



Contribution ID: 16

Type: **not specified**

Keynote: Big Data and Big Compute in Radio Astronomy

Thursday, 2 June 2016 13:30 (1 hour)

Modern radio telescopes are large distributed sensor networks that produce huge volumes of data. Flexibility requirements force us to perform the data processing of these instruments in software. I will sketch how the LOFAR and SKA telescopes are prime examples of this trend. LOFAR currently is the largest radio telescope in the world, and SKA has exascale requirements on both processing and the network.

I will focus on two interesting challenges that we face while moving to exascale instruments. First, the data volumes have become so large that they simply cannot be stored any more. This means that we have to switch from off-line processing to a real-time system. Second, changes in modern computer architecture render our current codes and algorithms inefficient. Together, these changes are disruptive, and require us to completely change our pipelines, perform completely different optimizations and redesign our algorithms.

An e-Science approach that combines computer science research with domain knowledge is essential to achieve the required breakthroughs.

Presenter: VAN NIEUWPOORT, Rob

Session Classification: Plenary Session 2