Manitoba Aerospace Technology Road Map

Kim Olson, Standard Aero
Ken Webb, Manitoba Aerospace Association

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Why invest in a Technology Road Map?

- The Manitoba Aerospace Sector supports over 5,000 jobs and produces more than $1.6B worth of goods and services annually of which 80% are exported.
- There are more than 40 business establishments in this sector.
- The industry's primary focus is on complex components design and manufacturing, precision machining, maintenance, repair and overhaul, and environmental testing of gas turbine engines.
- Manitoba has a vibrant and successful aerospace industry that has been built on entrepreneurship, innovation and productivity.
- **Technology capability and industrial competitiveness are the basis for continuing success.**

TRM Overview

Background

- Emerson report released Nov 2012
- 25 Recommendations including:
  - Market access
  - Trade and procurement
  - Safety certification
  - Supply chain development
  - Workforce development
  - **Research and Technology**

- MB Aerospace Workshop Jan 2013
  - MAA / EnviroTREC / WestCARD host 2-day stakeholder review

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Manitoba Aerospace Workshop

- Stakeholder mtg to review Emerson recommendations
  - *"particularly those related to technology development, technology funding, collaborations and workforce development"*
  - Industry, academia, govt, NPOs, research orgs, economic development
- Ensure MB needs and priorities are advanced as recommendations are implemented
- Consensus recommendations:
  - Manitoba strongly supports the Emerson Report recommendations
  - Manitoba use a modified Technology RoadMap (TRM) process to create a Strategic Technology Document (STD)

MB Aerospace Technology Roadmap

- Fore-sighting and priority setting exercise
- Industry led Steering Committee (SC) and six Thrust Area Working Groups (TAWGs)
- Industry leader chairs each group with NPO providing support
- Modeled off of NRC TRM process
- NRC-IRAP providing $ support, industry providing time and knowledge

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Steering Committee

- Kim Olson – StandardAero – Chair
- Ken Webb – Manitoba Aerospace Association – Deputy Chair
- Rick Jensen – Boeing
- Dave O'Connor – Magellan Aerospace
- Leo Sousa – Cormer Group Industries
- Udaya Silva – EMTEQ
- Sean McKay – Composites Innovation Centre
- Fred Doern – Red River College
- Jonathon Beddoes – University of Manitoba
- Myron Semegen – Industrial Technology Centre
- Greg Dandewich – Economic Development Winnipeg
- Wendell Wiebe – MB Aerospace Human Resources Council
- Vic Gerden – WestCaRD
- Alfonz Koncan – EnviroTREC

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MB Aerospace Technology Roadmap

- TRM objectives:
  - Communicate MB technology priorities
  - Respond to opportunities arising form Emerson review
  - Develop technology partnerships within the community
  - Develop technology partnerships external to community
  - Provide priority and direction for use by academic community
  - Provide technology component for overall sector strategic planning activities
- Steering Committee identified six key technology areas

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Thrust Area Working Groups (TAWGS)

- Advanced Machining (Cormer)
- Robotics and Automation (Magellan)
- Composites (Boeing)
- Simulation Modeling and Analysis (StandardAero)
- Testing and Certification (StandardAero)
- Space and Rocket Systems (Magellan)

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Results

- Over 50 subject matter experts with support from NRC identified 25 technologies in the six key areas
- Compiled into the following documents:
  - TRM Summary
  - TRM Report
  - Appendix D – Environmental Scans
  - Appendix E – Critical Technology Reports

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Conclusions and Recommendations

Conclusions

1. Manitoba aerospace companies share many common technology areas of interest;

2. Twenty-five critical technologies were identified in six key focus areas;

3. The key areas are consistent with those identified by the national Technology and Innovation Working Group working under direction of the Aerospace Industries Association of Canada;

4. Collaboration will be required to develop many of the technologies identified, including collaboration from beyond Manitoba's borders;

5. The Manitoba aerospace community will need to develop a greater capacity to undertake collaborative research projects;

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Conclusions (continued)

6. There is a collaborative spirit and collective willingness to pursue the R&D activities and the business opportunities they will create to develop the key technologies;

7. The Manitoba aerospace community will need to establish a strategy and a mechanism to pursue collaborative research and development;

8. Both funding models and coordination/leadership models will be required;

9. Existing programs such as CRIAQ, GARDN, CRN, WINN and CCMRD may offer opportunities or models for collaboration; and

10. The industry-led current TRM Steering Committee may be a suitable leadership group.

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Recommendations

1. Strategies be developed to pursue the development of the critical technologies identified.

2. A communication strategy be developed to engage government, research organizations, academia, and the public in supporting the development of the key technologies.

3. Funding strategies be pursued by leveraging local and national programs for both large and small scale technology research and development projects and by developing local strategies to fit regional resources and opportunities.

4. Systematic processes be developed to ensure the continuity and governance of this Technology Road Map, including periodic renewal and revision.

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Next Steps

Moving Forward

- Aligning the TRM Steering Committee under the MAA for governance and industry alignment
- Mandate is:
  - “The Manitoba Aerospace Research & Technology Committee (MARTC) will coordinate the research and technology development activities necessary to advance the economic development of Manitoba’s aerospace industry”

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Goals and Objectives

- Develop systematic processes to ensure the continuity and governance of the Manitoba Aerospace Technology Road Map.
- Develop strategies to pursue the development of the critical technologies identified;
- Develop technology partnerships within and external to the community;
- Communicate Manitoba's technology development priorities and requirements both internally and externally;
- Respond to opportunities arising from the Aerospace Review as well as those arising from CRIAQ, GARDN, CCMR&D, NRC, NART&N and other R&T initiatives
- Develop strategies to pursue funding by leveraging local and national programs for both large and small scale technology research and development projects and by developing local strategies to fit regional resources and opportunities.

Outlook

- Finalize Terms of Reference for MARTC
- Renew membership
- Continue the journey….

Potential Manitoba Tech Demo Projects

- Composites
  - Out of autoclave
  - Ceramic matrix composites
  - Preforms
  - Automated fabrication
- Simulation, modeling and analysis
  - Advanced composites modeling
  - Simulation platform for complex systems (e.g. engine simulator)
- Testing and Certification
  - Ice crystal testing
  - Engine testing simulator
- Others……

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Thank You

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