

Semanttinen web kansalliseksi voimavaraksi
FinnONTO(2003-2007) hankkeen visio ja tulokset
25th January 2008

QUCCOO & ShOE
Tools for building search ontologies and
ontology-based searching in unannotated
text collections

Feza BAŞKAYA

University of Tampere
Department of Information Studies

Outline

- 1. Background
- 2. Ontologies
- 3. Quccoo: Searching Unannotated Text Collections through Ontologies
- 4. ShOE: Creating ontologies
- 5. Discussion, Conclusion

INFORMATION STUDIES

1. Background

- Vast online information environments
 - many different natural languages
- Vocabulary mismatch
 - hard to guess the best search keys; leads to loss of search effectiveness
 - especially in foreign languages
 - hard to know word forms, compound treatment
- Other problems – depending on one's search environment
 - collection dependency, metadata dependency
 - engine and query language dependency

INFORMATION STUDIES

2. Ontologies

- Ontologies model semantics
 - concepts
 - rich relationships
 - support inference
 - application means resource annotation
 - closely related to thesauri
- Ontologies can solve the vocabulary problem!
 - represents the semantics of resources (documents) better than pure natural language
 - retrieval becomes correct and accurate
 - desired: a universal world model, and a controlled language for description and reasoning about this model

Issues in Classification and Indexing

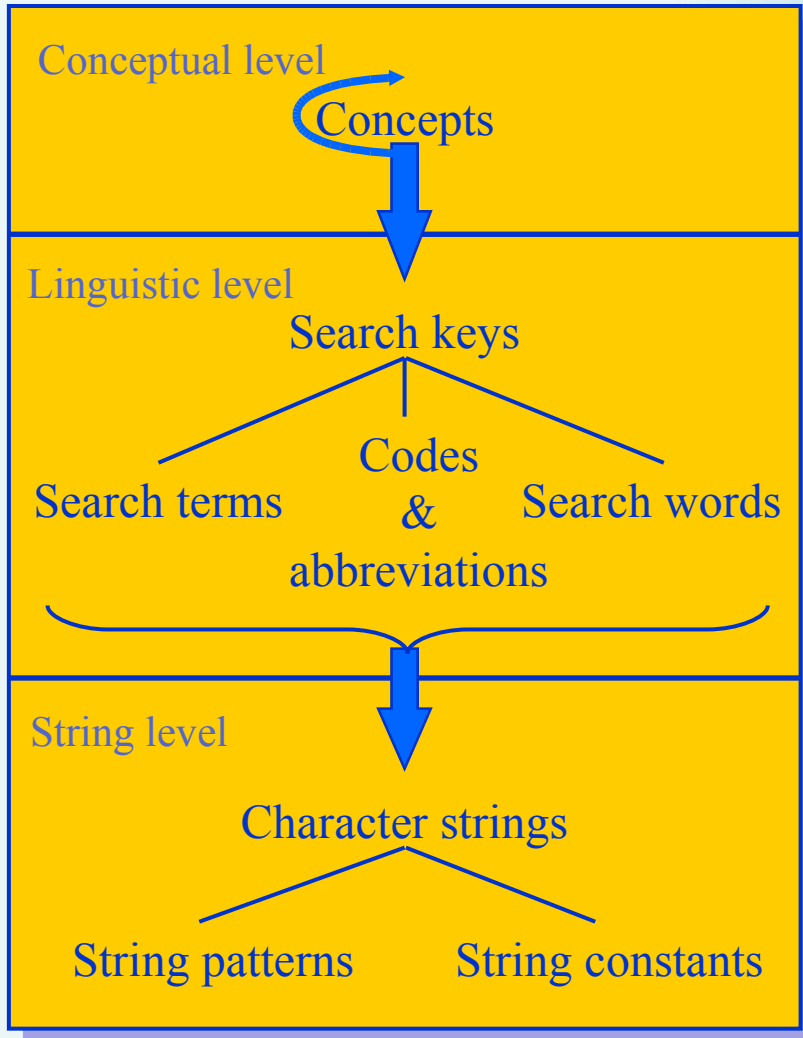
- Index languages -
 - modeling - coverage, viewpoint
 - maintenance - ageing, cost
- Indexing -
 - specificity, exhaustivity, consistency
 - cost - where paid, who pays?
 - The over-specificity the devices created often lead to poor recall and thus they were soon mostly abandoned

Any Room for Ontologies?

3. Searching Unannotated Text Collections through Ontologies

- Searching ontologies can
 - provide conceptual organization
 - support direct access to textual content
 - ✓ translate between concepts and textual variation
 - ✓ translate between natural languages
 - ✓ hide search engines / query languages
 - ✓ may support *other* media / structures / features
 - be light-weight, narrow, and no world models
 - ✓ personal, group or small community support
 - ✓ versions, mutually incoherent, easily modifiable
 - ✓ easily disposable, perhaps tradable

Three levels



➤ Forest industry

- forest industry
- paper industry
- saw mill
- ...
- pl(saw, mill)
- al(industry)
- pl(paperi, tehdas)

QUCCOO: Principles

- QUCCOO: QUery ConstruCtion with OntOlogies for direct content access
- Based on the three levels ...
- Aims to provide *independence* of ...
 - expression variability (nutraceutical?)
 - natural language (French?)
 - collection (intranet, Web ,...)
 - indexing (lemmatization, compounds?)
 - availability of metadata & world model
 - engine & query language (Lemur, Trip, Google, ...)
- You just select your concepts, targets and go!
 - Point, click and go

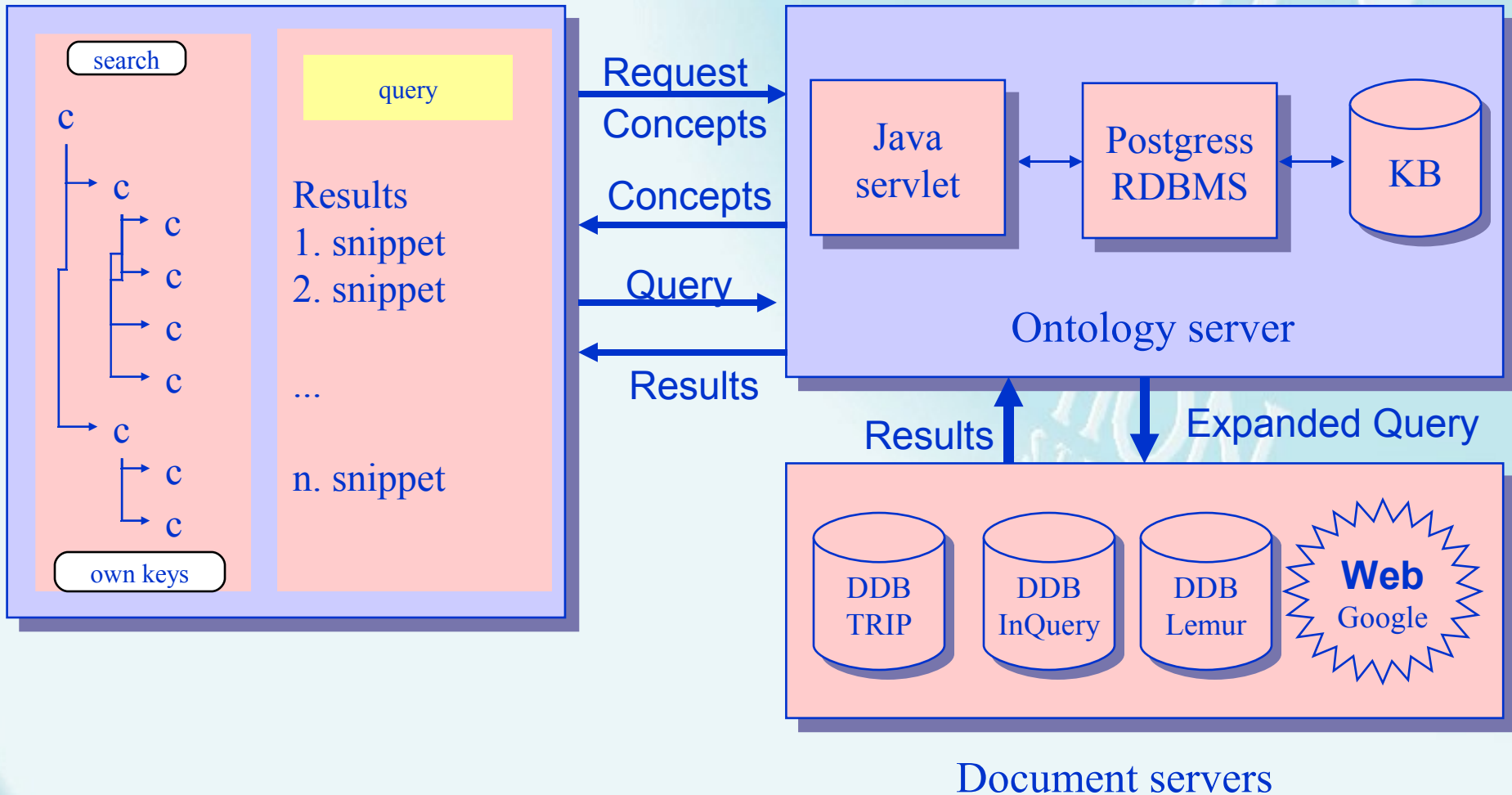
QUCCOO: Status

- Web application, uses state-of-the-art Servlet technology
- Supports diverse full-text database engines (Trip, InQuery, etc.) as well web search engines (e.g., Google)
- Supports diverse collections
- Intuitive; simple interface to access information
- Supports multilingual search and various index types

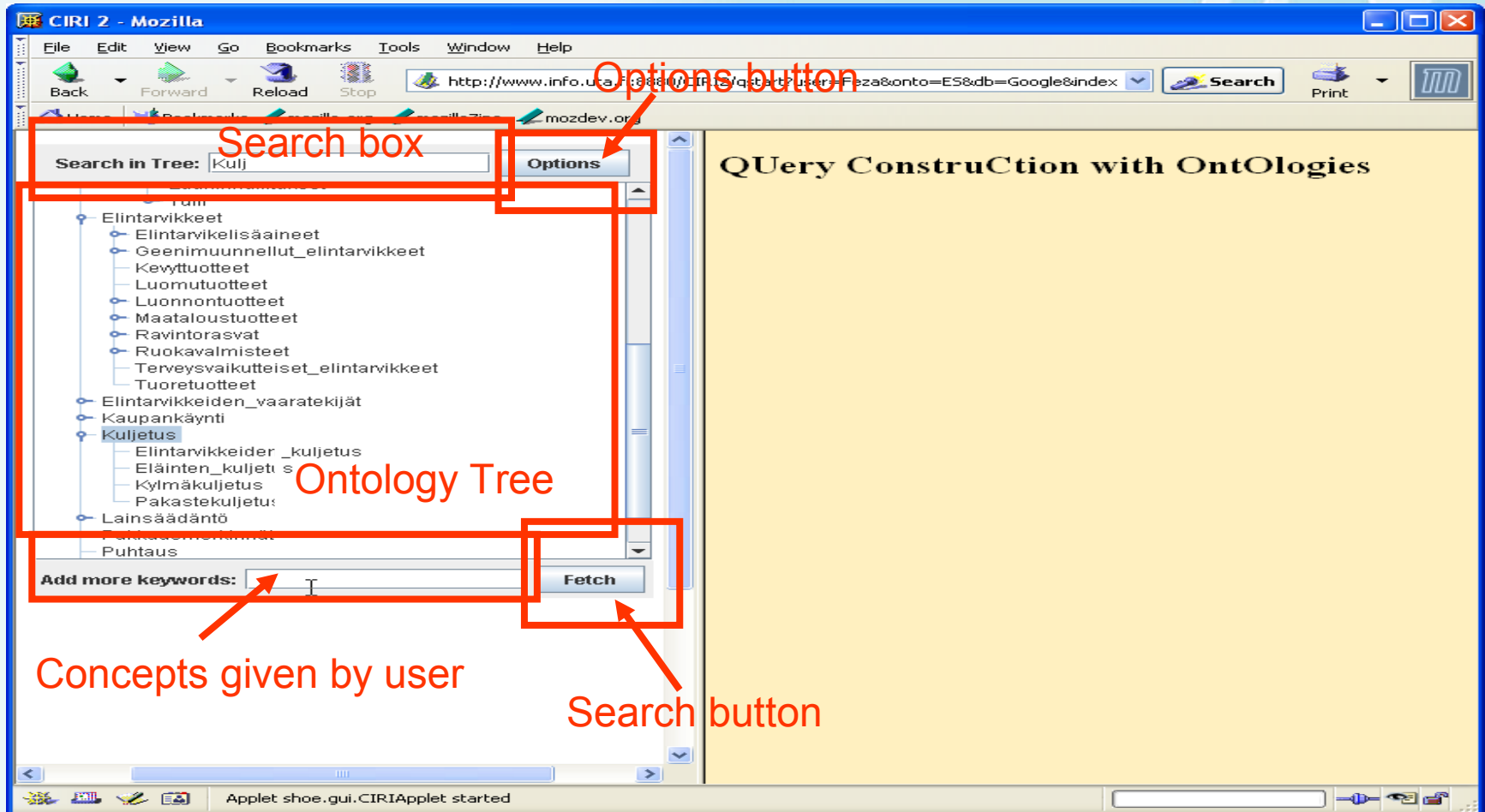
QUCCOO: Architecture

Client- Applet

Server-Servlet



Quccoo - interface



Quccoo - interface

Search in Ontology:

Add more keywords:

Search Engine: Lemur **Database:** STT:bas_...

Liberality: Liberal **Query Lang.:** fi

Expansion Le...: 1 **User name:**

Ontologies: **Onto Lang.:** Finnish

Ontology

- Elintarvikealan_käsitteet
- Ympäristöontologia
 - Jätteet
 - Luonnonvarat
 - Luonnonvarojen_käyttö
 - Uusiutumattomat_luonnonvarat
 - Uusiutuvat_luonnonvarat
 - Ympäristön_tila
 - Ympäristöindikaattorit
 - Ympäristön_seuranta
 - Ympäristötilastot
 - Ympäristötutkimus
 - Tutkimushankkeet
 - Tutkimusverkostot
 - Ympäristönsuojelu
 - Ilmansuojelu
 - Ilmastonsuojelu
 - Luonnonsuojelu
 - Harjujen_suojelu
 - Lajiensuojelu
 - Luontotyyppien_suojelu
 - Metsiensuojelu
 - Soiden_suojelu
 - Vesiensuojelu

Lemur Search

0: Eduskunta (Twolled)

#sum(#syn(ympäristönsuojelu #uw12(ympäristö suojeleu))

Searched for #sum(#syn(ympäristönsuojelu #uw12(ympäristö suojeleu)) ilmaans

Käyttäjätunnus:

- [SLL: Hallitus ei ole toistaiseksi täyttänyt ympäristölupauksiaan](#)
 (Score: 0.625408)
- [SLL: Hallitus ei ole toistaiseksi täyttänyt ympäristölupauksiaan](#)
 (Score: 0.625209)
- [Luonnonsuojeluliitto vaatii lisää soita suojeleuun](#)
 (Score: 0.624323)

Quccoo - interface

The screenshot shows a Mozilla browser window displaying the Quccoo interface. The browser's address bar shows the URL: <http://www.info.uta.fi:8680/CIRI2/qstart?user=Feza&onto=ES&db=Google&index=basic&dlang=finnish&qlang=en&se>. The search engine is set to 'Trip' and the query language is 'fi'. The search results are displayed in a list format, with the first result being 'Dollarikin nostaa raakaöljyn hintaa'. The interface also shows a search tree on the left side, with 'Kuljetus' selected. The search results are as follows:

HAKUTULOS
Trip, Aamulehti ja Kauppalehti 2000-2004
Haku : ((kuljetus AND kuljetus# AND kuljetus#))

Löytyi 2376 dokumenttia, joista näytetään korkeintaan 50 ensimmäistä.

1. [Dollarikin nostaa raakaöljyn hintaa](#)
2. [Palvelualojen liikevaihto syksyllä neljän prosentin kasvussa](#)
3. [Yrittäjät odottavat kunnilta strategiaa palveluseleista](#)
4. [Posti hakee uutta bisnestä sähköromun kierrätyksestä](#)
5. [Taksien kysyntä hiipuu yhä](#)
6. [VR Osakeyhtiö](#)
7. [Transbox Oy](#)
8. [Kelpo Kuljetus Fi Oy](#)
9. [EU:n komissio pani rajat halpalentoyhtiöiden tuille](#)

Ontology in Finnish

Trip Database Engine results

Quccoo - interface

The screenshot shows a Mozilla browser window with the address bar containing a URL from the University of Tampere. The search engine is set to Google, and the query language is Finnish. The search results are for the term 'Kuljetus' (transportation). The left sidebar shows an ontology tree with the following structure:

- Laajenninrinnakset
 - Tulli
 - Elintarvikkeet
 - Elintarvikelisiäaineet
 - Geenimuunnellut_elintarvikkeet
 - Keyyttuotteet
 - Luumutuotteet
 - Luonnontuotteet
 - Maataloustuotteet
 - Ravintorasvat
 - Ruokavalmisteet
 - Terveysvaikutteiset_elintarvikkeet
 - Tuoretuotteet
 - Elintarvikkeiden_vaaratekijät
 - Kaupankäynti
 - Kuljetus
 - Elintarvikkeiden_kuljetus
 - Eläinten_kuljetus
 - Kylmäkuljetus
 - Pakastekuljetus
 - Lainsäädäntö

The search results on the right include:

- Teljän Kuljetus Oy**: Welcome to transport company Teljän Kuljetus Oy homepage / Tervetuloa Teljän Kuljetus Oy:n kotisivuille. www.teljankuljetus.fi/ - 6k - Cached - Similar pages
- Tonttilan Nosto ja Kuljetus Oy - Etusivu**: Etelä-Suomen alueella nosto- ja kuljetuspalveluita. www.tonttila.com/ - 5k - 13 Nov 2005 - Cached - Similar pages
- Kuljetus H. Valo Oy**: Tavara-, muuttoliikenteen ja varastohotellitoiminnan ammattilainen. www.kuljetushvalo.fi/ - 2k - Cached - Similar pages
- Skal - WWW Etusivu**: Suomen Kuljetus ja Logistiikka SKAL ry:n hallitus kiittää ministeri Huovista ja hallituksen ilta-koulua toimenpiteistä, joilla Venäjän liikennettä laitetaan ... www.skal.fi/ - 39k - 13 Nov 2005 - Cached - Similar pages
- www.savonkuljetus.fi/**: 1k - 13 Nov 2005 - Cached - Similar pages
- PH Kuljetus Oy**: Kuljetuspalveluita pääasiassa Lahdessa ja lähialueilla. www.phkuljetus.fi/ - 10k - Cached - Similar pages
- Kuljetus - huoliinta - Venäjä - transito - kuljetusliikkeet ...**: Etusivu.info: **kuljetus** - huoliinta - kuljetusliikkeet - huolintaliikkeet - lentorahtiyhtiöt - laivarahtiyhtiöt - varustamot - bussiyhtiöt. www.etusivu.info/Kuljetus/ - 12k - Cached - Similar pages
- Kelpo Kuljetus Fi Oy**: Vuonna 1999 perustettu Kelpo Kuljetus Fi Oy on yksi Suomen suurimmista ja ... Tuotamme ja tarjoamme yrityksille tehokkaita terminaali-, **kuljetus**- ja ... www.kelpokuljetus.fi/ - 13k - Cached - Similar pages

Ontology in Finnish

Google Results in Finnish

Quccoo - interface

The screenshot shows a Mozilla browser window with the address bar containing the URL: <http://www.info.uta.fi:8880/CIRI2/qstart?user=Feza&onto=ES&db=Google&index=basic&dlang=finnish&qlang=ent>. The browser interface includes a search bar with the text "Kulj" and a "Search" button. Below the search bar is a tree view of an ontology in Finnish, with "Kuljetus" selected. The right side of the browser displays Google search results for the query "((transport OR transit OR transportation OR conveyance OR carrying OR conveying OR haulage OR hauling))". The results include news items and official websites related to transportation.

Search in Tree:

Search Engine: Google **Query Language:** en

Ontology in Finnish:

- Elintarvikkeet
 - Elintarvikkeiden_ääineet
 - Geenimuunnellut_elintarvikkeet
 - Keyyttytuotteet
 - Luomutuotteet
 - Luonnontuotteet
 - Maataloustuotteet
 - Ravintorasvat
 - Ruokavalmisteet
 - Terveysvaikuttiset_elintarvikkeet
 - Tuoretuotteet
- Elintarvikkeiden_vaaratekijät
- Kaupankäynti
- Kuljetus**
 - Elintarvikkeiden_kuljetus
 - Eläinten_kuljetus
 - Kylmäkuljetus
 - Pakastekuljetus
- Lainsäädäntö

Google Results in English:

Web Results 1 - 10 of about 690,000,000 for **((transport OR transit OR transportation OR conveyance OR carrying OR conveying OR haulage OR hauling))** - [View today's top stories](#)

News results for ((transport OR transit OR transportation OR conveyance OR carrying OR conveying OR haulage OR hauling)) - [View today's top stories](#)

- [Codey Is Seeking to Replenish State's Transportation Fund](#) - New York Times - 8 hours ago
- [Bomb threats freeze Brisbane transport](#) - NEWS.com.au - 16 hours ago
- [High-tech, high transport security?](#) - BBC News - 18 hours ago

Transport for London homepage - Transport for London
Information on all forms of public **transport** in London, routes, maps, journey planner and online tickets sales. Includes guide to what to see and do and ...
www.tfl.gov.uk/ - 19k - 13 Nov 2005 - [Cached](#) - [Similar pages](#)

US Department of Transportation
Oversees federal highway, air, railroad, and maritime and other **transportation** administration functions; components include the FAA, FHA, FRA, NHTSA, OIG, ...
www.dot.gov/ - 24k - 13 Nov 2005 - [Cached](#) - [Similar pages](#)

New Jersey Transit
NJ **TRANSIT** is New Jersey's public **transportation** corporation. Its mission is to provide safe, reliable, convenient and cost-effective **transit** service with a ...
www.njtransit.com/ - 34k - 13 Nov 2005 - [Cached](#) - [Similar pages](#)

Bureau of Transportation Statistics (BTS) - Research and ...
Compiles, analyzes, and makes accessible information on the Nation's **transportation** systems.
www.bts.gov/ - 29k - 13 Nov 2005 - [Cached](#) - [Similar pages](#)

National Transportation Safety Board
The National **Transportation** Safety Board is an independent Federal agency charged by Congress with investigating every civil aviation accident in the United ...
www.ntsb.gov/ - 17k - 13 Nov 2005 - [Cached](#) - [Similar pages](#)

Transportation Research Board -- Homepage
Transportation Cost Implications of New Development Proposals Due November 15, 2005
... Guide for **Transportation** Landscape and Environmental Design ...
www.trb.org/ - 32k - 13 Nov 2005 - [Cached](#) - [Similar pages](#)

Quccoo - interface

The screenshot shows a Mozilla browser window titled "CIRI 2 - Mozilla". The address bar contains the URL "http://www.info.uta.fi:8880/CIRI2/qstart?user=Feza&onto=ES&db=Google&index=basic&dlang=finnish&qlang=enf". The search engine is set to Google, and the query language is Swedish (se). The search results are displayed in Swedish, showing various links related to transport, including "Transport for London homepage", "London Underground homepage", "Transport Canada", "Department for Transport", "International Air Transport Association", and "US Department of Transportation".

Search in Tree: [Kulj] Hide ...

Search Engine: Google Query Language: se

Web Results 1 - 10 of about 211,000,000 for ((transport OR forsling OR fraktning OR befordran OR överföring OR befordran))

Book results for ((transport OR forsling OR fraktning OR befordran OR överföring OR befordran))

- Electronic Transport in Mesoscopic Systems - by Supriyo Datta - 393 pages
- Fundamentals of Carrier Transport - by Mark Lundstrom - 464 pages
- Transport and Developing Countries - by David Hilling - 364 pages

Transport for London homepage - Transport for London
Information on all forms of public transport in London, routes, maps, journey planner and online tickets sales. Includes guide to what to see and do and ...
www.tfl.gov.uk/ - 19k - 13 Nov 2005 - [Cached](#) - [Similar pages](#)

London Underground homepage - Transport for London
London's underground railway system. Journey planner, customer information, and the latest news about the Tube.
www.tfl.gov.uk/tube/ - 19k - 13 Nov 2005 - [Cached](#) - [Similar pages](#)

Transport Canada - Transports Canada
The department develops and administers policies, regulations and services for the transportation system. Information on modes of transport, environment, ...
www.tc.gc.ca/ - 6k - 13 Nov 2005 - [Cached](#) - [Similar pages](#)

Department for Transport
This website contains material for local government, the transport sector, ... Please use the links on the right hand side to Transport Direct and DirectGov ...
www.dft.gov.uk/stellent/groups/dft_control/documents/homepage/dft_home_page.hcsp - 19k - 13 Nov 2005 - [Cached](#) - [Similar pages](#)

International Air Transport Association
IATA is the governing Body that creates regulation for international air transport, including regulations controlling the transport of Dangerous Goods By ...
www.iata.org/ - 20k - 13 Nov 2005 - [Cached](#) - [Similar pages](#)

US Department of Transportation
Oversees federal highway, air, railroad, and maritime and other transportation administration functions: components include the FAA, FHA, FRA, NHTSA, OIG. ...

Ontology in Finnish

Google Results in Swedish

Quccoo - interface

The screenshot shows a Mozilla browser window titled "CIRI 2 - Mozilla". The address bar contains the URL: <http://www.info.uta.fi:8880/CIRI2/qstart?user=Feza&onto=ES&db=Google&index=basic&dlang=Finnish&qlang=ent>. The search engine is set to "GoogleLogging" and the query language is "fi". The search term is "Kuljetus".

The left pane shows a tree view of search results under the "Kuljetus" node:

- Elintarvikkeet
 - Elintarvikkeisääineet
 - Geenimuunnellut_elintarvikkeet
 - Keyytuootteet
 - Luomutuotteet
 - Luonnontuotteet
 - Maataloustuotteet
 - Ravintorasvat
 - Ruokavalmisteet
 - Terveysvaikuttiset_elintarvikkeet
 - Tuoretuotteet
- Elintarvikkeiden_vaaratekijät
- Kaupankäynti
- Kuljetus**
 - Elintarvikkeiden_kuljetus
 - Eläinten_kuljetus
 - Kylmäkuljetus
 - Pakastekuljetus
- Lainsäädäntö

The right pane shows the Google search results for "Kuljetus". The search results are as follows:

Web Results \$startno\$ - \$endno\$ of about 70700 for ((kuljetus)). (0.1864 seconds)

- [Teljän Kuljetus Oy](#)
Welcome to transport company Teljän **Kuljetus Oy** homepage / Tervetuloa Teljän **Kuljetus Oy**:n kotisivuille.
<http://www.teljankuljetus.fi/> -5k -
- [Tonttilan Nosto ja Kuljetus Oy - Etusivu](#)
Etelä-Suomen alueella nosto- ja kuljetuspalveluita.
<http://www.tonttila.com/> -5k -
- [Kuljetus H. Valo Oy](#)
Tavara-, muuttoliikenteen ja varastohotellitoiminnan ammattilainen.
<http://www.kuljetushvalo.fi/> -2k -
- [Skal - WWW Etusivu](#)
Suomen **Kuljetus** ja Logistiikka SKAL ry:n hallitus kiittää ministeri Huovista ja hallituksen iltakouluu toimenpiteistä, joilla Venäjän liikennettä laitetaan ...
<http://www.skal.fi/> -39k -
- [http://www.savonkuljetus.fi/](#) -1k -
- [PH Kuljetus Oy](#)
Kuljetuspalveluita pääasiassa Lahdessa ja lähialueilla.
<http://www.phkuljetus.fi/> -10k -
- [kuljetus - huolinta - Venäjä - transito - kuljetusliikkeet ...](#)
Etusivu. Info: **kuljetus** - huolinta - kuljetusliikkeet - huolintaliikkeet - lentorahtiyhtiöt - laivarahtiyhtiöt - varustamot - bussiyhtiöt.
<http://www.etusivu.info/Kuljetus/> -12k -
- [Kelpo Kuljetus Fi Oy](#)
Vuonna 1999 perustettu Kelpo **Kuljetus** Fi Oy on yksi Suomen suurimmista ja ... Tuotamme ja tarjoamme yrityksille tehokkaita terminaali-, **kuljetus**- ja ...
<http://www.kelpokuljetus.fi/> -13k -
- [Arolan Kuljetus](#)
<http://www.arolankuljetus.fi/> -1k -
- [Lapin Kuljetus Oy](#)

Ontology in Finnish

Google Results with Logging Facility

4. ShOE: Creating ontologies

- **Search Ontology Editor** - for creating ontologies
 - supports the 3 layer architecture of QUCCOO
 - intuitive; easy to learn and use
 - automatic support for the human editor
- **Multilingual in many aspects**
 - GUI, User Interface language can be changed
 - Concepts names can be edited/displayed on-the-fly in different languages
 - Expressions can be edited/displayed on-the-fly in different languages.

ShOE: Implementation

- Well-designed modular object-oriented architecture based on MVC paradigm
- Platform independent; written in Java
- Flexible; e.g. uses XML as file format, configurable tables, with XML configurable menu structure
- Robust
- Extensible via Plug-ins

ShOE - Main window

The screenshot shows the ShOE4Ciri Search ontology editor interface. The window title is "ShOE4Ciri Search ontology editor". The menu bar includes "File", "Tools", and "Help".

Search field: A text input field labeled "Find" is located at the top left.

Concept hierarchy tree: A tree view on the left side shows a hierarchy of concepts. The selected concept is "Yritykset".

Concept properties: A form in the center displays properties for the selected concept "Yritykset":

- Name: Yritykset
- Category: n/a
- Relation Type: generic
- Strength: 1.0

Concept description: A text area on the right contains the description: "Esimerkinomaisesti koko valtakunnan alueella toimivia yrityksiä sekä liha- ja valmisruoka- että meij".

Expression window: A table at the bottom displays expressions and associations. It has two tabs: "Expressions" and "Associations". The "Associations" tab is active, showing a table with columns: Name, Etype, Strength, and Occurrences.

Name	Etype	Strength	Occurrences
yritys	term	1	Click here
elintarvikealan_yr...	syno	0,25	Click here

Buttons at the bottom of the expression window are "Add Expression" and "Delete Expression".

6. Conclusion

- ShOE and QUCCOO are *one* answer to problems in semantic information access
 - light-weight disposable search ontologies for full content access
 - independencies of:
 - ✓ collections (partially), indexing ways,
 - ✓ availability of metadata / annotations
 - ✓ changes of needs, variability of "world models"
 - ✓ search engines, query languages
 - ✓ vocabulary variation and natural languages
 - a compromise, different from semantic annotation or indexing, with control at the user end

User testing

IN
FOR
MA
TION
STUDIES

Cross-language Web search

- Test persons
 - 40 students from the University of Tampere and Pirkanmaa polytechnic
- Ontology
 - Combination of two ontologies: Food concepts and geographical concepts
- 2 interfaces
 - QUCCOO + interface without ontology (basic Google search)
- 4 simulated search tasks
 - Two tasks with one interface and two with the other

Analysis

- Log files
 - Queries
 - Relevance assessments (scale 0-4)
- Questionnaires
 - Opinions about ontology and Quccoo-interface

Results: search success

- No significant difference between systems
 - QUCCOO performed better when strong query structure was needed (“alcoholic beverage”)
 - In most self-formulated queries no phrases were used
- QUCCOO helps persons who are not used to formulate structured queries

Results: opinions

- ”Structure of the ontology was logical”
- ”Finding search concepts needed in the tasks in ontology was easy”
- ”Using the ontology was effortless”
 - 92 % agreed in all

Results: opinions

- 32/40 thought that QUCCOO-interface was easier to use
- 32/40 liked QUCCOO better
- Why?
 - Helped users to clarify task topic and to find related search keys
 - Made cross-language search easy (in 80% of direct searches some dictionary was used to help query formulation)

Semanttinen web kansalliseksi voimavaraksi
FinnONTO(2003-2007) hankkeen visio ja tulokset
25th January 2008

OntoClass
Ontology based Classification
System
A tool for automatic document
classification

Feza BAŞKAYA

University of Tampere
Department of Information Studies

Ontoclass, Ontology based Classification System

Classify text documents

Standalone and web versions

Cross-language classification capability

Visual presentation of the classification results

easy to comprehend and easy to interpret

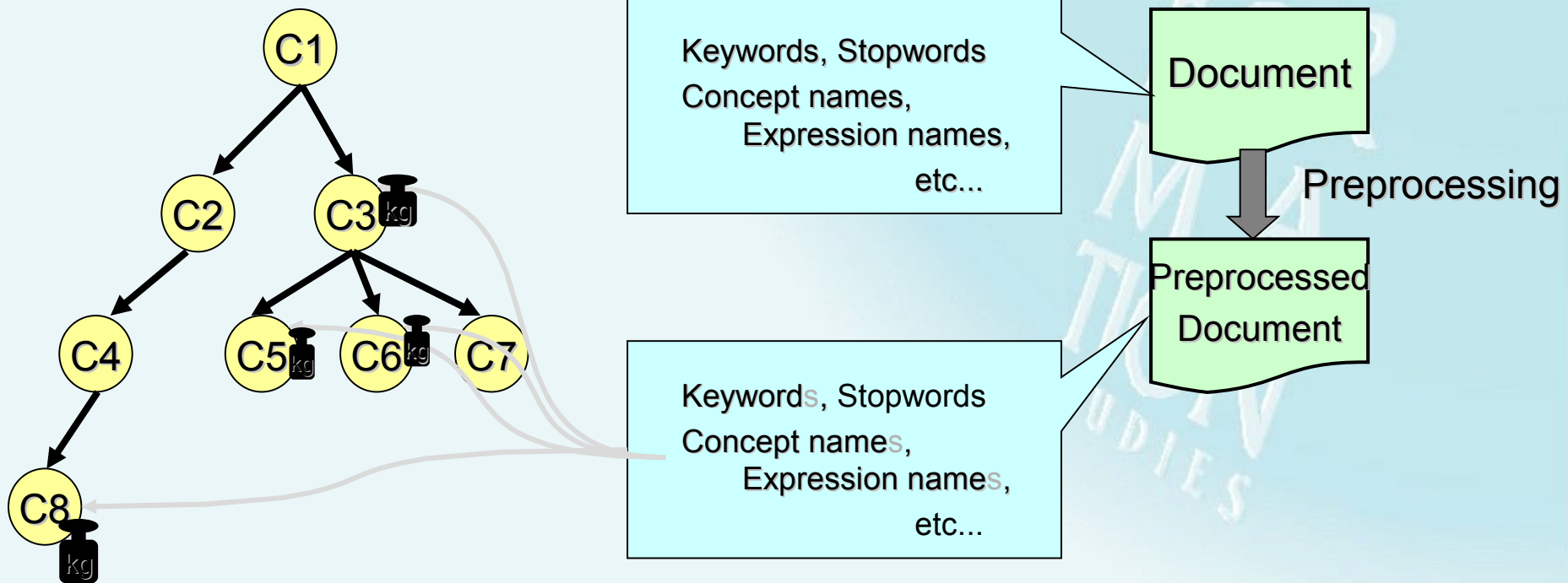
based on the visual comprehension faculty of the user

Ontoclass, Ontology based Classification System

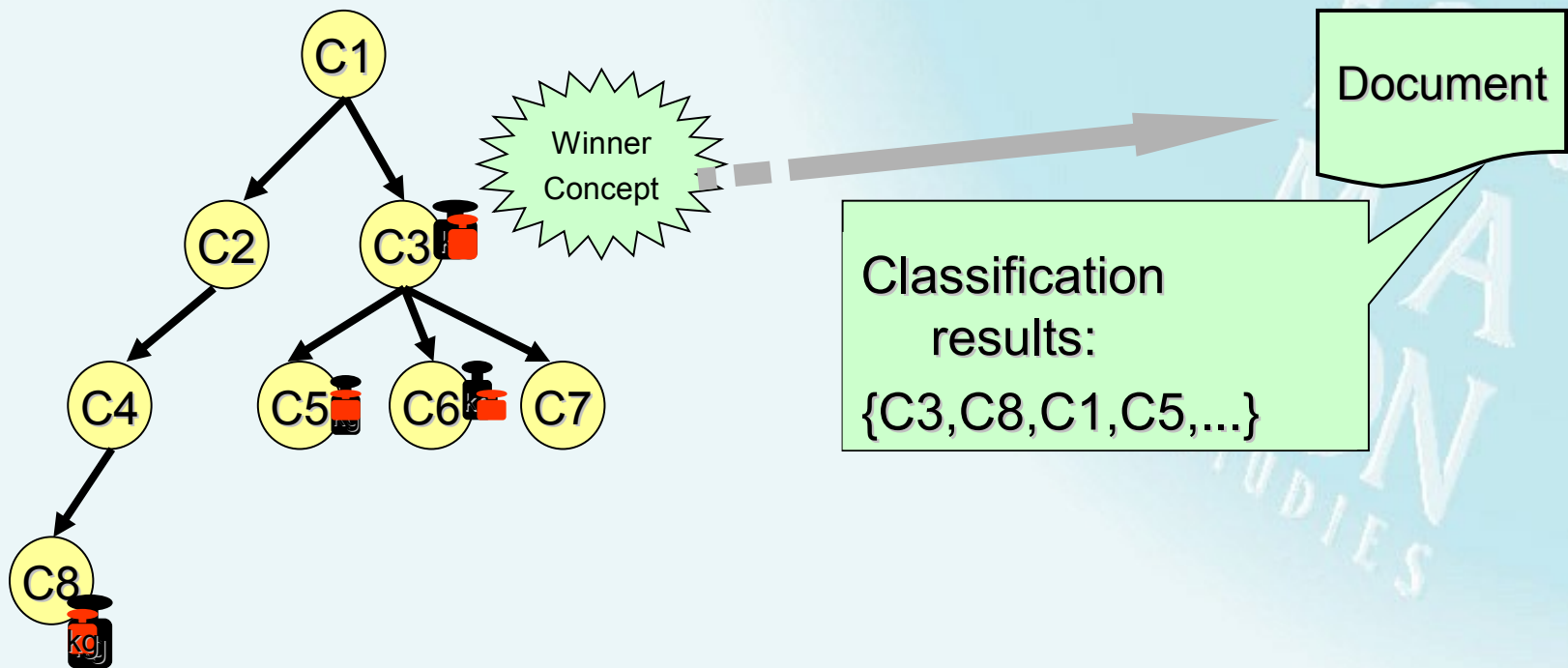
Consists of the following processes:

- Text preprocessing (lemmatizing stemming, etc.)
- Mapping the document to Ontology
- Weight propagation in ontology tree
- Selecting Winner concept(s)

Ontoclass, Ontology based Classification System



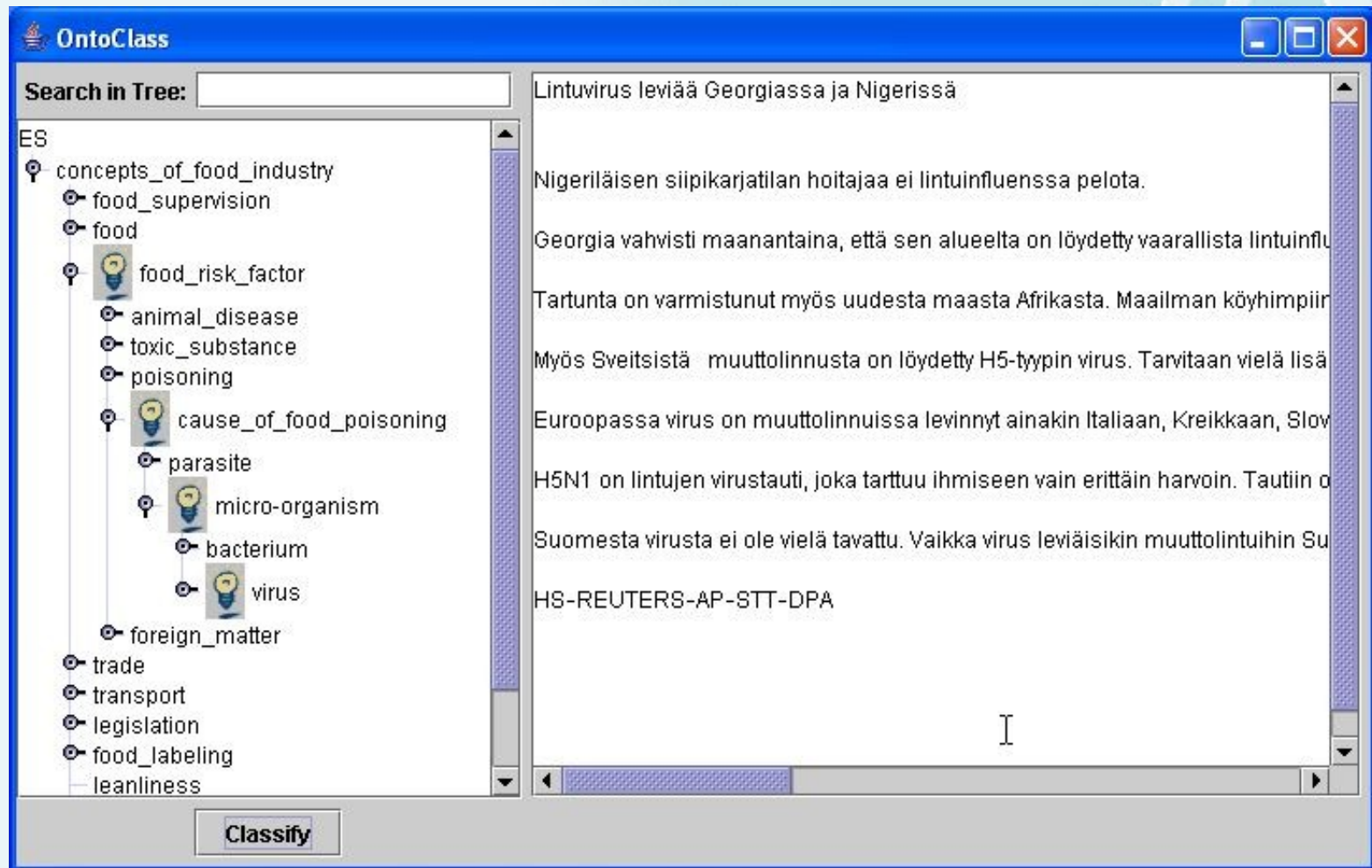
Ontoclass, Ontology based Classification System



Weight propagation

OntoClass

User interface (Standalone version)



OntoClass (Web interface)

Search in Ontology: Hide ...

Add more keywords: Fetch

Search Engine: GoogleCL... Database: STT:bas...
Liberality: Liberal Query Lang. fi
Expansion Le... 1 User name
Ontologies: Ontologies Onto Lang. English

Ontology

- concepts_of_food_industry
 - food_supervision
 - food
 - food_additive
 - gene-altered_food
 - light_product
 - organic_food
 - wholefood
 - agricultural_product
 - food_fat
 - food_product
 - functional_food
 - perishables
 - food_risk_factor
 - animal_disease
 - toxic_substance
 - poisoning
 - cause_of_food_poisoning
 - foreign_matter
 - trade
 - transport
 - legislation

Lähes **luomutuote** - Elintarviketurvallisuusvirasto Evira
Lähes **luomutuote**. Jos viljelijä on siirtymässä tavanomaisesta luomutuotant kasvipärisissä tuotteissa, joita on jo viljelty luomusäännösten mukaan ...
<http://www.evira.fi/portal/fi/elintarvikkeet/elintarviketieto/luomuelintarvikkeet/>

MySpaceTV Videos: **Luomutuote** Video Channel
Upload and share videos, find and watch funny clips, vote and comment on y favorites, subscribe to online video channels, add cool videos to your MySpa
<http://vids.myspace.com/index.cfm?fuseaction=vids.channel&ChannelID=22>

luomutuote.com - luomutuote
luomutuote.com - luomutuote. ... LUOMUTUOTE.COM. Tervetuloa luomu
<http://www.luomutuote.com/> -2k -

Vinkkilän Luomutuote
Vinkkilän **luomutuote** on erikoistunut terveelliseen täsmäravintoon. Tyrni on Vinkkilän päätuote, mutta sen lisäksi viljelemme parsaa, mustikkaa ja aronia
<http://www.vinkkilanluomutuote.fi/> -15k -

Vinkkilän Luomutuote
Vinkkilän **Luomutuote**. ... Tautien hoito kasviravinnolla - Vanheneminen - Vitamiinit. Copyright © 2007 Vinkkilän **Luomutuote**. Designed by Heikki Liu
<http://www.vinkkilanluomutuote.fi/terveys tieto.html> -257k -

Luomutuotteet - Luomut - Elintarvike - Ekotuote - Aromaterapiat ...
Luomutuote on luonnonmukaisesti viljelty. **Luomutuote** - Elintarvikkeet - E Valitse Luomu tästä! Maksa verkkopankissa; Nordean Solon, ...
<http://www.luomukauppa.fi/verkkokauppa/> -4k -

Iso-Markun luomutila
Joulukuuset - Perunat - Reseptit - Uutiset. Etsi sivulta. Arkisto. January 200 December 2007. Sähköposti: **luomutuote** (ät) **luomutuote** (piste) net.
<http://www.luomutuote.net/> -11k -

Luomutuote
email: info@**luomutuote**.fi. Ajankohtaista. **Luomutuote** studiossa 6.8.2007 kuuntelemassa täältä: www.myspace.com/luomutuoteband. Seuraava keikka: <http://www.luomutuote.fi/> -4k -

MySpace.com - **Luomutuote** - Espoo, FI - Rock / Punk / Alternative ...
MySpace music profile for **Luomutuote** with tour dates, songs, videos, pictu

Search in Tree:

Ontology:
<http://www.info.uta.fi:8880/QuccooFlexServer/YO.xml>
Concept language
Finnish
Classify

Ontology

- Ympäristöontologia
 - Jätteet
 - Luonnonvarat
 - Luonnonvarojen_käyttö
 - Uusiutumattomat_luonnonvarat
 - Uusiutuvat_luonnonvarat
 - Metsävarat
 - Muut_uusiutuvat_luonnonvarat
 - Kalat
 - Marjat
 - Porot
 - Riista
 - Sienet
 - Turve
 - Uusiutuva_energia
 - Vesivarat
 - Viljell...
 - Ympäristön_tila

<http://www.vinkkilanluomutuote.fi/>

OntoClass (Web interface)

The screenshot shows the OntoClass web interface in Mozilla Firefox. The browser address bar displays `http://www.info.uta.fi:8880/QuccooFlexServer/ClikObserver.html`. The interface is divided into several panels:

- Search in Ontology:** Includes a search input field, a "Hide ..." button, and a "Fetch" button. Below this are options for "Add more keywords:", "Search Engine" (set to Google), "Database" (set to STT:bas_...), "Liberality" (set to Liberal), "Query Lang." (set to fi), "Expansion Le..." (set to 1), "User name", and "Ontologies" (set to Ontologies) and "Onto Lang." (set to English).
- Ontology Tree:** A hierarchical tree view on the left side. The root is "Ontology", with sub-nodes like "concepts_of_food_industry", "food_supervision", "food", "food_additive", "gene-altered_food", "light_product", "organic_food", "wholefood", "agricultural_product", "food_fat", "food_product", "functional_food", "perishables", "food_risk_factor", "animal_disease", "toxic_substance", "poisoning", "cause_of_food_poisoning", "foreign_matter", "trade", "transport", and "legislation". The "organic_food" node is currently selected.
- Search in Tree:** A search input field and a "Classify" button.
- Ontology Selection:** A dropdown menu showing the selected ontology: `http://www.info.uta.fi:8880/QuccooFlexServer/ES.xml`. Below it, the "Concept language" is set to "Swedish".
- Search Results:** The main content area displays search results for "Luomutuote". The first result is "Vinkkilän Luomutuote" with a description: "Vinkkilän Luomutuote on erikoistunut terveelliseen täsmäravintoon. Tyrni on Vinkkilän päätuote, mutta sen lisäksi viljellemme parsaa, mustikkaa ja aronia" and a link `http://www.vinkkilanluomutuote.fi/ -15k -`. Other results include "Luomutuotteet - Luomut - Elintarvike - Ekotuote - Aromaterapiat ..." and "Iso-Markun luomutila".
- Footer:** At the bottom, it says "Result Page: 1 2 3 4 5 6 7 8 9 10" and "©2006 Smoogle".

OntoClass (Web interface)

The screenshot shows the OntoClass web interface in Mozilla Firefox. The browser address bar displays <http://www.info.uta.fi:8880/QuccooFlexServer/ClickObserver.html>. The interface includes a search bar, a search engine dropdown (Google), and a database dropdown (STT:bas...). The search results are displayed in the center, showing several entries related to 'Luomutuote' (organic food) with descriptions and links. The ontology tree on the right shows a hierarchical structure of concepts related to food and industry.

Search in Ontology:

Add more keywords:

Search Engine: GoogleCl... **Database:** STT:bas_...

Liberality: Liberal **Query Lang.** fi

Expansion Le...: 1 **User name:**

Ontologies: Ontologies **Onto Lang.** English

Search in Tree:

Ontology: <http://www.info.uta.fi:8880/QuccooFlexServer/ES.xml>

Concept language: English

Ontology Tree:

- Ontology
 - concepts_of_food_industry
 - food_supervision
 - food
 - food_additive
 - gene-altered_food
 - light_product
 - organic_food
 - wholefood
 - agricultural_product
 - food_fat
 - food_product
 - functional_food
 - perishables
 - food_risk_factor
 - animal_disease
 - toxic_substance
 - poisoning
 - cause_of_food_poisoning
 - foreign_matter
 - trade
 - transport
 - legislation
 - food_labeling
 - cleanliness
 - freshness

Search Results:

Vinkkilän Luomutuote
Vinkkilän Luomutuote on erikoistunut terveelliseen täsmäravintoon. Tyrni on Vinkkilän päätuote, mutta sen lisäksi viljelemme parsaa, mustikkaa ja aronia
<http://www.vinkkilanluomutuote.fi/> -15k -

Vinkkilän Luomutuote
Vinkkilän Luomutuote... Tautien hoito kasvisravinnolla · Vanheneminen · Vitamiinit. Copyright © 2007 Vinkkilän Luomutuote. Designed by Heikki Liu
<http://www.vinkkilanluomutuote.fi/terveystieto.html> -257k -

Luomutuotteet - Luomut - Elintarvike - Ekotuote - Aromaterapiat ...
Luomutuote on luonnonmukaisesti viljelty. Luomutuote - Elintarvikkeet - E-Valitse Luomu tästä! Maksa verkkopankissa; Nordean Solon, ...
<http://www.luomukauppa.fi/verkkokauppa/> -4k -

Iso-Markun luomutila
Joulukuuset · Perunat · Reseptit · Uutiset. Etsi sivuilta. Arkisto. January 2007 December 2007. Sähköposti: [luomutuote \(ät\) luomutuote \(piste\) net.](mailto:luomutuote@luomutuote.piste.net)
<http://www.luomutuote.net/> -11k -

Luomutuote
email: info@luomutuote.fi. Ajankohtaista. Luomutuote studiossa 6.8.2007 kuuntelemissa täältä: www.myspace.com/luomutuoteband. Seuraava keikka: <http://www.luomutuote.fi/> -4k -

MySpace.com - Luomutuote - Espoo, FI - Rock / Punk / Alternative ...
MySpace music profile for Luomutuote with tour dates, songs, videos, pictures, blogs, band information, downloads and more.
<http://profile.myspace.com/index.cfm?fuseaction=user.viewprofile&friendID=2>

Result Page: [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#)

©2006 Smoogle

<http://www.vinkkilanluomutuote.fi/terveystieto.html>

Discussion

Thank you!

Over to you ... questions?

IN
FOR
MA
TION
STUDIES