UNIVERSITY OF CALGARY

CREWES

Welcome and Introduction

2017 Annual Meeting & Technical Review

Banff AB Canada

Nov 29-Dec 1, 2017

CREWES in 2017

Today and Tomorrow

Thursday Nov 30

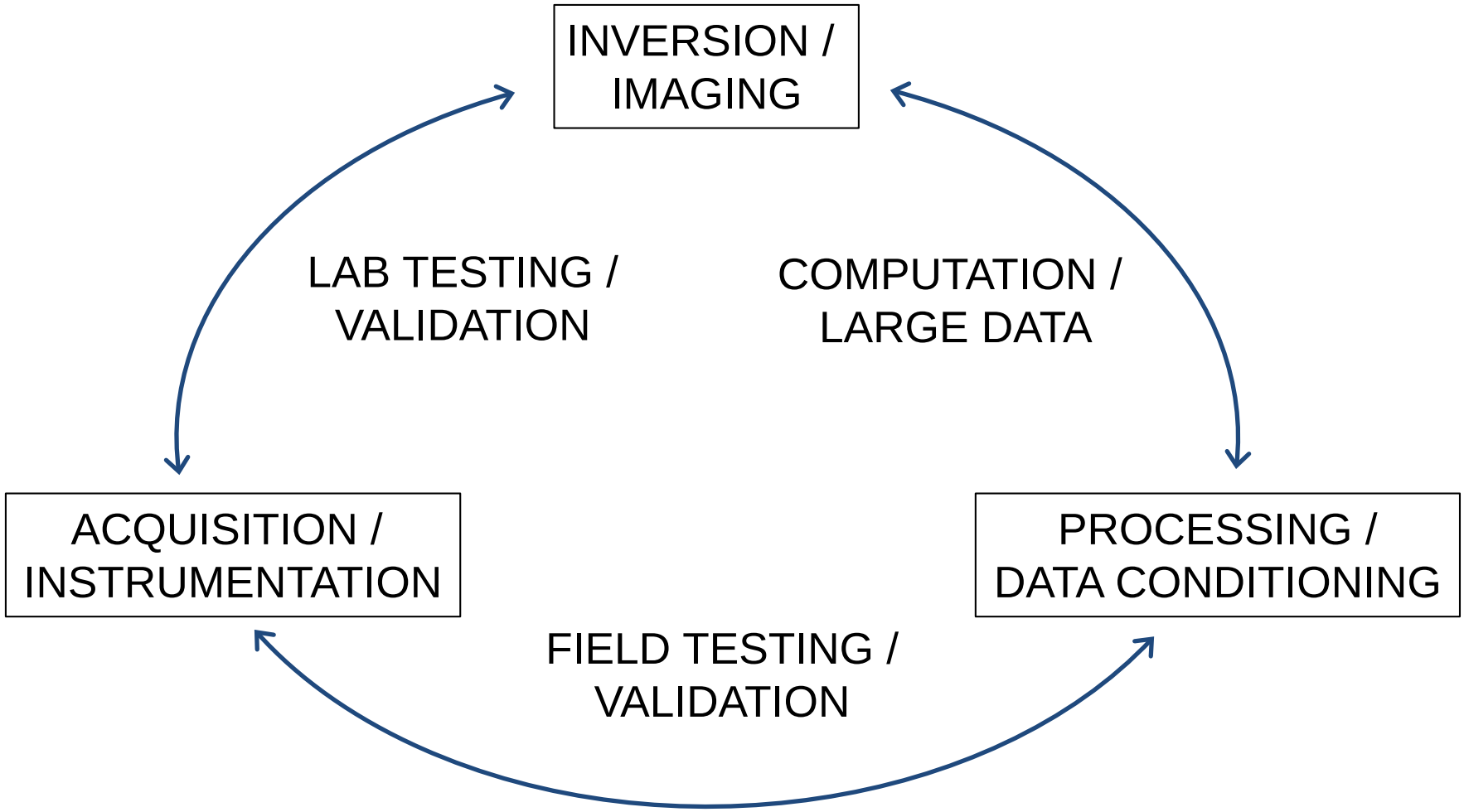
TIME	SESSION Moderator	TITLE	SPEAKER
8:30	**Session 1** Lawton	Welcome and new developments at CREWES	Kris Innanen
8:50	*Hussain Aldhaw**	Discriminating elastic wave modes with shaped DAS fibres	Kris Innanen
9:10		DAS installations at the CaMI Field Research Station	Don Lawton
9:30		Vertical Seismic Profiling using DAS	Heather Hardeman
9:50		A coupled DAS shaped-fibre & 3D elastic FD wave model	Matthew Eaid
10:10		Comparison of vertical stacks of Vibroseis sweeps into fibre	Kevin Hall
10:30		***Break***	
11:10	**Session 2** Innanen	Processing of zero-offset DAS-VSP data from the CaMI site	Adriana Gordon
11:30	*Hani Alzahrani**	Internal multiple prediction in the time and offset domains	Andrew Iverson
11:50		Multicomponent internal multiple prediction in the tau-p domain using high resolution transforms	Jian Sun
12:10		***Break – Lunch***	
1:30		Quantifying acquisition footprint	Gary Margrave
1:50		Raypath interferometry: 3D and time-lapse applications	David Henley
2:10		Cascaded deconvolution filters	Larry Lines
2:30		Comparison of refraction inversion methods	Bernie Law
2:50		***Break***	
3:10	**Session 3** Lawton	Seismic monitoring with continuous seismic sources	Tyler Spackman
3:30	*Arthur Lee**	Full waveform seismic AVAz responses from orthorhombic reservoir models	Sitamai Ajiduah
3:50		Seismic responses in fractured reservoir rocks with induced attenuation	Huaizhen Chen
4:10-5:45	**Session 4**	Posters	

Friday Dec 1

TIME	SESSION Moderator	TITLE	SPEAKER
8:30	**Session 5** Innanen	Practical multi-parameter FWI: robust sensitivities, field data examples, and laboratory expansion plans	Kris Innanen
8:50	*Ellen Liu**	Frequency domain elastic FWI in VTI media	Junxiao Li
9:10		Strategies for efficient multiparameter frequency domain QFWI	Scott Keating
9:30		The seismic physical modelling laboratory as a tool for design and appraisal of FWI	Sergio Romahn
9:50		***Break***	
10:30		PP / PS waveform inversion	Hassan Khaniani
10:50		Towards robust multicomponent FWI: data conditioning	Raul Cova
11:10		Fast waveform inversion strategies applied to Hussar	Marcelo Guarido
11:30		Microseismic FWI: trade-offs between source and medium properties	Nadine Igonin
11:50		***Break - Lunch***	
1:00	**Session 6** Trad	Mismatch between physics and operators in least-squares migration	Daniel Trad
1:20	*Jorge Monsegny**	Attenuation compensated RTM in acoustic VTI/TTI media	Ali Fathalian
1:40		Particle swarm numerical solution of the wave equation	Michael Lamoureux
2:00		Geophysical applications of quantum computing	Shahpoor Moradi
2:20		***Break***	
2:40	**Session 7** Lines	Reservoir simulation and feasibility for seismic monitoring at the CaMI-FRS	Marie Macquet
3:00	*Zhan Niu**	Simultaneous inversion in the Duvernay	Ron Weir
3:20		Least mean squares (LMS) applications in geophysics	Brian Russell

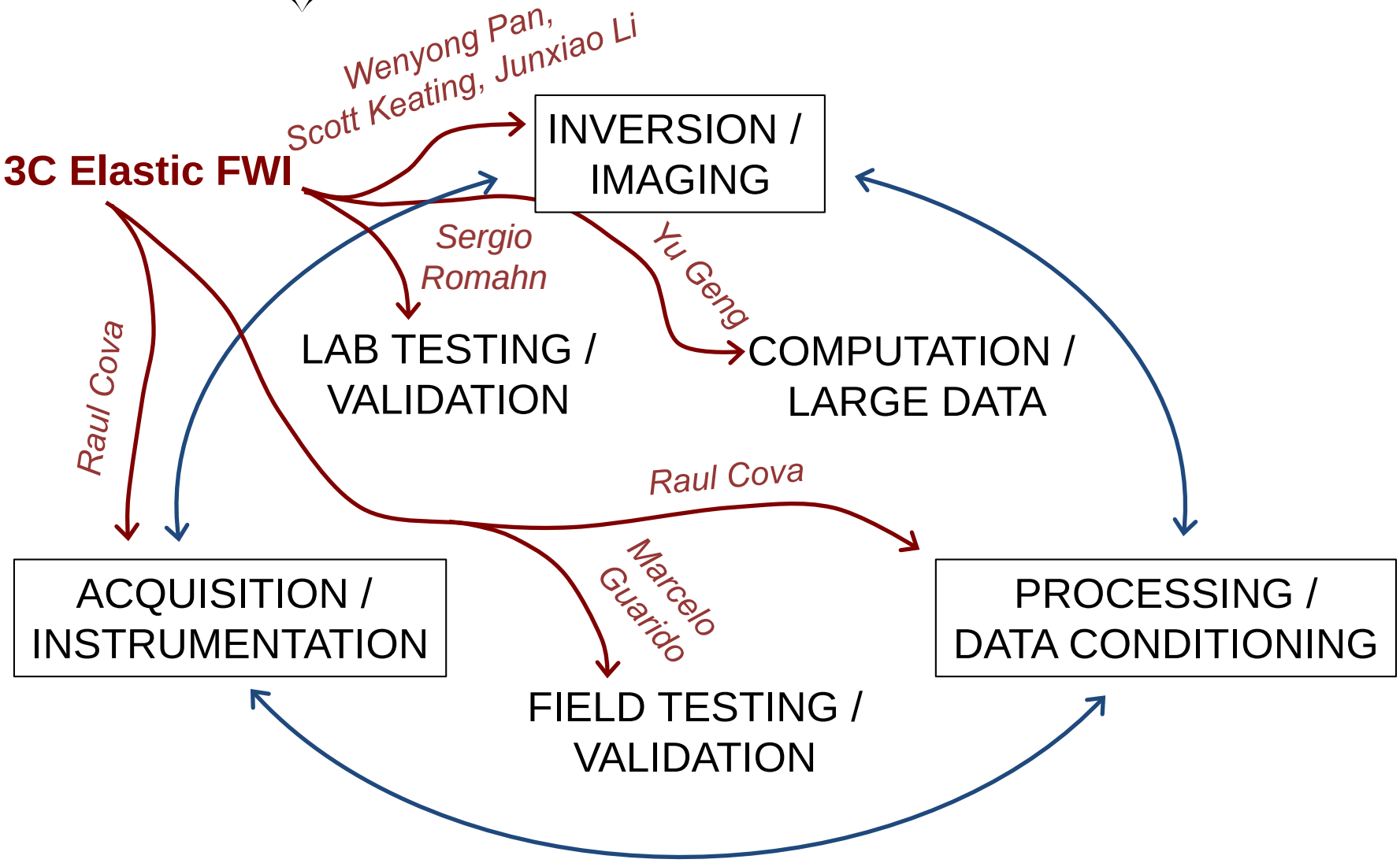
Acquisition	Processing	CO_2, fluids, fractures & viscosities	Posters	Practical FWI	Imaging & propagation	Case & feasibility studies

CREWES research



"comprehensive problem solving"

CREWES research



research projects should connect with all six items

Research themes & “big messages”

- 3C elastic FWI is arriving at the reservoir
  - new jargon, concepts, workflows, ...
  - generating rock physics, fluids, fracture quantities
- New data sets and types are arriving
  - inexpensive, broadband, enormous
  - continuous and discrete, sources and sensors
  - many modalities
  - certainly 4D, possibly real-time
- Data science – arriving too?
  - large nonlinear inverse problem, big data & big model
  - **does geophysics use data science?**
  - **is geophysics data science?**

FINANCIAL POST

'As precious as the resources:' Data science is oil industry's Next Big Thing

The digital opportunity is as significant to Canada's oil and gas sector as improvements in environmental performance: Cenovus Energy

CLAUDIA CATTANEO

November 24, 2017
6:12 PM EST

The new value proposition is that better information will squeeze more value out of those rocks, he said.

"The oil and gas business is on the cusp of new rules, and the basic game is insufficient," Tertzakian said. "Data science gets you in the winners' circle."

Your support is needed!

We generate & validate new knowledge & tech, make it intelligible and useful, and our graduates can use it to solve real problems.

How to justify a low-cost investment in the "value proposition"?

- Your dollars are leveraged
  - Canadian government (CRD)
  - University of Calgary (CFREF)
  - "Accelerate" (MITACS)
  - **Roughly $2 for every $1**
- Your dollars are tax incentivized
  - Scientific Research and Experimental Development tax incentive program
- ...and your dollars are critical!