Adam Shepherd

Information Systems Associate III
Computer and Information Systems
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Experience

Woods Hole Oceanographic Institution

Computer and Information Services

Information Systems Associate III   **July 2009 – present**

- Principal software engineer for the Biological and Chemical Data Management Office (BCO-DMO) where I develop software in support of data management, discovery, and archival for NSF-funded biogeochemistry research projects. This includes multiple Drupal applications, a formal OWL ontology, and REST APIs. These technologies are used for metadata management, Linked Data applications for ontology mapping and collaborative metadata validation, automatic data submission to data archives, and geospatial data discovery tools.
- Principal developer for a Drupal application, funded by the NSF, in support of the UNOLS research vessel fleet to provide researchers and vessel operators with a collaboration tool for planning research cruises. The application is currently being implemented across nine institutions across the United States.
- Principal developer and architect for a Java web application development framework modeled on the MVC design using 100% open source software. The goal of the framework is to provide application developers with a suite of tools and APIs to speed the development process. This framework is the basis of the WHOI CMS and ConnectWHOI software systems and currently runs 24 individual applications supporting content management needs across the institution.
- Designed a methodology for application design and development for the 4-person Web Communications group. The methodology addresses requirements gathering, identifying and prioritizing functionality to inform application design, and time and task management to ensure that software ships on schedule.

Information Systems Associate II   **January 2004 – May 2009**

- Principal Software Engineer for the ConnectWHOI and WHOI CMS Frameworks, in-house software packages hosting more than 1,000 users across 1200+ active websites.
- Developed the web component of the Marine Mammal 3D Visualization application, a three-year pilot project funded at WHOI based on the WHOI CMS Framework.
- Drafted procedures for documenting and planning projects for the Web Communications group.
- Implemented a new version control system for all sources written for the WHOI CMS and ConnectWHOI, build scripts for production environments using Ant tasks, development environment software called an IDE to speed up debugging and code generation, an object/relational database mapping abstraction that improves database access, flexibility, reusability from source code, a bug tracking system from which the Web Communications Group answered 196 WHOI CMS related questions in 2008, and a custom caching mechanism providing performance improvements on content dissemination.
- Developed and coded 100% of MyWHOI, a personalized web portal running on the ConnectWHOI framework for WHOI employees where they can manage the contents of their online profile page,

email settings and the newly implemented auto-vacation messaging, view WHOI and outside RSS feeds of their choice, search the WHOI website, and access all of their WHOI CMS applications and websites.

- Developed 100% of the Advanced WHOI Directory which expanded the SciTech directory to allow all WHOI employees to have an online profile with capabilities to personally manage its content via MyWHOI.
- Developed and coded 100% of the LDAP Administrator, a ConnectWHOI application that manages the LDAP directory in realtime as ConnectWHOI data is changed by a WHOI Employee, BiTech, or an assigned data manager in CIS.
- Developed and coded 100% of ConnectWHOI, an application framework for gathering relevant person data from sources around the Institution.
- By invitation, advised students at the Reading High School to help develop a CMS based off of the WHSTEP ROV which was built using a tool I wrote for the WHOI CMS called Formbuilder.
- Developed and coded 100% of EmEx, a stand-alone Java application that reads and prints emails and attachments from offline storage medias.

Information Systems Associate I   **June 2001 – January 2004**

- Developed stand-alone multi-platform Java applications for use of merging and sub setting scientific data sets with specific criterion for the JGOFS program.
- Developed web-based applications using Java and Coldfusion with back-end databases.
- Programmed the Java templates used by the web content management system, Divine.
- Designed database schemas for web-based applications.
- Administered a web-based Helpdesk ticketing system.

Education

B.S., Computer Science, Northeastern University, Boston, MA   **June 2001**
Minor in Business Administration
Award: 2001 Best Co-op Internship for Computer Science, Woods Hole Oceanographic Institution
Award: Reggie Lewis Scholar, 1996-2001

Publications, Presentations, and Posters

40) Shepherd, A., (2015). **Drupal as a Viable Tool for Semantic Data Management.** Presented at the 2015 ESIP Winter Meeting, Washington, D.C., 6-8 Jan. http://slides.com/adamshepherd/esip-semweb-demo-drupal

39) D. Bassendine, Shepherd, A. (2015). **ScienceOnDrupal 1st Annual Code Sprint**. Presented at the 2015 ESIP Winter Meeting, Washington, D.C., 6-8 Jan.

38) Shepherd, A., D. Bassendine (2015). **Drupal Working Group Open House**. Presented at the 2015 ESIP Winter Meeting, Washington, D.C., 6-8 Jan.

37) Chandler, C; R. Groman, A. Shepherd, M. Allison, D. Kinkade, S. Rauch, P. Wiebe and D. Glover (2014). **Provenance through Time** *(Invited).* Abstract IN34B-06 presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec.

36) K. Stocks; Y. Chen, A. Shepherd, C. Chandler, N. Dockery, J. Elya, S. Smith, R. Ferreira, L. Fu and R. Arko (2014). **Facilitating Semantic Interoperability Among Ocean Data Systems: ODIP-R2R Student Outcomes**. Abstract IN32A-03 presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec.

35) Narock, T; R. Arko, S. Carbotte, C. Chandler, M. Cheatham, D. Fils, T. Finin, P. Hitzler, K. Janowicz, M. Jones, A. Krisnadhi, K. Lehnert, A. Mickle, L. Raymond, M. Schildhauer, A. Shepherd and P. Wiebe (2014). **Provenance Usage in OceanLink Project**. Abstract IN31C-3733 presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec.

34) Raymond, L; A. Shepherd, R. Arko, S. Carbotte, C. Chandler, M. Cheatham, K. Janowicz, M. Jones, A. Krisnadhi, K. Lehnert, A. Mickle, T. Narock, M. Schildhauer and P. Wiebe (2014). **Using Linked Open Data and Semantic Integration to Search Across Geoscience Repositories**. Abstract IN53B-3807 presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec.

33) Chandler, C; R. Groman, D. Kinkade, A. Shepherd, M. Allison, S. Rauch, P. Wiebe and D. Glover (2014). **Partnerships: One Strategy for Meeting Big Data Challenges**. Abstract IN11C-3625 presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec.

32) Narock, T; R. Arko, S. Carbotte, C. Chandler, M. Cheatham, T. Finin, P. Hitzler, A. Krisnadhi, L. Raymond, A. Shepherd and P. Wiebe (2014). **The OceanLink Project** *(Invited)*. Abstract IN34B-02 presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec.

31) Kinkade, D; C. Chandler, R. Groman, A. Shepherd, M. Allison, S. Rauch, P. Wiebe and D. Glover (2014). **Navigating a Sea of Big Data**. Abstract IN11C-3622 presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec.

30) San Gil, I.; S. Corlosquet, A. Shepherd (2014). **Google, Bing, Yahoo and your metadata.** LTER Databits, Issue: Fall 2014. **http://databits.lternet.edu/print/644**

29) Narock, T; A. Krisnadhi, P. Hitzler, M. Cheatham, R. Arko, S. Carbotte, A. Shepherd, C. Chandler, L. Raymond, P. Wiebe and T. Finin (2014). **The OceanLink Project**. Presented at the International Workshop on Challenges and Issues on Scholarly Big Data Discovery and Collaboration, IEEE BigData 2014, Washington DC, USA., 27 Oct.

28) Leadbetter, A; R. Arko, C. Chandler, A. Shepherd, R. Lowry. "**Loose Integration of Local Information to Generate Collaborative Marine Science Knowledge**." Collaborative Knowledge in Scientific Research Networks.IGI Global, 2015. 238-261. Web. 17 Dec. 2014. doi:10.4018/978-1-4666-6567-5.ch012

27) Shepherd, A., D. Bassendine (2014). **2014 ESIP Drupal Summer Lab**. Presented at the 2014 ESIP Summer Meeting, Frisco, CO., 8-11 Jul.

26) Fils, Douglas, A. Shepherd (2014). **Schema.org Hack-A-Thon**. Presented at the 2014 ESIP Summer Meeting, Frisco, CO., 8-11 Jul.

25) Shepherd, A., Corlosquet, S. (2014). **Linked Data + Drupal for Oceanographic Data Management**, Presented at Drupalcon Austin 2014, Austin, TX., 2-6 Jun.
https://www.youtube.com/watch?v=wEllMpcNQFg

24) Krisnadhi, A; R. Arko, S. Carbotte, C. Chandler, M. Cheatham, T. Finin, P. Hitzler, K. Janowicz, T. Narock, L. Raymond, A. Shepherd, P. Wiebe (2014). **Cross-repository information discovery in the earth sciences, Summer Meeting of the Center for Operator Performance**, Dayton, Ohio, 13-15 May

23) Shepherd, A., C. Chandler, R. Arko, Y. Chen, A. Krisnadhi, P. Hitzler, R. Groman, S. Rauch (2014), **Semantic Entity Pairing for Improved Data Validation and Discovery**, Geophys. Res. Abstr. Vol. 16; EGU2014-2476.

22) Chandler, C., R. Groman, A. Shepherd, M. Allison, R. Arko, Y. Chen, P. Fox, D. Glover, P. Hitzler, A. Leadbetter, T. Narock, P. West, P. Wiebe (2014), **Enhancing Ocean Research Data Access**, Geophys. Res. Abstr. Vol. 16; EGU2014-2439.

21) Leadbetter A., R. Arko, C. Chandler, A. Shepherd(2014), **Linked Ocean Data**, Geophys. Res. Abstr. Vol. 16; EGU2014-2101.

20) Chen, Y., A. Shepherd, C. Chandler, R. Arko, A. Leadbetter (2014), **Ontology Based Vocabulary Matching Platform**, Geophys. Res. Abstr. Vol. 16; EGU2014-12909.

19) Beaulieu, Stace, A. Maffei, A. Shepherd, D. Fils, R. Arko (2013). "**InterRidge Vents Database join the semantic web of Linked Data**." *InterRidge News* 22 (2013): 27-29. Print.

18) Shepherd, Adam, R. Groman, C. Chandler, D. Gaylord, M. Sun (2013). **Sustainable Software Decisions for Long-term Projects** *(Invited)*. Abstract IN31D-03 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

17) Chandler, Cyndy, R. Groman, A. Shepherd, M. Allison, D. Kinkade, S. Rauch, P. Wiebe, D. Glover (2013). **Using Controlled Vocabularies and Semantics to Improve Ocean Data Discovery** *(Invited)*. Abstract IN52B-05 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

16) Rauch, Shannon, M. Allison, R. Groman, C. Chandler, C. Galvarino, S. Gegg, D. Kinkade, A. Shepherd, P. Wiebe, D. Glover (2013). **Improved Discovery and Re-Use of Oceanographic Data through a Data Management Center**. Abstract ED43E-03 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

15) Kinkade, Danie, M. Allison, C. Chandler, R. Groman, S. Rauch, A. Shepherd, S. Gegg, P. Wiebe, D. Glover (2013). **Enabling Access to Federally Funded Research Data**. Abstract PA31A-1814 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

14) Rauch, Shannon, M. Allison, R. Groman, C. Chandler, C. Galvarino, S. Gegg, D. Kinkade, A. Shepherd, P. Wiebe, D. Glover (2013). **Improving the User Experience of Finding and Visualizing Oceanographic Data**. Abstract IN31C-1508 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

13) Copley, Nancy, M. Allison, C. Chandler, R. Groman, A. Shepherd, P. Wiebe, D. Glover (2013). **Biodiversity Vocabulary Management at BCO-DMO**. Poster presented at TDWG Annual Conference 2013, Florence, Italy, 28 Oct – 1 Nov.

12) Whitehead, Brandon, Adams, B., Schildhauer, M., Vardeman, C., Kuhn, W., Shepherd, A., & Sinha, K. **Abstracting Transport to an Ontology Design Pattern for the Geosciences**. In *4th Workshop on Ontology and Semantic Web Patterns* (p. 5). 21 Oct 2013. Presented at the ISWC 2013, Sydney, Australia.

11) Shepherd, Adam (2013). **Implementing a Virtuoso Service for Indexing Drupal RDF** *(Invited)*. Oral Presentation for the monthly ESIP Drupal Working Group teleconference, 23 October.

10) Leadbetter, Adam, R. Arko, C. Chandler, A. Shepherd, R. Lowry (2013). "**Linked Data: An Oceanographic Perspective**." Journal of Ocean Technology, 8(3). http://www.journalofoceantechnology.com

9) Bassendine, David, A. Shepherd (2013), **Thematic Meta Issue Tracker for Drupal.org**. Poster presented at FUNding Friday, 2013 ESIP Summer Meeting, 9-12 Jul.

8) Leadbetter, Adam, R. Lowry, R. Arko, C. Chandler, A. Shepherd (2013). **Adding Value to Semantics Through Vocabulary Extension and Mapping**, Geophys. Res. Abstr. Vol. 15; EGU2013-4868.

7) Arko, Robert, C. Chandler, K. Stocks, S. Smith, P. Clark, A. Shepherd, C. Moore, and S. Beaulieu (2013). **Rolling Deck to Repository (R2R): Collaborative Development of Linked Data for Oceanographic Research**, Geophys. Res. Abstr. Vol. 15; EGU2013-9564.

6) Shepherd, Adam (2013), **Rolling Deck to Repository: Results of the Cruise Planning Pilot Project**, Oral presentation at RVTEC Annual Meeting, 11-15 Feb.

5) Shepherd, Adam, R. Arko, A. Maffei, C. Chandler (2012), **Maintaining Scientific Community Vocabularies via Linked Open Data and Web Services**, Abstract IN51C-1698 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec. http://abstractsearch.agu.org/meetings/2012/FM/sections/IN/sessions/IN51C/abstracts/IN51C-1698.html

4) Arko, Robert, C. Chandler, P. Clark, A. Shepherd, C. Moore (2012), **Rolling Deck to Repository (R2R): Linking and Integrating Data for Oceanographic Research** *(Invited)*, Abstract IN51C-1700 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec. http://abstractsearch.agu.org/meetings/2012/FM/sections/IN/sessions/IN51C/abstracts/IN51C-1700.html

3) Shepherd, Adam (2012). **Moving to Open Source Frameworks: The Decision to Adopt Apache Struts as the WHOI Content Management Framework**. Woods Hole Oceanographic Institution. Draft.

2) Shepherd, Adam (2009). **Web 2.0 & Social Media: Developing Strategies to Gain Meaningful Results from Social Technologies**. Communications Managers Meeting, Woods Hole Oceanographic Institution.

1) Shepherd, Adam (2005). **Using XML SOAP in Ocean Science**. WHIT Seminar, Woods Hole Oceanographic Institution.

Professional Activities

Chair, **Drupal Working Group**, Earth Science Information Partners, 2013 – present.
Member, Descartes-Core Geo-Vocabulary Initiative, 2013 – present.
Member, Earth Science Information Partners, 2012 – present.
Member, American Geophysical Union, 2012 – present.
Member, WHOI Gender Equity Program Advisory Committee, 2011 – present.
Invited Guest, Institute for Sustainable Earth and Environmental Software Workshop, August 2013.
Member, WHOI Data Portal Working Group, 2005.
Volunteer, Cape Cod Big Brother Big Sister, 2004-2013.
Volunteer, Reading High School Computer Science Program, 2004.

Technologies

Languages:	Java, PHP, jQuery, Javascript, SQL, SPARQL, Perl, C/C++, Coldfusion.
Semantics:	Linked Open Data Principles, RDF, Schema.org, RDFa, Protégé-OWL, CMapTools.
Tools:	Drupal, iOS SDK, Apache Struts, Apache Tomcat, Hibernate.
DevOps:	Git, SVN, CVS, Ant, Jenkins, Selenium, UNIX shell.
Databases:	MySQL, Virtuoso, PostgreSQL, Oracle 10g.