Final Technical Report  
for Grant No. DE-FG03-95 ER 81944  

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Research in the SBIR Phase II grant number 95 ER 81944 centered on creating interactive multimedia software for teaching basic concepts in particle physics on fundamental particles and forces. The work was undertaken from February 1997 through July 1998. Overall the project has produced some very encouraging results in terms of product development, interest from the general public and interest from potential Phase III funders. Although the original Phase III publisher, McGraw Hill Home Interactive, was dissolved by its parent company, and other changes in the CD-ROM industry forced us to change our focus from CD-ROM to the Internet (as outlined in our letter of February 17, 1997), there has been substantial interest from software publishers and online content providers in the content developed in the course of the Phase II research. Results are summarized below:

1) Product Development Achievements:

• SLAC Tour:

Seismic has created a tour of this DOE facility using techniques outlined in Phase I research and developed in detail during Phase II. The tour consists of 360° panoramic photographs which are inserted in Virtual Reality Markup Language (VRML) software for connections with other panoramas, ancillary text and photos and a user interface also developed in Phase II. Seismic plans to continue working with a Presidential Science Award-winning high school physics teacher to develop activities for students and the general public to enhance understanding of the physics, technology and history behind the accelerator, pending the acquisition of Phase III funding. The Tour is setup with VRML panoramas in the top half of the page, and Java-enabled chat in the bottom half, for realtime tours of DOE labs conducted by scientists and educators. New tour tools including a “jump-to” feature for late arrivals were developed also. The SLAC Tour is viewable on the Web at www.lost-worlds.com/slac/index.html

• CERN Tour:

Seismic created a tour of the CERN laboratories using production and user feedback from the SLAC tour experience. As a result, the CERN tour is substantially streamlined and easier to use. Panoramas photographed inside all the major facilities at CERN are linked together using VRML software, with closeup photographs, text and a complete VR tour interface. Additional improvements on the CERN tour are anticipated pending Phase III funding. The Tour is setup with VRML panoramas in the top half of the page, and Java-enabled chat in the bottom half, for realtime tours of DOE labs conducted by scientists and educators. CERN Tour is viewable on the Web at www.lost-worlds.com/cern/index.html

• Dark Secrets Web Map

Seismic created a fully interactive map outlining the frontiers of DOE research into inner and outer space, including a map of DOE and collaborating facilities worldwide, rollover pop-up closeup photos and text of each facility using Javascript, topically-themed items on particle physics and high-energy physics arranged around the map with additional pop-up photos and text for each item. The Dark Secrets web page is viewable on the Web at www.lost-worlds.com/dark/index.html
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• The technology and production techniques developed to create the above tours has been refined and enhanced during the Phase II research and development period. Using core VRML technology owned by Live Picture, Inc., Seismic has developed a viable tour programming structure and interface, extended the technology into a "virtual tour format" which has earned it a place as one of leading developers showcased by Live Picture. Panoramas are linked together so that users may navigate between locations seamlessly. Closeup photographs, diagrams or instructive animations are easily integrated into each panorama. Finally, off-the-shelf chat software from Live World Productions, Inc., has been combined with the VRML software to enable live hosted tours of scientific sites like SLAC. Seismic has also developed a cost-effective production plan for photographing, stitching and integrating the media into VRML software.

• The tour format and interface has been branded as the "LostWorlds: Atlas to the Unknown" format and launched as a highly successful web site and CD-ROM Encyclopedia component (see below). Users of the software can navigate easily through real-world environments, click on objects of interest and ask questions from on-line experts using the chat component. Seismic is in discussions with several major software publishers about developing a full Phase III version of DOE Tours and using the LostWorlds format/interface for additional science-related projects (see below).

2) General Public Interest:

The LostWorlds site was featured on Good Morning America on February 12, 1997, and has been listed in the Internet Guide Top 10 web sites. A segment on LostWorlds also appeared on the UPN Network's Strange Universe show in October, 1996.

3) Potential Phase III Funders:

Talk City: Talk City is a web site owned and operated by Live World Productions. Talk City is hosting the public version of LostWorlds, and has contributed its EZTalk Chat software to the site. Talk City is undertaking an Initial Public Offering of its stock in 1999, and if successful, has expressed a strong interest in funding Phase III work with Seismic.

Sierra Online: Sierra Online paid $30k to Seismic for an archaeology adventure using the LostWorlds format called "Palenque: Lost City of the Maya". Palenque was published in the 1998 Edition of Collier's Multimedia Encyclopedia. Sierra's Home Division has expressed interest in funding future CD-ROM projects based on the LostWorlds format.

Discovery Channel: The Senior Editor for the Discovery Channel Online web site met with the Seismic team and expressed a strong interest in the content of the SLAC and CERN tours and the Dark Secrets home page. Further meetings with DCOL are planned following their 1999 planning meetings.