

**Canarie IIP-03 “Undersea Window” Project Milestone 1 Report**  
**Appendix 1**  
**Report on the Consultation with Other Projects and Selection of the Camera and Fibre**  
**Transmission Hardware**  
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**1. Consultation with Other Projects**

Once the project got underway, it became clear that two other underwater high definition cameras had recently been developed for other projects by two U.S. underwater engineering firms. Both cameras were designed for deployment on an undersea vehicle or ROV rather than for long term deployment on the seafloor. However, other projects strongly suggested that we take advantage of the very considerable expertise gained by these firms, particularly in the manufacture of the camera case and its optical glass viewing port which must be matched to the lens. This would be more expensive than originally planned and at the end of the period, the budget was being examined to see if this would be possible.

**2. Selection of the Camera**

Insite Systems of California developed an underwater camera for Neptune U.S. using an Ikegami 1080i HD camera and a Fujinon 12X zoom lens. Deep Sea Systems of Massachusetts developed an underwater camera for National Geographic using a Panasonic 720p60 HD camera and a Canon 12X zoom lens. It was decided to use a progressive scan 720p60 camera rather than an interlace scan 1080i camera since it is much easier for the scientists to examine single frames of the video. There is no need for de-interlacing.

Deep Sea Systems used the same Panasonic model AK-HC900 720p60 HD camera that is being used by McGill in the Canarie AAP “Shared Spaces” project. McGill has a research relationship with Panasonic whereby they provide special pricing on equipment. At the end of the period, Panasonic advised that it had discontinued the AK-HC900 and would be replacing it with an improved model, the AK-HC1500, but that it might be some time before the new camera would be available.

Both suppliers suggested that we use a 12X zoom lens to minimize their development work. However consultations with the initial scientific users of the system indicated that most of them are interested in studying the behaviour of very small invertebrates on the seafloor which requires a 40X zoom lens. Such a lens is very expensive so discussions began with Canon on whether it is willing to assist the project. The engineering firms also began to look at the problem of manufacturing the optical glass viewing port for such a lens.

**3. Selection of the Fibre Transmission Hardware**

The fibre transmission hardware must transmit bi-directional RS-232 control for the camera, lens and pan/tilt head as well as the HD-SDI video stream. Evertz is a Canadian company that manufactures such hardware so initial contacts were made on pricing and technical support. The two U.S. underwater engineering firms have used two other fibre transmission hardware suppliers so a comparison will be made among the three.