

CASE STUDY

How the UW’s IT Partnership Launched *Their Next Gen AI & Computing Efforts*

PROJECT SNAPSHOT

INDUSTRY	Higher Education
SERVICES	Solution Architecture
TOOLING	AI Cluster
ENGAGEMENT	Strategic Partnership

Learn how the University of Washington, one of the world’s leading research institutions, used their partnership with Redesign to launch Tillicum, their next-generation platform for computing, AI, machine learning, and more.

01. About The Client

INTRODUCTION

The University of Washington (UW) is a public university in the Pacific Northwest. Boasting over 60,000 students spread across three campuses in Washington State, along with a medical center, the UW is regularly recognized as one of the most innovative public universities and one of the best in the world. The UW boasts over 500 patents filed in the last five years, ranks #23 in the world for filed US Utility Patents by the National Academy of Inventors and IPO (2020), as well as #7 in the US for technology transfer in a Milken Institute study that combines patents, licenses, licensing income, and startups.

Research at the UW is a cornerstone of the institution, as the university is proud to conduct more federally sponsored research on behalf of the American people than nearly any other public university — changing lives and boosting the nation’s global competitiveness. As a research institution, the UW stands out for the breadth and depth of their work.

HIGHLIGHTS OF THEIR ACCOMPLISHMENTS INCLUDE:

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 - Medicine, microbiology, and infectious disease work:**
Ground-breaking virology research, and development of new approaches to vaccines and infectious disease control.
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 - Public health, epidemiology, and global health:**
Strengths in public health and biostatistics.
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 - Computer science, AI, and Machine Learning:**
Leaders in AI and data-intensive computing, with a flagship effort in Open Multimodal AI Infrastructures (OMAI).
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 - Climate, environmental & sustainability science:**
Recognized for excellence in environmental science and sustainability research, including work that informs climate and biodiversity policy.
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 - Aerospace, space science & robotics / autonomous systems:**
The UW's College of Engineering hosts major centers in aerospace, space policy, and robotics, such as the Space Policy and Research Center (SPARC) and the Joint Center for Aerospace Technology Innovation (JCATI).

With a wide range of disciplines in research, the UW has accomplished extraordinary advancements in the pursuit of knowledge. The technology infrastructure to support these advancements, however, was behind. Though the UW is an exemplary institution for a breadth of disciplines, historically their technology environment has been a fragmented approach, with a blend of legacy tools and brands in their IT stack. Additionally, they have a central IT group that spans across multiple research areas within the university, creating a demand and need for resources.

02. Challenges

SCALING WITHIN LIMITS

The UW first announced their plan for Tillicum, the university's next-generation computing platform effort. Tillicum was designed to support research, teaching, and learning in AI, machine learning, data science, and scientific simulation, and would be operated by the UW-IT Research Computing at the UW. Tillicum was designed to accomplish multiple goals: to provide cutting edge technology to further advance research; to achieve and maintain a presence in the Top500 and Green500 lists; and to serve across all research domains of engineering, math, computer science, physical and life sciences, quantum computing, medicine, and teaching and learning.

However, these goals were juxtaposed with two challenges. First, how would the UW identify and design a hardware environment to achieve these goals? Second, how would the UW accomplish this within their budget? The UW, being a public university, was aiming to accomplish these tasks with a narrow budget. This meant that the technology solutions they selected had to be carefully orchestrated in order to maximize performance within their budget.

CASE STUDY

Solution + Recommendations

The UW broke Tillicum's hardware acquisition into three phases. Redesign was selected to help the UW in their first phase.

In order to help the UW accomplish their goals, Redesign and the UW relied on Redesign's existing partnership with Dell to help the UW put together a complex supercomputing architecture. Redesign and Dell were critical to this process, as both are experienced technology partners that have architected complex platforms and technology solutions in the past.

One of the first hurdles that Redesign helped the UW clear was their budgetary constraints. By working collaboratively with both Dell and Nvidia on creative solution architecture, as well as leveraging Redesign's Titanium Black status to get within budget, Redesign was able to help the UW orchestrate a technology solution stack that made sense to their goals and accomplished their objectives. This went through a myriad of decisions around networking, AI server configuration, all the way down to the storage level, turning that proverbial dial up and down as it made sense for their solutions.

This is where Redesign demonstrated their expertise as a partner for the UW.

By working with the UW closely and carefully, Redesign was able to understand and identify the best solution for the UW's needs. Redesign then took those needs and worked with an assortment of providers including Dell, Nvidia, and DataCore, to build the desired outcomes and efficiencies within the UW's budget. Redesign's work as a partner to the UW ensured that the UW's needs were met, while helping cut through the noise to find the right solutions and providers.

OUTCOMES

DELIVERED ON BUDGET, BUILT FOR SCALE

The successful launch ensured they maintained and even moved up in the Top500 and Green500 rankings to #185 and #51, respectively. Additionally, research was able to meet utilization goals and demand requirements on the cluster. A full look at their technology stack supported by Redesign can be found below.

TILLICUM'S TECHNOLOGY, EXAMINED

Redesign helped the UW build a complex and demanding stack of technology that met the needs of their project as well as the budget. A full examination of the solutions Redesign helped the UW adopt can be found in the Appendix below.

For a full list: [See appendix](#)

For more information on how Redesign can help optimize your technology solutions to meet your budget, or to learn how to leverage the latest technology experiences, get in touch with us.

[More info +](#)

Why It Matters

Tillicum is more than a computing platform. It supports the UW's ability to advance research across AI, medicine, climate science, engineering, quantum computing, and data-intensive discovery. By helping the UW optimize its infrastructure decisions, Redesign contributed to a foundation built to support scientific progress at scale.

The future belongs to the *curious*.

AI & Machine Learning

- Supporting large-scale AI, machine learning, multimodal research, and data-intensive computing.

Medicine & Public Health

- Enabling research across virology, vaccines, infectious disease, epidemiology, and medical data science.

Climate & Environmental Science

- Supporting simulation, modeling, and research connected to climate, sustainability, and biodiversity.

Engineering & Advanced Systems

- Powering work across aerospace, robotics, autonomous systems, materials science, and quantum technologies.

Scientific Computing at Scale

- Providing the performance foundation required for simulation, research workloads, and cross-disciplinary discovery

■ CASE STUDY: APPENDIX



Appendix: The UW AI Laboratory Phase 1

■ THE UW REQUIREMENTS /OUTCOMES

- Enable researchers from all the UW departments to access and utilize a cutting-edge AI environment for a wide variety of use cases
- Deploy new AI environment in Tower Data Center ASAP, ideally prior to end of Q1 2025
- Phase 1 (~200 GPUs) is a bridge solution sufficient to address near term AI resource gaps
- Preference for NVIDIA 8-way H200 GPUs, Kalray Storage, Infiniband Networking
- Preference for integrated platform solution to minimize execution risk and optimize user experience
- Minimize costs to the greatest extent possible
- Phase 2 and beyond (1000+ GPUs) will be “next gen” e.g. liquid cooled, Blackwell GPUs, in a CoLo or Modular DC
- “Lean In” in the spirit of long-term partnership

■ RECOMMENDED SOLUTION

- 24x Dell XE9680 8-way H200 Servers
- 3PB All Flash Kalray GPFS Storage
- NVIDIA NDR GPU Infiniband Networking
- Racks, PDUs & Accessories
- Dell Factory Rack Integration
- White Glove Installation Services

■ ADDITIONAL OPTIONS & CONSIDERATIONS

- Day 2 Management support, Build / Operate / Transfer
- Service catalog for automated resource provisioning
- End User training & education services

■ BENEFITS & VALUE TO THE UW

- Redesign and Dell have escalated this opportunity to the highest levels to shorten the timeline while minimizing the cost to the extent possible
- Strong partnership between Redesign, Dell, and NVIDIA enables holistic, end-to-end program execution and risk mitigation for the UW
- Dell Factory Rack Integration + Redesign on-site installation minimize both deployment complexity & cost.

redesign

DELLTechnologies

⇒ DATACORE

👁️ NVIDIA