“You’re lucky to be young, so enjoy the journey!”

An interview with Dan Negut

INTERVIEW COORDINATED BY SATINDER CHOPRA

After dedicating thirteen years to serving Romania’s national oil company, Dan Negut arrived in Calgary in 1990 and has since built an intriguing career in the Canadian oil industry. With more than four decades of experience as an explorationist and geophysicist, Dan has navigated his way through various companies, including Halliburton, Kelman, Arcis, and Divestco, where he held key positions and thoroughly enjoyed the science he practiced. Currently, he is leading Z-Terra North Inc., where he is highly regarded for his expertise.

Dan graciously agreed to an interview and was eager to share his experiences and insights on a wide range of topics. Below are excerpts from the interview.

Dan, to begin with, please tell us about your educational qualifications and your work experience.

I earned my ‘Engineering Master’ degree in Geology and Geophysics from the University of Bucharest, Romania, in 1977. That same year, I joined the National Exploration Hydrocarbon Prospecting Company in Romania as an acquisition field geophysicist. It was an exciting role, and I devoted myself fully to the job. Not long after, I was promoted to Acquisition Party Chief, and then to manager of seven field data acquisition crews. The company had a unique policy of closing the Geology and Geophysics (G&G) loop, where geophysicists rotated between seismic data acquisition, processing, and interpretation, making us well-rounded professionals.

I arrived in Calgary at the end of 1990 and soon began working with Haliburton Geophysical Services in 1991 as the senior geophysicist for land and marine processing. There, I processed many 3D seismic volumes including the Hibernia 3D seismic data from the east coast. Later, I was promoted to Senior Geophysical Advisor for marine projects in Shell’s dedicated offices in

Australia and Nigeria. I had the privilege of working with outstanding colleagues like Lorne Morris, Keith Matthews, and Tad Iwamoto. However, the downside was the extended time away from my family, which eventually became difficult.

In 1994, I joined Kelman Technologies in Calgary and worked for Gary Kelman, Brian Link, and Rob Howey in a great entrepreneurial environment that I truly enjoyed. I quickly rose to become the senior marine processing manager and worked on many seismic data processing projects including those from the Terra Nova and Whiterose fields offshore eastern Canada.

In 2000, I joined Arcis in Calgary, shortly after it was launched. It became my favorite company to work for, alongside amazing bosses, Peter Boyd and Rob Howey. Sadly, both have passed away.

In 2012, I briefly worked as a senior geophysical advisor at Sensor Geophysics Services, then joined Divestco later that year as chief geophysicist, working again for Rob Howey. Together, we transformed the well-known domestic stratigraphic processing center into a globally recognized center for structural and stratigraphic processing in both time and depth domains. Brent Sato, the architect of our proprietary software platform, was a key part of this success, and he is now retired but remains a close friend.

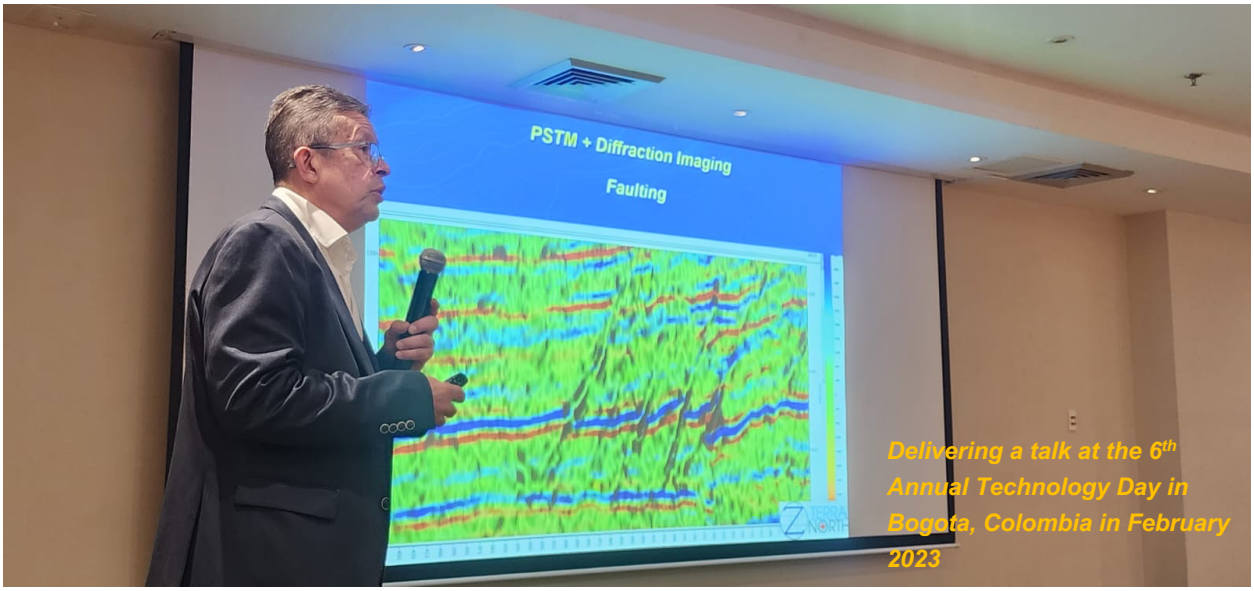
In 2020, Divestco's processing division was acquired by Z-Terra Inc. from Houston, and the division was renamed Z-Terra North, keeping all nineteen employees on board. I now serve as President and CTO of Z-Terra North, continuing the journey by advancing our modern proprietary technologies and providing top-notch customer service.

You received your master's degree in geophysics and geology in 1977. How did you decide to take up geoscience as a career?

At the age of eighteen, living in a communist country, one doesn't have much access to outside information, but you certainly know a lot about your own country. Growing up in Romania, I had some knowledge about our oil and gas industry: the first recorded crude oil production took place in 1857, natural gas production began in 1909, and the first European gas pipeline system was built in Romania in 1913. By 1935, Romania had become the 6th largest oil producer in the world, with a production of 8.4 million tons. In 1976, the country's peak oil production reached 14.6 million tons.

With this backdrop, it was an easy decision to pursue studies in geology and geophysics. My student years were truly special, and we had a great time both inside and outside the university. In fact, I even co-authored a paper that was published in the *Annales de la Societe Geologique de Belgique*.

Ultimately, I graduated with an Engineering Master's degree in Geology and Geophysics.



Delivering a talk at the 6th Annual Technology Day in Bogota, Colombia in February 2023

You joined the Romanian national company for oil and gas prospecting, as an explorationist, and you worked there for about 13 years. How was that experience, and what did it entail?

My experience working for the Romanian national oil and gas prospecting company was incredibly valuable. As I mentioned earlier, the graduate program was designed as a comprehensive, 360-degree exposure to exploration, giving us hands-on experience in all stages of seismic exploration—acquisition, processing, and interpretation. I was fortunate to have worked with some of the most advanced western technologies available at the time, which greatly enhanced my understanding of the field. In acquisition, I gained a deep appreciation for field conditions and limitations, the importance of proper shot depth/charge, and effective geophone coupling. In processing, I worked at the computing center that had been operational since 1975, which provided invaluable experience. I also had the chance to work in seismic interpretation, further enhancing my foundation in the industry.

On a different note, the human interaction experience I gained during that time proved to be extremely beneficial later in my career. It helped shape my approach to working with teams and managing relationships in the professional environment.

What made you decide to migrate to Calgary, Canada, and to work with Halliburton Geophysical Services at that time? Were you doing land or marine processing in your group?

I first heard of Calgary during the 1988 Olympics, but at that time, I never imagined that I would eventually visit the city. With the world changing in 1989 and the Berlin Wall collapsing, my wife, Carmen, and I made the life-changing decision to leave Romania, which was still under communist control.

Getting ready to enjoy dinner at the 7th Annual Technology Day in Bogota, Colombia in February 2024

We arrived in Canada in June 1990 and settled in Calgary on November 15th, 1990. My first job in Calgary was with Halliburton Geophysical Services (HGS), starting on January 1st, 1991. I chose HGS over GECO-PRAKLA, a decision I'll never regret. I was fortunate to have friends like Dr. Michael Enachescu, Nick Moldoveanu, and Dan Vetrici, who helped me understand the logistics of making employment choices based on both short-term and long-term factors. Keith Matthews, the processing manager at HGS, played a significant role in shaping my career.

During my time at HGS, I worked on many routine marine projects, but I also processed some major, large-scale projects, such as the Hibernia 3D in Calgary, the Mega Merge of five marine 3Ds on the western shelf of Australia in Perth, and Shell's dedicated marine 3Ds in Port Harcourt, Nigeria. I thoroughly enjoyed the environment at HGS, learning not only about logistics but also about geophysics. At the time, the TIPEX software (including Saddle DMO) was the best for marine processing.

Thereafter, you moved to Kelman Technologies and worked there for 5 years supervising the processing of seismic marine data. How different was that experience from that at Halliburton?

I decided to shift from international assignments to settle in Canada because I wanted to spend more time with my family, especially after I noticed my son, Alex, waving 'Hi Dad' to every airplane flying by.

At the time, Kelman was primarily focused on processing land time-domain projects, thanks to the perfect blend of exceptional geophysicists and programmers, led by Gary Kelman, Brian Link, and Rob Howey. My good friend Nick Moldoveanu highly recommended Kelman to me. Once I got familiar with their proprietary software platform, I started working on building the marine processing capability. A major milestone came when I won the Whiterose-Husky project over competitors like CGG, GECO, and Western. Husky subsequently awarded us the Whiterose 3D project, along with several other domestic and international marine projects.

One of Kelman's greatest achievements was the development of pre-stack time migration (PSTM) production software, which, at the time, was a first for Calgary. This software significantly improved the time imaging quality of Kelman products, giving us a competitive edge. In those days, PSTM was charged at $39 per shot.

When Kelman transitioned to Kelman Technologies (after Gary sold the company), Gary and Rob moved to Arcis, and soon after, Elvis Floreani, Gus McKay, and I followed them. Our new challenge was to build yet another successful company from the ground up.

I guess your move to Arcis was a step up the ladder as you joined there as chief geophysicist and worked there for 11 years. Tell us about your experience there.

ARCIS felt like a dream come true. It was an opportunity to start from scratch—developing proprietary software, winning turkey shoots, and building both friendships and client trust. Peter Boyd, the founder and CEO of Arcis, fostered a non-micromanaging environment, which was refreshing and inspiring. Those who visited the Arcis office would remember its unique atmosphere, with pieces of art displayed on the walls and meals (breakfast and lunch) provided for all employees. The company's name, Arcis, derived from the Latin word for 'citadel' or 'fortress', reflected the vision to build something strong and enduring in three stages.

Stage #1 focused on developing processing software; Stage #2 was all about technical marketing, with an emphasis on quality; and Stage #3 aimed at adding reservoir characterization capability. Satinder and I worked side by side in our cubicles starting at 6:45 am every day, dedicated to advancing the company's goals.

The big leap forward for Arcis was expanding our client base internationally, reaching South America, the USA, and Europe. This growth was driven by our commitment to quality—evidenced by a 77% success rate in turkey shoots—and exceptional customer service.

However, like any successful company, things started to change as we grew. After nine years of leading the company, Peter Boyd decided to leave the business he had founded. The new board of directors opted to sell Arcis, and as part of that transition, a new wave of "sales-driven" personnel was brought in, while the original "builders" were let go—including me.

At the Z-Terra North booth at the 2023 Summit Oil & Gas Exhibition, Cartagena, Colombia

After working at Divestco for 7 years, in 2020 you became a cofounder of Z-Terra North Inc. How has this experience been?

Z-Terra North is owned by Z-Terra Inc. Houston. We founded this new company after Divestco decided to shut down its processing division and lay off its personnel. The management at Divestco approached me with an offer to have Z-Terra Houston acquire the division, which was finalized on January 1, 2020.

Interestingly, the name 'Z-Terra North' was first mentioned by Rob Howey in 2016, a year before his passing. We wanted to honor his memory, so we decided to name the company in his honor.

With an excellent software platform, a strong team, and great chemistry, we were able to take the company to a whole new level internationally—expanding into markets in South America, the USA, Europe, and the Middle East. We achieved a 74% success rate in turkey shoots and provided boutique-style customer service that differentiated us from competitors.

Our proprietary software, ZXPRO, integrates both time and depth capabilities, allowing us to tackle a wide range of challenges. The team had worked together for many years, and that chemistry proved crucial during the challenging COVID years, as we continuously found new ways to solve complex issues and keep the business moving forward.

Geophysicists usually like to explore other aspects of seismic exploration, such as acquisition and interpretation of seismic data, especially when you have already worked as an explorationist in your country of origin. I notice that since you have come to Calgary, you have stayed within the domain of processing seismic data. What are your reasons for doing this?

When I started with HGS in 1991, the marketplace was quite challenging, and the only opportunity available was in seismic data processing. However, as I continued in this field, I found greater satisfaction and a growing sense of comfort, which fueled my passion.

Seismic data processing has evolved significantly over the years, with the development of new algorithms and constant advancements in seismic data acquisition. As a result, there is always something new to learn, and staying up-to-date with these changes keeps me engaged. There has never been a dull moment, and I continue to love what I do.

Participating at the 2018 SEG-KOC workshop held in Kuwait City

What are some of the challenges that you faced when you started running the new company? Also, please tell our readers what are the qualities required for becoming an entrepreneur?

The biggest challenge I faced was finding time for the non-G&G aspects of the business. I had to learn the modern ways to handle these tasks efficiently while following the proper procedures, allowing me to spend less time on them.

As for the qualities required to become an entrepreneur, I believe that if you have a passion for something, you should also be prepared to tackle the unknown challenges that lie outside that passion.

On the other hand, the only lost games are the ones you don't play.

Tell us about some of the prominent capabilities that Z-Terra North offers its clients, which distinguishes it from its competitors.

The Z-Terra North software platform (Z^{XPRO} time & depth) offers a range of unique technical capabilities that set it apart in the industry. These include, a comprehensive suite of QC and diagnostics, prestack 6D interpolation (one of only two available solutions in the industry), Wave Equation PSTM, which enables unique multipath PSTM imaging, diffraction Imaging in both time and depth domain, beam tomography, and Gaussian Beam PSDM (Pre-Stack Depth Migration). These advanced features make Z^{XPRO} a powerful tool for seismic data processing.

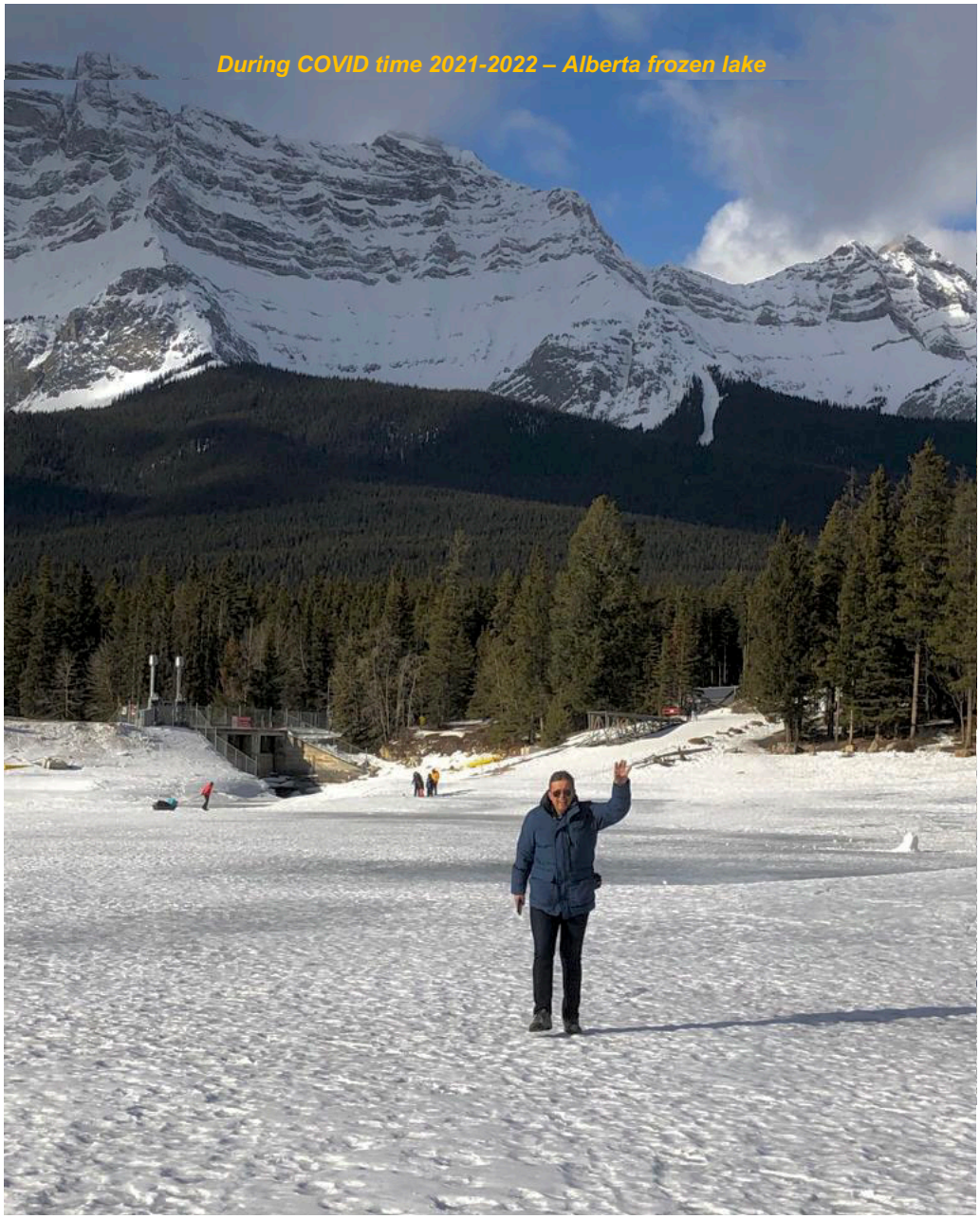
In your experience so far, which was the most satisfying project for you professionally and why?

It is an easy answer. It would be the WHITEROSE 3D project for Husky. During the PSTM velocity analysis, the client and I spent several nights working at the office. The outcome? Husky gifted me a vial of crude oil from the Whiterose L-08 well, with a 31-degree API, Avalon Sandstone. I still have it as a keepsake.

The processing of seismic data is crucial, as it directly influences the interpretation that will guide drilling decisions and overall project success. What are some key considerations and factors that can enhance the accuracy of seismic interpretation?

Between processing, reservoir characterization and interpretation, there should be an open, two-way street with no bureaucratic red tape. Once interpretation outlines the scope of work and targets, processing and reservoir characterization should be able to deliver an image that either aligns with the interpretation model or, if different, remains geophysically sound. In such cases,

interpretation can modify the initial model. We use mathematics to describe nature (physics), but since nature is so complex, math can never fully capture its entirety.



Technical communication is very important to share your capabilities within the technical community and learn from others. How is it that you started taking part in presentations late in your career?

Enjoying an evening beer in the summer of 2023

Good question. My first paper was written in 1976 and published in 1979 in *Annales de la Société Géologique de Belgique*. I also published three papers in Romania before 1990. Since then, I've co-authored or authored papers on topics such as Azimuth Move-Out, Demultiple, Diffraction Imaging, Deblending, Fault Shadow Zones, 6D Interpolation (which won Best Oral Paper at CSEG in 2016), QC & Diagnostics, and Wave Equation PSTM. The short answer, though, is simple: I am a shy person.

When you look back at your career spanning 47 years and still going strong, what are some of the thoughts that come to mind, e.g. a sense of achievement, satisfaction, etc.? Any regrets about a few things that you could have done differently, because as they say, hindsight offers clarity?

The passion for my work is still alive and has only grown over the years.

Good wells drilled based on our work – that's the ultimate satisfaction, the true fuel for my inner engine.

Winning turkey shoots – more fuel for the engine.

Figuring out why a job didn't succeed – that's also fuel for the inner engine. It's okay to fail once, as long as you don't make the same mistake twice. Not to mention one learns from mistakes.

As for regrets, as Sinatra said, 'I've had a few, but I did it my way.' And that's the only way I knew. Oh, one definite regret is losing close friends, but they are forever in our thoughts. At Z-

Terra North office there is an “In Memoriam” corner that displays the obituaries of former colleagues and friends.

What are some of the things you like to do outside of the science that you practice?

In my free time, I enjoy traveling, solving crosswords, walking the dog, and watching sports (I’ve transitioned from more practice to more watching over the years).

Over the years we change, but in some ways, we stay the same, true to our “hobbies”.

As you may be aware, I usually ask this question for the benefit of the young entrants in our industry. What would be your message for them?

I am not sure I can influence the next "wave" of G&G specialists who will help bridge the critical demographic gap, but it’s an important issue, nonetheless.

Choosing your path is a deeply personal decision.

Speaking of decisions, I must say that in our field, we are fortunate to learn how to make them. Not only do we face decisions every ten minutes, but we also develop the ability to make them quickly and effectively. This skill is an invaluable asset—being able to make decisions with confidence.

As I told my daughter Catrina, keep dreaming… you never know, it might become a reality. You’re lucky to be young, so make sure to enjoy the journey!