University of Sydney adopts a university-wide code repository

Client: The University of Sydney

Location: Sydney

Industry: Education

DXC.technology

Challenge
- University code projects were widely dispersed, insecure and lacking version control.

- Academic and student intellectual property was inadequately protected.

- Academics were unable to easily share code and projects with colleagues and students.

Solution
- GitHub Enterprise, cloud-based development platform, was selected as a central code repository.

- DXC Technology was brought in as strategic partner, implementer and service provider.

- Data sovereignty was assured, as all data remains on university-controlled servers in Australia.

Results
- Solution delivered on time; well-received by researchers and students.

- The University can now provide its researchers and students with unlimited code repositories, including version control.

- The system is secure, yet fully maintained and serviced.

Consolidating code

The University of Sydney, Australia's oldest university, is spread over a number of large, sprawling campuses. Its teachers, researchers and students work and study all over Australia; the university offers a wide range of academic programs including art, nursing, social science, business, dentistry, IT, health science, natural science, engineering, architecture, medicine, music and law. The University's software and algorithm code repositories were big and sprawling too, and that was a problem.

Across its academic programs, many of the University's researchers and students create, share and work with code. Unfortunately, the way they were storing that code was far from efficient. "We had fragmented code management systems all over the place," explains Rai Fergusson, Business Program Manager at the university. "We had people who had servers sitting under their desks, just to store their code. We also had people using storage platforms that are not really designed for code and version control."

Something had to change — and it did. The University devised a plan to set up a single centralised code repository for all its staff and students. As Fergusson recounts, the plan called for three main requirements:

- **Centralisation:** A single code repository would serve the entire university community. It would be capable of storing code for all the University's thousands of researchers and students.

- **Ease of access:** Access to the code repository would be open to all credentialled university members. In addition, students enrolled in a subject would be automatically linked to the repository for that subject. Administration would be offered via a standard directory service.

- **Data sovereignty:** Because protection of the University's intellectual property is so important, the system would be cloud-based but it needed to keep all code inside Australia.

A strategic partnership

To select a solution, the University formed an academic-led evaluation committee to review several code management systems. Ultimately, this committee selected GitHub Enterprise, the commercial version of of GitHub, the well-known software development platform. GitHub Enterprise includes tools for code hosting, code review, project and team management, social coding and documentation. GitHub Enterprise also offers high-level security and access control. It can be hosted either on-premises or in a private cloud using a public-cloud service. GitHub Enterprise is also battle-tested; it's been used by more than 1 million organisations worldwide — including Airbnb, IBM, MailChimp, NASA, PayPal, SAP and Walmart — and currently hosts more than 50 million projects.

The GitHub team, in turn, recommended that the University bring in DXC Technology as a premier regional partner on the project.

"When the University originally approached us around engaging on GitHub Enterprise, we immediately thought of a partner like DXC," says Sam Hunt, GitHub's Asia Pacific director. "That's because of their broad skills around the GitHub solution and their ability to provide managed services."

Indeed, DXC offered expertise in the tools that connect via APIs and to GitHub to extend the developer environment, as well as experience in managed services and supporting customer solutions on a long-term basis. "This," Hunt adds, "is just not something that GitHub can do."

A contract was signed in early 2017, and the DXC/GitHub team delivered a fully managed service, hosted on the University's private cloud, in roughly 12 weeks. "By university standards, that's a very quick deployment," Fergusson says.

The University of Sydney views DXC as a trusted partner, adds Dr. Jeremy Hammond, the University's Director of Strategic Ventures. "DXC advised us on architecture and design and implementation processes," he explains. "That allowed our project team to focus on engagement with the academics, while they got busy with delivering the actual product."

Engaged, secure — and impressive

The new GitHub-based system, officially dubbed the University Code Repository, is now online, providing a university-wide resource for code storage, management and review. It's also being used for general collaboration — letting teams share work, discuss changes and get feedback — all in one place. It allows the University to keep its intellectual property safe and usable.

Use of the University Code Repository is free for all university members with credentials under the University's UniKey authentication system. The GitHub system is fully supported by the University's Information and Communication Technologies (ICT) service desk with help from DXC, with at-elbow training provided by the Sydney Informatics Hub. Security is provided by both the University's firewall and secure shell (SSH) cryptography. Although the code can be accessed by users anywhere in the world, the data itself is stored on servers located in Sydney and controlled by the University.

Some of the projects now being migrated to the University Code Repository are extremely impressive. For example, the University's EarthByte research group has developed a cloud-based web portal that serves as a gateway to a set of virtual globes. "The globes allow users to interactively explore the global gravity and magnetic field as well as seabed geology, making the amazing tapestry of deep ocean basins readily accessible," explains Dietmar Müller, a Professor of Geophysics and Director of the Sydney Informatics Hub, a core research facility. "The globes also allow us to share the output of high-performance computing models portraying the dynamic nature of Earth's surface topography through time, allowing an interactive visualisation of the effect of surface tectonic plates acting like giant wobble boards as they interact with slow convection processes in the Earth's hot, toffee-like convecting mantle."

One next step, set for later in 2018, will add the University's School of IT, which has about 1,000 students, to the GitHub system as part of its core teaching curriculum.

The GitHub system also makes the University of Sydney the first university in Australia to have a site-wide code repository for all students and staff. "This genuinely sets us apart from our competitors and peers in the Australian market," says Dr. Hammond. "Our students and academic researchers now have the best possible tools they might need to undertake their research — and that gives them a competitive advantage."

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> *Dr. Jeremy Hammond, Director, Strategic Ventures, University of Sydney*

About DXC Technology

DXC Technology (DXC: NYSE) is the world's leading independent, end-to-end IT services company, helping clients harness the power of innovation to thrive on change. Created by the merger of CSC and the Enterprise Services business of Hewlett Packard Enterprise, DXC Technology serves nearly 6,000 private and public sector clients across 70 countries. The company's technology independence, global talent, and extensive partner network combine to deliver powerful next-generation IT services and solutions. DXC Technology is recognized among the best corporate citizens globally. For more information, visit www.dxc.technology.