

Peak to long-tail : how cloud is the fabric and the workshop

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Modern scientific discovery has followed modern innovation. We've enjoyed over 50 years of Moore's Law, over which computing capability has grown at near 50% compounded, in-turn driving model/simulation-driven scientific discovery. More recently then number of devices on the Internet has grown at a similar rate, and sensing capabilities have grown at half that rate, both driving data-driven discovery. No other modern-day man-made innovations come close.

Hence, researchers creating tools and workflows over this space integrate instruments with storage with analysis tools and computing resources, to effectively create the 21st century equivalent of the humble microscope. Further, and because it is software, successful tools are then readily proliferated to others who explore the space of a discipline. The dichotomy of expectations: peak and long-tail, modelling and data, creates a significant tension for e-infrastructure providers. Do we serve peak-modellers (~HPC)? Do we serve the data-driven peak? Or do we serve the long-tail?

Research @ Cloud Monash (R@CMon, pronounced "rack-mon") is a single scalable heterogeneous fabric that spans the peak and long-tail agendas. It rekindles the computing centre as a workshop for tooling experiments - things are not bought but bespoke and made for the experiment, whilst also, driving modern data computing consolidation and scale. R@CMon is a node of the NeCTAR Research Cloud, a major data storage facility, a HPC facility, a virtual desktop facility and the home of the Characterisation Virtual Lab. The goal is to nurture virtual research environments that scale between peak and desktop to long-tail and HPC.

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