



REFERENCE CASE



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TotalEnergies, one of the seven supermajor oil companies.

TotalEnergies SE is a French multinational integrated energy and petroleum company founded in 1924 and is one of the seven supermajor oil companies. Its businesses cover the entire oil and gas chain, from crude oil and natural gas exploration and production to power generation, transportation, refining, petroleum product marketing, and international crude oil and product trading.

TotalEnergies (TE) is also a large-scale chemicals manufacturer. TotalEnergies has its head office in the Tour Total in La Défense district in Courbevoie, west of Paris. The company is a component of the Euro Stoxx 50 stock market index. In the 2023 Forbes Global 2000, TotalEnergies was ranked as the 21st largest public company in the world.

Oil - biofuels - natural gas - green gases - renewables - electricity

In recent years, TE has undergone major changes from a petroleum company into a company that produces and market energies: oil and biofuels, natural gas and green gases, renewables and electricity. Their primary objective is to provide as many people as possible with energy that is more affordable, more reliable and more sustainable.

Some key figures (end 2023)

- Over 100,000 employees in nearly 120 countries
- 2.5 Mboe/d of hydrocarbons produced in 2023, including 44% from gas
- World no. 3 in liquefied natural gas
- 28 GW of gross installed electricity capacity, including 22.4 GW for renewable electricity
- Nearly 14,600 service stations and over 60,000 charge points worldwide
- 331,000 tons of biofuels produced
- 16.8 billion dollars invested, including 35% for low-carbon energy

Our role

We (M2Q) were part of a larger offering of various Cronos companies. To TE, this was transparent as we presented ourselves as Cronos with each company focusing on their strengths. For M2Q, this is Release-, Quality- and Test Management.

Our role as M2Q was split into 3 parts depending on the timeline of the project:

- Participating in the bid for program management of the Omega project with focus on release-, quality- and test management. Furthermore, assisted in streamlining the bid and agreeing who is responsible for which part.
- Create, align, and deploy a number of guidelines in relation with release-, quality- and test management. These were applicable for the software providers and TE.
- Steer, guide, and assist TE in accepting and deploying the software from the providers

One important aspect must be stressed that for the Omega project we were on the side of TE, and were chartered to ensure that the software providers delivered their products in accordance with the specifications. Additionally, we helped TE on how the program is/can be implemented, and how they can replace their current software by a number of packages.





Environment

The environment is quite complex with in-house development, and maintenance / configuration / implementation of several COTS applications. Additional complexity was that multiple vendors provided COTS applications and that in some cases multiple instances of the same software was implemented (e.g., SAP).

The focus is on replacing in-house software for Custom/Excise, Labo, Oil Movement & Refinement by 3 integrated Commercial off the Shelf software (COTS). These COTS must also be integrated in the eco-system of TE.

- The business SPOC's were primarily local. Local IT, central IT and HQ IT were also involved which required a lot of coordination

Challenges

TE had several challenges that were resolved, mitigated, removed, etc... by the actions in our solutions.

Some examples of the major challenges were:

- TE has no experience implementing and managing a program for such large scale replacement.
- 24/7 operations which have an impact on the Labo and Oil Movement/Refinement software availability.
- Replacing in-house developed software by a COTS which may require some trade-offs
- Limited resources has TE operates as a very lean organization
- Business and IT organisations focus on keeping the software operational not on adapting, improving, etc... Consequence is that there is lack of experience on how software can be validated and tested, and, eventually, released to production.
- Etc...





SOLUTIONS

Our solutions

The focus of our solutions is on those aspects of release-, quality-, and test management we deemed needed to ensure the successful delivery and implementation of the Omega project. Additionally, we participated in other areas as requested and where we can provide useful insights. For example, the validation of and changes to the Jira set-up. Another example is to validate the requirements documents of the software providers.

For the Omega project and TE, we provided a SPOC for all 3 areas under our responsibilities. We involved the people with the required experience as we see fit. This avoided that there are too many contact points and that the information was dispersed. Furthermore, it ensured that from M2Q there is only 1 person responsible for the delivery of the expected points.

The remaining part of this section focuses on the most important solutions and has no intentions to describe everything that we provided and foresee for the TE and the Omega project. Key is that our solutions are applicable to the software providers and TE.

For **release management**, we provided and foresee the following solutions.

- Set-up a number of environments to manage to complete flow from development, test, acceptance to production. Additionally, a sandbox is created with the objective to contain the standard version of the software provider and is used as a reference point. Each environment had an objective and purpose, owner, deployment frequency, and a description of the foreseen data.
- Deployment criteria to go from one environment to another. These deployment criteria are more stringent when coming closer to production. Important to mention is that the criteria are quantifiable.
- Standard release and deployment plan
- Cutover plan for going to production
- Communication plan for releases and deployments
- Set-up of (virtual) Change Advisory Board (CAB) to ensure only approved software gets deployed. Key is that the CAB caters also for emergency interventions

For **quality management**, we provided and foresee the following solutions.

- Set-up and implementation of a defect management process and prioritization method of the defects. The defect management process is applicable during the implementation of the project, and after go-live.
- (Key) Performance Indicators are set-up, and measured. The indicators focus on release (e.g., deployment errors), quality (e.g., all stories have acceptance criteria), and testing (e.g., number of test that pass/fail/not run).
- Set-up and validation of Non-Functional Requirements
- All stories have acceptance criteria
- Guidelines on managing changes and the impact of a change



For test management, we provided and foresee the following solutions.

- A basic test process, and an approach to testing for functional and non-functional requirements
- Test scenario and test case guidelines
- An approach to testing performance
- A number of basic test techniques like regression and functional testing
- Specific for the software providers, we focused on requesting test evidence and not how to test. In this case, we provided guidelines on what they should deliver.
- Set-up of the test management tool Xray (add-on for Jira)
- Guidelines for TE on how they can organize the testing especially as the delivery is incremental

Methods and Techniques

- Mainly a waterfall approach – during the delivery of the software an incremental approach was chosen so early validation could be done.
- Fixed price project
- Resource planning techniques
- Various workshop techniques
- Project management techniques
- Transparency approaches like program board, burn-up, burn-down, etc...

