



In 2019, Amsterdam Airport Schiphol implemented the PATCH MANAGER Cable & Asset Management Software solution to manage their complex network infrastructure consisting of hundreds of thousands of assets and cables. With the kind cooperation of Gregor Hendrikse, one of the key representatives of the airport, and Bas Keijser, the PATCH MANAGER lead consultant for the implementation project, we take a closer look at how PATCH MANAGER has become one of the airport's vital systems.

## About Amsterdam Airport Schiphol

As the 5th busiest airport in the world, Amsterdam Airport Schiphol counted 80.5 million passengers in 2019, going to or coming from 327 destinations, 2787 hectares of land, 165 boarding gates, 315 outlets and approximately 500 companies on the airport estate.

## About Schiphol Telematics

Schiphol Telematics (ST) is the leading telecom operator mainly for Aviation companies based at and around Amsterdam Airport Schiphol. Additionally, ST is the operator at Amsterdam Airport Schiphol for all public Internet and business services, offering both wired and wireless broadband Internet access as well as assisted telephone services.

## About PATCH MANAGER

PATCH MANAGER is a comprehensive and powerful software solution for planning, documenting, managing and maintaining the physical layer connectivity, cables & assets of data centers, offices, buildings and outside plant networks. PATCH MANAGER is relied upon and widely trusted by a rapidly growing international customer base, across a wide variety of market sectors, including many airports and transportation operators.

The PATCH MANAGER solution is the core product of Patchmanager B.V., an established company operating since 2002, specialized in Cable & Asset Management Software.

## Schiphol's infrastructure

ST is responsible for the build, management and monetization of the telecom network infrastructure at the airport. Hendrikse explained "To collect, process, and distribute the large amount of data in the Schiphol environment, ST operates its own two data centers. Besides the data centers, we have about 2,000 technical rooms with different hierarchies [...] and about 2,000 racks in those locations. We also have a lot of infrastructure underground and multiple glass fiber rings all across the Schiphol site. Additionally, Schiphol Group owns a lot of office spaces. Therefore, most of the data infrastructure in those buildings is also part of ST's Infrastructure." Hendrikse continued.

"Besides the data centers, we have about 2,000 technical rooms with different hierarchies [...] and about 2,000 racks in those locations. We also have a lot of infrastructure underground and multiple glass fiber rings all across the Schiphol site."

## The challenges ST were facing

ST were dependent on multiple systems for the day-to-day management of the network infrastructure, with each system providing only a partial solution, particular to a specific aspect of the network or work flow.

With an ever growing infrastructure to manage, and the fact that some of the systems were not supported anymore, ST decided it was time to look for a single comprehensive state-of-the-art solution that is capable of fulfilling the functionalities provided by the existing systems.


According to Hendrikse, *“There was quite an urge to replace them with one integrated system, which is capable, as a minimum, of implementing the functionality of the old applications.”*

## Best Value Approach to select the vendor and solution

Given the size of ST's network and complexity of data to be migrated from the existing systems, ST anticipated that the implementation was going to be a challenging project. ST decided to look for an experienced vendor with a proven track record in the domain, that would be willing to work closely together with ST in achieving the project goals.

After careful consideration, ST decided to go with the Best Value Approach to procurement.

“Schiphol Telematics decided to use the best value procurement selection procedure in order to fully benefit from the application vendor's knowledge and experience. Why should we describe exactly what the application needs instead of using the vendor's knowledge in determining what is most important and how things can be solved within the application?” Hendrikse said.

 **Best Value Approach:** This approach, developed by Dr. Dean Kashiwagi, has been widely adopted by the ICT sector. Its main goal is to improve the procurement and execution of projects and services by identifying and leveraging expertise. The use of the traditional approach is one of the primary sources of risks in project management, because the client has limited experience with the delivered product. In other words, usual tenders contain detailed specifications and deadlines of what the end-product should be. With the Best Value Approach (BVA), the client defines his needs and searches for the vendor with the best expertise.

“PATCH MANAGER proved to be the best match in both the prototype and the answers to our questions, as well as in meeting the global requirements about scalability, availability,...”

- Gregor Hendrikse, Schiphol Telematics

One of the key parts of the vendor selection process was a proof-of-concept process whereby the shortlisted vendors were invited to present how detailed samples of ST's infrastructure data could be represented in their solution.

Hendrikse explained “the vendors on the short list (...) not only were they to state what the possibility of their solution was on paper, but also provide a prototype so that we could see in real life what the implementation would look like. The PATCH MANAGER solution proved to be the best match in both the prototype and the answers to our questions, as well as in meeting the global requirements about scalability, availability, ...”.

Having selected PATCH MANAGER as the best solution, ST opted for the PATCH MANAGER Software-as-a-Service (SaaS) deployment model as the best match for their operational needs. Being a highly experienced SaaS provider with a proven track record of operating a secure and reliable service, the PATCH MANAGER team were able to guarantee the high level of security and availability required by ST.

## Agile PATCH MANAGER implementation

The Agile Scrum framework was adopted as the project implementation methodology. This approach played a significant role in the cooperation between ST and the PATCH MANAGER team, enabling both parties to review the project and communicate in complete transparency.

*We liked that the PATCH MANAGER team were willing and able to participate with the agile scrum approach in the project; not all the prospective vendors were willing to do so."* Hendrikse explained. And looking back on the implementation, he continued, *"One of the important things for me was to experience that both Schiphol and the PATCH MANAGER team were taking ownership of the end results. (...) That is a good feeling to have responsibility shared by both parties; that's an important thing for me."* He continued, *"I think the project implementation was kind of a journey designed by both parties, always in productive cooperation."*

## Data migration and upcycling from the existing legacy systems

To convert the data from the previous applications, the PATCH MANAGER team iteratively developed a conversion script with each cycle resulting in an offline import of the converted data and review by ST. An additional important aspect of this process was to collaboratively implement data design choices to make best use of the rich functionalities provided by PATCH MANAGER. The feedback from each review was then fed into the subsequent iterations, resulting in more of the data being converted, and with an ever increasing accuracy and structure.

The goal was to be able to work towards an automated switch-over from the legacy systems with a minimum of downtime, and indeed, the switch over from the previous systems to PATCH MANAGER was able to be performed over a single weekend. In the end, around 99.95% of the data was migrated automatically by the script. The remaining 0.05% of data were outlying cases, and rather than attempting to develop a specific automated conversion for each case, it was decided that it would be most efficient to migrate them manually. This manual step was completed in less than one week.

Hendrikse explained, "At Schiphol, we deliberately chose to have the PATCH MANAGER team take the migration lead, because of their skill and experience with large data migrations."

**"At Schiphol, we deliberately chose to have the PATCH MANAGER team take the migration lead, because of their skill and experience with large data migrations."**

## Preparing for operational roll-out

In parallel to the data conversion process, ST and the PATCH MANAGER team also worked on other key deployment-related aspects of the system that would need to be in place for the operational roll-out.

### Application user management

By making use of PATCH MANAGER's support for standard security protocols, the PATCH MANAGER team successfully configured an integration to the airport's centrally controlled Identity Management and Authorization system.

### Geographical maps

For accurate display and management of the outside plant fiber aspects of the network in the PATCH MANAGER software, an integration was implemented with the airport's in-house detailed geographical maps. The integration makes use of PATCH MANAGER's support for the standard Web Map Services (WMS) protocol.

### Workflow integration

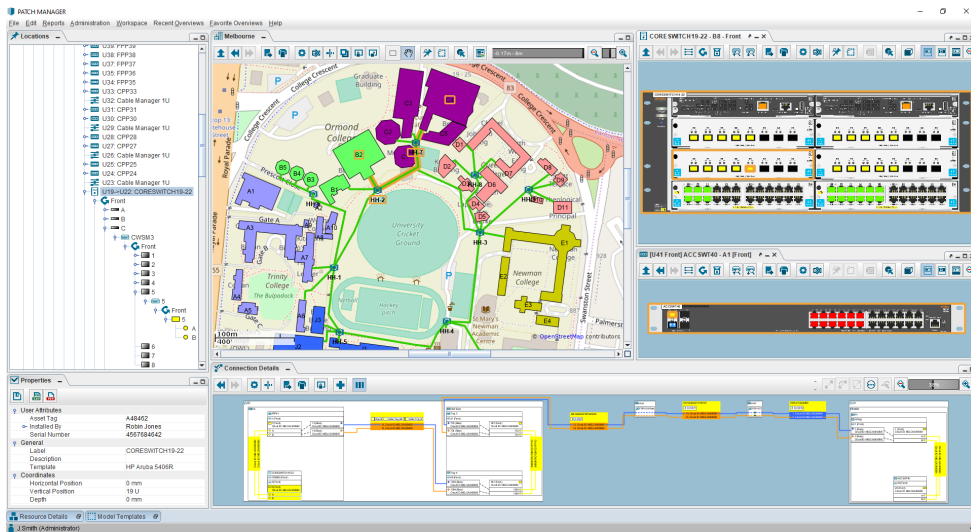
Infrastructure work orders are managed by PATCH MANAGER and IBM Control Desk, the ST Service Management tool. IBM Control Desk is used for the high-level task control, and PATCH MANAGER for the detailed infrastructure level changes. In order to facilitate an automated synchronization of the systems, an integration was implemented using PATCH MANAGER's extensive REST API.

## Reporting

To support the smooth running of its daily operations, ST relies on being able to quickly and efficiently retrieve information from the system. Using the powerful and flexible reporting functionality of PATCH MANAGER, reports were configured to return exactly that information.

Among the key reports required by ST were Risk reports (e.g., if a specific cable is cut or if a power supply goes off, what components would be affected?), Capacity management reports (e.g., available space in racks, available ports in switches, fiber availability), and Inventory reports.

According to Hendrikse, one of the main benefits of using PATCH MANAGER is that ST now has a single source of truth for all network-related information. He also stated that "one of the best things about the application is its flexibility. Everything you put in it, you can easily get out. That's an important thing." Another benefit he mentioned is the user-friendly interface that gives a good representation of the physical reality. When users "need to know something about the network, they use the application, and they can see the real situations in the application, just like they are in the field."



PATCH MANAGER: Sample illustration of demonstration data

## PATCH MANAGER in production

The PATCH MANAGER SaaS Solution is now in production, and is a crucial operational tool relied upon by ST's team on a daily basis. As a consequence, the former logical network administration database system has been fully phased out. The data migration of the second legacy system to PATCH MANAGER is now in process, adding the geographical context of the ST network infrastructure. As awareness of the application has grown throughout ST, the user base has expanded beyond the original expectations (100 users were initially trained), with many job roles benefitting from the information provided by the system.

Because PATCH MANAGER provides accurate and useful information about the ST network through a user-friendly interface, other teams were interested to use it and could benefit from it. The application is now used by way more users and departments than initially expected!

Order managers consult PATCH MANAGER to identify how services can best be made available, taking into account network resource availability, and the projected impact of the change options.

Field managers are responsible for making the detailed infrastructure change planning for technicians, and generate this information in PATCH MANAGER Work Orders.



According to Hendrikse, "The cooperation is very fruitful, very professional, but also flexible. PATCH MANAGER has totally fulfilled the needs of ST in the project". He added that he would recommend PATCH MANAGER "for organizations that require a tool in which they can manage both data center and underground/aboveground infrastructures. PATCH MANAGER is the ideal solution to do so, with a very good service to deliver the application."

According to Keijser, "the great atmosphere and will to extensively collaborate by both teams from the very beginning till the end of the migration was a major factor in making this project so successful."

"The cooperation is very fruitful, very professional, but also flexible. PATCH MANAGER has totally fulfilled the needs of ST in the project"

- Gregor Hendrikse, Schiphol Telematics

