CANARIE

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Intelligent Infrastructure Program

# Quarterly Progress Report



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## Project Information

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| Lead Contractor: | McGill University | | | |
| Project Name: | Underwater Window | | Project #: | IIP-03 |
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| Participant 1: | University of Victoria | | | |
| Participant 2: | Flex-Met Technologies | | | |
| Date: | Oct. 13, 2006. | | | |
| Claim Period: | April 1, 2006 | To: | June 30, 2006 | |

## Impact Report

The five full time positions continued, three at McGill and two at the University of Victoria.

## Project Activities

The project was proceeding on schedule at this milestone, but there were indications that the new model Panasonic camera might not be delivered as scheduled in July. This would in turn delay manufacture of the camera housing because it must be fitted exactly to the actual camera and the new model is not available.

The deployment plan (see Appendix 1) therefore contemplates the possibility that the camera will be initially deployed near shore if its delivery is delayed and deployment at the scientific site before the end of the project isn't possible due to non-availability of the required ship. This would enable complete testing of its functionality and that of the network, but the site would be of minimal use to the scientists. Scientific use would take place mainly after the end of the project.

Work on the user interface progressed normally, but it still wasn't clear exactly which scientists would be the first to use the camera. However feedback from several scientists was very helpful in designing a generic interface. The scientists were enthusiastic about the potential that the camera has for observing the behaviour of very small creatures on the ocean floor.

### Deliverables Milestone 3: June 30, 2006.

1. Underwater component deployment plan completed.
   ***Complete. See Appendix 1.***

2. Web Services request processing software alpha test completed.
   ***Complete.***

3. Plan completed for incorporating bio-fouling shutter if necessary.
   ***Complete. It was decided not to incorporate a bio-fouling shutter.***

4. Plan completed for incorporating illumination if necessary.
   ***Complete. There will be two LED variable intensity lamps for low light use and additional flood lighting in case it is needed.***

5. Underwater pan/tilt specifications completed.
   ***Complete.***

## Updated Project Plan

See "Project Activities" above for a detailed explanation of changes to the Project Plan. An updated Project Plan for Milestones 4 and 5 appears below.

### Updated Milestone 4 – September 30, 2006.

6. Web Services software alpha test and revisions completed.
7. Report on UCLPv2 software use plan.
8. Camera housing 50% completed.
9. Underwater pan/tilt completed.

### Updated Milestone 5 – December 31, 2006.

10. Report on UCLPv2 software test for ease of use, etc.
11. Report on video quality, network performance, and accuracy and response time of camera control.
12. Camera housing completed and tested.
13. Camera assembly attached to VENUS node.
14. Data stream format for NEPTUNE integration specified.
15. Underwater camera assembly performance tests completed.
16. Any necessary modifications of camera assembly completed.
17. Demonstrations for sponsors and the press completed.
18. Final project report completed.

## Technological Progress

Design of the optics for the camera housing is proving difficult because of the long zoom range of the lens – beyond that of any known underwater camera, but essential for the scientific tasks being undertaken. Arrangements were made for proprietary lens data from Canon in Japan to be made available to the housing manufacturer, Insite Pacific in San Diego.

Although the web services request processing software was shown to work with a generic web camera, work on computer control of the underwater camera was hampered by a lack of information on the communications protocol and command set used by the camera control unit for the new camera. Information provided by Panasonic was incomplete and of little help. Considerable time was spent on relaying technical questions to Panasonic Canada then to Panasonic U.S. and from there to the camera factory in Japan. Panasonic promised to provide better support in the future.

Because the plan is to move the camera on a regular basis, it will be possible to clean it and there is therefore no need for a bio-fouling shutter. The illumination plan is to make use of two small LED lights given the very low light level capability of the camera. However, additional flood lighting will be available should a situation arise where the LEDs are not sufficient.

The pan/tilt was delivered to McGill so that computer control could be tested. With assistance from the manufacturer, this proved to be successful. Work began on controlling other devices, such as lights, using the same interface.

## Communications

Press releases were issued by McGill and the University of Victoria in April 2006.
See Appendix 2.

## Web Site Information

Project web site: **http://www.canarie.mcgill.ca**