

Beyond survival:

Shifting the mindset to thrive in a new
O&G landscape

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Introduction

When oil prices first started plummeting in 2014, oil and gas (O&G) organizations swiftly entered survival mode, cutting costs wherever necessary to ride out the downturn. For those companies with strong balance sheets at the onset of the decline, the strategy proved successful—allowing many to remain afloat, three years later. But as the O&G sector emerges from the worst of the downturn, one thing is clear: **the industry is forever changed.** Oil prices are expected to remain much lower, for much longer—and they'll likely not return to previous levels anytime soon.

Despite this new reality, many service and supply (S&S) and exploration and production (E&P) companies continue to function as if a full recovery is in the not-so-distant future. Admittedly, respondents to the *Grant Thornton and JWN Service & Supply 2017 Outlook* reveal they plan to further cut costs in 2017, with layoffs, compensation reduction and supplier price reduction requests cited as their top cost-reduction priorities.¹ What these companies are unable—or, perhaps, unwilling—to acknowledge, however, is that while cost-reduction tactics may allow a company to withstand a temporary downturn, they're not enough to ensure sustainable growth in a lower-for-longer environment.

To achieve the latter, organizations must embrace change and shift longstanding mindsets governing how, with whom and where they conduct business—a concept supported in a recent roundtable discussion hosted by Grant Thornton. Throughout the discussion, executives from a range of Canadian S&S organizations—representing multiple sub-sectors including manufacturing, distribution, instrumentation and controls, maintenance and repair, and transportation—all agreed that the O&G sector of the past 40 years is gone. To succeed in this new environment, companies must learn to innovate, collaborate and diversify—or face the consequences.

¹ Grant Thornton Service & Supply 2017 Outlook, Accessed at: <http://bit.ly/2oMK1Kh>, August 18, 2017.

Current state

Despite continued volatility in the price of oil, S&S organizations are cautiously optimistic about the future. In the *Service & Supply 2017 Outlook*, most respondents said they believe the worst of the downturn is over, with 62% forecasting revenue growth and 61% expecting an increase in profitability in 2017 and beyond.² But while this cautious optimism is, in many ways, good news for the sector, our roundtable respondents believe there are still signs of trouble ahead—signs that members of the industry would be well-served to factor into any future plans.

Most of these concerns stem from the fact that many E&P companies are still in cost-cutting mode—continuing to dramatically shave margins which, in turn, is causing a trickledown cash crunch throughout the industry. Vendors are now more focused on collecting even the smallest invoices, with many attempting to accelerate accounts receivable cycles by offering discounts for early payment. On the flip side, their customers are delaying payment, making it hard for S&S companies to manage cash flows needed for hiring and capital expenditures.

This crunch is pushing certain portions of the S&S industry into a corner. Some of the smaller operators, for instance, are barely covering payroll and base costs. To stay alive, they're significantly dropping their prices, making it difficult for other

companies to effectively compete. At the same time, new, rather unexpected, competitors have emerged. Companies such as Amazon, for example, have become preferred vendors for many majors looking to buy large quantities of small, consumable products—such as safety gloves—for incredibly low prices.

All these factors indicate that the industry is not yet out of the woods. Companies that had enough cash on hand to weather the storm of the last few years may not be able to withstand a long recovery. According to respondents, this could result in a new wave of bankruptcies and consolidation. Eventually, lenders—which have, until now, been rather patient in waiting for the downturn to play out—will start calling their loans. Companies that can't afford to ramp back up, or aren't willing to do so given prevailing industry realities, will either be forced to change course—or leave the industry altogether.

Yet, despite these concerns, the future is still promising for the O&G sector. As the industry continues to shift, only forward-thinking businesses—those able to debunk old thought process and adapt their growth strategies accordingly—will be able to effectively withstand the challenges that lay ahead. This, in turn, will make the industry stronger, as these companies will be forced to rely on collaboration, innovation and diversification—and harness their entrepreneurial spirits—if they stand a chance at repositioning the sector for the future.

² Grant Thornton *Service & Supply 2017 Outlook*, Accessed at: <http://bit.ly/2oMK1Kh>, August 18, 2017.

LOOKING FORWARD

In the *Grant Thornton Service & Supply 2017 Outlook*, 62% of respondents forecasted revenue growth in 2017, compared to 25% the year before.

Areas with the greatest potential for growth include maintenance and repair (22%), operations (19%) and small capital projects such as plant debottlenecking (15%).

Notably, the top areas for growth (maintenance, repair and operations) represent areas where companies can cut costs and increase productivity going forward. Only 11% of respondents plan to pursue large capital projects, and these are predominantly larger companies.



62%

Believe the worst of the downturn is over and forecast revenue growth

Source: *Grant Thornton Service & Supply 2017 Outlook*, Accessed at: <http://bit.ly/2oMK1Kh>, August 18, 2017.

Collaboration

For several years, we've talked about how collaboration can help O&G companies combat pricing pressures, improve talent retention and operate leaner. Despite the importance of both internal and external collaboration, however, it's not taking hold in the industry—a reality roundtable participants attribute to a number of factors. These include:

An unwillingness to accept risk

With many organizations still functioning in survival mode, risk aversion is rampant, particularly among E&P companies. When investing in new processes or equipment, these companies have traditionally focused on the short term—tending to look at immediate unit costs rather than long-term pay-offs. As a result, they're often unwilling to accept the risk of paying a higher upfront price for a piece of equipment or new technology that will ultimately save money over time—such as a coil tubing alternative to service rigs. This is forcing S&S companies to shoulder the risk alone, or go back to the drawing board altogether.

INNOVATION IS A TWO-WAY STREET

When an oilfield service company came up with a potentially new—and significantly less expensive—alternative to service rigs, it immediately presented the idea to one of its E&P customers. The S&S company believed that coil tubing could allow E&P companies to re-enter wells without service rigs. The only problem was, this coil tubing theory was just that—a theory. Since it hadn't yet been tested, it was impossible to tell if the innovative solution would actually work.

To test the concept, the S&S company offered to accept 100% of the risk by providing its E&P customer with a free trial, with the understanding that the E&P customer would utilize the solution if it proved successful. But after the initial free successful rollout, the E&P customer still wouldn't commit to utilizing it—instead requesting another free trial to ensure it wouldn't lose money on the investment—exemplifying the problematic levels of risk aversion that are rampant in the O&G industry today.



Deterioration of buyer relationships

In the not-so-distant past, E&P and S&S companies worked together to devise more efficient and cost-effective business solutions. After the bottom dropped out on O&G prices, however, those relationships deteriorated. As they entered survival mode, many O&G companies started squeezing their vendors—asking for price concessions, delaying payments and treating many long-time business partners like interchangeable commodities. Needless to say, this caused trust levels to decrease, making it challenging to preserve long-standing working relationships.

Difficult operating conditions also led to an O&G brain drain. Many highly experienced people have left the industry over the last three years. Not only has this led to the erosion of long-standing vendor/supplier relationships, but less experienced individuals are now responsible for handling procurement. According to roundtable attendees, this has resulted in more purchasing mistakes, poor business decisions and fewer resources devoted to the building of vendor relationships. All these factors, in turn, hamper efforts to collaborate.

THE WONDERS OF REIMAGINATION

Sometimes, collaboration can be as simple as taking the time to better understand the needs of your customers—a lesson one S&S company learned first-hand. When the manufacturer of safety gloves learned that one of its customers was less-than-pleased with its product, it set out to understand why. According to the customer, the gloves were wearing out rapidly when exposed to ammonia—a frequent occurrence in the customer's facility. To combat the problem, the company sat down with its customer to reimagine a superior glove—and ended up reengineering the product completely. Not only did this move save the customer money in the long run—but it earned the company a loyal customer, as well as a new product offering.

An individualistic industry culture

At its core, the Canadian O&G sector is built on a culture that prizes the rugged individual—and it's not alone. In the report *The future of growth and the exploration and production industry: Breaking new ground in technology and talent*, Grant Thornton US acknowledges that E&P companies are traditionally highly independent—making collaboration counter-cultural.³ This is true for S&S companies as well. For instance, most companies are unwilling to cede control over their capital assets, even if they only use those assets for a few hundred hours a year. Leasing, renting or sharing them is one way to foster inter-industry collaboration, yet for many this is out of the question.

Regardless of the reasons for delayed adoption, collaboration remains critical to the future of O&G—and organizations must learn to work together if they hope to survive the challenges ahead. As paradigms continue to shift—and societal advancements continue to rapidly change the face of O&G—collaboration is one tool that could help S&S and E&P companies get ahead of disruptive forces.

In a similar token, when O&G organizations work together they have an opportunity to lower costs. This can be done by fostering internal collaboration among divisions and people—and taking strides to eliminate siloed thinking—or forming alliances with like-minded organizations to engage in joint bids on projects or reduce duplication by sharing ideas and research. Vendors and customers can also collaborate to ensure better products and services make it to market—such as software or services that integrate more readily into oilfield operations.

Above all, collaboration should be seen as an opportunity to pool resources and speed up the pace of innovation, which offers another opportunity to control costs and enhance competitiveness in a swiftly-changing marketplace.

³ Grant Thornton US, *The future of growth and the exploration and production industry: Breaking new ground in technology and talent*. Accessed at: <http://gt-us.co/2vHtHx3>, August 17, 2017.

Innovation

There are countless ways O&G organizations can embrace innovation—including investing in new technologies, engaging in R&D, or simply creating company cultures that celebrate and promote new ways of thinking. And in many cases, S&S organizations recognize this—23% believe creating a safe environment for innovation should be an organizational priority, and investing in innovation is necessary to avoid technological disruption.⁴ That said, taking the necessary steps to implement innovative practices is proving to be easier said than done.

According to roundtable participants, O&G still hasn't fully embraced innovation—for a number of reasons. For one thing, many believe companies are unwilling to let go of the past—they're committed to doing things the way they've always been done, with the equipment they've owned for years. While some companies may say they're open to innovation, many are really just searching for new ways to tweak existing processes—and perhaps find new uses for the land and equipment they already own—rather than invest in new, and truly innovative, practices.

Another obstacle standing in the way of innovation in the O&G sector is fear. In today's market, few companies have an appetite for risk—and without risk, you can't innovate. While many in the S&S sector say they're open to innovation—and perhaps are already taking steps to offer innovative products and services—they say they have no market for their offerings, as E&P companies are unwilling to absorb the risk required to adopt these new solutions. As a result, rather than increasing their investment in innovation, many S&S companies are backing off because they're afraid of spending money they'll never recapture.

Undoubtedly, when it comes to innovation, no company can work in complete isolation. To keep pace with the rest of the world, all sectors of the O&G industry will have to work together to move toward the future—which can be a complicated, and overwhelming, endeavour.

Fortunately, there are a number of ways to make the first step towards innovation a little bit easier. Here's how:

⁴ Grant Thornton Service & Supply 2017 Outlook, Accessed at: <http://bit.ly/2oMK1Kh>, August 18, 2017.

Reimagine how you do business

True innovation involves changing how we do things—not necessarily the things themselves. In one case, for instance, a S&S company that experienced declining sales during the downturn decided to reengineer its offering by leasing its equipment to customers on demand, rather than expecting them to buy it outright. This option released customers from having to come up with a high upfront payment, deal with depreciating equipment and replacement costs, and pay for costly equipment maintenance. Instead, they just lease the equipment when and as it's needed—resulting in a win/win for both parties.

Understand what your customers truly want

One of the first steps to successful innovation is determining what your customers truly want, rather than what you want to sell them or what you think they want. For example, when someone buys a power drill, although it may seem like what they want is the drill, what they really want is a hole. So it's important to have conversations with them to understand their pain points, observe new trends, pay attention to disruptive competitive offerings and, when necessary, reframe the conversation to determine the best way to help them create that metaphorical hole—even if it isn't a power drill. For S&S companies, this can be something as simple as repackaging products in new ways to create a discount line for price-sensitive customers, or delivering more customized service offerings—such as cradle-to-grave engineering solutions.

Take advantage of government resources

While the federal Scientific Research and Experimental Development (SR&ED) tax credit is the largest and most well-known government initiative designed to promote innovation, it is primarily targeted toward early to mid-stage innovation projects, and does not apply later during pre-commercialization and commercialization stages. Fortunately, there are countless other less-publicized federal and provincial programs designed to support business-led R&D and technology adoption. These programs take a variety of forms, including direct grant funding, tax credits, collaboration support and first-customer procurement contracts.⁵

⁵ For a listing of available funding programs, see the section "[Spotlight on funding programs](#)" on page 10 of this report.



READY TO CHANGE

Recognizing that the low oil price environment is here to stay, 74% of the *Grant Thornton Service & Supply 2017 Outlook* respondents said their company is willing to participate in making fundamental changes to how the O&G industry operates.

Sixty-nine percent said they were either somewhat ready (35%) or ready (34%) to make a fundamental change in how their organization operates within the industry.

Senior personnel, such as presidents/owners, directors and senior advisors, showed a particularly favourable response to change.

Willing to make fundamental changes to how the O&G industry operates



Somewhat ready or ready to make fundamental changes to how the O&G industry operates



Source: *Grant Thornton Service & Supply 2017 Outlook*, Accessed at: <http://bit.ly/2oMK1Kh>, August 18, 2017.

Diversification

Just as the survival of the O&G sector will, in part, hinge on innovation and collaboration among industry participants, it will also rely heavily on their willingness to recognize—and seize—new diversification opportunities. As the needs of customers continue to shift—and new markets continue to emerge—roundtable participants believe S&S companies would be well-served to ramp up their exploration of new geographic markets, verticals, industries, and product and services.

Exploring new geographies

The Canadian O&G sector isn't the only market undergoing massive change—markets across the world are frequently heating up and cooling off. Right now, according to roundtable participants, South America and possibly Asia present significant growth opportunities, while the Middle East appears to be slowing down. That said, while there are plenty of opportunities to be had, it's imperative for S&S companies to explore potential geographical diversification with a

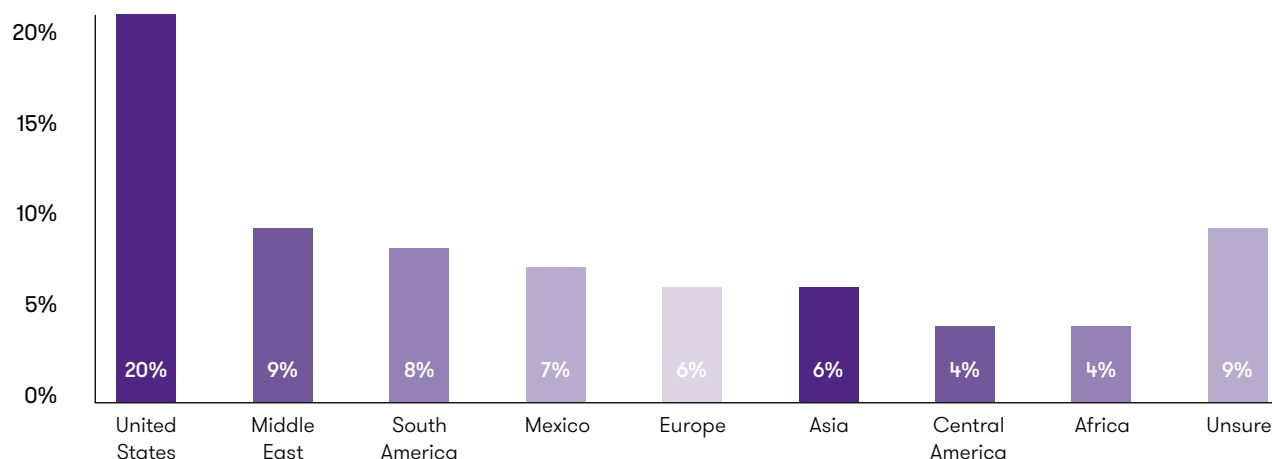
solid business case in hand—and leave no stone unturned. Depending on your overall growth strategy, in some cases it may make sense to export products to a burgeoning new market, while, in others, a merger or acquisition could be the smarter route. If you're selling somewhat outdated equipment—such as pre-directional drilling assets, for example, which are too low horsepower for the US—you may want to consider whether it's worth the cost to move them overseas, or whether another form of diversification, such as exploring a new domestic industry, would optimize your opportunity for growth.

DID YOU KNOW?

The Export Readiness Micro-Voucher Program is a federal initiative designed to help for-profit SMEs expand into international markets. It provides up to \$5,000 to aid in the development of international market assessments or business plans.

Source: <https://canadabusiness.ca/programs/export-readiness-micro-voucher-program/>

Figure 1: 2017 international geographical priorities for business development
64% of Canadian S&S companies plan to do business outside of Canada in 2017 and beyond.



Source: Grant Thornton Service & Supply 2017 Outlook, Accessed at: <http://bit.ly/2oMK1Kh>, August 18, 2017.



Embracing emerging industries

As Canada's energy needs evolve, new industries—particularly those surrounding clean technologies and renewables—are beginning to emerge, presenting plenty of new opportunities for savvy S&S companies. With many European governments already implementing legislation designed to speed up the adoption of Cleantech, it likely won't be long before Canadian policymakers follow suit. In fact, Alberta and Saskatchewan have already pledged that, by 2030, 30% and 50% of their respective energy generation needs will come from renewable sources.⁶

This alone provides proactive S&S companies with a massive opportunity—and a potentially significant competitive advantage in the years to come. In Alberta and Saskatchewan alone, it's estimated that \$50 billion will be earmarked for renewable energy projects between now and 2030. To earn a piece of that pie, S&S companies must start working now to determine how they can best adapt their existing business practices, technologies and processes to meet the needs of these new markets. For example, as traditional energy technologies are replaced with windmills, S&S companies should ask: Who's supplying, servicing and transporting these windmills? Who's assembling them—and maintaining them? And how can we tweak our existing operations to become that company?



17%
of S&S companies
are interested
in entering into
renewables in
2017 and beyond—
a 6% increase
over 2016.

Source: Grant Thornton Service & Supply 2017 Outlook,
Accessed at: <http://bit.ly/2oMK1Kh>, August 18, 2017.

⁶ Grant Thornton Service & Supply 2017 Outlook, Accessed at: <http://bit.ly/2oMK1Kh>, August 18, 2017.

The end of survival mode

As we enter what many believe to be the Fourth Industrial Revolution, the world, as we know it, is changing. Today, every industry—including O&G—is facing the threat of disruption. Only those businesses able to swiftly adapt to change—and readily forgo the concept of “business as usual”—will be the ones to make it through to the other side.

For the O&G sector, this means adapting to an environment of lower-for-longer oil prices—and seizing the opportunities that come with changing customer demands, emerging markets and new technologies. The future is still bright for O&G. To realize it, however, members of the industry must set their collective sights high—and work to achieve them through collaboration, innovation and diversification.

Repositioning the industry won't be easy. Every business, in every sector, will have a role to play in leading the industry towards a new way of thinking. E&P companies will have to emerge from survival mode, shift their focus away from cost-cutting and take steps to repair damaged business relationships. This will likely mean having open conversations, providing feedback and supporting vendors' innovative efforts. It will also mean taking on more risk, so they can realize the associated rewards—and move confidently into the future.

S&S companies, on the other hand, must take control of their own destinies—rather than waiting for governments or E&P companies to take the first step. This starts with truly understanding how their customers' needs and goals are changing, and working with them to find solutions to their challenges. It will involve thinking outside the box—and exploring new business practices, such as outsourcing manufacturing processes rather than maintaining them in-house—to reduce production costs in the face of low oil prices. It will also involve recognizing that, in this new era of change, no business is an island. S&S companies must work together to share new ideas, explore partnerships and find solutions to existing challenges—and they must take steps to uncover government funding opportunities that can help them put their forward-thinking ideas into practice.

With that in mind, it's important to recognize that the O&G sector will require the buy-in of outside forces if it hopes to thrive as well. Governments will have to take strides to better publicize the various available assistance programs to make it easier for innovative companies to acquire the support they need. Additionally, as the economy moves toward Cleantech and renewables, governments must take steps to help Canadian S&S companies transition into these new industries—and turn to them first, rather than their US competitors, when sourcing services and supplies for Cleantech government initiatives.

In the same vein, industry associations would be well-served to ramp up their efforts in helping the industry prepare for change. This can be done by simply getting industry players and governments to sit down at the same table. Only when businesses, governments and associations can see the industry as a whole—and understand how each party's individual needs fit into the bigger picture—will the sector have a chance of achieving true progress. Similarly, associations are in a unique position to help individual companies see their businesses in a different light—either through the exchange of ideas or exposure to industry experts—allowing them to apply their skillsets to new markets and industries.

Ultimately, however, it's the responsibility of each individual business to identify the unique challenges and opportunities that lie ahead—and establish a proactive strategy to address them in the years to come. To succeed in this endeavour, it will be critical to keep three key questions top-of-mind:

- 1 How will this decision help my business thrive in the years to come?**
- 2 What will happen if I don't do this?**
- 3 What will happen if I do?**

The O&G sector is one of the most resilient industries in the country—and it will certainly survive the years. Whether it flourishes, however, will depend on how well industry players and governments adapt—and how committed they are to seizing the moment.

Spotlight on funding programs

Beyond SR&ED

While the SR&ED program continues to be a great tax incentive for companies in the early stages of innovation, recent changes to program policy and administration have significantly reduced the program benefit and made it more difficult to gain approval. Fortunately, there are other government funding options that may be even better suited to O&G companies at almost every stage of innovation.

National programs

Program [†]	Summary	Type	Mandate	TRL*	Amount
Scientific Research & Experimental Development Program (SR&ED)	<ul style="list-style-type: none"> Tax incentive for Canadian technological advancement and is the largest funding program for innovation in Canada. All types of businesses eligible. Retroactive in nature, with filing deadlines linked to your corporate income tax filing deadline. Over \$3B to more than 20,000 claimants annually. 	Tax credit	R&D	3-8	<ul style="list-style-type: none"> 15% base investment tax credit rate 35% refundable accelerated rate on first \$3M expenditures for SME Canadian-Controlled Private Corporations Most provinces provide 10-20% top-up
Industrial Research Assistance Program (IRAP) Various federal programs are available to fund innovative early-stage "made in Canada" technologies.					
IRAP Accelerated review process	<ul style="list-style-type: none"> Funding support is designed to help recipients overcome technical challenges to business innovation and improvement, with the goal of facilitating growth. Eligible activities include the assessment and development of technology to improve internal processes, feasibility studies and prototype engineering. 	Grant	<ul style="list-style-type: none"> R&D Technology adoption Productivity improvement 	2-8	≤ \$50K (80% salaries, 50% contracts)
IRAP Mid-sized projects	Funding to support commercialization of newly developed or enhanced product, process or service innovations.	Grant	R&D	4-7	≤ 80% (\$50K-\$250K)
Mitacs Various federal funding programs to support national and international collaboration between corporations and academic organizations.					
Mitacs Accelerate	To fund short-term (four month) Masters or PhD student internship for SME industry research.	Grant	Collaboration	1-5	≤ \$50% of academic salaries (\$7500 max)
Mitacs Elevate	Funding support for industry/academic partnerships for two-year projects to solve industry specific challenges.	Grant	Collaboration	1-5	≤ \$50% of academic salaries

[†] Please note that this is not an exhaustive list of funding programs and represents a relevant selection for the O&G sector.

* TRL - Technology Readiness Level: see definitions on page 12.

National programs (continued)

Program [†]	Summary	Type	Mandate	TRL*	Amount
Sustainable Development Technology Fund (SD Tech Fund)	Funding for larger projects to develop/demonstrate new technology with significant and quantifiable environmental benefits.	Grant	R&D	3-7	≤ 33% (\$250K-\$2M)
Canadian International Innovation Program (CIIP)	Government of Canada funding to promote international R&D partnerships (Brazil, China, India, Israel, South Korea)	Grant	Collaboration	1-3	≤ 50% up to \$600K
Going Global Innovation (GGI)	Government of Canada funding of travel and administrative costs to secure international R&D collaboration	Grant	Collaboration	1-3	≤ 75% up to \$75K
Natural Sciences and Engineering Research Council of Canada (NSERC) Engage	Funding for university research assistance on short-term (four to six month) R&D projects related to company-specific problems.	Grant	R&D/ Collaboration	1-9	≤ \$25K (no match required)
NSERC Collaborative Research and Development Program (CRD)	Funding for university research assistance on longer-term (one to five year) R&D projects related to company-specific problems.	Grant	R&D/ Collaboration	1-9	50% (typically ≤ \$200K)
Strategic Innovation Fund (SIF)	<ul style="list-style-type: none"> Federal government program focused on diversifying innovation in the industrial and technological sectors. Four streams, including R&D and commercialization, growth and expansion, investment attraction, and collaborative development. Five-year, \$1.26B program launched in July 2017. 	Grant/Loan	Various	1-9	≤ 50% (typically ≤ \$200K)
Build in Canada Innovation Program (BCIP)	<ul style="list-style-type: none"> Government of Canada program to aid in the commercialization and distribution of innovative Canadian technology. Features a first-purchaser procurement and testing competition for pre-revenue Canadian products/services. Eligibility targeted to select standard and military technologies. 	Purchase contract	R&D/ Commercialization	7-9	\$250K-\$1M
Futurpreneur	<ul style="list-style-type: none"> Early-stage start-up loan to start any business. Repayable financing with preferred terms. 	Loan	R&D/ Commercialization	3-5	\$45K

[†] Please note that this is not an exhaustive list of funding programs and represents a relevant selection for the O&G sector.

* TRL - Technology Readiness Level: see definitions on page 12.



To learn more about the full range of programs available in your particular jurisdiction, please contact your Grant Thornton representative.

Provincial programs

The following represents a selection of Western Canadian funding programs. Additional programs east of Manitoba may also apply. To learn more about programs available in your particular jurisdiction, please contact your Grant Thornton representative.

Program [†]	Summary	Type	Mandate	TRL*	Amount
Alberta SR&ED program	<ul style="list-style-type: none"> Retroactive tax incentive for Alberta-based R&D available to Alberta taxable corporations only. 10% fully refundable on first \$400K of Alberta costs. 	Tax credit	R&D	3-8	10%
Alberta Innovates (AI) Various R&D funding programs aimed at accelerating commercialization of Alberta innovations.					
AI Micro-voucher program	Funding for R&D start-ups for early-stage market and technology assessments.	Grant	R&D	1-4	\$10K
AI Voucher program	Funding for R&D of working prototypes.	Grant	R&D	4-7	\$10K-\$100K
AI Product demonstration program	Funding for technology commercialization/demonstration projects that require industry, government or academic partnering.	Grant	Collaboration	7-9	≤ 50% (\$100K-\$300K)
Manitoba Commercialization Support for Business Program (CSBP) Various innovation funding programs for Manitoba development and commercialization.					
Manitoba CSBP Product development grants	Funding for development of working prototypes.	Grant	R&D	4-6	≤ 50% (\$50K Max)
Manitoba CSBP Product commercialization grants	Funding for evaluation and commercialization of working prototypes.	Grant	Commercialization	7-9	≤ 50% (\$50K-\$250K)
Manitoba CSBP Market development grants	To assist in developing new marketing materials and attending trade shows.	Grant	Market growth	9+	≤ 50% (\$30K Max)

[†] Please note that this is not an exhaustive list of funding programs and represents a relevant selection for the O&G sector.

* TRL - Technology Readiness Level: see definitions below.

*TRL = Technology Readiness Level

Method generally adopted to assess innovation maturity and where a technology is in its development cycle. The following was taken from the National Research Council of Canada website (nrc-cnrc.gc.ca):

- Level 9:** Actual technology proven through successful deployment in an operational setting. At this level there is actual application of the technology in its final form and under real-life conditions, such as those encountered in operational test and evaluations. Activities include using the innovation under operational conditions.
- Level 8:** Actual technology completed and qualified through tests and demonstrations. At this level the technology has been proven to work in its final form and under expected conditions. Activities include developmental testing and evaluation of whether it will meet operational requirements.
- Level 7:** Prototype ready for demonstration in an appropriate operational environment. At this level the prototype should be at planned operational level and is ready for demonstration of an actual prototype in an operational environment. Activities include prototype field testing.
- Level 6:** System/subsystem model or prototype demonstration in a simulated environment. At this level a model or prototype is developed that represents a near desired configuration. Activities include testing in a simulated operational environment or laboratory.
- Level 5:** Component and/or validation in a simulated environment. At this level the basic technological components are integrated for testing in a simulated environment. Activities include laboratory integration of components.
- Level 4:** Component and/or validation in a laboratory environment. At this level basic technological components are integrated to establish that they will work together. Activities include integration of "ad hoc" hardware in the laboratory.
- Level 3:** Analytical and experimental critical function and/or proof of concept. At this level active research and development is initiated. Activities might include components that are not yet integrated or representative.
- Level 2:** Technology concept and/or application formulated. At this level invention begins. Once the basic principles are observed, practical applications can be invented. Activities are limited to analytical studies.
- Level 1:** Basic principles of concept are observed and reported. At this level scientific research begins to translated into applied research and development. Activities might include paper studies of a technology's basic properties.

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