CUSTOMER INNOVATION STUDY

CERN

maximizes uptime of the world's largest and most complex machine with Infor EAM

> **Infor EAM helps CERN** manage a wide array of maintenance activities for many types of equipment from the Large Hadron Collider's magnets to everyday infrastructure like elevators and fire extinguishers."

David Widegren
Head of Asset & Maintenance Management, CERN

infor + CERN

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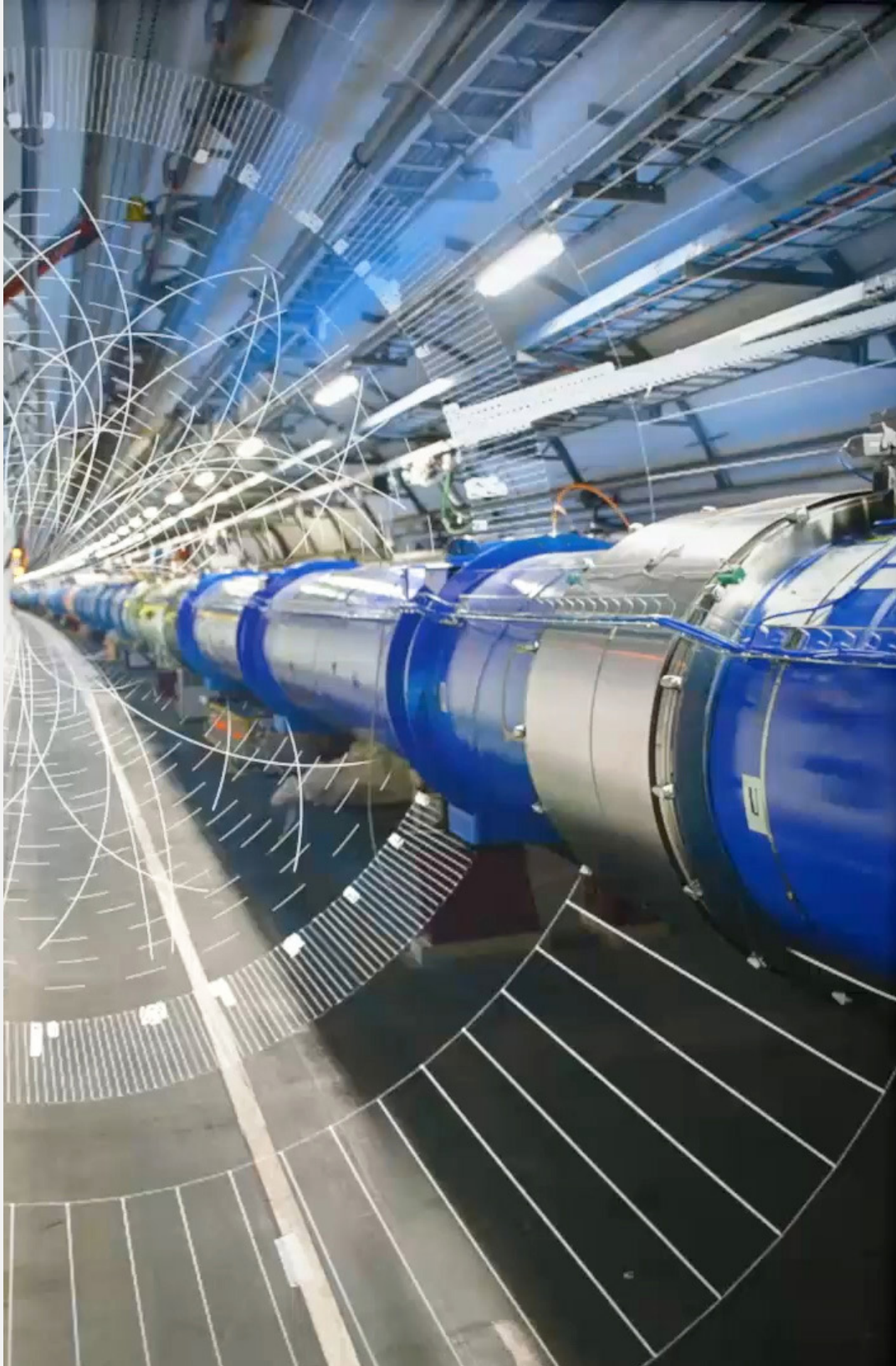

Facts at a glance

HEADQUARTERS
Geneva, Switzerland

INDUSTRY
Public Sector

EMPLOYEES
Approx. 2,350 staff

ANNUAL BUDGET
Approx. $1.3 Billion US

WEBSITE
www.home.cern

INFOR PRODUCTS AND SERVICES
Infor® EAM, Infor LN

Executive overview

Situation analysis

- Minimize unscheduled accelerator downtime by optimally maintaining high tech equipment, including supra-conducting magnets, cryogenics, radiation monitoring, controls equipment, electronics, and other equipment.
- Maintain technical infrastructure, including tunnels, caverns, roads, parking lots, electricity, water, cooling and ventilation systems, access control, machine tools, lifting equipment, and more.

Innovation strategy

- Centralize detailed records of a wide range of maintenance activities executed by both CERN staff and contractors for machines with more than 50-year useful lives.
- Centralize procurement processes across an organization the size of a small town, including retail, and employee-centric stores, hotels, and restaurants.
- Integrate Infor® EAM and Infor LN for specific use cases where CERN both procures and maintains equipment.

Results

- Accelerated response time to alarms concerning equipment failures by linking Infor EAM codes to information about the department and individual responsible for the maintenance of each item.
- Increased the operating efficiency of the radiation protection group responsible for the traceability of potentially radiation equipment and eliminated paper-based processes.
- Provided simple, intuitive self-service functionality across the organization to eliminate the need to train end users such as visiting scientists, students, contractors, and new hires.
- Reduced the time it takes to process the departure of temperature-sensing electronic cryogenics cards leaving the accelerator complex from 30 minutes to 2 minutes per card, resulting in a reduction of a full time employee's workload by 15.2 weeks.

High-level impact

12X

faster dispatching of corrective maintenance personnel

93.3%

reduction in the processing time of cryogenics' temperature-sensing electronic cards

15%

increase in efficiency of contract maintenance personnel, as well as CERN staff

SITUATION ANALYSIS

Accelerating science

There's nowhere like CERN

With 22 member states, CERN is the world's largest research center for particle physics. The organization's goal is to provide the 12,000 visiting scientists from top universities around the world with the tools to study the fundamental particles of the universe. It turns out that the tools, built and housed at CERN and needed by the scientists to prove theories about the origins of the universe, are some of the most complex machines ever built by man.

For example, the Large Hadron Collider, the largest and best-known collider in the accelerator complex, consists of millions of high tech components installed in a circular tunnel that is 16.7 miles (27km) long and situated 330 feet (100m) beneath the border between France and Switzerland.

Getting the equipment up and running was no small task; the total cost of the project was approximately $9 Billion USD.

The experiments CERN conducts are highly complex: during experiments, particles are accelerated to 99.999999% the speed of light and reach temperatures as high as 10,000,000,000,000,000° Celsius. The large Hadron Collider needs to be cooled through cryogenics to temperatures colder than outer space. To achieve the organization's goals, CERN needed a tool that could help minimize unscheduled accelerator downtime while maintaining the safety and convenience of all its employees and visitors.

INNOVATION STRATEGY

More uptime means more physics

Infor Solutions impact the entire organization

CERN has been an Infor customer since 1989, and Infor EAM has tracked the design and maintenance of key pieces of equipment in the accelerator complex since they were manufactured on the shop floor. At the CERN Control Center, which ensures the accelerators are operating as they should, EAM provides a clear view of the maintenance history to control room operators.

Operators use that information to diagnose a malfunction and ensure that corrective maintenance occurs as quickly as possible. That same level of visibility into maintenance history helps the Cryogenics group optimize when and how much preventative maintenance should be performed in relation to corrective maintenance; this, in conjunction with the replacement parts that are selected, can help CERN achieve the same level of performance from the equipment at a lower cost.

> “What we do at CERN is something quite unique, we collide particles at very high energies to recreate the universe like it was like just a fraction of a second after the big bang and by doing so we see particles and things we wouldn’t see otherwise.”
>
> **David Widegren**
> Head of Asset & Maintenance Management, CERN

Maximizing uptime to maximize CERN's goals

The goal of CERN is to advance science. The organization has been tremendously successful at doing this, as evidenced by the multiple Nobel laureates who have conducted their research in collaboration with CERN. Much of that has to do with the brilliance of the individuals CERN attracts; however, these individuals must accumulate a large amount of experimental data before they can validate their theories. By maximizing the uptime of the equipment and the surrounding infrastructure, the operational support groups help maximize the organization's goals.

Infor EAM is used at CERN to organize and carry out corrective maintenance on pieces of equipment that break down, increase the efficiency and speed of scheduled maintenance, and increase safety throughout the organization.

RESULTS

Simplifying the user experience to increase adoption

Value realized

Infor EAM is used at CERN for the traceability of potentially radioactive equipment, ensuring that all equipment coming out of the accelerator complex is properly measured for radiation and dealt with appropriately. Once an easy-to-use airport kiosk-like interface was introduced, EAM adoption by scientists and technicians skyrocketed. This provided CERN with the data that was required to comply with regulators and optimize the efficiency of the radiation protection group and the outside contractors that transport equipment to the appropriate locations. The centralization of information through EAM allows the radiation protection group to increase its efficiency by making scheduled pickups, rather than sporadically visiting each exit point where equipment can leave the accelerator complex. Ultimately, this helps reduce the cost associated with sub-contractors in this process and gets the equipment back to end users faster, maximizing the amount of science that gets done.

Infor EAM and Infor LN work together

Infor EAM and Infor LN impact CERN in countless areas, including both complex and simple processes. LN takes care of supply chain operations and the purchases of all of the infrastructure inputs that allow the CERN community to thrive. This includes much of what is needed within the 700+ building campus, from the food in the restaurants to the merchandise in the stores for scientists and tourists, alike. There are a number of instances where CERN procures products and takes responsibility for its maintenance, such as with personal safety equipment and car and electronic equipment rentals. In these cases, LN and EAM work together to take care of the full equipment life cycle—from purchase to retirement.

Detailed impact

250%

increase in registered location updates for assets in the last 18 months

160%

increase both in usage and frequency of information updates

20%

increase in the number of concurrent users that logged on to Infor EAM

50%

reduction of measurements required for the TREC program through enhanced coordination via Infor EAM

LOOKING AHEAD

Expanding and integrating for additional benefits

Going forward, CERN expects to expand its strategy to use homogenous and streamlined maintenance processes throughout the organization for both maintenance management and asset management. There are currently 2 million physical assets managed by Infor EAM; the goal is to extend the usage to include the whole accelerator complex and a larger portion of CERN's infrastructure, which could mean doubling both the current amount of users and managed assets during the coming 3-5 years. This is an ambitious yet realistic goal: 200,000 new pieces of equipment were registered in EAM within the last 18 months.

CERN also will focus on further increasing the integration between Infor LN and Infor EAM. Centralization of information through Infor EAM could help reduce costs in everyday activities. For example, monitoring the trends associated with indoor lighting replacement across the organization could enable centralized purchasing (buying in larger quantities), which would increase their buying power and allow more favorable contracts to be negotiated with suppliers. Given CERN's size, this type of strategic initiative applied across the organization could create significant benefits.

"We are very interested in Infor's Hook & Loop team and how they can help increase the usability of **Infor software by making it more beautiful and intuitive**."

David Widegren
Head of Asset & Maintenance Management, CERN

Learn more

CERN has been an Infor customer for 25 years, and was previously awarded Operational Excellence honors in the 2013. Infor Excellence in Action Awards. Take a look inside CERN and how they use Infor EAM and Infor LN to further the organization's goals to accelerate science.

CERN video ›

Scalable, dynamic EAM software

21st century asset management drives new levels of efficiency through preventative maintenance. But you need a system that's ready for whatever tomorrow brings—and niche solutions simply can't grow with you, while Tier 1 products often require extensive customization. Infor EAM is a best-in-class enterprise asset management solution with rich built-in functionality—and the flexibility to integrate with other applications as needed.

Read more ›

Outstanding Customer Achievements Acknowledged at Annual User Conference

CERN relies on Infor Enterprise Asset Management (EAM) to operate and maintain its Large Hadron Collider (LHC). During the last few years, the organization has taken the strategic decision to roll out Infor EAM throughout the entire organization, and has been able to replace a number of both in-house developed and commercial applications, with Infor solutions.

Read more ›

CERN, Infor EAM, IIoT, and the world's largest machine

Everything about CERN—the European Organization for Nuclear Research, based in Geneva, Switzerland—is outsized, including its maintenance needs. CERN oversees the world's largest and most complex machine, and its nearly 2 million assets and components.

Read more ›

Infor builds business software for specific industries in the cloud. With 15,000 employees and over 90,000 customers in more than 170 countries, Infor software is designed for progress. To learn more about Infor, please visit www.infor.com.

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