

Question 3.05 What are your expected benefits of using digital substation concepts and how to measure if the benefits can be realized?

RTE is currently developing a digital PACS based on a modular architecture based on IEC 61850 called R#SPACE.

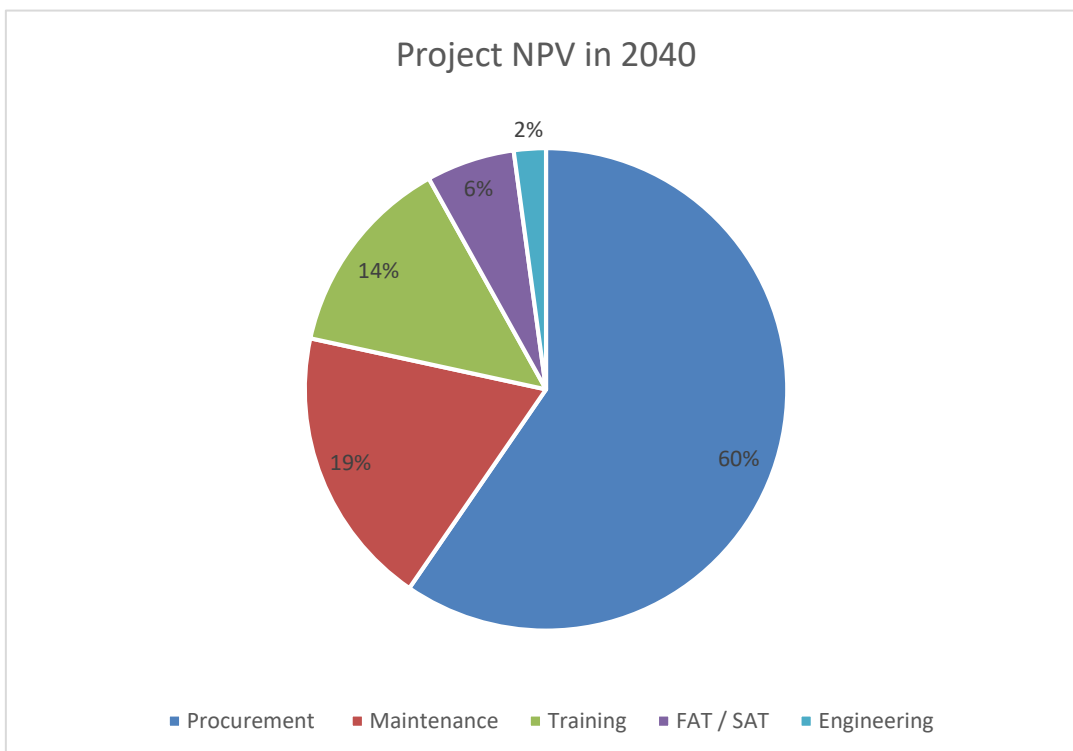
Economic Evaluation Method

The economic value provided by the R#SPACE project is established on a comparative analysis with the overall cost of a turnkey solution (i.e. the baseline scenario for the purpose of the analysis).

The economic study assumes a need for annual renewal of around 4% of the 14,000 bay units of the RTE electric network, the Protection, Automation and Control assets having an overall average lifespan of 30 years.

Due to costing and gain uncertainties, the calculation of the project NPV (Net Present Value) is carried out according to 3 scenarios: best case, medium, worst case.

As shown in the following graph, deployment costs account for the major part of project costs.



Therefore, the main benefits generated overtime by R#SPACE will expectedly derive from savings on deployment costs, and specifically on equipment and supply, but also from a better efficiency in the Factory Acceptance Test and Site Acceptance Test processes.

Other secondary benefits are also expected on training of the maintenance staff and maintenance costs, and notably on operations that can be managed remotely (including software upgrades, diagnosis and some maintenance activities).

Finally, some other benefits are more difficult to quantify and related to R#SPACE improved ability to adapt to the functional evolutions of the electrical network and in particular the transition to a more important share of renewable energies in the electric mix, at a lower cost than solutions based on legacy turnkey industrial systems. Those benefits are not all integrated yet in RTE economic study, and derive from R#SPACE modular architecture and a lesser reliance on suppliers. Recent architecture optimisation efforts aiming at lowering equipment costs demonstrate that the benefits of this new digital modular PACS are not limited to a better response to the electrical network needs but bring also some immediate economic benefits at equivalent technical perimeter. In addition, RTE ongoing technical and economical works confirm that R#SPACE has a better capability to continuous improvement. An important share of the project expected benefits depends on the success of R#SPACE industrial strategy that allows for more competition between the suppliers when possible, and more room and flexibility for products and systems improvements.