



# The Pamplona Community of Municipalities improves its citizens' quality of life through its Smart City transformation with the help of Chakray





In the last few years, many cities have found a great ally in Information and Communication Technologies (ICT), thus giving rise to Smart Cities with the objective of providing them with infrastructures that enable them to identify both challenges and opportunities. The Pamplona Community of Municipalities was one of them, as it sought to design a Smart City technological strategy to provide citizens with intelligent and transversal services, and ultimately improve their quality of life.

The Pamplona Community of Municipalities immediately recognised the role that Smart Cities could play for their community (made up of 50 municipalities and 179 councils) as they could achieve a reduction in time to market, facilitate decision making, streamline business processes and results. Therefore, they invited Chakray to join this project, to provide them with a business integration platform that would enable all of the above.

During 2019, the Pamplona Community of Municipalities had various actors requesting data and access to services from other areas/ departments for analysis or applications in a heterogeneous way, for which they needed ad hoc developments for each case.

**Felipe Alonso Rodriguez** (Director of Information Technologies of the Pamplona Community of Municipalities) and **Fermín Ibiricu Uhalte** (Information Technology Project Manager) were very clear that their organisation needed to adopt a methodology for the generation and control of APIs that would generate the expected value as a hub provider of technological services for multiple systems used for the integrated management of water, waste, transportation, and climate change of the community in a scalable way.

The business integration platform was to be based primarily on data consolidation. In other words, it was to enable:

-  Open information containers
-  Data flow throughout the organization
-  IoT data consolidation/Business Intelligence/AI
-  Accuracy of data

Therefore, this project not only seeks to improve the quality of life of local citizens, but also to improve the management of the IT equipment of the Pamplona Community of Municipalities, and to improve communication, data collection and make the various service areas (specifically transport, water, and waste) more efficient.



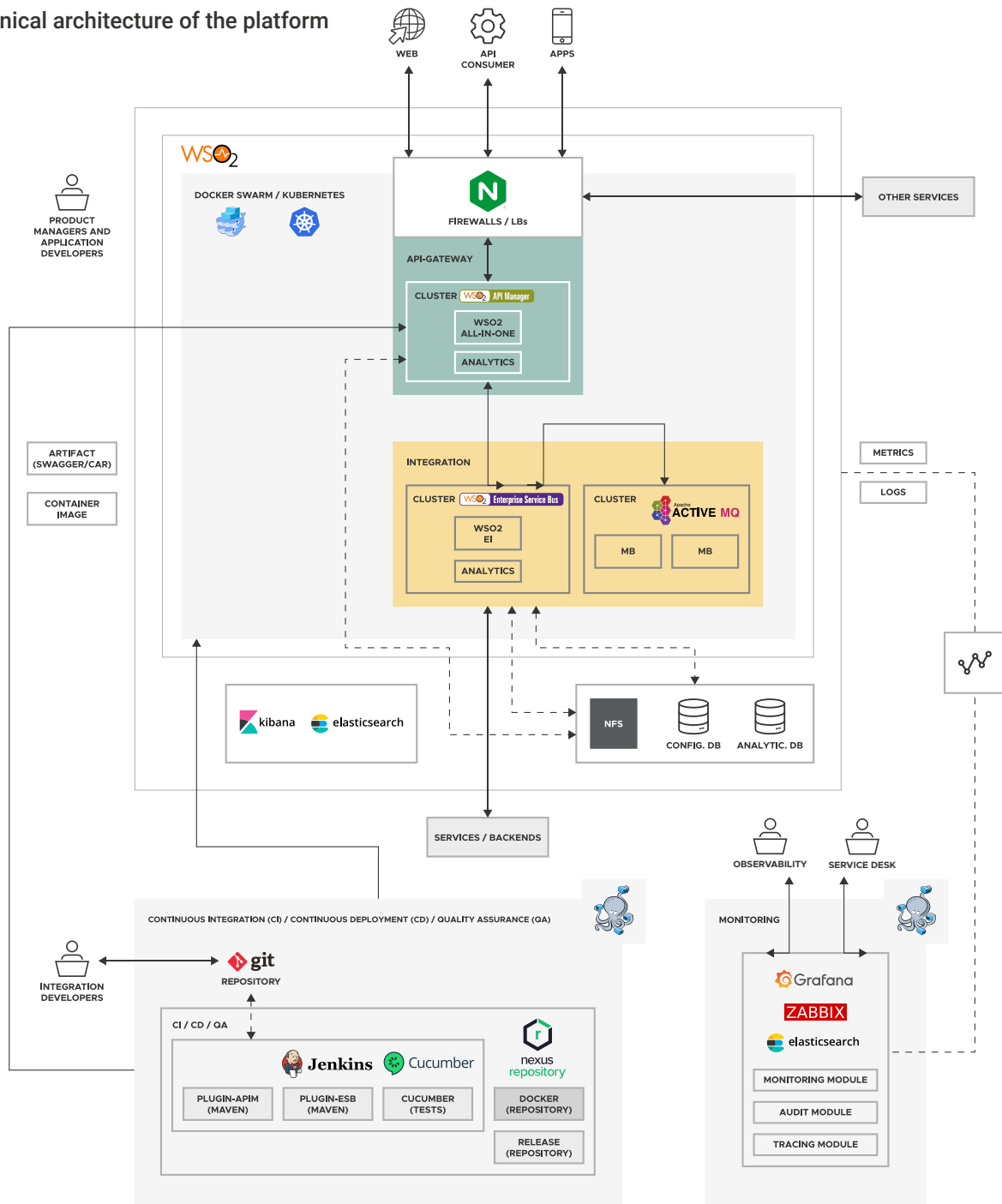


# The Solution

An in-house solution was developed to unify some of the information requests, with the objective of unifying processes and data management. In order to meet this objective, an analysis was carried of the various solutions available on the market for business integration and WSO2 Bus was selected as the most suitable for the community.

For the proper execution of the project, Chakray carried out an agile work methodology and focused on work sprints of no more than three weeks, with daily monitoring carried out by the technical consultant assigned to the project and weekly monitoring of the project with the Pamplona Community of Municipalities.

## Technical architecture of the platform



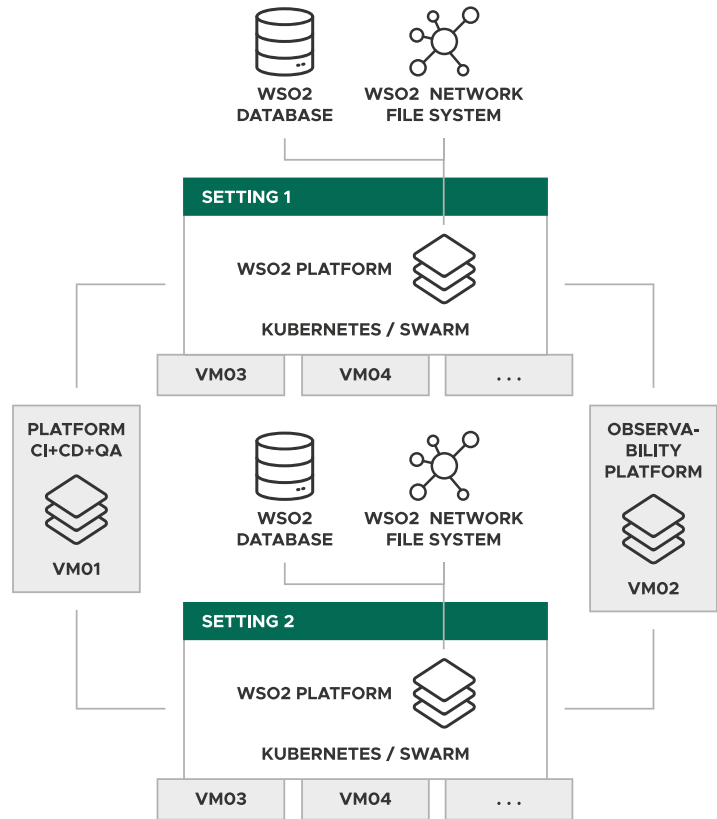


A standalone deployment of an API management domain and integration domain (synchronous and asynchronous) was performed on a container orchestrator (Docker Swarm or Kubernetes) that ensures a fast recovery of services in the event of a hypothetical system failure.




The components were also scaled according to the expected load and the active WSO2 subscription and a data migration to the new production environment, deriving all the requests to the API Manager. This essentially functions as the new input router for the requests related to the services implemented within the new architecture.

As a development methodology, a continuous integration was carried out, considering as totally independent processes the functional testing and creation of artifacts in the version repository (Chakray team) and the deployment of artifacts in productive environments (Pamplona Community of Municipalities team), respecting their security policies and the windows of transition to production.

**Infrastructure diagram**



**With the observability of environments based on three work domains, the aim is to analyze and minimize incidents, and respond proactively:**

-  Monitoring and alerts: keep track of all system metrics and activate a reactive response to them.
-  Auditing: keep all system logs in a single central site that enables us to obtain a global view of the platform.
-  Traceability: ensure traceability of the system focused on the requests made in order to maintain a centralized record.

The IT team of the Pamplona Community of Municipalities was given theoretical and practical training to operate the system at the infrastructure, platform, and product (WSO2) level.

In short, a 360-degree collaboration was carried out, enabling them to work in a unified way with a hybrid and multi-functional team. In addition to all of the above, Chakray also provided other services such as: Architecture Definition and Consulting, Environment and Platform Deployment, Evolutionary Integration Development, and Operational Support and Management Services.




# The Outcomes

The good coordination between the Pamplona Community and Chakray teams, together with the availability and support, at all times, of the IT team, helped to resolve incidents. In addition, agility in adopting new requirements during project execution and creative solutions to complex requirements (exposure of some API's to the outside world through tag sorting) enabled the project to be executed successfully, on time, and within budget.

## The main results obtained were:

- 

Deployment and integration of an Enterprise Integration Platform based on WSO2 that enhances ability to respond to business challenges and enables more efficient management of data metrics and KPIs.
- 

Awareness of data governance as a driver of Digital Transformation internally, thanks to the Uniform Application process.
- 

The interdepartmental communication and collaboration of the Pamplona Community of Municipalities was improved by breaking down information silos, allowing data and developed functionalities to flow and reusing data consumption interfaces, standardizing the way of accessing and exploiting information.
- 

Improved citizen perception of services, thanks to the implementation of new functionalities that make services faster and more efficient, among them:
 
  - Urban transportation application, which can predict bus occupancy.
  - Control of water consumption and losses.
  - Smart cards for opening waste containers to encourage separation at source.
- 

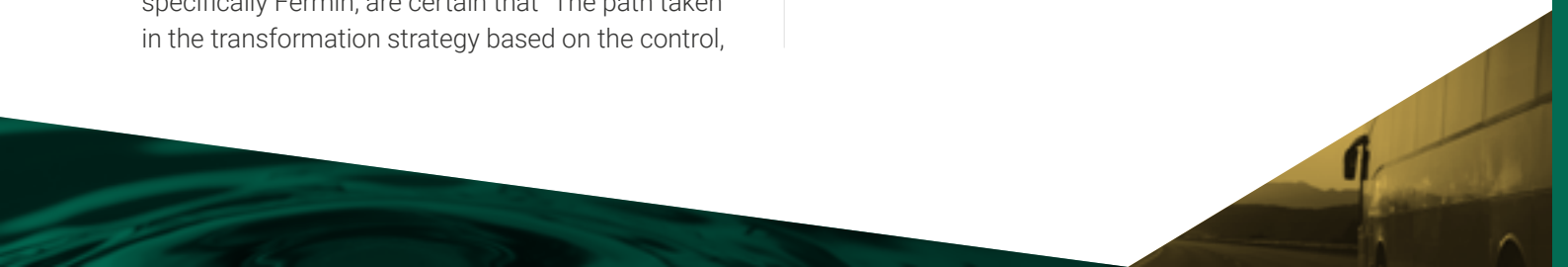
Training for system monitoring and exploitation of the information stored in a homogeneous and efficient way, which helped to make better decisions, predictions and streamlined business processes.

This was confirmed by Fermin Ibiricu Uhalte, Information Technology Project Manager of the Community: "Chakray is an exceptional technology partner, both professionally and personally. They helped us deploy our WSO2-based Enterprise Integration Platform that will enhance our ability to respond to current and future business challenges, and foster collaboration between our departments by breaking down information silos."

The Pamplona Community of Municipalities and, specifically Fermin, are certain that "The path taken in the transformation strategy based on the control,

management, and exploitation of data was the most appropriate way to address the change".










Currently, the Pamplona Community of Municipalities is working to continue its journey towards becoming a Smart City, and new projects are being developed, such as completing the homogenization of data from external systems and sensors in the platform that facilitates integration and consolidation and incorporating new technologies that further facilitate Artificial Intelligence.





# The Technologies

In order to obtain the desired results, some of the technologies employed were:

 WSO2	 NGINX	 Jenkins
 nexus repository	 kubernetes	 docker
 Grafana	 Apache ACTIVE MQ	 git

# About Pamplona Community of Municipalities

The Pamplona Community of Municipalities is a local entity made up of 50 municipalities, including Pamplona, which is responsible for various public services (integrated water cycle, waste collection and treatment, regional urban transport, regional taxi and river park).

# About Chakray

At Chakray, we work with transforming companies to ensure they leverage strategies, capabilities, technology solutions and processes to use digital agility to their advantage rather than viewing it as a constant constraint.



## Get in touch

Do you want to improve your systems?  
Ask our experts.

Ask our consultants without compromise.  
We will help you find the best solution for your project.

[CONTACT US](#)

