

Aviation and Aerospace Innovation

cmc electronics

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Corporate Background

About CMC Electronics Inc.

- 1901 Guglielmo Marconi successfully makes the first trans-oceanic wireless transmission.
- 1902 Marconi founds the *Marconi Wireless Telegraph Company*.
- 1925 Company name changed to *Canadian Marconi Company*.
- 60s Corporate focus moves towards aircraft navigation, monitoring and display systems.
- 2001 Company name changed to *CMC Electronics*.



Marconi co. circa 1910

CMC Electronics stands on a solid reputation based on over one hundred years of innovation. Today, CMCE is widely recognized to be a world leader in the design, manufacture, sales and support of high-technology electronic products for the aerospace and communication markets.

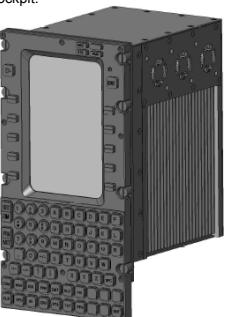
Program Abstract



Sikorsky Cyclone CH-148

The FMCDU creates an interactive display to present critical flight data, mission data and communication system status to the aircraft crew.

- Engineering of software design and development of flight computer systems.
- Replacing systems on board aging Sikorsky Sea-King Helicopters.
- System will include components for Flight Management, Mission Data Management, and Communication Management.
- MHP conducted to support Naval Surface Warfare, Sub-surface Warfare and Search and Rescue operations.
- Two Flight Management Control Display Units (FMCDUs) located in cockpit.



Flight Management Control Display Unit

Co-op Student Activities

- Working as a member of the Military Software Engineering team.
- Working closely with the FMCDU device.
- Writing, proofreading and editing software design and requirements documents.
- Developing embedded user interface keyboard and display software for the FMCDU in C and in Ada languages.
- Conducting and participating in review sessions to examine produced work.

Work Term Context

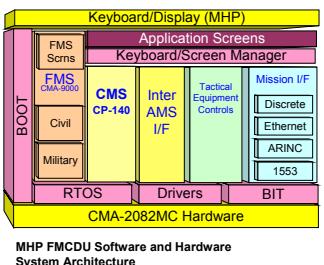
Student Background

- Honours Bachelor of Computing. Three of four co-op semesters completed.
- Previous Co-op Work Experience:
 - Blue Coat Systems (2005) - Quality Assurance.
 - Rogers Cable (2006) - Development Support. *Third Prize Winner for Best Work Term Report*
- Work Term Goals:
 - Broaden software development skills.
 - Develop agile decision-making practices.
 - Expand time management abilities.
 - Increase ability to conceptualize large projects.



System Architecture

Foundation, Application and Interface Integration Layers

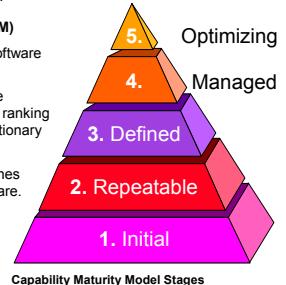


Software Process Maturity Overview

- In general, lives will ultimately depend on the reliability of flight equipment.
- Developing commercial and military aviation equipment must take place in a very sensitive and high precision environment.

Software Capability Maturity Model (CMM)

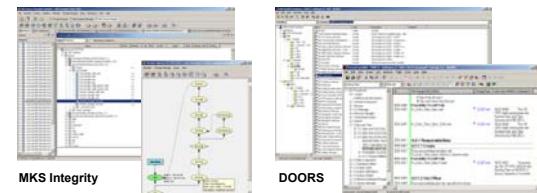
- Internationally recognized standard for software development.
- The model helps judge the maturity of the software processes of an organization. A ranking between one and five indicates the evolutionary stage for the key procedures in practice.
- Describes and provides company guidelines used for managing and developing software.
- A proven model. Benefits include:
 - Reliable on-time delivery
 - Higher product quality
 - Predictable expenses



Process Technologies

Measuring, Analyzing and Improving

- CMM Level Three: Defined.** All projects use standardized management and engineering processes for software development and maintenance.
- October 2003:** CMC Electronics was assessed and certified with **CMM Level Three**. This level provides a foundation from which all engineering processes will be examined and decisions can be made on how to improve them.
- A component of this certification is reliant upon the technologies being utilized within the process management infrastructure:
 - MKS Integrity™** is used for software version control, code and development path management, review session logging and issue tracking.
 - Telelogic DOORS®** is used for managing and tracing system requirements.



Conclusion

- Traceable.** All components of software functionality and low-level implementation detail must be traceable to a higher level of system and customer requirements.
- Defined.** Software which requires a very high degree of dependability necessitates a rigid and highly defined process management infrastructure.
- Consistent.** A corporation-wide set of procedures for design, implementation and maintenance will ensure that all aspects of the product lifecycle are well controlled and documented.

Citations and Acknowledgements

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- My co-op support in Guelph: Deborah Stacey, Sharon Popkey and Bruce Wilson.

Source Document References:

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- Maritime Helicopter Program Reference Document. 2003-06.
- New Hire Orientation Training Material – Marlene Walker. 2006.

