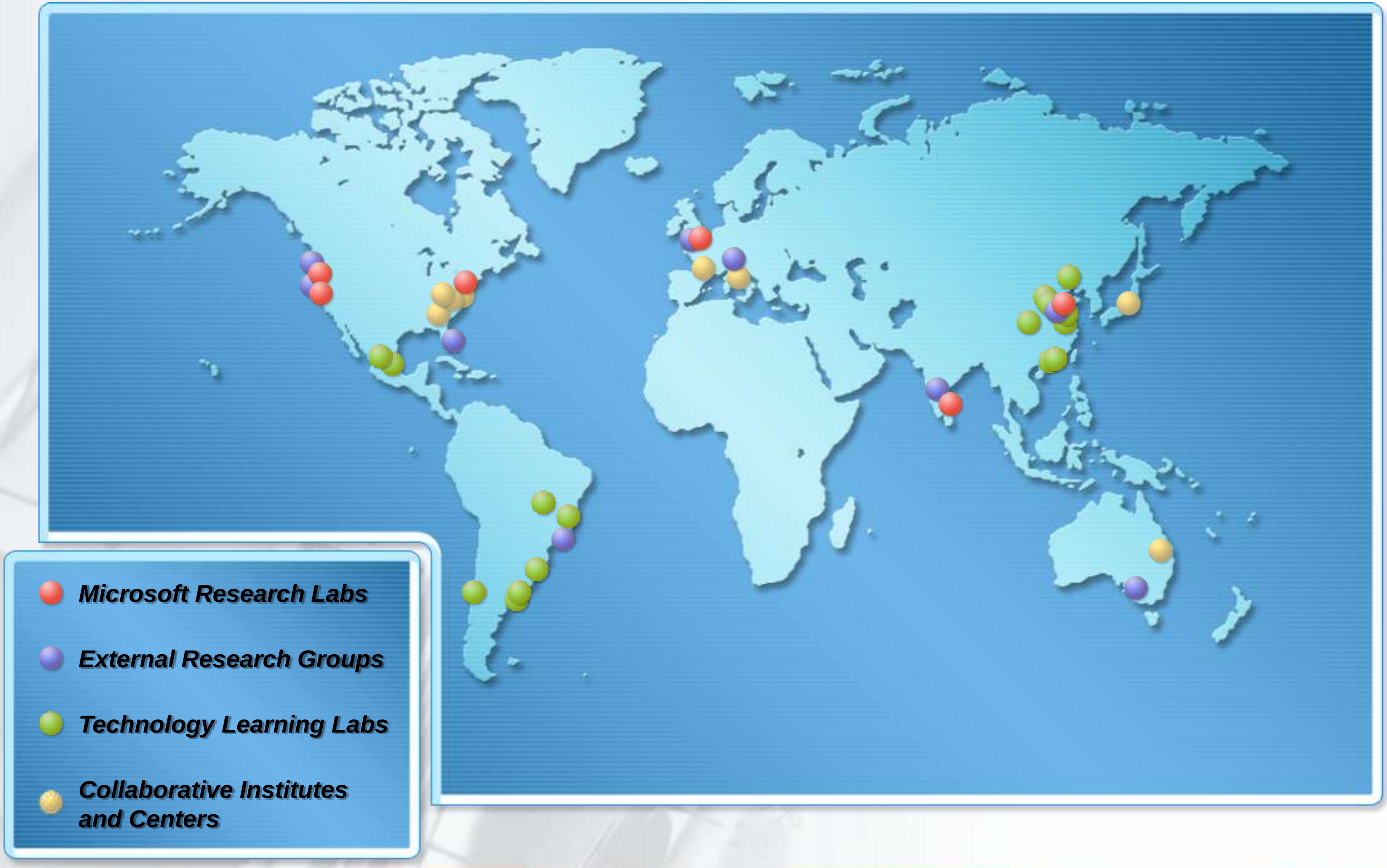
Digital Library Interoperability

Alex D. Wade
Director for Scholarly Communication
Microsoft External Research

Microsoft Research



🔴 *Microsoft Research Labs*

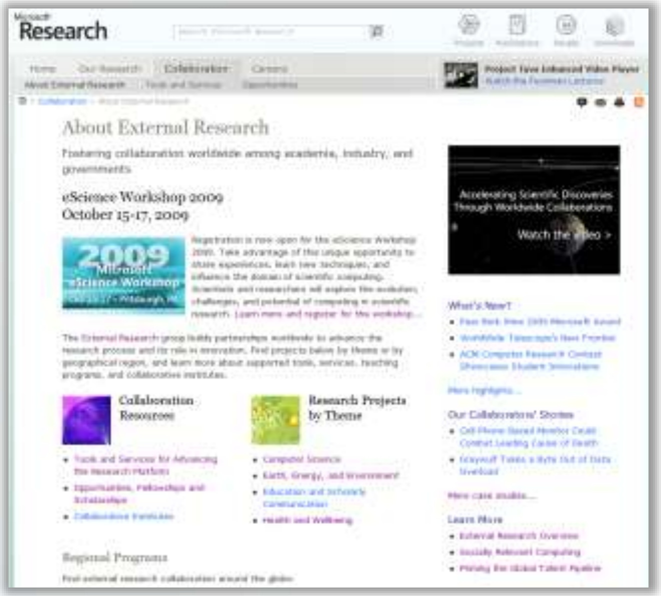
🟣 *External Research Groups*

🟢 *Technology Learning Labs*

🟡 *Collaborative Institutes and Centers*

Microsoft External Research

- Division within Microsoft Research **focused on partnerships** between academia, industry and government to advance research in fields that rely heavily upon advanced computing
- Supporting **groundbreaking research** to help advance human potential and the wellbeing of our planet
- Developing **advanced technologies** and services to support every stage of the research process
- Microsoft External Research is **committed to interoperability** and to providing open access, open tools, and open technology



Research

About External Research

Fostering collaboration worldwide among academia, industry, and governments

eScience Workshop 2009
October 15-17, 2009

Accelerating Scientific Discoveries Through Worldwide Collaborations

Watch the video >

What's New?

Collaboration Resources

Research Projects by Theme

- Computer Science
- Earth, Energy, and Environment
- Education and Scholarly Communication
- Health and Wellbeing

Our Collaborators' Stories

Learn More

Regional Programs

http://research.microsoft.com/collaboration/about/

Microsoft Interoperability Principles

- Microsoft recognizes that we need to work more at engaging with the community in an open way on interoperability.

- The principles:
  - Open Connections to Microsoft Products
  - Standards Support
  - Data Portability

Open to Choice

Interoperability builds choice, so governments, developers, and citizens can decide what technologies work best for them. At Microsoft, we design our products to work with third-party software, as well as our own.

- Document Interoperability
  - When document format choices are limited, restrictions on technology choices generally follow.

http://www.microsoft.com/interoperability

Open to Innovation

Interoperability drives innovation within a thriving IT industry, creating technologies that improve citizen services and government efficiency. Governments and businesses alike are looking to new technologies, like cloud services, to enable innovative offerings.

- Liberating Data
  - Open Government Data Initiative
  - Open Data (OData) Protocol

http://www.microsoft.com/interoperability

Open to Opportunity

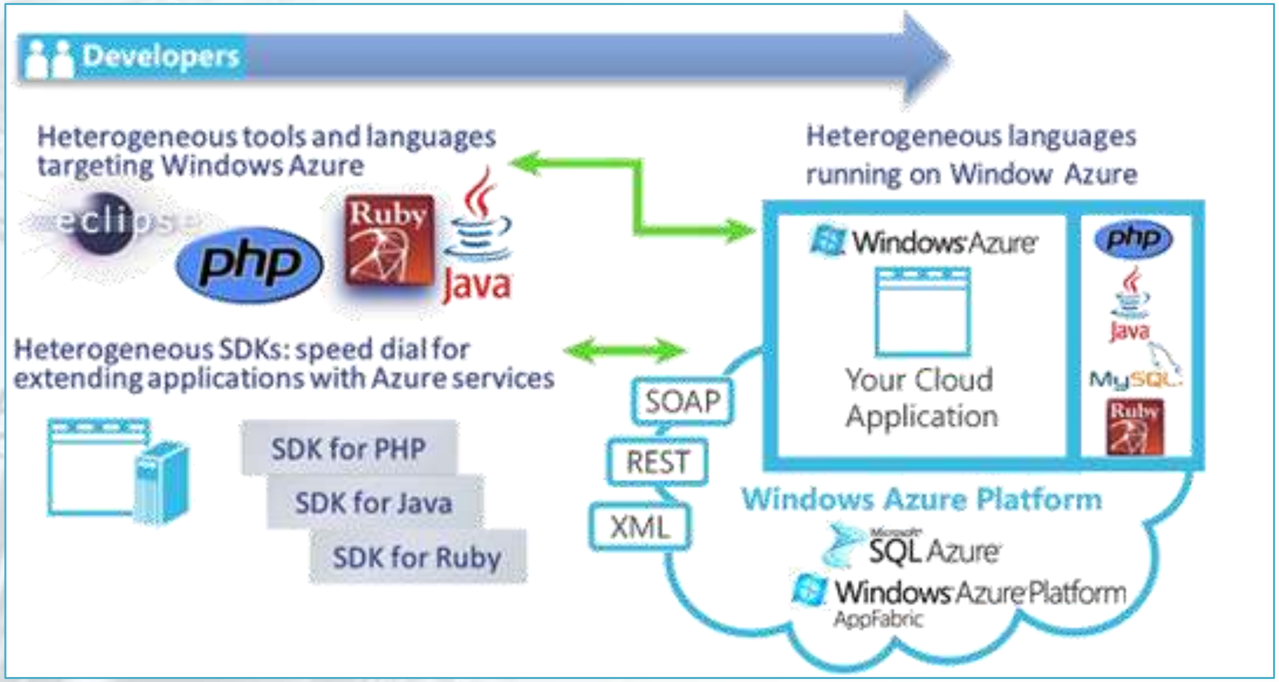
When the IT community collaborates and develops new technologies that work together, new opportunities are created. Companies across the IT sector are working with partners, customers, and competitors to deliver the levels of interoperability customers want.

- IDC's "Global Economic Impact Study" (2009)

http://www.microsoft.com/interoperability

Windows Azure

- Built to be interoperable
- Web standards (HTTP, XML, SOAP, REST, etc.)
- Programming language support
  - .NET SDK
  - Ruby SDK
  - Java SDK


Developers
Heterogeneous tools and languages targeting Windows Azure
eclipse
php
Ruby
Java
Heterogeneous SDKs: speed dial for extending applications with Azure services
SDK for PHP
SDK for Java
SDK for Ruby
SOAP
REST
XML
Heterogeneous languages running on Window Azure
Windows Azure
Your Cloud Application
php
Java
MySQL
Ruby
Windows Azure Platform
Microsoft SQL Azure
Windows Azure Platform AppFabric

Open Data Protocol

A RESTful Interface for Data

Just HTTP

- Items as resources, HTTP methods (GET, PUT, …) to act
- Leverage proxies, authentication, ETags, …

Uniform URL convention

- Every piece of information is addressable
- Predictable and flexible URL syntax

Multiple representations

- Use regular HTTP content-type negotiation
- JSON and Atom (full AtomPub support)

http://www.odata.org

Open Data Protocol
URL Conventions

- Addressing lists and items

List of lists	…/_vti_bin/listdata.svc/
List	listdata.svc/Employees
Item	listdata.svc/Employees(123)
Single column	listdata.svc/Employees(123)/Fullname
Lookup traversal	listdata.svc/Employees(123)/Project
Raw value access	listdata.svc/Employees(123)/Project/Title/$value

- Presentation options

Sorting	listdata.svc/Employees?$orderby=Fullname
Filtering	listdata.svc/Employees?$filter=JobTitle eq 'SDE'
Projection	listdata.svc/Employees?$select=Fullname,JobTitle
Paging	listdata.svc/Employees?$top=10&$skip=30

http://www.odata.org

Open Data Protocol

OData Producers

- Applications
  - SharePoint 2010
  - IBM Websphere
  - Windows Azure Table Storage
  - SQL Azure
  - Zentity 2.0

- Live OData Services:
  - Facebook Insights
  - Netflix
  - Open Government Data Initiative
  - Open Science Data Initiative
  - DBPedia

OData Consumers

- Web Browsers
- Excel 2010
- LinQPad

- Client libraries for
  - Javascript
  - PHP
  - Java
  - iPhone (Objective C)
  - Windows 7 Phone
  - .NET

http://www.odata.org

Interoperability Bridges & Labs

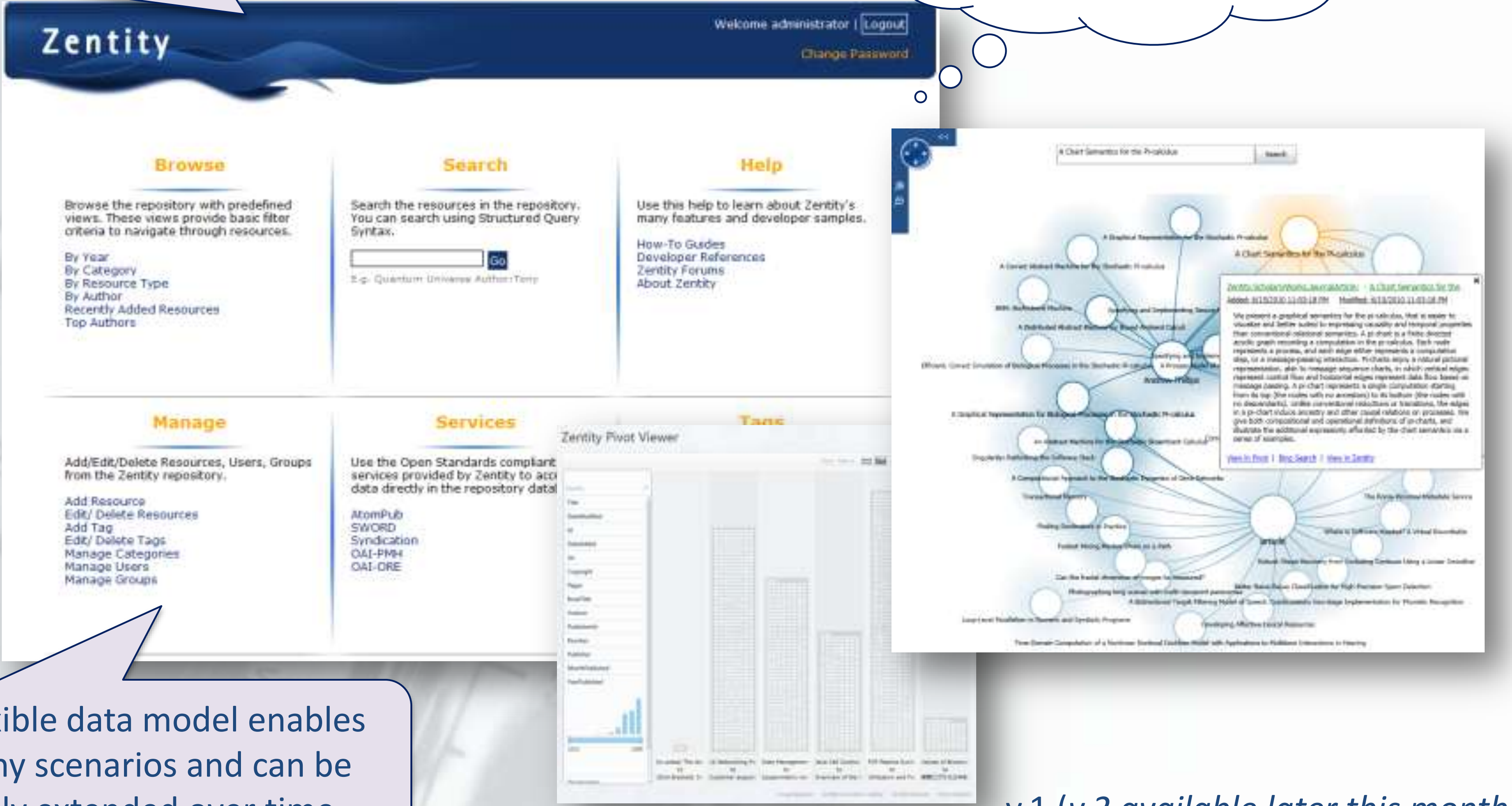
- Apache POI OpenXML Java API
- Apache Stonehenge
- AppFabric SDK for Java
- AppFabric SDK for PHP
- AppFabric SDK for Ruby
- Bing Search Library for PHP
- Eclipse Tools for Silverlight
- Enhancements of Eclipse on Windows 7
- Information Cards for C
- Information Cards for Java
- Information Cards for PHP
- Information Cards for Ruby
- Lab: Development Environment and Software Configuration Management (SCM) Interop
- Lab: Directory Management Interoperability
- Lab: Document & Records Management
- Lab: Federated Identity
- Lab: Interoperability with Open XML
- Lab: Multi-platform System Management
- Lab: Portal Aggregation and Integration
- Lab: Remote Desktop Interoperability
- Lab: Systems Management OData Client for Objective C (iPhone-Mac)
- OData SDK for PHP
- Office Binary to Open XML Translator
- OpenXML Document Viewer/HTML Translator
- OpenXML/ODF Translator
- OpenXML/UOF Translator
- Restlet Extension for OData
- Samples for PHP with Silverlight
- Samples for PHP with Webslices & Accelerators
- SQL CRUD Application Wizard for PHP
- SQL Server Reporting Services SDK for PHP
- Toolkit for PHP with Virtual Earth (Bing Maps)
- Windows Azure Command-line Tools for PHP
- Windows Azure SDK for Java
- Windows Azure SDK for PHP
- Windows Azure Storage for WordPress
- Windows Azure Tools for Eclipse
- WSRP Producer for Microsoft SharePoint Server

http://www.interoperabilitybridges.com/

Zentity – *a Research Output Repository Platform*

A semantic computing platform to store and expose relationships between digital assets

Native support for RSS, OAI-PMH, OAI-ORE, AtomPub and SWORD



Zentity

Welcome administrator | Logout

Change Password

Browse

Browse the repository with predefined views. These views provide basic filter criteria to navigate through resources.

By Year
By Category
By Resource Type
By Author
Recently Added Resources
Top Authors

Search

Search the resources in the repository. You can search using Structured Query Syntax.

☐ Go

E.g. Quantum Universe Author:Tony

Help

Use this help to learn about Zentity's many features and developer samples.

How-To Guides
Developer References
Zentity Forums
About Zentity

Manage

Add/Edit/Delete Resources, Users, Groups from the Zentity repository.

Add Resource
Edit/ Delete Resources
Add Tag
Edit/ Delete Tags
Manage Categories
Manage Users
Manage Groups

Services

Use the Open Standards compliant services provided by Zentity to acc data directly in the repository data

AtomPub
SWORD
Syndication
OAI-PMH
OAI-ORE

Flexible data model enables many scenarios and can be easily extended over time

v.1 (*v.2 available later this month!*) :
http://research.microsoft.com/zentity/

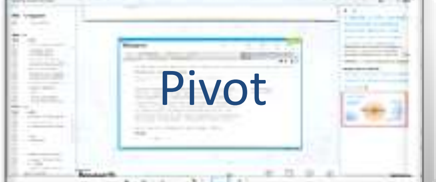
Zentity Stack

Zentity Client Applications

GuanxiMap

Zentity Console

(PowerShell)


Pivot

Web UI

(Scholarly Works)

Zentity Services

RSS, Atom

AtomPub,
SWORD

OAI PMH,
OAI ORE

Data
Service

Pivot
Collection
Service

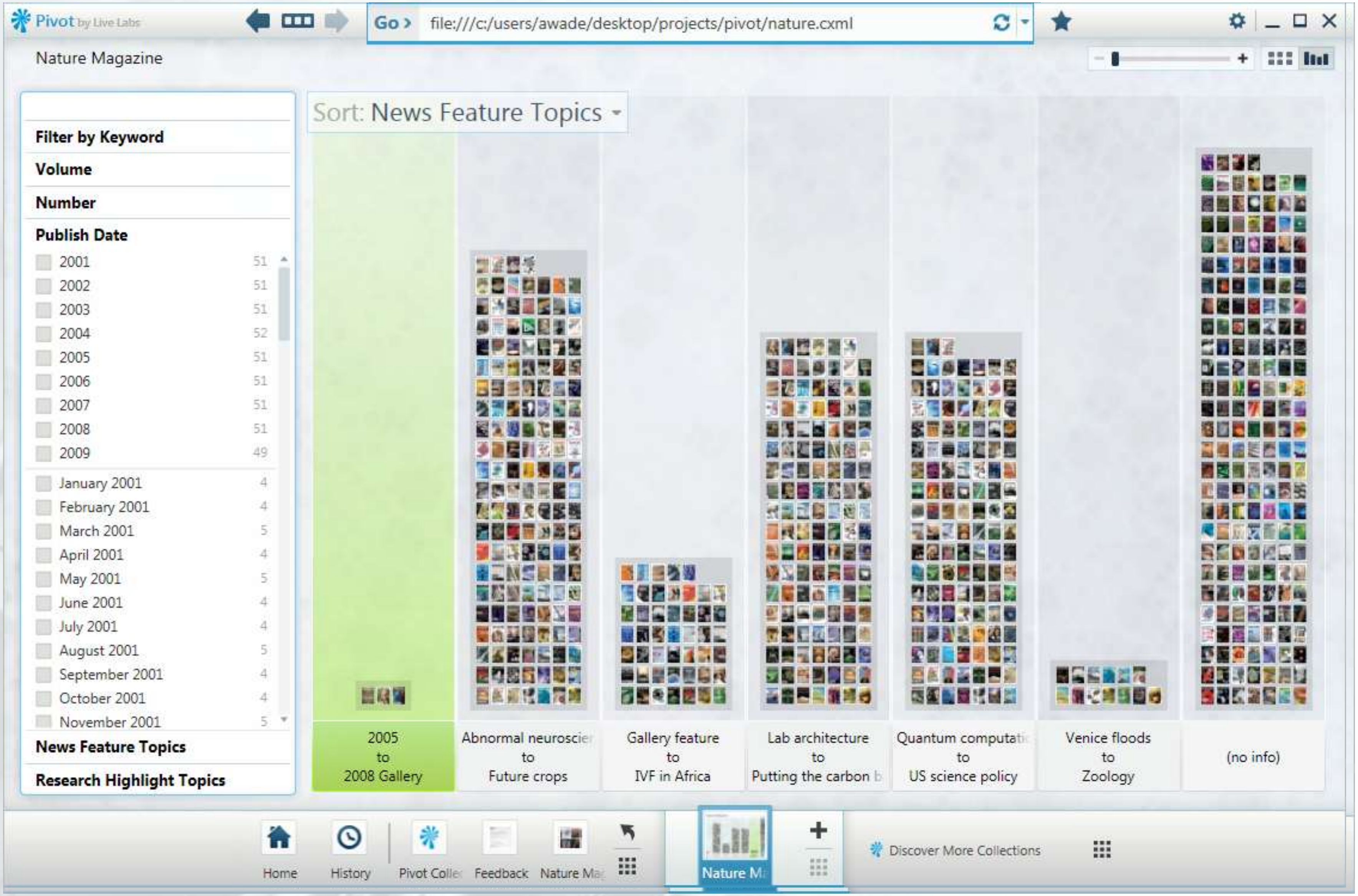
Zentity Server

Core
Data Model

Scholarly Works

My Custom
Data Model

Pivot



file:///c:/users/awade/desktop/projects/pivot/nature.cxml

Sort: News Feature Topics

DEMO

Microsoft Academic Search

http://academic.research.microsoft.com

DL Opportunities/Challenges

- Clouds
- Data, data, data
- Preservation and File Formats
- Language
- Integration

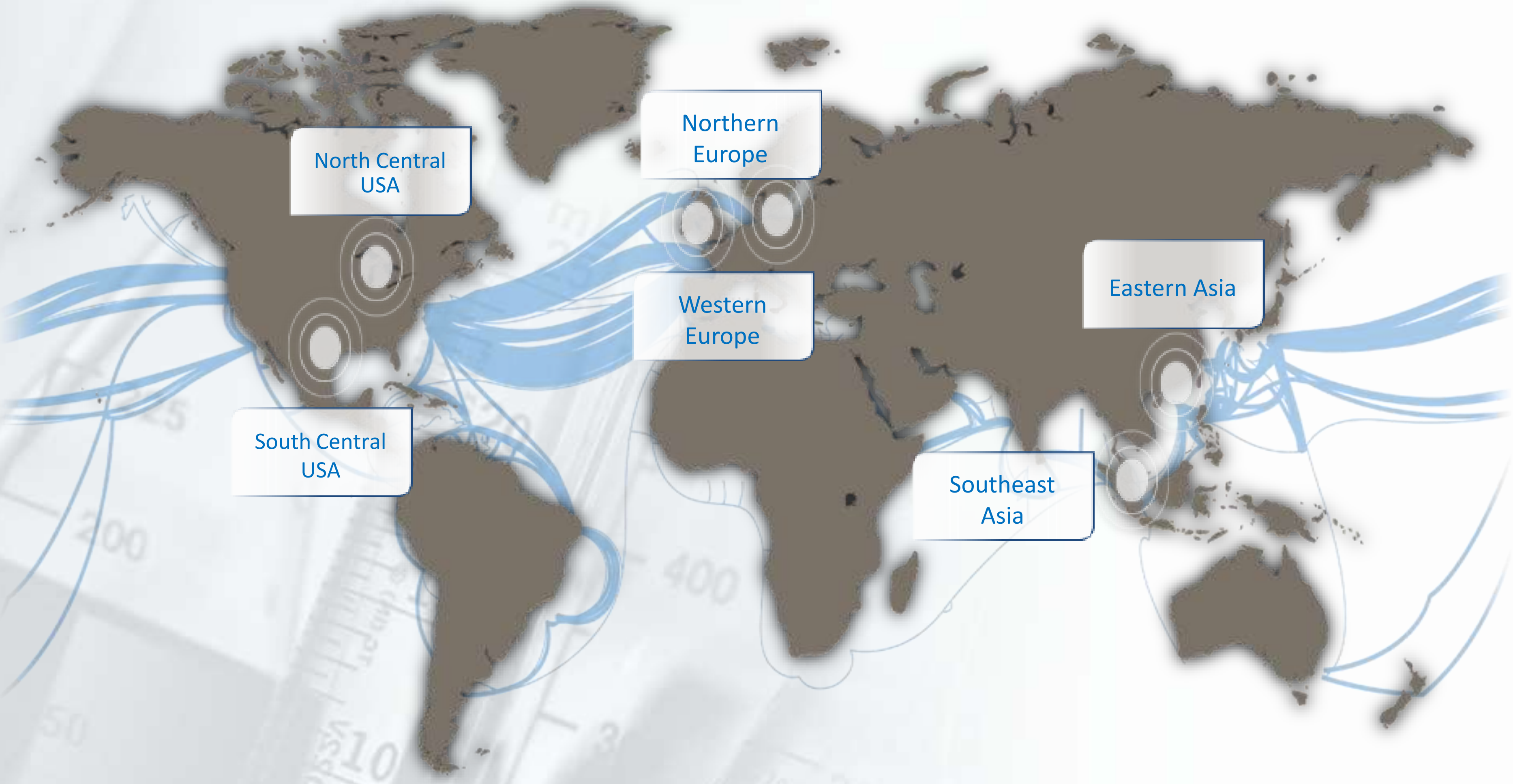
Cloud Data Centers: Economies of Scale

- Data Centers range in size from “edge” facilities to megascale (100K to 1MK servers)
- Offer real economies of scale
  - ➢Approximate costs for a small size center (1K servers) and a larger, 400K server center.

Technology	Cost in small-sized Data Center	Cost in Large Data Center	Ratio
Network	$95 per Mbps/ Month	$13 per Mbps/ month	7.1
Storage	$2.20 per GB/ Month	$0.40 per GB/ month	5.7
Administration	~140 servers/ Administrator	>1000 Servers/ Administrator	7.1

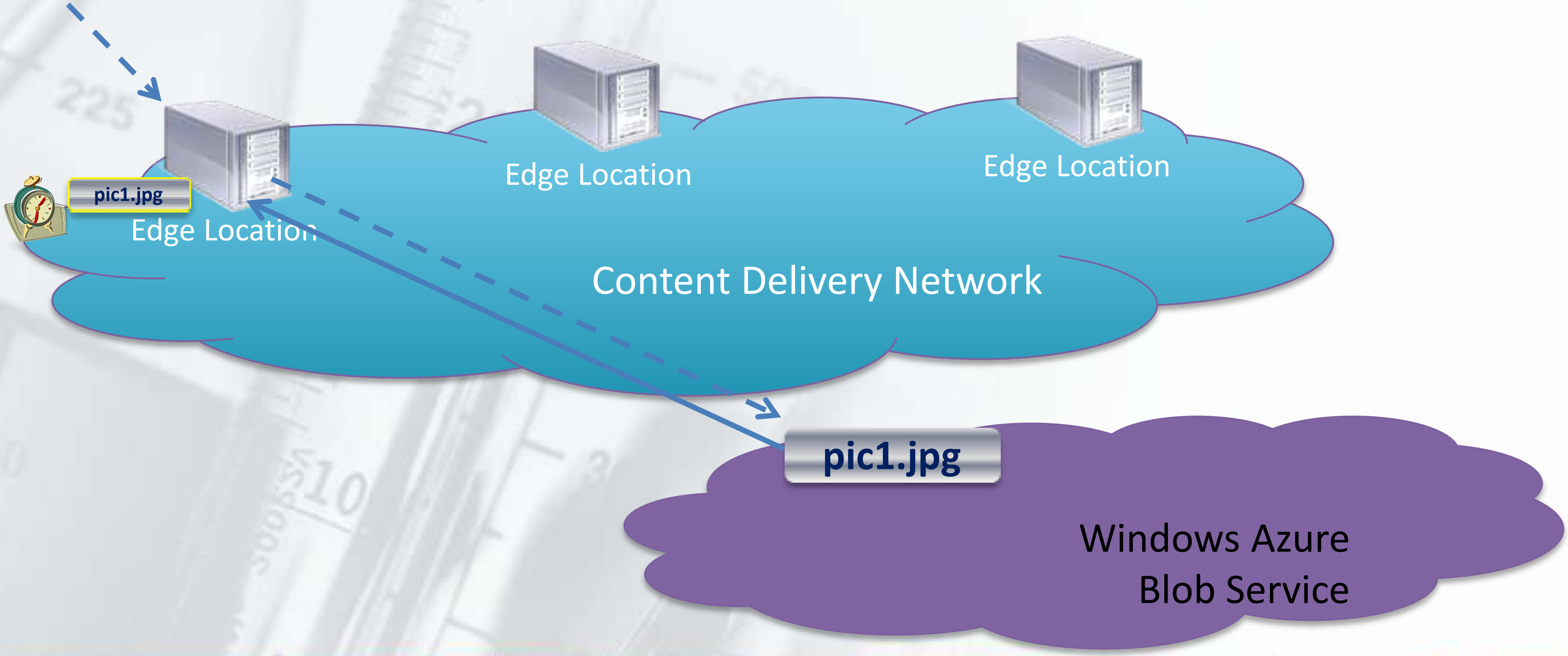
Data Center estimates from James Hamilton

Windows Azure Platform Availability

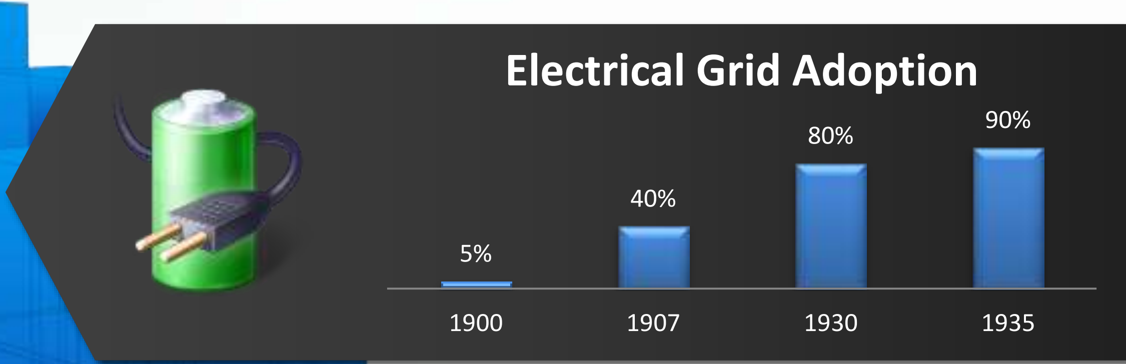


Azure Content Delivery Network

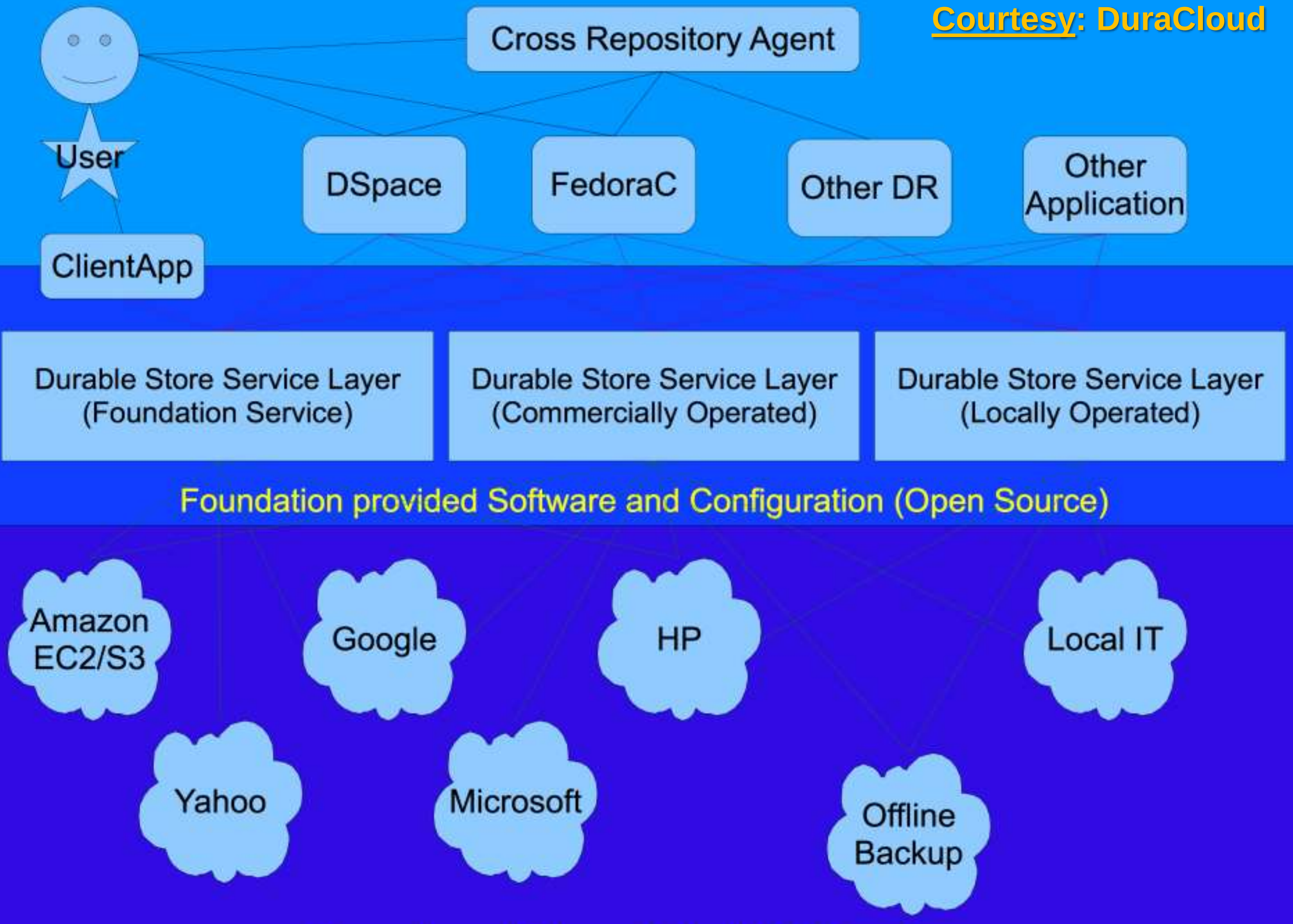
- Better performance and user experience by caching Azure blobs at strategically placed locations
  - 18 locations globally (United States, Europe, Asia, Australia and South America) and growing



This has happened before…



Courtesy: DuraCloud



User

ClientApp

Cross Repository Agent

DSpace

FedoraC

Other DR

Other Application

Durable Store Service Layer (Foundation Service)

Durable Store Service Layer (Commercially Operated)

Durable Store Service Layer (Locally Operated)

Foundation provided Software and Configuration (Open Source)

Amazon EC2/S3

Google

HP

Local IT

Yahoo

Microsoft

Offline Backup

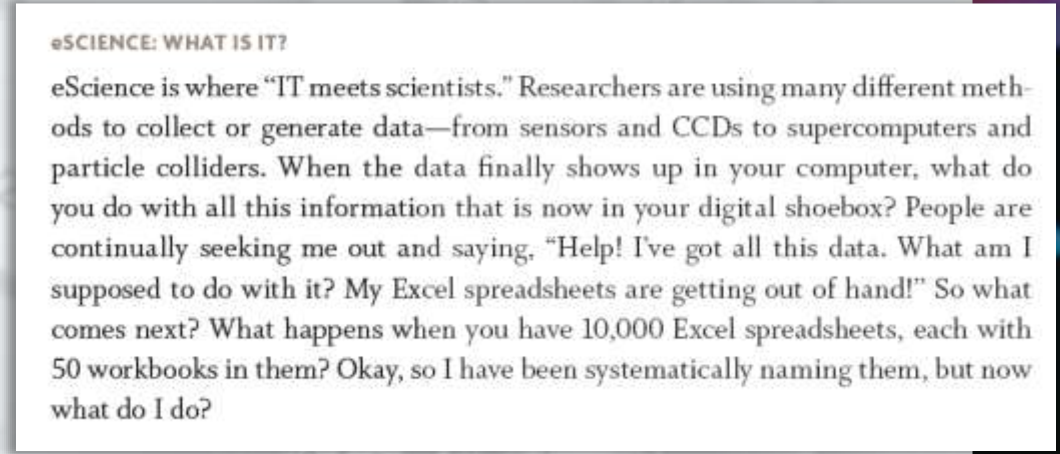
Compute and Storage [Cloud/Grid] Providers

The Rationale for DLs into the Cloud

- **We can expect digital library environments will follow similar trends to the commercial sector**
  - Leverage computing and data storage in the cloud
  - Small organizations need access to large scale resources
  - Scientists already experimenting with Amazon S3 and EC2 services
- **For many of the <u>same reasons</u>**
  - Little/no resource-sharing across library infrastructures
  - High storage costs
  - Physical space limitations
  - Low resource utilization
  - Excess capacity
  - High costs of acquiring, operating and reliably maintaining machines is prohibitive
  - Little support for developers, system operators

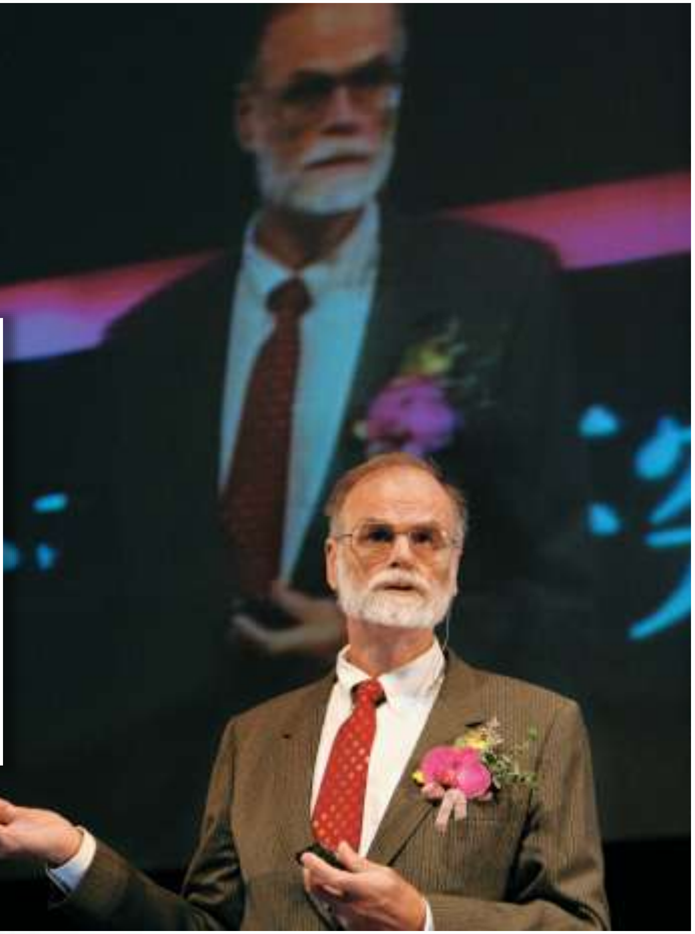
Realizing Jim Gray's Vision for Data-Intensive Scientific Discovery

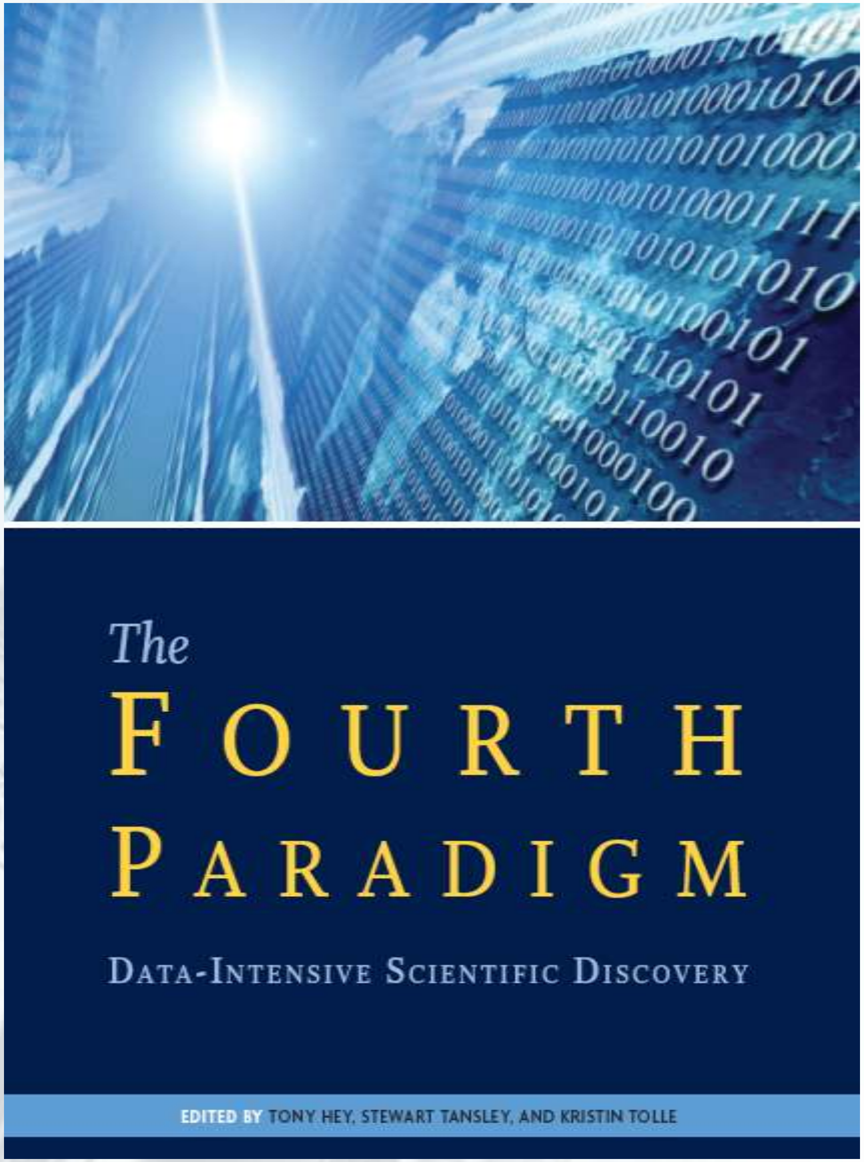
- Jim Gray = eScience
- A Transformed Scientific Method



eSCIENCE: WHAT IS IT?

eScience is where "IT meets scientists." Researchers are using many different methods to collect or generate data—from sensors and CCDs to supercomputers and particle colliders. When the data finally shows up in your computer, what do you do with all this information that is now in your digital shoebox? People are continually seeking me out and saying, "Help! I've got all this data. What am I supposed to do with it? My Excel spreadsheets are getting out of hand!" So what comes next? What happens when you have 10,000 Excel spreadsheets, each with 50 workbooks in them? Okay, so I have been systematically naming them, but now what do I do?





The

FOURTH PARADIGM

DATA-INTENSIVE SCIENTIFIC DISCOVERY

EDITED BY TONY HEY, STEWART TANSLEY, AND KRISTIN TOLLE

Free PDF Download
Or, Amazon Kindle version & paperback print-on-demand

“The impact of Jim Gray’s thinking is continuing to get people to think in a new way about how data and software are redefining what it means to do science."

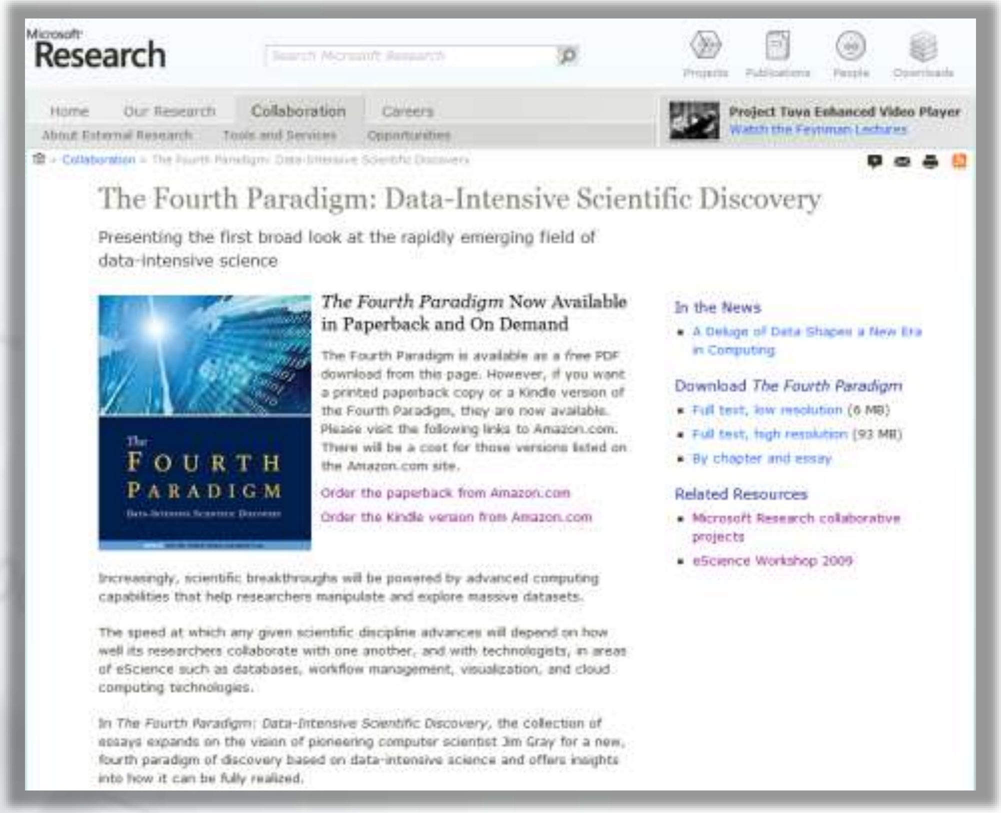
— **Bill Gates,** Chairman, Microsoft Corporation

“One of the greatest challenges for 21st-century science is how we respond to this new era of data-intensive science. This is recognized as a new paradigm beyond experimental and theoretical research and computer simulations of natural phenomena—one that requires new tools, techniques, and ways of working.”

— **Douglas Kell**, University of Manchester

“The contributing authors in this volume have done an extraordinary job of helping to refine an understanding of this new paradigm from a variety of disciplinary perspectives.”

— **Gordon Bell**, Microsoft Research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The Fourth Paradigm
Data-Intensive Scientific Discovery

The Fourth Paradigm: Data-Intensive Scientific Discovery

Presenting the first broad look at the rapidly emerging field of data-intensive science

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In the News
- A Deluge of Data Shapes a New Era in Computing

Download *The Fourth Paradigm*
- Full text, low resolution (6 MB)
- Full text, high resolution (93 MB)
- By chapter and essay

Related Resources
- Microsoft Research collaborative projects
- eScience Workshop 2009

Increasingly, scientific breakthroughs will be powered by advanced computing capabilities that help researchers manipulate and explore massive datasets.

The speed at which any given scientific discipline advances will depend on how well its researchers collaborate with one another, and with technologists, in areas of eScience such as databases, workflow management, visualization, and cloud computing technologies.

In *The Fourth Paradigm: Data-Intensive Scientific Discovery*, the collection of essays expands on the vision of pioneering computer scientist Jim Gray for a new, fourth paradigm of discovery based on data-intensive science and offers insights into how it can be fully realized.

http://research.microsoft.com/fourthparadigm/

Jim Gray’s Call to Action

Listed 7 key areas for action by Funding Agencies:

1. Fund both development and support of software tools
2. Invest at all levels of the finding ‘pyramid’
3. Fund development of ‘generic’ Laboratory Information Management Systems
4. Fund research into scientific data management, data analysis, data visualization, new algorithms and tools

Jim Gray’s Call to Action (continued)

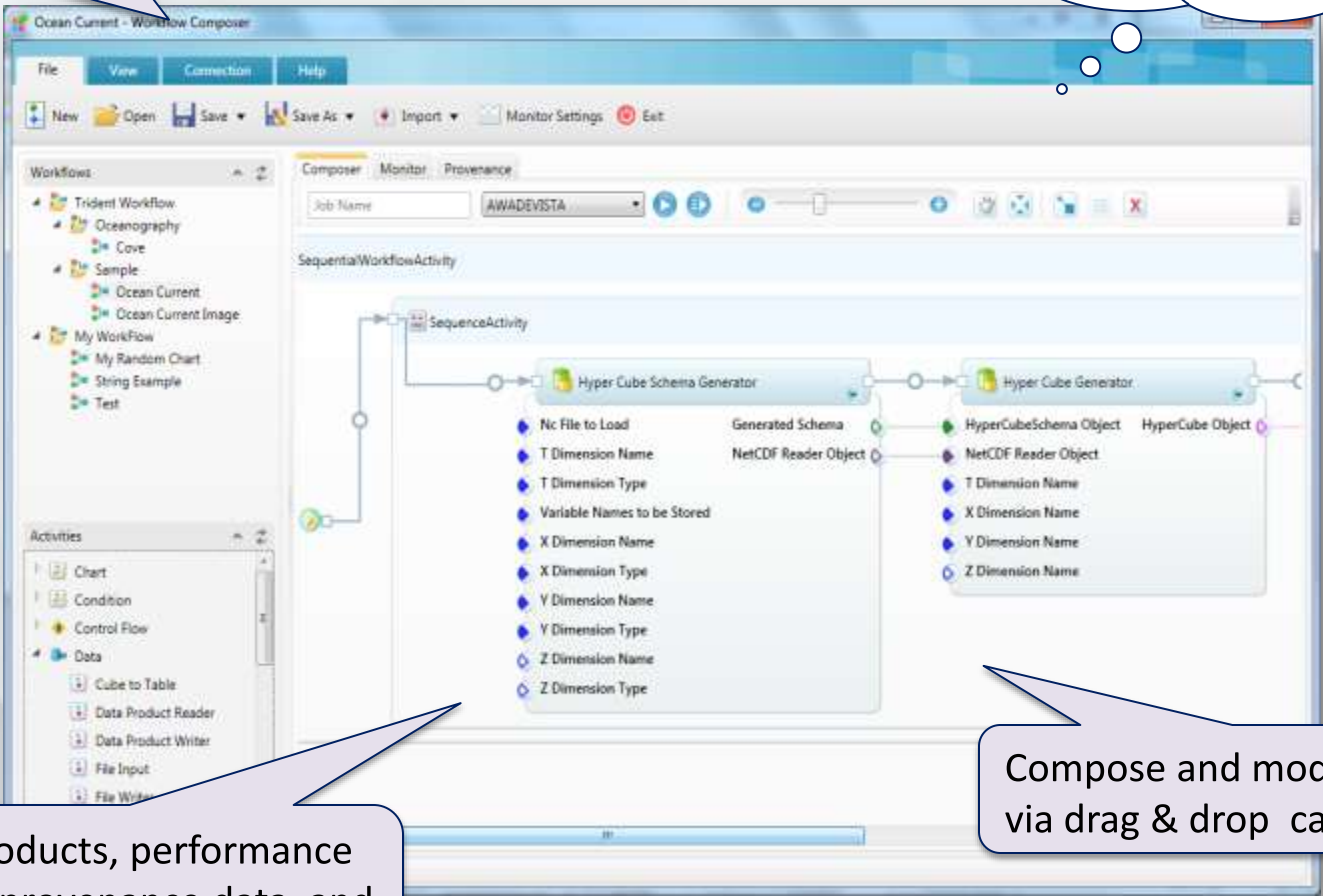
Remaining three key areas for action relate to the future of Scholarly Communication and Libraries:

5. Establish Digital Libraries that support the other sciences like the NLM does for Medicine
6. Fund development of new authoring tools and publication models
7. Explore development of digital data libraries that contain scientific data (not just the metadata) and support integration with published literature

Project Trident – a Scientific Workflow Workbench

Author, Execute and Monitor Workflows

Share workflows via myexperiment



Compose and modify workflows via drag & drop canvas

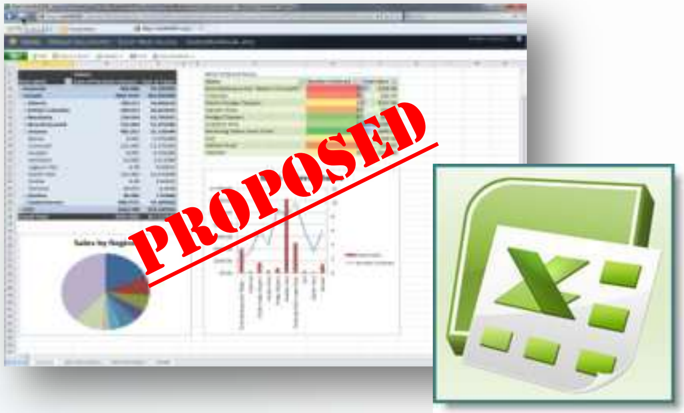
View data products, performance metrics, and provenance data, and write them directly into repository

Version 1.2 (Open Source under Apache 2.0 License): http://tridentworkflow.codeplex.com/

Data Curation Add-in for Microsoft Excel

University of California
CDL
California Digital Library

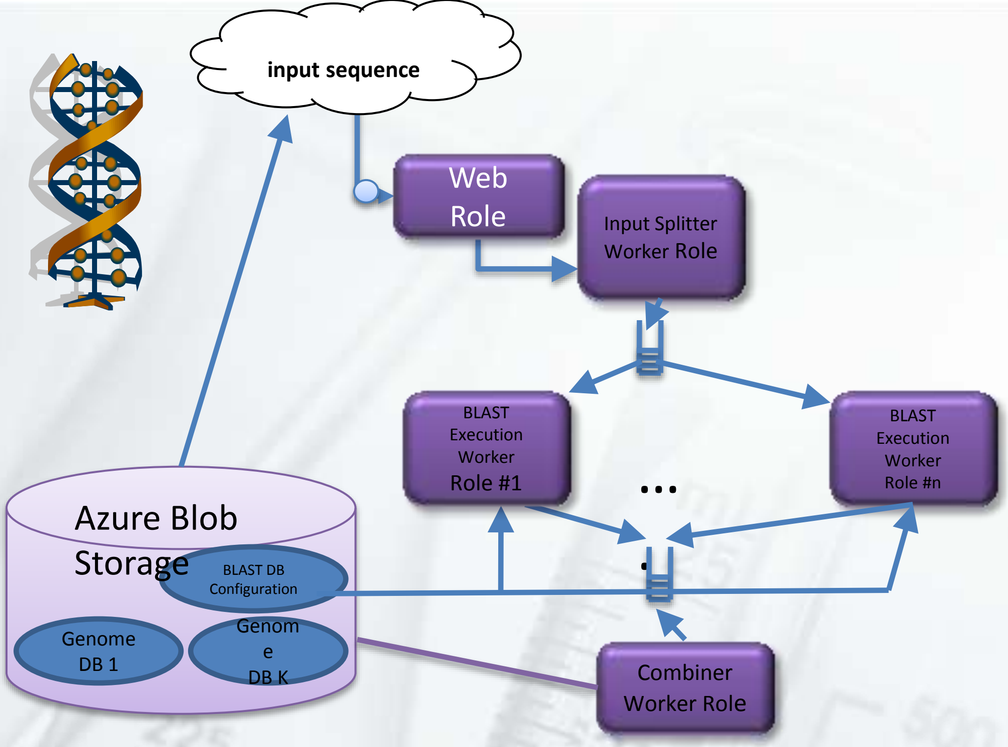
DataONE



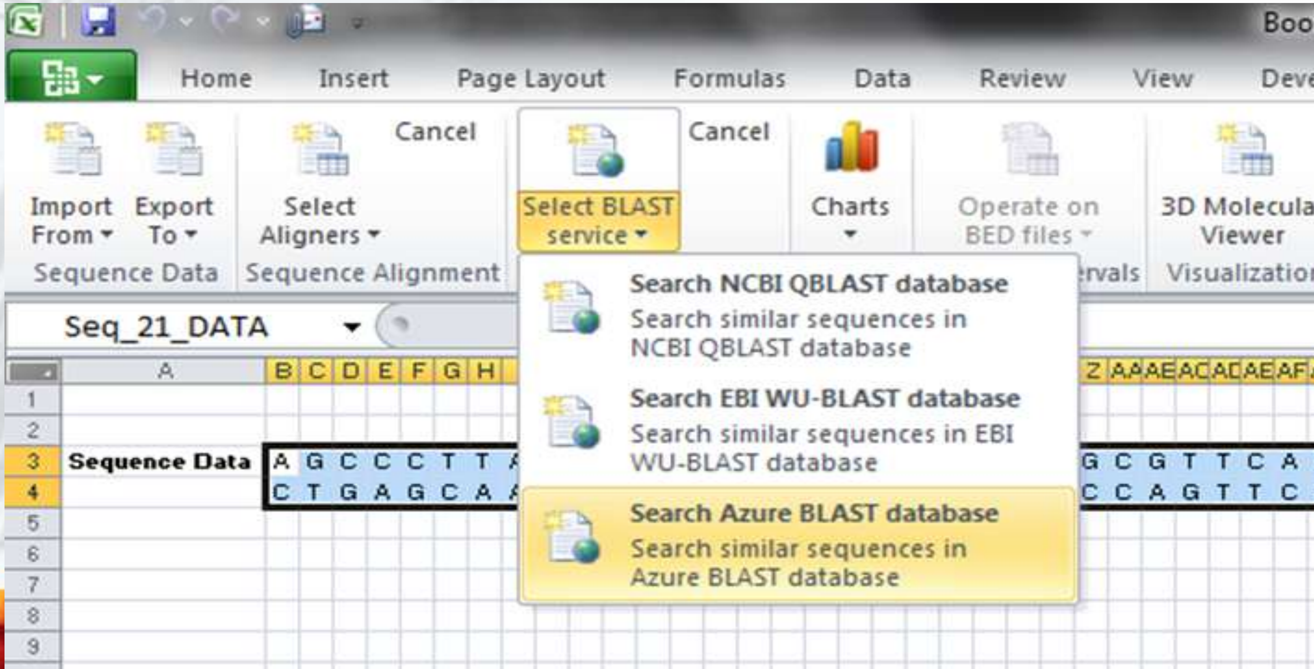
- **Microsoft Research, in partnership with California Digital Library's Curation Center**
  - Collaboration with **Tricia Cruse & John Kunze**
  - Part of the DataONE (an NSF DataNet Project)
- **Proposed functionality *under consideration*:**
  - **Versioning** - revision history and original raw data can be protected and recovered
  - **Time stamps** - easily determine when the data were created and last updated
  - **"Workbook builder"** - select from globally shared standardized layouts for capturing data
  - **Export metadata in a standard formats** (e.g., a DataCite citation or an EML document that describes the dataset(s) in a workbook) so that researchers can readily share their data,
  - **Globally shared vocabulary of terms for data descriptions** (e.g., column names), and as needed to add new terms to the globally shared vocabulary, to enable wide collaboration between researchers
  - **Import term descriptions from the shared vocabulary** and annotate them to refine local definitions
  - **Deposit data and metadata into a data archive** to preserve and publish research data

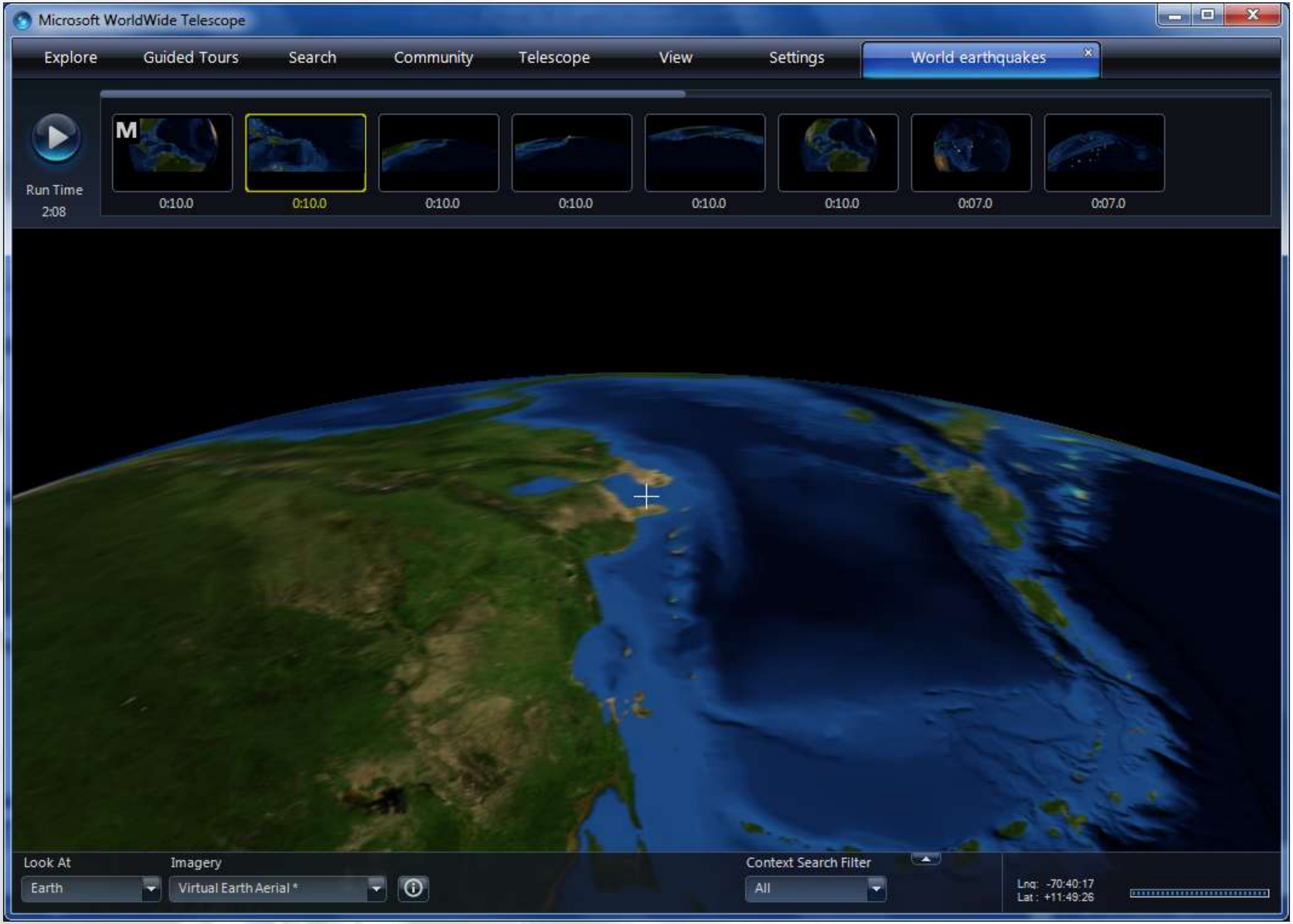
Metagenomics

- Using Azure cloud to host standard sequence data
- Run BLAST in parallel “map reduce” style for a large collection input
- Use Excel-based tool to search databases.



- Performance: speedup
- 45x with 50 roles; 94x with 100 roles;
- with 300 roles computation time is reduced to 4 **hours** !





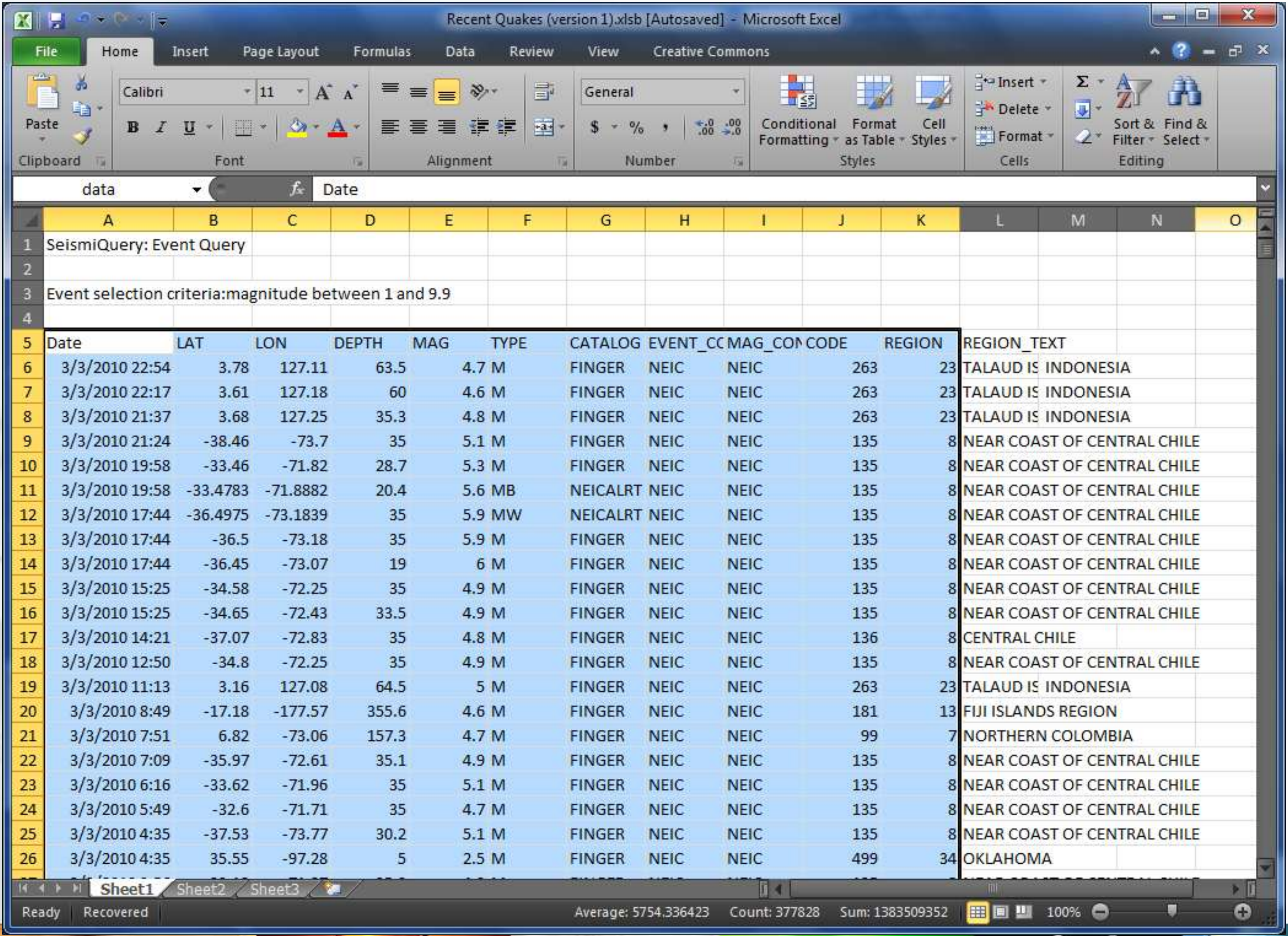
Run Time 2:08

Look At: Earth

Imagery: Virtual Earth Aerial *

Context Search Filter: All

Lng: -70:40:17
Lat : +11:49:26



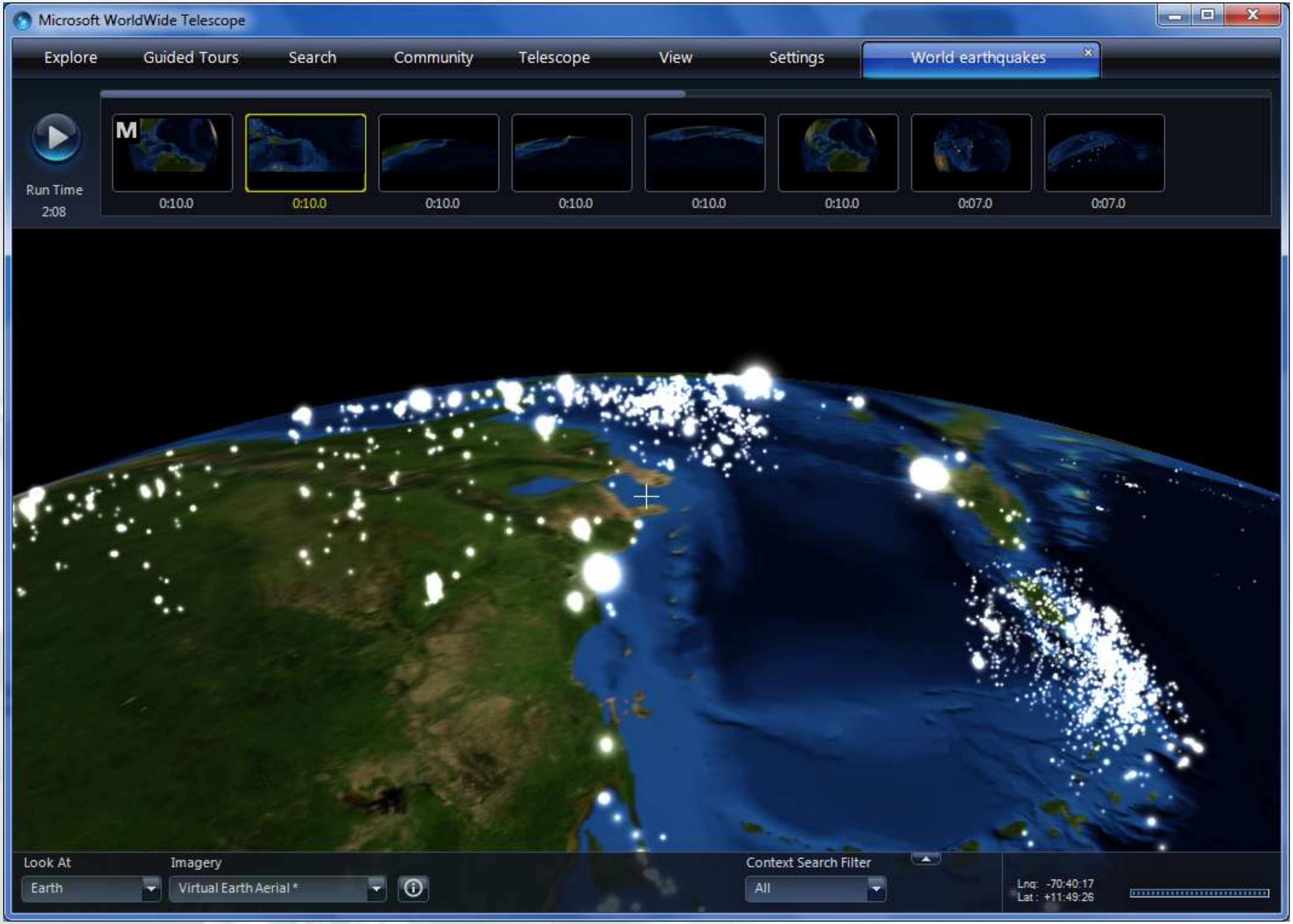
data | Date

SeismiQuery: Event Query

Event selection criteria:magnitude between 1 and 9.9

Date	LAT	LON	DEPTH	MAG	TYPE	CATALOG	EVENT_CC	MAG_CON	CODE	REGION	REGION_TEXT
3/3/2010 22:54	3.78	127.11	63.5	4.7	M	FINGER	NEIC	NEIC	263	23	TALAUD IS INDONESIA
3/3/2010 22:17	3.61	127.18	60	4.6	M	FINGER	NEIC	NEIC	263	23	TALAUD IS INDONESIA
3/3/2010 21:37	3.68	127.25	35.3	4.8	M	FINGER	NEIC	NEIC	263	23	TALAUD IS INDONESIA
3/3/2010 21:24	-38.46	-73.7	35	5.1	M	FINGER	NEIC	NEIC	135	8	NEAR COAST OF CENTRAL CHILE
3/3/2010 19:58	-33.46	-71.82	28.7	5.3	M	FINGER	NEIC	NEIC	135	8	NEAR COAST OF CENTRAL CHILE
3/3/2010 19:58	-33.4783	-71.8882	20.4	5.6	MB	NEICALRT	NEIC	NEIC	135	8	NEAR COAST OF CENTRAL CHILE
3/3/2010 17:44	-36.4975	-73.1839	35	5.9	MW	NEICALRT	NEIC	NEIC	135	8	NEAR COAST OF CENTRAL CHILE
3/3/2010 17:44	-36.5	-73.18	35	5.9	M	FINGER	NEIC	NEIC	135	8	NEAR COAST OF CENTRAL CHILE
3/3/2010 17:44	-36.45	-73.07	19	6	M	FINGER	NEIC	NEIC	135	8	NEAR COAST OF CENTRAL CHILE
3/3/2010 15:25	-34.58	-72.25	35	4.9	M	FINGER	NEIC	NEIC	135	8	NEAR COAST OF CENTRAL CHILE
3/3/2010 15:25	-34.65	-72.43	33.5	4.9	M	FINGER	NEIC	NEIC	135	8	NEAR COAST OF CENTRAL CHILE
3/3/2010 14:21	-37.07	-72.83	35	4.8	M	FINGER	NEIC	NEIC	136	8	CENTRAL CHILE
3/3/2010 12:50	-34.8	-72.25	35	4.9	M	FINGER	NEIC	NEIC	135	8	NEAR COAST OF CENTRAL CHILE
3/3/2010 11:13	3.16	127.08	64.5	5	M	FINGER	NEIC	NEIC	263	23	TALAUD IS INDONESIA
3/3/2010 8:49	-17.18	-177.57	355.6	4.6	M	FINGER	NEIC	NEIC	181	13	FIJI ISLANDS REGION
3/3/2010 7:51	6.82	-73.06	157.3	4.7	M	FINGER	NEIC	NEIC	99	7	NORTHERN COLOMBIA
3/3/2010 7:09	-35.97	-72.61	35.1	4.9	M	FINGER	NEIC	NEIC	135	8	NEAR COAST OF CENTRAL CHILE
3/3/2010 6:16	-33.62	-71.96	35	5.1	M	FINGER	NEIC	NEIC	135	8	NEAR COAST OF CENTRAL CHILE
3/3/2010 5:49	-32.6	-71.71	35	4.7	M	FINGER	NEIC	NEIC	135	8	NEAR COAST OF CENTRAL CHILE
3/3/2010 4:35	-37.53	-73.77	30.2	5.1	M	FINGER	NEIC	NEIC	135	8	NEAR COAST OF CENTRAL CHILE
3/3/2010 4:35	35.55	-97.28	5	2.5	M	FINGER	NEIC	NEIC	499	34	OKLAHOMA

Average: 5754.336423 Count: 377828 Sum: 1383509352



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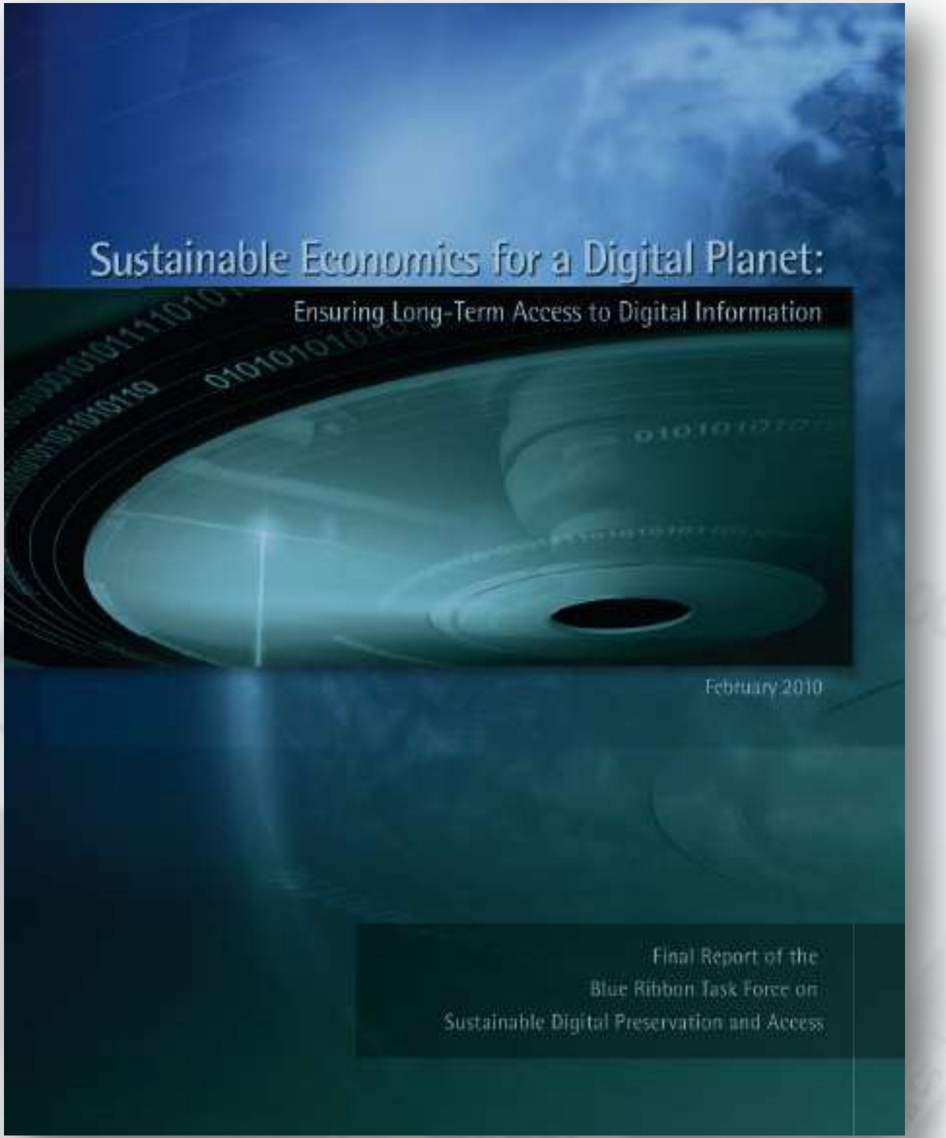


Sustainable Economics for a Digital Planet:
Ensuring Long-Term Access to Digital Information

February 2010

Final Report of the
Blue Ribbon Task Force on
Sustainable Digital Preservation and Access

Sustaining the Digital Investment

Issues and Challenges of Economically Sustainable Digital Preservation

February 2010

Final Report of the Blue Ribbon Task Force on Sustainable Digital Preservation and Access

17 member group of experts from economics, computer science, libraries, archives, museums, and related fields.

Supported by NSF, Andrew Mellon Foundation, JISC, US Library of Congress

http://brtf.sdsc.edu/biblio/BRTF_Final_Report.pdf

What are technical solutions?

- We have two main strategies:

content migration

- Migration to standards that are likely to be supported in the future.

emulation and simulation

- Create emulators of hardware and simulators of software systems to enable old programmes to run and old data to be used.

Why should Microsoft Engage

- We and computing industry are the closest to the problems
  - We create the technology. We can make it live longer and continue to bring benefits to all of us.
  - All our research areas are applicable, from technologies for media processing to retrieval, security, program checking and verification, and system emulation.

- Ensure long-term access to Europe’s cultural and scientific heritage
  - Improve decision-making about long term preservation
  - Ensure long-term access to valued digital content
  - Control the costs through automation, scalable infrastructure
  - Ensure wide adoption across the user community
  - Establish market place for preservation services and tools
- Build practical solutions
  - Integrate existing expertise, designs and tools
  - Share and build

planets

Preservation and
Long-term
Access through
NETworked
Services

PLANETS Partners

The British Library
National Library, Netherlands
Austrian National Library
State and University Library, Denmark
Royal Library, Denmark

National Archives, UK
Swiss Federal Archives
National Archives, Netherlands

Hatii at University of Glasgow
University of Freiburg
Technical University of Vienna
University at Cologne

Tessella Plc
IBM Netherlands
Microsoft Research, Cambridge
ARC Seibersdorf research

Towards Effective Digital Preservation

TECHNOLOGY

- Tools, methods, training
- Support for data processing and curation
- Standards for content handling and representation

SOCIAL

- Definition of new roles and skill sets for librarians and archivists

ECONOMIC

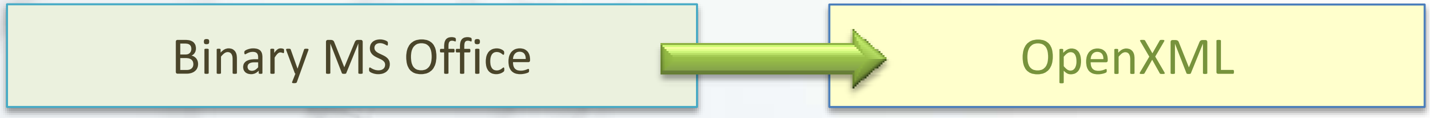
- Cost of preservation is enormous. Who will pay for it? Who will ensure that it remains accessible.
- Requires development of an ecosystem to support economically viable digitization efforts

LEGAL

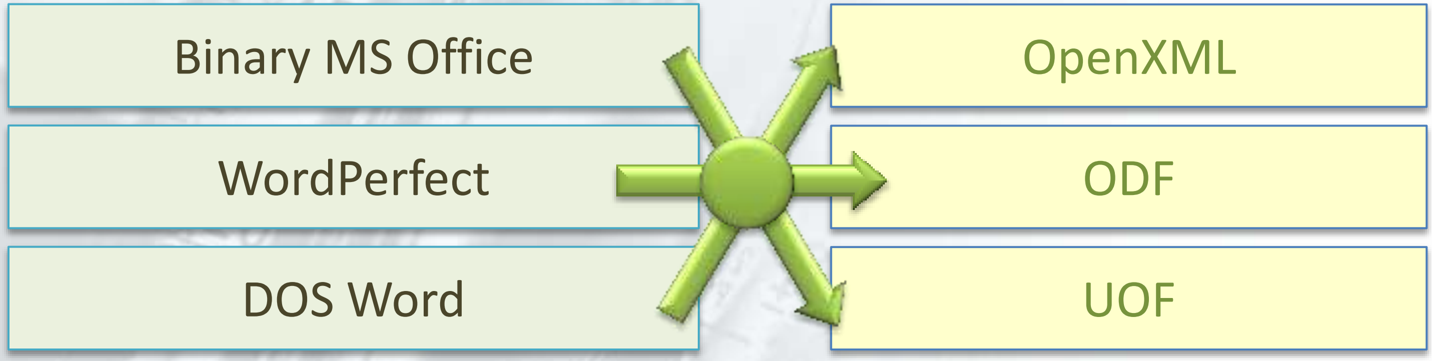
- Legal framework to enforce and protect the rights of authors and publishers, privacy and security.

Microsoft & PLANETS: Preserving Office Documents

- Microsoft Research role within PLANETS:
  - Conversion of binary Microsoft Office Documents into Office Open XML File Format (OpenXML)



- We extended the effort to include other formats
  - More legacy formats, e.g. WordPerfect
  - Other open standards, e.g. Open Document Format.



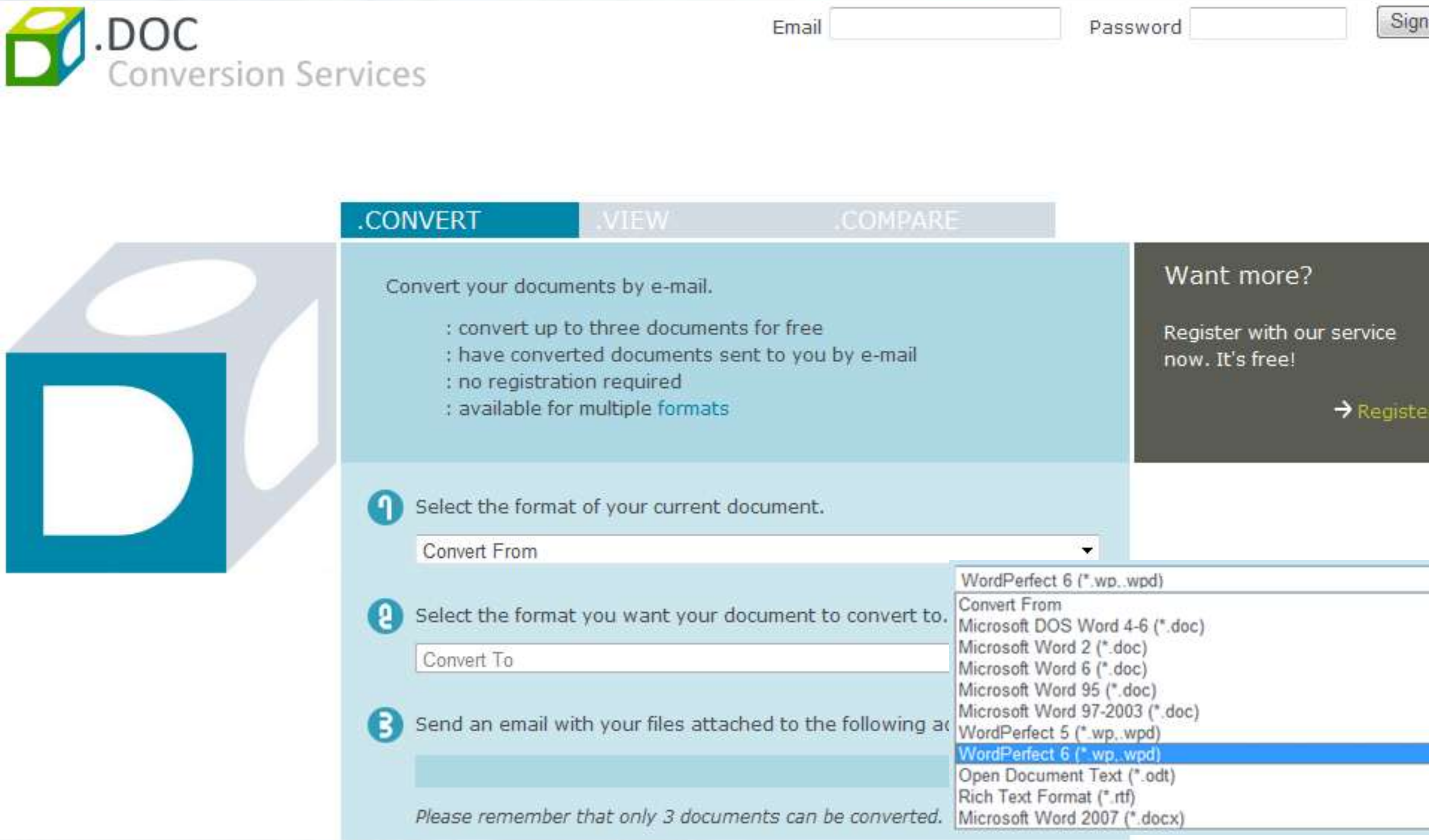
Document Conversion Tools – Our Approach

- Three-step approach, resulting in a modular and extendible infrastructure
  - Identify existing conversion tools and libraries
  - Wrap these tools and libraries into re-usable components
  - Integrate these components into PLANETS and other systems.
- If possible, do not use the office applications (e.g., Microsoft Office or OpenOffice.org)
  - They are designed as interactive applications
  - Message boxes might pop up (“Do you want …”)
  - Unclear license question when running on a server.

Supported Formats

- Source formats
  - WordPerfect 5
  - WordPerfect 6
  - DOS Word
  - Word 2, 6, 95
  - Word 97-2003
  - RTF
  - ODF
  - OpenXML
- Target formats
  - OpenXML
  - ODF
  - UOF
  - HTML
  - XCDL (format defined in PLANETS/PC)

Conversion service



Convert your documents by e-mail.

: convert up to three documents for free
: have converted documents sent to you by e-mail
: no registration required
: available for multiple formats

Want more?

Register with our service now. It's free!

→ Registe

① Select the format of your current document.

Convert From

② Select the format you want your document to convert to.

Convert To

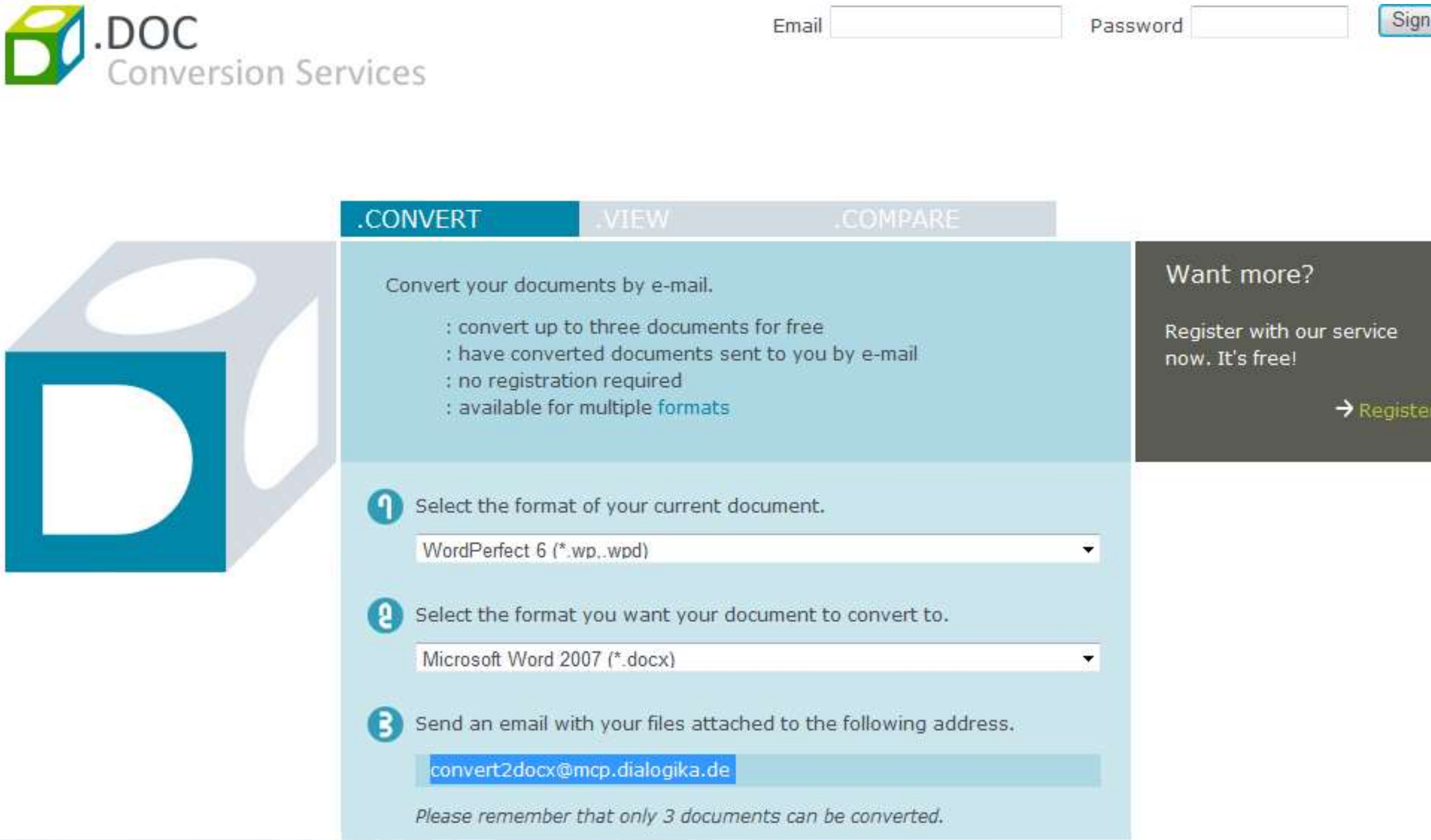
③ Send an email with your files attached to the following ad

Please remember that only 3 documents can be converted.

WordPerfect 6 (*.wp,.wpd)

- Convert From
- Microsoft DOS Word 4-6 (*.doc)
- Microsoft Word 2 (*.doc)
- Microsoft Word 6 (*.doc)
- Microsoft Word 95 (*.doc)
- Microsoft Word 97-2003 (*.doc)
- WordPerfect 5 (*.wp,.wpd)
- WordPerfect 6 (*.wp,.wpd)
- Open Document Text (*.odt)
- Rich Text Format (*.rtf)
- Microsoft Word 2007 (*.docx)

Conversion service



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: convert up to three documents for free
: have converted documents sent to you by e-mail
: no registration required
: available for multiple formats

Want more?

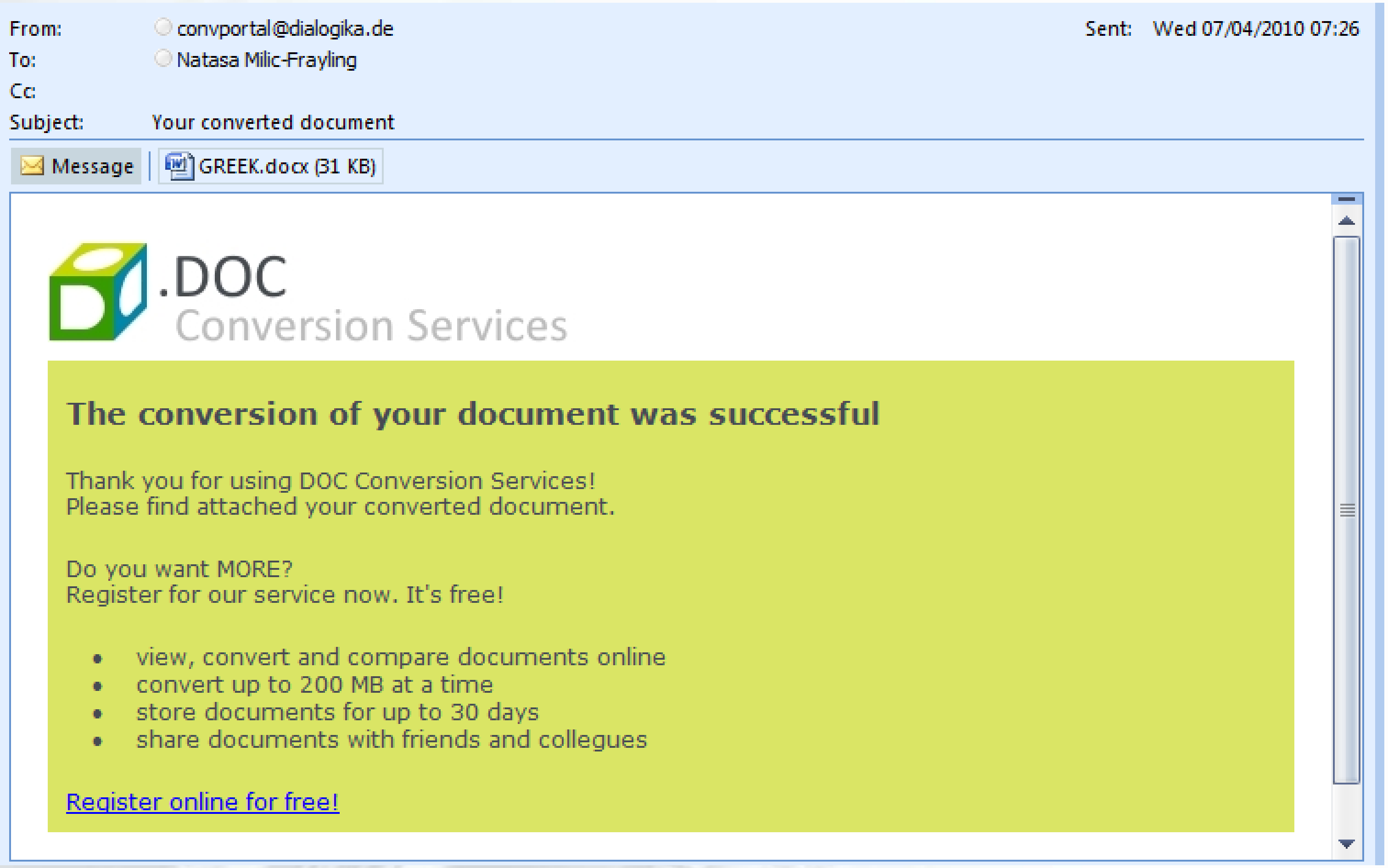
Register with our service now. It's free!

→ Registe

1. Select the format of your current document.
   WordPerfect 6 (*.wp,.wpd)
2. Select the format you want your document to convert to.
   Microsoft Word 2007 (*.docx)
3. Send an email with your files attached to the following address.
   convert2docx@mcp.dialogika.de

Please remember that only 3 documents can be converted.

Conversion service



From: convportal@dialogika.de
To: Natasa Milic-Frayling
Cc:
Subject: Your converted document

Sent: Wed 07/04/2010 07:26

The conversion of your document was successful

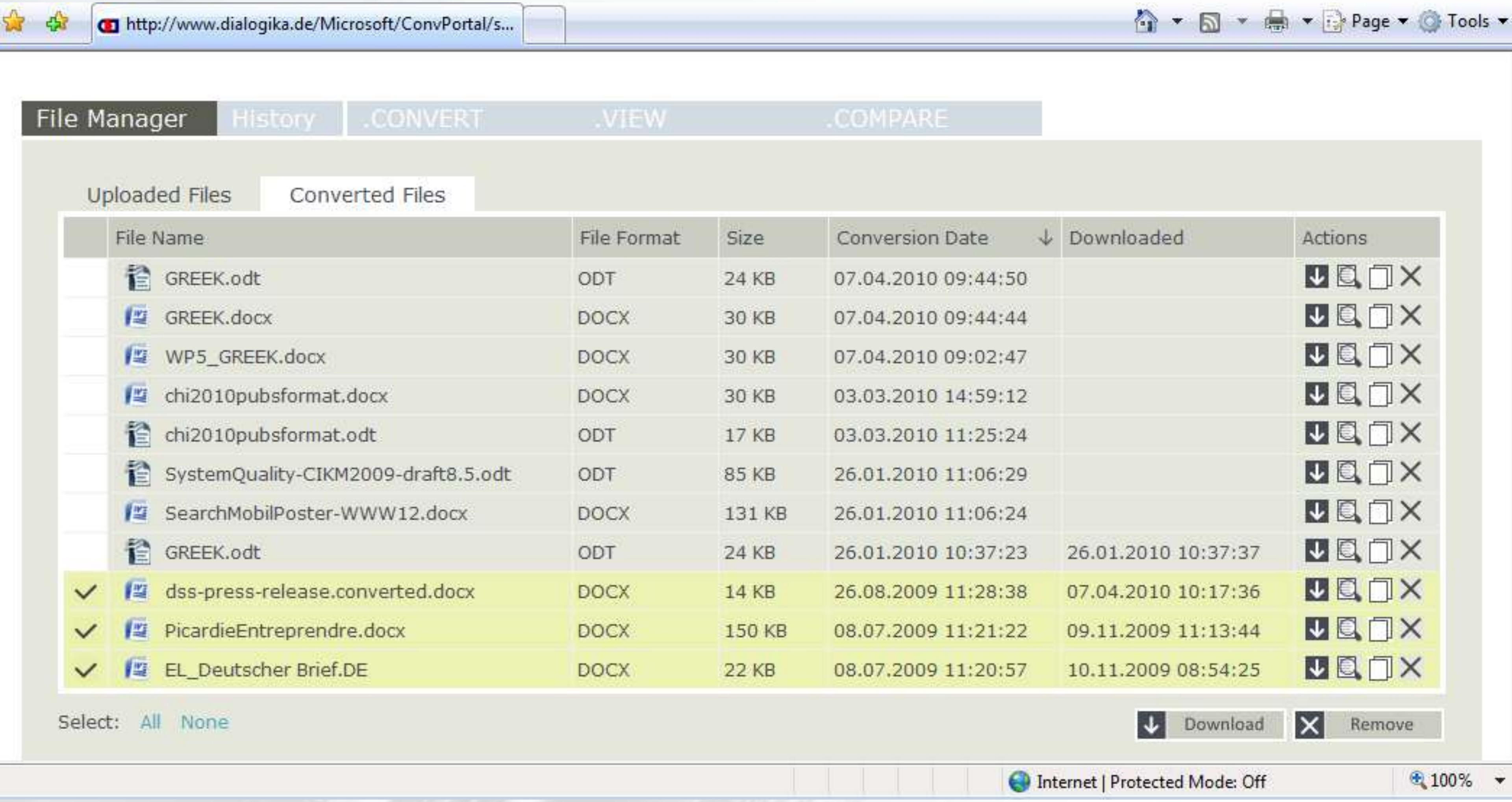
Thank you for using DOC Conversion Services!
Please find attached your converted document.

Do you want MORE?
Register for our service now. It's free!

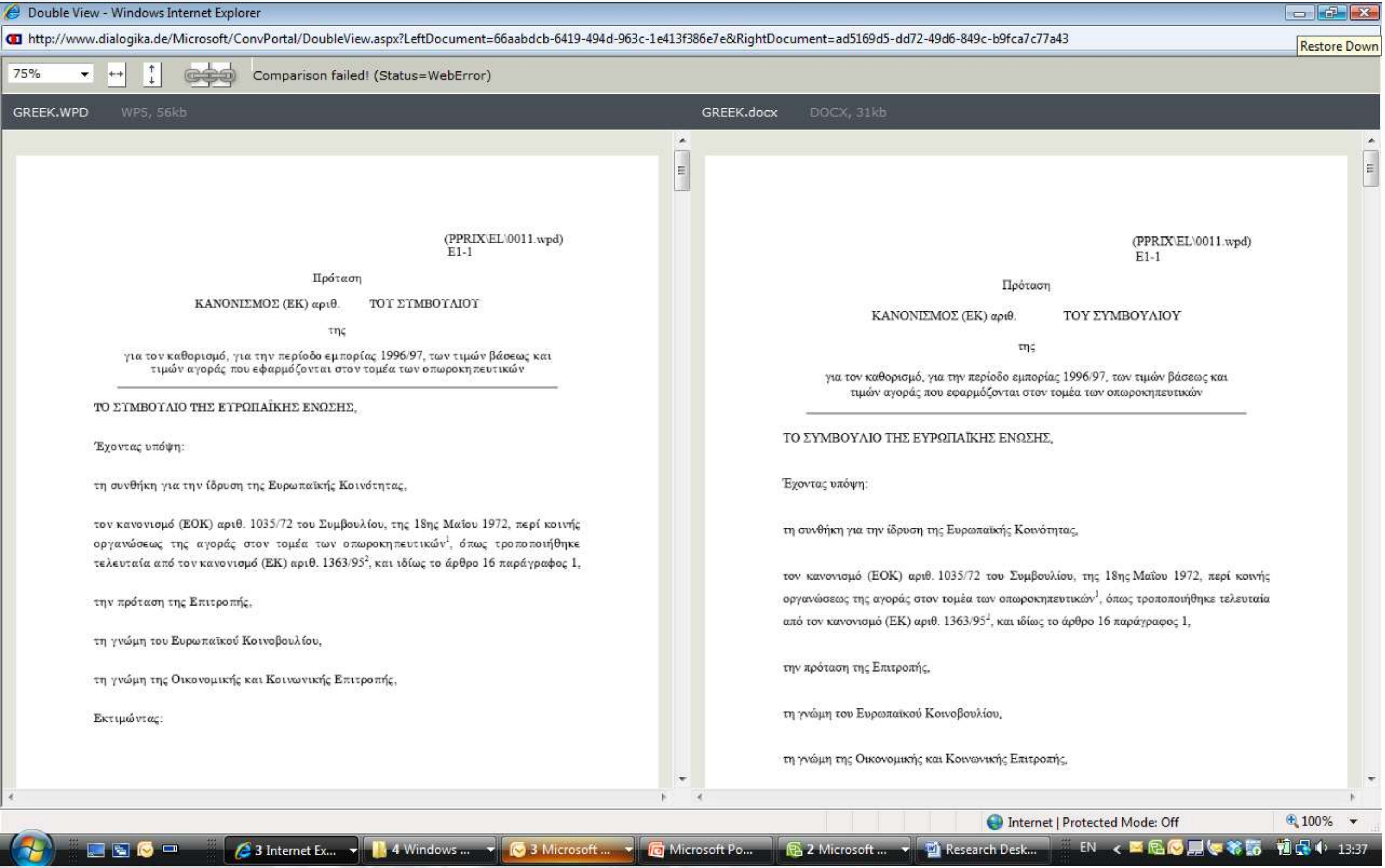
- view, convert and compare documents online
- convert up to 200 MB at a time
- store documents for up to 30 days
- share documents with friends and collegues

Register online for free!

Conversion service



	File Name	File Format	Size	Conversion Date ↓	Downloaded	Actions
	GREEK.odt	ODT	24 KB	07.04.2010 09:44:50		↓ 🔍 ❐ ✕
	GREEK.docx	DOCX	30 KB	07.04.2010 09:44:44		↓ 🔍 ❐ ✕
	WP5_GREEK.docx	DOCX	30 KB	07.04.2010 09:02:47		↓ 🔍 ❐ ✕
	chi2010pubsformat.docx	DOCX	30 KB	03.03.2010 14:59:12		↓ 🔍 ❐ ✕
	chi2010pubsformat.odt	ODT	17 KB	03.03.2010 11:25:24		↓ 🔍 ❐ ✕
	SystemQuality-CIKM2009-draft8.5.odt	ODT	85 KB	26.01.2010 11:06:29		↓ 🔍 ❐ ✕
	SearchMobilPoster-WWW12.docx	DOCX	131 KB	26.01.2010 11:06:24		↓ 🔍 ❐ ✕
	GREEK.odt	ODT	24 KB	26.01.2010 10:37:23	26.01.2010 10:37:37	↓ 🔍 ❐ ✕
✓	dss-press-release.converted.docx	DOCX	14 KB	26.08.2009 11:28:38	07.04.2010 10:17:36	↓ 🔍 ❐ ✕
✓	PicardieEntreprendre.docx	DOCX	150 KB	08.07.2009 11:21:22	09.11.2009 11:13:44	↓ 🔍 ❐ ✕
✓	EL_Deutscher Brief.DE	DOCX	22 KB	08.07.2009 11:20:57	10.11.2009 08:54:25	↓ 🔍 ❐ ✕



http://www.dialogika.de/Microsoft/ConvPortal/DoubleView.aspx?LeftDocument=66aabdcb-6419-494d-963c-1e413f386e7e&RightDocument=ad5169d5-dd72-49d6-849c-b9fca7c77a43

Comparison failed! (Status=WebError)

GREEK.WPD WPS, 56kb

(PPRIX\EL\0011.wpd)
E1-1

Πρόταση

ΚΑΝΟΝΙΣΜΟΣ (ΕΚ) αριθ. ΤΟΤ ΣΤΜΒΟΤΛΙΟΤ

της

για τον καθορισμό, για την περίοδο εμπορίας 1996/97, των τιμών βάσεως και τιμών αγοράς που εφαρμόζονται στον τομέα των οπωροκηπευτικών

ΤΟ ΣΤΜΒΟΤΛΙΟ ΤΗΣ ΕΤΡΩΠΑΪΚΗΣ ΕΝΩΣΗΣ,

Έχοντας υπόψη:

τη συνθήκη για την ίδρυση της Ευρωπαϊκής Κοινότητας,

τον κανονισμό (ΕΟΚ) αριθ. 1035/72 του Συμβουλίου, της 18ης Μαΐου 1972, περί κοινής οργανώσεως της αγοράς στον τομέα των οπωροκηπευτικών[1], όπως τροποποιήθηκε τελευταία από τον κανονισμό (ΕΚ) αριθ. 1363/95[2], και ιδίως το άρθρο 16 παράγραφος 1,

την πρόταση της Επιτροπής,

τη γνώμη του Ευρωπαϊκού Κοινοβουλίου,

τη γνώμη της Οικονομικής και Κοινωνικής Επιτροπής,

Εκτιμώντας:

GREEK.docx DOCX, 31kb

(PPRIX\EL\0011.wpd)
E1-1

Πρόταση

ΚΑΝΟΝΙΣΜΟΣ (ΕΚ) αριθ. ΤΟΥ ΣΥΜΒΟΥΛΙΟΥ

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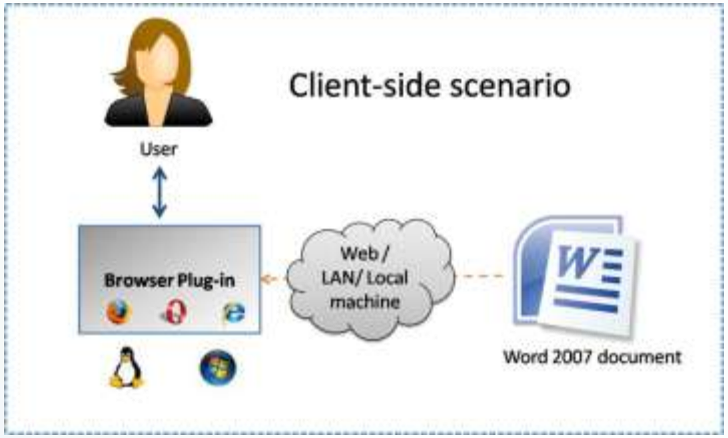
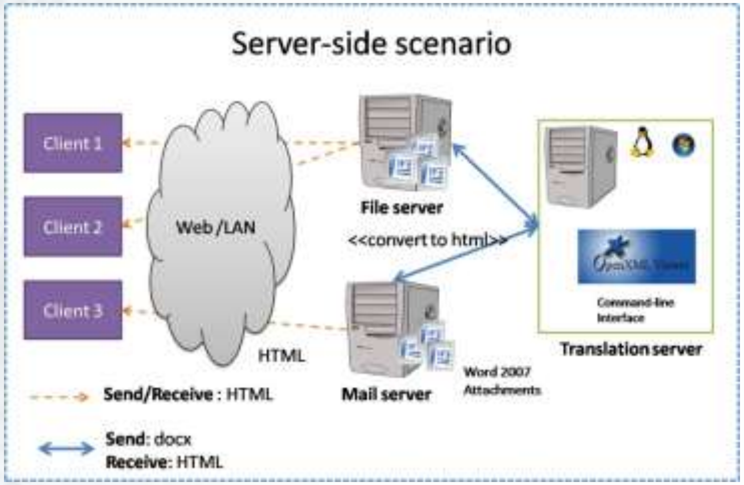
τη γνώμη της Οικονομικής και Κοινωνικής Επιτροπής,

Open XML to HTML Translator Overview

- Resulted from direct feedback from the Document Interoperability Initiative
- The main goal of the OpenXML Document Viewer project is to create software tools, plus guidance, showing how documents created using Open XML Format can be translated to HTML
- The OpenXML Viewer is available under the open source Microsoft Public License (Ms-PL)





Open XML to HTML Translation Steps

Unzip the document

Parse docx into single XML

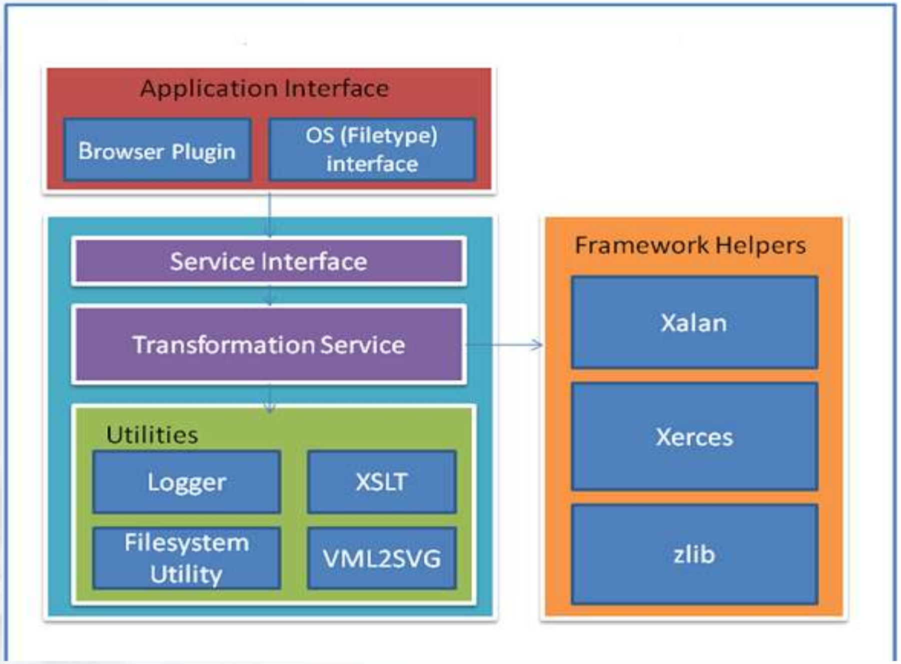
Pre-process parsed XML

Convert VML to SVG

Apply XSL Transforms

Open XML to HTML Translator Architecture

- Application Interface allows transformation engine to be leveraged across multiple browsers and operating systems
- Transformation Service provides a reusable core engine
- Utility classes provide support functions including XSL transformation, which does the bulk of the heavy lifting



More information

- Microsoft Interoperability Blog
  - http://blogs.msdn.com/interoperability
- Open XML Projects
  - HTML Translator – http://openxmlviewer.codeplex.com
  - ODF Translator – http://odf-converter.sourceforge.net
  - Binary Translator – http://b2xtranslator.sourceforge.net

Digital Library Application Integration

Evolve from DLs being a ‘place’ where one goes to store/discover digital objects

to

the DL as a set of services woven into the tools & workflows of the researcher

SWORD Protocol

<sword />

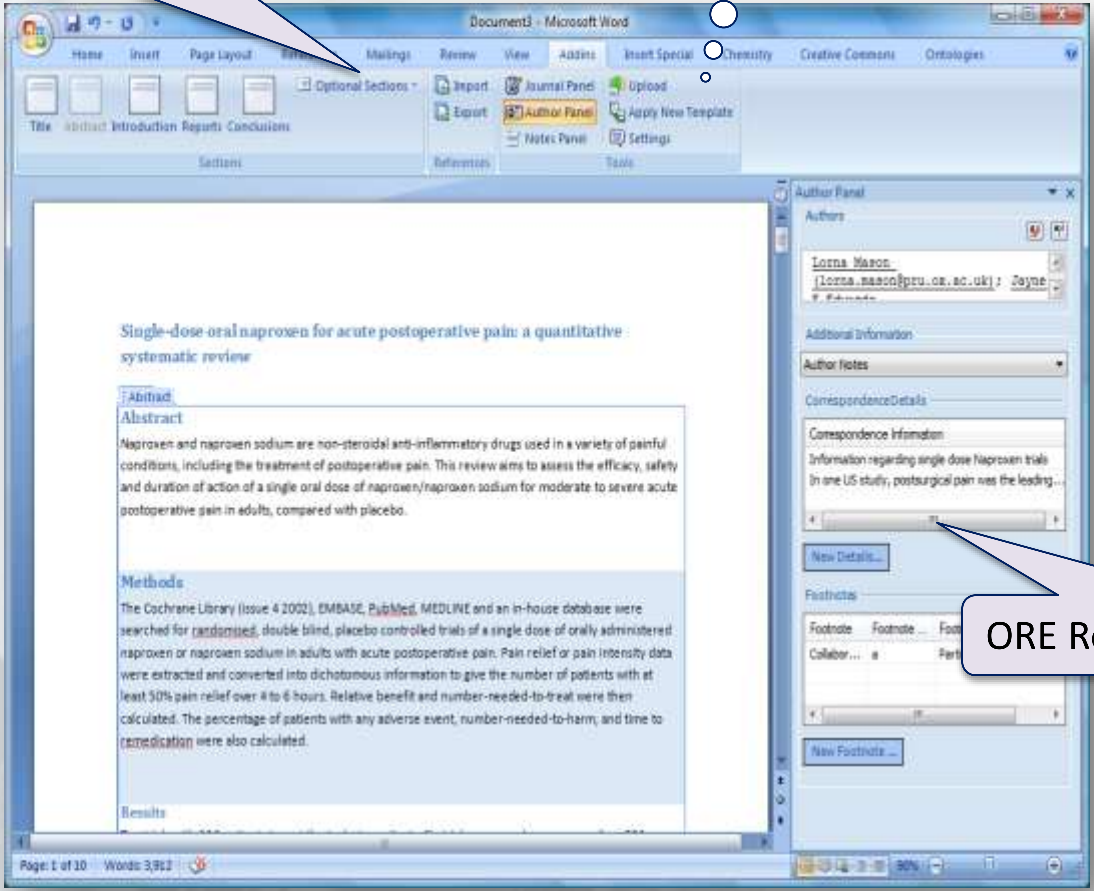
JISC PROJECT

Facilitating Deposit

Article Authoring Add-in for Word

Read, convert, and author NLM XML documents

Repository deposit via SWORD



Single-dose oral naproxen for acute postoperative pain: a quantitative systematic review

Abstract

Naproxen and naproxen sodium are non-steroidal anti-inflammatory drugs used in a variety of painful conditions, including the treatment of postoperative pain. This review aims to assess the efficacy, safety and duration of action of a single oral dose of naproxen/naproxen sodium for moderate to severe acute postoperative pain in adults, compared with placebo.

Methods

The Cochrane Library (issue 4 2002), EMBASE, PubMed, MEDLINE and an in-house database were searched for randomised, double blind, placebo controlled trials of a single dose of orally administered naproxen or naproxen sodium in adults with acute postoperative pain. Pain relief or pain intensity data were extracted and converted into dichotomous information to give the number of patients with at least 50% pain relief over 4 to 6 hours. Relative benefit and number-needed-to-treat were then calculated. The percentage of patients with any adverse event, number-needed-to-harm, and time to remedication were also calculated.

Results

Lorna Mason (lorna.mason@pru.ox.ac.uk); Jayne

Correspondence Information
Information regarding single dose Naproxen trials
In one US study, postsurgical pain was the leading...

Footnote	Footnote ...	Foo
Collabor...	a	Fert

ORE Resource Map creation

v.2 beta 3: http://research.microsoft.com/authoring/

SWORD client for SharePoint

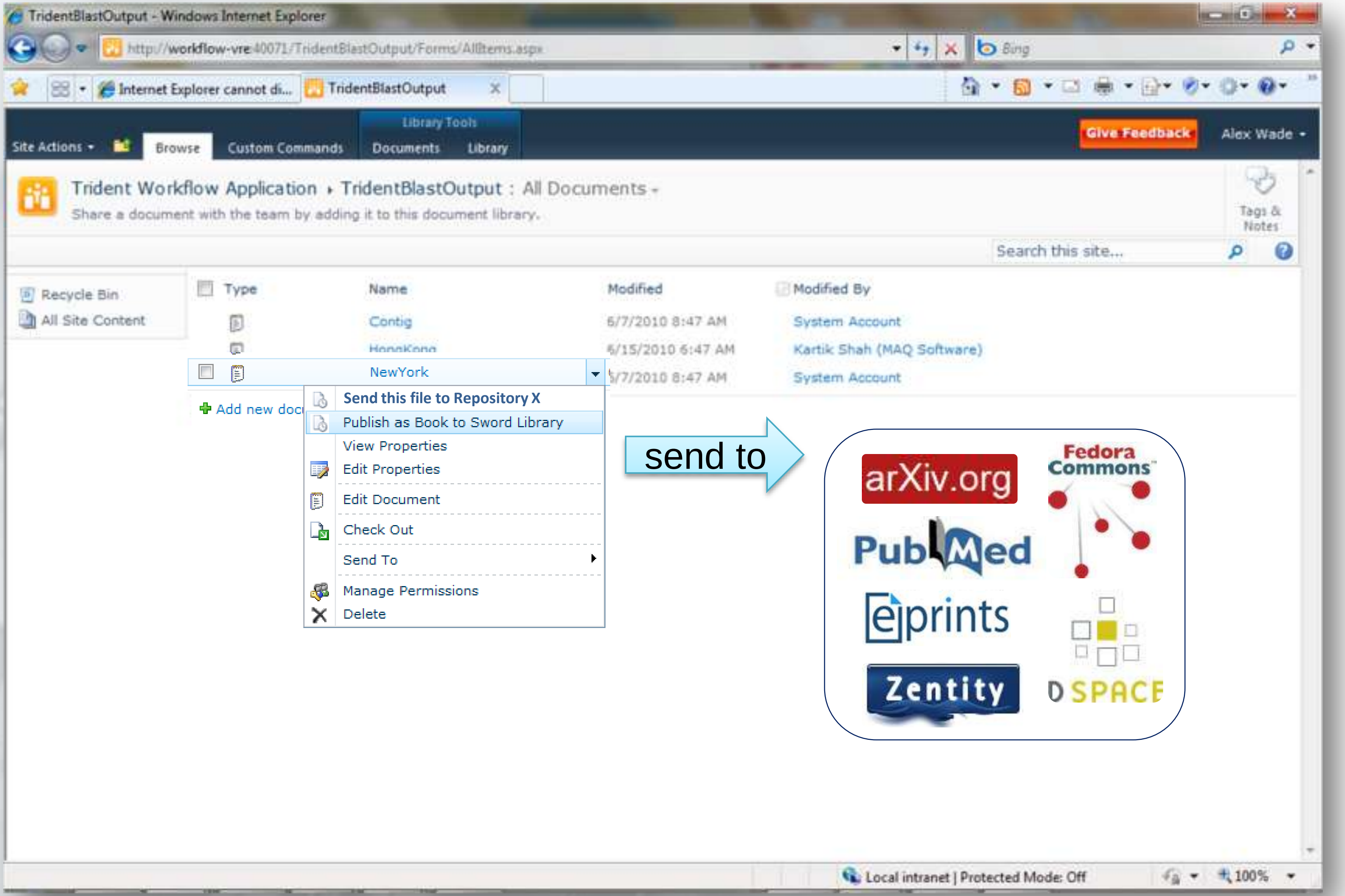
From a SharePoint site researchers can…

Select any file stored in SharePoint:

- Document
- Presentation
- Image
- Data files

and publish it to any repository (via SWORD)

- SWORD endpoints are managed as a custom list, so new locations are easily added



Trident Workflow Application › TridentBlastOutput : All Documents

Share a document with the team by adding it to this document library.

Type	Name	Modified	Modified By
	Contig	6/7/2010 8:47 AM	System Account
	HongKong	6/15/2010 6:47 AM	Kartik Shah (MAQ Software)
	NewYork	6/7/2010 8:47 AM	System Account

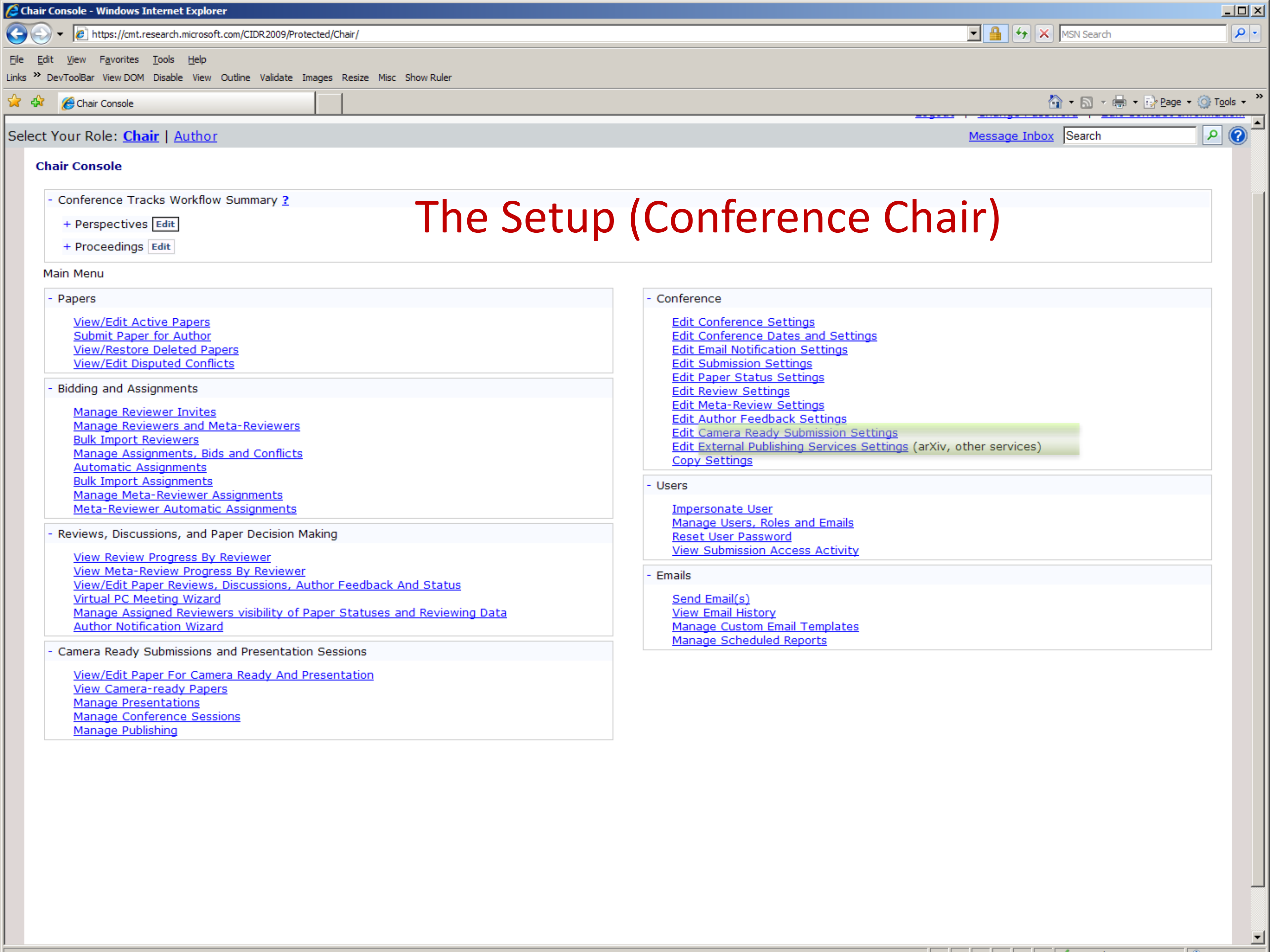
send to

Conference Management Tool

http://cmt.research.microsoft.com

CMT to arXiv via SWORD

The Setup (Conference Chair)


Chair Console - Windows Internet Explorer
https://cmt.research.microsoft.com/CIDR2009/Protected/Chair/
MSN Search
File Edit View Favorites Tools Help
Links DevToolBar View DOM Disable View Outline Validate Images Resize Misc Show Ruler
Chair Console
Page Tools

Select Your Role: **Chair** | Author

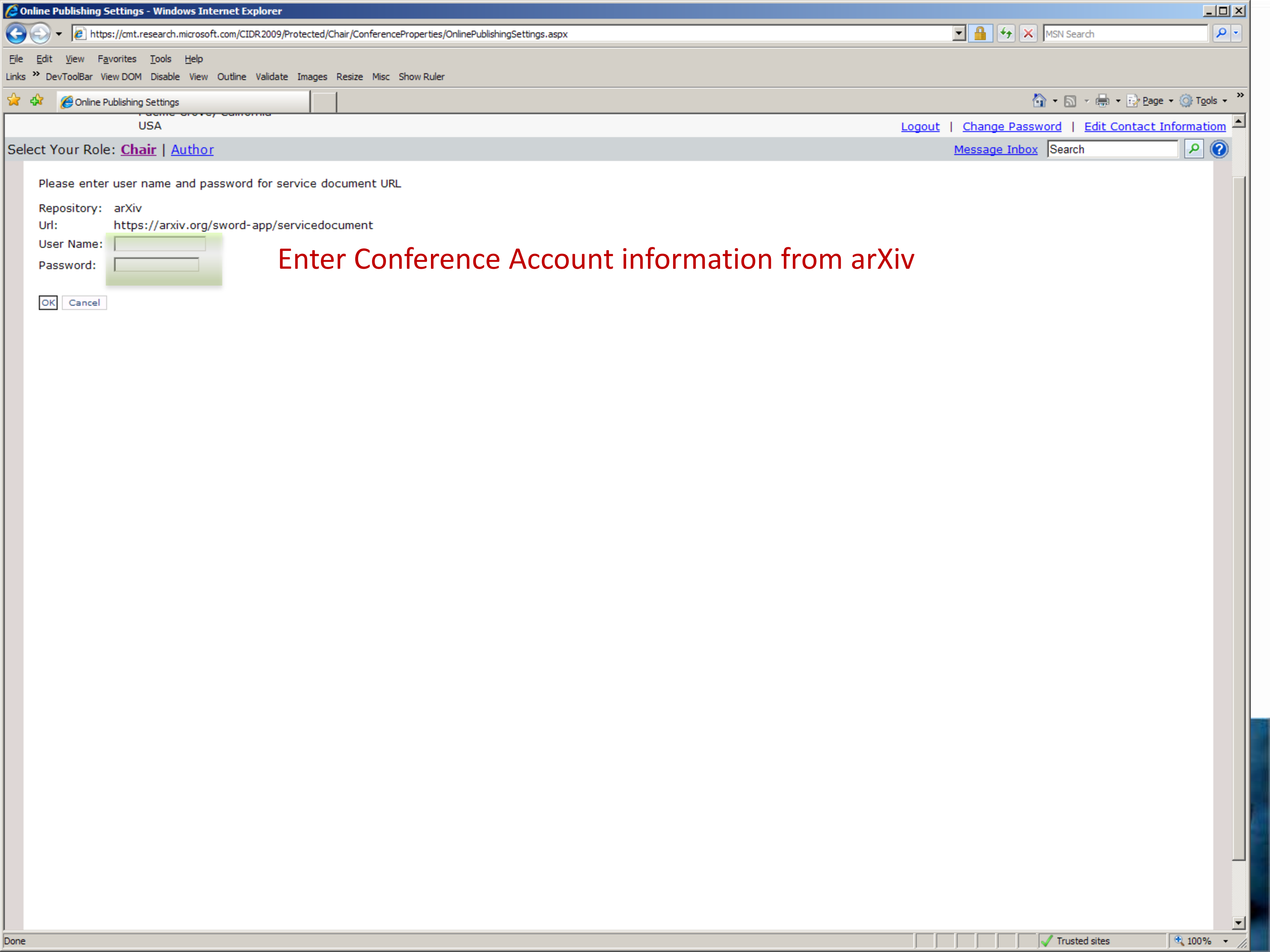
Message Inbox Search

Chair Console

- Conference Tracks Workflow Summary ?
  - + Perspectives Edit
  - + Proceedings Edit

Main Menu

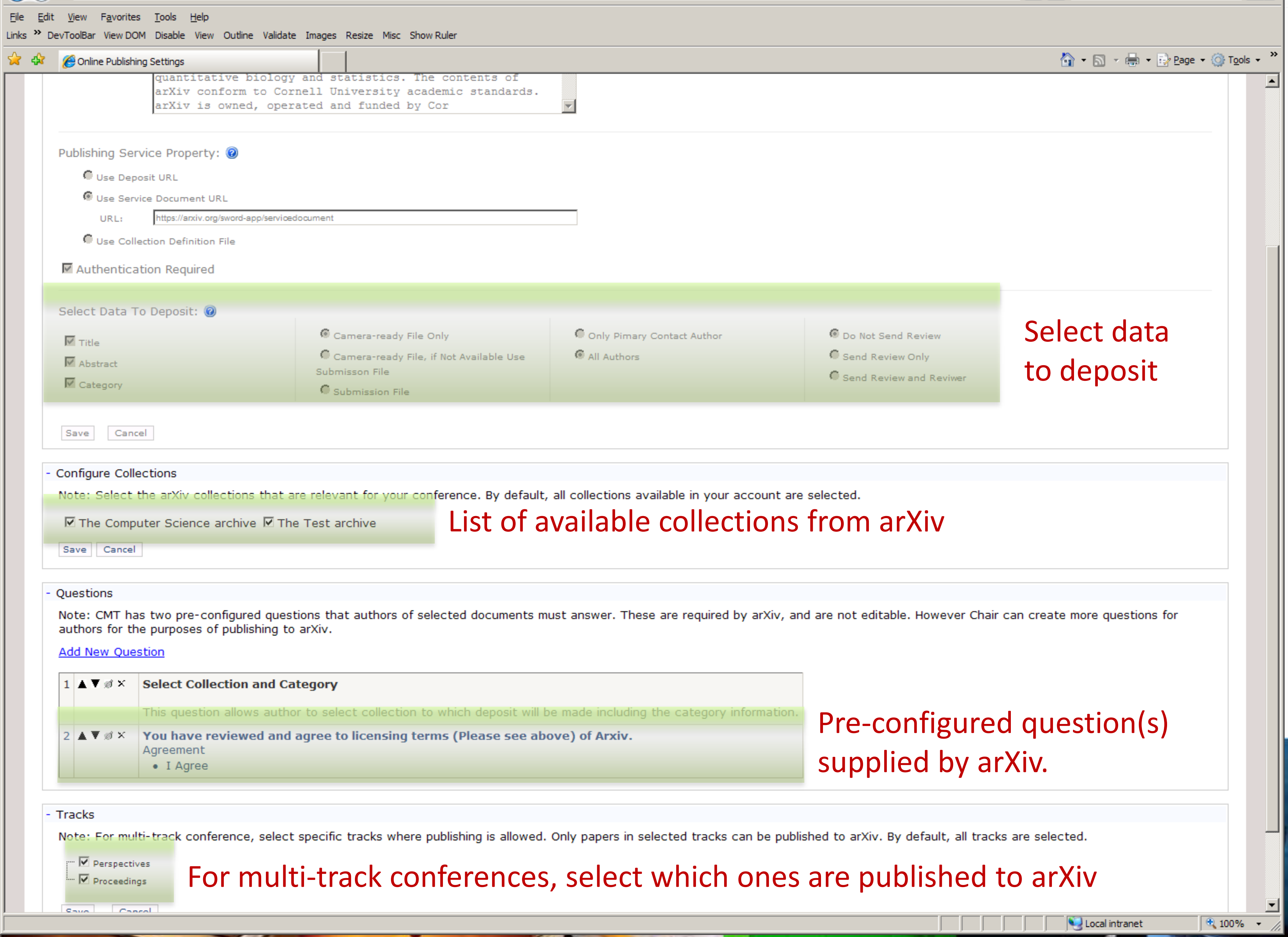
- Papers
  - View/Edit Active Papers
  - Submit Paper for Author
  - View/Restore Deleted Papers
  - View/Edit Disputed Conflicts
- Bidding and Assignments
  - Manage Reviewer Invites
  - Manage Reviewers and Meta-Reviewers
  - Bulk Import Reviewers
  - Manage Assignments, Bids and Conflicts
  - Automatic Assignments
  - Bulk Import Assignments
  - Manage Meta-Reviewer Assignments
  - Meta-Reviewer Automatic Assignments
- Reviews, Discussions, and Paper Decision Making
  - View Review Progress By Reviewer
  - View Meta-Review Progress By Reviewer
  - View/Edit Paper Reviews, Discussions, Author Feedback And Status
  - Virtual PC Meeting Wizard
  - Manage Assigned Reviewers visibility of Paper Statuses and Reviewing Data
  - Author Notification Wizard
- Camera Ready Submissions and Presentation Sessions
  - View/Edit Paper For Camera Ready And Presentation
  - View Camera-ready Papers
  - Manage Presentations
  - Manage Conference Sessions
  - Manage Publishing
- Conference
  - Edit Conference Settings
  - Edit Conference Dates and Settings
  - Edit Email Notification Settings
  - Edit Submission Settings
  - Edit Paper Status Settings
  - Edit Review Settings
  - Edit Meta-Review Settings
  - Edit Author Feedback Settings
  - Edit Camera Ready Submission Settings
  - Edit External Publishing Services Settings (arXiv, other services)
  - Copy Settings
- Users
  - Impersonate User
  - Manage Users, Roles and Emails
  - Reset User Password
  - View Submission Access Activity
- Emails
  - Send Email(s)
  - View Email History
  - Manage Custom Email Templates
  - Manage Scheduled Reports


Online Publishing Settings - Windows Internet Explorer
https://cmt.research.microsoft.com/CIDR2009/Protected/Chair/ConferenceProperties/OnlinePublishingSettings.aspx
MSN Search
File
Edit
View
Favorites
Tools
Help
Links
DevToolBar
View DOM
Disable
View
Outline
Validate
Images
Resize
Misc
Show Ruler
Online Publishing Settings
Page
Tools
USA
Logout | Change Password | Edit Contact Information
Select Your Role: Chair | Author
Message Inbox
Search
OK
Cancel
Done
Trusted sites
100%

Please enter user name and password for service document URL

Repository: arXiv
Url: https://arxiv.org/sword-app/servicedocument
User Name:
Password:

Enter Conference Account information from arXiv



File Edit View Favorites Tools Help
Links DevToolBar View DOM Disable View Outline Validate Images Resize Misc Show Ruler
Online Publishing Settings
Page Tools
Local intranet
100%

quantitative biology and statistics. The contents of
arXiv conform to Cornell University academic standards.
arXiv is owned, operated and funded by Cor

Publishing Service Property:

○ Use Deposit URL
● Use Service Document URL
URL: https://arxiv.org/sword-app/servicedocument
○ Use Collection Definition File

☑ Authentication Required

Select Data To Deposit:

☑ Title
☑ Abstract
☑ Category

● Camera-ready File Only
○ Camera-ready File, if Not Available Use Submisson File
○ Submission File

○ Only Pimary Contact Author
● All Authors

● Do Not Send Review
○ Send Review Only
○ Send Review and Reviwer

Save Cancel

Select data to deposit

- Configure Collections

Note: Select the arXiv collections that are relevant for your conference. By default, all collections available in your account are selected.

☑ The Computer Science archive ☑ The Test archive

Save Cancel

List of available collections from arXiv

- Questions

Note: CMT has two pre-configured questions that authors of selected documents must answer. These are required by arXiv, and are not editable. However Chair can create more questions for authors for the purposes of publishing to arXiv.

Add New Question

1 **Select Collection and Category**
This question allows author to select collection to which deposit will be made including the category information.

2 **You have reviewed and agree to licensing terms (Please see above) of Arxiv.**
Agreement
- I Agree

Pre-configured question(s) supplied by arXiv.

- Tracks

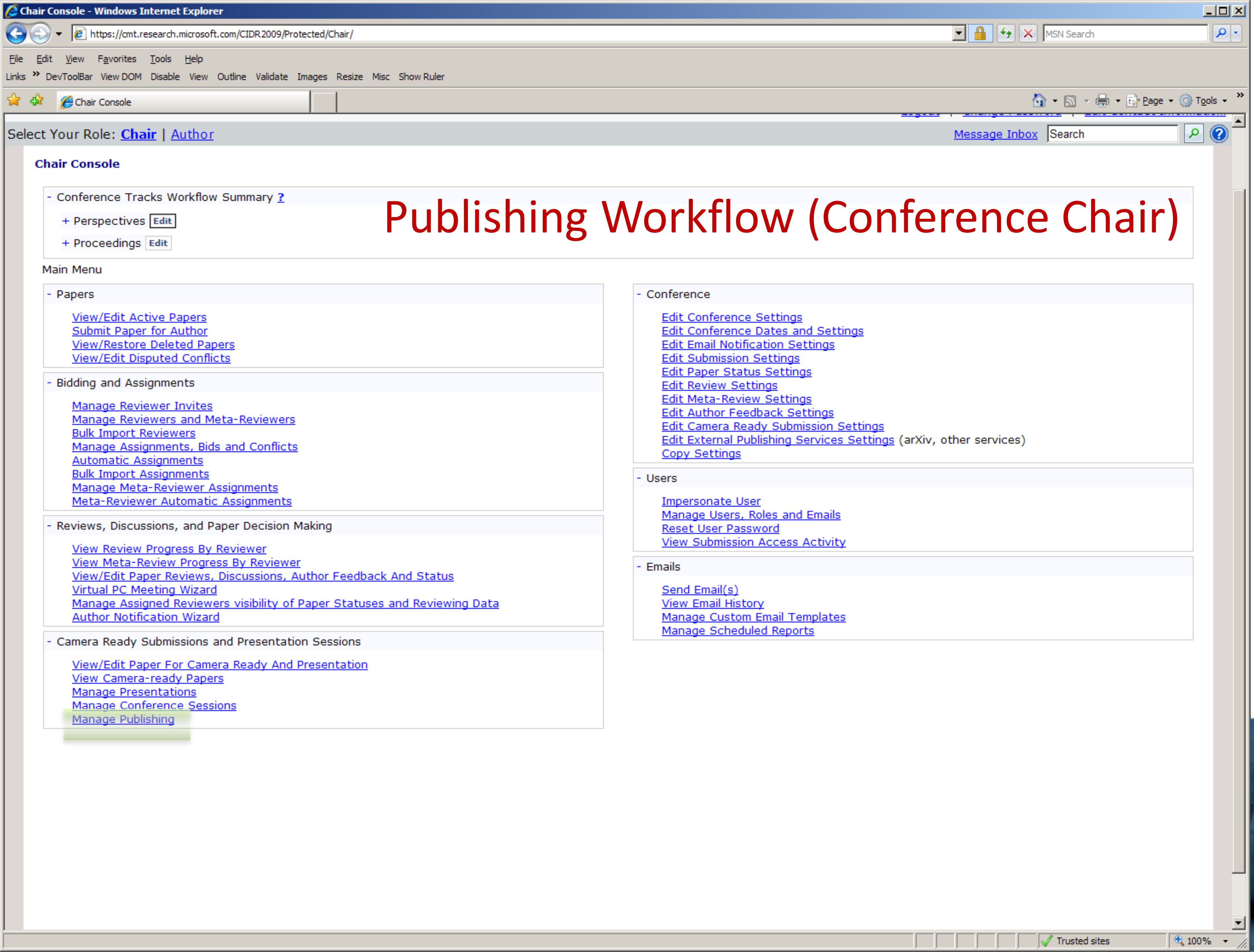
Note: For multi-track conference, select specific tracks where publishing is allowed. Only papers in selected tracks can be published to arXiv. By default, all tracks are selected.

☑ Perspectives
☑ Proceedings

Save Cancel

For multi-track conferences, select which ones are published to arXiv

Publishing Workflow (Conference Chair)


Chair Console - Windows Internet Explorer
https://cmt.research.microsoft.com/CIDR2009/Protected/Chair/
MSN Search
File Edit View Favorites Tools Help
Links DevToolBar View DOM Disable View Outline Validate Images Resize Misc Show Ruler
Chair Console
Page Tools
Trusted sites
100%

Select Your Role: **Chair** | Author

Message Inbox Search

Chair Console

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  - + Perspectives Edit
  - + Proceedings Edit

Main Menu

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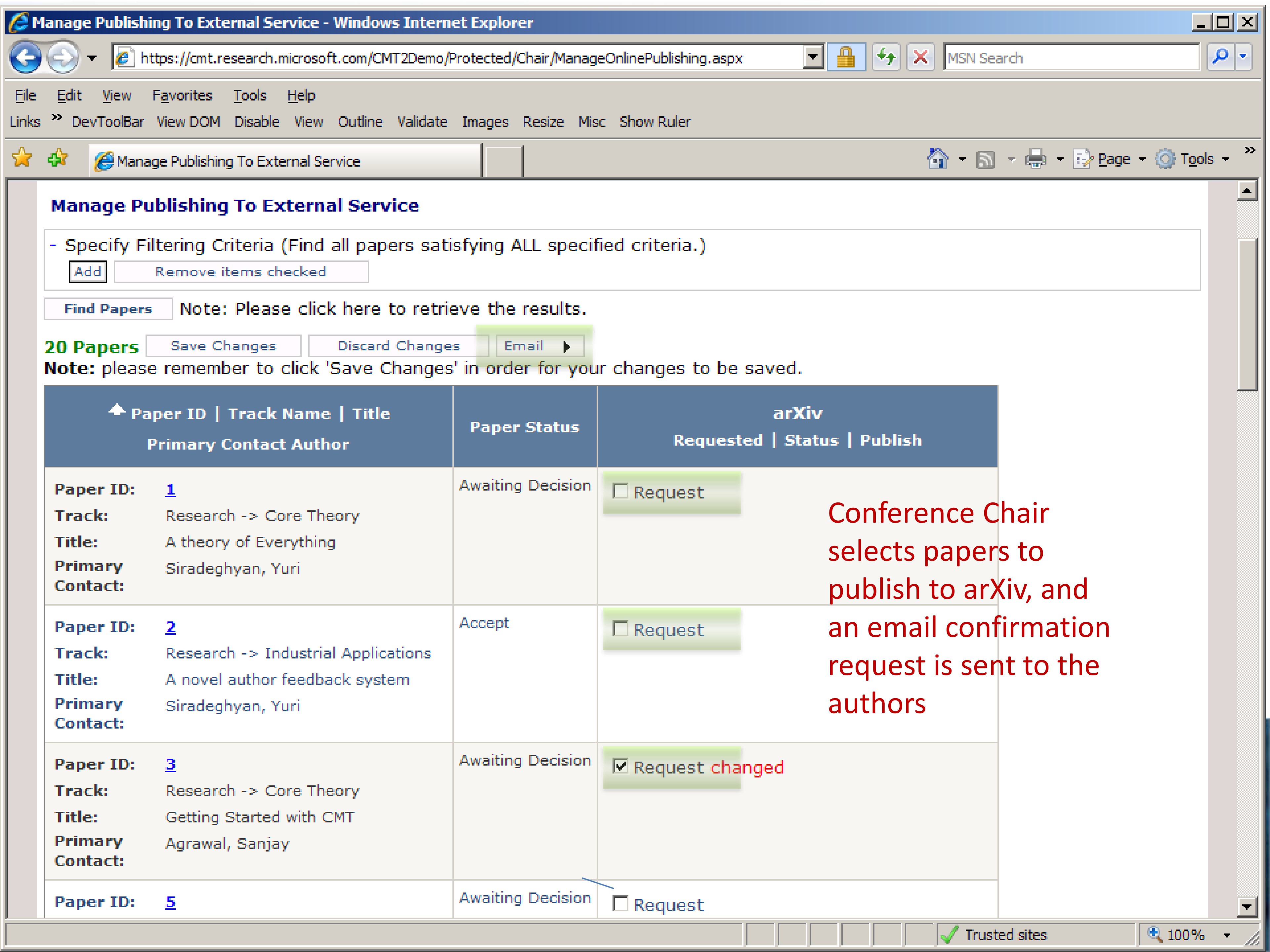
  - Automatic Assignments
  - Bulk Import Assignments
  - Manage Meta-Reviewer Assignments
  - Meta-Reviewer Automatic Assignments
- Reviews, Discussions, and Paper Decision Making
  - View Review Progress By Reviewer
  - View Meta-Review Progress By Reviewer
  - View/Edit Paper Reviews, Discussions, Author Feedback And Status
  - Virtual PC Meeting Wizard
  - Manage Assigned Reviewers visibility of Paper Statuses and Reviewing Data
  - Author Notification Wizard
- Camera Ready Submissions and Presentation Sessions
  - View/Edit Paper For Camera Ready And Presentation
  - View Camera-ready Papers
  - Manage Presentations
  - Manage Conference Sessions
  - Manage Publishing
- Conference
  - Edit Conference Settings
  - Edit Conference Dates and Settings
  - Edit Email Notification Settings
  - Edit Submission Settings
  - Edit Paper Status Settings
  - Edit Review Settings
  - Edit Meta-Review Settings
  - Edit Author Feedback Settings
  - Edit Camera Ready Submission Settings
  - Edit External Publishing Services Settings (arXiv, other services)
  - Copy Settings
- Users
  - Impersonate User
  - Manage Users, Roles and Emails
  - Reset User Password
  - View Submission Access Activity
- Emails
  - Send Email(s)
  - View Email History
  - Manage Custom Email Templates
  - Manage Scheduled Reports


Manage Publishing To External Service - Windows Internet Explorer
https://cmt.research.microsoft.com/CMT2Demo/Protected/Chair/ManageOnlinePublishing.aspx
MSN Search
File
Edit
View
Favorites
Tools
Help
Links
DevToolBar
View DOM
Disable
View
Outline
Validate
Images
Resize
Misc
Show Ruler
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Page
Tools
Trusted sites
100%

Manage Publishing To External Service

- Specify Filtering Criteria (Find all papers satisfying ALL specified criteria.)

Add | Remove items checked

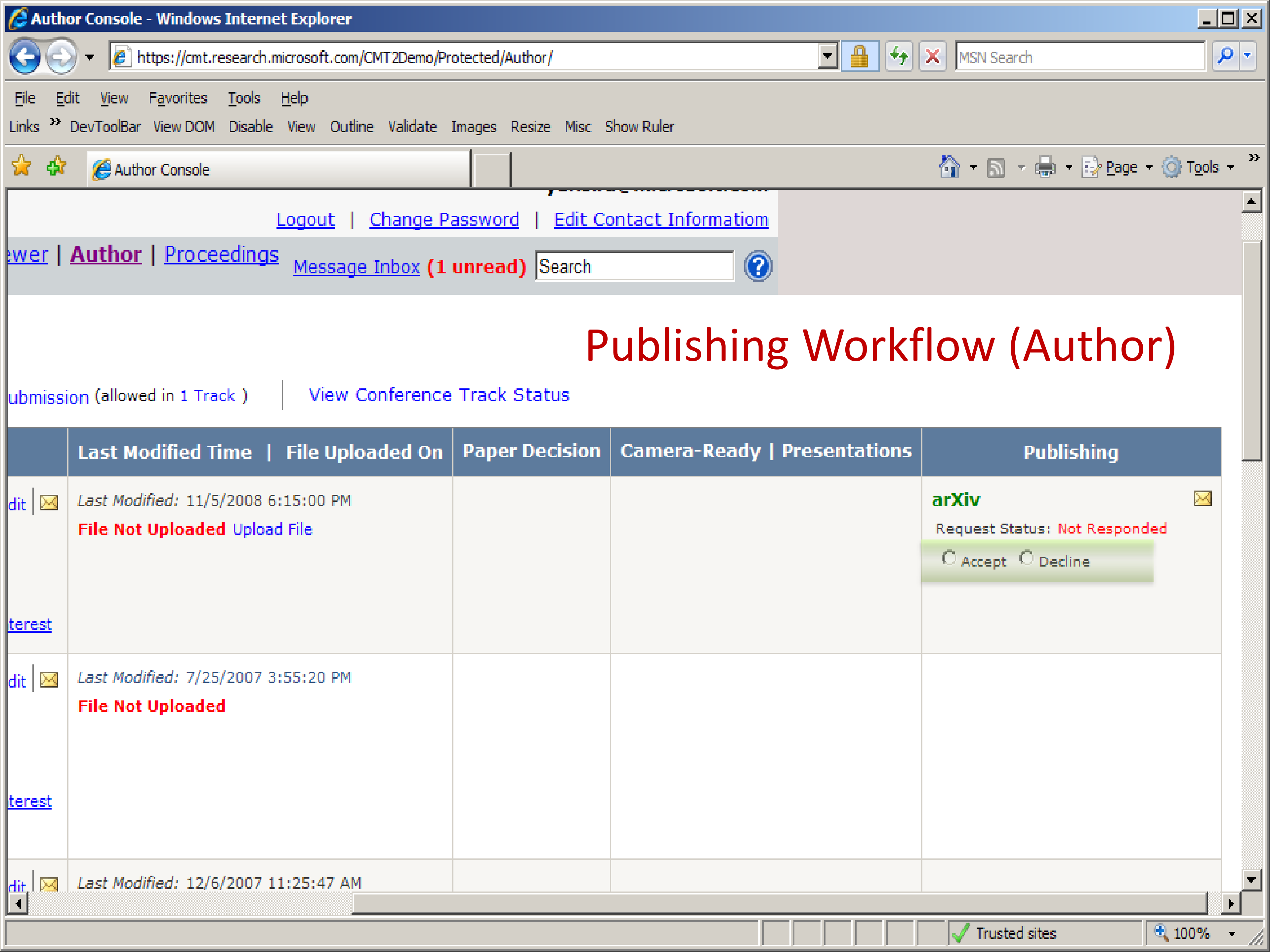
Find Papers Note: Please click here to retrieve the results.

20 Papers Save Changes | Discard Changes | Email ▸

Note: please remember to click 'Save Changes' in order for your changes to be saved.

Paper ID | Track Name | Title Primary Contact Author	Paper Status	arXiv Requested | Status | Publish
Paper ID: 1 **Track:** Research -> Core Theory **Title:** A theory of Everything **Primary Contact:** Siradeghyan, Yuri	Awaiting Decision	☐ Request
Paper ID: 2 **Track:** Research -> Industrial Applications **Title:** A novel author feedback system **Primary Contact:** Siradeghyan, Yuri	Accept	☐ Request
Paper ID: 3 **Track:** Research -> Core Theory **Title:** Getting Started with CMT **Primary Contact:** Agrawal, Sanjay	Awaiting Decision	☑ Request changed
Paper ID: 5	Awaiting Decision	☐ Request

Conference Chair selects papers to publish to arXiv, and an email confirmation request is sent to the authors



Author Console - Windows Internet Explorer
https://cmt.research.microsoft.com/CMT2Demo/Protected/Author/
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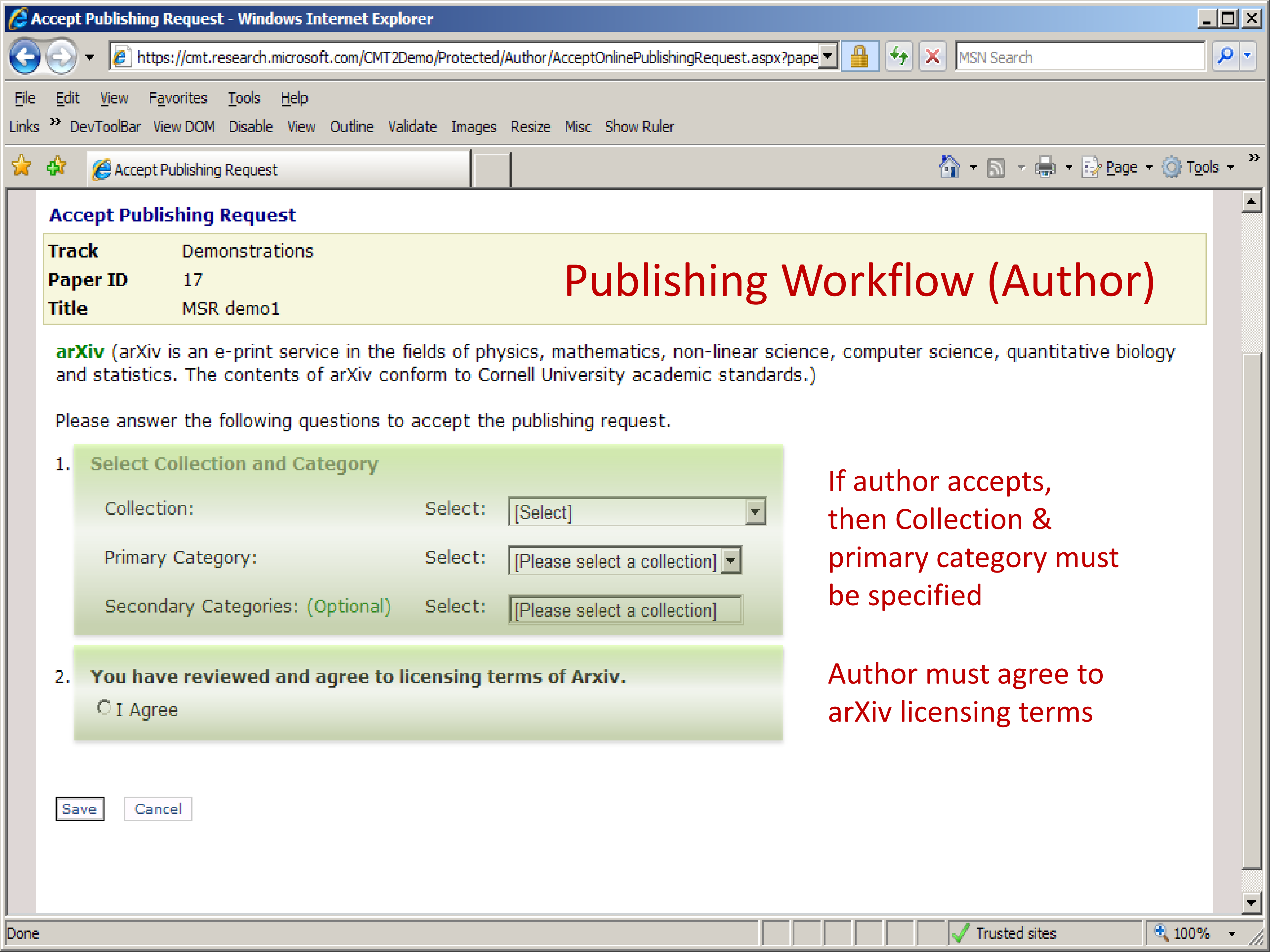
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Title	MSR demo1

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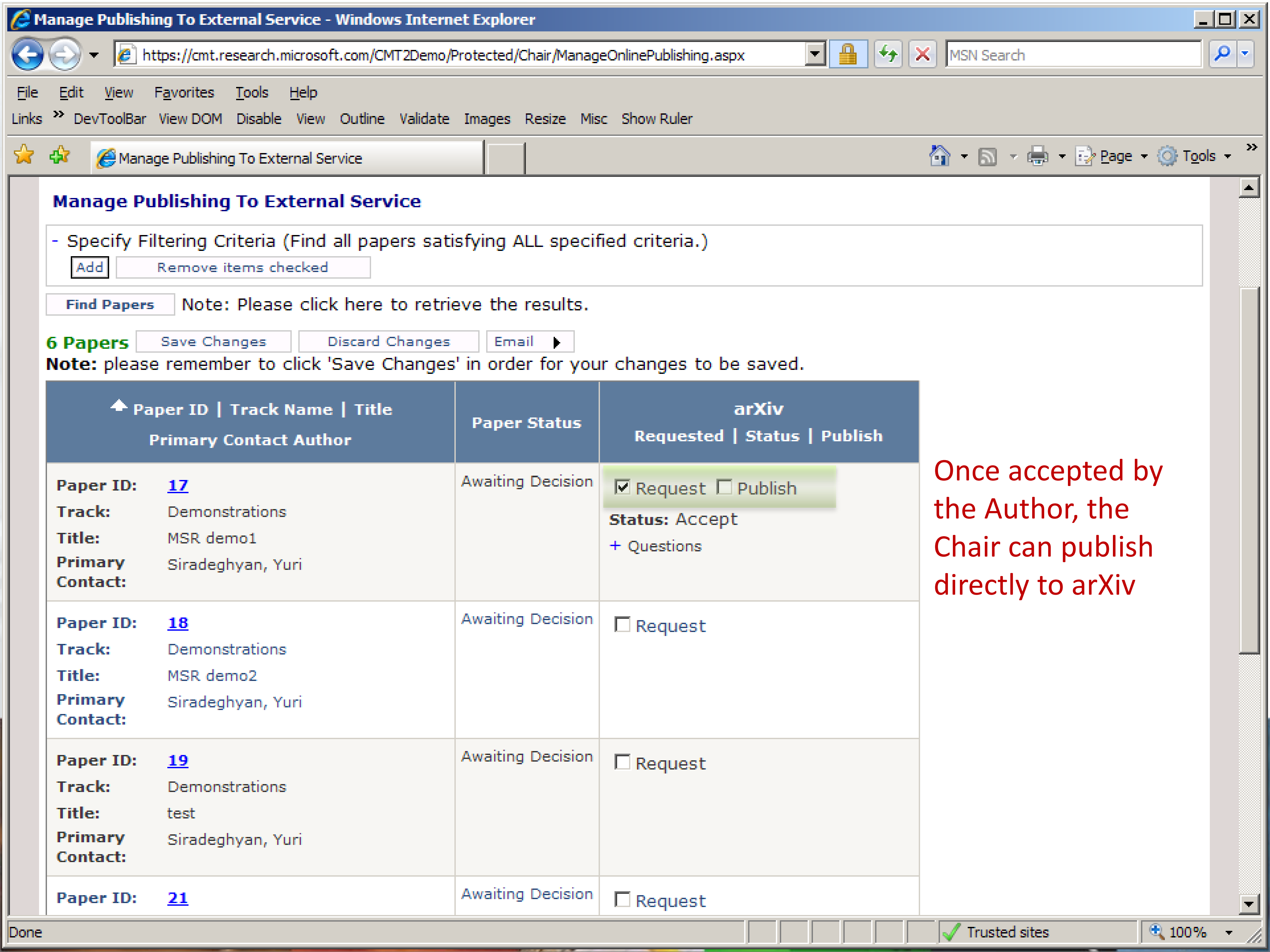
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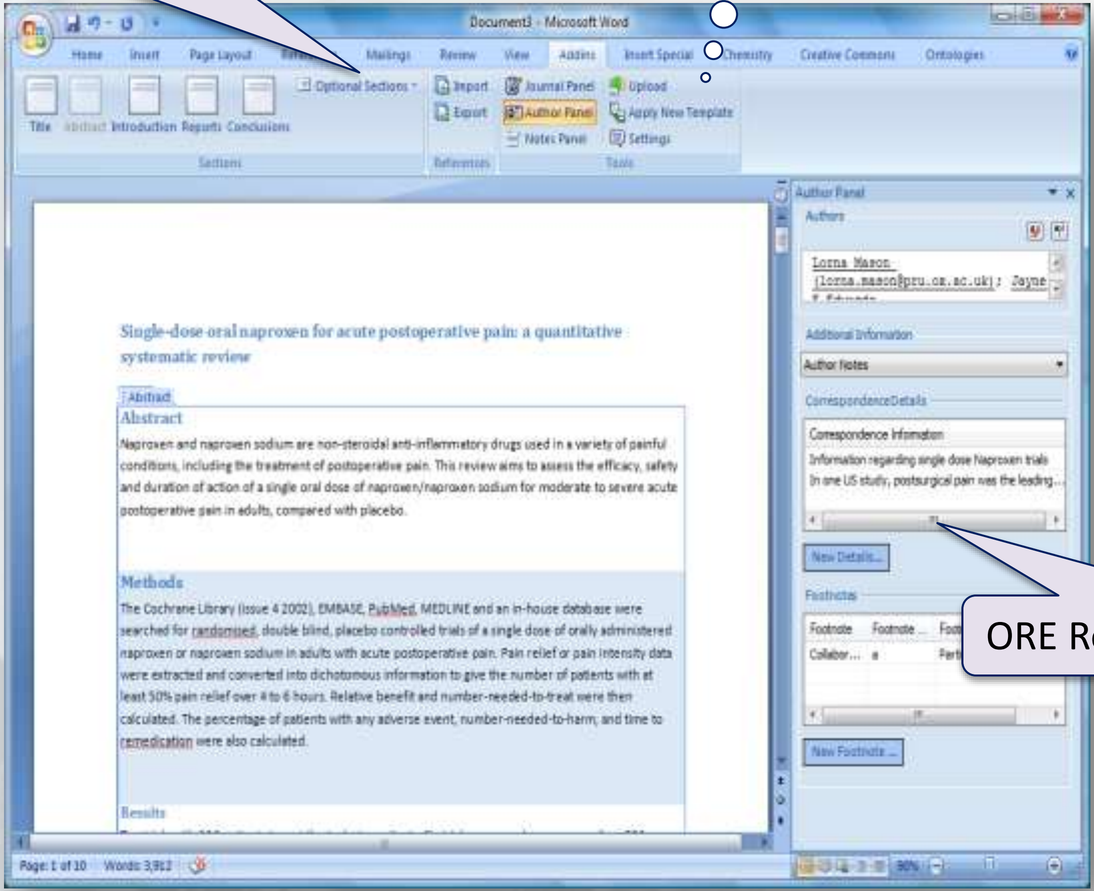

Lorna Mason (lorna.mason@pru.ox.ac.uk); Jayne

Information regarding single dose Naproxen trials

In one US study, postsurgical pain was the leading...

Single-dose oral naproxen for acute postoperative pain: a quantitative systematic review

Abstract

Naproxen and naproxen sodium are non-steroidal anti-inflammatory drugs used in a variety of painful conditions, including the treatment of postoperative pain. This review aims to assess the efficacy, safety and duration of action of a single oral dose of naproxen/naproxen sodium for moderate to severe acute postoperative pain in adults, compared with placebo.

Methods

The Cochrane Library (issue 4 2002), EMBASE, PubMed, MEDLINE and an in-house database were searched for randomised, double blind, placebo controlled trials of a single dose of orally administered naproxen or naproxen sodium in adults with acute postoperative pain. Pain relief or pain intensity data were extracted and converted into dichotomous information to give the number of patients with at least 50% pain relief over 4 to 6 hours. Relative benefit and number-needed-to-treat were then calculated. The percentage of patients with any adverse event, number-needed-to-harm, and time to remedication were also calculated.

Results

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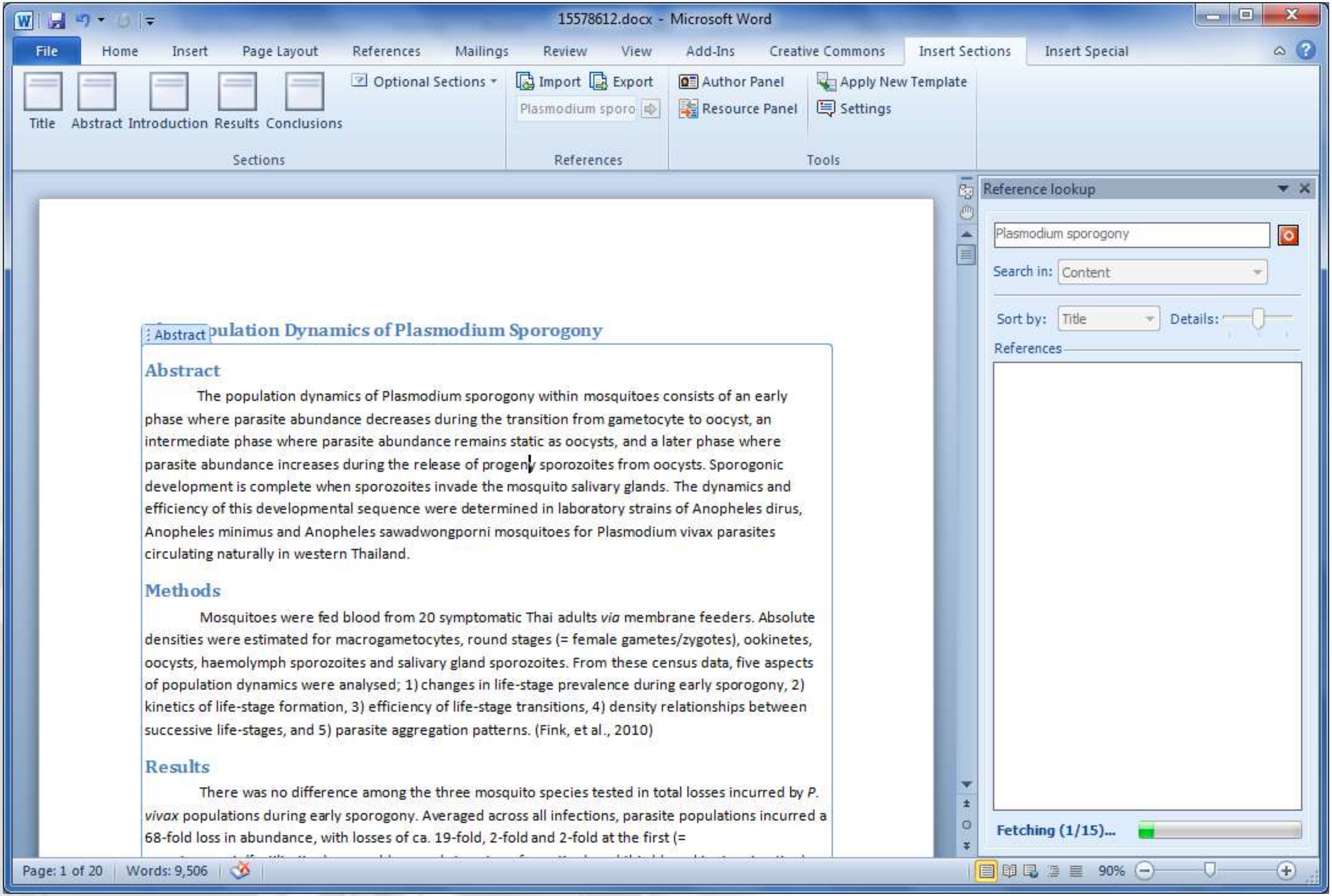

Plasmodium sporogony

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pulation Dynamics of Plasmodium Sporogony

Abstract

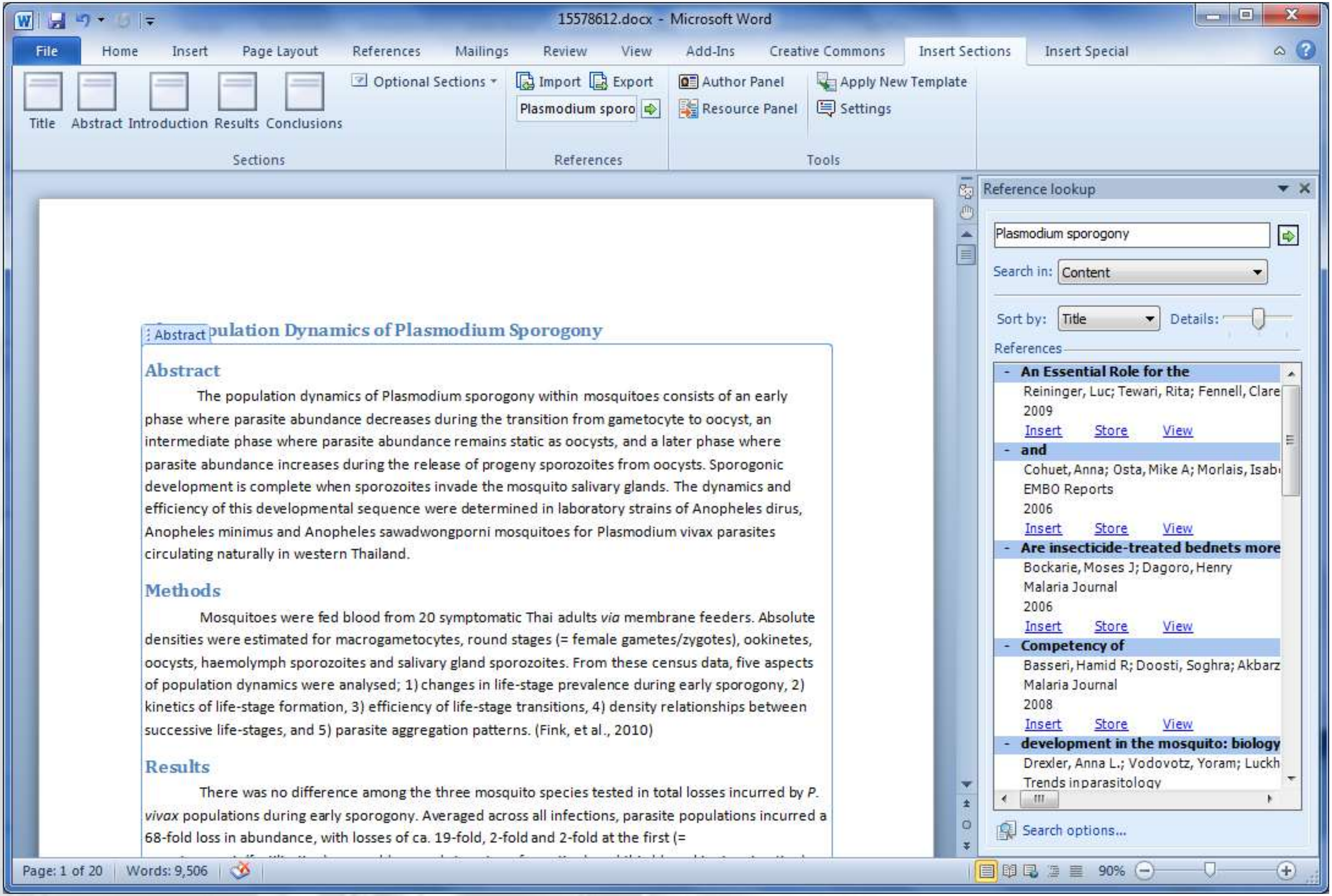
The population dynamics of Plasmodium sporogony within mosquitoes consists of an early phase where parasite abundance decreases during the transition from gametocyte to oocyst, an intermediate phase where parasite abundance remains static as oocysts, and a later phase where parasite abundance increases during the release of progeny sporozoites from oocysts. Sporogonic development is complete when sporozoites invade the mosquito salivary glands. The dynamics and efficiency of this developmental sequence were determined in laboratory strains of Anopheles dirus, Anopheles minimus and Anopheles sawadwongporni mosquitoes for Plasmodium vivax parasites circulating naturally in western Thailand.

Methods

Mosquitoes were fed blood from 20 symptomatic Thai adults *via* membrane feeders. Absolute densities were estimated for macrogametocytes, round stages (= female gametes/zygotes), ookinetes, oocysts, haemolymph sporozoites and salivary gland sporozoites. From these census data, five aspects of population dynamics were analysed; 1) changes in life-stage prevalence during early sporogony, 2) kinetics of life-stage formation, 3) efficiency of life-stage transitions, 4) density relationships between successive life-stages, and 5) parasite aggregation patterns. (Fink, et al., 2010)

Results

There was no difference among the three mosquito species tested in total losses incurred by *P. vivax* populations during early sporogony. Averaged across all infections, parasite populations incurred a 68-fold loss in abundance, with losses of ca. 19-fold, 2-fold and 2-fold at the first (=



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Plasmodium sporogony

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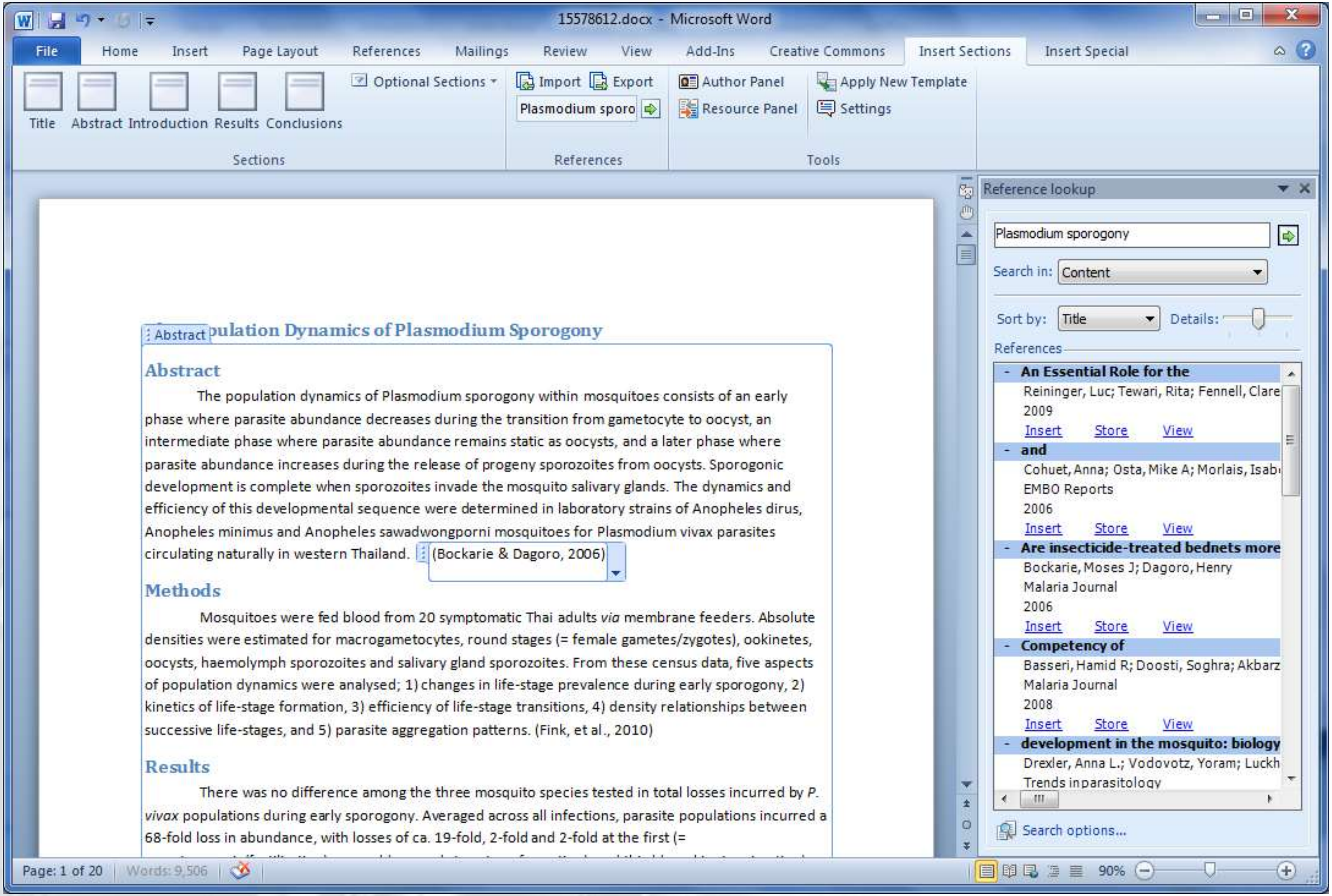

Abstract

…pulation Dynamics of Plasmodium Sporogony

Abstract

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Plasmodium sporogony

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Chemistry Add-in for Word

UNIVERSITY OF CAMBRIDGE

- Peter Murray-Rust
- Joe Townsend
- Jim Downing

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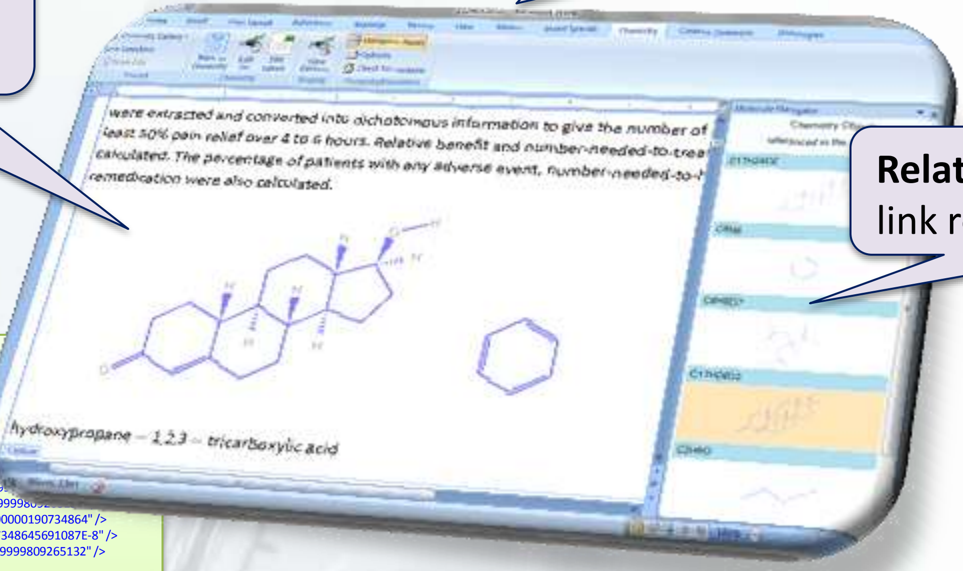
Author/edit 1D and 2D chemistry. Change chemical layout styles.

Relationships: Navigate and link referenced chemistry

Data: Semantics stored in Chemistry Markup Language



were extracted and converted into dichotomous information to give the number of least 50% pain relief over 4 to 6 hours. Relative benefit and number-needed-to-trea calculated. The percentage of patients with any adverse event, number-needed-to-h remedication were also calculated.

hydroxypropane – 1,2,3 – tricarboxylic acid

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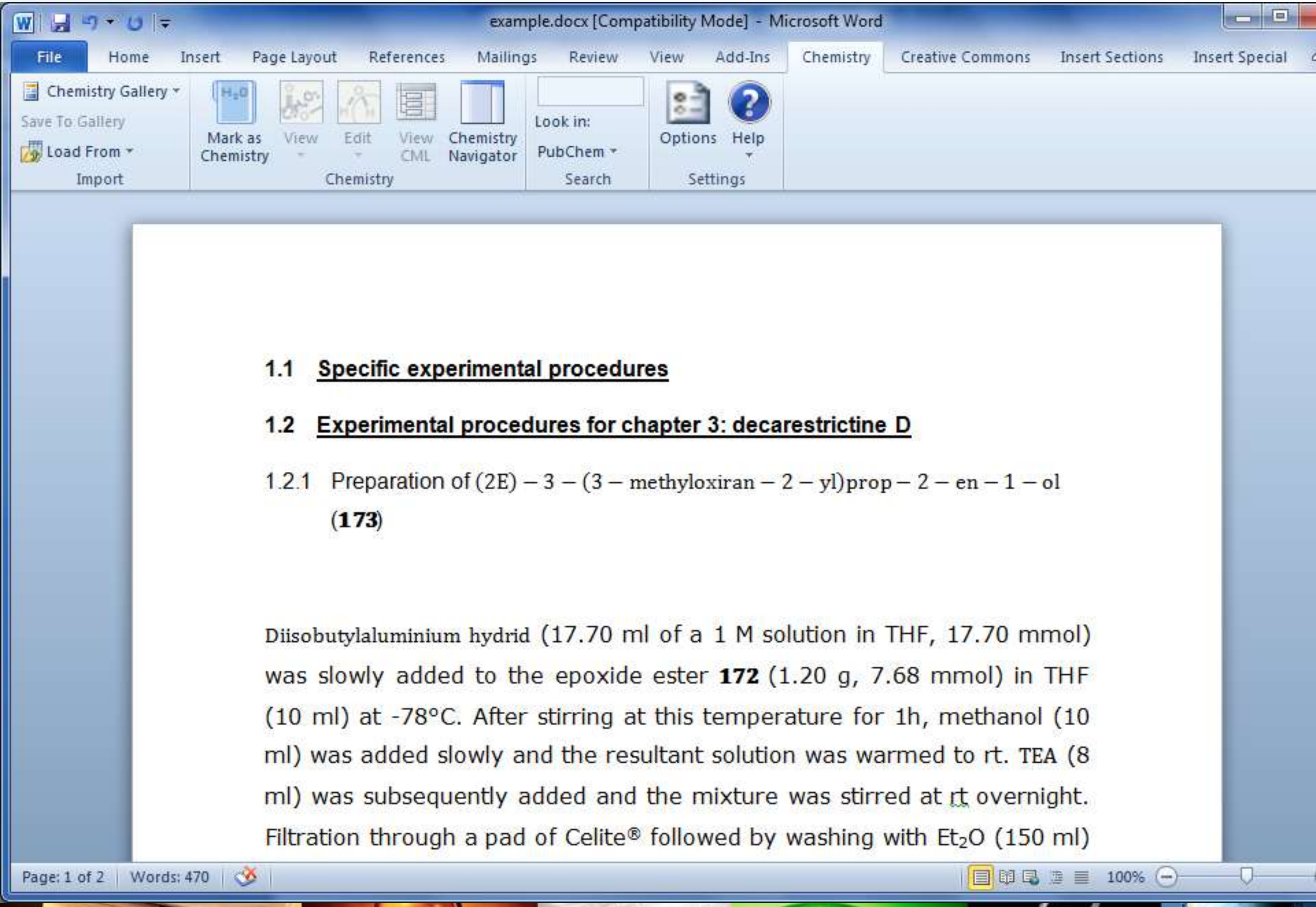
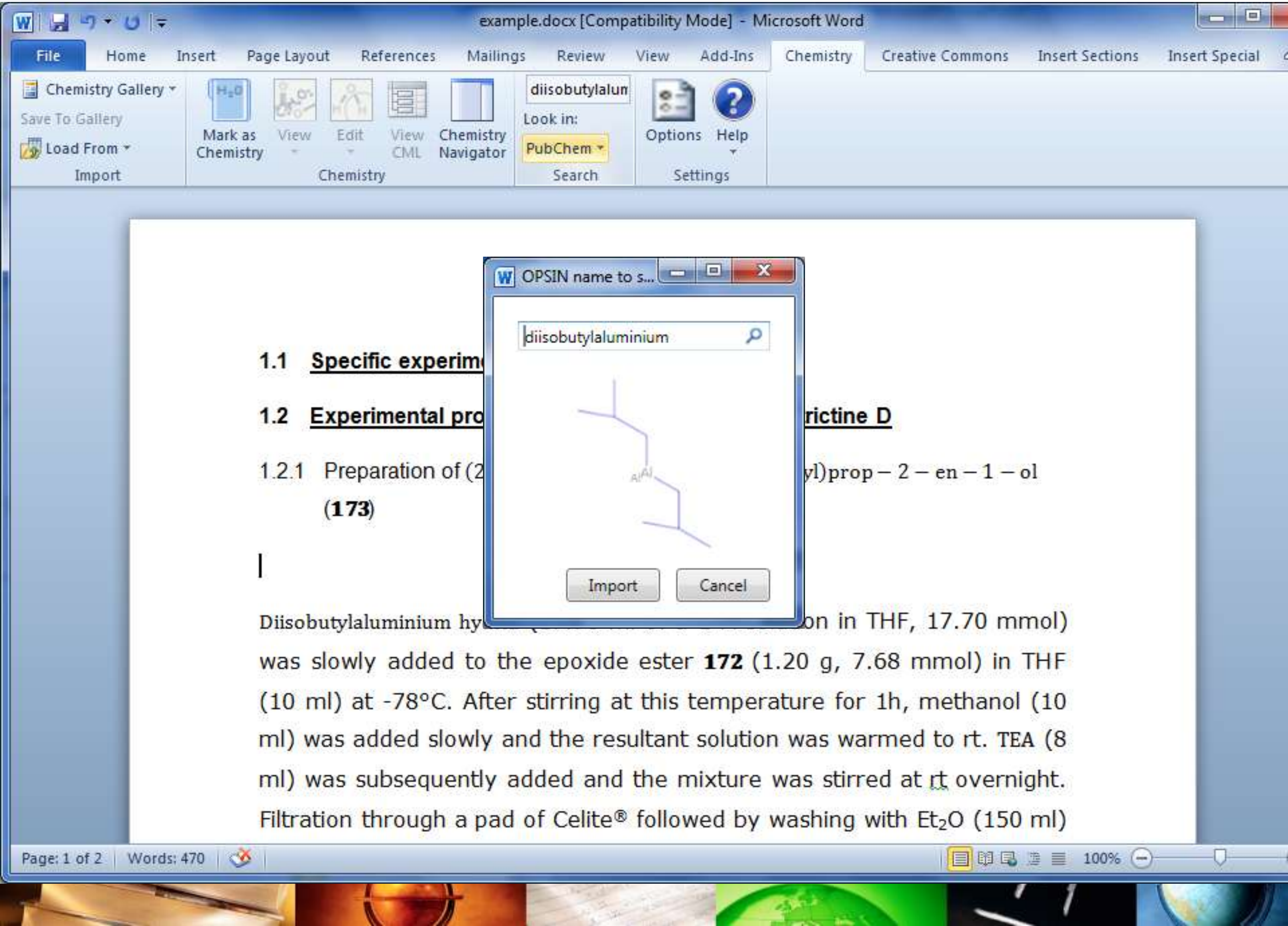


1.1 Specific experimental procedures

1.2 Experimental procedures for chapter 3: decarestrictine D

1.2.1 Preparation of (2E) − 3 − (3 − methyloxiran − 2 − yl)prop − 2 − en − 1 − ol (**173**)

Diisobutylaluminium hydrid (17.70 ml of a 1 M solution in THF, 17.70 mmol) was slowly added to the epoxide ester **172** (1.20 g, 7.68 mmol) in THF (10 ml) at -78°C. After stirring at this temperature for 1h, methanol (10 ml) was added slowly and the resultant solution was warmed to rt. TEA (8 ml) was subsequently added and the mixture was stirred at rt overnight. Filtration through a pad of Celite® followed by washing with Et_2O (150 ml)



diisobutylaluminium

1.1 **Specific experim**

1.2 **Experimental pro** … **rictine D**

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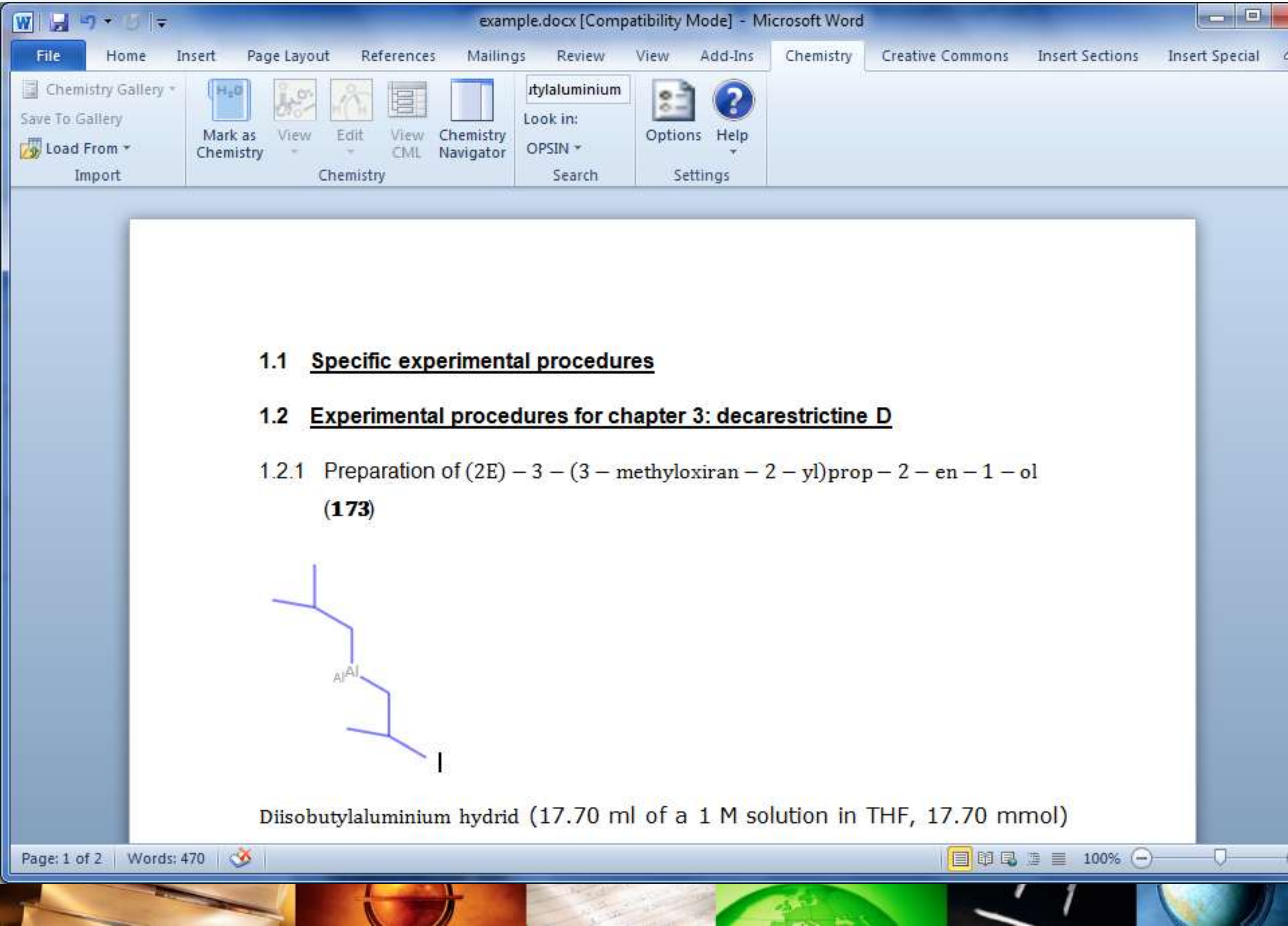

ıtylaluminium

Look in: OPSIN

1.1 Specific experimental procedures

1.2 Experimental procedures for chapter 3: decarestrictine D

1.2.1 Preparation of $(2E)-3-(3-\mathrm{methyloxiran}-2-\mathrm{yl})\mathrm{prop}-2-\mathrm{en}-1-\mathrm{ol}$ $(\mathbf{173})$

Diisobutylaluminium hydrid (17.70 ml of a 1 M solution in THF, 17.70 mmol)

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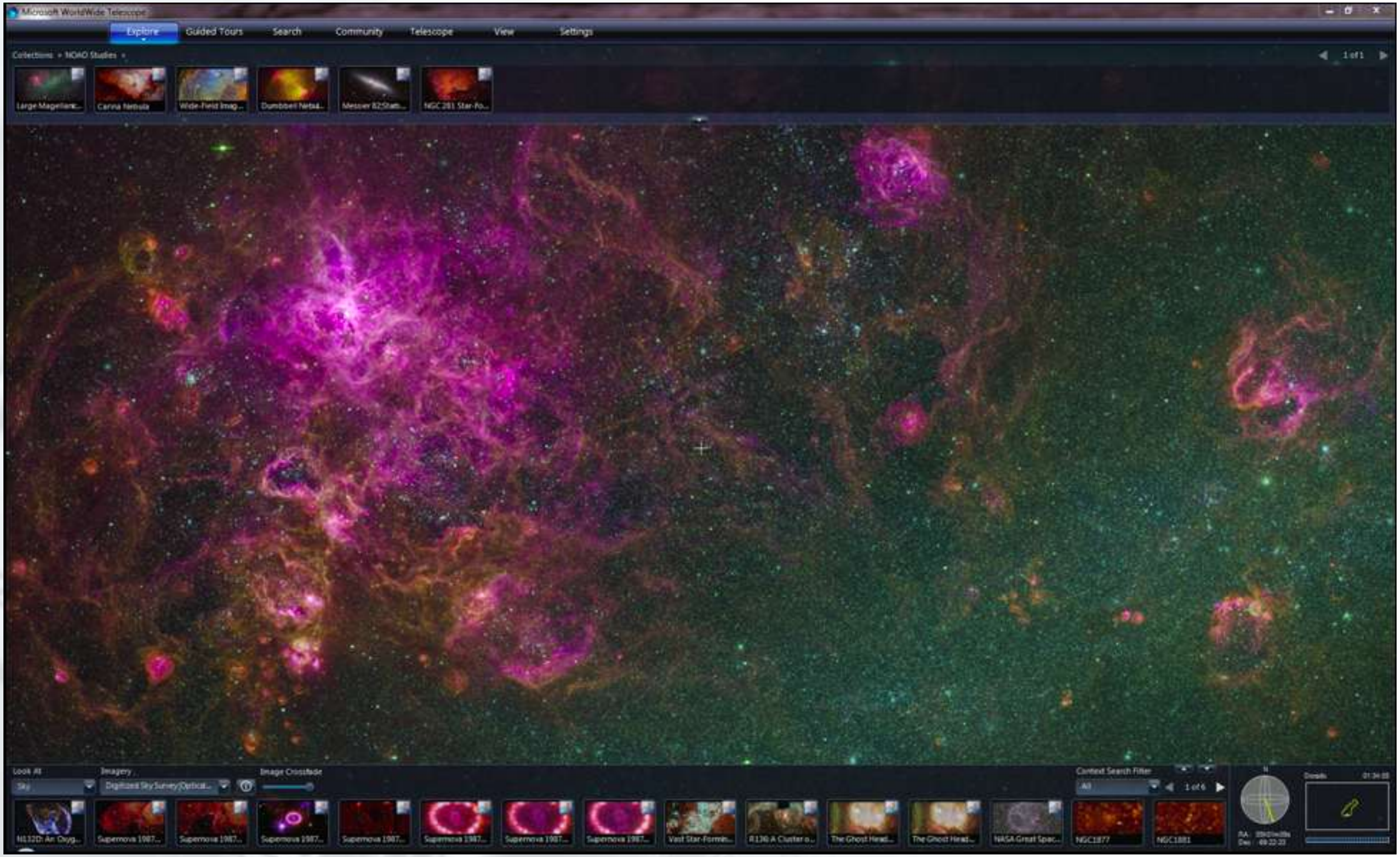

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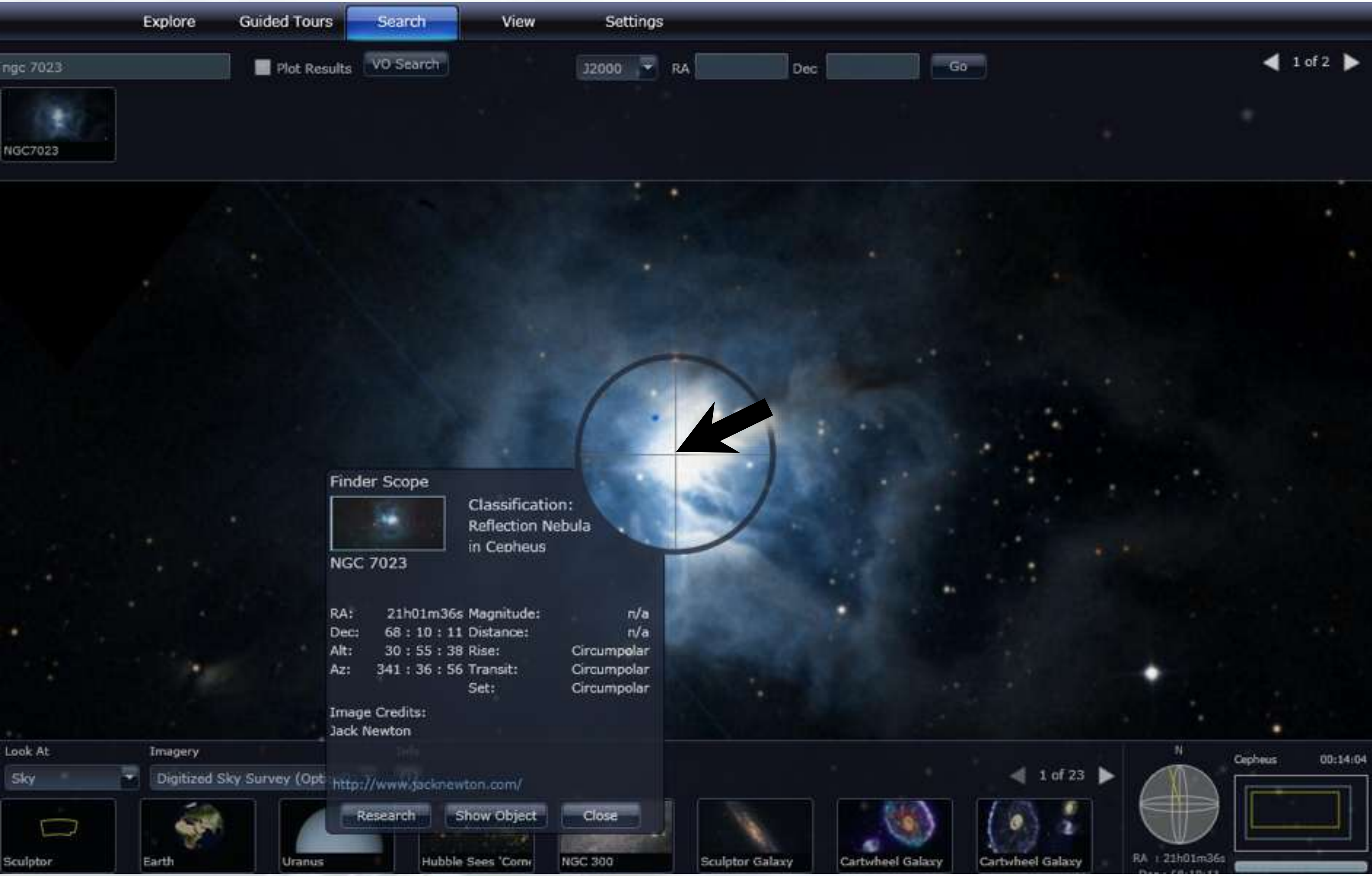

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NGC 7023

Classification:
Reflection Nebula
in Cepheus

RA:	21h01m36s	Magnitude:	n/a
Dec:	68 : 10 : 11	Distance:	n/a
Alt:	30 : 55 : 38	Rise:	Circumpolar
Az:	341 : 36 : 56	Transit:	Circumpolar
		Set:	Circumpolar

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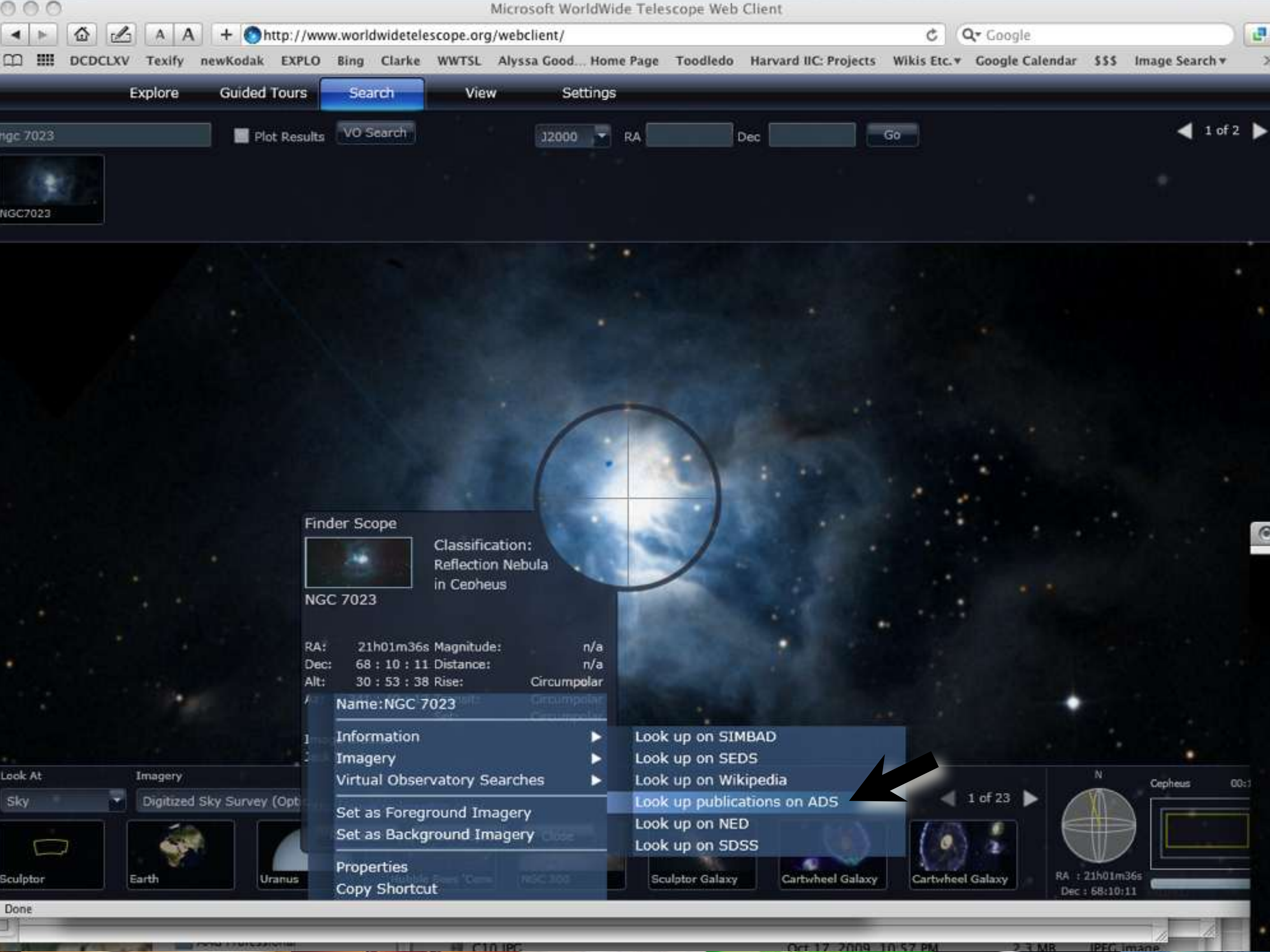
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1 of 23
Sculptor
Earth
Uranus
Sculptor Galaxy
Cartwheel Galaxy
Cartwheel Galaxy
N
Cepheus
Done

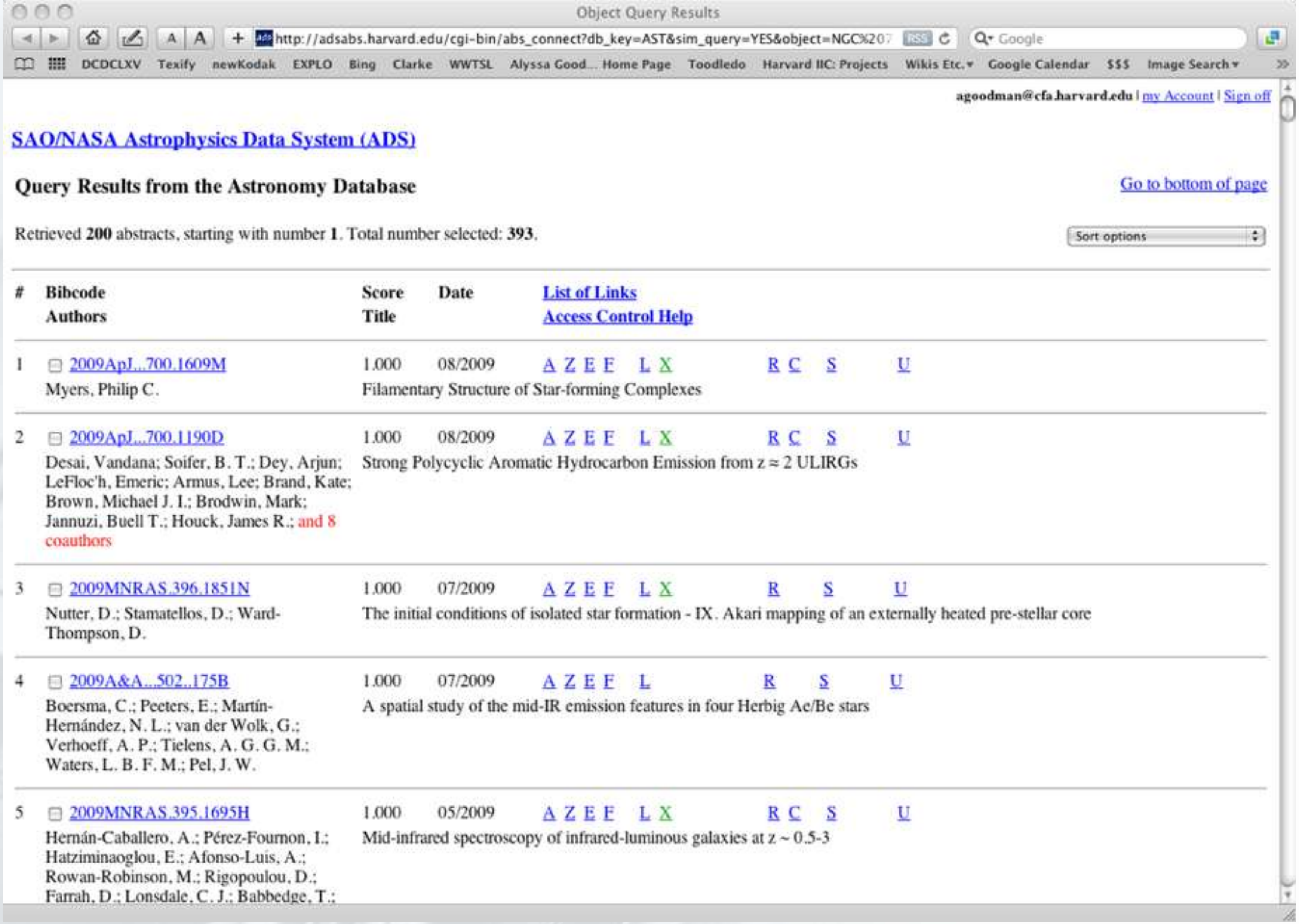
Finder Scope

NGC 7023

Classification:
Reflection Nebula
in Cepheus

RA: 21h01m36s Magnitude: n/a
Dec: 68 : 10 : 11 Distance: n/a
Alt: 30 : 53 : 38 Rise: Circumpolar

RA : 21h01m36s
Dec : 68:10:11



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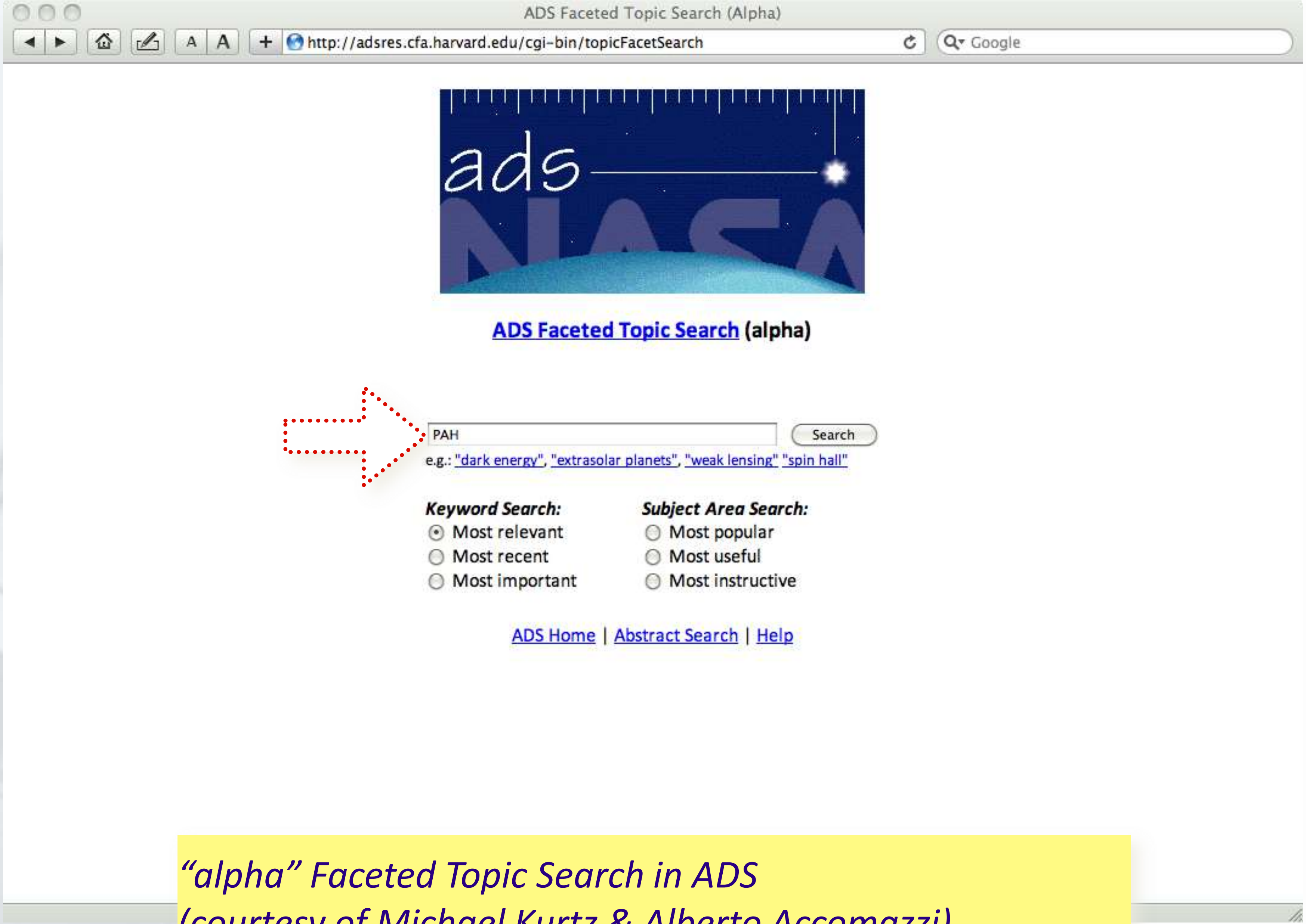

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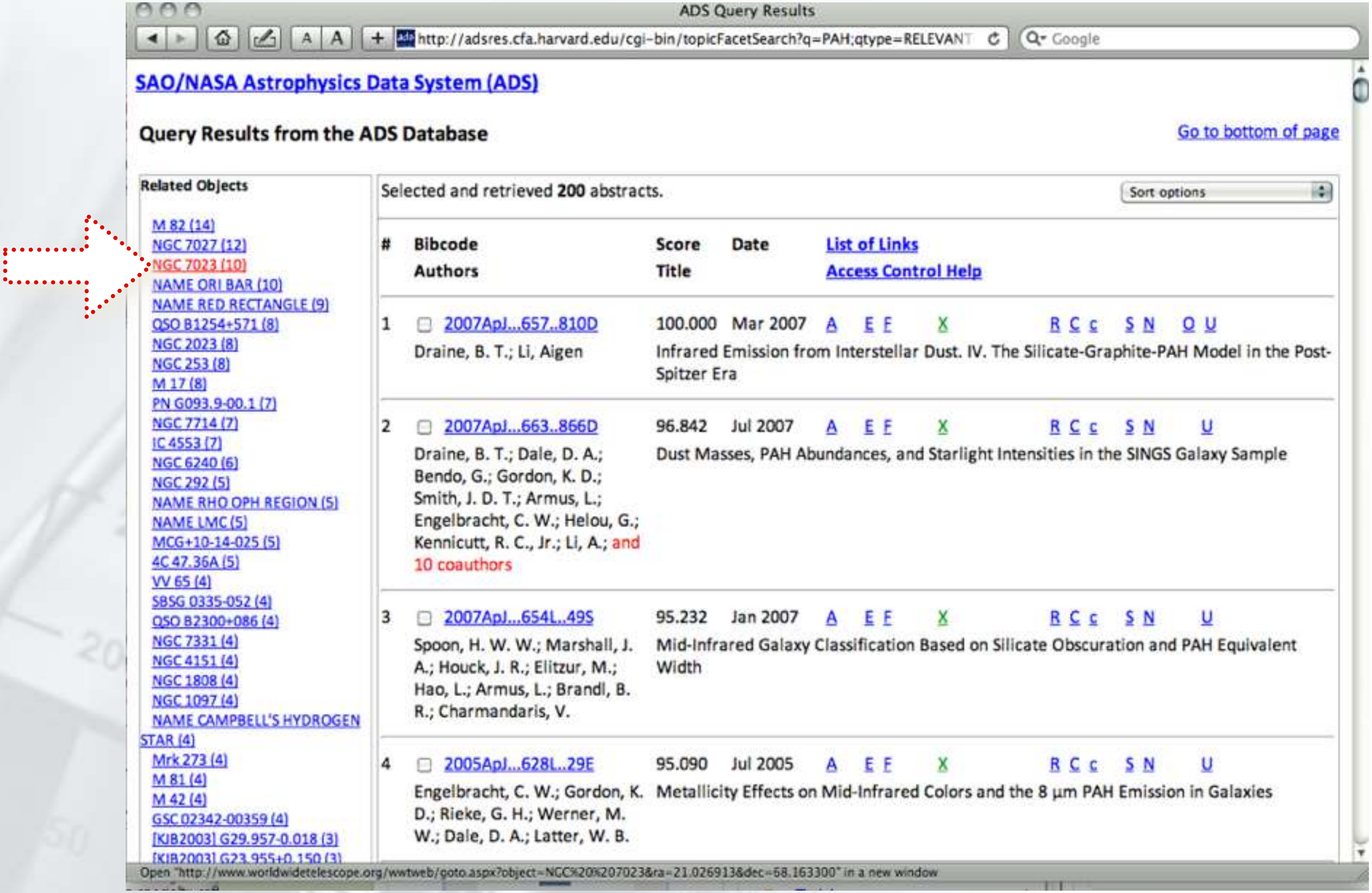

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4	☐ 2005ApJ...628L..29E Engelbracht, C. W.; Gordon, K. D.; Rieke, G. H.; Werner, M. W.; Dale, D. A.; Latter, W. B.	95.090 Metallicity Effects on Mid-Infrared Colors and the 8 μm PAH Emission in Galaxies	Jul 2005	A E F X R C c S N U

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list of objects with links to WWT browser

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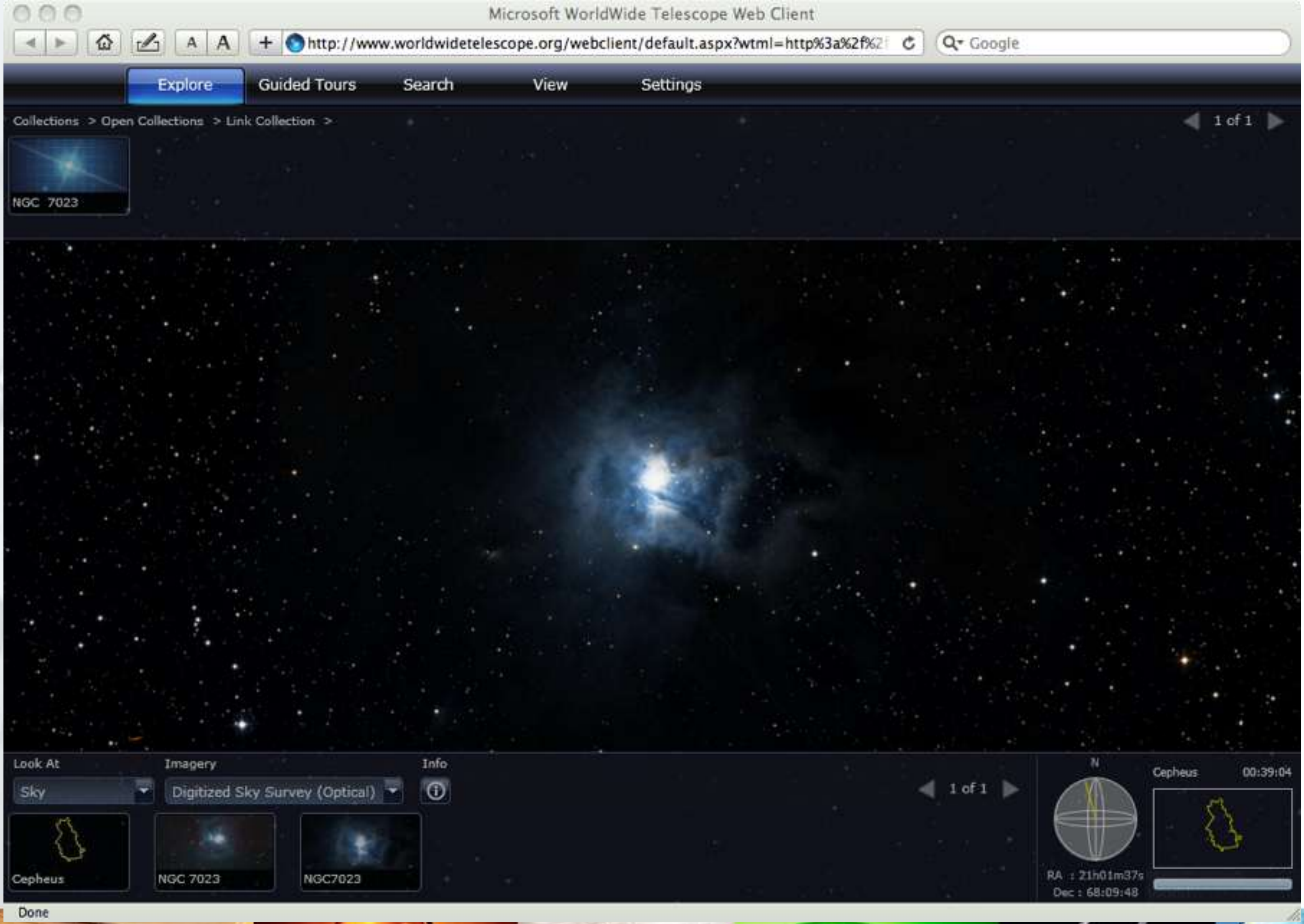

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Look At: Sky

Imagery: Digitized Sky Survey (Optical)

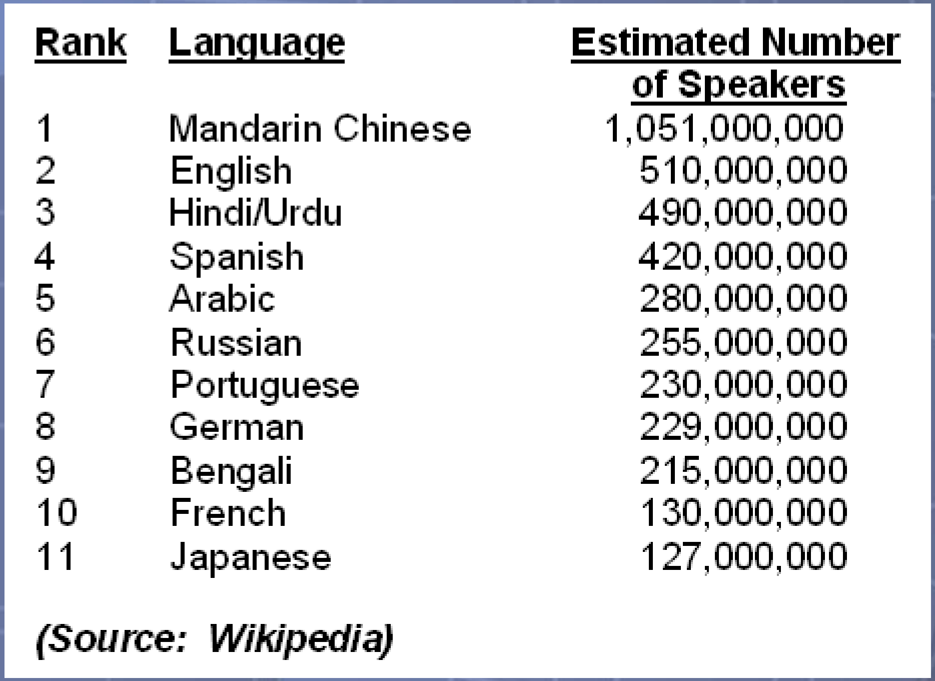
Cepheus 00:39:04

RA : 21h01m37s
Dec : 68:09:48

Done

View Demo

Consider this . . .
While English is the *lingua franca* for science, these are the world's most widely spoken languages:



Rank	**Language**	**Estimated Number of Speakers**
1	Mandarin Chinese	1,051,000,000
2	English	510,000,000
3	Hindi/Urdu	490,000,000
4	Spanish	420,000,000
5	Arabic	280,000,000
6	Russian	255,000,000
7	Portuguese	230,000,000
8	German	229,000,000
9	Bengali	215,000,000
10	French	130,000,000
11	Japanese	127,000,000

(Source: Wikipedia)

Of the world's "top 400" institutional repositories, 250, or 63%, have some or all non-English content.

Examples:
- HAL CNRS -- French
- Kyoto University Research Repository – Japanese
- Leiden University Digital Repository -- Dutch
- CSIC (Spanish National Research Council)

(Source: Cybermetrics Lab, Spain)

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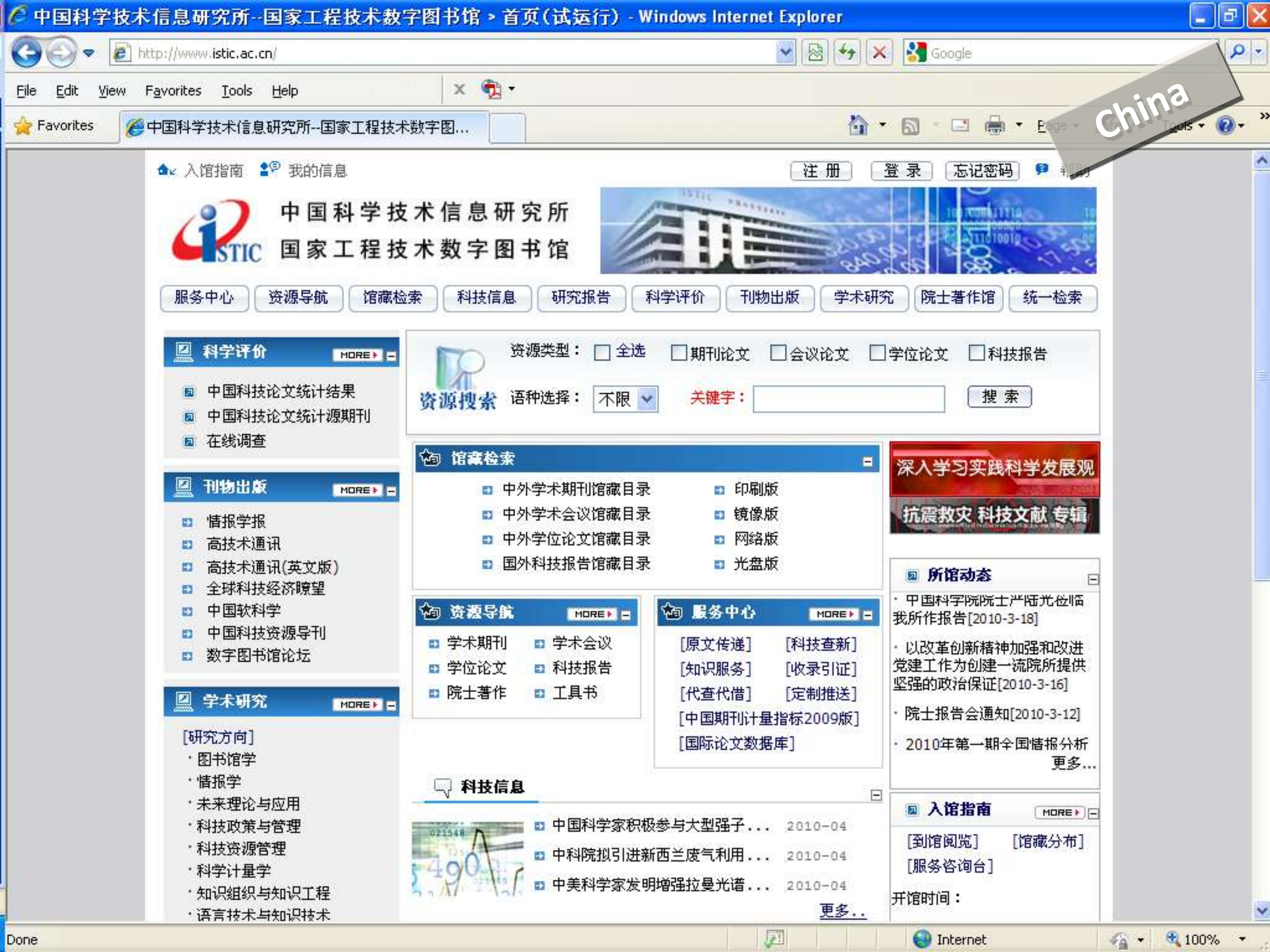
China



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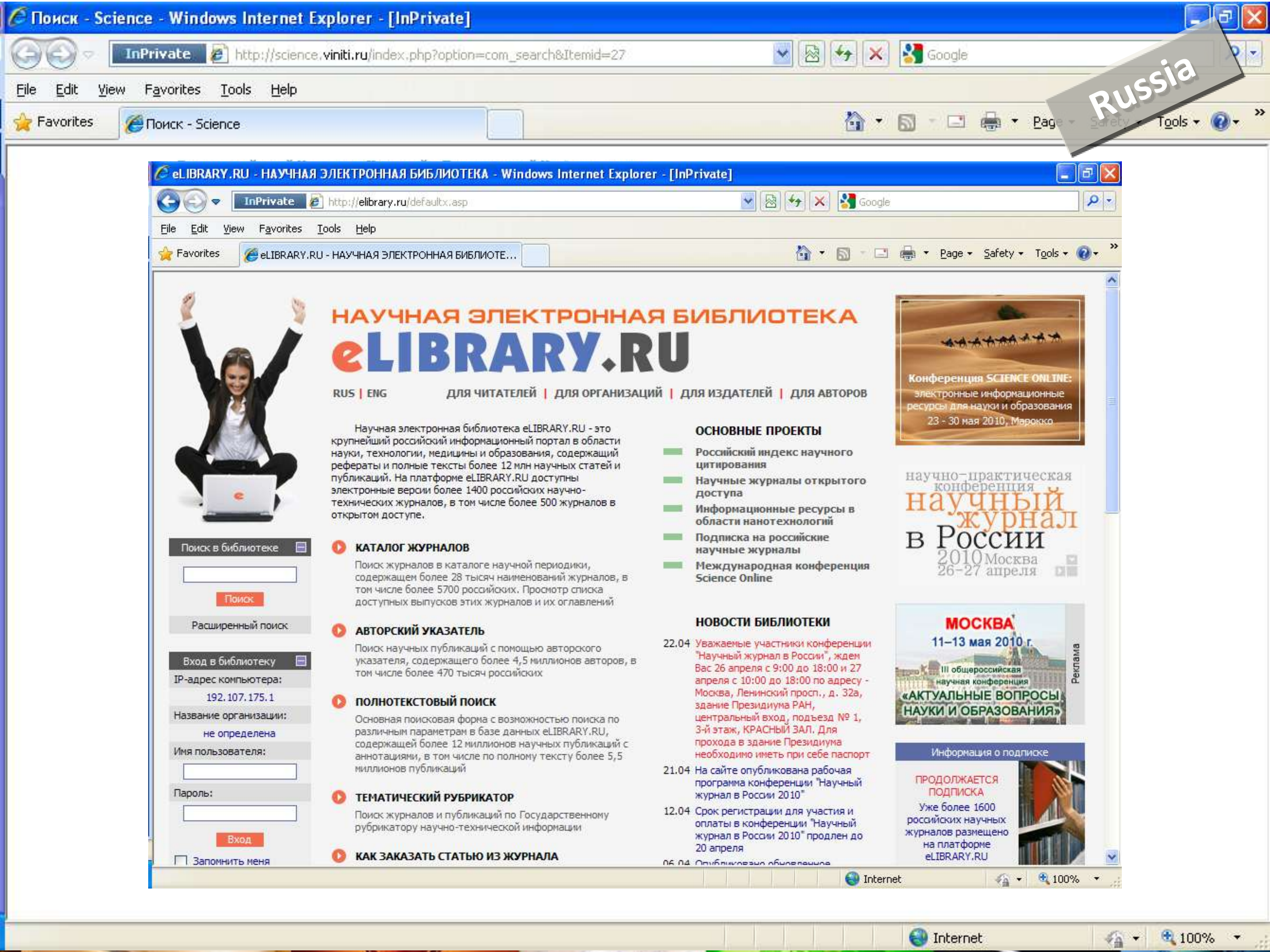
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- Научные журналы открытого доступа
- Информационные ресурсы в области нанотехнологий
- Подписка на российские научные журналы
- Международная конференция Science Online

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22.04 Уважаемые участники конференции "Научный журнал в России", ждем Вас 26 апреля с 9:00 до 18:00 и 27 апреля с 10:00 до 18:00 по адресу - Москва, Ленинский просп., д. 32а, здание Президиума РАН, центральный вход, подъезд № 1, 3-й этаж, КРАСНЫЙ ЗАЛ. Для прохода в здание Президиума необходимо иметь при себе паспорт

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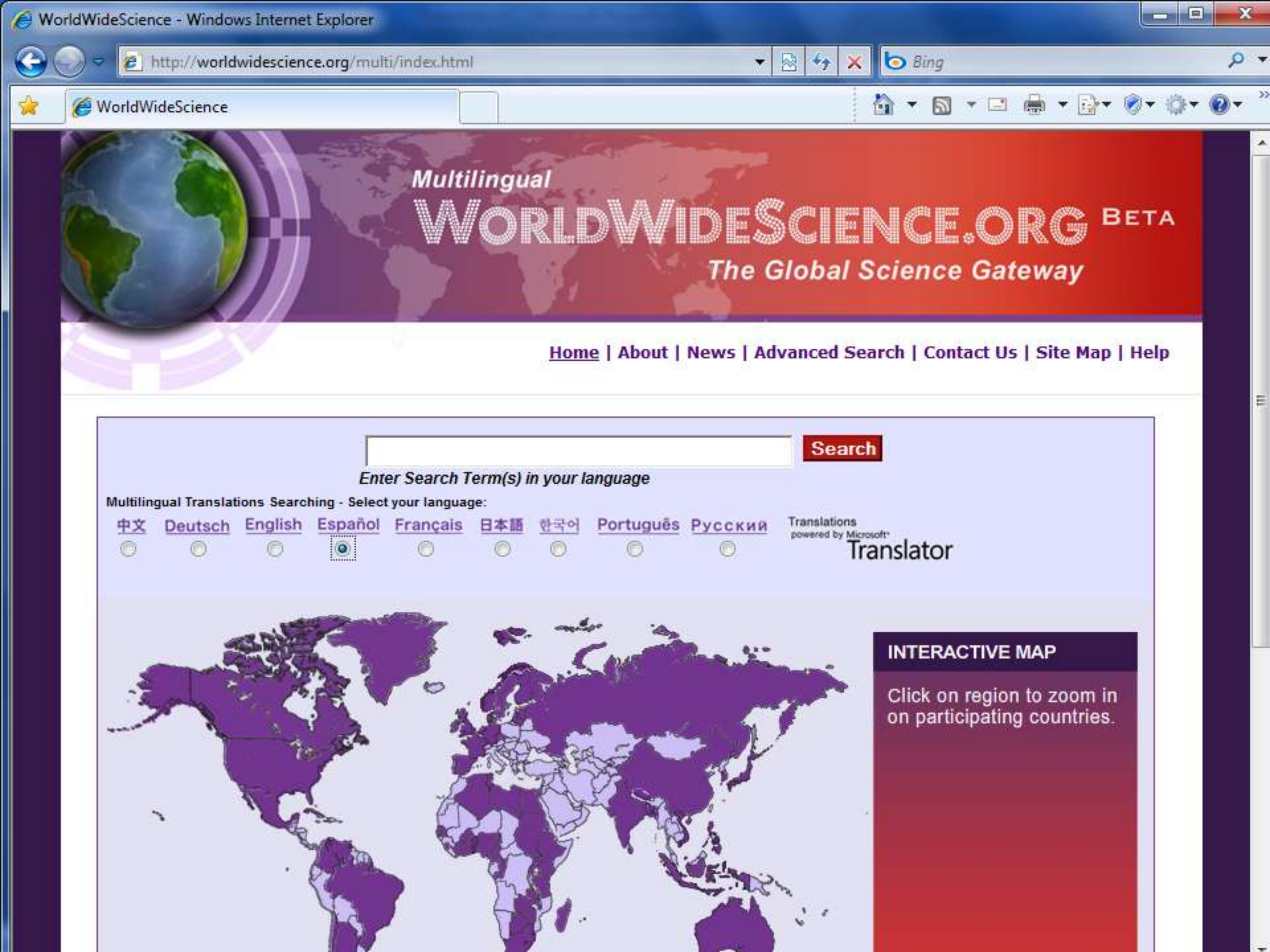
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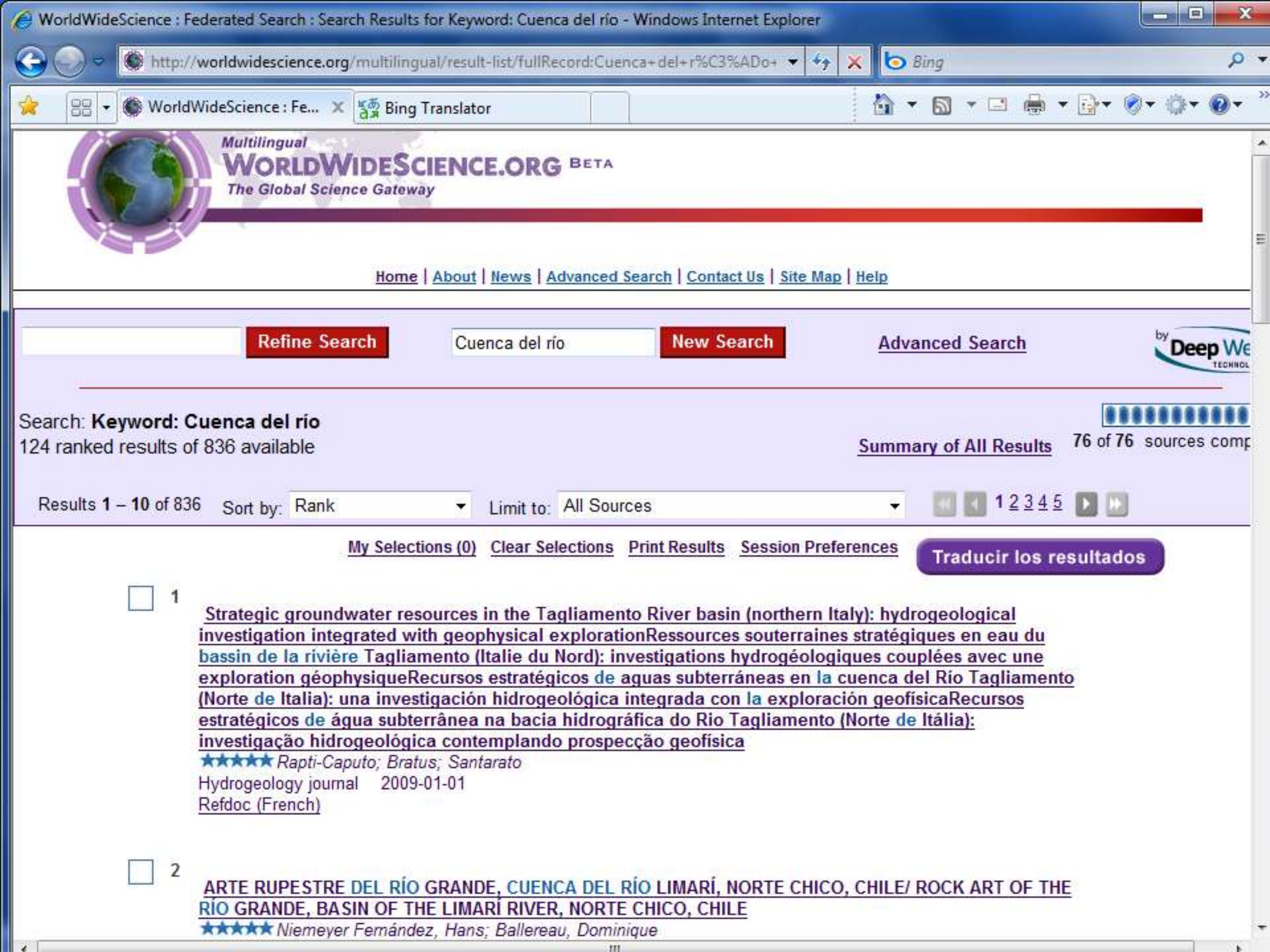
Click on region to zoom in on participating countries.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Search: **Keyword: Cuenca del río**

124 ranked results of 836 available

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☐ 1

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★★★★★ *Rapti-Caputo; Bratus; Santarato*

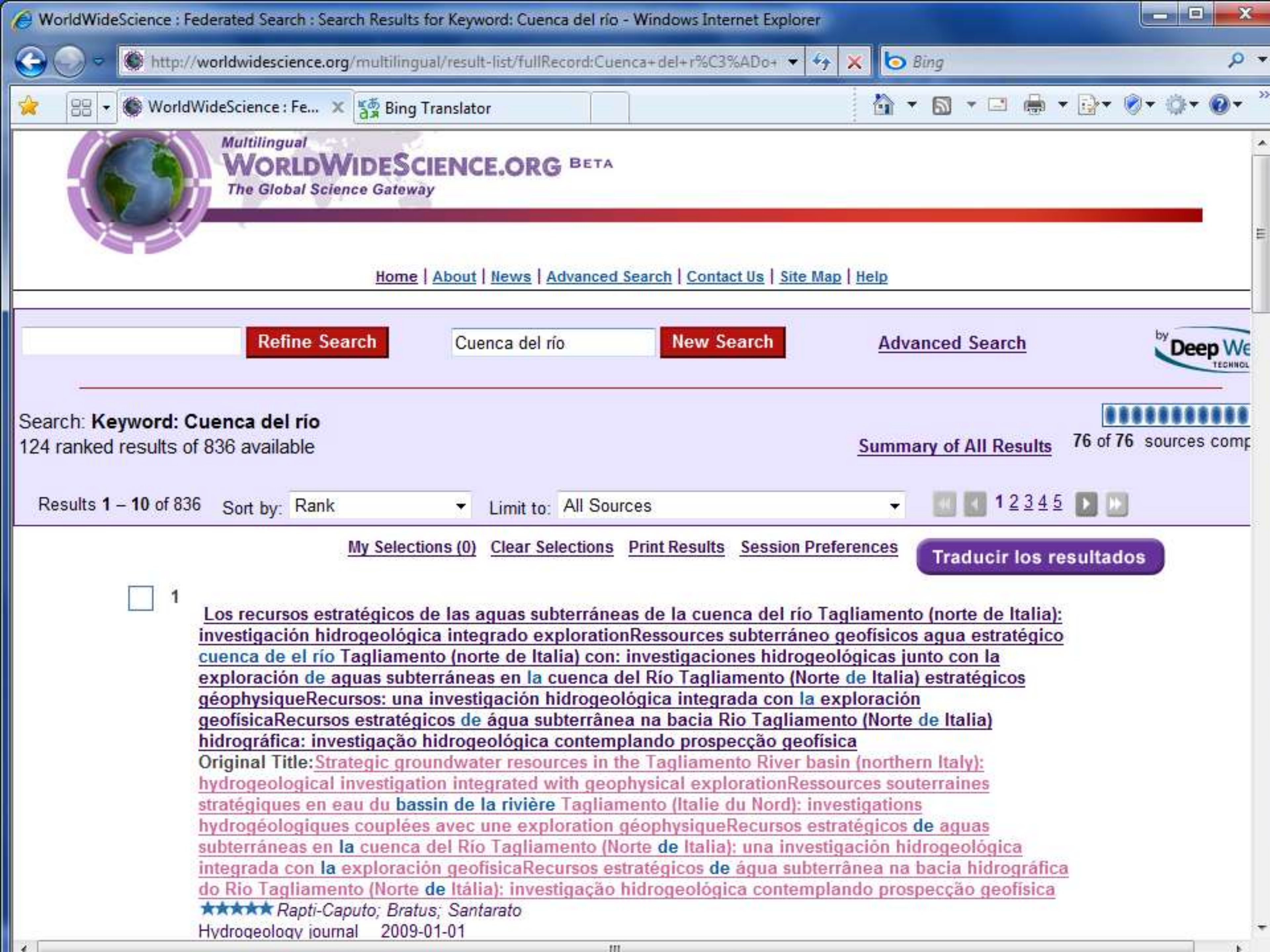
Hydrogeology journal 2009-01-01

Refdoc (French)

☐ 2

ARTE RUPESTRE DEL RÍO GRANDE, CUENCA DEL RÍO LIMARÍ, NORTE CHICO, CHILE/ ROCK ART OF THE RÍO GRANDE, BASIN OF THE LIMARÍ RIVER, NORTE CHICO, CHILE

★★★★★ *Niemeyer Fernández, Hans; Ballereau, Dominique*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Cuenca del río

Search: **Keyword: Cuenca del río**

124 ranked results of 836 available

76 of 76 sources comp

Results **1 – 10** of 836 Sort by: Rank Limit to: All Sources 1 2 3 4 5

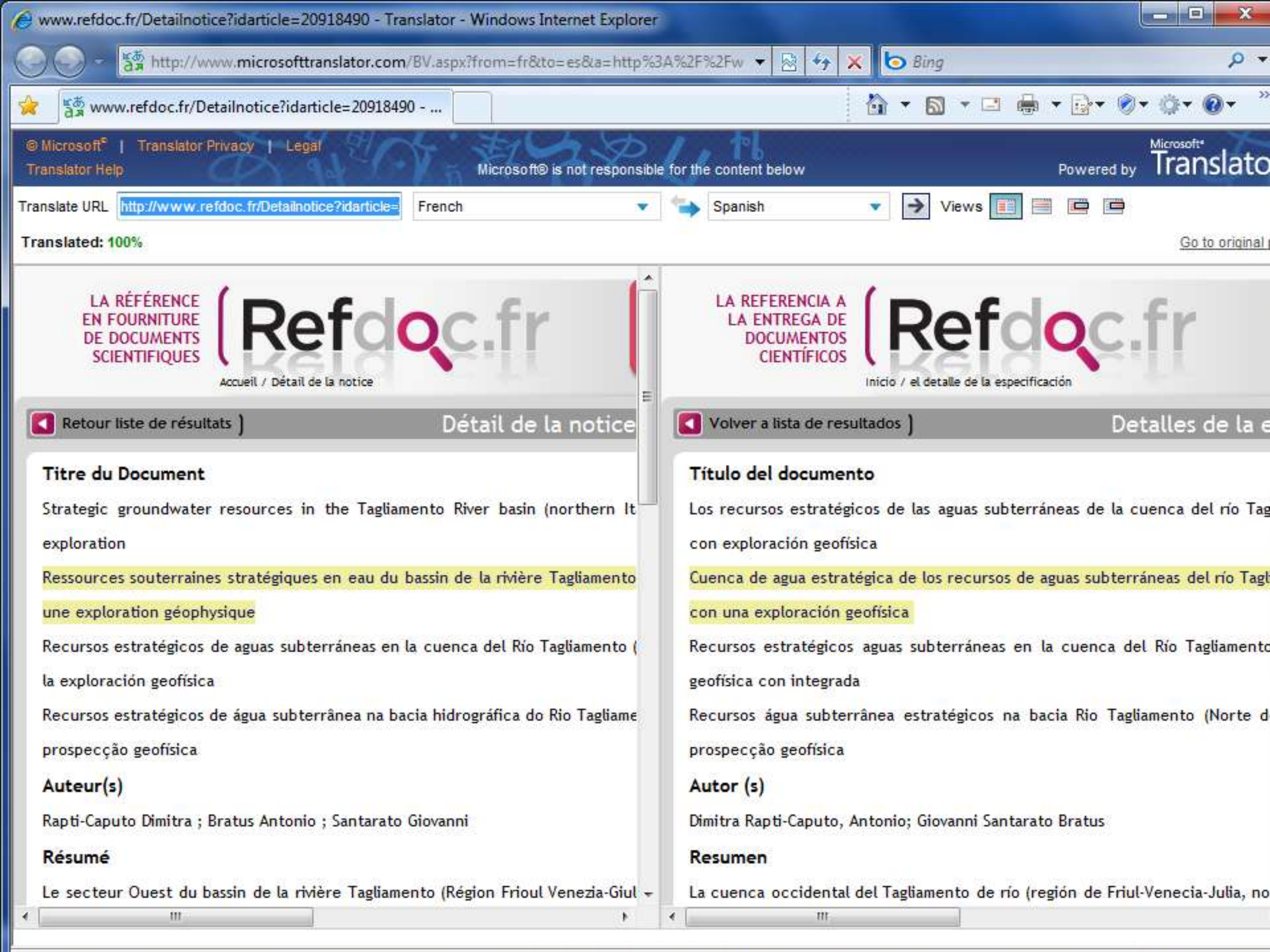
☐ 1

Los recursos estratégicos de las aguas subterráneas de la cuenca del río Tagliamento (norte de Italia): investigación hidrogeológica integrado explorationRessources subterráneo geofísicos agua estratégico cuenca de el río Tagliamento (norte de Italia) con: investigaciones hidrogeológicas junto con la exploración de aguas subterráneas en la cuenca del Río Tagliamento (Norte de Italia) estratégicos géophysiqueRecursos: una investigación hidrogeológica integrada con la exploración geofísicaRecursos estratégicos de água subterrânea na bacia Rio Tagliamento (Norte de Italia) hidrográfica: investigação hidrogeológica contemplando prospecção geofísica

Original Title:Strategic groundwater resources in the Tagliamento River basin (northern Italy): hydrogeological investigation integrated with geophysical explorationRessources souterraines stratégiques en eau du bassin de la rivière Tagliamento (Italie du Nord): investigations hydrogéologiques couplées avec une exploration géophysiqueRecursos estratégicos de aguas subterráneas en la cuenca del Río Tagliamento (Norte de Italia): una investigación hidrogeológica integrada con la exploración geofisicaRecursos estratégicos de água subterrânea na bacia hidrográfica do Rio Tagliamento (Norte de Itália): investigação hidrogeológica contemplando prospecção geofísica

★★★★★ *Rapti-Caputo; Bratus; Santarato*

Hydrogeology journal 2009-01-01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une exploration géophysique

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Recursos estratégicos de água subterrânea na bacia hidrográfica do Rio Tagliame

prospecção geofísica

Auteur(s)

Rapti-Caputo Dimitra ; Bratus Antonio ; Santarato Giovanni

Résumé

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con una exploración geofísica

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geofísica con integrada

Recursos água subterrânea estratégicos na bacia Rio Tagliamento (Norte d

prospecção geofísica

Autor (s)

Dimitra Rapti-Caputo, Antonio; Giovanni Santarato Bratus

Resumen

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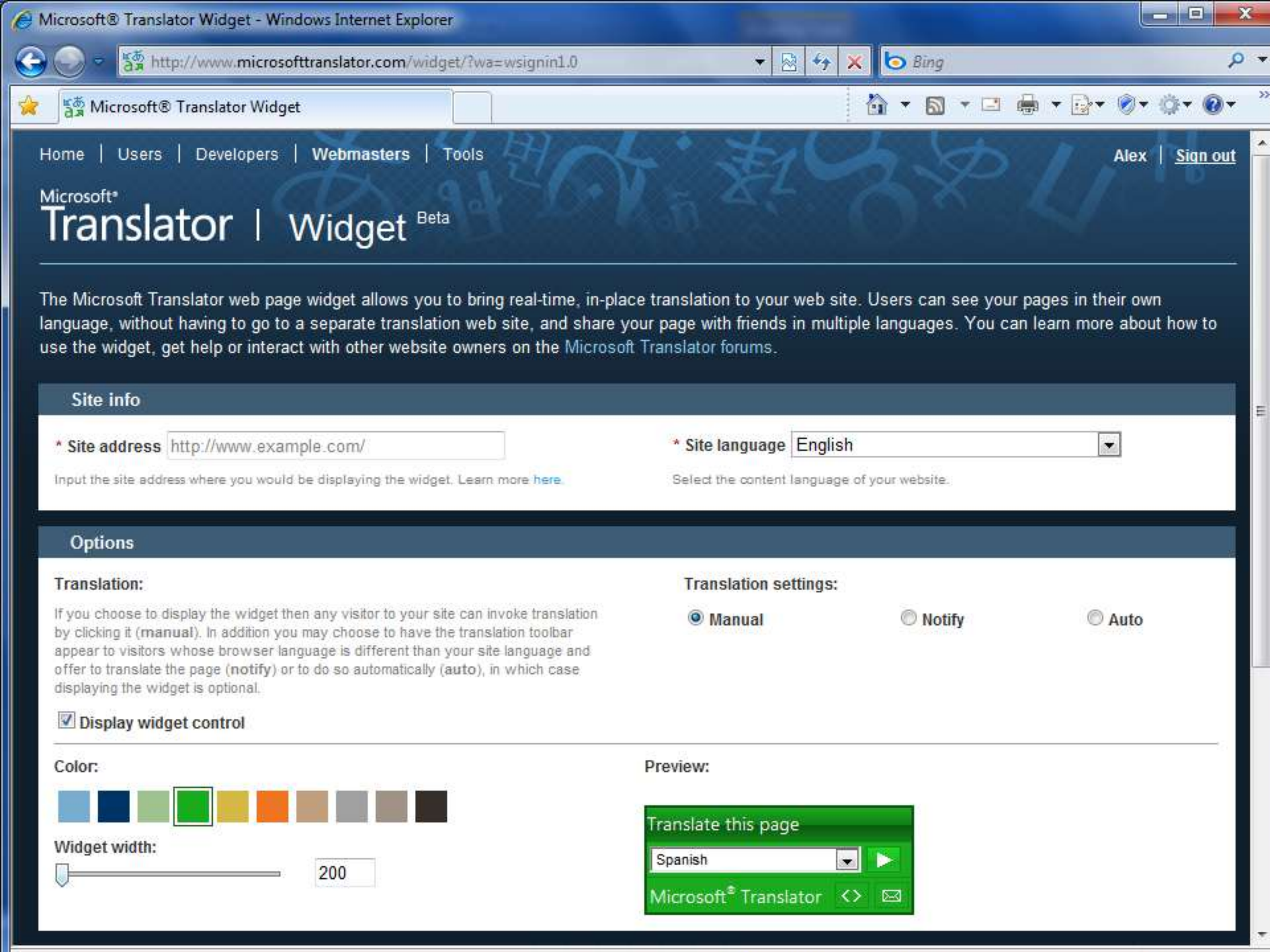

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Widget width: 200

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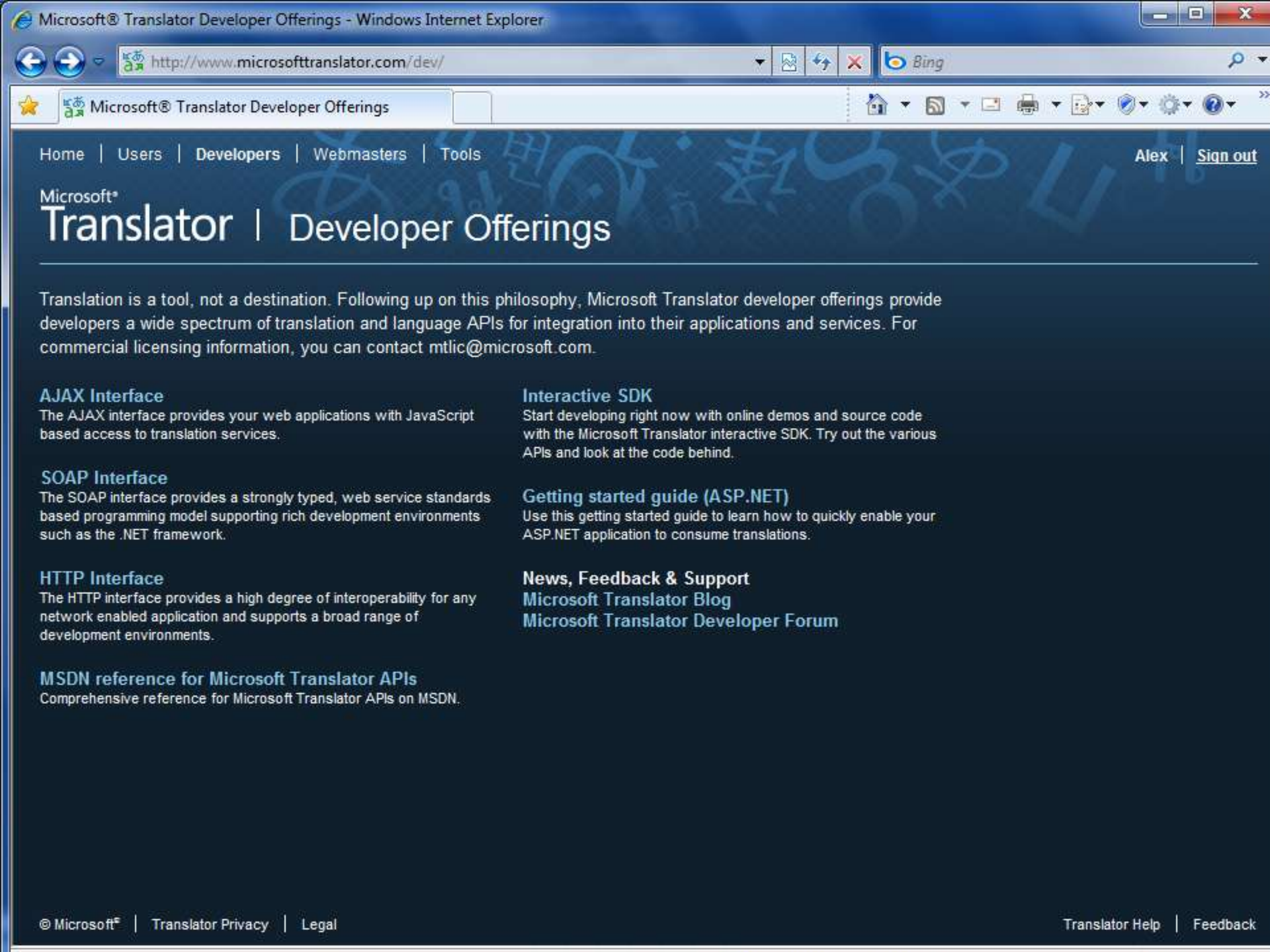
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MSDN reference for Microsoft Translator APIs
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