Developing small worlds of e-science: using quantum mechanics, biological science, and oceanography for education and outreach strategies for engaging research communities within a university

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Relativistic quantum mechanical wave equation formulated by Dirac in 1928
Models – Open Archival Information System (OAIS), DCC Curation Lifecycle, Boyer’s Model of Scholarship

- International Standard Organization (ISO) OAIS – “provides a framework for understanding and increased awareness of archival concepts needed for Long Term digital information preservation and access; provides a framework for describing and comparing different Long Term Preservation strategies and techniques” (CCSDS, 2009).

- DCC Curation Lifecycle – “provides a graphical, high-level overview of the stages required for successful curation and preservation of data from initial conceptualisation or receipt” (DCC, 2010).

- Boyer’s Model of Scholarship (Nibert, 2008)
  - Discovery – Build new knowledge through traditional research
  - Integration – Interpret the use of knowledge across disciplines
  - Application – Aid society and professionals in addressing problems
  - Teaching – Study teaching models and practices to achieve optimal learning
Research Disciplines – Physics, Biological Science, and Earth, Ocean, & Atmospheric Science

- Physics – quantum mechanics (Dr. Paul A.M. Dirac)
  - 1000 digitized objects
  - OCLC WorldCat, OPAC, DigiTool accessible
  - FDA & MetaArchive preserved (in process)
- Selected Materials Digitized
  - Key lectures, hand written 1926 dissertation & 1930 1st ed. Principles of Quantum Mechanics, photos, national society certificates from around the world, deteriorating negatives to name a few.

Honorary Fellow Certificate, Institute of Physics, Great Britain, December 14, 1971
Research Disciplines – Physics, Biological Science, and Earth, Ocean, & Atmospheric Science - cont.

- **Biological Science – Dr. A.K.S.K. Prasad**
  - 14 images open-access (online); SEM/LM images; thousands offline
  - OCLC WorldCat, OPAC, DigiTool accessible
  - FDA & MetaArchive preserved (Diatomscapes I & II collections)

- **Earth, Ocean, & Atmospheric Science – various FSU faculty/scientists**
  - 21 tech reports open-access
  - DigiTool accessible
  - OCLC WorldCat, OPAC, FDA & MetaArchive (in process)

Dr. Prasad’s research - PC-D2K87243
Cerataulus smithii SJB-Gulf_002
"Developed by UF integrated in their processes with an origin around 2005 and in use since then by UF. Recently rebranded and repurposed for larger consumption and use."

Open-source SobekCM Online METS metadata creator/editor tool

Creates OAIS SIP & AIP for FDA

Used by University of Central (UCF)

Currently being tested by Florida International University (FIU) and Florida State University (FSU)

FSU began testing 2010-11-04
METS creation data entry
bibliographic information – metadata standards, checksums, & FDA preservation options

Available via http://ufdc.ufl.edu/software/mets
Preservation – Florida Digital Archive (FDA)

• FDA – FSU joined 2009

• Digital preservation strategy

• DAITSS open-source software

• OAIS conformance (METS SIP, AIP)

• Checksum AIP required

• Requires FDA agreement (free)

Biological Science Diatomscapes I & II collections preserved via FDA

(Note: This collection was the first to be preserved via FDA as part of demo preservation pilot project & was later used to influence senior management for FSU Libraries to join FDA)
Preservation – MetaArchive

• MetaArchive – FSU joined 2004
• Distributed digital preservation strategy
• LOCKSS open-source software
• OAIS conformance (SIP, AIP)
• Requires XML plugins, manifest page, conspectus DB entry
• Requires cooperative agreement (fee)

Biological Science Diatomscapes I & II collections preserved via Auburn, Clemson, FSU, Louisville, University North Texas, and Virginia Tech LOCKSS caches
(Note: This collection was the first FSU collection to be successfully preserved via MetaArchive in 2009)
Dissemination – OPAC, OCLC WorldCat, DigiTool

FSU OPAC Diatomscapes record

OCLC WorldCat Diatomscapes record
Dissemination – OPAC, OCLC WorldCat, DigiTool – cont.
Continuation – Horizon Issues, Ideas, & Plans

- Submitted a FSU Faculty Research Library Materials (FRLMG) for acquisition of digital curation/preservation publications 2010-10-25
- Submitted iConference 2011 proposal 2010-10-29
- Submitted IASSIST 2011 proposal 2010-11-03
- Develop a FSU Libraries Data Management Plan
  - Metadata, Data, Content, Submission, and Preservation Policies
  - Register policies in OpenDOAR & develop OAI base URLs
- Develop & register Open Access Repository Material Archiving Policies with ROARMAP (Registry of Open Access Repository Material Archiving Policies)
- Publish, promote, and preserve FSU faculty research
- Improve organization, digitization, workflows, preservation & collaborations
- Apply & secure grant funding in 2011 for development & curation