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Nyriad Creates Groundbreaking Technology While Assisting New Zealand and Australian Governments with Square Kilometre Array Development

Cambridge, New Zealand, April 10, 2017— The Square Kilometre Array (SKA) radio telescope is the world's biggest data problem. Nyriad (a New Zealand startup) has developed a breakthrough technology that promises to be the solution. ICRAR, the International Centre of Radio Astronomy Research, based in Perth, Australia, is working with Nyriad to adopt the technology for SKA.

How do you store, process and analyse astronomical streaming bits of data collected throughout a multi-decade project when no supercomputer capable of handling the task exists on the planet?

In 2021 the largest IT project in the world will be switched on, turning the southern hemisphere of the planet Earth into a giant scanner of the Universe, mapping the galaxies as far back as the big bang and looking for life. Not only is the scale of this massive project daunting, the tools needed to solve numerous challenges have yet to be invented.

Two serial entrepreneurs and technologists found themselves collaborating to help solve work packages for the SKA 10-nation consortium at the invitation of the New Zealand government. When Kiwi serial-inventor Matthew Simmons and American GPU-computing pioneer Alex St. John realized they both lived in the same town, Nyriad was formed in 2014, with the goal of creating the world's first exascale computing company.

Starting with a few students learning extremely parallel computer programming in St. John's garage (like many now-famous tech startups), Nyriad has grown to a team of over 50 engineers.

In partnership with international heavyweights in the computing sector, the technology developed in this collaboration has revolutionary and disruptive implications for the entire IT industry.

ICRAR is responsible for the development of the Data Layer of the Square Kilometre Array Science Data Processor. Nyriad began working with ICRAR on the Murchison Widefield Array (MWA) radio telescope, an SKA precursor.

Nyriad engineers are now working with ICRAR researchers to quantify the performance and efficiency of the new breakthrough, called “storage-processing,” which reduces unnecessary data movement by performing data processing and storage together on Graphics Processing Units (GPUs).

“With Nyriad’s storage architecture we can carry out very high performance computing while keeping data secured and checked at all times. This can be achieved with a lot less overhead and redundant storage hardware, so the cost savings are significantly greater than using traditional HPC storage and access technologies,” said Andreas Wicenec, who leads ICRAR’s Data Intensive Astronomy Program.

Nyriad CEO Matthew Simmons said, “The SKA forced us to look 10 years into the future for a cost-effective and power-efficient approach to processing data at this scale with I/O speeds that aren’t possible in current big data analytics or high performance computing (HPC).”

“The full impact of this faster, more efficient operating system will really become evident once the entire system is up and running in our next project with Nyriad,” says Wicenec.

Nyriad is working with several global IT companies to commercialise the technology.

Bios

Nyriad Founder and CEO Matthew Simmons was Co-Founder of Arvus Group International Ltd., and inventor of dozens of signal processing technologies used by Dolby, DTS, Sony, Microsoft, Samsung, Pixar, Singtel, Park Road Post, NHK and Disney. He was CEO of the New Zealand Clean Energy Center and invented a high-temp solid state heat-transfer system for Molten Salt Reactors (MSRs) and Nuclear Waste. When his business was decimated by the Christchurch earthquake in 2010, he resettled his family in Cambridge, New Zealand.

Nyriad Founder and CTO Alexander St. John was formerly CEO-Founder of WildTangent Inc., President & CTO of Hi5.com, former GM of the Microsoft Technology Evangelism Team, and he pioneered GPU computing. Creator of the Microsoft DirectX OS used by the DirectXbox, St. John also led development of the Windows 95 and Windows NT print, video, audio, 2D & 3D graphics, color management, font system, multiplayer and input architectures. Inventor of the streaming mapping technology used for Google Maps, he holds 23+ patents in compression,

digital rights management (DRM), machine learning, streaming media, e-commerce, virtual currencies and online advertising.

ICRAR's Andreas Wicenec is Professor at the University of Western Australia, leading the Data Intensive Astronomy Program of the International Centre for Radio Astronomy Research and designing and implementing data flows and high performance scientific computing for large-scale astronomical facilities and surveys. He joined ESO in 1997 as an archive specialist and was involved in the final implementation of the archive for ESO's Very Large Telescope (VLT), becoming ESO's Archive Scientist and head of the ALMA archive subsystem development group. Prof. Wicenec is also involved in the International Virtual Observatory Alliance (IVOA).

About Nyriad

Nyriad is a New Zealand-based exascale computing company specialising in advanced data storage solutions for big data and high performance computing. Born out of its consulting work on the Square Kilometre Array Project, the company was forced to rethink the relationship between storage, processing and bandwidth to achieve a breakthrough in system stability and performance capable of processing and storing over 160Tb/s of radio antennae data in real-time, within a power budget impossible with any modern IT solutions.

About ICRAR

The International Centre for Radio Astronomy Research (ICRAR) was founded in August 2009 with the specific purpose of supporting Australia's bid to host the world's largest radio telescope and one of the largest scientific endeavors in history, the Square Kilometre Array (SKA). ICRAR is a joint venture between Curtin University and The University of Western Australia (UWA), with funding support from the State Government of Western Australia. ICRAR has research nodes at both universities and is now host to over 100 staff and postgraduate students.

Notes to Editors

For more information about Nyriad, see http://www.nyriad.com
For more information about ICRAR, see http://www.icrar.org/our-research/ska/
For more about the Square Kilometre Array, see: http://ska.gov.au/