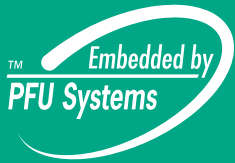


Case Study



CardPC™

Bringing Design Challenges Down To Size™

Sensors and Software, Inc. Digital Video Logger (DVL)



The Opportunity:

Sensors and Software develops portable ground penetrating radar (GPR) systems that locate buried or sunken objects below the surface of the earth, macadam, water and similar materials. Virtually every public utility, municipality, and underground construction company can benefit from portable GPR to see below the earth's surface to locate pipes, cables and other obstacles before commencing excavation; thus they can avoid costly damage and service interruptions. With the increasing performance of small form factor computing solutions, GPR systems are becoming more powerful and cost effective which is driving their use in a growing number of applications.

The Challenge:

GPR devices use computers to capture radio-echoes in real time and convert them to digital images. Those images are then displayed on a sunlight readable LCD and stored in digital format to be downloaded later for further analysis, modeling and archiving. Sensors and Software pioneered the use of laptop PC's for portable GPR but quickly found that laptops are neither rugged enough to suit the harsh conditions of outdoor use, nor were the LCDs bright enough to be used outside. Further, the popular Windows® operating system could not support the real time processing requirements of GPR applications. As such, Sensors and Software's engineers needed to combine the advantages of the laptop's size, cost, portability and software compatibility in a more rugged package with a sunlight readable display.

The Solution:

The Sensors and Software team settled on Cell Computing's CardPC because the proven and tested system-on-a-module provided an Intel® 486MHz CPU that could be easily upgraded to a Pentium® processor should the requirements of their system change over time. Further, the ultra-compact form factor of the CardPC enabled Sensors and Software to build a custom solution that met their requirements for ruggedization, portability, and functionality while slashing nine months from their design cycle. "The product has been very reliable and we were pleased with Cell's design review process," said Dave Leggett, Sensors and Software's vice president of engineering.

The Alternatives:

Sensors and Software contemplated the development of a custom motherboard, but the estimated US\$100,000 cost and twelve to fifteen month lead time were too much to invest in their initial product offering. They also considered various PC/104 boards, but found these solutions to be bulky, unreliable in terms board to board interconnect and cabling, and the power requirements exceeded the battery size and capacity specified by Sensors and Software for portable field use. In the end Cell's system-on-a-module provided them with a scalable, low power, small form factor solution around which they could quickly build a cost effective, custom, ruggedized solution.