Panel

Answering the Really Important Questions Once and For All

Rusty Lusk, moderator
Jean-Yves Berthou
Al Geist
Geoffrey Fox
Thilo Kielmann
Jean-Laurent Philippe
Vaidy Sunderam
Exascale question

- When will we have a Linpack-exaflop machine?
  - Guess the year
  - Explain why it will take this long
  - Explain why it won't take longer
  - What will it look like? Architecturally? Physically?
  - When the first application reaches 1/4 exaflop on this machine, what programming technologies will it use? (languages, libraries, domain-specific languages, etc.)
Programming question

- Why isn't everyone programming in D?
  - D is a proposed, and implemented, replacement for C, with built-in parallelism modules, "bringing the modern programming constructs of Python to C, without making the mistakes of C++ and Java." (See "The D Programming Language" book, or Googlit.)

  - What does your answer say about the adoption of new programming technologies?
Fault-tolerance question

• What fault-detection, fault-avoidance, and/or fault-recovery mechanisms do you see in use now?

  – Which will be \{used, necessary, impossible\} on the next-generation machines?
Big data question

• What is the "Big Data" version of the Linpack benchmark?
  – (We will never get anywhere without one.)
Selfie question

- What are YOU currently doing to bring about the golden age of computational science?
  - Don't be shy.
Megalomania question

• If you were in charge of a 100-million-euro (not billion) research program, how would you invest it?
Escape-hatch question

• What is another "Really Important Question"?
  – Answer it.