

INFORMATION MANAGEMENT IS NO EASY TASK

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Charged with building an information management system from the ground up, the information management team has worked tirelessly, managing a variety of software and processes to coordinate the disparate observing systems. Facilitating the use of SEACOOS data across forums and discourse communities is a challenging task. A task that, in fact, depends upon its data management system because it provides the capacity for data exchange among disparate researching systems and coordinates the integration of such data into informational products and blended models ~ the two key elements for SEACOOS' communication with general public users.

The principal challenge in building the information management system from the ground up is the coordination of so many different processes and resources. The system is in the process of simultaneously developing the mechanisms for information exchange, establishing archives for data and information products, and developing a list of necessary software and processes required for data integration. What follows is a basic assessment of what the SEACOOS information management system has established and developed to date; the system is still growing and so the assessment is by no means complete.

PostgreSQL <http://www.postgresql.org/>

A relational database management system (RDBMS) that enables you to create, update, and administer a relational database. An RDBMS takes Structured Query Language (SQL) statements entered by a user or contained in an application program and creates, updates, or provides access to the database.

Post GIS <http://postgis.refrations.net/>

PostGIS adds support for geographic objects to the PostgreSQL object-relational database. In effect, PostGIS "spatially enables" the PostgreSQL server, allowing it to be used as a backend spatial database for geographic information systems (GIS), much like ESRI's SDE or Oracle's Spatial extension, thus enabling certain geometric datatypes which use index functions better suited to spatial entry and search.

MapServer GIS <http://mapserver.gis.umn.edu/>

A GIS (geographic information system) enables you to envision the geographic aspects of a body of data. The most convenient features being the ability to overlay geographic data in layers and selectively view, pan and zoom on layers of interest. We have further adapted this GIS with an animation applet called 'Anis' which allows the user to apply an animation to a selected time range for the data layers of interest.

DM Solutions <http://www.dmsolutions.on.ca/>

This is an open source oriented Canadian company which has enhanced the MapServer GIS greatly with developer toolkits like Maplab and Chameleon. There is a nice gallery of MapServer GIS solutions at <http://www.dmsolutions.on.ca/solutions/liveapps.html>.

Open Geospatial Consortium <http://www.opengeospatial.org>

OGC brings together industry, government and academic parties in defining geospatial metadata and data schemas and service protocols that are open standards based. While the underlying application technology may be geospatially oriented, the metadata and data transport proposals and specifications are applicable across a wide domain of technical issues including those addressed within the OOS community. The current OGC specifications of particular interest are WMS (Web Mapping Service) which allows exchange of data at the representation (image) level and WFS (Web Feature Service) which allows exchange of data at a record level. Also of interest is the Sensor Web specifications and service protocols such as SensorML which is a markup language for the tracking, exchange and administration of platform and sensor information.

Zope/Plone <http://zope.org> <http://plone.org>

Zope came first as an object oriented, all-in-one(web server, object oriented database, applications environment) through the web applications framework created in Python and supporting both Python and Perl scripts. Plone is an extension of Zope to better define Zope as a CMS (Content Management System) / CMF (Content Management Framework). This technology has a lot of great promise in that a lot of common application considerations (user authentication and security, object caching, workflows) are already built into the system or available as free products which have been developed by the community. It uses its own web server and object oriented database as the install default, although developers can modify their instance to use Apache and a relational database of choice with limitations on framework specific functionality. On the downside (like a lot of open source development), the documentation still needs a lot of work.

Wiki <http://twiki.org>

Another option for the Content Management System (CMS) is to use of one of a variety of wiki's which allow for dynamic user development of web page content. Generally speaking Wiki's are a set of CGI scripts which run against your existing web server and database, providing a framework for users to dynamically add and edit webpage content. Gomoos currently uses a Twiki so that would probably be our current preference as well for a wiki based CMS. Language Choice Primarily, Perl and PHP (PHP being a close cousin of Perl) have proven themselves to be good languages for quick initial development. Java works well for processes which might need optimization for multi-threading and Python good for object oriented systems. MapServer GIS is PHP oriented and Zope/Plone is Python oriented.

Coming Soon!

SEACOOS will provide documentation shortly of a SEACOOS netCDF convention which we are using to move forward in our variable declaration and assimilation of these variables into the PostgreSQL relational database with the combined results then presented via the MapServer GIS. This GIS presentation is couched within the content panel of the SEACOOS Zope/Plone portal. An example of the necessary netCDF file format can be seen at the following provider site http://seacoos.marine.usf.edu/cgi-bin/nph-dods/data/seacoos_rt/