

SLF as an incubator for innovation in service logistics

Why wait until a component actually fails when data and smart analytics can predict the need for maintenance much earlier? This question was at the heart of ProSeLoNext, a four-year research program in which three Dutch universities and seven companies from the SLF network jointly explored how service logistics could become more proactive.

ProSeLoNext (Proactive Service Logistics for Capital Goods – the Next Steps) was not a stand-alone research project. It was the next phase in a research program that had originated within SLF years earlier. It began with SLF Research (SLF-R), jointly funded by universities and companies. When that funding model came to an end, new funding was secured through TKI Dinalog and the ProSeLo research program was launched. Four years later, this was followed by ProSeLoNext.



Taking the next step

According to project leader Rob Basten (Eindhoven University of Technology), ProSeLoNext represented a clear step forward.

“ProSeLo focused primarily on spare parts management. With ProSeLoNext, we took it a step further. Sensors and data enabled us to predict maintenance needs, manage service logistics more intelligently and explore new business models.”

Predictive maintenance

Basten and his research group focused on predictive maintenance: performing maintenance based on the actual condition of machines rather than at fixed maintenance intervals. Together with Canon Production Printing, they developed a Maintenance Scheduler that automatically indicates when maintenance is required.

“Canon had already developed its own roadmap for predictive maintenance,” he explains. “Our researchers and students were able to build on that seamlessly. Ultimately, this resulted in a maintenance tool that actually generates alerts when condition-based maintenance is required. It was genuinely implemented in practice.”

Smarter inventory management

Researchers at the University of Twente focused on the logistics side. Once you can predict that a failure is likely to occur, a new question arises: how do you make sure spare parts, technicians and tools are in the right place at the right time? Matthieu van der Heijden (University of Twente): “We investigated how real-time information can be used to manage inventories more intelligently. Suppose one warehouse is about to run out of a

particular part, while another warehouse still has two in stock. It makes sense to move that part in advance, before a shortage occurs.”

At ASML, this principle was actually implemented. Not the complete scientific methodology, but the underlying principles, Van der Heijden explains.

“A graduate student developed a practical system that enables ASML to proactively move parts between warehouses. This is now being used in practice.”

A fundamental challenge

Rommert Dekker (Erasmus University Rotterdam) also focused on decision-making in service logistics. His research covered areas such as inventory management, contracts and the availability of spare parts for products that have long since gone out of production.

“With capital goods such as aircraft or ships, you are looking at lifespans of thirty years or more,” he says. “Production of parts often stops much earlier. The question then becomes: how do you ensure that those parts remain available? That is a fundamental service logistics challenge.”

A simple intervention

Sometimes, the solutions prove surprisingly simple. At IBM, the researchers developed a model for reducing inventory as service contracts approach their end.

“Our mathematical models were fairly complicated,” Dekker says with a laugh. “But in the end, the practical solution turned out to be very simple. As soon as a customer indicates that they will not renew a contract, you immediately stop replenishing the spare parts inventory. That idea generated immediate financial benefits.

Sometimes the biggest gains come from a relatively simple intervention.”

Tangible results

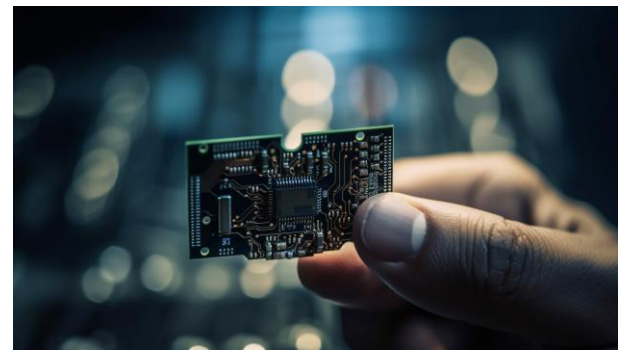
It was precisely this practical approach that set ProSeLoNext apart from much traditional academic research. In addition to PhD candidates, dozens of master’s students and PDEng candidates worked directly with the participating companies on real-world challenges.

“More than thirty young researchers worked on this project,” says Basten. “As a result, it produced not only scientific publications, but also numerous tangible short-term results that companies could immediately build on.”

Strengthening each other

Many of these students later joined the companies where they had conducted their research. As a result, the knowledge developed through the program did not remain within the universities but also found its way into practice.

“You can see that research and practice continuously reinforce each other,” says Basten. “We learn from the challenges companies face, while companies benefit from new insights generated by research.”



Mutual trust

“SLF was also an official partner in this project, and all participating companies came from the

SLF network. They knew each other, which created a foundation of trust. They also knew what to expect from academic research,” says Basten.

That mutual trust proved essential. Companies were willing to make their operational data available, while researchers gained access to real-world operational challenges.

“Companies don’t have time to wait years for results,” Basten says. “But within SLF, they also understand that fundamental research takes time. At the same time, as mentioned earlier, student projects generate many tangible results along the way.”

Seeing what others are doing

Dekker sees another advantage.

“Within SLF, companies can see what others are doing. If ASML or IBM is working on something, other companies naturally start thinking about whether it could be relevant to them as well. That allows new ideas to spread much faster.”

Because the companies are not direct competitors, there is room to exchange experiences openly.

“You need an environment like SLF where people feel comfortable talking honestly about the challenges they face,” says Dekker. “That trust is

incredibly important. Ultimately, that is what a network like SLF is all about.”

Long-term commitment

The researchers emphasize that the value of ProSeLoNext lies not only in its individual results, but particularly in the long-term research journey that has been developing through SLF for more than twenty years. New projects build on previous insights, researchers and students move into industry, and practical experience generates new research questions.

“Research has the greatest impact when you work on it for twenty years, rather than just five,” says Dekker.

Basten agrees. “It is difficult to pinpoint exactly which innovation emerged exclusively from ProSeLoNext. But when you look at the developments at companies such as ASML, Canon, Fokker, IBM and Vanderlande, you can see that together they continue to move forward step by step. That is the result of long-term collaboration between companies, universities and students.”

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