



中国科学技术信息研究所

INSTITUTE OF SCIENTIFIC AND TECHNICAL INFORMATION OF CHINA

# STKOS Development & Its Application Service in ISTIC

Ying LI@ISTIC

Information Technology Support Center

Institute of Scientific and Technical Information of China (ISTIC)

ICSTI 2014, Miraikan, Tokyo, JAPAN

October 20 (Mon.) 2014, 15:30-16:00

# Outline

1. Background & Introduction
2. Overview of STKOS\*
3. Application of STKOS in:
  - NSTL (National Science and Technology Library, a digital library) , for Implementation of intelligent retrieval
  - monitoring technical trends
  - industry knowledge system
4. the cooperation between information organizations in China-Japan-Korea ⇒ ISTIC-JST-KISTI

\* In our project, STKOS stands for Scientific Technical Knowledge Organization System.

# 1. Background & Introduction

- STKOS Positioning
- What is KOS ?
- What is STKOS ?



# STKOS Positioning

Government Granted Projects in China:

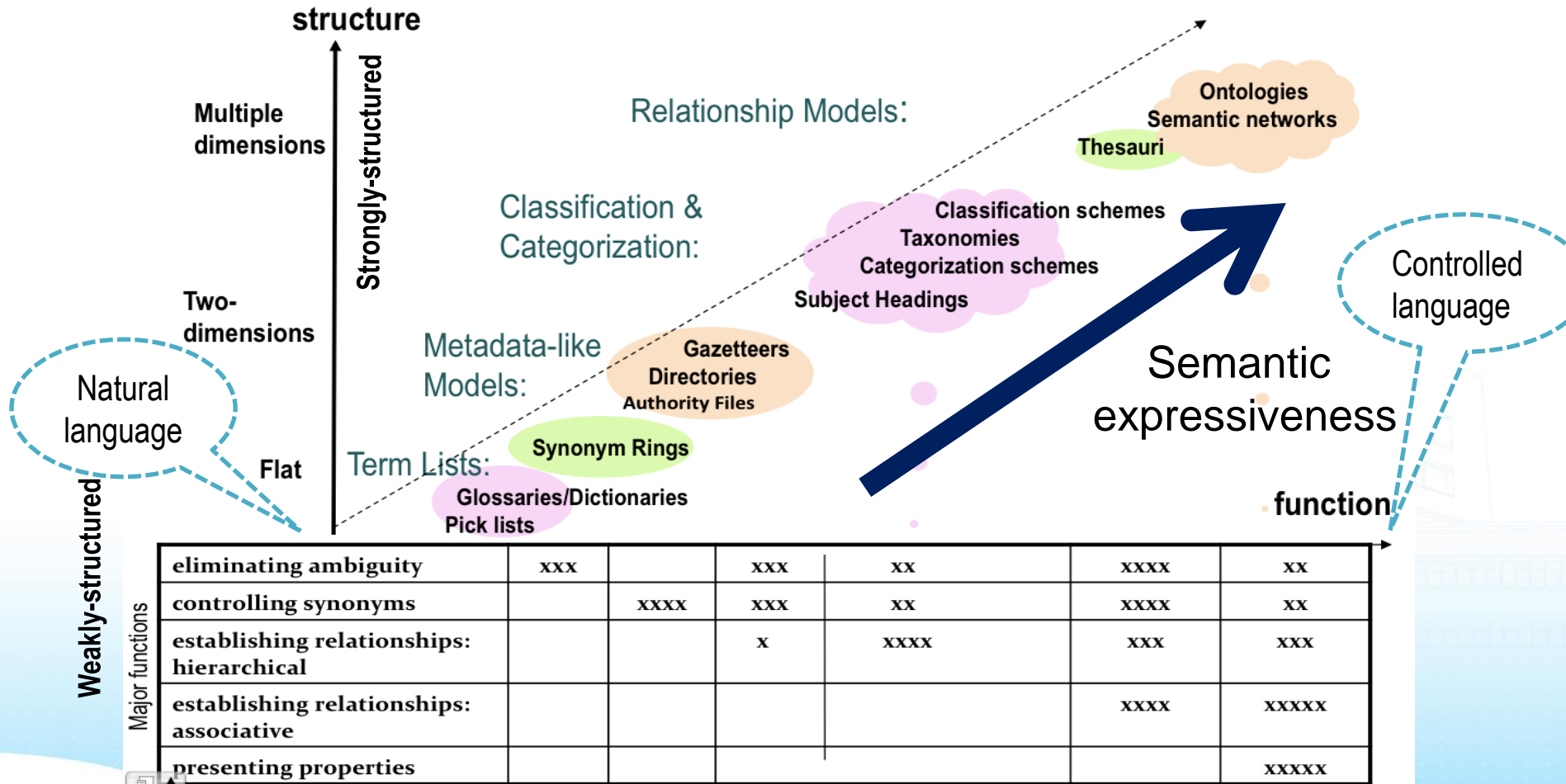
- One type of national projects is named as:  
the National Key Technologies R&D Program of the  
12th 5-Year Plan (in China)(2011–2015)
- One of projects implanted by ISTIC:  
Construction of Knowledge Organization System (KOS)  
and Application Oriented Foreign Science & Technology  
Literature
- One of the seven sub-projects : STKOS

# What is KOS

KOS stands for Knowledge Organization Systems  
Schemes for Organizing Information & Promoting  
Knowledge Management

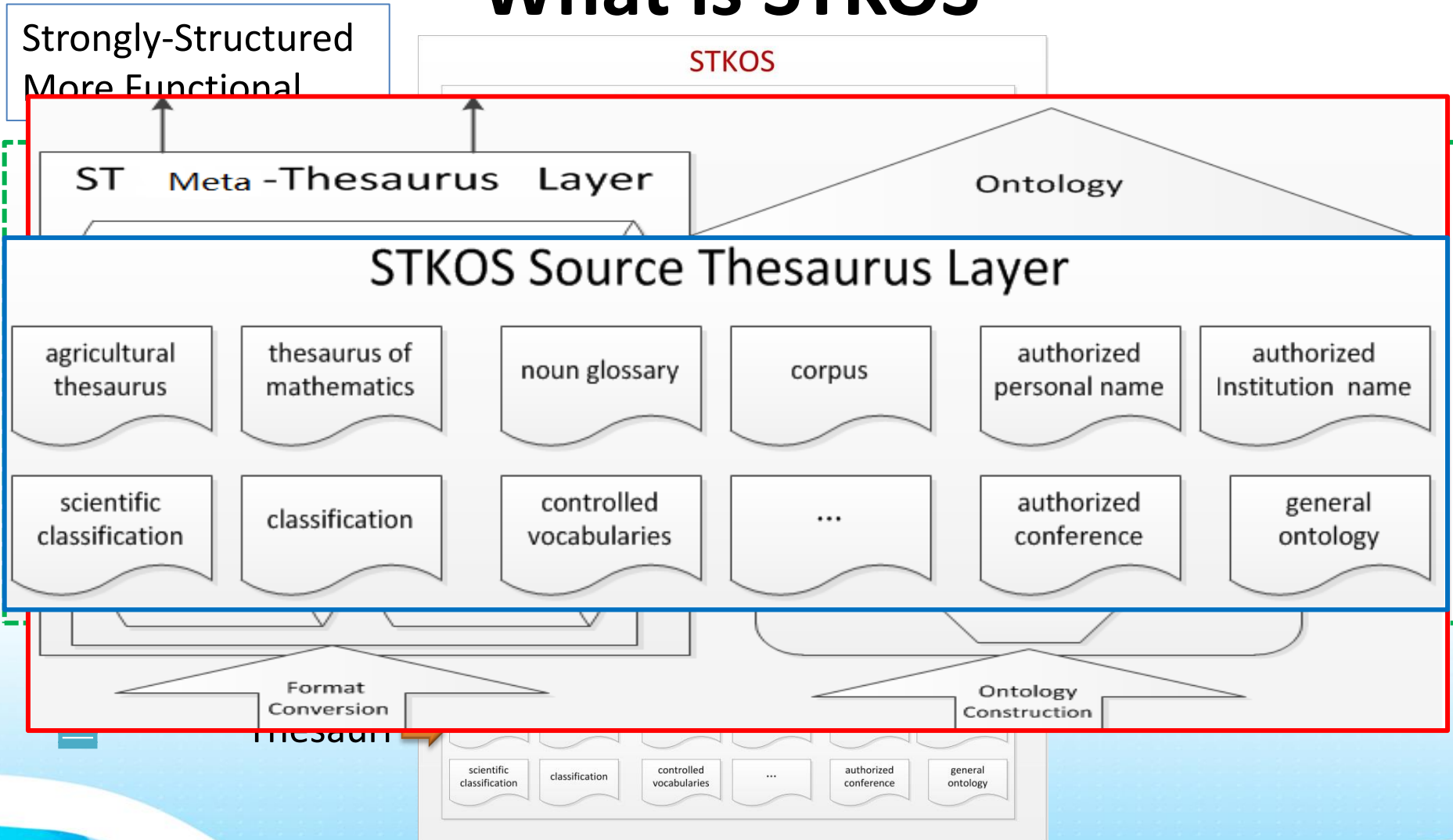
- Term lists (authority files, glossaries, dictionaries, gazetteers)
- Classification & categories (classification scheme, taxonomy, subject headings)
- Relationship lists (thesaurus, semantic network, ontology)

# KOS Types



Come from slides of Zeng, 2008.

# What is STKOS



## 2. Overview of STKOS Construction

- Construction Goals
- Construction Flow of STKOS
- Metadata Schema of STKOS
- Service Platform for construction



# Objectives / Goals

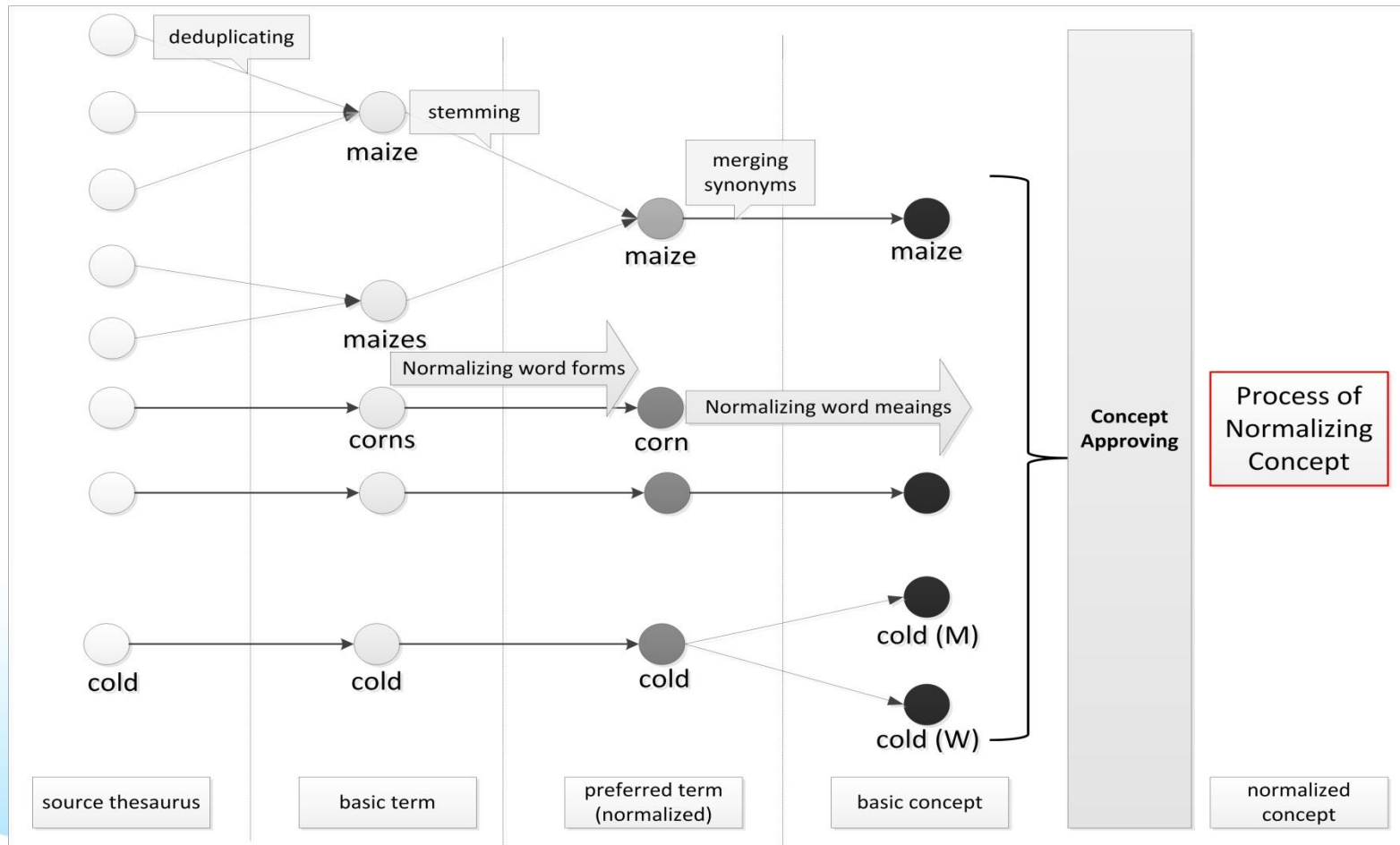
## Concrete Goals:

- Source Thesaurus, 10 M
- ST Term, > 5 M
- ST Concept, 800 K

## Long-term Goals:

- Supporting organization and application of large-scale foreign ST literature
- Achieving effective organization, depth representation, associating knowledge for ST literature
- Enhancing our institute service ability : knowledge discovery, knowledge mining, knowledge computing
- Upgrading the overall service level of literature institutions in China

# Data Processing Flow for STKOS(illustrate)

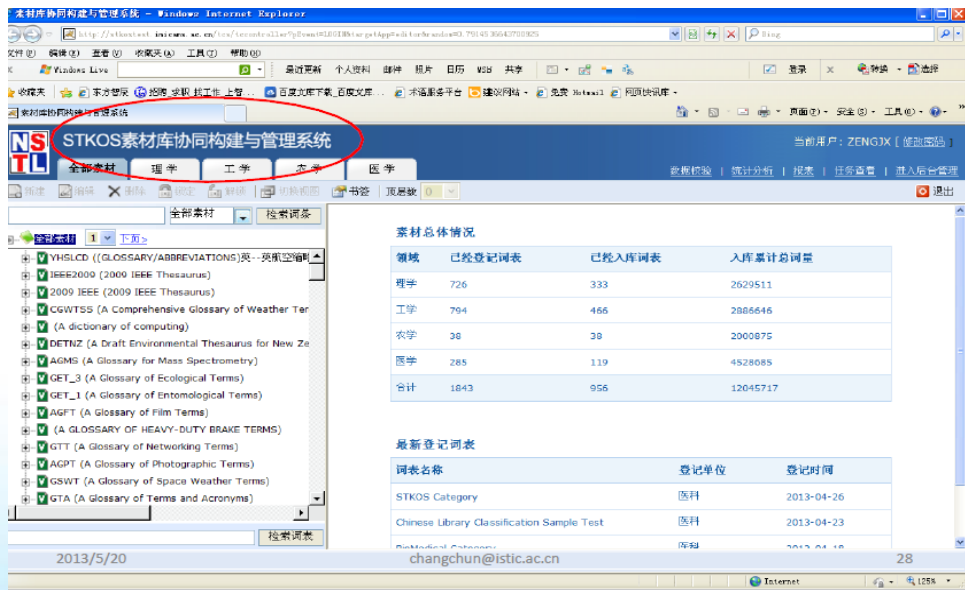


# STKOS Metadata Schema

Element Code	Label	Definition	XML Attribute	Frequency of Occurrence	Coding System
01	name	...		(0,n)	URI
04	use	use instead		(0,1)	URI
0401	use and	...		(0,1)	URI
05	used for	...		(0,n)	URI
0502	antonym	...		(0,n)	URI
06	broader term	...		(0,n)	URI

# Service Platforms for Data Processing

## Collaborative Construction & Management of Source Thesauri



STKOS素材库协同构建与管理系统

当前用户: ZENGJX [退出系统]

全部素材 理学 工学 农学 医学

全部素材 检索词表

YHSLCD ((GLOSSARY/ABBREVIATIONS)英-英航空缩略...  
IEEE2009 (2009 IEEE Thesaurus)  
2009 IEEE (2009 IEEE Thesaurus)  
CGWTSS (A Comprehensive Glossary of Weather Ter...  
(A dictionary of computing)  
DIETNZ (A Draft Environmental Thesaurus for New Ze...  
AGMS (A Glossary for Mass Spectrometry)  
GET\_3 (A Glossary of Ecological Terms)  
GET\_1 (A Glossary of Entomological Terms)  
AGFT (A Glossary of Film Terms)  
(A GLOSSARY OF HEAVY-DUTY BRAKE TERMS)  
GTT (A Glossary of Networking Terms)  
AGPT (A Glossary of Photographic Terms)  
CSWT (A Glossary of Space Weather Terms)  
GTA (A Glossary of Terms and Acronyms)

2013/5/20

changchun@istic.ac.cn

28

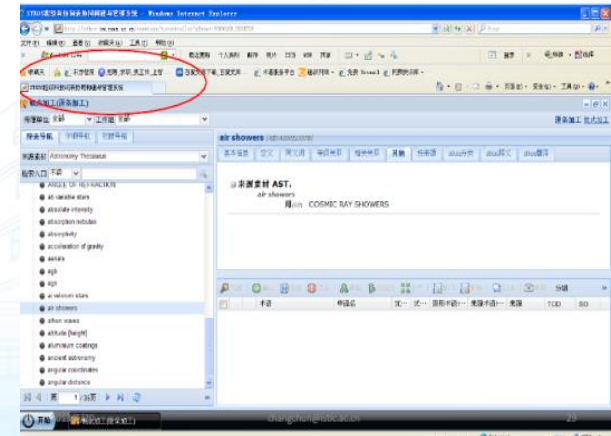
素材总体情况

领域	已经登记词表	已经入库词表	入库累计总词量
理学	726	333	2629511
工学	794	466	2886646
农学	38	38	2000875
医学	285	119	4528085
合计	1843	956	12045717

最新登记词表

词表名称	登记单位	登记时间
STKOS Category	医科	2013-04-26
Chinese Library Classification Sample Test	医科	2013-04-23
...	...	...

## Concept Processing



air showers (201405020001)

词表名称: Air Showers

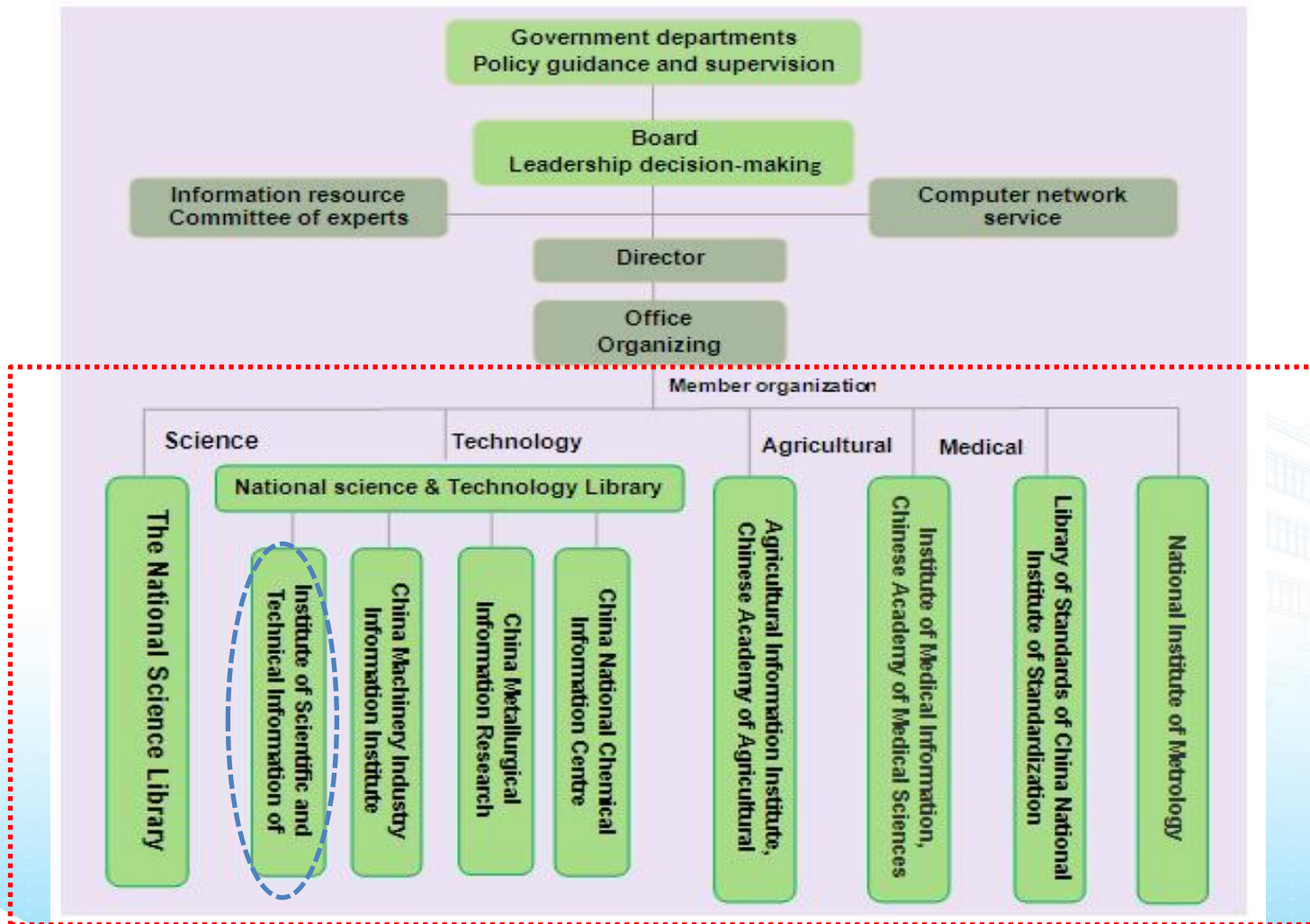
来源: COSMIC RAY SHOWERS

概念处理: 1/30页

## 3. Application of STKOS

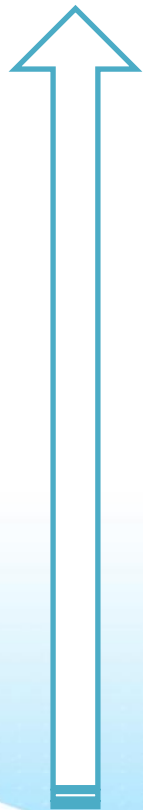
- Intelligent Retrieval in NSTL
  - NSTL: National Science & Technology Digital Library. It consists of 9 member libraries. (shown in the next slide)
  - NSTL: provides foreign literature services of science and technology nationwide by 9 member libraries cooperation.
  - journal, patent, proceeding, report, dissertation, standard, etc.
  - English, Japanese, Russian, Chinese, etc.
- Monitoring Technical Trends
- Industry Knowledge System

# NSTL Organization Chart



# Search Extension Based-on Concept in STKOS

Strongly-Structured  
More Functional



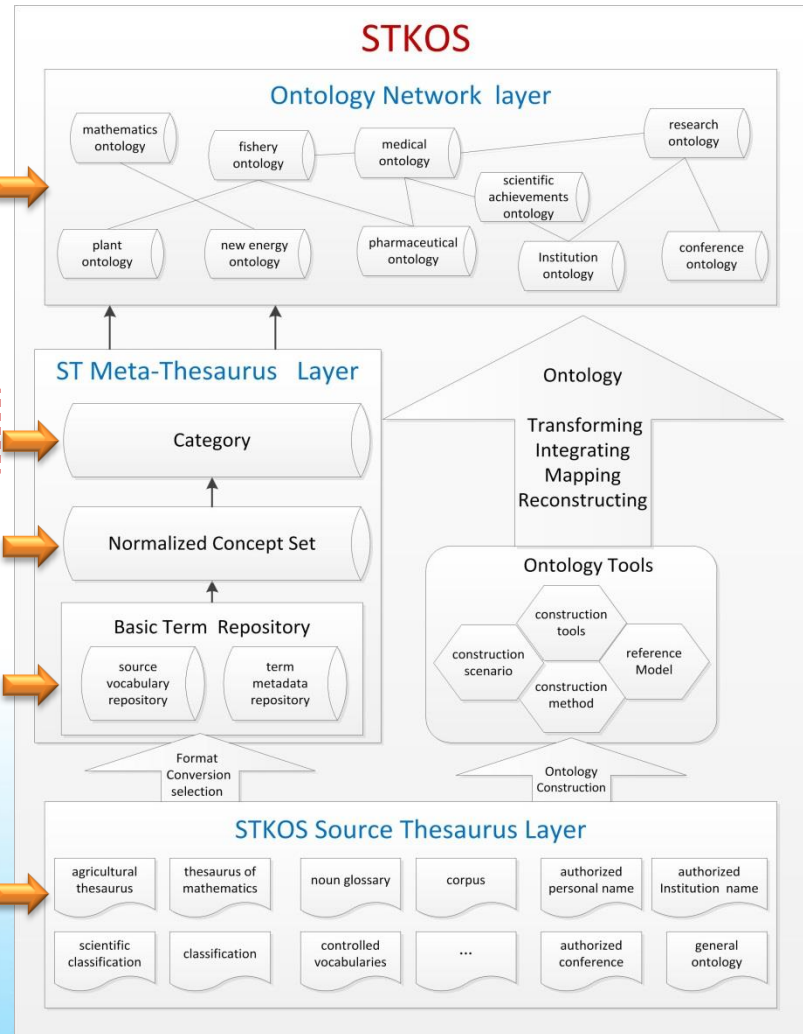
Ontologies

Categories

Concepts

Basic Terms

Thesauri



# Pilot System: Intelligent Retrieval in NSTL



The screenshot displays the NSTL website header with the logo for the National Science and Technology Library (NSTL) and the National Science and Technology Digital Library. Below the header is a search interface featuring a search box, a callout bubble pointing to it with the text "Intelligence retrieval box on NSTL", and three search buttons: "快速检索" (Quick Search), "高级检索" (Advanced Search), and "引导检索" (Guided Search). The footer contains a navigation menu, copyright information, contact details, and a page visit count.

NS TL 国家科技图书文献中心 National Science and Technology Library

国家科技数字图书馆 National Science and Technology Library

Intelligence retrieval box on NSTL

FAQ 收藏 联系我们

快速检索 高级检索 引导检索

文献检索 | 期刊浏览 | 全文文献 | 引文检索 | 代查代借 | 参考咨询 | 热点门户 | 预印本服务 | 集成揭示 | 意见与建议

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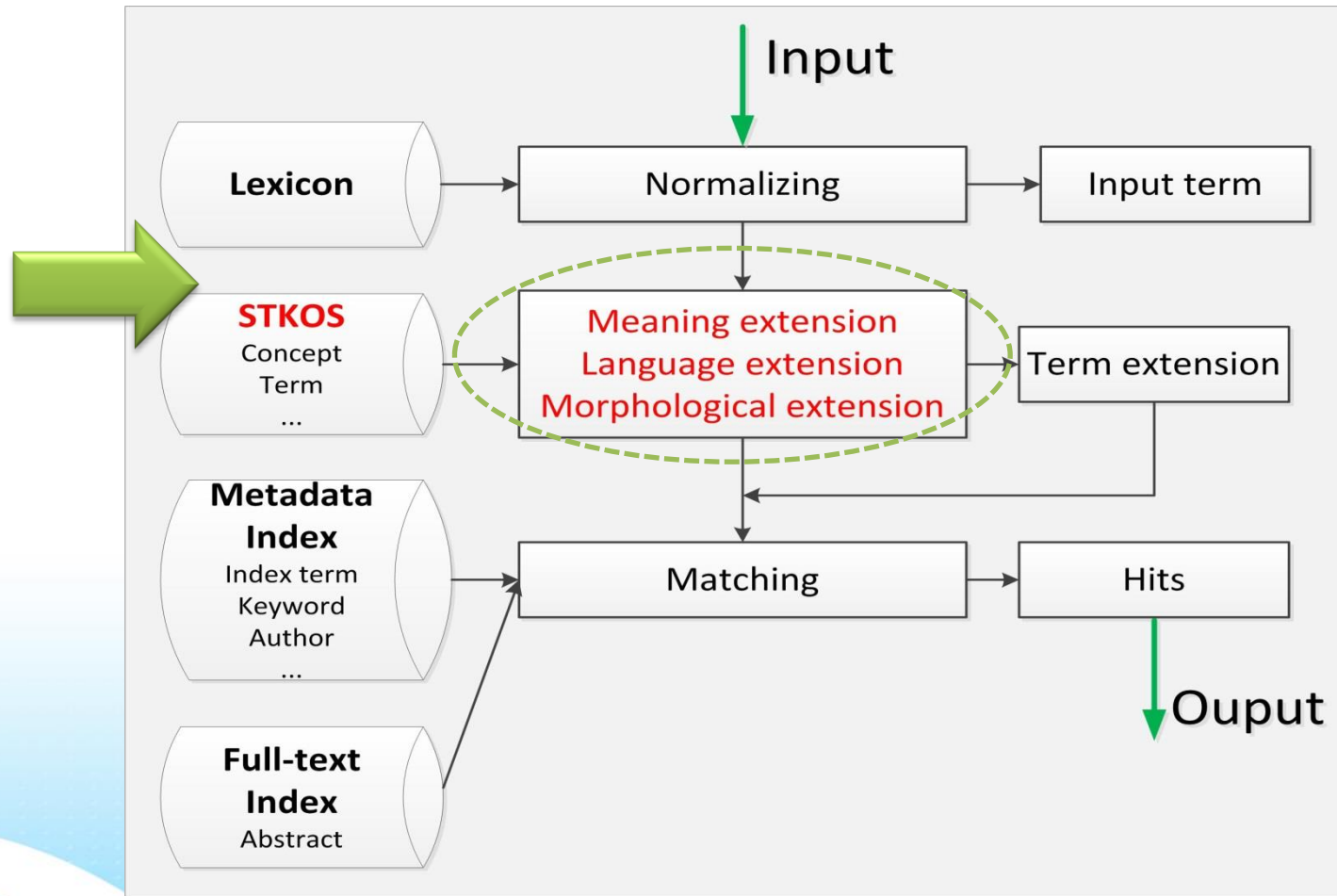
国家科技图书文献中心咨询热线: 800-990-8900 010-58882057 Email:service@nstl.gov.cn

地址: 北京市复兴路15号 100038 京ICP备10027328号

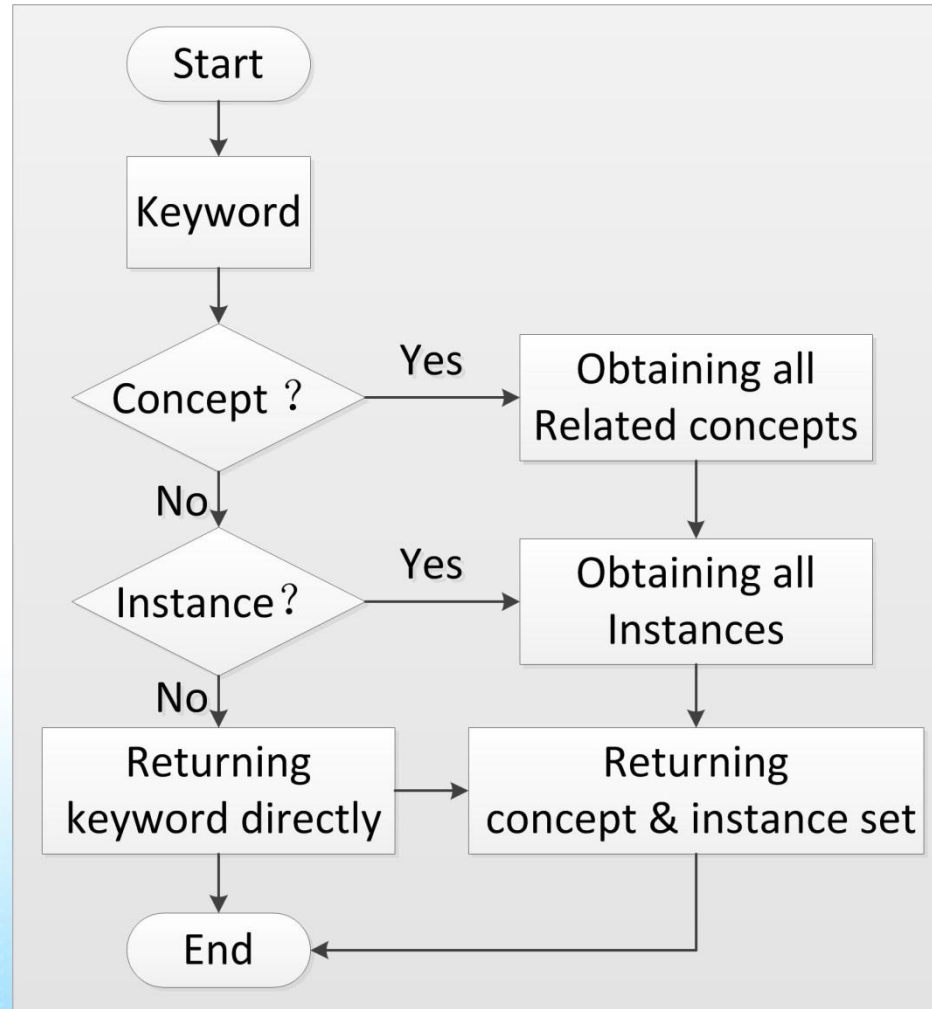
页面总访问量: 2638892



# Search Extension Based-on STKOS Concept in NSTL Intelligent Retrieval

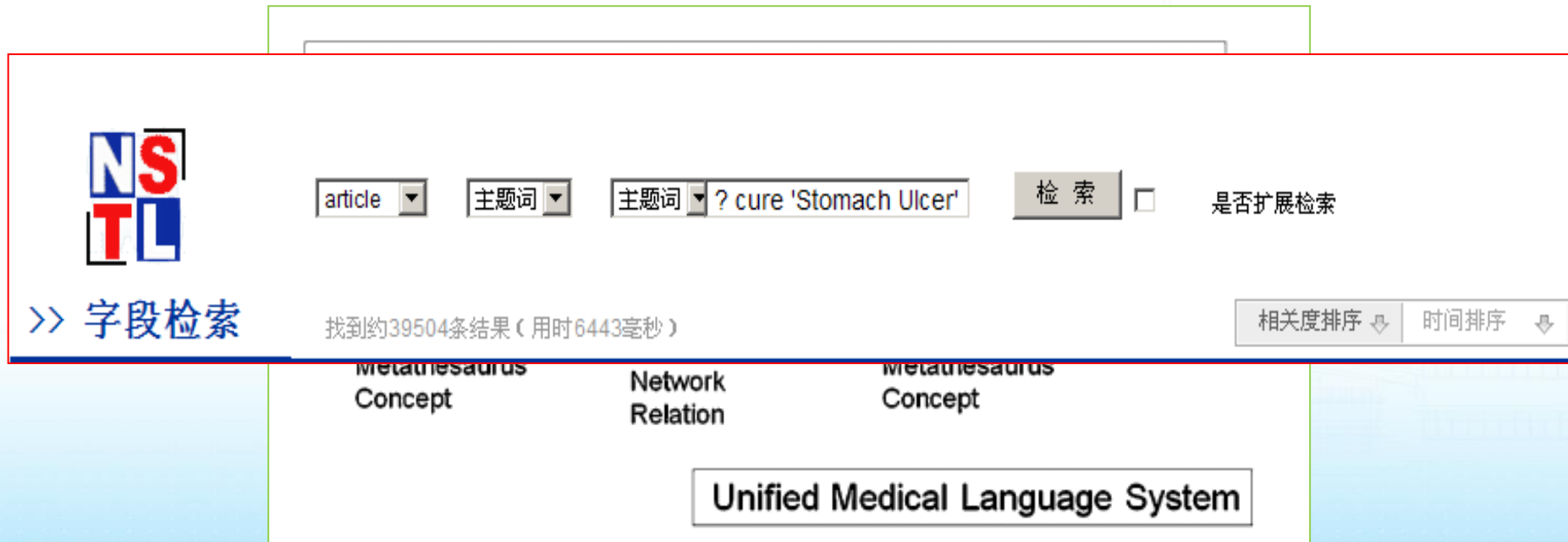


# Search Extension -- Concept Extension



# Searching by Semantic Relations

- Search Using semantic relations between concepts  
e.g. Drug --- Therapy / Side-effect --- Disease



NS  
TL

article 主题词 主题词 ? cure 'Stomach Ulcer' 检索  是否扩展检索

>> 字段检索

找到约39504条结果 (用时6443毫秒)

相关性排序 ↓ 时间排序 ↓

Metathesaurus Concept      Network Relation      Metathesaurus Concept

Unified Medical Language System

# Screenshot (1/5)



NS NSTL 国家科技图书文献中心 National Science and Technology Library

您好, 杨先生 2011年4月8日 星期五

STKOS 范畴 来源术语

来源术语: 916129 规范概念: 321074 范畴类: 7137 来源词表: 54  
共 136378 条 | 第 1 页 | 共 27276 页 | 查询时间: 187 毫秒

triazacyclophe

所属范畴: 有机药物 有机化合物  
代词(0) 参(0)

来源术语:  
triazatetrabenzcorrole 所属范畴: 有机药物 有机化合物  
代词(0) 上位词(0) 下位词(0) 参(0)

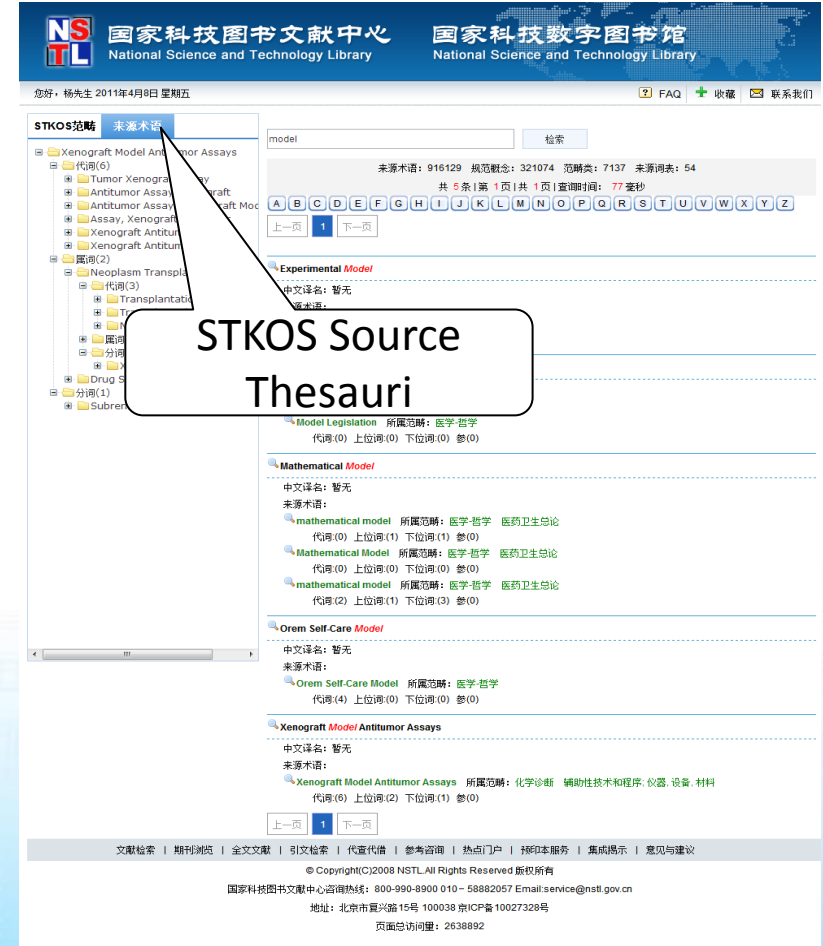
triazavirin  
中文译名: 暂无  
来源术语:  
triazavirin 所属范畴: 有机药物 有机化合物  
代词(0) 上位词(0) 下位词(0) 参(0)

triazbutil  
中文译名: 暂无  
来源术语:  
triazbutil 所属范畴: 有机药物 药代动力学 有机化合物  
代词(1) 上位词(0) 下位词(0) 参(0)

triazepinone  
中文译名: 暂无  
来源术语:  
triazepinone 所属范畴: 有机药物 有机化合物  
代词(1) 上位词(0) 下位词(0) 参(0)

文献检索 | 期刊浏览 | 全文文献 | 引文检索 | 代查代借 | 参考咨询 | 热点门户 | 预印本服务 | 集成揭示 | 意见与建议

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STKOS 范畴 来源术语

来源术语: 916129 规范概念: 321074 范畴类: 7137 来源词表: 54  
共 5 条 | 第 1 页 | 共 1 页 | 查询时间: 77 毫秒

model

Experimental Model  
中文译名: 暂无  
来源术语:

Model Legislation 所属范畴: 医学-哲学  
代词(0) 上位词(0) 下位词(0) 参(0)

Mathematical Model  
中文译名: 暂无  
来源术语:  
mathematical model 所属范畴: 医学-哲学 医药卫生总论  
代词(0) 上位词(1) 下位词(1) 参(0)  
Mathematical Model 所属范畴: 医学-哲学 医药卫生总论  
代词(0) 上位词(0) 下位词(0) 参(0)  
mathematical model 所属范畴: 医学-哲学 医药卫生总论  
代词(2) 上位词(1) 下位词(3) 参(0)

Orem Self-Care Model  
中文译名: 暂无  
来源术语:  
Orem Self-Care Model 所属范畴: 医学-哲学  
代词(4) 上位词(0) 下位词(0) 参(0)

Xenograft Model Antitumor Assays  
中文译名: 暂无  
来源术语:  
Xenograft Model Antitumor Assays 所属范畴: 化学诊断 辅助性技术和程序: 仪器、设备、材料  
代词(6) 上位词(2) 下位词(1) 参(0)

文献检索 | 期刊浏览 | 全文文献 | 引文检索 | 代查代借 | 参考咨询 | 热点门户 | 预印本服务 | 集成揭示 | 意见与建议

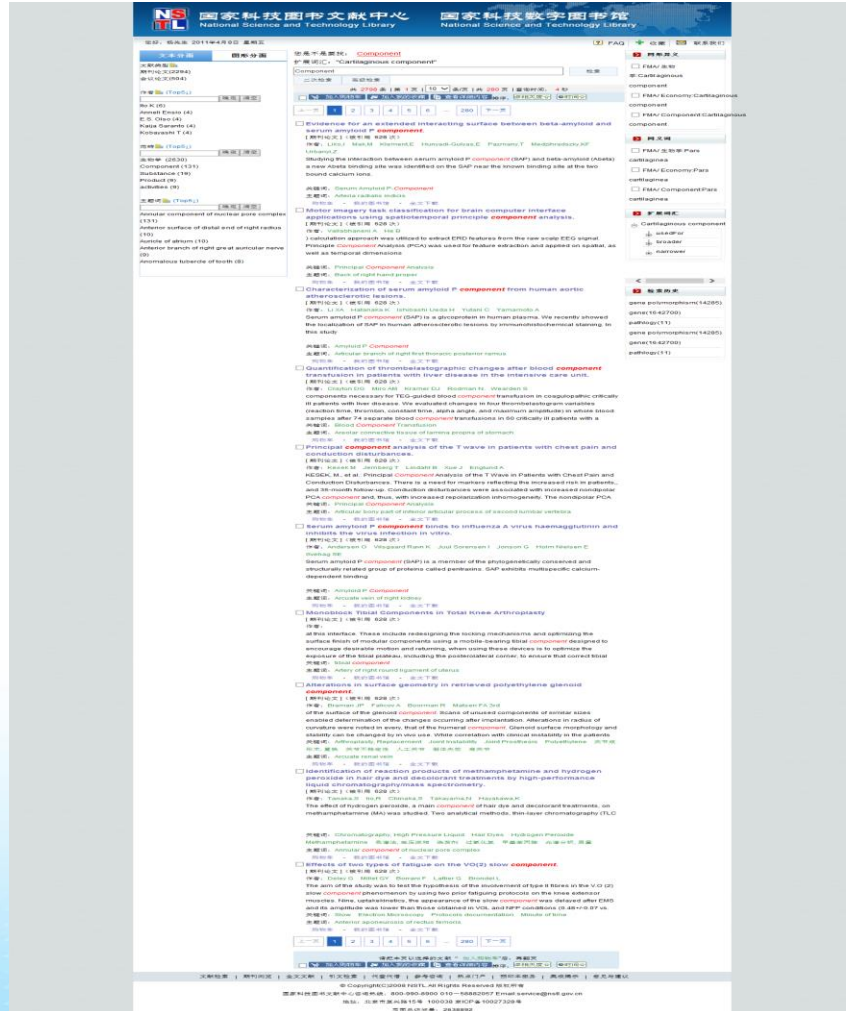
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地址: 北京市夏兴路15号 100038 京ICP备10027328号  
页面总访问量: 2638892

# Screenshot (2/5)



The screenshot displays the National Science and Technology Library (NSTL) website interface. At the top, the logo for the National Science and Technology Library is visible, along with the text "国家科技图书文献中心" and "国家科技数字图书馆". A search bar is present, and a callout box labeled "Retrieving" points to it. The main content area shows search results for the term "Abdomino pelvis". The results include the UI number "C1467563", the Chinese translation "中文译名: 髂窝", and the classification "所属范畴类: Component". Below this, there are sections for "Abduction" (UI: C1534799) and "Acetylcholine" (UI: C1483038). A sidebar on the left shows a hierarchical tree structure under "STKOS 范畴树", with "BMC" and "BioMedical Category" expanded. A "按字母检索" (Search by letter) section is also visible. The bottom of the page contains navigation links, copyright information, and contact details for the NSTL.

# Screenshot (3/5)



The screenshot displays the National Science and Technology Library (NSTL) search results page for the keyword "Component". The interface is in Chinese and includes a search bar at the top, navigation tabs, and a list of search results. The results are organized into columns, with the main column showing the title of each article, its authors, and a brief abstract. The right-hand side of the page features a sidebar with filters and options to refine the search. The background of the page shows a faint architectural drawing of a modern building.

**Search Results:**

- Component**  
 作者: ...  
 Abstract: ...  
 Keywords: ...
- Characterization of serum amyloid P component from human atherosclerotic lesions**  
 作者: ...  
 Abstract: ...  
 Keywords: ...
- Quantification of thromboelasticographic changes after blood component transfusions in patients with liver disease in the intensive care unit**  
 作者: ...  
 Abstract: ...  
 Keywords: ...
- Principal component analysis of the T wave in patients with chest pain and myocardial infarction**  
 作者: ...  
 Abstract: ...  
 Keywords: ...
- Serum amyloid P component binds to influenza A virus haemagglutinin and protects the virus attachment to cells**  
 作者: ...  
 Abstract: ...  
 Keywords: ...
- Microtubule Tact Components in Total Knee Arthroplasty**  
 作者: ...  
 Abstract: ...  
 Keywords: ...
- Alterability of blood geometry in retrieved polyethylene glycol component**  
 作者: ...  
 Abstract: ...  
 Keywords: ...
- Identification of reaction products of methamphetamine and hydrogen peroxide in hair and exfoliators of hair by high-performance liquid chromatography/mass spectrometry**  
 作者: ...  
 Abstract: ...  
 Keywords: ...
- Effects of two types of fatigue on the VEGF show component**  
 作者: ...  
 Abstract: ...  
 Keywords: ...



# Screenshot (5/5)

NSTL 国家科技图书文献中心 National Science and Technology Library
国家科技数字图书馆 National Science and Technology Library

您好, 杨先生 2011年4月8日 星期五

**年卷期列表**

- 2009年 (05)
  - 174卷 (13)
  - 第 1期 (13)
- 173卷 (42)
  - 11期 (17)
  - 10期 (12)
  - 9期 (13)
- 1996年 (47)
  - 153卷 (47)
  - 3期 (47)

**American journal of respiratory and critical care medicine**

期刊起始年: 2007  
期刊终止年:  
ISSN: 1073-449X  
国内统一书刊号:  
分类号: R56  
出版商:  
文献类型: journal  
出版者:  
馆藏卷期:  
出版地:  
出版周期:  
EISSN:  
订购号:  
母体数据库编号: N2007EPST0000357  
期刊语种: eng  
coden:

文献检索

**最新内容**

Peripheral Muscle Weakness Contributes to Exercise Limitation in COPD  
Ciliary Disorientation Alone as a Cause of Primary Ciliary Dyskinesia Syndrome  
Effect of Gas Density on Respiratory Sounds  
A Neurokinin 1-Receptor Antagonist Improves Exercise-induced Airway Narrowing in Asthma...  
Antibody to Surfactant Protein A Increases Sensitivity of Pulmonary Surfactant to Inactivation by ...  
Patient-Triggered Ventilation Decreases the Work of Breathing in Neonates  
Evidence That Epithelium-derived Relaxing Factor Released by Bradykinin in the Guinea Pig T...  
Transgenic Mice Expressing Rabbit C-Reactive Protein Exhibit Diminished Chemotactic Facto...  
Refractory Hypoxemia During Liver Cirrhosis: Hepatopulmonary Syndrome or 'Primary Pulmo...  
Effects of an Inhaled Steroid (Budesonide) on Skin Collagen Synthesis of Asthma Patients In ...  
Nutritional Status and Mortality in Chronic Obstructive Pulmonary Disease  
Inhaled Bronchodilators Reduce Dynamic Hyperinflation during Exercise in Patients with Chro...  
Noninvasive Positive-Pressure Ventilation in Acute Respiratory Distress Without Prior Chronic ...  
Tolerance to Phosgene Is Associated with a Neutrophilic Influx into the Rat Lung  
Effects of Assisted Ventilation on the Work of Breathing: Volume-controlled versus Pressure-c...  
Obstructive Sleep Apnea Syndrome and Circadian Rhythms of Hormones and Cytokines  
Interindividual Variation in Pubertal Growth Patterns of Ventilatory Function, Standing Height, a...  
Fluticasone Propionate Does not Influence Bone Metabolism in Contrast to Beclomethasone ...  
Evaluation of a Pneumonia Practice Guideline in an Interventional Trial  
Sedation of Critical-Care Patients during Mechanical Ventilation: A Comparison of Propofol and ...

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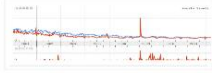
**检索词扩展**

iphone, ipod, news, droid, 苹果, iphones, 游戏, windows, mobile, 三星, symon

**高产作者 (top10)**

作者	所在单位
ALAIN H...	harmacol.usyd.edu.au
ANN DE...	harmacol.usyd.edu.au
CHARL...	harmacol.usyd.edu.au
FRANC...	hysiology.uab.edu
HUBER...	harmacol.usyd.edu.au
LAURE...	hysiology.uab.edu
MICHAEL...	harmacol.usyd.edu.au
PETER...	harmacol.usyd.edu.au
ROBER...	harmacol.usyd.edu.au
Sciurba ...	

**本期刊关键词趋势**



**本期刊下载最多文献 (top10)**

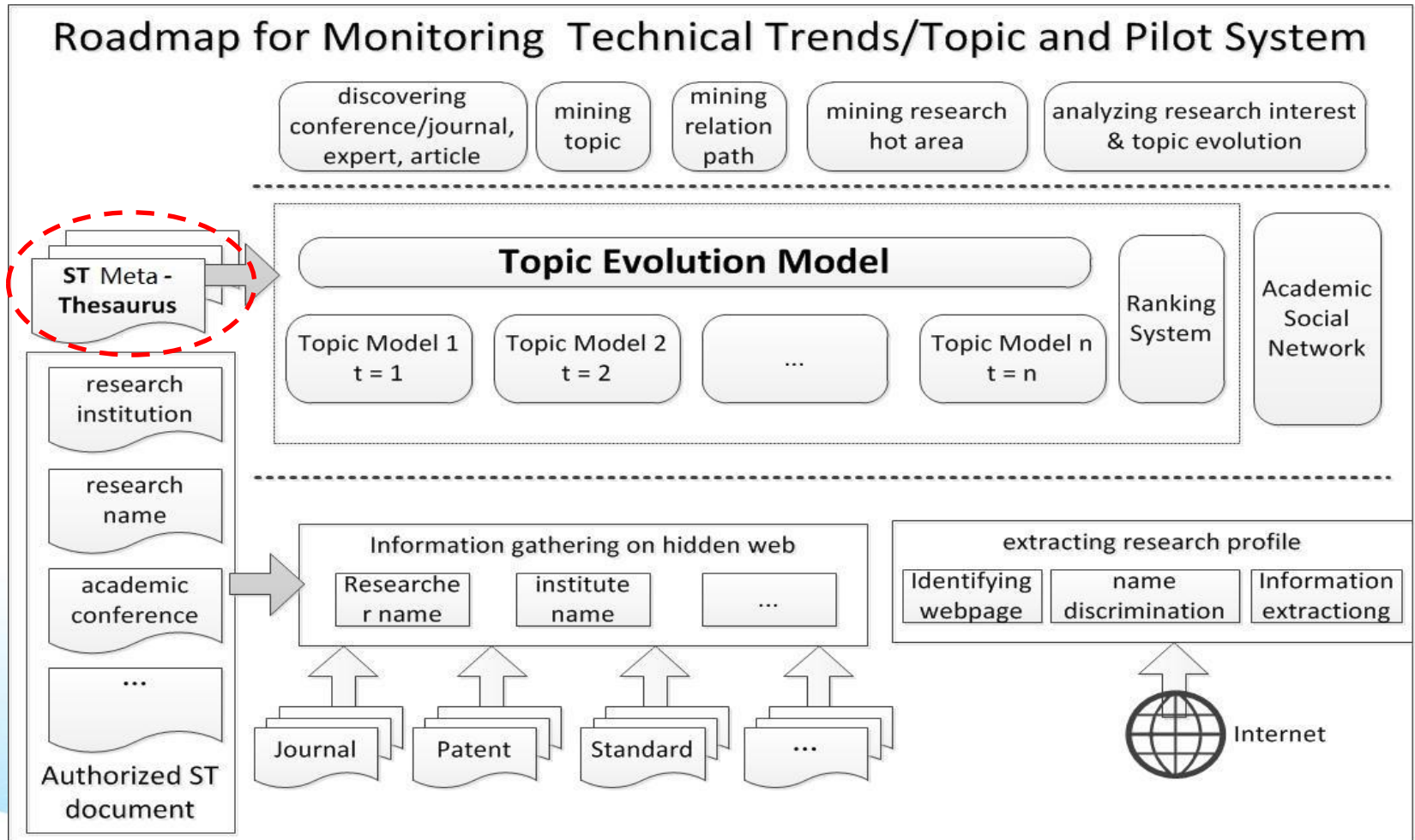
- SUBSPACES OF STABILITY IN THE CAUCHY PROBLEM FOR THE HELMHOLTZ EQUATION
- MULTI-PARAMETER TIKHONOV REGULARIZATION
- GLOBALLY CONVERGENT NUMERICAL METHOD FOR CONSTRUCTIVE METHOD TO CONTROLLABILITY
- QUANTITATIVE STRONG UNIQUE CONTINUATION FOR THE LAME SYSTEM
- QUANTUM MECHANICAL INVERSE SCATTERING PROBLEM ATTACHED ENERGY
- EXACT SUPPORT RECOVERY FOR LINEAR INVERSE PROBLEMS WITH SPARSITY CONSTRAINTS
- INVERSE ELECTROMAGNETIC SCATTERING PROBLEMS

文献检索 | 期刊浏览 | 全文文献 | 引文检索 | 代查代借 | 参考咨询 | 热点门户 | 预印本服务 | 典藏揭示 | 意见与建议

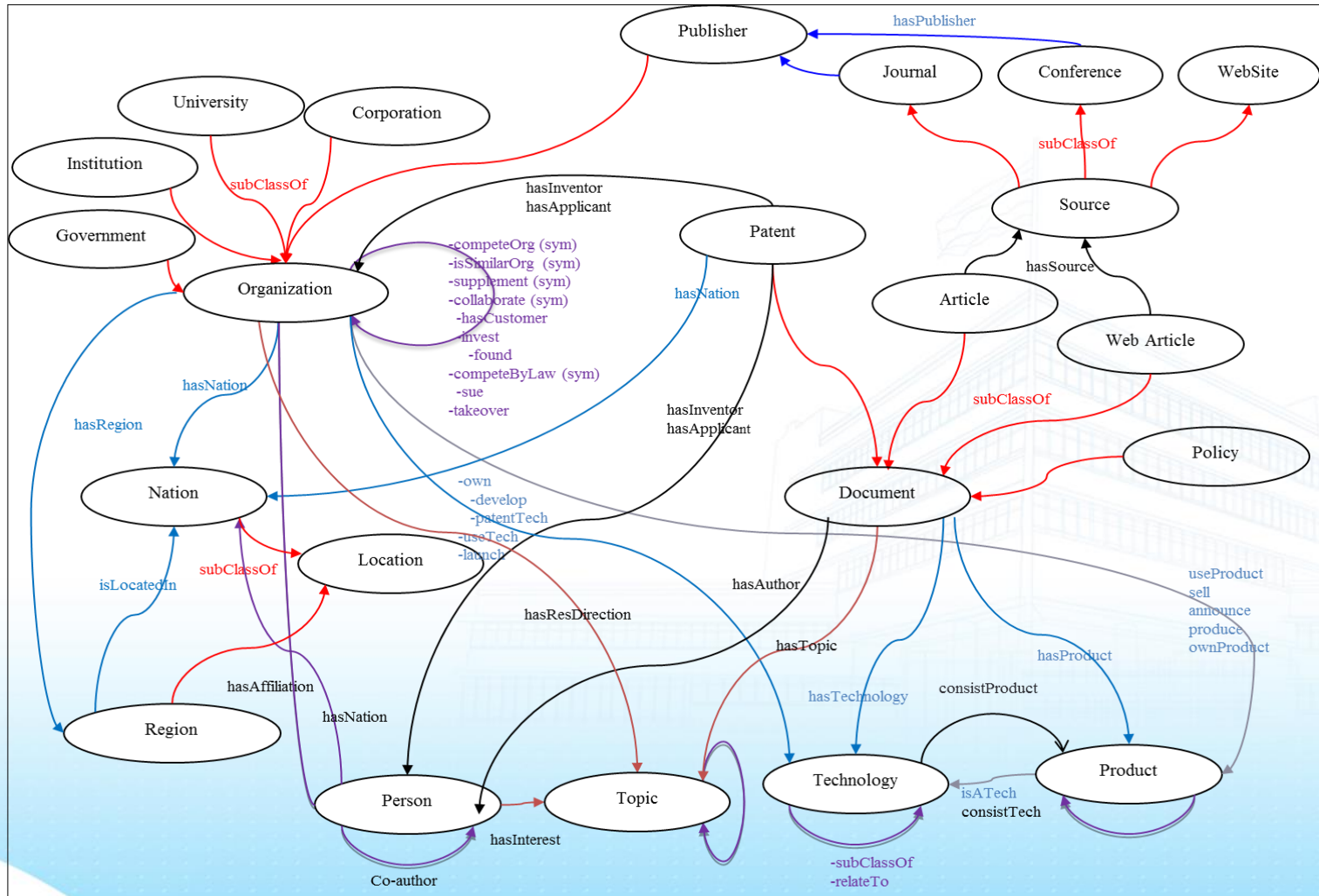
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地址: 北京市复兴路15号 100038 京ICP备10027328号  
英语总访问量: 2638892



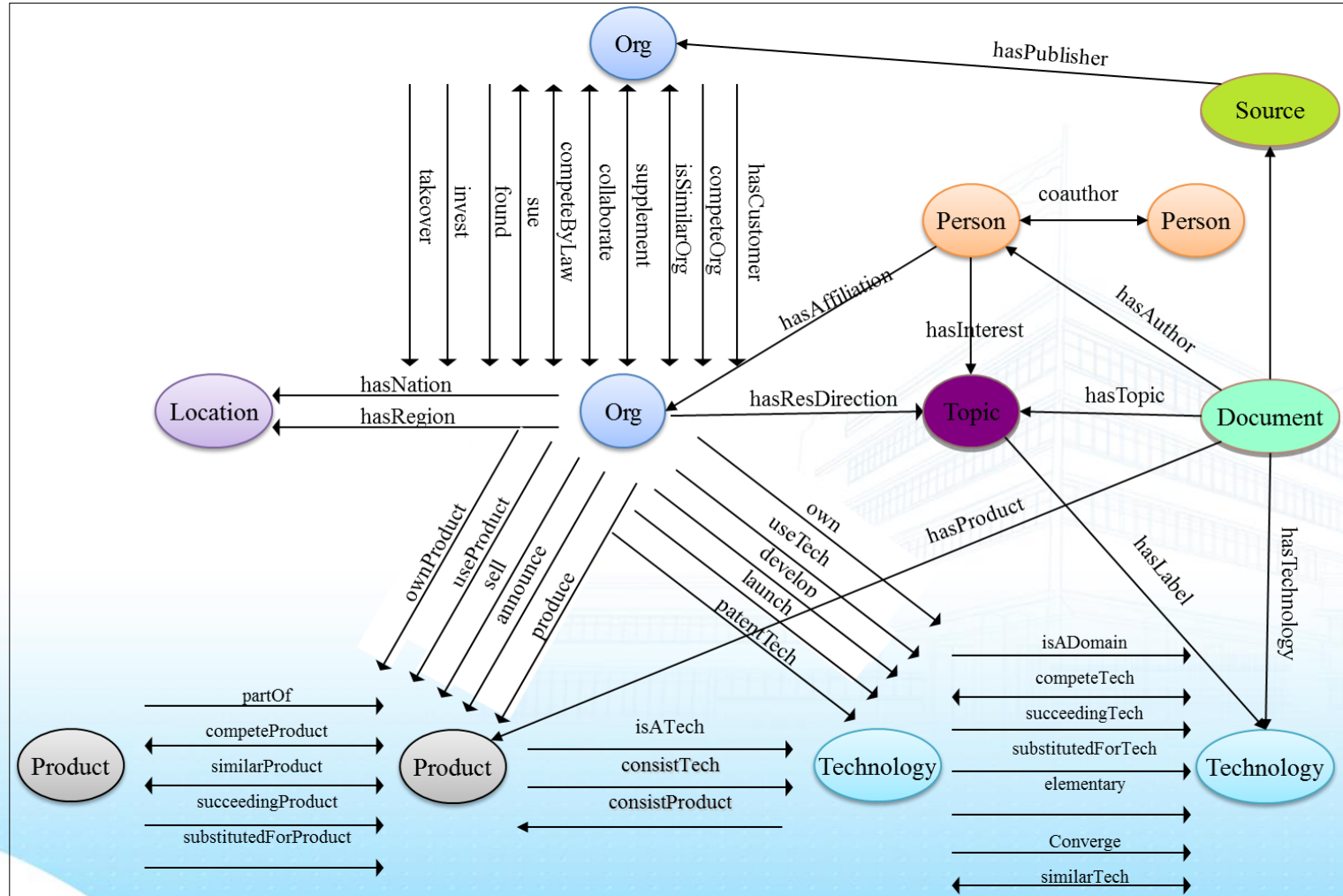
# Framework of Monitoring Technical Trends



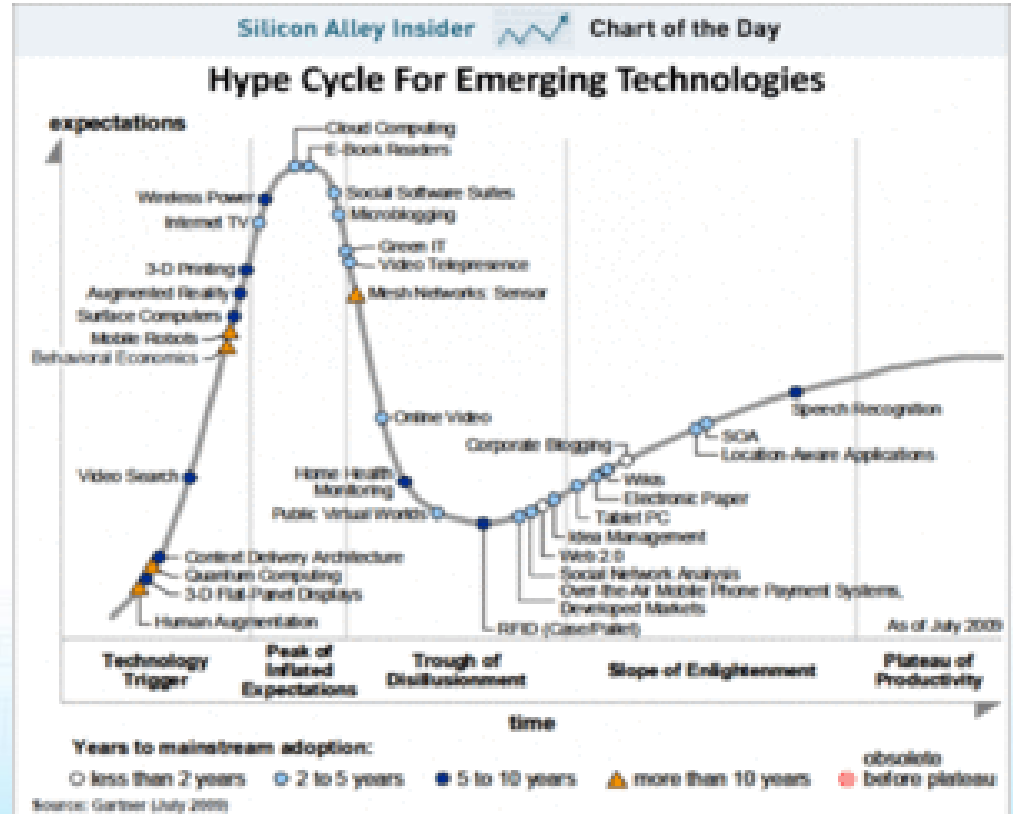
# Ontology Model (1/2)



# Ontology Model (2/2)

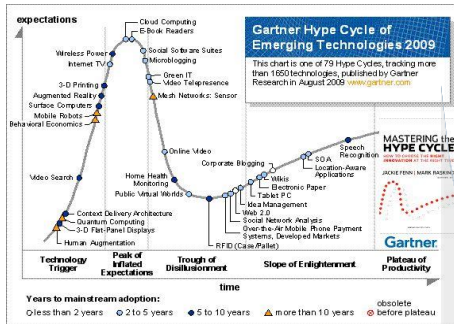


# Analyzing Technology Life Cycle (1/4)

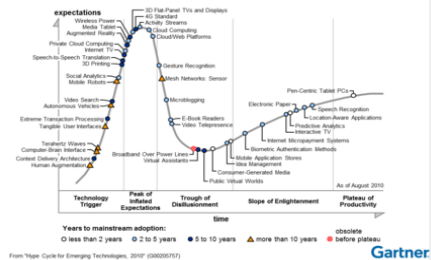


# Analyzing Technology Life Cycle (2/4)

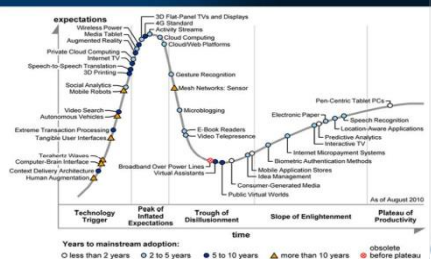
Features



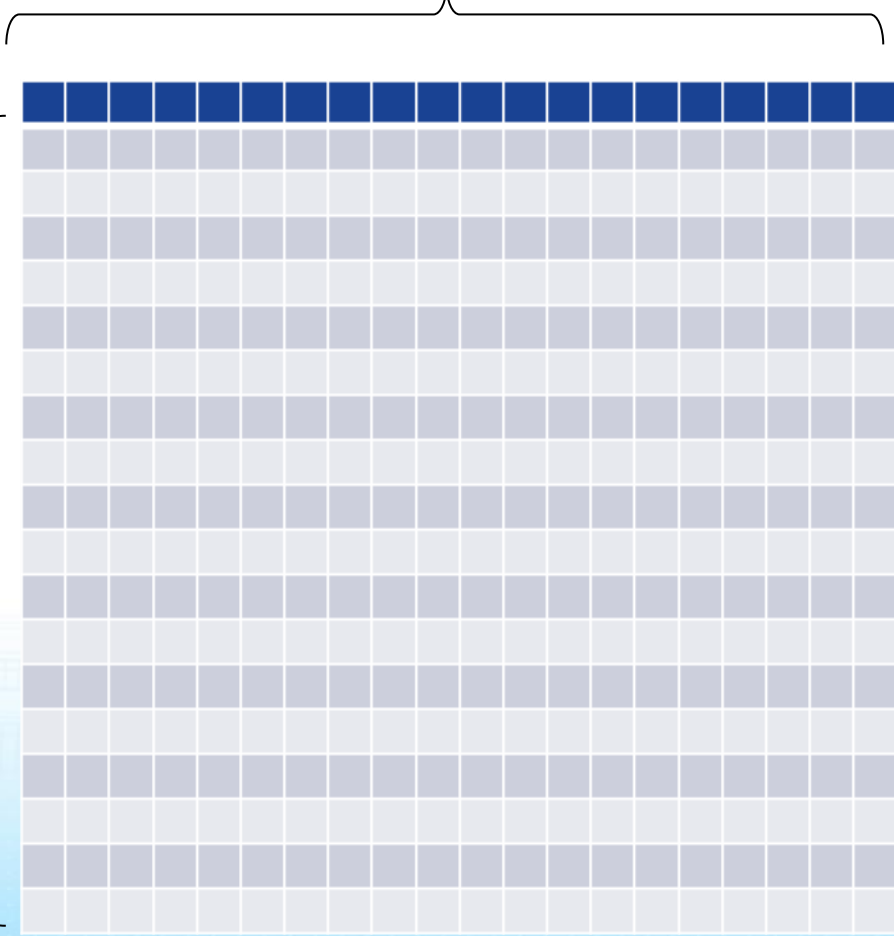
Hype Cycle for Emerging Technologies, 2010



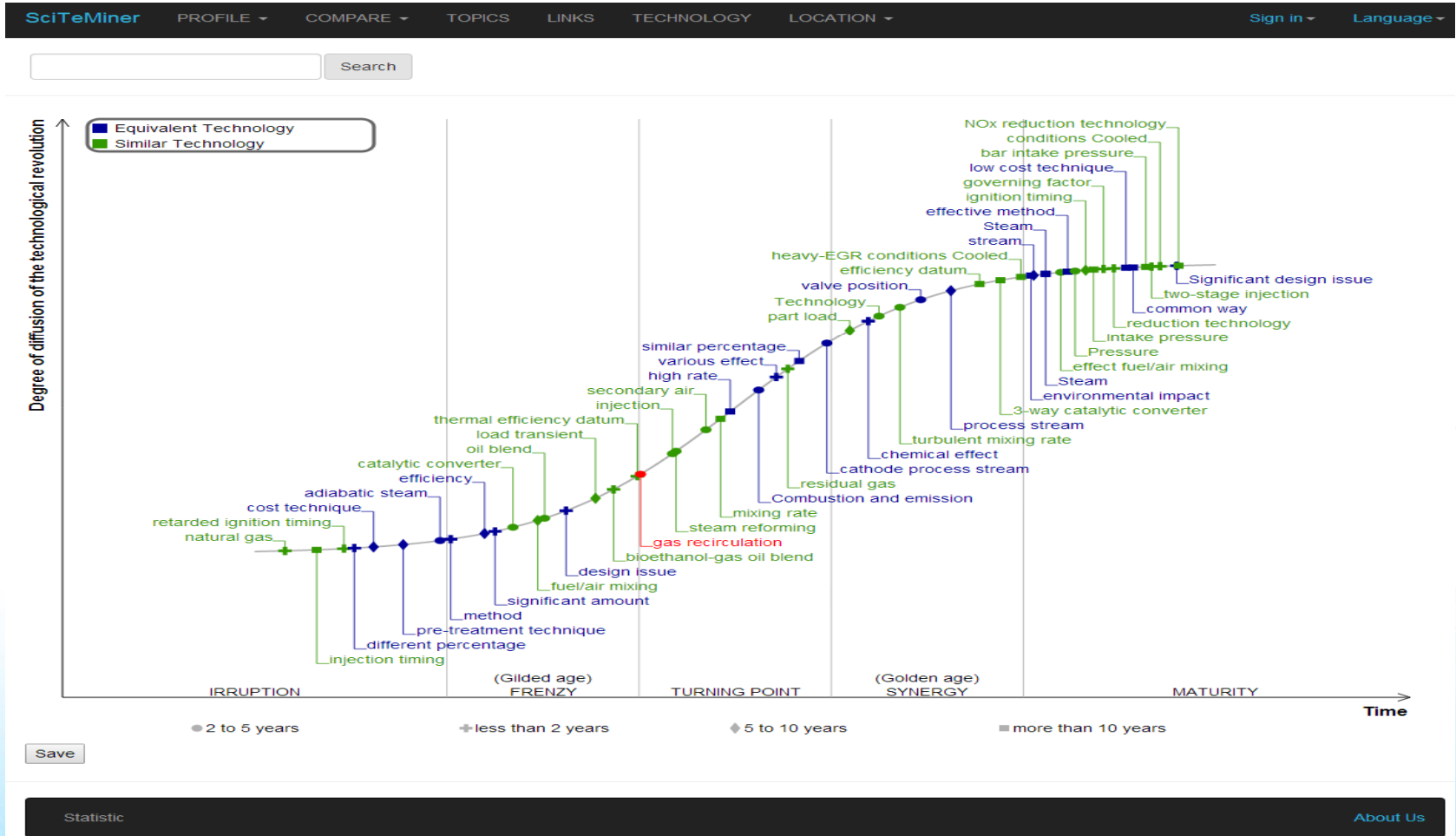
Hype Cycle for Emerging Technologies, 2011



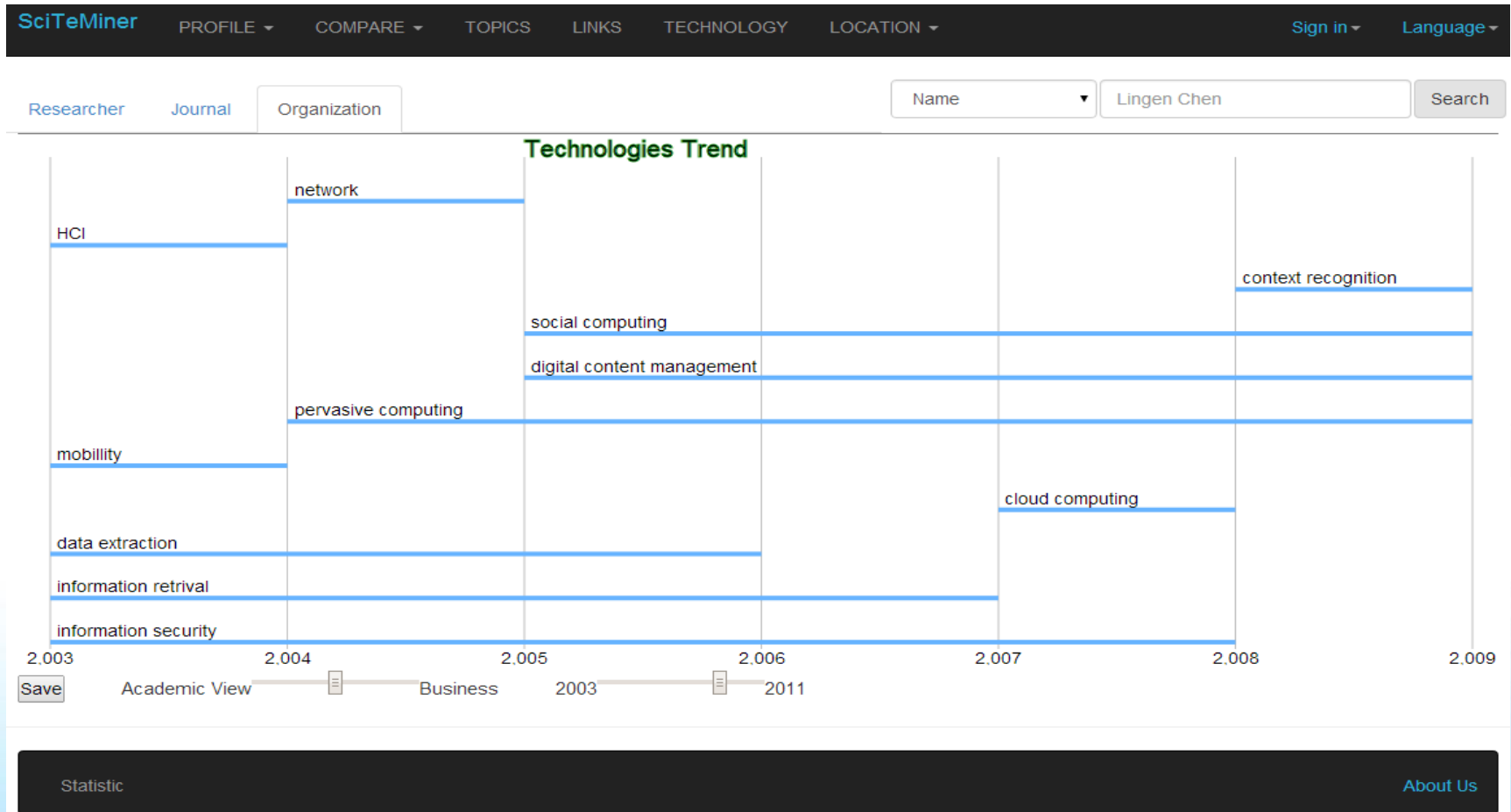
Technical Terms



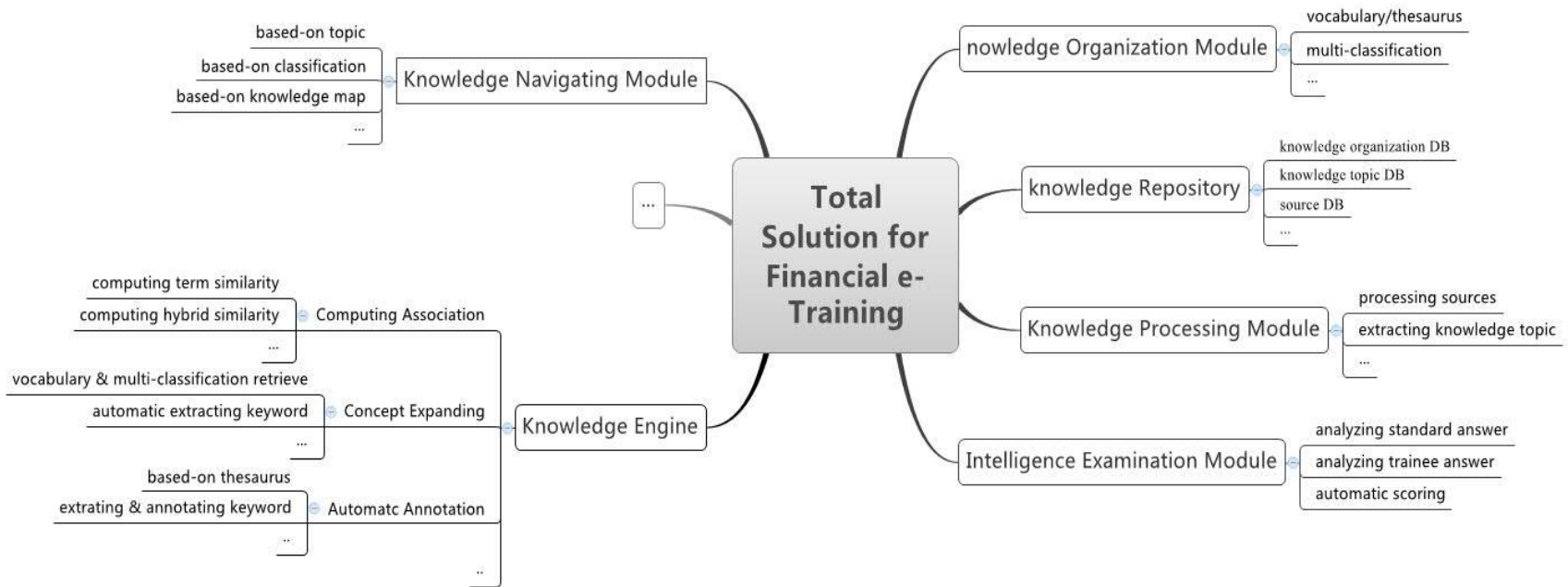
# Analyzing Technology Life Cycle (3/4)



# Analyzing Technology Life Cycle (4/4)

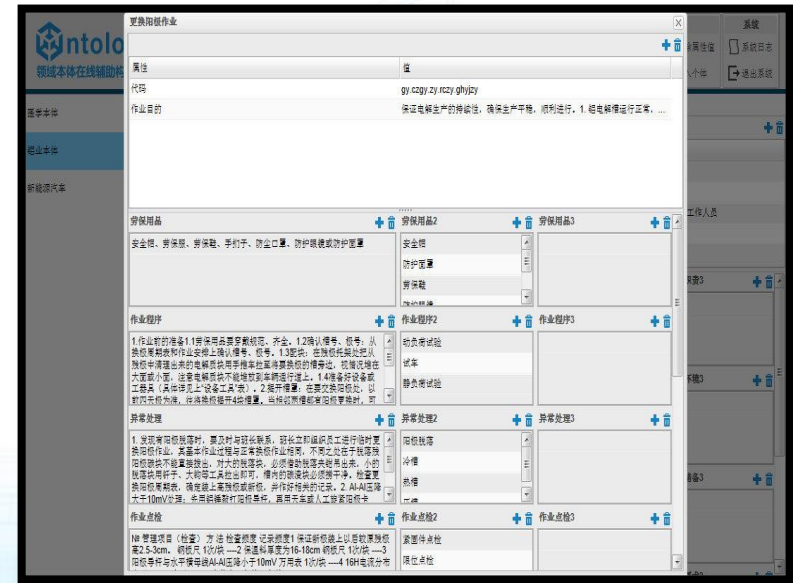
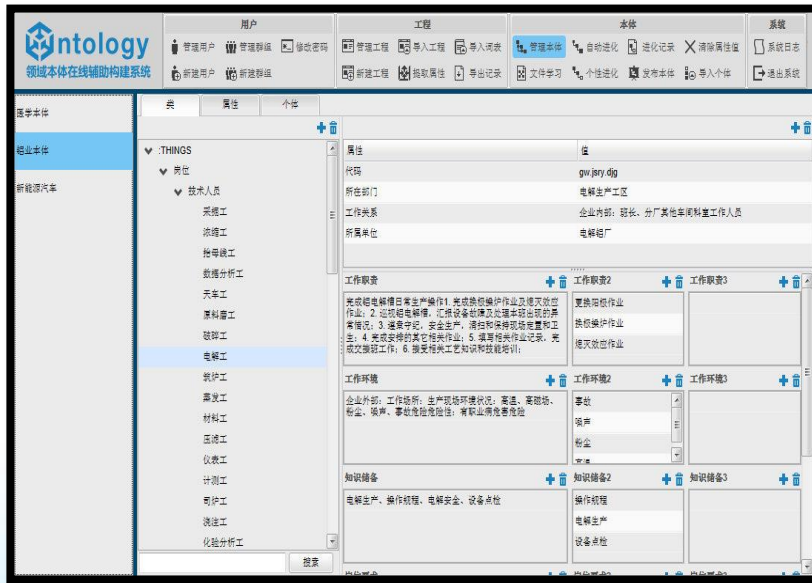


# Financial Training Knowledge System





# Manufacturing Industry Knowledge System



# 4. China-Japan-Korea Cooperation

Current:

- China-Korea

Monitoring Technical Trends

- China-Japan

Cooperative Research on Japanese-Chinese Bidirectional Practical Machine Translation for Scientific and Technical Literature

Future :

China-Japan-Korea Multilanguage STKOS

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STKOS

Thank you for your kind attention

ご清聴、ありがとうございました

XieXie == (谢谢)