



Career advice for young geophysicists in a declining market



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A regular column like 'Data Trends' gives me massive carriage to comment on almost any issue. The editor of *Preview* would prefer, of course, that my contribution has at least some vague reference to geophysics or to science in general, but as long as it is three columns wide, and fills a page, I think I am safe. In the case of this article, I address the

overlying 'Data Trends' of our fickle industry's ups and downs.

One of the things about writing an article for an intensely technical publication such as *Preview* is that I do have to be very careful not to be too smart. Smart generates feedback, and in general feedback is not good in technical writing. So, I try to walk the fine line of witty intelligence, with an undertone of life experience.

Witty intelligence in general is a far stretch for me, well at least half of it is. But life experience I have in spades. In my many past lives I have been a cook, an army medic, a truck driver, a cardiac technician and a CEO. I now have five kids, have been married for 25 years, have been to the north pole, climbed a mountain and swam with whale sharks. I have met prime ministers, rock stars and comedians, and have suffered loss and seen hard fought gains. I feel qualified

to talk to young geophysicists about their careers (and hopefully none of them will ask me any technical questions).

So, having informed you of my qualifications and convinced you of my authenticity, let me offer some career advice to our youngest graduates who no doubt are actively seeking some direction (in the context of the current state of the market for geophysicists).

1. If you are reading this article and are a young geophysicist that means you are a member of the ASEG and are off to a good start (or it means your dentist has a shortage of magazines for their waiting room).
2. Find the discipline within geophysics that you enjoy the most and keep pushing. If your objective is to be the best in your field, this advice sticks. If your objective is to become immensely wealthy, this advice also sticks (about 1% of the time), win-win.
3. Commodity prices will rise and fall and, seemingly, so will the degree of appreciation you get from your employer. Don't let the industry roller coaster make you change your views about your chosen profession. Continue development in your area of interest, even if you are driving a taxi part time to pay the bills. Just ride it out and live with the certainty that better times always follow the bad.
4. Lastly, never take advice from an old, balding geophysicist who claims to be offering free career counselling.

On a more serious note, the industry has a boom and bust cycle – feast or famine. That is just the way it is. Our most remarkable talents in geophysics did not get to their positions by stopping their feet from moving underneath them on the basis of market conditions. As my father used to tell me, 'good things come to those who wait'. He just never specified how long I had to wait.

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The Government's Industry Innovation and Competitiveness Agenda



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In October the Government announced an Industry Innovation and Competitiveness Agenda (http://www.dpmc.gov.au/publications/Industry_Innovation_and_Competitiveness_Agenda/index.cfm) to describe its vision for a strong and competitive economy:

It is a business-focused element of the Government's Economic Action Strategy.

So far so good, then we go into spin-doctor speak. According to the media release:

The Industry Growth Centres Initiative (the Initiative) is the centrepiece of the Government's new industry policy direction and part of the Industry Innovation and Competitiveness Agenda. It will lift competitiveness and productivity by focusing on areas of competitive strength. This will help Australia transition into smart, high value and export focused industries.

Furthermore,

The Initiative will enable national action on key issues such as deregulation, skills, collaboration and commercialisation. It will drive excellence, not dependence and create an economy that ensures Australia's ongoing prosperity.

These are wonderful words; full of clarity and meaning!

In practice, the Government will provide \$188.5 million over the first four years

and the Initiative will initially focus on five growth sectors in which Australia already has a competitive advantage. These are:

1. Food and Agribusiness
2. Mining Equipment, Technology and Services
3. Medical Technologies and Pharmaceuticals
4. Advanced Manufacturing
5. Oil, Gas and Energy Resources

Notice that there is no category for transport, renewable energy or IT communications.

The Growth Centres will be not-for-profit organisations, led by industry leaders and the initiative will definitely provide direct assistance to the private sector.

Funding of \$63 million will be available to develop and deliver large scale collaborative projects to build the capability and competitiveness of the sector. Project funding will focus on market, value chain or technology issues to deliver commercial outcomes. Sector projects will not only benefit the project participants but have impact across the whole sector and contribute to the outcomes of the Initiative.

As part of the Initiative \$60 million will be available on a competitive basis to help convert ideas with high potential into profitable commercial realities. It is also stated that:

The Initiative will also facilitate engagements between enabling services and technologies, such as Information and Communications Technology, where they provide essential and direct support to the growth sectors.

More wonderful words; with more clarity and meaning!

In fact this means that there will be \$9.4 million per year available for each Centre and \$3 million per year for each sector to commercialise research outcomes.

The Growth Centres will be looking at four broad themes:

- *increasing commercialisation opportunities,*
- *enhancing workforce skills,*
- *addressing regulatory barriers, and*
- *forging closer links with supply chains in their specific sector.*

They will also build export ready capabilities of firms in the sectors.

Overarching activities that all Growth Centres will complete include:

- *Development and implementation of a roadmap to lift sector competitiveness;*
- *Provision of advice to Government on how to best reduce regulatory burden within their sector; and*
- *Development of annual industry knowledge priorities to help inform the research sector of industry needs and commercialisation opportunities.*

The Oil, Gas and Energy Resources Growth Centre may assist businesses to lower costs through greater collaboration, better sharing of infrastructure and logistics support (especially on remote projects), greater development and uptake of new technology and innovation, and improved planning across all areas of the resources value chain.

I am told that the \$188.5 million is not 'new money' but just a re-allocation of resources from within the Industry portfolio. The base level funding for Geoscience Australia and CSIRO has not changed and the cuts of \$55 million listed in the June Preview still apply.

Anyway, \$9 million per year is a sizeable sum to help develop a good project. So if you think you have a good idea go to industrygrowthcentres@industry.gov.au or telephone 13 28 46 and make the best use of the funds available.



Seismic attributes and Nintendo geophysicists



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I started this article about seismic attributes and it was half written when I attended a SEAPEX meeting in Perth where Bob Shoup gave a talk titled 'How workstations cause dry holes'. The talk highlighted how blind faith in computer generated products without the application of sound geological principles has led to many needless dry holes. Part of the problem is the lack of mentoring in many companies.

Most of today's seismic interpretation software can generate a plethora of seismic attributes. Some of these are useful, while others don't add much to our understanding. In practice those attributes that support a prospect are kept and, unfortunately, those that don't are quickly forgotten. An impressive list of seismic attributes and situations where they are useful can be found at http://opendtect.org/opendtect_attributes_matrix. Other similar but less detailed matrices can be found on some vendor websites but they are not as easy to access. With all these attributes available, I am often asked 'which attribute is best for finding hydrocarbons?' I will give the answer to this question later. But first, some comments about Nintendo geophysicists and geologists.

In many companies seismic attributes are churned out by a Nintendo geo

(Figure 1). This slightly derogatory term is used by some to describe a generally younger geologist or geophysicist that was brought up on computer games and as a result can think and work in 3D space. They can create eye catching 3D visualisations in gaudy colours with ease. But, these displays can distract from the detail and hide many short comings in an interpretation or model. Technology has always been part of our industry, but this over-reliance on technology is new and has many people concerned because there is often a lack of understanding of the principles behind the workstation screens. This has not gone unnoticed with many in the industry commenting on Nintendo geos. For example, Durham (2006) states 'seismic is not geology' and '...many geoscientists ... started to believe that computers find oil and gas. Nintendo geology had arrived. But you can ... shortcut the geology for only so long'. And these comments from Brown (2004):

'I was first introduced to the term Nintendo geologist by a petroleum industry professional who saw that the new school geoscientists were relying more on computer graphics than geologic thought' (Roger Slatt, Professor of Petroleum Geology, University of Oklahoma) and 'They are computer jockeys but they don't know anything about the horses they ride' (Andrew Hurst, Professor of Production Geoscience, University of Aberdeen).

So, back to the best attribute. As powerful as computers are, they cannot find oil or gas without a good interpreter with good ideas. The most useful attribute any of us can use is a sound background in geology and an understanding of depositional processes. This is where good interpreters have the edge – they have ideas and test them against the data available. This knowledge is gained (by me at least) over many years of working with good geologists and having a mentor to make suggestions and keep interpretations realistic. Even today, we still spend too much time searching for data or getting things to work, and not enough time thinking of geology and testing ideas with peers and mentors. Every Nintendo geo needs a good mentor but many companies think mentors are expensive to maintain. Well, we're a bargain when compared to the cost of drilling a dry hole that could easily have been avoided.



Figure 1. Nintendo controller used with LMK interpretation software demonstrated at Melbourne ASEG Conference and Exhibition 2013.

References

- Brown, D., 2014, Geology, Interrupted: *AAPG Explorer*
 Durham, L. S., 2006, Digits can Distract from the Rocks: *AAPG Explorer*.



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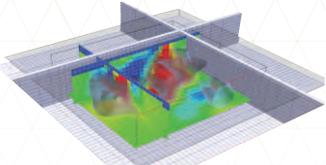
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January	2015			
11–14		3rd South Asian Geosciences Conference and Exhibition http://geo-india.com/	New Delhi	India
February	2015			
15–18		ASEG–PESA 2015: Geophysics and Geology together for Discovery 24th International Geophysical Conference and Exhibition http://www.conference.aseg.org.au/	Perth	Australia
March	2015			
18–21		PACRIM 2015 http://www.pacrim2015.ausimm.com.au	Hong Kong	China
22–26		SAGEEP 2015 http://www.eegs.org/Annual-Meeting-SAGEEP/SAGEEP-2015	Austin, Texas	USA
April	2015			
19–22		SEG/CGS Workshop: GEM Chengdu 2015 Gravity, Electrical and Magnetic Methods and their Applications http://www.seg.org/events/upcoming-seg-meetings/gem-chengdu-2015	Chengdu	China
May	2015			
15		2nd Great Basin and Western Cordillera Mining Geophysics Symposium being held in association with the Geological Society of Nevada Symposium http://gsnv.org/2015-symposium/	Reno, Nevada	USA
17–22		20th Caribbean Geological Conference http://www.thegstt.com	Port-of-Spain	Trinidad & Tobago
June	2015			
1–4		77th EAGE Conference and Exhibition 2015 http://eage.org	Madrid	Spain
July	2015			
7–10		2nd Near-Surface Geophysics Asia-Pacific conference (NSGAP) http://www.seg.org/events/upcoming-seg-meetings/2015/ns-asia-pacific-2015	Hawaii	USA
September	2015			
6–10		1st European Airborne Electromagnetics Conference and 21st European Meeting of Environmental and Engineering Geophysics – Near Surface Geoscience 2015 http://eage.org/event/index.php?eventid=1325&Opendivs=s3	Turin	Italy
October	2015			
5–8		8th Congress of Balkan Geophysical Society http://www.eage.org/event/index.php?eventid=1313&Opendivs=s3	Chania	Greece
18–23		SEG International Exhibition and 85th Annual Meeting http://www.seg.org	New Orleans	USA
November	2015			
18–20		12th SEGJ International Symposium http://www.segj.org/is/12th/	Tokyo	Japan
December	2015			
7–9		9th International Petroleum Technology Conference http://www.iptcnet.org	Doha	Qatar
October	2016			
16–21		SEG International Exhibition and 86th Annual Meeting http://www.seg.org	Dallas	USA
July	2017			
2–17 (TBC)		3rd Near-Surface Geophysics Asia-Pacific conference (website TBA)	TBA	Australia

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