

# COLLABORATIONS

Collaborations of projects and departments in the certification of innovation activities at FCC Construcción

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FCC Construcción 2024



The National R&D Department manages each year the certification process for the innovative activities carried out at the different work centres once they are completed. This process always requires the direct collaboration of the units involved and generates significant benefits for FCC Construcción:

- It provides references of R&D&I projects for bids, especially in public tenders where they are specifically assessed.
- It enables the company to obtain tax deductions for R&D&I activities in the corporate income tax.
- It expands the areas of activity covered by the Innovation Management System certified under ISO 56001, strengthening the company's innovative positioning.

During the 2024 fiscal year, the following certifications have been completed:

### AENOR Certificate – Innovation Management System



### NEW INTELLIGENT TECHNICAL PLANNING PLATFORM

It has been certified as “TECHNOLOGICAL INNOVATION” thanks to the support and collaboration of the Planning Service team, belonging to the Management Control and Planning Department.

The project aims to create and develop a new company-wide global repository platform for technical planning and monthly certifications (PLTs and Certifications).

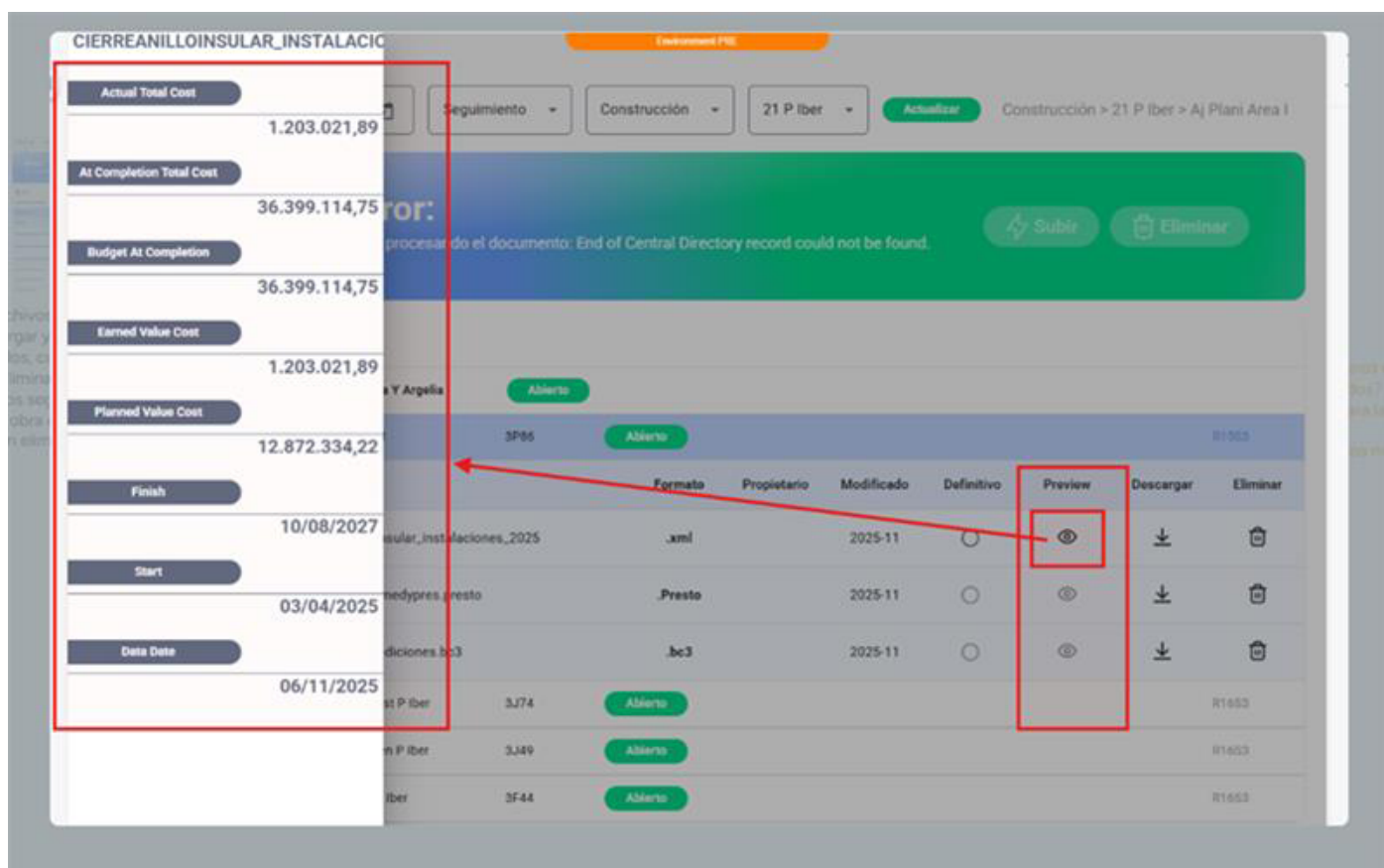
División	Número	Estado	Referencia
Penins.Ibérica Y Argelia		Abierto	
Aj Plani Area I	3P65	Abierto	R1583
Esta División no contiene documentos asociados. Si está abierta, arrastra cualquier archivo al banner superior para poder contribuirlo.			
Ctes Comer Est P Iber	3J74	Abierto	R1653
Ctes Satt Ingen P Iber	3J49	Abierto	R1653
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The design of the tool resulted in a platform that not only provides a global physical repository (which did not previously exist at company level) to host the supporting files containing the details of technical planning (files from various software programs such as P6, MS Project, Excel) and monthly certifications (standard information exchange files such as BC3 and Excel), but also advances towards the possibility of storing this information in a structured database, extracting data, and generating dashboards with aggregated level KPIs (the ability to create reports directly from the tool).

The global management of these documents—containing the periodic summary of each project, both at an aggregated level and individually in detail—is crucial for maintaining an updated and detailed record of all relevant project information and for enabling portfolio /company level management decisions. Therefore, its internal impact within the FCC Group is substantial.

### Objectives:

- Allow information to be stored in the main file formats.
- Enable different departments and users across the company to access data from these supporting files so that it can be used in the various dashboards (across different departments).
- Provide a tool that allows each project to easily monitor the uploading of files.

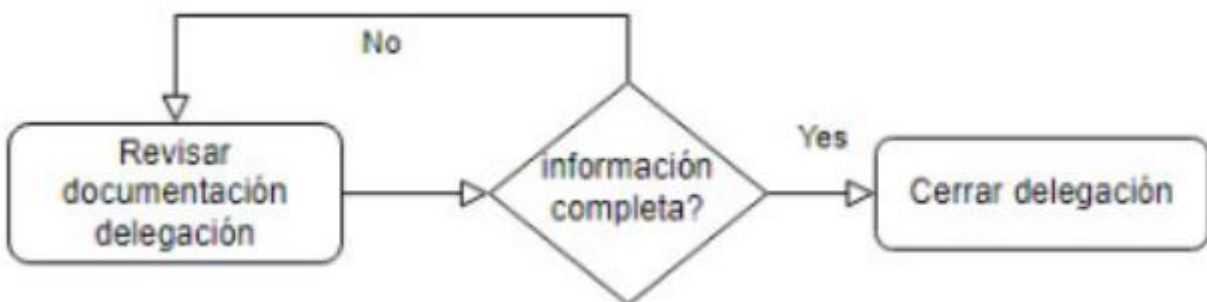


## Information flow:

- **Site/Delegation staff:**



- **Delegation administrator:**



- **Head Office administrator:**

- A. User role administration
- B. Management of the projects that must report (opening delegations, selecting whether they report PLTs, certifications, or both)
- C. Management of project statuses
  - I. Open: ready for file upload
  - II. Completed: files have been uploaded and are ready to be validated
  - III. Closed: files have been uploaded and validated
- D. Documentation control

To meet the previously mentioned need, a new application has been developed, structured mainly into 5 sections:

- **PLT Upload:**

**The project/delegation may upload files containing the project planning in three different formats:**

- .xer – Primavera P6
- .xml – Microsoft Project
- .xlsx – Microsoft Excel
- .

- **Certifications Upload:**

The project/delegation may upload files containing the details of the project certifications in two different formats:

- .pzh – Presto
- .xlsx – Microsoft Excel

The upload must be completed every month.

- **PLT/Certification Upload Status Monitor:**

The delegation may always review the upload status of its corresponding projects. Similarly, the central services can view their status, close delegations, reopen them, etc.

In both cases, delegations may be closed once all documentation has been uploaded, or reopened if additional files need to be submitted.

- **Administration:** Central services may manage the following through the tool:

- User and role management, assigning roles and defining the organizational scope accessible to each user.
- Management of projects required to report under each functionality.
- Management of project statuses, monitoring, and revisions.

- **Other medium/long-term requirements:**

- Ability to export the global view of upload status to Excel
- Inclusion of reports
- Intelligent reading of data from uploaded files
- Dashboards with the data obtained from the intelligent reading of uploaded files user role flows

Tracker\_ 2.1.08

2025-11 | Seguimiento | Construcción | 21 P Iber | Actualizar | Construcción > 21 P Iber > Aj Plan

¡Enhorabuena!  
Datos extraídos y guardados exitosamente.

Subir | Eliminar

PLTs	Formato	Propietario	Modificado	Definitivo	Preview	Descargar	Eli
Penins.Ibérica Y Argelia							
Aj Planl Area I	3P86						R1533
Archivo							
Cierreanilloinsular_instalaciones_2025	.xml		2025-11				
Ctes Comer Est P Iber	3J74						R1653
Ctes Sott Ingen P Iber	3J49						R1653
0.ctes. Gda P Iber	3F44						R1653

Certificate:



## DEVELOPMENT OF AN ADVANCED IT TOOL FOR CRITICAL BUSINESS WORKFLOWS

It has been certified as “TECHNOLOGICAL INNOVATION” thanks to the support and collaboration of the Planning Service team, part of the Management Control and Planning Department.

In the current context of the construction industry, digital transformation has become a key element for improving efficiency, traceability, and control throughout all phases of the project life cycle. Large construction companies, such as FCC Construcción, face the challenge of integrating heterogeneous corporate systems such as SAP for economic financial management and Oracle Primavera P6 and PCC Unifier for the technical, economic, and document control of projects. The lack of integration between these platforms generated inefficiencies, manual errors, and a loss of competitiveness, which justifies the need for a robust and scalable solution.

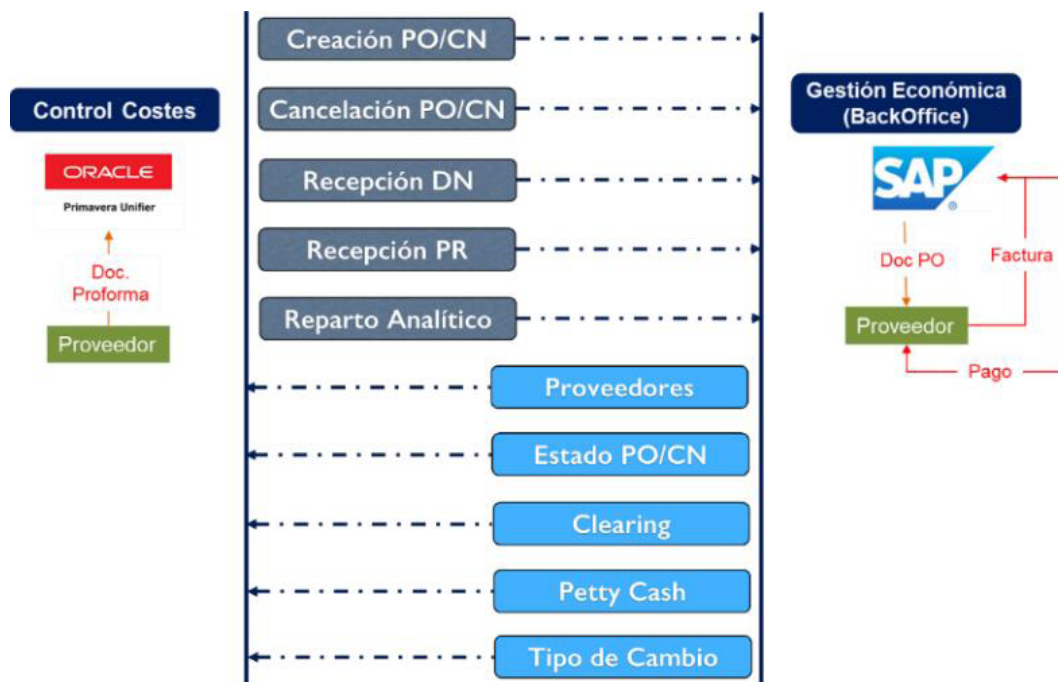
To meet the business needs, the following technological solutions are employed:



- Oracle Primavera P6.
- Oracle Unifier.
- Oracle Gateway.
- Solución Integración Unifier – SAP

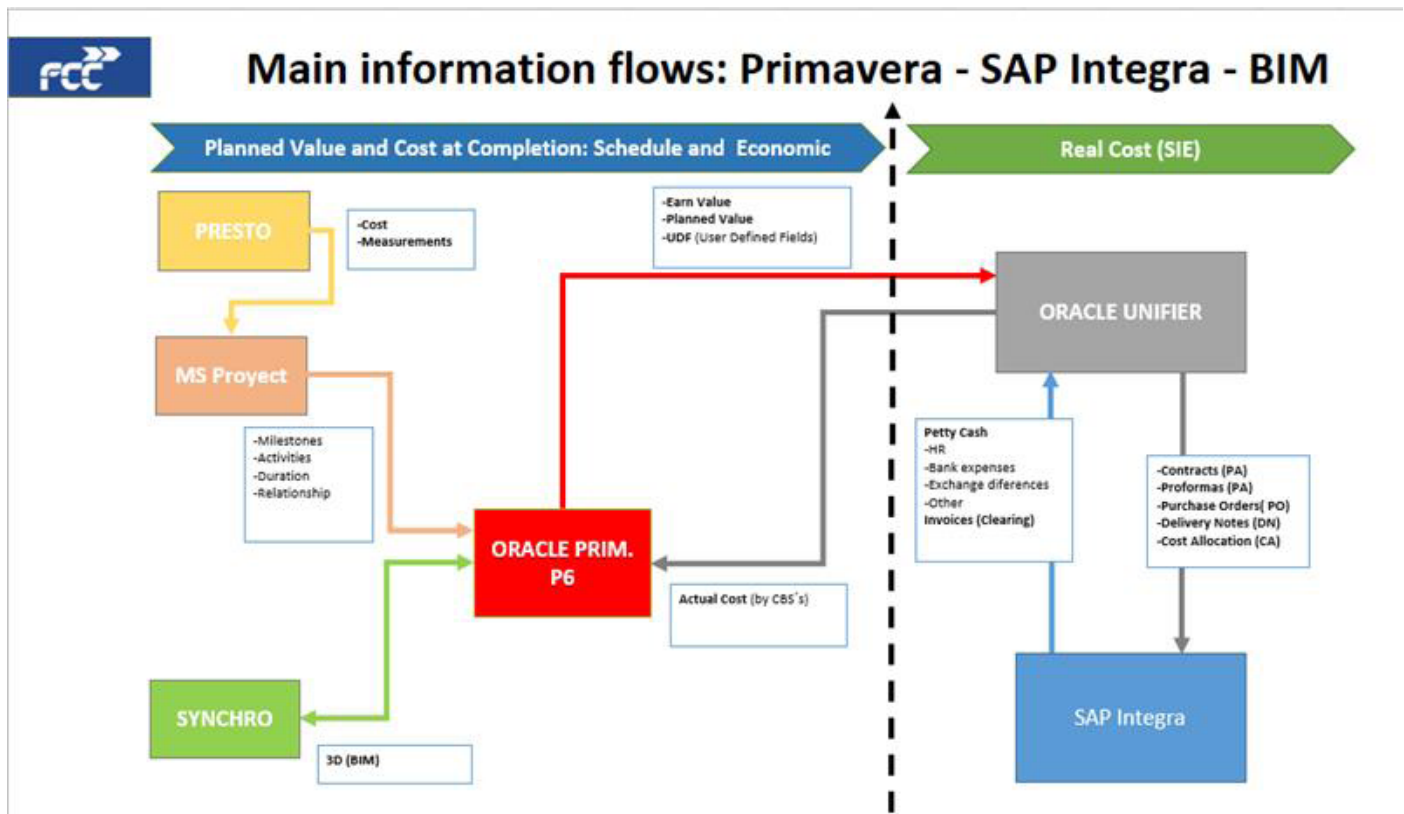
The in house development project for PCC UNIFIER emerges as a response to this issue, proposing the creation of an advanced middleware tool that enables secure and automated interoperability between SAP and Oracle.

The business process diagram is attached below:



This solution is designed to synchronize critical processes in real time, ensuring full traceability and reducing manual intervention.

Among the main objectives of the new development are task automation, preliminary data validation, multi project management, and a substantial improvement in data quality, all fully aligned with regulatory and security standards.



General flow diagram of FCC’s technological tools: Oracle, BIM, SAP

In a more concrete way, the objective is to synchronize five business processes between the in house PCC UNIFIER development (Oracle) and Primavera P6:

1. Creation of Purchase Orders (POs) / Contracts (CNs)
2. Cancellation of Purchase Orders (POs) / Contracts (CNs)
3. Receipt of Goods: Delivery Notes (DN)
4. Receipt of Services: Proformas (PA)
5. Cost allocation

Likewise, those business processes originating in SAP will also be synchronized:

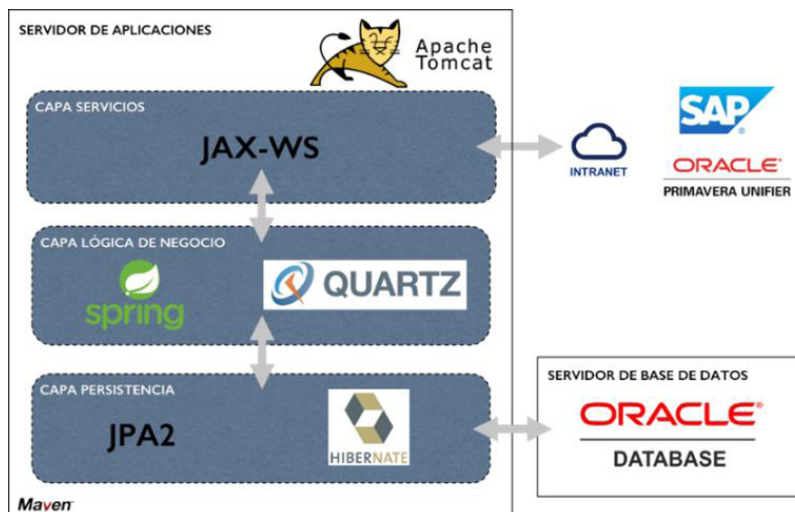
1. Supplier creation/update
2. Status update / WF approvals
3. Clearing / Procurement invoice
4. Petty Cash
5. Exchange Rate
6. Reception / Sending of Analytical Distribution
7. Reception and Sending of Cost Allocation Type 3 and Movement Outputs

**Transferencia de Costes desde SAP Integra a Primavera PCC**

Obra/Contr. Id.	Interf.	Soc.	IF doc.	Ejercicio	Apte.cont.	Fecha contab.	Txt.cab.doc.	Tipo Oper.	División	Va/ MonObj	Va/ MScCO	Va/ MDeleg	Mon.objeto	MonSoCO	Mon.Deleg.	Cl.coste	Asign.	Denomin.	Objeto	Cód
3P76	CO_PCC_001	C909	126908644	2024	1	23.07.2024	Delivery Prueba 1	R	3P76	0,00	20.300,00	0,00	EUR	EUR		6280000000	20240201	3P76.2.1.18	3P7	
3P76	CO_PCC_001	C909	126908644	2024	2	23.07.2024	Delivery Prueba 1	R	3P76	0,00	10.300,00	0,00	EUR	EUR		6280000000	20240201	3P76.2.1.18	3P7	
3P76	CO_PCC_001	C909	126908685	2021	1	31.07.2021	Delivery Prueba 2	R	3P76	0,00	168,00	0,00	EUR	EUR		6280000000	20220201	3P76.2.1.18	3P7	
3P76	CO_PCC_001	C909	126911365	2024	1	31.01.2024	20243201	R	3P76	0,00	1.500,00	0,00	EUR	EUR		6280000000	20240201	3P76.2.1.2	3P7	

From a technical standpoint, the in house development of PCC UNIFIER introduces a modern architecture based on technologies such as Java, Spring Framework, Apache Tomcat, and Angular, complemented by SOAP web services over the HTTPS protocol.

The system incorporates a Quartz Scheduler engine that enables the automatic execution of processes, eliminating the need for human intervention and reducing the risk of errors.



Además, se han implementado mecanismos de validación dinámica que replican las reglas de negocio internas de FCCCO, asegurando la coherencia contable y operativa antes de cada intercambio de datos.

### Transferencia de Costes desde SAP Integra a Primavera PCC

Obra/Contrata

Opciones de envío:

- Envío documentos nuevos
- Envío documentos pendientes
- Reenvío documentos erroneos
- Anulación documentos enviados
- Reenvío documentos anulados
- Ver documentos enviados

Fecha de referencia: (COBK-CPUDT)

Fecha entrada  a

Criterios de selección adicionales:

Número de documento  a

Datos Interface:

Identificador Interface

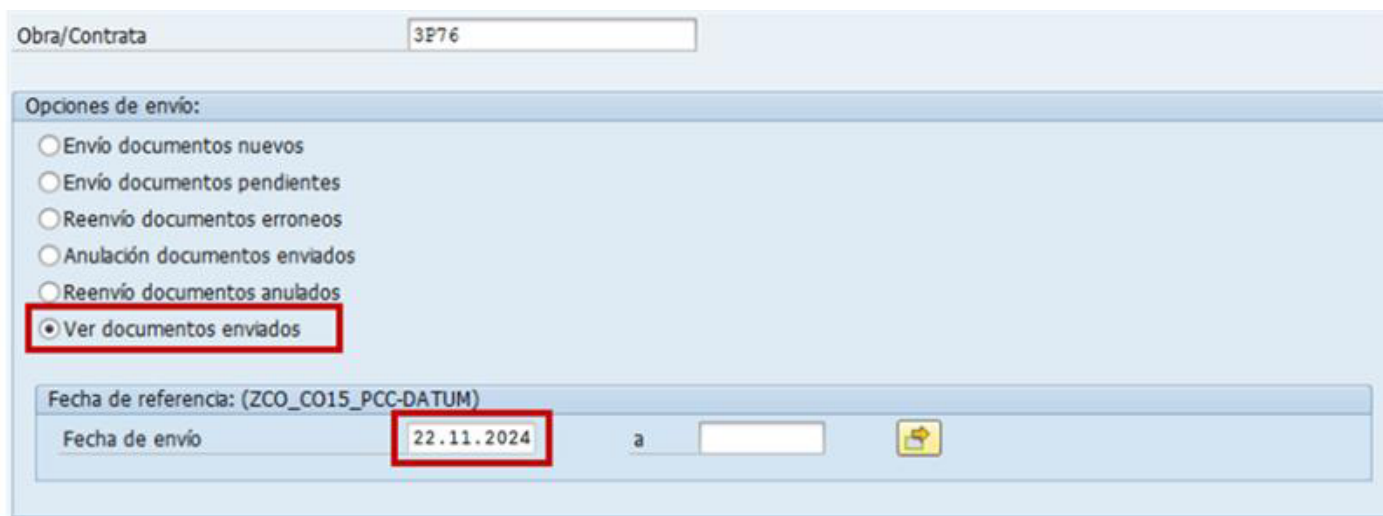
Moneda interface

Modo ejecución:

Simular

Cost transfer from SAP INTEGRA to Oracle

The proposal stands out for its ability to integrate more than 15 critical processes, including the creation and cancellation of purchase orders and contracts, the receipt of materials and services, analytical cost allocation, warehouse movements, and the synchronization of approvals.



The screenshot shows a software interface with a header 'Obra/Contrata' and a value '3P76'. Below this is a section titled 'Opciones de envío:' with five radio button options: 'Envío documentos nuevos', 'Envío documentos pendientes', 'Reenvío documentos erroneos', 'Anulación documentos enviados', and 'Reenvío documentos anulados'. The option 'Ver documentos enviados' is selected and highlighted with a red box. Below the options is a section titled 'Fecha de referencia: (ZCO\_CO15\_PCC-DATUM)' with a 'Fecha de envío' field containing the date '22.11.2024', also highlighted with a red box. To the right of the date is a small yellow icon.

The development of the project has been structured into two major activities: requirements analysis and design, followed by the development, testing, and validation phase. During these stages, the business flows, validation rules, and technical architecture were defined, ensuring the system's scalability and sustainability.

Unlike existing commercial solutions, the proprietary development of PCCUNIFIER offers complete traceability, preliminary structural validation, and a multi project architecture adaptable to both national and international environments. Its implementation is estimated to reduce the time spent on manual management by between 15% and 20%, thereby improving efficiency and competitiveness.

The solution is prepared to evolve and incorporate new functionalities, adapt to regulatory changes, and respond to the needs of international projects, thereby preserving the investment made.

In conclusion, the proprietary development of PCCUNIFIER represents a significant advancement in the digitalization of the construction sector, providing an innovative technological solution that combines automation, security, and traceability. Its modular and scalable design, together with the integration of expert knowledge, makes this tool a key enabler for operational efficiency and regulatory compliance, strengthening FCCCO's position as a benchmark in innovation applied to the management of complex projects.



## DESIGN OF AN IT TOOL FOR THE MANAGEMENT OF A PROJECT PORTFOLIO WITH HIGH DATA VOLUME

It has been certified as “TECHNOLOGICAL INNOVATION,” thanks to the support and collaboration of the Planning Service team, part of the Management Control and Planning Directorate.

The project represents a strategic initiative by FCC Construcción aimed at transforming project management within the construction sector. Planning and cost control become critical factors for ensuring business profitability and competitiveness.

The general technical objective of the project is the design of a new application, **P6 UTILITIES**, which compiles a set of utilities or operational enhancements that enable a more agile information management model in scenarios with high data volume within construction planning and cost control.



FCCCO has opted to develop an in house tool that overcomes the limitations of commercial solutions such as Primavera P6 and Microsoft Project. Although these platforms are market leaders, they present shortcomings in critical functionalities for large scale projects, such as massive data import and export, full integration with internal processes, and the flexibility to adapt to changing scenarios.

The specific objective of the new tool is to enable agile and efficient data transfer between Oracle Primavera P6 and PCC Unifier, as well as from Excel based templates into those Oracle tools.

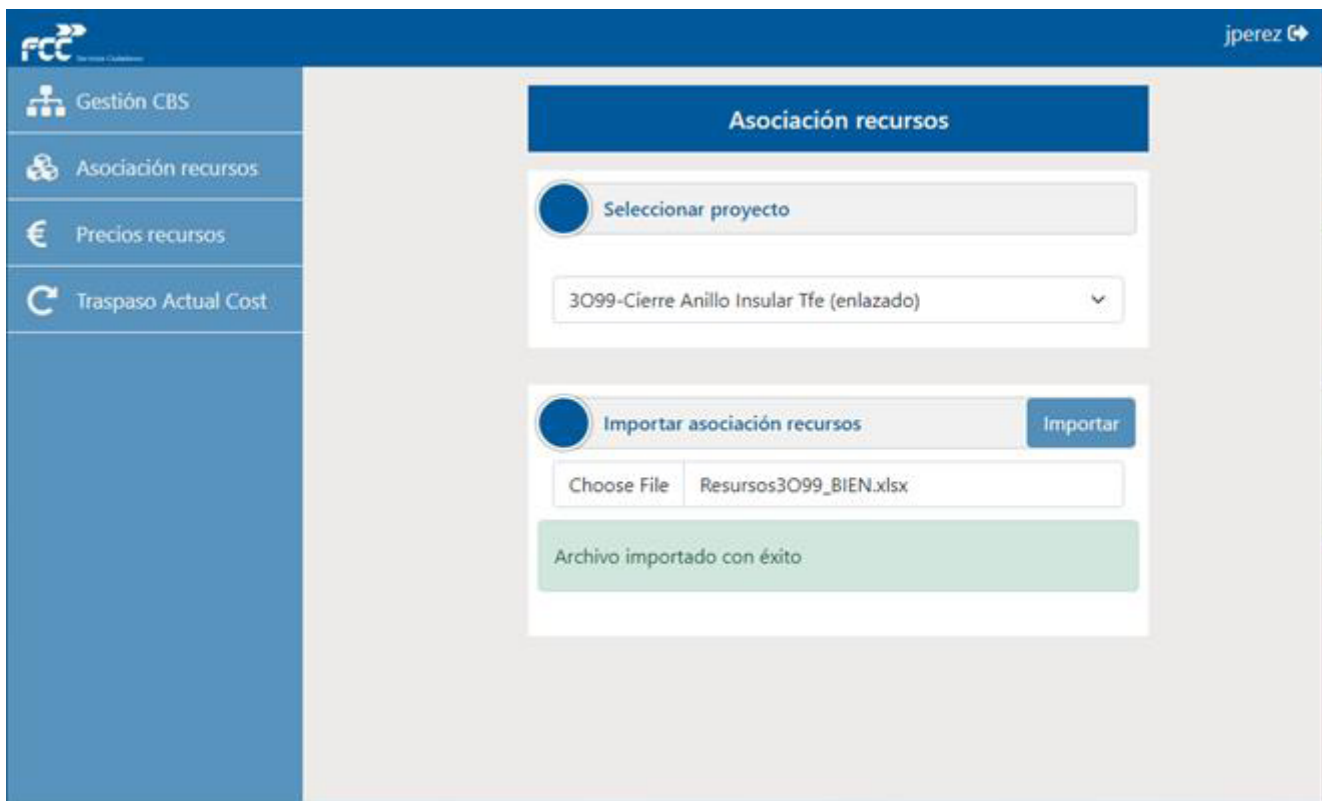
P6 UTILITIES was created with the aim of offering a robust, secure, and adaptable solution, designed ad hoc for the construction sector. Its modular architecture—based on technologies such as Java (Spring, Hibernate), Angular, and REST services—ensures scalability and maintainability.

The tool incorporates advanced functionalities such as:

- **Massive management of Cost Breakdown Structure (CBS) elements**
- **Association of resources to activities**
- **Price assignment**
- **Automated transfer of actual costs between PCC Unifier and Primavera P6**

The project development has been structured into three phases: requirements analysis and functional design, coding, and validation testing.

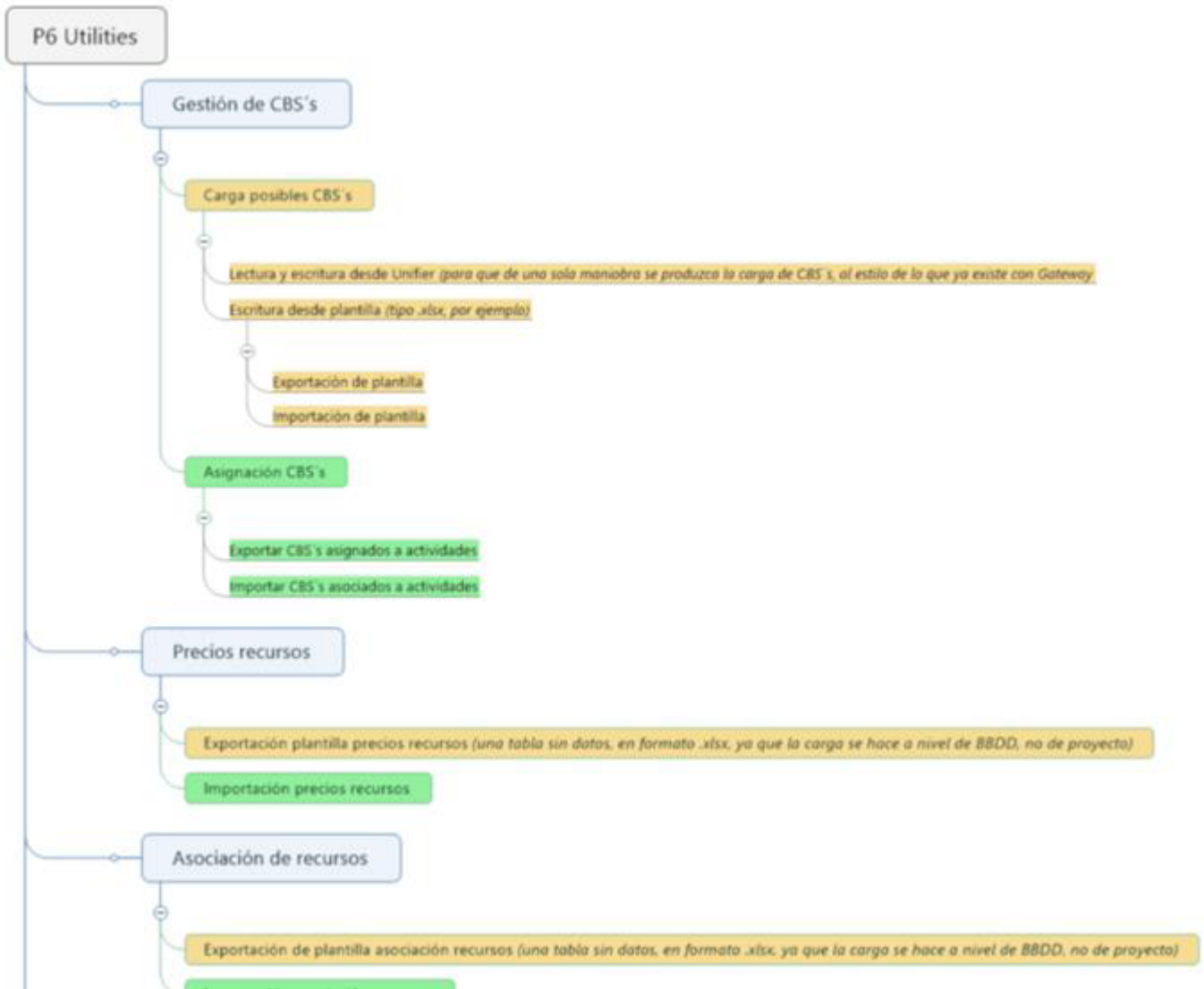
During the first phase, the technical and business objectives were defined, aimed at improving competitiveness through simplified processes and a documented architecture that prevents knowledge gaps. The second phase addressed the construction of the prototype, integrating reusable components and ensuring interoperability with existing tools such as Primavera P6 and Unifier.



Finally, the testing phase confirmed the robustness of the system and its ability to handle large volumes of data without issues, resulting in an estimated savings of 5–6%.

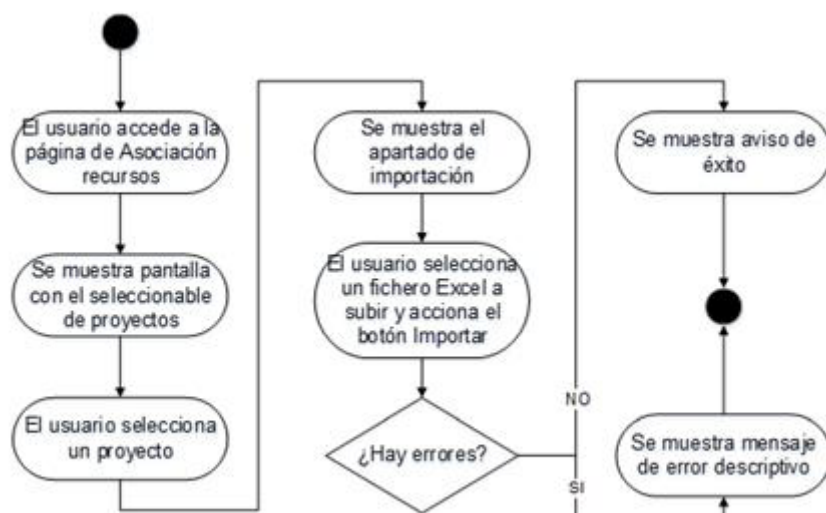
The development of this tool addresses the need to improve data entry in Primavera P6, enabling bulk or mass execution of the following main operations:

- Management of a project's CBS
- Import of resources associated with activities
- Import of resource prices
- Transfer of Actual Cost between P6 and Unifier (bi directionally)

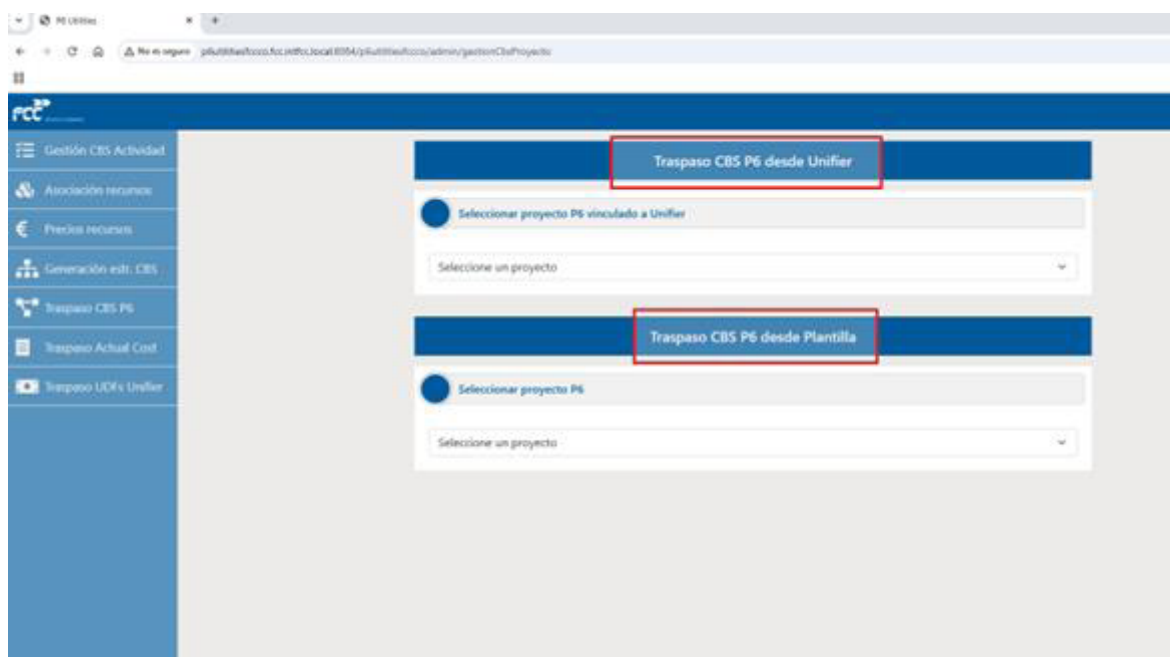


## Detailed Requirements:

- RNF01 – Existing Java architecture at FCC
- RNF02 – Authentication with Primavera P6
- RNF03 – Massive data processing (1,000 rows)
- RF01 – Bulk export of activity CBSs
- RF02 – Bulk import of activity CBSs
- RF03 – Bulk import of resource to activity associations
- RF04 – Bulk import of resource prices
- RF05 – Transfer of Actual Cost between P6 and Unifier



Beyond the operational benefits, P6 UTILITIES strengthens FCCCO's technological innovation strategy by promoting collaboration between teams and the generation of internal knowledge. Although the prototype developed is not commercially marketable, it lays the groundwork for future evolutions aimed at industrial deployment, aligning with the company's strategic objectives.



This project contributes to strengthening a culture of innovation, fostering creativity and teamwork, and positioning FCCCO as a benchmark in the digital transformation of the sector.

Certificate:



## COMPETITIVE IMPROVEMENT OF THE INTEGRATED BUSINESS MANAGEMENT SYSTEM THROUGH LOW CODE TECHNOLOGY

During 2024, FCC Construcción took a decisive step in the digitalization and modernization of its management systems with the development and certification of the ATENEA project, officially recognized as “Technological Innovation.” This achievement was made possible thanks to the active collaboration of FCCCO’s Knowledge Management Department and the Systems Division of FCC Industrial, as well as the commitment of the teams involved in the areas of Quality, Environment, and R&D&I.

### Context and Objective

ATENEA was created with the aim of transforming and making the company’s management systems more flexible by integrating the critical processes of R&D&I, Quality, and Environment into a single digital tool. The project responds to the need for a modern, collaborative, and efficient solution capable of adapting to the diverse contexts and regulatory requirements of FCC Construcción, and aligned with the most demanding standards of security and data protection.

The screenshot displays the ATENEA web application interface. At the top, there is a navigation bar with the FCC logo and the text 'ATENEA'. Below this, a header section shows the project name '3S92/UTE L1 PLAN SANEA' and a 'LOGO NO AVAILABLE' warning. A dashboard area contains several key performance indicators (KPIs) with status icons: '% FCC' (100%), 'UTE/CONSORCIO' (green checkmark), 'APAT' (red X), 'PLAN CALIDAD' (red X), 'SGSI' (red X), 'EFO' (grey circle), 'OBRA VIVA' (green checkmark), 'N C', and 'INC MA'. Below the KPIs, there is a section titled 'Información general' which contains a table of project details.

TIPO DE OBRA	SUBTIPO DE OBRA	CLASE DE OBRA	TIPO DE CLIENTE	SUBTIPO DE CLIENTE		
CONDUCCIONES DE TUBERÍA	APARC.SUBTERRÁNEOS	OBRA NUEVA	SECTOR PRIVADO	PRIVADOS		
NUM. LICITACION	DELEGACIÓN	FECHA DE INICIO	FECHA DE FIN	% EJECUCIÓN	SITUACIÓN	SISTEMA DE CALIDAD
2-2022-0247	CO0155 (CENTRO)	04/09/2023	01/09/2028	-	Viva	-
SOCIEDAD	DELEGACIÓN	PARTICIPACIÓN				
9842 (AQUATEC, PROYECTOS PARA EL SECTOR DEL AGUA, S.A.U) 0909 (FCC CONSTRUCCION S.A.)	CO0155 (CENTRO)	60 % 40 %				

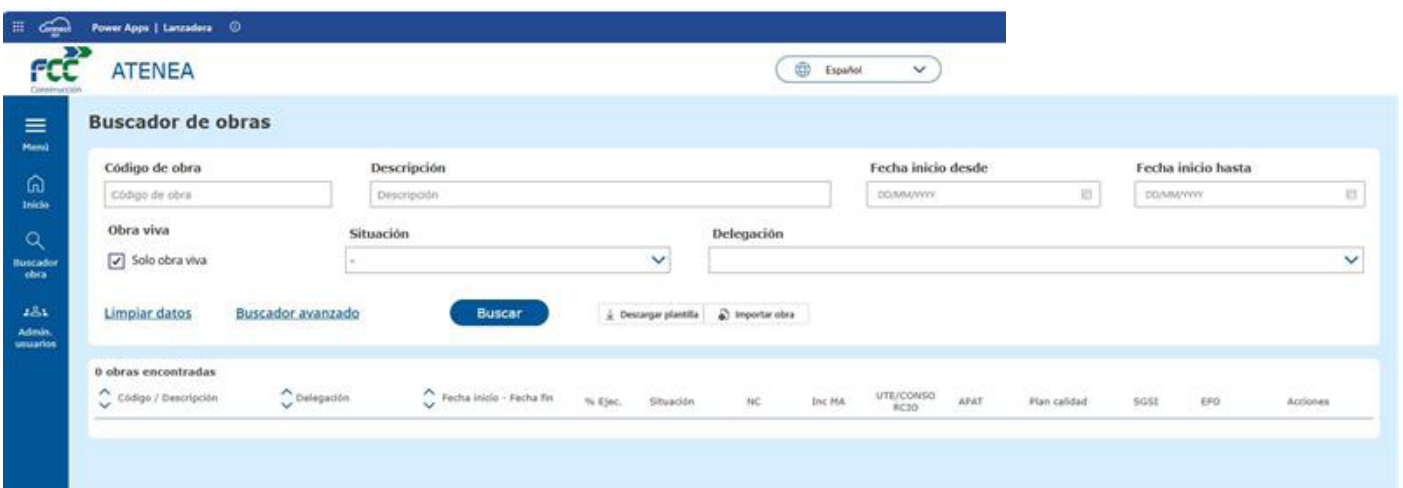
### Main actions certified in 2024

- Design and implementation of key modules:
- An advanced module has been developed for the comprehensive management of construction projects, based on a robust and flexible data model that enables full project traceability, as well as the management of project leads, areas, delegations, companies, and profit centers.
- The APAT module (Technical Action Planning Record) has been implemented, centralizing the documentation of technical meetings, attendees, certifications, risks, and aids associated with each project, facilitating the management and monitoring of the critical aspects of every project.



### Integration with corporate systems:

- ATENEA has been connected with SAP Integra, Alejandría (SharePoint), and digital signature systems, enabling interoperability and workflow automation, as well as advanced document management and real time data integration.



### Testing, validation, and security:

- Functional and access tests have been carried out in dedicated development and pre production environments, ensuring security, proper permission management, and integration with existing systems.
- The system complies with current data protection regulations (GDPR and LOPDGDD) and international information security standards, ensuring the confidentiality and traceability of the information managed.

### Innovation and added value:

- The use of Low Code technology (Microsoft Power Platform) has made it possible to create a scalable, multilingual solution that is accessible from mobile devices and provides advanced capabilities in document management, dashboards, alerts, and approval workflows.
- Collaboration between power users and developers has accelerated the deployment and adaptation of the tool, enabling an agile response to the company's real needs and facilitating knowledge transfer between teams.

## Results and recognition

The certification of ATENEA in 2024 represents a milestone in FCC Construcción's digitalization and innovation strategy, providing greater efficiency, traceability, and security in project management. The tool is consolidated as a comprehensive and flexible solution capable of evolving and adapting to the sector's future challenges. In addition, the certification allows the company to validate R&D&I projects in tenders and contracts, obtain tax deductions, and strengthen its position as a benchmark in technological innovation.

The project will continue its development in 2025 with the incorporation of new modules and functionalities (quality, environment, sustainability, audits, non conformities, stakeholder management, etc.), thereby completing the planned integrated system and consolidating FCC as a leader in the application of advanced digital solutions in the construction sector.

Certificate:



