of a **hierarchy of needs in functional and technical requirements**, which is accompanied by the maintenance of both internal and external **traceability** according to needs.

THE MAIN PITFALLS

Among the main pitfalls:

- Operate in all or nothing mode without prioritization of values and without any hindsight,
- Wanting to go too far in writing and breaking down requirements. System architecture is then perceived as a long, laborious process without added value,
- Cover the field of stakeholders without going to consult them,
- The absence of a decision maker who bears the responsibility of deciding the value. It is not the role of the system architect to do this alone

BEST PRACTICES

Here are some good practices to consider:

- Train teams and communicate at the start of each project on the pragmatic nature of the deployment of architecture methods and the search for value.

- Include assisted "tayloring" in the architecture process by allowing projects to adapt the approach in a guided manner to their contexts. It is interesting, for example, to distinguish the type of architectural work "we start from a blank sheet" from that which rather aims to modify an existing one. This tailoring must be accompanied by the implementation of a set of criteria (e.g. reuse, innovation, level of complexity, impact on the existing architecture, maturity of the teams, customers, organization, etc.)
- Have a pool of experienced architects (both on the method and business aspects) who support the teams. This requires the implementation of constructed pathways, based on an assessment of the profile and appetites and which progressively increases professional knowledge (e.g. immersion course in the professions). It is therefore necessary to clearly identify which are the most critical professions. Above all, a strong HR policy is needed.

TESTIMONIALS

We have compiled here several verbatim statements from project managers or system architects from different companies, which echo this phase:

- “ We put time constraints in place to complete the black box architecture, which naturally forced the teams to adapt the level of details of the deliverables.
- “ Taking the time to communicate on the "success stories" by choosing examples that speak to everyone was a real plus.
- “ We organized decision-making committees to refine the risk/value analysis.

-END

PRELIMINARY SUMMARY OF THE WHITE PAPER

– Architect assignments

- Manage the architecture lifecycle
- Black box architecture
 - Capture the needs of internal / external customers and consolidate them** (published)
 - Analyze customer needs and translate them into requirements** (chapter published)
 - Define the uses
- White box architecture
 - Design a system that meets the needs/constraints of the stakeholders with the expected performance, justify the choice of architectures, propose alternatives and make the subsystems converge towards the overall optimal solution
 - Dysfunctional analysis
- Modeling of the system and value chains in architecture
- Proposal, justification and choice of competing architectures
 - Validate the technical choices
- Architecture assessment
 - Assess the maturity of the architecture definition
 - Evaluate the conformity of the architecture to the priority needs / values
- Interfaces
 - Manage internal and external functional and physical interfaces
- Link to product line
 - Ensure consistency with the standard product (when it exists)
 - Implement the product line strategy in the multi-project case
- Impact analysis
 - Analyze the impacts of modification and development requests
- V&V
 - Validate the technical configurations of the product/system
 - Check the design of the subsystems: it covers the needs with the expected performance
 - Compliance with requirements
 - Test
 - Prepare the deliverables of appropriate maturity according to the life phases: pre-project, development, production, support
- Contribution to project management
 - Sharing of responsibility between the architect and the project manager** (published)
 - Contribution of the architect to the activities carried out by the project manager
- Ensure the technical coordination of the project
- Model architecture
- Competitive intelligence / open-mindedness
- System engineering support
- Tips for structuring an architecture team

– The architect in the company

- The architect's interfaces
- Focus on the interface with the business lines
- Focus on the interface with the product lines
- Focus on the interface with the projects
- Focus on the interface with customers

– How to start system architecture

– The profile of the architect

- Inventory in terms of training and certification
- Technical skills
- Transversal skills
- Typologies of architects
- Can everyone become a good architect?

ABOUT THE CERCLE CESAM

The CESAM Community has been developed by the CESAMES Association since 2010. Its objective is to share best practices in Enterprise Architecture and System Architecture. Through CESAM certification, it certifies the ability of players to implement these best practices. The CESAMES association has thus formed the largest community around the MBSE (today, more than 8,500 Professionals are trained or certified in the CESAM method). It relies on major partners, whether academic, institutional or professional.

The Cercle CESAM is a working group whose objective is to develop and share a pragmatic international system architecture standard and to apply it to each major industrial field. For the commercial benefit of its members.

Today the Cercle has about fifteen members, including ITER, Sagemcom, Safran (SHE, SAE, SED), Dassault Systèmes, Idemia, Airbus, Somfy.

The 2 areas of work of the Cercle are: Method and tools (formalization and sharing of applications of the CESAM method by major sectoral areas (case studies, good practices, method tools, etc)) and Professionalization (contribute to the professionalization of the profession as a system architect to promote architects within their organizations).

The Cercle is currently working on the white paper "the role of the architect" which will be published in 2023.

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