



Aerospace Industries
Association of Canada

L'Association des industries
aérospatiales du Canada

**Aerospace Industries Association of Canada
Replies to Consultation Questions**
**Presented to the Expert Panel on Review of Federal Support to
Research & Development**

February 2011

www.aiac.ca

Summary of Answers to Consultation Questions and Recommendations to the Panel

The following is a summary of answers gathered from the AIAC membership following a consultation of its broad membership. It contains input from aeronautics and space companies and includes answers from small businesses. Our recommendations consist of modifications to existing R&D instruments such as SADI and the SR&ED tax credit, and highlight an imminent need to fund Technology Demonstrators to ensure that the Canadian aerospace industry's competitiveness is maintained and maximized. The success of our industry is unequivocally based on strong partnerships among governments, industry, and academia. Several programs and institutions are therefore also crucial to our industry's competitiveness. These include the NRC's Institute for Aerospace Research, NRC-IRAP and business-led Centers of Excellence. Suggestions for improvements to these programs are also included in this paper. Lastly, to ensure consistency and complementarity of federal measures, AIAC asserts that aerospace should be included in NSERC's strategic areas and that means be given to Precarn to increase its support for aerospace related ICTs .

Question 1: In order to reduce Canada's productivity gap and encourage the commercialization of new technologies, AIAC recommends the following:

- Make **intellectual property (IP)** protection expenses involved in eligible R&D projects eligible for the SR&ED tax credit;
- Improve funding to **Experimental Development** and transition to **Production Phases** of R&D such as **Technology Demonstrators Projects** which are expensive and risky by nature but crucial to the future and sustained growth of most R&D-based industries such as aerospace. As such, and in order to level the playing field between Canada and other regions such as the EU, AIAC would like to see the "funding of **Technology Demonstration** projects" as explained in AIAC's Future Major Platforms Report of June 2008;
- Create incentives for **Collaborative International R&D Projects**. In order to develop international R&D Partnerships, such programs could provide funding of off-shore operations which would also help to leverage funding available through international programs;
- Also, **support for commercialization should include costs related to new product introduction (NPI)** such as tooling, processes, training, etc.
- One of the greatest challenges facing small, R&D focused companies is the commercialization phase of their research programs. The government should **expand the definition of R&D to include activities that support the development, customization, manufacturing process innovation and commercialization** after certification of new products.

Question 2: Increased productivity is not the only consequence of innovation. Other elements include a strategic and sustainable product portfolio, a safer, more ergonomic workplace and increased opportunities for university and college graduates

Question 3: Aerospace technologies and services do not allow for a margin of error. The continual pressure to produce safe and cost-effective solutions means that R&D cycles are longer and more risky in aerospace than they are in most other industries. The following changes and additions to existing programs could improve their efficiency:

The Strategic Aerospace and Defence Initiative (SADI): AIAC would like to see a shift towards a more flexible program in which more of the risk is taken into account – particularly in the repayments terms and conditions of the program including:

- A modification of the SADI contract terms to achieve the desired accounting treatment (i.e. report benefit on income statement) while meeting the stated risk-sharing objectives of the program. Implementing this

recommendation would also make the SADI program more attractive to multinationals with Canadian subsidiaries.

- The expansion of the definition of “eligible expenditures” to include manufacturing process improvements and pre-production phases of development. Investments in these areas are critical to remain competitive in the global market, and would be of particular benefit to SMEs.
- A modification of the SADI contract terms to allow for the start of repayments to begin after a minimum number of years or until the project becomes cash positive.
- Since space technologies are not submitted to NAFTA and WTO rules, AIAC recommends that specific, more flexible terms and conditions be applied to space related projects.

Industrial & Regional Benefits (IRB): Although not directly addressed in the Consultation Paper, IRBs are a considerable source of funds with the potential to be used to develop new technologies. The sixth element of the recently announced changes to the IRB policy calls for the eligibility of IRB funding for venture capital investment. **AIAC approves of the use of IRBs to provide a reliable source of venture capital to Canadian firms – particularly SMEs – as well as to specialized VC firms.**

Loan Guarantee Program for small business: Small companies agree that the government needs to consider the development of a program that incentivizes bank lending to small R&D companies with reasonable credit through a Loan Guarantee program because venture capital is not the answer for all small companies.

Question 4: In order for aerospace companies to compete and make investments in capability and productivity, they must be able to develop their own technology, obtain exclusive rights to exploit a given technology for a sufficiently long period, and/or reapply technologies developed in other sectors.. Limiting factors include: a limited ability to recover R&D Investment; a lack of risk-sharing partnerships; a lack of investment availability for manufacturing technology and manufacturing readiness; intellectual property (IP) practices that are an obstacle to performing R&D activities in Canada; and a lack of incentive for high-technology readiness-level research and **technology demonstrators** (see question 13).

AIAC believes that a system that allows tax credits to be converted into cash would be favorable to increase R&D investments. Improvements to SADI, as expressed above, would also improve R&D performance in Canada, both in quality and quantity.

For small companies, current funding and commercialization rules limit R&D activity because: 1) their financial and human resource capacities limit their ability to invest in R&D and 2) small companies are also limited in their marketing coverage as finding the first customers for new ideas is difficult. First customers are generally more hesitant to commit to a smaller, lesser-known organization.

Moreover, most R&D programs are seen as being directed at the early stages of R&D and are often inaccessible to SMEs. There is therefore a perceived lack of support for product commercialization and an obvious need to stimulate and reward the product of their commercialization in a fashion that matches the realities of small aerospace companies.

Question 5: The aerospace industry’s success is based on a strong partnership between government, industry and academia. As such, the Canadian post-secondary education system is perceived as having the right capacities to partner effectively with industry. Some challenges exist, however, namely: 1) **Intellectual Property** in the context of collaborative networks often remains at the university level. Solutions could include pre-established IP agreements (e.g. CRIAQ) and allow for creative ideas to come from businesses, other partners and co-inventors. The two sectors must work together to find a solution agreeable to both parties and: 2) the **alignment of research objectives** among collaborators can also be a challenge. Universities should be provided with sufficient funding to enhance the activities of their university-industry collaboration offices.

NSERC's Strategic Grant program is a very valuable tool for long-term, high-risk research. However, aerospace is not among the strategic areas defined by NSERC. **AIAC would like to see aerospace become a recognized strategic area for NSERC and see this program made available to aerospace research projects.** Also, although still a fairly new concept, **business-led Centers of Excellence such as the Green Aviation Research and Development Network** are enthusiastically encouraged by AIAC.

Question 6: Unlike that of several other nations, the Government of Canada's procurement practices are generally not seen by AIAC member companies as favoring domestic firms. **AIAC strongly believes that Canada should adopt of a Defence Industrial Base plan as part of a coherent Aerospace Policy Framework** as defence represents less than 20 per cent of the aerospace sector. Through this plan, the government would ideally involve industry at an early stage of procurement, so that Canadian industry can focus its efforts on developing technologies that will address the anticipated future needs of the Department of National Defence. **This principle also applies to other federal departments that have needs that can be filled by Canadian Industry at a competitive cost.**

Also, while the space sector derives only 14% of its domestic revenues from government, these sales are absolutely vital for the generation of new technologies and applications. No other entity can serve this role and without it, the ability for many companies to sustain operations would be challenged. **It is therefore critically important that the government maintains a strong commitment to funding a robust space program.**

Small businesses believe that the government should play a major role in being a first customer for the output of R&D in Canada. The new **Canadian Innovation Commercialization Program** is a step in the right direction. **AIAC would be favorable to a timely expansion of the program.** In addition, the program should separate funding allocation between small companies and medium companies.

Question 7: Access to the highly-skilled workforce is also crucial to the competitiveness of the industry. AIAC agrees with Aero Montréal's suggested measures and actions to develop the talents necessary to ensure our industry's competitiveness. These measures¹ range from university-industry exchanges to shared training programs for "in company" aerospace training; to a better alignment of programs with the industry's current and future needs; to the improvement of training of engineers by emphasizing specific disciplines both in universities and companies and to the identification of the various engineer profiles and specializations. These classifications should be made available to define academic programs and reflect the industry's needs.

Question 8: The following programs are seen as valuable tools for training and hiring university-level students and post-graduates, but AIAC members have made additional suggestions for a number of the programs. Valuable programs include: **Consortium de Recherche et d'Innovation en Aérospatiale au Québec (CRIAQ)** research programs (no suggested changes); **NSERC Industrial Undergraduate Student Research Program:** allocate more funding and increase the limit of 15 students for larger companies. After completion of their third year of internship, many of the students are hired; Quebec's "**Bourses en Milieu de Pratique**" (BMP): allow students (in Master and PhD programs) to complete programs on a topic selected by industry. Many of the students find permanent employment with their companies since they have solved a company's problem and made a valuable contribution to the organization; **Undergraduate Institutes such as Concordia/CIADI, ETS/ICIA, Poly/IICAP, McGill/MIAE and Ryerson/RIADI:** allow engineering students to work on specific industry projects and present a public report on their findings at the end of the semester; **Industrial Research Fellowship** program for postdoctoral fellows (no suggested changes) and; **Industrial Postgraduates program** through university collaboration. Sabbatical exchanges between academia and industry should also, in our view, be encouraged and partially funded to develop a better understanding of each sector's respective realities and needs.

Question 9: The following programs are appreciated by the industry, but modifications could make them more efficient as discussed above and below:

¹ Aéro Montréal, Summit on Training of Engineers and Specialists for the Aerospace Industry, April 2009.

- The **SR&ED tax incentive** is seen by AIAC member companies as a very valuable tool to help drive investments in R&D. But the program has some restrictions that prevent it from being more effective as described in question 10.
- **SADI** is an important government funding vehicle for assisting Canadian aerospace companies in the development of new technologies and products but, as explained in question 3, it has some limitations. Among others, the program is not accessible to SMEs. It should also be noted that some intellectual property (IP) clauses are becoming all too prevalent and this limits the ability to innovate. **AIAC therefore recommends that the SADI template agreement be modified to ease restrictions on IP ownership.**
- **NRC Industrial Research Assistance Program (IRAP)** is perceived by some small companies as focusing on the front end of R&D and, although designed for SMEs, is also often seen as being too cumbersome for smaller companies.

Research Chairs, Cooperative Research grants and Business Led Networks of Centers of Excellence and are seen as useful and generally satisfactory programs by industry. Also, the **NRC Institute for Aerospace Research (NRC Aerospace)** has been a trusted partner and mentor to small R&D companies for more than 70 years. Recent reductions in funding allocation - coming on top of previous budget cuts - will do severe damage to much of the carefully nurtured expertise available to small companies in the aerospace industry from this organization. **If these cuts are not reversed in the very near future, much of the gains sought in this presentation will be overturned by the loss of access to one of the few friends of small R&D companies in Canada.** High technology small businesses need easily accessible and affordable test facilities to assist in their R&D efforts. **AIAC would like to see an increase in funding allocated to NRC Aerospace.**

Precarn is seen by AIAC as an effective complement to SR&ED and IRAP for the funding of technologies in areas such as avionics, manufacturing systems, maintenance systems, etc. This model is consistent, among others, with the need to develop technology demonstrators, and support strategic collaborative R&D in order to position Canadian SME's on future major platforms. **As such, AIAC recommends an increase in Precarn's overall funding in order to allow for additional "aerospace-dedicated" funding, and consequently substantially increase the level of ICT R&D and commercialization performed by aerospace in those areas.**

Question 10: a) The SR&ED tax credit program is a valuable tool to encourage investment in R&D. However, the program has some limitations applicable to large companies that make it less effective from a cash flow perspective, reducing the positive impact this program could have on R&D investment decisions. We recommend that the following rules limiting the use of SR&ED tax credits be revisited in order to increase the ability to cash in on the benefits: **1) The tax credit is limited to the amount of income tax payable in the current year; 2) In the event where the tax credit is higher than the income tax, the corporation can carry it back (up to 3 years) only if it had income tax payable in those previous years; 3) The tax credit can be used in the next 20 years only against the future income tax payable.**

b) For small business, **the application process needs to be streamlined for small companies. The measures should be expanded to include commercialization. Shorter recovery time would also make the measures more suitable from a cash-flow management perspective.**

c) AIAC recommends the following additional changes to the SR&ED tax credit:

- A refundable portion of federal tax credits – similar to what is currently offered in Quebec – be introduced in the context of the SR&ED tax credit and that the credits be allowed to be applied to taxes other than income taxes. Making SR&ED tax credits refundable or creditable against other non-income taxes would make the Canadian regime much more attractive to multinationals.
- Access to federal tax credits as refundable in cash be allowed within certain limits.

- An approach like that of Quebec (of not taxing claimed ITCs) be used to leave companies with additional cash flows to re-invest in the business.
- An increase in the amount of R&D costs outside of Canada that are eligible for tax credits. Canadians accrue the benefits of the intellectual property and the learning from Canadian-led projects. If the project is funded and led from Canada, the intellectual property and learning will reside in Canada and Canadians can exploit the results.
- The cost to protect the R&D output should also be considered as an eligible expense.

Question 11: A streamlining and aligning of federal and provincial programs would lighten administrative burdens and costs, especially for SMEs. Also, within the federal government itself, a greater harmonization of the processes for various programs could be envisaged. Moreover, an expansion of the Small Business Advocacy Program initiated by the Office of small and medium enterprises (OSME) at Public Works and Government Services Canada (PWGSC) is recommended. OSME could facilitate meetings between government departments and small companies in an attempt to truly understand the issues of small businesses.

Question 12: The government should accept that there will always be a probability of failure in any given innovative process. Reducing the risk to zero implies that several potentially successful ideas will never be implemented. The tools and programs should reflect this fact. Moreover, reducing the paperwork, administrative burden and the need for companies to hire experts to demystify and assist in the management of program applications, administration and auditing would be extremely beneficial. Small companies believe that the government should consider developing a collaborative R&D program and encourage the utilization of Industrial Regional Benefit (IRB) programs to stimulate R&D.

Question 13: The US and the EU are investing heavily in the development of aerospace technologies. In order for the Canadian aerospace industry to remain competitive and to take advantage of the outstanding forecasted growth in demand for civil aircraft, Canada needs to do the same on an urgent basis. Development of technologies from university laboratories (Technology Readiness Levels TRL 1-3) to the stage where they are funded by SADI is not properly supported in Canada. This leads to reduced innovation, as key technologies are not mature enough to be exploited in commercial developments. There is therefore an urgent need for non-refundable funds for **technology demonstrators**.

Question 14: The Government of Quebec has been proactively supporting its aerospace industry. Several lessons and best practices can be drawn from Quebec: **SR&ED** tax credits are refundable independently of a firm having income tax to pay or not. Bona fide refundable tax credits are available for private partnership pre-competitive research; **Quebec projets mobilisateurs**: five non-refundable technology demonstrators (Avion plus écologique) are managed by an industry consortium, with a non-refundable budget allocated to develop new green and environmental projects. This provide incentives for aerospace companies to work on new and future technologies and reduce the risk of development costs; **Consortium de recherche et d'innovation en aérospatiale au Québec** (CRIAQ) is a successful industry-led collaborative aerospace research consortium and; **Investissement Québec** (IQ) which, by combining the mandates of a financial institution and an economic development agency, provides a wide array of programs and measures designed for growing strategic sectors such as aerospace. Also, the **Economic Partnership Agreement between Western Economic Diversification and the Province of Manitoba** provides flexible funding to industry priority projects. The reporting level is seen as being reasonable, the program is well managed, and funding can be applied to higher TRL levels of R&D.

Question 15: Innovation is a process. It starts with an idea which is then successfully commercialized. There is no innovation without research and development. In order to generate growth, create jobs and exports, there is a need to “push” the results of R&D to their full extent: the successful commercialization of the products of R&D. Because of long R&D cycles and the fact that aerospace leaves no room for error, this process can be considerably longer for the aerospace industry than for most other sectors. As such, the industry requires reliable, efficient end complementary aerospace R&D instruments.

APPENDIX

Background Information & Complete Replies to Consultation Questions

About AIAC

AIAC is the national voice of Canada’s aerospace industry. Our mission is to understand, build consensus and provide leadership on aerospace policy issues impacting the competitiveness of the industry. We also work to increase Canada’s profile on the world stage by communicating our air and space accomplishments and by promoting Canadian aerospace companies in foreign markets.

The Canadian Aerospace Industry

As the world’s fifth largest aerospace industry, Canada’s aerospace sector generated more than \$22 billion and employed nearly 80,000 Canadians in 2009 and more than 150,000 workers when indirect and induced employment is included. Nearly eighty percent of Canadian aerospace products were exported. Eighty three percent of our revenues were generated from the civil (or commercial) sector while 17 percent came from the military (or defence) sector.

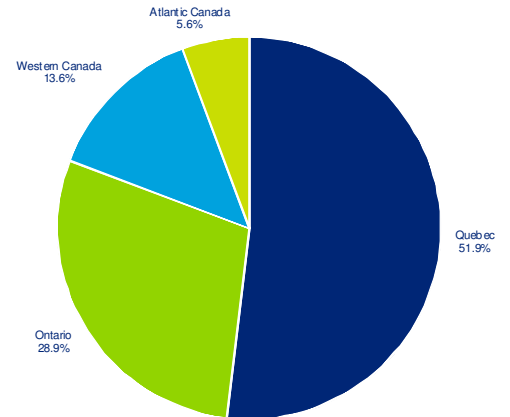


Figure 1 Regional distribution of the revenues of the Canadian aerospace industry

The revenues of the Canadian aerospace industry are generated all across the nation. Although Montréal is the third-largest aerospace center in the world, a significant portion of the revenues were generated in Western Canada, in Ontario and in Atlantic Canada as shown in Figure 1.

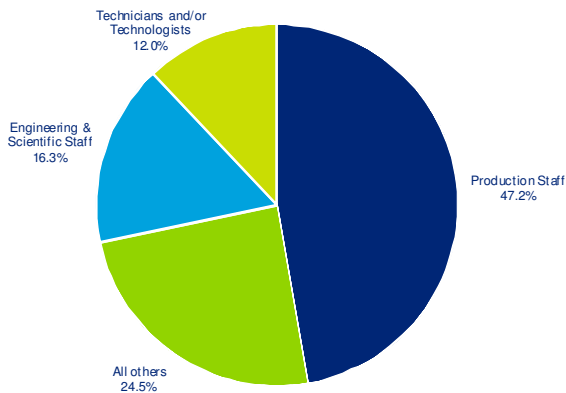


Figure 2 Types of Employment of the Canadian aerospace industry

In 2009, the aerospace industry’s contribution to Canadian GDP reached \$17.5 billion while \$1.5 billion was paid in taxes². Investments in R&D and Capital reached \$1.9 billion. Of this amount, \$1.4 was exclusively spent on R&D, making aerospace one of Canada’s largest investors in such activities.

The Canadian aerospace labor force consists of engineers and engineering staff, technicians and technologists and production staff as shown in Figure 2. Wages are generally higher than the manufacturing sector average. In 2008, the average wage for aerospace part and manufacturing reached 67,200³.

World demand for aircraft is expected to reach a value of \$3.2 Trillion (USD) over the next 20 years⁴ for the production of more than 30,000 aircraft. This represents an outstanding opportunity for growth. In order to capture this growth, however, new technologies that will allow Canadian industry to maximize its presence on future platforms must be developed and successfully commercialized.

² Includes corporate and income taxes at the provincial and federal levels. Deloitte & Touche, The Strategic and Economic Impact of the Canadian Industry, Impact of the Canadian Aerospace Industry, p. 27. October 2010.

³ Statistics Canada, NAICS 336410

⁴ Boeing Current Market Outlook 2010-2029 and Airbus Global Market Forecast 2010-2029.

The Government's decision to conduct a review of R&D Programs is both timely and judicious from a Canadian aerospace industry perspective. AIAC trusts that the measures and improvements to be brought to the programs will result in an increased competitiveness of the sector. This will, in turn, allow Canada to take advantage of the outstanding opportunities for growth of the global aerospace market and the creation of high-quality jobs that will arise as a result.

Our Approach

This Paper is the product of a consultation conducted among the broad membership of AIAC. Its content therefore reflects the collective opinions of the member companies that took the time to provide replies to the 15 consultation questions included in *The Expert Panel Consultation Paper*. Its content reflects the perspective of the aeronautics and space sectors and includes, for most questions, the perspective of small companies which not only represent an important AIAC constituency, but are also important contributors to the Canadian economy. These companies generally include fewer than 100 employees and average gross revenues over the past 5 years of less than \$25M per year, on average. Note that this group should not be confused with medium companies, large companies or SMEs. AIAC recognizes that the characteristics and needs of small aerospace companies are different from these other groups and their needs are reflected in our responses.

Answers to Consultation Questions

- 1 -

In addition to the R&D activity defined by the OECD, should government be funding other business activities related to the commercialization of R&D? If so, what and why?

Economic benefits result from the commercial exploitation of the product of R&D. AIAC believes that government must create incentives that result in the transfer of the results from the *research entity* to a *commercial entity*.

As such, and in order to reduce Canada's productivity gap and encourage the commercialization of new technologies, AIAC recommends the following:

- Make **intellectual property (IP)** protection expenses involved in eligible R&D projects eligible for the R&D tax credit;
- Improve funding to the **Experimental Development** and transition to **Production Phases** of R&D such as **Technology Demonstrators Projects** which are expensive and risky by nature but crucial to the future and sustained growth of most R&D-based industries such as aerospace. As such, and in order to level the playing field between Canada and other regions such as the EU, AIAC would like to see the "funding of **Collaborative Technology Demonstration** projects" as explained in AIAC's Future Major Platforms Report of June 2008. (See question 13);
- Create incentives for **Collaborative International R&D Projects**. In order to develop international R&D Partnerships, programs could provide funding of off-shore operations which would also help to leverage funding available through international programs;
- Also, support for commercialization should include costs related to new product introduction (NPI) such as tooling, processes, training, etc.

Small Business Perspective:

The government of Canada should expand the definition of R&D to include activities that support the development, customization, manufacturing process innovation and commercialization after certification of new products. The current definitions restrict government support to the phases of development which are often the least capital and cash intensive. This leaves a significant gap – especially for small companies for which cash flow is often a dominant concern. Furthermore, the current definition ignores innovation related to manufacturing technology.

Government support for commercialization should, however, be clearly separated from government support for R&D, and the terms and conditions of government support for commercialization should reasonably provide for a reward for both the government and the company.

In addition the following comment from the Consultation Paper requires feedback.

“The justification for government intervention is strongest in the case of basic research activities. The strength of the justification declines as research activities progress through the various stages leading to commercialization...The benefits of these successive activities are progressively more likely to be captured by the R&D performer, and there is correspondingly less likelihood of “spill-over” to the larger economy.”

The notion that government support is most justified for early stage R&D is quite defensible because such research is more likely to have a broad impact. However, this comment implies that any benefit captured by a Canadian company will not spill over into the larger economy. This thinking is questionable. A benefit captured by any company in Canada is, in turn, a benefit captured for the whole nation. The mindset of this comment amounts to government policy that supports private individuals at university and other research institutions but not the commercialization of new ideas by private corporations. The OECD definition stresses that innovation requires implementation. For the government to provide effective programs that encourage innovation, it must provide support for all phases –including the final implementation stages which, in turn, lead to commercialization.

One of the greatest challenges facing small, R&D focused companies is the commercialization phase of their research programs. Current government programs somewhat adequately address early stage research, but small companies lack a suitable direct support program from government to assist in the commercialization of their R&D efforts.

- 2 -

Does Figure 2, the model of business innovation, capture the key structural factors and inputs to innovation? If not, what is missing?

Increased productivity is not the only consequence of innovation. Other elements include:

- A strategic and sustainable product portfolio
- A safer, more ergonomic workplace
- Increased opportunities for university and college graduates

- 3 -

Regarding capital, is there an adequate supply of risk capital for Canadian firms at each stage of their growth (start-up, small, medium, large)? If not, why not? Where returns on investments are low, what are the reasons and potential solutions?

Aerospace technologies and services do not allow for a margin of error. The continual pressures to produce safe and cost-effective solutions mean that R&D cycles are longer and more risky for aerospace than they are for most other industries. Moreover, ever-changing market conditions and economic fluctuations also increase the inherent risk of aerospace related projects. Changes to existing instruments could improve their efficiency.

The Strategic Aerospace and Defence Initiative

Past programs, such as the Defence Industry Development Program (DIPP) and Technology Partnerships Canada (TPC), both took elements of risk into account when evaluating the performance of projects. The new Strategic Aerospace and Defence Initiative (SADI), however, doesn't take "risk" into account. The contract terms have become more onerous and the definition of eligible expenses has narrowed, reducing the effectiveness of the program. This puts Canadian companies at a disadvantage compared to competitors across the world.

AIAC would like to see a shift towards a more flexible program in which more of the risk is taken into account – particularly in the repayment terms and conditions of the program.

The vast majority of companies cannot report the benefits of SADI in their income statements. The level of company profitability, however, is an important measure when making investment decisions. These contract terms reduce the benefit of the SADI program and can lead to unfavourable R&D investment decisions in Canada. **AIAC would like to see a modification of the SADI contract terms to achieve the desired accounting treatment while meeting the stated risk-sharing objectives of the program. Implementing this recommendation would also make the SADI program more attractive to multinationals with Canadian subsidiaries.**

Eligible activities under the SADI program consist of industrial research and pre-competitive development, both targeting the application of technology to a product or need. Equally important is the investment aerospace companies must make before entry into production to increase productivity levels and reduce manufacturing costs in a very competitive global supply chain. These pre-production expenditures may not be eligible under the existing terms of the SADI program. **As such, AIAC would like to see the definition of "eligible expenditures" expanded to include manufacturing process improvements and pre-production phases of development. Investments in these areas are critical to remain competitive in the global market, and would be of particular benefit to SMEs.**

Also, under the terms of the SADI program, repayments begin immediately after the end of development. Experience shows that the period of time following development remains a cash-intensive period as the product or technology is moved out of the lab and into the market. Placing further calls on cash during this period impairs the ability of companies – SMEs in particular – to successfully transition the R&D project to a commercial product. **AIAC would like to see a modification of the SADI contract terms to allow for the start of repayments to begin after a minimum number of years or until the project becomes cash positive.**

It is also important to note that the SADI program is geared towards the aeronautics sector and the engineering and development processes related to aircraft and their components, while ensuring compliance with WTO and NAFTA rules. The program is well designed for this sector, which is prohibited from receiving direct subsidies from national governments. However, it is still a very important funding source for the space sector, but since the space sector has a vastly different commercialization process and is not subject to WTO and NAFTA compliance, its rules penalize the space sector. Space companies are therefore put at a disadvantage with foreign competitors when we have to comply with these SADI rules. **AIAC recommends that specific, more flexible terms and conditions be applied to space related projects.**

See also intellectual consideration of SADI at question 9.

Industrial & Regional Benefits (IRB)

Although not directly addressed in the Consultation Paper, IRBs are a considerable source of funds with the potential to be used to develop new technologies. The sixth element of the recently announced changes to the Industrial & Regional Benefits (IRB) policy calls for the eligibility of IRB funding for venture capital investment. AIAC approves of the use of IRBs to provide a reliable source of venture capital to Canadian firms – particularly SMEs – as well as to specialized VC firms.

Small Business Perspective:

Long R&D cycles also impact the level of risk to aerospace SMEs. Indeed, it is almost impossible for such firms to produce the information currently needed to access venture funding such as a “five-year” sale forecast for disruptive technologies.

With respect to financing, the government needs to consider the development of a program that incentivizes bank lending to small R&D companies with reasonable credit through a **Loan Guarantee program** because venture capital is not the answer for all small companies.

- 4 -

Regarding ideas and knowledge, do you believe it is important for Canadian firms to perform their own R&D and, if so, what do you believe are the key factors that have been limiting business R&D activity in Canada?

In order for aerospace companies to compete and make investments in capability and productivity, they must be able to develop their own technology, obtain exclusive rights to exploit a given technology for a sufficiently long period, and/or reapply technologies developed in other sectors. However, several limiting factors exist. These include:

- Limited ability to recover R&D Investment
- Lack of risk-sharing partnerships
- Lack of investment availability for manufacturing technology and manufacturing readiness
- Intellectual property practices can be obstacles to performing R&D activities in Canada
- Lack of incentive for high-technology readiness-level research and **technology demonstrators** (see question 13).

As expressed in more detail in the reply to question 10, AIAC believes that a system that allows tax credits to be converted into cash would be favorable to increase R&D investments.

Improvements to SADI, as expressed above, would also improve R&D performance in Canada, both in quality and quantity.

Small Business Perspective:

It is important for Canadian firms to perform their own R&D. This is especially true for small companies attempting to grow and expand into new markets. It appears to small companies that many R&D incentives are misdirected in that they aim to provide more resources to organizations that already have significant resources but lack the will or means to deploy them on R&D. This approach leaves out companies (usually small companies) that have the will to do the R&D but lack the financial means. In other words, current R&D programs are focused on increasing existing R&D activity as opposed to assisting in the creation of new R&D participants.

For small companies, there are two key factors that limit R&D activity: funding and commercialization.

1. Investing in R&D always presents risk. Small companies are innovative and have the ability to make decisions quickly. However, their financial and human resource capacities limit their ability to invest in R&D.
2. Small companies are also limited in their marketing coverage. Finding the first customers for new ideas, especially if they are not completely developed, is difficult. In addition, first customers are more hesitant to commit to a smaller, lesser-known organization.

Moreover, most R&D programs are directed at the early stages of R&D and are often inaccessible to SMEs. Pay-off for R&D investments, productivity gains and growth occurs at the end of the R&D cycle (i.e. the commercialization phase) and not at the beginning. From a small business perspective, there is

a lack of support for product commercialization and an obvious need to stimulate and reward the product of their commercialization in a fashion that matches their reality.

- 5 -

Regarding networks, collaborations and linkages, what are the main impediments to successful business-university or business-college partnerships? Does the postsecondary education system have the right capacity, approaches, and policies for effective partnerships with business?

The aerospace industry's success is based on a strong partnership between government, industry and academia. As such, the Canadian post-secondary education system is perceived as having the right capacities to partner effectively with industry. Some challenges exist, however, namely:

- **Intellectual Property** in the context of collaborative networks, IP often remains at the university level and collaboration is often seen as a one-way street. Solutions could include pre-established IP agreements (e.g. CRIAQ) and allow for creative ideas to come from businesses, other partners and co-inventors. The two sectors must work together to find a solution agreeable to both parties.
- The **alignment of research objectives** among collaborators can also be a challenge. Universities should be provided with sufficient funding to enhance the activities of their university-industry collaboration offices.

NSERC's Strategic Grant program is a very valuable tool for long-term high-risk research. However, aerospace is not among the strategic areas defined by NSERC. **AIAC would like to see this program made available to aerospace projects.**

Examples of successful partnerships include the development of BlackBerry data transfer technology and of numerical methods commonly used in the aerospace industry.

Although still a fairly new concept, business-led Centers of Excellence such as the Green Aviation Research and Development Network are enthusiastically encouraged by AIAC.

- 6 -

Regarding the creation of demand for business innovation, what role, if any, do you believe that government should play in being a "first customer" for R&D investments in Canada?

The Government of Canada's procurement practices are generally not seen by AIAC member companies as favoring domestic firms. In several nations, governments are often the first customers for new technologies (i.e. major defence R&D in the United-States). AIAC strongly believes that Canada should do the same through the adoption of a Defence Industrial Base plan. This plan should be part of a coherent Aerospace Policy Framework as defence represents less than 20 per cent of the aerospace sector. This plan would involve industry at an early stage to develop technologies that will address the anticipated future needs of the Department of National Defence.

Advantages of such a "first customer" policy include:

- Job protection
- Initialization of the ROI system
- Demonstration of confidence in domestic industry by the government
- Placing Canadian industry on a competitive and fair global playing field since most other countries become "first customers" for their R&D investments
- Increased confidence within Canadian industry that R&D is encouraged and rewarded by the government
- Technologies can be leveraged for multiple applications

AIAC also believes that government acquisitions should target technologies that have a worldwide commercial potential.

Canada's space industry has a long track record of delivering innovation to the Canadian government, including the development of significant infrastructure systems such as communications satellites that serve the needs of Canadians. The space sector is intimately involved with governments at all levels, where the government is both a customer (and often, pivotally, "First Customer") and a partner through a wide array of interactions with essentially every program and vehicle for fostering R&D and competitiveness that exists at the provincial and federal government level. While the space sector derives only 14% of its domestic revenues from government, these sales are absolutely vital for the generation of new technologies and applications. No other entity can serve this role, and without it, the ability for many companies to sustain operations would be challenged. It is therefore critically important that the Canadian government maintain a strong commitment to funding a robust space program.

Small Business Perspective:

For most small companies involved in R&D, early sales are often the difference between successful product development and failure. Early sales also often determine whether small companies seek foreign investment at a stage prior to the realization of the true value of the technology. Many good Canadian ideas from small companies end up in the hands of foreign concerns which is neither beneficial to the company nor the country.

As such, the government should play a major role in being a first customer for the output of R&D in Canada. When small businesses know that the government is willing to act as an initial and possibly anchor customer, they gain the certainty they require to negotiate their way through the cash-intensive period of product introduction and market penetration. Furthermore, having a first customer is a significant enabler to promote their products elsewhere.

The Canadian Innovation Commercialization Program

The Office of Small Medium Enterprises (OSME) of Public Works and Government Services Canada (PWGSC) recently embarked on Phase I of their Canadian Innovation Commercialization Program (CICP) which aims to develop commercial partnerships between R&D focused SMEs and the federal government. Although it is too early to judge the success of this program, AIAC finds that the concept is excellent and would be favorable to a timely expansion of the program. In addition, the program should separate funding allocation between small companies and medium companies.

- 7 -

Regarding talent, is Canada producing sufficient numbers of graduates with the right skills to drive business innovation and productivity growth? If not, what changes are needed? Where demand for advanced skills is low, what are the reasons and what changes, if any, are needed?

AIAC agrees with Aero Montréal's suggested measures and actions to develop the talents necessary to ensure our industry's competitiveness. These measures⁵ include:

1. Encourage university-company and company-university exchanges by facilitating training through internships and the integration of professors into companies and joint research projects such as CIADI & RIADI (see -8- below);
2. Establish shared training programs that are recognized by all partners for "in company" aerospace training;
3. Develop concentrations in airborne systems, advanced materials/composites and environmental research;

⁵ Aéro Montréal, Summit on Training of Engineers and Specialists for the Aerospace Industry, April 2009.

4. Encourage more young people to consider a career in aerospace engineering by promoting aerospace in high-school;
5. Encourage more university students to continue their studies and ensure that the programs are aligned with the industry's current and future needs;
6. Improve the training of engineers by emphasizing systems integration and the management of multidisciplinary teams, both in universities and companies;
7. Identify the various engineer profiles and specializations and make this a classification available to define academic programs and reflect the industry's needs.

- 8 -

Can you describe whether and how your firm employs students currently enrolled in community colleges, polytechnics and universities, and what government measures could make it easier to work with students during their academic programs and to recruit them after their graduation?

Given the industry's strong focus on R&D, the aerospace industry employs university students – mostly future engineers – as interns. The following programs are valuable tools for training and hiring university-level students including post-graduates:

- **CRIAQ** research programs;
- **NSERC Industrial Undergraduate Student Research Program**: allocate more funding and increase the limit of 15 students for larger companies. After completion of their third year of internship, many of the students are hired;
- Quebec's "**Bourses en Milieu de Pratique**" (BMP): allow students (in Master and PhD programs) to complete programs on a topic selected by industry. Many of the students find permanent employment with their companies since they have solved a company's problem and made a valuable contribution to the organization;
- **Undergraduate Institutes such as Concordia/CIADI, ETS/ICIA, Poly/IICAP, McGill/MIAE and Ryerson/RIADI**, allow engineering students to work on specific industry projects and present a public report on their findings at the end of the semester;
- **Industrial Research Fellowship** program for postdoctoral fellows;
- **Industrial Postgraduates program** through university collaboration.

Sabbatical exchanges between academia and industry should also, in our view, be encouraged and partially funded to develop a better understanding of each sector's respective realities and needs.

- 9 -

With which federal programs supporting business or commercially oriented R&D in Canada do you have direct experience and knowledge? In your view:

a. Which of these programs are working, and why? b. Which programs are not working, and why not?

The following programs are appreciated by the industry, but modifications could make them more efficient as discussed above and below:

- The **SR&ED tax incentive** is seen by AIAC member companies as a very valuable tool to help drive investments in R&D. But the program has some restrictions that prevent it from being more effective. (See question 10)
- **SADI** is helpful to support R&D initiatives but has some limitations. (See question 3 for suggested improvements).

- **NRC Industrial Research Assistance Program (IRAP)** is perceived by some small companies as focusing on the front end of R&D and, although designed for SMEs, is also often seen as being too cumbersome for smaller companies (see below).

Several of our companies are also involved in **Research Chairs, cooperative research grants and Business Led Networks Centers of Excellence** and are generally satisfied with the results.

Intellectual property considerations of SADI

In many cases, the IP developed when partially or wholly funded by Canadian government funding is deemed to be the property of the Ministry or Canadian Government. This limits the free flow of this IP and “handcuffs” Canadian companies compared to their partners and competitors in other nations. Increasingly, new aerospace programs are developed as a collaborative effort between multiple partners across national borders – most noticeably by a small number of large Tier 1 and 2 OEMs and system providers.

This measure contrasts with the European Union treatment of IP, in which aerospace companies are actually encouraged to share IP amongst members and partners. This strategic difference puts Canadian companies and, in particular, subsidiaries of European parent companies, at a disadvantage compared to their partners in Europe.

Also, Canadian subsidiaries of large multi-nationals in the United States consider IP to be essential to the development of a long term sustainable advantage, and will resist any attempts to limit the free flow of IP between subsidiaries in Canada and other jurisdictions. There have been several recent examples of Canadian subsidiaries of US parent companies refusing to participate in SADI programs due to its restrictions. Clauses such as those in the SADI agreement are becoming all too prevalent and this limits the ability to innovate.

Moreover, in a global industry such as aerospace, Canadian companies need to develop industrial strategies that allow them to be competitive in the global market. The reality of aerospace manufacturing, as in other manufacturing sectors, is that price and cost competition is intense, and non-strategic elements are often outsourced in an effort to reduce costs. These strategies may include outsourcing of sub-assemblies or lower value non-strategic items to emerging regions of the world in which reduced labour costs create a competitive advantage. IP restrictions that limit or prohibit such industrial strategies have the effect of creating a competitive disadvantage for Canadian aerospace firms. For example, clause 3.1c in the SADI template agreement states that; “The Recipient covenants and agrees: (c) to ensure that Resulting Products are produced exclusively in Canada ...”. The practicality of this clause in a globalized aerospace industry is suspect at best. In fact, this clause is often ignored, or informal consent is given by public servants to allow competitive industrial strategies such as outsourcing. No such restriction exists in similar aerospace funding programs in Europe, Asia, or Mexico which are all increasing their share of the global aerospace market.

SADI is an important government funding vehicle for assisting Canadian aerospace companies in the development of new technologies and products. AIAC recommends that the SADI template agreement be modified to ease restrictions on IP ownership.

Small Business Perspective:

Because administrative and cost burdens of the program are often perceived as being too high for smaller companies, **SADI** and **IRAP** are not seen as adequate tools to promote R&D among all smaller companies. For example, repayments of SADI are required too early after the commercialization of a product and often have a significant negative impact on a company's cash flow.

NRC Industrial Research Assistance Program (NRC-IRAP)

NRC-IRAP provides a range of technical and business-oriented advisory services, as well as financial support for Canadian small and medium-sized enterprises (SMEs) engaged in research and development of technological innovations. Financial support is provided for selected projects through a transfer payment program delivered by a cross-Canada network of professionals including 232 Industrial Technology Advisors (ITAs), located in approximately 100 communities.

For SMEs, IRAP works well for a number of reasons:

- Technical and business-oriented advice is provided free of charge by a cross-Canada network of 232 ITAs located in approximately 100 communities. The advice provided is based on the ITAs' experience and networks in order to identify and apply solutions on a wide range of topics specific to the firm's problems and challenges.
- Contributions are non-repayable and made to firms that are typically small technology firms (80 percent have less than 50 employees) with limited resources. These contributions help projects overcome barriers on the road to commercialization and encourage innovative products and services.
- NRC-IRAP has the expertise, the delivery infrastructure, and the accountability framework in place to support its clients in achieving their business objectives.

However, for some small companies, IRAP does not work for a number of reasons.

- Although the NRC's objective is to streamline the approval process to 3 months, the time required for application approval can still be seen as too long for some smaller companies.
- Although NRC's objective is to support SMEs at all stages of development, some small companies are concerned that the program does not adequately address the commercialization aspects of R&D programs.
- Although IRAP intends to fund multi-year projects, it is perceived that the institution's fiscal reality creates difficulties in approving such projects.
- Although IRAP is offered in all regions of Canada, the program does not appear to be equally applied from jurisdiction to jurisdiction. Efforts should be made by IRAP to have consistent application of the program across the country.

Strategic Aerospace and Defence Initiative (SADI)

Many years ago, a similar program was extremely useful for small companies. In fact, a small portion of the total program funding was allocated specifically to smaller organizations. This, however, is no longer the case. SADI appears to be a tool that is primarily designed around the needs of large and medium organizations and is rarely used by small companies. For small companies, SADI is not working for the following reasons:

- Unless specifically related to commercialization, SADI for small business must be a grant and not a repayable contribution.
- The application and administrative process is far too time consuming and most small companies are discouraged to go through the process.
- The minimum project size is too high for many small businesses with valid projects.
- The filing, reporting and financial eligibility requirements restrict access for small companies to this program.
- Repayment is based on the profits of the company rather than the success of the specific project.
- Capital equipment requirements are no longer eligible.

The NRC Institute for Aerospace Research (NRC Aerospace)

Concentrating its expertise and resources on five main research programs (aerospace manufacturing, aerodynamics, flight research, gas turbine engines, and the performance of aerospace structures and materials), NRC Aerospace has adopted a very comprehensive technology readiness level (TRL) scale that graduates the “R” to “D,” and then to the “commercialization” spectrum.

An excellent example of this practice is NRC Aerospace’s involvement in providing the key icing technology for the newly opened Global Aerospace Centre for Icing and Environmental Research (GLACIER) in Thompson, Manitoba, at a cost of \$5M. GLACIER is a \$46M large engine certification facility, made possible with contributions from the Government of Manitoba, Western Economic Diversification Canada (WED) and two of the top three gas turbine engine manufacturers in the world, Pratt & Whitney and Rolls-Royce. To help make the facility a reality, NRC Aerospace drew on its 50 years of expertise as a pioneer in the development of icing simulation technology aimed at engines and wings, as well as ice detection equipment and atmospheric measurement of icing conditions.

However, at the beginning of the current fiscal year, NRC Aerospace had their funding allocation cut by 10 per cent (over \$2M), and their recapitalization and internal research fund (close to \$7M) reallocated to NRC shortfall. The logic of these actions is difficult to understand considering the high technology, export-oriented, “home-buying” employment nature of the aerospace industry in Canada.

For 70 years, through many changes, NRC Aerospace has been a partner, mentor and everyday helper to small R&D companies throughout Canada – opening its doors to technicians and scientists, providing equipment and expertise that they could not access through any other means, and working with national and international OEMs to strengthen Canada’s aerospace supply chain. Such a major reduction, coming on top of previous budget cuts, will do severe damage to much of the carefully nurtured expertise available to small companies in the aerospace and defence industry from this organization. If these cuts are not reversed in very near future, much of the gains sought in this presentation will be overturned by the loss of access to one of the few friends of small R&D companies in Canada. High technology small businesses need easily accessible and affordable test facilities to assist in their R&D efforts.

Precarn

Precarn's mandate is to support pre-commercial development of information and communications technologies (ICT). Based on a collaborative model, it is seen by AIAC as an effective complement to SR&ED and IRAP for the funding of technologies in areas such as avionics, manufacturing systems, maintenance systems, etc. This model is consistent, among others, with the need to develop technology demonstrators, and support strategic collaborative R&D in order to position Canadian SME's on future major platforms, as discussed at question 13.

Precarn is well positioned to build ICT capability in the Canadian aerospace industry. The Canadian ICT sector has skills and experience well aligned with the needs of the aerospace sector. As such, AIAC recommends an increase in Precarn's overall funding in order to allow for additional "aerospace-dedicated" funding, and consequently substantially increase the level of ICT R&D and commercialization performed by aerospace in those areas.

- 10 -

If you have direct experience and knowledge of the SR&ED tax credit, what are your views in relation to the following?

- a. Does the current structure of the SR&ED tax credit encourage incremental investment in R&D? Does it free up capital to invest in other aspects of innovation activities in the firm? Does this vary by size, ownership, sector or nationality of firm?**

The SR&ED tax credit program is a valuable tool to encourage investment in R&D. However, the program has some limitations applicable to large companies that make it less effective from a cash flow perspective. This, in turn, reduces the positive impact this program can have on R&D investment decisions.

We recommend that the following rules limiting the use of SR&ED tax credits be revisited in order to increase the ability to cash the benefit:

- The tax credit is limited to the amount of income tax payable in the current year;
- In the event where the tax credit is higher than the income tax, the corporation can carry it back (up to 3 years) only if it had income tax payable in those previous years;
- The tax credit can be used in the next 20 years only against the future income tax payable.

b. What are the strengths and weaknesses of the refundable portion of the SR&ED tax credit for Canadian-controlled private corporations and to what extent does it encourage the growth and commercial success of SMEs?

Small Business Perspective:

The **SR&ED** tax credit is a good program that is widely used by small companies. However, the following improvements could increase its efficiency:

First of all, the application process is basically the same regardless of the size of company and size of application. It is far too complicated. Most small companies do not have the expertise on staff to properly complete an application. Usually a consultant is required by small companies who then, of course, share in some of the tax credit. **The application process needs to be streamlined for small companies.**

Although the SR&ED encourages incremental R&D, it does not encompass all costs in the development, testing and certification of a product and, in fact, appears to actively discourage the transition to commercialization. This, in turn, keeps the SR&ED Program in a holding pattern of perpetual ongoing research. SR&ED specifically excludes the commercialization aspects of R&D in which much of the expense is incurred. Direct support of product commercialization would be extremely useful for most small companies focused on R&D.

Each application requires a business case. This is true even for small applications. The result is that eligible SR&ED tax credits are ignored because the \$5K to \$10K tax credit just isn't worth the effort. There should be a way to capture small applications without a full blown business case.

The time to recover the tax credit is too long; usually around 1 year. For a small company this can have a serious impact on cash flow, particularly since this expense has been incurred in the previous year.

There is inconsistency between what is and what isn't eligible. Different regions seem to have different opinions especially with respect to whether or not development is just as eligible as research.

c. Bearing in mind the improvements being made by the Canada Revenue Agency, are there additional opportunities for change to simplify the administration of the SR&ED tax credit and facilitate the applications process?

The cost to protect the R&D output could be considered as an eligible expense.

Unlike Quebec refundable tax credits, non-refundable Federal tax credits are not reported in the operating profit of US owned subsidiaries. This can lead to unfavourable R&D investment decisions in Canada. **AIAC recommends that a refundable portion of federal tax credits – similar to what is currently offered in Quebec – be introduced in the context of the SR&ED tax credit and that the credits be allowed to be applied to taxes other than income taxes.** Making SR&ED tax credits refundable or creditable against other non-income taxes would make the Canadian regime much more attractive to multinationals.

For many aerospace companies, federal tax credits have accumulated on their balance sheets and have not been converted into cash. This inability to realize the cash benefits in a timely manner is a disincentive to R&D investment. **AIAC recommends that access to federal tax credits as refundable in cash be allowed within certain limits.**

The federal government taxes both federal and provincial investment tax credits when claimed. By comparison, the Quebec government does not tax their ITCs, even if reimbursed. **AIAC recommends that an approach like that of Quebec (of not taxing claimed ITCs) be used to leave companies with additional cash flows to re-invest in the business.**

The SR&ED program requires that virtually all R&D be conducted within Canada to be eligible for tax credits. The rationale for this is to increase employment in the home country. However, we live in a global society and more and more R&D projects are performed in collaboration with organizations outside of Canada. **AIAC recommends an increase in the amount of R&D costs outside of Canada that are eligible for tax credits. Canadians accrue the benefits of the intellectual property and the learning from Canadian-led projects. If the project is funded and led from Canada, the intellectual property and learning will reside in Canada and Canadians can exploit the results.**

- 11 -

How could the Government of Canada lighten the administration requirements of its programs on recipients and improve outreach to business?

As said previously, a streamlining and aligning of federal and provincial programs would lighten administrative burdens and costs – especially for SMEs.

Also, within the federal government itself, a greater harmonization of the processes for various programs could be envisaged.

Small Business Perspective:

Expansion of the Small Business Advocacy Program initiated by the Office of small and medium enterprises (OSME) at Public Works and Government Services Canada (PWGSC) is recommended. OSME could facilitate meetings between other government departments and small companies in an attempt to truly understand the issues of small businesses.

- 12 -

How could the Government of Canada be more innovative and responsive to meet new needs or opportunities, and try alternative service delivery-approaches in its programs?

The government should understand and accept that there will always be a probability of failure in any given innovative process. Reducing the risk to zero implies that several potentially successful ideas will never be implemented. The tools and programs should reflect this fact.

Reducing the paperwork, administrative burden and the need for companies to hire experts to demystify and assist in the management of program applications, administration and auditing would be extremely beneficial.

Small Business Perspective:

Small companies believe that the government should consider developing a collaborative R&D program. The program would include three participants: the government of Canada, large companies and small companies. Funding would be split between the three participants. Government funding would not be repayable. The process would include large companies listing their R&D requirements. Small companies would have an opportunity to express their expertise and interest. A transparent approach by large companies is essential to ensure a true collaborative effort. The large and small company would then jointly present their proposal to all of Canada.

Small companies also believe that the Government of Canada could be much more creative in utilizing Industrial Regional Benefit programs to stimulate R&D.

- 13 -

Are there any gaps in the Government of Canada's support to business and commercially-oriented R&D? Do firms performing R&D in other countries have an advantage over Canadian firms because of access to programs that are not available in Canada? What would be the principal features of new programming to fill these gaps?

Investments in Technology Demonstrators

The United States and the European Union are investing heavily in the development of aerospace technologies. Both have adopted a public-private framework and/or technology programs that aim to position their respective industries on future platforms. The EU 7th and 8th Framework, for instance, is providing firms with non-refundable funds for technology demonstrators while the *Clean Sky* initiative provides non-refundable funding for greener technologies.

In order for the Canadian aerospace industry to remain competitive and to take advantage of the outstanding forecasted growth in demand for civil aircraft, Canada needs to do the same on an urgent basis. Development of technologies from university laboratories (Technology Readiness Levels TRL 1-3) to the stage where they are funded by SADI is not properly supported in Canada. This leads to reduced innovation, as key technologies are not mature enough to be exploited in commercial developments.

Indeed, at present, available financing is mostly directed at conceptual and pre-competitive phases of R&D. Many ideas therefore remain at the level of concept validation in universities. Industry is the natural player to develop these ideas and take them to the level of the technology demonstration phase. In the USA, such funding is available through defence technology procurement, and in the EU, programs have been created to assist Original Equipment Manufacturers (OEMs) and their suppliers to carry out such projects.

Development of technologies from university laboratories (IAR Technology Readiness Levels TRL 1-3) to the stage where they are funded by SADI, (TRL 7+), is not properly supported in Canada. There is therefore an urgent need for non-refundable funds for **technology demonstrators**.

Protectionist behaviors and trade blocks:

With respect to international market access, the Canadian space business has been severely hampered by the application of US International Traffic in Arms Regulations (ITAR) by the US government. Although the Government of Canada successfully negotiated an exemption for Canadian aircraft manufacturing industry, there is no such exemption for Canadian space companies doing business in the US. This has had a severe impact on our competitiveness.

In addition, EU firms enjoy fair and open access to Canadian public non-defense procurement markets in the aerospace industry. Canadian firms, however, do not have such access in the EU. This is a result of long-standing non-competitive practices, but also of EU Procurement Directives on defense and security supplies. Such directives cover non-military security equipment purchases by agencies that include national governments, regional and local authorities, and a wide variety of parapublic end users. Specifically, such procurement agencies cover police air units, border patrol, intelligence agencies, fire fighters and civil protection agencies. Similar agencies in Canada do not restrict such tenders from international competition. This unlevel playing field disadvantages the Canadian aerospace industry's pursuit of sustainable industrial growth in diversified country markets. Canada must ensure reciprocity in trade agreements with the EU.

- 14 -

What lessons and best practices can be taken from provincial business and commercially oriented R&D programs, and how should the two orders of government align their programming?

The Government of Quebec has been proactively supporting its aerospace industry. Several lessons and best practices can be drawn from Quebec, including:

- **SR&ED** tax credits are refundable independently of a firm having income tax to pay or not. Bona fide refundable tax credits are available for private partnership pre-competitive research.
- **Quebec projets mobilisateurs:** five non-refundable technology demonstrators (Avion plus écologique) are managed by an industry consortium, with a non-refundable budget allocated to develop new green and environmental projects. This provides incentives for aerospace companies to work on new and future technologies and reduce the risk of development costs.
- **Consortium de recherche et d'innovation en aérospatiale au Québec (CRIAQ)** Is a successeur industry-led collaborative aerospace research consortium.
- **Investissement Quebec (IQ)** which, by combining the mandates of a financial institution and an economic development agency, provides a wide array of programs and measures designed for growing strategic sectors such as aerospace.

The **Economic Partnership Agreement between Western Economic Diversification and the Province of Manitoba** provides flexible funding to industry priority projects. Reporting is reasonable and the program is very well managed. Funding can be applied to higher TRL levels R&D.

The competitiveness of the aerospace industry is a priority for Industry Canada, DFAIT and the National Research Council. In order to ensure consistency of the tools and programs within the Government of Canada, NSERC policies should clearly reflect that aerospace is also a priority.

SME perspective:

AIAC encourages the Government of Canada to streamline and harmonize (as much as possible) federal and provincial priorities and programs. This will increase the efficiency of such programs and reduce overhead and waste to the benefit of larger, medium and mostly smaller companies which often don't have the available resources to take advantage of the existing programs. Too often, application costs outweigh the potential value of a specific program.

As such, AIAC is pleased with the recent announcement of the Red Tape Reduction Commission to reduce the burden of complying with federal regulatory requirements.

- 15 -

Is there a difference between R&D and innovation? If yes, how are they different? Should government focus on R&D or Innovation? What should the balance be?

Innovation is a process. It starts with an idea, which is then successfully commercialized. This process can be considerably longer for the aerospace industry than for most other sectors.

There is no innovation without research and development. In order to generate growth, create jobs and exports, there is a need to "push" the results of R&D to their full extent: the successful commercialization of the products of R&D.

The Government's decision to conduct a review of R&D Programs is both timely and judicious from a Canadian aerospace industry perspective. AIAC trusts that the measures and improvements to be brought to the programs will result in an increased competitiveness of the sector. This will, in turn, allow Canada to take advantage of the outstanding opportunities for growth of the global aerospace market and the creation of high-quality jobs that will arise as a result.



Aerospace Industries
Association of Canada

L'Association des industries
aérospatiales du Canada

be conducted within Canada to be eligible for tax credits. The rationale for this is to increase employment in the home country. However, we live in a global society and more and more R&D projects are performed in collaboration with organizations outside of Canada. **AIAC recommends an increase in the amount of R&D costs outside of Canada that are eligible for tax credits. Canadians accrue the benefits of the intellectual property and the learning from Canadian-led projects. If the project is funded and led from Canada, the intellectual property and learning will reside in Canada and Canadians can exploit the results.**

* * *



Suite 1200, 60 Queen,
Ottawa, Ontario K1P5Y7