Research   North America

KARLSRUHE INSTITUTE OF TECHNOLOGY

Modernizing Legacy Infrastructure: KIT's Journey to Container-Powered Research

Business overview

This globally recognized German research institute is at the forefront of climate and environmental science. With over 10,000 researchers, it develops physics-based forecasting tools, dashboards, and simulation platforms used in international projects, impacting policy, disaster relief, and scientific collaboration.

Challenges

To support large-scale climate modeling and decision-support tools, researchers relied on manual container workflows SSH'ing into servers, running Docker containers by hand, and managing PHP-based portals one instance at a time. This fragmented process led to several challenges, including,

- Required specialist infrastructure staff to oversee deployments

- Was slow, cumbersome, and error-prone

- Lacked consistency, reproducibility, and centralized visibility

- Limited broader adoption of containerized apps across non-technical teams

The solution

Adopting Portainer provided a game-changing, container-first platform:

- Researchers used a simple GUI to deploy containers directly from a registry, without needing to use the CLI or SSH

- Consistent workflows and environment definitions improved reproducibility

- Git-connected deployments enabled self-service rollout of tools and APIs

- Integration with existing OAuth/LDAP systems supported secure, role-based access

- Centralized dashboards gave IT teams visibility, governance, and operational efficiency

This shift empowered scientists to deploy research containers to any cluster effortlessly, paving the way for broader adoption of reproducible, containerized solutions in critical climate initiatives and ultimately helping to save lives.

"In the past, we had to go to Africa and install research tools on a server there and in most of the cases that never really worked because then something crashed and the people were gone.

With Portainer, we just take a container and put it somewhere else."

Christof Lorenz, Scientific Data Manager

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