



June 26, 2009

Hi Justin,

Below is an estimate for the prototype Gigavision system project for this summer. The prototype specs are preliminary but something like this should work well. To keep things simple for the first round of development, I'm planning to put the pan-tilt (PT) hardware inside the camera housing. This approach has the advantage of being low-powered and the PT hardware is based on a system that I have used before which is robust, easy to program and will work in a wide temperature range. The disadvantage of this approach is that the camera will only have the field of view it can get from within a fixed housing (probably 80-90°).

As spec'd out, the system will not be wireless and the images will have to be harvested by a user on a regular basis every couple of weeks. If there is time I will program our recording software to upload thumbs or some kind of system info so we can at least see if everything working. I anticipate purchasing a Netbook computer for the system which is GSRM-enabled so you could easily add cell or 802.11 wireless and we could implement image upload at a later date. Since this system runs on a PC, it should be able to interface with any other wireless and/or computer based systems you have such as the weather stations.

I will also investigate other pan tilt systems such as the rugged PT system by PantiltUSA (<http://pantiltusa.com/> - See the FPT500). This system is great in that it supports a 25' load so we could have the whole camera housing move with no constraints on field of view. However, on paper the FPT500 looks like it requires too much power and doesn't function in a wide enough temperature range to be useful year round. I've contacted the FPT engineers with some questions and am waiting to hear back from them. I will also look into other PTZ systems that we might use but so far, all other systems I've seen are way too expensive (\$2,000 - \$15,000). In the short term at least, I don't see how we could ruggedize an existing Gigapan system if it can only hold 3' of weight and I think it will be quicker to program an off-the-shelf PT system that is designed for ease of use rather than trying to figure how to hack the Gigapan servo hardware.

In terms of payment, I propose you pay TimeScience at the outset for half of the hourly costs (\$2,500) and the cost of one unit (\$3,000) to get us started. The remainder of the hourly costs and the cost of a working Gigavision unit would be paid on the completion of the project. The trip to Chicago could be paid when I got there. My hours for assembling and testing the units and my time in Chicago are included in the 100 hours estimated for the project.

Let me know if you have any questions or give me a call and we can discuss how to proceed from here.

Tim

*\* All costs are estimates. Actual cost will be determined when project requirements are finalized.*

*\* Pricing valid for 2 months from date of issue*



**Gigavision system prototype cost estimate**

***Research, Development and testing time***

100 hrs @ \$50/hr = \$5,000

***Gigavision basic system – parts list***

SLR Camera	\$850	Probably Canon, Lumix or Olympus
200mm lens	\$200	Prices range from ~\$120 - \$400
Waterproof camera housing	\$200	
Solar or wind power	\$600-800	
Battery system	\$200	
GSRM enabled Netbook	\$400	Probably Asus eee or Dell mini 12
Misc parts and supplies	\$250	
PanTilt (PT) Hardware	\$100 - \$700	Basic low-power USB PT with ~5' load capacity is \$100; Industrial weatherproof 25' load PT is \$650 but power requirements may be too high. More research needed.

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*Parts Estimate (per unit)*                      **\$3,000**

***Visit to Chicago***                                      **\$550**

***Estimated total project cost***

R & D	\$5,000
2 gigavision units	\$6,000
Chicago site visit (airfare/transport)	\$ 550
<b>Total</b>	<b>\$11, 550</b>