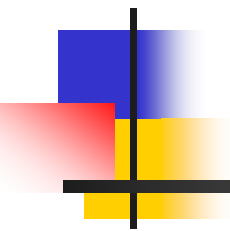


Serving Southeast Asia Topographic Atlas on The Web: An Open Source Free Software Approach



Xianfeng SONG and Yasuyuki KONO

Center for Southeast Asian Studies, Kyoto University

Email: song@cseas.kyoto-u.ac.jp

Tel: 81-75-753-7338

Fax: 81-75-753-7350



1 Introduction

Objective

Distributed Online Atlas To Promote Data Sharing Among Univ.

Atlas Coverage

Vietnam(592),Laos(109),Burma(1700?),Cambodia(289),Thai,etc.

Data Source and Rarity

1:50,000 – 1:100,000

Data Ownership

Center for Southeast Asian Studies, Kyoto University

Graduate School of Asian and African Area Studies, Kyoto University

Media Center, Osaka City University



2 Open Source Free Software

Open Source Alternatives of GIS Soft?

LightWare: OpenEV/OpenMap/Thuban vs ArcView

HeavyWare: GRASS vs ArcInfo

Spatial Data Engine(manager): PostGIS vs ArcSDE

Spatial DataBase: PostgreSQL vs Oracle/IBM DB2/Informix

Internet Mapping: UMN Mapserver/Lat-Ion Deegree vs ArcIMS

MetaData Clearinghouse: Isite/ZETA Perl/YAZ Toolkit(z39.50)

Cost

In a middle term, “Total cost of operation” and Good return

In a short term, the migration and training costs can be high



3 Atlas Basic Functions

Online Topographic Map Index

Background:

Vmap0 (Formerly known as Digital Chart of the World)

Foreground:

Topographic Map Index

Search and Retrieval Based on Z39.50

Collaborating geodata databases to a Z39.50-compliant gateway

A CSEAS Z39.50-Compliant Gateway



4 Metadata Catalogue

Data Catalogue Standard

Dublin Core Metadata Standard

Data Storage

PostgreSQL Database

Why not XML?



5 System Architecture

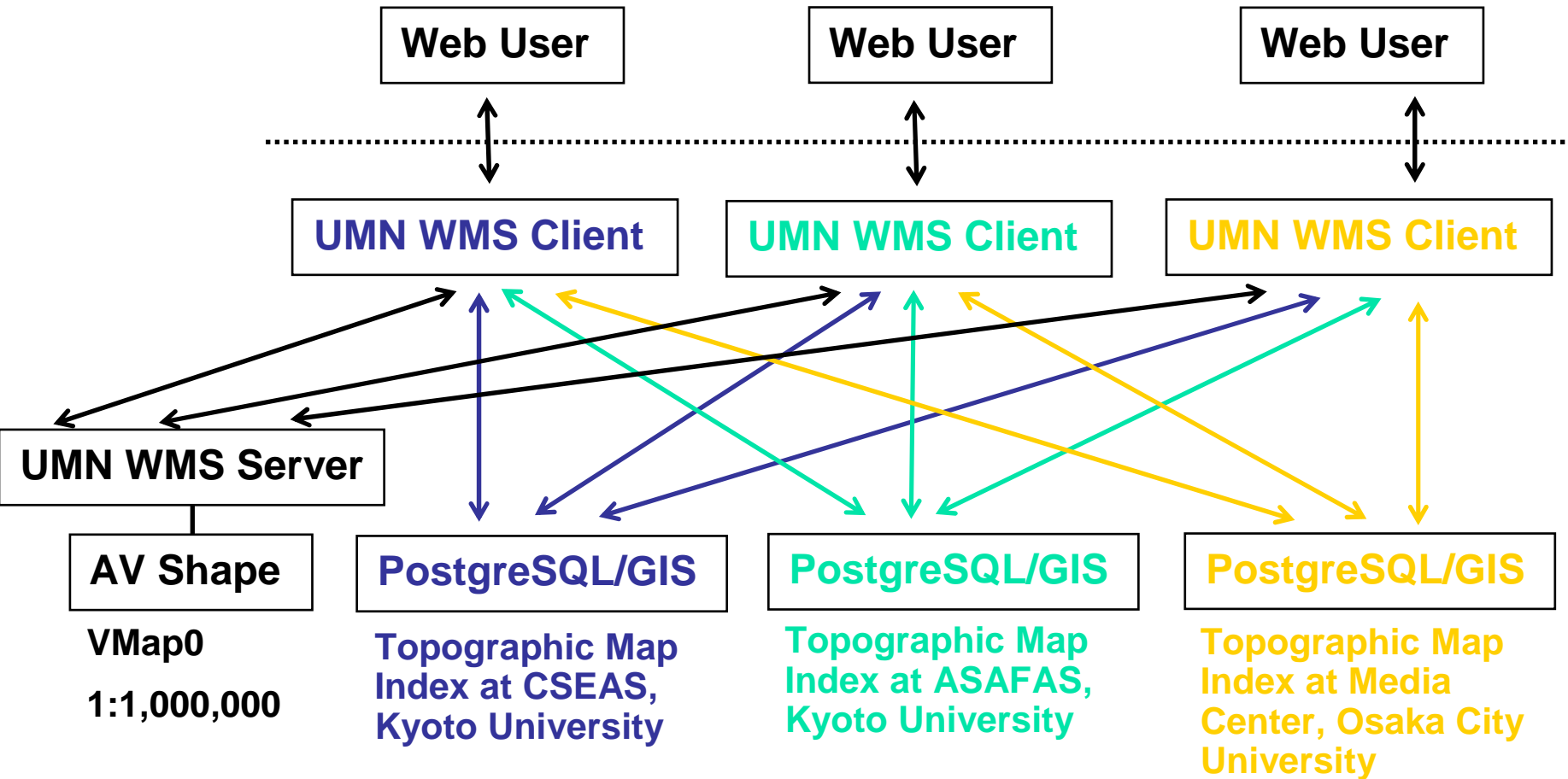
5-1 Online Topographic Map Index

5-2 Search and Retrieval Based on Z39.50

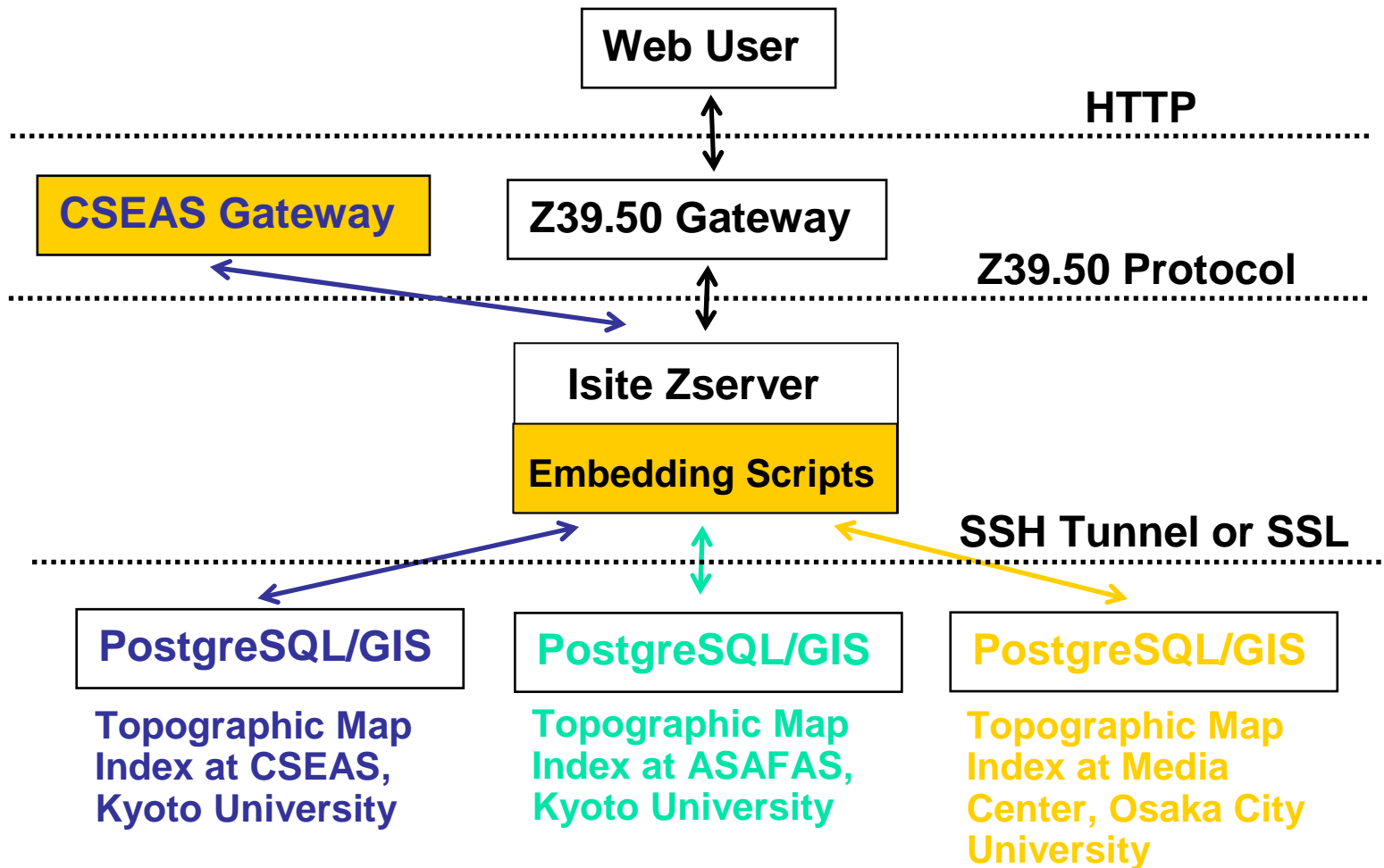
5-2-1 Collaborating PostgreSQL with Isite Zserver

5-3 A CSEAS Z39.50-compliant Gateway

5-1 Online Topographic Map Index



5-2 Search and Retrieval Based on Z39.50





5-2-1 Collaborating PostgreSQL with Isite Zserver

Isite Zserver And Its Script Database

Receiving RPN Notation (Reverse Polish Notation) from Zserver

Parsing RPN into a PostgreSQL accepted SQL expression

Connecting the PostgreSQL database for a SQL transaction

Reformatting the query results following a specified syntax

Attention

Profile/Attribute set/Syntax

search fields used / USE attribute mapping between profiles

Host: aris.cseas.kyoto-u.ac.jp

Port 6668

attrsetid=> "bib1"

syntax=> "sutrs"



5-3 A CSEAS Z39.50-Compliant Gateway

Isite Gateway

Zgate/Zcon

No Guide Map Supported

Our Gateway Initiative (<http://aris.cseas.kyoto-u.ac.jp/>)

A 1:1,000,000 Vmap0 Supported Z39.50 Gateway

UMN Mapserver

ZETA Perl

Perl



6 Demonstrations

6-1 Geo-Collection Map Index

6-2 CSEAS Z39.50-Compliant Gateway

6-3 Search Results

6-4 MetaData Retrieval

6-5 Metadata Browning

6-6 Raw Collection Browsing

<http://aris.cseas.kyoto-u.ac.jp/>

Geo-Collection Map Index

ARIS MapServer - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print Mail

Address http://10.242.26.180/cgi-bin/mapserv?mode=browse&zoomdir=0&zoomsize=2&imgxy=249.5+249.5&in

Powered by ARIS Mapserver

Legend

- LaosTopo100000
- Province
- Country
- Floodarea
- Builtup
- Crop
- Grass
- Tree
- Swamps
- Tundra
- Water

Redraw Map

Select Layers to Display:

- GEO-SPATIAL PART
- Laos Topo 1:100,000
- Satellite Image
- GPS Photo

Map Control

- Box Definition
- Browse map
- Query feature
- Query multiple features

Map Tool

- Zoom In
- Recentre
- Zoom Out
- Zoom Factor

Done Internet

CSEAS Z39.50-Compliant Gateway

ARIS MapServer - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print Mail

Address <http://10.242.26.180/cgi-bin/mapserv?mode=browse&zoomdir=0&zoomsize=2&imgxy=249.5+249.5&img> Go Links

Data Search

Geographic Box

Time of Content

Publication Date

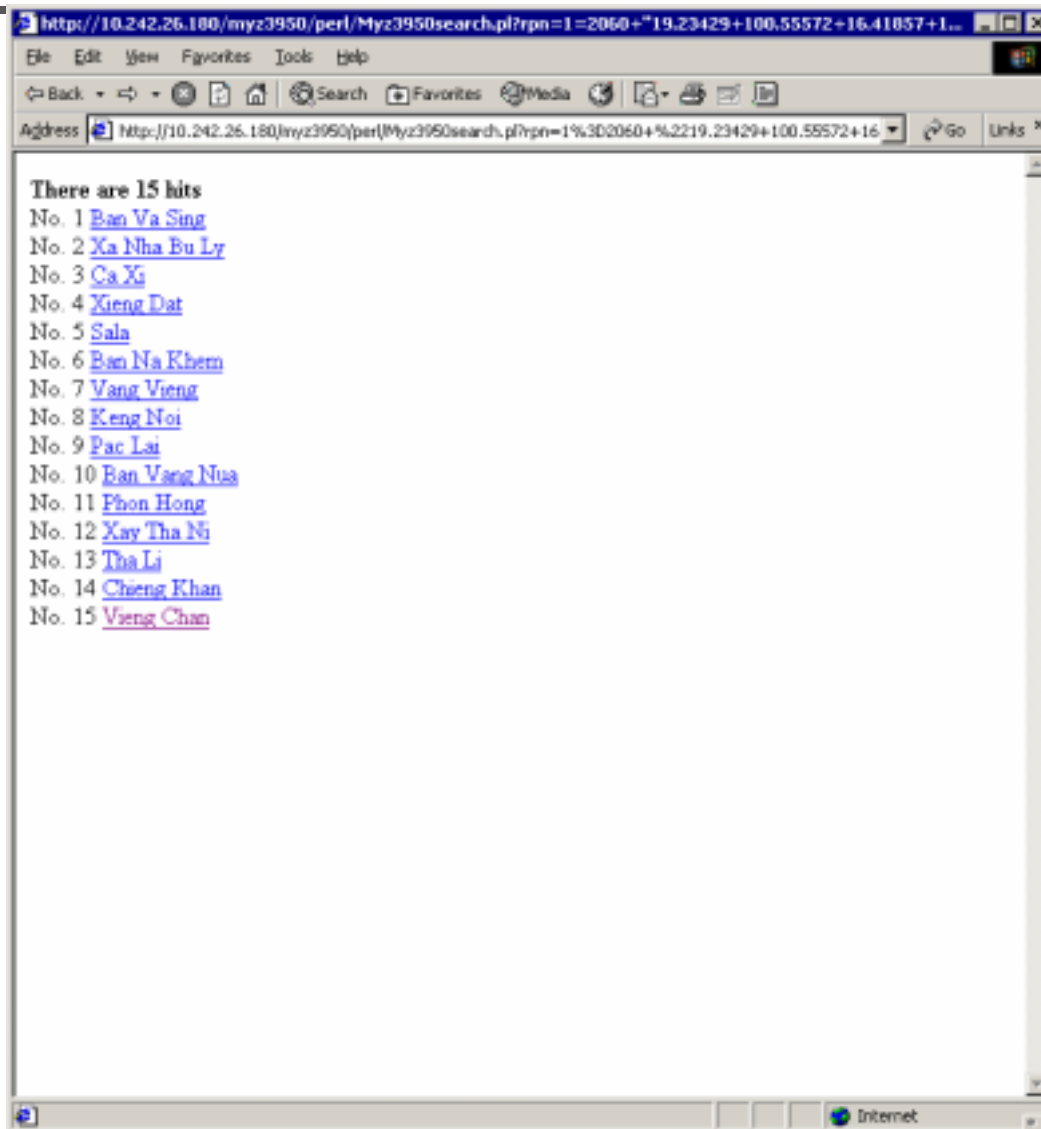
Text

Database List

RPN Notation
102.81857\" Band8 1=31 2=14 4=115
5=100 \"19960101\" Band8 1=3121 2=3 4=6
5=100 \"jaos\""/>

Done Internet

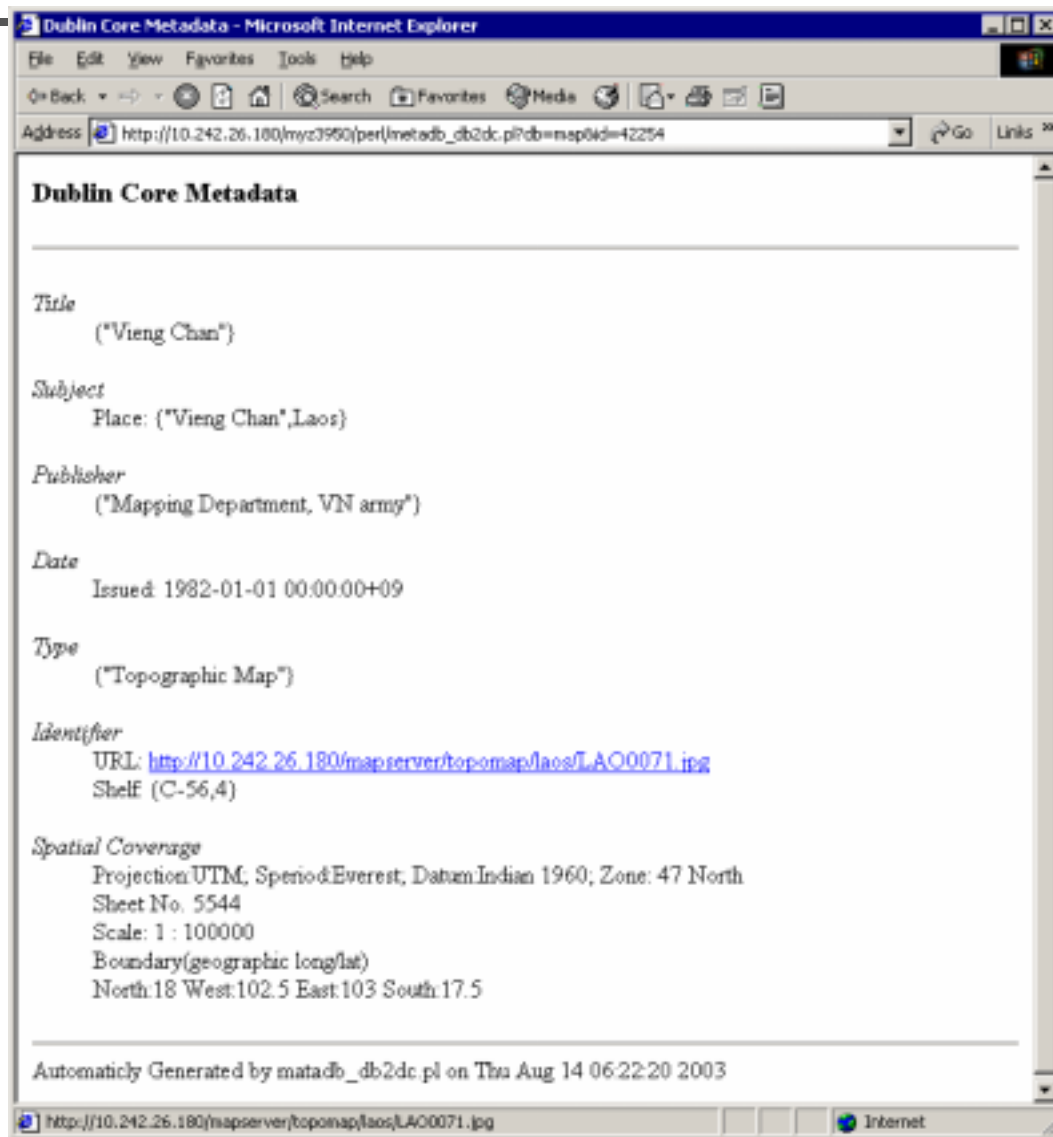
Search Results



There are 15 hits

- No. 1 [Ban Va Sing](#)
- No. 2 [Xa Nha Bu Ly](#)
- No. 3 [Ca X](#)
- No. 4 [Xiang Dat](#)
- No. 5 [Sala](#)
- No. 6 [Ban Na Khem](#)
- No. 7 [Yang Vieng](#)
- No. 8 [Keng Noi](#)
- No. 9 [Pac Lai](#)
- No. 10 [Ban Vang Nua](#)
- No. 11 [Phon Hong](#)
- No. 12 [Xay Tha Ni](#)
- No. 13 [Tha Li](#)
- No. 14 [Chieng Khan](#)
- No. 15 [Vieng Chan](#)

MetaData Retrieval



The screenshot shows a Microsoft Internet Explorer browser window with the title "Dublin Core Metadata - Microsoft Internet Explorer". The address bar contains the URL: http://10.242.26.180/myz3950/per/metadata_db2dc.pl?cb=msp&id=42254. The main content area displays the following metadata:

Dublin Core Metadata

Title
("Vieng Chan")

Subject
Place: ("Vieng Chan",Laos)

Publisher
("Mapping Department, VN army")

Date
Issued: 1982-01-01 00:00:00+09

Type
("Topographic Map")

Identifier
URL: <http://10.242.26.180/mapserver/topomap/laos/LAO0071.jpg>
Shelf (C-56,4)

Spatial Coverage
Projection:UTM, Sperioid:Everest, Datum:Indian 1960; Zone: 47 North
Sheet No. 5544
Scale: 1 : 100000
Boundary:(geographic long/lat)
North:18 West:102.5 East:103 South:17.5

Automatically Generated by metadata_db2dc.pl on Thu Aug 14 06:22:20 2003

The status bar at the bottom shows the current page URL: <http://10.242.26.180/mapserver/topomap/laos/LAO0071.jpg> and the Internet icon.

Metadata Browsing

Query Results - Microsoft Internet Explorer

Address <http://10.242.26.180/cgi-bin/mapserv?mode=query&zoomdir=1&zoomsize=2&layer=LaosTopo100000bin>

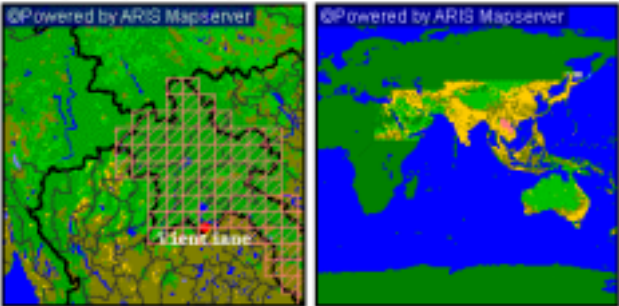
Query Results

QUERY PARAM
BROWSE WINDOW 96.660000 15.660000 105.660000 24.660000
QUERY LOCATION 102.636000,17.694000

LAOS TOPO MAP 1:100,000

SHEET_NO	5544
TITLE	Vieng Chan
TYPE	Topographic Map
PUBLISH DATE	1982-01-
PUBLISHER	Mapping Department, VN army
REGION	("Vieng Chan",Laos)
SCALE	1:100000.0000000000
PROJECTION	Projection:UTM, Speriod:Everest, Datum:Indian 1960; Zone: 47 North
SHELF	C-56
URL	http://10.242.26.180/mapserv/topomap/laos/LAO0071.jpg

Query Map Display

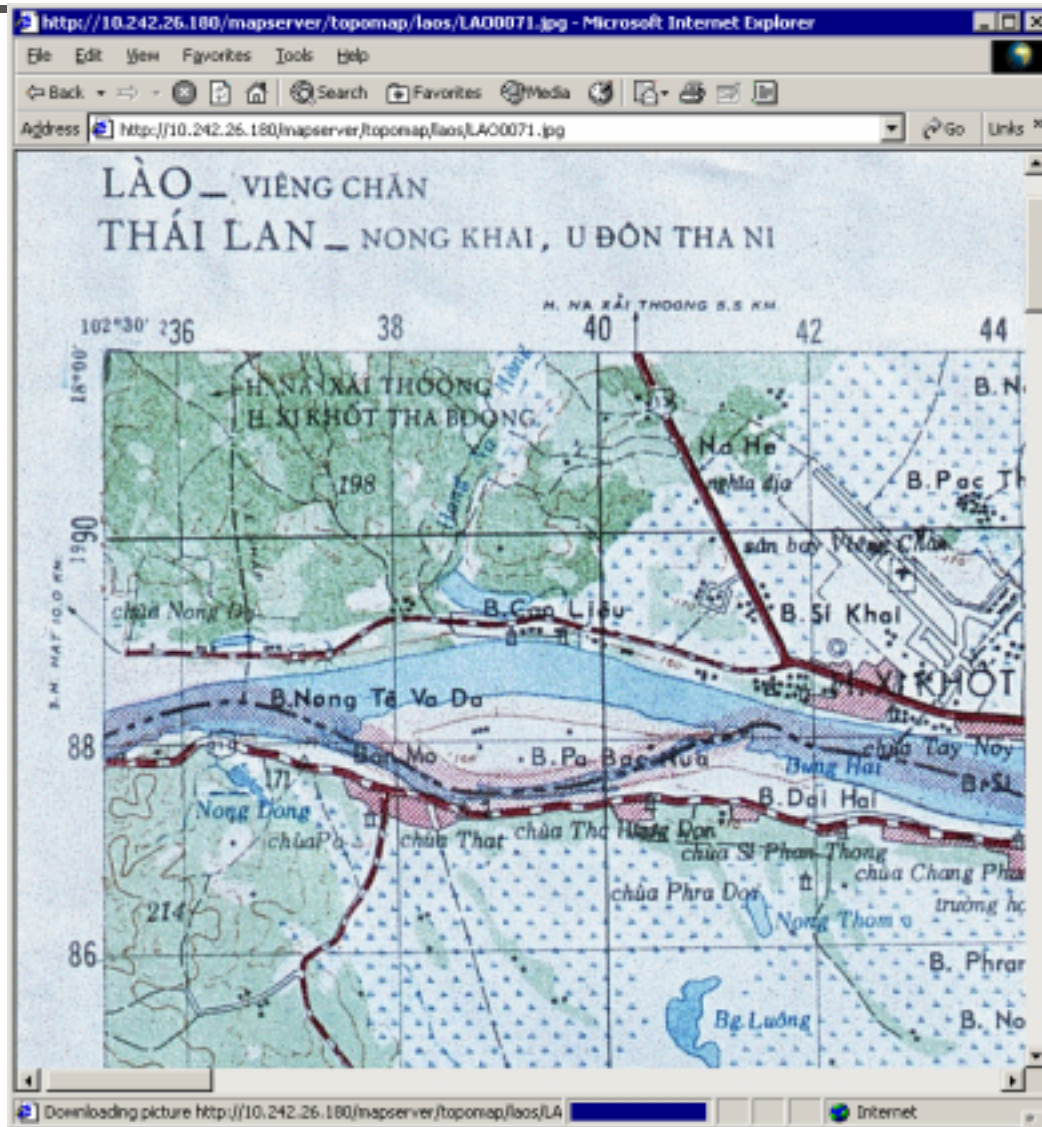


©Powered by ARIS Mapserv

©Powered by ARIS Mapserv

Internet

Raw Collection Browsing





7 Future Works

Data Catalogue

Only Laos Maps Finished; Others are coming soon.

Application of WFS in Online Topographic Map Index

Depending on the version upgrade.

Expanding those to another two nodes



8 Conclusions

- UMN MapServer plus Vector Map Level 0 serves us an attractive global map.
- ZETA Perl and UMN Mapserver could support a quick development of z3950 gateway.
- Isite is a perfect metadata search engine supporting to collaborate a SQL-compliant database (such as PostgreSQL/PostGIS)
- I hope there may be some lessons learned from our efforts, which could be applied elsewhere for a similar processes. Moreover I want to listen to some suggestions for the further improvement of my system.