PTTC Workshop - Open Software Tools for Reproducible Computational Geophysics

Open Software tools allow the exchange of data and procedures so results can be independently reproduced. This greatly accelerates the transfer of technology and best practices in research and commercial communities.

Reproducible research is a revolutionary concept in organizing and transferring geoscientific technology, both in the public domain and inside individual organizations. Computational experiments with geophysical data are captured in the form of transferable recipes, which can be shared and modified by users of the system. The computational recipes are attached to scientific publications, implementing the publication discipline known as "reproducible research". The economic benefits of reproducible research using open source in computational geophysics are enormous.

There are several open source software packages for geophysical data analysis that were developed to address different aspects of the problem by different organizations around the world. Example packages are Seplib, Seismic Unix, FreeUSP, DDS, JavaSeis, JTK, Pseis, OpendTect, cpseis, and Madagascar. The packages have individual strengths, are not integrated in a comprehensive system, and some critical components are missing. The workshop will introduce participants to the available software. Those already working on various components will get an update on the recent progress. Users and developers will build the community required to improve collaboration.

Petroleum Technology Transfer Council
A forum for transfer of technology and best- practices within the O&G community,
http://www.pttc.org/

Agenda

Thursday, June 16, 2011

8:30 – 9:00	Continental Breakfast
9:00 – 9:30	Welcome
	Karl Schleicher, University of Texas at Austin
9:30 – 10:00	A Comparison of Open Source Seismic Processing Software,
	Mihai Popovici, Zterra
10:00 – 10:30	The Mines Java Toolkit and Multicore Computing + demo
	Dave Hale, Colorado School of Mines
10:30 – 10:45	Break
10:45 – 11:15	JavaSeis
	Chuck Mosher, ConocoPhillips
11:15 – 11:45	Scientific Python
	Eric Jones, Enthought
11:45 – 12:15	FreeDDS and FreeUSP
	Richard Clarke, BP
12:15 – 1:15	Lunch
1:15 – 1:45	BotoSeis: A new interactive platform for seismic data processing with SU
	German Garabito, UFRN/UFPA, Brazil.l
1:45- 2:15	Open Seismic Data with Scripts for Processing with Open Software
	Karl Schleicher, University of Texas at Austin
2:15 – 2:30	Break
2:30 – 3:00	CPSeis -- Open-Source Seismic Processing - How it is Used, Lessons Learned
	Bill Menger, GlobalGeophysical.com
3:00 – 4:00	Discussion
5:00 – 8:00	Dinner

Friday, June 17, 2011

8:30 – 9:00	Continental Breakfast
9:00 – 9:30	Welcome
	Karl Schleicher, University of Texas at Austin
9:30 – 10:00	Open-source software usage in a geophysical software and services
	company, Nick Vlad, Fusion Geophysical
10:00 – 10:30	Reproducible Research in SEP
	Yang Zhang, Stanford University
10:30 – 10:45	Break
10:45 – 11:15	Madagascar Open Source Project
	Sergey Fomel, University of Texas
11:15 – 11:45	A simple way to add interactivity to Madagascar
	Joe Dellinger, BP
11:45 – 12:15	SeaSeis: A simple open-source seismic data processing system
	Bjorn Olofsson, Seabird Exploration
12:15 – 1:15	Lunch
1:15 – 1:45	OpendTect: driving the open source model into the world of oil and gas
	Renee Bourque, dGB Earth Sciences
1:45- 2:15	Mobile Geo-computing in oil and gas
	Matt Hall, Agile Geoscience
2:15 – 3:15	Discussion

Speakers:

Renee Bourque, dGB Earth Sciences

Richard Clarke, BP

Joe Dellinger graduated with a PhD in Geophysics from the Stanford Exploration Project in 1991 and currently works for BP in Houston, specializing in anisotropy and multicomponent seismology. Joe has often provided advice to the SEG (much of it unsolicited) on how they should best advance into the brave new online/digital world, for which he was awarded Life Membership in 2001. Joe currently is the editor of the Software and Algorithms section of GEOPHYSICS, and maintains the accompanying software and data website. http://software.seg.org

Sergey Fomel has been working at the Bureau of Economic Geology at the University of Texas at Austin since 2002 and currently has an Associate Professor appointment, jointly with the Department of Geological Sciences. He received a Ph.D. in Geophysics from Stanford University in 2001 and worked previously at the Institute of Geophysics in Novosibirsk, Russia, and the Lawrence Berkeley National Laboratory. Sergey started work on Madagascar (at that time named RSF for Regularly Sampled Format) in 2003. http://www.beg.utexas.edu/fomel/

German Garabito, Universidade Federal do Para, Brazil

Dave Hale received a B.S. in physics from Texas A&M University in 1977 and a Ph.D. in geophysics from Stanford University in 1983. At Stanford, he studied with the Stanford Exploration Project. He has worked as a field seismologist and research geophysicist for Western Geophysical, as a senior research geophysicist for Chevron, as an associate professor at the Colorado School of Mines, as a chief geophysicist and software developer for Advance Geophysical, and as a senior research fellow for Landmark Graphics. While at Mines, he worked with the Center for Wave Phenomena. In 2005, he returned to Mines as the C.H. Green Professor of Exploration Geophysics.

Matt Hall is a geoscientist based in Nova Scotia. A sedimentologist who found geophysics later in his career, Matt has worked at Statoil in Stavanger, Landmark and ConocoPhillips in Calgary, and is now happily self-employed - - running his company from his world HQ: A small shed conveniently located in his back garden.

Eric Jones, Enthought

Bill Menger - Houston HPC Manager for Weinman Geoscience: Bill holds BS degrees in Electrical Engineering and Geophysics from Texas A&M University. He was a nuclear engineer in the US Navy Submarine force for five years, joined Conoco R&D doing work in magnetotellurics, multi-component seismic, and development of a seismic processing system for the Cray X-MP. He moved to Houston with Conoco's Advance Exploration group, building a worldwide database of all its oil and gas data using a distributed database. After a stint in Lafayette as data management supervisor, he left Conoco to join Applied Geophysical Software, where he wrote software for multiple suppression, model-building, tomography, and depth migration. Bill rejoined Conoco in 1998 and assisted with the rewrite of CPS, the seismic processing system for Conoco. From the ConocoPhillips merger in 2002 until March 2009 he supervised a software and HPC group. At ConocoPhillips, Bill was instrumental in obtaining open source licensing for CPS (http://cpseis.org), and for GeoCraft (http://geocraft.org), a framework for general purpose geophysical software. Bill is President of the Society of HPC Professionals.

Chuck Mosher, ConocoPhillips

Speakers (continued)

Bjorn Olofsson, Seabird Exploration

Mihai Popovici, Zterra

Karl Schleicher received a B.S. In Mathematics from the University of Houston in 1974 and an MS in Management from the University of Texas at Dallas n 1988. He has worked in data processing. Software testing, and research for GSI, Halliburton Geophysical, Western Geophysical, GDC, PGS and AGS. He is interested in the practical development, implementation, and commercialization of seismic processing technology. He is currently retired and works part time as a Senior Research Fellow at University of Texas at Austn

Nick (Ioan) Vlad received an Engineer degree in geophysics (2000) from the University of Bucharest and a M.Sc. degree in geophysics (2002) from Stanford University. After three more years of research at Stanford and an internship with ConocoPhillips, he joined Statoil. He did imaging and velocity analysis R&D for Statoil for five years -- four at the Trondheim Research Center, and one as a Visiting Scientist with Colorado School of Mines. He was a Senior Research Geophysicist with Fusion Petroleum, Inc. He is currently a Senior Research Geophysicist for Fusion Geophysical in Houston. He is a member of the SEG, EAGE, IEEE Computer Society, FSF and the Linux Foundation. He has been a participant in the Madagascar project since 2006.

Yang Zhang, Stanford University