

# Linked Data: step by step

paul@proxml.be

# Start

353 rows

Extensions: Zemanta Freebase RDF CKAN

Show as: rows records Show: 5 10 25 50 rows « first < previous 1 - 25 next > last »

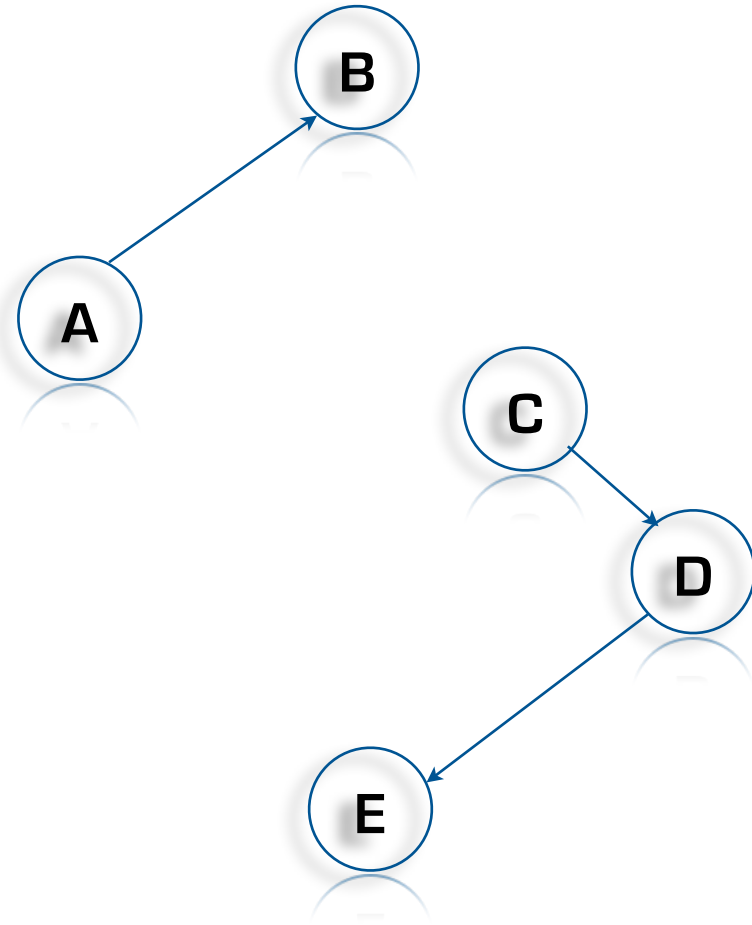
All	PROVINCIE	BEVOEGD GEZA	BRIN NUMMER	INSTELLINGSNAAM	PLAATSNAAM	GEMEENTE NUM	GEMEENTENAA	Gemeentenaam	BBL	BOLDT	B
☆	1.	Drenthe	40872	25PW	ROC Drenthe College	EMMEN	114	Emmen	Emmen <a href="#">Choose new match</a>	2525	239
☆	2.	Flevoland	40320	18XX	Berechja College	URK	184	Urk	Urk <a href="#">Choose new match</a>		
☆	3.	Flevoland	40805	25LR	ROC Flevoland	ALMERE	34	Almere	Almere <a href="#">Choose new match</a>	1189	172
☆	4.	Friesland	30932	08PG	ROC Friese Poort	LEEWARDEN	80	Leeuwarden	Leeuwarden <a href="#">Choose new match</a>	2064	1666
☆	5.	Friesland	31126	12VI	AOC Friesland	LEEWARDEN	80	Leeuwarden	Leeuwarden <a href="#">Choose new match</a>	589	2
☆	6.	Friesland	40295	25LG	ROC Friesland College	LEEWARDEN	80	Leeuwarden	Leeuwarden <a href="#">Choose new match</a>	2018	206
☆	7.	Gelderland	<a href="#">edit</a> 31142	26CC	Helicon Opleidingen	NIJMEGEN	268	Nijmegen	Nijmegen <a href="#">Choose new match</a>	2056	122
☆	8.	Gelderland	<a href="#">Edit this cell</a> 34386	04NZ	SOMA College	HARDERWIJK	243	Harderwijk	Harderwijk <a href="#">Choose new match</a>	489	
☆	9.	Gelderland	40190	04CY	ROC Rivor	TIEL	281	Tiel	Tiel <a href="#">Choose new match</a>	881	48
☆	10.	Gelderland	40392	24ZZ	ROC Graafschap College	DOETINCHEM	222	Doetinchem	Doetinchem <a href="#">Choose new match</a>	2293	35
☆	11.	Gelderland	40687	25GV	AOC Groenhorst College	EDE GLD	228	Ede	Ede <a href="#">Choose new match</a>	875	
☆	12.	Gelderland	40840	25LF	Rijn IJssel	ARNHEM	202	Arnhem	Arnhem <a href="#">Choose new match</a>	3637	304
☆	13.	Gelderland	40852	25PN	ROC Nijmegen eo	NIJMEGEN	268	Nijmegen	Nijmegen <a href="#">Choose new match</a>	5349	82
☆	14.	Gelderland	40979	01IC	AOC Oost	DOETINCHEM	222	Doetinchem	Doetinchem <a href="#">Choose new match</a>	1039	4
☆	15.	Gelderland	41151	27DV	ROC AVENTUS	APELDOORN	200	Apeldoorn	Apeldoorn <a href="#">Choose new match</a>	3666	286
☆	16.	Gelderland	41300	25PM	ROC A12	EDE GLD	228	Ede	Ede <a href="#">Choose new match</a>	1956	30
☆	17.	Groningen	31108	01NJ	AOC Terra	GRONINGEN	14	Groningen	Groningen (Gr)	391	

# Triples

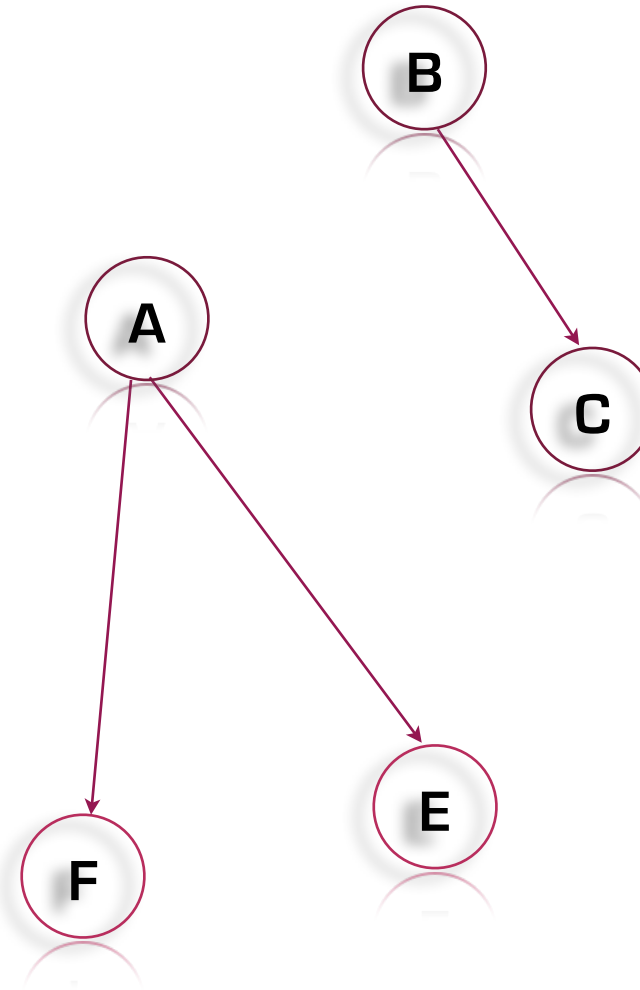
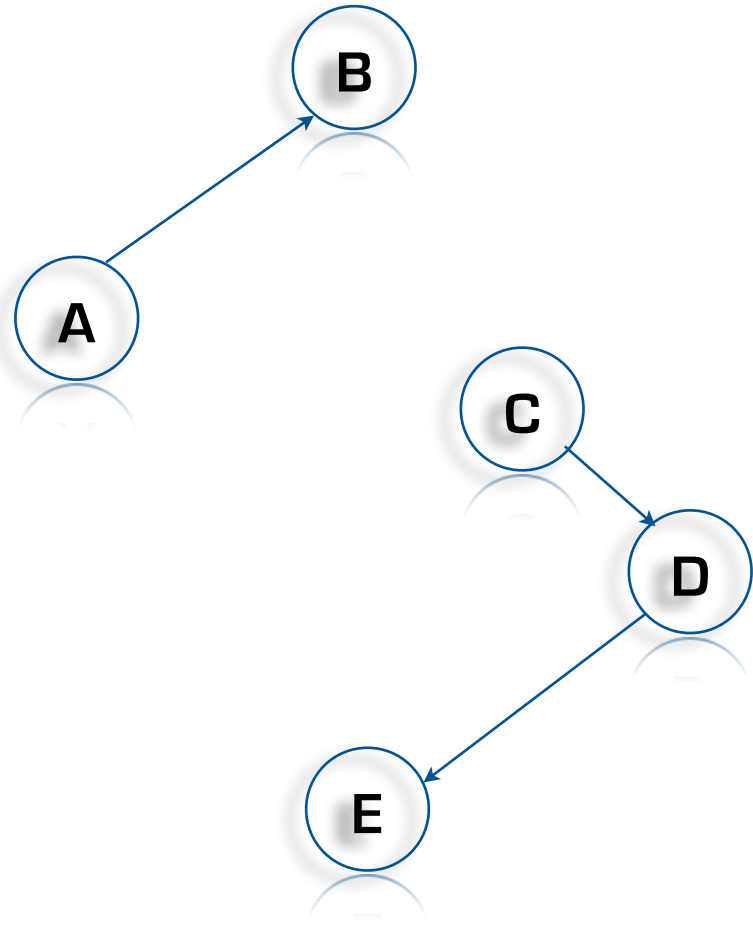
	A	B	C
1	Subject	Predicate	Object
2			
3	1	Provincie	Drenthe
4	1	BevoegdGezag	40872
5	1	Brin Nummer	25PW
6	1	InstellingsNaam	ROC Drenthe College
7	1	GemeenteNummer	114
8	1	GemeenteNaam	Emmen
9	1	BBL	2525
10	1	BOLDT	239
11	1	BOLVT	5635
12			
13	2	Provincie	Flevoland
14	2	BevoegdGezag	40320
15			
16			

# Why triples?

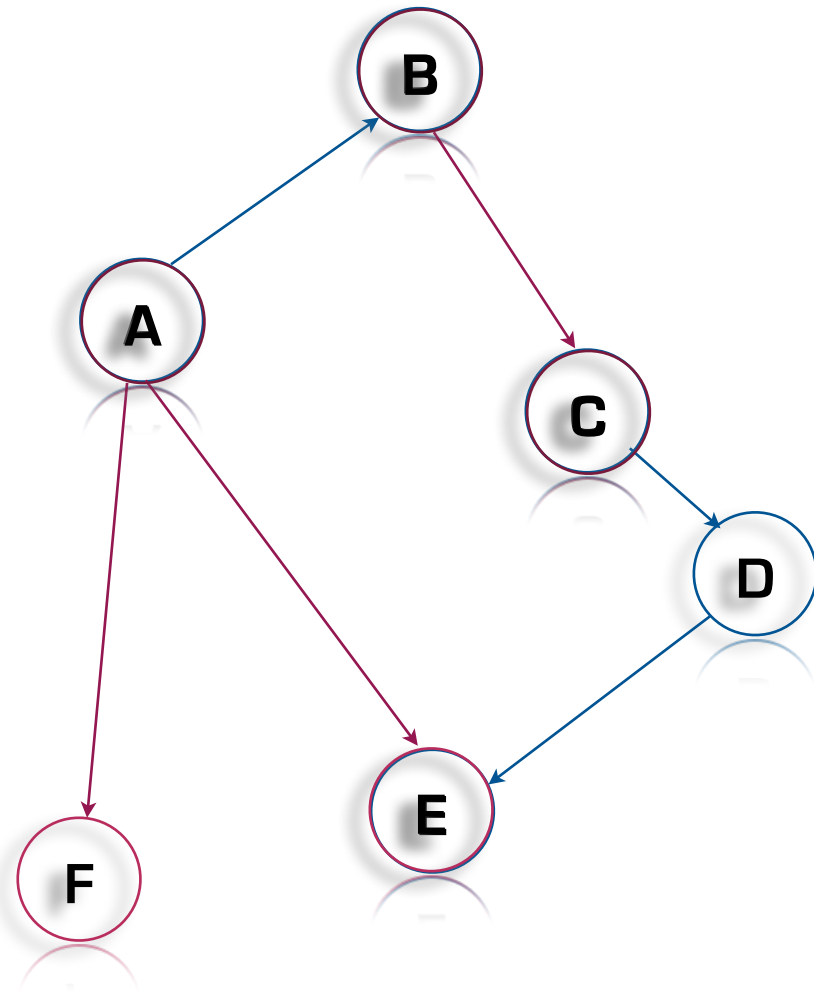
# Why triples?



# Why triples?



# Why triples?



# Subject

- \* Use URIs as names for **things**
- \* Use **HTTP URIs** so that people can look up those names



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`http://data.overheid.nl/ocw/school/{id}`

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`http://data.overheid.nl/ocw/school/25PW`

# Subject

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- \* Use **HTTP URIs** so that people can look up those names

`http://data.overheid.nl/ocw/school/{id}`

`http://data.overheid.nl/ocw/school/25PW`

`http://data.overheid.nl/ocw/school/S25PW`

# Subject

- \* Use URIs as names for **things**
- \* Use **HTTP URIs** so that people can look up those names

`http://data.overheid.nl/ocw/school/{id}`

`http://data.overheid.nl/ocw/school/25PW`

`http://data.overheid.nl/ocw/school/S25PW`

`@prefix school: <http://data.overheid.nl/ocw/school/>.`  
`school:S25PW`

# Subject

- ✱ Use **HTTP URIs** so that people can look up those names

<http://data.overheid.nl/ocw/school/S25PW>



# Subject

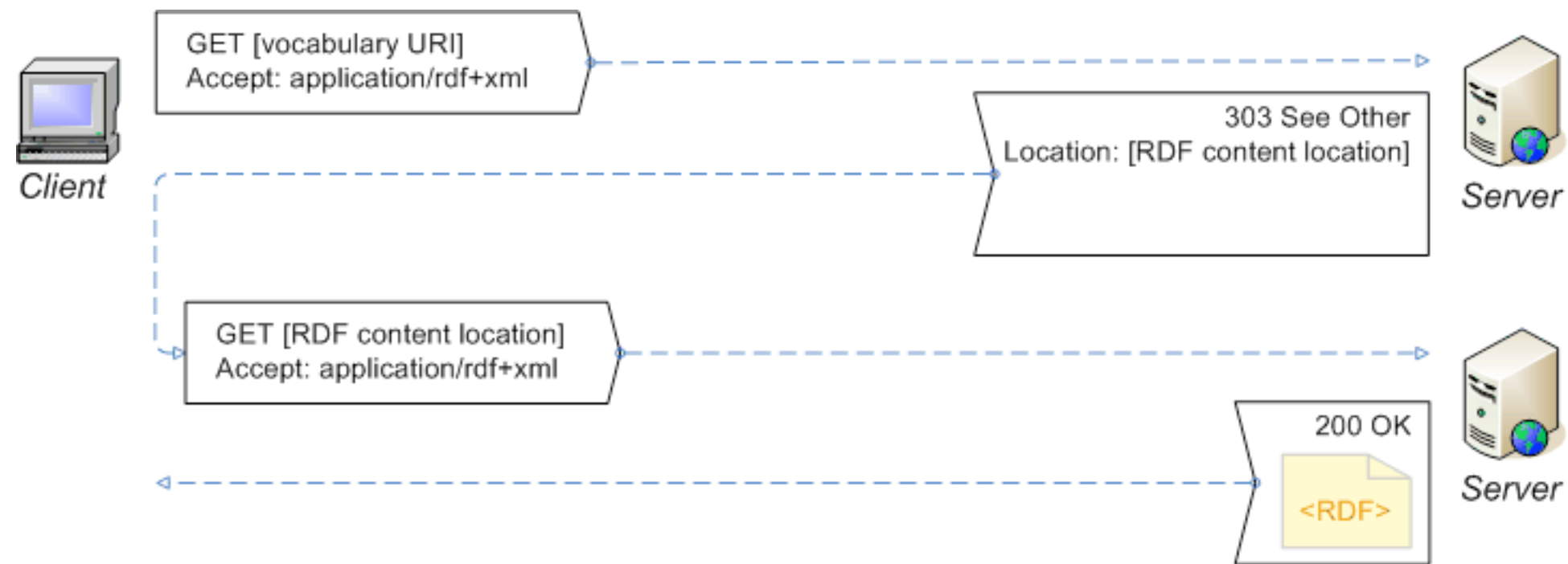
- ✱ Use **HTTP URIs** so that people can look up those names

<http://data.overheid.nl/ocw/school/S25PW>



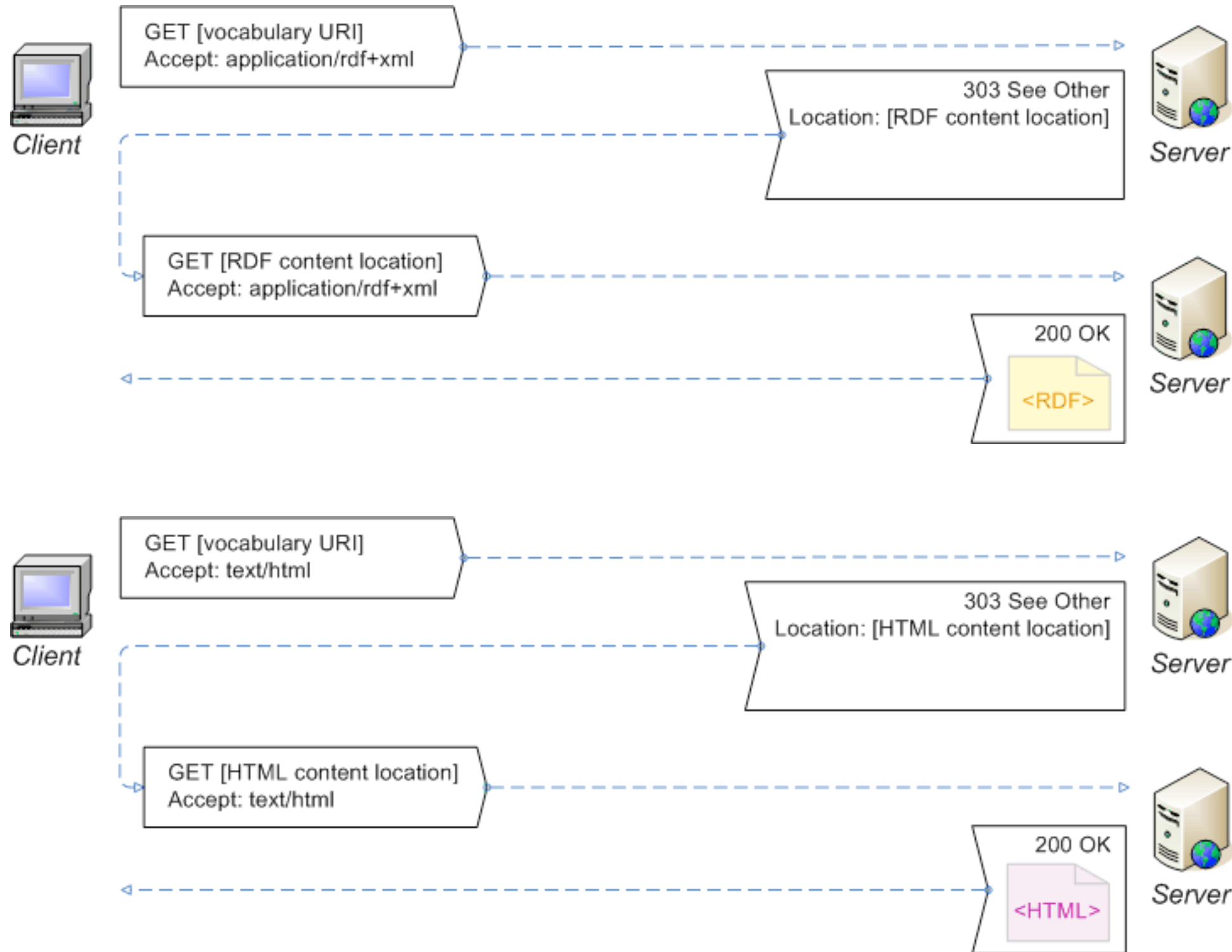
# Subject

# Subject





# Subject



```
1. bash
</head><body>
<h1>See Other</h1>
<p>The answer to your request is located <a href="http://localhost/Bedrijf.html"
>here</a>.</p>
</body></html>
Macintosh-9:~ paul$ curl -H "accept:application/rdf+xml" http://localhost/Bedrij
f
<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html><head>
<title>303 See Other</title>
</head><body>
<h1>See Other</h1>
<p>The answer to your request is located <a href="http://localhost/Bedrijf.rdf">
here</a>.</p>
</body></html>
Macintosh-9:~ paul$ curl -H "accept:text/turtle" http://localhost/Bedrijf
<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html><head>
<title>303 See Other</title>
</head><body>
<h1>See Other</h1>
<p>The answer to your request is located <a href="http://localhost/Bedrijf.ttl">
here</a>.</p>
</body></html>
Macintosh-9:~ paul$
```



Client



Client

<HTML>

```
1. bash
</head><body>
<h1>See Other</h1>
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>here</a>.</p>
</body></html>
Macintosh-9:~ paul$ curl -H "accept:application/rdf+xml" http://localhost/Bedrij
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<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html><head>
<title>303 See Other</title>
</head><body>
<h1>See Other</h1>
```



<http://data.overheid.nl/ocw/school#S25PW>

```
Macintosh-9:~ paul$ curl -H "accept:text/turtle" http://localhost/Bedrijf
<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html><head>
<title>303 See Other</title>
</head><body>
<h1>See Other</h1>
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```



<HTML>



```
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<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html><head>
<title>303 See Other</title>
</head><body>
<h1>See Other</h1>
```

<http://data.overheid.nl/ocw/school#S25PW>

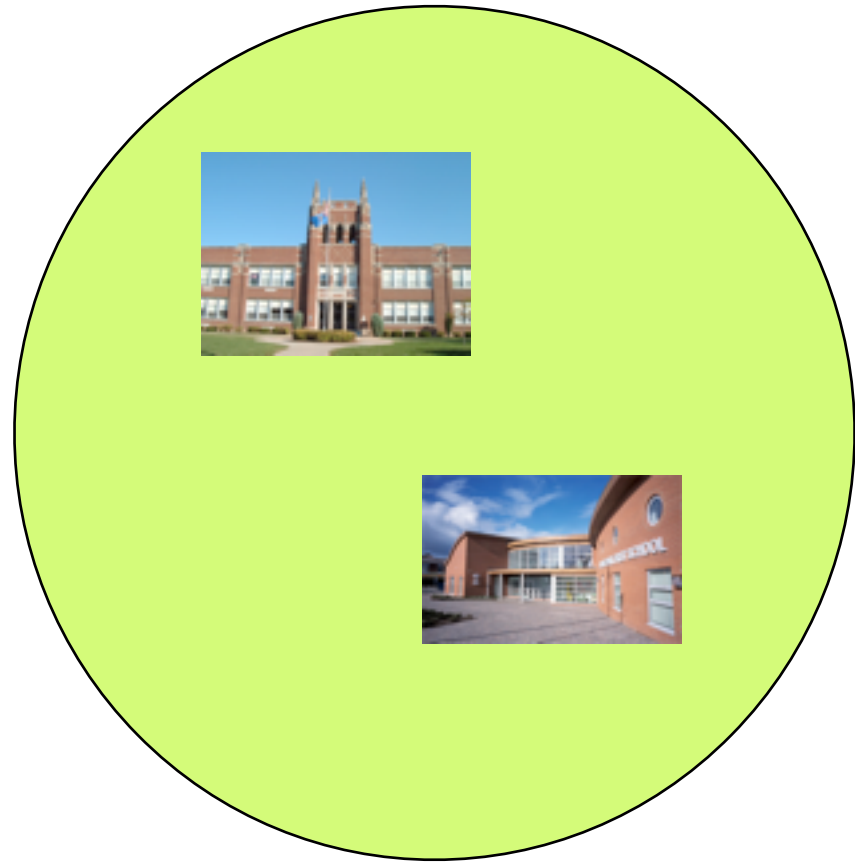
```
Macintosh-9:~ paul$ curl -H "accept:text/turtle" http://localhost/Bedrijf
<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
```

<http://data.overheid.nl/ocw/school/S25PW#thing>

```
<h1>See Other</h1>
<p>The answer to your request is located <a href="http://localhost/Bedrijf.ttl">
here</a>.</p>
</body></html>
Macintosh-9:~ paul$
```

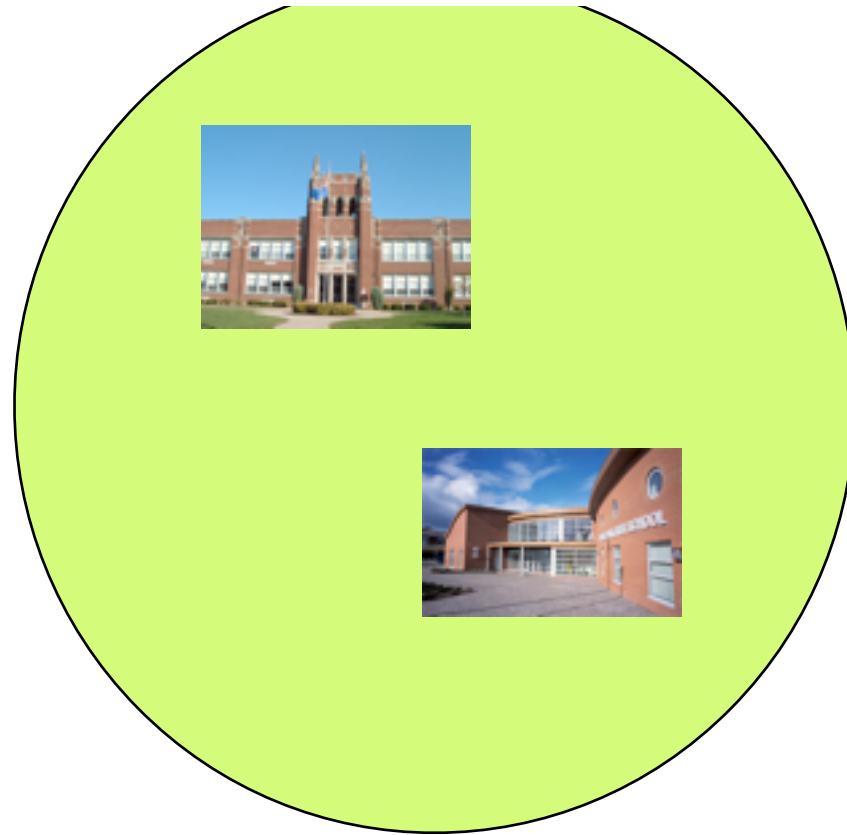
<HTML>

# Classes



# Classes

<http://data.overheid.nl/ocw/vocab#School>





# http://data.overheid.nl/ocw/vocab#School

school Search

20 results in 10 vocabularies

Filter by Domain

- City (6)
- General and Meta (5)
- Library (4)
- Market (0)
- Media (0)
- Science (3)
- Web (1)
- Where & When (0)

Filter by Type

- owl:Class

Filter by Vocabulary (10)

- poder (4)
- pext (4)
- vivo (3)
- opus (2)

vivo:School (owl:Class)	score:0.662	>>
rdfs:label School @en-us		
<a href="http://vitro.mannlib.cornell.edu/ns/vitro/0.7#descriptionAnnot...">http://vitro.mannlib.cornell.edu/ns/vitro/0.7#descriptionAnnot...</a> eference.com/browse/school.		
<a href="http://vitro.mannlib.cornell.edu/ns/vitro/0.7#exampleAnnot">http://vitro.mannlib.cornell.edu/ns/vitro/0.7#exampleAnnot</a> School of Architecture; Sc...		
opus:School (owl:Class)	score:0.662	>>
rdfs:label School		
pext:School (owl:Class)	score:0.662	>>
rdfs:label School @en		
rdfs:comment ... could be a primary school, or a secondary sch... @en		
lgdo:School (owl:Class)	score:0.662	>>
rdfs:label School @en		
schema:Organization (owl:Class)	score:0.175	>>
rdfs:comment ...anization such as a school, NGO, corporation, ... @en		
pext:University (owl:Class)	score:0.075	>>
rdfs:comment ...ization higher than school. @en		



<http://data.overheid.nl/ocw/vocab#School>

school Search

Filter by Domain

- City (6)
- General and Meta (5)

20 results in 10 vocabularies

vivo:School (owl:Class)	score:0.662
rdfs:label School @en-us	

<http://www.ontotext.com/proton/protonext#School>

Web (1)  
Where & When (0)

Filter by Type

- owl:Class

Filter by Vocabulary (10)

- poder (4)
- pext (4)
- vivo (3)
- opus (2)

rdfs:label School	
pext:School (owl:Class)	score:0.662
rdfs:label School @en	>>
rdfs:comment ... could be a primary school, or a secondary sch... @en	
lgdo:School (owl:Class)	score:0.662
rdfs:label School @en	>>
schema:Organization (owl:Class)	score:0.175
rdfs:comment ...anization such as a school, NGO, corporation, ... @en	>>
pext:University (owl:Class)	score:0.075
rdfs:comment ...ization higher than school. @en	>>





Linked Open Vocabularies (LOV)



<http://data.overheid.nl/ocw/vocab#School>

school Search

Filter by Domain

- City (6)
- General and Meta (5)

20 results in 10 vocabularies

vivo:School (owl:Class)	score:0.662
rdfs:label School @en-us	

<http://www.ontotext.com/proton/protonext#School>

Web (1)

Where & When (0)

Filter by Type

- owl:Class

Filter by Vocabulary (10)

- poder (4)
- pext (4)
- vivo (3)
- opus (2)

rdfs:label School	
pext:School (owl:Class)	score:0.662
rdfs:label School @en	
rdfs:comment ... could be a primary school, or a secondary sch... @en	
lgdo:School (owl:Class)	score:0.662
rdfs:label School @en	
schema:Organization (owl:Class)	score:0.175
rdfs:comment ...anization such as a school, NGO, corporation, ... @en	
pext:University (owl:Class)	score:0.075
rdfs:comment ...ization higher than school. @en	

`ocw:School rdfs:subClassOf pext:School`

# Predicate

<b>B</b>
<b>Predicate</b>
Provincie
BevoegdGezag
Brin Nummer
InstellingsNaam
GemeenteNummer
GemeenteNaam
BBL
BOLDT
BOLVT
Provincie
BevoegdGezag

# Predicate

B
Predicate
Provincie
BevoegdGezag
Brin Nummer
InstellingsNaam
GemeenteNummer

<http://data.overheid.nl/ocw/vocab#brinnummer>

Provincie
BevoegdGezag

# Predicate

B
<b>Predicate</b>
Provincie
BevoegdGezag
Brin Nummer
InstellingsNaam
GemeenteNummer

<http://data.overheid.nl/ocw/vocab#brinnummer>

Provincie
-----------

<http://purl.org/dc/terms/identifier>

# Predicate

B
Predicate
Provincie
BevoegdGezag
Brin Nummer
InstellingsNaam
GemeenteNummer

<http://data.overheid.nl/ocw/vocab#brinnummer>

Provincie
-----------

<http://purl.org/dc/terms/identifier>

`ocw:binnummer rdfs:subPropertyOf dct:identifier`

# Object

- \* atomair
- \* reference to entity

```
school:S25PW a owc:School ;  
  dct:identifier "25PW" ;  
  owc:bb1 "2525"^^xsd:int ;  
  dct:spatial <http://standaarden.overheid.nl/owms/terms/Emmen\_\(gemeente\)> ;  
  dct:title "ROC Drenthe College"@nl .
```

# Value vocabularies

[Home](#) > OWMS

## overheid:Doetinchem

### Waarden

Label	Naam term	URI
-------	-----------	-----

### Schema

<b>URI</b>	<a href="http://standaarden.overheid.nl/owms/terms/Doetinchem">http://standaarden.overheid.nl/owms/terms/Doetinchem</a>
<b>rdf:type</b>	<a href="http://standaarden.overheid.nl/owms/terms/Gemeente">http://standaarden.overheid.nl/owms/terms/Gemeente</a>

# Value vocabularies

[Home](#) > OWMS

overheid:Doetinchem

## Waarden

Label	Naam term	URI
-------	-----------	-----

## Schema

<b>URI</b>	<a href="http://standaarden.overheid.nl/owms/terms/Doetinchem">http://standaarden.overheid.nl/owms/terms/Doetinchem</a>
<b>rdf:type</b>	<a href="http://standaarden.overheid.nl/owms/terms/Gemeente">http://standaarden.overheid.nl/owms/terms/Gemeente</a>



DEFINE VALUE VOCABULARIES



# Value vocabularies

[Home](#) > OWMS

overheid:Doetinchem

## Waarden

Label	Naam term	URI
-------	-----------	-----

## Schema

URI	<a href="http://standaarden.overheid.nl/owms/terms/Doetinchem">http://standaarden.overheid.nl/owms/terms/Doetinchem</a>
rdf:type	<a href="http://standaarden.overheid.nl/owms/terms/Gemeente">http://standaarden.overheid.nl/owms/terms/Gemeente</a>



DEFINE VALUE VOCABULARIES



ESTABLISH A RECONCILIATION SERVICE

# Conclusion

# Conclusion

- \* Not there yet!
  - having RDF
  - how to publish?

# Conclusion

- \* Not there yet!
  - having RDF
  - how to publish?
- \* Learned:
  - URI for subject
  - vocab
    - .. URI for classes
    - .. URI for predicates
  - objects
    - .. reconcile against authority lists