

Semantic Web Applications: Current Status and Trends



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Acknowledgements: Asunción Gómez-Pérez, Jesús Barrasa, Angel López Cima, Oscar Muñoz, Jose Angel Ramos Gargantilla, María del Carmen Suárez de Figueroa, Boris Villazón

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- **Ontologies, Semantic Web and Corporate Semantics**
- Semantic Web Applications
 - Annotation: Corporate Semantic Webs
 - ODESeW R&D portals
 - Data Integration
 - Fund finder
 - FAO
 - SEEMP
 - Decision Support Systems
 - Satellite Missions
 - Car Fraud
- Conclusions and Trends
 - Including the real world: SemsorGrid4Env
 - Combining Semantic Web and Web2.0: GeoBuddies



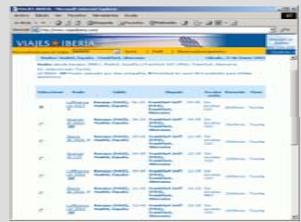
The Web



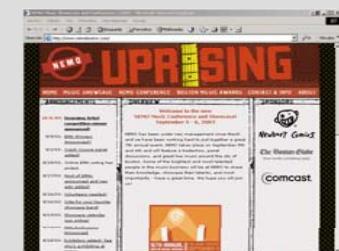
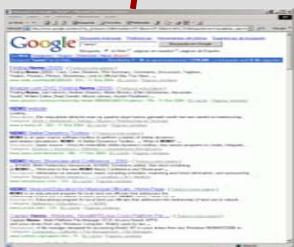
Huge



Dynamic

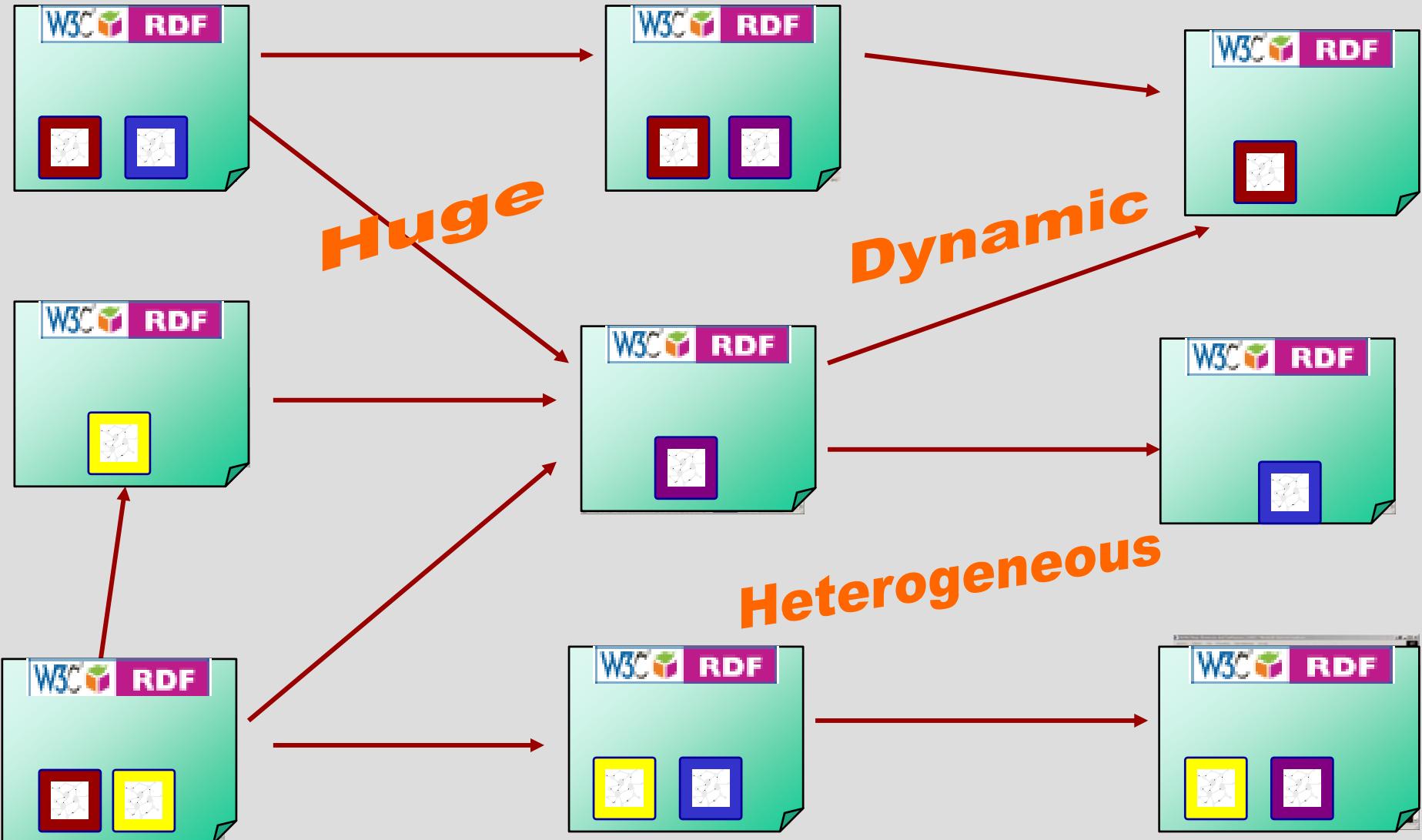


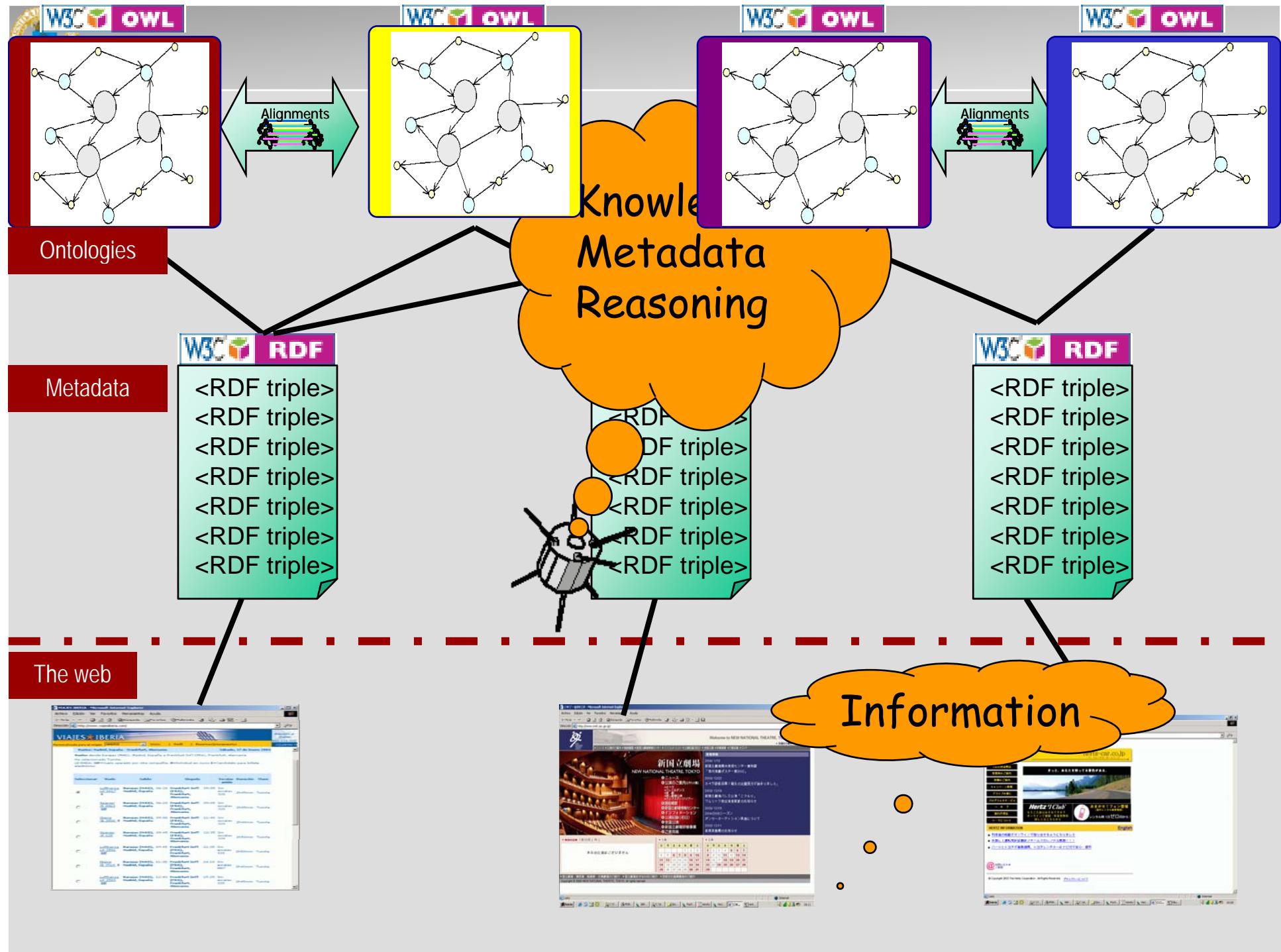
Heterogeneous





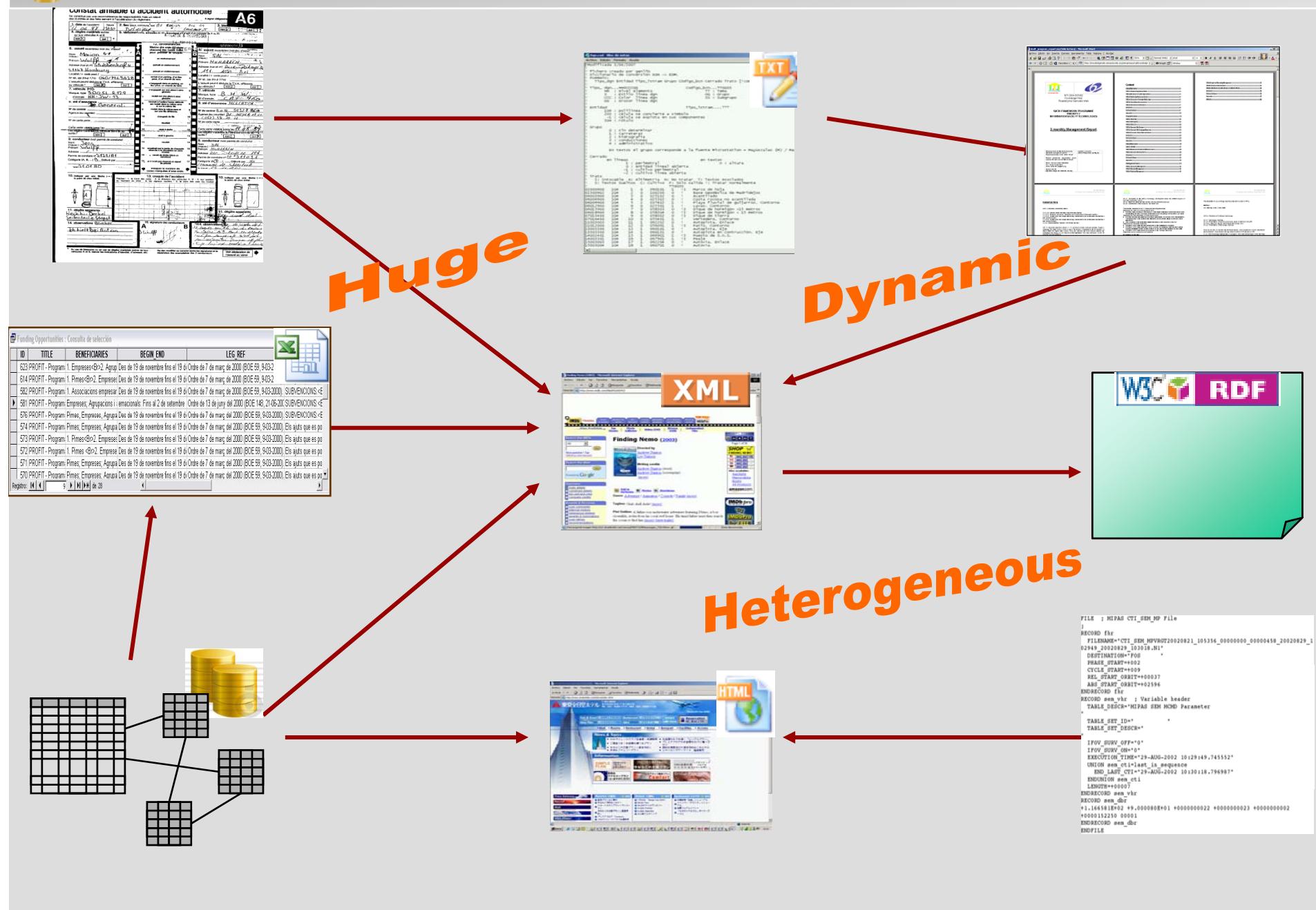
Semantic Webs





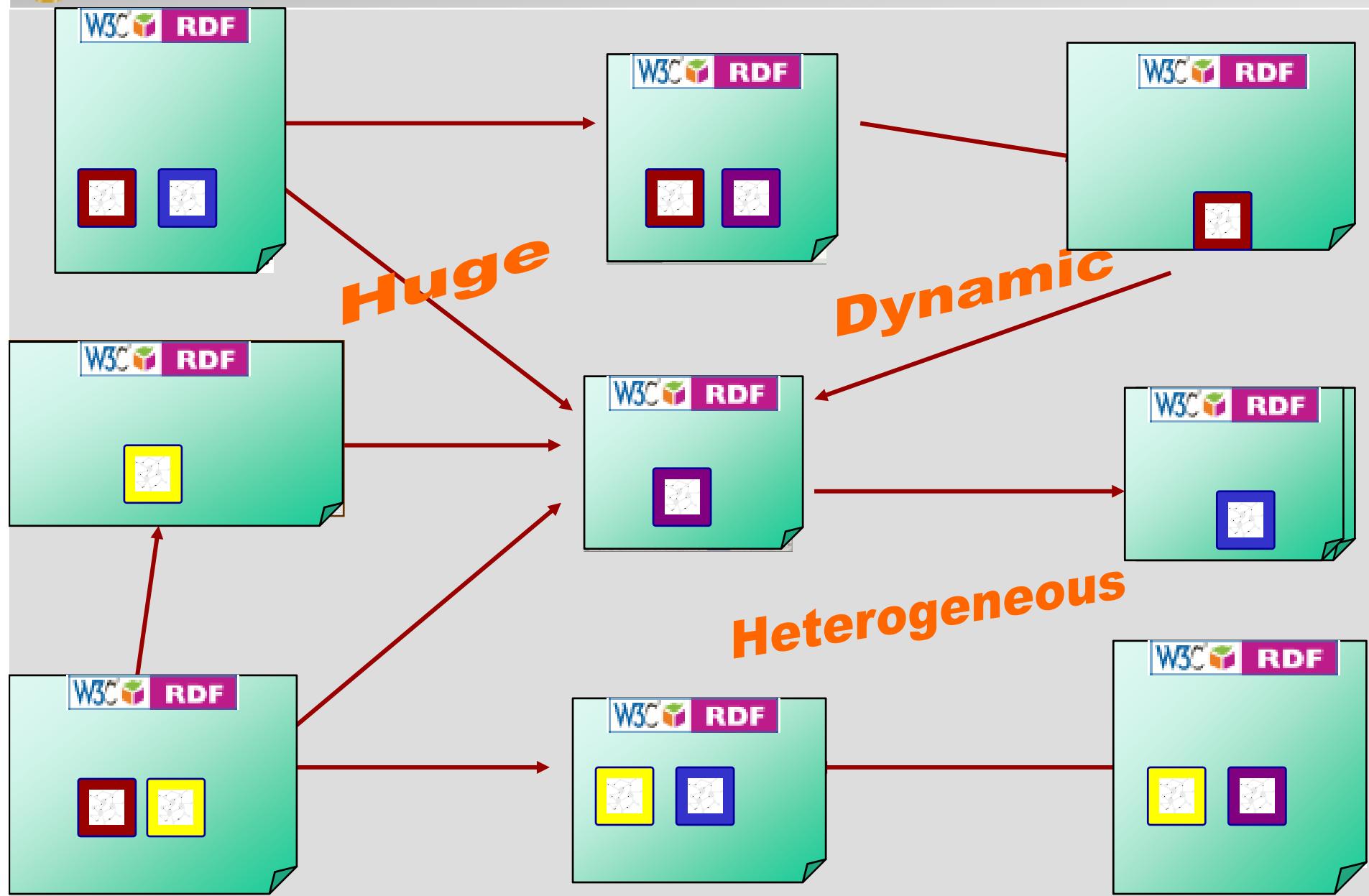


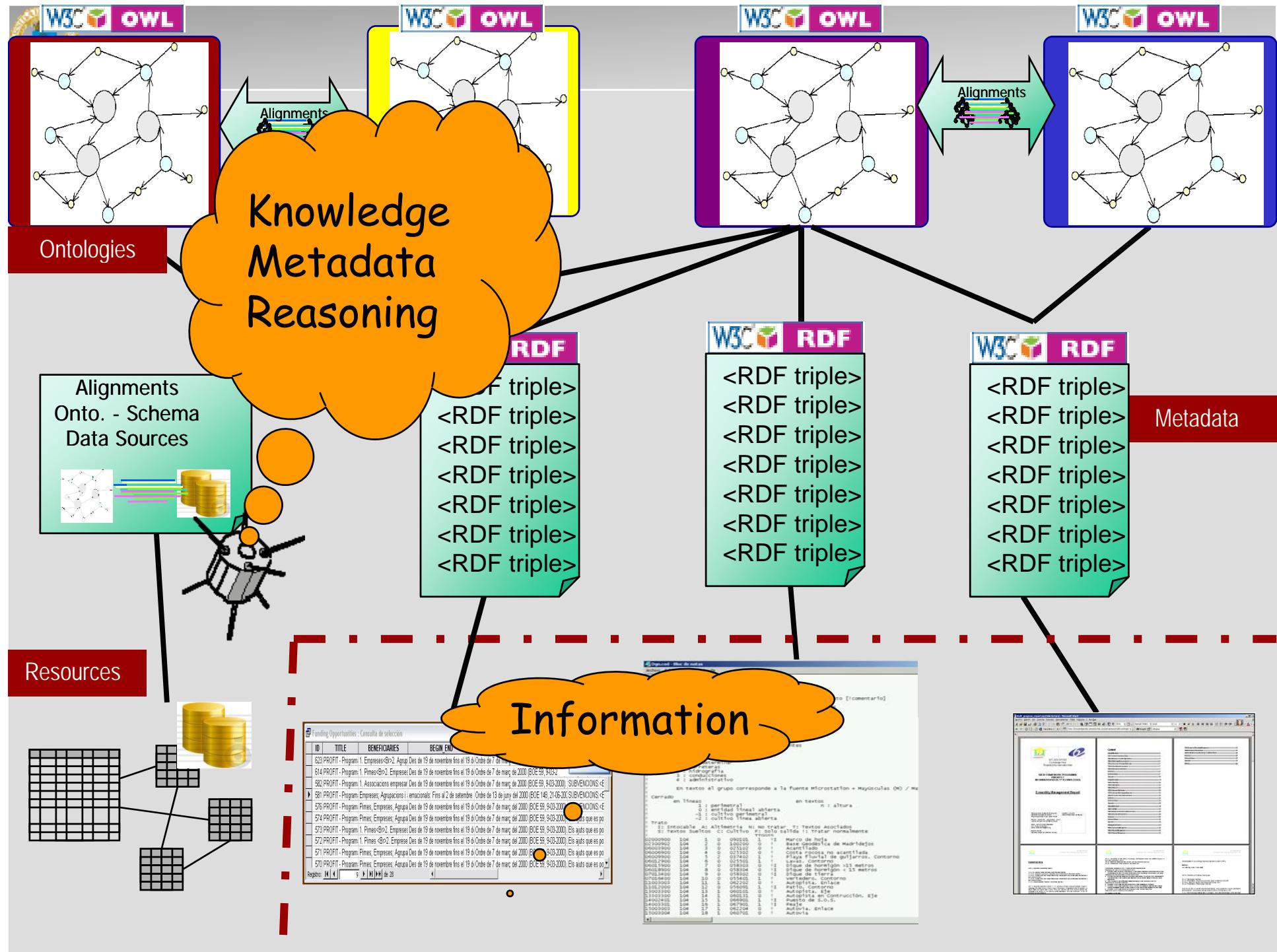
Corporate Semantics





Corporate Semantics

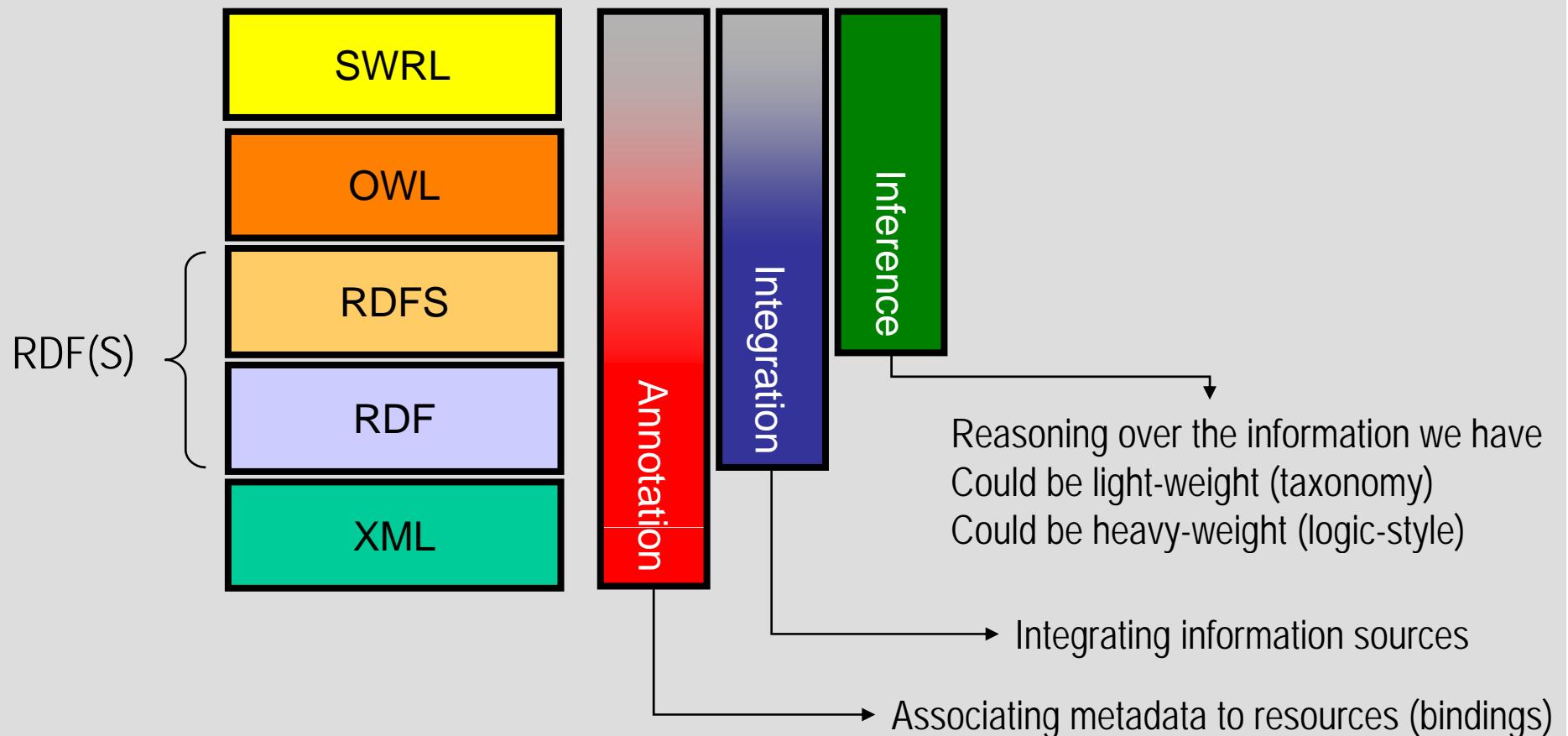






Key Aspects: Ontological Engineering

- Work on Semantic Web has concentrated on the definition of a collection or “stack” of languages.
 - Used to support the representation and use of metadata
 - Basic machinery that we can use to represent the extra semantic information needed for the Semantic Web



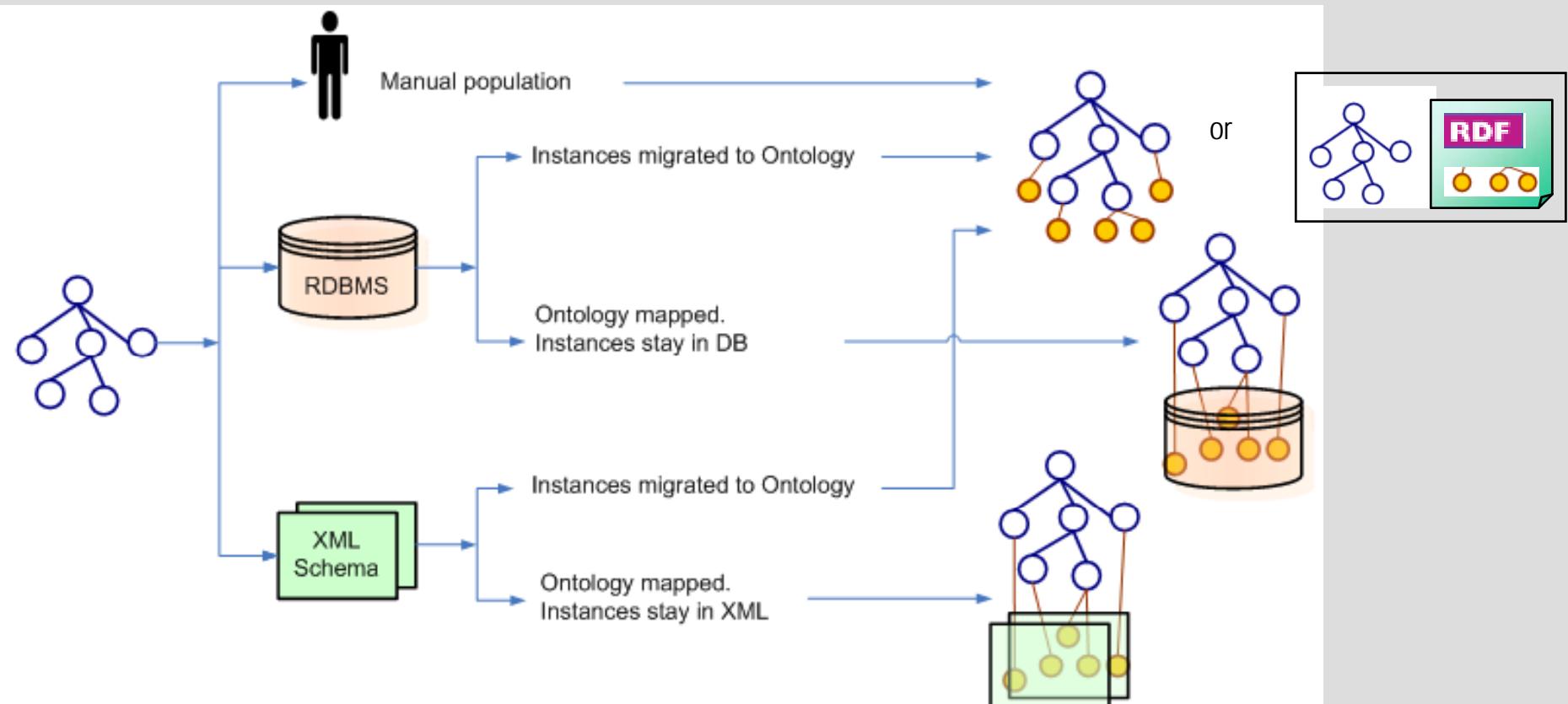


Key aspects: Ontological Engineering

- **Ontologies**
 - Single versus network of ontologies?
 - Are ontologies built from scratch or reusing knowledge-aware resources?
 - Are mappings used for solving conceptual mismatches?
- **Instances**
 - Where are the data/instances?
 - Instances are in the ontology
 - Instances are in independent RDF files or databases
 - Data are kept in the original sources
 - Are instances distributed or centralized?
 - Have instances a very high rate of changes?
 - Heterogeneous provenance of instances
 - Degrees of data quality
 - Permissions



Key aspects (Ont. Eng.): Where are the instances?

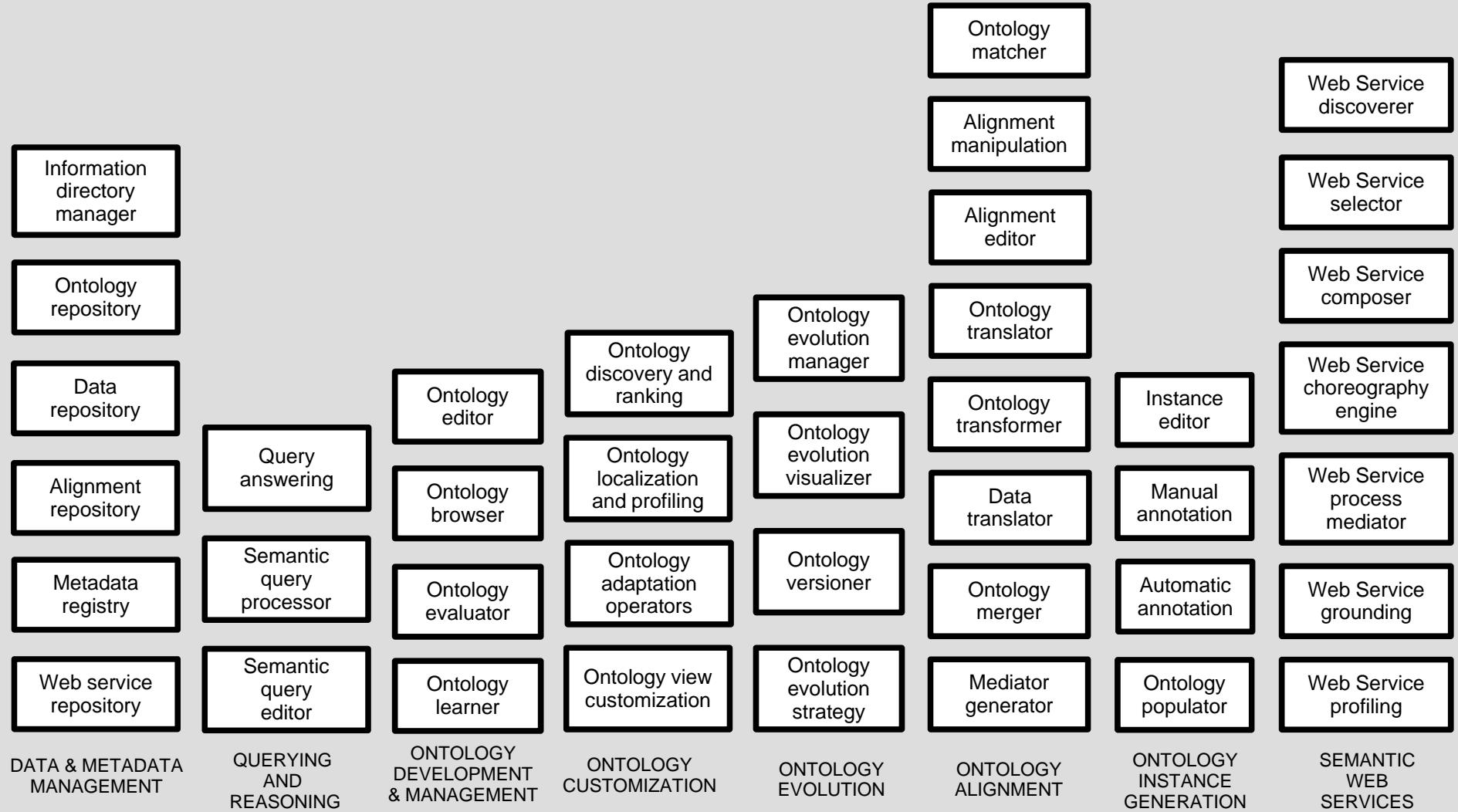




Key aspects: Semantic Applications

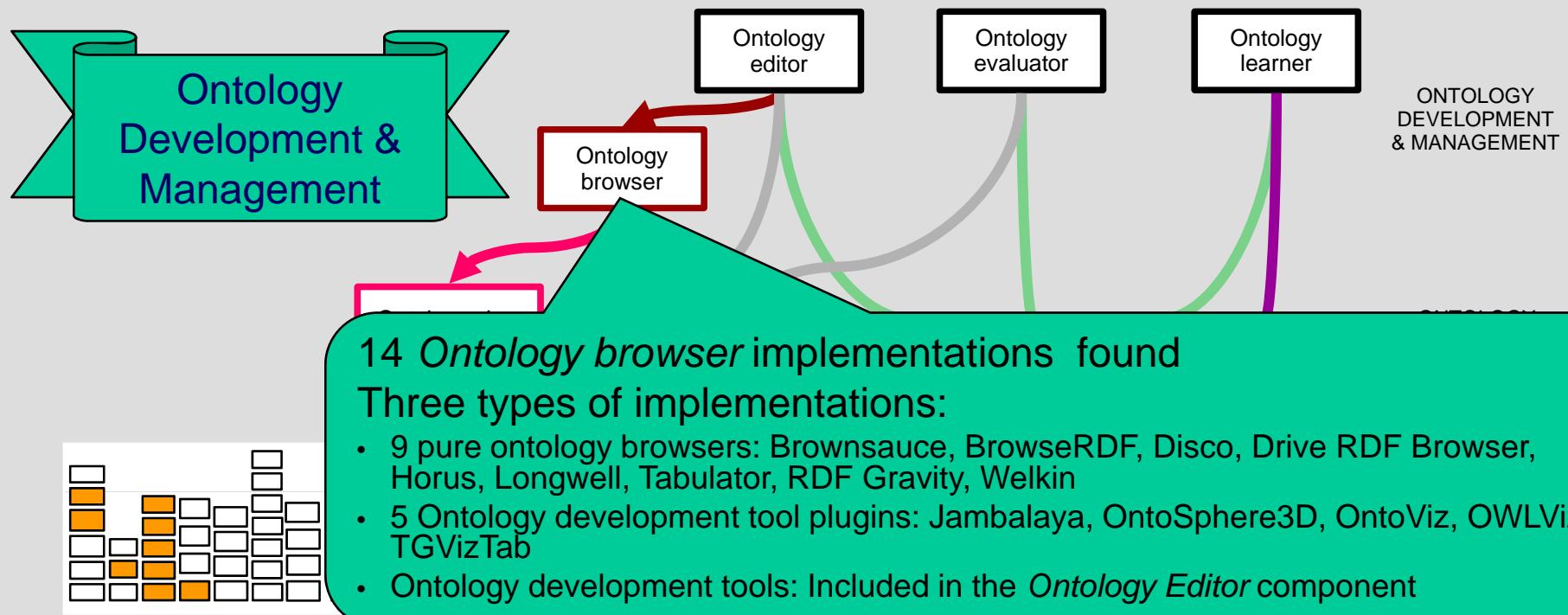
- Amount of semantic markups
- Conceptual Heterogeneity (semantic markup based on different ontologies)
- Interoperability with other semantic resources
- Open to Web resources
- Open to Web services
- Web 2.0 like
- Mobile devices
- Geo-spatial information

Key aspects (Apps): Semantic Web Framework



Key aspects (Apps): Dimensions of the SWF

- For each dimension, we have identified:
 - Components
 - Component dependencies
 - Existing implementations



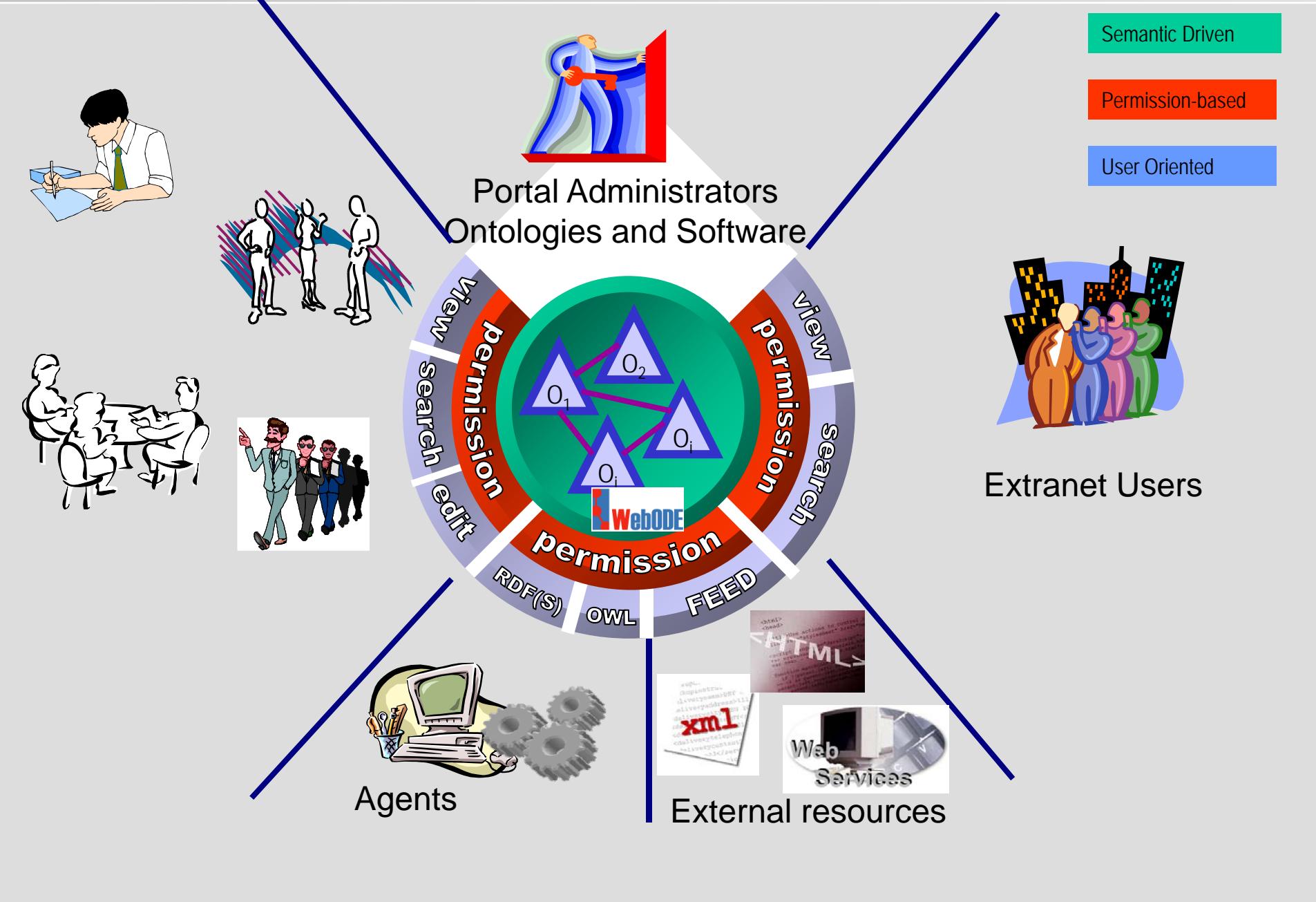


Key Aspects: Summary

Single versus network of ontologies		Type of Application		Software Components Used
Ont. Built from scratch or reusing resources		Hugeness: Operates at scale?		
Conceptual Heterogeneity (mappings)		Open to semantic resources?		
Where are the data/instances?		Open to web resources?		
Are instances distributed or centralized?		Open to web services?		
Very high rate of change in instances?		Web 2.0 like?		
Heterogeneous Provenance of instances		Mobile devices?		
Various degrees of data quality		Geo-spatial Information		



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KnowledgeWeb Project FP6-507482

Documentation Event Organization Person Project Administration Logout

RDFS

Person

- Person
 - University Staff
 - Company Staff
 - Project Officer
- Student
 - Master Student
 - PhD Student
 - Undergraduate

Instance of PhD Student: Angel López-Cima

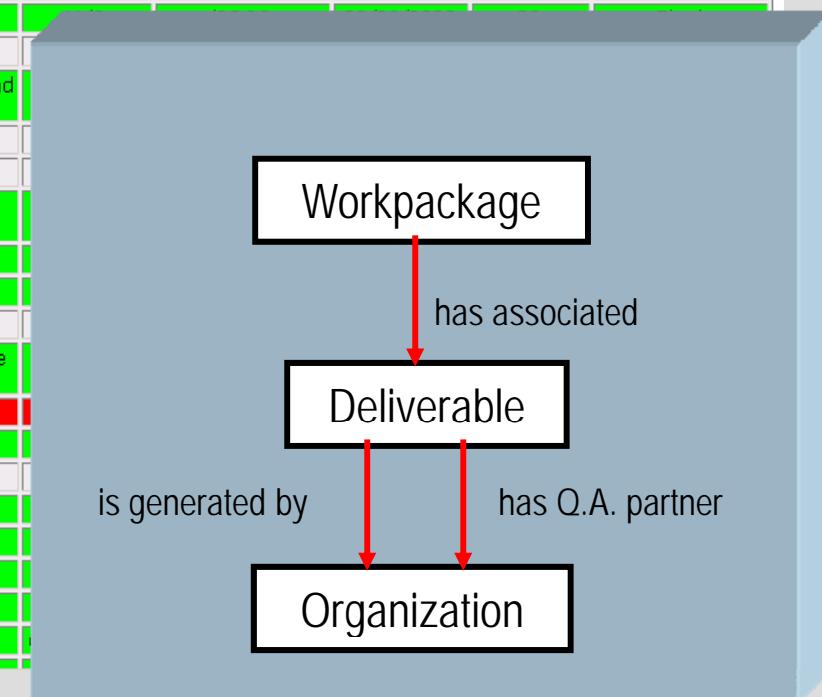
Move instance to: Administrative Staff Send Continue to relations >>

Instance Name:	Angel López-Cima																																												
Instance Attribute	Range	Cardinality	Value																																										
Full Name	String	(1,1)	Angel Lopez-Cima																																										
<div style="border: 1px solid black; padding: 5px;"> KnowledgeWeb (FP6-507482). Powered by ODESeW - Mic... Upload a file to Angel López-Cima.Photo: <input type="button" value="Select a file to upload:"/> <input type="button" value="Examinar..."/> <input type="button" value="Enviar consulta"/> </div>																																													
<div style="border: 1px solid black; padding: 5px;"> Select Date, Please. - <input type="button"/> <input type="button"/> <input type="button"/> October 1976 <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Mo</th><th>Tu</th><th>We</th><th>Th</th><th>Fr</th><th>Sa</th><th>Su</th></tr> <tr> <td>27</td><td>28</td><td>29</td><td>30</td><td>1</td><td>2</td><td>3</td></tr> <tr> <td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr> <td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td></tr> <tr> <td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td></tr> <tr> <td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td></tr> </table> </div>				Mo	Tu	We	Th	Fr	Sa	Su	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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Telephone	String	(0,1)	<input type="text"/> +34 91 336 6604																																										
Fax	String	(0,1)	<input type="text"/> +34 91 352 4819																																										

Send Continue to relations >>

Status of the Deliverables

Workpackage	Deliverable	Generated By	Q.A. Responsibility	Delivery Date	Project Month	Status
WP1: Ontologies	D1.1: State of the art in ontologies from the SW perspective	UPM	IFI	11/08/2002	2	Final
	D1.2: Kernel Ontology Specification, Knowledge architecture	UPM	UdS	09/24/2003	27	Final
	D1.3: Ontology Workbench Specification	UPM	UniLiv	09/26/2003	27	Final
	D1.4: Ontology Alignment Solution	IFI	UPM	09/12/2003	27	Final
WP2: Window on Semantic Web languages	D2.1: State of the art on Semantic Web languages	IFI	UPM	02/17/2003	2	Final
	D2.2: Report on SW languages evolution	IFI	iSOCO	08/28/2003	30	Final
WP3: Annotation services	D3.1: State of the art on annotation tools and services	iSOCO	UdS	02/28/2003	2	---
	D3.2: Methodology for the development of wrappers and annotation tools	iSOCO	UdS	09/15/2003	10	---
	D3.3: Annotation services for static resources	iSOCO	UPM	---	10	---
	D3.4: Annotation services for dynamic resources	iSOCO	UniLiv	---	23	---
	D3.5: Annotation services for multimedia content					
	D3.6: Annotation services for web services					
WP4: Semantic indexation and routing	D4.1: State of the art on indexation, routing techniques and negotiation techniques					
	D4.2: Semantic Index Solution					
	D4.3: Routing Solution					
WP5: Multilinguality	D5.1: State of the art on multilinguality for ontologies, annotation services and user interfaces					
	D5.2: Multilinguality and ontologies					
	D5.3: Multilingualism and annotation services					
	D5.4: Multilingual user interface					
WP6: User interface and visualisation services	D6.1: State of the art on visualisation technologies feasible for the Semantic Web					
	D6.2: Ontology visualisation core services					
	D6.3: Semantic Web content visualisation services					
	D6.4: Semantic Index and Routing Monitor service					
WP7: Definition and integration	D7.1: System specification					
	D7.2: Cooperation protocol definition					
	D7.3: Application development guidelines					
	D7.4: Integration test plan					
WP8: Test case 1. Fund finder for	D8.1: Test case system specification					
	D8.2: Test case system implementation					



Semantic markup based on different ontologies

KMi

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People

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Members [78] [A][B][C][D][E][F][G][H][I][J][K][L][M][N][O][P][Q][R][S][T][U][V][W][X][Y][Z]

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  <foaf:surname>Motta</foaf:surname>
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```

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Systems & Network Administrator [[Info](#)] [[email](#)] [[RDF/XML](#)]

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<rdf:Description rdf:about="Asunción Gómez Pérez">

<rdf:type rdf:resource="Full_Professor"/>

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<NS0:Last_Name2>Pérez</NS0:Last_Name2>

<NS0:DisplayName>Asunción de María Gómez Pérez</NS0:DisplayName>

<NS0:Academic_Degree>Ph.D.</NS0:Academic_Degree>

<NS0:E-mail>asun@fi.upm.es</NS0:E-mail>

<NS0:Telephone>34 913367439</NS0:Telephone>

<NS0:Fax>34 913524819</NS0:Fax>

<NS0:Address>Campus de Montegancedo</NS0:Address>

<NS0:City>Boadilla del Monte</NS0:City>

<NS0:Country>Spain</NS0:Country>

<NS0:Date_of_Birth>03/09/1967</NS0:Date_of_Birth>

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Conceptual Mismatch

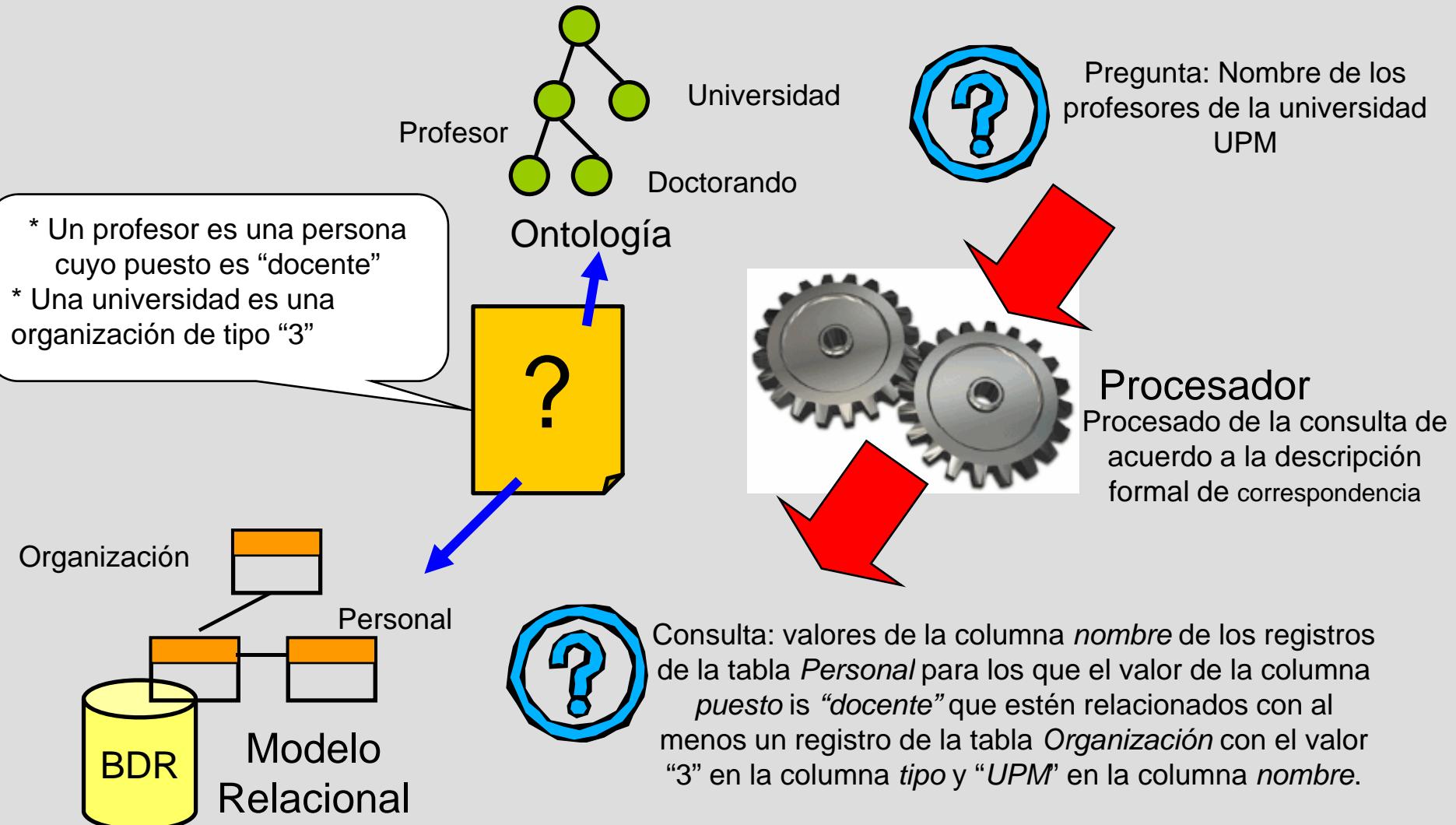
Single versus network of ontologies	Ontology Networks	Type of Application	Corporate Semantic Web	Software Components Used from the SWF
Ont. Built from scratch or reusing resources	From scratch	Hugeness: Operates at scale?	Partially	1. Ontology repository 2. Data repository 3. Metadata registry 4. Query answering 5. Semantic query processor 6. Ontology browser 7. Ontology view customization 8. Instance editor 9. Manual annotation. 10. Ontology Populator
Conceptual Heterogeneity (mappings)	No	Open to semantic resources?	Yes	
Where are the data/instances?	In the ontology	Open to web resources?	Yes	
Are instances distributed or centralized?	Centralized	Open to web services?	No	
Very high rate of change in instances?	No	Web 2.0 like?	No	
Heterogeneous Provenance of instances	Yes	Mobile devices?	No	
Various degrees of data quality	Yes	Geo-spatial Information	NO	

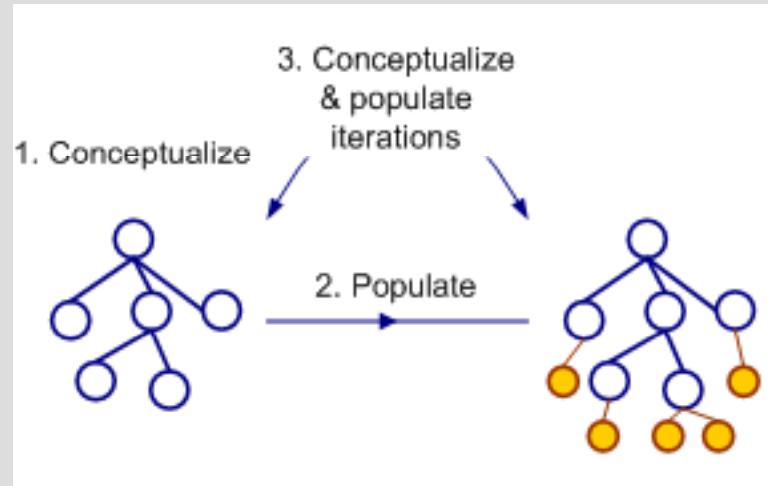


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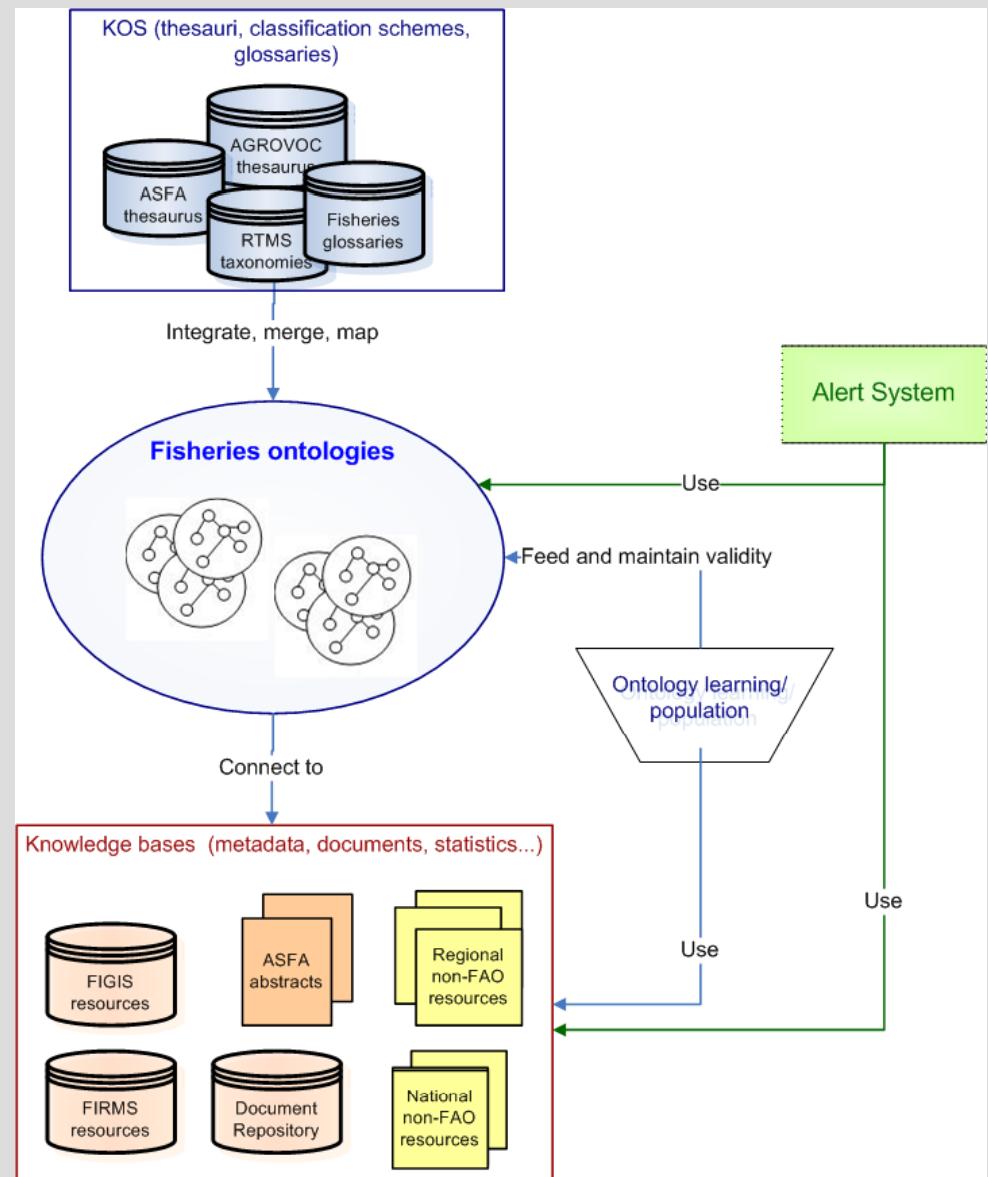


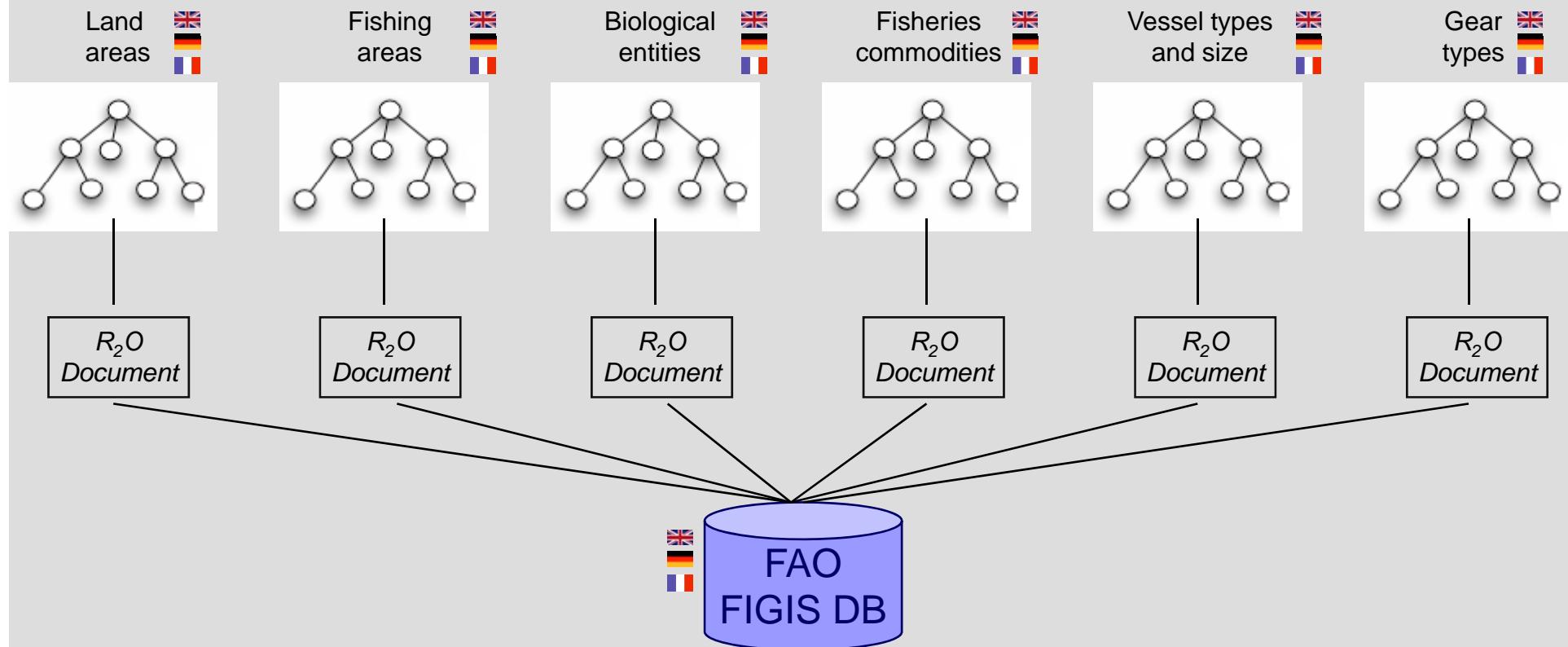
Semantic Access to Databases





The ontologies produced with this framework will be used by the Food and Agriculture Organization of the United Nations (**FAO**) in many different large applications such the *Fisheries Stock Depletion Assessment System*.





Land areas	
Concepts	4
Properties	25
Instances	289

Fishing areas	
Concepts	5
Properties	14
Instances	134

Biological entities	
Concepts	5
Properties	21
Instances	11571

Fisheries commodities	
Concepts	5
Properties	14
Instances	1380

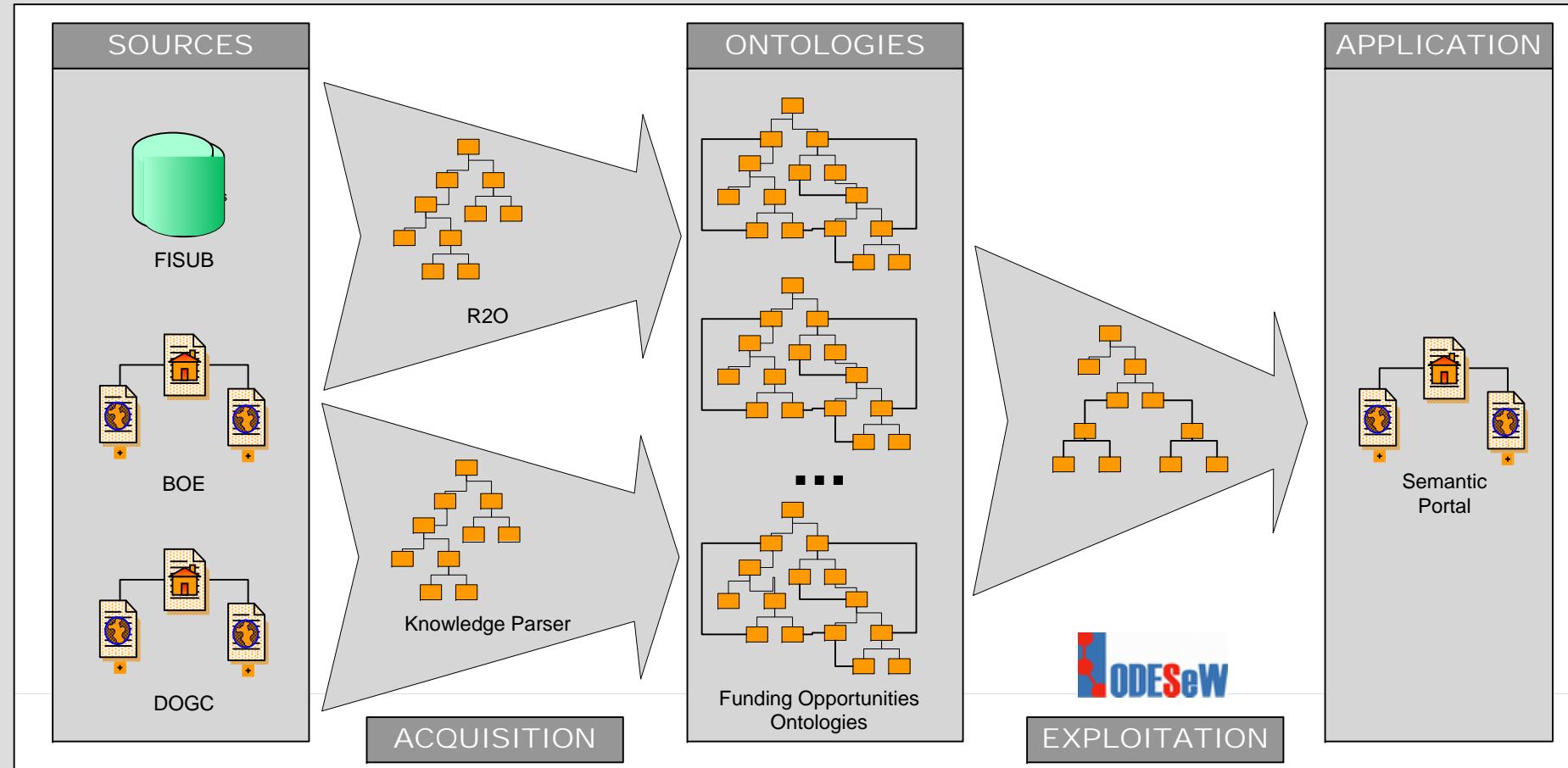
Vessel types and size	
Concepts	5
Properties	20
Instances	120

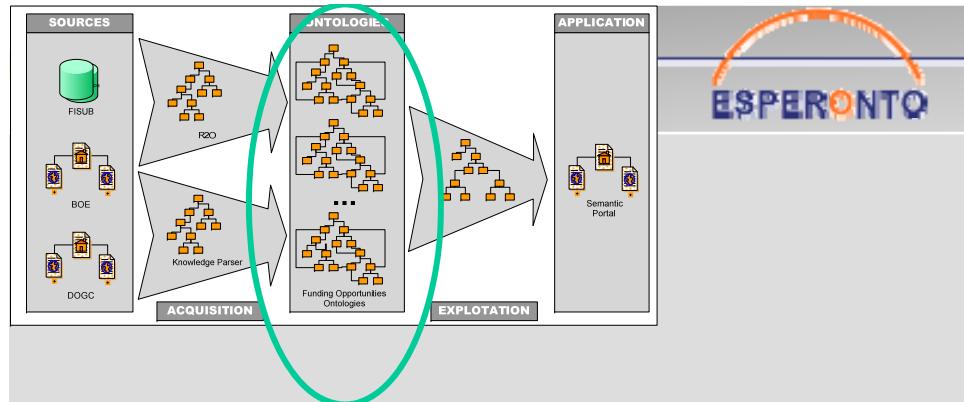
Gear types	
Concepts	4
Properties	14
Instances	0



Single versus network of ontologies	Network of ontologies	Type of Application	Desktop application	Software Components Used
Ont. Built from scratch or reusing resources	Reusing resources	Hugeness: Operates at scale?	Yes	<ul style="list-style-type: none">1. Information directory manager2. Ontology repository3. Data repository4. Alignment repository5. Metadata registry6. Query answering7. Semantic query proccesor8. Ontology editor9. Ontology browser10. Ontology evaluator11. Ontology learner12. Ontology matcher13. Ontology localization and profiling14. Ontology adapation operators15. Ontology view customization16. Ontology evolution manager17. Ontology evolution visualizer
Conceptual Heterogeneity (mappings)	Yes	Open to semantic resources?	Yes	
Where are the data/instances?	DB + XML + RDF files	Open to web resources?	Yes	
Are instances distributed or centralized?	Distributed	Open to web services?	No	
Very high rate of change in instances?	Yes	Web 2.0 like?	No	
Heterogeneous Provenance of instances	Yes	Mobile devices?	No	
Various degrees of data quality	Yes	Geo-spatial Information	Yes	<ul style="list-style-type: none">18. Ontology versioner19. Instance Editor20. Manual annotation21. Automatic annotation22. Ontology populator

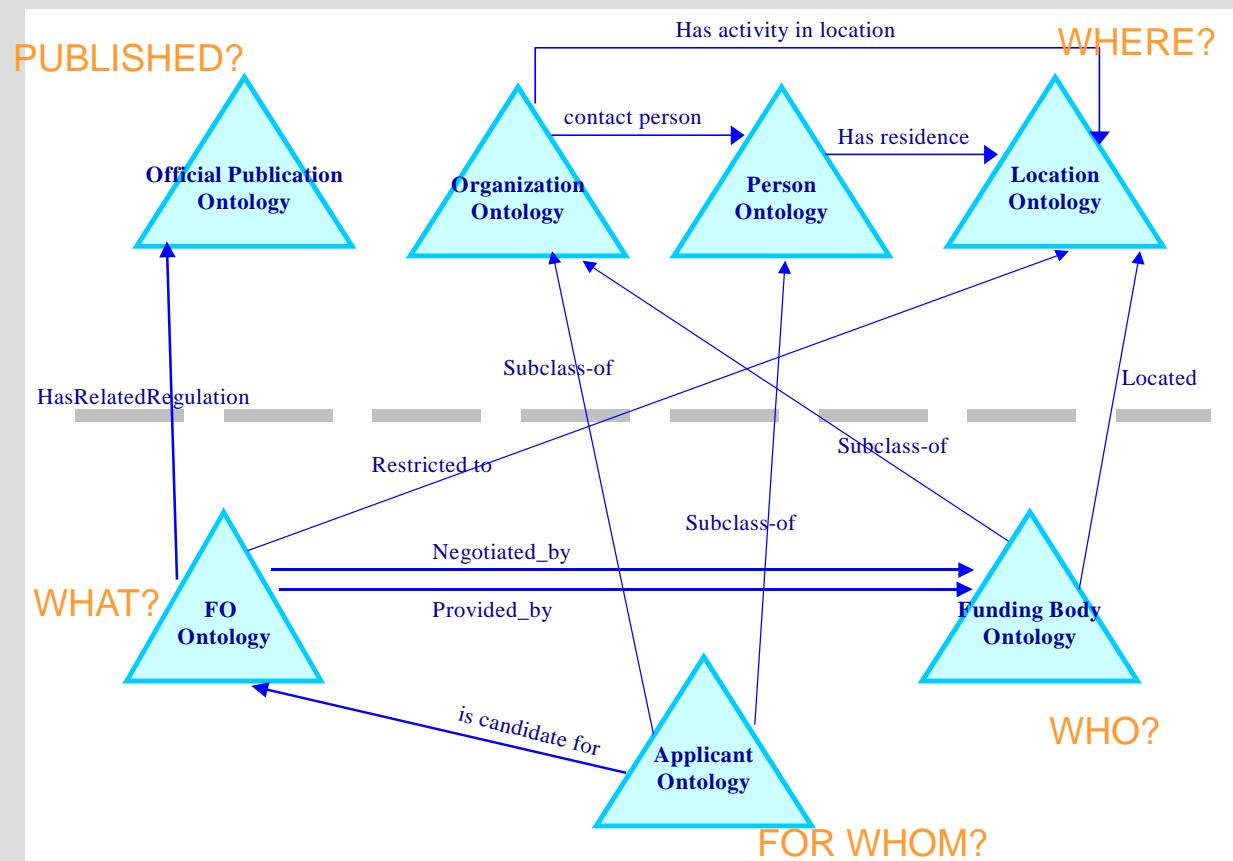
Integrating DB and Text Information: FundFinder

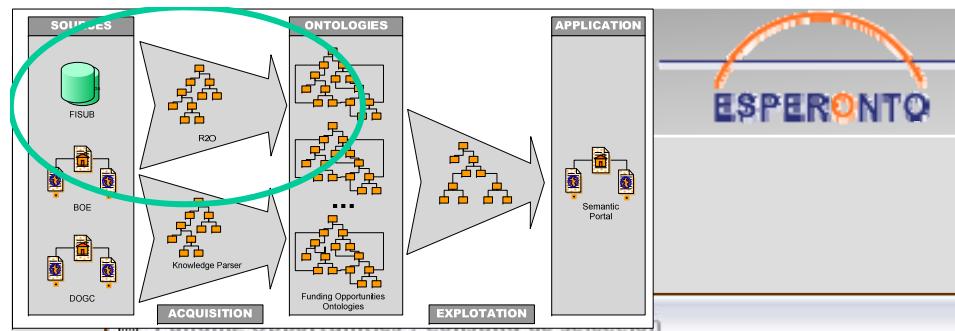




Build the ontologies

Network of ontologies





Population example (I)

ID	TITLE	BENEFICIARIES	BEGIN_END	LEG_REF	FUND_C
623	PROFIT - Program: 1. Empreses 2. Agrupacions internacionals	Des de 19 de novembre fins el 19 de desembre al 2 de setembre	Ordre de 7 de març de 2000 (BOE 59, 9-03-2000).	Els ajuts que es poden sol·licitar	
614	PROFIT - Program: 1. Pimes 2. Empreses	Des de 19 de novembre fins el 19 de desembre	Ordre de 7 de març de 2000 (BOE 59, 9-03-2000).	Els ajuts que es poden sol·licitar	
582	PROFIT - Program: 1. Associacions empresarials	Des de 19 de novembre fins el 19 de desembre	Ordre de 7 de març de 2000 (BOE 59, 9-03-2000).	SURVENTIONS: <E>	
▶ 581	PROFIT - Program: Empreses; Agrupacions internacionals	Fins al 2 de setembre	Ordre de 13 de juny del 2000 (BOE 148, 21-06-2000)	SUBVENTIONS: <E>	
576	PROFIT - Program: Pimes, Empreses, Agrupacions internacionals	Des de 19 de novembre fins el 19 de desembre	Ordre de 7 de març del 2000 (BOE 59, 9-03-2000).	SUBVENTIONS: <E>	
574	PROFIT - Program	-	Ordre de 7 de març del 2000 (BOE 59, 9-03-2000).	Els ajuts que es poden sol·licitar	
573	PROFIT - Program	-	Ordre de 7 de març del 2000 (BOE 59, 9-03-2000).	Els ajuts que es poden sol·licitar	
572	PROFIT - Program	-	Ordre de 7 de març del 2000 (BOE 59, 9-03-2000).	Els ajuts que es poden sol·licitar	
571	PROFIT - Program: Pimes; Empreses; Agrupacions internacionals; Empreses; Agrupacions internacionals	Des de 19 de novembre fins el 19 de desembre	Ordre de 7 de març del 2000 (BOE 59, 9-03-2000).	Els ajuts que es poden sol·licitar	

Attribute Direct Mapping

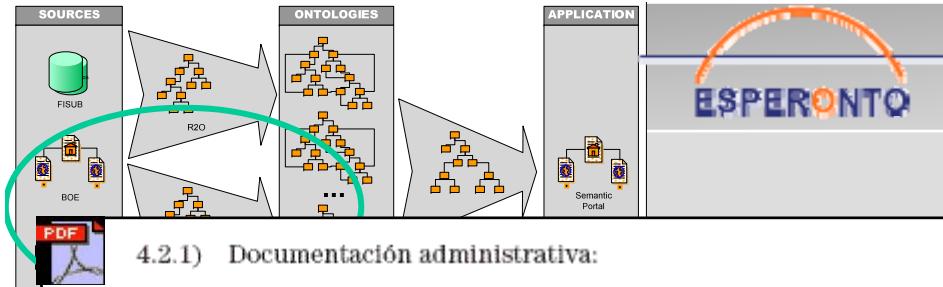
Relation Mapping w. Transformation (Regular Expression)

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Relation Mapping w. Transformation (Keyword search)

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                <arg-restriction on-param="const-val">  
                    <has-column>Titol</has-column>  
                </arg-restriction>  
            </operation>  
        </aftertransform>  
    </selector>  
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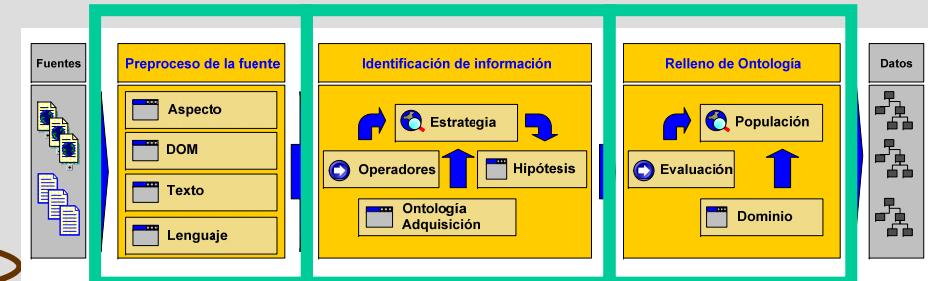
Knowledge Parser



4.2.1) Documentación administrativa:

- a) Original o fotocopia compulsada del documento acreditativo de la personalidad de la entidad solicitante.
- b) Poder notarial bastante del representante de dicha entidad, o documentación acreditativa de dicha cualidad.
- c) Fotocopia compulsada de la tarjeta de identificación fiscal de la Entidad.
- d) Original o copia con el carácter de auténtica o fotocopia compulsada de los Estatutos debidamente legalizados.
- e) Original o fotocopia compulsada de la siguiente documentación acreditativa del cumplimiento de Obligaciones Tributarias y de Seguridad Social:

Recibo del año anterior a la convocatoria del Impuesto sobre actividades económicas, o en su caso, exención concedida por el órgano competente. Certificaciones administrativas con el carácter de positivas expedidas por las Administraciones correspondientes de la Agencia Estatal de Administración Tributaria y de la Tesorería Territorial de la Seguridad Social, de conformidad con lo establecido en el artículo 81 de la Ley General Presupuestaria y en su caso, exenciones del Impuesto del Valor Añadido y del Impuesto de Sociedades.

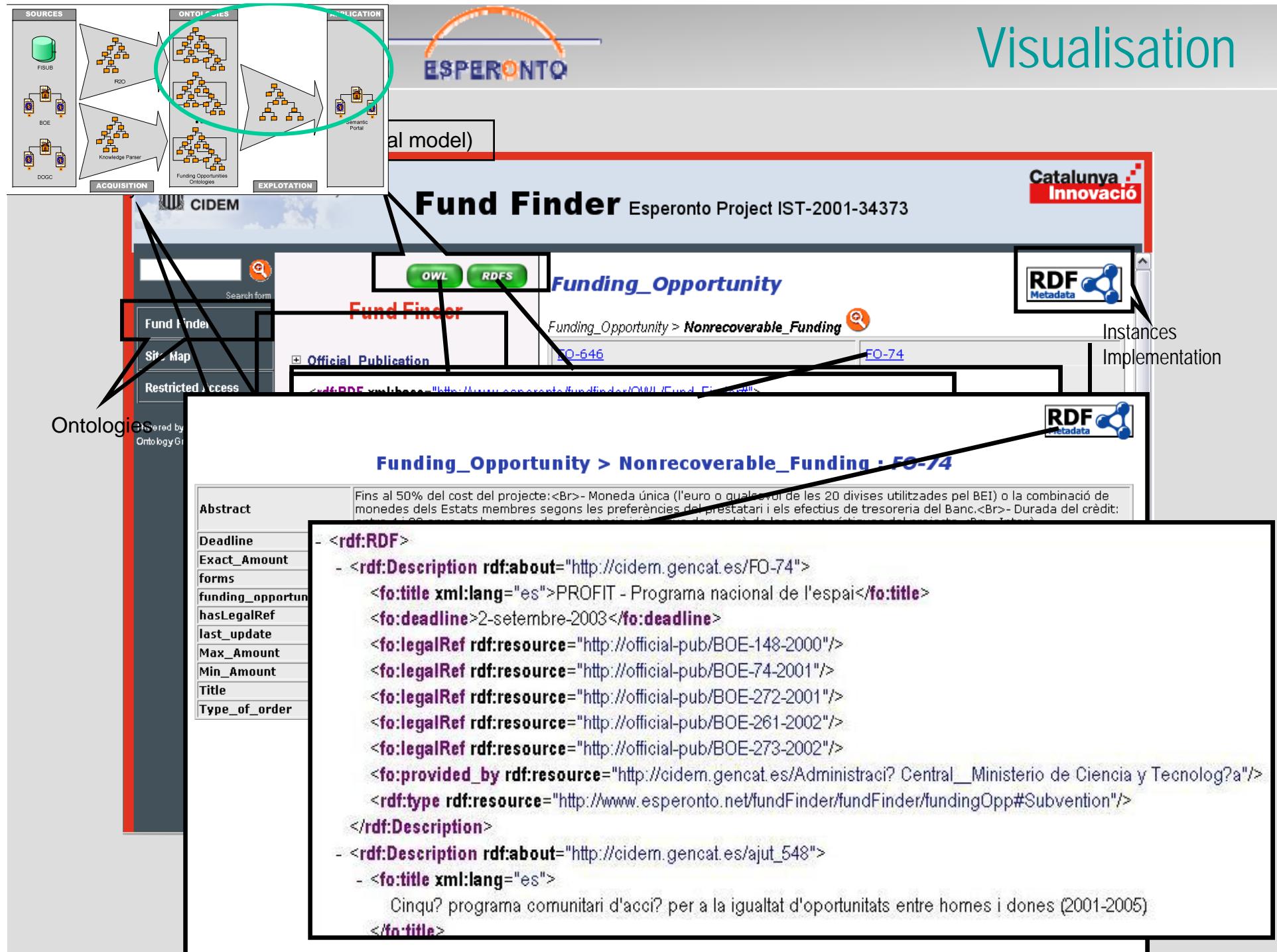


```

<tmp_namespace:DocumentationItem>
- <Funding_Opporu:DocumentationItem>
  rdf:about="http://protege.stanford.edu/tmp_namespace#tmp_Instance_10032" rdfs:label="BOE">
  <tmp_namespace:Description>Fotocopia compulsada de la tarjeta de identificación fiscal de la Entidad.</tmp_namespace:Description>
  <Funding_Opporu:isNeededToApplyFor>
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  </Funding_Opporu:DocumentationItem>
- <Funding_Opporu:DocumentationItem>
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  <Funding_Opporu:isNeededToApplyFor>
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  </Funding_Opporu:DocumentationItem>
- <Funding_Opporu:DocumentationItem>
  rdf:about="http://protege.stanford.edu/tmp_namespace#tmp_Instance_10034" rdfs:label="BOE">
  <tmp_namespace:Description>Original o fotocopia compulsada de la siguiente documentación acreditativa del cumplimiento de Obligaciones Tributarias y de Seguridad Social: Recibo del año anterior a la convocatoria del Impuesto sobre actividades económicas, o en su caso, exención concedida por el órgano competente. Certificaciones administrativas con el carácter de positivas expedidas por las Administraciones correspondientes de la Agencia Estatal de Administración Tributaria y de la Tesorería Territorial de la Seguridad Social, de conformidad con lo establecido en el artículo 81 de la Ley General Presupuestaria y en su caso, exenciones del Impuesto del Valor Añadido y del Impuesto de Sociedades.</tmp_namespace:Description>

```

Visualisation



Single versus network of ontologies	Network of ontologies	Type of Application	Information Aggregation (2000)	Software Components Used
Ont. Built from scratch or reusing resources	From scratch	Hugeness: Operates at scale?	No	1. Ontology repository 2. Data repository 3. Metadata registry 4. Query answering 5. Semantic query processor 6. Ontology editor 7. Ontology browser 8. Ontology learner 9. Instance editor 10. Manual annotation 11. Automatic annotation 12. Ontology populator
Conceptual Heterogeneity (mappings)	No	Open to semantic resources?	No	
Where are the data/instances?	In the ontology	Open to web resources?	No	
Are instances distributed or centralized?	Centralized	Open to web services?	No	
Very high rate of change in instances?	Yes	Web 2.0 like?	No	
Heterogeneous Provenance of instances	No	Mobile devices?	No	
Various degrees of data quality	No	Geo-spatial Information	No	



SEEMP: Helping Job Seekers on their way



Lombard
ES (It)

a
FS

LEGEND

Requester ES

Responding ES

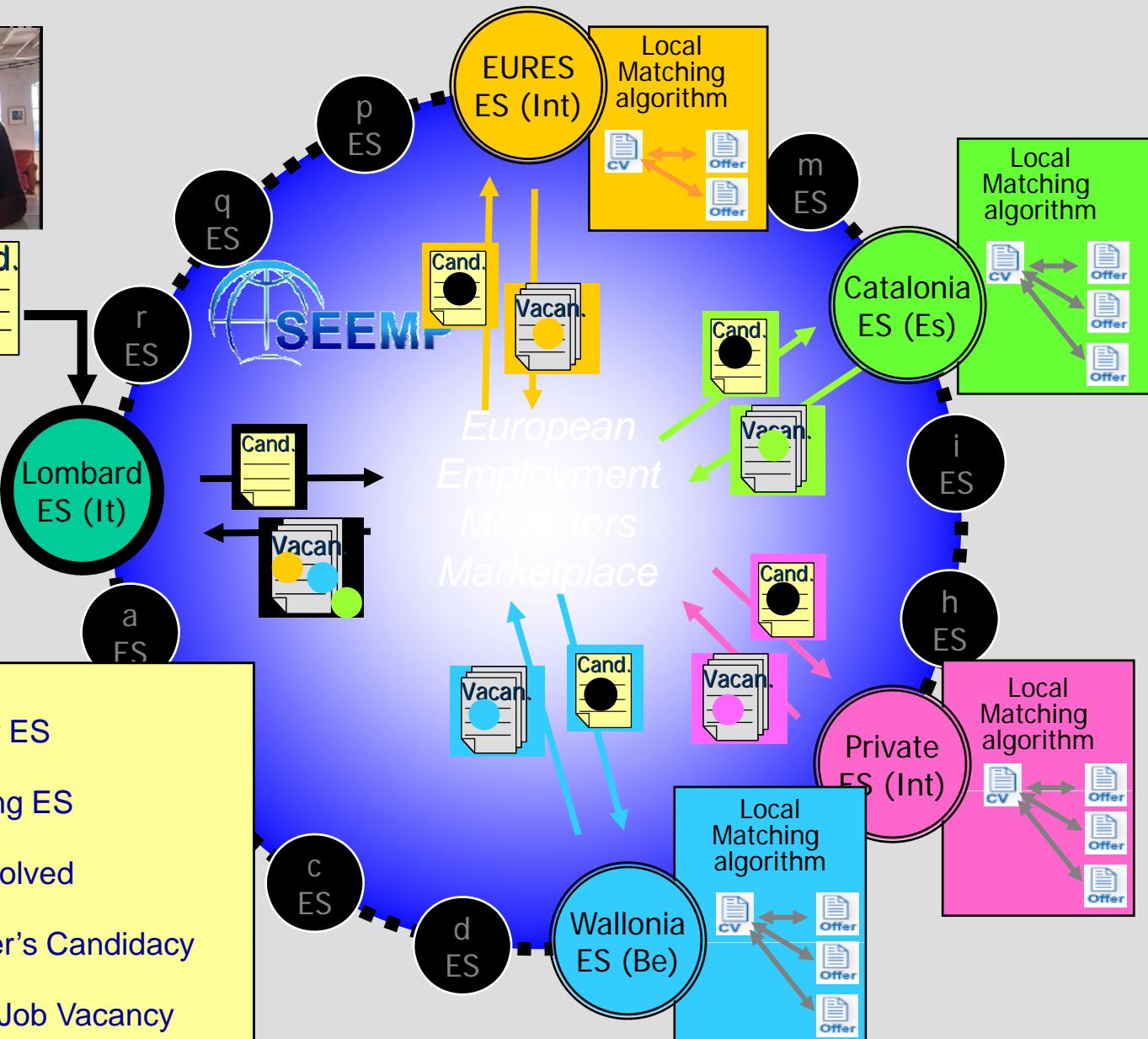
ES not involved



Job Seeker's Candidacy

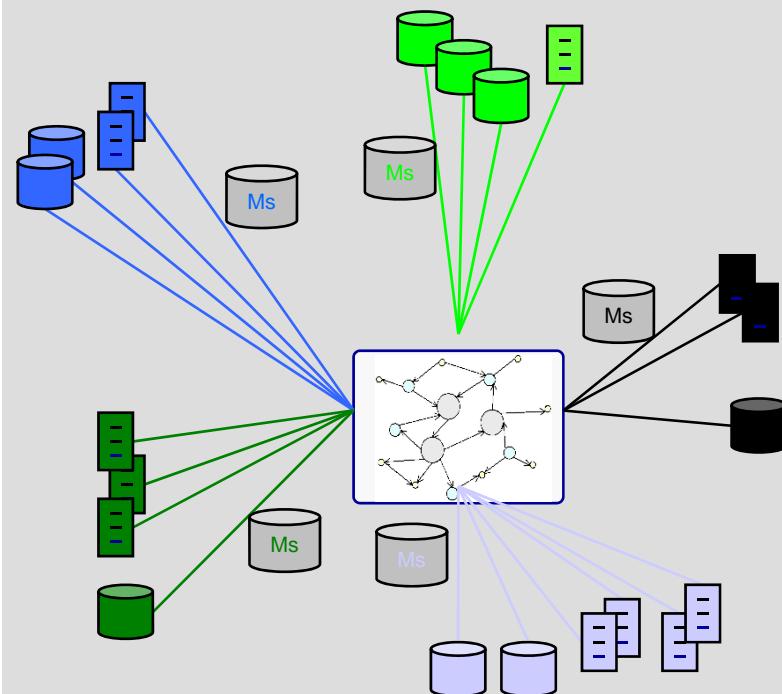


Employer Job Vacancy



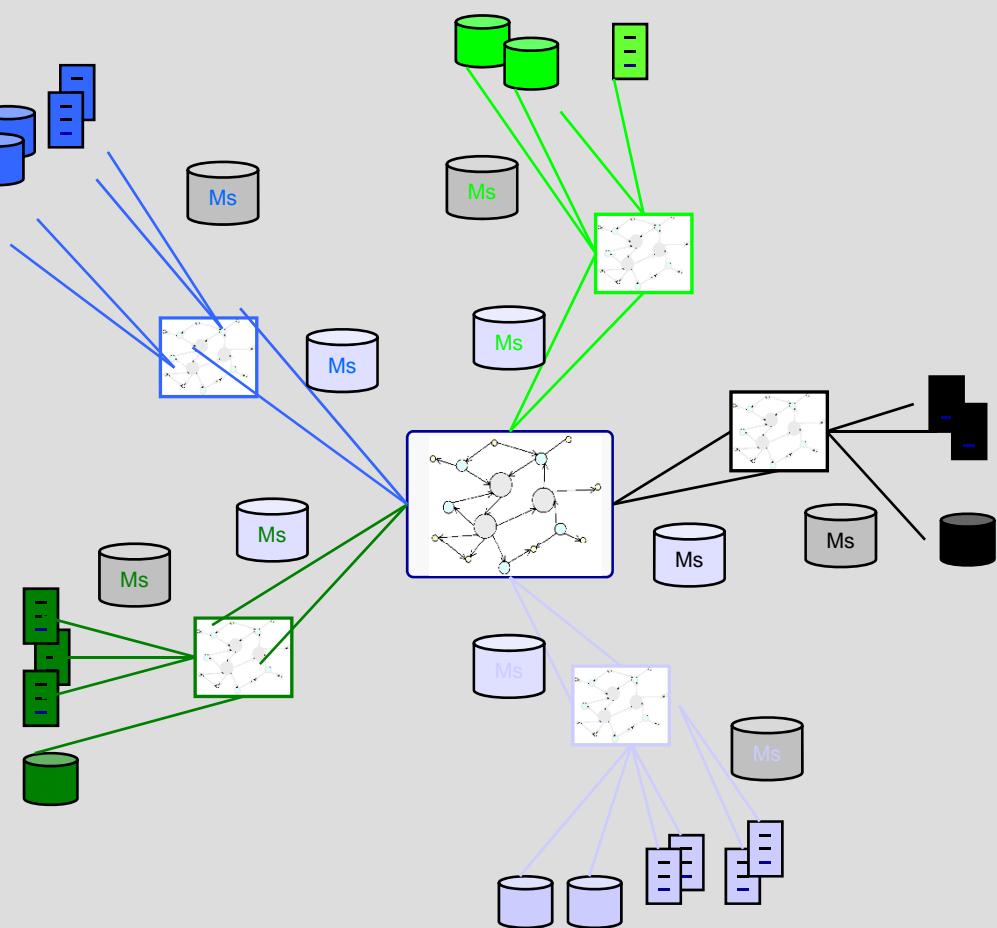


Centralized network of ontologies

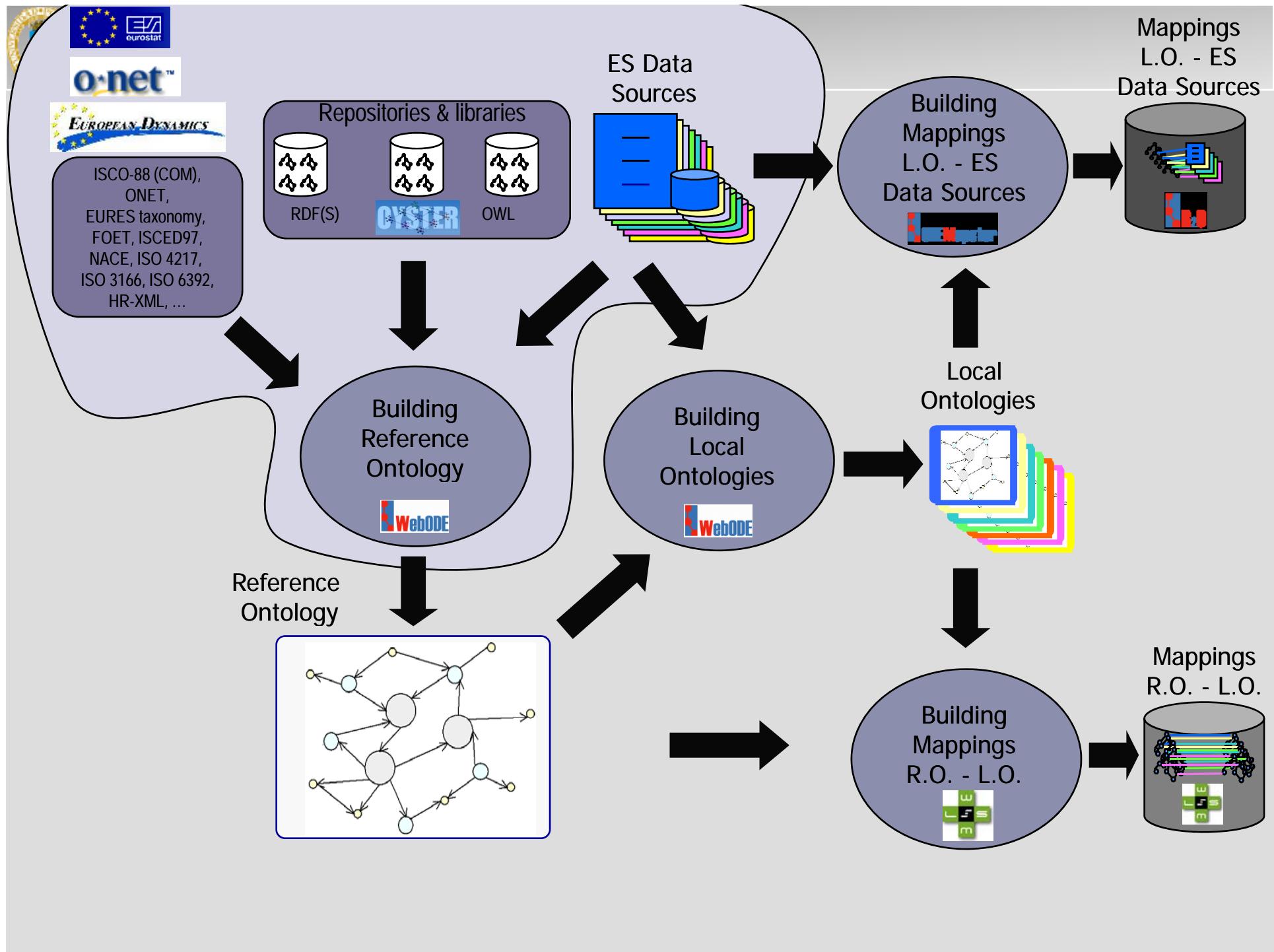


1. Build a reference ontology
2. Build mappings between the reference ontology and the data sources

Federated network of ontologies

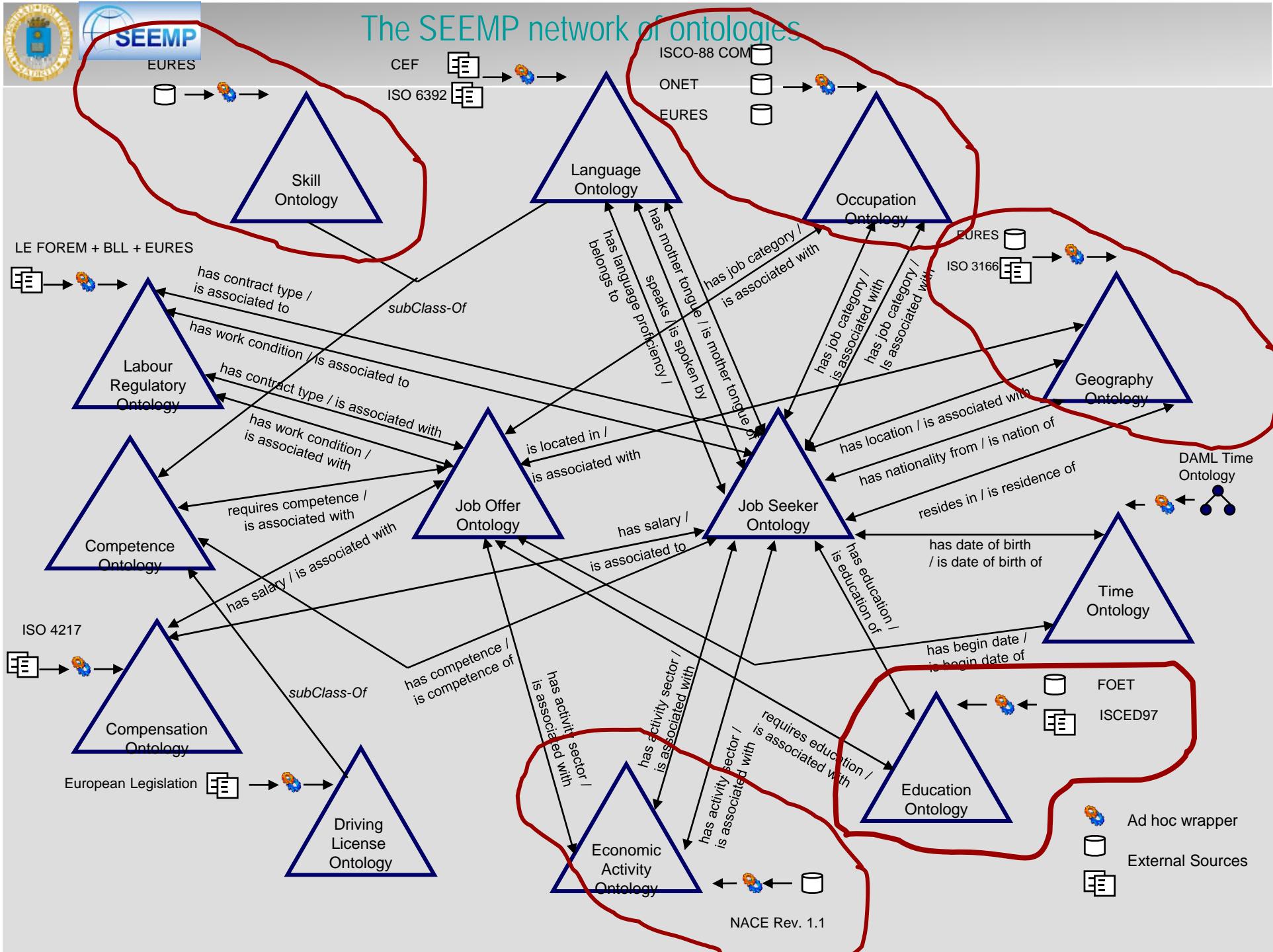


1. Build a reference ontology for the domain
2. Build local ontologies
3. Build mappings between the core and local ontologies
4. Build mappings between the local ontologies and the data sources





The SEEMP network of ontologies





Single versus network of ontologies	Network of ontologies	Type of Application	Data integration	Software Components Used
Ont. Built from scratch or reusing resources	Reusing standardized resources	Hugeness: Operates at scale?	Yes	1. Ontology repository 2. Data repository 3. Alignment repository 4. Metadata registry 5. Query answering 6. Semantic query processor 7. Semantic query editor 8. Ontology editor 9. Ontology browser 10. Ontology localization and profiling
Conceptual Heterogeneity (mappings)	Yes	Open to semantic resources?	No	11. Ontology adaptation operators 12. Ontology view customization 13. Instance editor 14. Manual annotation 15. Ontology populator 16. Web Service discoverer 17. Web Service selector 18. Web Service choreography engine 19. Web service grounding
Where are the data/instances?	In the original sources	Open to web resources?	No	
Are instances distributed or centralized?	Distributed	Open to web services?	Yes	
Very high rate of change in instances?	Yes	Web 2.0 like?	No	
Heterogeneous Provenance of instances	Yes	Mobile devices?	No	
Various degrees of data quality	Yes	Geo-spatial Information	No	

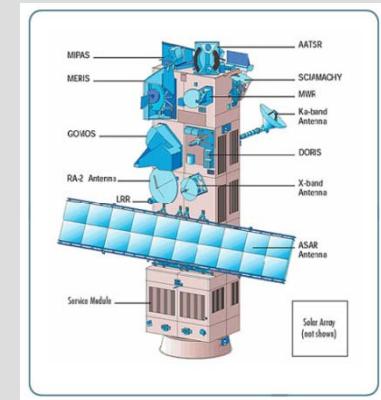


- Ontologies, Semantic Web and Corporate Semantics
- Semantic Web Applications
 - Annotation: Corporate Semantic Web
 - ODESeW R&D portals
 - Data Integration
 - Fund finder
 - FAO
 - SEEMP
 - Decision Support Systems
 - Satellite Missions
 - Car Fraud
- Conclusions and Trends
 - Including the real world: SensorsGrid4Env
 - Combining Semantic Web and Web2.0: GeoBuddies



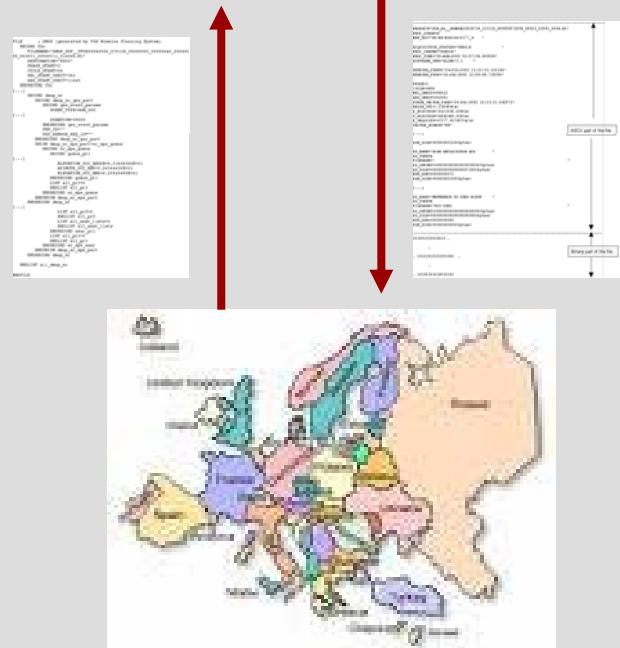
Satellite Image Processing

- Geographically distributed organizations
- Organizations send plans to the Envisat
- Envisat has Instruments on board that take “pictures”
- Envisat sends back information to the Earth



USE CASE DIMENSION:

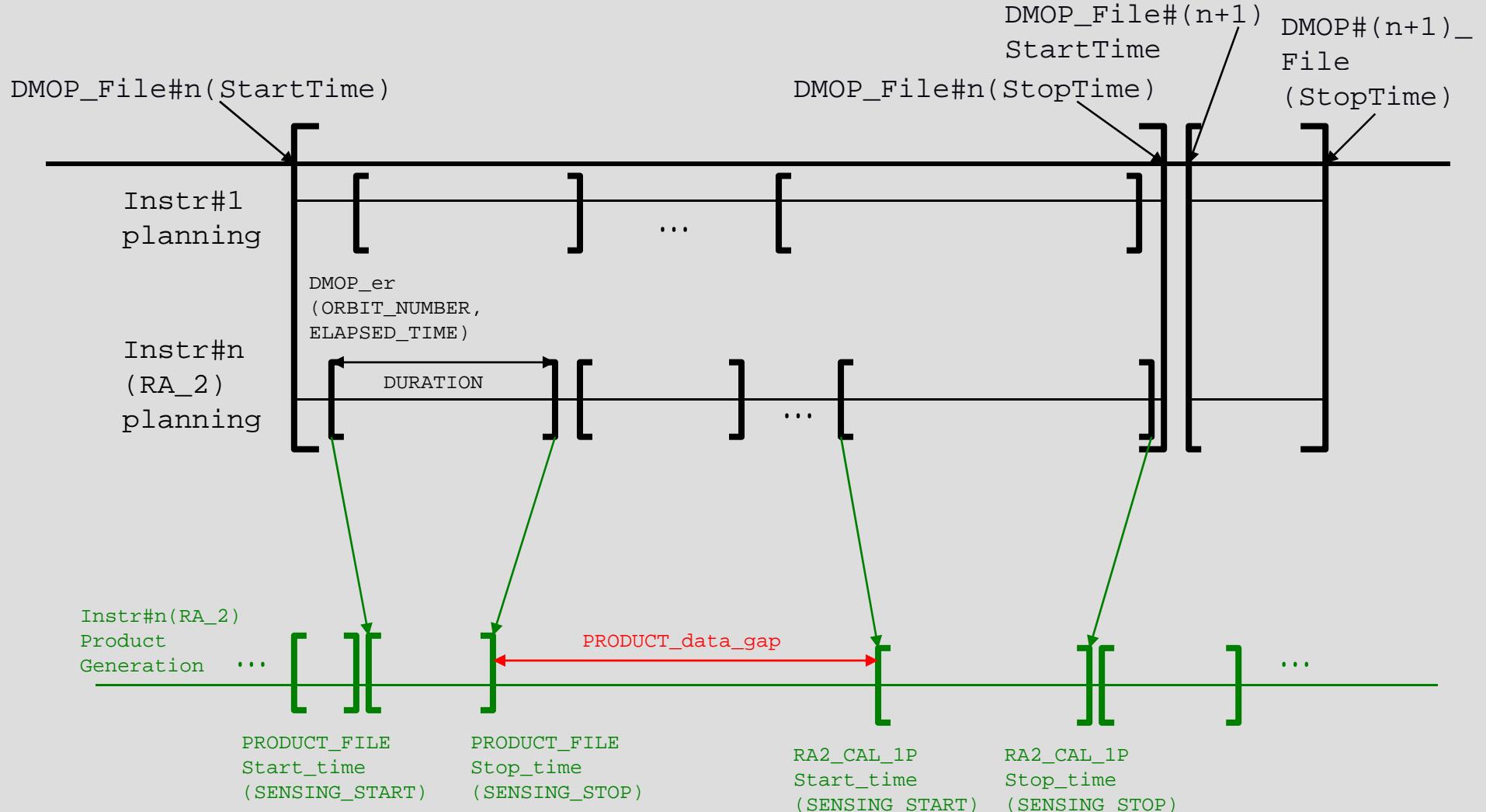
- 1 planning file (DMOP) is generated per planning day
 - Parameters for instrument operation (taking pictures)
 - Parameters for the satellite general configuration.
 - MacroCommands (MCMD's): translation from planning
- For each DMOP file:
 - Hundreds of planning activities per instrument and instrument mode
 - Hundreds of Product files are generated per instrument and instrument mode
 - Each product file corresponds with a planning activity



Analysis needs to be carried out on the existence, contents and correlation of these files



Comparison between planning and product generation





Generating files in RDF

FILE System ; DMOP (generated by FOS Mission Planning

RECORD fhr ← RECORD ID

FILENAME="DMOP_SOF__VFOS20060124_103709_00000000_000
01215_20060131_014048_20060202_035846.N1"
DESTINATION="PDCC"
PHASE_START=2
CYCLE_START=44
REL_START_ORBIT=404
ABS_START_ORBIT=20498

RECORD dmop_er
RECORD dmop_er_gen_part
RECORD gen_event_params

EVENT_TYPE=RA2_MEA
EVENT_ID="RA2_MEA_0000000002063"
NB_EVENT_PR1=1
NB_EVENT_PR3=0
ORBIT_NUMBER=20521
ELAPSED_TIME=623635
DURATION=41627862

RECORD gen_event_params

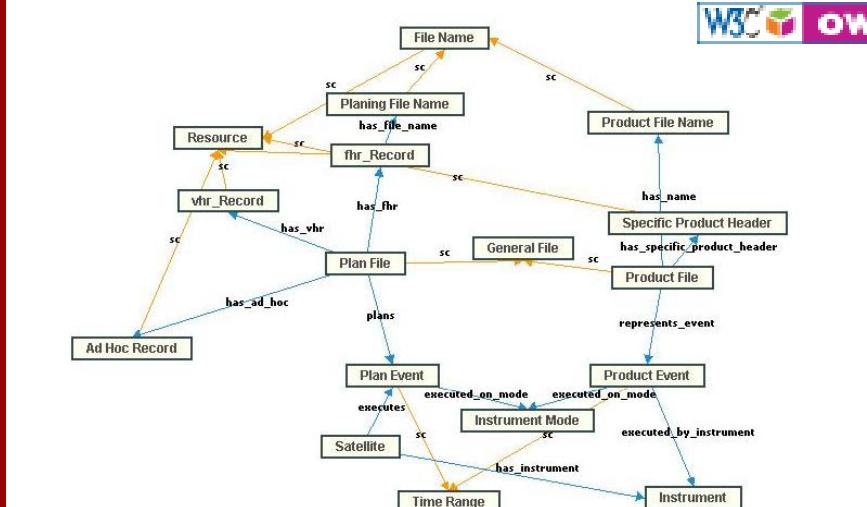
ENDRECORD dmop_er

ENDRECORD all_dmop_er

ENDFILE

RECORD parameters

RECORD parameters corresponding to other RECORD structure.



W3C OWL

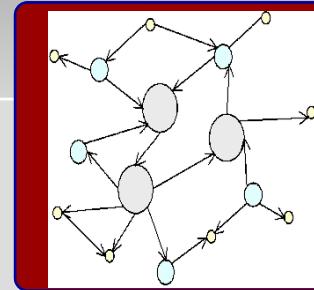
```
<?xml version='1.0' encoding='ISO-8859-1'?><rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:NS0="http://protege.stanford.edu/kb#"

  >
  <rdf:Description rdf:about="http://protege.stanford.edu/kb#10822">
    <rdf:type rdf:resource="http://protege.stanford.edu/kb#Instrument_mode"/>
    <NS0:instrument_mode_id>MS</NS0:instrument_mode_id>
  </rdf:Description>
  <rdf:Description rdf:about="http://protege.stanford.edu/kb#11224">
    <rdf:type rdf:resource="http://protege.stanford.edu/kb#DMOP_ER"/>
    <NS0:event_id>&quot;GOM_OCC_0000000541299&quot;</NS0:event_id>
    <NS0:duration rdf:datatype="http://www.w3.org/2001/XMLSchema#int">53000</NS0:duration>
    <NS0:orbit_number rdf:datatype="http://www.w3.org/2001/XMLSchema#int">20552</NS0:orbit_number>
    <NS0:elapsed_time rdf:datatype="http://www.w3.org/2001/XMLSchema#int">2452293</NS0:elapsed_time>
    <NS0:event_type rdf:resource="http://protege.stanford.edu/kb#10713"/>
  </rdf:Description>
```

W3C RDF



1 Ontology



W3C OWL

1 reference ontology for annotating all files
RDF files are distributed

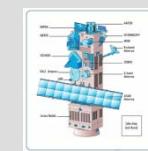
Distributed Metadata for Planning files

WCG RDF

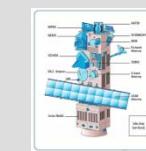
Distributed Metadata for Product files

 **RDF**

The planning files



The product files



```

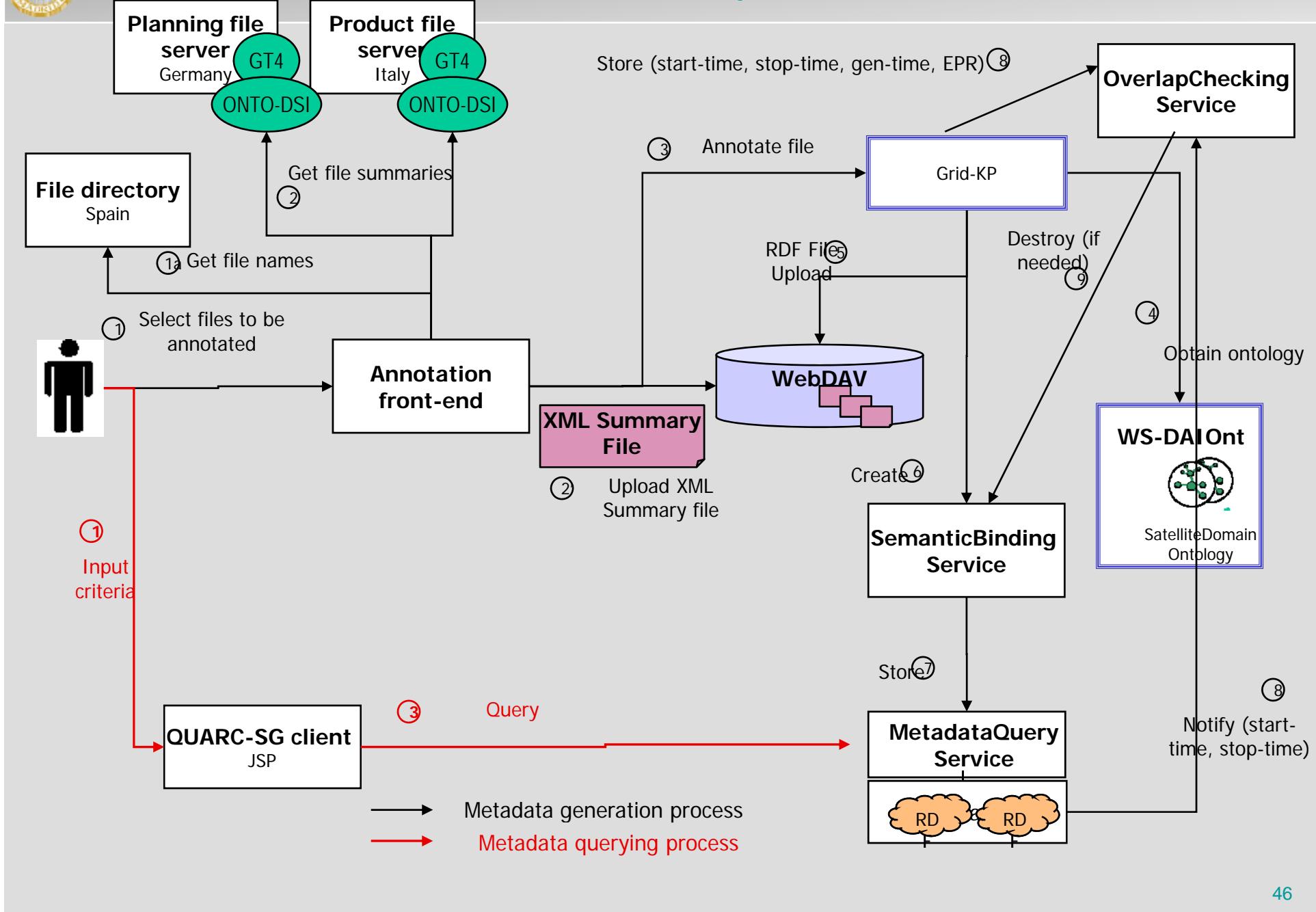
graph TD
    A[ASCII part of the file] --- B[Binary part of the file]

```

The diagram illustrates the structure of a file as a vertical stack of components. At the top is a box labeled "ASCII part of the file". Below it is a horizontal line that extends downwards, ending at a box labeled "Binary part of the file". This visual representation shows that the file consists of two distinct parts: an ASCII part at the top and a binary part at the bottom.



Satellite Use Case (System Infrastructure): S-OGSA Scenario





Satellite Image Processing

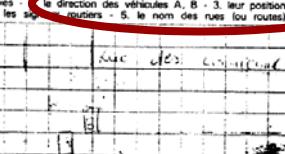
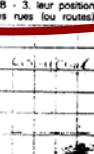
Single versus network of ontologies	Single Ontology	Type of Application	Data integration	Software Components Used
Ont. Built from scratch or reusing resources	Built from scratch	Hugeness: Operates at scale?	Yes	<ul style="list-style-type: none">1. Ontology repository2. Data repository3. Metadata registry4. Query answering5. Semantic query processor6. Ontology editor7. Ontology browser8. Instance editor9. Automatic annotation10. Ontology populator
Conceptual Heterogeneity (mappings)	No	Open to semantic resources?	No	
Where are the data/instances?	RDF files	Open to web resources?	No	
Are instances distributed or centralized?	Distributed	Open to web services?	No	
Very high rate of change in instances?	Yes	Web 2.0 like?	No	
Heterogeneous Provenance of instances	No	Mobile devices?	No	
Various degrees of data quality	No	Geo-spatial Information	No	

Fraud detection in car insurance

CONTINUER SUR LA PAGE SUIVANTE

Ne constitue pas une reconnaissance de responsabilité mais un relevé des faits et des tirs servant à l'accordement et au règlement.

A signer obligatoirement

1. date de l'accident	heure	2. lieu (village, commune, rue)	3. bles
16.06.87 23h30		N° Rogier Rue de la Couleur	non <input checked="" type="checkbox"/>
3. si le choc a été subi par les deux voitures qu'aux véhicules A et B		4. si l'assuré a été blessé	
non <input type="checkbox"/> oui <input checked="" type="checkbox"/>		oui <input checked="" type="checkbox"/>	
5. témoins (noms, adresses et tél.) (si plusieurs il s'agit d'un passager de A ou B) ALAIN & HUGO STAR			
6. assuré souscripteur (voir doc. d'assur.) Nom Marion Prénom Wulff Adresse (rue et n°) Stubbenhof 4 21147 Hamburg Localité (+ code post.) N° tel. de 9h à 17h 040/79170028 L'assuré peut-il être joint au travail? non <input type="checkbox"/> oui <input checked="" type="checkbox"/>			
7. véhicule MB Marque, type et immatriculation (n° d'immatr.) HH-JW-13			
8. sté d'assurance De Generali N° de contrat Agence (ou courtier) N° de carte verte			
Carte verte valable jusqu'au Les dégâts matériels du véhicule sont-ils assurés? non <input type="checkbox"/> oui <input checked="" type="checkbox"/>			
9. conducteur (voir permis de conduire) Nom (majusc.) Jens Prénom Wulff Adresse Permis de conduire n° 2121181 Catégorie (A, B, ...) B Délivré par			
10. Indiquer par une flèche (→) le point de choc initial.			
			
Préciser: 1. le tracé des routes 2. la direction des véhicules A, B - 3. leur position au moment du choc - 4. les signes routiers - 5. le nom des rues (ou routes)			
			
11. dégâts apparents Heck h. Deckel Seitenteile Stoßst			
14. observations Blinker Ich hielte bei Rot an			
* En cas de blessures ou en cas de dégâts aux véhicules A et B, relever les indications			
12. circonstances Mettre une croix (X) dans chacun des cases toutes pour préciser le croquis.			
<input type="checkbox"/> en stationnement <input type="checkbox"/> quittait un stationnement <input type="checkbox"/> prenait un stationnement <input type="checkbox"/> sortait d'un parking, d'un bureau, d'un dépôt, d'un chemin de terre <input type="checkbox"/> s'engageait dans un parking, feu privé, un chemin de terre <input type="checkbox"/> engagé sur une piste à sens unique <input type="checkbox"/> roulait sur une piste à sens unique <input type="checkbox"/> roulait à l'envers l'autre véhicule qui roulait dans le même sens et sur la même file <input type="checkbox"/> roulait dans le même sens et sur une file différente <input type="checkbox"/> changeait de file <input type="checkbox"/> doublet <input type="checkbox"/> virait à droite <input type="checkbox"/> virait à gauche <input type="checkbox"/> reculait			
13. croquis de l'accident			
			
10. Indiquer par une flèche (→) le point de choc initial.			
			
11. dégâts apparents			
12. circonstances			
13. croquis de l'accident			
			
14. observations			
15. signatures et la déclaration de l'assuré au verso			

Unfallbericht
 keine Schuldurkennung, sondern eine Wiedergabe des
 Unfallhergangs zur schnelleren Schadensregulierung.

Von beiden Fahrzeuglenkern auszufüllen

1. Datum: 23.06.97 2. Ort Straße, Haus-Nr. bzw. Kilometerstein: Niederland
 3. Zeugen Name, Anschrift, Telefon (neessezen unterstreichen) N59 Zierikzee/215 richtung Middelhornis

4. Andere Sachen: 5. Lenkername und Adresse (Globusmarken)

X nein Ja

Verzeichnungsnahme und Adresse (Globusmarken)

Wulff Marion
 Stubbenhof 4
 21147 Hamburg
 4010/7965628

MB 5000SL R1
 des Kennzeichen
 HH-JW 13

Generali Vers.

Bestellt eine VOLKASCO Versicherung

Bestellt eine VOLKASCO Versicherung

Sachverständiger

Bezeichnen Sie durch einen Pfeil den Punkt des Zusammenstoßes

Zeichnung Nr.: 1. Straßenlinie

Heckdeckel-Stop-
 orangefarbene Seitenstiel links
 Rechts Blinker
 14. Bemerkungen
 Ich hielte bei Rot an

N 59 Zierikzee/215 richtung Middelhornis

A B

12. Bitte Zutreffendes ankreuzen

Fahrzeug

1. fährt
 2. fährt zu schnell oder fahrt zu langsam
 3. fährt in Grün, gelb oder Fehlerzeit
 4. fährt in einen Kreisverkehr ein
 5. fährt im Kreisverkehr
 6. fährt auf
 7. fährt quer
 8. wechselt die Spur
 9. bog links ab
 10. bog rechts ab
 11. kam von links
 12. kam von rechts
 13. beachtete Vorfahrtszeichen nicht
 14. fährt rückwärts
 15. Aut in die Gegenfahrbahn
 16. kam von rechts
 17. beachtete Vorfahrtszeichen nicht
 Anzahl der ankreuzten Felder

13. Unfallsache

1. Richtung der Fahrzeuge A und B
 2. Ihre Position im Moment des Zusammenstoßes

14. Straßenchilder

1. Straßenlinien

15. Unterschrift der Fahrzeuglenker

16. Bemerkungen

17. Sichtbare Schäden

18. Kupplung, radiator
 Links & rechts vor
 masken vor blick
 stark stangel
 ik had. hieb was regen
 ik habe achtet boc

19. Nach Unterschrift und Trennung der Blätter nichts mehr ändern

3. Verletzte?
 X nein Ja

Fahrzeug B

6. Verzeichnungsnahme Name und Adresse (Globusmarken)

Ahmetovic

M.
 3255 TC
 Oude Tonge

Telefon (privat/dienstlich)

Bestellt eine VOLKASCO Versicherung

7. Fahrzeug

1. nein
 2. fährt zu schnell
 3. fährt in Grün, gelb oder Fehlerzeit
 4. fährt in einen Kreisverkehr
 5. fährt im Kreisverkehr
 6. fährt auf
 7. fährt quer
 8. wechselt die Spur
 9. bog links ab
 10. bog rechts ab
 11. kam von links
 12. kam von rechts
 13. beachtete Vorfahrtszeichen nicht
 14. fährt rückwärts
 15. Aut in die Gegenfahrbahn
 16. kam von rechts
 17. beachtete Vorfahrtszeichen nicht
 Anzahl der ankreuzten Felder

13. Unfallsache

1. Richtung der Fahrzeuge A und B
 2. Ihre Position im Moment des Zusammenstoßes

14. Straßenchilder

1. Straßenlinien

15. Unterschrift der Fahrzeuglenker

16. Bemerkungen

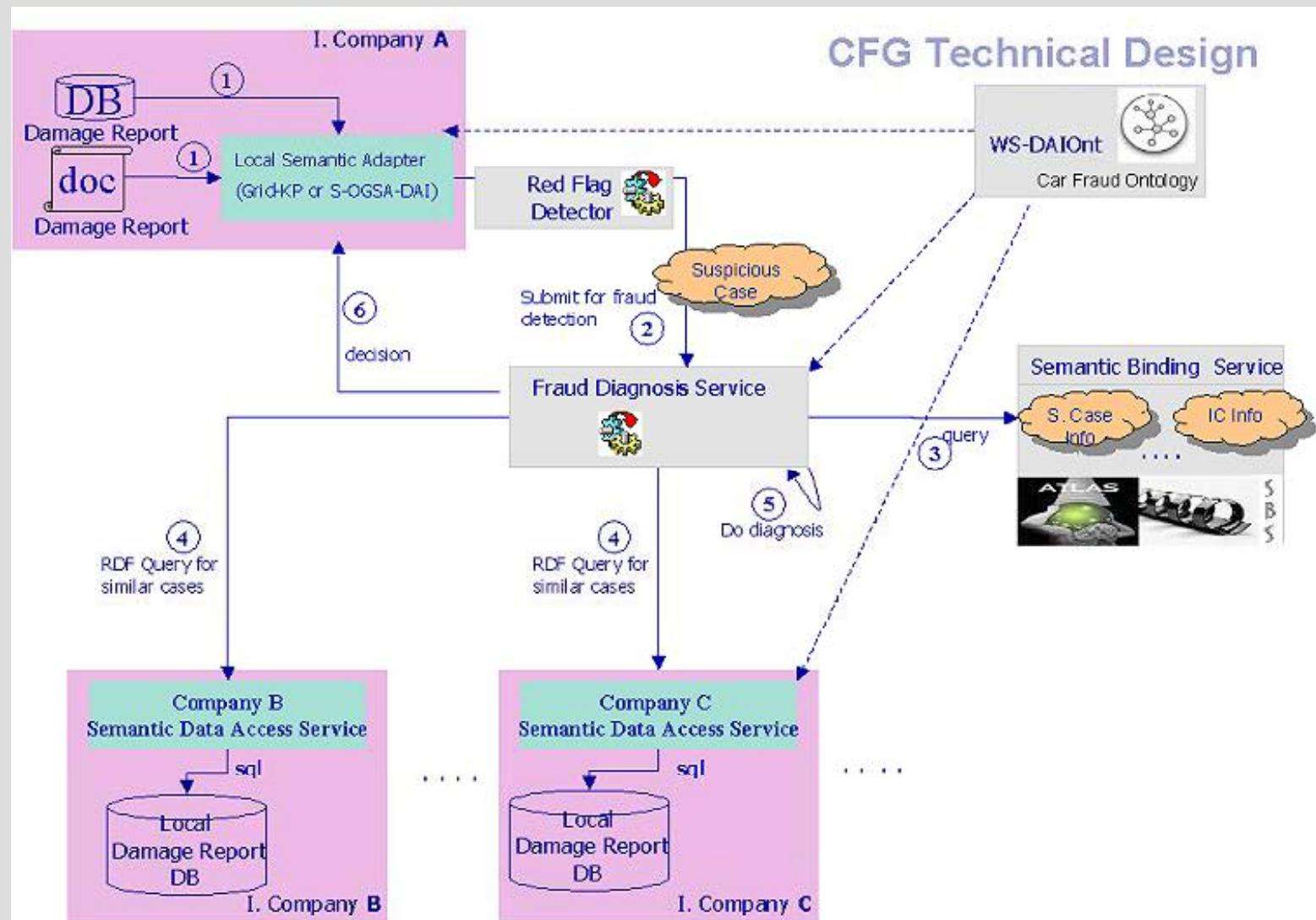
17. Sichtbare Schäden

18. Kupplung, radiator
 Links & rechts vor
 masken vor blick
 stark stangel
 ik had. hieb was regen
 ik habe achtet boc

19. Nach Unterschrift und Trennung der Blätter nichts mehr ändern



FraudGrid





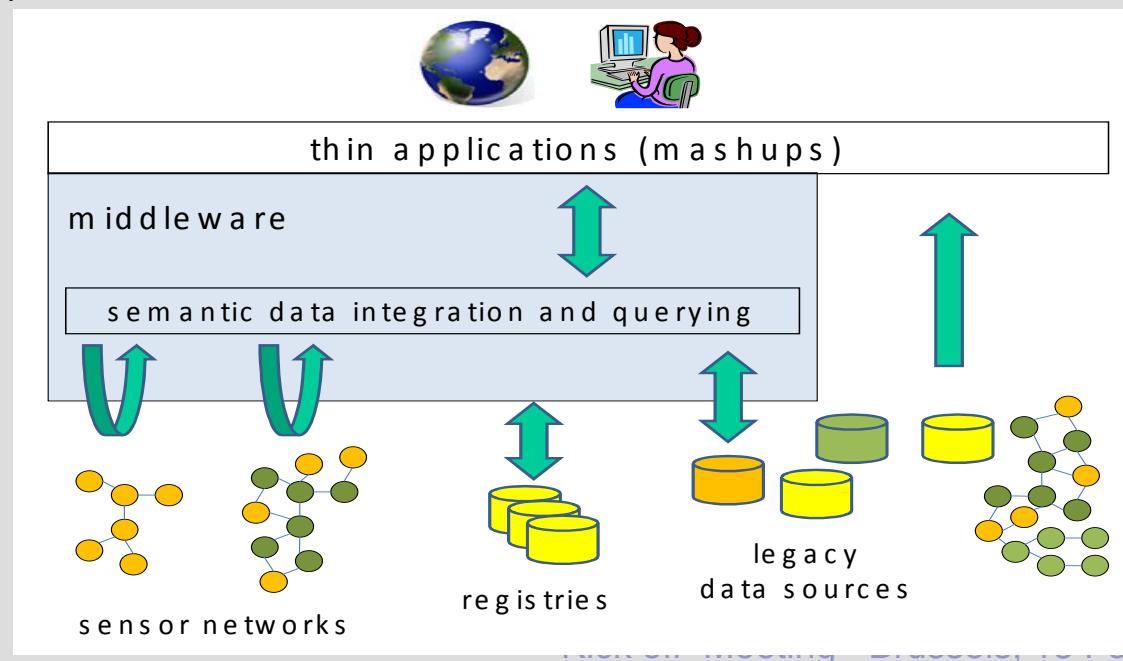
Detección del Fraude en seguros de coches

Single versus network of ontologies	Single Ontology	Type of Application	Data integration	Software Components Used
Ont. Built from scratch or reusing resources	Built from scratch	Hugeness: Operates at scale?	Yes	<ul style="list-style-type: none">1. Ontology repository2. Metadata registry3. Query answering4. Semantic query processor5. Ontology editor6. Ontology browser7. Instance editor8. Manual annotation9. Automatic annotation10. Ontology populator
Conceptual Heterogeneity (mappings)	No	Open to semantic resources?	No	
Where are the data/instances?	RDF files	Open to web resources?	No	
Are instances distributed or centralized?	Distributed	Open to web services?	No	
Very high rate of change in instances?	Yes	Web 2.0 like?	No	
Heterogeneous Provenance of instances	Yes	Mobile devices?	No	
Various degrees of data quality	Yes	Geo-spatial Information	Yes	



- Ontologies, Semantic Web and Corporate Semantics
- Semantic Web Applications
 - Annotation: Corporate Semantic Web
 - ODESeW R&D portals
 - Data Integration
 - Fund finder
 - FAO
 - SEEMP
- Grid and Semantic Grid
 - Decision Support Systems
 - Satellite Missions
 - Car Fraud
- **Conclusions and Trends**
 - Including the real world: SemsorGrid4Env
 - Combining Semantic Web and Web2.0: GeoBuddies

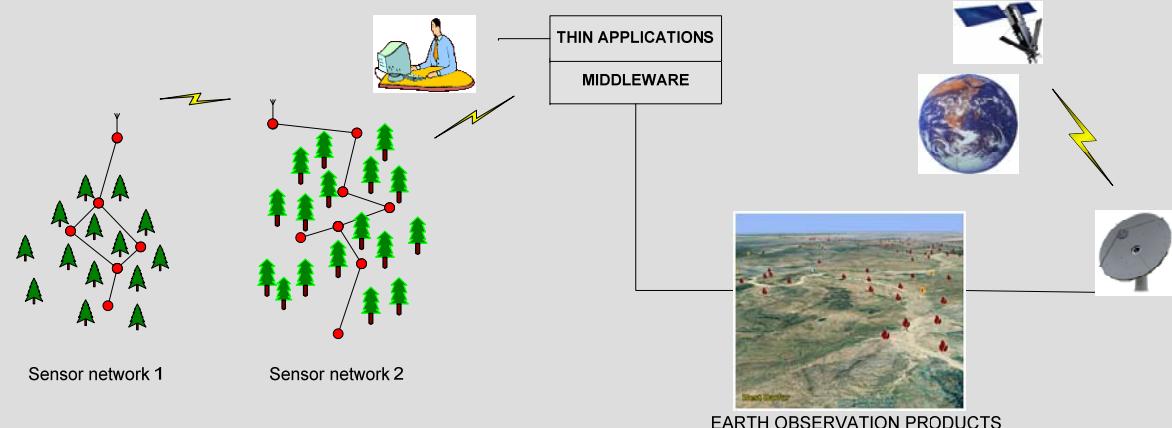
1. Development of an integrated information space where new sensor networks can be easily discovered and integrated with existing ones and possibly other data sources (e.g., historical databases),
2. Rapid development of flexible and user-centric decision support systems that use data from multiple autonomous independently deployed sensor networks and other applications.



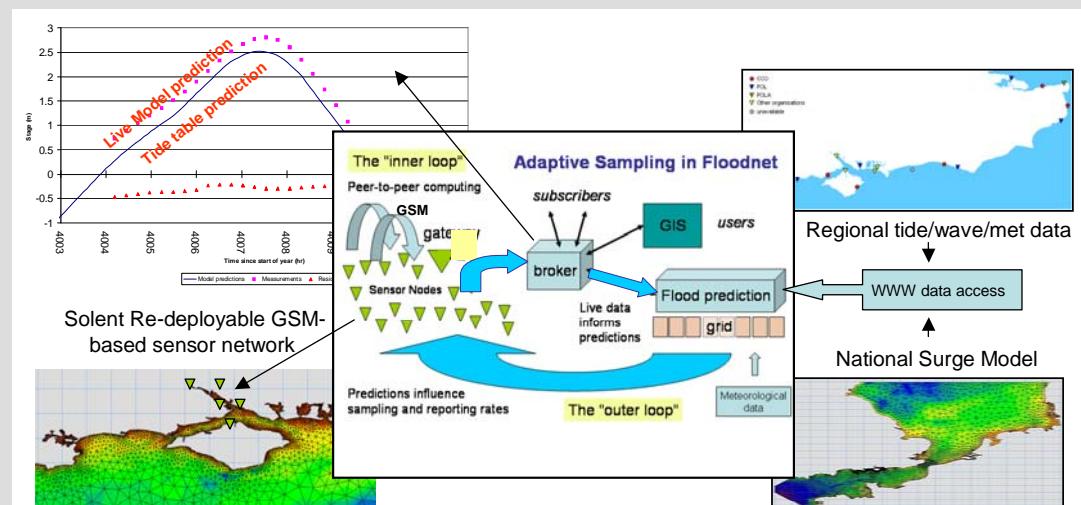


Two environmental management use cases:

Fire Risk Monitoring and Warning in a specific area in the north west of Spain.



Coastal and Estuarine Flood Warning in Southern UK.





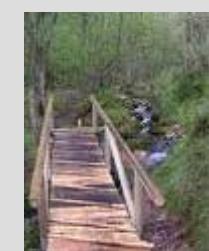
SemSorGrid4Env

Single versus network of ontologies	Network of ontologies	Type of Application	Decission Support systems	Software Components Used
Ont. Built from scratch or reusing resources	Reusing resources	Hugeness: Operates at scale?	Yes	1. Information directory manager 2. Ontology repository 3. Data repository 4. Metadata registry 5. Query answering 6. Semantic query processor 7. Ontology editor 8. Ontology browser 9. Instance editor 10. Manual annotation 11. Ontology populator
Conceptual Heterogeneity (mappings)	Yes (Onto-BD)	Open to semantic resources?	Yes	
Where are the data/instances?	In DB + RDF files + SENSORS!!!	Open to web resources?	yes	
Are instances distributed or centralized?	Distributed	Open to web services?	Yes	
Very high rate of change in instances?	Yes	Web 2.0 like?	No	
Heterogeneous Provenance of instances	Yes	Mobile devices?	yes	
Various degrees of data quality	Yes	Geo-spatial Information	yes	



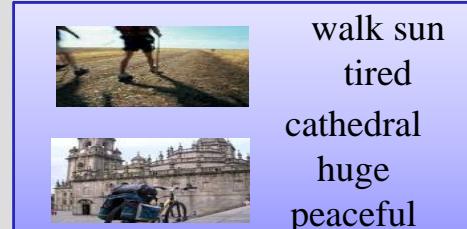
GeoBuddies: A pilgrim in St. James' Way

- Diverse routes for pilgrims
- Self-emergent community of pilgrims
 - People that talk about their experiences during the way
 - People that join together in the joy of walking
 - Mobile users
- People want to
 - Find interesting locations
 - Find community services
 - Provide information





El usuario ve un punto de interés y envía una foto con sus correspondientes anotaciones



Las anotaciones se guardan y los objetos se consolidan con bases de datos geográficas y anotaciones existentes

Servidor de anotaciones



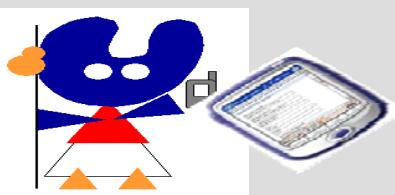
BBDD geográficas



Motor de recomendaciones (sólo geográfico)



El usuario quiere saber qué puntos de interés le pueden interesar en la zona en la que se encuentra



Motor de recomendaciones (geográfico + tags + ontologías)



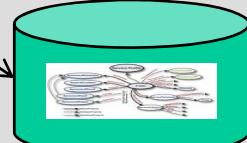
Camino Personalizado

mezcla

Servidor de anotaciones (todos los usuarios)



Servidor de ontologías





GeoBuddies: Main R&D Topics

1. Architecture to support user-centered geomatic applications
 - → Semantic Web + Web 2.0 + Mobile devices + Geomatic services
2. Ontology based multilingual integration information
 - Harmonize multilingual and heterogeneous geo-DB
3. Social tagging of resources and services
 - to derive user communities
4. Collaborative filtering
 - recommendations based on user communities
5. Service composition and execution
 - creation and use of added-value services based on the user's context
6. Data transfer and reliability in mobile environments
 - relevant data is always available to services and mobile devices



Catalogue Integration in the Geographical domain

- Monolingual **Knowledge bases** of IGN (spanish):
 - NC (Nomenclátor Conciso),
 - NGN (Nomenclátor Geográfico Nacional),
 - BCN200 (Base Cartográfica Nacional escala 1:200.000),
 - BCN25 (Base Cartográfica Nacional escala 1:25.000)
- Monolingual **Knowledge bases** of CC.AA. (spanish, basque, galician): Castilla y León, Cataluña, Euskadi, Extremadura, Galicia, La Rioja, Madrid, Murcia, Navarra.
- Creation of an **ontology** from IGN resources and creation of mappings with IGN knowledge bases

Nomenclátor conciso - Bloc de notas

Comunidad Autónoma	Provincia	Comarca administrativa	Capital
Población 1	Población 2	Sierra	PICO
Puerto	Área geográfica	Río	Puerto
Canal	Lago	Embalse	Cabo
		Golfo	Playa
		Isla	Mar
		Lugar	Aeropuerto
		Puerto	

Bcn200.tbl - Bloc de notas

CODIGO	LV	COL	PS	LC	SIMB.	NOMBRE
010101	01	000	00	6	00006	LIMITE_MUNICIPAL
010201	01	015	00	6	03846	LIMITE_MUNICIPAL_PROVISIONAL
010201	01	030	03	4	07708	LIMITE_PROVINCIAL
010301	01	045	06	2	11570	LIMITE_AUTONOMICO
010401	01	060	06	3	15411	LIMITE_NACIONAL
010501	01	075	00	1	19201	AGUAS_JURISDICCIONALES
015101	01	090	00	6	23046	MUNICIPIO_CONTORNO
015131	01	105	00	6	26886	MUNICIPIO_ANEJO

Dgn.cod - Bloc de notas

Entidad	Tipo_istream
104	: polilínea
203	: célula se convierte a simbolo
-1	: célula se explota en sus componentes
304	: rótulo

En textos el grupo corresponde a la fuente Microstation + Mayúsculas (M) / Minúsculas (m)

Grupo	Entidad	Tipo_istream
0	: sin determinar???
1	: carreteras	
2	: hidrografía	
3	: conducciones	
4	: administrativo	

Cerrado

en líneas	en textos
1	: perimetral
0	: entidad lineal abierta
-1	: cultivo perimetral
-2	: cultivo linea abierta

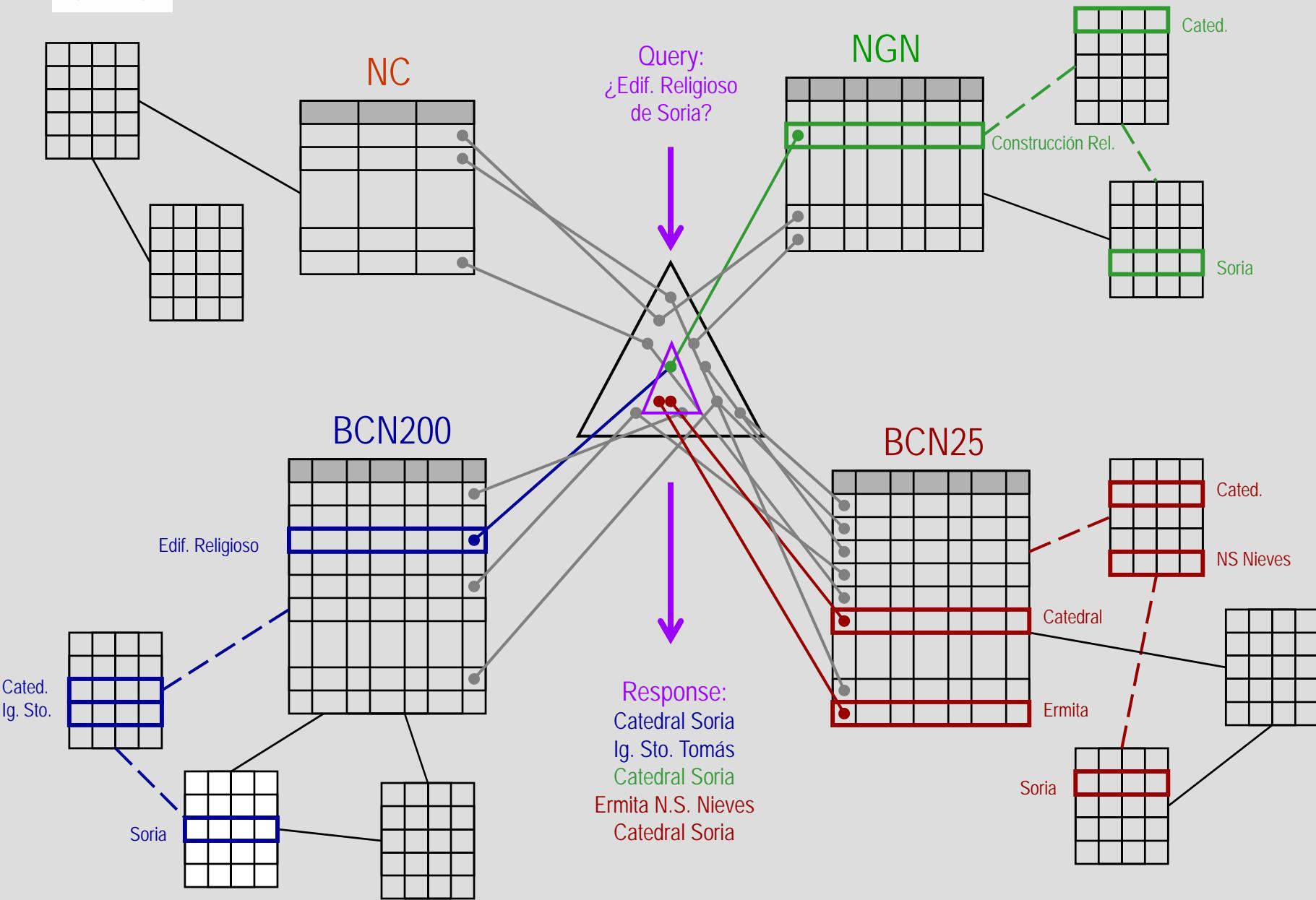
Trato

I:	A:	N:	No tratar	T:	Textos Asociados
I: Intocable	A: Altimetría	N: No tratar	T: Textos Asociados		
S: Textos sueltos	C: Cultivo	F: Solo salida	!:	Tratar normalmente	TTGGSS

02000900	104	1	0	090101	1	! I	Marco de hoja
02300902	104	2	0	100200	0	! I	Base Geodésica de Madridejos
06003900	104	3	0	025102	0	! I	Acantillado
06006900	104	4	0	025202	0	! I	Camino seco no acantillado
06009900	104	5	2	037402	1	! I	Playa fluvial de guijarros. Contorno
06012900	104	6	0	025501	1	! I	Lavas. Contorno
06015900	104	7	0	058303	0	! I	Dique de hormigón >15 metros
06018900	104	8	0	058304	0	! I	Dique de hormigón < 15 metros
07013400	104	9	0	058302	0	! I	Dique de tierra
07016400	104	10	0	055401	1	! I	Vertedero. Contorno
11003003	104	11	1	062202	0	! I	Autopista. Enlace
11013000	104	12	0	056091	1	! I	Ratio. Contorno
13003300	104	13	1	060101	0	! I	Autopista. Eje
13303300	104	14	1	060131	0	! I	Autopista en Construcción. Eje
14002401	104	15	1	066901	1	! I	Puesto de S.O.S.
14003301	104	16	1	067901	1	! I	Playa
15003003	104	17	1	062204	0	! I	Autovía. Enlace
15003004	104	18	1	060701	0	! I	Autovía



GN Catalogue Integration: Exploitation of Mappings



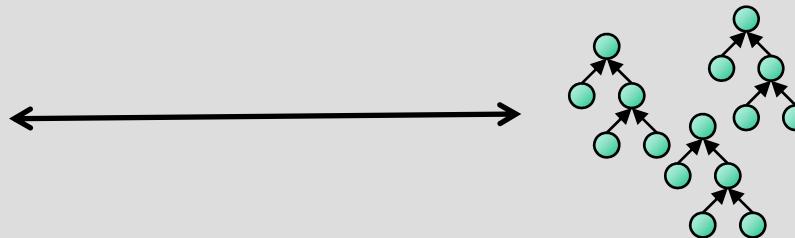


When folksonomies meet ontologies

Users annotate with their own tags

- The system provides hints about commonly used tags on a predictive style (like SMSs)
- Tag clouds can be generated out of this, based on geographical information, services or in general

1 2003 2004 2005 2006 **2007** amsterdam animals argentina australia austria barcelona
beach belgium berlin brasil brazil bridge budapest building **buildings** california canada castle chile
china church city croatia denmark deutschland egypt england españa finland florida flowers
france germany greece hamburg hotel hungary india ireland italia **italy** japan kirche lake
landscape lighthouse london madrid mallorca mexico moscow mountain mountains **nature**
netherlands new york new zealand night norway **panorama** paris park poland portugal prague river
roma rome russia san francisco scotland sea snow **spain** sunrise sunset sweden switzerland thailand
turkey usa water waterfall winter



Tags are indexed according to ontologies
Predictive tags are enriched with ontologies

Users request information using their own tags

- The system provides hints about commonly used tags on a predictive style (like SMSs)
- Collaborative filtering techniques can be used to recommend the most closely-related tags
- Requests can be extended with ontology-based annotations



Geobuddies Application

Single versus network of ontologies	Ontology Networks	Type of Application	Web 3.0 application	Software Components Used from the SWF
Ont. Built from scratch or reusing resources	Reusing standardized and web resources	Hugeness: Operates at scale?	Yes	1. Information directory manager 2. Ontology repository 3. Data repository 4. Alignment repository 5. Metadata registry 6. Query answering 7. Semantic query proccesor 8. Ontology editor 9. Ontology browser 10. Ontology learner 11. Ontology matcher 12. Ontology localization and profiling 13. Ontology view customization 14. Instance Editor 15. Manual annotation 16. Ontology populator
Conceptual Heterogeneity (mappings)	Yes. . - Ontol-Catalogues . - Onto - BD	Open to semantic resources?	Yes	
Where are the data/instances?	DB + RDF files	Open to web resources?	Yes	
Are instances distributed or centralized?	Distributed	Open to web services?	Yes	
Very high rate of change in instances?	YES	Web 2.0 like?	Yes	
Heterogeneous Provenance of instances	Yes	Mobile devices?	Yes	
Various degrees of data quality	Yes	Geo-spatial Information	Yes	



Conclusions

We are moving into a new generation of semantic applications

- Open to web resources
- Open to semantic resources
- Open to web services
- Open to the physical world and having an impact on it.

where ...

data integration at large scale is one of the main challenges

and ...

everything combined with

1. Social communities
2. Mobile devices
3. Ubiquitous computing