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RKB: a knowledge base to support research documentation, GIS data and communications for a major rail freight projects

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Roadmap

- Context
- Capabilities
- Mapping issues
- Architecture
- Metadata issues
- IP issues
- Wider demonstration trials
- Where next?

This presentation will, as far as possible, be illustrated by live interaction on the actual systems on the net





REORIENT project

- **FP6 Coordination Action addressing barriers to railway integration [in the eastern states]**
- **Required both fresh data and marshalling of existing data**
- **Proposed to the Commission that knowledge base be built with wide functionality to allow these resources to be useful during the project as well as delivering the final results**
- **Ambitious goals, but were shown working at mid project**





What are the key components?

- Documents in many formats, in multiple versions
- Data in an accessible and documented form
- Data Cube handling and exploration
- Interactive data entry and adjustment for vector data
- Dynamic thematic maps for user understanding
- Wiki, mail centre and video conferencing for communication
- As many Open Source components as possible
- Commercial high quality servers where appropriate
- Clean standards and expandable architecture
- Z39.50 (Endnote), RSS etc to minimise portal access
- Documentation using commented movies
- Ability to explore exported Kb backups with just a browser





And specifically- which commercial servers?

Commercial Tools

- Nesstar

(data cube and integrated distributed data access)

- TeraText from SAIC

(SGML based document manger and search engine)

- MapServer from Demis

(global vector mapserver supporting thematic mapping:
Open GIS compliant: needs only a Flash client)

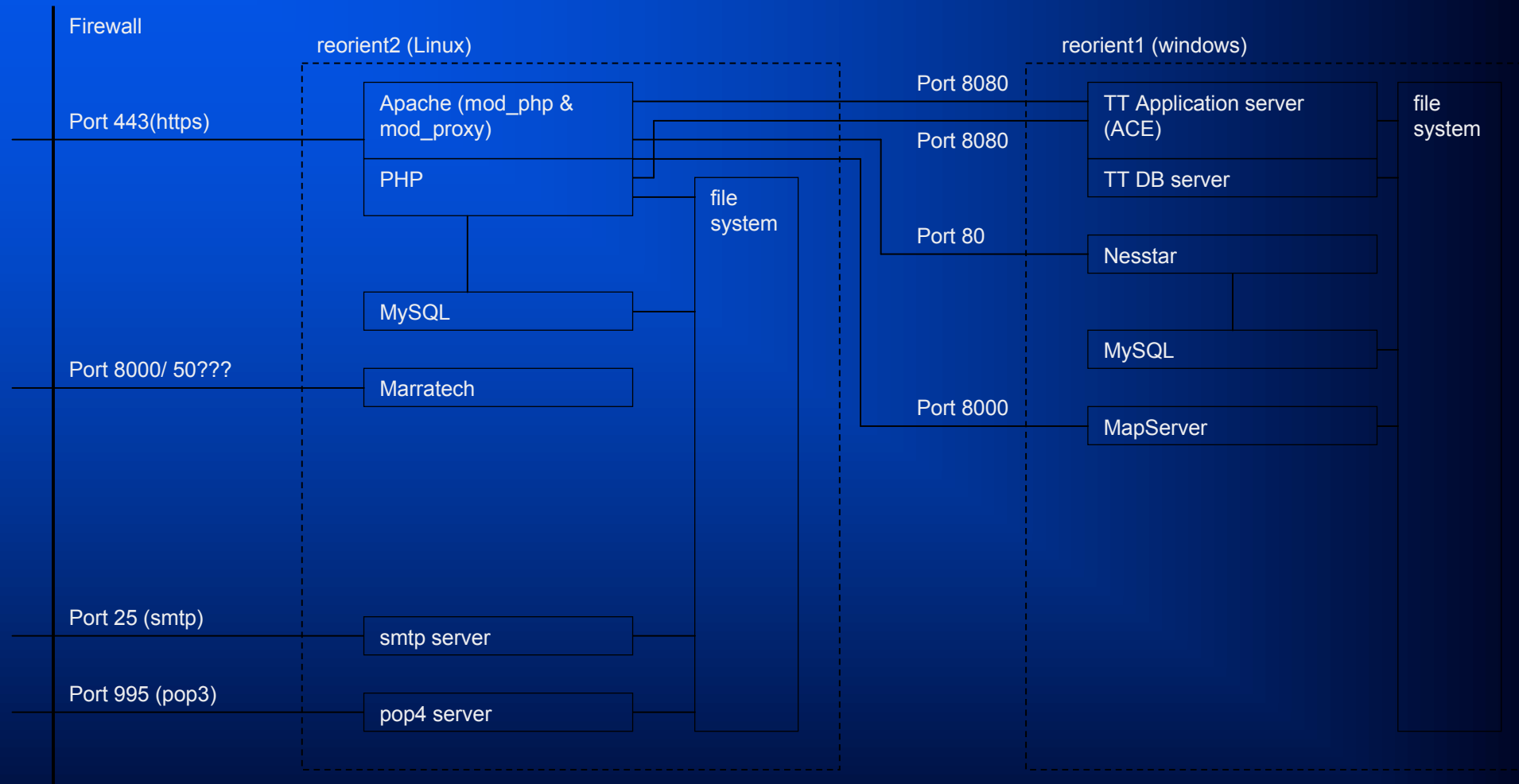
- Internetter and Worldnetter from Demis

- All the rest are open source tools with our linking code



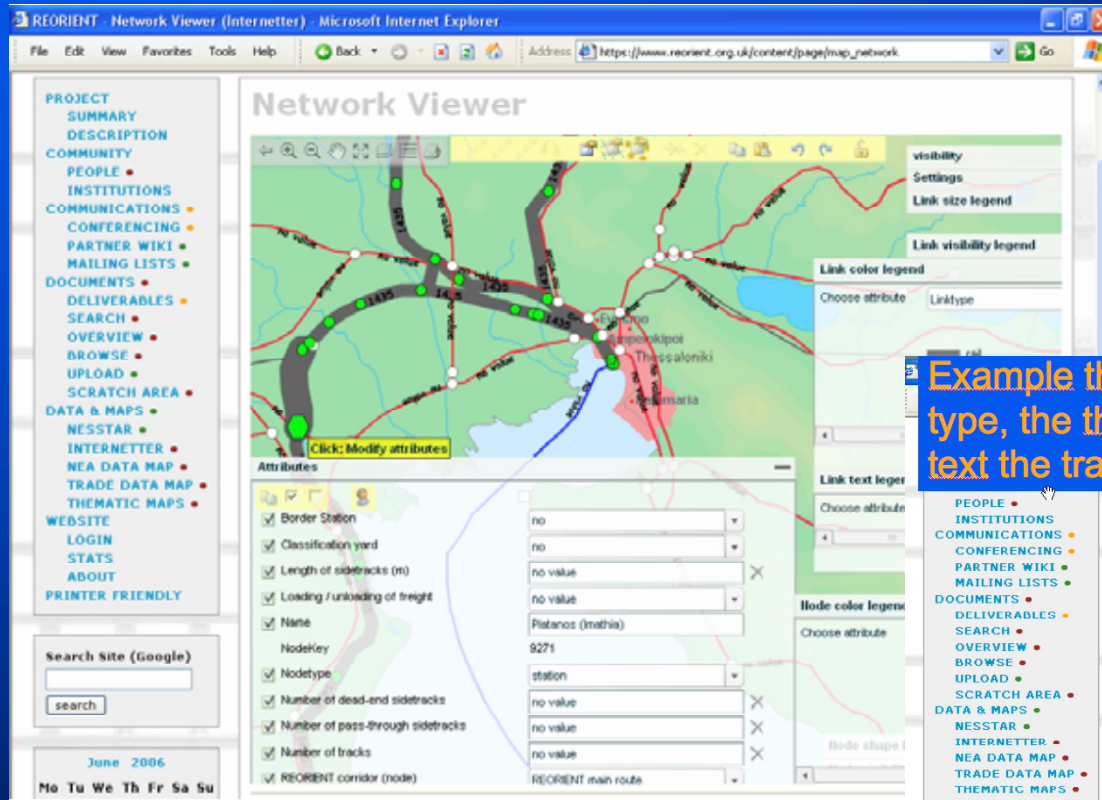


Architecture

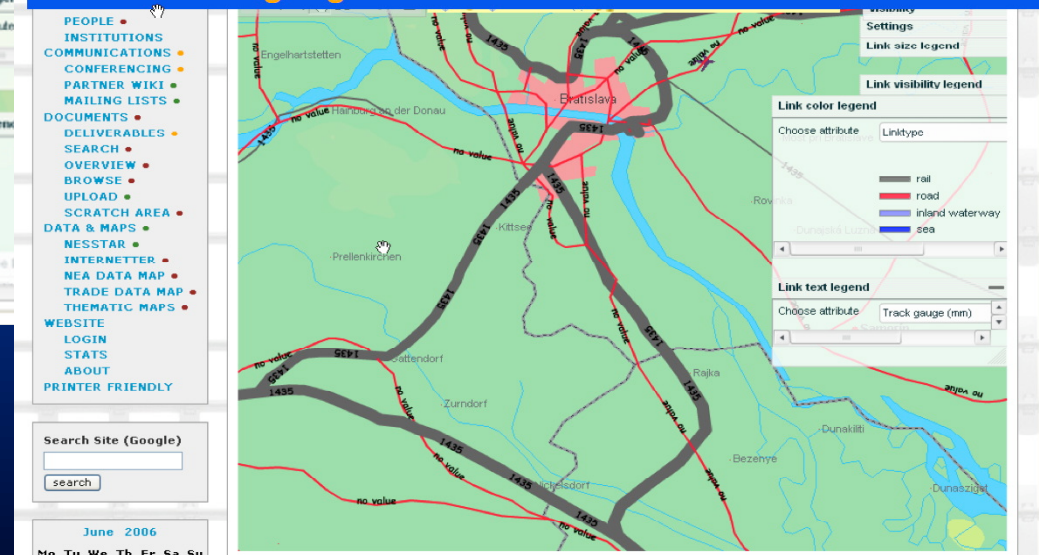




Internetter in use for vector editing

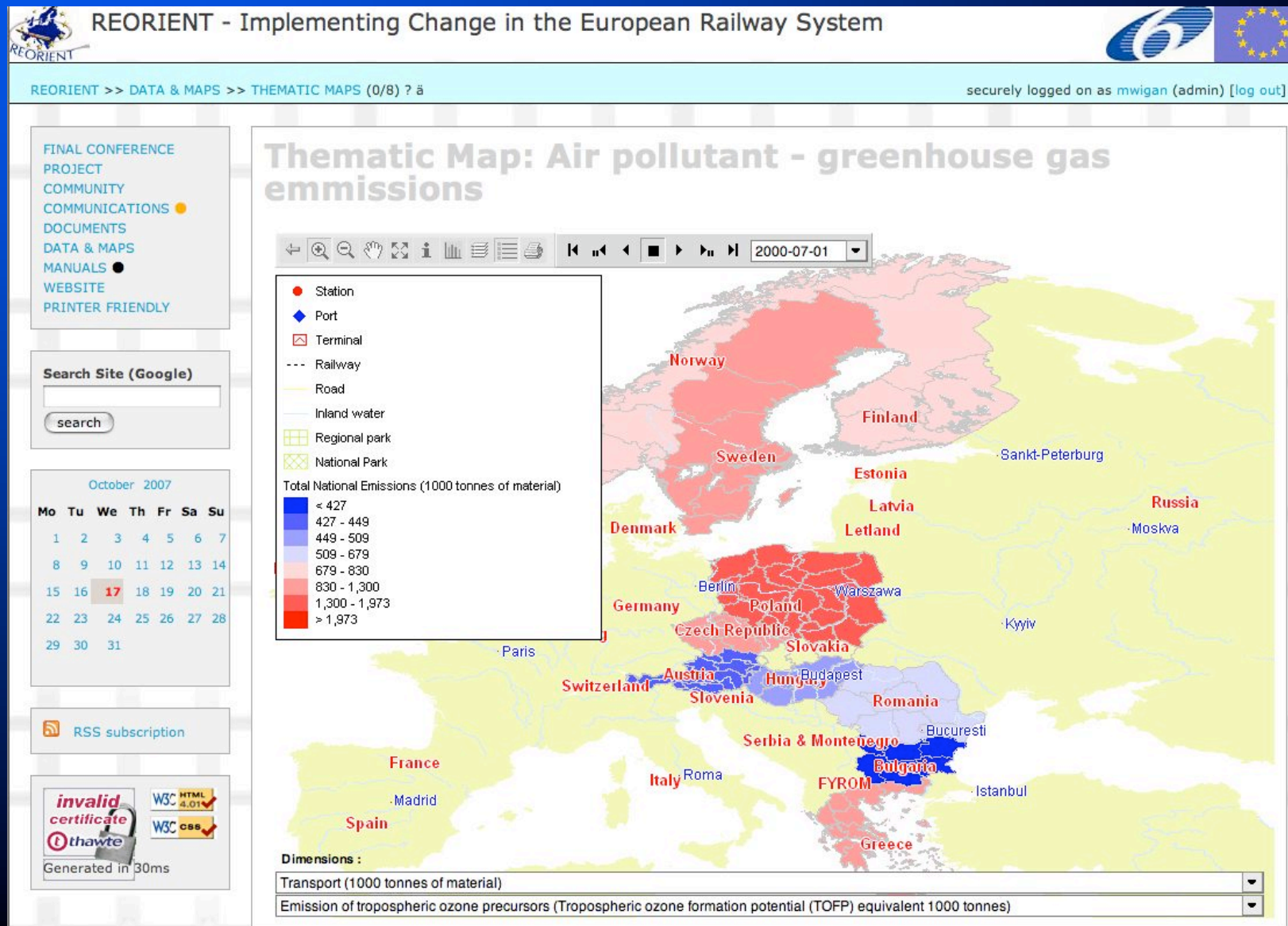


Example that shows rail & road, the color shows the link type, the thickness the REORIENT corridor attribute and the text the track gauge



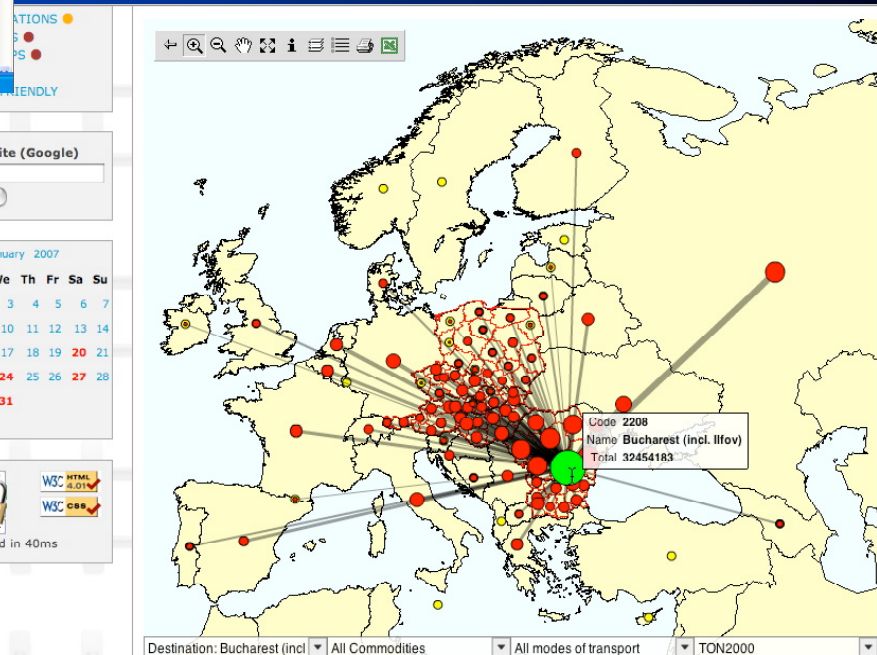
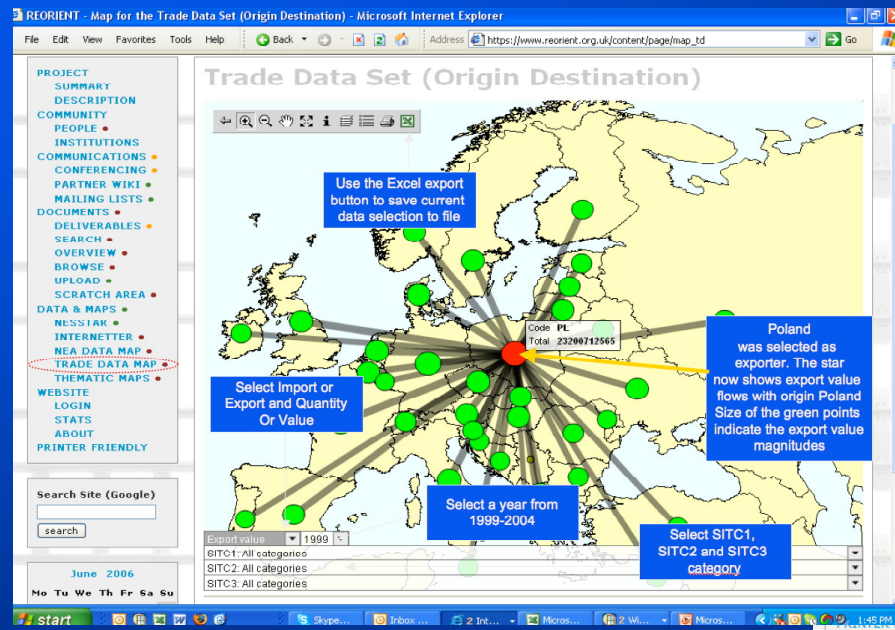


Greenhouse gases on REORIENT Corridor





OD Matrix explorations





Mapping design issues

- **Nesstar offers a very simplified thematic map display**
- **Requires the full Publishing process to access this**
- **Full GIS not always needed (TransCad was originally planned)**
- **Adopted OpenGIS as the Standard interface**
- **Thus able to use Demis Mapserver, and replace as required**
- **XML based multidimensional thematic map builder uses Flash client**
- **Integration with other versions of data bases ...**
 - **discovery and download is a 'document'**
 - **datacube analysis requires Publishing**
 - **Mapserver allows public access to sensitive data**
- **Data Observatory approaches to date have fallen between stools**





A Nesstar example: tables

DESCRIPTION TABULATION

Dataset: 01. Number of locomotives, by source of power

REORIENT corridor country: REORIENT corridor country

Energy used by vehicle: Energy used by vehicle

Time (year): Time (year)

Unit: Number / Absolute value / Unit

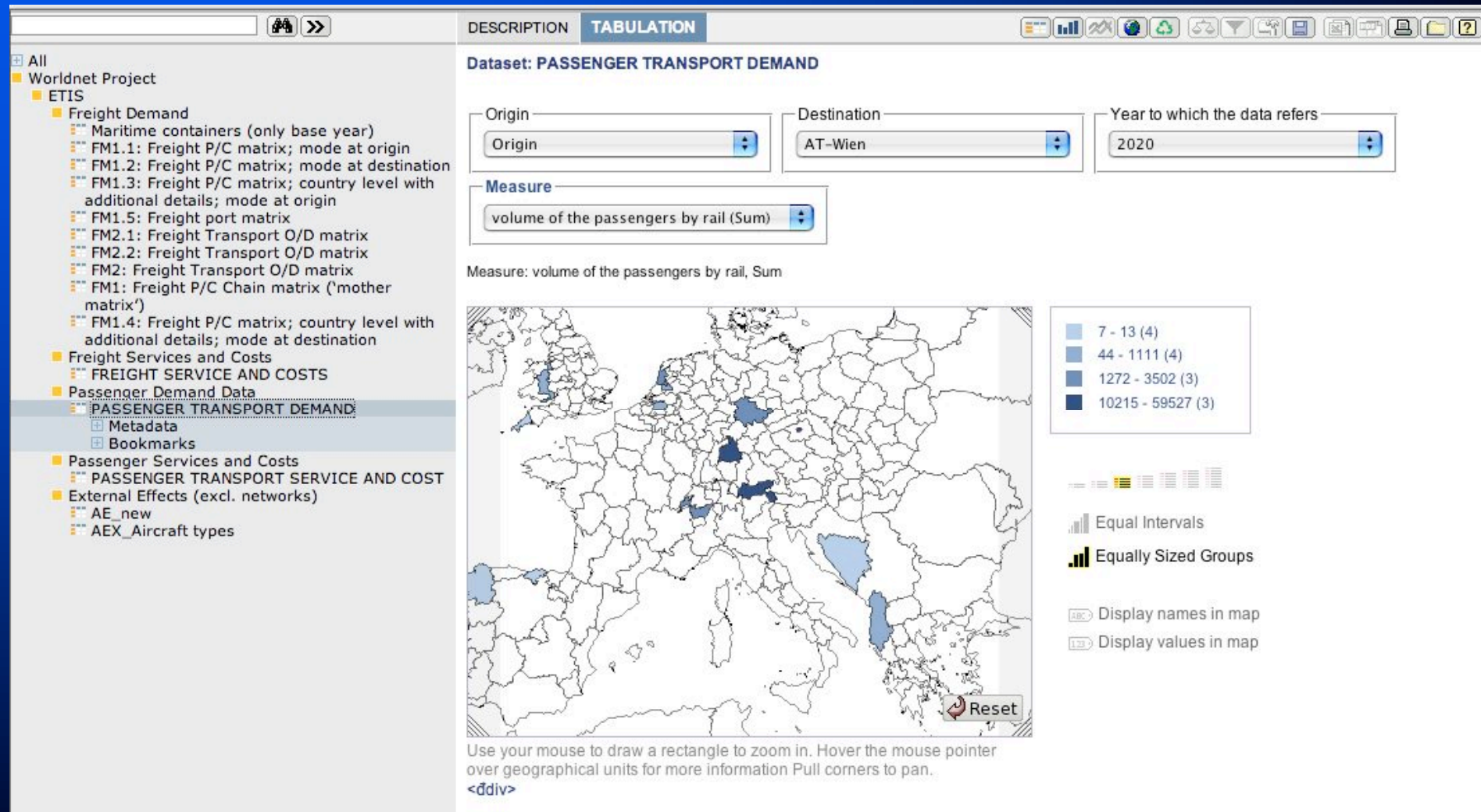
Measure: The unit is represented in dimension unit (Sum)

Time (year)	1995	1996	1997	1998	1999	2000	2001
REORIENT corridor country							
Austria	1,333.00	1,327.00	1,328.00	1,297.00	1,277.00	1,268.00	1,274.00
Bulgaria	-	-	-	-	-	-	-
Czech Republic	2,968.00	2,961.00	2,973.00	2,923.00	2,851.00	2,829.00	2,639.00
Finland	663.00	648.00	654.00	640.00	639.00	622.00	-
Greece	234.00	234.00	330.00	356.00	163.00	157.00	106.00
Hungary	1,290.00	1,203.00	1,204.00	1,142.00	1,100.00	1,050.00	1,038.00
Norway	235.00	201.00	199.00	197.00	185.00	172.00	172.00
Poland	2,872.00	2,816.00	2,775.00	2,657.00	2,549.00	2,562.00	4,416.00
Romania	-	-	-	-	-	-	-
Sweden	671.00	636.00	583.00	613.00	607.00	-	-





A Nesstar Example - simple thematic map





Metadata issues matter

- Harvesting is automatic from a restricted set of fields by the InOut component of Teratext
- Special metadata (group and individual document) management in RKB, allowing rapid input
- Keyword inputs currently held in a SQL dbms created from teratext meta data: can be replaced or added to with multiple merged thesauri (see the aet trial system)
- Security management is integrated with metadata management
- Dublin core is used, including resource link(URL) and spare fields
- Z39.50 server included has an Endnote connect files for RKB and AET trials.





Searching issues... using metadata

Document Search - Advanced

Help

[SIMPLE] - [ADVANCED] - [KEYWORDS] - [CCL]

Meta: Creator	walker
AND Meta: Title	deliverable
Document Text	
Document Text	
Document Text	

Search

Find documents using a combination of search terms.

Knowledge Base: Browse Results

Help

- root
- Deliverables
- Events
- Other projects
- WPLC-list

Knowledge Base: View Search Results

Help

10 documents found

[EDIT METADATA FOR WHOLE RESULT SET] [BROWSE RESULT SET]

1) Deliverables\Official project deliverables\Deliverable D4.1--Final.pdf

Adobe Acrobat (PDF) file of 6013390 Bytes, uploaded by [Warren Walker \(DEM\)](#) on 2007-06-15 as a final document for subcontractor users

"Deliverable D4.1--Final" European Commission Sixth Framework Programme Contract : 513567
Date: 14 /06 /2007 Organization UOB Classification Confidential Version: 1.0 Page: Reference: WP4 -UOB -D4.1 -V01 REORIENT Implementing Change in the European Railway System Deliverable D4.1, Version 1.1 Selection of Two Freight Corridors for Demonstration of Seamless International Rail Freight Services: Modeling Freight Transport on the Corridors Organization Code: UOB Classifica...

[VIEW DOCUMENT] - [DOWNLOAD DOCUMENT] - [UPLOAD NEW REVISION] - [VIEW/EDIT METADATA] - [VIEW HISTORY] - [REPORT DOCUMENT]

2) Events\2006-10-30 Brussels WPLC meeting\DELIVERABLE REVIEWING PROCESS.ppt

Microsoft PowerPoint 97-2003 file of 488448 Bytes, uploaded by [Warren Walker \(DEM\)](#) on 2006-11-17 as a final document for wplc users

"Deliverable Reviewing Process" REORIENT Consortium Demis b.v. WPLC Meeting 31 October 2006
Page 1 Reviewing REORIENT Deliverables Warren E. Walker REORIENT Quality Assurance Coordinator
Brussels, 31 October 2006 www.reorient.org.uk REORIENT Consortium Demis b.v. WPLC Meeting 31 October 2006 Page 2 Outline The review process Review guidelines REORIENT Consortium Demis b.v.



Metadata and Security management

Title:	Deliverable D4.1--Final
Date:	2007-06-15
Creator:	Warren Walker
Contributor:	
Description:	
Subject and Keywords:	
Coverage:	
Source:	
Rights Management:	
Relation:	
Format:	Adobe Acrobat (PDF)
Language:	en
Publisher:	Warren Walker
Filename:	Deliverable D4.1--Final.pdf
Path:	Deliverables\Official project deliverables\
Document status:	final
Upload date:	2007-06-15
Access level:	3
Document ID:	1000002775 1000002775
People ID:	1000000223
Institution ID:	DEM

Access level:	<input type="radio"/> public <input type="radio"/> registered <input checked="" type="radio"/> subcontractor <input type="radio"/> partner <input type="radio"/> wplc <input type="radio"/> admin
Designated access list:	
ADD access:	none
REMOVE access:	none
<input type="button" value="send"/>	

Filename:	TRANSPORT & MOBILITY LEUVEN UNIVERSITY OF BOLOGNA, DEIS UNIVERSITY OF MARYLAND VTT
Path:	✓ none
Document status:	Abbas Rajabifard Agnieszka Filarska-Durak Agnieszka Osiecka Alan Cannon
Upload date:	Alberto Caprara alexander van altena
Access level:	Alison McCleery Ana María Gómez André van Velzen Andrea Tramontani
Document ID:	Andreas Lischke Andres Rabinowicz Andrew Bull MRICS, CMILT Andrew Harding Andrew Lockton Andy Nash
People ID:	Angelika Schulz Anna-Maija Alaruikka Antonio Bove Antti Permala April Kuo Ari Sirkiä
Institution ID:	
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Selective access management





IP Issues

- a typical mixed IP system of the new variety
- Content management and access management interact
- Any such mixed IP system will require access to specialised IP law as it develops fast and interacts with OA publishing already





Repositories for documents: state of play

- JISC Repositories and Research Council Directives
- Self Archiving mandate issues and problems
- The metadata issue - librarian and user perspectives
- Making repositories relevant to content **creators**
- All repositories are embryonic and mutable
- Few if any have strong general research (not IS research) input other than from computer science
- Take up is slow by content providers
- Journal publishers and OA journals are also confusing the issues by financial interest debates
- We have subsequently added an automated metadata generator to enhance discovery via metadata





Z30 50 Endnote access for simplicity





Wider demonstration trials framework

www.reorient.org.uk

The full ReOrient system plus additional trial features

www.aet-reorient.org.uk

2.7G of all ETC papers to date as a demo repository

www.e-journal.reorient.org.uk

The integrated eJournal (open source) system using the document repository for papers and other materials

www.worldnetproject.eu

Integrates an off site geospatial editor and other adjustments for testing possibilities for a Gen2 system for WorldNet.

ALL running on a single cpu licence for the commercial components





Where next?

- User generated content has become expected rather than exceptional during the project period
- Many lessons learned from building this system
- Real promise for forming a basis for raising productivity within distributed teams and organisations- as well as for delivery
- The Next Generation will embody a rethinking
 - Are the commercial servers the right ones?
 - Interactive spatial and attribute data input is good
 - The thematic mapping approach is highly effective
 - Improved integration with emergent widespread institutional digital library document repositories (add data capacities to them)
 - Adding interactive means of exploring the results of complex model runs
 - Improved communications within this cooperation system
 - Implications of aggregating many different projects into one KB



WorldNet demo prototype

WORLDNET
WORLDWIDE CARGO FLOWS

Menu:

- Project Info
- Data
- Maps
- Documents
- Community
- Español

Login:

Password:

[Register](#)

Introduction to WorldNet

WORLDNET addresses the SSP-5 Call objective to deliver realistic solutions that support policy forecasting and facilitate the implementation of the European transport and energy policy measures and instruments. The strategic objective is to refine the European transport network model regarding freight and intermodal transport to and from the rest of the world, following the work of ETIS and TRANSTOOLS.

Freight Flow Database

The first specific objective is to attain a more precise representation of the freight flows between European countries and the rest of the world.

Freight Network Model

The project also aims to extend the network model to other world regions, subsequently to facilitate the use and uptake within other countries and regions.

Extending Freight Flow Database

Extending Freight Network Database

Coverage: extended to EU neighbouring countries
Sea and Air Freight Links Added

International Communication Strategy

WorldNet seeks active participation from INCO target countries and/or international organisations interested in this action. A common, international modelling framework gives policy makers a consistent, quantitative baseline for technology, transport, energy, environment and economic trends.

Conferences

Three conferences will be held in the fourth quarter of 2007 and first quarter of 2008, covering:

- The European Union's neighbours
- Central and South America
- Rest of the World

The project will be completed in 2009.

Dissemination via the Web: REORIENT Approach

Teratext Document Search

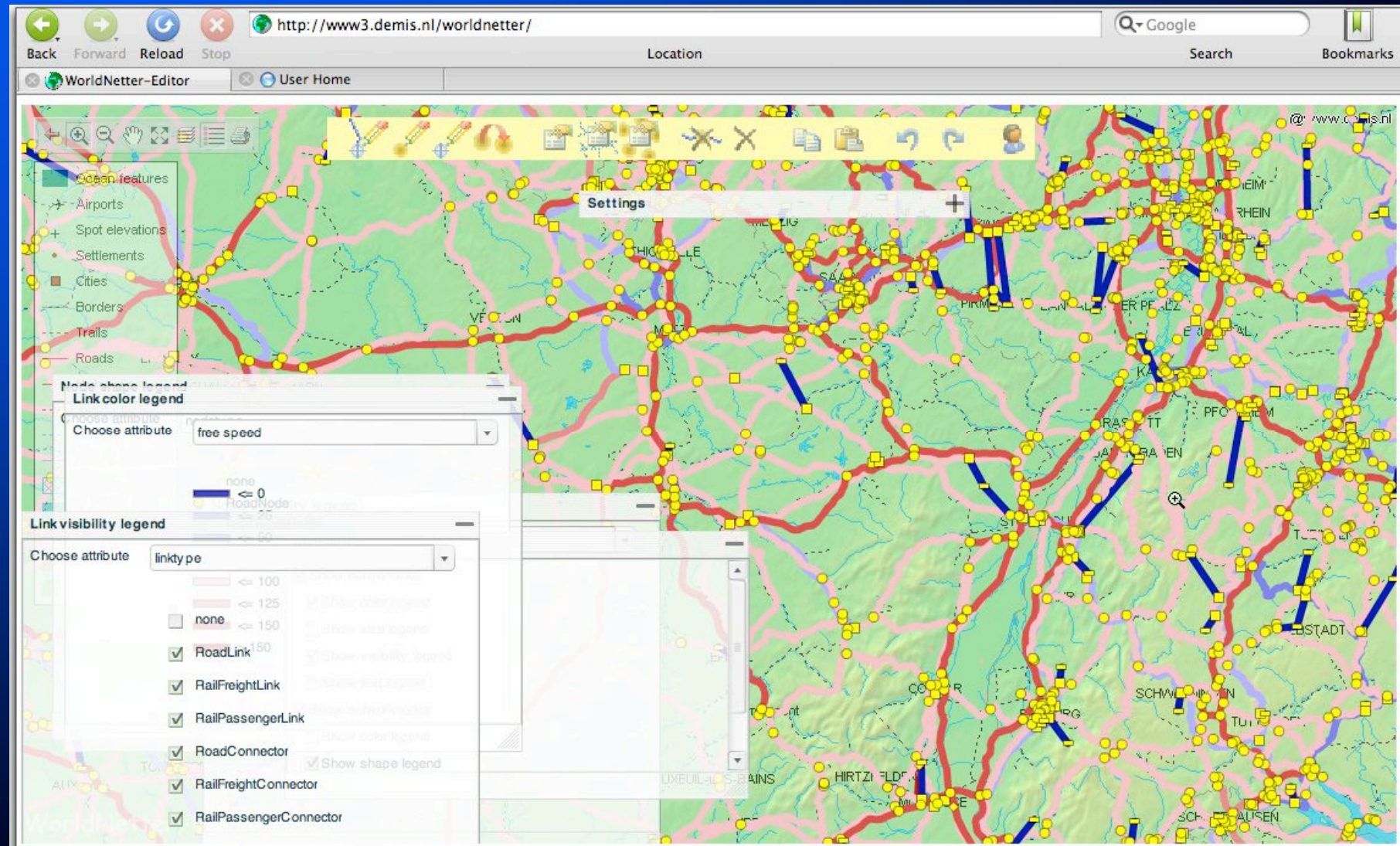
Internetter: Online GIS Editing

Nesstar Data browsing

See:



WorldNetter - editable vectors and nodes





AET Trial front page

The Association for European Transport Repository


SAIL nesstar TRI

AET >> HOME

accessing the public area [[log in](#)]

PROJECT
COMMUNITY
DOCUMENTS
WEBSITE

Please [login](#) for access to the knowledgebase. If you do not have a username, please [register](#).



The proceedings of the European Transport Conference 2001-2007

This AET KB is hosted on the N_KB_S framework first implemented for the R_KB.





AET what is in there?

The Association for European Transport Repository

AET >> DOCUMENTS >> OVERVIEW (0/8) ? ä

securely logged on as mwigan (admin) [log out]

PROJECT
COMMUNITY
COMMUNICATIONS ●
DOCUMENTS
DATA & MAPS ●
WEBSITE
PRINTER FRIENDLY

Search Site (Google)

October 2007
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1 2 3 4 5 6 7
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29 30 31

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1) Admin\Unsorted\05 0929 WiganSouthworthETC05f.pdf
Adobe Acrobat (PDF) file of 881720 Bytes, uploaded by [Marcus Wigan \(NU\)](#) on 2007-07-26 as a final document for public users
"Microsoft Word - WiganSouthworthETC05PaperB.doc" WHATS WRONG WITH FREIGHT MODELS? Marcus Wigan 1 Oxford Systematics, Frank Southworth 2 Oak Ridge National Laboratory, ABSTRACT After many years of neglect, freight, freight operations, and commodity flow models are now attracting substantial attention, and there is a wide perception among transportation analysts that they all need a careful overhaul. In this paper the range of applications and issues associated with different forms of freight model are considered. Conf...
[VIEW DOCUMENT] - [DOWNLOAD DOCUMENT] - [UPLOAD NEW REVISION] - [VIEW/EDIT METADATA] - [VIEW HISTORY] - [REPORT DOCUMENT]




2) ETC 1996\Airport Planning Issues\Airport Choice And Hub Development\A competitiveness.pdf
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"A competitiveness analysis of major airports in Asia using fuzzy linguistic approach" ...
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Keywords from the thesaurus generator

 The Association for European Transport Repository

   TRANSPORT
RESEARCH
INSTITUTE

AET >> DOCUMENTS >> SEARCH

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Document Search - Keywords

Help

[SIMPLE] - [ADVANCED] - [KEYWORDS] - [CCL]

australian government
australian standard
automatic incident detection
automatic vehicle identification
automatic vehicle location
automatic vehicle monitoring
automation
automobile
automobile demand
average speed
avi

☒ exclude drafts


Find all documents containing a phrase (also searches filename and meta data).





AET Prototype eJournal

 The Association for European Transport Repository

  nesstar  TRANSPORT
RESEARCH
INSTITUTE

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Home > **Open Journal Systems**

A test site for integrating e-journal facilities into AET KB web portal.

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JOURNAL CONTENT



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AET Prototype journal management

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mwigan

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LANGUAGE

English

JOURNAL CONTENT

Search

All

Search





So what, broadly, have we done?

- Proved that this overall approach is both feasible and can be implemented quickly with limited resources
- Showed that users (EC DGTREN, UIC, CEN et al) respond well to this demonstrated capability set
- Opened the door to aggregation of multiple data and document resources beyond the life of a single project
- Done the first round live testing of such a system well enough that others wish to at least explore it!
- Established a basis for informed user feedback from small scale demos (RAD development)
- Identified what can be shed, what should be added and what should be reinvented for a fresh “generation 2” system matching user needs





Hands on is the best way to see if there is something in this for you

Speak to Sean Newton or Marcus Wigan for live access and demonstration at the NEA stand- or on our portable laptops..

Have a look at the Aet document demo and comment to any Council member if this looks like a useful way to go

Try the Worldnet interactive editor to see how this is to be used to build a global cargo network and data system

