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Cross-Language Evaluation Forum

Benchmarking Multimedia Retrieval Applications

ICT 2010 Networking Session, 28th September 2010, Brussels

Nicola Ferro

Information Management Systems (IMS) Research Group

Department of Information Engineering

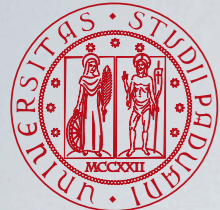
University of Padua, Italy

DEPARTMENT OF
INFORMATION
ENGINEERING
UNIVERSITY OF PADOVA



CLEF “Classic”



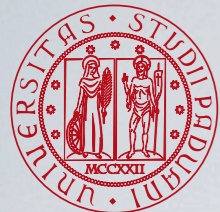


Objectives



- Promote research and stimulate development of multilingual and multimodal IR systems for European (and non-European) languages, through
 - Creation of evaluation infrastructure and organisation of regular evaluation campaigns for system testing
 - Building of an MLIA/CLIR research community
 - Construction of publicly available test-suites

- Major Goal
 - To anticipate the emerging needs of the R&D community, and
 - Encourage development of truly multilingual and multimodal systems



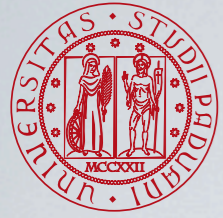
History



- 1997 – First CLIR system evaluation campaigns in US and Japan: TREC and NTCIR
 - CLEF actually began life in 1997 as a track for Cross Language Information Retrieval (CLIR) within TREC. Mainly, English centered tasks (EN -> X, X -> EN).

- 2000-2009 – CLIR evaluation in Europe: CLEF (extension of CLIR track at TREC)
 - Fully multilingual, multimodal information retrieval systems capable of processing a query in any medium and any language finding relevant information from a multilingual multimedia collection containing documents in any language and form, and presenting it in the style most likely to be useful to the user

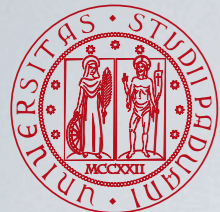
- Funding
 - DELOS NoE under FP5 2000 – 2003 (<http://delos-noe.isti.cnr.it/>)
 - DELOS NoE under FP6 2004 – 2007 (<http://www.delos.info/>)
 - TrebleCLEF under FP7 2008-2009 (<http://www.trebleclef.eu/>)



CLEF Achievements



- Stimulation of research activity in new, previously unexplored areas
- Study and implementation of evaluation methodologies for diverse types of cross-language IR systems
- Creation of a large set of empirical data about multilingual information access from the user perspective
- Quantitative and qualitative evidence with respect to best practice in cross-language system development
- Creation of reusable test collections for system benchmarking
- Building of a strong, multidisciplinary research community



CLEF Test Collections



- CLEF multilingual comparable corpus of more than 3M news docs in 15 languages: BG,CZ,DE,EN,ES,EU,FI,FR,HU,IT,NL,RU,SV,PT and Persian
- The European Library Data in DE, EN, FR (>3M docs)
- GIRT-4 social science database in EN and DE, Russian ISS collection; Cambridge Sociological Abstracts
- Online Flickr database
- IAPR TC-12 photo database (20,000 images, captions in EN, DE);
- ARRS Goldminer database (200,000 medical images)
- IRMA: 10,000 images for automatic medical image annotation
- INEX Wikipedia image collection (150,000 images)
- Very large multilingual collection of Web docs (EuroGov)
- Malach spontaneous speech collection – EN & CZ (Shoah archives)
- Dutch / English documentary TV videos
- Agence France Press (AFP) newswire in Arabic, French & English
- Patent documents from the European Patent Office



The DIRECT System



DIRECT

DISTRIBUTED INFORMATION RETRIEVAL EVALUATION CAMPAIGN TOOL

DIRECT for the Cross Language Evaluation Forum (CLEF)

Logged as mueller @ CLEF2009 [Logout]

Back [Navigation icons] Query [Search] Clean previous highlighted words

Info about topic 10.2452/1-PR: Assessed Documents / Total Documents: Update progress bar under construction

Document Preview

Document Identifier	Document Title	Aboutness
00010132	An employee of the German Federal Publishing house in Berlin shows some raw copies of covers of the new Palestinian passports here 11 April. The printing house had received an order to print 1.5 million Palestinian passports for Palestinian citizens and the last 120,000 passes will be printed in the next coming days.	Not Relevant
00010130	Iraqi Kurds gather at a Turkish Red Crescent (Turkish Red Cross) aid post in northern Iraq 11 April under military observation to receive medical care and food. The leader of separatist Turkish Kurds Abdallah Ocalan called 10 April for a political settlement with Ankara as Turkey's military operation to crush rebel PKK fighters in northern Iraq entered its fourth week.	Relevant
00010132	An employee of the German Federal Publishing house in Berlin shows some raw copies of covers of the new Palestinian passports here 11 April. The printing house had received an order to print 1.5 million Palestinian passports for Palestinian citizens and the last 120,000 passes will be printed in the next coming days.	Not Relevant
00010134	A South Korean player looks on at US basketball star Maic Johnson demonstrating his shooting	Relevant

Topic Fields: title, leterme, clusters, yves leterme

Relevant images contain photographs of Yves Leterme. Images of Leterme with other people are relevant if Leterme is shown in the foreground. Images of Leterme in the background are irrelevant.

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DOI Task Descriptive Statistics

Scientific Production

Statistical Analyses

Performance Measures

Experiments Average Precision Box Plot

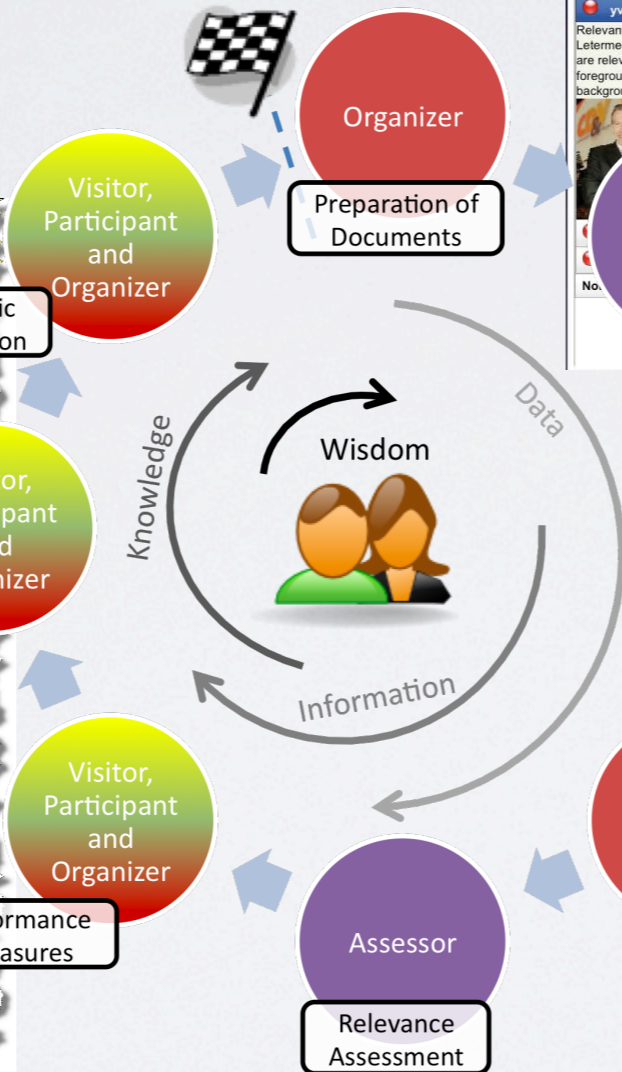
Experiments R Precision Box Plot

Top Participants Standard Recall Levels vs Interpolated Precision

Top Participants Average Precision Comparison to Median

Top Participants Document Cutoff Levels vs Precision

Top Participants R Precision Comparison to Median



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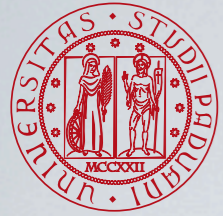
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Main Page

Experiment Submission

Task Identifier	Task Description	Download Topics	View Task Descriptive Statistics	Download Assessments
10.2415/GRIDCLEF-MONO-DE-...	Grid@CLEF 2009 Monolingual German	Download Topics	View Task Descriptive Statistics	Download Assessments
10.2415/GRIDCLEF-MONO-DE-...	Grid@CLEF 2009 Monolingual English	Download Topics	View Task Descriptive Statistics	Download Assessments
10.2415/GRIDCLEF-MONO-DE-...	Grid@CLEF 2009 Monolingual French	Download Topics	View Task Descriptive Statistics	Download Assessments

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The DIRECT System



more than 5.6 million documents

DIRECT DISTRIBUTED INFORMATION RETRIEVAL EVALUATION CAMPAIGN TOOL

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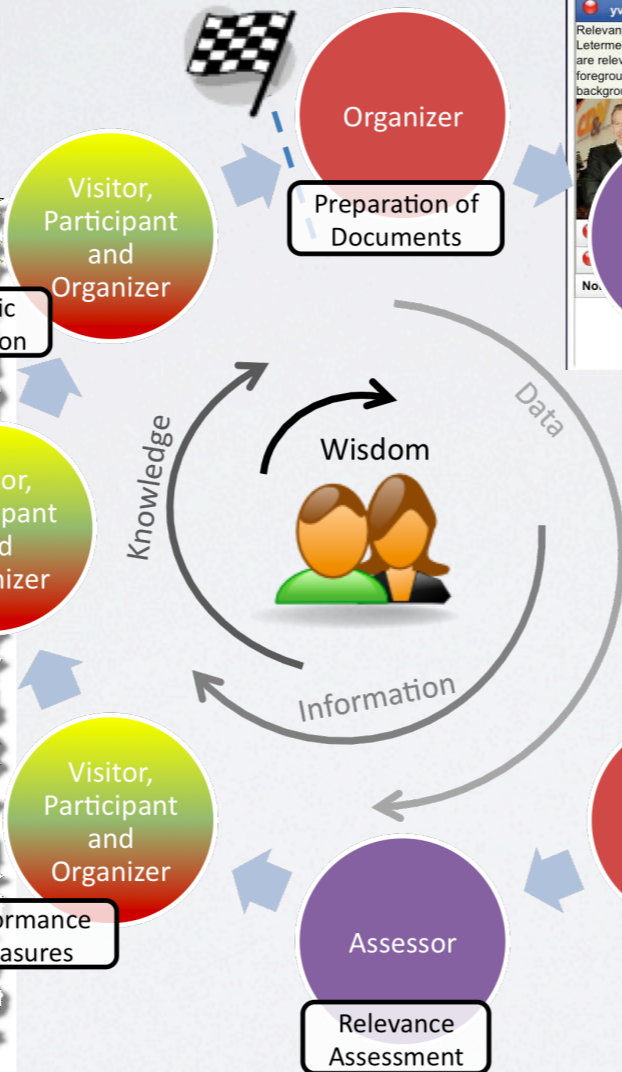
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DOI Task Descriptive Statistics

Scientific Production

Statistical Analyses

Performance Measures



DIRECT for the Cross Language Evaluation Forum (CLEF)

Participant

Experiment Submission

Experiment DOI	Task Description	Timestamp	Priority	Topic Fields	Description	View	Delete	View Metrics
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10.2415/GRIDCLEF-MONO-DE-CHEMNITZ.CUT_GRID_MONO_DE_LUCENE_PGDEC	Grid@CLEF 2009 Monolingual German	Jul 13, 2009 3:29:24 PM	1	title description	porter lucene	View	X	View
10.2415/GRIDCLEF-MONO-DE-CHEMNITZ.CUT_GRID_MONO_DE_LUCENE_PORTER	Grid@CLEF 2009 Monolingual German	Jul 13, 2009 3:53:53 PM	5	title description	merged porter pgdec lucene terrier	View	X	View
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10.2415/GRIDCLEF-MONO-DE-CHEMNITZ.CUT_GRID_MONO_DE_TERRIER_PGDEC	Grid@CLEF 2009 Monolingual German	Jul 13, 2009 3:43:24 PM	3	title description	porter terrier bm25 prf	View	X	View

Creation of Pools

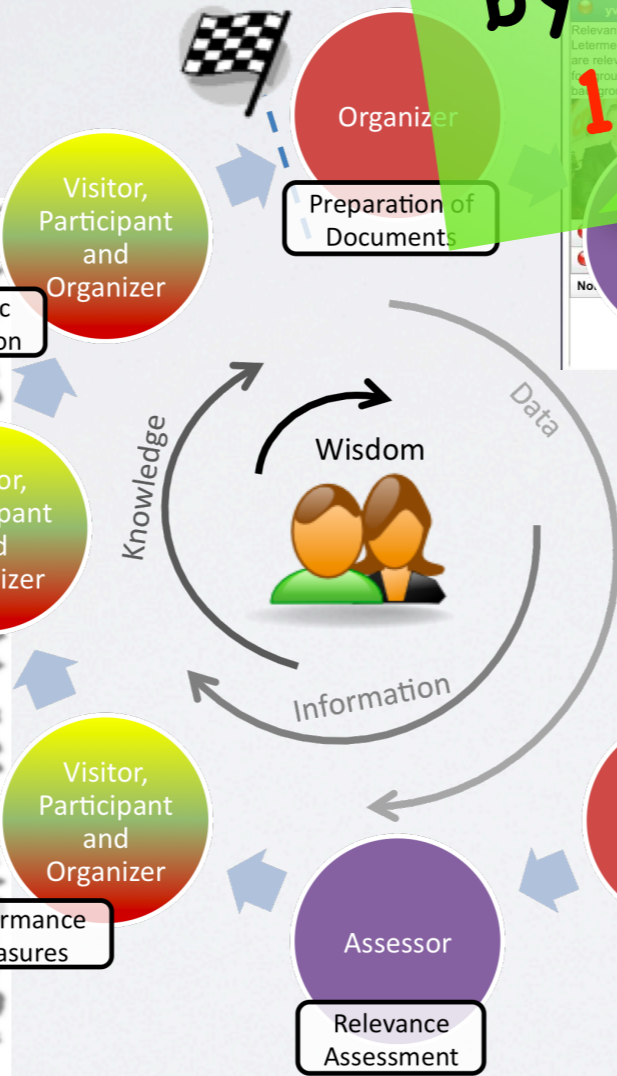
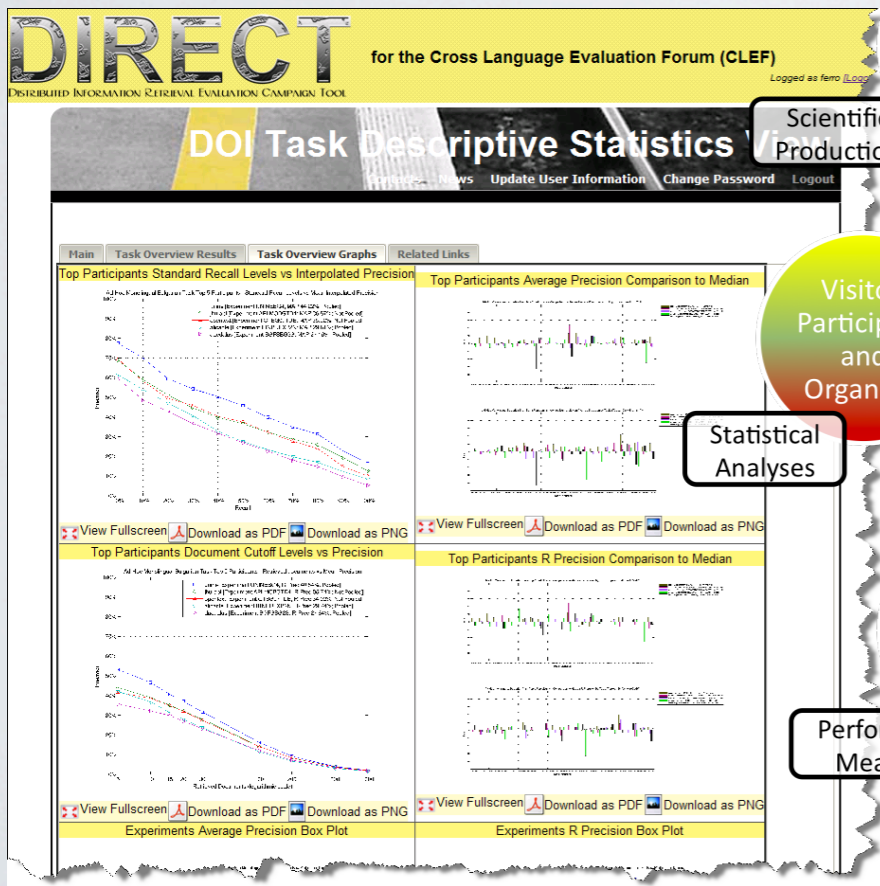


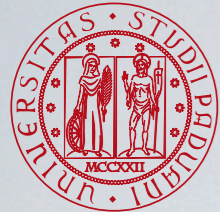
The DIRECT System



more than **5.6 million** documents

more than **1.5 million** relevance assessments for more than **600** topics made by over **200** assessors in **15** different countries



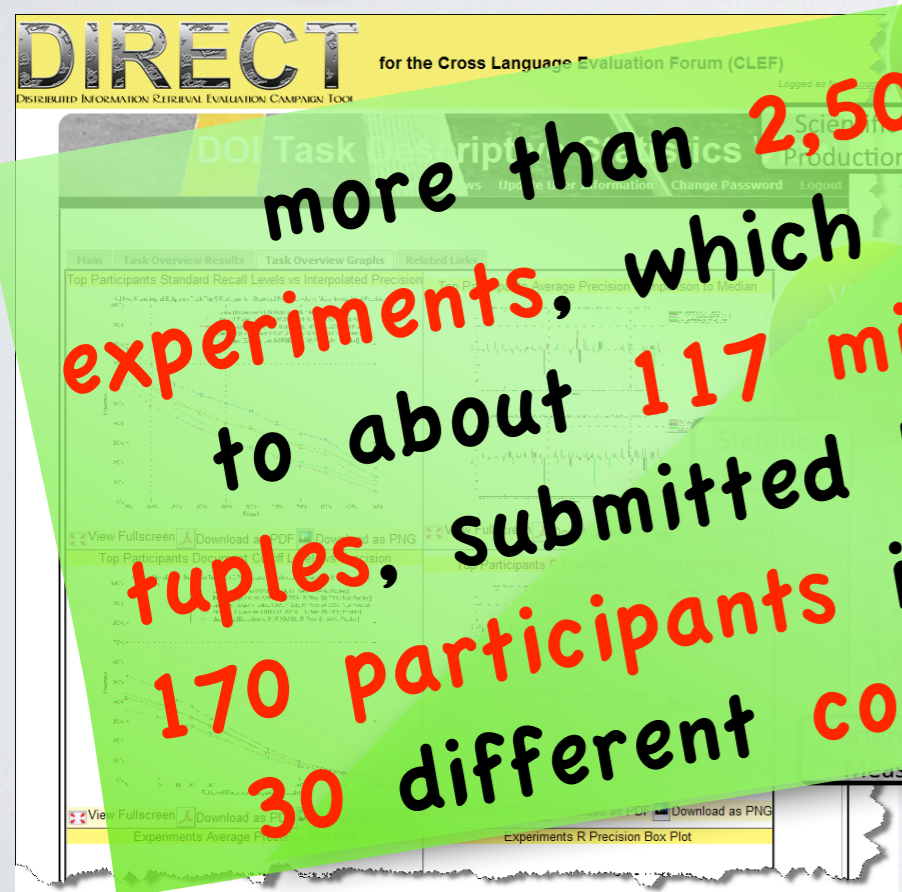


The DIRECT System

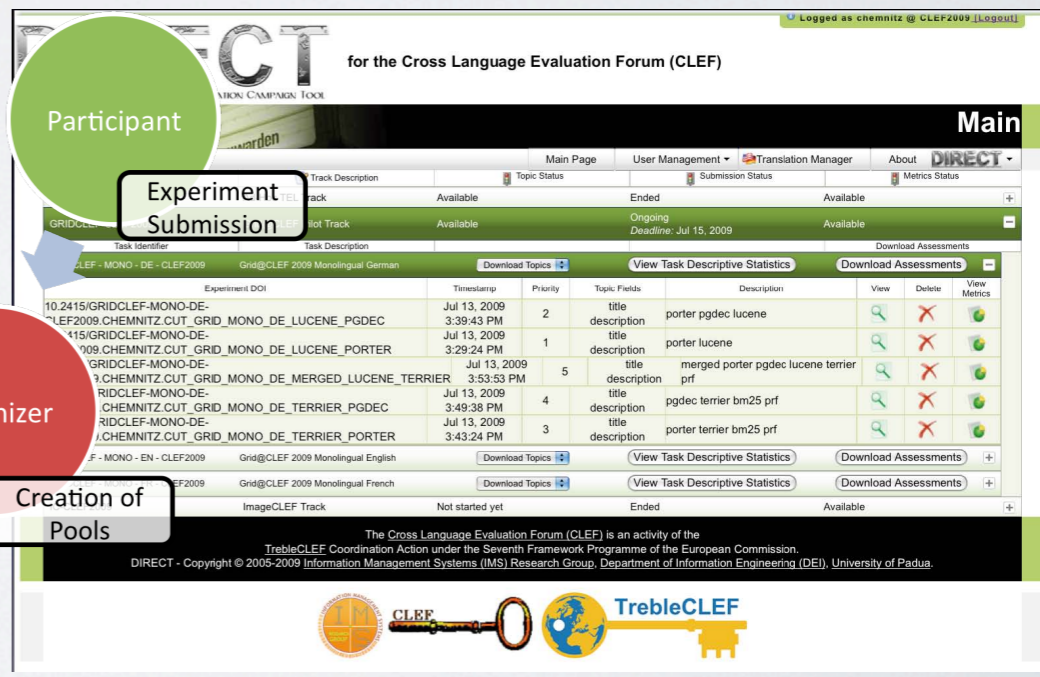


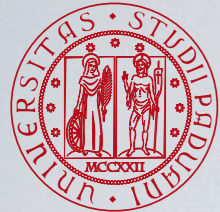
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more than **2,500** experiments, which amount to about **117 million** tuples, submitted by over **170** participants in about **30** different countries



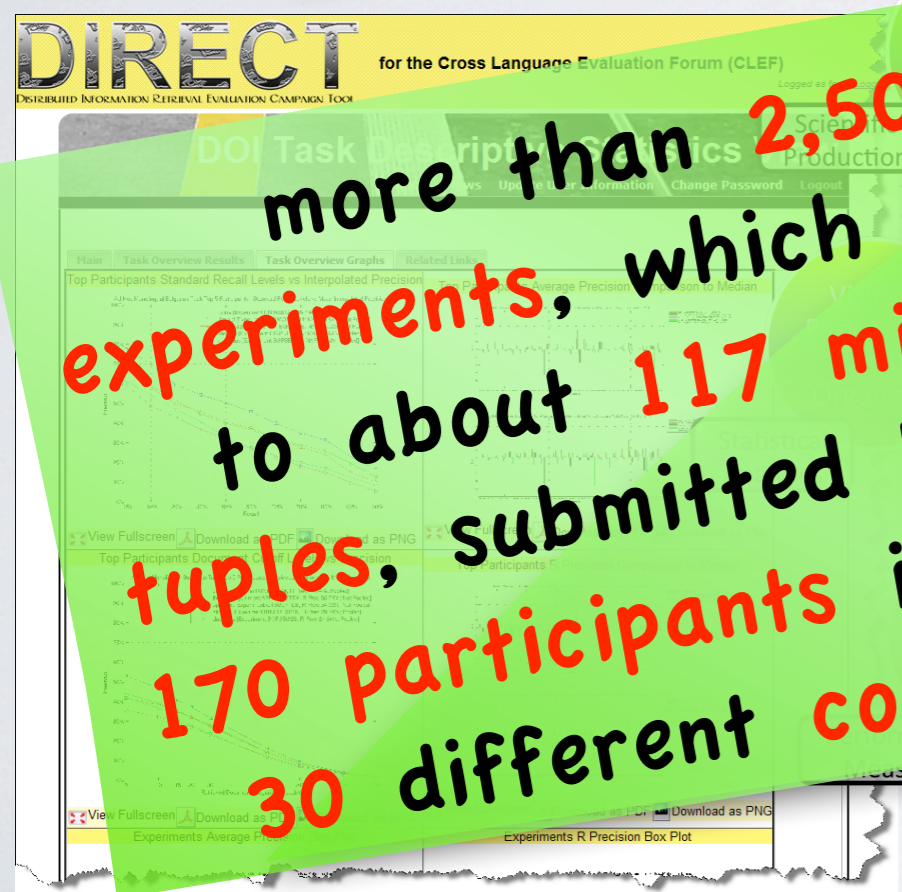


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over **5.5 million** performance measures and descriptive statistics; and, about **20,000** plots and statistical analyses graphs

CLEF 2010



- What and how innovate
- Change in the coordination
- Funding



CLEF 2010 as a **bridge**
to the future



The **community** is the key to **success**



CLEF 2010 as a **bridge** to the future

La Gioconda
A Romantic New Musical
music by
Donya Lane
lyrics by
Ed McNamee
directed by
Michael Unger

Mona Lisa

La Gioconda

La Joconde

Мона Лиза

times to a
rostimulate
electro

unité d
électrique
étant co

sind, wo
Elektrosti
ewebe



Patent: Electrostimulating device

An electrostimulator having electrode terminals (12, 14), which are to be connected at least sometimes to a stimulation unit (22) and a detection unit (18) of the electrostimulator, the stimulation unit (22) being implemented to generate electrostimulation pulses for stimulating body tissue and deliver them to at least one of the electrode terminals (12, 14), and the detection unit (18) being implemented to detect a successful stimulation of body tissue on the basis of at least one electrical signal applied to an electrode terminal, the electrostimulator being implemented



to record an electrical signal representing an intracardial electrocardiogram via a bipolar electrode configuration, characterized in that a high-pass filter having a lower limiting frequency greater than 100 Hz is situated between the electrode line terminal and the detection unit, and the detection unit is implemented to analyze the high-pass-filtered electrical signal.



Brevet

Stimulateur électrique

Stimulateur électrique avec branchements d'électrodes (12) doivent être reliés au moins temporairement à une unité de stimulation (22) et une unité de détection (18) du stimulateur électrique, l'unité de stimulation (22) étant conçue pour générer des impulsions de stimulation électrique pour la stimulation de corps et de les envoyer à l'un des branchements d'électrodes (12, 14) et l'unité de détection (18) étant conçue pour détecter une stimulation réussie de tissu corporel sur la base d'au moins un signal électrique appliqué à un terminal d'électrode, le stimulateur électrique étant implémenté pour enregistrer un signal électrique représentant un électrocardiogramme intracardiaque via une configuration d'électrodes bipolaires, caractérisé en ce qu'un filtre passe-haut ayant une fréquence limite inférieure supérieure à 100 Hz est situé entre le terminal de ligne d'électrode et l'unité de détection, et l'unité de détection est implémentée pour analyser le signal électrique filtré passe-haut.

PATENT

ELEKTROSTIMULATOR

Stimulator mit Elektrodenanschlüssen (12, 14), die zeitweise mit einer Stimulationseinheit (22) und einer Detektionseinheit (18) des Elektrostimulators verbunden sind, wobei die Stimulationseinheit (22) dazu dient, Elektrostimulationsimpulse zur Stimulierung des Körpers zu generieren und an wenigstens einen der Elektrodenanschlüsse (12, 14) abzugeben und wobei die Detektionseinheit (18) dazu dient, eine erfolgreiche Stimulation von Körpergewebe zu detektieren auf der Basis von wenigstens einem elektrischen Signal, das an einen der Elektrodenanschlüsse (12, 14) angelegt ist, wobei der Elektrostimulator dazu implementiert ist, ein intracardiales Elektrokardiogramm über eine bipolare Elektrodenanordnung aufzuzeichnen, dadurch gekennzeichnet, dass ein Hochpassfilter mit einer unteren Grenzfrequenz größer als 100 Hz zwischen dem Elektrodenanschlussterminal und der Detektionseinheit (18) angeordnet ist, und die Detektionseinheit (18) dazu implementiert ist, das hochpassgefilterte elektrische Signal zu analysieren.

Patent: Electrostimulating device

An electrostimulator having electrode terminals (12, 14), which are to be connected at least sometimes to a stimulation unit (22) and a detection unit (18) of the electrostimulator, the stimulation unit (22) being implemented to generate electrostimulation pulses for stimulating body tissue and deliver them to at least one of the electrode terminals (12, 14), and the detection unit (18) being implemented to detect a successful stimulation of body tissue on the basis of at least one electrical signal applied to an electrode terminal, the electrostimulator being implemented to record an electrical signal representing an intracardiac electrocardiogram via a bipolar electrode configuration, characterized in that a high-pass filter having a lower limiting frequency greater than 100 Hz is situated between the electrode line terminal and the detection unit, and the detection unit is implemented to analyze the high-pass-filtered electrical signal.

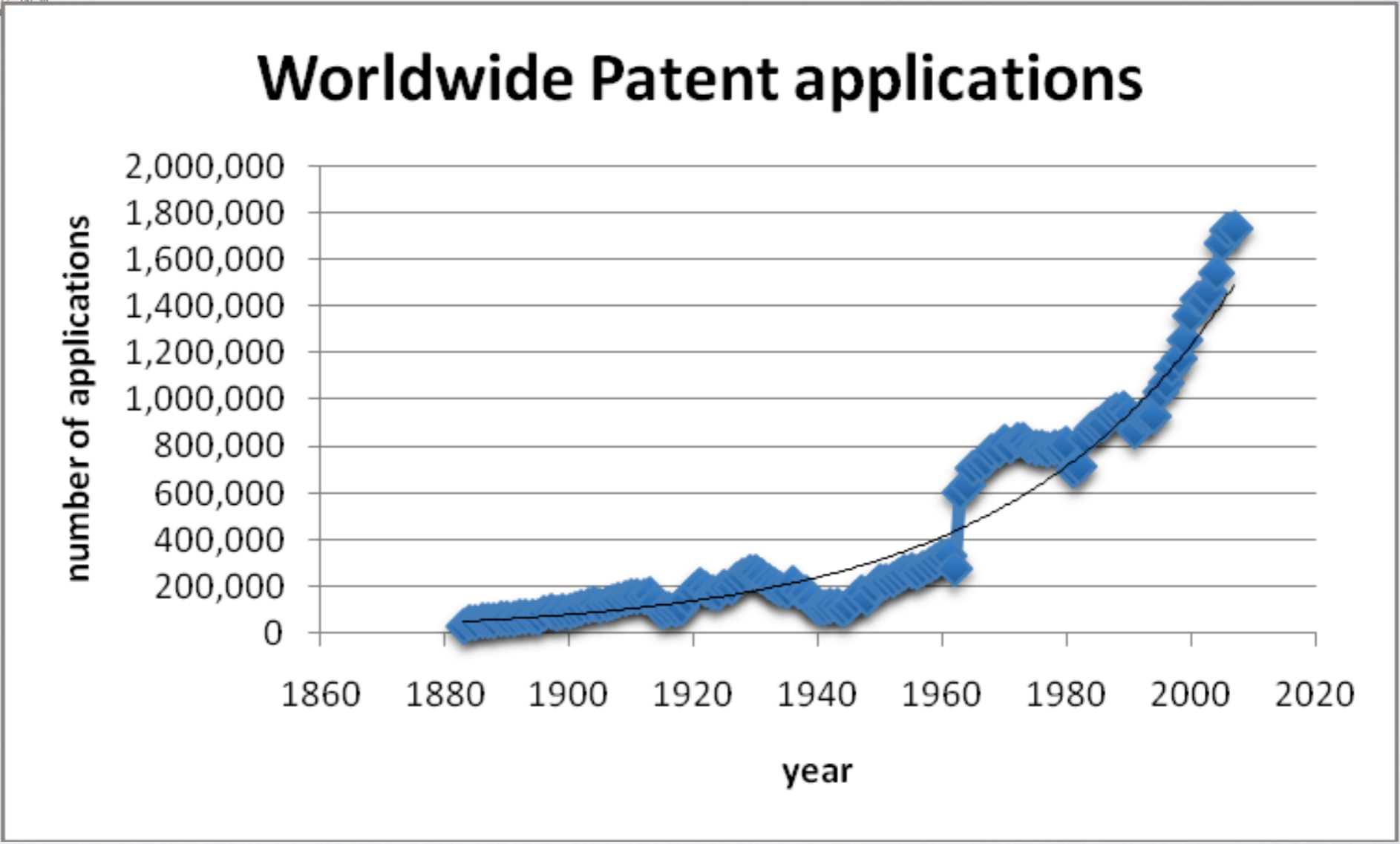
Brevet Stimulateur électrique

Stimulateur électrique avec chévements d'électrodes (12 doivent être reliés au moins temporaire à une unité de stimulation (22) et une unité de détection (18) de l'électrostimulateur (22) étant conçue pour des impulsions de stimulation électrique pour la stimulation d'organs et de les envoyer à l'un des branchements d'électrodes (12, 14) et l'unité de détection conçue pour détecter une stimulation réussie de tissu corporel sur la base d'au moins un signal électrique appliqué à un des branchements d'électrodes, l'électrostimulateur étant implémenté pour enregistrer un signal électrique représentant un électrocardiogramme intracardiaque via une configuration d'électrodes bipolaires, caractérisé en ce qu'un filtre passe-haut ayant une fréquence limite inférieure supérieure à 100 Hz est situé entre le terminal de ligne d'électrode et l'unité de détection, et l'unité de détection est implémentée pour analyser le signal électrique filtré passe-haut.

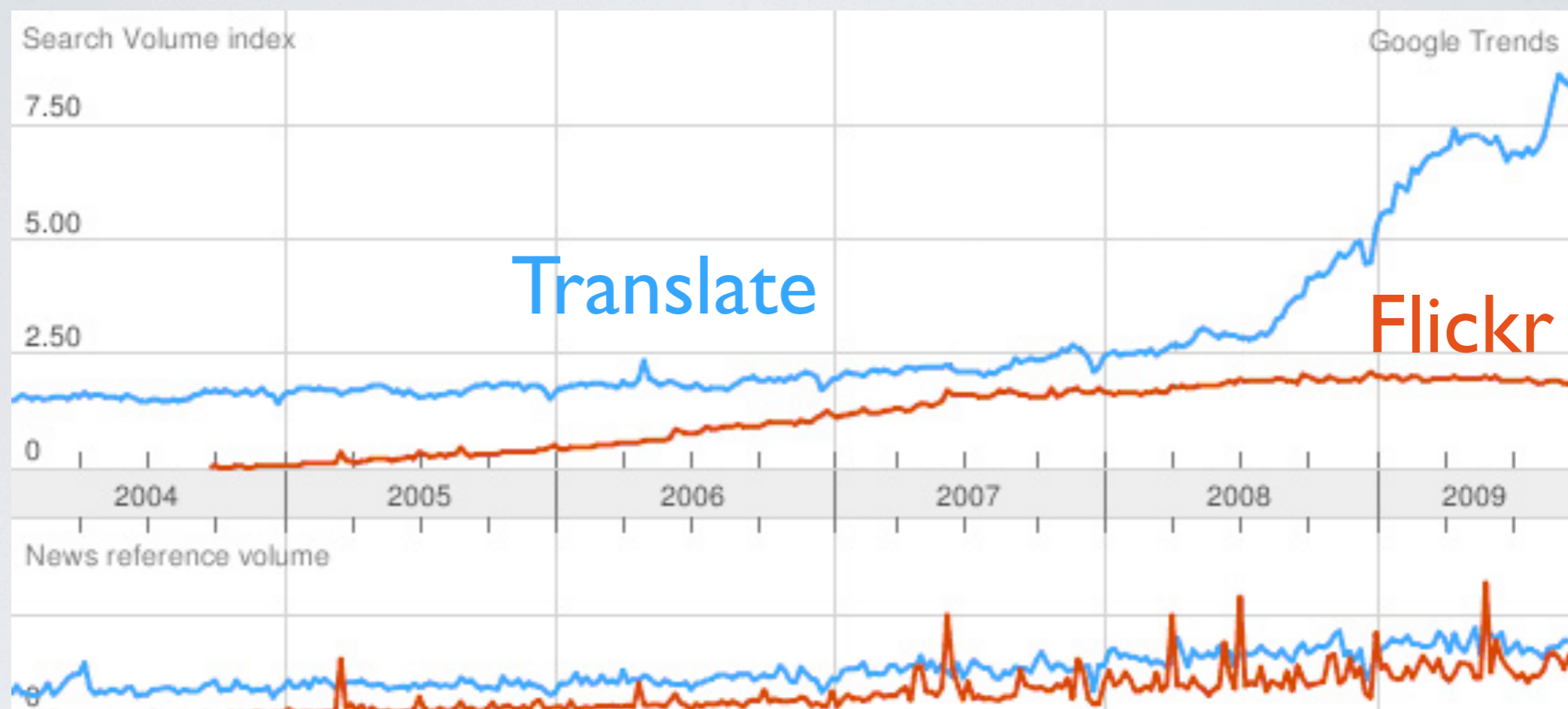
PATENT

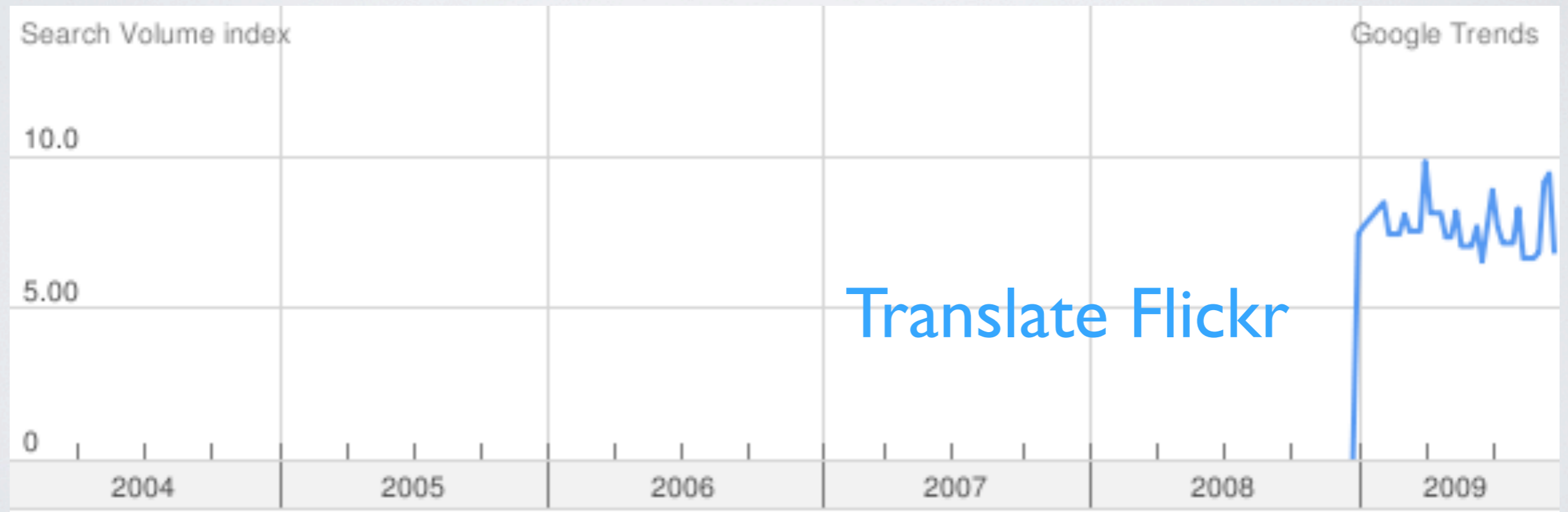
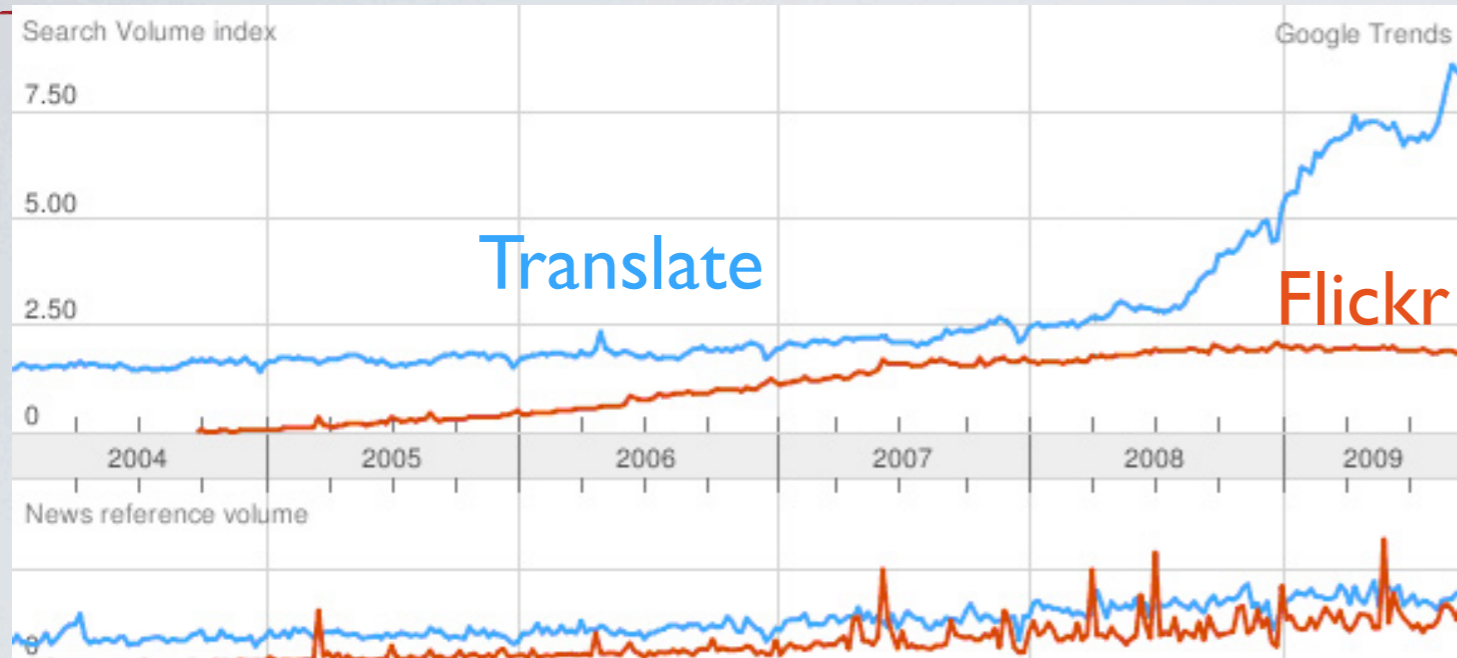
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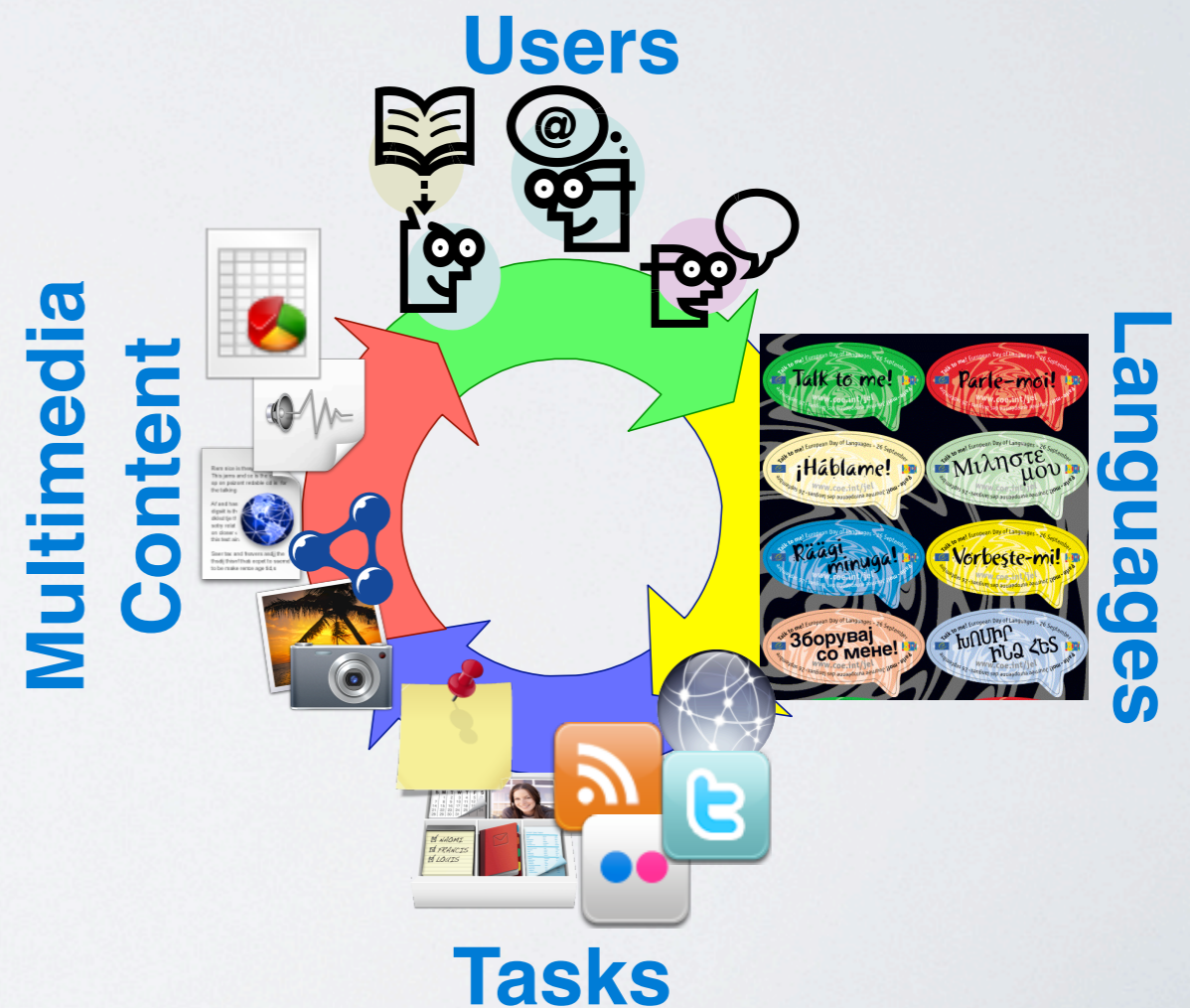
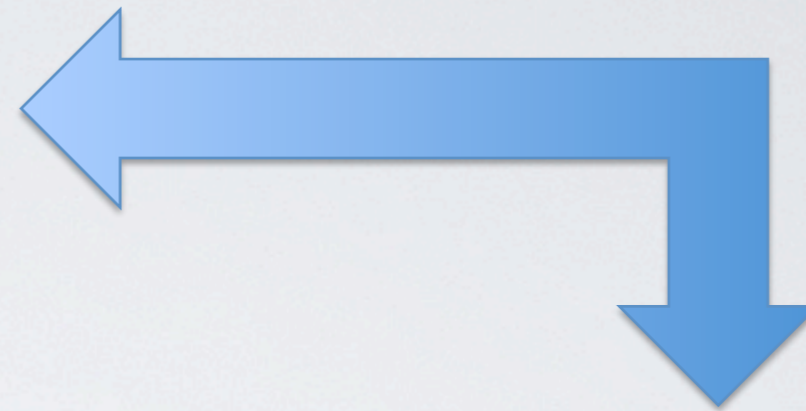
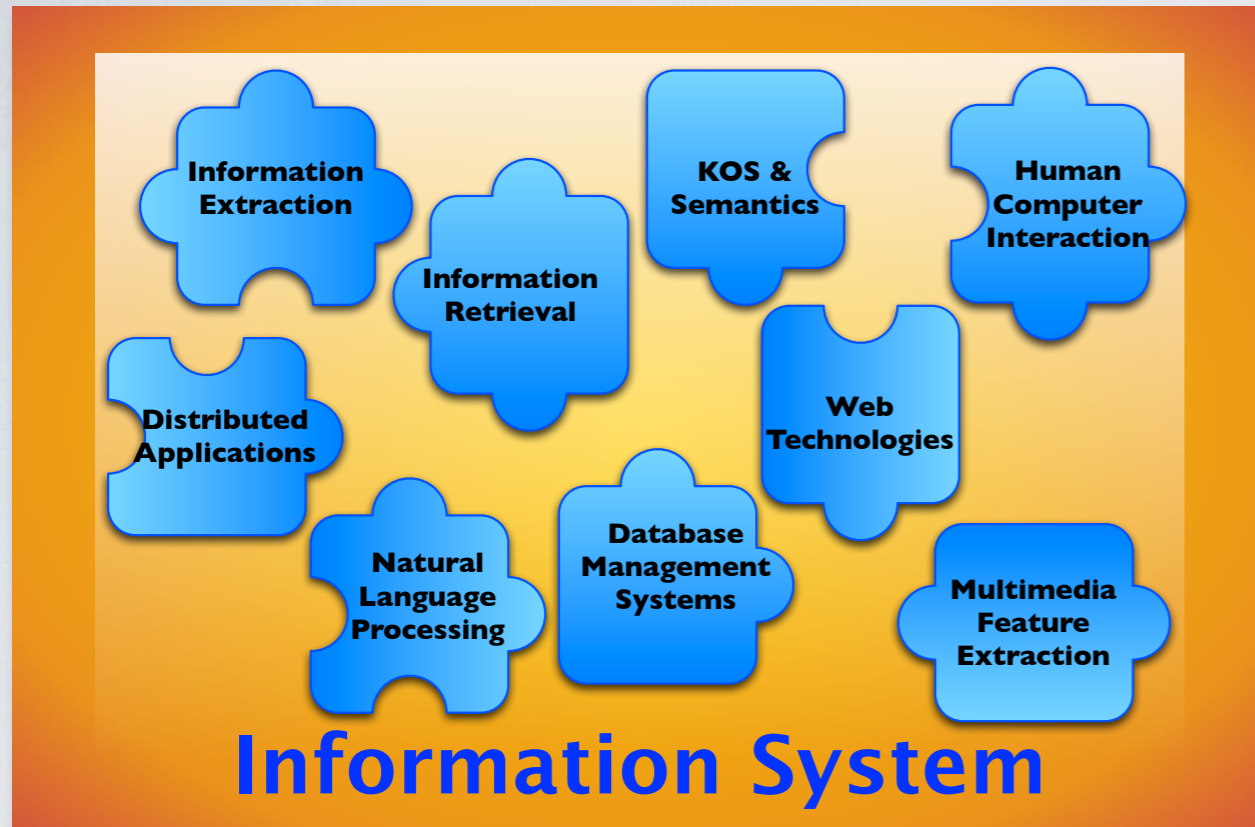
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The screenshot displays a medical image analysis software interface. It features two main viewing windows: 'View 2d' on the left and 'View 3d' on the right. The 'View 2d' window shows a cross-sectional CT scan of a chest with various lung regions segmented into different colors. A yellow callout box labeled 'Micro nodules' points to a small blue region. The 'View 3d' window shows a 3D reconstruction of the lungs with similar color-coded segments. A blue callout box labeled 'Emphysème' points to a large green region, and a pink callout box labeled 'Fibrosis' points to a red region. Below the viewing windows is a control panel with a 'Select segment' list containing 'emphysema' (blue), 'ground_glass' (yellow), 'fibrosis' (red), 'micronodules' (magenta), and 'healthy' (green). The 'Lung Tissue Analysis Parameters' section includes a slider for 'distance between the center of 32x32 blocks' set to 16, and buttons for 'Generate' and 'Auto Update'. The bottom status bar shows 'Memory Usage: 418 / 483MB', 'Seed: (0 , 0 , 0)', and a progress indicator at 'done 100%'.









Experimental Evaluation
is a key means for supporting and fostering the development of such complex multilingual and multimedia systems



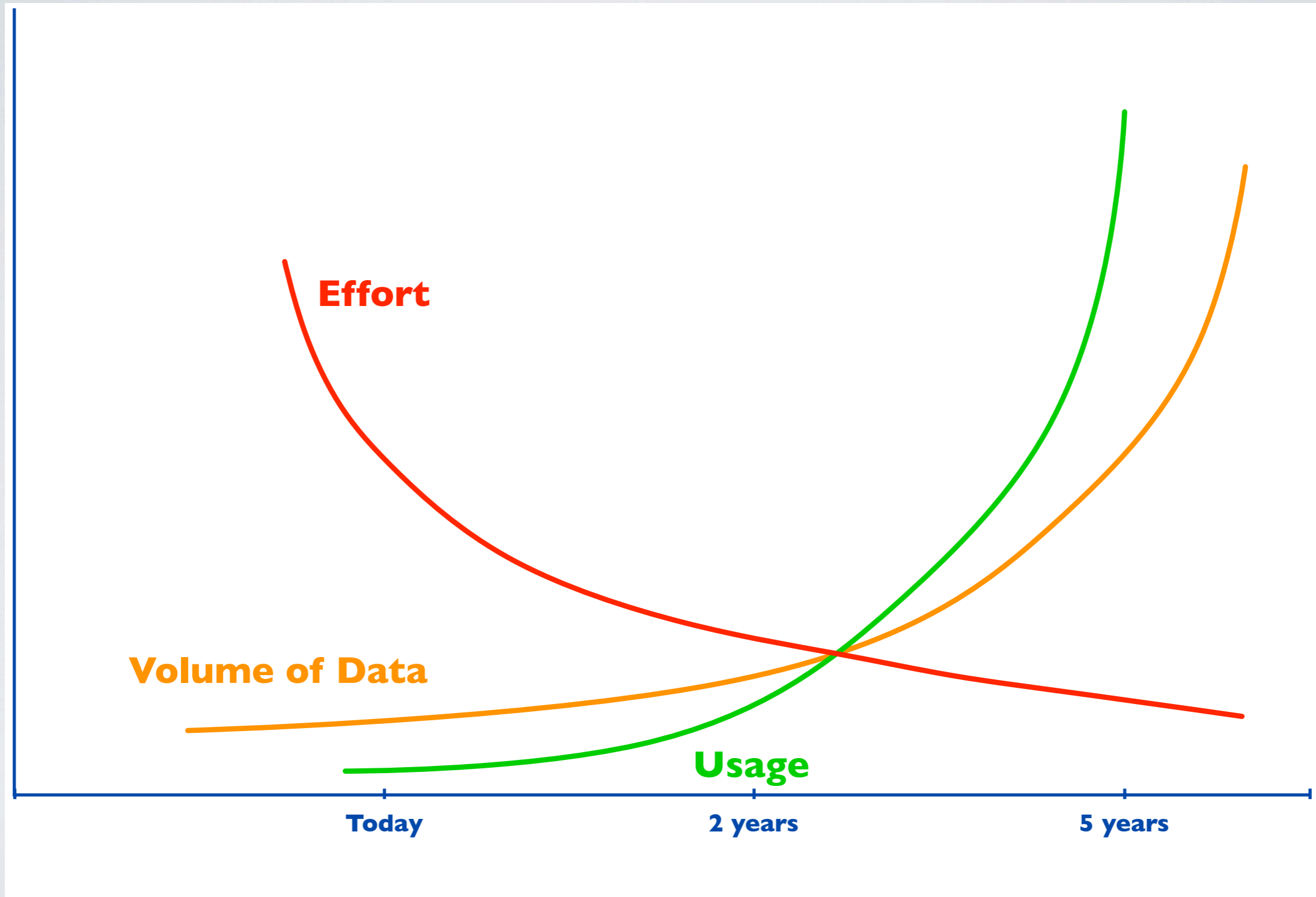
Languages

- Heterogeneous and volume of the data
 - much is done to provide realistic document collections
- Diversity of users and tasks
 - evaluation tasks/tracks are often too “monolithic”
- Complexity of the systems
 - system are usually dealt with as “black boxes”

- To increase the **automation** in the evaluation process
 - reduction of the effort necessary for carrying out evaluation
 - increase the number of the experiments conducted in order to deeply analyse evolving user habits and tasks

- To study systems, **component-by-component**
 - better understanding of systems' behaviour also with respect to different tasks

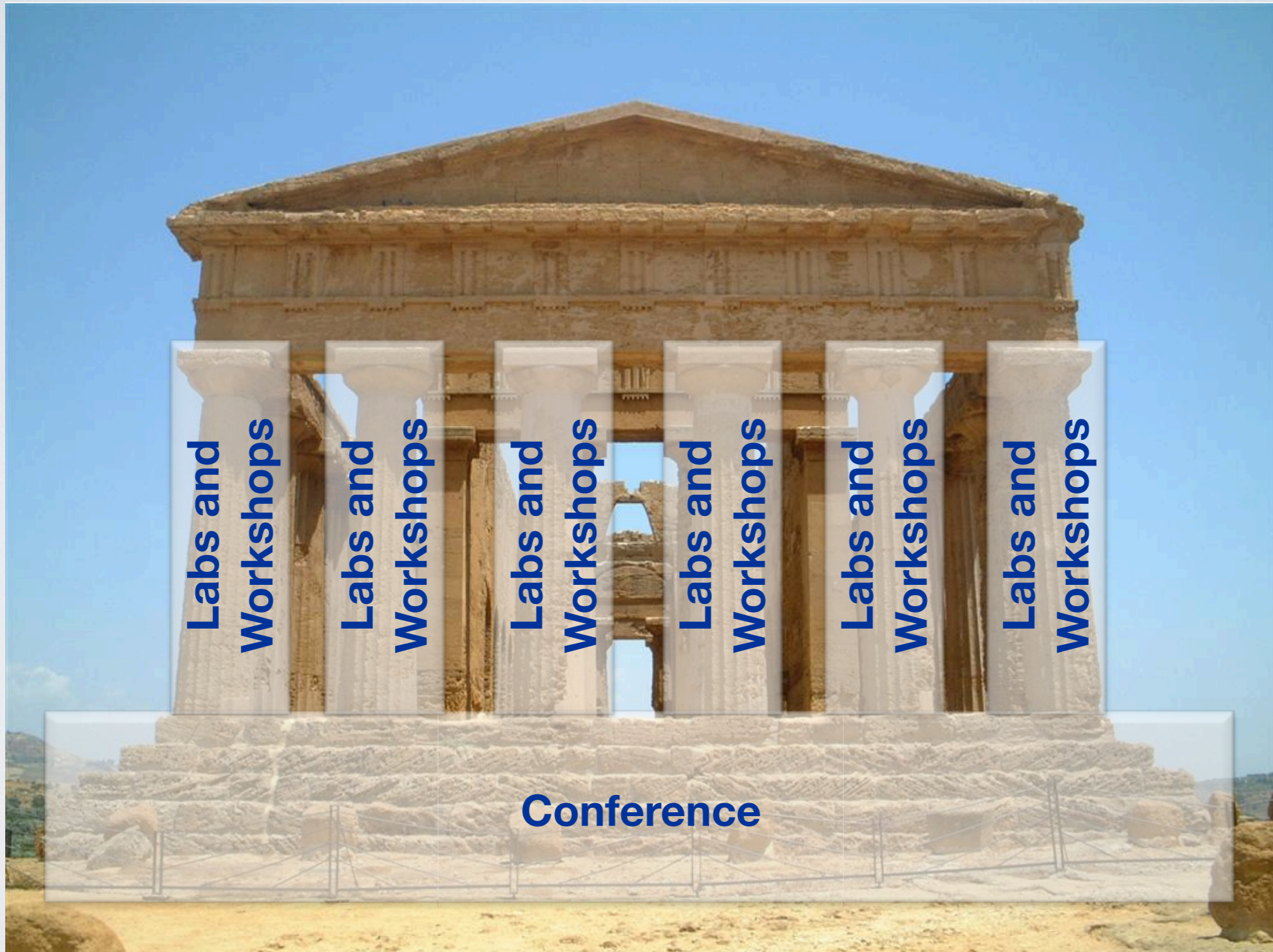
- To increase the **usage** of the produced experimental data
 - improving collaboration and user involvement to achieve unforeseen exploitation and enrichment of the experimental data



Approach











- **PROMISE:** Participative Research labOratory for Multimedia and Multilingual Information Systems Evaluation
- **Network of Excellence:** Grant Agreement 258191
- **Duration:** 3 years from 1st September 2010 to 31st August 2013
- **Consortium:** 10 partners
- **Web site:** <http://www.promise-noe.eu/>

