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Are HPCS languages the way forward for the next generation
of multi-disciplinary Petascale research codes?

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We introduce the Hartree Centre: a new national and international centre for computational science in the UK focussing on the development of new leading-edge multi-scale multi-disciplinary application codes for grand challenge projects.

The High Productivity Computing Systems (HPCS) project aims to create a new generation of high end programming environments, software tools and computer architectures. One arm of the project is developing new languages to support the high productivity computational environment envisaged. Three languages, Fortress, Chapel and X10, were defined in the first phase of the project, and the latter two are being further developed in phase 2. We will discuss the features of the three languages and discuss the support they offer for the next generation of multi-disciplinary Petascale research codes.

Mike Ashworth is leader of the Advanced Research Computing Group at STFC Daresbury Laboratory in the UK. This group is engaged in the development and optimization of large-scale applications across a wide range of scientific disciplines for Terascale and Petascale systems. His work focuses on the development and optimization of environmental modelling and CFD codes, including performance engineering and application of Grid technologies. In particular he has worked with scientists at the Proudman Oceanographic Laboratory on the optimisation of the POLCOMS coastal ocean model, its coupling to ecosystem, wave and sea ice components and the introduction of data assimilation techniques.

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