

Robust financial risk management through high performance computing

While dealing with the ongoing financial crisis, the European financial world and academic researchers are facing major challenges to create and apply more reliable quantitative models to manage risks. Simultaneously, new computationally challenging financial products combining traditional investments with insurance policies are gaining popularity. These challenges have increased the demand for experts in finance with superior computing skills.

The HPCFinance network aims to proactively train young people to respond to the future requirements and provide solutions to manage financial risks by high-performance computing (HPC). The network will help improve the financial strength of banks, pension funds, insurance companies, other financial institutions and households in Europe. In achieving these goals, HPCFinance will provide the European finance community with new robust financial models and specialists in computational finance holding state-of-the-art skills. HPCFinance is a Marie Curie Initial Training Network, funded by the European Commission with the budget of EUR 4,101,000 within the 7th Framework Programme.

Research and training will be provided in robust financial models and numerical methods on HPC platforms with emphasis on hybrid products and asset and liability management. HPCFinance stands at the crossroads of computational finance and technology. "The main goal is to train PhDs who are experts not only in quantitative finance but also in high-performance computing. At the same time, we help the European financial sector to apply new models, numerical methods and computational platforms", says project coordinator, Associate Professor **Juho Kanninen** from Tampere University of Technology, Finland. The project develops and integrates more realistic robust models for volatility, interest rate and counterparty risk on efficient HPC platforms.

The intended research is not only academically but also practically relevant as the programme is built around real life challenges identified together by the academic and private sector partners. "In fact, regulatory initiatives such as Basel III and Solvency II require the financial industry to gear up to more robust standards in real-time and enterprise wide risk management", says **Erik Vynckier**, Investment Director at the Scottish Widows Investment Partnership (SWIP) relates. According to Vynckier, "the HPC Finance initiative aims to help the European financial industry to routinely adopt the most advanced modelling techniques and computational platforms available today".

HPCFinance consists of eight companies and seven universities representing investment and insurance companies, banks, consultants and high-performance computing solution providers. In addition to producing academically valid and practically relevant research results, the training conducted in HPCFinance will

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enhance the partner universities' capabilities to exploit HPC technologies in their master's and PhD programmes in finance.

The partner members of the network are Scottish Widows Investment Partnership, Cambridge Systems Associates, Techila Technologies, Tampere University of Technology, Aarhus University, Maastricht University, The University of Manchester, Citigroup, Barrie & Hibbert, Maxeler Technologies, Numerical Algorithms Group, Vilnius University, Universidad de Málaga, Åbo Akademi University and Bgator Ltd.

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More information: www.hpcfinance.eu [1]

Associate Professor Juho Kanninen, Tampere University of Technology,
Department of Industrial Management tel. +358 40 707 4532,
juho.kanninen@tut.fi [2]

Investment Director Erik Vynckier, Scottish Widows Investment Partnership, tel. +44
131 655 8522, erik.vynckier@swip.com [3]

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[1] <http://www.hpcfinance.eu>

[2] <mailto:juho.kanninen@tut.fi>

[3] <mailto:erik.vynckier@swip.com>

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