



Working Group Report

**Small Business**

September 19, 2012

*This report reflects the views of one of the six industry-led working groups created to provide advice to the Aerospace Review Head and the members of the Advisory Council. The recommendations therein may not reflect the findings of the Aerospace Review.*

*For more information on the Review process visit [www.aerospacereview.ca](http://www.aerospacereview.ca)*

## Executive Summary

### Background

The Small Business Working Group (SBWG) evolved from the Small Business and Supply Chain Group, recognizing that the issues confronting small businesses were specific to their size, and were therefore better dealt with separately. The mandate of the SBWG (Composition in Annex A) was to define the “issues of specific significance to small businesses” and make recommendations relevant to these issues, bearing in mind the five questions that were provided to the Working Groups.

The SBWG divided into sub-groups to address the issues of financing, procurement and Intellectual Property (IP) as they impact Canadian Aerospace Small Businesses (SBs).<sup>1</sup> in the context of current global trends in the aerospace sector, and make appropriate recommendations.

### Why A Small Business Section

The objective in submitting a report that specifically addresses the needs of SBs is to create the right framework that will allow the SBs achieve a high degree of competitiveness, have equal access to opportunities, and increase their ability to capture a larger share of the national and international market.

The key deliverables of a healthy SB network include the following:

- Source of jobs in Canada and abroad
- Ability to support Primes/ OEMs in Canada
- Development of technology through Canadian R&D

An overriding theme of this document is that SBs face obstacles that medium and large businesses either do not face or, are able to respond to. The challenges to SBs are inherently linked to their size and are impeding their ability to execute, as well as to grow to the next level, a key requirement to be part of a robust international supply chain. In order to grow, SBs must have an effective and supportive environment both in terms of financing and opportunities. Otherwise, they will not survive. Equally, if competence, flexibility and technical experience cannot be drawn from SBs, then technology jobs and future R&D becomes exported, resulting in a negative, long-term impact to Canada.

The key characteristics of SBs can be summarized as follows.

- Cash-flow limitations
- Lack of specialized staff

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<sup>1</sup> The thrust of this Report focuses on small firms only (under 100 employees) as opposed to SMEs, given that 98% of Canadian firms are SMEs (e.g. <500 employees).

SBs are severely constrained by cash flow limitations, which often impose a short term rather than strategic outlook. Since most SBs are owner-operated, their cash flow is often secured by personal assets, thus limiting their ability to invest in risk-sharing ventures.

The other key characteristic of SBs is the challenge of having the resources and ability to hire staff dedicated to specific jobs such as preparing bids and proposals, quality, legal matters or international marketing. Until this occurs, SBs must use the same personnel to perform multiple tasks leading to a high percentage of available resources focused on 'keeping the pipeline supplied', but generating no immediate cash flow. This limits SBs' abilities in international market development, government program awareness/compliance abilities, and process improvements.

These two key characteristics have an impact on every aspect of SBs, from product development, market access, business development and commercialization. Furthermore, there are challenges unique to the aerospace industry which compound the impact of these two characteristics. They are briefly summarized in Annex B.

Yet, given the right environment, SBs are exceptional contributors to a robust supply chain as indicated by the AIACs recently released 2011 Aerospace Statistics which stated that "hiring took place predominantly among small and medium-size companies".

## Challenges

SBs face several important challenges linked to these two characteristics. Notwithstanding the success of many aerospace firms including SBs in Canada, global trends in the supply chain structure have significantly modified the supply chain landscape, and are increasingly putting pressure on suppliers to take on more and longer-term risk.

Additionally, suppliers are in large part the ones facing the pressure of OEMs outsourcing to lower-cost countries. Concurrently, new government procurement practices, including bundling, IRB, and IP policies are shutting out many highly competitive suppliers strictly on the basis of size. Adding to these challenges is the looming third industrial revolution that will have a major impact on the production methods and processes of suppliers, and will require major process and capital equipment investments if Canadian suppliers are to forge ahead of the competition. The impact of all of these challenges is dramatically more significant for SBs due to their inherent characteristics; cash-flow limitations and lack of specialized staff.

## A Way Forward

SBs want to excel as suppliers and contribute value-added products and services to the primes, systems integrators, and government departments while providing high quality jobs for Canadians across the country. They seek opportunities to prove their innovative products and services to end customers, and to design to build, rather than to build to print, to be competitive and attractive to their customers. To achieve this objective, there needs to be a competitive framework and appropriate tools adapted to the *SB characteristics, needs and challenges*. Furthermore, it is critical that changes and modifications to

current practices and programs be adapted to allow rapid adoption of evolving technologies and processes and implementation of state-of-the-art facilities. Without an appropriate and supportive environment, there is a high risk of successful SBs being bought out by foreign firms.

This Report identifies a vision for SBs that serves as the foundation to define the type of support and tools needed to remain competitive and world-class suppliers.

First and foremost, however, there must be recognition that:

- SBs are a major driving force and an essential part of the overall make-up of a thriving aerospace sector in Canada,
- The full potential of SBs as suppliers and participants in the aerospace supply chain and as service providers both nationally and internationally, can only be fully realized if their specificity and their needs are taken into account, and
- There is a risk premium associated with having a thriving aerospace SB sector in Canada; a factor that must be recognized and accepted by the Government of Canada.

Canadian SBs ask for equal access to opportunities and for the application and adoption of measures that will serve the interests of all.

635 SBs account for 91% of the total aerospace firms in Canada with employment of approximately 9600 full time employees.<sup>2</sup> A recent AIAC survey states that SBs account for approximately 11,500 jobs in Canada. These SBs are involved in the following clusters:

- Aerostructures
- Avionics
- Electrical Power Management
- Engines
- Environmental Control Systems
- Flight Controls
- Flight Testing
- Interiors
- Landing Gear
- MRO
- Simulation
- Space
- Training
- UAVs

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<sup>2</sup> *Industry Canada Analysis of the Canadian Aerospace Industry: A SME versus Large Firm Perspective (Draft for Discussion), June 2012.*

## Recommendations

In light of the analysis of the trends and challenges to SBs, the SBWG makes the following recommendations which are described in detail further in this report.

### **Adapted and Accessible Financing**

That the Government adopt or implement a full range of financing support measures that take into account the challenges described in this Report, either by modifying current mechanisms or by introducing new measures. These measures should provide flexible and affordable funding /financing support for the full range of requirements in line with other countries – from concept development, process improvements, risk-sharing investment, to the commercialization phase. They should include taxation measures, loan guarantees, grants, long-term loans and bridge financing, with simplified and less onerous terms and conditions that are adapted to the current global aerospace business model of risk sharing and that take into account the characteristics of SBs.

### **Government Procurement**

That the Government develop measures that actively encourage participation of SBs in all procurements, either through direct government contracts or through IRB policy changes and implementation. These measures should fairly address practices that penalize SBs such as “bundling”, while ensuring open access to procurements by simplifying Ts and Cs, improving information sharing and transparency between Government and SBs, and by fostering more effective links between Primes/OEMS and SBs.

### **Intellectual Property**

That the Government ensure that restrictive and onerous IP terms and conditions not be a deterrent to SB participation in contracts – rather, measures should be taken to encourage SB access to IP to enhance growth in high-value added contracts.

The Report below provides a detailed description of the challenges related to financing, government procurement and Intellectual Property, and will help outline the issues in more detail, so that appropriate decisions and measures can be adopted.

## 1.0 A VISION FOR SBs

In 2032, SBs (manufacturing and services) will form an ecosystem of flexible and highly productive suppliers to OEMs, systems integrators, and the Canadian Government. This will be achieved through focused investments and sustained involvement in R&D collaborative projects, and will be driven by improved productivity measures and adoption of leap-frog production and process technologies. It will be encouraged and supported by close collaboration and planning between OEMs, systems integrators and SBs, in anticipation of procurements – both civil and defence – and with the cohesive support and partnership of all levels of governments in their respective areas of competence.

In essence, SBs will be *preferred suppliers* to Canadian *OEMs and systems integrators and to the Canadian Government* who will seek their services for their agility, responsiveness and cost competitiveness. SBs will cause larger firms, both Canadian and international, to seek their services first in their decision-making process for outsourcing, and will engage in making reshoring more attractive to OEMs.

## 2.0 OPPORTUNITIES

The Integrative Trade Global Strategy Aerospace presents an excellent SWOT analysis of the Canadian aerospace sector.<sup>3</sup> SBs offer additional advantages to their larger customers, which can be viewed as opportunities, summarized as follows:

- Opportunities to sell systems, components, and in-service support to clients around the world; however this is accompanied by a loss of proximity advantage when seeking sales with Canadian OEMs,<sup>4</sup> and
- “Studies have found that a great deal of innovation in the A&D industries is taking place at the level of SMEs. In a competitive context, smaller businesses have many advantages—they tend to be leaner, faster, more flexible, more specialized, more cost-effective and highly inventive”<sup>5</sup>

Opportunities for SBs to participate on new aircraft (commercial and defence) rarely lie directly with the OEMs, but increasingly with systems integrators and Tier 2 companies. Early engagement at the program definition stage along with a risk-sharing position is required. The Canadian aerospace industry has positioned itself successfully for several years on major new platforms being developed by OEMs; the 787, A350, C-Series, COMAC, SUPER JET, Sukhoi, F-35, 737 and A320 re-engine programs, and a wide range of business jet developments are examples. Capturing these opportunities creates work for the duration of the aircraft program—often well over 20 years. It is therefore critical for Canadian suppliers

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<sup>3</sup> *Integrative Trade Global Strategy Aerospace 2012-2013*, Global Business Opportunities Bureau, November 2011, p. 7

<sup>4</sup> *Aerospace Review Global Trends and the Aerospace Industry*, March 2012, p.6

<sup>5</sup> *Public Funding Programs in Support of R&D in the Aeronautics and Defence Industries: An International Scan*, September 23, 2011, p. 28

to be effective competitors in the global supply chain; however this comes with inherent risks and challenges.

With respect to federal defence procurement, “National Defence is the single largest federal player in terms of high-dollar value, long-term procurement, and will spend close to \$ ½ trillion over the next 25 years under the Canada First Defence Strategy. Upwards of \$200 billion – more than 40% of that amount – will be for the acquisition and support of military goods and services.”<sup>6</sup> This military procurement represents a significant opportunity to utilize and enhance the innovative capabilities of SBs.

Defence procurement creates IRB-related opportunities beyond the actual acquisitions. There are currently more than 60 military and security procurements subject to IRB policy with obligations representing approximately \$21 billion in current and future business activity with Canadian industry.

Opportunities for SBs to participate in collaborative R&D have increased significantly over time through initiatives such as Green Aviation Research and Development Network (GARDN), Consortium de recherché et d’innovation en aérospatiale au Québec (CRIAQ) and Canadian Networking Aeronautics Project for Europe (CANNAPE) which promote the participation and contribution of SBs in the collaborative research endeavours with OEMs.

### **3.0 CHALLENGES & RECOMMENDATIONS**

While the opportunities are sizeable, the challenges and obstacles resulting from global trends have made these opportunities more difficult for SBs to capture. The following global trends set the context in which the entire aerospace industry and its SBs must evolve:

- Outsourcing to low cost countries,
- Increased flow-down of risk-sharing requirements through the supply chain,
- The practice of Governments and OEMs to bundle procurements as an attempt towards cost-savings,
- The aggressive and generous support of other countries for the emergence and growth of an indigenous aerospace industry, and
- The current smart manufacturing transformation which is impacting the supply chain production processes.

Consequently, the major challenges identified in this report are of particular concern to the growth and competitiveness of SBs, and are the subject of recommendations by the SBWG. SBs challenges, specifically related to financing, government procurement, and Intellectual Property are described in the next pages, as are recommendations addressing these challenges.

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<sup>6</sup> Major Military Procurement Module, Office of Small and Medium Enterprises

## 3.1 FINANCING

### 3.1.1 Current environment in Canada

The aerospace industry business model has evolved dramatically over the past 20 years. The current business model and trends are forcing major players and the supply chain to adopt critical changes to their approach in order to remain key players for the next generation. The combination of aerospace specific trends and challenges described further in this document is putting an exceptional strain on SBs' working capital requirements that cannot be met by traditional financing mechanisms. Yet SBs are least structurally capable of handling the resulting financing strains and, without access to bridge financing, are often unable to make the necessary investments to participate in these programs. Access to bridge financing is a prerequisite in today's aerospace environment and it is program-specific. For SBs, it is a critical factor to remaining a part of the global supply chain.

Traditional lending sources do not provide funding that takes into account the specific challenges related to the aerospace industry described herein. Credit facilities normally available by Canadian banks require cash flow and progress payments to be available from the contract or sale.

Current government programs focus on early recovery of funding or by taxation of successful efforts which prevent re-investment and which tend to draw funds away from commercialization and marketing efforts when they are most needed; during the early competitive market introduction phases. The problem is further exacerbated for SBs because of their inherent narrow asset base and inability to place reliance on more than one or two initiatives.

Current government programs offer a wide range of financial support options which have grown over the years. However, in most cases, they represent important access challenges for SBs, and rarely recognize the specificity of the aerospace business model identified above. In addition, they do not address the aforementioned challenges, particularly with respect to bridge financing. When compared to other countries, the complexity and the less-than-favourable terms and conditions of Canadian support programs make it difficult for SBs to benefit and be engaged on a level playing field with their competitors.

Furthermore, there are many deterrents making it difficult for most SBs to access government programs, notably:

- The application processes are usually complex and costly,
- Most programs require certified or audited financial statements for a minimum of two years,
- The Ts & Cs are overly complex and represent a challenge for SBs with limited specialized staff,
- SADI is not a program that takes into account the SBs realities. While SBs can apply and obtain support, many of the conditions make this program less than attractive for SBs. The application or interpretation of the programs is often not applied uniformly across the board, for instance, in the case of capital equipment,

- The pay back via royalties based on the company’s overall revenue base (SADI) is onerous, and prevents the firm from reinvesting in R&D and process improvement,
- Support of capital for process improvement and capital equipment investments under programs such as SADI and SR&ED is limited to investments linked to R&D, thus limiting SBs ability to invest aggressively in transformational production and process technologies, such as additive and smart manufacturing,
- SR&ED does not cover the full range of capital requirements and development costs from concept to qualification,
- The Business Development Bank of Canada’s focus is on both small and medium-sized enterprises (SMEs) – not specifically SBs. As it is a lender of secondary resort or, complementary lender, it can support higher risk projects than private financing institutions, but at a significant cost premium. This deters firms from participating in long-term, risk-sharing aircraft programs, as the premium makes it unaffordable over the long-term,
- Although EDC’s current expanded domestic financing power mandate is a step in the right direction, the investments are limited to the revenues of the borrower, and do not allow for growth,
- Canada’s SR&ED program is world class. It allows for development of products and processes, and is an excellent vehicle for many SBs to make the necessary investments. The cash refund potential for Canadian controlled private corporations is of particular benefit to SBs. However, the recently proposed changes to this program are at best neutral, or worse, they could be detrimental to SBs as they have reduced the cash refund potential. This is particularly true with respect to the exclusion of capital expenditures as of 2014,
- Current opportunities are being missed due to the absence of a dedicated fund that would allow Canadian firms to bid under what is known as a “coordinated call”, knowing that funding is available prior to doing so, and considerably increasing their chances of successful bids. R&D and process/material developments are at the forefront of a healthy aerospace industry, and SBs must be active participants in such projects to be on par with SBs in other countries. To be disadvantaged here is to disadvantage the entire Canadian aerospace industry, and
- The Canadian Innovation Commercialization Program (CICP) is a step in the right direction for the procurement of pre-commercial innovations through the Government as the first adopter. The addition of military procurement to this initiative<sup>8</sup> is a welcome measure, and the

In their paper Miller and Cote note that; “Management science has taken a great interest in innovation and has greatly advanced our understanding. Among findings of interest, successful innovation typically requires more marketing than R&D”<sup>7</sup>

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<sup>7</sup> International Productivity Monitor, Number 23, Spring 2012

<sup>8</sup> Note: If pilot projects are put in place now, it will take years to see and evaluate the results; yet it is critical to act now as these investments take 10 years to come to fruition. Canadian companies must get ahead of the curve in R&D and in production process improvements in order to regain market share.

enrichment of this program would be a most welcome step in supporting the movement of innovations to the marketplace. Nonetheless, when compared to other countries such as the US, where military platforms are currently used as a launching pad for innovation, it provides a very limited support for aerospace applications.

When compared to the scope of the Small Business Innovation Research (SBIR) program in the US and programs in other countries (Annex C), such support programs as mentioned above do not offer the depth and scope required to truly impact the ability of SBs to adequately respond to the challenges, and access the huge opportunities ahead.

### 3.1.2 Challenges: Access to Working Capital and Bridge Financing

*The flow-down of risk-sharing requirements* on most commercial aerospace opportunities require suppliers to invest in the aircraft development program, causing a transfer of development and commercialization risk down the supply chain. These exceptionally large and up-front financial requirements, coupled with the risk and long term nature of the programs, are of particular concern to established SBs who seek to make incremental improvements or grow at a measured rate. The cash-flow limitations of SBs may in fact preclude participation in these programs or, at the very least, limit participation to one program at a time; hopefully, the successful one. This is the nature of the industry; large risks, large rewards.

*Chronic delays in major programs* strain financing arrangements. In order to win contracts on major programs, SBs must often invest in new tooling, equipment, technology, processes and qualifications. The business case for such investments assumes reasonable timelines and contingencies, but often cannot anticipate the variability in delays due to the complexities of major programs. This effectively prevents SBs' ability from pursuing multiple opportunities, thus restricting their ability to grow.

The recent experience of CAL's participation as a risk-sharing partner in both the A380 and Boeing 787 is a good example of the impact of the program delays. *These delays have a tremendous impact on cash flow management for SBs.* At the end, CAL ended up with a large debt that impedes its competitiveness and ability to finance new programs. Full case study in Annex D.

*Onerous financial terms and conditions* such as extended delays in payment terms, free delivery of the first five aircraft ship sets, payment terms of 120 days or upon delivery of aircraft and post-contractual mandatory changes that are generally "not negotiable", often preclude SBs from participating and effectively become a barrier to participation. SBs often do not have the capital available to make the up-front investment and are forced into a "take it or leave it" response.

*Foreign buyers and governments no longer provide progress payments.* This significantly impacts the ability of cash-flow restricted SBs to respond to international procurements.

*Many growth opportunities are tied to multi-year endeavours and long pay-back periods* that often extend even after R&D has evolved to a stage of readiness to allow commercialization. Sell cycles are typically in excess of a year, and increasingly involve significant international marketing. This combination creates significant cash flow challenges for SBs.

*SBs face commercialization challenges* due to working capital financing arrangements with commercial banks which are risk-averse and better suited to short-term, transactional businesses. Yet, SBs must increasingly find customers located in many different parts of the world. This is of particular concern to SBs that generally spend less on marketing and have fewer marketing resources than larger firms.

All of the foregoing challenges can create perceived financial weakness for SBs. Any of these challenges can create instability resulting in a cascading effect on SBs, thus creating a self-perpetuating cycle. This perceived risk does not go unnoticed by the OEMs' financial analysis when considering its supply chain.

*Why have Canadian Small Businesses not been successful on major platforms and other procurement opportunities?*

*The increased risk and cost of financial strains to both Canadian SBs and to OEMs have been a contributing factor in Canada's poorer share of current commercial aircraft programs (e.g. 787 and A350) relative to historical ones (e.g. 767 and A320).*

*Similarly, the increased cost, risk, and difficulties in obtaining financing for commercialization growth opportunities has discouraged SBs from pursuing opportunities domestically and internationally.*

### **3.1.2.1 Recommendations: Access to Working Capital and Bridge Financing**

It is recommended that Government:

1. Create a national loan guarantee program, analogous to that provided by Investissement Quebec for lines of credit through commercial banks, where Government has pre-negotiated risk premiums and collateral requirements with commercial banks on behalf of SBs capital need,
2. Create a bridge financing program designed for SBs to remove or reduce the risk of aerospace program-specific, OEM-level delays on supply contracts,
3. Mandate significantly reduced risk premiums and/or increased repayment timelines of financing mechanisms for SBs by entities such as BDC, EDC and ITO for process improvements and capital equipment purchases,
4. Implement a program with non-repayable terms to allow SBs to participate on a level playing field in international collaborative R&D programs such as FP7 and, on a level playing field with their international counterparts engaged in programs such as SBIR,

5. Increase its contribution share in the SADI program and establish non-repayable provisions for SBs, and
6. Review the Ts & Cs and application processes for all programs with a view of streamlining and simplifying the documents and processes.

Implementation of these recommendations will result in a significant increase of SBs participating in these programs.

### **3.1.3 Challenges: Access to R&D, Process Improvement and Capital Equipment Financing**

*Aerospace research and development investments require “patient” capital.* Such investments typically require a number of years to come to fruition and generate a payback. The certainty of a reasonable return is low as some R&D investments will yield positive results while other will not, even if valuable lessons are learned. Also, even when SBs successfully complete R&D projects which result in new products or services, SBs may still not have the necessary financial capability to commercialize and exploit the new capability.

*Technology demonstration and qualification costs* are often too significant for the SBs. There is no federally supported Technology Demonstration program for OEMs and the supply chain. Technology Demonstration programs are key for SBs to demonstrate their product to potential buyers. However the high costs associated with Technology Demonstration are often too significant for SBs to undertake, preventing their innovations from reaching the market.

*As for process improvements*, the fundamental technology trends are driven by OEMs who invest in the key technologies; Automated Fibre Placement, for example. This leaves the lower end structures to SBs, who compete on cost and face pressure from low cost countries such as Mexico, Eastern Europe, North Africa and Asia. This creates an obligation to be more productive, lean and competitive through technological means and innovations that require massive investments, particularly in light of upcoming new manufacturing technologies.

SBs in the aerospace industry are faced with a number of challenges related to access to process improvement and capital equipment investments. While these investments can be somewhat less risky than R&D, they can represent relatively large expenditures beyond the internal financing capabilities of most SBs.

#### **3.1.3.1 Recommendations: Access to R&D, Process Improvement and Capital Equipment Financing**

It is recommended that Government:

1. Substantially expand CICIP and the proposed Military Procurement Component of CICIP to provide benefits comparable to the SBIR or STTR programs in the US (Annex B),
2. Create an aerospace-specific commercialization fund, that would bridge the funding gap in the innovation chain (development and demonstration), analogous to Sustainable Development

Technology Canada for green technology, that would be aimed at supporting the late-stage development and pre-commercial demonstration,

3. Provide substantial financial and program incentives over the next 5-10 years for SBs to adopt the key 'leap-frog production and process technologies' (e.g. 3D printer, robotics, digitization, smart manufacturing) that will spearhead a Canadian supply chain transformation and make a real impact on SBs competitiveness,
4. Support the establishment of a nation-wide initiative tailored to regional realities and requirements to support the SBs overall transformation process in order to be key players in the new supply chains (using elements of programs such as Quebec's MACH and Ontario's Esprit),
5. Renew and expand the GARDN financing to allow for further collaborative projects involving SBs in green aviation (a growth area in the industry),
6. Ensure additional funds from changes to SR&ED are focused on small business programs through IRAP,
7. Include flow-down conditions to require SBs participation in all Government funded Technology Demonstration projects with non-refundable financial support,
8. Develop a better vehicle (one-stop shopping) to communicate aerospace related government programs with SBs, and
9. Reinforce the excellent services of DFAIT to support further SB commercialization activities in global markets

## 3.2 GOVERNMENT PROCUREMENT

### 3.2.1 Challenges

The Jenkins Report states *"The government should make better use of its substantial purchasing power to create opportunity and demand for leading edge goods, services and technologies from Canadian suppliers. This will foster the development of innovative and globally competitive Canadian companies connected to global supply chains, while also stimulating innovative and greater productivity in the delivery of public goods and services."*<sup>9</sup>

***Bureaucratic and complex requirements*** essentially shut out many SBs who would otherwise have the potential to be a competitive and productive part of the solution. For example:

- Terms and conditions imposed on major Crown, OWSS and ISSCF contractors are often imposed on their suppliers. It is not reasonable for all T&Cs to flow down the supply chain,
- Complex bidding processes with large amount of paperwork means significant project planning must be completed and included in RFP prior to contract award,

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<sup>9</sup> Innovation Canada: A Call to Action, Review of Federal Support to R&D – Expert Panel Report.

- There is a lack of team/joint venture opportunities to collaborate on bundled contracts,
- Government bids are becoming more and more complex, both in terms of putting together a compliant proposal and in terms of fulfilling Contract Data Requirement List (CDRL) obligations, and
- Experts are required to prepare compliant bids; however it is difficult for SBs to retain these experts on staff full-time.

*Recent “bundling” practices* are having a major impact on SBs and have resulted in discontinuation of contracts between PWGSC and SBs. Optimized Weapon System Management (OWSM) which is utilized for existing fleets, “bundles” hundreds of support contracts into a few contracts. The In-Service Support Contracting Framework (ISSCF), which is utilized on new fleets, takes the “bundling” concept further, and utilizes only one support contract for the entire fleet. In these situations, SBs face scenarios where previously they have successfully competed their services to provide work directly to the government, but now, face new challenges dealing with OWSM and ISSCF contractors. For example:

- SBs have no assurances of an opportunity to compete let alone an opportunity to continue providing the services they successfully provided in the past,
- For a company, new or existing, without previous experience, it is nearly impossible to crack the current OWSM/ISSCF procurement process,
- SBs, even incumbents, have very little if any input into what is/isn’t included in the “bundle”,
- SBs are not given advanced warning that their products and/or services will be part of a “bundled” package. Almost always SBs learn of their situation after the OWSM/ISSCF competition process is complete, and after the OWSM/ISSCF contract is awarded. OWSS and ISSCF contractors are not always willing to entertain new suppliers, even incumbent suppliers. Often at this point, the successful OWSM/ISSCF contractor has already established plans to satisfy the needs of the government. They may wish to use an existing supplier in their system, or they may wish to bring the work in-house, and
- The practice of “bundling”, in effect, shuts out many emerging and high potential start-ups. Primes have well established supply networks, and rarely have an incentive to qualify additional SBs to their supply chain. And, through no fault of their own, the SBs incumbents with proven capability and significant investment in people, equipment, and systems are left with a discontinued contract.

*In a Standing Committee on Government Operations Report in 2009 and in subsequent Committee Hearings in 2011, witnesses described bundling of contracts as a barrier to participation by small companies. Bundling is not only a barrier but for small companies, it is a significant cause of lost business.*

The consequences of “bundling” are devastating to many SBs; despite proven capability and investment in people, equipment and processes they often lose the opportunity to compete.

*The Government is currently foregoing a major opportunity to enhance the growth and competitiveness of Canadian SBs<sup>10</sup> by the way the current IRB program is implemented.* Though many changes are being implemented as a result of the IRB review in 2009, the current IRB policy and its application generally have the effect of favouring larger firms to the detriment of SBs, particularly due to the fact that they do not consider SBs (with less than 100 employees), separately. When faced with a substantial IRB requirement, Primes attempt to satisfy this requirement with the least risk and lowest cost. This motivation leads Primes towards large subcontractors rather than a multitude of SBs. It is not worth their investment to work with many SBs if they can achieve greater IRB’s with larger subcontractors. With SBs being perceived as higher risk, the strategic result is a reduced proportion of transactions with SBs.

A debrief by a senior Prime executive indicated that a life cycle multiplier of 50 would be required in order for SBs to “make sense” as targets for significant IRB expenditures. The current 5x multipliers are therefore inadequate to encourage the use of SBs, which nullifies the enormous potential for the IRB program to simulate growth.

Government’s current “neutral” transaction-based policy does not discourage the natural tendency of the Prime to take the path of least resistance, which is to direct more work to their existing supply chain, often categorically excluding SBs. Unlike larger subcontractors, SBs will not likely have an existing relationship, nor a shared infrastructure with the Prime. The investment required to assist SBs in becoming recognized, qualified, and integrated with the Prime supply chain is significant and a disincentive to the Prime in working with SBs.

In some large Primes, the R&D and procurement departments are usually separate entities with very little harmonization across the company. Procurement departments who are responsible for IRBs are unaware of the R&D priorities and vice versa. In some instances, the IRB decision-makers are not integrated to the procurement departments. In most cases, those same R&D organizations often have no influence on the suppliers’s selection process, nor knowledge of IRB obligations. In this context, the Government’s expectation that SBs forge the relationship with and within the Primes is unreasonable, given the Primes own inability to accomplish this feat.

In addition, most IRBs are still allocated to the purchase of off-the-shelf items from existing supply chains of Primes. This does not favour the development of an innovative SB supply chain.

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<sup>10</sup> IRB defines an SMB as a Canadian-based, independently owned and operated firm with under 250 full-time employees.

While significant efforts are deployed by the RDAs across Canada to ensure IRB benefits accrue to SBs, there needs to be more concerted and intense effort to promote SBs to the Obligor and provide motivation for them to engage with SBs. RDAs play an important “connecting” role for the aerospace industry but RDAs have very limited resources compared to the larger departments.

For most major military procurement projects, there is a 15% small and medium-size business IRB requirement. However, this requirement applies to SMEs (1-250 employees) and not SBs. With 98% of all Canadian businesses having fewer than 500 employees, this 15% target is in essence a Canadian content target, not a small business target.

*Communication with SBs* on issues such as “bundling”, IRBs or other procurement opportunities remains a challenge. For instance, it is extremely difficult for SBs to obtain any information from the government on the subject of “bundling”. SBs often ask the government whether their contracts will be subject to a future planned OWSS or ISSCF so they can plan accordingly and begin discussions with potential Primes, but rarely obtain a response.

### **3.2.2 Recommendations: Government Procurement**

It is recommended that Government:

1. Establish “bundling” mechanisms aimed at ensuring fair practices and incentivizing Procurement Officials to foster use of SBs in Canada such as:
  - a. Communicating with existing government contractors prior to making decisions about bundling their services, to assess ways of retaining the current supplier,
  - b. Ensuring incumbents receive a fair and open opportunity to supply the same services to OWSS and ISSCF contractors,
  - c. Identifying SBs’ capabilities and match these capabilities to requirements in all major acquisitions and reserve these areas for SBs, and
  - d. Facilitating introductions to Major Crown, OWSS and ISSCF contenders and giving SBs leverage with contenders during the competitive stage of an RFP.
  
2. Improve leverage of the IRB Policy to support SBs through:
  - a. Strongly favouring SBs if the industrial capability exists in Canada,
  - b. Identifying target technologies and set IRB targets/rewards for achievement,
  - c. Implementing a Small Business (100 employees or less) set-aside policy,
  - d. Providing communication mechanisms for IRB obligors to connect the purchasing and R&D/engineering teams with the objective of seeking out value-added SBs,

- e. Enabling obligor-SBs relationship creation prior to contract award and during contract definition phase, without jeopardizing incrementality,
  - f. Providing enhanced multipliers for SBs in recognition that there is an inherent tendency within the primes to avoid SBs,
  - g. Confirming up-front disclosure of exactly what credits and crediting methodology will be applied for strategic IRBs, and
  - h. Creating a Canada-wide Approved IRB Supplier List for SB competencies and technologies for use by/promotion to obligors.
3. Implement an advocacy model harmonized across all departments (such as in the Netherlands) for SBs by:
- a. Reinforcing the advocacy role for SBs within the Canadian government dedicated to ensuring government procurement maximizes the development of Canadian innovative products and services, building on the work done by OSME, IC and the Regional Development Agencies (RDAs), and
  - b. Giving the authority and responsibility to a specific body to ensure all major government procurements fully utilize and foster growth of existing SBs capabilities. This body would advocate on behalf of SBs during the four procurement phases.
4. Continue to improve communication and engagement with Industry/SBs by:
- a. Engaging SBs, and all industry in all four phases of the procurement process: identification of requirements, determining best technical approach, contract award and life-cycle management (e.g. the National Shipbuilding Procurement Strategy).
5. Help alleviate complex requirements by:
- a. Providing bid preparation training for SBs,
  - b. Assisting SBs to achieve the qualifying certification and process standardization required by Primes, and
  - c. Incentivizing strategic alliances among similar suppliers in order to support much larger contracts.

### **3.3 INTELLECTUAL PROPERTY**

#### **3.3.1 Challenges**

Restrictive IP terms and conditions significantly affect SBs' ability to provide competitive goods and services to Government on foreign equipment acquisitions. Restrictive IP terms and conditions also have

a lasting impact on the ability of SBs to provide life-cycle support for acquired technology. IP and data licence issues are critical issues relating to procurement, and should be considered during the solicitation and selection of required technologies. Implications are especially great for SMEs as they must balance the risk of disclosing their valuable IP against the potential loss of business, especially when dealing with larger companies, and only the largest industry players may have the capital to bring exploitable IP to market.<sup>11</sup>

The following are specific IP onerous and restrictive challenges facing SBs.

*Canadian SB's have been prevented from bidding on opportunities* related to past procurement and life-cycle support contracts because key pieces of technology and data are in control of the Prime. The Prime will sometimes choose which companies are allowed to receive data/IP; even when this is not regulated by government. An example would be aviation procurements where the Prime will only make available Operational Flight Programs (OFP) and aircraft data to training companies of their choosing.

*If key data and interface details are in control of a Prime instead of the Government*, there cannot be fair competition by SBs for life-cycle support, training, and upgrades of the technology. The intent of sharing key data would be not to violate trade-secret information or copyrights, but to ensure that data which is required for the support of technology is reasonably available to Canadian SBs.

*IP is also a major issue with respect to technology development.* Negotiation of IP clauses between partners often takes many months and the situation is normally worse when universities are involved. Unless they realize that an IP has no value until it is commercialized, Universities (and some research centers) are not talking the same language as industry.

*If fair access to IP and/or data licences was provided* at the contract level, significant opportunities could be made available to SBs. SBs can compete effectively on contracts relating to life-cycle support, including future upgrades and training, if any unnecessary restrictions are not placed on the data.

Fair and equal access to IP/Data will enable SBs to build skills and products that will not only benefit Canadian procurement, but also will enable SBs to compete globally on future procurements similar to the acquired technologies. In addition to SBs growth, the Government's interests would be best protected by careful review of IP-affected clauses prior to contract award.

### **3.3.2 Recommendations: Intellectual Property**

It is recommended that Government:

1. Reinforce procurement policy by providing stronger guidelines regarding IP and data availability during the solicitation and contract pre-award phases,
2. Ensure Primes facilitate access to IP for SBs, and do not impose onerous or restrictive IP provisions down the supply chain,

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<sup>11</sup> Science-Metrix (2011, September) *Public Funding Programs in Support of R&D in A&D Industries*

3. Ensure that the results of all IP negotiations are incorporated into subsequent contracts, and
4. Adopt a common framework to facilitate the discussions (e.g. CRIAQ, National Research Council Institute for Aerospace Research (NRC-IAR) and Federal Partners in Technology Transfer).

## 4.0 CONCLUSION

The reality of the global aerospace industry has changed dramatically over the past 20 years. Programs and policies that have been established over the years must be reviewed and adapted to today's global aerospace business model that has particularly impacted SBs through the movements in the supply chain. Given a supportive environment, it is up to entrepreneurial SBs to take full advantage of the programs to gain full access to opportunities and succeed in the world market.

The Working Group Recommendations essentially focus on:

- Appropriate and adapted financial support mechanisms,
- Support for adoption of process and production technologies,
- Effective procurement policies, and
- A supportive IP environment.

The Working Group believes that these policies can be implemented in a fiscally neutral manner and will advance Canada's Innovation Agenda. Both the Canadian Government and the Industry will derive substantial benefits including:

- *Improved productivity and innovation*
- *State-of-the-art manufacturing – ahead of the competition*
- *Reshoring – jobs back in Canada*
- *Stronger clusters*
- *Highly skilled jobs*
- *A higher rate of investment in R&D*
- *Retention of researchers and engineers in Canada*
- *Increased market share*
- *Increased revenues for government /income tax*
- *Higher contribution to GDP*
- *Technology support to Canadian Tier1 and OEMs fuelling sustainable growth at all tiers in the industry.*

***Complacency is not an option. If we are not moving ahead, we are falling behind.  
If this industry is worth preserving, exceptional measures must be taken.***

**ANNEX A**  
**MEMBERS OF THE SMALL BUSINESS WORKING GROUP**

Pat	Mann	Chair	Patlon Aircraft & Industries
Adam	Moser	Secretary	Aerospace Review Secretariat
Lucie	Boily	AIAC	Aerospace Industries Association of Canada

**Industry**

Claude	Baril	Composites Altantic
Ross	Betts	Shipley
Dale	Boucher	Norcat
Brad	Bourne	FTG Inc.
Tony	Burgess	TDM
Ray	Castelli	CADSI (Weatherhaven)
Iain	Christie	Neptec
Keith	Donaldson	Apex
Stéphane	Germain	Xiphos
David	Gregory	Canrep
Martin	Lavoie	CME
Chris	Lawler	Esterline CMC Electronics
Fergie	Legge	Aerosystems
John	Maris	Marinvent
Roman	Ronge	Aflare Systems
Kevin	Russell	ASCO
Richard	Smith	Aversan
Léo	Sousa	Cormer Group
James	Tully	Cascade Aerospace
Mark	van Rooij	Avcorp
Alec	van Zuiden	SECM-GT International Inc

**Academia**

Colin	Kelly	Confederation College
Don	MacDonald	Red River College
Barry	Prentice	University of Manitoba

**Government – ex-officio representatives**

Business Development Bank of Canada  
 Federal Economic Development Initiative in Northern Ontario  
 PWGSC - Office of Small and Medium Enterprises  
 PWGSC – Client Engagement Coordination Directorate  
 Industry Canada - Industrial Technologies Office  
 Industry Canada - Small Business Branch  
 Western Economic Diversification Canada  
 Department of National Defence - International and Industry Programs  
 Canada Economic Development for Quebec Regions  
 NRC - Industrial Research Assistance Program  
 Atlantic Canada Opportunities Agency  
 Export Development Canada - Transportation Group

## ANNEX B

Follow-up to meeting with Review Head and the members of the Advisory Committee on July 25, 2012

### AEROSPACE SMALL BUSINESS VERSUS OTHER MANUFACTURING SMALL BUSINESS

**Question:**

*Briefly clarify how challenges faced by aerospace small businesses are different from challenges faced by small businesses in other sectors.*

**Answer:**

First of all, the two critical differences between small business and medium/large businesses are cash flow or financial limitations and lack of specialized staff. Almost by definition the financial and personnel depth of small business is limited. This restricts small businesses ability to borrow and/or invest in equipment, processes, personnel and new projects. Similarly, limited personnel restricts small businesses ability to expand its capability in pursuing new projects and/or new markets.

Compounding these two key characteristics of small businesses are the challenges unique to or predominately associated with the aerospace industry. Participation at any level in major aerospace platform programs means risk sharing, onerous terms and conditions, lengthy periods from program inception to cash generation, operating in a global marketplace and possible relocation around the world and inevitable program delays.

Small Business involvement in aerospace programs often includes research and development. This barrier to entry is also not common in other industries and often the investment required and the length of time from research through development is simply prohibitive for aerospace small businesses to participate.

Furthermore most banks relegate small businesses to their commercial desk of a local branch. These people do not have the expertise nor the resources to understand and service any aerospace company, let alone an aerospace small business.

Finally participation in aerospace major platforms at any level is not simply a matter of providing a three page quotation. These programs involve detailed aerospace specifications and regulations, quality specifications, specialized engineering drawing formats and specifications, mandatory process requirements and qualified program managers. All of these aerospace specific requirements necessitate specific processes and personnel which strain aerospace small businesses ability to participate.

## ANNEX C

### SMALL BUSINESS INNOVATION AND RESEARCH (SBIR)

#### SME Specific Public Funding Programs in Support of R&D in the Aeronautics and Defence Industries

Excerpts from the study *Public Funding Programs in Support of R&D in the Aeronautics and Defence Industries*, Science Metrix, September 23, 2011 for Industry Canada (SADI)

#### UNITED STATES

##### **National Aeronautics and Space Administration (NASA) Small Business Program**

Performed chiefly by industry, extramural R&D accounted for 64% of NASA's R&D obligations in 2008. Like all US departments with extramural research budgets in excess of \$100 million, *NASA must allocate 2.8% of its total extramural budget for contracts or grants to small businesses*. NASA has a Small Business Development Office that offers a wide variety of programs targeted at small businesses. These include Mentor/Protégé Programs which help prime contractors to assist eligible protégés in enhancing their capabilities to perform NASA contracts/subcontracts and aim to foster long-term relationships between the firms.

These also include **Small Business Innovation Research (SBIR)** contracts, which on a whole-of-government level provide the largest source of early-stage technology financing in the US. According to the SBIR website, through the program, participating agencies have provided contracts to 15,000 firms and involved 400,000 scientists and engineers. The SBIR is a set-aside program that allows small businesses to engage in federal R&D, and to compete on the same level as larger businesses. It is primarily concerned with funding the critical start-up and development stages. Currently, 11 US agencies are participating in the SBIR program.

While the **Small Business Technology Transfer (STTR)** program is similar in structure to SBIR, it funds cooperative R&D projects... It is primarily concerned with facilitating the transfer of technology developed by a research institution through the entrepreneurship of a small business.

Recipient groups – only firms qualifying as small business concerns (SBCs) are eligible to participate in the SBIR and STTP programs... and having no more than 500 employees.

It is interesting to note that 'contractors can generally retain the title to patents granted for inventions that were conceived of or developed under the SBIR contract....

DARPA (Defense Advanced Research Projects Agency) provides funding for fundamental and innovative defense research that is conducted by private sector, academic and other non-profit organizations as well as government labs. All its research is carried out extramurally. DARPA's general acquisition strategies are structured to facilitate small business participation, either directly or indirectly, by fostering small business teaming through either small business prime contracting or prime contractors

subcontracting with SBCs. (TRL 1-7) Funding is provided in the form of contracts, grants, cooperative agreements and technology investment agreements, as well as other transactions.

## FRANCE

ONERA has instituted a new Partnership Innovation Strategy which stresses the strategic further development of partnerships with national and European SMEs. The objectives of this strategy are to enable SMEs to gain access to R&D results achieved at ONERA and to elicit innovative proposals from, and create opportunities for SMEs.

SMEs benefit from the partnership in many ways, including access to scientific expertise, tools and solutions from the aerospace domain; opportunities for technology and transfer of know-how for new products and business opportunities for hosting an ONERA spin-off reinforced competitiveness with high added-value scientific inputs; reinforced visibility in the aerospace market; promotion of SMEs on ONERA's website and in national and international communication and commercial operations; and an overall boost for innovation.

Dual Innovation Projects (RAPID) – funded by DGA to support industrial research or experimental development that produces technology that has high potential for military applications, with additional benefits for civilian markets. Recipient Group is SMEs (fewer than 250 employees) and Medium-sized (fewer than 2000). Funding is provided in the form of a grant. Up to 80% of eligible costs will be funded... SMEs receive a funding boost of 10% over medium-sized companies, with an additional 15% if they collaborate exclusively with another small company. (TRL 2-5)

## GERMANY

The LuFo IV program for civil aviation research – its program lines and activities cover R&D (TRL 2-5) in manufacturing, maintenance and repair, environmentally friendly air transport; efficient aircraft and integrated technology projects. Recipient groups include SMEs who can receive funding up to 60% of costs (as opposed to 50% for non-SMEs).

## SWEDEN

The Swedish National Aeronautic Program offers support in the form of a grant. The program covers approximately 50% of eligible costs.

## THE NETHERLANDS

The Civil Aircraft Development (CAD) program provides loans and grants to cover the development of products, processes or services for civil aircraft and aircraft engines. Grants range from €10 to €20 million and the share covered will vary: 50% if the research is industrial or commercial; 40% if the research is experimental... If the recipient company is an SME, the amount granted jumps by an additional 10%, with a maximum grant of €1 million. (TRL 2-5)

## CONCLUDING OBSERVATIONS

Given their key roles in national security, strategy and technological development, the A&D industries are among the most government-supported in the world.

Studies have found that a great deal of innovation in the A&D industries is taking place at the level of SMEs.<sup>11</sup> In a competitive context, smaller businesses have many advantages – they tend to be leaner, faster, more flexible, more specialized, more cost-effective and highly inventive. However, the same studies often describe the various barriers faced by SMEs to market entry, including information asymmetries, a lack of awareness of funding or contract opportunities and difficulties securing co-financing.<sup>12</sup>

In Europe, FP 7 cooperation programs included dedicated instruments for increasing the participation of SMEs in the A&D industries, and initiatives such as AeroSME/AeroPortal (<http://aeroportal.eu/>) further support these widespread efforts. In the US, SMEs in the A&D industries are some of the major recipients of funding under the SBIR and the STTR programs. (...) the majority of the programs highlighted in this report (Public Funding Programs) make some provisions for SMEs.

Although SADI is ostensibly open to firms of all sizes, the Aerospace Industries Association of Canada (AIAC) has noted that the program is structured to meet the needs of larger firms – its application, administrative and reporting processes are considered somewhat onerous and its financial eligibility, project size requirements and repayment terms too stringent for smaller firms.<sup>13</sup>

Governments are arguably best positioned to “leverage the indigenous industrial capabilities of a country” and those concerned about mitigating the effects of risk-taking on innovating firms make greater efforts to share the considerable risks involved. Government risk-sharing approaches are often broadly articulated as the creation of more amenable R&D program terms and conditions (e.g. clear and fair rules on ‘eligible project costs’, reasonable repayment terms, etc.).

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<sup>11</sup> Tall, P. (2010) March) *Depth and diversity of a competitive EDTIB: SMEs in defence.*

<sup>12</sup> CSES (2011, January). *SMEs and their participation in security research – Case study.* Retrieved from [http://ec.europa.eu/enterprise/policies/security/files/doc/sme\\_case\\_study\\_cses\\_en.pdf](http://ec.europa.eu/enterprise/policies/security/files/doc/sme_case_study_cses_en.pdf)

<sup>13</sup> AIAC (2011, February) Aerospace Industries Association of Canada replies to consultation questions.

## **ANNEX D**

### **CAL'S EXPERIENCE WITH RISK SHARING**

It is well known that for several years, the modus operandi of OEM has been to flow down risks (financial and technical) to Tier 1 suppliers which in turn flow down these risks to their suppliers.

For an SME, supporting such risk can be very dangerous and even life threatening. Composites Atlantic Limited (CAL) has participated in two projects requiring risk sharing and the following is a summary of our experience and downfalls.

In 2002, CAL entered into a contract agreement with its sister company (Composites Aquitaine) to design and manufacture the A380 cockpit interior (panels and banquettes). The contract was heavily biased towards the OEM (Airbus) as often the SME has little choice or power to negotiate contract terms with OEMs.

Starting in 2005, CAL also got involved on projects for the Boeing 787. Although CAL was not entirely responsible for the design on these projects, CAL still had to support the development and tooling costs. In addition, CAL invested heavily in facility and new equipment to support the expected rate and ramp-up.

### **ISSUES RELATED TO SUCH PROJECTS**

- The SME often does not have the necessary skills and/or staff to negotiate complex contracts with the OEM. The typical reaction of OEMs is you accept as is or we go elsewhere (always insisting that other suppliers have agreed to the same terms which is often true).
- The SME has very little control on the development schedule and main cost drivers. Therefore, the SME has to adapt and try to manage the contract (managing the contract takes resources that are often not available to the SME)
- Many changes are imposed which drive up the development cost. The end result is a higher non-recurring cost and likely higher recurring costs.
- Design, development and tooling costs are absorbed by the SME and repayment is done through amortization on the production phase (i.e. an amount per part delivered is fixed to payback the non-recurring costs).

### **WHAT CAN GO WRONG**

The recent experience with both the A380 and Boeing 787 is a good example that such complex development programs are often (not to say always) delayed. These delays have a tremendous impact on cash flow management for SMEs.

Here are some facts:

- The A380's entry into service was delayed by two years. This means that amortization revenues started two years later.

- The ramp-up of the A380 was far slower than initially projected by Airbus. This means that the amortization period will be far longer. Therefore, when actualizing the cash flows, the ROI is drastically reduced (now negative)
- The amortization was negotiated to be on 600 aircrafts. This may take 25+ years to produce these aircrafts as only 200+ have been sold. That means that CAL will never recuperate its investment.
- The 787 was plagued by technical problems resulting in the delay of the first flight by more than 3 years. Again, this means that revenues from amortization start far later than planned.
- The investment made to add capacity for future production on 787 is not fully utilized. The fixed costs greatly reduce our profitability and that will be the case until production finally reaches full rate production.
- The production ramp-up is not as steep as projected by Boeing. With contracts being negotiated on a fixed duration (i.e. end of 2013 and 2015) fewer aircraft are produced during the contractual timeframe and therefore, the revenues from amortization are far less.

In the end, CAL ended up with a large debt that impedes its competitiveness and ability to finance new programs.

#### **LESSON**

Based on the past experience, CAL did readjust its valuation of risk and is now including provisions to account for the risks such as delays, increased NRC, lower quantity of units produced, etc.

Doing so impacts the overall competitiveness of our offer as OEMs base their selection on total cost (RC + NRC). The end result is that CAL could not provide a competitive offer (there is always a company ready to buy in the hopes of gaining other projects; Especially now that more and more countries invest in the aerospace sector and support their national industry).

#### **DATA**

Original Delivery Plan A380: 22 a/c in 2004, up to 50 aircraft per year from 2005

Actuals: First 22 aircraft delivered by the end of 2008, rate of 24 a/c per year in 2011

**Investment in NRC: 8 M\$ CAD**

Original Delivery Plan 787: 300 aircraft to be delivered by mid-2011

Actuals: 65 aircraft delivered by mid-2011

**Investment in NRC: 6 M\$ CAD**