

WELCOME

Hangar of the Future Information Webinar



CENTENNIAL
COLLEGE

The Hangar of the Future

Centennial College's Technology Access
Centre (TAC) Submission to Transform
Ontario's Aerospace MRO Sector



See where
experience
takes you.



Aerospace & Aviation at Centennial: **A Long History**

- Centennial College holds an excellent track record in the aerospace and aviation sector
- We've been teaching our School of Transportation & Aviation programs for 50+ years
- Our excellence and experience in this field is what empowers us to apply for this TAC
- ARIES (Applied Research, Innovation and Entrepreneurship Services) is an established research department placing Centennial amongst **Canada's top research colleges**



Hangar of the Future: **What's in it for you?**

Centennial College is applying for a Technology Access Centre to **transform aircraft MRO and equip the industry for the future.**



Reduce costs and increase efficiencies



Address your labour shortages



Get ready for the next generation of aviation technologies

What is a TAC – a Technology Access Centre?



A **specialized centre of expertise** advancing applied research and innovation



They address **timely innovation challenges by leveraging a college's expertise, technology and equipment** and providing them to industry organizations.



NSERC TAC grants provide funding for the core operations, up to \$350K/year for 5 years

Centennial **invited by NSERC to apply** for funding after initial down-selection



Hangar of the Future: Ontario's first aerospace-specific TAC

- Currently **only 2 aerospace-specific TACs in Canada** – Manitoba & Quebec
- Aerospace has a **rich heritage in Ontario** hosting many of the world's top aerospace companies



The aerospace industry is **lagging behind** in today's world of rapid technology development



Labour shortage in need of recruitment, training, upskilling



Post-pandemic recovery: profitability challenges



No easy access for aerospace industry to innovation



Ontario's aerospace industry is significantly **underserved**



Innovative **SMEs have vital roles** in advancing aerospace technology

Hangar of the Future: Themes & Concept

- ✓ **Barrier-free, affordable, and responsive access to cutting-edge MRO technology and equipment** for Ontario (and pan-Canadian) aerospace and aerospace-adjacent companies
- ✓ Focused on **six major technology development** themes

- ✓ **Fast-track innovation development** to successfully bring technology into the global MRO market



Hangar of the Future: Themes & Concept



1) Sensor Technologies

- Radio-frequency identification (RFID)
- 5G network
- Aircraft health monitoring
- Internet of Things

Application example:

Aircraft is scanned and inspected for damage by intelligent sensors upon entering hangar



Hangar of the Future: Themes & Concept



2) Repair Technologies

- Advanced materials
- Inspection and assessment
- Robotic repair
- Additive Manufacturing (3D Printing)

Application example:

On-site 3D printer can print special maintenance tools, spare parts, or repair material in real time on demand.



Hangar of the Future: Themes & Concept



3) Digitalization & Data Analytics

- Artificial Intelligence
- Augmented, Virtual & Mixed Reality
- Flight Operations Quality Assurance
- Predictive Analytics
- Aircraft Health Monitoring
- Mobile Applications
- Digital Twins

Application examples:

- *Real-time progress is displayed and shared on interactive screens*
- *Data analyzed is used for predictive maintenance to boost efficiency*
 - *Workers' wearable devices have AR capabilities*



Hangar of the Future: Themes & Concept

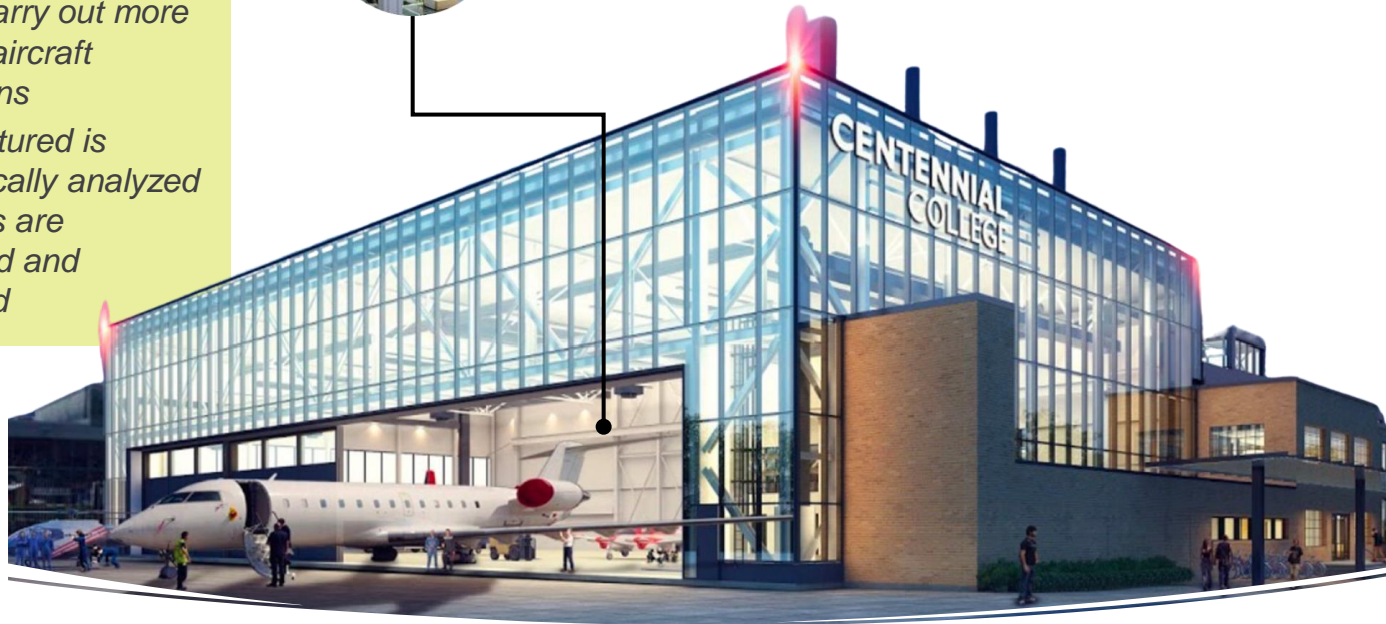
Application examples:

- *Intelligent robots and drones carry out more detailed aircraft inspections*
- *Data captured is automatically analyzed and tasks are generated and delegated*



4) Robotics and Automation

- Drone Inspection Technology
- Exoskeletons



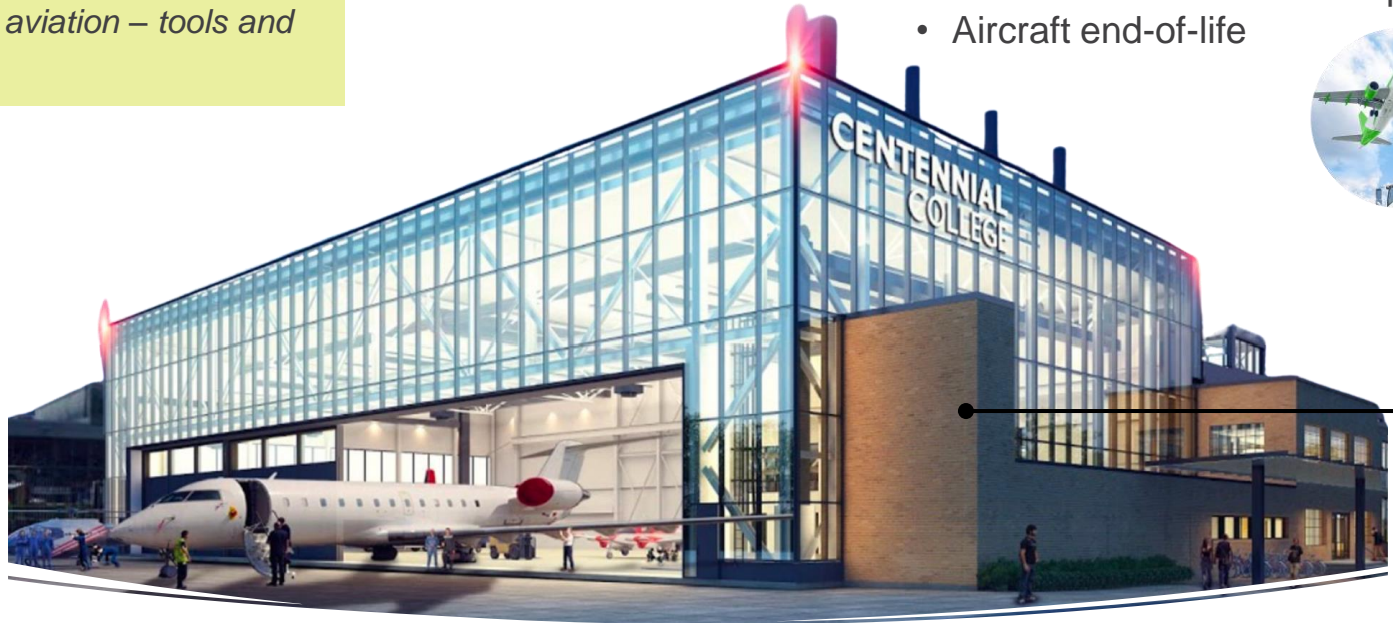
Hangar of the Future: Themes & Concept

Application example:

Developing MRO procedures for sustainable aviation – tools and techniques

5) Sustainable Aviation

- New flight vehicle technology
- Sustainable aviation fuel
- MRO infrastructure development
- Aircraft end-of-life



Hangar of the Future: Themes & Concept

Application example:

Use of blockchain technology to reduce the use of unapproved parts

6) Business Processes

- Encryption
- Life Cycle Cost



Hangar of the Future: Labs & Facilities



Hangar of the Future: Who will benefit?

Centennial
College
Schools



Industry
Partners &
Collaborators



Ontario
SMEs in
Aerospace



MRO Sector
and Market



Student
and Staff
Researchers



We need your help to refine our application!



Your feedback and input

- Today's discussion
- Survey / questionnaire
 - What is important to you for this TAC?
 - What are the industry's innovation priorities?



Your engagement

- Share our questionnaire with other industry connections
- Engage in conversation with others and share their feedback

What's next?

- **Dec 2nd, 2022**
Last day to submit your feedback
- **Dec 23rd, 2022**
Centennial completes TAC Proposal
 - Summary of proposal sent to industry partners
- **Jan 19th, 2023**
Centennial submits full TAC application to NSERC
- **March 2023**
NSERC awards grants
- **Q3 - 2023**
Hangar of the Future operational



Questions & Discussion Period

We welcome your feedback and input

THANK YOU



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