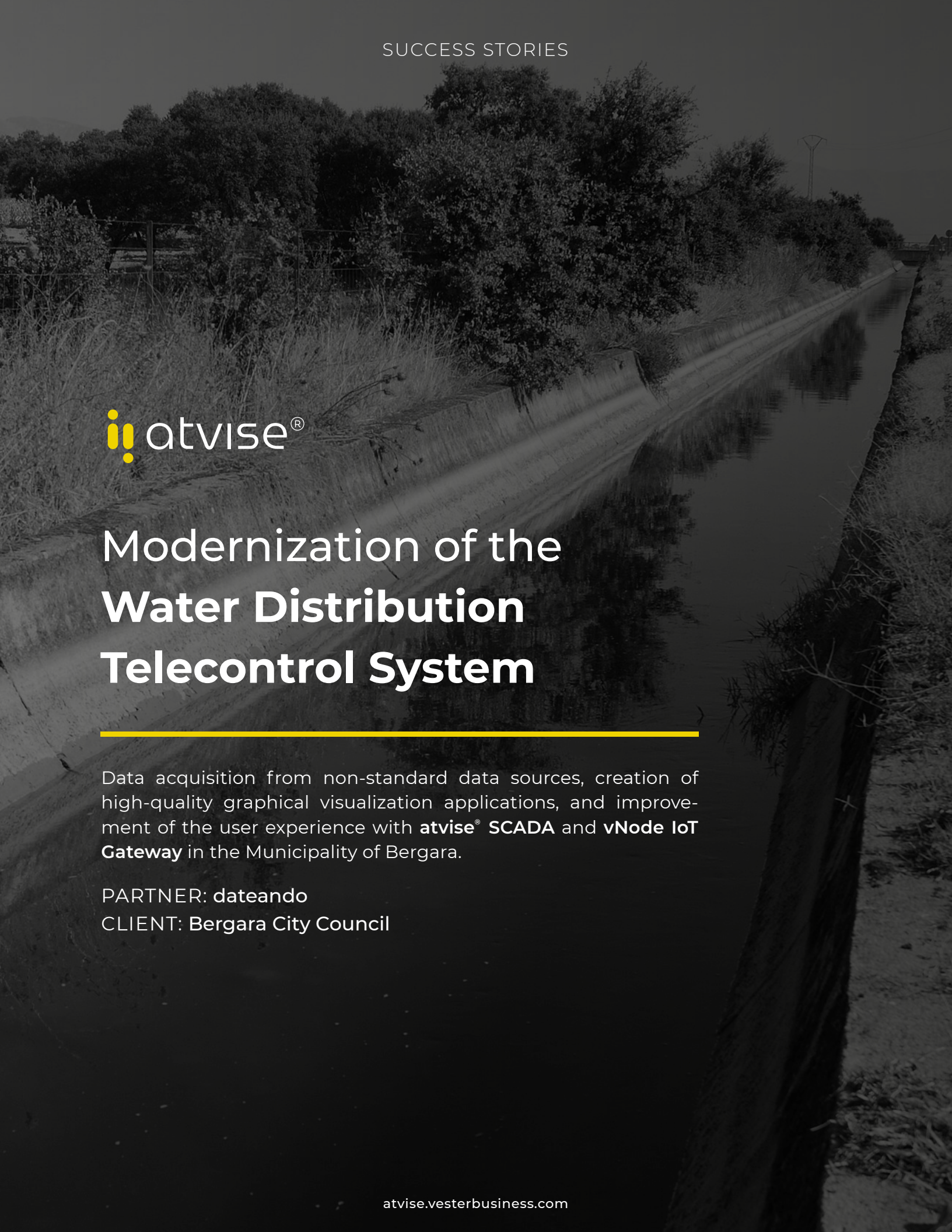


atvise®

Modernization of the **Water Distribution Telecontrol System**

Data acquisition from non-standard data sources, creation of high-quality graphical visualization applications, and improvement of the user experience with **atvise® SCADA** and **vNode IoT Gateway** in the Municipality of Bergara.

PARTNER: **dateando**
CLIENT: **Bergara City Council**

Project

The project presented two main challenges. The first one was to provide an exquisite visualization system with a very powerful and user-friendly interface, aimed at users who are not accustomed to handling technological systems. The second challenge was the agile and consistent integration of data from sources that did not have standard communication protocols.

Solution

Implementation of **atvise® SCADA** combined with **vNode IoT Gateway**. Two platforms designed for industrial visualization and data acquisition, even in unfavorable environments.

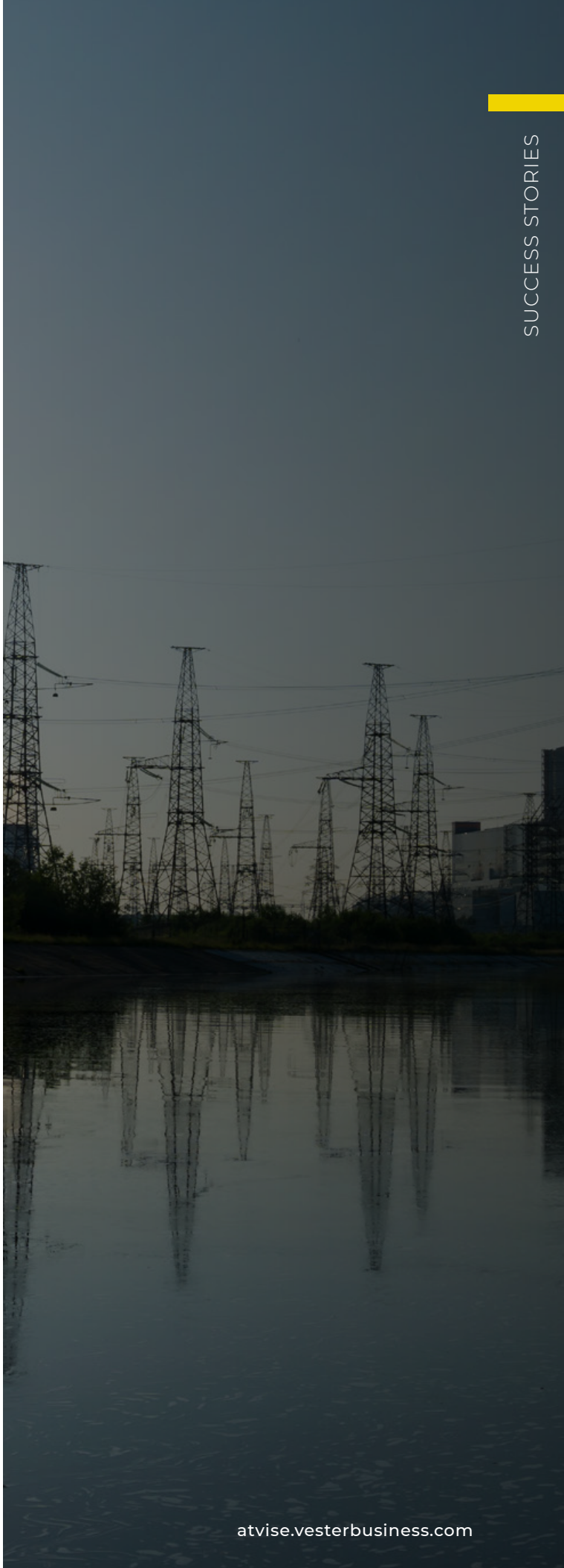
Partner

dateando

dateando is a company specialized in helping businesses and public organizations make decisions to optimize their operations through data acquisition, recording, and visualization, followed by data unification, derivation, and analysis using techniques such as *Machine Learning* and *Business Intelligence*.

Customer

The end user is the **Municipality of Bergara**, located in Gipuzkoa, in the northern region of Spain. The design, development, and implementation of the project have been carried out by **dateando.**



Objectives

- Creation of a **visually high-quality graphical interface** for data analysis.
- **Comfortable user experience,** tailored to users not specialized in industrial systems.
- **Comfortable user experience, tailored to users not specialized** in industrial systems.
- **Implementation of alarm management** on mobile devices.

Main Challenges

- **Integration of data** from devices through GPRS networks and non-standard communication protocols.
- **Enhancing interface usability and improving the user experience.**
- **Adapting the visualization interface** for mobile devices.
- Developing a **sustainable, affordable, and competitive** commercial solution.

Results

- The **graphical power and flexibility of atvise® SCADA** have enabled the creation of custom data analysis applications that are understandable to all users.
- The **interoperability between vNode and atvise®** has overcome previous technological barriers, providing the system with high scalability.
- The end-user has moved away from proprietary systems, and their **IT department now has multi-platform software.**
- Now, users can **access visualization applications from their smartphones.**

Background

The infrastructure consists of a collection of water reservoirs that supply water to the neighborhoods in the locality and a collection of sectorial flow meters to evaluate its proper distribution.

Each of the flow measurement stations and reservoirs is equipped with **PLCs** and a *data logger* that collects the measured data and communicates it to a central site, where the **SCADA** system is located, via a **GPRS** network.

The goal of this system is real-time monitoring and telecontrol of the entire water distribution network, as well as recording the received data and providing an interface for data analysis.

Until the execution of this project, the end-user was using a proprietary SCADA system from the same brand as the PLCs located in each of the stations. Their options were limited, and the graphical visualization was very poor.

In this project, the graphical aspect is of paramount importance, and with the tools they had, they were unable to meet their targets.

Therefore, the **search for a web-based visualization system based on modern technologies and with sufficient flexibility to achieve the following goals was initiated:**

- Integrating data from devices at each station through GPRS networks and non-standard communication protocols.
- Providing users with a powerful yet user-friendly graphical interface, tailored to non-specialized users.
- Extracting as much information as possible from the received data through calculations and aggregations.
- Accessing alarm management from mobile devices.

Solution

vNode Automation

At the flow measurement stations and, in the reservoirs, there were PLC systems that communicated with a SCADA system of the same brand through a proprietary protocol that no other system could understand.

The end-user needed to move away from their previous limited and obsolete SCADA software, so the project required a solution that would allow data collection and ensure its delivery to the new SCADA system.

The only option was to query the data loggers at each station, which dumped the data into an SQL database. Thus, the flexibility of the SQL Client module of vNode was crucial for extracting this data and delivering it to the new atvise® SCADA through the OPC UA Server module.

Software used:

vNode IoT Gateway:

- SQL Client Module
- OPC UA Server Module

atvise® SCADA

There was a need to improve the visualization interface in many ways, primarily:

- **Higher graphical quality in visualization.**
- **An interface understandable by any user.**
- **Presenting graphics that convey a maximum amount of information with minimal data.**

The integration of vNode & atvise® SCADA through OPC UA is robust, so once data acquisition is resolved, the focus shifts to meeting the graphical requirements. atvise® SCADA offers visualization through SVG vector graphics by default. Therefore, by choosing this software alone, the requirement to improve graphical quality is more than adequately met.

The user-friendly interface, especially for those not accustomed to using technological systems, posed a challenge that was overcome thanks to the flexibility provided by atvise® SCADA in designing visualization displays and the expertise of dateando.

"There were PLCs communicating with the proprietary SCADA using a protocol that other systems couldn't understand. We needed something agile to integrate this data, and there weren't many options. Thanks to the interoperability of vNode and atvise®, we addressed this need."

– Gabriel Viscarret, Founder of dateando.

This flexibility also allowed users from the Bergara City Council to access the alarm system directly from their mobile devices, significantly improving the telecontrol system's quality.

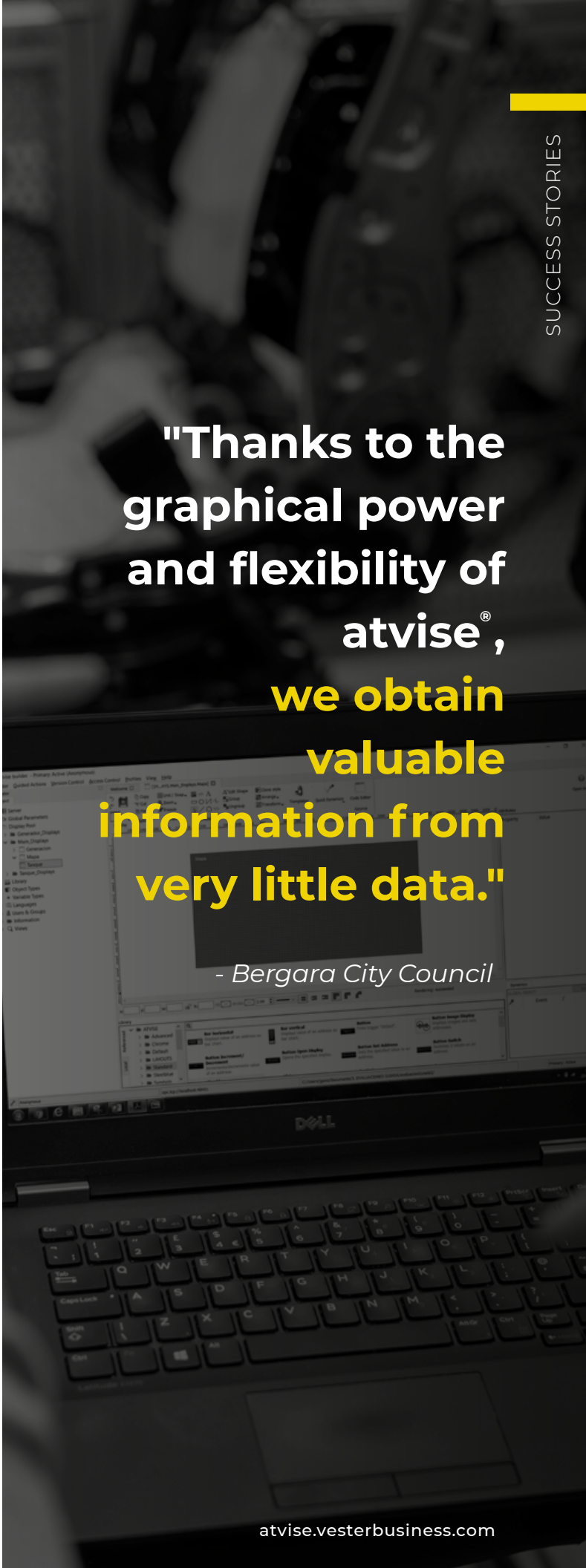
"We needed to display the maximum amount of information possible. The flexibility of Highcharts was crucial: real-time trend charts, histograms with daily cumulative flow totals, and charts showing weekly and monthly nightly lows. In the end, with minimal data, we obtain very powerful insights."

– Gabriel Viscarret, Founder of dateando.

Software used:

atvise® SCADA micro:

- OPC UA
- Historian
- Aggregates
- Dashboards y Highcharts
- Alarmas
- Tecnología Responsive
- Javascript

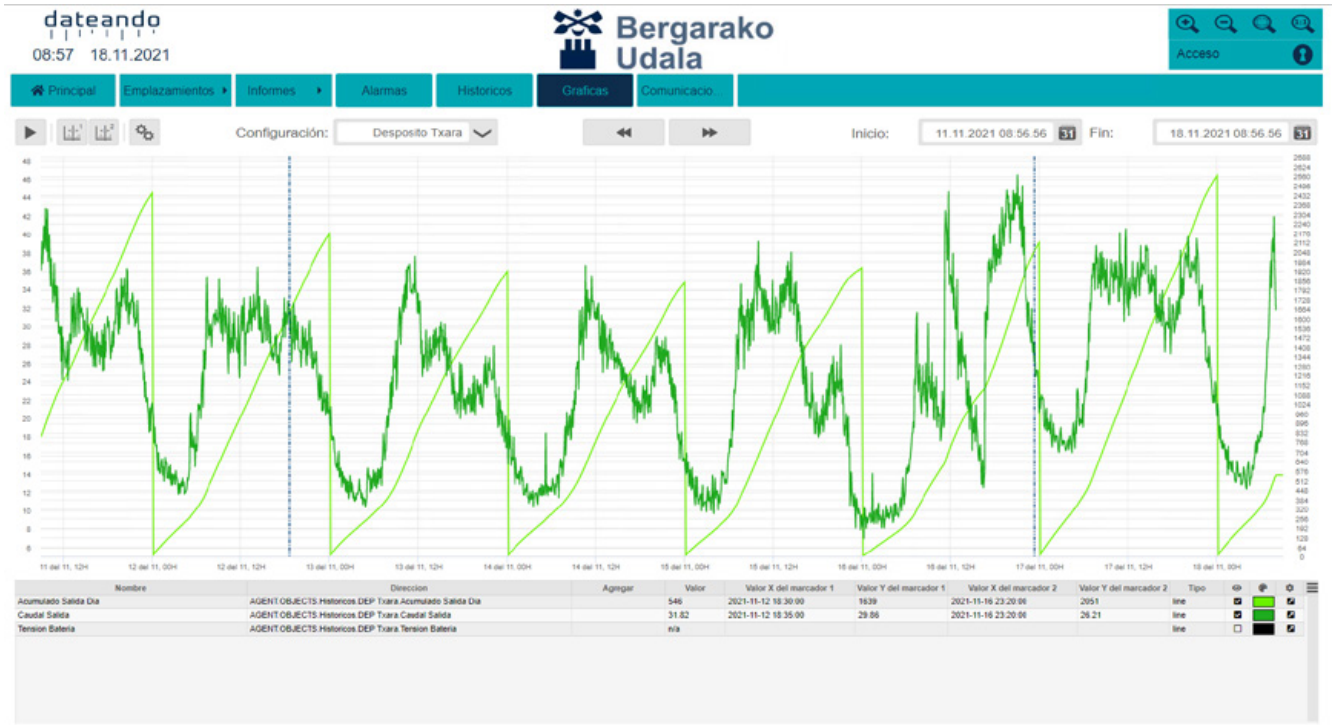


"Thanks to the graphical power and flexibility of atvise®, we obtain valuable information from very little data."

- Bergara City Council

ALARM MANAGEMENT

SIMPLE CHART

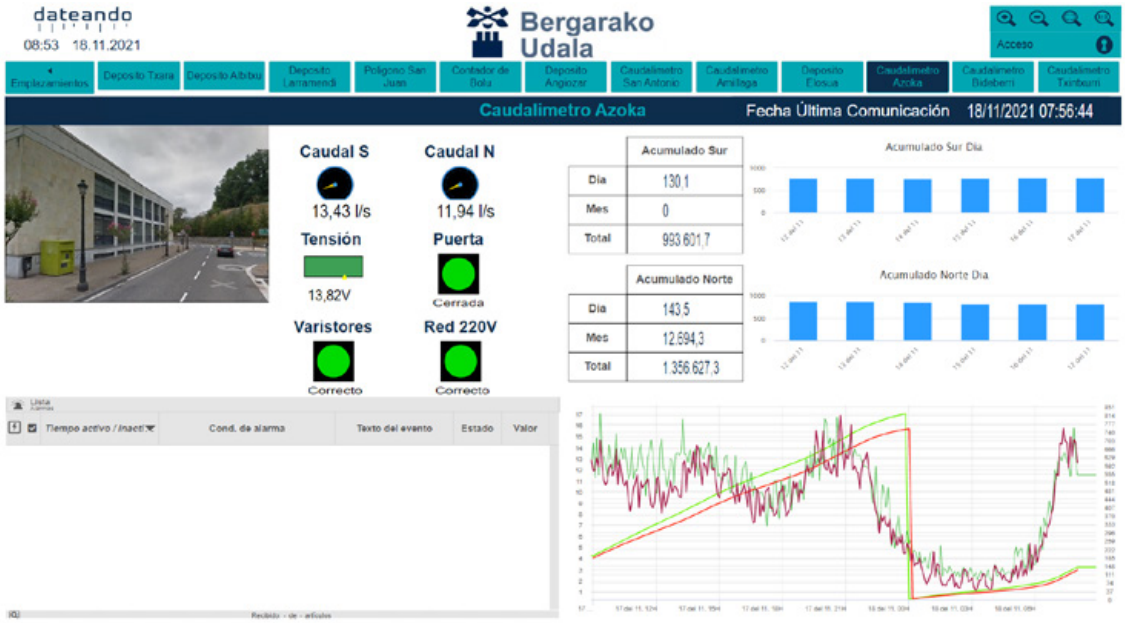


FLOW REPORT

Informe Caudales

Estacion	Señal	Dia	Máximo	Media	Mínimo
Azoka	Caudal Salida Sur		22,95	9,61	0,94
		01 / 11 / 2021	19,11	8,73	0,94
		02 / 11 / 2021	19,17	8,84	1,48
		03 / 11 / 2021	17,18	8,70	1,21
		04 / 11 / 2021	17,58	8,95	1,19
		05 / 11 / 2021	17,63	10,53	3,19
		06 / 11 / 2021	22,95	10,67	3,15
		07 / 11 / 2021	20,72	10,82	3,20
Azoka	Caudal Salida Norte		22,81	9,81	1,86
		01 / 11 / 2021	19,87	9,46	2,13
		02 / 11 / 2021	21,45	9,60	1,86
		03 / 11 / 2021	16,79	9,73	2,42
		04 / 11 / 2021	16,57	9,35	2,07
		05 / 11 / 2021	22,81	9,97	2,34
		06 / 11 / 2021	22,23	10,34	2,55
		07 / 11 / 2021	20,73	10,25	2,53

AZOKA SYNOPTIC



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