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Chair

Mr. Dan Ruimy

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● (1535)

[*English*]

The Chair (Mr. Dan Ruimy (Pitt Meadows—Maple Ridge, Lib.)): Good afternoon everybody. Welcome to our ongoing, continuing side show, meeting 14 of the Standing Committee on Industry, Science and Technology.

Today we're going back to school. In fact, we have from Universities Canada, Paul Davidson, president and chief executive officer; from Colleges and Institutes Canada, Christine Trauttmansdorff, government relations and Canadian partnerships; and from Georgian College, MaryLynn West-Moynes, president and chief executive officer.

Our normal course is that you're all going to do your presentations. You each get 10 minutes. I'm very tight with my time. Then we'll open up the round of questions.

Mr. Davidson, you got the luck of the draw.

Mr. Paul Davidson (President and Chief Executive Officer, Universities Canada): Terrific, thank you.

[*Translation*]

I am pleased to be here with you this afternoon.

[*English*]

I appreciate the invitation to be in front of this committee. As it's my first time in front of this committee since the election, let me congratulate each of you on your election to Parliament and your commitment to serving constituents and building a better Canada.

[*Translation*]

I am Paul Davidson, president of Universities Canada. We are the voice of Canada's 97 universities working together to advance higher education, research and innovation in Canada.

[*English*]

On their behalf, let me invite you to visit our campuses to see the phenomenal work being done by students, faculty, and researchers to give you a glimpse into Canada's future.

Today's subject is of vital concern to our members, and let me tell you why. Over 40% of all R and D in Canada happens at Canada's universities. This spans from fundamental research that spurs disruptive innovations and creates markets to applied research that innovates new products, processes, and services.

Over one million young Canadians are pursuing their first degree at our places of learning. The experiences they have will determine Canada's prosperity for decades to come.

Canada's universities are anchor institutions in communities right across the country, in communities large and small, and so we appreciate the opportunity to explore academic-industry collaboration and how it can be improved.

At the outset, let me say that budget 2016 contained many welcome measures that have a bearing on today's subject. The new post-secondary strategic investment fund will provide new investments in research infrastructure to promote innovation. The new investments in discovery research are the largest in a decade, and will let discovery lead, which in turn leads to innovation. Changes in student financial assistance will make post-secondary education more attainable. These measures, along with others, will contribute to economic growth and inclusion.

Today's universities may be different than when you were younger. Canada is now proud to have globally competitive research infrastructure, the results of investments that started being made in late 1990s, and the world is now coming to Canada to work with us. We have a new generation of faculty and researchers. Think of this: over 65% of our faculty have been hired in the last 15 years. This is a new generation of researchers with new experiences, new skills, and a commitment to collaboration, and they're among the world's best. Last year 24 Canadians won major international prizes—I'm thinking of Dr. Art McDonald and the Nobel Prize in Physics—and the world is noticing.

We have far more entrepreneurship and co-op opportunities on our campuses than ever before with entrepreneurship programs and resources for students and faculties, such as the new certificate in entrepreneurship, available to all students at SFU. From start-up incubators that launch students' inventions to help creating new companies, universities are fuelling the entrepreneurial spirit in today's students.

You may be surprised to know that over 55% of all undergraduates at universities today have some form of experiential education, and we're working with private sector leaders and our colleagues at this table to increase that further. University research and technology parks house nearly 1,500 companies employing about 65,000 people and generating $4.3 billion annually in GDP.

All that being said, we share your concern about the future of manufacturing in this country. Visiting communities like London, Windsor, and Hamilton, we can see that we all need to draw on our best efforts to create new opportunity. That's why studies like this are important. Universities provide a unique and vital role in the growth and sustainability of industrial clusters, networks, and manufacturing plants across the country. We do this as educators and research performers and also as innovation stimulators, entrepreneurship enablers, and global connectors for all types of industrial sectors.

I'll just give a couple of examples if I may, both in the field of advanced manufacturing. The first is the Centre for Hybrid Automotive Research and Green Energy. It's an industrial-scale research and development lab at the University of Windsor. This facility produces world-class disruptive technology in battery-to-wheel research. The work enhances electrified vehicle technology and encourages knowledge, technology, and expertise to be transferred to industrial partners at globally competitive levels.

Universities also collaborate together and with industry to provide quick results to urgent manufacturing challenges, such as working to make electric and hybrid vehicles more common by lowering the production costs of rechargeable batteries. Watch this space in the next few weeks. For example, the engineers and scientists at Quebec-based Clariant, École Polytechnique de Montréal, Université de Montréal, and Western University, with support from Canmet-MATERIALS in Hamilton, are testing new chemical processes that cut manufacturing costs in half, making electric vehicles both affordable for families and profitable for manufacturers.

My third example is the really impressive work that Siemens Canada is doing under the leadership of Bob Hardt, the CEO there. His partnership with McMaster, Mohawk, Waterloo, the University of Alberta, and NAIT is truly groundbreaking. Participating students receive exceptional training at Siemens, developing their professional skills as they work at the forefront of engineering innovation, and Siemens gets fresh talent and new ideas.

I am particularly fond of this example for a couple of reasons. First of all, it is an investment in young people and a commitment to them through the course of their studies. Second, it is an investment by private sector leaders in their future competitiveness.

The common thread in all these examples is finding ways to collaborate across business, governments, and post-secondary institutions of all kinds to draw on the unique abilities of each. How can we improve this dynamic? There are a couple of things I want to focus on. First, we need better two-way mobility or flow of talent. We are proud that more than half of all undergraduates at universities have some form of work experience in the course of their studies, but we simply don't have enough placements in the private sector. We need to work with employers, and especially with SMEs, to up their participation in taking that talent into their workplaces. That is why we join with the president and CEO of RBC, Dave McKay, in setting an ambitious goal of moving that 50% number to 100%.

His recent presentation to our members spoke of the compelling benefits of engaging students in the big challenges facing the future of banking. Earlier this week, we sent to each of your offices a short YouTube video of his remarks. I invite you to watch it. It is a five-minute highlight reel, and it is a very compelling presentation on the benefits of work-integrated learning.

We also need to find ways to increase business investment in research and development. As we look to the future and ways to drive sustained economic growth, a major concern is that from 2006 to 2013, our global ranking in business expenditures on R and D has decreased from 18th in the world to 26th. Previous studies, many of them, have suggested ways to reverse this worrying trend, and I commend those to you.

Let me close by suggesting a couple of rabbit holes to avoid. The first is to avoid the temptation to say that universities do only basic research. Universities conduct about $1 billion a year of research for the private sector, including many types of manufacturers, helping build their competitive advantage, and another $1 billion for the not-for-profit sector. Canada's universities are problem-solvers, working in your community every day.

Another one of those rabbit holes.... Please don't fall back on the framing that universities are slow and others are fast. Universities work on both very long time scales and very short ones. The work done by Dr. James Till and Dr. Ernest McCulloch at U of T on a summer Sunday in 1961 in discovering multipotent stem cells has led directly to the whole new field of regenerative medicine. If a government granting council insisted on immediate applicability, that work would never have been done, and the whole new sector that Toronto is enjoying right now would never have occurred.

At the other end of the time spectrum, consider Canada's response to the Ebola outbreak last year. Based on a deep understanding of the nature of the problem, Gary Kobinger and his team in Winnipeg were able to develop a vaccine that is 100% effective. The time to clinical trial was 10 months. Anyone who has been involved in the pharma industry knows that this is phenomenal speed. The trial proved 100% effective, and the vaccine is now known around the world as “the Canadian vaccine”. It is a triumph of collaboration across borders, disciplines, and sectors.

● (1540)

[*Translation*]

To further propel innovation and economic growth in Canada, all partners need to come to the table and commit to action.

Universities Canada will be engaging actively in the federal science, innovation and economic growth reviews to advance our vision for an innovative and inclusive Canada and talk about how Canada's universities can contribute solutions.

[*English*]

Higher education, government, and the private sector need to deepen their collaboration, be bold in their ambition, and do even more to connect people to ideas and better respond to the needs of our changing economy. When we combine talent development with entrepreneurial opportunity and cutting-edge research, we have what it takes to support manufacturing to achieve real change.

Thank you.

The Chair: Thank you very much.

We will move to Ms. Trauttmansdorff.

Ms. Christine Trauttmansdorff (Vice-President, Government Relations and Canadian Partnerships, Colleges and Institutes Canada): Thank you very much, Mr. Chair.

[*Translation*]

I am pleased to be presenting this afternoon on behalf of Canada's extensive network of colleges, institutes, CEGEPs and polytechnics. Our members serve over 1.5 million learners in 3,000 urban, rural and remote communities throughout Canada.

[*English*]

It's a special honour to be appearing not only alongside my esteemed colleague Mr. Davidson, but also with one of our members, MaryLynn West-Moynes, the president of Georgian College in Barrie, Ontario.

We very much welcome the committee's study on manufacturing and fully recognize the importance of this sector to Canada's economic development and future employment. Colleges and institutes have a close relationship with the manufacturing sector and it can be summed up in two words: skills and innovation.

As you all know, manufacturing has undergone dramatic changes over the past decade. The traditional assembly line is a thing of the past. The people employed by today's successful companies are working with highly sophisticated equipment and software. They're using robotics, 3D printers, computer-aided design, and state-of-the-art testing and quality assurance techniques. In addition to these job-specific abilities, employers seek graduates with strong essential skills in areas such as communications and financial literacy.

The competition for qualified labour is fierce. According to the Canadian manufacturing network, job vacancies are going unfilled because 65% of applicants lack the required skills and 53% lack sufficient work experience.

Colleges and institutes are mandated to respond very directly to these needs, with a special focus on the current and emerging requirements of the employers in their regions. This means they have especially close ties with small and medium-sized businesses, including those in the manufacturing sector where 60% of jobs are in SMEs. The certificates, diplomas, and degree programs offered by our members are all developed in consultation with employers through program advisory committees to ensure that curriculum is aligned with current needs and that graduates are job-ready. The vast majority of programs include work-integrated learning, ranging from work placements and applied research projects to co-ops, internships, and student-run enterprises. Our students get invaluable work experience and on-the-job training as part of their education, and employers get the best job interview possible.

The challenge in training for the manufacturing sector is staying current or, better yet, one step ahead. Colleges and institutes need to provide their students with access to the equipment, software, and facilities they will encounter in the workplace. Employers who want to remain competitive turn to recent graduates for the state-of-the-art knowledge and experience that will allow them to upgrade and innovate within their existing operations.

These industry-driven demands make the government's recent announcement of $2 billion in funding for post-secondary infrastructure especially welcome in our community. This will go some way to meeting the $8 billion in innovation infrastructure and equipment needs identified recently by our members.

Next Wednesday, CICan will release its applied research report for 2014-15 at a *Hill Times* event called “Sparking Innovation”. You'll be particularly interested to see that in 2014-15 alone, more than 5,500 private sector firms turned to the R and D services offered by colleges and institutes. Unfortunately, many more were turned away due to lack of program funding. SMEs, including microenterprises, make up 86% of these companies and more than half come from the manufacturing sector. Overall, this represents a significant portion of the 24,000 Canadian firms that conduct R and D and claim SR and ED credits.

● (1545)

[*Translation*]

The research services provided by colleges and institutes are highly focused on industry innovation. They meet the needs of their partners by providing access to facilities and cutting-edge equipment, and, more importantly, access to the time and expertise of professors and students.

[*English*]

Our projects all fall in the category of “applied research”. In manufacturing, examples would include product development and enhancement, prototyping, testing, process improvement, and experimenting with new materials and equipment. There is also support for business innovation such as improving the work environment, expanding to new markets, and developing new strategies for interacting with customers and the firms in their supply chains.

Colleges and institutes are known for their ability to respond quickly to business needs. This is particularly important for small firms whose limited resources require easy access to places where they can de-risk their innovation investments.

The vast majority of projects are completed in less than one year, with about 25% wrapped up in under six months. Faculty understand the business environment because most have worked in industry, and many have been entrepreneurs themselves. Attractive intellectual property policies generally allow partners to retain IP, which speeds project start-up time significantly.

Satisfaction with these services is evidenced by the investments that businesses themselves, including SMEs, bring to these projects. Federal research funding allocated to colleges and institutes is matched dollar for dollar by the private sector.

The involvement of students in almost every project is another defining feature of the innovation services offered by colleges and institutes. Working on an applied research project gives students experience in solving a real-world problem and developing soft skills related to communication, project management, and working in multidisciplinary teams. The chance to work directly with local entrepreneurs also gives students insights into the innovation process and how to run a business.

Our latest data show that more and more colleges and institutes are offering their services through specialized research centres and labs. The number of these facilities has more than doubled in the last five years to 763 in 2014-15, with manufacturing and building technology accounting for the largest portion. There are now 156 in operation across the country. The work they are doing makes for some great stories. For example, the technology access centre at Camosun College in Victoria, B.C., recently worked with Canadian Paralympic athletes on wheelchair seat design to maximize their performance in the 2016 Olympics.

Some of these centres are also exploring creative ways to collaborate with one another. In a couple of weeks, we'll see the formal launch of the technology access centre network, a national consortium of 25 centres that expands the very successful Réseau Trans-tech model in Quebec. Funded by NSERC, the TACCAT network aims to harmonize applied research approaches, share best practices, and foster cross-country collaboration that can benefit industry clients.

Colleges and institutes are very active in broader research networks at the local, provincial, and national levels, many of which are sector-specific. In manufacturing, a good example is the Consortium for Research and Innovation in Aerospace in Quebec, CRIAQ, which brings together a number of universities, CEGEPs, their technology transfer centres, known as CCTTs, and over 55 industry partners to identify and implement pre-competitive projects that meet the aerospace industry's requirements.

Incubators and accelerators are also becoming common features on campuses across the country. Conestoga College has a specialized accelerator called the advanced manufacturing technology catalyst. The AMT catalyst supports early-stage start-ups in Waterloo and Guelph-Wellington, providing business training, mentoring, networking, lab space, and technical support to post-secondary students and graduates. These young entrepreneurs are focused on advanced manufacturing technologies and processes related to hardware devices, medical devices, recycling technology, robotics, food manufacturing, and more. Half of those who graduated from the inaugural class have already started a business.

Mr. Chair, in closing, we know that your committee is just beginning its study of the manufacturing sector and that over the coming months you'll be very closely involved in much broader discussions about research and innovation in Canada. On behalf of colleges and institutes across the country and CICan itself, I want to convey our enthusiastic commitment to working with the government, with this committee, and with individual members of Parliament, as well as our partners in universities, industry, and communities, to leverage the full potential of our institutions to contribute to Canada's innovation agenda.

Thank you very much for the opportunity to speak with you today. I look forward to your discussions.

● (1550)

The Chair: Thank you very much.

We will move on to Ms. West-Moynes.

Dr. MaryLynn West-Moynes (President and Chief Executive Officer, Georgian College): Thank you very much.

Good afternoon. I'm honoured to be asked to present to you today. I believe your work on this subject is critically important to Canada's economic future and the individual prosperity of all Canadians.

It's nice how this has been set up, because I'll give you the story of an institution, if I might. To introduce myself, I've had a 32-year career in post-secondary education. I have worked both in a university as a senior administrator, and in a college as a senior administrator. I am currently the president and CEO of Georgian College. We have seven campuses across central Ontario. Our largest campus is in Barrie, an hour north of Toronto.

While my remarks this afternoon will be peppered with Georgian examples, if one of my colleagues from any one of Canada's colleges were here today, they would be telling you about similar work with their own local flavour. I'm sure you will see an alignment with your colleges in your ridings as I speak.

Allow me to tell you a bit more about Georgian. We have 11,000 full-time students. Of those, 1,100 are international students from over 60 countries. We offer apprenticeship and diploma and degree programs in a wide range of disciplines. Many of our program areas directly relate to providing a highly skilled and innovative workforce to manufacturing, including programs in engineering, environmental, and other technologies. We are home to the Automotive Business School of Canada, which is enthusiastically supported by the auto sector.

Next month, if you're in the area, please drop in. Our students will mount the 31st annual edition of the Georgian College auto show, the largest student-run outdoor automotive show in North America, and over two days we usually have about 11,000 people who get to kick the tires in a non-sales environment. The industry support we have for that is quite amazing.

We operate centres for career and employment services in Barrie, Orillia, and Orangeville, and these receive federal funding through Employment Ontario. Our staff provides funds and job-specific training to manufacturers across our region through numerous programs. To give you an example, last month we did customized training to provide 80 staff members to auto parts maker, KTH Shelburne Manufacturing.

I'm very proud to say Georgian graduates get jobs. In 2015 we achieved the highest graduate employment rate of all English-speaking Ontario colleges: 87.8% of our graduates got jobs within six months. Part of the reason for this success, I believe, is that we are Ontario's number one co-op college. We offer co-op programs in almost all of our programs, resulting in paid work terms. Last year 4,000 of our students completed co-op work terms with one of the 6,200 partners we have doing co-op with us annually.

When you think of a college, you first think of students in apprenticeship and diploma programs. People are absolutely astounded when they hear that on our campus 10% of our enrolment was in degrees last year, and what's even more interesting, 750 students are taking one-year certificates, having already got a college or university degree, in a fast-track career-focused program, so they can get experience and ultimately a job.

There is more. Colleges have really become the go-to resource for local business and industry. We are collaborating with Simcoe County and the City of Barrie right now to conduct an environmental scan on the state of manufacturing in our region. We've been at this for about four months. It's early days, but there is already much we know.

Between 2006 and 2011, Simcoe County's manufacturing sector shed almost 6,400 workers, which represents a decline of about 19.4%. That's about equivalent to what's going on in the rest of the country. While manufacturing has struggled in recent years, it remains a strong contributor to our regional economy, with 22,000 workers making up more than 10% of our local labour force.

● (1555)

The promising news from this study is that Simcoe County projects manufacturing employment will grow by 1,650 jobs in the next five years. A key finding of our study to date is that local manufacturers are excited about the advances in such areas as green energy, robotics, and automation, and they want to discover how materials evolve over time and how to ensure efficiency in their own manufacturing process.

There's a very encouraging statistic, that 85% of the manufacturers we've interviewed so far are prepared to accommodate change quickly. That's the key: they're ready to make change. They know this means R and D, upgrading of machinery, and training of employees, and they know that they need help with this to be successful. We're hearing this more among the small companies. I'm sure that's no surprise to any of you.

Let me give you an example.

One of our large donors at Georgian is Wolf Steel-Napoleon—a great story, by the way, if you have time to look them up, about a guy who started by creating a heating system in a garage and has turned it into a manufacturing company with more than 1,200 employees throughout the world. It's about to grow another 200 workers, thanks to a $4.2 million FedDev grant to expand its business in the American-dominated HVAC market. This is a success story.

The federal government is investing in Wolf Steel. Wolf Steel is investing in Georgian by hiring more than a dozen co-op students every year in a number of programs, particularly heating, refrigeration, and air conditioning, but also in electrical engineering, computing, business programs, and human resources and accounting. We are close partners in both workforce development and research.

Currently our students and faculty are working with Wolf Steel to improve issues with uptime and quality in a robotic welding cell. This kind of research project whereby students can engage is key to that business's growth. It's aimed at finding answers to specific questions and solving real work problems today.

Last year, we worked with 98 industry partners like Wolf Steel on more than 120 projects just like that one. Our work with Ford Canada and the electrical utility power stream is a unique applied research initiative to better understand electric vehicles, their charging demands, and their impact on the grid through level 2 charging stations on our campus.

We all know research has become vital to our economy. While Georgian is proud of what we are accomplishing in this area, we know there's more to do.

Three days ago, we submitted a proposal to the federal government's post-secondary institutions strategic investment fund for a $10.8 million contribution investment in an advanced technology and innovation research centre on our Barrie campus. A highlight of this proposal is to create a centre for research and innovation.

Here's what's key about this proposal.

Our municipal partners from Simcoe County and the City of Barrie are so committed to this project that they have jointly pledged $10 million, half of the money to make this project work. They feel it is so important to bring something like this to our community that they're prepared to put up 50 cents on the dollar.

The centre will be a place in which industry and academia will test concepts, incubate new projects, and virtually kick-start our new economy. Simcoe County does not have—in fact, none of central Ontario has—a dedicated facility of any kind to research, accelerate, or commercialize a product. This facility will be fundamental to the economic growth and prosperity of central Ontario.

Our partners tell us that the other critical factor to manufacturing success in our region is a highly skilled workforce. The Canadian occupational project system predicts many engineering occupations will face labour shortages between 2015 and 2024. It's obvious that the demand is there. Regional engineering job opportunities are projected to grow by approximately 6% without injecting innovation and research opportunities.

To give you an example of the demand, our enrollment in diploma and technology programs at Georgian has increased by more than 15% over the last three years.

● (1600)

We plan to meet the future need by introducing the first engineering degrees in central Ontario in an innovative, integrated degree-diploma program with Lakehead University. This is where the two sectors can come together and create the best of both worlds. Students will graduate job-ready with both a diploma and a degree, the best of a college, the best of a university, in just four years, prepared to lead in local industry and innovation.

To prepare for today, I asked our staff and partners what they wanted me to tell you on their behalf. Here's what they said, and this won't surprise you.

Number one, consider the burden involved in applying for and achieving any government grant funding. I'm sure you've never heard that before from business and industry.

Fund a skill-specific workforce developed for manufacturers to help workers and employers adapt to the changes in emerging technologies.

Also fund and support open innovation. You can facilitate the collision of the innovation ecosystem with manufacturing in so many ways by bringing other sectors to the table in what I like to think of as a sandbox.

I'd add to the list myself. Support the link between entrepreneurship, innovation, and research. We have an entrepreneurship centre on our campus. We don't have the innovation and research to close that whole loop.

Continue to support applied research. I personally don't believe colleges should become university research facilities, but I do believe we can leverage our excellent relationships with business and industry, and continue to add value on the applied side in a very meaningful way.

Increase access to commercialization organizations across Canada and provide high access to the Internet in areas such as in central Ontario, which has a very low bandwidth capability. It is hard to attract manufacturing in communities that are low.

I want to close by congratulating the federal government on its current infrastructure funding plans for post-secondary sectors. The criteria is built on advancing innovation, and I believe it is exactly what is needed in our community, and no doubt in communities across the country.

Georgian is willing and ready, as I am sure all colleges in Canada are, to be an equal partner and drive meaningful innovation—

● (1605)

The Chair: I'll have to cut you off there, sorry.

Thank you very much. I know you said a lot of things that have struck chords with some of our members here today.

We are going to Mr. Longfield for seven minutes.

Mr. Lloyd Longfield (Guelph, Lib.): Thank you very much. There's so much to talk about and so little time.

Thank you for the time you've spent coming here and preparing, and also for the time you're already spending on the Hill working with us to make sure we have the attention being put into the right places.

You've given us a lot for our report already, but I wanted to expand on the “creative and entrepreneurial citizens” approach, and it's the first pillar in our budget, where we're looking at a more innovative Canada.

The Ontario Chamber of Commerce, on May 2, released a report, Small Business: Too Big to Ignore. They talked about the three major items in Ontario that are stopping the SMEs of fewer than 100 people from growing: 39% of the SMEs with fewer than 100 people are having trouble hiring people, they're having trouble identifying the people who could fill their gaps, and that's up from 28% of the businesses in 2014 that had similar challenges.

What are you seeing on the labour market front, having information on businesses so that you know your students are heading into careers where there are jobs? What can we do about helping or connecting you to the businesses that are having so much trouble finding people?

Mr. Paul Davidson: I'm not familiar with that report of the chamber; I am familiar with much of the Ontario chamber's work. One of the things the chamber is doing itself, which I think is terrific, is their magnet program, which is actually an interactive database that matches needs to people and does a very good job at a very low cost. It's something we've been very pleased to be a partner of and a supporter of through the university sector.

Members on all sides of this committee will know that I have spoken in other places about the importance of timely, accurate labour market information for parents, for students, for businesses, and for education providers. We collect a wealth of data. It's hard to get to and it's hard to get at.

Over the last couple of years we've been talking about creating something like the Canadian Institute for Health Information, a stand-alone, purpose-built organization that can bring this data together, and put it in a format that, as I say, parents, families, employers, and the education sector can use to good effect.

Having said all of that, most of the jobs that will exist in 10 years have not been invented yet. So we have to make sure we prepare students to be flexible, adaptable, and innovative throughout their careers, no matter where they choose to study and learn.

Mr. Lloyd Longfield: That's for sure. Thank you.

Ms. Christine Trauttmansdorff: I would complement that with the importance of providing good information about post-secondary education options to students early, early on in high school, and even in elementary school.

Also, from the college sector, I think there's still some awareness building to provide. Colleges have changed dramatically in the last 50 years. What they are offering and the career options that they support are really quite impressive.

Last week, I was at Algonquin College in Nepean. The school year has ended, so the campus is not full of the regular students, but there were busloads and busloads of grade 8 students visiting the campus for the day, having a look around, looking at the labs, looking at the classrooms, and interacting with the faculty. They were wide-eyed at what was on offer there. Things like that are also supported by a lot of the dual credit programs that are being offered. Students can get a credit in high school that is also a credit towards a program at a college or an institute.

As I say, this demystifies, this opens the door, and it gives them some ideas. I think that most kids coming out high school just need that spark of “what is it that I'm going to do?”

Mr. Lloyd Longfield: Thank you.

Because of time, I want to cut to something that you mentioned, MaryLynn, on the Georgian College gap on innovation and where the federal government may play a role in introducing support for an innovation centre that is something like what we have in Guelph.

● (1610)

Dr. MaryLynn West-Moynes: I think this is fundamental. Look at where our population is in Ontario in the south. People understand a need for the investment in the north, but right across Canada there are sectors in the middle, and we haven't quite figured out how we're going to support them to ensure that those communities continue to build: seven communities and no research and innovation kick-start space at all. There's a huge opportunity on the table to change that. I think it's fundamentally key.

We have an entrepreneurship centre. We've been very fortunate. We had a donor give us $1.5 million to get that off the ground. But we have no place to test products and to test commercialization, and no place for the different sectors to align.

Mr. Lloyd Longfield: We could look into the gap in another part of the study, possibly.

Dr. MaryLynn West-Moynes: I think that would be great.

Mr. Paul Davidson: Can I say something? I know you're pressed for time.

Mr. Lloyd Longfield: I'm really pressed, but....

Mr. Paul Davidson: The other element is about students as job creators themselves, right? If you look at the Digital Media Zone, if you look at SFU's work, or if you look at the new District 3 at Concordia, you'll see that we're helping students unleash new jobs and become employers themselves, and that's a really important part of the future.

Mr. Lloyd Longfield: Thanks.

With a minute and half left, or less than, I noted that you mentioned your partnership with Siemens. For me, that's interesting in terms of building a bridge to Europe. Siemens in Germany has done a lot of work with colleges and universities. I wonder whether maybe we can, on the international front, work with international manufacturers, or even with companies like RBC, which you also mentioned in terms of developing partnerships.

Mr. Paul Davidson: It's been terrific to engage with Siemens over time. I've done it at one level, and our institutions themselves are much more deeply engaged, but I think all sides have learned from the experience. We can't simply replicate a model from another country, but we can take the best learnings from those countries and apply them in the Canadian context.

I think that if you were to invite Robert Hardt, the CEO of Siemens, to come to the table, he would say that he has learned and his thinking has evolved about how to make the innovation system work better in Canada by collaborating with colleges and universities.

Mr. Lloyd Longfield: As this is an actionable report that we're developing, I know that we'll be reaching back. The end of our report is really the beginning of another piece of work, and that's try to develop the middle-class jobs that we're working on.

Thank you very much, everyone. I wish we had more time.

The Chair: Mr. Dreeshen, you have seven minutes.

Mr. Earl Dreeshen (Red Deer—Mountain View, CPC): Thanks very much, Mr. Chairman.

Welcome to the witnesses.

It's been an honour for me to be able to work with both of you over the years, and I very much appreciate your commitment to universities, to students, and to manufacturing, and I hope that we can have some great discussions in the future as well.

With regard to the committee study, I think really where our universities and colleges come into play is with regard to analyzing the state of industrial innovation across Canada, in terms of our industry-academic collaboration. This is what we've been talking about, and you've had great examples of that in your innovation centres and business incubators and accelerators. Of course, we discussed the funding part with other groups earlier, so we more or less understand where that is coming from and what the needs are.

We were talking as well about global connectors and opportunities for us to branch out into different places and to collaborate. We've had an opportunity to go along on the Governor General's state visit to China and Mongolia. Our Governor General and the strength he has in representing universities definitely showed how our universities and the universities in the rest of the world closely work together. The same thing is true for our colleges and polytechnics, because they're trying to work to make sure we have opportunities for our students to learn, but also for that engagement that would take place later.

I'm wondering if you could just quickly talk a little bit about this collaboration, this global approach. Of course we know what the advantages are when you have people learning from others around the world, but could you just touch on that first, please?

Ms. Christine Trauttmansdorff: Maybe I'll start with a couple of things.

Colleges and institutes in Canada are very, very well known on the international stage, primarily for their teaching and learning. The model here in Canada is somewhat unique in the world. We have great diversity; you can always say that about the Canadian system. We are involved in projects in 29 countries. Faculty members from our colleges and institutes go and help develop programs that allow developing countries to respond to the needs of their local labour markets. That employment for education, exporting the Canadian college model, is very much a part of our territory.

The other aspect of this is that most of these collaborations, no matter what governments and companies try to do, always come down to people and people connections. A huge issue for us, and I think the same is probably true for Paul, is having opportunities for our students to go abroad. We have a huge population of people who have come from other parts of the world, and giving everyone an opportunity to explore the world, to develop those connections, to do a work term abroad, or to do a semester at a university or college elsewhere develops those people-to-people connections and an understanding of the culture and the business dynamic that those longer-term partnerships are based on.

● (1615)

Dr. MaryLynn West-Moynes: I would just say that three years ago we sent about 20 students to study abroad. This year, 500 students from Georgian College participated in trips involving culinary experience with the hospitality industry to Italy—I wanted to go on that, by the way—and a golf tour to Scotland. We have a professional golf program. It's starting, but it needs to become much more expanded.

It's interesting that there's an alliance between Georgian College, Lakehead University, and the Simcoe school board to recruit and promote internationally. Any one of our recruiters going out of our home community is now also recruiting for the other two institutions.

We know that this will be the first year in Canada that the number of babies born will be lower than the number of people who die. Last year while I was in India, they had more babies that year than we have in Canada in our entire population. We know we have to rely on this globalization, so I'm very pleased that you're aware of that.

We can start bringing that manufacturing with us in our research. We have three students from three different countries, who are engaged in our entrepreneurship centre trying to figure out how they can bring innovative ideas from here to their home countries. What a way to kick-start great business.

Mr. Paul Davidson: I will jump in on this because it's something I believe so passionately in. We've told you in the past about how international students in Canada contribute $10 billion a year to Canada's economy. That's more than the export of wheat. That's more than the export of softwood lumber. Think of the time and attention we're paying to those issues. Imagine if we paid similar attention to how we attract talent into this country at scale and then how we turn that around and get Canadians abroad.

The year 2017 is coming. What a year for a legacy to say we're going to send Canada's young people out in numbers never before seen, and they're going to be our ambassadors in India, in China, and in other fast-growing economies. We're really working together on getting Canadians out and about so they can see those global markets when they're young. Start young, start global.

Just to make the link, Christine was mentioning CRIAQ, the really collaborative work on aerospace led out of Quebec. We are connected through the European Commission through an €80 billion research effort to connect Canadian researchers to European researchers, and the CRIAQ collaboration is one where there is opportunity to do more.

This is how, again, through the long chain of research, innovation, and students, we can grow a competitive economy that's inclusive for Canadians.

Mr. Earl Dreeshen: Thank you.

I only have a little bit of time left, but as a former high school teacher for 34 years, I saw the need for the dual credit. I dealt with work with RAP and all of those types of things. It's so important to be able to take the talented people you have and allow them to get into colleges. I know Olds College does that extremely well, and there are great opportunities. That's really where you get the excitement.

For those students who maybe don't quite fit into the normal path, when they can see what's happening at a college or a university and get the hands-on experience, it really means a lot to them.

Thank you very much.

The Chair: Thank you very much.

Mr. Masse, you've got seven minutes.

● (1620)

Mr. Brian Masse (Windsor West, NDP): Thank you, Mr. Chair.

Thank you for being here today.

One of the things that I'm concerned about with regard to colleges and universities and then exiting programs is the skills gap between what you learn at college and university and then how it's applied out in the workforce. Can you give me your comments on what you think about that situation?

Ms. Christine Trauttmansdorff: I think one of the things that comes to mind right away, and Paul talked about it as well, is the work-integrated learning, those co-op opportunities, the chance to get real work experience.

Georgian College has a great story on that front. Most of our members do have. Virtually every student has an opportunity to have an employment experience, but it's hard work to create those. Business partners need to make room for them. It's costly to find the appropriate placement for the student. In health care in particular, it's very difficult to get the practicums that are required in order to give the students the credentials they need.

I know Employment and Social Development Canada is working on a new framework for work-integrated learning. We're very keen to participate in those discussions and look at how the academic and the employer community can work together to enhance what is already happening.

Mr. Paul Davidson: I might add, first of all, that both CI Canada and Universities Canada are active members on the Chamber of Commerce's human resources policy committee, which is a group of HR professionals across the country, and it's listening very carefully to the antenna, to the needs of the workforce.

Secondly, I'm really struck by the changing nature of work-integrated learning. The co-op model developed at Waterloo is now 50 years old and it's really innovative and changing.

To give an example, the CEO of the Royal Bank, Dave McKay was saying that their approach to co-op at RBC is different than it used to be. It used to be that they would take students, put them through a co-op for four months or six months, and hold on to the best.

Now they're saying that they are going to give those students the toughest problems they are facing as a sector. They are going to put them in with their most senior people and actually hope they don't find the solution in the first four months, because they want them to go back into university with their colleagues and they'd like those students to develop a business. If it's a successful business, they will either buy it back, buy the business, or have it open to the whole financial sector.

Mr. Brian Masse: In those cases, for example, calling them work integrated, how many of them are paid?

Mr. Paul Davidson: That is a challenging issue. Let me just say that Universities Canada believes in high-quality internship placements and that they be remunerated properly.

Mr. Brian Masse: Okay. But what percentage-wise—or you have no data on that?

Mr. Paul Davidson: I don't have that data today. We can look into that.

Mr. Brian Masse: Can you look into that? Here's what I'm concerned about. I used to work in the not-for-profit sector as an employment specialist for persons with disabilities and youth at risk, and I was a city councillor as well. We watched the universities and colleges have to struggle with income coming in. First of all, there was a far greater outreach to the provincial and federal governments for greater access to capital for various programs and services. Then there was outreach to municipalities, especially related to sports, culture, and facility infrastructure. Then there was outreach to business. We saw others lose that traditional base of support of philanthropy in communities because it was being tapped into, so not-for-profit organizations, charitable organizations, lost traditional partners. For example, automobile manufacturing has gone from fourth in Canada in a community like mine, to tenth overall. Also, many products and services are moving south because of different policies.

Then we've watched tuition go to some of the highest levels, if not the highest levels. I'm wondering what work is being done to look at the cost of the product that you have a student go through and exit; the cost of financing that investment, because it is an investment; and then of remuneration in the market, and how long it takes to pay back. I fear what a lot of people are doing is similar to what my partner and I did. We waited to have children till later in life to pay off student debt and buy a home and get into the economy in a different way. I worry that this been further exacerbated 20 years later.

● (1625)

Dr. MaryLynn West-Moynes: I'm mindful of your time. I think we can collectively get you some information about the return on investment at both a college and a university, and the difference between students who have to borrow money to go to school versus students who don't have to. We'll make an agreement to provide the committee with the correct data.

I'd like to talk a bit about the skill discussion for a moment. I'm worried about nomenclature. We keep talking about there being a skills gap. When I talk to business and industry, I hear that message, and then I have to work hard to translate what they mean for the different industries and the different types of organizations. They could mean they want to hire someone from a workforce unit that they're going to pay just above minimum wage and they need to make sure they can read and write to meet standards. Because there's a shortage now they're prepared to pay a little better than minimum wage, but they're more concerned about a skill in communication, teamwork, writing, and math.

A lot of people equate having a trade or a journeyman paper with having a skill. In some sectors there are shortages, and in others there aren't. Yet we talk about a skill gap of apprentices in this large group of people.

I don't think people understand what a technologist and a technician can do versus what an engineer can do. We keep putting them all in the same pot. It would be something of value for this industry to look at.

The Chair: You've got about 30 seconds.

Mr. Brian Masse: I'm going to get another round, so I'm going to let you have a full answer on that. We will start with that, so it gives you sufficient time, and I'll finish my last 15 or 20 seconds with this.

Over the last number of centuries we have allowed industry to stop training its own workforce and put that on the backs of young people who have to go through a training process more than in the past. There seems to be a continuation of this to the point where the return on your investment is very much a questionable use of resources at the end of the day.

The Chair: That will be continued. Thank you.

Mr. Baylis, you've got seven minutes.

Mr. Frank Baylis (Pierrefonds—Dollard, Lib.): I'd like to talk about technology transfer. We hear an awful lot about the work that's done at universities and colleges, and a lot of technology and innovation is developed there. Then there seems to be a problem in moving it out of there and into businesses. This is generally done through technology transfers. In my experience, some do it very well, some do it absolutely terribly.

How do you see that, Paul? What are the opportunities to make this better? We'll start with you and move across.

Mr. Paul Davidson: There's more to be done in this area, and there's learning to be learned from other jurisdictions, as well.

If you think about the first 10 years—from 1996 to 2006 or so—with investments in research, higher education, and innovation, the emphasis was on discovery research. Over the ensuing decade, there's been more emphasis on the commercialization side and the attention to tech transfer. The development of programs like CECRs, another through IRAP, and the like have improved the capacity to move ideas out.

The big challenge, we find—and I think the Jenkins panel found this in its review—is the receptor capacity to pull the ideas from the university as—

Mr. Frank Baylis: Are you saying they found a problem of people wanting to take them out?

Mr. Paul Davidson: Yes.

Mr. Frank Baylis: Then I'll be clear. I've found a problem in the interface between the two, and that interface is the tech transfer office. I find that to be a huge problem in a lot of universities, particularly in Canada. I've had experiences in other universities and big American research centres. They're nowhere near as difficult to deal with.

Ms. Christine Trauttmansdorff: I think in colleges and institutes, we don't use the term “tech transfer”. We don't do any basic research. The institutions don't initiate any research. It's all demand pull. It's all industry partners and small business knocking at their doors. What that means is there's a ready market for it by virtue of where it starts.

I think where there's some work to do in the college and institute system in terms of this applied research and demand-driven research is in making sure that businesses, once they've had their problem solved, or their prototype worked through, or their new product developed, are able to scale that up from a business point of view.

I talked a bit about the support for business innovation. We talked about incubators and accelerators, and we're going to talk a lot about clusters, etc. over the next few months. We need to make sure what our members are able to do with their partners, that they are able to support the partners in making the most of that, and that the whole region is able to support them going forward.

● (1630)

Dr. MaryLynn West-Moynes: I don't see the same problem, but I understand the question having been in both a college and a university. I think part of it is who owns the intellectual property. It's not so much of a problem on the college side.

Mr. Frank Baylis: Why is that?

Dr. MaryLynn West-Moynes: It's clear that our faculty members are not required to publish, so it's not so important for them to hold onto the intellectual property. They're much more likely to engage with a manufacturer or an industry, because that's not what they're looking for. They're looking for experiences for their students to promote the learning. That takes tug and pull, and that's why I think we're playing so well in the applied research sector.

I would be looking to the issue of intellectual property.

Mr. Frank Baylis: I would agree with you about the intellectual property. I've had experiences that I've mentioned before at some large Canadian universities where the professor would say, “Frank, please take the idea. The people—and I won't call them ‘tech transfer’—inside the university are so slow and so bad that I trust you more to get this thing patented. If something comes of it, I'd rather do business with you than have to go through them.” It's not just one or two universities. Yet, when I go to the United States....

It comes down a lot to ownership and the idea of who gets.... If a company is coming in there, who owns it? I'm having difficulty seeing what you're saying.

Mr. Paul Davidson: Let me respond to that, because I talked about a couple of rabbit holes earlier in the conversation. I think this is another rabbit hole, respectfully.

There are some you will hear from who say what we need is a one-size-fits-all template. That's not how Canada works. That's not how our economy works. There are a range of alternatives and approaches.

At the University of Waterloo it's 100% investigator-owned, at other universities it's 100% university-owned, and at many universities it's a blend.

Mr. Frank Baylis: Do we have statistics?

Mr. Paul Davidson: What we have found is that both sides often spend too much time worrying about what the ultimate payday is going to be and not enough time getting on with the work. For example, if you look at the recent changes at the University of Manitoba's IP policy, there is one where they found ways of respecting the intellectual property protocols while enabling both sides to get on with the work, and then talking about about how to divide the spoils.

There are examples we can provide you with of different IP models across the country.

Mr. Frank Baylis: I agree there are different IP models across the country. Like I said, I've had experience across the board with them. Some work, in my estimation, and some don't work. I could be wrong. Do we have any statistics in terms of getting IP out, or interactions between the...if you could find that?

Mr. Paul Davidson: Again, we can provide some additional information, and this is part of the joy of the work you're doing in making this study, because for years we measured number of patents as one outcome. Well, what about revenue, what about—

Mr. Frank Baylis: Do you have that?

Mr. Paul Davidson: There are reams of data on that and we'll be happy to share it with you.

Again, my message to you is be careful, it's a rabbit hole, because there is not a one-size-fits-all approach to this. There are some institutions that do it very well, there are some others that do it less well, but you will hear from witnesses who say this is the number one burning issue. I would respectively disagree with that.

Mr. Frank Baylis: Do you have something to add to that?

Ms. Christine Trauttmansdorff: One statistic I was verifying is that with colleges and institutes, I think 63% of our members report that their IP policy gives it entirely to the partner, no interest at all. There's a blend of other arrangements, but in general, as MaryLynn said, there's no interest or motivation for faculty to keep IP, or for the institutions.

Dr. MaryLynn West-Moynes: Our motivation really is that we don't think we can afford to have a society where we have apprentices and diploma graduates studying in post-secondary education, making a huge investment, and not being involved in research and innovation. That's the motivation at the college table and that's why the German model and Siemens are so successful, because that has been created.

We have to move from the mentality that if you go to university you do research, and if you do any other job, you don't. We need everybody doing it.

● (1635)

The Chair: Thank you very much.

Mr. Nuttall, you have five minutes.

Mr. Alexander Nuttall (Barrie—Springwater—Oro-Medonte, CPC): Thank you, Mr. Chair.

Thank you to each of our witnesses today for making the trek here to be with us.

One of the things that has struck me on a local level, and I think I've heard it from all three of you today in different ways, is about the international students and the impact they have both on our education system as well as on our economy.

I have two questions. First, in terms of international students, what percentage are coming to Canada and will end up in a manufacturing type or sector job or industry at the end of it?

Mr. Paul Davidson: I don't have that data immediately available.

I will say that over the last several years the approach has been to actually reward and encourage international students to come to Canada, stay in Canada, invest in Canada, and find work in Canada. That has been a tremendous competitive advantage as we go up against our competitors to attract talent.

Mr. Alexander Nuttall: Absolutely!

My next question is what percentage of international students are staying in Canada, and calling Canada their home after that?

Dr. MaryLynn West-Moynes: Can I come at that from a local perspective, then maybe you'll have some time to draw up some data on this particular topic?

What has happened in this country, which is fabulous, is.... Two or three years ago, you came as an international student and then you had six weeks to go home, but now you can stay and if you can find a job you can stay for two years. If you're good in that job, the employer will consider supporting you. It is a brilliant approach in my opinion.

Here's the challenge for the international student, and we're finding it at Georgian. It is getting a co-op work experience, being able to span that bridge between their culture and what they've been trained to do, what workforces are looking for, and being able to successfully get an interview so they can get the work experience. Then also, how do they get a job?

I really believe this is a place where, if we want to attract those minds from all over the world into the manufacturing sector, we help bridge to jobs for our international students. That would allow them to have a two-year experience, hopefully get gainful employment, go on and apply for citizenship, and go on to driving our economy.

It's brilliant. Would you agree?

Ms. Christine Trauttmansdorff: Yes, I absolutely agree.

I think there are some policy changes in the works that are going to address some of the issues around visa requirements and those transition measures. Then there's preparing people in terms of language and culture to do that job interview and get a job.

I think I read today there is a recent study being done that says 18-year-olds to 35-year-olds in the world are rating Canada as the best country in the world. What an opportunity for us in terms of attracting international students to Canada.

MaryLynn made a reference to Barrie, Simcoe, Georgian, and Lakehead, all working together to promote that region internationally. I think Canada could do a far better job taking that model and scaling it up. That branding Canada effort internationally is a huge challenge for us, and we can work together much more effectively to leverage those people who think we're the best place in the world.

Mr. Paul Davidson: I would just add that, as MaryLynn was saying, it's important that those students have a high-quality experience. The minute we start treating them like cash cows we're done. So the wraparound around language, culture, work experience is critically important for their desire to stay in the country.

Mr. Alexander Nuttall: Absolutely. Before I run out of time, “collaboration” is something that I've heard from you guys over and over again. I think it's fair to say that the government as well as we on this side of the House feel that's very important, as is the alignment of courses with the market demands.

For my final question on access to capital, perhaps, Paul, I can focus on you because I can ask MaryLynn this any day of the week. When you have businesses or students who are creating businesses is there capital readily available for them to hit the market and run with, taking whatever it is they've created, whether it's digital or real, to the marketplace? You have about ten to fifteen seconds.

● (1640)

Mr. Paul Davidson: In the previous government, one of the Hon. Jim Flaherty's great legacies was to create a $400-million venture capital fund in this country, and that's a critical component of the innovation economy. There's still more to do to grow the venture capital side in this economy.

I'll also add that universities like Ryerson and others are creating their own VC funds within the university to support the students. That's really exciting to watch. So if the committee gets a chance to travel consider visiting the Digital Media Zone at Ryerson.

The Chair: Thank you very much.

Mr. Jowhari, you have five minutes.

Mr. Majid Jowhari (Richmond Hill, Lib.): Thank you, Mr. Chair.

Good afternoon. I want to go back to the creative and entrepreneurial citizens, which is one of the key pillars in our innovation agenda. One of the key drivers under that pillar is skilled entrepreneurs and creative innovators. We spent a lot of time talking about the skills. You nicely dissected it for us. You said it's going to come from a combination of a program that they go through and also co-op programs and having opportunity. We talked about innovators, research, basic research, applied research, and partnering with the industry. One of the areas that all three of you touched, but it was touched on lightly in my point of view, is entrepreneurship. You all mentioned that there is some school of entrepreneurs or there are entrepreneurial skills. Paul touched on it, saying that is the key, that we need to think beyond them graduating and just finding a job, and that if they can't find it they should be the creator of the jobs.

My question is how do you define entrepreneurial, and please explain to me what programs do you have that include the sense of entrepreneurship, and having the right tools such as the instructors, and connection with the industry, to be able to bring that sense, because I struggled with the entrepreneurship when I transitioned from a job in to becoming a business owner.

Mr. Paul Davidson: There's so much to talk about here and I don't want to dominate so just cut me off, folks. I mentioned that Ryerson's Digital Media Zone is a place where they bring undergraduate students, faculty lawyers, IP lawyers, and venture capitalists together and create businesses. I've forgotten the most precise number, 25 to 30 businesses in the last recent period, where again it's outside the bounds of a traditional classroom. It is really happening in real time. It's giving the young kids a ticket to go meet venture capitalists in California and come back with a big deal. Or if you look at SFU and UIT and Concordia's entrepreneurial space, at SFU every student at the university now has an opportunity to get an entrepreneurial certificate, and for those who are in STEM there's a master's initiative that teaches them the business basics that they're going to need to apply those skills.

Maryam Sadeghi, is a woman who developed a cancer-solving mole scanner. She came to Canada and she found out about Simon Fraser from our website. She could have gone to Stanford. At SFU she got the skills she needed to create a business that's now getting FDA approval on her treatments. It is a different kind of campus from even a few years ago.

Dr. MaryLynn West-Moynes: We've embedded entrepreneurial objectives into every program, every one of 120 programs. I used to say colleges and universities were trying to get out ahead of who was going to be the best at entrepreneurship. Everybody needs to own this space. There's skill that you need to understand it. There's an ability to go for services. You need mentorship and you need capital, and we need centres on our campuses I believe. We've been fortunate; we had a philanthropist who was an entrepreneur who gave us money to do that. He has ensured our students have access to a mentor, they have access to some very minor small bit of money to inculcate and move forward with their product, and they have support to ongoing services. The thing that I think is missing right now is linking that with the research and innovation space. It's cyclic.

Mr. Majid Jowhari: That's actually nicely done on page 110 of the "2016 Federal Budget", which is in front of all of us on this side.

I want to touch on something. Where do you think the government enablers come in? We talked about partnership, but what I didn't hear is where the government comes in and where the expertise comes in that says, "Now that you understand the IP, now that you've developed a sense, these are the government programs that are available to help you take it to—whether it's incubation or whether it's scale up or whether it is"—

● (1645)

Mr. Paul Davidson: I'll mention four quick things. Promote work-integrated learning, not only in STEM, but across all disciplines. Increase the support for accelerators and incubators, because that's making a transformative [*Inaudible—Editor*]. Work on those long-standing recommendations about how to encourage business investment, because we've gone from 16th in the world to 26th and we can do everything in the world but we need that resource. Finally, invest in the fundamentals of research and innovation as you have over the last decade.

Mr. Majid Jowhari: I think the third point is the key.

Ms. Christine Trauttmansdorff: For colleges and institutes, as MaryLynn indicated, a lot of the entrepreneurial activities are funded through the applied research funding that the colleges and institutes receive. Eighty-four percent of our members are reporting that they've supported student entrepreneurship. Over 10,000 students received support to pursue an entrepreneurial idea in 2014-15.

I mentioned that a lot of the faculty are entrepreneurs themselves, so they're building that into their discussions every day. We have lot of student-led enterprises in our space, and as a fabulous example we have a brewery that is right from production to retail. They're offering that on campus.

Lakeland College has a student-managed farm, complete end-to-end—

The Chair: I love it but I'm going to have to cut you off.

The Chair: Mr. Brassard, you have five minutes.

Mr. John Brassard (Barrie—Innisfil, CPC): Thank you, Mr. Chair.

First of all, it's MaryLynn West-Moynes' appearance that compels me to be here. I want to congratulate you on the success of Georgian College. I know that you're a strong leader within our community, and certainly have driven Georgian to the place where it is today, will continue to be, and will grow for sure.

I'm curious about the environmental scan that you talked about. I know that is being dealt with at a local level, and I'm just wondering, Christine and Paul—and MaryLynn spoke about this—is there anything similar that is being done at a national level with respect to that environmental scan that—

Mr. Paul Davidson: On the future of manufacturing?

Mr. John Brassard: Something similar to what Georgian College is doing.

Ms. Christine Trauttmansdorff: Not to my knowledge, although I suspect some of our colleagues in the Canadian Manufacturers & Exporters, the Chamber of Commerce, and the Canadian Manufacturing Network could probably give you a much more complete answer. I have to tell you, just in the same way that Paul referred to our participation in the human resources policy committee of the Chamber of Commerce, the networks with those associations and the groups with the academic community are very active.

Mr. Paul Davidson: Yes, there's work being done in a number of places. There's no one-stop shop on this, but I think the biggest concern is the concern about disruption in the economy, and how advances in research are changing our economy so quickly. You look at large enterprises that have had a similar business for 100 years or more suddenly having to find a solution in 72 hours to a new threat to their business. The point I would make is that we are living in a disruptive age and we have to have the tools in the tool box to cope with that disruption.

Mr. John Brassard: I want to focus on something else that was brought up. The other day in the House, as I was debating the budget implementation bill, I mentioned the innovation agenda. Last week we had Startup Canada here, with 150,000 people across the country being represented. I think probably many of us in this room met with them.

In Barrie we have two local persons, Chad Ballantyne and his wife Sandra, who really are the epitome of those micro-entrepreneurs, the ones who are starting to sow the seeds of business. I asked Chad what they were focused on the other day. Part of their agenda proposes that a lot of the investment that's being made in this budget is pouring into a handful of clusters. I made some notes on what he said. He said it's too narrow a focus, and limits the investment opportunity to later-stage enterprises in R and D sectors, ignoring those early-stage start-ups that could in fact become the future manufacturers of the country. He also said there's little funding, if any, for these types of post-R and D communities and companies despite their sector success.

I know our time is limited, but I have a quick question for all three of you. Innovation research centres will not only do for smaller cities and towns...but they also have the aim to grow those local incubators that can drive the type of creativity and job growth that we see. From your standpoint, do you see any opportunity, or should there be another focus, of moving away from that sliver and growing it some more? I'm just wondering if you could comment on that.

● (1650)

Mr. Paul Davidson: One of the challenges that we face in our case, with universities and other parts of the post-secondary system, is what are the signals the market is sending? Five years ago, I was before a committee like this, and the issue was that we don't have nearly enough money for start-ups. More recently we've been told, actually, there is quite a bit of money for start-ups, and what we really need is getting across the valley of death. Then you talk about others who say, actually, what we need is a third tranche of focused clusters.

I think if I could leave a message with you from universities—I won't speak for my colleagues formally, but I know they're committed to it as well—it would be that we're here to deliver for Canada. Twenty years ago you said that you wanted globally competitive research. We now have globally competitive research. When you said you wanted a new generation of faculty, we turned over our faculty. When you said you wanted us to grow our campuses, we grew our campuses.

So as you do your work, be really sure that the charge you give us is precisely what you want, because we will over-deliver.

Ms. Christine Trauttmansdorff: Maybe I can add something. If you have an opportunity to go to one of our campuses and talk to people like MaryLynn and people who are running start-up garages and innovation centres and ask them exactly that question, I think you'll get answers that are way better than anything I can give you.

Dr. MaryLynn West-Moynes: Can I add something as well, please?

This is a good idea for you to consider. There's an angel investors group in Owen Sound that is about to create a repayment fund. It would be interesting for your committee to look at seeding money that would be managed by a group. When businesses were successful, over a period of time they would pay back the money that would be used, over and over, for what we're calling the small people who don't have the skills. It would be a brilliant idea.

The Chair: Thank you very much.

Mr. John Brassard: Thank you, Mr. Chair.

The Chair: Oh, no problem. You got an extra minute out of that one.

Mr. Arya—

Voices: Oh, oh!

The Chair: It was a good answer.

Mr. John Brassard: It was a great answer. I'm not used to having the time.

You know what? I'll just leave it there. I appreciate the time you've given me.

Thank you.

The Chair: Go ahead.

Mr. Chandra Arya (Nepean, Lib.): Thank you, Mr. Chair.

Thank you to all of you for coming here.

You know, I worked with universities, especially Carleton University, in my previous profession. We set up a lab for very advanced research in digital signal processing. I worked with Roseann Runte. Of course, with the colleges I worked on the board of Invest Ottawa. The Algonquin College president was my colleague on the board for three years.

Paul, you mentioned the placement problem. On the one hand, we have the placement problem. On the other hand, Christine mentioned job vacancies, which are getting difficult to fill in the manufacturing sector. I know there's a disconnect, especially with respect to manufacturing jobs. For service sector jobs, banking, almost anybody can fill in, but for the manufacturing sector we need specific skills, especially in STEM at the universities and the colleges here.

You mentioned the $10 billion being brought in by Canadian international students. That's good, but correct me if I am wrong on this. People tell me that today the percentage of post-graduate Canadian students, especially on the technology side, is getting lower and lower. Is that a fact, and if so, should we not encourage more Canadian students to head for higher studies in the technology sector?

Mr. Paul Davidson: You have a couple of very good questions there.

We need more postgraduate opportunities for Canadians. We are behind the U.S., Germany, and the U.K. in terms of the number of graduates we have per capita or the graduate per GDP number. By any measure, we do not have enough.

That's one reason why the pull factor is harder. We don't have as many Ph.D.s and graduate students working in business as there are in the United States, and they understand how to connect with the post-secondary system. I would just nuance it to say we're quite pleased that we have a number of international students at the graduate level, because that's a demonstration of the world-class excellence that they're coming to Canada to pursue.

● (1655)

Mr. Chandra Arya: It's time, as Christine was mentioning, to start bringing this knowledge to the high school students in terms of the importance of studying in college. In the same way, I think a university should also encourage students to look at the very long term and to go into the STEM sector or STEM stream so we can get graduates in there.

Christine, I think you mentioned that you are in enrolled in the HR committee of the CME.

Paul, I guess you're also a member there.

With regard to your presence there, where do you think the manufacturing sector is going? Where do you think the shortage of skilled workers will be felt? Will it be in the 3-D robotics, or photonics, or space technology? Where do you think there is going to be a problem in the near future?

Ms. Christine Trauttmansdorff: I think you've captured a good list right there. Paul has alluded to the disruptive nature of technology. Things are changing so quickly. Keeping skills current is vitally important, and not only in making sure that we're training students today for the jobs of tomorrow as much as we possibly can. It comes back to equipment, facilities, and always being at the leading edge.

Students are the bridge between the old and the new. You have to train them on what's in place today so that they can go in and take those jobs, but they also have to be trained on what the technology is going to be tomorrow. They're the ones who are bringing that innovative thinking into a lot of workplaces and saying, “Hey, I trained on a 3-D printer when I was at school, and I think you could maybe use one here.” They see that innovation in the companies they're working with.

Mr. Paul Davidson: If I could, I'll jump in on that.

First of all, I'm really pleased about the collaborative nature of the conversation today, because one of the things that we've been saying for years is that it's both...and. We need more of everything in this country. We need more. We need to have ambition.

There's another piece around STEM. In talking with employers right across the country, some through the training group, some through the new Business Council of Canada, John Manley's group, and their survey data, which we read quite closely, what we're seeing is that yes, we need to have STEM, but we need those STEM students to understand the arts and social sciences, and we need the arts and social sciences to understand STEM. Finding ways to have interactive collaboration in that regard is going to be really important.

Mr. Chandra Arya: That's good.

In the short time I have, I want to thank you for being here. I really appreciate it. I look forward to working with you in the future too. Thank you.

The Chair: Thank you very much.

Mr. Masse, you have two minutes.

Mr. Brian Masse: Thank you, Mr. Chair.

I'll give you one minute to answer, Mr. Davidson, if you want to take that time.

Mr. Paul Davidson: Yes. I have a couple of things on the skills gap. What the evidence will show is that the skills gap is very sectoral and very geographical. It is not a crisis, and it is not a pan-Canadian problem. That's what the evidence and data will show.

Second, I invite you to watch some new research coming out in about two weeks from the University of Ottawa. It tracks students' earnings over 15 years post-graduation, from a range of disciplines and from colleges and universities. It will provide hard evidence about what students are earning. It's linked to income tax files, so this is not survey data. This is every student and their tax file.

On the question of business investment and training, that's one of the reasons why I like the Siemens model so much. He's not just talking about what needs to be done and he's not just asking others for help. He's investing time, effort, and creativity to give students a really high quality of training.

The Chair: Could you forward that report to the clerk? The clerk will send it out to everybody

Mr. Paul Davidson: Yes, we will.

Mr. Brian Masse: That's a good suggestion, Mr. Chair.

I want to conclude with this. One of the things that I still find concerning, though, is that the model we've set up right now to move our system forward is going to be extremely challenged. That's why I raised the issue with regard to monetary redistribution in terms of supporting this as a significant piece for the future. Also, there's the fact that students are customers, really, and they demand a product that actually has results at the end of the day. I think that's a fair expectation. It's not just the universities and colleges that are part of doing that; it's also about societal expectations and the marketing of post-secondary education to students.

One thing that I would like to see happen—and maybe you can over-deliver on expectations on this—is with regard to foreign training credentials and getting that resolved to some degree. I'll give a quick example to get it on the record for you to think about.

In Windsor, Ontario, where I come from, we have people who cross the border to the United States, where their credentials are recognized. That includes, for example, the health care system. Doctors, nurses, and health care professionals go over into the United States every single day and save lives. Ironically, sometimes they're Canadian lives because we can't fit them into our hospitals, so we ship them over there.

But they're not recognized over here in Canada. I think that's one of the things that we all need to work on, because we have too many people driving to—

● (1700)

The Chair: Thank you.

Mr. Paul Davidson: If I can jump in very quickly on that. With regard to employment outcomes and delivering for students—

The Chair: Actually, sorry, we have enough for one quick round of seven minutes each.

Mr. Alexander Nuttall: We're not going to do the other thing today?

The Chair: It's going to take us to about twenty after, if you want to talk about your motion. You'd prefer to talk about the motion?

Mr. Frank Baylis: For sure.

The Chair: Okay, good. Then we have seven minutes each. You can split your time.

Mr. Frank Baylis: We'll split some time. I'll start.

I'd like to talk about incubators now. You mentioned some universities doing very well. You mentioned SFU and I think you also mentioned District 3. We're actually going to visit the District 3 incubator in a couple of months. I'd like you to elaborate a little bit on how that's worked in your different organizations.

Maybe we'll start with you, MaryLynn. Do you actually have one associated with—

Dr. MaryLynn West-Moynes: No. We hope that will be an investment as a result of the $2 billion you've set aside for infrastructure funding.

Mr. Frank Baylis: You'd be looking to have some of that come to help?

Dr. MaryLynn West-Moynes: Absolutely.

Mr. Frank Baylis: Incubators would be a priority for you?

Dr. MaryLynn West-Moynes: They would be so much so that our county and the City of Barrie have put up a $10-million match-up. That's how critical it is to our economy.

Mr. Frank Baylis: So you see the value of getting something attached to your institution that could help?

Dr. MaryLynn West-Moynes: It would be so that ecosystem could begin creating that pipeline in which you can incubate something; you can test it; you can have an open space where different sectors come together. We don't have that throughout central Ontario.

Mr. Paul Davidson: If I can—

Mr. Frank Baylis: Just a second, Paul. I'll go to Christine first.

Ms. Christine Trauttmansdorff: I think you're going to see a host of incubator options and models being developed and in place already in the colleges and institutes across the country.

One particular example—I'm just coming back to the applied research piece—is that it's such an opportunity for students. You'll see a lot of applied research showcases in colleges, with year-end capstone projects. Very often those are linked to you having developed something, you having done something, and how you will now actually turn that into a business. That's being provided to them as part of their programs in many cases. Faculty have that experience of having run businesses themselves. They're entrepreneurs. They've been able to build that into their program.

Mr. Frank Baylis: Your association covers both colleges and universities.

Ms. Christine Trauttmansdorff: Some of our members also have university status, but they all deliver what you would think of as traditional college programming.

Mr. Frank Baylis: Would most of them have this kind of an incubator attached or would most not?

Ms. Christine Trauttmansdorff: I don't have any stats. I would say most of them have some sort of incubator support for their students, whether it's a formal physical location—

Mr. Frank Baylis: But they could use more, as MaryLynn said.

Ms. Christine Trauttmansdorff: They could, absolutely. Entrepreneurship is embedded.

Dr. MaryLynn West-Moynes: If you made a comparison between the range and the resources in those centres and what's in universities, I would say we're probably at 20% of what's going on in the university sector.

Mr. Frank Baylis: You'd like to see more of that and you see a huge value in that.

Dr. MaryLynn West-Moynes: We just need to close that gap.

Mr. Frank Baylis: Okay.

Go ahead, Paul.

Mr. Paul Davidson: More generally on incubators, these were models that were developed on campus, without funding, without budget, and then thankfully people saw how successful they were, so the previous government's introduction of CAIP was really important. The fact that it has been expanded and the fact that there's still more is really encouraging. First of all, it's important that they be housed in post-secondary institutions; second, it is a contact sport, so getting people mixing it up is really important. These are not like traditional classes.

Mr. Frank Baylis: You said it's important that it be housed, or attached to, or adjacent to—

Mr. Paul Davidson: —or linked to a post-secondary environment.

Mr. Frank Baylis: And it should be physically, because you want interaction.

Mr. Paul Davidson: You want that close interaction.

I've talked about DMZ right down at Yonge and Dundas; or SFU's centre, which is opening later this month right in Harbour Centre in Vancouver; or District 3, in the core of economic activity, because you want to have that mix, that sandbox, if you will, and it's generating results.

I'll just make an international comparison. SFU and Ryerson have now opened one in Mumbai at the Mumbai stock exchange.

Mr. Frank Baylis: I'm going to pass it over now to Majid Jowhari.

Mr. Majid Jowhari: Thank you. I couldn't have asked for a better lead-in.

I really want to talk about clusters, and I want to talk about innovation. In certain areas that we may not be focusing on here, we have the skill set that we could use to partner internationally, especially somewhere like India or China, which would not only position us to be able to provide services, such as innovation services or research services, but also give us access to the broader market. What are universities and colleges doing on that front?

● (1705)

Mr. Paul Davidson: In that case, just to carry on with SFU and Ryerson in Mumbai.... It is located at the Mumbai stock exchange, and it is students, intellectual property lawyers, venture capital, and the stock exchange all in close collaboration. It has expanded three times since it was opened 18 months ago. There is a similar one in Israel. There is a similar one in Johannesburg, tied into the mining sector.

Mr. Majid Jowhari: Can I quickly summarize? Is it fair to say that universities are looking beyond the clusters, that they show a strength, and that they are looking at clusters globally, where we could be a player?

Mr. Paul Davidson: I will just say that universities are unleveraged assets in the global marketplace.

Mr. Majid Jowhari: Great.

The Chair: Mr. Longfield.

Mr. Lloyd Longfield: This fantastic conversation this afternoon, is this happening outside of these walls? Are you doing this collaboration with the colleges, the institutes, and the universities?

Ms. Christine Trauttmansdorff: Every day.

Mr. Lloyd Longfield: I graduated in 1980, as a mechanical engineering technologist. I learned moving part logic, and then fluidics. Then I had to learn computers. Then I had to learn wireless.

I think a parting word I would say is to make sure you are covering the basics, because you don't know what you are going to need in five years' time.

Then you become a member of Parliament. That is your punishment for not supporting your college or whatever. I don't know what it is.

The Chair: You have about 50 seconds.

Mr. Lloyd Longfield: That partnership is really critical, and we need to know that for our study, so if we have a problem or a manufacturer has a problem, there is a network to tap into that we can direct them to.

Ms. Christine Trauttmansdorff: I don't know how familiar you are with the Winnipeg area and Red River College. That is a great example of a cluster in action.

The movement of people around business, the university, and the two colleges in that area—Red River College and MITT.... When you talk to those people, it is part of their daily life, and I think that is true in cities across the country.

Mr. Lloyd Longfield: I know. It is prairie people.

The Chair: That's good. Thank you very much.

Mr. Lobb, you have seven minutes.

Mr. Ben Lobb (Huron—Bruce, CPC): Thank you.

I think the most shocking thing I have heard so far today was the year in which Mr. Longfield graduated from university. I never would have guessed that. This coming from a guy who.... Somebody thought I was a grandpa yesterday, so there you go.

My first question is for Paul. The question I have for you is on the number of openings in a certain field or specialization and the price point for tuition.

I am going to give you the example of teachers. I know this is a manufacturing study, but there are parallels here. For over a decade in Ontario, which is the province I come from, there were at least twice as many or five times as many teaching spots available for the number of teachers that were retiring. Now we have a massive surplus of teachers.

Do we need to take another look at how many openings there are for engineering and how many openings we have for arts programs, and try to encourage people to head into areas where there is going to be demand and high-paying jobs?

I want to hear your thoughts on that, specifically from the university standpoint.

Mr. Paul Davidson: Better labour market information will make a huge difference for everyone. That is the first point.

The second point is....

Mr. Ben Lobb: I am sorry to interrupt you. Just on that point, I would be shocked if there is any faculty in this country that doesn't know what is going on. Any people in charge of the university have to understand. Maybe you need some empirical data to back up your decision, but at the same time, when you read a story like the one in.... I will use the example of the *London Free Press*, where it went on for a decade.

How quickly can you pivot and make it not 10 or 15 years, but three or four years?

● (1710)

Mr. Paul Davidson: That is a great example. Frankly, the Government of Ontario was providing incentives to universities to increase the number of places for students to study education, and universities responded, because the government asked them to respond. That is why I say, be very careful what you ask us to deliver, because we will over-deliver.

Your second question was with regard to....

Mr. Ben Lobb: Tuition....

Mr. Paul Davidson: I want to come back to the question of what people should be studying, engineering or arts.

Watch for the data coming out from U of O in the next few weeks, because what it will show is that 90% of graduates are earning income within six months of graduation, and 80% of that is within their field of study.

We have a shortage of talent across the spectrum in this economy, and to pit arts students against engineering students is doing a disservice to Canada's economy.

Mr. Ben Lobb: Yes, and that's not what I'm trying to come off as, and that's not where the root of my question was. My point is that we hear from manufacturers. We hear from other businesses and industries that they need workers. They need skilled workers, engineers, tradespeople, on and on. We hear this every day. Yet the price of tuition for an engineering student is almost double what it is for an arts student. To me, it should be the reverse, or at least it should be equal.

Mr. Paul Davidson: The cost of delivering an engineering program is much more expensive than it is to deliver an arts program.

Mr. Ben Lobb: Fair enough, fair enough, I wouldn't argue with that. But I would also add that we need lots of engineers, we are short of engineers. We are importing engineers across the field.

Mr. Paul Davidson: Again, it's very specific, it's very sectoral. That's why the evidence is helpful to bring to bear. Again, I was not involved in the community at that point, but we were told in the ITC sector that we needed a huge number of engineers to graduate right up until the 2000 bubble burst, and then we were over-producing for a period of time.

I'm a big believe in labour market information, but I don't want for a minute to say that we're all going to be like Kreskin and predict the future perfectly. What we need is capacity in this country to know where we are, to know where we're going, and be able to course-correct quickly. The labour market information will help us do that.

Mr. Ben Lobb: All right. We may agree on some things and disagree on others, I think, at this point.

My question now is for the colleges. I've talked to many businesses in my riding and other businesses throughout the nearly eight years I've represented my riding. I'll give you one example that is about specialty butchering and abattoir. Olds College in Alberta has a very focused program that is relevant to the needs of small abattoirs, butchers, etc.

I'm not talking about Cargill meats and a large assembly line. I'm talking about small town or neighbourhood butcher shops. There are very limited programs in this country that deal with these specialized areas, so it kind of goes back to what I asked Paul. When do colleges make the linkage that there are openings for specialized programs? When are we going to start to connect the dots here and offer a program in Ontario like Olds College has? I'll use Ontario as an example.

Ms. Christine Trauttmansdorff: MaryLynn is going to have some good local examples at Georgian, but in general I talked about the program advisory committees that are set up. Colleges have a pretty active labour market information system going in terms of their connections to programs. Because they were mandated originally to respond to local needs, they're setting their enrolment numbers based on what employers are telling them. They meet a couple of times a year. They're talking about curriculum, but they're also talking about demand and whether or not those local businesses and associations see things growing, shrinking or new areas growing —

Mr. Ben Lobb: Okay, then you would know better than me, but in the particular example I gave, I'm not so sure there's a college, other than maybe George Brown College, in this entire province that offers that. Certainly, over the last 15 years somebody must have made those connections, but they're not offering the courses.

Maybe it's that these small butcher shops and abattoirs don't have a big lobby to get their point across, but you only need to look in the job ads for all these positions that are available from one end of the province to the other. How do you make that, where you actually trigger a program like Olds?

Dr. MaryLynn West-Moynes: It's pretty interesting, because actually our provincial government is asking us for differentiation, not to repeat what everybody else is doing. For example, we happen to have the only marine cadet and pilot program and technologist program in Ontario, because that supplies the workforce. We have Canada's only automotive business dealers degree that teaches people how to manage an automotive dealership in Canada. I hear what you're saying—

● (1715)

Mr. Ben Lobb: I'm not going to be difficult here with you, and I think those programs are great. My area is the Port of Goderich, so we love the students you teach in that training.

My point is, how long does it take to actually create a course? Once they're going, that's great, but does it take 20 years to create an abattoir program?

Dr. MaryLynn West-Moynes: No, but it's the first time I've heard of it—

The Chair: Very briefly—

Dr. MaryLynn West-Moynes: —so I'm going to look into it. You never know, it might be a good program for Georgian.

Mr. Ben Lobb: Well, put it in Huron—Bruce.

Dr. MaryLynn West-Moynes: All right.

The Chair: Thank you very much.

Mr. Masse, you have seven minutes.

Mr. Brian Masse: Thank you, Mr. Chair.

The previous question that I asked was about formed credentials, and I'll let you have some thoughts on that. Then I have one last question after that.

I'll allow all three panellists to have a crack at it, if they like.

Dr. MaryLynn West-Moynes: Yes. It's a costly process, and I would say we don't have the resources to address it. I think it's a place where if Canada wanted to take a good look at how we could do this, it would be wise.

We know in Europe they have a Bologna accord, where there is an agreement between all the European countries about programs and their standards, and about how programs are assessed. People who get them can move throughout Europe and their boundaries. It can be done.

We have a huge job, and there's a lot of time that needs to be invested to ensure and protect the employers. When we say they are the same credentials then they have to be the same credentials. I think it's something worth looking at. It would be great for students and for transferability in Canada, but it's a costly thing to start.

Ms. Christine Trauttmansdorff: I know many colleges and institutes invest quite a bit in a one-on-one basis by working with each individual student to assess their prior learning and making sure they're going to be not spending time and money they don't have to.

The professional associations also play a role in this, in terms of acceptance, and it's not only the colleges that have an option to say yea or nay to the next person who comes in the door.

Mr. Paul Davidson: I was going to pick up on Christine's point. The focus needed on the regulated professionals, whether it's engineers, or doctors, or other highly skilled professionals, has to come through the regulated professions. That's where the challenge lies. Universities can help, and colleges can help, but—

Dr. MaryLynn West-Moynes: We can sign agreements, but if the professional bodies don't accept them them, we still have the same problem.

Mr. Brian Masse: Exactly. It seems to be, for the individuals who come to me as doctors, for example, it's difficult for them to find the correct pathway forward. I will even give an example. One of my close personal friends that I went to school with—I've known him since kindergarten—is now practising in the United States because the transfer of his medical degree—and he's at one of the best hospitals in the United States—is so costly. It's easier for him to have his family there and come back to Windsor all the time. He lives in the U.S., and he pays taxes in the U.S. He considered coming back to Canada, but in raising a family, and with all the different things, and the investment that he's made, it makes it more difficult for that individual.

I agree, it's not just a.... It also relates to our immigration policy and so forth. Expectations sold abroad, which are quite different when people get here, are fraudulent. In my opinion that fraudulent expectation crushes individuals. Now the next generation of that, their sons and daughters, are watching them not practice what they were back somewhere else because of mere red tape or other difficulties.

I'll be quick Mr. Chair.

I'm lucky to have the University of Windsor and St. Clair College in my riding. I'm familiar with lots of the innovation that takes place.

I'll end with one thing, to have all three of you to finish, and that's one of the reasons I've been asking about the sustainability of our system. It's more about AUTO21, for example, and fortunately Windsor being sunsetted for mere number reasons in terms of it only goes to 14, which is ridiculous in my opinion.

Aside from that, when you look at inventions and innovations in the past, such as potato chips, x-rays, Teflon, and all those things, they were accidental innovations. I'm a little concerned and want your final thoughts on whether there's space. Are we sometimes over-prescribing the development of innovation as opposed to the exploration that leads to innovation?

● (1720)

Dr. MaryLynn West-Moynes: Can I talk about potato chips for a minute? With Miss Vickie's—and I challenge most people who went to an entrepreneurial area—I know the women who was her mentor in Collingwood and who helped make what was just enough chips to sell in a church basement grow into a product that is now on every shelf in every Ontario grocery store. If you're not from Ontario, try them, because they're absolutely great.

She did not do that without support to grow a business and transform it into a large business. The flip to not having the space is that idea could have stayed in a church basement and never gone anywhere. We would all miss that wonderful experience of having that bag of chips.

Mr. Brian Masse: Well, my point on that example is that actually in the 1800s a chef was mad at one of his customers so he actually created the potato chip, which ended up being over-salted and so forth, but it became a hit.

My point is, are we stifling by over-prescription of these things sometimes?

Ms. Christine Trauttmansdorff: I think one of the big mitigating forces against over-prescribing is students. Students come and look at everything differently. You put them in a lab or expose them to technology, a machine, or an idea, and they're going to turn it on its head in an instant. They'll take us by surprise all the time, so the more they get that chance for hands-on experience, for tossing ideas around....

Paul talked about the multidisciplinary aspect, and I think that's a lot of what those incubators and hubs are all about, getting people from a whole lot of different disciplines, backgrounds, and work experience all together, trading ideas over a cup of coffee or a beer or whatever it is, and that's where those aha moments come from.

Mr. Paul Davidson: I will just say that I share your concern when people get too prescriptive, when they have a three-year horizon when they should be thinking about a 30-year horizon. We have to do both.

Again, disruption happens in 72 hours now, so we have to be able to work in multiple time sequences. I made the phrase in my remarks about letting discovery lead. It is about the creative instinct, it is about following your interests, and it is about serendipity. Many of the greatest inventions and greatest innovations in the world were not a result of a three-year results-based plan.

Mr. Brian Masse: No, exactly, and that's what makes me so sad about AUTO21.

The Chair: Thank you very much. Time is up.

I really would like to thank our guests for coming in today. I feel that I lost out because I never went to university and maybe I—

Mr. Paul Davidson: It's early yet.

The Chair: It's early; I could sign up now.

Thank you very much for attending.

We're going to take a quick two-minute recess. We have a couple of housekeeping items to take care of and then we're good to go.

The meeting is suspended.

[*Proceedings continue in camera*]