

UCL: dedicated HPC hardware for the Infrastructure Systems Institute

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The use case

The DAFNI hardware fund has allowed us to add considerable computing power to our Infrastructure Systems Institute at UCL. Within the Institute we use multidisciplinary approaches to investigate infrastructure systems which provide critical services such as power and clean water.

Over 25 people in the Infrastructure Systems Institute, including post docs, lecturers, doctoral students, and professors have access to the new powerful desktop computers with large, curved-screen monitors, placed in a dedicated room with six sit/stand workstations.

The new DAFNI-funded hardware provides the highest powered of all the desktops in the department and allows staff and students to run models much more quickly than previously.

In addition to six desktops, DAFNI has also funded a large portable monitor stand and sizeable TV screen for conferences and meetings to enable better collaboration.

What does the DAFNI equipment allow you to do?

The high performance computers are proving invaluable for testing and honing models prior to uploading to the DAFNI platform, for using Docker imaging software, and other DAFNI services such as workflows and visualisations.

As students and staff are coming into the university campus more frequently, they are increasingly using the room and the desktops.

One of the doctoral students using the hardware is running a spatial model of Cambridge, modelling optimum locations for electrical vehicle charge points. The granular scale of Lower Super Output Area – LSOA – means high amounts of processing required by the model.

One of the staff, Dr Evangelia Manola, Research Fellow is working on a maritime shipping Digital Twin for construction materials distribution and will be using the desktops to further her work which will be added to the DAFNI platform.

I recently spoke on resilience when Innovate UK visited me at UCL. I was able to discuss previous articles and models using the DAFNI desktops. The link to the October 28th 2022 event is available at www.podfollow.com/brightspark



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How do you plan using the equipment in the future?

We anticipate that more faculty and students will use the new DAFNI-funded high performance computing available for their research in areas such as sustainability, resilience, and productivity in infrastructure and cities. This can involve using the computing power in areas such as developing discrete choice models, and activity-based modelling.

UCL refurbished the room that contains the DAFNI hardware so we have a dedicated room for our institute that's set up for our needs and also provides a great environment for collaborative meetings. This should be a bonus for new post docs and lecturers joining our institute.

We plan to do more work on Digital Twins using the DAFNI hardware and with the DAFNI platform, including developing future models for the research work we are doing.

Benefits of working with DAFNI

I sit on the DAFNI governance board and have been a DAFNI Champion. As one of the advocates for DAFNI, I always suggest its use when I talk about infrastructure research. It's a great resource for data, models and visualisations in infrastructure for infrastructure researchers.

The UKCRIC universities participating in DAFNI each bring unique contributions to the DAFNI platform creating a diverse and vibrant resource.

Using the DAFNI platform will increase the visibility of researchers' models to the wider research community and it also acts as a repository so that other researchers can build on previous work.

The DAFNI platform, analytics and visualisation tools is an opportunity to highlight insights into infrastructure challenges and opportunities for industry and government.

The hardware

- 4k high definition monitor
- 6 curved monitors
- 6 hard drives, memory
- 3 headsets VR
- Large monitor stand

