

tesi di laurea

Realizzazione di un Framework a supporto di un processo per l'interoperabilità semantica nel Web

Anno Accademico 2008 - 2009

relatori

Ch.ma prof.ssa Anna Rita Fasolino

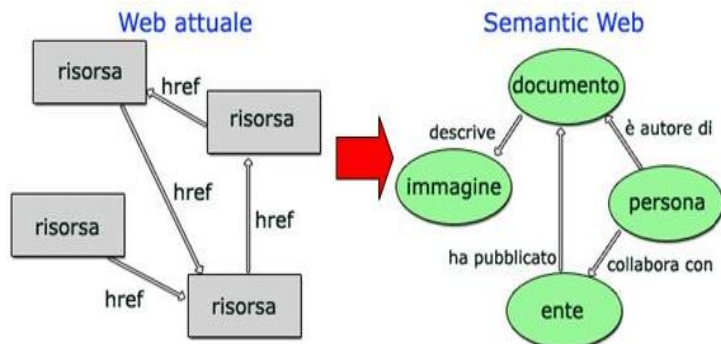
Ch.mo prof. Vincenzo Moscato

candidato

Raffaele Chiocchetti

Matr. 534/3053

Contesto e Contributo



INTEROPERABILITA' SEMANTICA:

**dati compresi senza
ambiguità sia da persone
che da agenti software**

Contesto

Evoluzione del Web: dal Web Sintattico al Web Semantico

❖ Problematiche del Web Sintattico:

- assenza di significato dei collegamenti
- web nascosto
- i motori di ricerca si basano su semplici tecniche di word-matching
- problemi di interoperabilità ed integrazione

❖ IL Web Semantico risponde a queste problematiche, introducendo:

- annotazioni semantiche per le risorse (Metadati)
- relazioni tra le risorse web (Ontologie)
- appositi linguaggi e tecnologie (XML, RDF, OWL, etc..)

Contributo

Realizzazione di un Framework a supporto di un processo per l'interoperabilità semantica nel Web

- Basato sul modello a triangolo semantico (Ogden-Richards)
- Progettazione ed Implementazione del modello ottimizzato

Decodifica

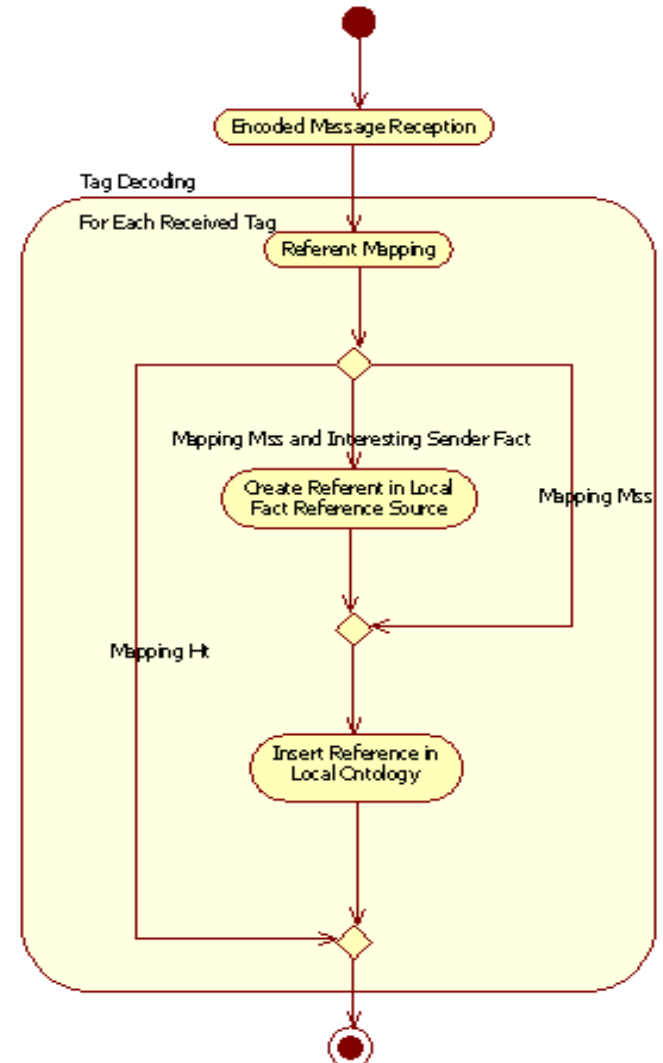
Information Object



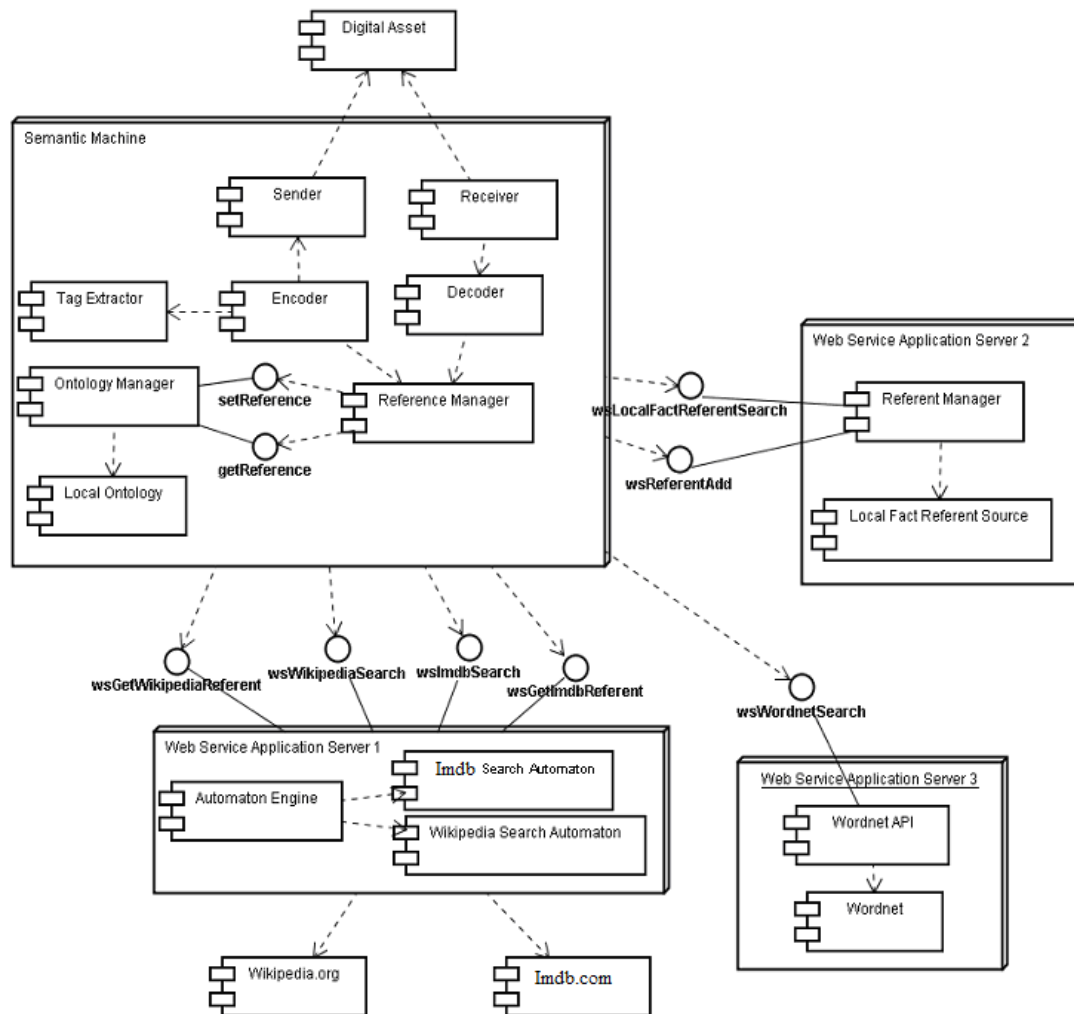
Risultato processo di
codifica, sono presenti tutte
le informazioni necessarie al
ricevente per individuare le
entità in gioco

```

<< resource
  << header
    << URI(fisichella.xml) URI >>
  >> header >>
  << description
    << internal
      @prefix local: <http://localhost:3000/server_directory/rdf_document/> .
      @prefix apsw: <http://www.specs.org/specs/apsw/> . <#tag1> a
      apsw:NonEncyclopedicFact ;
      apsw:Referent local: fisichella ;
      apsw:accessBy "http://localhost:3000/server_directory/rdf_document/" ;
      apsw:tag "fisichella" . [] a apsw:EncodedIO .
    >> internal >>
  >> description >>
>> resource >>
  
```

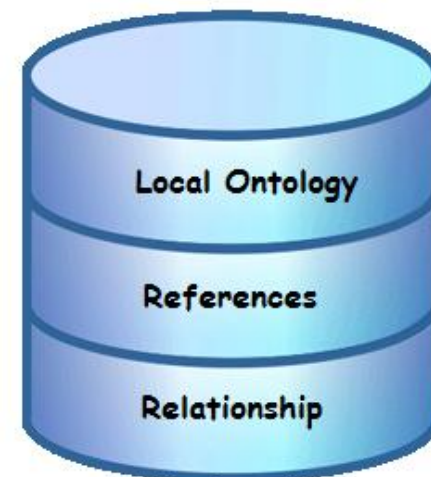


Sistema Realizzato



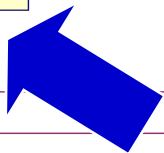
Tecnologie utilizzate

- Java Server Pages
- Apache Tomcat v. 6.0
- MySQL 5.0
- Wordnet 2.0
- XML RDF
- Web Service (WSDL)
- Librerie JWNL, JDOM



Processo di codifica

143.225.229.92:8080/WS_Client



IO Parameters

Source: *

Tag List: *

Log-In

Username:

Access Key:

Fields with (*) must be filled

```
<resource>  
<header>  
<URI|www.gazzettadelloport.it/formula|LURI|>  
</header>  
<description>  
<internal>@prefix apsw: <http://www.specc.org/specs/apsw/> .  
<#tag1> apsw:tag "fisichella" .  
<#tag2> apsw:tag "torraii" .  
<#tag3> apsw:tag "prole" .  
<#tag4> apsw:tag "giappone" .  
</internal>  
</description>  
</resource>
```

ul Links:

ix Decoder

Start

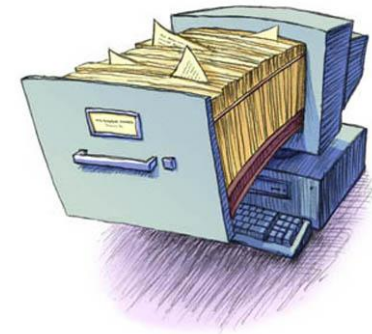


Processo di codifica

143.225.229.92:8080/WS_Client



DataBase



IO Parameters

Source: (*)
(htm/doc)

Tag List: (*)

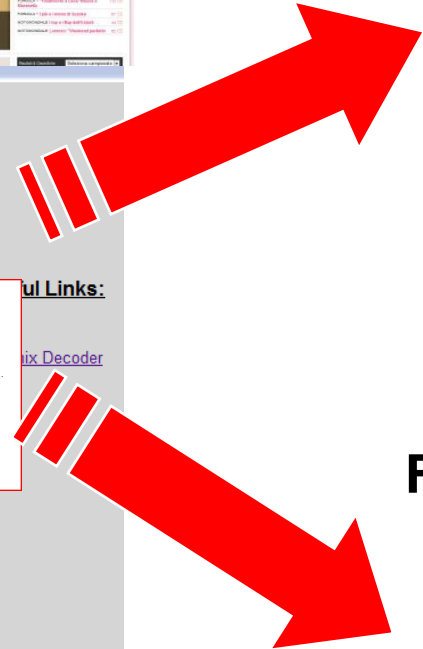
Log-In

Username: (*)

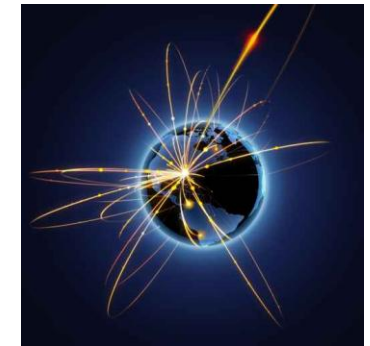
Access Key: (*)

Fields with (*) must be filled

```
<resource>  
  <header>  
    <URI|www.gazzettadello sport.it/formula|LUR|>  
  </header>  
  <description>  
    <internal_@prefix apsw: <http://www.specc.org/specs/apsw/>  
    <#tag|> apsw:tag "rischiella".  
    <#tag|> apsw:tag "torral".  
    <#tag|> apsw:tag "pole".  
    <#tag|> apsw:tag "giappone".  
  </description>  
</resource>
```



Fonti Universali



Start

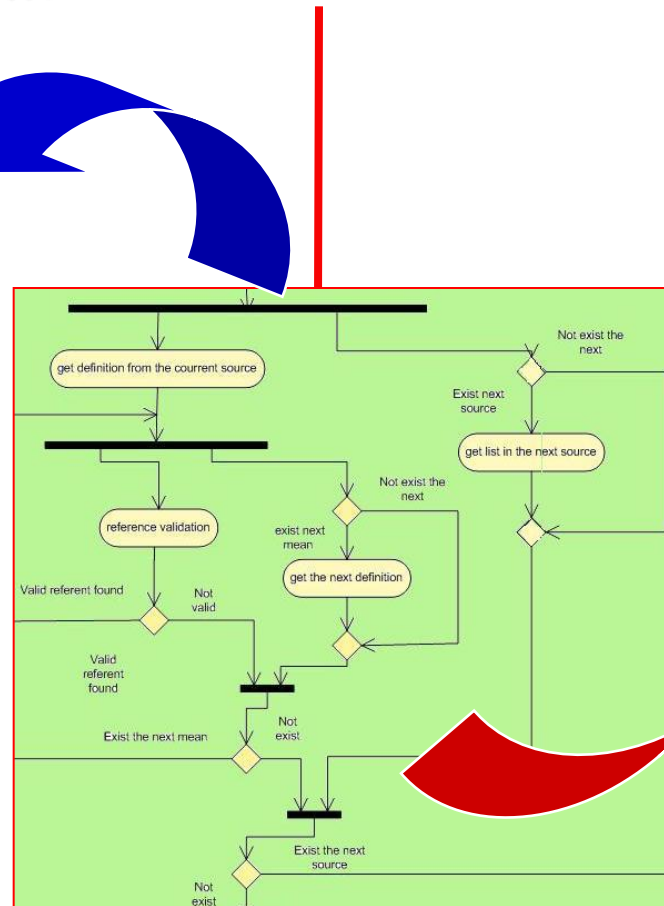
Parallelizzazione su due livelli

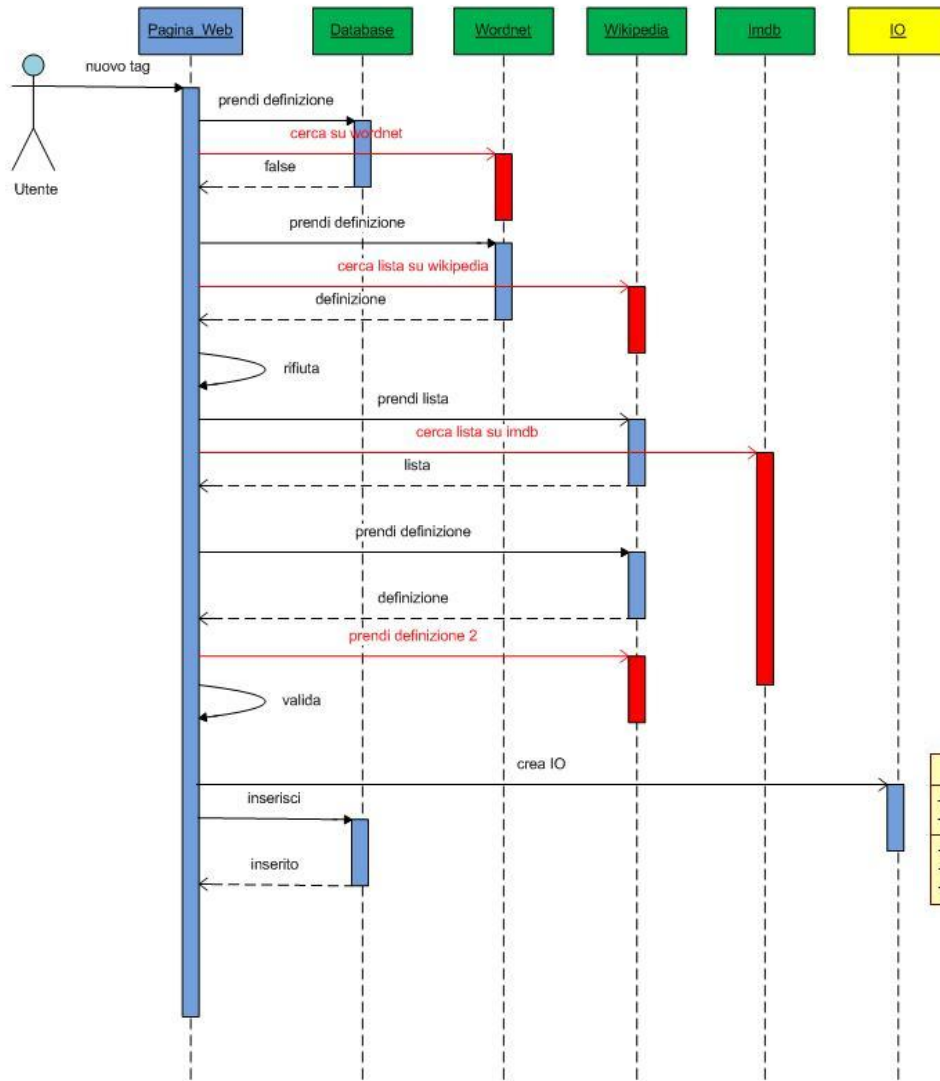
Tra le varie fonti

Sulla stessa fonte

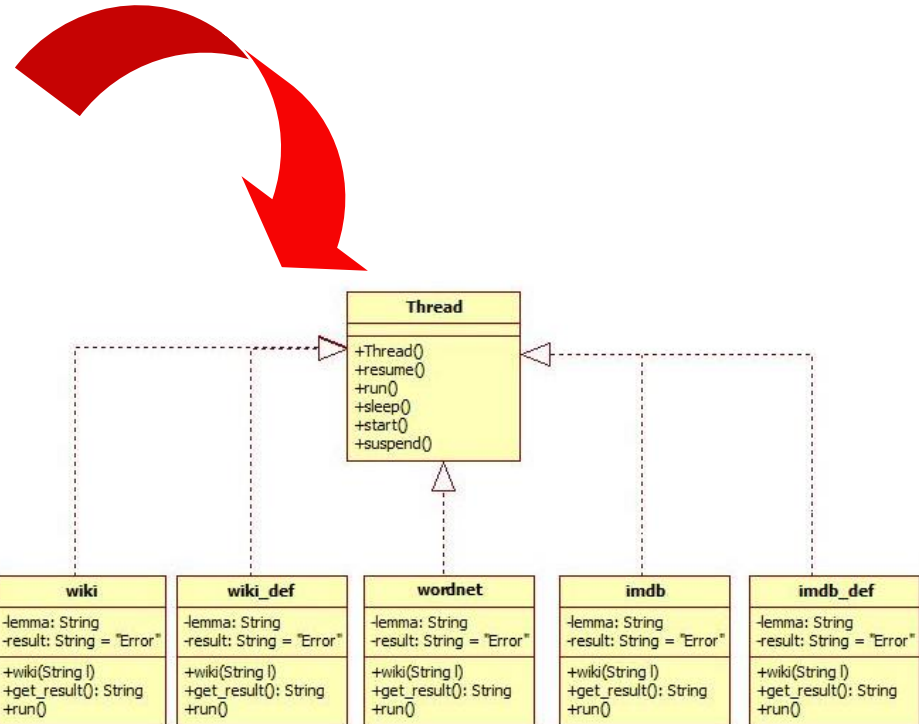
- Inizialmente tra DB locale e prima fonte
- Successivamente tra fonte corrente e successiva
- Fino a terminare con l'ultima fonte

- Tra le varie disambiguazione restituite dalla fonte universale (Wikipedia, Imdb)
- Seguendo sempre il principio con lemma corrente e quello direttamente successivo





Parallelizzazione su due livelli



UNIVERSITA' DEGLI STUDI DI
NAPOLI FEDERICO II

Meanings found on WIKIPEDIA for the following lemma:

{fischella}

Meaning Selection

Please select one of the following meanings:

Giancarlo Fischella (born January 14, 1973 in Rome, Italy), also known as Fisco, Giano or Fisi, is an Italian racing driver. He has driven in Formula One for Minardi, Jordan, Benetton, Sauber, Renault, Force India and is currently driving for Ferrari in place of the injured Felipe Massa.1 He will also be Ferrari's reserve driver for 2010.

result 1 of about 4

Adding to Database

Do you want to link the selected meaning to an existing concept on your Database?

Yes
 No

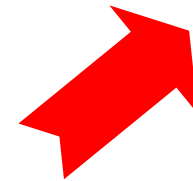
Select the existing resource:

Resource: Type:

Useful Links:

[Home Page](#)
[Phoenix Decoder](#)

Accept the meaning
Refuse this mean - Go to the next one in wikipedia
Go to next source



UNIVERSITA' DEGLI STUDI DI
NAPOLI FEDERICO II

Add meanings for the following lemma:

{fischella}

Meaning Section

Please insert your tag meaning:

Adding to Database

Do you want to link your personal concept to an existing concept on your Database?

Yes
 No

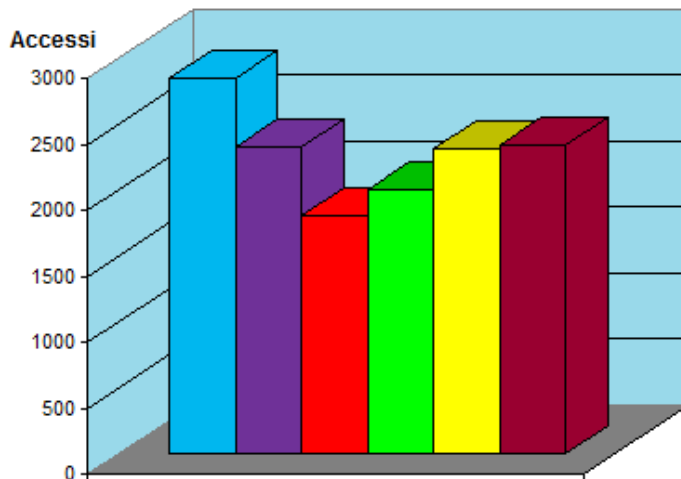
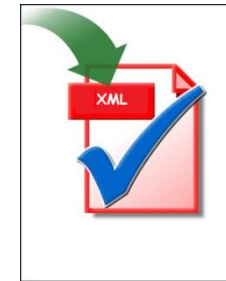
Select the existing resource:

Resource: Type:

Accept the meaning
Restart search

XML

Referente Locale:
risorsa REST



- 1 Wordnet_Wikipedia_Imdb
- 2 Wordnet_Imdb_Wikipedia
- 3 Wikipedia_Wordnet_Imdb
- 4 Wikipedia_Imdb_Wordnet
- 5 Imdb_Wikipedia_Wordnet
- 6 Imdb_Wordnet_Wikipedia

```

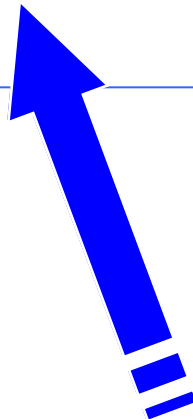
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE rdf:RDF [
  <rdf:RDF
    <URI http://localhost:3000/server_directory/rdf_document/fischella.xml URI>
  </rdf:RDF>
  <description>
    <internal @prefix apsw: <http://www.specs.org/specs/apsw/> . [] a
    apsw:LocalFactReferent ; apsw:semantic "pilota della ferrari" ;
    apsw:tag "fischella" .</internal>
  </description>
</resource>
  
```

Binding dei tag

Ingresso Decoder



```
resource {
  header {
    URI(fisichella.xml) URI
  }
  header {
    description {
      internal {
        @prefix local: <http://localhost:3000/server_directory/rdf_document/> .
        @prefix apsw: <http://www.specs.org/specs/apsw/> . <#tag1> a
        apsw:NonEncyclopedicFact ;
        apsw:Referent local: fisichella ;
        apsw:accessBy "http://localhost:3000/server_directory/rdf_document/" ;
        apsw:tag "fisichella" . [] a apsw:EncodedIO .
      }
    }
  }
}
```



Information Object



XML Document

Information Object: |

Log-In

Access Key:

Fields with (*) must be filled

Useful Links:

- [Home Page](#)
- [Phoenix Encoder](#)

Local DB del receiver

DATABASE
Vuoto

```
<concept>  
<name>  
<URI>fisichella.nal</URI>  
</name>  
</concept>  
  
<concept>  
<name>  
<URI>http://localhost:3000/serve_directory/df_document/</URI>  
</name>  
</concept>  
  
<concept>  
<name>  
<URI>http://www.apcs.org/spec/apcs/</URI>  
</name>  
</concept>  
  
<concept>  
<name>  
<URI>http://localhost:3000/serve_directory/df_document/</URI>  
</name>  
</concept>  
  
<concept>  
<name>  
<URI>http://localhost:3000/serve_directory/df_document/</URI>  
</name>  
</concept>
```

Cerca fisichella



Non trovato

Estrae uri dal IO
ed accede al
referent locale al
sender

```
<concept>  
<name>  
<URI>http://localhost:3000/serve_directory/df_document/fisichella.nal</URI>  
</name>  
</concept>  
  
<concept>  
<name>  
<URI>http://www.apcs.org/spec/apcs/</URI>  
</name>  
</concept>  
  
<concept>  
<name>  
<URI>http://localhost:3000/serve_directory/df_document/</URI>  
</name>  
</concept>
```

Referente Locale:
risorsa REST

Sender



UNIVERSITA' DEGLI STUDI DI
NAPOLI FEDERICO II

The following tag has not been found on your Ontology and it is a Encoder local concept :

{fisichella}

Tag Meaning

pilota della ferrari

Adding to Database

Do you want to link the retrieved meaning to an existing concept on your Database?

- Yes
- No

Select the existing resource:

Resource:

Type:

Accept the meaning

Refuse this mean

Conclusioni e sviluppi futuri

Lo scopo di questo elaborato di tesi è stato realizzare un framework che implementi il processo ottimizzato per l'interoperabilità semantica nel web

Possibili sviluppi futuri:

- Integrazione con un Tag-Extractor automatizzato;
- Introduzione nuove fonti di dominio specifico;
- Deployment su sistema multiprocessore;
- Integrazione di ontologie locali di agenti diversi;