Federated Metadata of PICES Member Nations: Information Sharing Across International Borders

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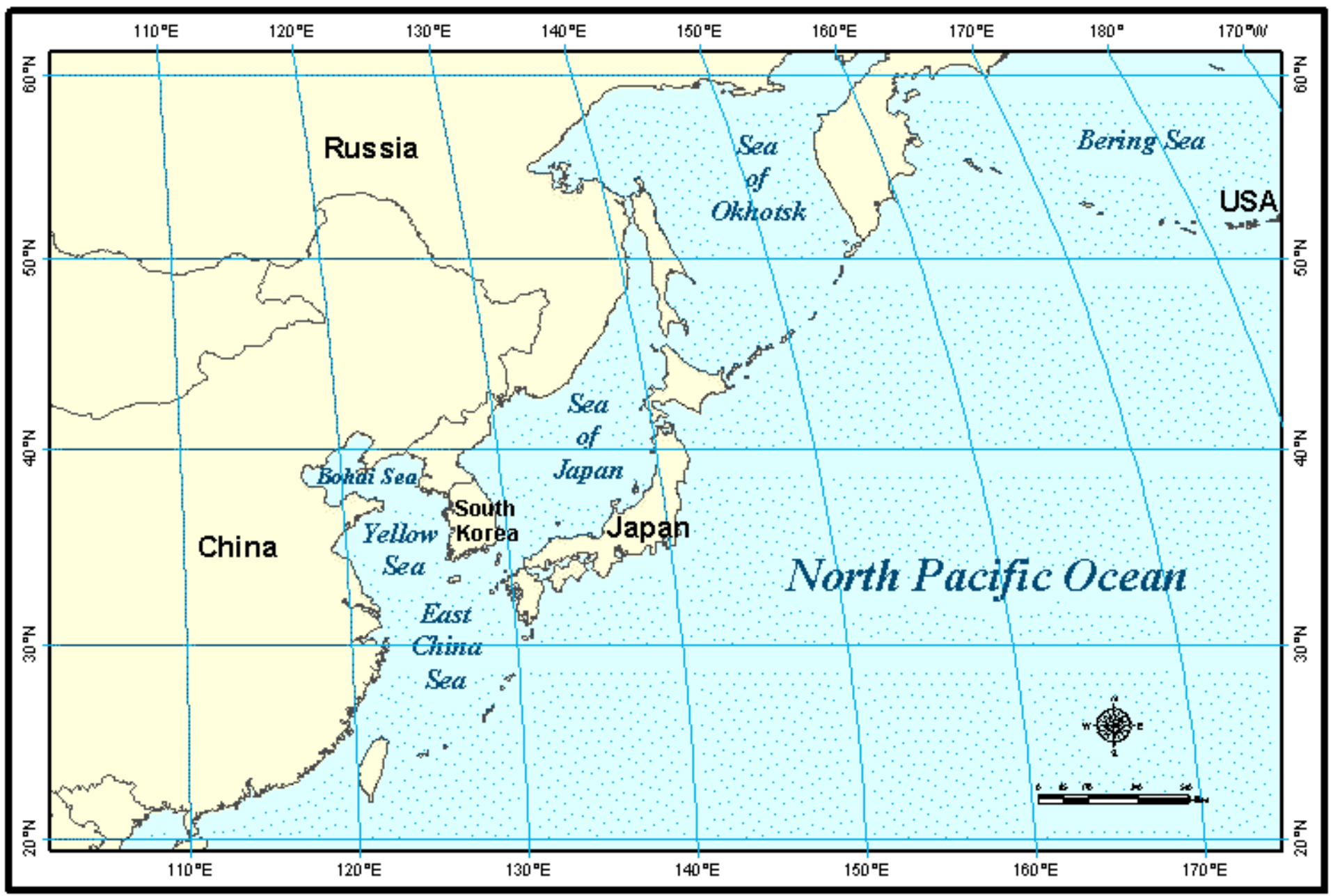
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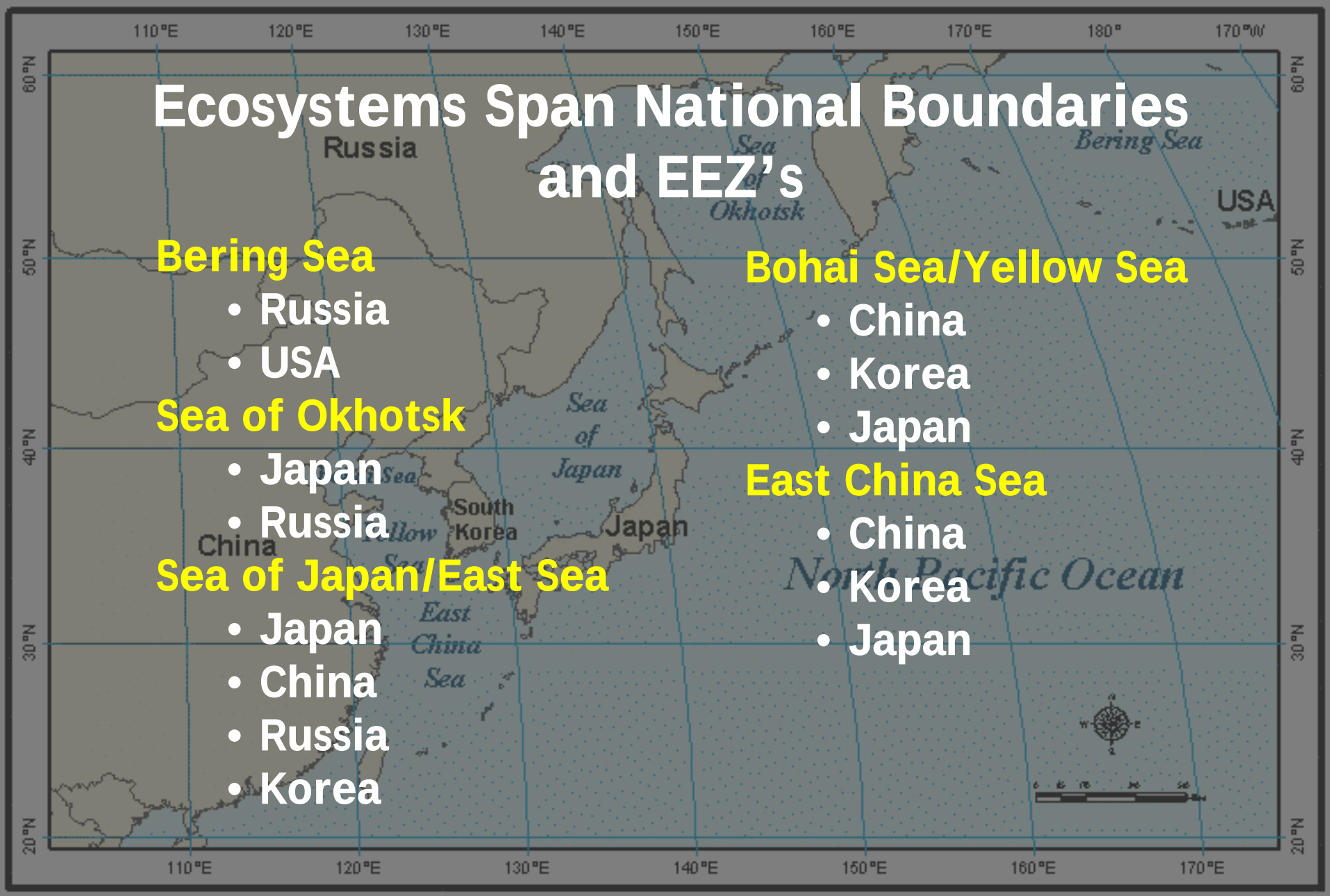
Russia
Sea of Okhotsk
Bering Sea
USA
Sea of Japan
Bohai Sea
South Korea
Japan
China
Yellow Sea
East China Sea
North Pacific Ocean



Ecosystems Span National Boundaries and EEZ's

Bering Sea
- Russia
- USA

Sea of Okhotsk
- Japan
- Russia

Sea of Japan/East Sea
- Japan
- China
- Russia
- Korea

Bohai Sea/Yellow Sea
- China
- Korea
- Japan

East China Sea
- China
- Korea
- Japan

Introduction

- Shared ecosystems are a source of conflict due to national interests and management.
- Despite a great deal of effort put forth to collecting and analyzing environmental information, much of this information is not easily available and disseminated to the public.
- A method of sharing national information about marine ecosystems, independent of political boundaries, is required.

Introduction

- Need international collaboration that will provide tools to foster multi-national sharing of information on marine ecosystems, so that true ecosystem management among interested parties can take place.
- Multi-national partnerships should include all member countries of the North Pacific Marine Science Organization who will share with the world the wealth of marine ecosystem information available from eastern Asia and western North America.

PICES Metadata Federation

- Federate - join together in a league or association
- Fast and easy metadata search and access of all PICES member nations
- Browsable and searchable on-line inventory of data and other info
- Transparent to user

North Pacific Ecosystem Metadatabase

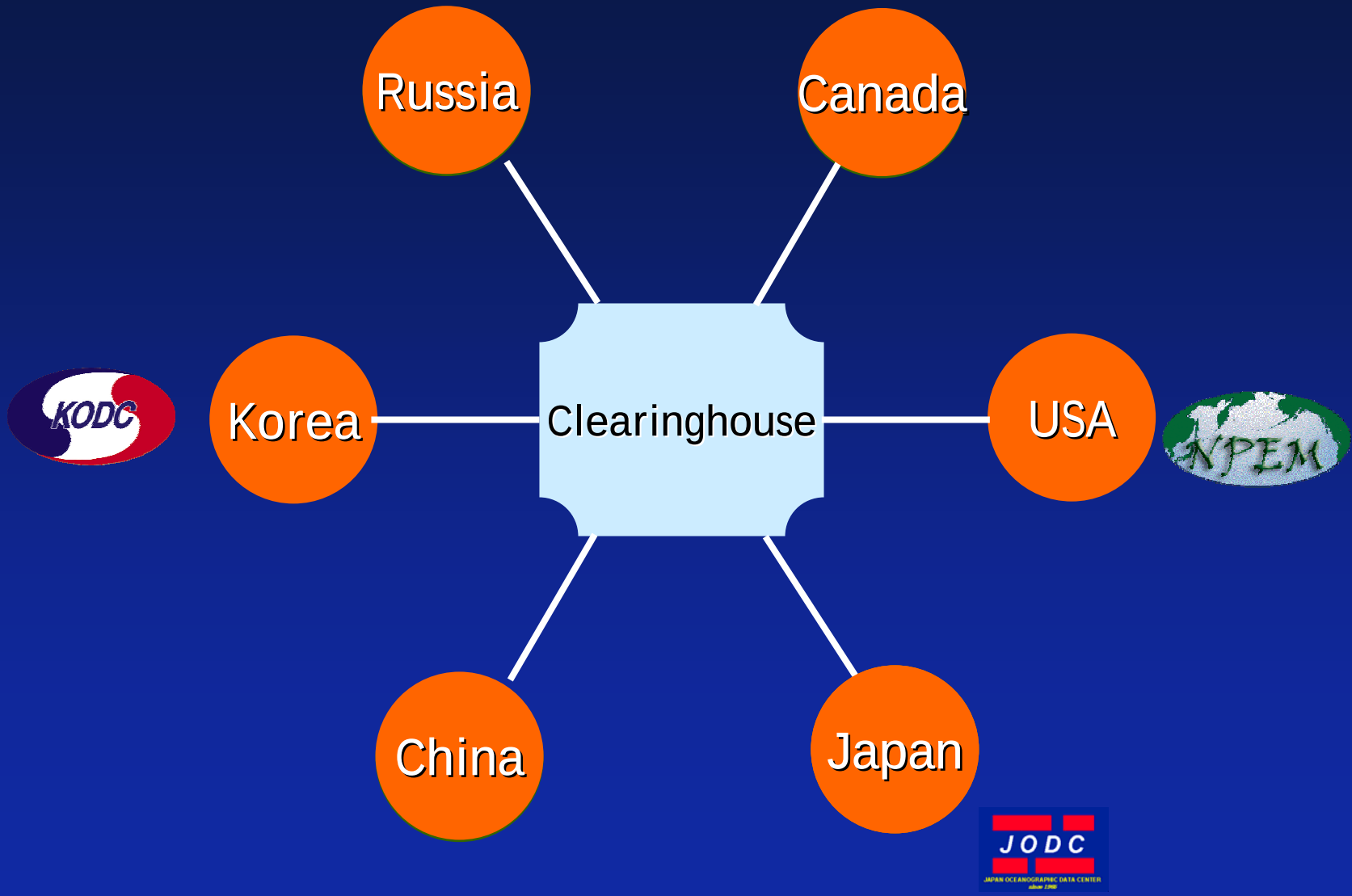
KODC

Federated Search

NPEM

Starting last year, the metadata project began developing "federated search collaboration".

Federated searches enable users to search within the NPEM and, at the same time, search other data centers, as well. NPEM personnel are working with KODC to be the first federated partner.


Russia
Canada
Korea
Clearinghouse
USA
China
Japan
KODC
NPEM
JODC
JAPAN OCEANOGRAPHIC DATA CENTER

3 Steps towards Federation Strategy

- Metadata Standard
- Communication Protocol
- Register with Clearinghouse

Strategy 1 - Metadata Standard

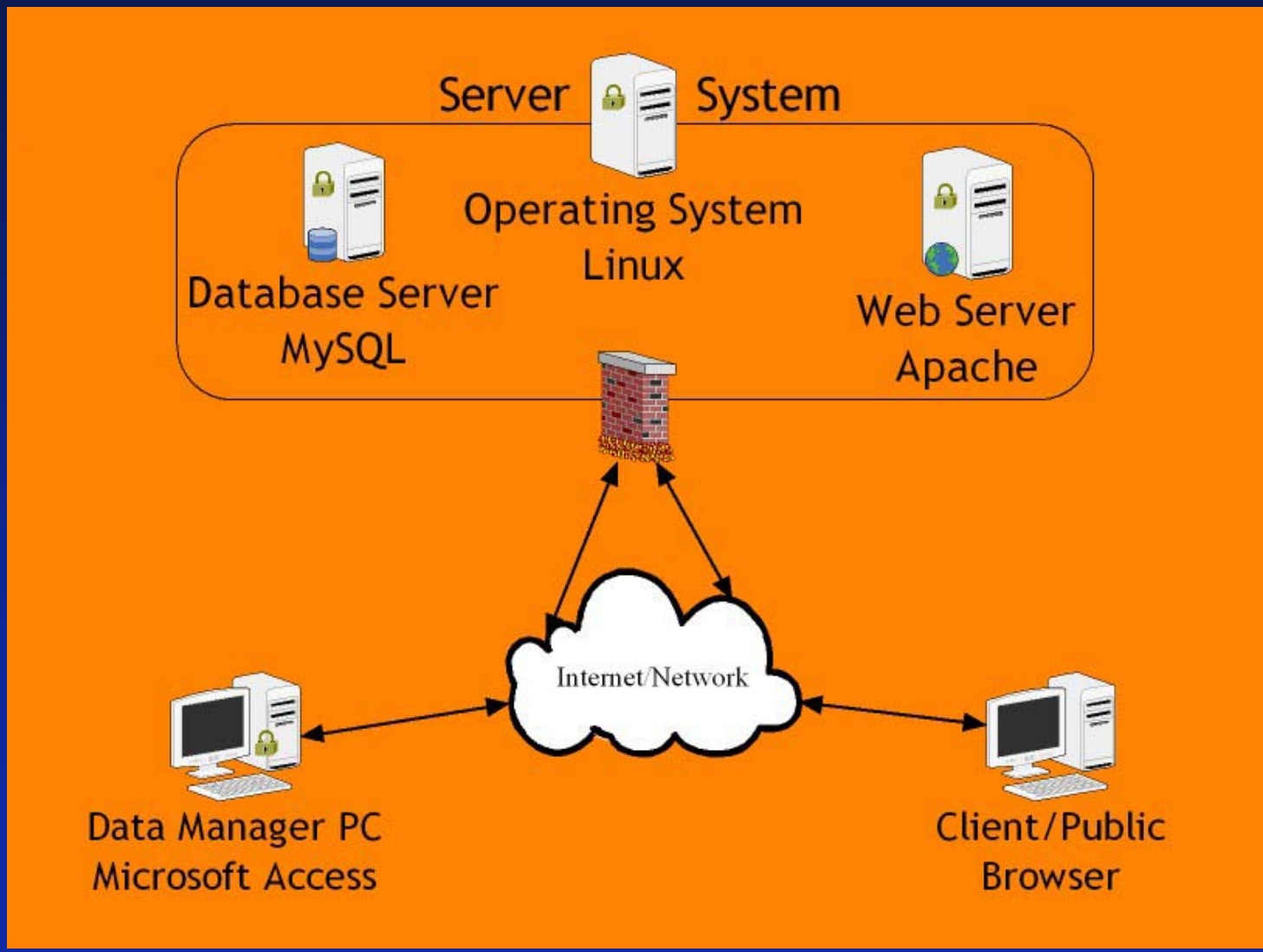
- FGDC, DIF, Dublin Core, EML, etc.
- FGDC: A standard for geographic metadata developed by the Federal Geographic Data Committee.
- Not limited to spatial data. FGDC enables customization of the standard to suit a particular application while staying within the framework of the standard.
- FGDC is easily translated to and from other metadata standards.

Strategy 2 - Communications Protocol

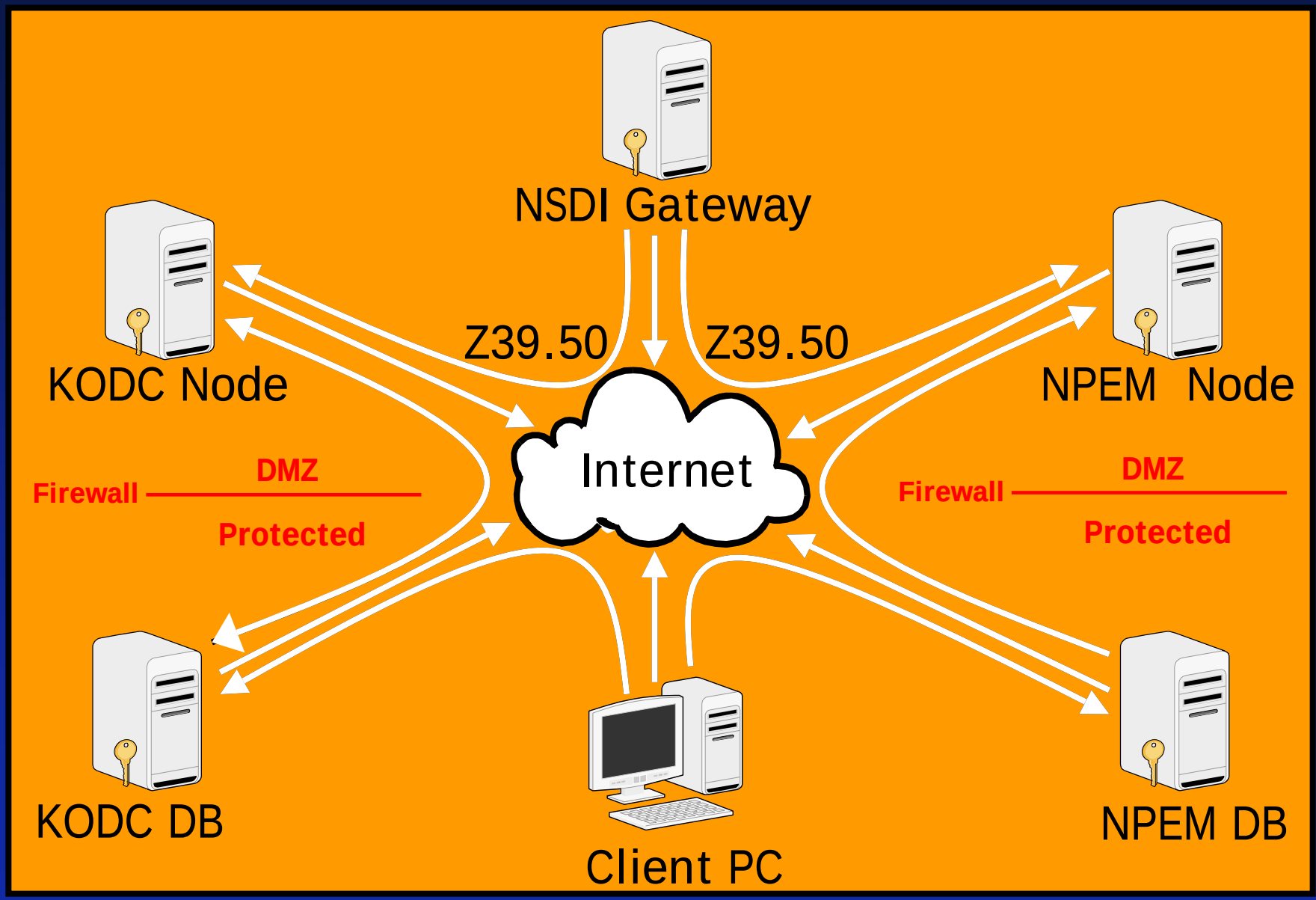
- Wide-spread Internet usage has brought about a resurgence in electronic transfer methodologies (Z39.50, MARC, ISO2709, SGML [XML], etc.).
- Z39.50 provides a standardized and well established way of information retrieval over computer networks across various software and hardware platforms.
- A user in one of the systems on which this protocol has been implemented may search the other systems without learning the other systems' search syntax.
- Z39.50 protocol is proven and used by nearly all integrated library systems.

Strategy 3 - Clearinghouse

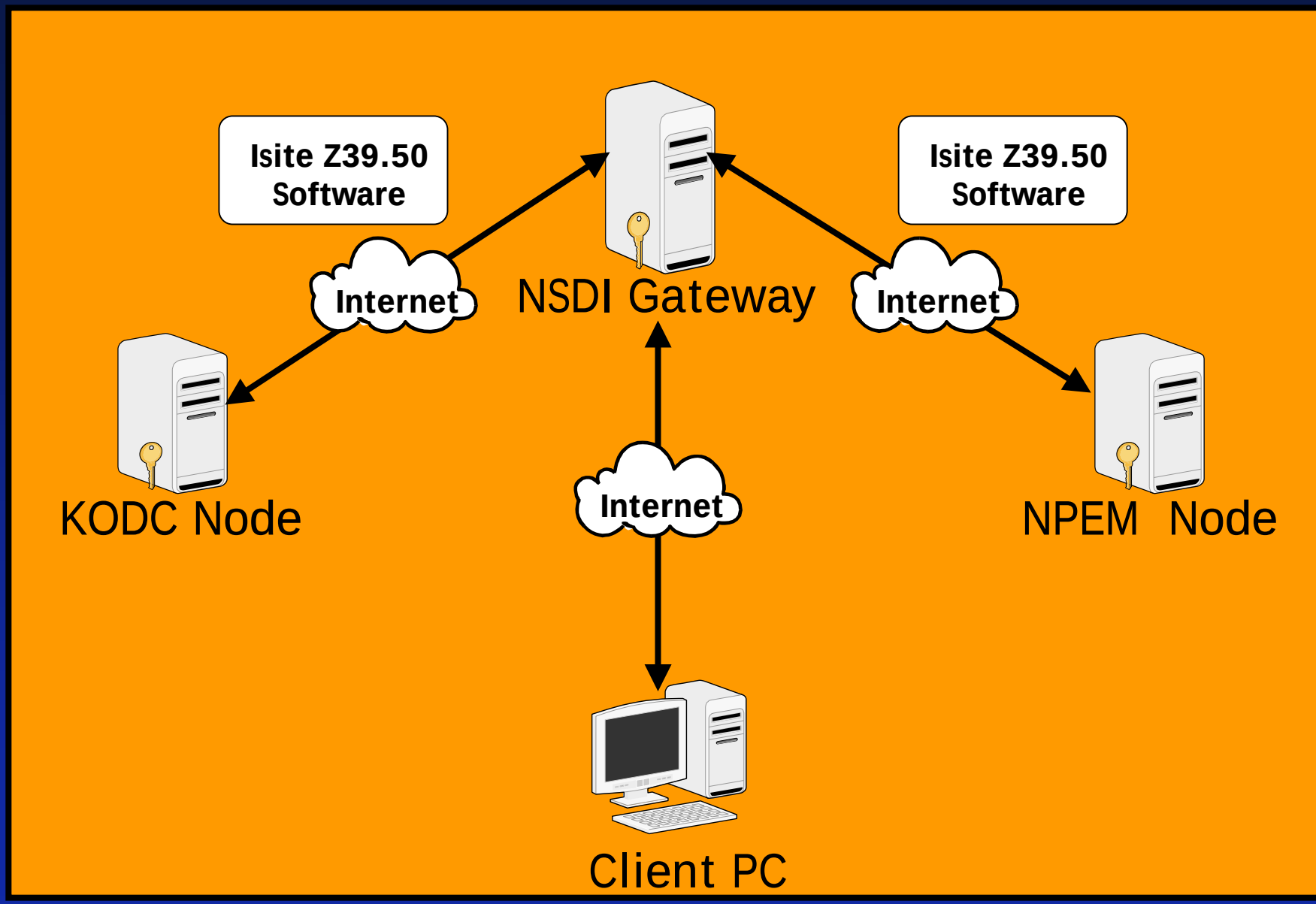
- NSDI, GMCD, GSDI, ESRI, TerraServer, etc.
- NSDI: The National Spatial Data Infrastructure's Geospatial Data Clearinghouse is a collection of nearly 400 spatial data servers. These data collections can be searched through a single interface based on their metadata.
- The NSDI Clearinghouse uses the FGDC metadata standard and the Z39.50 communication protocol (Isite).
- The NSDI Clearinghouse provides connectivity and search services to its subscribers.


Server System
Operating System
Linux
Database Server
MySQL
Web Server
Apache
Internet/Network
Data Manager PC
Microsoft Access
Client/Public
Browser

KODC/NPEM FEDERATION



KODC/NPEM FEDERATION



Isite Server Configuration

- **Open Source Software**
  - RED Hat Linux OS
  - Isite (Z39.50) package and associated software
  - Apache Web Server
  - XML files from every record on database server
- **Hardware**
  - 2.3 GHz Intel CPU
  - 512 MB RAM
  - 120GB HD

Steps to Create a Clearinghouse Node

- Map existing metadata records to XML using FGDC standard
- Acquire server
- Install Isite (Z39.50) and associated software, XML metadata files
- Open port on server
- Test
- Join existing or develop new clearinghouse
- KODC/NPEM node indexing by NSDI clearinghouse

File Edit View Favorites Tools Help

Back Search Favorites

Address http://registry.fgdc.gov/serverstatus/

Google Search New! 2 blocked Check AutoLink AutoFill Options

Add Your Node | Browse Registry | Browse Diagnostics | Modify Your Node | International Server Status | Domestic Server Status | Canadian Server Status | Home

THE CLEARINGHOUSE REGISTRY

Federal Geographic Data Committee (FGDC)

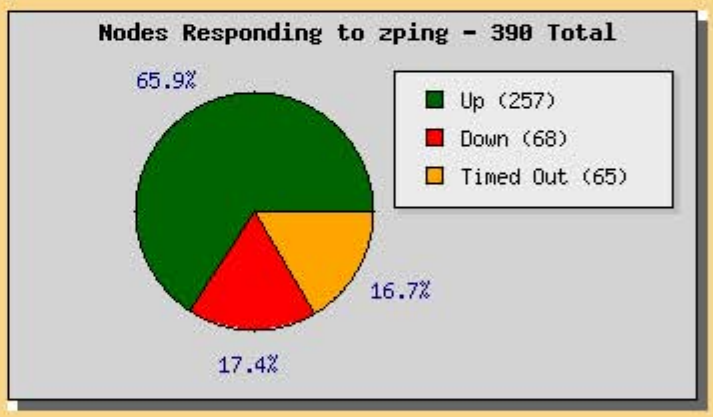
Hourly Status of International Clearinghouse Nodes

Thursday 29th of September 2005

All registered Clearinghouse Nodes are polled periodically (hourly) to determine the status of the Z39.50 processes. A set of pie and bar charts displays the general status of all Clearinghouse Nodes and can be viewed as Hourly, Daily, Weekly or Monthly graphs.

Each individual Clearinghouse Node displays information such as the status, registration information, ping time, individual node graphs, weekly reports and the ability to re-run the weekly report through the Update Node function.

For more information, please use our online help by clicking on the question mark icon above.



Choose Graph : Hourly View

Test Results

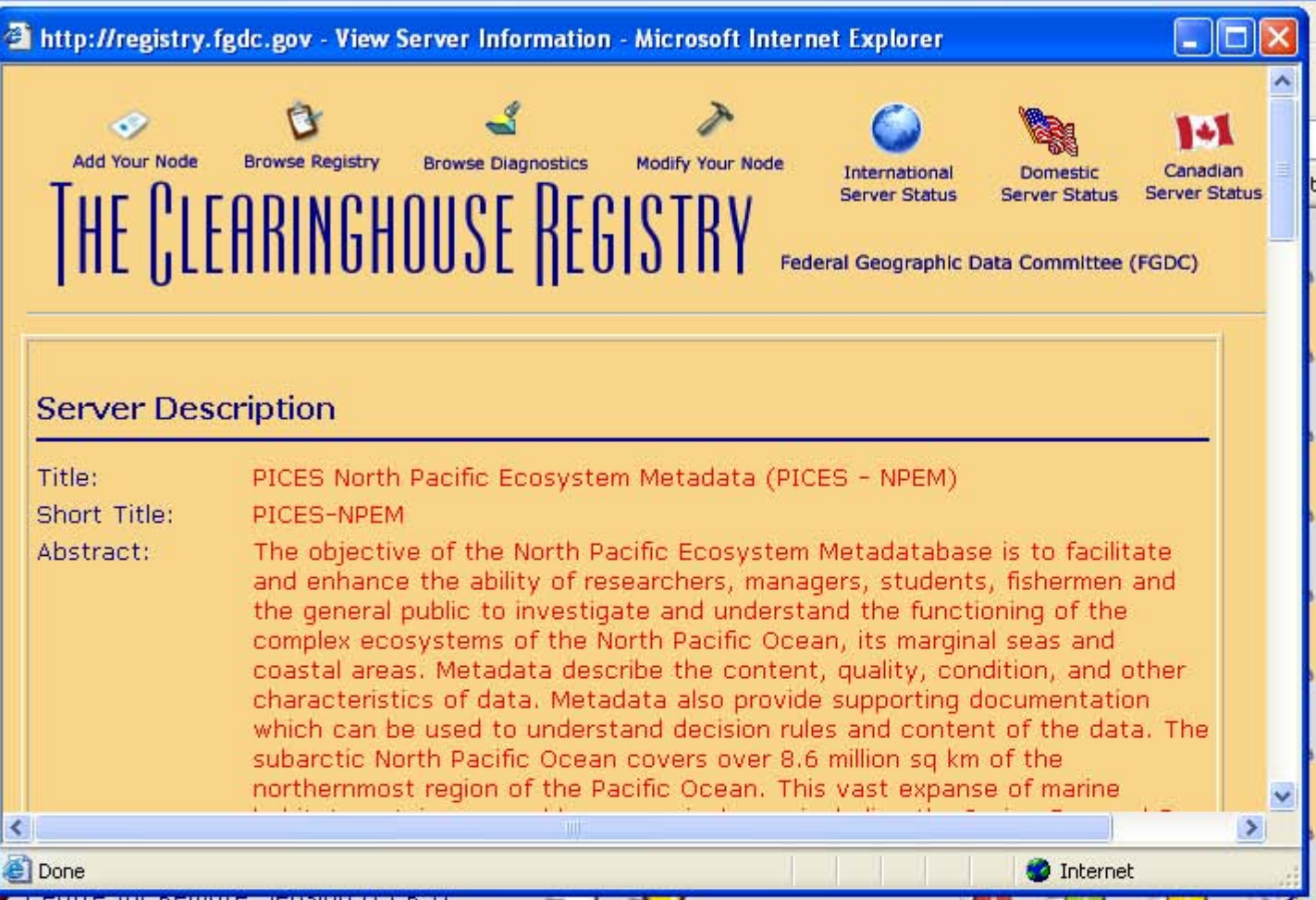
zping title full text spatial

Starting in the the upper left quadrant and moving clockwise the quadrants represent the status of the zping, title search, spatial, and full text searches. Simply move your mouse over the pie charts for more information.

Status	Node Name	Node Info	View Website	Ping Time (seconds)	Last Test Run	Daily Graph	Weekly Graph	Monthly Graph	Current Status	Update Node
	(SCI) Municipal Forestry Planning,			N/A	8:16 AM					

Internet

1st PICES Node Established



Rapid Online Mapping Network (romap.net) N/A 8:09 AM

Red River Basin Decision Information Network 0.042 8:09 AM

Republica Dominicana - Nodo Nacional de Datos Geoespaciales 0.015 8:08 AM

Research Planning, Inc. N/A 8:02 AM

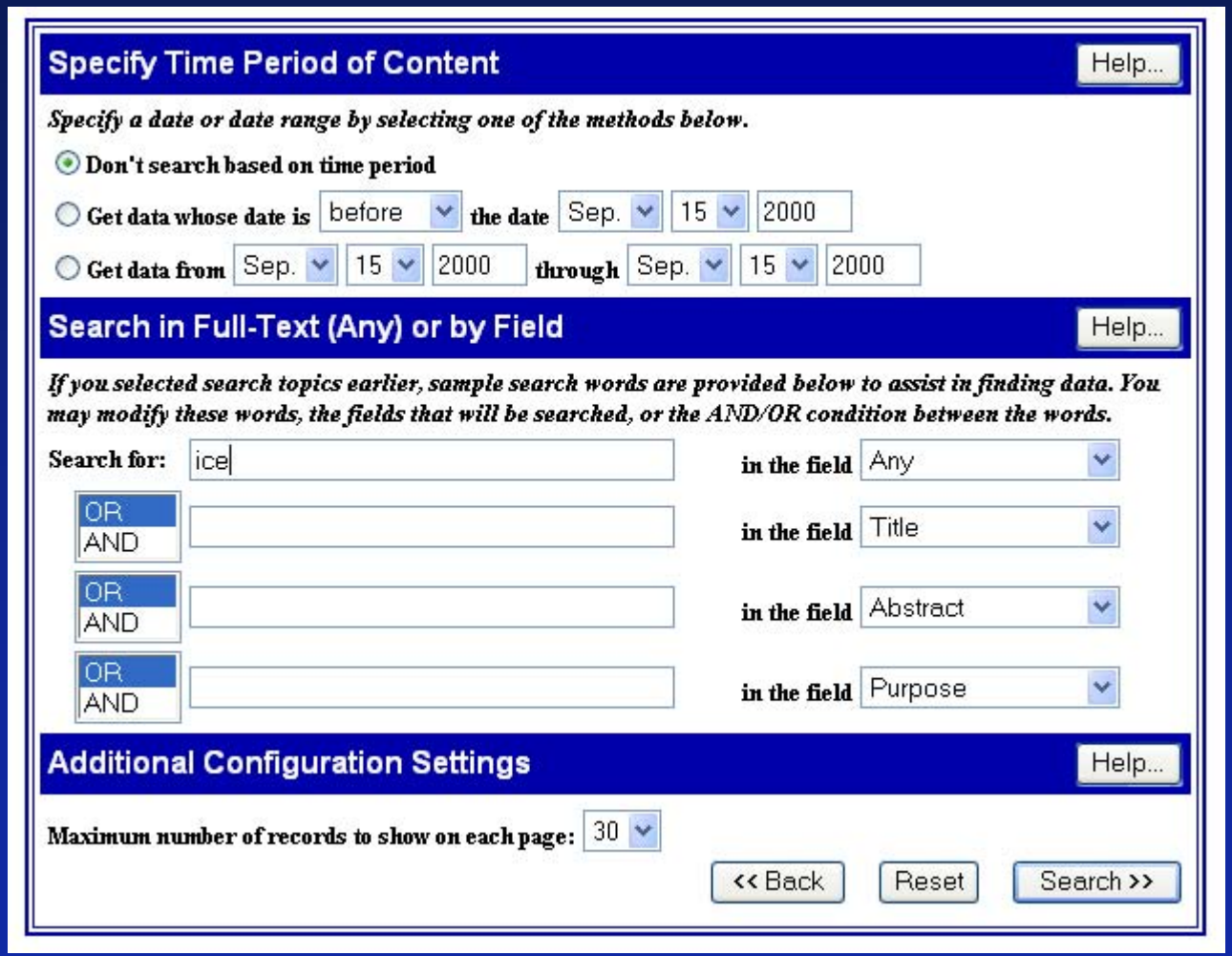
Rhode Island Geographic Information

vascript:viewWebsite('http://ROMap.net')

Internet

Search PICES Metadata Servers
An Example

Search Example



Search Example

Done with search!

Select the links below to view matches by database.

Database	Status	# Results
PICES North Pacific Ecosystem Metadata (PICES - NPEM)	Search Successful	223

Having troubles using this software to find what you need?
Click here to send us a message.

<< Back

Search Example

Brief Metadata Information and Links

You are currently viewing 1-30 out of 223 matches from database *'PICES North Pacific Ecosystem Metadata (PICES - NPEM)'*.

All 1 2 3 4 5 6 7 8 Next

Velocities of outlet glaciers, ice streams, and ice shelves, Antarctica, from satellite images [Summary] [Full]

Sea Ice and Polar Climate in the NCAR CSM [Summary] [Full]

Passive microwave remote sensing of thin sea ice using principal component analysis [Summary] [Full]

Monthly Averaged Sea Ice Concentration Grids [Summary] [Full]

Sea Ice Concentration Grids for the Polar Regions on CD-ROM [Summary] [Full]

Sea ice prediction modeling [Summary] [Full]

Atmospheric boundary layer structure and drag coefficients over sea ice [Summary] [Full]

Response of sea ice drift to wind forcing on the northeastern Newfoundland shelf [Summary] [Full]

Arctic and Antarctic Research Institute (AARI) 10-day Sea Ice Charts for the Arctic Ocean [Summary] [Full]

Modeling of Antarctic Sea Ice in a General Circulation Model [Summary] [Full]

Modeling Sea Ice as a Granular Material, Including the Dilatancy Effect [Summary] [Full]

Polar Microwave Sea Ice Data from Nimbus - 5 [Summary] [Full]

Bering AIR-SEA-ICE Study (Basics) [Summary] [Full]

Tracking of Ice Edges and Ice Floes by Wavelet Analysis of SAR Images [Summary] [Full]

Monthly Averaged Sea Ice Concentration Grids for the Polar Regions [Summary] [Full]

Search Example

Summary Metadata Information

You are currently viewing record 5 out of 223 from database *'PICES North Pacific Ecosystem Metadata (PICES - NPEM)'*.

Full Previous Next

Title: Sea Ice Concentration Grids for the Polar Regions on CD-ROM
Time Period of Content: 1987-07-09 to 1991-12-31
West: 163.000000 **East**: -157.000000 **North**: 65.500000 **South**: 52.000000

Having troubles using this software to find what you need?
Click here to send us a message.

Progress to Date – NPEM/KODC

- Seed Money Identified for Proof of Concept (US$16K)
  - PICES TCODE support (US$4K)
  - NPEM and KODC support (US$6K/each)
- Sasakawa Peace Foundation proposal submitted (NPEM-KODC)
- 1st planning meeting in Seattle, Aug 05
- 2nd planning meeting in Busan, Oct 05

Progress to Date – NPEM/JODC

- US - Japan Foundation proposal (NPEM-JODC)
- Partner with MIRC and JODC
  - MIRC conducts high grade quality control to the oceanic data compiled by JODC, and produces useful data products for users of various fields.

Challenges

- What are the best metadata standard, communications protocol and clearinghouse system for PICES?
- Location of external funds to bring other PICES countries into the federation.
- Translation of metadata records to English