

EXCERPT FROM WHITE PAPER

# The role of the architect

For a product line architect,  
manage the lifecycle:  
Maintenance and evolution



The Cercle CESAM  
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**CESAM**  
COMMUNITY

# For a product line architect, manage the lifecycle: Maintenance and evolution

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

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### Preamble

The evolution of a product line is dictated by changing needs. These changes in needs can come from several sources, such as the market, future business needs, or the desire to introduce new products into the product line.

### THE ESSENTIAL

Controlling the scope and technical debt (management of obsolescence and technical choices of implementation) of the line of products via strong governance is a major challenge for its maintenance and development.

### THE MAIN PITFALLS

Among the main pitfalls:

- There is no governance or no solid governance (i.e., which is not recognized in the company or supplanted by other processes – by projects for example).
- Governance that is too rigid or decorrelated from operational needs, which no longer allows adaptation to market changes
- The project that forces the product line to make a change and ultimately distorts the product line
- Obsolescence management:
  - we cling to all the functionalities, even those which are no longer relevant, which leads to a maintenance cost that is too high
  - the obsolescence of components not taken into account in the creation leads to a maintenance cost that is too high for the product range, even jeopardizes it
  - creation and maintenance are decoupled and have no common rules

### BEST PRACTICES

Here are some good practices to consider:

- Set up feedback from projects to the product line within governance to reinject what could be reused and understand what is not used
- You have to make sure that the maintenance and the evolution of the product line are done at the right moment, that is to say at the moment when you need to make an instantiation. It is a question of piloting the line of products according to the deadlines of the project
- Move architects between product line maintenance and projects to improve the relevance of architectures to project needs
- Have meshed during the creation of the product line the documentary architecture (from specification to testing) on the architecture of the product line in order to promote the capitalization of projects and configuration management
- Do not hesitate to prune certain elements/functionalities or even to make a new range of products if you realize that maintaining or changing the line of products no longer makes operational or economic sense

## TESTIMONIALS

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

- “ Nowadays we sometimes spend a lot of time finding test reports, justifications for design choices, etc. due to a lack of link between the documentation and the architecture, and of sharing between the different entities.
- “ We are mainly working on extending product lines (by adding new artefacts) to gain in efficiency and even address new markets more quickly.
- “ Development environments vary enormously over very long series: we have to keep old PCs only to make changes in the event of problems with these old products

**-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**
- Role of the architect within the framework of a range of products
  - For a Product Line Architect: Manage the Life Cycle of the Product Line (Standard Product Architect)**
    - Creation of a range of products**
    - Maintenance and evolution**
  - For a project system architect: Ensure the consistency of the project architecture with the standard product (when it exists)
- 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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