

# Web Semántica y Linked Data

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- Jesús Antonio Bella Martí
- Ismael Ayatz Ortiz
- Pablo Sayans Cobos

- Búsqueda de datasets.
  - Comprobación de licencias.
  - Filtrado de los CSV y realización del Analysis.
  - Realización de la ontología y RNS.
  - Generación de los RDF basándonos en la ontología.
  - Linking de los datos.
  - Realización de la app con Jena y Swing.
- 

Objetivo : Realización de app para obtener datos sobre lugares de necesidad.

# Elección de dataset

## Estaciones de Metro

- [https://www.doogal.co.uk/london\\_stations.php](https://www.doogal.co.uk/london_stations.php)

## Paradas de Autobús

- <https://data.london.gov.uk/dataset/tfl-bus-stop-locations-and-routes/resource/673033eb-59a6-4903-84bc-d24495661707>

## Líneas de metro

- [https://www.doogal.co.uk/london\\_stations.php](https://www.doogal.co.uk/london_stations.php)
- 


## Baños públicos


- <https://data.gov.uk/dataset/public-toilets-2014-15/resource/3e9934ac-492a-4042-971c-fe49bd9ca7e7>

## Restaurantes

- <http://tour-pedia.org/about/datasets.html>

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**The National Archives**  
[Back to The National Archives](#)

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Es la más restrictiva de las presentes.

# Crear proyectos en LODRefine. Analizar y filtrar cada CSV.

26 rows											
Show as: rows records			Show: 5 10 25 50 rows								
All	ExtractDate	OrganisationURI	OrganisationLat	ServiceTypeURI	ServiceTypeLabel	LocationText	CoordinateRefer	GeoX	GeoY	GeoPointLicensingURL	Category
1.	01/10/2014	<a href="http://opendatacommunities.org/id/london-borough-council/barnet">http://opendatacommunities.org/id/london-borough-council/barnet</a>	Barnet	<a href="http://id.esd.org.uk/service/579">http://id.esd.org.uk/service/579</a>	Public toilets	Ballards Lane, Finchley Central, London	OSGB36	525239	190735	<a href="http://www.ordnancesurvey.co.uk/business-and-government/help-and-support/public-sector/guidance/derived-data-exemptions.html">http://www.ordnancesurvey.co.uk/business-and-government/help-and-support/public-sector/guidance/derived-data-exemptions.html</a>	unisex
2.	01/10/2014	<a href="http://opendatacommunities.org/id/london-borough-council/barnet">http://opendatacommunities.org/id/london-borough-council/barnet</a>	Barnet	<a href="http://id.esd.org.uk/service/579">http://id.esd.org.uk/service/579</a>	Public toilets	Bell Lane, Hendon, London	OSGB36	523426	189016	<a href="http://www.ordnancesurvey.co.uk/business-and-government/help-and-support/public-sector/guidance/derived-data-exemptions.html">http://www.ordnancesurvey.co.uk/business-and-government/help-and-support/public-sector/guidance/derived-data-exemptions.html</a>	unisex
3.	01/10/2014	<a href="http://opendatacommunities.org/id/london-borough-council/barnet">http://opendatacommunities.org/id/london-borough-council/barnet</a>	Barnet	<a href="http://id.esd.org.uk/service/579">http://id.esd.org.uk/service/579</a>	Public toilets	Burnt Oak Library	OSGB36	520357	190939	<a href="http://www.ordnancesurvey.co.uk/business-and-government/help-and-support/public-sector/guidance/derived-data-exemptions.html">http://www.ordnancesurvey.co.uk/business-and-government/help-and-support/public-sector/guidance/derived-data-exemptions.html</a>	female and male
4.	01/10/2014	<a href="http://opendatacommunities.org/id/london-borough-council/barnet">http://opendatacommunities.org/id/london-borough-council/barnet</a>	Barnet	<a href="http://id.esd.org.uk/service/579">http://id.esd.org.uk/service/579</a>	Public toilets	Cat Hill, East Barnet, Hertfordshire	OSGB36	527200	195407	<a href="http://www.ordnancesurvey.co.uk/business-and-government/help-and-support/public-sector/guidance/derived-data-exemptions.html">http://www.ordnancesurvey.co.uk/business-and-government/help-and-support/public-sector/guidance/derived-data-exemptions.html</a>	unisex
5.	01/10/2014	<a href="http://opendatacommunities.org/id/london-borough-council/barnet">http://opendatacommunities.org/id/london-borough-council/barnet</a>	Barnet	<a href="http://id.esd.org.uk/service/579">http://id.esd.org.uk/service/579</a>	Public toilets	Chipping Barnet Library	OSGB36	524331	196747	<a href="http://www.ordnancesurvey.co.uk/business-and-government/help-and-support/public-sector/guidance/derived-data-exemptions.html">http://www.ordnancesurvey.co.uk/business-and-government/help-and-support/public-sector/guidance/derived-data-exemptions.html</a>	female and male








26 rows

Extensions: DBpediaCrowdsourcingNamed-entity recognitionFreebaseUtilitiesRDF

Show as: rows records

Show: 5102550 rows

« first « previous 1 - 10 next » last »

▼ All	▼ Servicio	▼ Direccion	▼ Coordenada-X	▼ Coordenada-Y	▼ Categoria Acces	▼ Cambiador de B	▼ Baños familiare	▼ Cambiador	▼ Horario de apertura	▼ Administrado por	▼ Email de contacto	▼ Telefono de con	▼ N
 	1. Public toilets1	Ballards Lane, Finchley Central, London	525239	190735	unisex <a href="#">edit</a>	true	true	true	opening_hours=24/7	jc decaux	highways.correspondence@barnet.gov.uk	2083592000	Situat near Finch Centr Tube Statio
 	2. Public toilets2	Bell Lane, Hendon, London	523426	189016	unisex	true	true	true	opening_hours=24/7	jc decaux	highways.correspondence@barnet.gov.uk	2083592000	Situat at jun with E Stree
 	3. Public	Watling Avenue, Edgware, London	520357	190939	female and male	true	false	false	opening_hours=Mo,Tu,We,Fr,Sa 09:00-17:00; Th	Servest Contract	burnt.oak.library@barnet.gov.uk	2083593880	Librar

# Caso especial paradas Metro

640 rows

Show as: rows records Show: 5 10 25 50 rows

All	Station	OS X	OS Y	Latitude	Longitude	Zone	Postcode
1.	Abbey Road	539081	183352	51.5319519867171	0.00372337109717115	3	E15 3NB
2.	Abbey Wood	547297	179002	51.4907840957031	0.020271969782359	4	SE2 9RH
3.	Acton	520296	181196	51.5168869310483	-0.267689952184077	3	W3 0BP
4.	Acton Central	520613	180299	51.5087577801896	-0.263430199363473	2	W3 6BD
5.	Acton Town	519457	179639	51.5030714429635	-0.28030270140601	3	W3 8HN
6.	Addington Village	537082	163744	51.3562385904301	-0.032665100391443	3, 4, 5, 6	CR0 5AR
7.	Addiscombe	534190	166290	51.3798082895941	-0.0732132828267587	3, 4, 5, 6	CR0 7AA
8.	Albany Park	547903	172902	51.4358156062277	0.126444637772442	5	DA5 3HP
9.	Aldgate	533629	181246	51.5143423787415	-0.0756269126501567	1	EC3N 1AH
10.	Aldgate East	533809	181333	51.5150816226404	-0.0730014627258136	1	E1 7PT

**Add column based on column Station**

New column name:

On error: ☒ set to blank ☐ store error ☐ copy value from original column

Expression:  No syntax error.

Preview

row	value	forEach(cell.cross('London TubeLines', 'From Station'), r, r.cells['Tube Line'].value).join(' ')
1.	Abbey Road	DLR Line
2.	Abbey Wood	
3.	Acton	
4.	Acton Central	Overground Line
5.	Acton Town	District Line Piccadilly Line Piccadilly Line
6.	Addington Village	Tramlink Line

OK Cancel

**Add column based on column Station**

New column name:

On error: ☒ set to blank ☐ store error ☐ copy value from original column

Expression:  No syntax error.

Preview

row	value	forEach(cell.cross('London TubeLines', 'From Station'), r, r.cells['To Station'].value).join('   ') + '   ' + forEach(cell.cross('London TubeLines', 'To Station'), r, r.cells['From Station'].value).join('   ')
1.	Abbey Road	West Ham   Stratford High Street
2.	Abbey Wood	
3.	Acton	
4.	Acton Central	Willesden Junction   South Acton
5.	Acton Town	Ealing Common   South Ealing   Ealing Common   Chiswick Park   Turnham Green

OK Cancel

# Caso especial paradas Metro

640 rows

Extensions: DBpedia

Show as: rows records Show: 5 10 25 50 rows

All	Station	paradas adyacentes	Lineas	OS X	OS Y	Latitude	Longitude	Zone	Postcode
		1. Abbey Road	West Ham   Stratford High Street	539081	183352	51.5319519867171	0.00372337109717115	3	E15 3NB
		2. Abbey Wood		547297	179002	51.4907840957031	0.120271969782359	4	SE2 9RH
		3. Acton		520296	181196	51.5168869310483	-0.267689952184077	3	W3 0BP
		4. Acton Central	Willesden Junction   South Acton	520613	180299	51.5087577801896	-0.263430199363473	2	W3 6BD
		5. Acton Town	Ealing Common   South Ealing   Ealing Common   Chiswick Park   Turnham Green	519457	179639	51.5030714429635	-0.28030270140601	3	W3 8HN
		6. Addington Village	Fieldway   Gravel Hill	537082	163744	51.3562385904301	-0.032665100391443	3,4,5,6	CR0 5AR
		7. Addiscombe	Blackhorse Lane   Sandilands	534190	166290	51.3798082895941	-0.0732132828267587	3,4,5,6	CR0 7AA
		8. Albany Park		547903	172902	51.4358156062277	0.126444637772442	5	DA5 3HP
		9. Aldgate	Tower Hill   Liverpool Street   Liverpool Street	533629	181246	51.5143423787415	-0.0756269126501567	1	EC3N 1AH
		10. Aldgate East	Tower Hill   Whitechapel   Whitechapel   Liverpool Street	533809	181333	51.5150816226404	-0.0730014627258136	1	E1 7PT



# Ejemplo resultados Analysis

## Baños públicos

- **Nombre del fichero:**public-toilets.csv
- **Descripción:**Baños públicos en la ciudad de Londres
- **Origen de los datos :**[Click aqui](#)
- [Licencia](#)

Columna	Tipo
Servicio	String
Dirección	String
Coordenada X	double
Coordenada Y	double
Catagoria accesible	String
Cambiador de bebe	Boolean
Baños familiares	Boolean
Boolean	String
Horario de apertura	String
Administrado por	String
Email de contacto	String
Teléfono de contacto	int
Notas	String
Código Postal	String

## Paradas de autobuses en Londres

- **Nombre del fichero:**London-bus-stops.csv
- **Descripción:**Paradas de bus en la ciudad de Londres
- **Origen de los datos :**[Click aqui](#)
- [Licencia](#)

Columna	Tipo
Nombre	String
Código de parada	int
Coordenada-X	int
Coordenada-Y	int
Sentido	int
Area de parada	String

## Restaurantes

- **Nombre del fichero:**london-restaurant.csv
- **Descripción:**Restaurantes en la ciudad de Londres
- **Origen de los datos :**[Click aqui](#)
- [Licencia](#)

id	Tipo
Nombre	String
Dirección	String
Categoría	String
Localización	String
Latitud	double
Longitud	double
detalles	String
Crítica	String

# Resource Naming Strategy y Ontología.

Ontology prefixes:

Prefix	Value
	<a href="http://www.semanticweb.org/webSemantica/grupo02/">http://www.semanticweb.org/webSemantica/grupo02/</a>
owl	<a href="http://www.w3.org/2002/07/owl#">http://www.w3.org/2002/07/owl#</a>
rdf	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#">http://www.w3.org/1999/02/22-rdf-syntax-ns#</a>
rdfs	<a href="http://www.w3.org/2000/01/rdf-schema#">http://www.w3.org/2000/01/rdf-schema#</a>
xml	<a href="http://www.w3.org/XML/1998/namespace">http://www.w3.org/XML/1998/namespace</a>
xsd	<a href="http://www.w3.org/2001/XMLSchema#">http://www.w3.org/2001/XMLSchema#</a>

Resource Naming Strategy.

Class hierarchy: Parada\_bus

Annotations: Parada\_bus

Description: Parada\_bus

Equivalent To

SubClass Of

General class axioms

SubClass Of (Anonymous Ancestor)

Instances

Target for Key

Disjoint With

Classes

Data property hierarchy: tieneCodigoPostal

Annotations: tieneCodigoPostal

Characteristics

Description: tieneCodigoPostal

Functional

Equivalent To

SubProperty Of

Domains (intersection)

Ranges

Disjoint With

Data Property

Object property hierarchy: tieneLinea

Annotations: tieneLinea

Characteristics

Description: tieneLinea

Functional

Inverse function

Transitive

Symmetric

Asymmetric

Reflexive

Irreflexive

Equivalent To

SubProperty Of

Inverse Of

Domains (intersection)

Ranges (intersection)

Disjoint With

Object Property

# Generación de los RDF y linkeado de datos con DBpedia

```
4694 lines (4312 sloc) | 275 KB
Raw Blame History

1 @prefix : <> .
2 @prefix ont: <http://www.semanticweb.org/webSemantica/grupo02/vocabulary#> .
3 @prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
4 @prefix owl: <http://www.w3.org/2002/07/owl#> .
5 @prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
6 @prefix foaf: <http://xmlns.com/foaf/0.1/> .
7
8
9 <http://www.semanticweb.org/webSemantica/grupo02/resource/Parada/Parada_metro#Abbey+Road> a ont:Parada_metro ;
10   ont:tieneNombre "Abbey Road" ;
11   ont:tieneParadasAdyacentes "West Ham" ;
12   ont:tieneLinea "DLR Line" ;
13   ont:tieneCoordenada-Y "183352"^^<http://www.w3.org/2001/XMLSchema#int> ;
14   ont:tieneLatitud "51.5319519867171"^^<http://www.w3.org/2001/XMLSchema#double> ;
15   ont:tieneLongitud "0.0037233710971715"^^<http://www.w3.org/2001/XMLSchema#double> ;
16   ont:tieneZona "3"^^<http://www.w3.org/2001/XMLSchema#int> ;
17   ont:tieneCodigoPostal "E15 3NB"^^<http://www.w3.org/2001/XMLSchema#int> ;
18   ont:tieneParadasAdyacentes "Stratford High Street" .
19
20 <http://www.semanticweb.org/webSemantica/grupo02/resource/Parada/Parada_metro#Acton+Central> a ont:Parada_metro ;
21   ont:tieneNombre "Acton Central" ;
22   ont:tieneParadasAdyacentes "Willesden Junction" ;
23   ont:tieneLinea "Overground Line" ;
24   ont:tieneCoordenada-Y "180299"^^<http://www.w3.org/2001/XMLSchema#int> ;
25   ont:tieneLatitud "51.5087577801896"^^<http://www.w3.org/2001/XMLSchema#double> ;
26   ont:tieneLongitud "-0.263430199363473"^^<http://www.w3.org/2001/XMLSchema#double> ;
27   ont:tieneZona "2"^^<http://www.w3.org/2001/XMLSchema#int> ;
28   ont:tieneCodigoPostal "W3 6BD"^^<http://www.w3.org/2001/XMLSchema#int> ;
29   ont:tieneParadasAdyacentes "South Acton" .
30
31 <http://www.semanticweb.org/webSemantica/grupo02/resource/Parada/Parada_metro#Acton+Town> a ont:Parada_metro ;
32   ont:tieneNombre "Acton Town" ;
33   ont:tieneParadasAdyacentes "Ealing Common" ;
34   ont:tieneLinea "District Line" ;
35   owl:sameAs <http://dbpedia.org/resource/District_line> ;
36   ont:tieneCoordenada-Y "179639"^^<http://www.w3.org/2001/XMLSchema#int> ;
37   ont:tieneLatitud "51.5030714429635"^^<http://www.w3.org/2001/XMLSchema#double> ;
38   ont:tieneLongitud "-0.28030270140601"^^<http://www.w3.org/2001/XMLSchema#double> ;
39   ont:tieneZona "3"^^<http://www.w3.org/2001/XMLSchema#int> ;
40   ont:tieneCodigoPostal "W3 8HL"^^<http://www.w3.org/2001/XMLSchema#int> ;
41   ont:tieneParadasAdyacentes "South Ealing" ;
42   ont:tieneLinea "Piccadilly Line" ;
43   owl:sameAs <http://dbpedia.org/resource/Piccadilly_line> ;
44   ont:tieneParadasAdyacentes "Chiswick Park" , "Turnham Green" .
45
```

# Generación de los RDF y linkeado de datos con DBpedia

1057 rows

Extensions:

Show as: **rows** records

Show: 5 10 25 50 rows

All	Nombre	Paradas Adyace	Linea	schema:linea	Coordenada-X	Coordenada-Y	Latitud	Longitud	Zona	Codigo Postal
	1. Abbey Road	West Ham	DLR Line <small>new</small> <a href="#">Choose new match</a>	<a href="#">edit</a>	539081	183352	51.5319519867171	0.00372337109717115	3	E16 3NB
	2. Abbey Road	Stratford High Street								
	3. Acton Central	Willesden Junction	Overground Line <small>new</small> <a href="#">Choose new match</a>		520613	180299	51.5087577801896	-0.263430199363473	2	W3 6BD
	4. Acton Central	South Acton								
	5. Acton Town	Ealing Common	District Line <a href="#">Choose new match</a>	<a href="http://dbpedia.org/resource/District_line">http://dbpedia.org/resource/District_line</a>	519457	179639	51.5030714429635	-0.28030270140601	3	W3 8HN
	6. Acton Town	South Ealing	Piccadilly Line <a href="#">Choose new match</a>	<a href="http://dbpedia.org/resource/Piccadilly_line">http://dbpedia.org/resource/Piccadilly_line</a>						
	7. Acton Town	Ealing Common	Piccadilly Line <a href="#">Choose new match</a>	<a href="http://dbpedia.org/resource/Piccadilly_line">http://dbpedia.org/resource/Piccadilly_line</a>						
	8. Acton Town	Chiswick Park								
	9. Acton Town	Turnham Green								
	10. Addington Village	Fieldway	Tramlink Line <small>new</small> <a href="#">Choose new match</a>		537082	163744	51.3562385904301	-0.032665100391443	3,4,5,6	CR0 5AR

# Generación de los RDF y linkeado de datos con DBpedia

```
4694 lines (4312 sloc) | 275 KB | Raw | Blame | History |
1 @prefix : <> .
2 @prefix ont: <http://www.semanticweb.org/webSemantica/grupo02/vocabulary#> .
3 @prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
4 @prefix owl: <http://www.w3.org/2002/07/owl#> .
5 @prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
6 @prefix foaf: <http://xmlns.com/foaf/0.1/> .
7
8
9 <http://www.semanticweb.org/webSemantica/grupo02/resource/Parada/Parada_metro#Abbey+Road> a ont:Parada_metro ;
10     ont:tieneNombre "Abbey Road" ;
11     ont:tieneParadasAdyacentes "West Ham" ;
12     ont:tieneLinea "DLR Line" ;
13     ont:tieneCoordenada-Y "183352"^^<http://www.w3.org/2001/XMLSchema#int> ;
14     ont:tieneLatitud "51.5319519867171"^^<http://www.w3.org/2001/XMLSchema#double> ;
15     ont:tieneLongitud "0.00372337109717115"^^<http://www.w3.org/2001/XMLSchema#double> ;
16     ont:tieneZona "3"^^<http://www.w3.org/2001/XMLSchema#int> ;
17     ont:tieneCodigoPostal "E15 3NB"^^<http://www.w3.org/2001/XMLSchema#int> ;
18     ont:tieneParadasAdyacentes "Stratford High Street" .
19
20 <http://www.semanticweb.org/webSemantica/grupo02/resource/Parada/Parada_metro#Acton+Central> a ont:Parada_metro ;
21     ont:tieneNombre "Acton Central" ;
22     ont:tieneParadasAdyacentes "Willesden Junction" ;
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26     ont:tieneLongitud "-0.263430199363473"^^<http://www.w3.org/2001/XMLSchema#double> ;
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29     ont:tieneParadasAdyacentes "South Acton" .
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31 <http://www.semanticweb.org/webSemantica/grupo02/resource/Parada/Parada_metro#Acton+Town> a ont:Parada_metro ;
32     ont:tieneNombre "Acton Town" ;
33     ont:tieneParadasAdyacentes "Ealing Common" ;
34     ont:tieneLinea "District Line" ;
35     owl:sameAs <http://dbpedia.org/resource/District_line> ;
36     ont:tieneCoordenada-Y "175035"^^<http://www.w3.org/2001/XMLSchema#int> ;
37     ont:tieneLatitud "51.5030714429635"^^<http://www.w3.org/2001/XMLSchema#double> ;
38     ont:tieneLongitud "-0.28030270140601"^^<http://www.w3.org/2001/XMLSchema#double> ;
39     ont:tieneZona "3"^^<http://www.w3.org/2001/XMLSchema#int> ;
40     ont:tieneCodigoPostal "W3 8HW"^^<http://www.w3.org/2001/XMLSchema#int> ;
41     ont:tieneParadasAdyacentes "South Ealing" ;
42     ont:tieneLinea "Piccadilly Line" ;
43     owl:sameAs <http://dbpedia.org/resource/Piccadilly_line> ;
44     ont:tieneParadasAdyacentes "Chiswick Park", "Turnham Green" .
45
46 <http://www.semanticweb.org/webSemantica/grupo02/resource/Parada/Parada_metro#Addington+Village> a ont:Parada_metro ;
47     ont:tieneNombre "Addington Village" ;
48     ont:tieneParadasAdyacentes "Fieldway" ;
```

# APP

