

## Evolving Internal Logistics Operations with 5G: An innovative Intralogistics Platform at CIE Automotive

Economic instability, challenging markets, and demanding customers have forced industries to be more aggressive in optimizing and making their operations more flexible to achieve better results. Current global trade restrictions and the pandemic outbreak have made sourcing even more challenging, and they continue to threaten business continuity. In an effort to optimize processes, reduce production times and ultimately, lower costs, many companies in the manufacturing industry are looking to fully digitalize their production lines by incorporating advanced technologies such as IoT or autonomous mobile devices like Automatic Guided Vehicles (AGVs) and Autonomous Mobile Robots (AMRs). At the heart of this transformation is 5G connectivity due to its ability to link a large number of devices and sensors and truly shorten reaction time.



CIE Automotive is a global supplier of components for the automotive market and generates value for its clients by simultaneously developing both the products and the processes necessary for manufacturing, integrating a whole range of technologies to provide the best solutions for the mobility of the future.

CIE Automotive has understood the importance of automatization and the added value of incorporating early on 5G technology, and took the first step towards a fully automated production line by digitalizing the final part of the production line from where end-goods have to be transported to the warehouse using AGVs and the Intralogistics Platform powered by 5G.

# The challenge

As a major manufacturer of components for the automotive market, CIE Automotive relies on state-of-the-art production lines that deliver high-quality products in optimal conditions and timings. Given the relevance of the intralogistics processes, CIE Automotive decided to evaluate the benefits of 5G with an integrated solution incorporating advanced capabilities to automate the end-line process, boosting efficiency, flexibility, and lowering costs.

The client's goal was to achieve the following objectives:

- Integrate autonomous devices such as AGVs.
- Incorporate 5G technology.
- Deploy an Intralogistics Platform capable of orchestrating and managing the connectivity, sensors, data and autonomous devices in an automated fashion.

To that end, NTT DATA has developed a proof of concept for CIE Automotive in collaboration with Telefónica. Together, NTT DATA as a technology partner and Telefónica as a leading company in digital transformation with 5G connectivity capabilities, we have deployed an Intralogistics Platform that solves the challenges of CIE's internal logistics operations faced at the final part of the production line. Our solution is enabled by reliable 5G connectivity which is at the heart of the communication between the AGVs, the PLCs and the Intralogistics Platform.

*While many associate 5G with mobility, the applications of this technology extend to a great variety of business use cases. Companies that value innovation like CIE Automotive and decide to integrate 5G in their operations, are future-proofing their service offering in a world where competition is fierce and the economic climate requires sudden shifts.*

Andrés Escribano.  
Industry 4.0 and New Business Director  
in Telefónica Tech IoT & Big Data

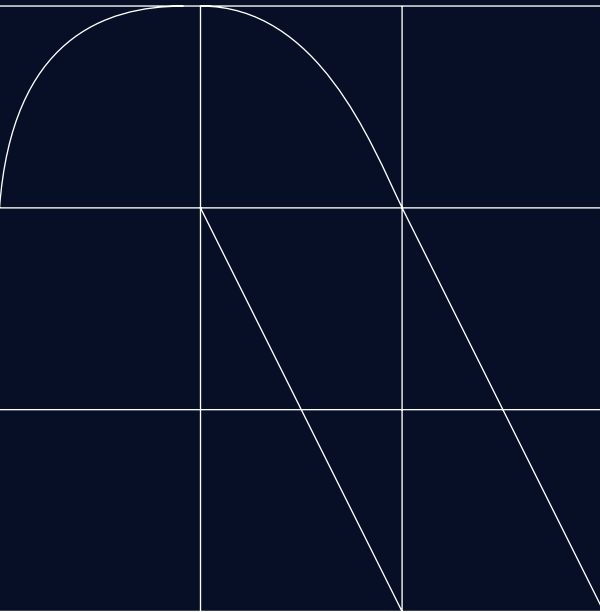
**The connectivity solution deployed consists of a 5G NSA network and 8 dots (indoor antennas) in total, which have been installed to guarantee the coverage and quality on the entire AGVs route, from the production line to the warehouse, and to send the signals from the PLCs to the cloud, where the Intralogistics Platform is hosted.**

## The solution

Managing a factory that produces components, assemblies and subassemblies is a very complex process that requires all its systems to work seamlessly and with as little interruption as possible. Operations like CIE Automotive's plant usually include:

- ERP - an Enterprise Resource Planning software as the main system that controls all the resources of a company and could trigger orders of moving materials/action to devices such as AGVs and AMRs. These need to integrate the feedback with the production/intralogistics information.
- MES - a Manufacturing Execution System that controls the entire production of a plant and could also trigger orders of moving materials. Also integrating other production data.
- Sensors - to automate other aspects of the intralogistics processes as door openings, and identification of specific goods or cases needed at specific moments of the production process. In this case, sensors are used to identify when a production line needs an empty case and when a full case is ready to be transported. These sensors needed to be integrated into the intralogistics process.

To address CIE Automotive challenges, we deployed a private 5G network and integrated the existing systems and components with Programmable Logic Computers (PLCs) and AGVs on the NTT DATA's Intralogistics Platform, enabling a fully automated and intelligent end-line process.





NTT DATA's **Intralogistics Platform** deployed at CIE Automotive allows to:

- Receive task execution orders from ERP and/or MES (or other platforms such as SCADA, and PLCs...if necessary) and provide feedback to these systems.
- Optimize orders, organize them and create the necessary queues and execution orders for each autonomous mobile devices.
- Collect all the execution orders through a layer of orchestration intelligence.
- Integrate the production line's sensors to generate tasks automatically.
- Monitor all devices and sensors' activities and status in real-time.
- Centralize the integration and coordination of different AGVs/AMRs, multiple sensors and systems, adapting itself to communicate through necessary protocols.
- Monitor the entire process from an intuitive dashboard.



The platform empowers the client to streamline the management of their logistics processes within the internal material flow, automatically and autonomously, following a functional logic determined by the characteristics and needs of each operation.

This cloud-based solution is enabled by 5G, the latest connectivity technology providing differential benefits in terms of security, low latency, capacity, and bandwidth for dynamic operations as intralogistics, and also powers AGVs/AMRs. These devices are not only useful for the transportation of goods, but other capabilities can be added-on for enabling other data-based use cases (e.g. bar code scanning for inventory automation), to fully benefit from the advantages provided by 5G.

The main features of the NTT DATA Intralogistics Platform are:



**5G-enabled**



**Cloud-based**



**Scalable**



**Flexible**



**Adaptable to new business requirements**



**Supports different communication protocols**



## Components:



### **Advanced Task Management**

Increases efficiency in plant operations as well as productivity and performance in industrial processes by optimizing all task executions coming from different “demanding” applications (machinery, ERP, MES, SCADA, devices, PLCs and others) and feeding them in different moments of the process.



### **Orchestration brain**

Provides the optimal planning for all devices, robots and processes working simultaneously, assuring safety for people and equipment.



### **User interface**

Controlling and centralizing the management of all AGVs/AMRs regardless of the manufacturer from a single, easy-to-use and effective interface.



### **Intuitive dashboard**

Allows users and leadership to visualize in real-time all the tasks and alerts, whether they are related to events generated by failures in the signal traffic or physical incidents.

With an integral approach, NTT DATA's Intralogistics Platform helps industrial sectors to achieve their objectives of optimization, flexibility and quality, relying on the capabilities that connectivity technologies allow, to promote increasing horizontal and vertical digitization in the factories.

*As part of our commitment to innovation, we're constantly looking for ways to improve our production processes and incorporate cutting-edge technologies into our systems. We're confident that the use of AGVs supported by tools like the Intralogistics Platform developed by NTT DATA will not only increase productivity but also the safety and well-being of our staff which is a key factor in any digitalization.*

Jon Ezkerra.

Coordinator of R&D projects of the CIE Automotive group



# Results

Thanks to the PoC, multiple benefits and advanced capabilities of NTT DATA's Intralogistics Platform were tested and validated in real settings at the CIE Automotive plant located in Itziar (Deba), Guipúzcoa:

- 1 End-to-end automation, monitoring and control of all autonomous mobile devices and sensors for optimized and efficient usage.
- 2 The Platform's features powered by 5G capabilities are expected to generate an approximate 10% increase in AGVs/AMRs productivity in industrial plants.
- 3 Safer process automation for employees and devices as all of them are communicating with each other through the platform.
- 4 Data collection and management for analytics of entire intralogistics operations.
- 5 Ability to progressively integrate, manage and optimize additional mobile autonomous devices and sensors, enabling the industry to carry out a digital evolution in a scalable, sustainable, and more controlled manner.



# Why NTT DATA

Our vast technological expertise and our capability to develop and implement large-scale projects, together with the expert multidisciplinary teams that were assembled, allowed NTT DATA to enable a complete test environment and evaluate all the important pieces for the future of intralogistics operations.

In addition to the solution, NTT DATA also offers the capabilities and complementary know-how of consultancy, digitization, automation, SAP, and system integration, and relies on an extensive ecosystem of partners available for joint work with other technology providers.

## What's next

While the Intralogistics Platform tested in CIE Automotive is focused on the automotive industry, its applicability can be extended to other sectors that require optimizing routines and processes such as logistics companies, retailers, distribution centers or ports. In fact, the Intralogistics Platform can be adapted for any industrial sector that intends to automate its internal logistics processes, using autonomous mobile devices, connected sensors and any other type of advanced technologies, to scale their transformation.

**For further information**

[www.es.nttdata.com](http://www.es.nttdata.com)

