



Nuclear & Energy

MISSION



SECURE A DESIGN PROJECT AND IMPLEMENTATION OF A COMPLEX PRODUCT BASED ON SYSTEM ENGINEERING

CONTEXT

AREVA NP, AREVA group subsidiary, is a major international actor of the nuclear industry. With more than 14000 employees around the world, it is recognized for its innovative solutions and its high value technologies in the conception, construction, maintenance and the development of the world's nuclear fleet. The company designs and manufactures components, fuel and offers a full range of services for reactors.

As part of a project in the design phase which is already at a very advanced stage, AREVA NP wishes to secure a project by mastering the integration of one of its products, which is complex involving multiple professions. Let's call it here Product X. The CESAMES architects were called to assist the AREVA NP teams working on this subject.

PROBLEMATIC

How to adapt the engineering process of product X, in order to:

- Maximize its efficiency,
- Secure its integration and the achievement of the expected performance,
- Benefit from the system engineering methods while taking also into account of the feasibility constraints related to the existing team organization and the very advanced status of the conception.

SOLUTION

The CESAMES architects supported AREVA NP throughout two major stages:

1. **Definition of the right system engineering ambition in relation to the context of the project , by:**
 - Studying the feedbacks from the previous projects to understand the strengths and weaknesses of the current functioning,
 - Identifying the system engineering activities to be developed as a priority to compensate the weaknesses,
 - Building collaboratively a realistic system engineering ambition in terms of timeframe, budget and taking into account the previous analysis with stakeholders



SOLUTION (Cont'd)

2. Support for the implementation of the systems engineering ambition once validated by the COMEX for the year 2017:

- At the global product level: build and share an operational model of the global product that wasn't yet formalized, starting from a capture of the macroscopic needs of the project. This step was achieved through an architectural coaching process with the project architects (8 half-day coaching sessions with 5 architects). It also consisted in the animation of 2 collaborative workshops and decision making with stakeholders (manufacturing, client, regulations, purchasing, commissioning, installation).
- At the by-product level: construction of an overall architecture of each by-product. This architecture provides an analysis grid to verify that the existing detailed specifications of each by-product meet the needs. This step was achieved through a training approach followed by individual coaching of the by-product managers (15 people trained and coached).
- At the project level: animation of the regular information sharing and interactions between all actors through 3 one-day collaborative workshops.

RESULT

The key elements of the mission achieved:

- A repository of 150 macroscopic needs summarizing all the needs and product constraints has been validated with/by the stakeholders,
- An overall product architecture built and cascaded at the subsystem level was validated by stakeholders,
- 20 people were trained in system architecture and became aware of the importance of the multi-business approach,
- An overall product verification strategy was under construction (dated 1 November 2017),
- The sharing of viewpoints thanks to the method & process was fruitful and led to more informed decisions.

STRENGTHS of CESAMES

- Flexibility in the content of the support
- Theoretical solidity and pragmatism of the teams
- Use of examples that are directly applicable to the client being accompanied
- Ability to truly listen the audience
- Impeccable and very professional animation of meetings

Architect Product Integration – AREVA NP

“One of the things I like about the CESAMES methodology is that everything is based on a solid theoretical foundation. CESAMES support has the characteristic of challenging and understanding the client's needs, instantiating and relaxing some theoretical concepts so that they can be adapted to companies' capacity to assimilate new methods. »