

Computing for Finance

Innovation First @ CERN, Geneva

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Speakers, Synopsis and Biographies

(((Michael Yoo, Managing Director, Head of the Technical Council, UBS

Title: Overview of High Performance Computing in the Financial Industry

Abstract: Presentation will describe the key business challenges driving the need for HPC solutions, describe the means in which those challenges are being addressed within UBS (such as GRID) as well as the limitations of some of these solutions, and assess some of the newer HPC technologies which may also play a role in the Financial Industry in the future.

Speaker Bio: Michael originally joined the former Swiss Bank Corporation in 1994 in New York as a developer on a large data warehouse project. In 1996 he left SBC and took a role with Fidelity Investments in Boston. Unable to stay away for long, he returned to SBC in 1997 while working for Perot Systems in Singapore. Finally, in 1998 he formally returned to UBS in Stamford following the merger with SBC and has remained with UBS for the past 9 years.

During his tenure at UBS, he has had a number of leadership roles within IT in development, support and architecture. In 2006 Michael relocated to Switzerland to take up his current role as head of the UBS IB Technical Council, responsible for the overall technology strategy and vision of the Investment Bank. One of Michael's key responsibilities is to manage the UBS High Performance Computing Research Lab and he has been involved in a number of initiatives in the HPC space.

(((Fred Gedling, Chief Technology Officer EMEA and Senior Vice President Global Services, DataSynapse

Title: Grid in the Commercial World

Abstract: Grid computing gets mentions in the press for community programs starting last decade with "Seti@Home". Government, national and supranational initiatives in grid receive some press. One of the IT-industries' best-kept secrets is the use of grid computing by commercial organizations with spectacular results. Grid Computing and its evolution into Application Virtualization is discussed and how this is key to the next generation data center.

Speaker Bio: Fred Gedling holds the joint roles of Chief Technology Officer for EMEA and Senior Vice President of Global Services at DataSynapse, a global provider of application virtualisation software. Based in London and working closely with organisations seeking to optimise their IT infrastructures, Fred offers unique insights into the technology of virtualisation as well as the methodology of establishing ROI and rapid deployment to the immediate advantage of the business.

Fred has more than fifteen years experience of enterprise middleware and high-performance infrastructures. Prior to DataSynapse he worked in high performance CRM middleware and was the CTO EMEA for New Era of Networks (NEON) during the rapid growth of Enterprise Application Integration. His 25-year career in technology also

includes management positions at Goldman Sachs and Stratus Computer. Fred holds a First Class Bsc (Hons) degree in Physics with Astrophysics from the University of Leeds and had the privilege of being a summer student at CERN.

(((Adam Vile, Head of Grid, HPC and Technical Computing, Excelian Ltd.

Title: Opportunities for gLite in finance and related industries

Abstract: gLite, the Grid software developed by the EGEE project, has been exceedingly successful as an enabling infrastructure, and has been a massive success in bringing together scientific and technical communities to provide the compute power to address previously incomputable problems. Not so in the finance industry. In its current form gLite would be a business disabler. There are other middleware tools that solve the finance communities compute problems much better.

Things are moving on, however. There are moves afoot in the open source community to evolve the technology to address other, more sophisticated needs such as utility and interactive computing. In this talk, I will describe how Excelian is providing Grid consultancy services for the finance community and how, through its relationship to the EGEE project, Excelian is helping to identify and exploit opportunities as the research and business worlds converge.

Because of the strong third party presence in the finance industry, such opportunities are few and far between, but they are there, especially as we expand sideways into related verticals such as the smaller hedge funds and energy companies. This talk will give an overview of the barriers to adoption of gLite in the finance industry and highlight some of the opportunities offered in this and related industries as the ideas around Grid mature.

Speaker Bio: Dr Adam Vile is a senior consultant and head of the Grid and HPC practice at Excelian, a consultancy that focuses on financial markets professional services. He has spent many years in investment banking, as a developer, project manager and architect in both front and back office. Before joining Excelian he was senior Grid and HPC architect at Barclays Capital. Prior to joining investment banking, Adam spent a number of years lecturing in IT and mathematics at a UK University and maintains links with academia through lectures, research and through validation and steering of postgraduate courses. He is a chartered mathematician and was the conference chair of the Institute of Mathematics and its Applications first conference in computational Finance.

(((Daniel Egloff, Head of Financial Engineering Computing Unit, Zürich Cantonal Bank

Title: From Monte Carlo to Wall Street

Abstract: High performance computing techniques provide new means to solve computationally hard problems in the financial service industry. First I consider Monte Carlo simulation and illustrate how it can be used to implement a sophisticated credit risk management and economic capital framework. From a HPC perspective, basic Monte Carlo simulation is embarrassingly parallel and can be implemented efficiently on distributed memory clusters. Additional difficulties arise for adaptive variance reduction schemes, if the information content in a sample is very small, and if the amount of simulated data becomes huge such that incremental processing algorithms are indispensable. We discuss the business value of an advanced credit risk quantification which is particularly compelling in these days.

While Monte Carlo simulation is a very versatile tool it is not always the preferred solution for the pricing of complex products like multi asset options, structured products,

or credit derivatives. As a second application I show how operator methods can be used to develop a pricing framework. The scalability of operator methods relies heavily on optimized dense matrix-matrix multiplications and requires specialized BLAS level-3 implementations provided by specialized FPGA or GPU boards.

Speaker Bio: Daniel Egloff studied mathematics, theoretical physics, and computer science at the University of Zurich and the ETH Zurich. He holds a PhD in Mathematics from University of Fribourg, Switzerland.

After his PhD he started to work for a large Swiss insurance company in the area of asset and liability management. He continued his professional career in the consulting industry. At KPMG and Arthur Andersen he consulted international clients and implemented quantitative risk management solutions for financial institutions and insurance companies.

In 2002 he joined Zurich Cantonal Bank. He was assigned to develop and implement credit portfolio risk and economic capital methodologies. He built up a competence center for high performance and cluster computing. Currently, Daniel Egloff is heading the Financial Computing unit in the ZKB Financial Engineering division. He and his team is engineering and operating high performance cluster applications for computationally intensive problems in financial risk management.

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