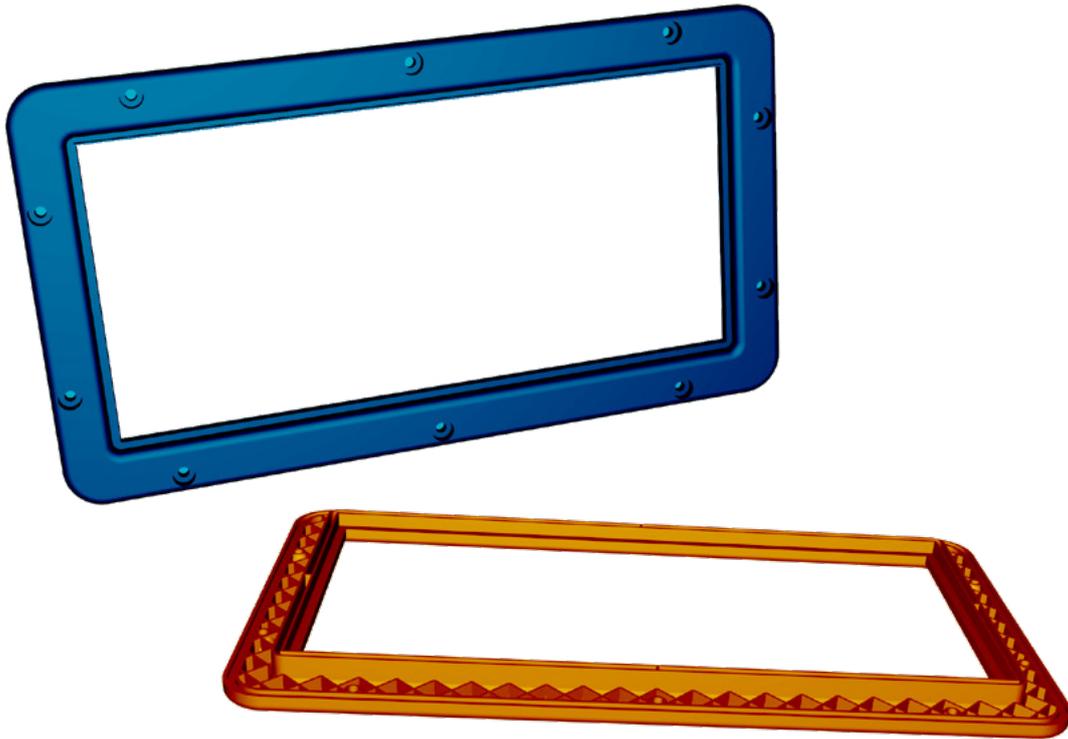


## Case Study



**NS (Dutch Railways) reduces costs and lead times for spare parts with DiManEx**



## About NS

Nederlandse Spoorwegen (NS) is the principal passenger railway operator in the Netherlands. The organization is responsible for managing, operating and developing more than 400 stations and station areas in the busiest rail network in Europe. NS also has an operations department that provides a complete package of services to maintain and refurbish the organization's coaches (rolling stock).

## Challenge

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Part obsolescence is a big challenge for NS' operations department. The department strives to optimize train maintenance and utilization, but a single missing part can bring coaches to a stand still for several months. Joris van de Sande, who is responsible for strategic purchasing at NS, explains: "obsolescence is one of our biggest challenges and it's set to increase. We realized that this required a strategic approach, so we formed a team dedicated to obsolescence management and started considering Additive Manufacturing as a possible solution to produce spare parts."

One such part was a frame used for train radios. The frame was not available through NS' original supplier anymore. Without it, trains couldn't run. Getting replacements for electronics covers was equally problematic. When a cover for an electronic part would break, the part (sometimes worth up to 1,000 euros) would become unusable. Minimum order quantities (MOQs) for these parts were prohibitive from a cost perspective. In most cases, NS would have to order a minimum of 100 parts, when in fact they only needed 10. At the same time, there were strict quality control regulations to consider.

## Solution

NS started working with DiManEx to introduce 3D printing into their organization. The operations department chose 10 parts to be printed through DiManEx as a pilot. Several non-critical plastic parts, such as frames, door handles and switches were printed through the platform. Following the pilot stage, NS started working with DiManEx to perform data analysis and increase their understanding of how Additive Manufacturing can benefit their supply chain. Based on this analysis, 50 parts will be selected for 3D printing.

To supplement this initiative, NS implemented an internal communication program to educate and train employees on the possibilities offered by 3D printing. "We do a lot of communication internally to get ideas from the workshop floor," van de Sande adds. "It's important to train employees so they understand that these are industrial quality parts that are safe to use. That way they can embrace 3D printing as a possible solution for several of their day-to-day challenges."



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DiManEx is flexible and has a quality mindset. This allows us to build a digital supply chain while adhering to our company's strict quality requirements

Joris van de Sande, Strategic Buyer at NS

## Results

NS was able to reduce lead times from 6 to 3 months. In addition, asset utilization for coaches increased. "The pilot helped us demonstrate that 3D printing is something we scale and use to improve supply chain performance," says van de Sande. "We now have a better understanding of what we can print. We developed a process for 3D printing and we know when it will benefit us and when it won't. When we have a high MOQ or lead time, we know we can rely on 3D printing."

## Building a future supply chain

NS' future ambition is to develop a virtual library of spare parts to be manufactured through DiManEx. "Our goal is to connect our key suppliers to DiManEx so they can provide the engineering expertise and DiManEx can handle production, on demand. DiManEx is flexible and has a quality mindset. This allows us to build a digital supply chain while adhering to our company's strict quality requirements. It also helps that DiManEx has a multi-disciplinary team with a lot of experience." - Joris van de Sande, Strategic Buyer at NS

## The results in a nutshell

- ✓ Lead times reduced from 6 to 3 months
- ✓ Improved availability of rolling stock
- ✓ Waste reduction
- ✓ Foundation for a scalable 3D printing operation established

## About DiManEx

DiManEx provides a cloud-based, end-to-end service for distributed 3D manufacturing through a network of certified Additive Manufacturing partners. Ideal for manufacturers and parts intensive companies, our digital supply platform can be accessed anywhere in the world to produce industrial parts and small series with the click of a button. We are a partner you can trust, with a strong commitment to quality.

Visit [www.dimanex.com](http://www.dimanex.com) to learn more.

[Contact us for a demo](#)

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