

The background is a dark blue space with glowing orange and yellow orbital paths around a central bright light. In the foreground, there are several 3D geometric shapes, primarily cubes and hexagons, in shades of purple, pink, and blue.

# SERVICE MANAGEMENT AT CERN

## 1. INTRODUCTION

CERN is a European-based intergovernmental organization that was founded in 1954 and now operates the largest particle physics laboratory in the world. It is known for collaboration and openness, with a long-established culture of knowledge-sharing. As this paper demonstrates, CERN's contribution to society is not limited to its research in physics.

CERN employs over 2,500 people and welcomes over 18,000 external scientists and collaborators to use its resources for experiments. With thousands of people on site every day, the general management of CERN's services is both complicated and crucial. In this paper, three CERN employees explain how its service management culture and systems have evolved over the last 10 years. Olaf Van Der Vossen is the former head of general service management at CERN and was involved in service management there from 2008. His successor is Gyorgy Balazs, who was previously involved in IT service management. Frédéric Chapron works in a different department enabling the production of particle beams and is in charge of developing service management processes in collaboration with the general service management team.

The general service management team, in collaboration with the IT department at CERN, have achieved extraordinary change by applying ITIL and other service management principles outside of the IT environment.

## 2. CERN'S SERVICE MANAGEMENT PROBLEMS

CERN is a little city, with thousands of people on site every day and hundreds of services available across the sites. There are many IT services, but also services like bicycle rental, stores, hotels, and a fire brigade. Coordinating and managing all these services is an enormous task, made even more difficult because many people, such as physicists from other labs contributing to CERN experiments, visit CERN for short periods and there is a lot of turnover. This means that the services and user interfaces at CERN must be easy to use with minimal training.

In 2009, a new Director General arrived at CERN and began his five-year mandate. This was the beginning of serious organizational restructuring and cultural change. Olaf and his team saw an opportunity for improvement, and they took it.



## 2.1 OVERCOMPLICATED SYSTEMS

In the past, CERN had different service desks for all of the services on site, with little to no coordination between them. The systems were difficult to navigate even for practiced users, who had to juggle multiple contact numbers and processes. For new or temporary users, the systems were unworkable. CERN needed a new, unified system that was simple and practical.

Olaf said: 'Our vision was to make something simple that everyone could use.'

The general service management team decided to use IT-specific guidance and tools to optimize and simplify all service management at CERN. They depicted their approach with an excellent graphic, shown in Figure 1.1.

Figure 1.1 IT service management outside of IT



The team took inspiration from ITIL and other ITSM tools, but they did not limit their improvements to IT services. Instead, they took all the useful stuff and used it to transition from one service management model to another. As the new system was being deployed, some people took ITIL training, while others received a variation of the training that was shorter and not IT specific.

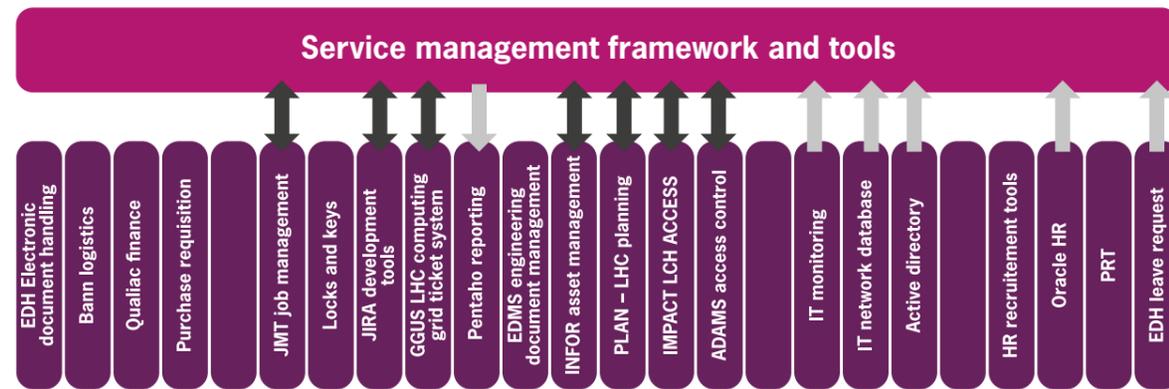
The team had specific outcomes that they wanted to achieve:

- simplify users' lives by providing a single point of contact for all services
- ease supporters' work through a collaborative, highly automated tool
- improve management's monitoring and control capabilities
- demonstrably improve efficiency and effectiveness.

## 2.2 RESISTANCE TO CHANGE

So, CERN needed a new, unified service management system. However, the team knew that many users would push back against the idea of retiring their existing tools. Also, building a brand-new system would take so long that it would be out of date before it was finished. For both of these reasons, Olaf and the team decided to create a thin service management layer on top of CERN's existing tools, as shown in Figure 1.2. The aim was to create a single interface that represented all of the services at CERN.

Figure 1.2 The thin service management layer



Olaf compared this project to the unification of Europe in the middle of the 20th century. He said: 'In the 50s and 60s, doing business in Europe was very complicated. Unification made things much easier.'

With this aim in mind, Olaf and the team began work on a service portal that would provide easy access to most of the services at CERN and which users could use to browse the service catalogue, report and follow up on issues, access the knowledge base, and access service status information. Users would only have one login and one point of contact to remember, and all of the legacy complexity would be hidden.

Gyorgy said: 'Many people come to CERN for only a few weeks or months. It's important that they can find whatever they need quickly and easily. Our achievement, a simple service management layer, enables this.'

## 2.3 USERS WANTING ACCESS TO THE EXPERT

The team faced another problem: users were used to having access to every layer of the service management system. They wanted to know how services were delivered and talk with experts to resolve their issues. This behaviour is common in science-driven environments, but an approach that enables it is neither sustainable nor scalable. In an environment like CERN, there are simply too many services, incidents, and requests for an expert-led system to be feasible.

The team aimed to have a single service desk for all of CERN's services, so there was no possibility of having experts from specific fields on the frontline. Instead, they planned a system of escalations: incidents and requests can be escalated, if necessary, to increasingly knowledgeable support staff until the issue is resolved.

Olaf said: 'Most users no longer get access to the expert. That might upset them, but that's how it goes.'

## 2.4 NEEDING A FLEXIBLE, SCALABLE SYSTEM

One of the most important aspects of the service management system is its flexibility. The system needed to be adaptable as more and more services were integrated over time. Early on, the team decided to centre the system around incident reporting and request processes. These processes worked in the same way regardless of the service that was being used, whether it was site security reporting a broken lock (incident) or a user asking for a password reset (request). For specific business areas, such as HR, finance, or car rental, the team made unique forms that would prompt the user to include any information needed to help the support team process their ticket. Because this was a system-wide approach, a new service could be defined in the service catalogue, support and management roles could be assigned, and the service could be advertised as ready for use very quickly.

Crucially, the team at CERN wanted to retain their agility; they did not want to build an inflexible system. To get and retain buy in from users, the system needed to adapt to their needs. For this reason, Olaf cautions organizations against overcomplicating their tools. He said: 'Some tool providers will promise you a tool with many functionalities, but they lock you into one solution and then you can't adapt. We stayed simple so we didn't get locked into specific solutions or domains.'

Not everything at CERN is managed with service management tools and methodology, yet. As Olaf said: 'You cannot ask for a Higgs-Boson with a ticket'. However, technical services, like accelerator services, are increasingly being integrated into the service management tools and environment.

“Crucially, the team at CERN wanted to retain their agility; they did not want to build an inflexible system”

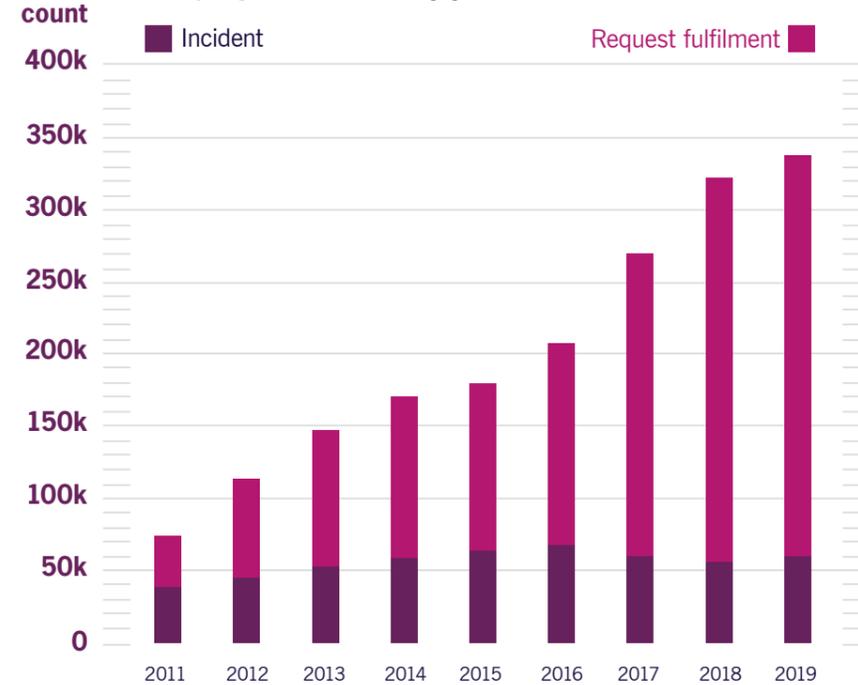


### 3. WHAT WERE THE RESULTS?

For the last decade, the general service management team at CERN has deliberately encouraged and enabled cultural change. Before, services were separate and everyone needed to know who, out of many options, to contact to resolve issues. Now, CERN has a user-centralized service management layer that is accessible through a functional, accessible portal. There is one point of contact for most services at CERN, and simplicity in general is prioritized.

The new service management system unified a set of independent services and expanded its service offering to include up to 340 operational services. This is the result of sustained integration over the years, which was made easier by relying on two base processes: incident and request. Forms are used throughout the system to maximize efficiency. For example, the internal car rental service at CERN is a request fulfilment process. The user submits a request with a form providing all of the details of the request, such as the type of car needed and the rental period, and the request is automatically assigned to the correct support team. This initial touchpoint can even hide a coordination process between several service providers, thereby simplifying the user experience. The ticket request lifecycle forms the basis of the value stream on which the various service contributors collaborate to co-create value with the user. Figure 3.1 shows that, between 2011-19, the number of incidents reported at CERN remains roughly at the same level, and the number of requests increases dramatically. This demonstrates users' increasing acceptance of and reliance on the service management system.

**Figure 3.1 Ticket volume per year at CERN**  
INC/RQF ticket trend by year with a human 'caller'



The team has found ways to incorporate as many process and services as possible into their system, including some which were not obvious candidates for integration. For example, there are no official parking wardens to manage the car parks and issue fines to poorly parked cars at CERN. Instead, the team integrated this process into their system. Now, the site security service can issue tickets as they move around the site as if they were reporting an incident. The incident is processed through the system and the owner is automatically notified that they need to move their car.

Another example of automation is in the IT sector, where incidents are reported by the monitoring system and then the relevant field technician automatically receives an incident ticket requesting an on-site intervention (when required). That ticket will include information about the incident and indicate what the technician will need to do to fix it. This is only possible because the service management system integrated information about the field technicians' processes as part of its ongoing development. Even CERN's transportation services involve automation. Every day, shuttle buses drive around the site on fixed schedules, which are planned into every bus driver's phone or tablet. If there are delays, drivers can report them. The delays are then signalled to users through an online service status board.

### 4. LESSONS LEARNED

Although the development of the service management system at CERN has, overall, gone very well, there were some bumps in the road. Most of these involved the communication of new processes and, in the beginning, a lack of acceptance from the users. These are common problems, but they are not insurmountable.

#### 4.1 COMMUNICATING NEW PROCESSES

The general service management team originally relied on the user to know the difference between an incident and a request. Because the system is designed around those two processes, it is important that they are used correctly. However, users did not always understand which process was needed.

Olaf said: 'Someone would report a broken light, which would be processed as an incident, but then they would ask for an improved or second one. We would try to get them to close the incident and raise a request, but they didn't understand why. We should have hidden that complexity from the user and managed the change ourselves. We had to remind ourselves to focus on value and keep it simple. If they couldn't make it work, it wasn't working.'

Frédéric expanded on this, saying: 'When you adopt ITIL, it's important not to expose the complexity of the framework. Instead, you should approach the users to ask what they need. ITIL 4, with its focus on the value chain and what service providers can do for consumers, really helps with this. Users don't need to understand the concepts behind the service; they don't need to know if something is an incident or a request. For me, ITIL 4 is much more helpful than ITIL v3 in this regard.'

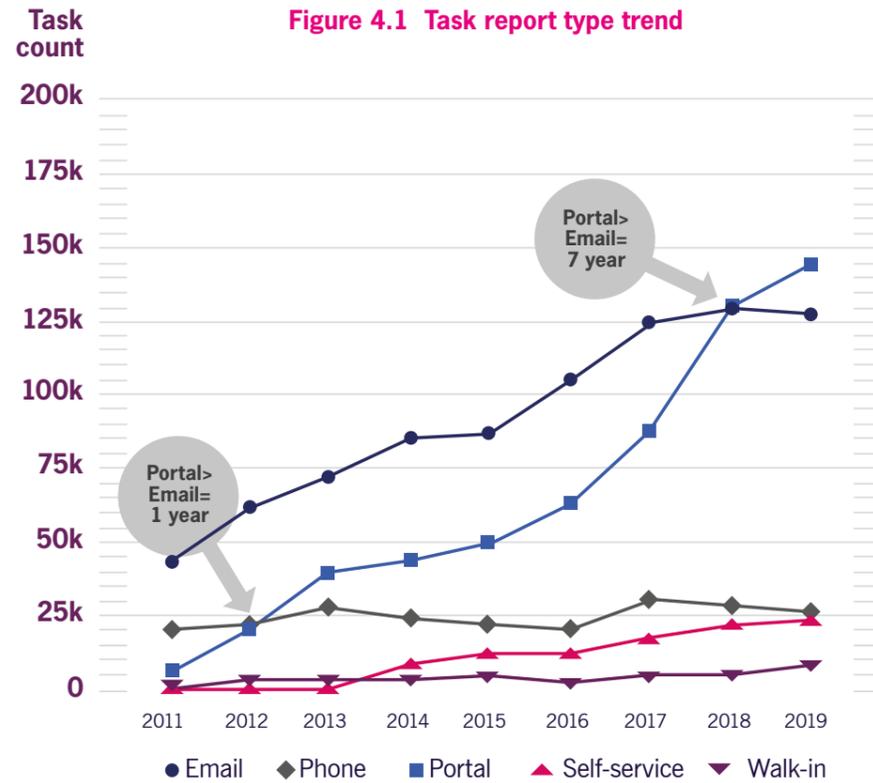
**“When you adopt ITIL, it's important not to expose the complexity of the framework”**



## 4.2 LEGACY PROCESSES

Another problem the CERN team had involved the reluctance of users to move away from old processes. In the beginning, users were reliant on phone and email to report incidents and make requests. It took one year for the majority of users to stop using the phone, and eight years for them to stop relying on email, as shown in Figure 4.1. Olaf said: 'I recently learned that support for the astronomers using the Hubble space telescope was managed through fax and phone for many years. When the new James Webb telescope project started, a support platform was built using Service Management technology<sup>1</sup>.

It was only after some people from that community had visited CERN and seen what we had done that the concerned team in NASA started considering the introduction of formal service management.'



## 5. WHAT'S NEXT?

It's been over 10 years since the IT and general service management teams began to revolutionize service management at CERN, but they are not stopping yet. Until now, service integration has mostly involved IT services and generic site services, such as hostel bookings, which are used by a large population. However, these are not the only services on site. Technical services provide the accelerator facilities for the science at CERN; the service management system is expanding to include these, just as it has for generic site services over the years.

The other main goal for the team is to continue to promote and increase the service management culture within CERN. CERN will continue to provide on-site ITIL Foundation courses so that more people understand and embrace the importance of service management. The team has also started to expand the system's scope by building processes to simplify service delivery when multiple services must collaborate to fulfil user's requests, track performance, manage problems, and create reports.

ITIL 4 will have a prominent role in the ongoing development of the service management culture at CERN. When compared to ITIL v3, ITIL 4 has more of a focus on value and is less IT-specific, which makes it doubly useful. Gyorgy explained: 'ITIL 4 is more applicable to generic services, rather than just IT services, so it is even more aligned with what we are doing than ITIL v3.' Cultural change always takes time, and CERN is no exception. Gyorgy said: 'It's been 10 years, and I think we are about halfway.'

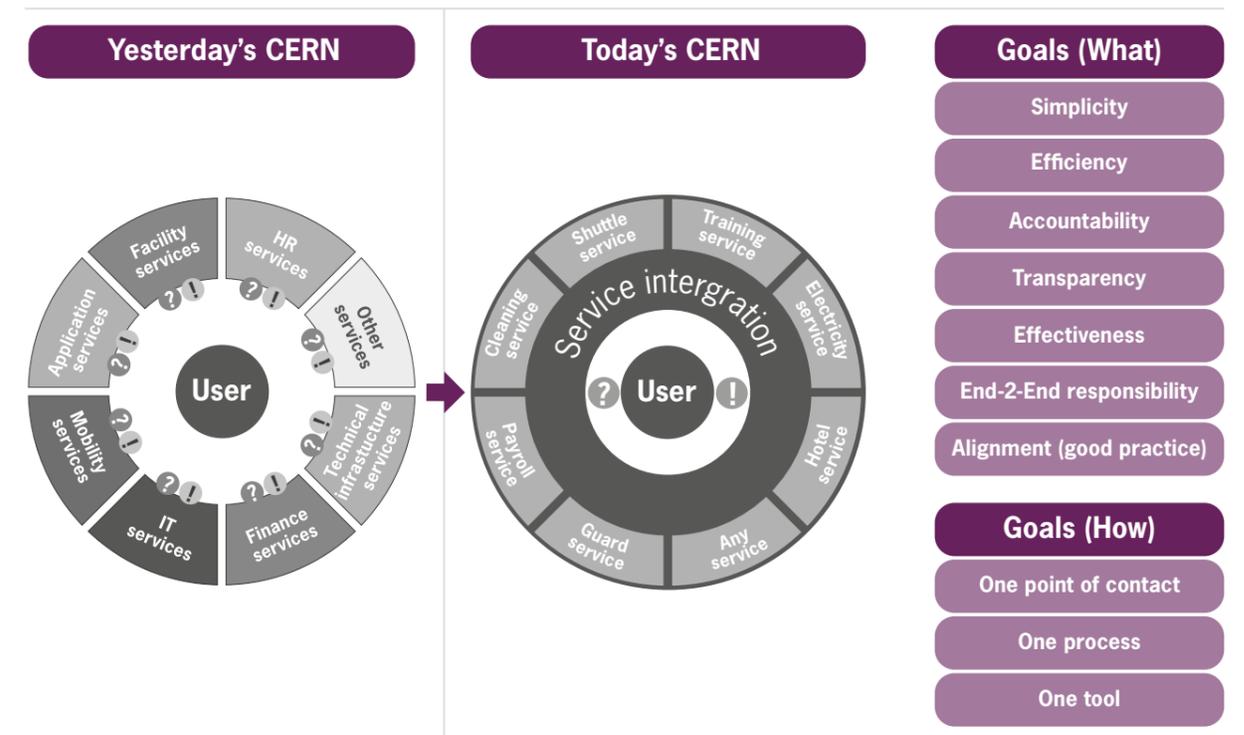
## 6. CONCLUSION

This was an ambitious project, one that many people thought would be unsuccessful. CERN is a large organization with many distinct groups of people, all of whom had their own ways of working and did not necessarily welcome the idea of change. Frédéric said: 'I want to emphasize that this was not easy. Honestly, when Olaf and his colleagues started this project we didn't know if he would succeed.'

However, Olaf and his team were undeterred. They have made enormous progress towards their goals, and Gyorgy will continue to develop and expand the influence of service management at CERN.

The change in culture is reflected in the increasing acceptance of and dependence on the service management system and the team that supports it. Frédéric said: 'In the beginning, some people thought that the IT team were overstepping, getting involved in areas that were not theirs to influence. Now, many non-IT groups are approaching Gyorgy and Olaf, as I have, to get involved and to interact with other groups that are already embedded in the process. The general service management team is now a central point of contact that allows various stakeholders to co-create value with CERN users.' The team's extraordinary process towards their goals is depicted in Figure 6.1.

**Figure 6.1 Service management at CERN: before and after**



### Olaf's top takeaways are simple.

First, service management is relevant and effective beyond IT. Second, organizations should invest in a comprehensive service catalogue and service portal. Third, service management is not rocket science; it worked for CERN, and it will work for you.

<sup>1</sup> <https://stsci.service-now.com/jwst>

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