

CASE STUDY: C3 IOT AND ENGIE

ENGIE Transforms Its Business by Building on C3 IoT's PaaS

Energy Company Leverages Internal Expertise with
Partner Technology to Enhance Global Business
Process ROI



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AT A GLANCE

ENGIE develops its businesses (power, natural gas and energy services) around a model based on responsible growth to take on the major challenges of the energy industry's transition to a low-carbon economy: access to sustainable energy, climate-change mitigation and adaptation, and the rational use of resources.






ENGIE provides individuals, cities and businesses with highly efficient and innovative solutions, largely based on its expertise in four key sectors: renewable energy, energy efficiency, liquefied natural gas and digital technology.

A successful transformation requires fundamental process changes for both intraenterprise as well as value chain-centric best practices. Because existing platforms could not handle these requirements, ENGIE sought a next-generation platform to power new requirements.

ENGIE

- **Headquarters:** Paris La Defense
- **2016 Revenue:** €66.6 billion
- **No. of Employees:** 153,090 (2016 average)
- **Industry:** Energy/utility
- **CEO:** Isabelle Kocher
- **Executive VP, CIO & CDO:** Yves Le Gélard

Business Themes

-  Data to Decisions
-  Technology Optimization
-  New C-Suite
-  Future of Work
-  Next-Generation
- Customer Experience

At a Glance	
Problems	<ul style="list-style-type: none">• Revenue challenges were caused by volatile commodity prices.• ENGIE's new strategic priorities, such as decarbonization and decentralization, required digitalization.• Digital transformation required a new technology platform and approach.
Solutions	<ul style="list-style-type: none">• C3 IoT Platform, Applications and Tools.• Center-of-excellence approach to attract/retain talent and work with ENGIE's business units.
Benefits	<ul style="list-style-type: none">• Faster time-to-market of next-generation applications for retail B2B and B2C and power plant maintenance.• Savings in plant operations.• Better customer intimacy and satisfaction.

To achieve this, ENGIE selected the C3 IoT Platform based on five factors:

1. Time-to-value capabilities
2. Type of system architecture
3. Prebuilt utility assets and domain expertise
4. C3 IoT prepackaged applications
5. Willingness to go the extra mile to make ENGIE successful

C3 IoT jointly delivered four early solutions for ENGIE, including business-to-business (B2B), business-to-consumer (B2C) and Internet of Things next-generation applications.

THE COMPANY

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For ENGIE's Group Digital and IT Department, managed by Yves Le Gélard, this meant that new tools, process and vendors were needed to support the transformation. To address these challenges, ENGIE invested €1.5 billion and created ENGIE Digital.

ENGIE Digital will enhance the company's digital transformation in the following ways:

- Supporting the development of new offers
- Accelerating the efficiency of assets and services
- Reinventing the internal functioning of the company

Both business units and functions have already identified many digital projects.

The company also decided to invest in major technology partnerships.

THE CHALLENGES

The switch from energy products to energy-efficiency services poses formidable challenges to the internal systems and the IT landscape.

ENGIE's executives quickly realized that their new strategy meant that traditional software vendors could not provide the required automation, and thus they would need to leverage more innovative technologies—for example, big data, the cloud, IoT and artificial intelligence—to power its transformation.

During a vendor selection, ENGIE executives understood that the speed of implementation was a key selection criterion. This led to the decision to centralize skills on these new technologies and leverage partner capabilities to complement the internal talent pool and propagate methods within the business units. It was clear to Le Gélard that experience and a successful track record for rapid project delivery would be the key criteria when selecting the new platform.

THE SOLUTION

After a thorough request-for-proposals process, ENGIE selected C3 IoT as a strategic partner, providing the big data and advanced analytics platform as well as the expertise for the onboarding process.

The key factors that prompted ENGIE to select C3 IoT were the following: industry-ready functionality for utilities in the platform; prebuilt C3 IoT software-as-a-service applications; and the capacity to develop, operate and maintain a custom application on the C3 IoT Platform that would help its 24 business units to differentiate themselves in both the marketplace and internal operational efficiencies.

To formalize setup, process and organization, ENGIE and C3 IoT partnered to build a center of excellence (CoE) that is jointly staffed by both companies. ENGIE executives were very interested in having C3 IoT staff in the CoE because they know the C3 IoT Platform and products, and also to leverage the expertise C3 IoT gathers from being based in Silicon Valley.

Consequently, the joined project teams worked on their first deliverables both in Paris and Silicon Valley.

To date, the joint CoE has tackled three major projects:

1. Enterprise energy monitoring with Project Clara Domus. Powered by the C3 IoT Energy Management module, energy operators can now see what energy consumption their facilities have at any given time. Moreover, energy operators can combine visibility of energy consumed from ENGIE, as well as information from their property management systems and more external data—e.g., weather information. The system helps customers meet their contractual obligations in regarding temperature, humidity and other parameters, for example. The project, Clara Domus, enables over 1,000 large facilities in Italy to make smarter decisions about their energy consumption, savings and carbon footprint reduction.

2. Consumer energy transparency with Mastermind and Energy Manager Retail. Consumers want and need to see their energy consumption and costs. Mastermind (in France) and Energy Manager Retail (in Belgium) provide self-monitoring based on the C3 IoT Residential module, with minimal extensions. To build these applications, the CoE teams tapped into a variety of data sources. There were at least three key ENGIE systems, some of them custom and some of them powered by a commercial off-the-shelf system. Customers can now access their consumption history, forecast future needs and, most interestingly, benchmark their consumption, both in kilowatt hours and euros, against similar customers. All of this is enabled by an easy-to-use and intuitive home page.

3. Predictive maintenance for power plants with Project Delta. To optimize plant operations, ENGIE decided to implement predictive maintenance solutions. Based on the C3 Predictive Maintenance module, the new system is able to visualize asset performance and plant efficiency across

multiple plants, and it has the ability to drill down into individual plant assets regarding historical performance. To achieve this, the new system will load and combine data from three other systems and ingest real-time updates from 250+ sensors.

THE IMPACT

The close partnership with C3 IoT, the joint staffing of the CoE and the early projects have enabled ENGIE to become proficient on the C3 IoT Platform quicker than with a traditional transfer of acquiring platform skills. Constellation estimates that the joint CoE approach, coupled with hands-on delivery of real-world projects, doubles the speed of enterprise adoption and proficiency on a new platform.

The early solutions have already shown a financial impact. For example, the Delta preventive maintenance application has shown significant savings for plant maintenance in two Middle East countries.

From an overall perspective, ENGIE has committed to three strategic growth engines: low-carbon dioxide power generation, global networks and customer solutions, with approximately €16 billion in investments, of which €1 billion is in innovation and digital. The C3 IoT Platform and

“ENGIE has implemented an ambitious plan to confront the major challenges posed by climate change and promote people’s access to reliable, innovative, socially responsible, low-carbon and decentralized energy. C3 IoT is an essential partner in ENGIE’s digital transformation, enabling ENGIE to support our mission to be at the vanguard of the IoT revolution.”

– Isabelle Kocher
ENGIE, Chief Executive Officer

The Technologies

- C3 IoT Platform
- C3 Data Integrator
- C3 IoT Analytics Engine
- C3 Enterprise
- C3 Type Designer
- C3 Data Explorer
- C3 Data Science Notebook
- C3 Ex Machina
- C3 Residential
- C3 Predictive Maintenance

the applications that ENGIE plans to build on it are expected to improve agility, cost effectiveness and efficiency across the three pillars. (See Figure 1 for more on the project's financial impact.)

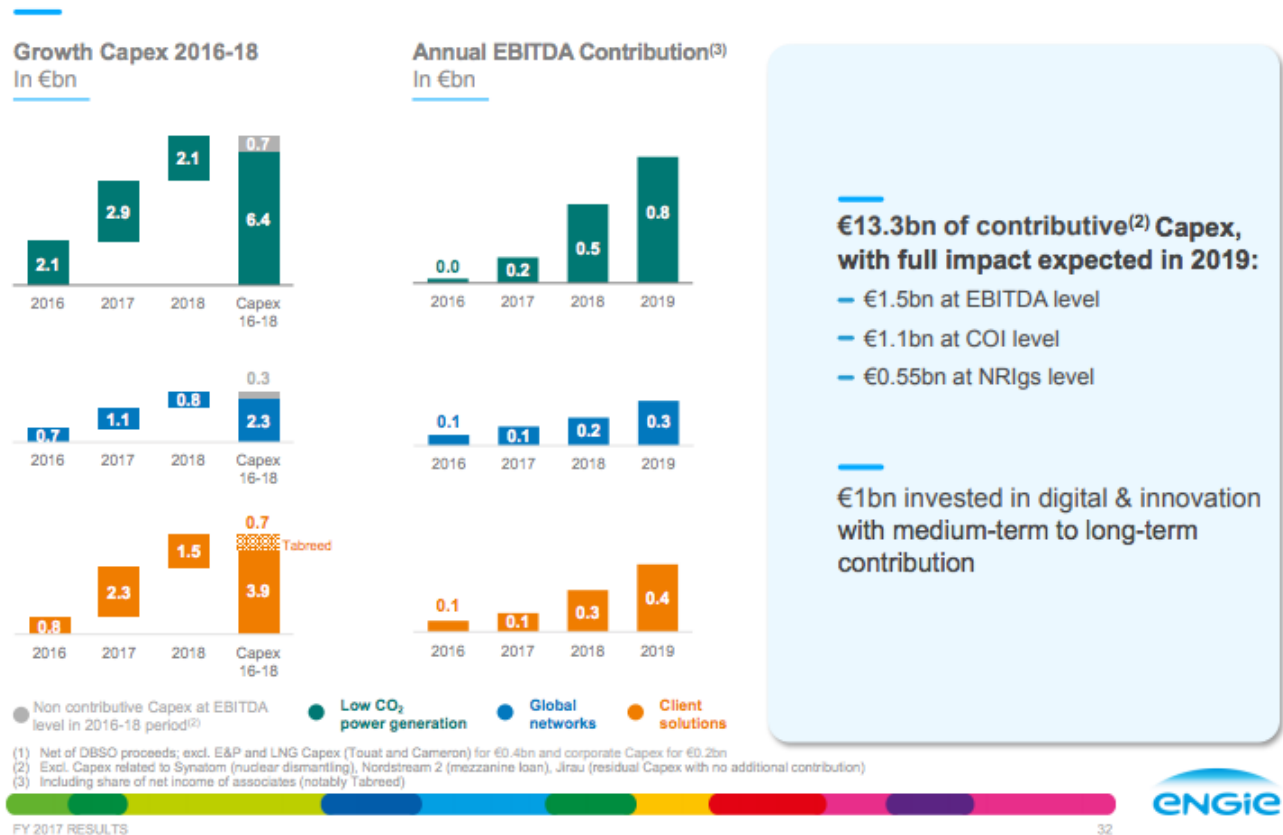
THE TAKEAWAYS

Lessons Learned

The ENGIE team has several worthwhile lessons to share for other CxOs selecting PaaS platforms and building next-generation applications:

Figure 1. ENGIE's Visible Returns from Growth Capex

VISIBLE RETURNS FROM GROWTH CAPEX



Source: ENGIE, fiscal year 2017 results

- **Talent matters.** People and their abilities matter for the delivery success of next-generation applications. The most desired technical skill has been big data project experience, with an expected shift toward more data science and machine learning skills once the data platform has been established. For a successful CoE setup, skills such as business expertise, data science, strong interpersonal and multicultural skills are essential.
- **The mixed CoE model works.** The joint staffing of the CoE between ENGIE and C3 IoT has been a key success factor for the utility. The teams were able to get up to speed quickly and deliver the first production-grade applications in a matter of months. Enterprises should explore and implement a joint CoE model if they are interested in similar platform-uptake speeds.
- **Speed is essential.** ENGIE is following an ambitious three-year transformation plan, which means the C3 IoT Platform needs to scale. As of the end of 2017, ENGIE has delivered four early applications,

and soon it will operate dozens. ENGIE made the decision to deliver these with in-house resources, valuing the domain and current operational system expertise. Many enterprises are in a comparable situation and need to search for options to accelerate their business, not only to build next-generation applications but also to successfully roll them out, operate them and ensure a positive market impact and ROI.

- **Group-level scale matters.** A headquarters-based effort is essential to helping ENGIE achieve scale of investment, allow the rollout to the business units, and create and leverage cross-business-unit synergies.
- **Business unit onboarding speed is critical.** While the central start and scale was a key catalyst, the adoption rate of ENGIE business units was the main challenge. The speed with which the business unit resources can get started building and delivering next-generation applications with the C3 IoT Platform is critical. ENGIE plans to replicate the joint delivery approach within the business units, only this time

the joint teams will be working with ENGIE Digital and business unit colleagues.

ROI

ENGIE picked all four initial use cases with an emphasis on ROI. Business units realize that working with the CoE resulted in real savings. Savings from the Delta project solidified their interest to collaborate. Solutions such as Mastermind/Energy Manager Retail are key for the business units to achieve. Business unit management quickly realized that partnering with the CoE early can give business units a fast start through reuse and new creation, and then accelerate their ability to meet their objectives.

Best Practices

As often with technology innovation, finding the right balance between the need to lead and learn about modern technologies and platforms on one side and an enterprise's need for speed on the other side is a substantial challenge. ENGIE Digital saw the same challenge, but with the help of the joint CoE,

the company could accelerate learning and choose initial projects that would be early and easy wins given the know-how in the organization.

At the same time, the competition never sleeps, which is true for ENGIE as well. Exploiting the right level of competitive pressure and pointing to a solution that is available in-house is a delicate balance. However, when mastered successfully by a CxO implementing next-generation applications, it's a key accelerator and success factor. So, use and don't underestimate the energy level that an organization can tap into when faced with competitive pressure.

The biggest challenge for a fast uptake in the business units is proven experience with big data projects, so the best practice recommendation is to anticipate technical skills earlier from both an internal training/learning perspective as well as from a talent acquisition perspective.

What to Avoid

Here are four situations to avoid, as learned by the ENGIE team:

1. Keep the right balance between system integrators and digital software editors.

ENGIE has put in place a smart combination of expertise coming from editors (as in C3 IoT), the most aware of the code, and system integrators, who bring in the fuel that is needed for application development.

2. Leverage your own staff. ENGIE executives saw that the digital transformation projects should not only be staffed with domain experts from ENGIE, but that they should also be built and operated by ENGIE.

3. Make sure learning and coaching capabilities scale. Consequently, this meant that ENGIE Digital had to make sure that the business units have the right leadership and operational and technical skills, resulting in both prodding conservative business units into using C3 IoT and, on the other side, slowing over-eager units to realize

what it would take to be successful. That's a delicate balance when you consider the need for transformation speed. With over 70 countries involved, this is not only a sensitive case-by-case question but also a volume challenge for a central organization. Being prepared to coach a high number of autonomous business units is critical to keep in mind for a successful platform adoption and application rollout.

4. Don't scare your workforce. Finally, employees can become concerned that they are on the losing side of digital transformation projects. The CoE and system integrator-free approach that ENGIE chose addresses many of these fears. It's now up to organizational and individual learning speed to be successful at ENGIE.

THE RECOMMENDATIONS

CxOs who must make platform and implementation decisions can learn many things from this case study, but the following four points stand out:

- 1. Pick a platform with built-in speed.** In an era when enterprise speed matters, any tool that can accelerate an enterprise is a key success factor. The C3 IoT Type System, prebuilt applications and platform tools are a means to the end of the accelerated adoption of the C3 IoT Platform. CxOs should seek similar accelerators for “time to go live” and ask platform vendors for them.
- 2. Think outside of the box.** Every organization is different. CxOs need to find the right approach for their enterprise. In ENGIE’s case, it chose a central approach with ENGIE Digital and a CoE approach with joint project delivery with C3 IoT in order to deliver the first projects and entice ENGIE’s business units to start working on the new platform. That approach worked for ENGIE and is likely to be successful for enterprises in a

comparable situation and organizational setup. CxOs should evaluate what worked for ENGIE but not blindly copy the approach.

- 3. Build in-house.** Enterprises operate in the era of business best-practice uncertainty, caused by technology progress that for the first time has overtaken the traditional demand for best practices. This void cannot be filled by the standard software vendors, who largely only automate the 20th century practices and not the new 21st century best practices. The experience of system integrators is limited as well. What is vital for enterprises is the domain expertise of their own teams and the speed of making quality calls on what works and what doesn’t. The fabled “fail fast” approach is most successful when an enterprise can autonomously decide to switch gears, start over and find what works—without having to wait for a pilot project, the next release or a new set of consultants. CxOs should strongly consider following the ENGIE approach of building their next-generation application with current in-house employees.

4. Cater to strengths; be aware of

weaknesses. As with all successful business strategies and decisions, knowing the strengths and weaknesses of the organization and those of the relevant players in the market is key. CxOs should be keenly aware of their organizations' weaknesses and shortcomings, but at the same time not underestimate the potential, creativity, ability and fortitude of their people. Finding creative ways to tap into this potential, as ENGIE has done with the joint staffing of the early projects with C3 IoT, is a good and promising approach.

ANALYST BIO

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Holger Mueller is vice president and principal analyst at Constellation Research, providing guidance for the fundamental enablers of the cloud, IaaS, PaaS, with forays up the tech stack into big data, analytics and SaaS. Holger provides strategy and counsel to key clients, including chief information officers (CIO), chief technology officers (CTO), chief product officers (CPO), investment analysts, venture capitalists, sell-side firms and technology buyers.

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