

FLIGHT PATH: A VISION FOR THE FUTURE



Ontario Aerospace Strategy

**Vision, Goals, Targets for Success,
Strategies and Integrated Strategic Initiatives**

Stakeholder Organizations participating to date in the Aerospace Action Partnership to develop the Ontario Aerospace Strategy and Integrated Strategic Initiatives

ADVANCED PROCESSING
AERO-SAFE TECHNOLOGIES
ASS'N OF COLLEGES of APPLIED ARTS & TECHNOLOGY of ONTARIO
ATLANTIS SYSTEMS INTERNATIONAL
B&R MACHINE
BOEING ARNPRIOR
BOEING TORONTO
BOMBARDIER AEROSPACE
CAMETOID
CANADIAN COMMERCIAL CORPORATION
CANADIAN PLASTICS GROUP
CANADORE COLLEGE
CASEBANK TECHNOLOGIES
CAW - LOCAL 112
CAW - LOCAL 673
CAW - NATIONAL OFFICE
CENTENNIAL COLLEGE
CITY OF BRAMPTON
CITY OF MISSISSAUGA
CITY OF TORONTO
COCOR AERO PRODUCTS
CONFEDERATION COLLEGE
CON*NECT
CURTISS WRIGHT CONTROLS, NOVATRONICS
EADS CANADA
EUROCOPTER CANADA
EXACTATHERM
FIELD AVIATION
GOODRICH LANDING GEAR
HONEYWELL
HUMBER INSTITUTE of TECHNOLOGY
INDUSTRY CANADA
INTERFAST
INTERNATIONAL ASSOCIATION of MACHINISTS & AEROSPACE WORKERS
INTERNATIONAL TRADE CANADA
L-3 COMMUNICATIONS, ELECTRONIC SYSTEMS
LUXELL TECHNOLOGIES
MAGELLAN AEROSPACE
MESSIER-DOWTY
METAL IMPROVEMENT
MGMT2GO
NATIONAL RESEARCH COUNCIL
ONTARIO MINISTRY of ECONOMIC DEVELOPMENT & TRADE
ONTARIO MINISTRY of EDUCATION & TRAINING
PATLON AIRCRAFT & MANUFACTURING
PRATT & WHITNEY CANADA
PwM CONSULTING
QUEENSWAY MACHINE PRODUCTS
REIL INDUSTRIAL ENTERPRISES
RYERSON UNIVERSITY
TDM TECHNICAL SERVICES
TECHNOLOGY PARTNERSHIPS CANADA
TEDCO
THERMODYNE ENGINEERING
TORONTO AEROSPACE MUSEUM
TOWN OF AJAX
TOWN OF OAKVILLE
UNIVERSITY OF TORONTO- INSTITUTE FOR AEROSPACE STUDIES
VAC AERO INTERNATIONAL

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1 Introduction

The Aerospace Action Partnership is an Ontario-based, multi-stakeholder group comprised of: Industry Firms, Labour Organizations, Academic Institutions, Research Organizations, and Governments (municipal, provincial, federal) who have come together to work in partnership to enhance the success and global position of the Ontario Aerospace Industry.

In the global aerospace industry, responsibility, risk, and investment are being pushed down the supply chain. Suppliers at all levels must provide higher value while meeting substantially reducing cost targets. At the same time, all Ontario aerospace firms must compete on an ever more global basis. In this dynamic market environment, a cohesive sector strategy is vital to enable all stakeholders to work together for greater success.

2 Background

The Ontario Aerospace stakeholders first came together in mid-2003 to discuss common interests and shared challenges. At the Aerospace Roundtable in September 2003, representatives from all stakeholder groups laid the foundation for the Aerospace Action Partnership (AAP) and framed their goals for the Ontario aerospace sector. The AAP Steering Committee was formed and met initially in October 2004 to endorse the Vision, Goals, and Targets for Success for the sector, and to authorize a series of Think Tanks, Task Forces and Action Teams involving a wide range of sector stakeholder organizations. Their mandate was to develop Strategies and Initiatives that would drive actions to make progress towards our Goals and Targets and thereby realize our Vision. The resulting five Integrated Strategic Initiatives are set out in Section 7 below. The preliminary Action Plans to mobilize these five Integrated Strategic Initiatives are proposed in Sections 8.

The detailed outcomes of the Think Tank and the Task Forces are provided in the attached Appendix. This work was guided by the Integrated Strategic Action Planning process developed for this purpose. Stakeholder representatives examined the 'Current State' of the Ontario aerospace industry, considered Industry Trends, and then defined their vision of their desired 'Future State'. Finally, they identified an extensive range of actions needed to move from "where we are" to "where we want to be".

3 Vision, Goals & Targets for Success

The Vision, Goals, Targets for Success, Integrated Strategic Initiatives and Action Plans developed by the Ontario aerospace stakeholders reflect a frank recognition of the tough challenges that are part of a global, technology based, cyclical industry together with tremendous pride in our aerospace heritage and in the market-leading positions achieved by many Ontario aerospace companies today. Guided by their insightful vision and driven by their keen ambition, Ontario aerospace stakeholders are poised to build even greater success in future. The success of Ontario's aerospace sector benefits our economy, our communities, and all Ontarians.

Vision for Ontario Aerospace

- an Ontario aerospace industry which is an internationally recognized leader in aircraft, integrated systems, and equipment in its target markets; as a major provincial industrial asset, it builds aggressively on its base of people, globally competitive technology, and capital to provide expanding exports while leveraging domestic demand, supply opportunities around key product clusters, secure employment and income levels which minimize dislocation of people, and satisfactory return to its investors.

Goals for Ontario Aerospace

- Promote health and growth of the industry
- Lead the world in innovating customer-focused products, processes and services and higher productivity
- Ensure skills and knowledge to support the industry
- Develop a world-class brand for the industry

Ontario Targets for Success by 2015

		2004	2015
→ Triple Tier 1 aircraft assembly		35 - 45 /yr	100 - 150 /yr
→ Double our product mandates for systems integration		4 - 6	→ 8 - 12
→ Triple our engineered product firms		8 - 10	24 - 30
→ Double our knowledge workers engaged in life-long learning		20%	40%
Increase our revenues, our exports and our Manufacturing and MRO* jobs by at least 50%	Revenues	\$7 - 8 billion	\$15 - 18 billion
	Jobs	22 - 25,000	38 - 45,000
* Maintenance, Repair & Overhaul			

4 The Need:

To fully support the approved Goals and Targets and to facilitate the transitioning of the Ontario Aerospace Industry global 'Supply-Chain Value Added' positioning, the need to identify opportunities, develop key technologies, enhancement of the human resources base of the Industry, expand resource sources and develop mechanisms to promote and educate has been recognized and has been addressed within the Integrated Strategic Initiatives.

Our Aerospace firms have classically demonstrated key company capabilities in areas of technological development of new products, services and processes as currently demonstrated through the successes in global market penetration in specialized niches.

Long-term Industry growth and sustainability will rely on 'Market Outlooks' as they drive ongoing strategic initiatives. To enhance Ontario Aerospace positioning, transformation and attraction of new product/cluster development to facilitate sustainable competitive advantages within the global market, and enhance the Industry's ability to win new product mandates, a sustainable 'Market Outlooks' program and an integrated 'Progressive Marketing Plan' is critical. A sustainable 'Competency Based Skills and Learning' program is critical to ensure that Industry capabilities may be realized and honed as increased technological advances require ongoing enhanced and specific human resource skill sets. The basis for all Company capability demonstration is through the core competencies exhibited by their human resources.

The need to provide evergreen training and competency development facilities is essential to enhance our Industry capabilities and sustainable competitive advantages as the Global Industry supply-chain has transitioned from 'One to Many' to 'One to Few'. The need to attract, develop and retain human resource talent is a key element to sustainability and growth for the Industry. The need to further clarify, plan and enhance the relative skill and competency levels of our human resource bases is necessary to support the Industry and provide tangible incentives for employment retention and advancement, in dealing with multiple industry sector demand for similar skill sets set against a diminishing availability of youth and new entrants to the Aerospace Industry and multiple career options.

The development of 'Progressive Marketing Programs' will on an ongoing basis provide educational materials to the Ontario and Canadian public, who are not aware of the heritage and ongoing technical, environmental and quality of life contributions that the domestic Aerospace Industry has and continues to provide. The public does not know or recognize the multiple Tiers which exist within the Aerospace Industry and are unaware of the diverse scope, size and capabilities of the companies involved in Aerospace activities in Ontario. These perceptions affect not only the awareness of the Industry in general but more significantly they affect the ability to attract and retain entrants into the highly skilled Aerospace job market.

The need to promote our Aerospace Industry capabilities on a global basis is key to the successful attainment of the AAP growth targets and goals as the Global Industry supply-chain has transitioned from 'One to Many' to 'One to Few'. The impact of this supply-chain transition has created new challenges and demands on the Ontario Aerospace firms.

The development and implementation of an 'Ontario Centre for Aerospace' is considered an 'enabling' Strategic Initiative and will enhance the success of all four AAP Goals and Target areas; Health & Growth, New Product/Service/Process Development, Skills & Knowledge and World-Class Brand by increasing awareness and attraction of key sustaining elements such as human resources, facilitating skills training and physical resources to support technology development/demonstration.

5 Contribution to Ontario Aerospace Goals and Targets:

The development and implementation of Integrated Strategic Initiatives will enhance the success of all four Goals and Target areas; Health & Growth, New Product/Service/Process Development, Skills & Knowledge and World-Class Brand by increasing awareness and attraction of key sustaining elements such as human resources, facilitating skills training and physical resources to support technology development/demonstration. The following denotes key contribution areas:

Health & Growth:

The approved Targets and Goals represent up to a 300% net growth of the Ontario Aerospace Industry over the next 10 years in the areas of new aircraft assembly, product mandates for systems integration, the number of product firms, recruitment /retention and development of human resource skills, MRO employment opportunities and revenues. The Integrated Strategic programs are critical enabling co-elements in providing impetus and support to these goals and targets by accurate analysis and forecasting of business opportunities, technologies and human resource talent enhancing supply-chain value added propositions of the Industry. Additionally, the programs will support technology development and demonstration and key Industry capabilities domestically and internationally.

New Product/Service/Process Development:

The Integrated Strategic programs supports the development of new product/service/process technology development and demonstration by providing focused areas of technology development and demonstration of Company capabilities. The resultant productivity gains increase international levels of awareness and acceptance of our Industry capabilities in existing and new market niches thereby enhancing the Industry's abilities to win new product mandates. The evergreen education and training aspects of the programs may dispel perceptions that the Canadian/Ontario Aerospace Industry is small and non responsive by raising the skills and competency levels on an ongoing basis of our human resources and increasing the Industry's 'supply-chain value' on all Tier levels. Our relatively small size may be transitioned into a perception of responsiveness, agility, creativity, value added capabilities and commitment.

Additionally, the Integrated Strategic initiative may assist domestic firms in developing technical clusters both virtual and physical by increasing development participation and activity, as may be carried out via the 'Aerospace Development Centre'.

Skills & Knowledge:

The Integrated Strategic initiative may facilitate long-term human resource planning, attraction, development, retention & integration between educational facilities and the Industry by supporting curriculum development, enrollment and providing opportunities and incentives to encourage life-long learning. As the industry is cyclical in nature, this forward planning is essential in support of existing and future skill requirements.

As new technologies/ services and processes emerge and are being developed, the need to train and develop human resource skills development/educational programs is essential to success. Attraction of domestic and foreign labour pools is critical to Industry sustainability. Effective promotion and Industry opportunity awareness will translate into long term career retention and continuing education of the domestic Aerospace Industry human resource base.

World-Class Brand:

The Integrated Strategic programs will provide tangible demonstration and marketing resources to our domestic Aerospace Industry and will support the winning of new product mandates and increase supply-chain value on a global basis as firms may showcase their capabilities. As the Canadian Aerospace Industry is considered small in global terms, the need to identify and promote our capabilities and talents is critical for growth and sustainability. The demonstration focus of capability and productivity will assist our firms in winning competitive bids for participation in larger system integration packages and supply.

6 Strategies

The collected strategies that emerged from the work of the Think Tank provided the basis for the Task Forces to bring forward their proposals for actions. These Strategies are as follows:

- Facilitate access to market opportunities and advantageous competitive positioning
- Strengthen existing Ontario aerospace industry clusters
- Attract new product / services mandates
- Focus on product & process technology development / commercialization related to existing and potential industry clusters
- Leverage the wide and diverse technology strengths in Ontario, in aerospace and beyond
- Establish industry stakeholder-defined, competency-based, outcomes-driven learning initiatives
- Build on existing and emerging industry-driven learning and HR initiatives
- Fully leverage the resources of Ontario's colleges, universities, and secondary schools
- Cultivate a positive image of the industry with the Ontario and Canadian public
- Aggressively promote aerospace trade and investment attraction internationally

7 Strategic Initiatives

Five AAP Task Forces (1 - Health & Growth, 2 - Product Innovation, 3 - Skills & Learning, 4 - World Class Brand and 5 - Aerospace Development Centre), working independently and each guided by the relevant Strategies, proposed the following Strategic Initiatives:

1 – Drive the Health and Growth of the Industry

Strategies

- Facilitate access to market opportunities and advantageous competitive positioning
- Strengthen existing Ontario aerospace industry clusters
- Attract new product / services mandates

Strategic Initiatives

- Define investment incentive programs / identify existing investment incentive mechanisms to facilitate building a long-term industry infrastructure
- Establish 'Buy Canadian - Buy Ontario' incentive programs to encourage higher Canadian value-added and greater market success at all levels in the supply chain
- Identify and target major market opportunities (e.g. new aircraft programs) of importance to Ontario firms and aggressively promote Ontario capabilities into these opportunities. Conditional on government support - e.g. minimum % of Canadian
- Define industry cluster 'gaps' and new product mandate opportunities
- Develop 'Value Proposition' and 'Business Case Support' packages specific to individual corporations to assist them in winning new product mandates within their corporations

2 – Lead the World in Innovating Customer- focused Products, Processes & Services and Higher Productivity

Strategies

- Focus on product & process technology development / commercialization related to existing and potential industry clusters
- Leverage the wide and diverse technology strengths in Ontario, in aerospace and beyond

Strategic Initiatives

- Develop a Market Outlook, that responds to future market directions, that identifies targets and availability of technology injection, required business practices, capabilities, and qualified resources
- Develop long-term, stable private-public partnerships among industry, research organizations, and governments to support technology leadership
- Develop long-term, stable Investment Capability & Capacity, focused on product / service / process technology development / commercialization and infrastructure investment for productivity
- Cultivate Environmental Stewardship, by driving technology development and education

3 – Ensure skills and knowledge to support the Industry

Strategies

- Establish industry stakeholder-defined, competency-based, outcomes-driven learning initiatives
- Build on existing and emerging industry-driven learning and HR initiatives
- Fully leverage the resources of Ontario's colleges, universities, and secondary schools

Strategic Initiatives

- Verify Market Research, to validate /forecast/ update current skills, knowledge status/requirements and evaluate compared to stated goals/targets (numerical) on a going basis (regular time interval).
- Identify and/or develop linkages with current and planned HR Initiatives including required communications and tools.
- Establish industry-wide, competency-based position profiles and correlated educational programming. Identify and fill competency gaps

4 – Develop a world-class brand for the Industry

Strategies

- Cultivate a positive image of the industry with the Ontario and Canadian public
- Aggressively promote aerospace trade and investment attraction internationally

Strategic Initiatives

- Implement a comprehensive Marketing Program, that is based on an examination of target audiences, long-term market opportunities and trends, with appropriate linkages to existing initiatives and government programs, that deliver a compelling message about "What Makes Ontario World Class"
- Develop Economic Business Cases to support winning of new product mandates by established multinational firms

5 – Aerospace Development Center

Strategic Actions

- Create Research Centre for Aerospace, focusing on technology demonstration facilities
- Create Training Centre for Aerospace, focusing on programs that require scarce capital assets necessary for advanced practical training in aviation and aerospace, to service employees and instructors
- Inspire youth to want to enter into an Aerospace career and inspire General Public to recognize the value of aerospace (in coordination with Brand Image initiatives)

8 Integrated Strategic Initiatives

Five Integrated Strategic Initiatives were crafted by integrating the Strategic Initiatives developed by each of the five Task Forces into related sets of initiatives. Common background information is annexed to this report.

8.1 Integrated Strategic Initiative #1 – ‘Market Outlooks’

Keep a close watch on future market opportunities, help companies access these opportunities, and discern the technologies and skills that will be needed to capture priority future market opportunities. Do this on an ongoing basis.

I. Business Opportunities Identification / Assessment & Gap Analysis

Identify, assess, and prioritize new business opportunities (e.g. major aircraft programs) in global aerospace markets. Determine industry cluster ‘gaps’ and new product mandate opportunities. Establish a sustainable ‘Market Intelligence’ process to capture and communicate information about future opportunities to Ontario aerospace firms.

II. Technologies Identification & Gap Analysis

Identify technologies needed to capture future business opportunities, and determine sources for needed technologies. The ‘Technology Roadmap / Framework’, as developed by Industry Canada and the Ontario Aerospace Council in 1997, will be used and updated to support technology identification activities.

III. Human Resources Competencies Identification & Gap Analysis

Guided by the defined market opportunities and key technologies, identify the most important Job Families and develop a consistent set of competency-based, outcomes-driven position profiles for these positions.

8.2 Integrated Strategic Initiative #2 – ‘Incentives to Win Aerospace Programs’

Establish “Incentives to Win Aerospace Programs” to enable Ontario aerospace firms to develop / demonstrate / commercialize the products / processes, advance their business acumen, and achieve the productivities that will position them to win on future aerospace programs.

I. Technology Development and Demonstration

Identify and establish incentive mechanisms necessary and sufficient to encourage and support technology development and demonstration for products, services, processes and human resource development. Identify and establish common / shared / collaborative technology demonstration facilities, as appropriate. The nature and form of needed financial incentives may involve governments and financial institutions.

II. Productivity Infrastructure Investment

Identify and establish incentive mechanisms necessary and sufficient to encourage and support investments in industry infrastructure to increase productivity. These investments may be in the form of facilities and equipment, business processes, human resource training and retention programs or IT infrastructure. The nature and form of needed financial incentives may involve governments and financial institutions.

III. Business Methods Advancement

Identify and establish the means to cultivate key business practices and methods required to support strategic repositioning by Ontario aerospace firms at all levels. MAP (Manufacturing Advancement Partnership) will be the means to accomplish this with SME suppliers who have the desire to transform their business and ‘move up the value chain’ by enhancing their capability offerings and human resource competencies to support strategic positioning.

8.3 Integrated Strategic Initiative # 3 – ‘Competency-based Skills & Learning’

Create outcomes-driven, competency-based position profiles and align educational programs with these, incorporating both industry and academic recognition. Do this on an ongoing basis.

I. Inventory/Assess existing Industry Competency Profiles

Inventory all existing competency profiles covering key aerospace Job Families and Positions (described in terms of Business, Relational and Technical Competencies) and identify competency gaps. Gaps may exist with respect to Positions covered or completeness of the existing competency profiles or both.

II. Establish Industry Competency Profiles

Create a consistent set of competency-based, outcomes-driven, descriptive position profiles in terms of the Business, Relational and Technical Competencies needed for a broad base of key aerospace positions.

Establish an Industry adopted ‘Competency Dictionary’ and correlating competency proficiency levels to enable additional / future position profiles to be created.

Develop and establish mechanisms (web-based, intelligent) to support the consistent application of competency profiles by companies.

III. Inventory / Assess existing Learning Programs

Inventory existing educational, training and apprentice programs relevant to key industry positions. Assess the competencies cultivated, compare these to the required competencies for key positions, and define the gaps.

IV. Develop / Revise Learning Programs to match Competencies Required

Develop / revise existing learning programs and/or establish new programs to deliver the competencies required.

Establish both an industry-recognition basis and an academic-recognition basis for relevant learning programs.

8.4 Integrated Strategic Initiative # 4 – ‘Progressive Marketing Programs’

Build greater pride by all Ontarians in our aerospace achievements and contributions, and build positive recognition in global markets of Ontario’s aerospace prowess

I. Public Image

Design and deliver Public Image marketing programs that will heighten awareness of the contributions, heritage, prestige and status of the Aerospace Industry in Ontario and Canada to the Ontario and Canadian public.

II Industry Profile

Develop and deliver Industry Profile marketing programs aimed at increasing the awareness of the capabilities of the Ontario Aerospace Industry abroad in established and developing Product/Service/Process niches globally. Develop linkages to promote Ontario businesses to the world.

III Winning New Product/Cluster Mandates

Develop supporting ‘Business Cases’ and ‘Value Propositions’ and establish marketing programs to increase awareness and attraction to support the winning of new product/cluster mandates, with investment into Ontario of capital resources, infrastructure, capabilities.

8.5 Integrated Strategic Initiative # 5 – ‘Aerospace Centre / Institute’

Create a center / institute (mostly ‘virtual’, physical as necessary), as a new and vital enabling initiative, to coordinate and support all the above initiatives.

I. Market Opportunities

Coordinate the identification, evaluation and prioritization of Major Programs and other market opportunities, and provide support for the repository of market intelligence and the communication with Ontario aerospace industry firms regarding marketing intelligence / opportunities.

II. Industry Research Programs

Coordinate Industry research programs aimed at facilitating technology development / demonstration and commercialization towards defined market demands. Some highly specialized facilities could be located at the Centre / Institute to enhance capabilities and technological specialties of the Ontario Aerospace Industry in established and developing Product/Service/Process niches. (An example is Environmental technology development and demonstration.) Such facilities would provide a showcase for Ontario aerospace technical capabilities.

III. Industry Training Programs

Operate specialized, capital intensive shared training resources and facilities, to be utilized by Industry personnel and training staff to advance life long learning, skills development, retention and core competency enhancement are to be developed.

IV. Youth & Public Image

Coordinate Public Image demonstration programs that:

- a. heighten awareness of the contributions, heritage, prestige and status of the Aerospace Industry in Ontario and Canada, targeted towards the Ontario and Canadian public and
- b. educate and excite youth about Aerospace career opportunities.

8.6 Current Enabling Initiatives

The AAP teams recognized three (3) existing initiatives as vital for supporting or enabling the Integrated Strategic Initiatives to fully achieve our Goals and Targets for Success.

8.6.1 MAP (Manufacturing Advancement Partnership)

The Manufacturing Advancement Partnership (MAP) is an industry-led initiative created for Canadian Small- and Medium-Sized Enterprises (SMEs) in the manufacturing sector. MAP is designed to enable SMEs to advance their competitive positioning. MAP works with companies on a customized basis to enable them to align their business strategic directions, their company capabilities, and their human resource competencies.

MAP matches each participating organization with a team of business experts who work with the company's managers using the MAP Business Advancement Framework to facilitate:

- Assessment of the company's external business environment and internal capabilities (including technical and business capabilities and resources)
- Formulation of their strategic directions and identification of their key company capability and human resource competency requirements
- Development of their strategic action plans and initiatives to align key company capabilities and human resource competencies with the company's strategic directions.

MAP currently is undertaking a series of pilot projects to test and refine the MAP Business Advancement Framework with SME manufacturers in Ontario's aerospace and automotive industries. It is anticipated that this first phase of MAP will be completed in the fall of 2005.

The second phase will involve the establishment of a prototype MAP Resource Centre to deliver the MAP Business Advancement Framework to SMEs in the manufacturing sector in Ontario.

MAP has been established by the Canadian Manufacturing Agility Forum (CMAF) with the following partner organizations:

Automotive Parts Manufacturers Association (APMA)

Ontario Aerospace Council (OAC)

Canadian Manufacturers & Exporters (CME)

Greater Toronto Skills Training Council (GTSTC)

MAP is funded in part by the Government of Canada.

8.6.2 Canadian Aerospace & Defence Capabilities Database

OAC is leading the development of a comprehensive, current, and effective capabilities database for the Canadian aerospace & defence industries, in partnership with other provincial and national aerospace organizations and with Industry Canada. International partners (France, UK) are working together with us to expand the database to include their aerospace industries.

Such a database is vital to support the matching of market opportunities with existing product / service capabilities, and to identify valuable strategic 'gaps' in our 'clusters of capabilities'.

This critical need has also been fully recognized in the work of the Canadian Aerospace Partnership, the national aerospace sector strategy initiative currently beginning its activity.

8.6.3 Aerospace Action Partnership

The Ontario aerospace stakeholders have recognized that there must be some ongoing mechanism whereby they can continue to facilitate and coordinate their efforts to drive the implementation of their defined Integrated Strategic Initiatives, and to adjust their Strategies as events unfold.

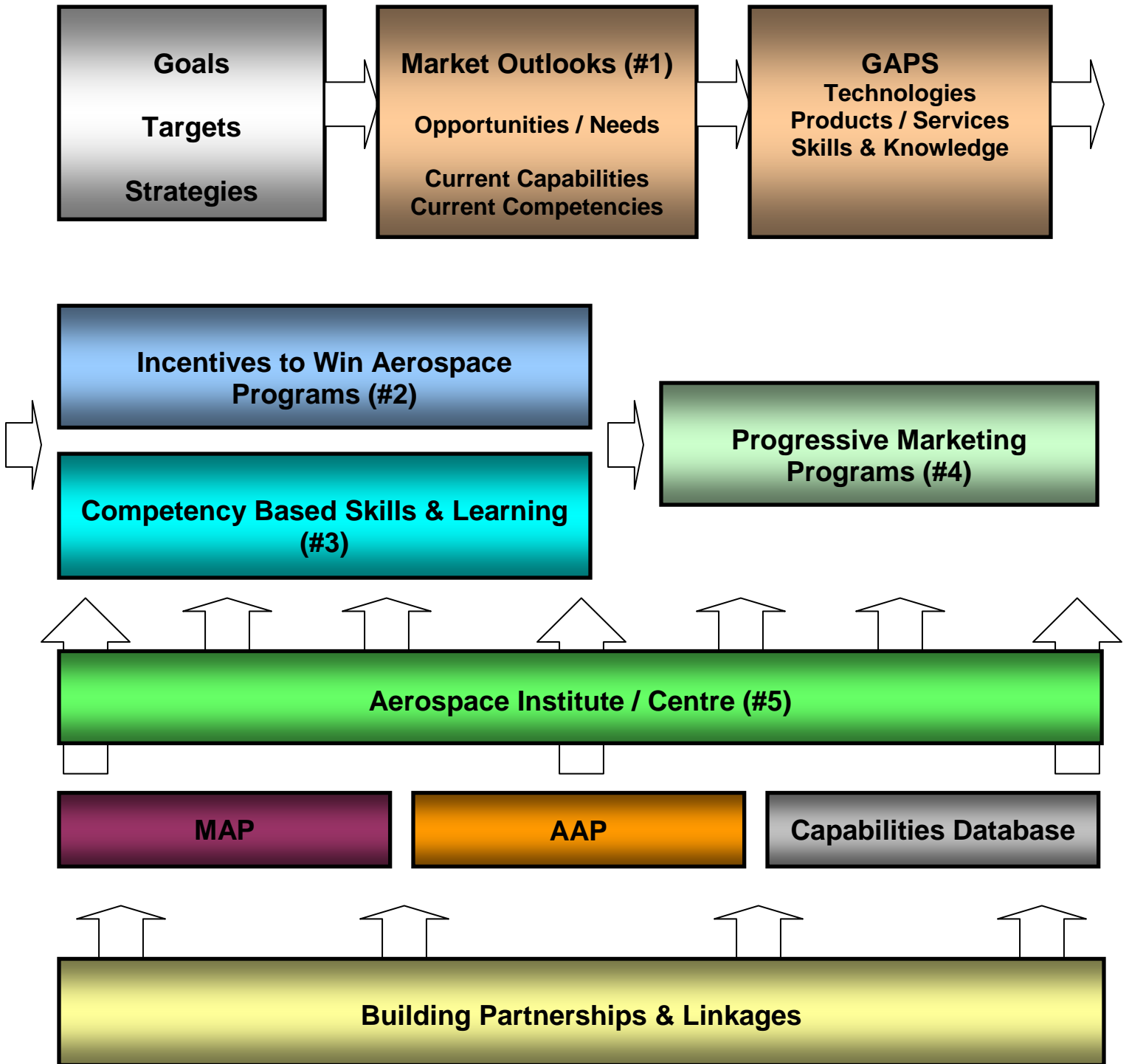
While some structural adjustments are likely needed to the current AAP and ongoing resources need to be obtained, the stakeholders have agreed that a form of AAP is essential.

8.6.4 Building Partnerships and Linkages

The AAP stakeholders recognized that it will be vital to our success to cultivate much stronger and more positive relationships among all stakeholder groups than has been the case to date. No specific initiative has been defined towards this, since the activities that will be involved in implementing the Integrated Strategic Initiatives and the Enabling initiatives will inexorably cultivate closer working relations. Success will breed further partnership activities beyond these strategic initiatives.

The relationships of the Goals, Targets, Strategies, Integrated Strategic Initiatives, and Enabling Initiatives are shown graphically on the following page.

Integrated Strategic and Enabling Initiatives



Support provided by Enabling Initiatives for Integrated Strategic Initiatives

<u>Enabling Initiatives</u>	Aerospace Centre / Institute	Manufacturing Advancement Partnership (MAP)	Aerospace Capabilities Database	Aerospace Action Partnership (AAP)
<u>Integrated Strategic Initiatives</u>				
Market Outlooks	◆	◆	◆	◆
Incentives to Win	◆			◆
Competency-based Skills & Learning	◆	◆		◆
Progressive Marketing Programs	◆		◆	◆

Integrated Strategic Initiatives – Timelines, Priorities, and Resources

	Timelines			Priorities			Resources					
	< 1 year	2 – 4 years	> 5 years	Low	Med	High	<\$500 K	\$1-5 M	\$10-100 M	In-kind	Cash	Sources
Market Outlooks												Industry – Gov't
Incentives to Win Aerospace Programs												Industry – Gov't - Research
Competency-based Skills & Learning												Industry – Labour – Gov't – Academia
Progressive Marketing Programs												Industry- Gov't- Labour

Enabling Initiatives – Timelines, Priorities, and Resources

	Timelines			Priorities			Resources					
	< 1 year	2 – 4 years	> 5 years	Low	Med	High	<\$500 K	\$1-5 M	\$10-100 M	In-kind	Cash	Sources
Aerospace Centre / Institute												Ind -Gov't- Lab – Acad - Research
Manufacturing Advancement Partnership												Ind – Gov't - Academia
Aerospace Capabilities Database												Industry – – Gov't – Research
Aerospace Action Partnership												Ind -Gov't- Lab – Acad - Research

9 APPENDIX A: Task Force Proposals for Mobilizing the Integrated Strategic Initiatives

9.1 Action Plan # 1: Market Outlooks

9.1.1 Objectives

Keep a close watch on future market opportunities, help companies access these opportunities, and discern the technologies and skills that will be needed to capture priority future market opportunities. Do this on an ongoing basis.

I. Business Opportunities Identification / Assessment & Gap Analysis

Identify, assess, and prioritize new business opportunities (e.g. major aircraft programs) in global aerospace markets. Determine industry cluster 'gaps' and new product mandate opportunities. Establish a 'Market Intelligence' process to capture and communicate information about future opportunities to Ontario aerospace firms.

II. Technologies Identification & Gap Analysis

Identify technologies needed to capture future business opportunities, and determine sources for needed technologies. The 'Technology Roadmap / Framework', as developed by Industry Canada and the Ontario Aerospace Council in 1997, will be used and updated to support technology identification activities.

III. Human Resources Competencies Identification & Gap Analysis

Guided by the defined market opportunities and key technologies, identify the most important Job Families and develop a consistent set of competency-based, outcomes-driven position profiles for these positions.

Coordination with Canadian Aerospace Partnership

The National 'Canadian Aerospace Partnership' (CAP) initiative currently underway encompasses some of same areas of focus as those of AAP. CAP has established a Work Group on 'Major Programs' whose mandate is:

Construct a framework and supporting processes that will enable Canadian industry and Canadian governments to make co-investment decisions in respect to participation on major new aerospace development programs that best optimize their collective and individual returns.

Our AAP Action Team on 'Market Outlooks' will therefore focus, initially, on the Technology Development and Skills Development aspects, arising from Major Program opportunities.

9.1.2 Work Activities

Technology Development

Identify technology requirements and develop Competency profiles for specific job families and positions with proficiency levels.

Establish technology development clusters and strategic opportunities. Enhance skills training opportunities

Skills Development

Identify and/or create linkages with current and planned Human Resource initiatives including determination of required job family competencies, tools & communications and tools

Identify coordination required to support technology development, and delivery / expansion of training curricula at all levels

Implement new technology development and skills development. Assess on an evergreen basis.

9.1.3 Action Details:

Some additional details to support the development of AAP "Market Outlooks" programs as derived from the AAP Task Force Group #1, 2 and 3 may include:

Task Force 1

- MRO opportunities
- Assess opportunities around AI and YI (?) (MMA) programs.
- Coordinate strategies aimed at programs, in advance
- Finalize Capabilities Database, match to opportunities
- Undertake coordinate market research for sector
- Define industry cluster 'gaps' and new product mandate opportunities.
- (Co-ordinate with Ontario Aerospace Council ("OAC") Task Force on Export Business Development, Ontario Exports Inc. and MEDT Investment Branch, and engage International Trade Canada.)
- SMEs need access to engineers, CATIA + funding to adapt
- Help SMEs to access markets
- Tier 3 & 4 companies need capital investment assistance for equipment, business processes, external sales and marketing (help them move up the feed chain)
- Dedicated provincial aerospace funding program
- Technology demonstration support
- Identify business line gaps
- Fill knowledge gaps at all levels
- Give full assessment of industry and all programs, not just big ticket programs
- OAC to develop a stronger advocacy role
- Form Mayor's Aerospace Council
- Market talent surplus to capture new business

- Adopt “Team Ontario” approach to support mandates
- Develop Joint Bidding Capabilities
- Build upon OAC supply chain initiative, coordinate with government (e.g. EDC, CCC)
- Partner with other sectors to capture manufacturing and MRO opportunities
- Definition of required knowledge and skills through analysis of the several HR studies that have been conducted recently
- An evaluation of the need for a comprehensive ‘needs survey’ of the Industry

Task Force 2

- Develop a Market Outlook, that responds to future market directions, that identifies targets and availability of technology injection, required business practices, capabilities, and qualified resources
- Conduct a Strategic Think-Tank on the future directions of transportation and the implications for aerospace, and on future directions for defence and space relevant to Ontario’s aerospace sector.
- Develop and review periodically a 'Hit List' of technologies / products / processes / services needed or desired by aircraft and systems integrators and equipment firms to strengthen their 'cluster of capabilities' and thereby identify targets for technology injection.
- Identify business practices needed and qualified resources for business improvement by lower tier suppliers (mostly SMEs) to enable them to provide increased value to their customers and achieve enhanced innovation for global competitiveness*.
- Establish program-driven targets and capture strategies.
- Identify the areas in which global product mandates may be available on an industry- and company-specific basis.
- Analyze foreign jurisdictions to target as sources of technology partnerships and identify potential partners for technology injection.
- Develop long-term, stable private-public partnerships among industry, research organizations, centres of excellence and governments to support technology leadership and to work together across the domain of research, technology development and commercialization, including but not limited to:
 - 1) Industry/ research organizations collaboration
 - 2) Industry-driven research
 - 3) Clusters of universities / research
- Communicate effectively with all stakeholders.
- Cultivate strong industry consortia to pursue new opportunities (up the value chain).
- Establish investment incentive programs and other similar funding (from Task Force 1)
- Matching TPC funding by Ontario (like Investissement Quebec does)
- Focus Ontario Commercialization programs on Aerospace and applied research and product development
- Examine world-wide incentive programs, and define what would be the best fit for Ontario
- Create meaningful levels of long-term TPC funding to Ontario Aerospace organizations

Task Force 3

- Determination of specific benefits and establishment of appropriate linkages with existing and emerging HR initiatives
- Establish ongoing Industry Advisory Board (Via OAC) to establish common and specific needs
- Ensure all documentation, communication, web linkages are accessible for all current and future programs
- Determine all active Industry surveys and review results from recent surveys
- Establish ongoing mapping format to evaluate ongoing HR initiatives and their relevance to AAP Skills & Knowledge Strategic Initiatives
- Determine 'Value Propositions' for occupations and careers
- Define and adoption of Skills & Competencies (Competency Dictionary) – initially Tiers 1 & 2, subsequently Tiers 3 and beyond
- Move to Results – Academia to describe existing programs in terms of occupational Relational/ Business and Technical Competencies for each job family
- Merge/Compare program characteristics with Job Competency characteristics to identify GAPS
 - Outputs of analysis:
 - Knowledge for Industry of occupational transference
 - Definition of required program development
 - Ways to enhance existing programs
 - Transferability between Educational Institutions
 - Continuing Education opportunities identified and developed
- Establish standard consistent set of assessment tools

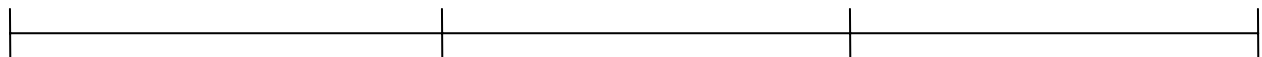
9.1.4 Action Timeline:

These timelines represent a proposed series of activities and requires additional elements and activities to successfully develop the 'Aerospace Development Centre'.

May – Oct 05
Stage 1

Nov 05 – Jul 06
Stage 2

Aug – Dec 06
Stage 3



Stage 1

- AAP Launch promotional material development – 'Competency-Based Skills and Learning'
- Launch Follow up
- Identification of linkages and potential partnerships
- Identification of potential financial and non-financial resource sources
- Current opportunities, technology and Competency status gathering (obtain CAP data)
- Stakeholder forums to identify strategic opportunities to support and prioritize
- Determination of communications and information management (Repository requirements)

Stage 2

- Development of resource requests and submissions
- Analysis of information regarding opportunities, technologies and competencies
- Conduct GAPs analysis
- Linkage & Partnership Development
- Participate in technology and Competency development
- Stakeholder co-ordination and prioritization
- Information system development
- Co-ordination with Integrated Strategic Initiatives

Stage 3

- Secure resources – financial & other
- Linkage & Partnership establishment
- Curricula development and articulation establishment
- Initiation of training and assessment programs
- Information management establishment

Other Activities:

- To be determined.

9.1.5 Resources/Costing:

\$TBD In-Kind/Grants

- Technology and Competency GAP analysis
- Industry/Labour/Academia/Government forums
- Computerized System for information management (Repository)
- Maintenance of Repository data management

9.1.6 Key Success Factors:

- a) Ongoing access to reliable, useful data focused on specific needs of Aerospace
- b) Coordination among stakeholders
- c) Engaging colleges & Universities
- d) Simplified government process to access funds
- e) Investment incentive programs with appropriate capability and sufficient capacity
- f) An appropriate mix of new funding and reallocation of current funding exists
- g) Open to collaboration with foreign partners
- h) Central database to track information, data collection and storage
- i) Communication amongst stakeholders (AAP) Sharing of information
- j) Communication tools, process for dissemination of information, ongoing stakeholder relationships, ongoing set of mechanisms for feedback from all stakeholders for the purpose of evaluation and continuous improvement

- k) Evergreen learning opportunities for Human Resources exist and is supported by Competency Dictionary, link with NOCs (map i.e. employment reporting and current aerospace records), MAP, Transport Canada Standards, CAMC Standards, Apprenticeship etc.

9.1.7 Key Performance Indicators & Monitoring Process:

A qualitative measurement system for evaluation of all success factors is required and may be indicated through the following mechanisms:

- a) Increased market share of 10 – 15%
- b) Development of a 'step-change' in Ontario Aerospace enabling the Industry to drive results
- c) Established accurate, relevant information for use in :
 - i. Forecasting
 - ii. GAPS identification
 - iii. Trend Analysis
 - iv. Response development
 - v. Ongoing success measurement – growth, innovation, retention, recruitment
- d) Description of program results:
 - i. Opportunities won
 - ii. Technology development
 - iii. Human Resources skills and competencies enhanced and validated
- e) Key Performance indicators:
 - i. Impact
 - ii. # of Companies involved
 - iii. Application to Industry needs
 - iv. Reduction of barriers
- f) Detailed information from Industry and Education
- g) Ongoing alignment between skill requirements and educational programming
- h) Common definitions of Job Families
- i) Increased number of Articulation Agreements and increased awareness of career opportunities in Aerospace
- j) Enhanced 'Life-long' learning opportunities for current employees

9.1.8 Program Success Evaluation:

A direct comparison to the established AAP Targets and Goals is required to fully monitor the ongoing success of the AAP program and integrated Strategic Initiatives. A quantitative analysis on an evergreen basis will provide the feedback for repositioning and redirection to meet exigent and emerging marketplace conditions such that Ontario Aerospace firms may anticipate and react to the ever evolving conditions of its marketplace.

9.2 Action Plan #2: Incentives to Win Aerospace Programs

9.2.1 Objectives

Establish "Incentives to Win Aerospace Programs" to enable Ontario aerospace firms to develop / demonstrate / commercialize the products / processes, advance their business acumen, and achieve the productivities that will position them to win on future aerospace programs

I. Technology Development and Demonstration

Identify and establish incentive mechanisms necessary and sufficient to encourage and support technology development and demonstration for products, services and processes. Identify and establish common / shared / collaborative technology demonstration facilities, as appropriate. The nature and form of needed financial incentives may involve governments and financial institutions.

II. Productivity Infrastructure Investment

Identify and establish incentive mechanisms necessary and sufficient to encourage and support investments in industry infrastructure to increase productivity. These investments may be in the form of facilities and equipment, business processes, or IT infrastructure. The nature and form of needed financial incentives may involve governments and financial institutions.

III. Business Methods Advancement

Identify and establish the means to cultivate key business practices and methods required to support strategic repositioning by Ontario aerospace firms at all levels. MAP (Manufacturing Advancement Partnership) will be the means to accomplish this with SME suppliers who have the desire to transform their business and 'move up the value chain'.

9.2.2 Work Activities

Implementation plans must be developed by the Action Team to achieve the following objectives:

- 1) Define investment incentive programs / identify existing investment incentive mechanisms to facilitate building a long-term industry infrastructure.
- 2) Establish 'Buy Canadian - Buy Ontario' incentive programs to encourage higher Canadian value-added and greater market success at all levels in the supply chain
- 3) Develop long-term, stable Investment Capability & Capacity, focused on product / service / process technology development / commercialization and infrastructure investment for productivity

Coordination with Canadian Aerospace Partnership

The National 'Canadian Aerospace Partnership' (CAP) initiative currently underway encompasses some of same areas of focus as those of AAP. CAP has established a Work Group on 'Technology Development/Commercialization' whose mandate is:

Propose strategy and enabling framework for inducing a higher level of Canadian industry and government investment in aerospace technology development and facilitating its commercialization.

Our AAP Action Team on 'Incentives to Win Aerospace Programs' will therefore focus, initially, on incentives to promote production infrastructure and business methods.

9.2.3 Action Details:

Some additional details to support the development of AAP 'Incentives to Win Aerospace Programs' initiatives as derived from the AAP Task Force Group #1 and 2 may include:

Task Force 1

- Define investment incentive programs / identify existing investment incentive mechanisms to facilitate building a long-term industry infrastructure.
- Establish an aircraft sales financing program (equity guarantees) for all Ontario Tier 1 aircraft programs
- Undertake coordinated market research for sector
- Establish 'Buy Canadian - Buy Ontario' incentive programs to encourage higher Canadian value-added and greater market success at all levels in the supply chain
- Give SMEs cash / financing to make them competitive in bidding on Canadian aircraft programs
- Leverage government support to buy Canadian content (higher Canadian value-added) when they support airlines or Tier 1 companies
- Assess the levers that are available
- OAC / AAP / CAW to advocate for their use
- MRO opportunities
- Assess opportunities around AI and YI (?) (MMA) programs.
- Coordinate strategies aimed at programs, in advance
- Finalize Capabilities Database, match to opportunities
- Undertake coordinate market research for sector
- Define industry cluster 'gaps' and new product mandate opportunities.
- (Co-ordinate with Ontario Aerospace Council ("OAC") Task Force on Export Business Development and MEDT Investment Branch, and engage International Trade Canada.)
- SMEs need access to engineers, CATIA + funding to adapt
- Help SMEs to access markets
- Tier 3 & 4 companies need capital investment assistance for equipment, business processes, external sales and marketing (help them move up the feed chain)
- Dedicated provincial aerospace funding program
- Technology demonstration support
- Identify business line gaps
- Fill knowledge gaps at all levels

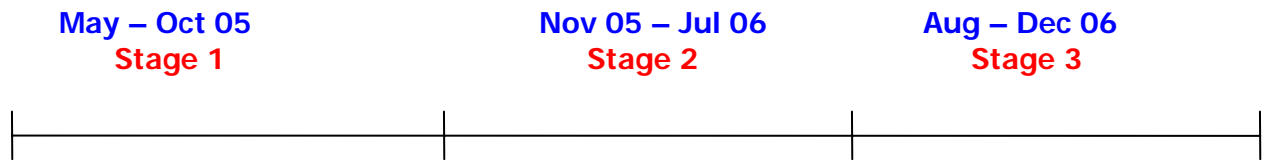
- Give full assessment of industry and all programs, not just big ticket programs
- OAC to develop a stronger advocacy role
- Form Mayor's Aerospace Council
- Market talent surplus to capture new business
- Adopt "Team Ontario" approach to support mandates
- Develop Joint Bidding Capabilities
- Build upon OAC supply chain initiative, coordinate with government (e.g. EDC, CCC)
- Partner with other sectors to capture manufacturing and MRO opportunities
- Definition of required knowledge and skills through analysis of the several HR studies that have been conducted recently
- An evaluation of the need for a comprehensive 'needs survey' of the Industry

Task Force 2

- Establish appropriate, globally competitive and adequately funded product / process / service technology development / commercialization investment incentive programs in concert with government agencies in support of technology development, demonstration and commercialization.
- Establish appropriate, globally competitive and adequately funded product / process / service technology development / commercialization investment incentive programs in concert with government agencies in support of technology development, demonstration and commercialization.
- Establish appropriate and adequately funded programs or other funding mechanisms (e.g. tax treatments, grants, etc.) to encourage investment in advanced manufacturing and process technologies, including infrastructure investments. The principal objective is increased productivity.
- Establish long-term funding / resources whereby Industry, research organizations, centres of excellence and governments can work together across the domain of research, technology development and commercialization.
- Ensure ready access, conducive terms and conditions and efficient administration for all investment initiatives.
- Develop long-term, stable private-public partnerships among industry, research organizations, centres of excellence and governments to support technology leadership and to work together across the domain of research, technology development and commercialization, including but not limited to:
 - 1) Industry/ research organizations collaboration
 - 2) Industry-driven research
 - 3) Clusters of universities / research
- Communicate effectively with all stakeholders.
- Cultivate strong industry consortia to pursue new opportunities (up the value chain).
- Establish investment incentive programs and other similar funding (from Task Force 1)
 - 1) Matching TPC funding by Ontario (like Investissement Quebec does)
 - 2) Focus Ontario Commercialization programs on Aerospace and applied research and product development
 - 3) Examine world-wide incentive programs, and define what would be the best fit for Ontario
 - 4) Create meaningful levels of long-term TPC funding to Ontario Aerospace organizations

9.2.4 Action Timeline:

These timelines represent a proposed series of activities and requires additional elements and activities to successfully develop the 'Incentives to Win Aerospace Programs':



Stage 1

- AAP Launch promotional material development
- Launch Follow up
- Identification of linkages and potential partnerships
- Identification of potential financial and non-financial resource sources
- Current opportunities, technology, production infrastructure and business methods gathering (obtain CAP data)
- Stakeholder forums to identify strategic opportunities to support and prioritize
- Determination of communications and information management (Repository requirements)

Stage 2

- Development of resource requests and submissions
- Analysis of information regarding opportunities, technologies and competencies
- Conduct GAPs analysis
- Linkage & Partnership Development
- Participate in technology, production infrastructure and business methods incentive programs development
- Stakeholder co-ordination and prioritization
- Information system development
- Co-ordination with Integrated Strategic Initiatives

Stage 3

- Secure resources – financial & other
- Linkage & Partnership establishment
- Initiation of training and assessment programs
- Information management establishment

Other Activities:

- To be determined.

9.2.5 Resources/Costing:

\$TBD In-Kind/Repayable Contributions / Grants

- Technology, production infrastructure and business methods GAP analysis

- Industry/Labour/Academia/Government forums
- Computerized System for information management (Repository)
- Maintenance of Repository data management

9.2.6 Key Success Factors:

- a) Ongoing access to reliable, useful data focused on specific needs of Aerospace
- b) Coordination among stakeholders
- c) Engaging colleges & Universities
- d) Appropriate messages about the Industry are conceived to denote investment by government vs. subsidy
- e) Support mechanisms that invest in 'Buy Ontario and support additional coordination throughout the supply exist
- f) Labour is fully engaged in the process
- g) Simplified government process to access funds – lobbying plan
- h) Structure incentives to allow supply chain to meet new program requirements – cost top customers
- i) Investment incentive programs with appropriate capability and sufficient capacity
- j) An appropriate mix of new funding and reallocation of current funding exists
- k) Open to collaboration with foreign partners
- l) Central database to track information, data collection and storage
- m) Communication amongst stakeholders (AAP) Sharing of information
- n) Communication tools, process for dissemination of information, ongoing stakeholder relationships, ongoing set of mechanisms for feedback from all stakeholders for the purpose of evaluation and continuous improvement
- o) Evergreen learning opportunities for Human Resources exist and is supported by Competency Dictionary, link with NOCs (map i.e. employment reporting and current aerospace records), MAP, Transport Canada Standards, CAMC Standards, Apprenticeship etc.

9.2.7 Key Performance Indicators & Monitoring Process:

A qualitative measurement system for evaluation of all success factors is required and may be indicated through the following mechanisms:

- a) Benchmarking of what we have now vs. future
- b) Province establishes:
 - i. Sales Financing
 - ii. R&D/Infrastructure funding
 - iii. SME Capital acquisitions
- c) A recognition of Aerospace as strategic industry exists
- d) Support for all supply chain including services
- e) Programs are tailored to the needs of the Tier and size
- f) Ontario recognizes that our Industry composite is different than Quebec so our needs are different
- g) A % of Export sales also using market system suppliers
- h) Increased % Ontario content in new programs
- i) Ontario support mainly focused on supply chain
- j) Made in Ontario strategy to reflect the nature/composition of the Ontario
- k) Globally competitive supply chain with an increased % of market content
- l) Increased market share of 10 – 15%
- m) Development of a 'step-change' in Ontario Aerospace enabling the Industry to drive results
- n) Established accurate, relevant information for use in :
 - iv. Forecasting
 - v. GAPS identification
 - vi. Trend Analysis
 - vii. Response development
 - viii. Ongoing success measurement – growth, innovation, retention, recruitment
- o) Description of program results:
 - ix. Opportunities won
 - x. Technology development
 - xi. Human Resources skills and competencies enhanced and validated
- p) Key Performance indicators:
 - xii. Impact
 - xiii. # of Companies involved
 - xiv. Application to Industry needs
 - xv. Reduction of barriers
- q) Detailed information from Industry and Education
- r) Ongoing alignment between skill requirements and educational programming
- s) Common definitions of Job Families

- t) Increased number of Articulation Agreements and increased awareness of career opportunities in Aerospace
- u) Enhanced 'Life-long' learning opportunities for current employees

9.2.8 Program Success Evaluation:

A direct comparison to the established AAP Targets and Goals is required to fully monitor the ongoing success of the AAP program and integrated Strategic Initiatives. A quantitative analysis on an evergreen basis will provide the feedback for repositioning and redirection to meet exigent and emerging marketplace conditions such that Ontario Aerospace firms may anticipate and react to the ever evolving conditions of its marketplace.

9.3 Action Plan # 3: Competency-based Skills & Learning

9.3.1 Objectives

Create outcomes-driven, competency-based position profiles and align educational programs with these, incorporating both industry and academic recognition. Do this on an ongoing basis.

I. Inventory/Assess existing Industry Competency Profiles

Inventory all existing competency profiles covering key aerospace Job Families and Positions (described in terms of Business, Relational and Technical Competencies) and identify competency gaps. Gaps may exist with respect to Positions covered or completeness of the existing competency profiles or both.

II. Establish Industry Competency Profiles

Create a consistent set of competency-based, outcomes-driven, descriptive position profiles in terms of the Business, Relational and Technical Competencies needed for a broad base of key aerospace positions.

Establish an Industry adopted 'Competency Dictionary' and correlating competency proficiency levels to enable additional / future position profiles to be created.

Develop and establish mechanisms (web-based, intelligent) to support the consistent application of competency profiles by companies.

III. Inventory / Assess existing Learning Programs

Inventory existing educational, training and apprentice programs relevant to key industry positions. Assess the competencies cultivated, compare these to the required competencies for key positions, and define the gaps.

IV. Develop / Revise Learning Programs to match Competencies Required

Develop / revise existing learning programs and/or establish new programs to deliver the competencies required.

Establish both an industry-recognition basis and an academic-recognition basis for relevant learning programs.

9.3.2 Work Activities

Focus:

The National 'Canadian Aerospace Partnership' (CAP) activities, which are in development concurrently to the AAP initiative, encompass some of the areas of focus to those of the AAP program. Specifically, CAP activity is underway to identify 'Major Program' opportunities and 'Technology Development/Commercialization' mechanisms. These two initiatives are in parallel to the AAP Strategic Initiatives of #1 'Market Outlooks' and #2 'Incentives to Win Aerospace Programs'. The AAP Strategic Initiative #3 "Competency-Based Skills and Learning" will utilize information amassed from the CAP programs identifying new opportunities to fully utilize training programs in order to maximize positioning opportunities.

Primary Activity – Stage 1

The Stage 1 primary activities for the 'Competency-Based Skills and Learning' Action Team include the initiation of information gathering, linkages identification to support GAP determination, resource sourcing and the development of materials to support the AAP Launch in July 2005.

AAP Launch:

The AAP Launch material is to be developed in conjunction with the other AAP Action Teams and market positioning. The focus of material development may incorporate the following:

- Demonstration of the 'High Skill set of the Aerospace Industry and the 'High Level' of human capital currently and future demand.
- The global competitive nature of the Industry and the increase of growth in Ontario and Canadian Aerospace
- The commitment of the stakeholders to work together to achieve sustainable results – long term perspectives
- The economic, social, technological and broad base affects of Aerospace as employers providing jobs, wages and tax bases – significant contributions
- The differentiation of the AAP program and long term commitment to achieve vision, targets and goals

9.3.3 Action Details:

Some additional details to support the development of AAP 'Competency-Based Skills and Learning' programs as derived from the AAP Task Force Group #3 may include:

- Definition of required knowledge and skills through:
- Analysis of the several HR studies that have been conducted recently, including but not limited to:
 - 'Canadian Aerospace Labour Market Survey', (CALMS); September 2001
 - 'A Human Resources Study of the Canadian Aviation Manufacturing and Maintenance Industry; November 2002
 - 'Education and Training Supply for the Aviation and Aerospace Sectors in Ontario: A Strategic View'; April 2003
- An evaluation of the need for a comprehensive 'needs survey' of the Industry
- Determination of specific benefits and establishment of appropriate linkages with existing and emerging HR initiatives, which include but is not limited to:
 - Manufacturing Advancement Partnership (MAP) – Canadian Manufacturing Agility Forum
 - Aerospace Industry Training Program – OAC
 - Program Management in Aerospace – OAC
 - Business leadership and Management Program – OAC and Ontario Society for Professional Engineers (OSPE)
 - Prior Learning and Foreign Credentials Recognition program (PL/FCA) – Canadian Aviation Maintenance Council CAMC

- Youth Internship Program (YIP) – CAMC
- Air Cadet League of Canada – Aviation/Aerospace Industry Strategic Alliance
- Pan Canadian Career Awareness Initiative (PCCAI) - CCHRA
- Establish ongoing Industry Advisory Board (via OAC) to establish common and specific needs
- Ensure all documentation, communication, web linkages are accessible for all current and future programs
- Determine all active Industry surveys and review results from recent surveys
- Establish ongoing mapping format to evaluate ongoing HR initiatives and their relevance to AAP Skills & Knowledge Strategic Initiatives
- Determine 'Value Propositions' for occupations and careers
- Define and adoption of Skills & Competencies (Competency Dictionary) – initially Tiers 1 & 2, subsequently Tiers 3 and beyond
- Move to Results – Academia to describe existing programs in terms of occupational Relational/ Business and Technical Competencies for each job family
- Merge/Compare program characteristics with Job Competency characteristics to identify GAPS
 - Outputs of analysis:
 - Knowledge for Industry of occupational transference
 - Definition of required program development
 - Ways to enhance existing programs
 - Transferability between Educational Institutions
 - Continuing Education opportunities identified and developed
- Establish standard consistent set of assessment tools

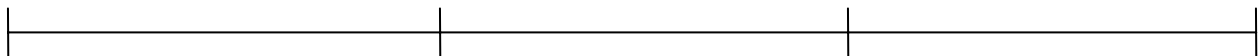
9.3.4 Action Timeline:

These timelines represent a proposed series of activities and requires additional elements and activities to successfully develop the 'Aerospace Development Centre'.

May – Oct 05
Stage 1

Nov 05 – Jul 06
Stage 2

Aug – Dec 06
Stage 3



Stage 1

- AAP Launch promotional material development – 'Competency-Based Skills and Learning'
- Launch Follow up
- Identification of linkages and potential partnerships and current infrastructures availability
- Identification of potential financial and non-financial resource sources
- Current Competency status analysis
- Stakeholder forums to identify Job Families, and Competency Dictionary terms
- Prioritize Tier Job Families for assessment
- Determination of Repository requirements

Stage 2

- Development of resource requests, submit and secure
- Development of Competency Dictionary
- Development of Job Families profiles and proficiency levels
- Select and validate assessment tools
- Conduct GAPs analysis
- Linkage & Partnership Development
- Stakeholder co-ordination and prioritization
- Repository system development
- Co-ordination with Integrated Strategic Initiatives

Stage 3

- Secured resources – financial & other
- Linkage & Partnership establishment
- Curricula development and articulation establishment
- Repository establishment
- Establishment of training and assessment programs

Other Activities:

- To be determined.

9.3.5 Resources/Costing:

\$TBD In-Kind/Grants

- Competency GAP analysis
- Industry/Labour/Academia/Government forums to determine Job Families - Competencies definitions, proficiency levels and curricula development
- Computerized System for Repository of Competency Dictionary and Job Profiles
- Maintenance of Repository data management

9.3.6 Key Success Factors:

- a) Access to reliable, useful data
- b) Central repository for database to track information, data collection and storage
- c) Communication amongst stakeholders (AAP)
- d) Communication tools, process for dissemination of information, ongoing stakeholder relationships, ongoing set of mechanisms for feedback from all stakeholders for the purpose of evaluation and continuous improvement
- e) Evergreen Competency Dictionary, link with NOCs (map i.e. employment reporting and current aerospace records), MAP, Transport Canada Standards, CAMC Standards, Apprenticeship etc.

9.3.7 Key Performance Indicators & Monitoring Process:

A qualitative measurement system for evaluation of all success factors is required and may be indicated through the following mechanisms:

- a) Established accurate, relevant information for use in :
 - i. Forecasting
 - ii. Competency Gaps identification
 - iii. Job Family identification
 - iv. Trend Analysis
 - v. Ongoing success measurement – retention, recruitment
- b) Description of program results:
 - i. Employability
 - ii. Participation Rates
 - iii. Graduate numbers/supply
- c) Key Performance indicators:
 - i. Impact
 - ii. # of Companies involved
 - iii. Application to Industry needs
 - iv. Reduction of barriers to involvement
 - v. Utilization of existing facilitating infrastructures
- d) Detailed information from Industry and Education
- e) Ongoing alignment between skill requirements and educational programming
- f) Common definitions of Job Families
- g) Increased number of Articulation Agreements
- h) Additional information for individuals/students
- i) Increased awareness of career opportunities in Aerospace
- j) Enhanced 'Life-long' learning opportunities for current employees
- k) Validated Competency assessment tools

9.3.8 Program Success Evaluation:

A direct comparison to the established AAP Targets and Goals is required to fully monitor the ongoing success of the AAP program and integrated Strategic Initiatives. A quantitative analysis on an evergreen basis will provide the feedback for repositioning and redirection to meet exigent and emerging marketplace conditions such that Ontario Aerospace firms may anticipate and react to the ever evolving conditions of its marketplace.

9.4 Action Plan # 4: Progressive Marketing Programs

9.4.1 Objectives

Build greater pride by all Ontarians in our aerospace achievements and contributions, and build positive recognition in global markets of Ontario's aerospace prowess

I. Public Image

Design and deliver Public Image marketing programs that will heighten awareness of the contributions, heritage, prestige and status of the Aerospace Industry in Ontario and Canada to the Ontario and Canadian public.

II. Industry Profile

Develop and deliver Industry Profile marketing programs aimed at increasing the awareness of the capabilities of the Ontario Aerospace Industry abroad in established and developing Product/Service/Process niches globally. Develop linkages to promote Ontario businesses to the world.

III. Winning New Product/Cluster Mandates

Develop supporting 'Business Cases' and 'Value Propositions' and establish marketing programs to increase awareness and attraction to support the winning of new product/cluster mandates, with investment into Ontario of capital resources, infrastructure, capabilities.

9.4.2 Work Activities

Focus:

The National 'Canadian Aerospace Partnership' (CAP) activities, which are in development concurrently to the AAP initiative, encompass some of the areas of focus to those of the AAP program. Specifically, CAP activity is underway to identify 'Major Program' opportunities and 'Technology Development/Commercialization' mechanisms. These two initiatives are in parallel to the AAP Strategic Initiatives of #1 'Market Outlooks' and #2 'Incentives to Win Aerospace Programs'. The AAP Strategic Initiative #4 'Progressive Marketing Programs' will utilize information amassed from the CAP programs identifying new opportunities to fully develop the 'Business Cases' and 'Value Propositions' to maximize positioning opportunities.

Primary Activity – Stage 1

The Stage 1 primary activities for the 'Progressive Marketing Programs' Action Team include the initiation of resource sourcing and the development of materials to support the AAP Launch in July 2005.

AAP Launch:

The AAP Launch material is to be developed in conjunction with the other AAP Action Teams and market positioning. The focus of material development may incorporate the following:

- The demonstration of the AAP Vision with high visual content outlining:
 - Past Successes of Ontario Aerospace
 - Present Capabilities
 - Future Capabilities
 - Positive Aerospace impact on society, economic and environment
- Community localized news items to showcase and customize AAP Stakeholder companies
- Demonstration of the 'High Skill set of the Aerospace Industry and the 'High Level' of human capital currently, education and future demand.
- The global competitive nature of the Industry and the increase of growth in Ontario and Canadian Aerospace
- The commitment of the stakeholders to work together to achieve sustainable results – long term perspectives
- The differentiation of the AAP program and long term commitment to achieve vision, targets and goals

9.4.3 Action Details:

Some of the additional details to support the development of AAP 'Progressive Marketing Programs' as derived from the AAP Task Force Group #4 may include:

- Determine availability of public relations expertise and cost
- Look at case studies to determine why companies chose to locate in Ontario
- Specify and prioritize target audiences (client base, public, politicians)
- Develop list of channels of distribution (direct advertising, media releases, website, focus groups, targeted outreach to consular core, infomercials)
- Identify sources of market data (where market is going/ market niches) Consider each of 4 sectors (Commercial, Defence, MRO, Space)
- Define Ontario's capabilities (working in conjunction with other AAP Action Teams) and identify strategic alliance opportunities
- Participate in major international aerospace trade shows to meet with prospective investors and to profile Ontario as an attractive aerospace location e.g. Paris Air Show (June 2005), Aerospace North America (September 2005) , NBAA October 2005). (from CISP)
- Develop and implement a practical, web-based, Capabilities Database (In conjunction with Industry Canada Industry Capabilities Database) of the aerospace companies in Ontario, to identify who will be the 'receptors' for technology injection and partners in technology transfer. (from CISP)
- Look at other jurisdictions and what they have to offer
- Inventory Ontario programs

- Develop a message outlining Ontario's value proposition and attractive environment for foreign investment based on the following strengths
- World leader in niche markets Skilled Labour, MRO advantage, Canadian dollar, Range of capabilities, Cost competitiveness, Resource pool, Good academic and business environment, Secure, stable, sophisticated, multicultural environment, R&D, Customer support, Access to North American market, EDC export guarantees, Government policy and support programs –Govt is industry friendly, Advanced manufacturing, History and heritage – leading edge (aerospace did not move here – it evolved here, Labour friendly environment – stability, Risk Sharing – risk management – sophisticated industry base, Synergy with other sectors (IT), Prepare 3-4 fact sheets for Ontario
- Development of an engagement strategy and design of required communications products (web-sites, printed materials, etc, to increase the positive 'brand image' of the Ontario aerospace industry within targeted international jurisdictions. (from CISP)
- Establish a review group
- Development of 'business case support' package that existing multinational aerospace systems integrator firms can use with their corporations to win new product mandates.

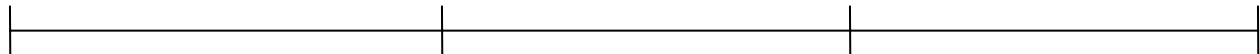
9.4.4 Action Timeline:

These timelines represent a proposed series of activities and requires additional elements and activities to successfully develop the 'Progressive Marketing Programs'.

May – Oct 05
Stage 1

Nov 05 – Jul 06
Stage 2

Aug – Dec 06
Stage 3



Stage 1

- AAP Launch material development
- AAP Launch
- Launch Follow up
- Development of Business Cases & Value Propositions
- Identification of linkages and potential partnerships
- Participation in Trade Shows Internationally
- Investigation in Product/Cluster mandate opportunities
- Identification of multi-media promotional programs

Stage 2

- Development of content for multi-media promotional programs
- Implementation of Business Case & Value Proposition information dissemination
- Linkage & Partnership Development
- Trade Show follow up
- Cluster development & Development opportunity follow up
- Co-ordination with Integrated Strategic Initiatives

Stage 3

- Implementation of multi-media Marketing programs
- Follow up of Business Case & Value Proposition opportunities
- Linkage & Partnership establishment
- Cluster & Development establishment

Other Activities:

- To be determined.

9.4.5 Resources/Costing:

\$580,000 In-Kind/Grants

- \$300,000 Development of comprehensive integrated program
- \$ 80,000 Creative costs plus production costs
- \$100,000 Product Placement
- \$100,000 Public Relations
- Sourcing of resources is required to develop and implement programs.

9.4.6 Key Success Factors:

- a) Alignment of Strategic Intent
- b) Directed messages to focused target markets through an effective communications campaign (media, trade shows, etc.)
- c) Streamlined communications across Government, Industry, Labour and Academia
- d) Sustained networking via AAP
- e) Sustained lobbying via AAP
- f) Ontario Aerospace Capabilities Database established

9.4.7 Key Performance Indicators & Monitoring Process:

A qualitative measurement system for evaluation of all success factors is required and may be indicated through the following mechanisms:

- a) Increased interest in Ontario Aerospace Industry
- b) Increased education level of audience
- c) Healthy economy of Ontario Aerospace
- d) Differentiation 'memorable and engaging' 'Brand Promise' is perceived
- e) Competitive advantages and capabilities are understood
- f) Strategy to counter losing market share position (Defense Purchasing)
- g) Increased market share and opportunities due to AAP is recognized

- h) Ontario Government recognizes gaps and is making requests from Federal Government and is also making direct financial contributions.
- i) A 'level playing field' exists
- j) Ontario Aerospace firms are winning new product mandates
- k) The message that Ontario can deliver a 'whole' aircraft is recognized
- l) Ontario Aerospace firms fit into global supply chain at every level
- m) The typical set up costs, training costs, schedule, risks for establishing operations in Ontario compared to elsewhere, availability of skilled labour and government programs demonstrate a competitive advantage.
- n) Ontario is recognized a 'hub' for transportation and as a centre for excellence
- o) Promotion of firms who have already established in Ontario. (Testimonials)

9.4.8 Program Success Evaluation:

A direct comparison to the established AAP Targets and Goals is required to fully monitor the ongoing success of the AAP program and integrated Strategic Initiatives. A quantitative analysis on an evergreen basis will provide the feedback for repositioning and redirection to meet exigent and emerging marketplace conditions such that Ontario Aerospace firms may anticipate and react to the ever evolving conditions of its marketplace.

9.5 Action Plan # 5: Aerospace Institute / Center

9.5.1 Objectives

Create a center / institute (mostly 'virtual', physical as necessary) to coordinate and support all the above initiatives.

I. Market Opportunities

Coordinate the identification, evaluation and prioritization of Major Programs and other market opportunities, and provide support for the repository of market intelligence and the communication with Ontario aerospace industry firms regarding marketing intelligence / opportunities.

II. Industry Research Programs

Coordinate Industry research programs aimed at facilitating technology development / demonstration and commercialization towards defined market demands. Some highly specialized facilities could be located at the Centre / Institute to enhance capabilities and technological specialties of the Ontario Aerospace Industry in established and developing Product/Service/Process niches. (An example is Environmental technology development and demonstration.) Such facilities would provide a showcase for Ontario aerospace technical capabilities.

III. Industry Training Programs

Operate specialized, capital intensive shared training resources and facilities, to be utilized by Industry personnel and training staff to advance life long learning, skills development and core competency enhancement are to be developed.

IV. Youth & Public Image

Coordinate Public Image demonstration programs that:

- a. heighten awareness of the contributions, heritage, prestige and status of the Aerospace Industry in Ontario and Canada, targeted towards the Ontario and Canadian public and
- b. educate and excite youth about Aerospace career opportunities.

9.5.2 Work Activities

Youth & Public Image

Develop Educational materials including promotional, 'Press Release' info packages to promote heritage, social, technical and environmental contributions of Ontario Aerospace Industry to support Aerospace Development Centre establishment and AAP Launch

Identify organizations, youth groups etc. to direct Aerospace Development Centre promotional materials and tour opportunities

Develop evergreen channels of distribution and content to outreach to consular core including, website, direct, infomercials, trade venues, educational opportunities, tours, etc.

Industry Research

Develop 'Press Release' information package for Industry distribution to support facility research utilization and AAP launch

Identify process to facilitate coordination and sharing of research and facilities with Industry and Academia

Identify sources of resource opportunities – financial, equipment, research resources and facilitate contact with Ontario Aerospace firms

Industry Training

Develop 'Press Release' Industry Capability information package for Industry distribution to support training course development, utilization and AAP launch

Identify coordination required to support development, delivery, and expansion of training programs at all levels

Identify opportunities to partner and promote science & technology programs. Develop youth specific program opportunities

Market Opportunities

The National 'Canadian Aerospace Partnership' (CAP) activities, which are in development concurrently to the AAP initiative, encompass some of the areas of focus to those of the AAP program. Specifically, CAP activity is underway to identify 'Major Program' opportunities and 'Technology Development/Commercialization' mechanisms. These two initiatives are in parallel to the AAP Strategic Initiatives of #1 'Market Outlooks' and #2 'Incentives to Win Aerospace Programs'. The AAP Strategic Initiative #5 'Ontario Centre for Aerospace' will utilize information amassed from the CAP programs identifying new opportunities to fully utilize research and training programs in order to maximize positioning opportunities.

9.5.3 Action Details:

Some of the additional details to support the development of AAP 'Ontario Centre for Aerospace' as derived from the AAP Task Force Group #5 are included as Appendix A.

Details to support the development of AAP 'Ontario Centre for Aerospace' as derived from the AAP Task Force Group #5:

- Create an 'Advanced Technologies Industrial Park' at Downsview
- Designate lands (City of Toronto) adjacent to the Bombardier plant in Downsview in a 'Community Improvement Plan'
- Specify areas and types of industrial uses for aerospace to be defined and approved by 2005
- Increase availability of apprenticeships
- Train interested youth towards certification
- Adopt a 'Team Approach' towards training

- Expand awareness of specific aerospace jobs and broaden the context of the positions
- Provide current news on Ontario Aerospace Industry for all employees via websites, newsletters etc. Inspire existing employees
- Utilize existing Aerospace firms' facilities, museums to establish promotional tours expositions etc.
- Utilize Ontario Centre for Aerospace to regularly bring companies and youth together
- Make presentations to youth (Grades 6 and up)
- Broaden 'outreach' with CAW newsletters
- Develop and support 'Space Camp' activities
- Develop Tour programs, media content
- Establish Theme Days/Weeks – Industry, City of Toronto – make 'Aviation Day' an aviation milestone event
- Provide access to more Industry information
- Partner in major public exhibitions (CNE)
- Promote local Aerospace heritage

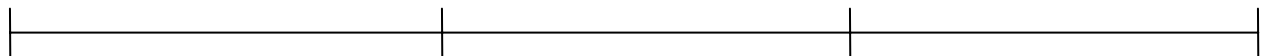
9.5.4 Action Timeline:

These timelines represent a proposed series of activities and requires additional elements and activities to successfully develop the 'Ontario Centre for Aerospace'.

May – Oct 05
Stage 1

Nov 05 – Jul 06
Stage 2

Aug – Dec 06
Stage 3



Stage 1

- AAP Launch promotional material development – Ontario Centre for Aerospace
- AAP Launch
- Launch Follow up
- Further development of Business Cases & Value Propositions
- Identification of linkages and potential partnerships
- Identification of potential financial and non-financial resource sources
- Initiate securing of location, etc
- Identification of research and training program opportunities
- Identify youth and public image groups and opportunities

Stage 2

- Development of resource requests and submissions
- Development of youth opportunities and support promotional materials
- Dissemination of public awareness and promotional materials
- Linkage & Partnership Development
- Research & Development opportunity follow up
- Training Course development
- Co-ordination with Integrated Strategic Initiatives

Stage 3

- Secure resources – Location, equipment, financial & other
- Follow up of Business Case & Value Proposition opportunities
- Linkage & Partnership establishment
- Research & Development coordination establishment
- Establishment of training programs

Other Activities:

- To be determined.

9.5.5 Resources/Costing:

\$TBD In-Kind/Grants

- Facilities, Equipment
- Operating working capital – Government and Industry
- Formal coordination with Academia and Industry and expert personnel
- Public Relations materials

Sourcing of resources is required to develop and implement programs.

9.5.6 Key Success Factors:

- a) Full support of Aerospace Industry
- b) Full support of government at all levels
- c) Full support of educational agencies
- d) Industry support and acceptance of training value
- e) Employable, trained new labour
- f) Filling of certification GAPS

9.5.7 Key Performance Indicators & Monitoring Process:

A qualitative measurement system for evaluation of all success factors is required and may be indicated through the following mechanisms:

- a) More research coordination and sharing
- b) Show casing advancements and process improvements
- c) Increased participants, competitiveness, successful growth of Industry, frequency of collaborations
- d) Expansion of Aerospace labour pool and trained employees
- e) Broader Tier 2 & 3 Industries for Aerospace services
- f) Enhanced 'Life-long' learning opportunities
- g) Increased number of educators
- h) An increased number of apprenticeships
- i) Increased awareness of Industry and enthusiasm
- j) Increased Industry responsibility
- k) Frequency of Government attention and recognition of importance of Aerospace Industry
- l) Increased number of:
 - a. Applications for Aerospace career programs
 - b. Aerospace related courses/programs
 - c. Annual events/activities with Aerospace focus
 - d. Attendees at Aerospace activities/events
 - e. Air Cadets continued involvement in Aerospace Industry

9.5.8 Program Success Evaluation:

A direct comparison to the established AAP Targets and Goals is required to fully monitor the ongoing success of the AAP program and integrated Strategic Initiatives. A quantitative analysis on an evergreen basis will provide the feedback for repositioning and redirection to meet exigent and emerging marketplace conditions such that Ontario Aerospace firms may anticipate and react to the ever evolving conditions of its marketplace.

Aerospace Action Partnership

Ontario Aerospace Strategy

Appendix B

**Future State Vision/ Current State Assessment
& Industry Trends /Actions**

Future State Vision

As derived from the vigorous discussions that took place among participants in all five Task Forces during the three sessions held during March 2005, the Future State Vision for the Industry may embody the following:

- Ontario is a preferred location for Canadian product mandates within multi-national systems & equipment companies, based on the flexible business climate, working environment, responsive government programs (all levels), and access to knowledgeable and skilled people.
- Sustained government investments and partnerships exist to support export trade development and market sustainability.
- Ontario Policy recognizes that increasing 'value added' is the key objective, targeting Tiers 2 & 3 with enhanced capabilities and support systems and which capitalizes on Ontario Aerospace diversity e.g., established Clusters (virtual or physical as best suits strategic requirements) facilitating a ready access to target markets.
- Competitive 'bid support' mechanisms are available for new programs and an increase in the number of 'Integrators' has attracted 'Primes'. Incentives exist to 'level the playing field' such as tax incentives. Team bids are cultivated, with appropriate financial support.
- A valid and realistic image and public awareness exists about Ontario / Canadian aerospace sector as a world-class, globally prominent industry:
 - Domestic value-added is sustainable
 - Successful in global markets
 - Strong benefits to Canadians
 - Across Canada, Ontario is 2nd
 - Niche players – established niche players are further expanded, new market niches are developed in specialized areas of Product/Service/Process.
 - Ontario government is a key promoter of Canadian Aerospace. Aerospace Industry has grown in Canada. Increased promotion of technology successes has been undertaken in several venues, including, for example, museums.
 - Ontario Aerospace Institute / Centre is established to enhance promotional, developmental and educational activities.
- Suitably funded and promoted programs are established, which support 'market pull' commercialization of technology.
- Active engagement/ partnering with Universities, Colleges and R&D organizations to assist in Industry led commercialization are established. Developed linkages between Companies and research organizations are established to develop innovative technologies (including environmental technologies) to support the products, which will go to market. Clustering of university / research organizations (not silos) (including Ontario Centers of Excellence?) are established with funding tied to Industry/ research organization collaboration.

- Research is Industry led and focused on market needs. Industry is responsible for R&D development sustainability. Well defined programs at colleges and universities with access to scientific and engineering staff exist to support development, demonstration and commercial integration of technological initiatives. Financial support programs exist to support technical developments in the form of Tax Credits and development-demonstration incentives within Aerospace companies.
- Strategic system integrators with more product mandates from parent companies require more diversity info systems which require further development. Engineered product firms have been established to provide support and continue to build on existing technological strengths.
- Focus on core technical capabilities. Ontario has diverse, well recognized technical capabilities, which are developed by trends in technology, which create demand for new skills.
- Job Skill levels and competencies have increased and are proportionate to the increase in High Tech job opportunities. Well-established Aerospace integrated educational, training opportunities exist. People aspire to careers in Aerospace industry attracting from youth, other sectors and other countries.
- An ongoing promotion of well informed education systems exist with co-ordination of education programs and promotes partnership between colleges/universities increasing enrollment and retention.

This capture of our Future State Vision is not all-encompassing. Ample scope remains to evolve our ideas about a winning future for Ontario aerospace.

Current State Assessment / Industry Trends

As derived from the vigorous discussions that took place among participants in all five Task Forces during the three sessions held during March 2005, the Current State of the Ontario Industry and Global Industry Trends include the following:

Global Industry Economic Realities

- Moderate Growth / Cyclical / Subject to “shocks” dependent on Tier Level and market reach therefore making growth unpredictable.

Innovation / Commercialization

- University research is the dominant method funded by governments
- Technology Development / Demonstration support is missing
- Product Development support is insufficient to meet industry needs
- “Commercialization” programs proposed by Ontario Government are insufficient and conceptually flawed
- Productivity gains are more capital intensive than R&TD; other jurisdictions support capital investment
- IP rights – conflicting views between Industry and Research Organizations (varies by research organization)
- Unique product is not sufficient – productivity is also essential to achieve low cost

Industry Regulatory Factors

- Transport Canada - Aircraft Certifications, PMA (reverse engineering), Safety Management Systems
- Moving from Quality Control to Quality Assurance to Quality Management

Global Industry Key Technologies

- Fuel efficiency
- A/c systems software driven (automated)
- Composites (Structural), Nano-technology / MEMS, etc.
- Manufacturing techniques more automated
- More Electric Power & Efficiency with continuing research
- Health Monitoring / Diagnostics of air quality inside aircraft. Passenger Information / Entertainment / Environment
- Design methodologies e.g. Multi-disciplinary design optimization (MDO)
- Emphasis on High Tech and qualified high levels of skills
- Developed Countries require new technology while emerging Nations require refurbishing.

Global Industry Environmental Factors

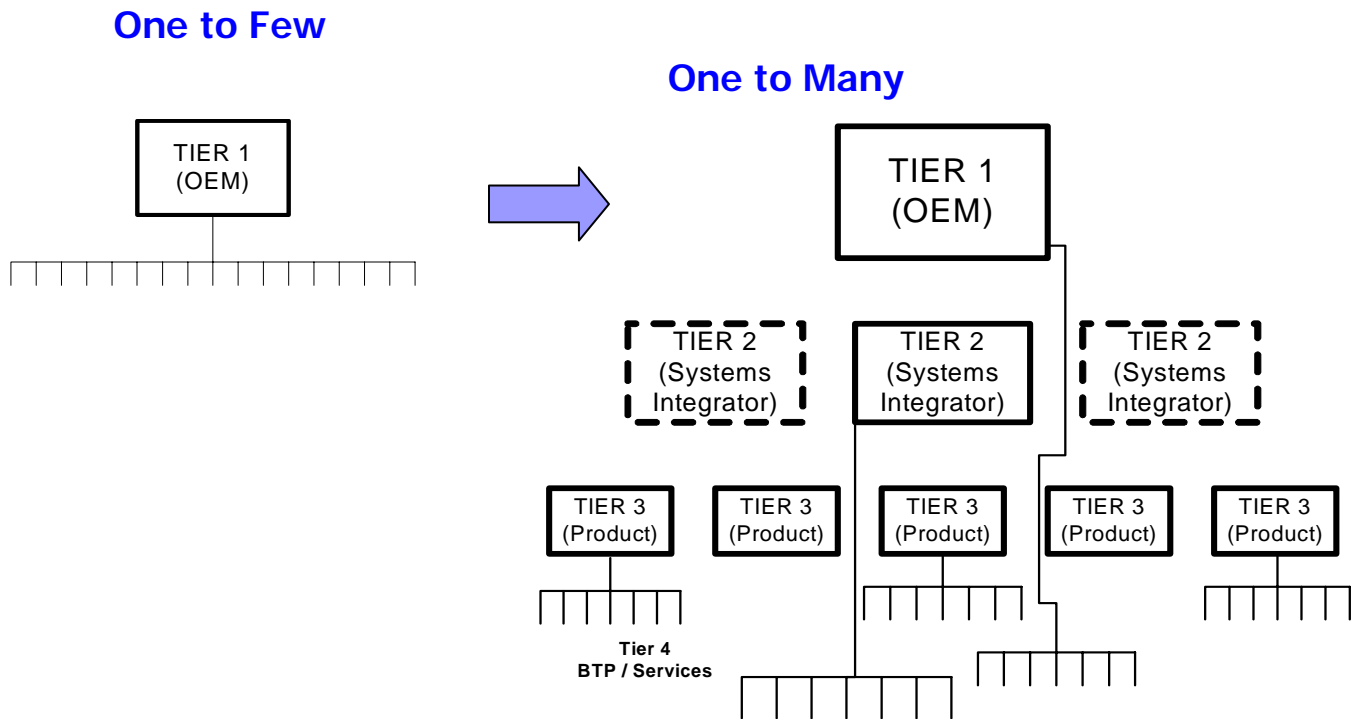
- Emissions further reduced
- Negative effects at higher altitudes
- Noise - Engine, Airframe
- Some products / materials being banned e.g. Chrome, adhesives
- ISO 14001 compliance increasingly mandatory

Supply-Chain & Human Resource Demands:

Some of the issues that Aerospace Companies must be cognizant of to effectively enhance their human resource positions include:

The impact of this supply-chain transition has created new challenges and demands to increase 'supply-chain value' on Ontario and Canadian Aerospace firms as is demonstrated below:

Aerospace Supply Chain Transition:



Industry Supply Chain Performance

- One-to-many ----- One-to-few. Offsets have a large impact. Tier 1 moving more to assembly vs. manufacturing.
- Supply linkages in Canada are weakening. Large work packages going outside Canada e.g. Only two domestic systems integrators on Q400, and only one domestic systems integrator on Global Express
- Suppliers must 'move up the value chain'
- Low cost producers in other countries / regions are taking low-end work
- Responsibility, Risk sharing, Investment is being forced down the supply chain
- Design-to-cost
- Consolidation
- Financing essential (a/c sales)
- Programs now multi-national some of which are unable to supply product delivery requirements.
- Capabilities are locating to foreign markets influenced by offsets.
- Long payback periods.

Industry Structure – Ontario

- Aircraft Integration – strong
- Systems & Equipment - strong
- Specialized processes – strong

Quebec

Tier 1 (OEM)

Tier 2 (System Integrators)

Tier 3 (Equipment Providers)

**Tier 4
(Sub-contract Suppliers)**

Ontario

Tier 1 (OEM)

**Tier 2
(Systems Integrators)**

**Tier 3
(Equipment Providers)**

**Tier 4
(Sub-contract Suppliers)**

Industry Scale

- Canadian Aerospace is a strong niche player, but small on global terms.
- Canadian value-added is shrinking
- 5th Largest aerospace Industry in the world in specific classifications.

Industry Ownership

- Canadian Aerospace consists of multi-nationals, many “home-based”.

Global Industry Trade

- Competing regulatory and subsidy environments by other jurisdictions e.g. ITAR
- ITAR rules and regulations changing due to missile defence.
- New competing low-cost manufacturing jurisdictions
- OEMs take risks in anticipation of ‘working things out’ with supplier.

MRO Sector

- Same size as manufacturing
- Technologies becoming more sophisticated
- Consolidating
- MRO is continuing to evolve to provide ‘nose to tail’ service.
- Current MRO is focused on specific market segments (distinctive / dynamic).

Defence Sector

- Canada has a small aerospace defence market.
- Canada has small share of huge Department of Defense (DoD) United States market.

Human Resources

- Aerospace not a well-defined career.
- Apprenticeships not encouraged in aerospace.
- Canadian Aviation Maintenance Council (CAMC) programs are aimed at National programs – AMEs AMOs.
- Provincial boards administer apprentice programs. Maintenance / Repair / Overhaul (MRO) focus.
- Cross training of many programs of skills required in aviation sectors/others.
- Average employer training costs approximate \$110,000 and have a 3 year ROI to recoup.
- Federal regulations while educational Provincial training programs.
- College/Industry Applied Research is focused on ‘quick’ commercialization.
- University/Industry Applied Research is focused on development.
- Higher technology products demand higher skills and knowledge.
- Demographics will challenge our growth as populations are aging, declining birth rates exist and immigration rates are at their lowest level in 80 years, which will affect our ability to reach the AAP growth targets and goals.
- Attracting to aerospace careers requires promotion and awareness.
- Technical program enrolments declining steadily.
- Education / Training is good caliber but fragmented.
- Few programs are aviation/aerospace industry-driven.

- Training programs are predominantly reactive, in-house + supply chain (self-built) and are company specific.
- Skills / knowledge requirements are changing and include Procurement, Program Management, Operators (trouble-shooting more complex a/c systems) as examples.

Additionally, the general public has not been educated about the Ontario and Canadian Aerospace heritage and ongoing technical and environmental contributions. The public perception is flawed in that the Aerospace Industry is believed to be dependent on government, providing no tangible benefit to Canadians and is predominately a Quebec based Industry making attraction of new labour bases even more difficult.

Action Items

Action Items from Task Force discussions:

Task Force 1

- MRO opportunities
- Assess opportunities around AI and YI (?) (MMA) programs.
- Coordinate strategies aimed at programs, in advance
- Finalize Capabilities Database, match to opportunities
- Undertake coordinate market research for sector
- Define industry cluster 'gaps' and new product mandate opportunities.
- (Co-ordinate with Ontario Aerospace Council ("OAC") Task Force on Export Business Development, Ontario Exports Inc. and MEDT Investment Branch, and engage International Trade Canada.)
- SMEs need access to engineers, CATIA + funding to adapt
- Help SMEs to access markets
- Tier 3 & 4 companies need capital investment assistance for equipment, business processes, external sales and marketing (help them move up the feed chain)
- Dedicated provincial aerospace funding program
- Technology demonstration support
- Identify business line gaps
- Fill knowledge gaps at all levels
- Give full assessment of industry and all programs, not just big ticket programs
- OAC to develop a stronger advocacy role
- Form Mayor's Aerospace Council
- Market talent surplus to capture new business
- Adopt "Team Ontario" approach to support mandates
- Develop Joint Bidding Capabilities
- Build upon OAC supply chain initiative, coordinate with government (e.g. EDC, CCC)
- Partner with other sectors to capture manufacturing and MRO opportunities

Task Force 2

- Develop a Market Outlook, that responds to future market directions, that identifies targets and availability of technology injection, required business practices, capabilities, and qualified resources
- Conduct a Strategic Think-Tank on the future directions of transportation and the implications for aerospace, and on future directions for defence and space relevant to Ontario's aerospace sector.
- Develop and review periodically a 'Hit List' of technologies / products / processes / services needed or desired by aircraft and systems integrators and equipment firms to strengthen their 'cluster of capabilities' and thereby identify targets for technology injection.
- Identify business practices needed and qualified resources for business improvement by lower tier suppliers (mostly SMEs) to enable them to provide increased value to their customers and achieve enhanced innovation for global competitiveness*.
- Establish program-driven targets and capture strategies.
- Identify the areas in which global product mandates may be available on an industry- and company-specific basis.
- Analyze foreign jurisdictions to target as sources of technology partnerships and identify potential partners for technology injection.
- Develop long-term, stable private-public partnerships among industry, research organizations, centres of excellence and governments to support technology leadership and to work together across the domain of research, technology development and commercialization, including but not limited to:
 - 1) Industry/ research organizations collaboration
 - 2) Industry-driven research
 - 3) Clusters of universities / research

- Communicate effectively with all stakeholders.
- Cultivate strong industry consortia to pursue new opportunities (up the value chain).
- Establish investment incentive programs and other similar funding (from Task Force 1)
- Matching TPC funding by Ontario (like Investissement Quebec does)
- Focus Ontario Commercialization programs on Aerospace and applied research and product development
- Examine world-wide incentive programs, and define what would be the best fit for Ontario
- Create meaningful levels of long-term TPC funding to Ontario Aerospace organizations

Task Force 3

Some additional details to support the development of AAP 'Competency-Based Skills and Learning' programs as derived from the AAP Task Force Group #3 may include:

- Definition of required knowledge and skills through:
Analysis of the several HR studies that have been conducted recently, including but not limited to:
 - 'Canadian Aerospace Labour Market Survey', (CALMS); September 2001
 - 'A Human Resources Study of the Canadian Aviation Manufacturing and Maintenance Industry'; November 2002
 - 'Education and Training Supply for the Aviation and Aerospace Sectors in Ontario: A Strategic View'; April 2003
- An evaluation of the need for a comprehensive 'needs survey' of the Industry
- Determination of specific benefits and establishment of appropriate linkages with existing and emerging HR initiatives, which include but is not limited to:
 - Manufacturing Advancement Partnership (MAP) – Canadian Manufacturing Agility Forum
 - Aerospace Industry Training Program – OAC
 - Program Management in Aerospace – OAC
 - Business leadership and Management Program – OAC and Ontario Society for Professional Engineers (OSPE)
 - Prior Learning and Foreign Credentials Recognition program (PL/FCA) – Canadian Aviation Maintenance Council CAMC
 - Youth Internship Program (YIP) – CAMC
 - Air Cadet League of Canada – Aviation/Aerospace Industry Strategic Alliance
 - Pan Canadian Career Awareness Initiative (PCCAI) - CCHRA
- Establish ongoing Industry Advisory Board (Via OAC) to establish common and specific needs
- Ensure all documentation, communication, web linkages are accessible for all current and future programs
- Determine all active Industry surveys and review results from recent surveys
- Establish ongoing mapping format to evaluate ongoing HR initiatives and their relevance to AAP Skills & Knowledge Strategic Initiatives
- Determine 'Value Propositions' for occupations and careers
- Define and adoption of Skills & Competencies (Competency Dictionary) – initially Tiers 1 & 2, subsequently Tiers 3 and beyond
- Move to Results – Academia to describe existing programs in terms of occupational Relational/ Business and Technical Competencies for each job family
- Merge/Compare program characteristics with Job Competency characteristics to identify GAPs
 - Knowledge for Industry of occupational transference
 - Definition of required program development
 - Ways to enhance existing programs
 - Transferability between Educational Institutions
 - Continuing Education opportunities identified and developed
- Establish standard consistent set of assessment tools

Task Force 4

Some of the additional details to support the development of AAP 'Progressive Marketing Programs' as derived from the AAP Task Force Group #4 may include:

- Determine availability of public relations expertise and cost
- Look at case studies to determine why companies chose to locate in Ontario
- Specify and prioritize target audiences (client base, public, politicians)
- Develop list of channels of distribution (direct advertising, media releases, website, focus groups, targeted outreach to consular core, infomercials)
- Identify sources of market data (where market is going/ market niches) Consider each of 4 sectors (Commercial, Defence, MRO, Space)
- Define Ontario's capabilities (working in conjunction with other AAP Action Teams) and identify strategic alliance opportunities
- Participate in major international aerospace trade shows to meet with prospective investors and to profile Ontario as an attractive aerospace location e.g. Paris Air Show (June 2005), Aerospace North America (September 2005), NBAA October 2005). (from CISP)
- Develop and implement a practical, web-based, Capabilities Database (In conjunction with Industry Canada Industry Capabilities Database) of the aerospace companies in Ontario, to identify who will be the 'receptors' for technology injection and partners in technology transfer. (from CISP)
- Look at other jurisdictions and what they have to offer
- Inventory Ontario programs
- Develop a message outlining Ontario's value proposition and attractive environment for foreign investment based on the following strengths
- World leader in niche markets Skilled Labour, MRO advantage, Canadian dollar, Range of capabilities, Cost competitiveness, Resource pool, Good academic and business environment, Secure, stable, sophisticated, multicultural environment, R&D, Customer support, Access to North American market, EDC export guarantees, Government policy and support programs –Govt is industry friendly, Advanced manufacturing, History and heritage – leading edge (aerospace did not move here – it evolved here, Labour friendly environment – stability, Risk Sharing – risk management – sophisticated industry base, Synergy with other sectors (IT), Prepare 3-4 fact sheets for Ontario
- Development of an engagement strategy and design of required communications products (web-sites, printed materials, etc, to increase the positive 'brand image' of the Ontario aerospace industry within targeted international jurisdictions. (from CISP)
- Establish a review group
- Development of 'business case support' package that existing multinational aerospace systems integrator firms can use with their corporations to win new product mandates.

Task Force 5

Some of the additional details to support the development of AAP 'Aerospace Development Centre' as derived from the AAP Task Force Group #5 may include:

- Create an 'Advanced Technologies Industrial Park' at Downsview
- Designate lands (City of Toronto) adjacent to the Bombardier plant in Downsview in a 'Community Improvement Plan'
- Specify areas and types of industrial uses for aerospace to be defined and approved by 2005
- Increase availability of apprenticeships
- Train interested youth towards certification
- Adopt a 'Team Approach' towards training
- Expand awareness of specific aerospace jobs and broaden the context of the positions
- Provide current news on Ontario Aerospace Industry for all employees via websites, newsletters etc. Inspire existing employees
- Utilize existing Aerospace firms' facilities, museums to establish promotional tours expositions etc.
- Utilize Aerospace Development Centre to regularly bring companies and youth together
- Make presentations to youth (Grades 6 and up)
- Broaden 'outreach' with CAW newsletters
- Develop and support 'Space Camp' activities
- Develop Tour programs, media content
- Establish Theme Days/Weeks – Industry, City of Toronto – make 'Aviation Day' an aviation milestone event
- Provide access to more Industry information
- Partner in major public exhibitions (CNE)
- Promote local Aerospace heritage