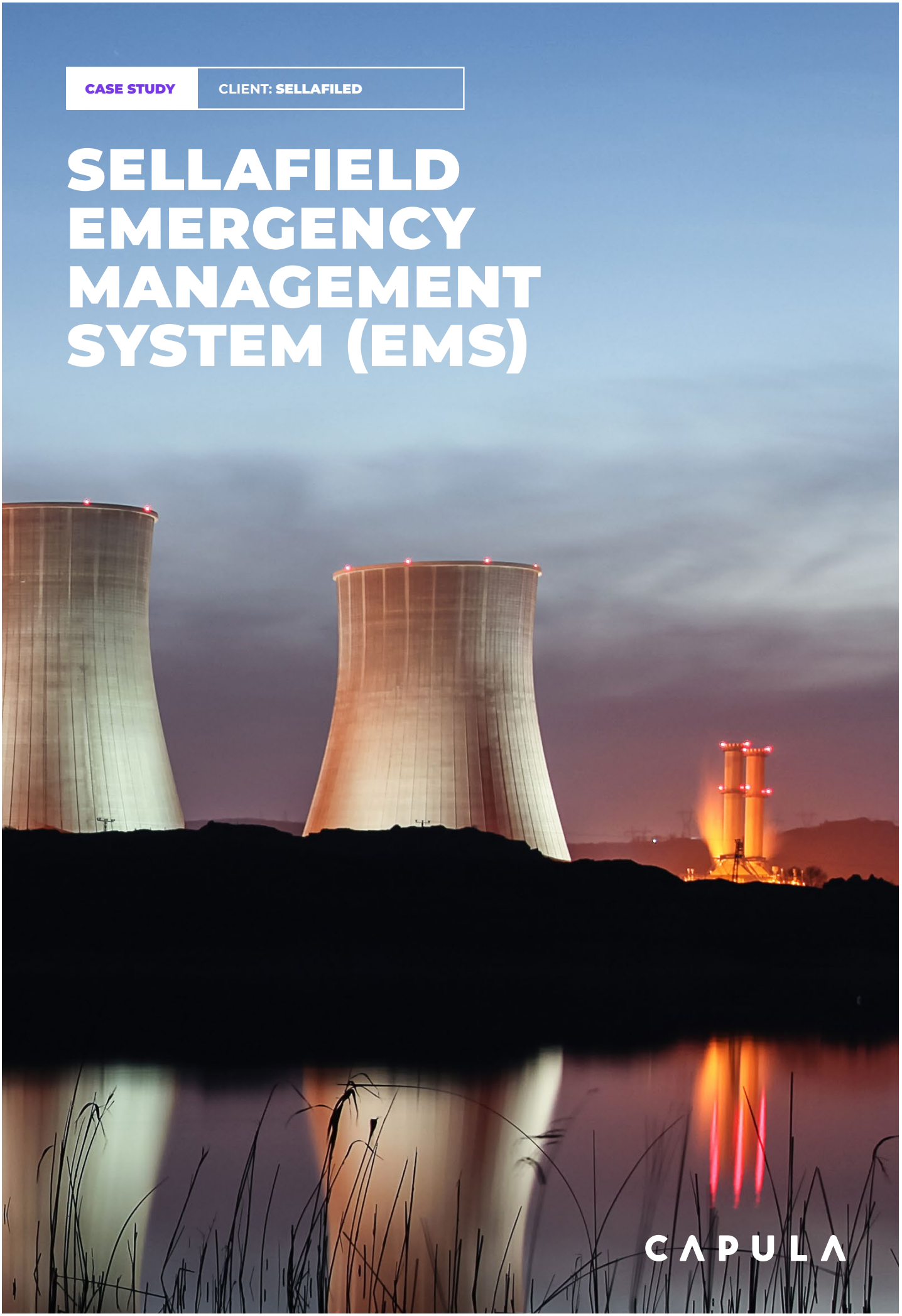
CASE STUDY | CLIENT: SELLAFILED

SELLAFIELD EMERGENCY MANAGEMENT SYSTEM (EMS)



CAPULA

Sellafield Emergency Management System (EMS)

ENSURING CONTINUED AND SAFE OPERATIONAL READINESS THROUGH THE DELIVERY OF A HIGHLY SECURE EMERGENCY MANAGEMENT SYSTEM (EMS) FOR SELLAFIELD LTD

Sellafield Ltd is responsible for the safe and secure operation and remediation of the Sellafield nuclear site.

It's nationally important aim is to create a clean and safe environment for future generations – from cleaning up the country's highest nuclear risks and hazards to safeguarding nuclear fuel, materials and waste.

KEY BENEFITS

- Delivery of a cutting edge, high availability and secure enterprise data centre to support essential site operations
- Enabling greater performance, availability, resilience, supportability and expandability across the site
- Supporting site-wide readiness to respond to emergencies
- Keeping site-wide operations safe and secure
- Intelligent risk reduction to minimise unplanned disruption of the live production systems
- Provision of a safe digital twin environment to allow updates to be developed, tested and verified prior to release to live production systems
- Optimising operator and maintenance training in advance of changes or enhancements to live systems
- Supporting obsolescence management and allowing a robust environment to support multiple systems with future scalability
- Future-proofed platform able to support the retirement of aging physical infrastructure

"It has been a real pleasure working in such close collaboration with Capula developing this capability for our Sellafield site. Their extensive knowledge and experience developing complex infrastructure has continually given us the confidence and assurance that we are getting the right solution to meet all our current and future needs. We look forward to continuing our valued relationship with Capula developing the new offline simulation, test and development environment."

Hannah Gibson,
Sub Project Manager
SMS and EMS data centre
Site Security Architecture
Upgrade (SSAU) Project

THE PROBLEM

In recent years, and in response to global events such as 9/11, 7/7 and Fukushima Daiichi the nuclear industry regulatory framework has changed significantly.

Given the critical role Sellafield Ltd performs, keeping the site safe and secure is a priority that governs the decisions taken every day. Today, Sellafield covers 6 square kilometres and is home to more than 200 nuclear facilities and the largest inventory of nuclear waste in the world.

Ensuring that the site can perform its critical activities is paramount.

To achieve this, Sellafield Ltd has invested in several programmes to ensure operational readiness and resilience can be maintained specifically in response to emergency situations that pose a significant risk of disruption to normal business operations.

One of the critical programmes was the Sellafield Security Architecture Upgrade (SSAU) project, designed to deliver the technology and active infrastructure required to ensure a resilient response in emergency situations.

THE SOLUTION

Part of the SSAU scope involved the creation of multiple data centre platforms, one of which was the Emergency Management Systems (EMS) infrastructure.

With over 50 years expertise in delivering digital operational technology solutions, including control and automation, Capula demonstrated significant experience of working across the Sellafield estate and its understanding of associated policies, procedures and the overall project requirements.

Capula was initially selected to deliver the EMS data centre, supporting the resilience of critical site-wide applications during an emergency or disruption to normal business operations. This greenfield project would lead the way, a key part of the site-wide digitalisation strategy and modernisation of Sellafield technologies.

THE IMPACT

The key tenets of the Capula solution included:

Data capture, interrogation and qualification

The EMS needed to extract data from critical, legacy systems; checking the integrity and validity of the information; and further storing it for use across the wider business network. Therefore, allowing a safe way to pass data from untrusted networks into clean environments securely.

With significant experience in both systems and data integration, Capula designed and developed a ‘best of class’ application and process that would deliver an interoperable solution that would interface with the various legacy systems, extract the necessary information and further optimise it to deliver a final ‘trusted’ data source.

The designed application would be scalable and support obsolescence, being capable of migrating current and future datasets from multiple systems into this central, secure platform.

Test and validation

To ensure the delivery of this first of a key enterprise grade data centre, Capula built a clean room in an accelerated time-line to enable the EMS to be tested and verified throughout the design and build process. Due to the sensitivity of the equipment, this was a critical stage of the project, helping to de-risk the overall solution and provide greater confidence that the system could handle emergency situations.

Virtualisation platform

With the project focused on resilience, Capula designed a solution that would support uptime availability of 99.95%, allowing future growth at minimal costs and providing security of new and inclusive systems with no additional risk.

A virtualisation platform was designed that would optimise a number of existing independent servers and bring greater agility and flexibility to the overall solution design. Virtualisation removes the boundaries of physical hardware limitations and reduces the costs associated with scalability.

Optimising investment in existing technologies

Having invested in a number of core technologies and systems, Sellafield were looking to ensure that the final EMS solution would benefit from such investments.

Capula developed a solution that reused and optimised existing technologies to benefit from further banked efficiencies. This included the application of software and hardware solutions that were commonly used in other existing data centre builds, enabling greater transfer of knowledge and learning from experience to better support future training and maintenance.

Secure by design

Ensuring the final solution was cyber secure and complied with the required regulatory codes and standards was a critical part of the overall system design.

With significant experience of delivering cyber secure solutions to the nuclear industry, Capula was able to develop a robust and ‘secure by design’ EMS. The system was externally validated through a robust independent IT health check prior to final release.

FUTURE DEVELOPMENTS

Following the successful delivery of the EMS Capula has been contracted to further develop the system. The project will focus on an Offline Test and Development Environment (OTaDE) or digital twin that would enable even greater development and test capability. This modernisation and virtualisation project is designed to help reduce energy intake and further mitigate and manage risk.

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