



Center of Excellence For Research, Innovation, Education and industrial Lab partnership
Politecnico di Milano

Squiggle Med: Semantic Search for Medical Digital Library

Workshop for W3C Semantic Web
Health Care & Life Sciences Interest Group

I. Celino, A. Turati, E. Della Valle, D. Cerizza
Semantic Web Activities group – CEFRIEL

Web: <http://swa.cefriel.it> Email: semanticweb@cefriel.it

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Squiggle: real-world semantic search engines

- At **CEFRIEL**, with Semantic Web technologies, we built a search engine called *Squiggle* and we tested it in different contexts

<http://squiggle.cefriel.it/>

- *Squiggle* is not a search engine itself, but it is a framework to support the building of domain-aware search engines
- *Squiggle* adopts **SKOS** as application ontology and allows for an easy customization with domain knowledge ontologies and metadata

Real-world semantic search engines

Squiggle Med



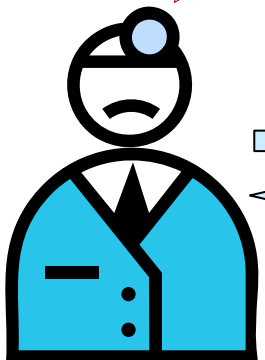
Squiggle Med (medical literature domain)

- ▶ uses **PubMed** (see <http://pubmed.com>) as content source
- ▶ levers on a multilingual medical ontology,
 - built starting from the terminology of a shared and well-known thesaurus like **MeSH** (Medical Subject Headings, for details see <http://www.nlm.nih.gov/mesh/>)
 - merging different translations of MeSH terms
- ▶ lets the user
 - submit queries in his own language, leaving to the engine the effort of “recognizing” the meaning of the query
 - find relevant medical literature from PubMed that are semantically indexed with regards to the medical ontology
 - in case, expand his/her query to related concepts
- Coming soon at <http://squiggle.cefriel.it/>

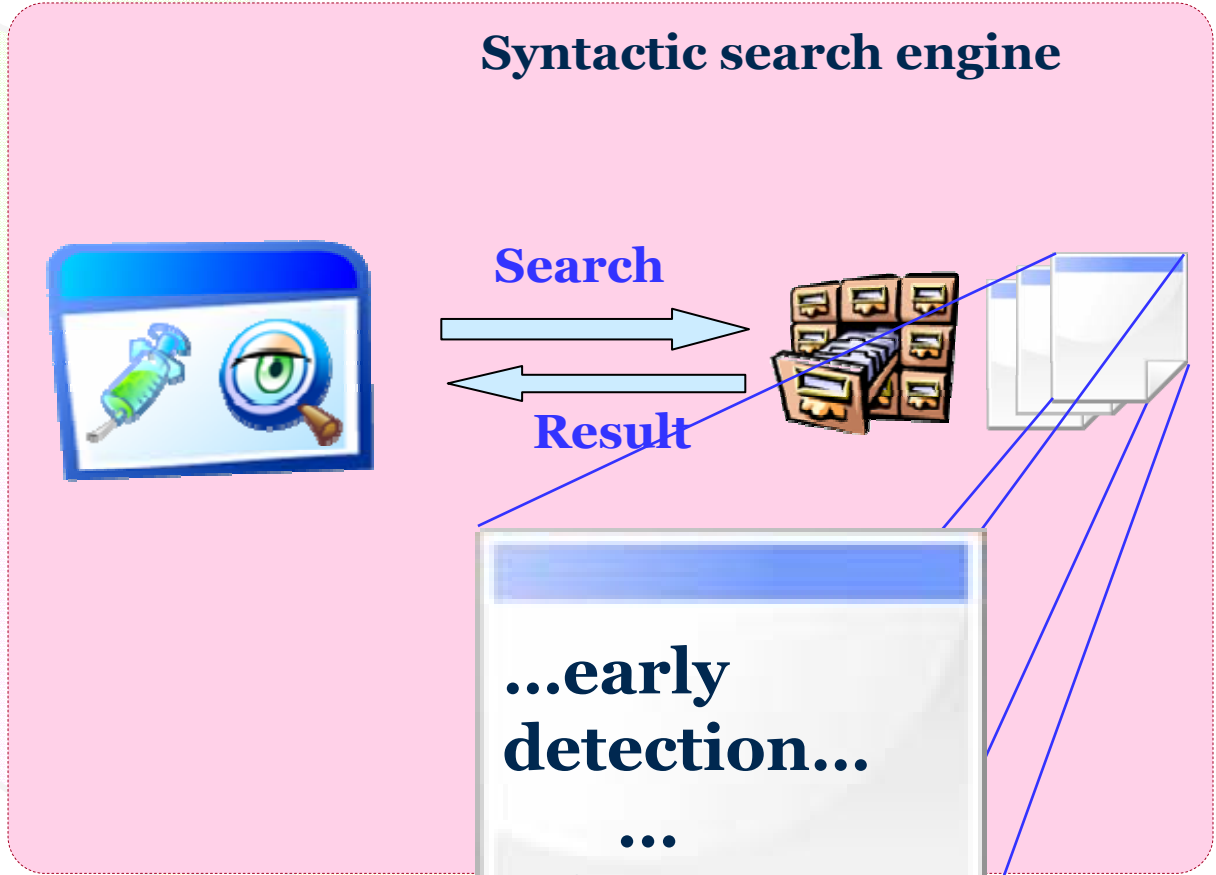
Real-world semantic search engines

Example without Squiggle Med

“Diagnosi preventiva del cancro al seno”



No match found !!

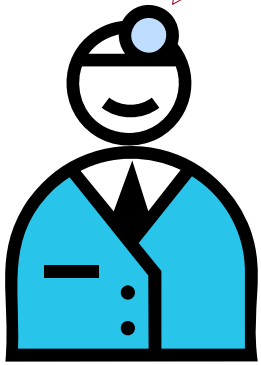


traditional syntactic search engine vs. ...

Real-world semantic search engines Example with Squiggle Med

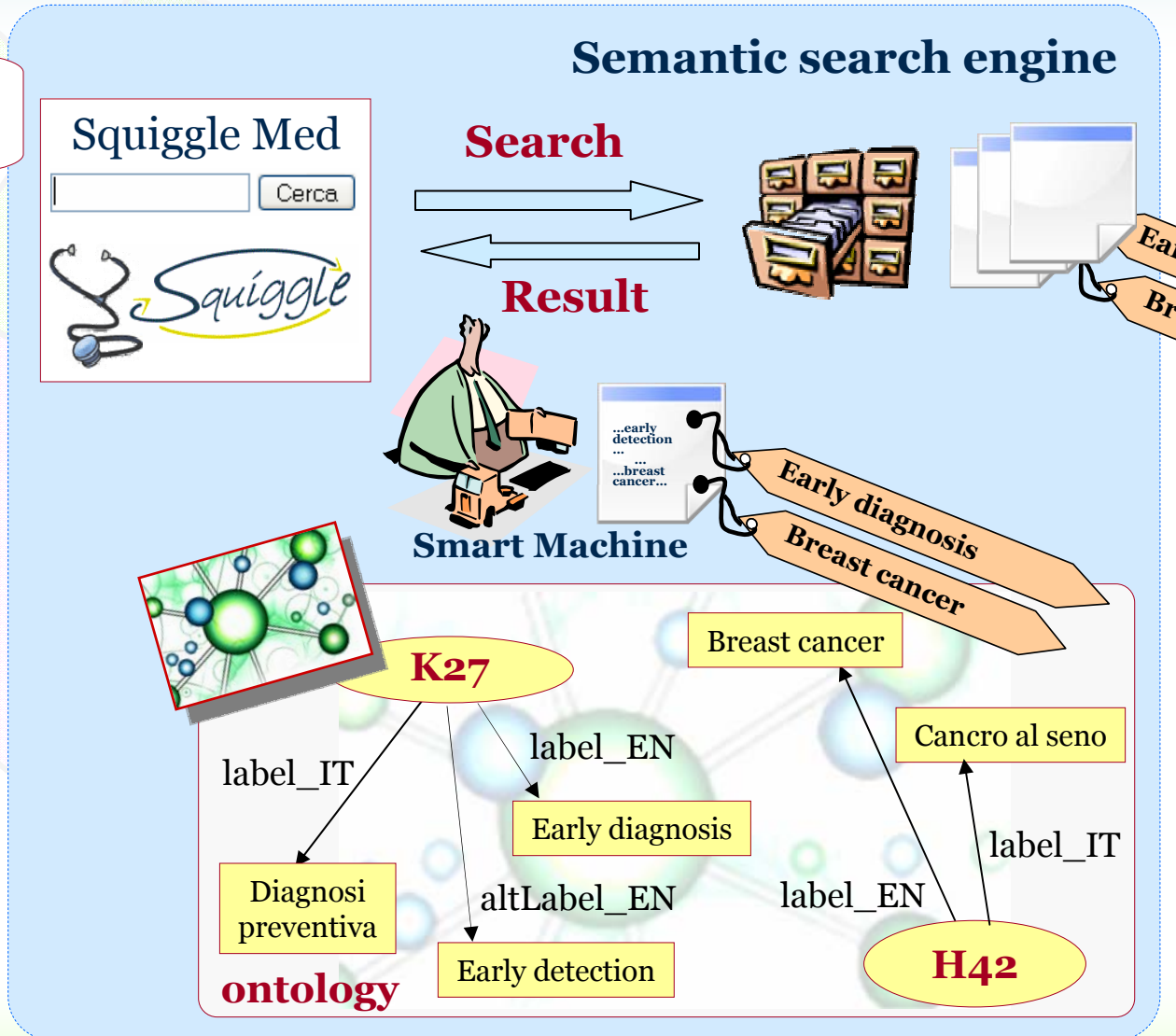


“Diagnosi preventiva del cancro al seno”



Good match found !!

... vs. semantic search engine



Real-world semantic search engines

Squiggle Med at work



Diagnosi preventiva del cancro al seno

Semantic Search

[Underwood SM.](#)

[redacted] in African American women: nursing essentials.
 ABNF J. 2006 Jan-Feb;17(1):3-14. Review.

[Jansen N, Nickers P, Deneufbourg JM.](#)

[Partial breast irradiation: the role of brachytherapy. A new treatment option for early breast cancer]
 Rev Med Liege. 2006 Feb;61(2):97-103. Review [redacted]

[Paajanen H, Kyhala L, Varjo R, Rantala S.](#)

Effect of [redacted] mammography on the surgery of breast cancer in Finland: a population-based analysis during the years 1985-2004.
 Am Surg. 2006 Feb;72(2):167-71.

[Ganott MA, Sumkin JH, King JL, Klym AH, Catullo WJ, Cohen CS, Gur](#)

Screening mammography: do women prefer a higher recall rate given the possibility of [redacted] of cancer?
 Radiology. 2006 Mar;238(3):793-800.

[Sener SF, Winchester DJ, Winchester DP, Barrera E, Bilimoria M, Brinkmann E, Alwawi E, Rabbitt S, Schermerhorn M, Du H.](#)

Survival rates for breast cancers detected in a community service screening mammogram program.
 Am J Surg. 2006 Mar;191(3):406-9.

Did you mean ...

- [Early Diagnosis](#)
- [Breast Neoplasm](#)
- [Primary Prevention](#)
- [Breast Diseases](#)

Submit Query

Broader Terms:
 Breast Neoplasm
 |→ [Breast Diseases](#)
 |→ [Neoplasms by Site](#)

Narrower Terms:
 Breast Neoplasm
 |→ [Phyllodes Tumor](#)

Allowable Qualifiers:
[Complications](#)
[Therapy](#)

On-line demos of Squiggle

 **Squiggle Music** (music context)

- <http://squiggle.cefriel.it/music>

 **Squiggle Ski** (Olympic Winter Games disciplines)

- <http://squiggle.cefriel.it/ski>

Try them out!

CEFRIEL was Official
Supplier of Applied
Academic Research at
Torino 2006 Olympic
Winter Games!



Thank you for your attention



Contact information:

Irene Celino

irene.celino@cefriel.it

CEFRIEL – Politecnico di Milano
via Fucini, 2 – 20133 Milano – Italy

website: <http://swa.cefriel.it>

phone: 02 23954-266 fax: 02 23954-466