

EXCERPT FROM WHITE PAPER

The role of the architect

Assess architecture conformity to
priority needs or value



The Cercle CESAM

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CESAM
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Assess architecture conformity to priority needs or value

Extract of the white paper "The role of the architect"

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Preamble

The architect assesses the compliance of the architecture with the priority needs that he must first identify as such. Compliance is then established, initially, with respect to the state of the art and then with respect to the constituents (2nd stage once the needs have been defined via the first architectural drafts).

The results of this assessment and the first compliance feedback are consolidated by establishing a compliance matrix providing an overall view of what is compliant, non-compliant or partially compliant.

THE ESSENTIAL

Assessing the compliance of an architecture with priority needs or value is a process that must be initiated very early in the development cycle with the identification of value-bearing needs for the customer and the implementation of the compliance matrix defining the elements expected at the different phases (justification, elementary tests, global tests.).

THE MAIN PITFALLS

Among the main pitfalls:

- Poor exchanges between engineering strata and poor consideration of potentially reported non-conformities
- Liar poker policy vs contracts and financial constraints (or to get the contract)
- The upstream team does not use minimum requirements engineering (no upstream tag) in order to give a factual matrix.
- All needs come first
- Lack of clearly defined requirements

BEST PRACTICES

Here are some good practices to consider:

- Identify priority needs (KDD, key design drivers) with issuing stakeholders
- Capitalize on the state of the art and have a management of this state of the art (updated by R&T in particular) to know at any time what we are capable of

- Have a good management of multi-layer engineering margins
- Have a factual statement of the coverage of the technical proposal which is taken into account with the associated level of performance
- Element contributing to the T of the QCDT during the phase transition
- Very early in the development cycle, have a preliminary mapping of the Key Driver Parameters (main indicators) on the different layers of analysis (need, system, subsystem, etc.) allowing a preliminary assessment of the feasibility and conformity to needs. Establish a traceability link between these KDPs.

TESTIMONIALS

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

- “ With us, the prioritization of value is done by the teams in charge of writing the black box. The response is done by the architecture in the form of a batch with a logical division which represents the integration chain
- “ Contractual constraints stronger than non-compliance alerts from sub-systems and customer notified too late of non-compliance, program canceled late and financial and image losses at the end
- “ Development of a pre-sizing model to link operational KDPs, KDP systems and KDP subsystems. Development of a diverted DSM matrix -> "KDP Structure Matrix" to ensure a traceability link of KDPs and analyze the impacts of non-compliance with certain parameters
- “ All needs come first. With us, it is very difficult to have the analysis of the value as justification. The magic phrase "The market will never accept" is very often used

-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** (published)
 - Define the uses** (published)
- 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** (published)
 - Dysfunctional analysis
- Modeling of the system and value chains in architecture** (published)
- Proposal, justification and choice of competing architectures** (published)
 - Validate the technical choices
- Architecture assessment
 - Assess the maturity of the architecture definition** (published)
 - Evaluate the conformity of the architecture to the priority needs / values**
 - Assess the technical maturity of the solution choices
- 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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