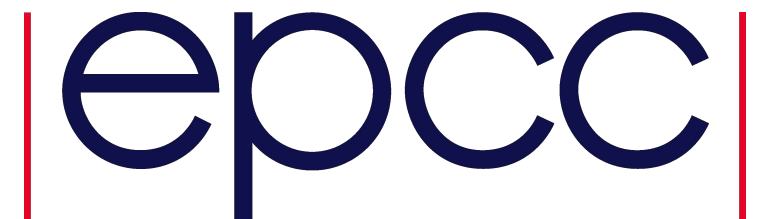


# EXASCALE I/O WORKSHOP

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CHALLENGES, INNOVATIONS AND SOLUTIONS

Professor Mark Parsons  
Director, EPCC



# Welcome!

# Introductory remarks

- For many years I/O challenges of HPC systems related to the inter-processor interconnect
- At the Petascale, I/O challenges of reading and write data to storage before and after a job are much more apparent
- Over past 5 years it's become much easier to buy large amounts of storage for data
- Managing that data has become much more challenging
- I/O subsystems have not kept up with rising core counts
- How many applications address those I/O subsystems has not changed
- ... I/O is a hot topic at the Petascale

## Introductory remarks (cont)

- ... at the Exascale I/O challenges multiply
- In the presence of 100 million+ parallel threads, I/O becomes a massive challenge for HW and SW
- Main technology innovations
  - Complex memory and storage hierarchies
  - New memory technologies
  - Move from parallel filesystems (e.g. Lustre or GPFS) to Object Storage
  - Cloud storage and data locality
- I/O is an enormous issue at the Exascale ... are we prepared?

# Agenda

- 0830-0845 Introduction to workshop (M Parsons)
- 0845-0910 IO Challenge at the Exascale: Perspectives for Numerical Weather Prediction (T Quintino)
- 0910-0935 NEXTGenIO: Moving I/O into the memory system (A Jackson)
- 0935-1000 SAGE: Percipient StorAGe for Exascale Data Centric Computing (S Narasimhamurthy)
- 1000-1030 Break
- 1030-1055 Who is afraid I/O? Exploring I/O Challenges and Opportunities at the Exascale (M Taufer)
- 1055-1120 The DEEP-ER take on I/O (W Frings)
- 1120-1200 Panel discussion

# Important links

- All slides will be made available on the NEXTGenIO website in the next couple of weeks:

<http://www.nextgenio.eu>

- Please fill in the evaluation questionnaire at:

<http://bit.ly/sc16-eval>

This will help us run another workshop next year!