**Publishing Scholarly Journals in Universal Format- Physicists Take the Lead**

By  
Emilia Persoon, Dedicon  
Robert Kelly, American Physical Society  
Dorine in’t Veld and John Gardner, ViewPlus

(to be presented by Emelia Persoon and Dorine in’t Veld)

The American Physical Society and ViewPlus Technologies have completed a proof-of-principle research project on the feasibility of publishing American Physical Society journals in a universally accessible DAISY format. They have shown definitively that it is possible to do so at little additional cost. The results of that study will be discussed briefly, and accessible DAISY articles from Physical Review Letters will be demonstrated.

Two new improvements in DAISY XML capabilities make DAISY scientific articles possible. Two of the authors (EP, JG) were members of a DAISY working group that added MathML as a DAISY extension. Their MathML recommendations were officially adopted by the DAISY board in February, 2007. SVG has always been permitted in DAISY, but a new working group is presently developing guidelines and new namespaces to make DAISY SVG both very accessible and very useful for mainstream purposes. One author (JG) is a member of this group.

The American Physical Society (APS) has been a leader in moving to XML (eXtensible Markup Language) publishing. They presently convert all text and mathematics to XML during the publication process and derive all subsequent materials from that XML. ViewPlus developed a transformer from APS XML to DAISY XML and demonstrated that the text and mathematics in DAISY versions of APS journals is fully accessible.

Making the figures in these journals accessible is much more difficult, because APS figures are inaccessible PostScript format. As part of the research project ViewPlus developed a transformation methodology by which PostScript images can be transformed automatically into moderately accessible DAISY SVG (Scalable Vector Graphic) format. The transformation process requires using OCR (Optical Character Recognition) for many figures in order to obtain proper SVG text in figures. SVG text is accessible, but images of text are not. OCR is not 100% accurate, so some human editing is required to obtain perfect text and math on figures. This additional editing time is the primary contribution to additional costs of publishing as DAISY.

Anybody, including people who are blind, dyslexic, or have other severe print disabilities, can read one of the APS DAISY articles with a standard web browser. Visually impaired readers can use screen readers to read the text and math aloud. A special mathML- and SVG-aware DAISY Reader computer application can be used for reading instead of a web browser. It offers several advantages in the form of self-voicing audio and improved navigation.

Whether the user is reading with a web browser or DAISY Reader, the SVG figure will be displayed, and a SVG link exposed to all users. If that link is clicked, the ViewPlus IVEO SVG Viewer application is opened with the SVG figure displayed. This application allows the user to select text and hear it spoken. Initial DAISY journals will include only such "minimally accessible" figures. Improved authoring and editing techniques will permit much more useful figures. If graphical objects are given SVG titles, they are heard when the object is selected. Extensive descriptions are also available if the author or some subsequent editor has added such information. If the original data is present, the data can be accessed by audio graphing techniques. The structure and meta data of excellent DAISY SVG figures also make them extremely useful for such mainstream purposes as classifications and good search ability, as well as the possibility of data graphs being their own data archive.

Our next step is to develop software and procedures necessary for scholarly publishers to produce and deliver minimally-accessible DAISY journal articles to their subscribers.

Making these DAISY XML scholarly publications available will be a spectacular accomplishment, but it is only the first step in a process leading eventually to a fully XML work flow and to more than-minimal DAISY XML publications. The original ViewPlus-APS team has been joined by other organizations to facilitate such development. These include three composition organizations, the American Institute of Physics, Beacon PMG, and Aptera who will assist in developing software and new composition protocols. The archiving company Portico will create a process that ensures easy archiving of the new SVG images.

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Phone: 541.754.4002   
Fax: 541.738.6505  
1965 SW Airport Ave. Corvallis OR USA 97333