

Information Exchange: Using Semantic Web Technologies in Plone

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Information Exchange and Semantic Web

Goal

Import and export information to and from the
Mathematics Institute Plone information system
(*Infomatem*)



Instituto de
Matemáticas UNAM



Gil will talk about more
thoroughly tomorrow.

A yellow sticky note with a close button (an 'x' in a circle) in the top right corner and a small icon in the bottom right corner. The text on the note is in a black, sans-serif font.

Background

Infomatem

Infomatem

- Academic and administrative staff personal information.

Infomatem

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- Courses, CV, Articles, Projects and Publications of the academic staff.

Infomatem

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- Information about activities, newsletters, seminars, congresses, etc.

Infomatem

- Academic and administrative staff personal information.
- Courses, CV, Articles, Projects and Publications of the academic staff.
- Information about activities, newsletters, seminars, congresses, etc.
- Used for over 4 years.


UNAM

UNAM

- National Autonomous University of Mexico:
 - * 315,000 students
 - * 35,000 staff members
 - * 100+ departments.

Departments

- Each has its own system:
 - Information structure.
 - Staff.
 - Priorities.
- Problems across systems:
 - Data redundancy.
 - No one knows who has the original data.
 - Slim to none communication.



hair pulling, angry phone
calls, ball kicking

We said:



Problem

- Need to share academic information between departments.
- Things like: courses given, CV, publications and personal information.
- At present there is no automated and reliable way of doing this.

Solution

Requirements

Requirements

- Standard communication protocols.

Requirements

- Standard communication protocols.
- A common language.

Requirements

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- A common language.
- Ease of use.

Requirements

- Standard communication protocols.
- A common language.
- Ease of use.
- Security support.

Properties

Information Structure

- How information is stored and organized in each system.
- Don't want to care about it.
- Depending on structure limits the solution.

Data consistency

- Avoid outdated data.
- Avoid multiple copies of the same data.
- Have an easy way to update when data changes.

Scalability

- Little to no modification if we want to add new data to the communication.
- And if we have new partakers in the information exchange.

Solution Overview

Application Layer
Uses the data uniformly
Not caring about the Data Layer

Connection Layer
Connects and abstracts data

Data Layer
Data resources

Our Choice: Semantic Web

What is it?

- It's a W3C standard built on W3C standards.
- Development tools already coded.

Semantic Web Overview

URI

- Uniform Resource identifier.
- Gives unique names.
- Resource location.

URI/IRI

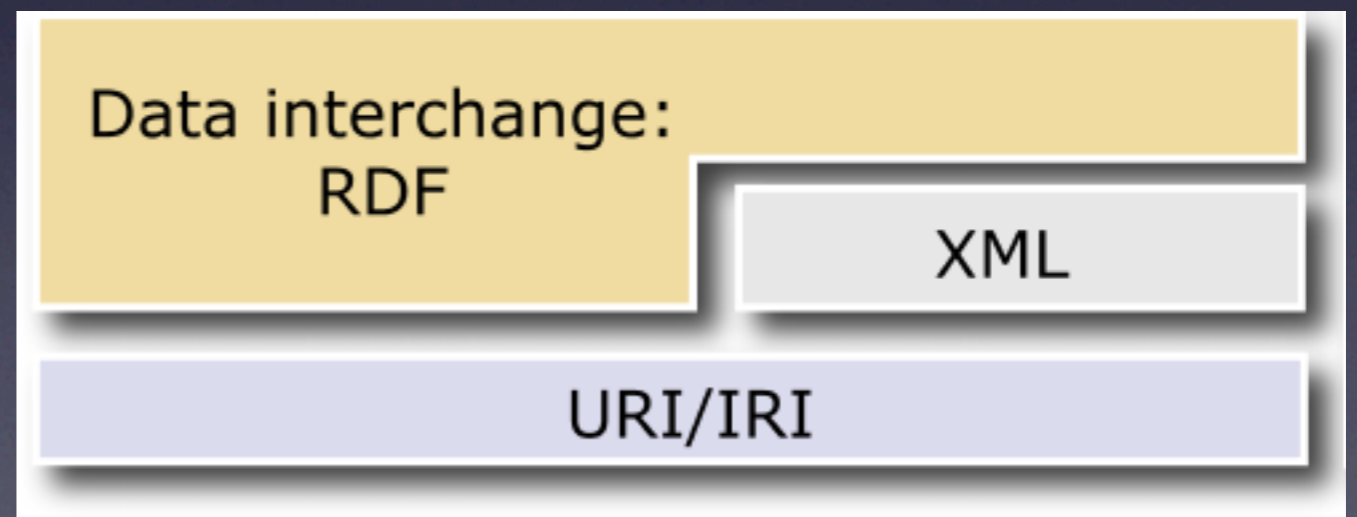
XML

- eXtensible Markup Language
- Gives a well defined syntax.
- Universality across systems.
- Helps extend the language.



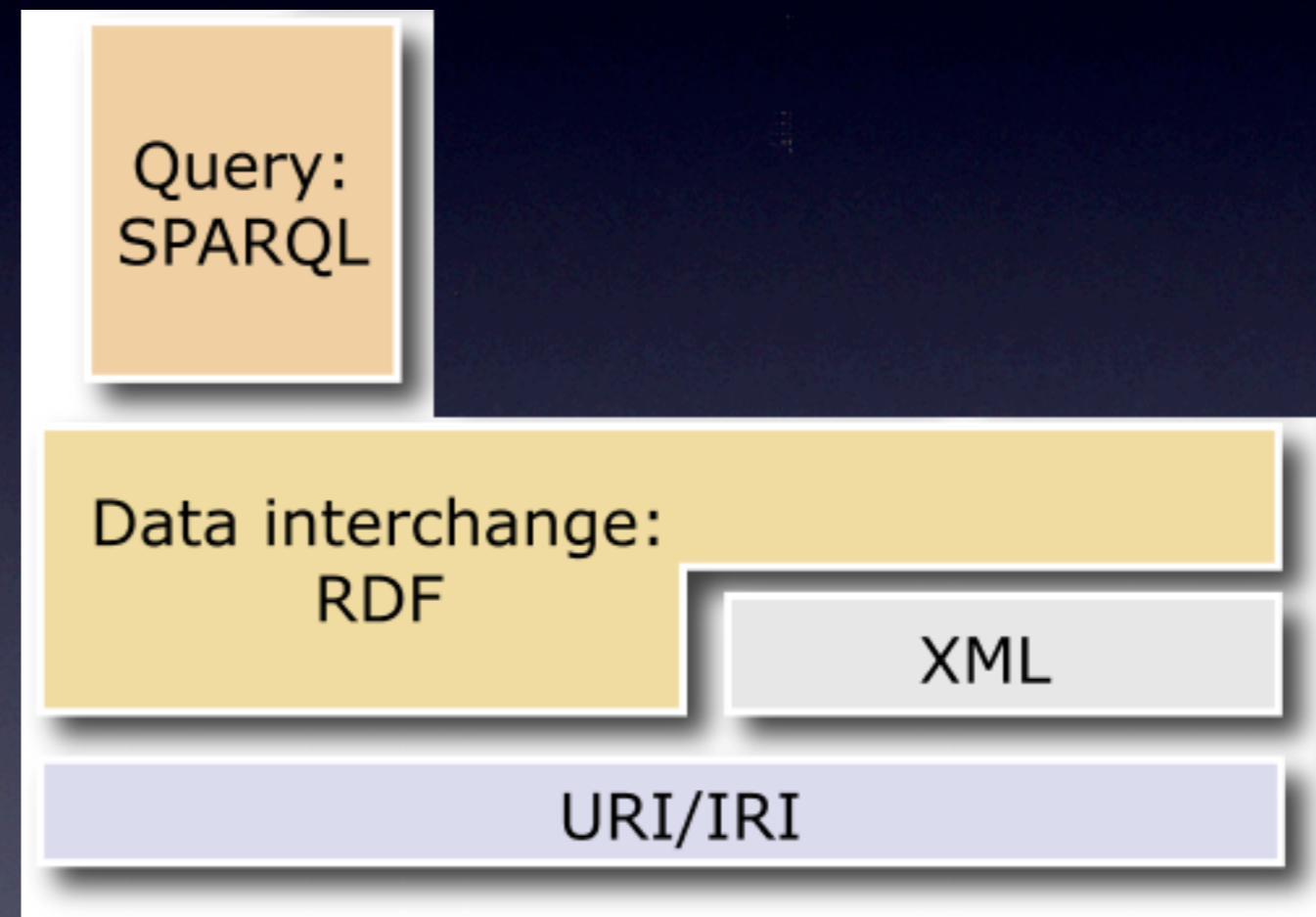
RDF

- Resource Description Framework.
- Information represented in statements made of triples.
- 3 parts: subject, predicate and object.
- Creates a directed graph.



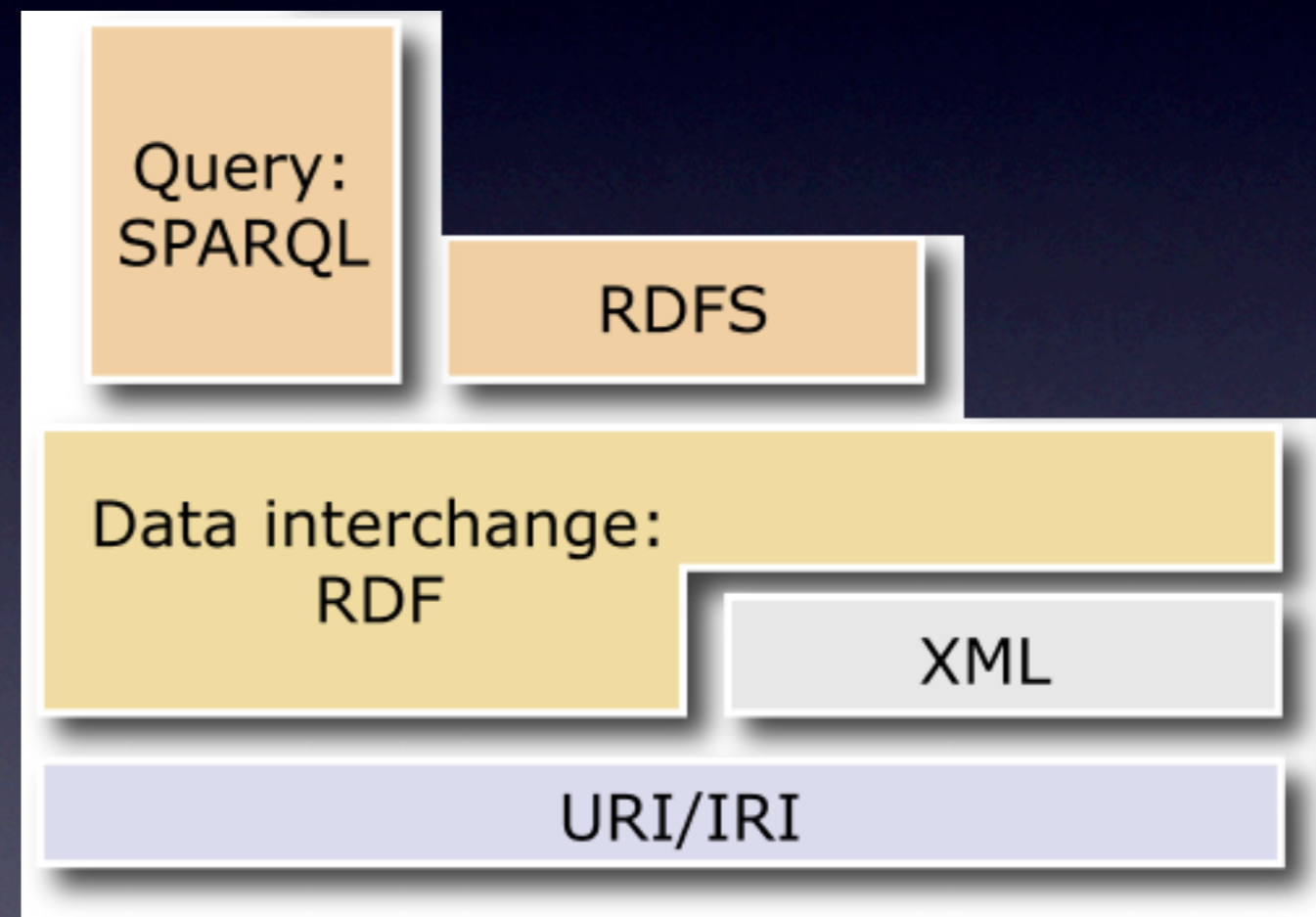
SPARQL

- SPARQL Protocol And RDF Query Language.
- SQL like language used to search data across the semantic web.
- Takes advantage of the graphs generated by RDF.



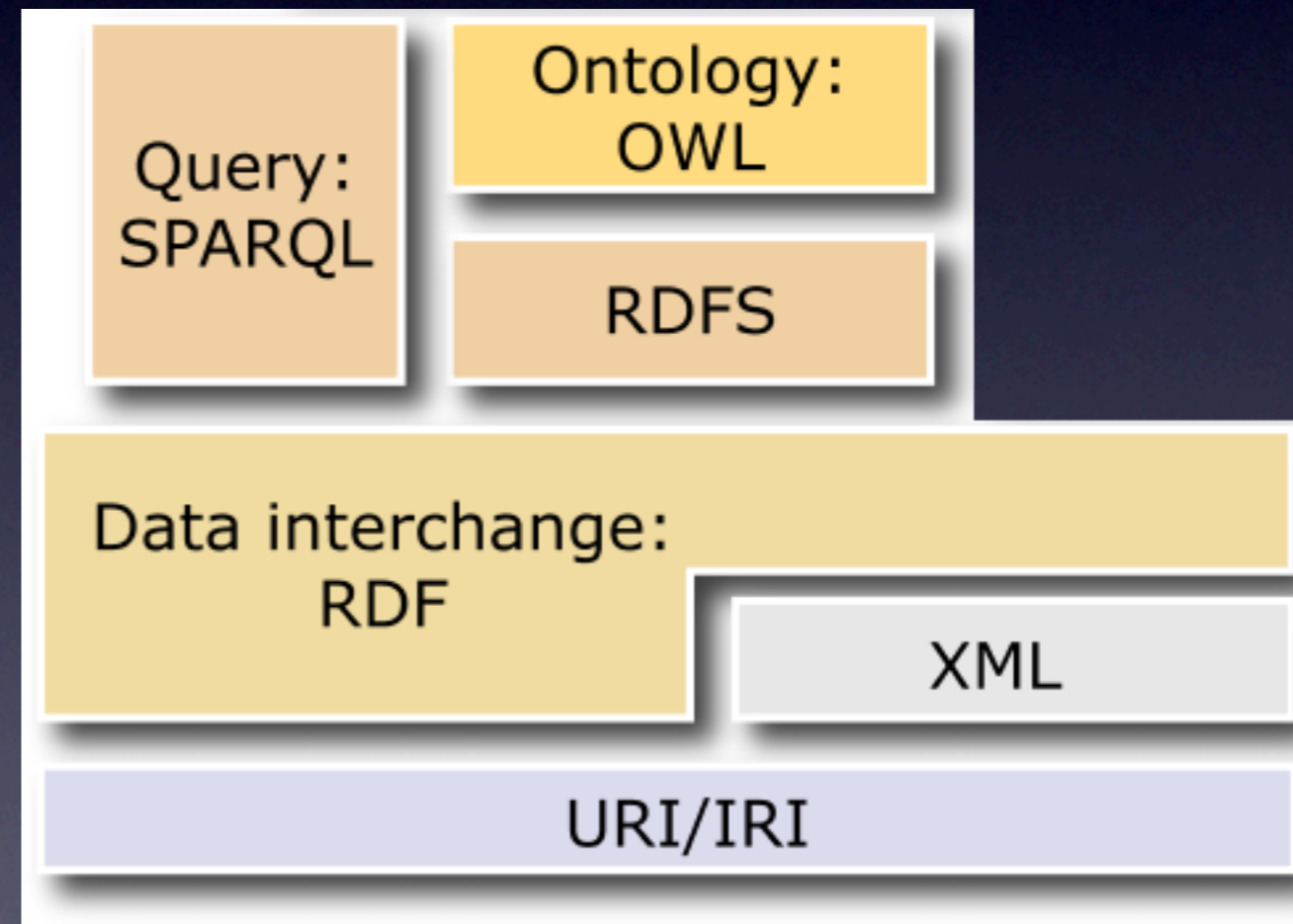
RDFS

- RDF Schema
- A set of RDF statements that describe things.
- Based on classes and properties, we create vocabularies.



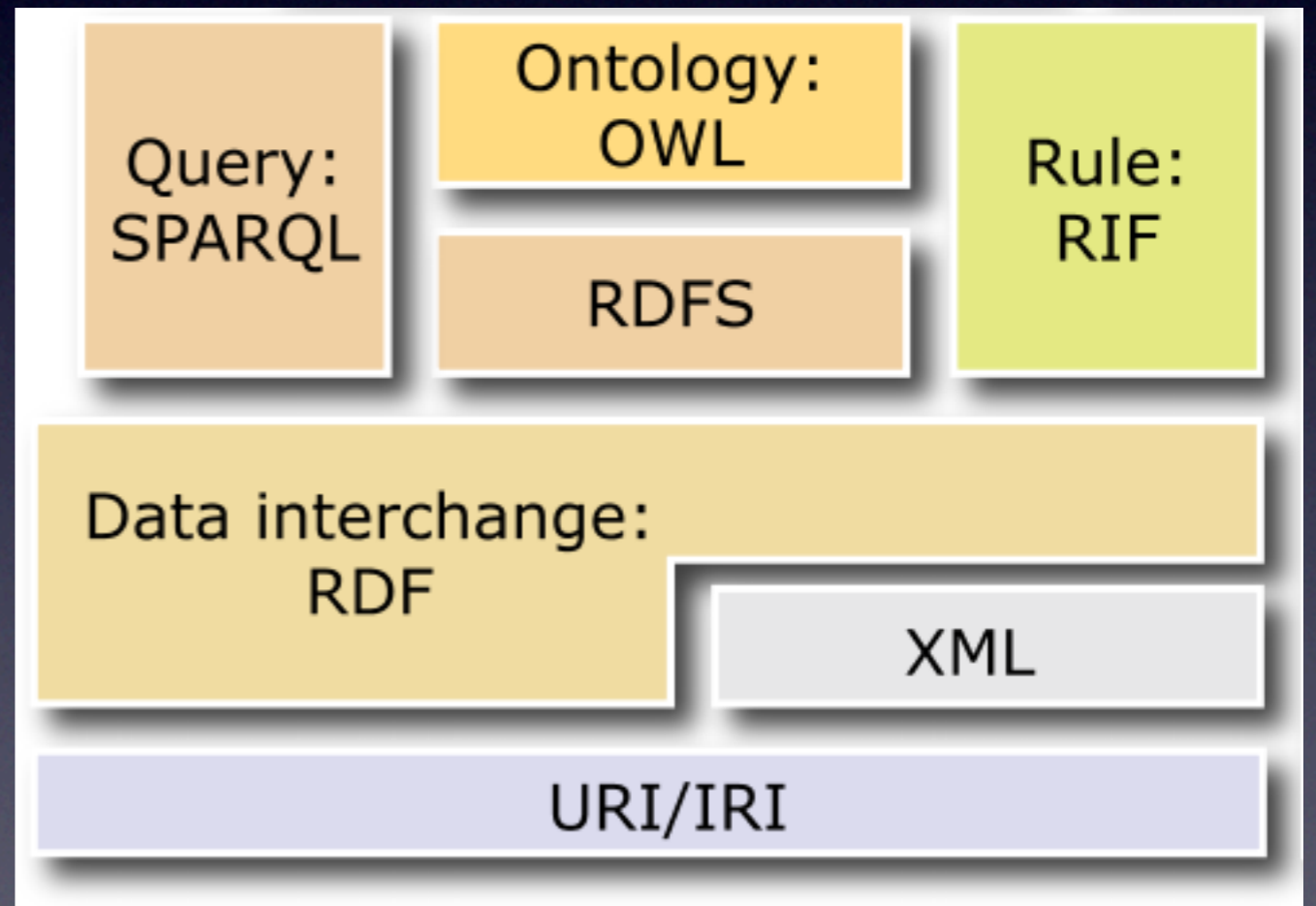
OWL

- Web Ontology Language.
- Allows for more complicated descriptions.
- Membership, equivalence and uniqueness properties.



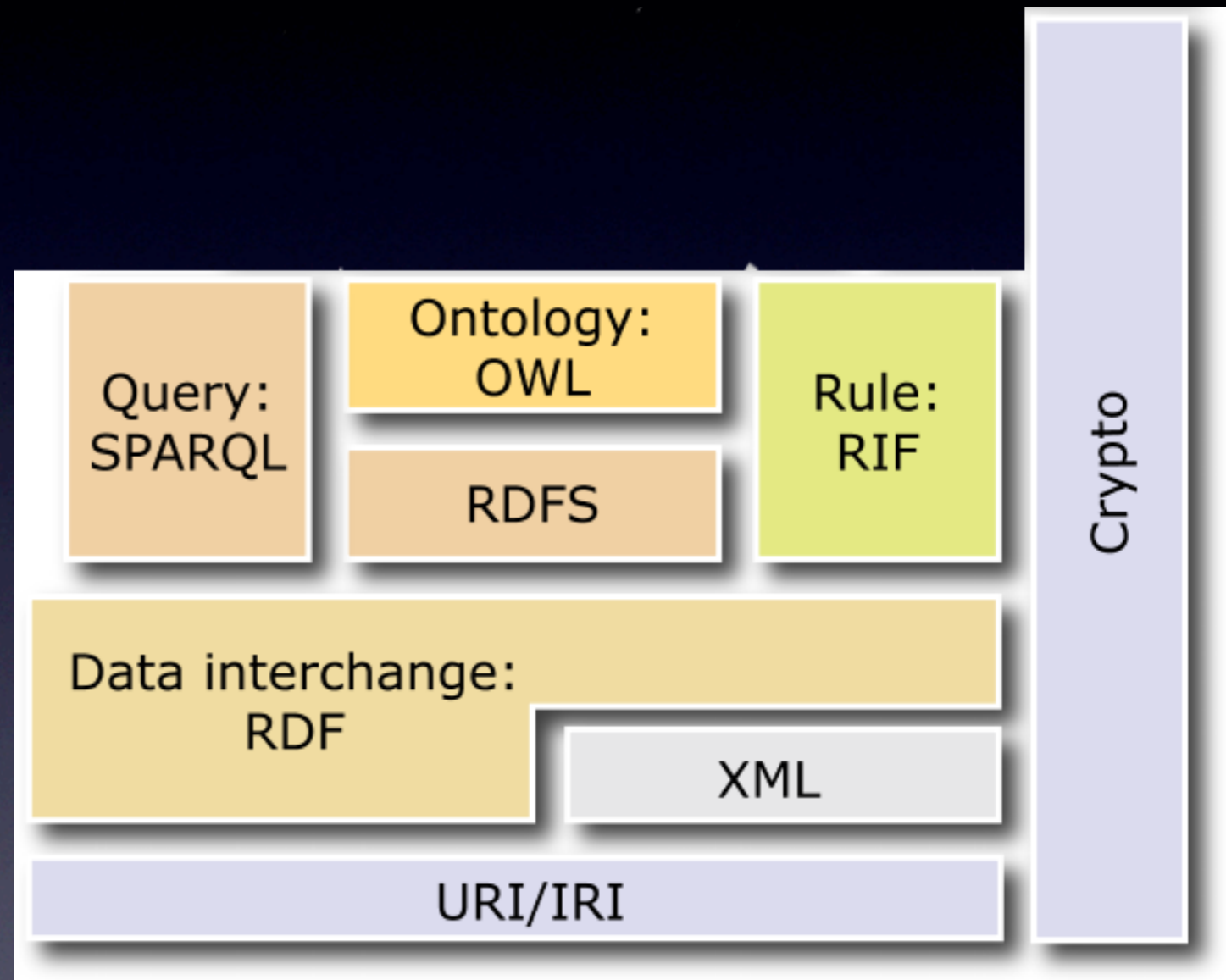
RIF

- Rules Interchange Format.
- A language used to create RDF statements dynamically.
- Based on logic programming languages.



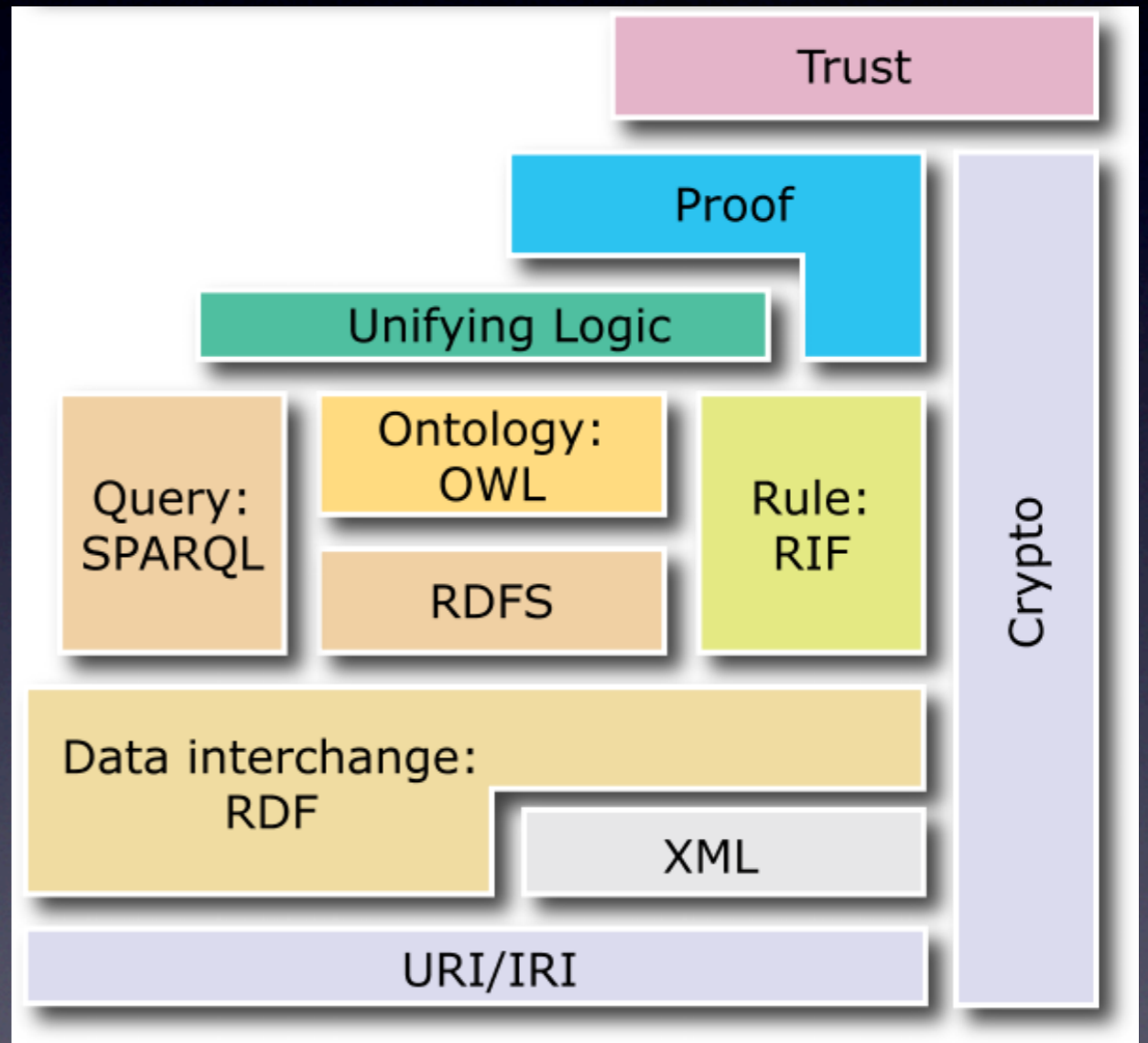
Encryption

- Support for private descriptions.
- Compatible with https.
- Support for encrypted SPARQL queries.



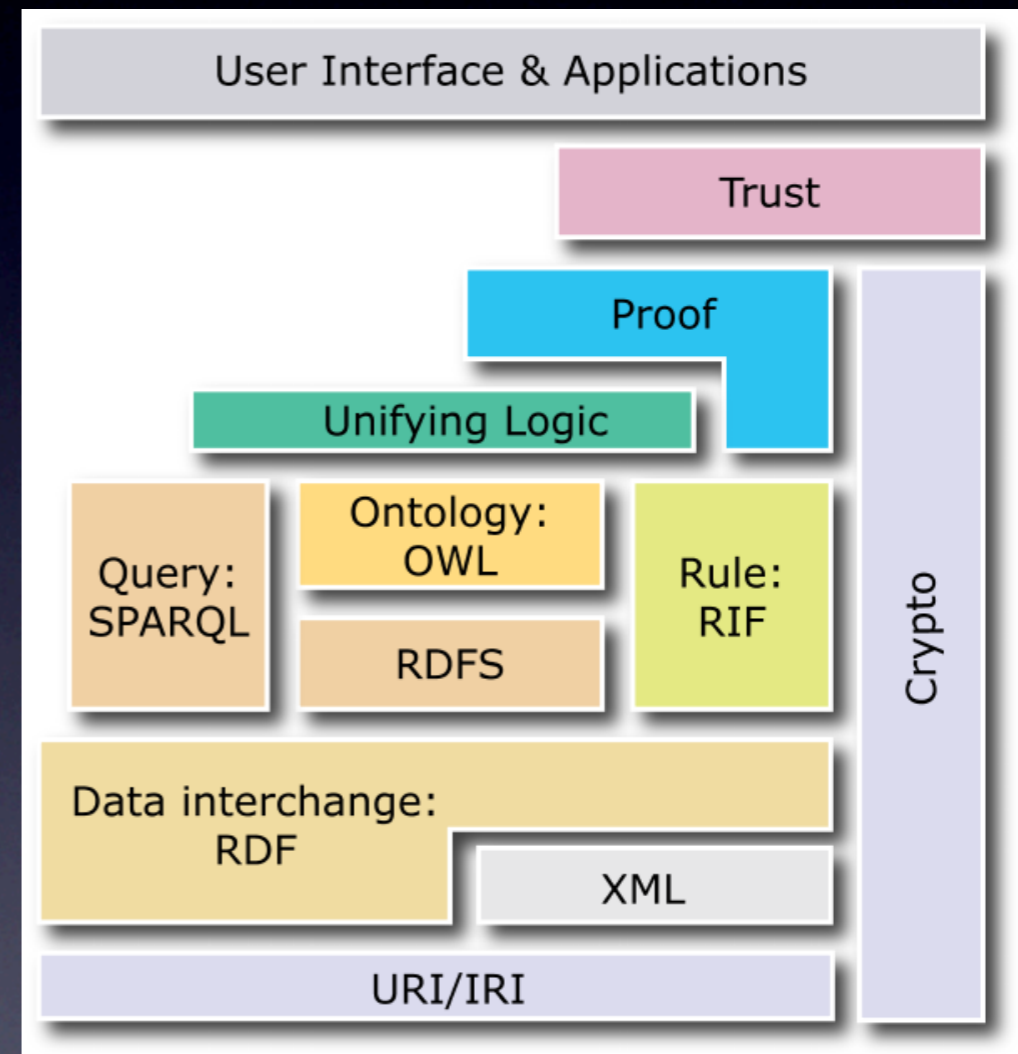
Logic, Proof, Trust


- Data validation.
- Proof that it makes sense.
- Trust where that data comes.



Applications

- This are the applications that apply this technologies.
- Search engines, reasoners and whatever your imagination brings.





Application Layer
Uses the data uniformly
Not caring about the Data Layer

Semantic Web Layer
Vocabularies and Descriptions

Data Layer
Data resources

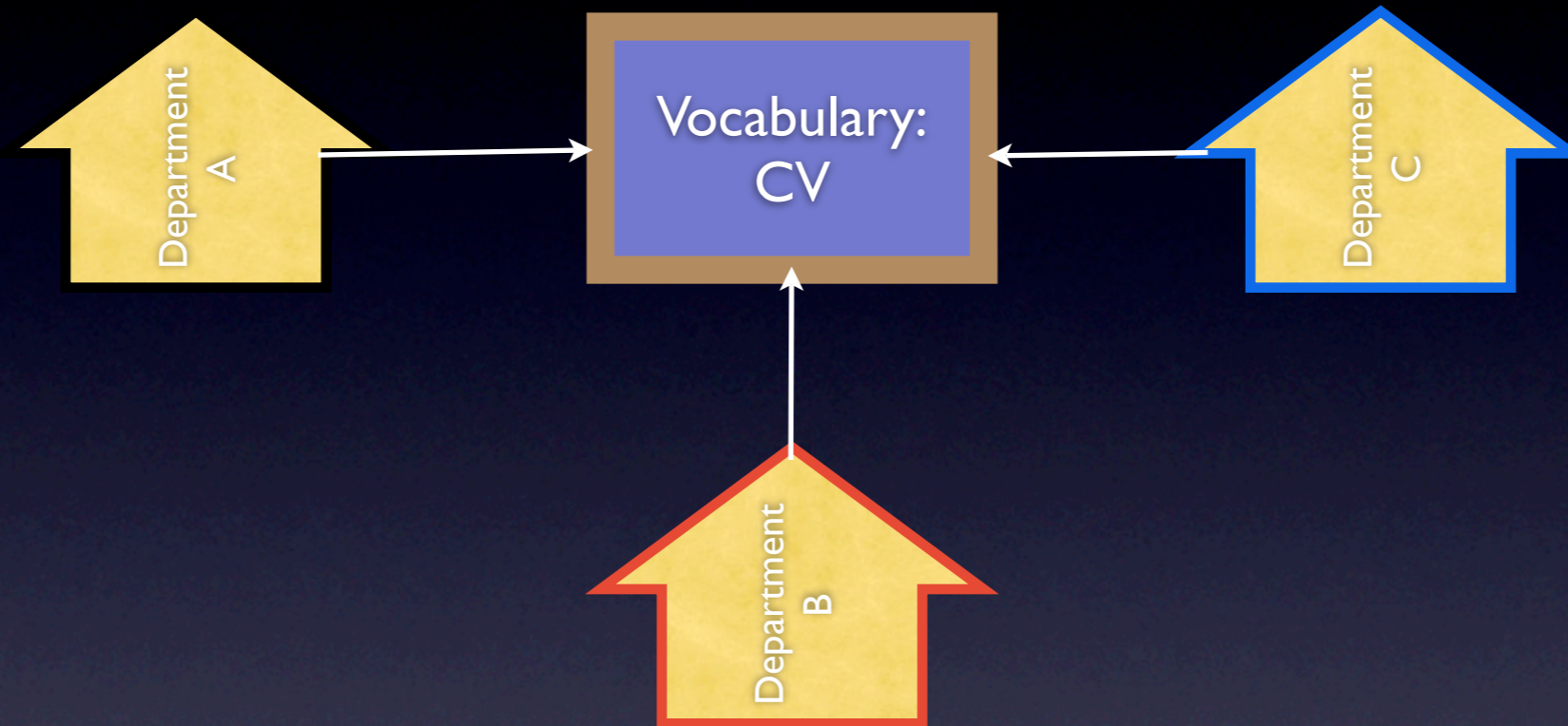
Our Solution Overview

Anyone may publish a vocabulary

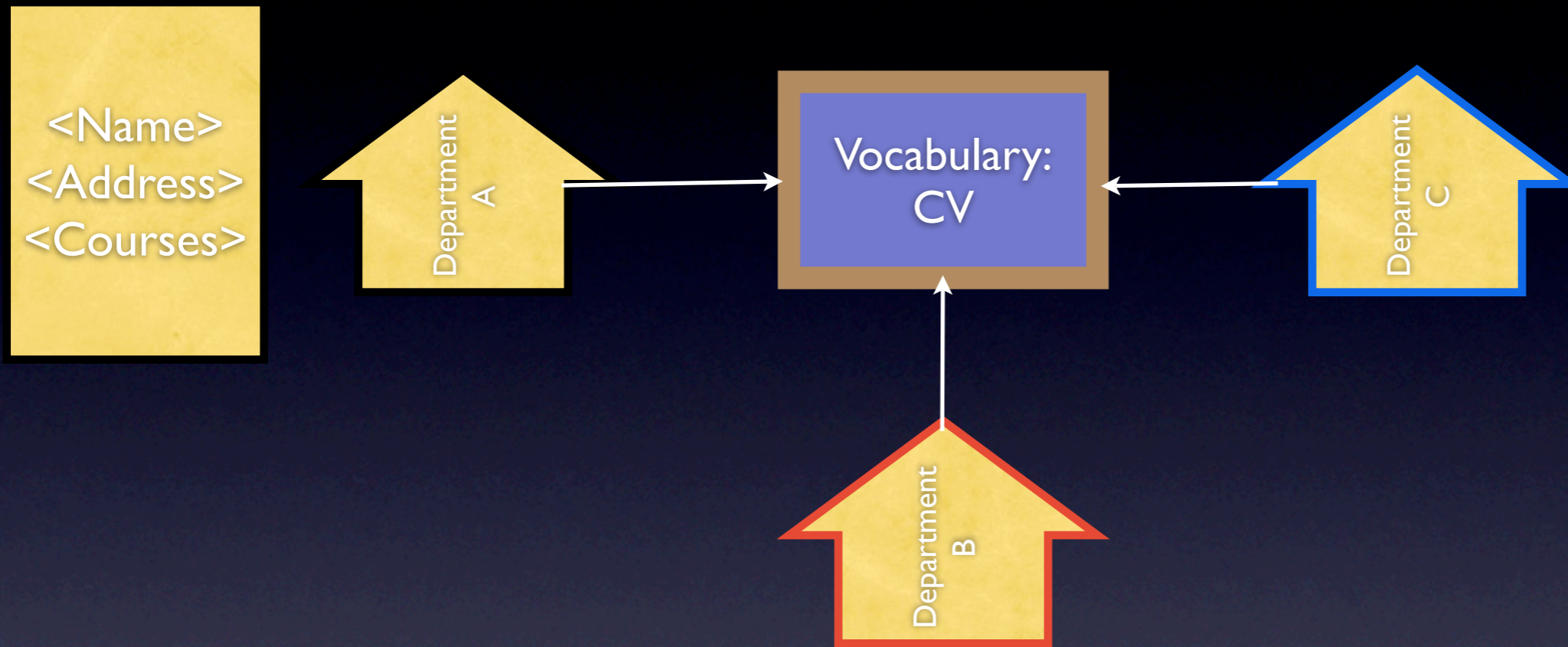


Vocabulary: CV
<Name>
<Birth Date>
<Address>
<Telephone>
<Academic Grade>
<Courses>
<Articles>
<Activities>

For example someone published a vocabulary of CV info

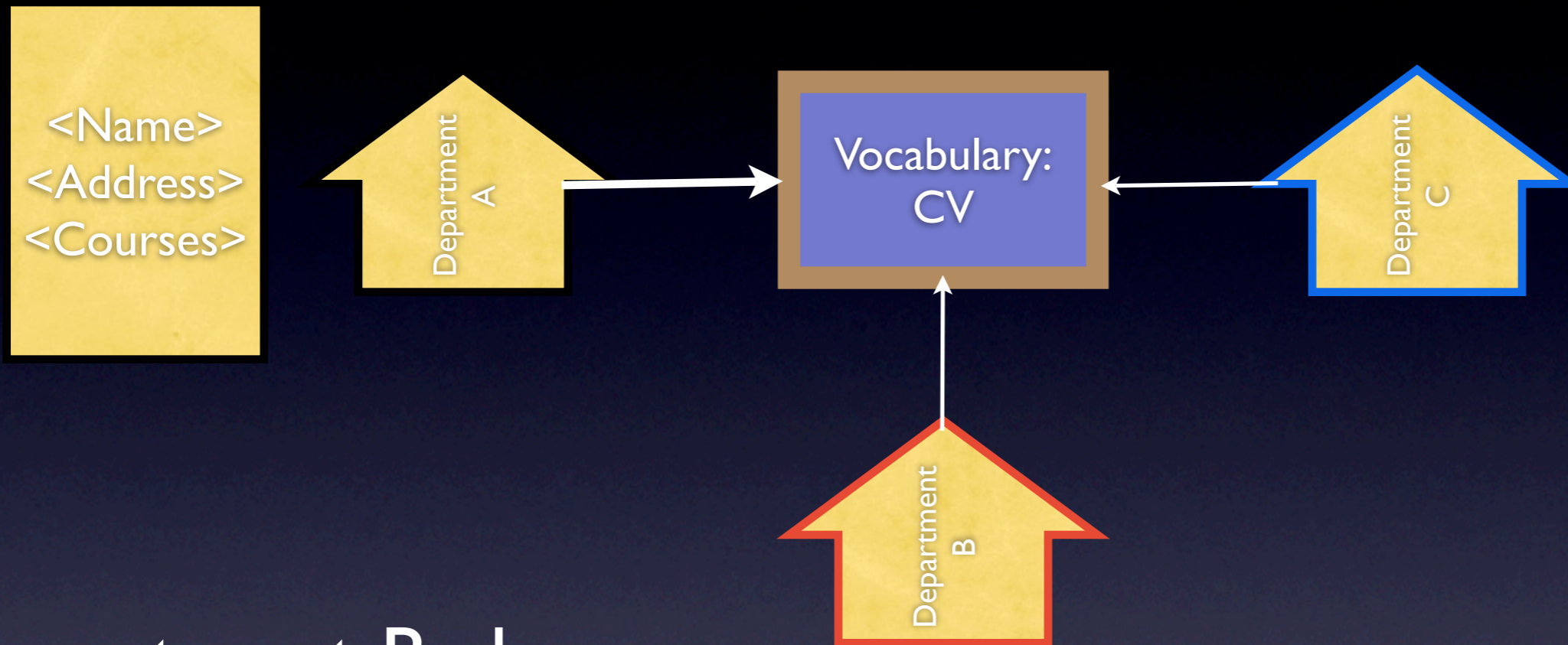


Departments look at the vocabulary and choose what fields are useful for them.



Department A chooses:

<Name>
<Address>
<Courses>



Department B chooses:

<Name>
<Telephone>
<Courses>
<Articles>

<Name>
<Telephone>
<Address>
<Courses>
<Articles>

<Name>
<Address>
<Courses>



Vocabulary:
CV



<Name>
<Address>
<Birth Date>
<Academic Grade>
<Articles>
<Articles>

Department C choose :



<Name>
<Telephone>
<Address>
<Courses>
<Articles>

<Name>
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<Birth Date>
<Academic Grade>
<Articles>
<Activities>

Vocabulary:
CV

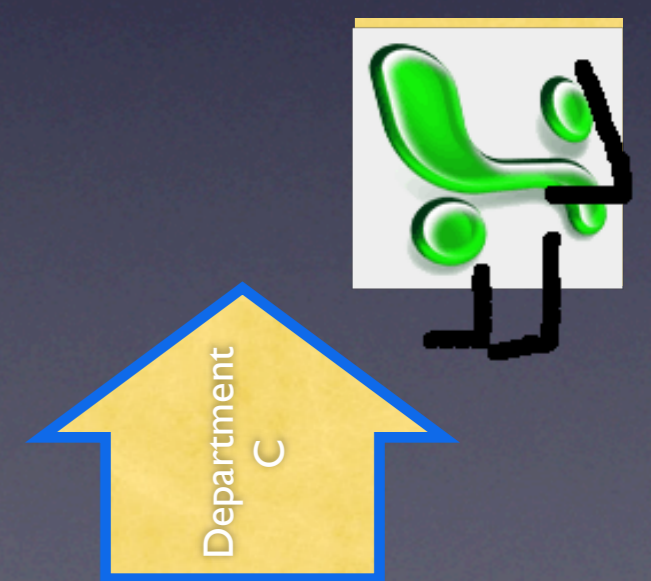
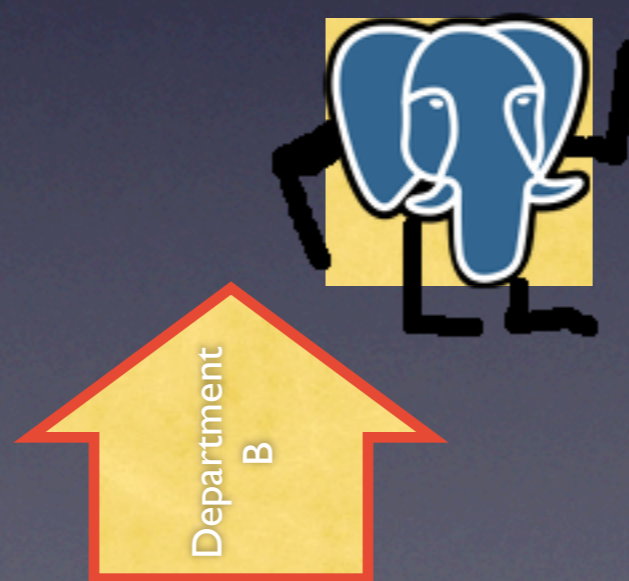
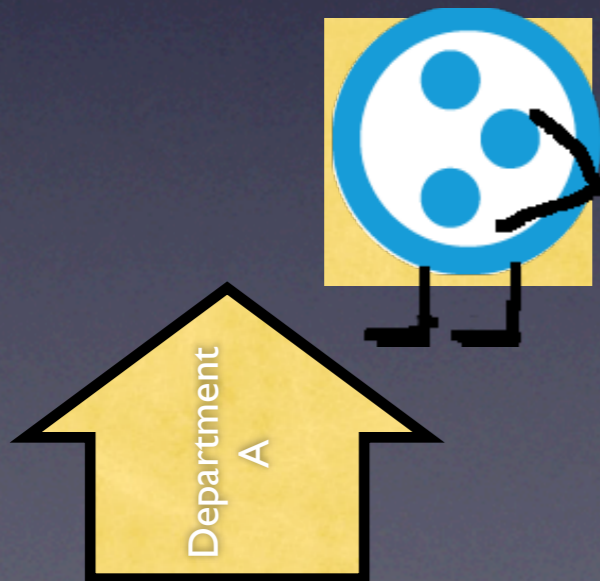
Semantic Web Layer

Each department publishes their info in RDF standard despite the information system

Dep. A
RDF data

Dep. B
RDF data

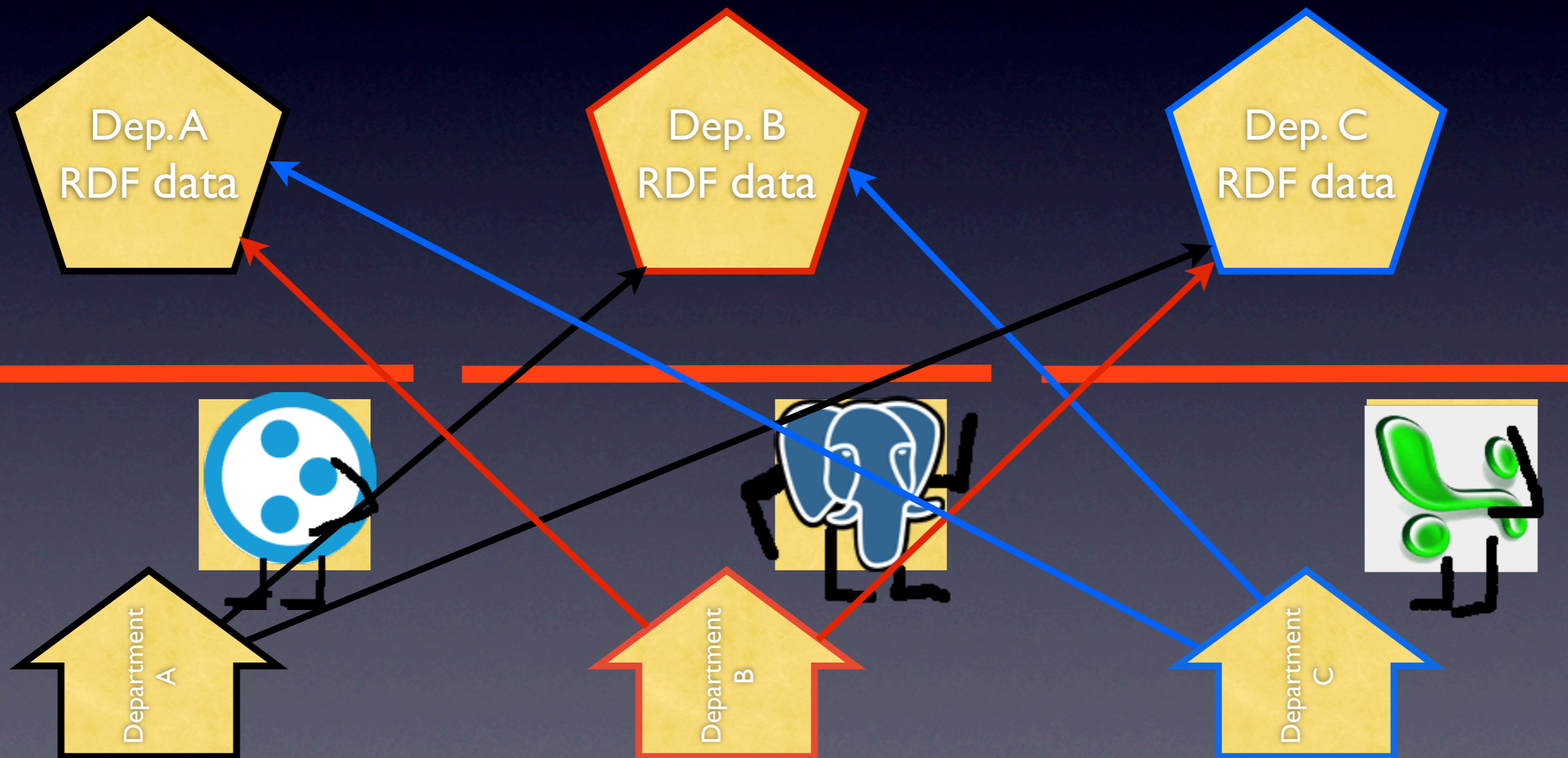
Dep. C
RDF data

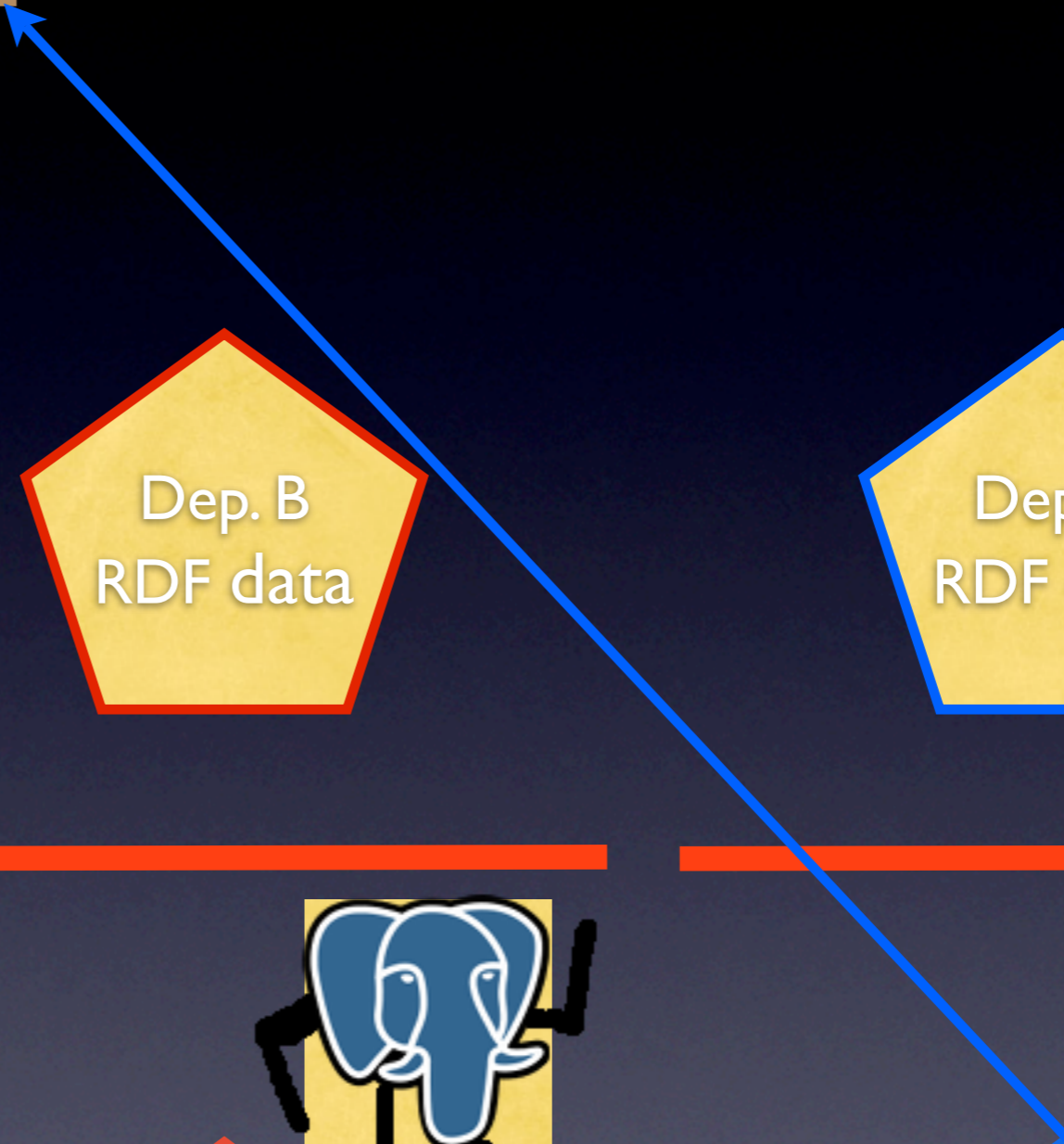
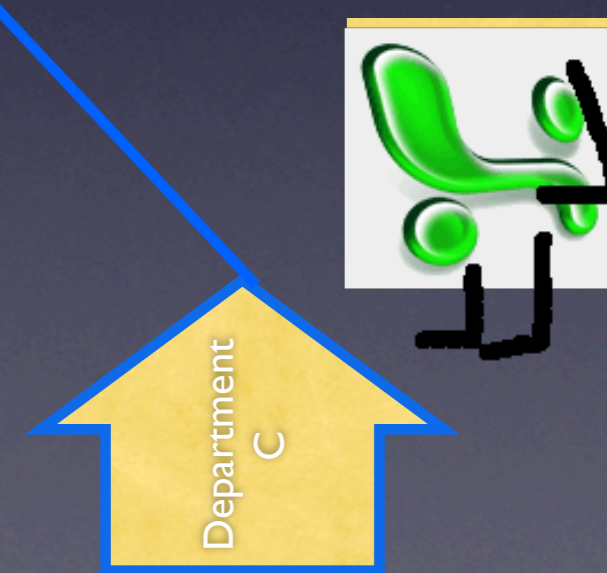
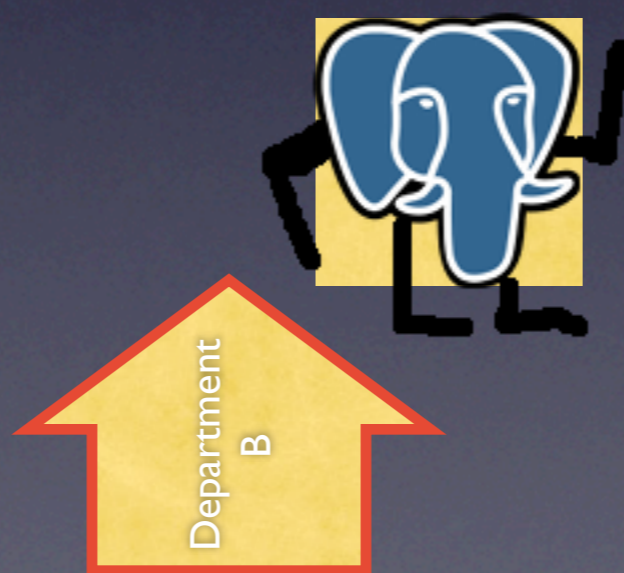
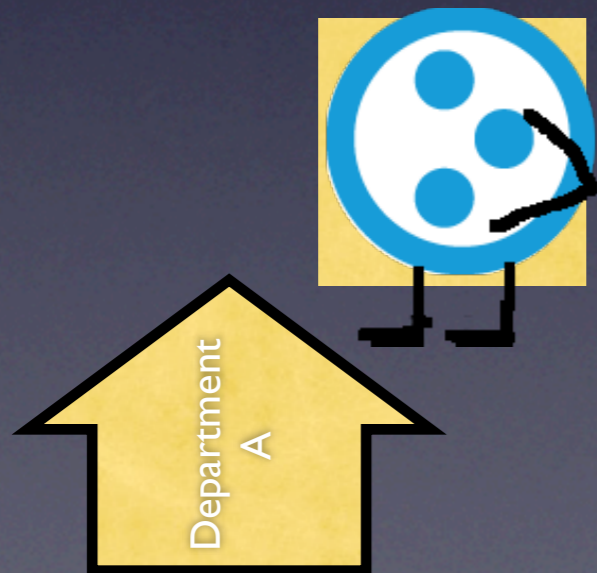
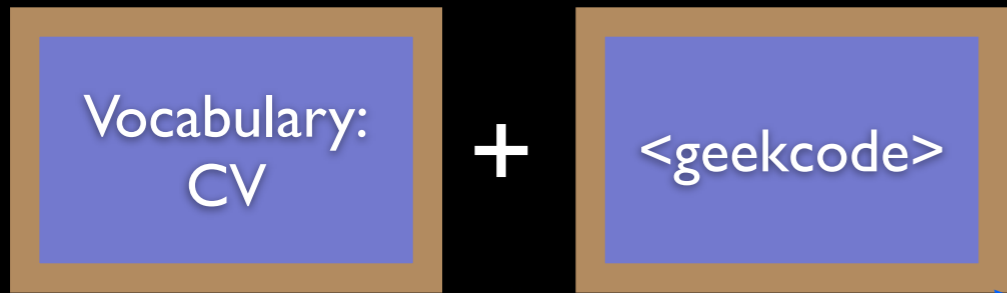


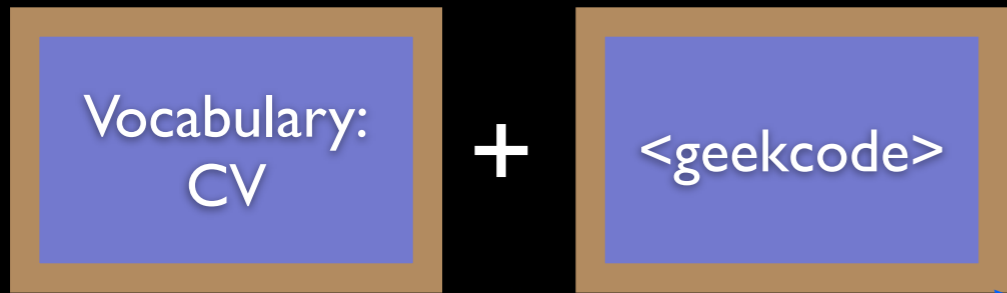
Vocabulary:
CV

Semantic Web Layer

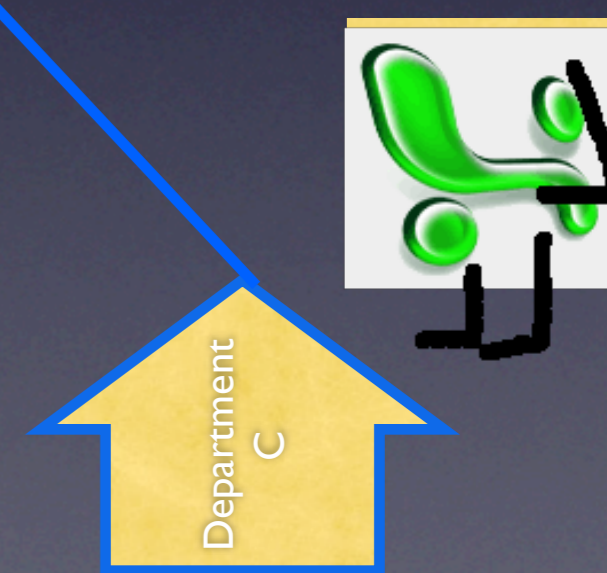
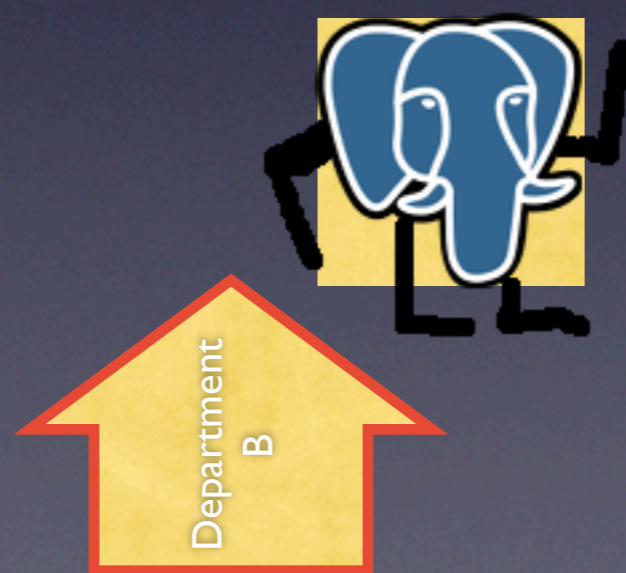
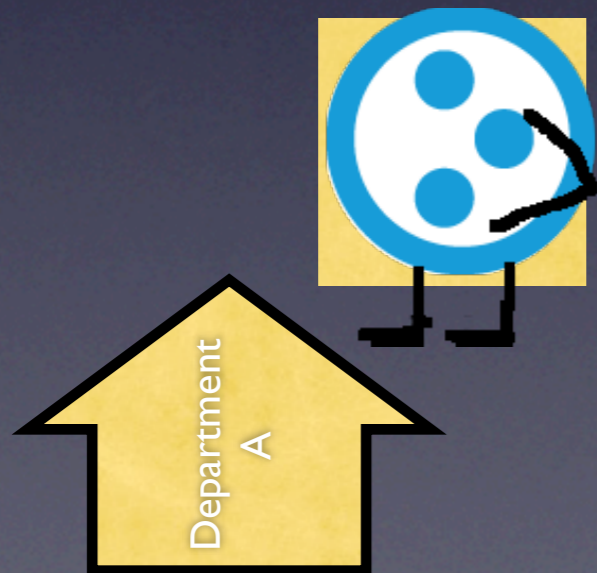
Departments exchange data through
Semantic Web Layer

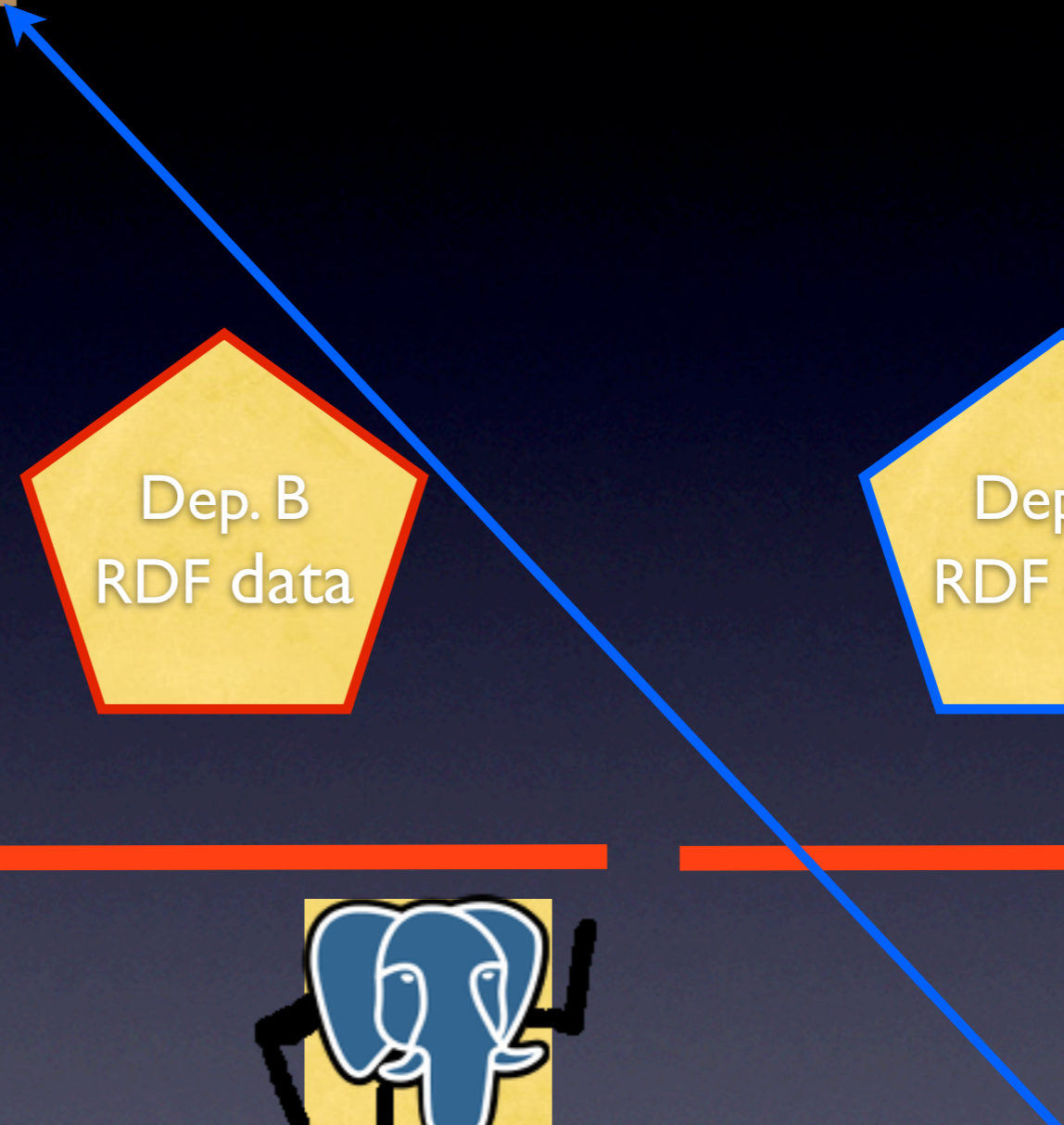
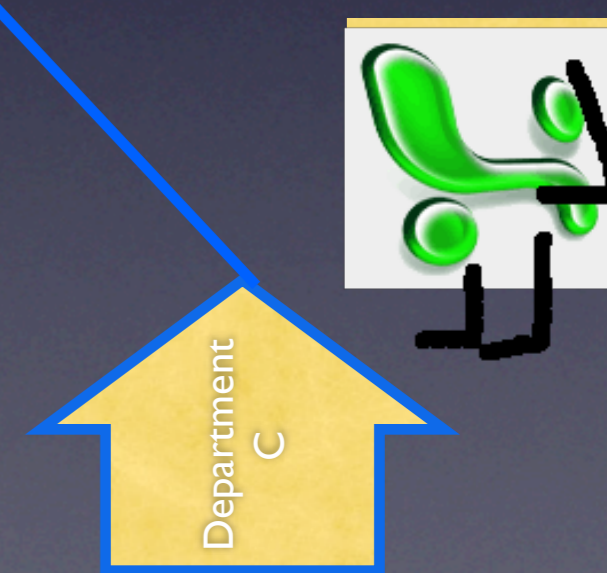
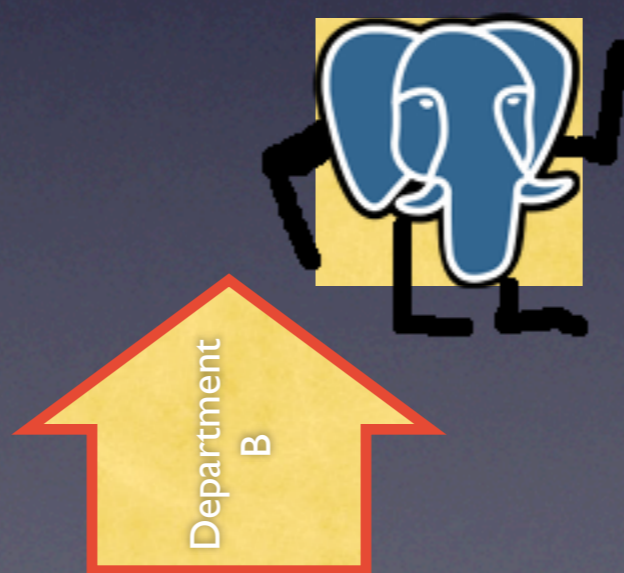
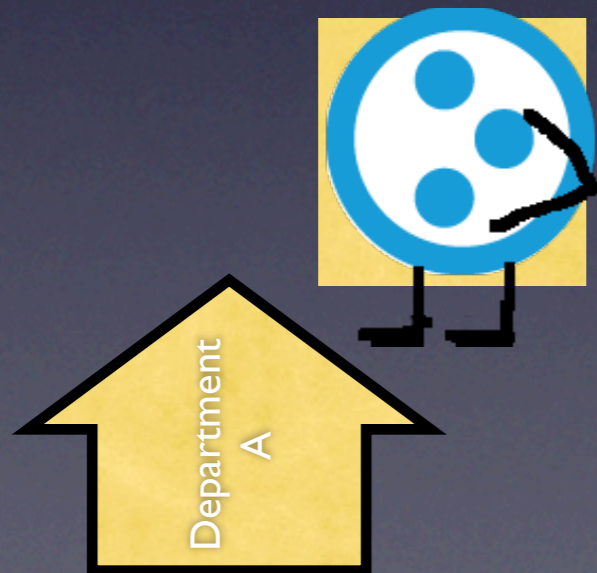
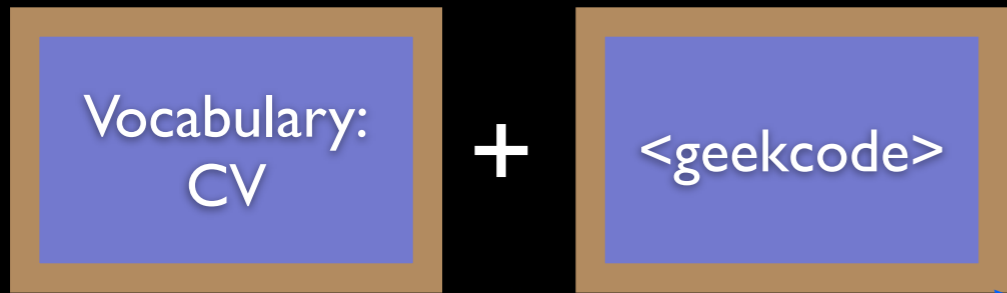


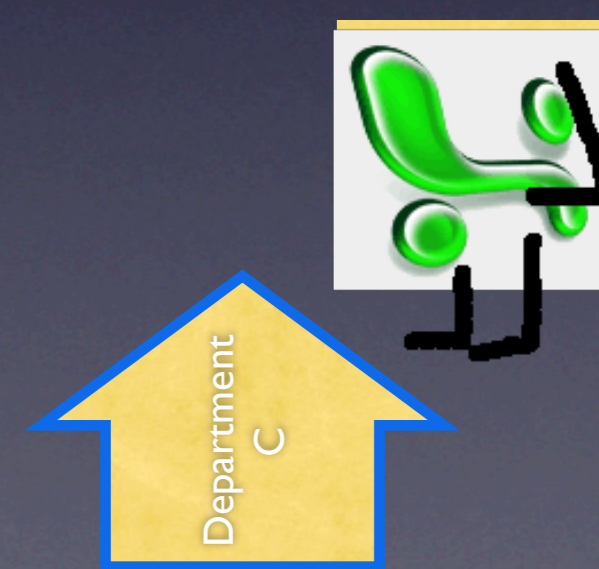
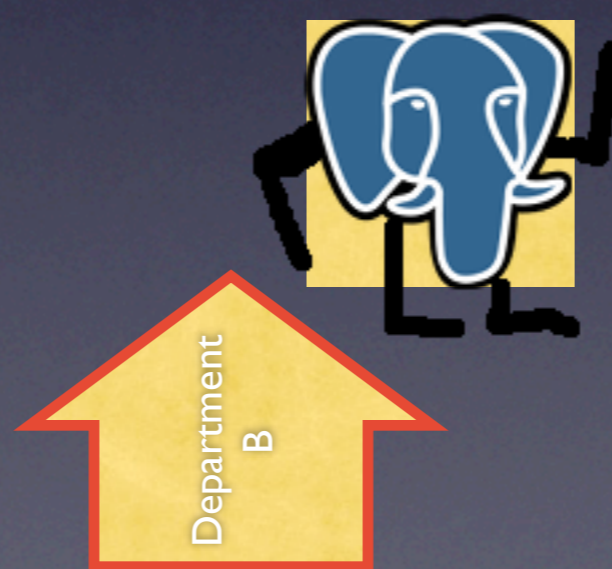
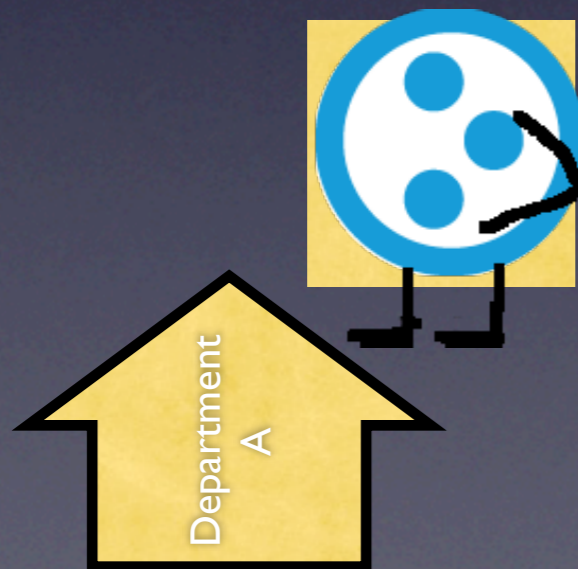
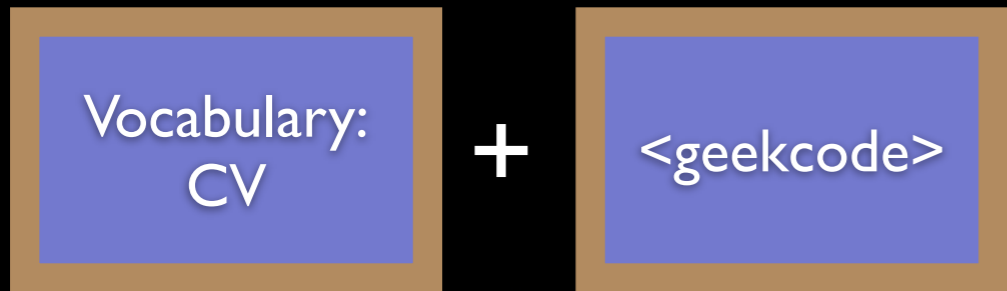


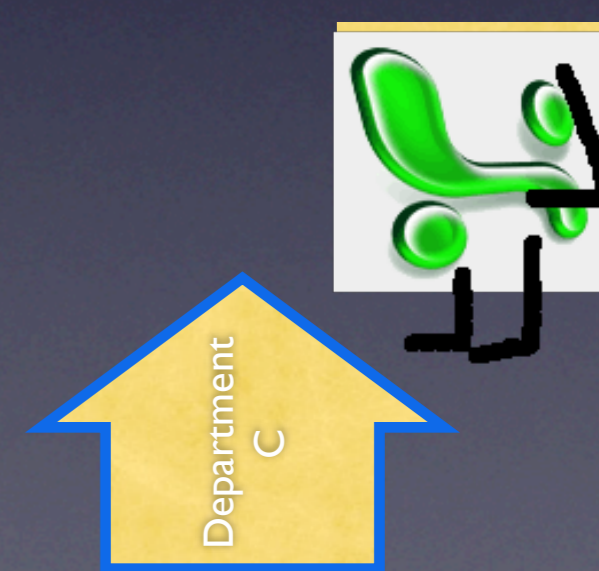
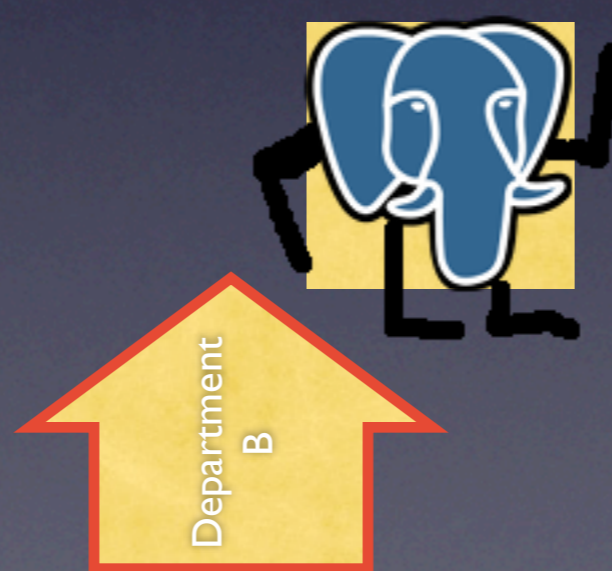
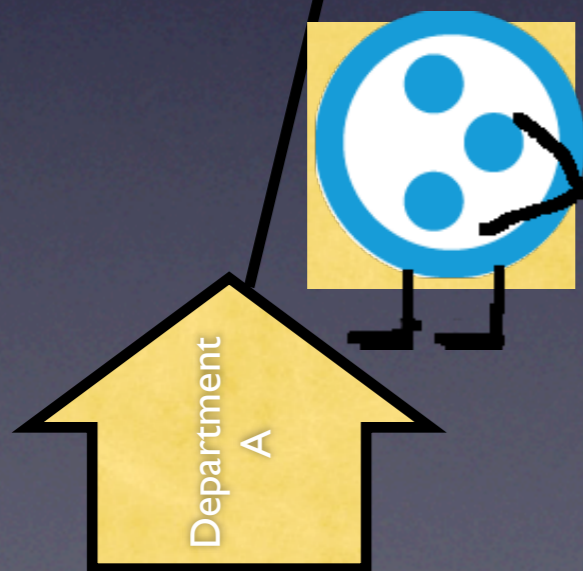
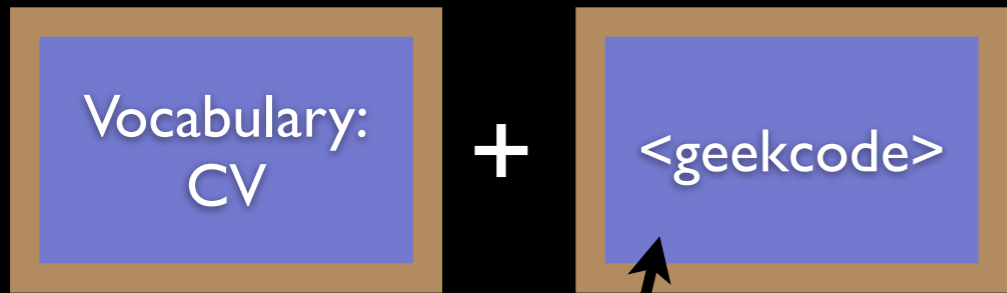


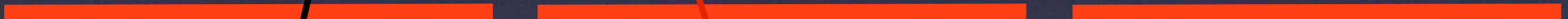
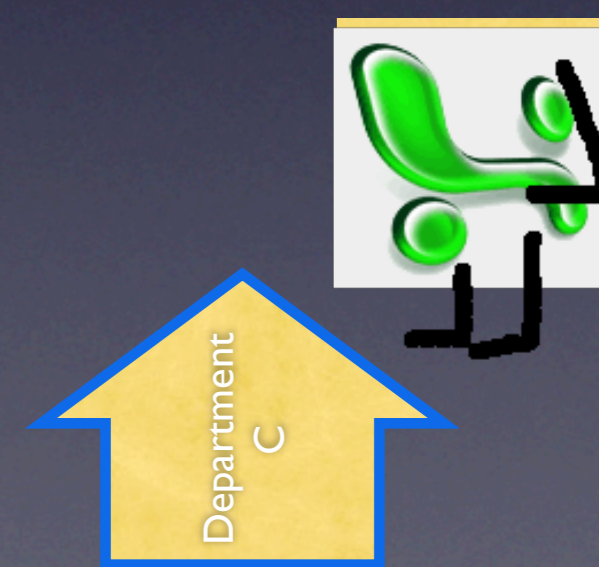
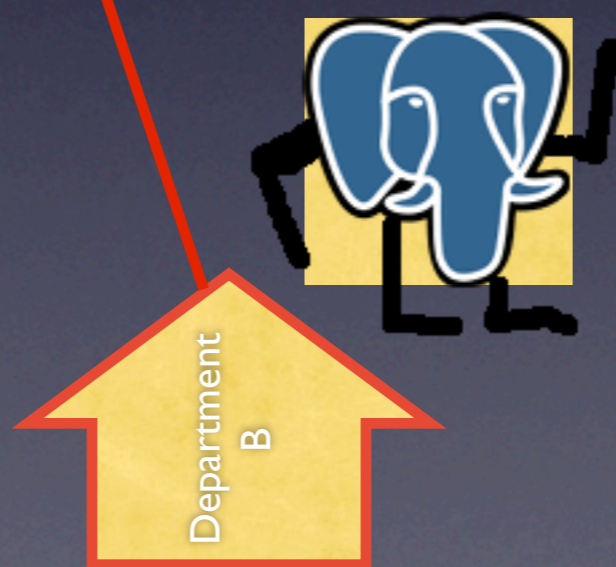
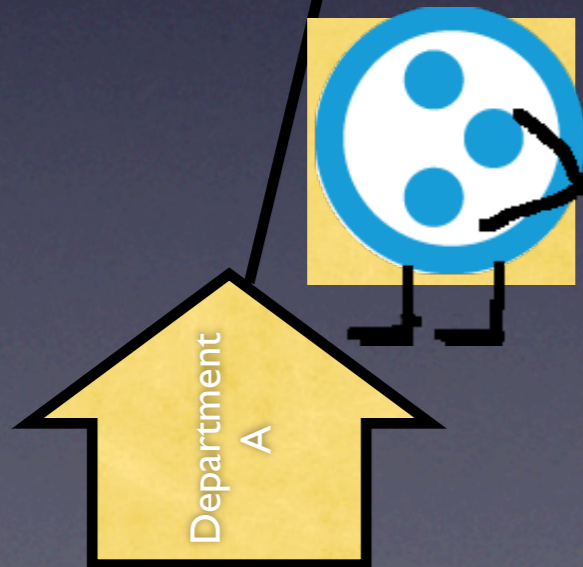
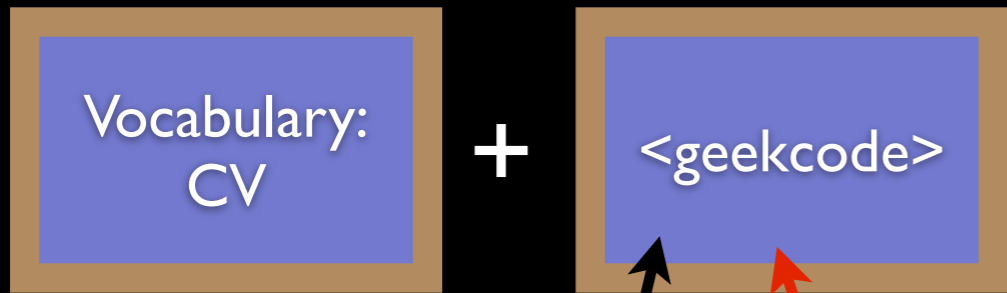
Dep C adds a term to
the vocabulary

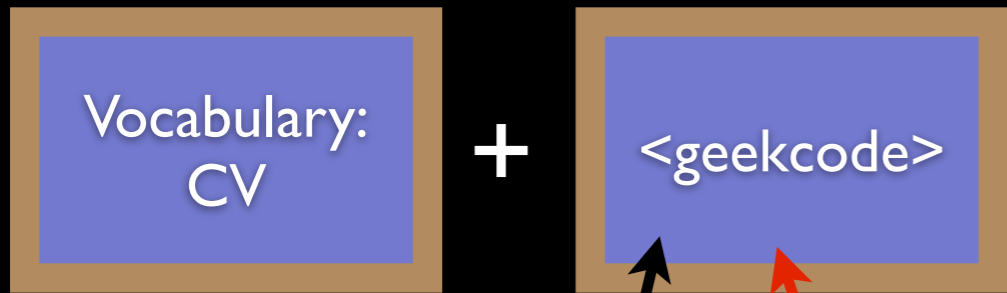




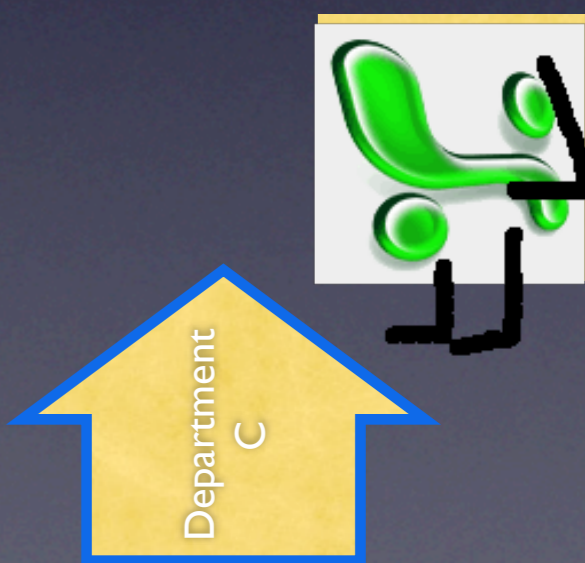
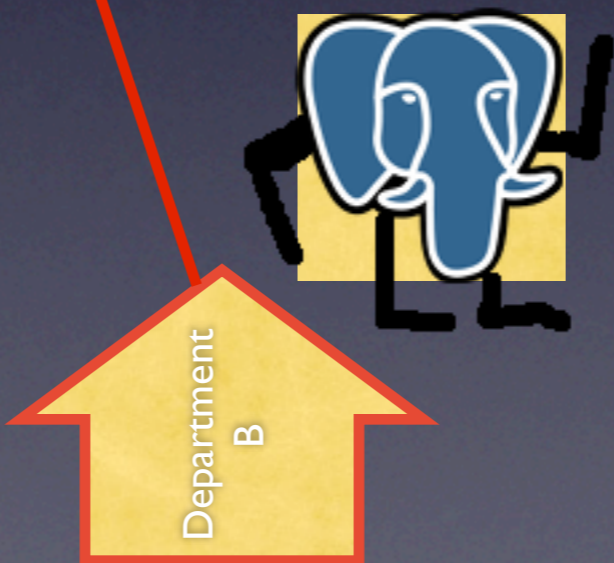
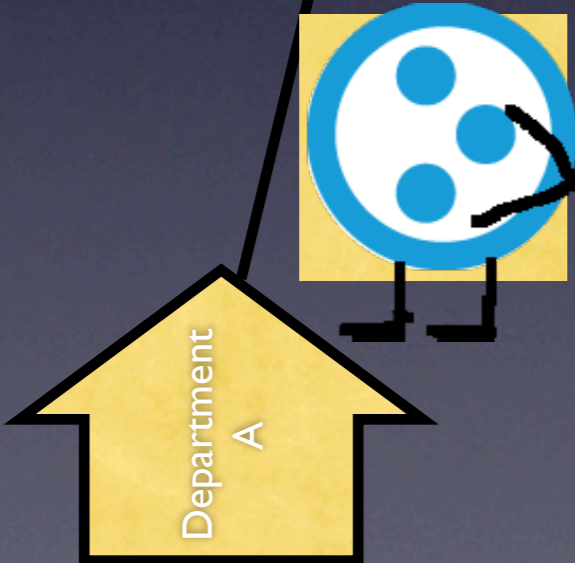






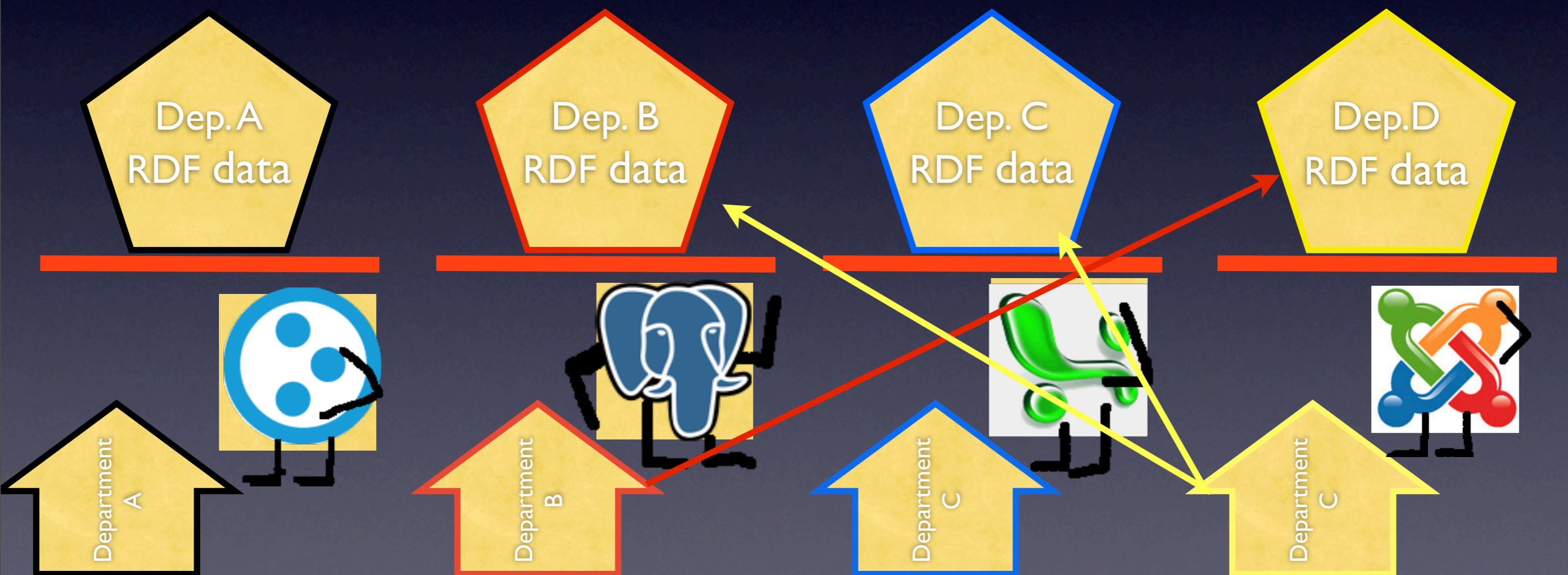


Everybody else
can use it



Vocabulary:
CV

Another department can join and instantly exchange data.



Getting to work

Getting to work

- We developed and published vocabularies describing Persons working at UNAM and courses.

Getting to work

- We developed and published vocabularies describing Persons working at UNAM and courses.
- We adapted the *infomatem* to publish information in RDF and use existing RDF information.

Tools we used

- For vocabularies we used Protege, an RDF generator with graphic interface.
- Python RDF library rdflib2.4

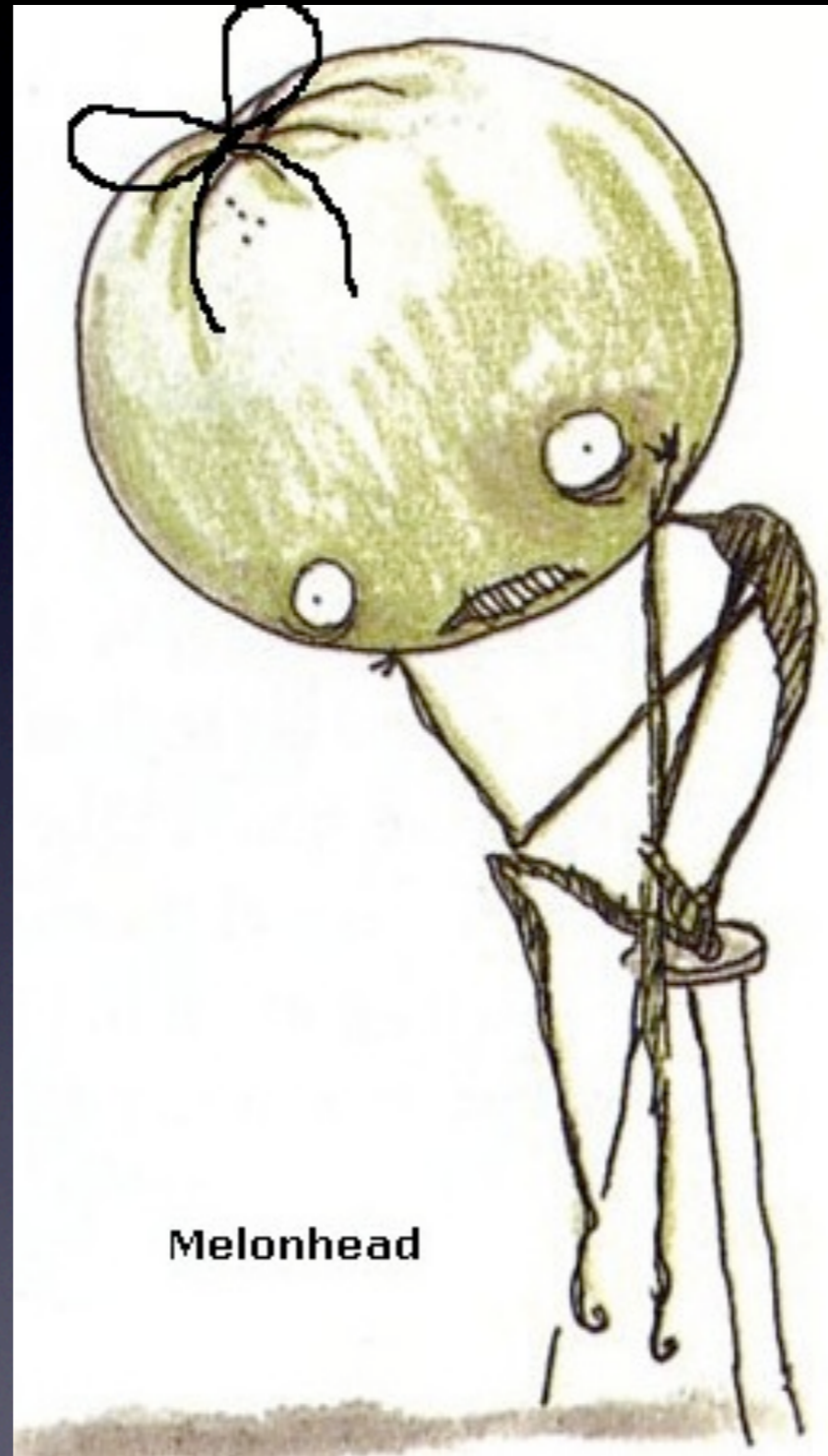
Experience with Plone

First we were like this:



Jumping head on into Plone. All macho. Thinking we can handle anything attacking plone straight in the gut.

Then we were like this:



We found out things worked differently, and things can get done in different ways.

We didn't know where to start :!

But at the end we managed
and we were like this:



things started to make sense, we started to understand how plone worked and how to do things.

Case Studies

Sharing courses information

- *Math Institute* researchers teach in other departments.
- Import the information of those courses easily.
- Publish the other departments' information.

Adding information from Courses published in RDF.

- **We need Courses information published in RDF**
- We add an Action to our CV-Courses Datatype to import information from RDF.

Standard view of courses

Ciencias de la Computación (plan 1995), 2010-2

Buscar en grupos

Segundo Semestre Cálculo Diferencial e Integral II

Anterior: Álgebra Superior II Siguiente: Geometría Analítica II

Grupo 4055, 30 alumnos.

Profesor Emma Lam Osnaya

lu a sá 7 a 8 O125

Ayudante Leticia Guadalupe Cienfuegos Blancas lu mi vi 8 a 9 O125

Standard view of courses

Study Plan

Ciencias de la Computación (plan 1995), 2010-2

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Standard view of courses

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Standard view of courses

Ciencias de la Computación (plan 1995), 2010-2

Course name
and semester

Segundo Semestre
Cálculo Diferencial e Integral II

Anterior: Álgebra Superior II Siguiente: Geometría Analítica II

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Standard view of courses

Ciencias de la Computación (plan 1995), 2010-2

Buscar en grupos

Segundo Semestre Cálculo Diferencial e Integral II

Anterior: Álgebra Superior II Siguiente: Geometría Analítica II

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Standard view of courses

Ciencias de la Computación (plan 1995), 2010-2

Buscar en grupos

Segundo Semestre Cálculo Diferencial e Integral II

Anterior: Álgebra y Geometría Analítica II

Grupo 4055, 30 al

Profesor Emma Lam Osnaya

lu a sá 7 a 8 O125

Ayudante Leticia Guadalupe Cienfuegos Blancas lu mi vi 8 a 9 O125

Professor and
Assitant

Standard view of courses

Ciencias de la Computación (plan 1995), 2010-2

Buscar en grupos

Segundo Semestre Cálculo Diferencial e Integral II

Anterior: Álgebra Superior II Siguiente: Geometría Analítica II

Grupo 4055, 30 alumnos.

Profesor Emma Lam Osnaya

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Standard view of courses

Ciencias de la Computación (plan 1995), 2010-2

Buscar en grupos

Segundo Semestre Cálculo Diferencial e Integral II

Anterior: Álgebra Superior II Siguiente: Geometría Analítica

Grupo 4055, 30 alumnos.

Profesor Emma Lam Osnaya

lu a sá 7 a 8 O125

Ayudante Leticia Guadalupe Cienfuegos Blancas lu mi vi 8 a 9 O125

Schedule

Published RDF with the same info

```
<rdf:RDF xml:base="http://proyectos.matem.unam.mx:8085/papiit/vocabularios/instancias/instanciascursolight.rdf">
  <curhlight:Encargado rdf:ID="Encargado_4">
    <curhlight:cargo>Profesor</curhlight:cargo>
    <curhlight:NombreEncargado>Emma Lam Osnaya</curhlight:NombreEncargado>
    <curhlight:correoEncargado>dam@lol.com</curhlight:correoEncargado>
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Published RDF with the same info

Relation "atendant"

```
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    <curhlight:NombreEncargado>Emma Lam Osnaya</curhlight:NombreEncargado>
    <curhlight:correoEncargado>dam@lol.com</curhlight:correoEncargado>
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  </curhlight:daCurso>
</curhlight:Encargado>
</rdf:RDF>
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Published RDF with the same info

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      <curhlight:claveAsignatura>0010</curhlight:claveAsignatura>
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    </curhlight:Curso>
  </curhlight:daCurso>
</curhlight:Encargado>
</rdf:RDF>
```

Published RDF with the same info

Relation "is Professor"

```
<rdf:RDF xml:base="http://www.inec.mx:8085/papiit/vocabularios/instancias/instanciascursolight.rdf">
  <curhlight:Encargado rdf:ID="Encargado_1">
    <curhlight:cargo>Profesor</curhlight:cargo>
    <curhlight:NombreEncargado>Emma Lam Osnaya</curhlight:NombreEncargado>
    <curhlight:correoEncargado>dam@lol.com</curhlight:correoEncargado>
  <curhlight:daCurso>
    <curhlight:Curso rdf:ID="Curso_7">
      <curhlight:numeroHorasSemana>3</curhlight:numeroHorasSemana>
      <curhlight:claveGrupo>4055</curhlight:claveGrupo>
      <curhlight:claveAsignatura>0010</curhlight:claveAsignatura>
      <curhlight:nombreCurso>Calculo Diferencia e Integral II</curhlight:nombreCurso>
      <curhlight:Periodo>20102</curhlight:Periodo>
    </curhlight:Curso>
  </curhlight:daCurso>
</curhlight:Encargado>
</rdf:RDF>
```

Published RDF with the same info

```
<rdf:RDF xml:base="http://proyectos.matem.unam.mx:8085/papiit/vocabularios/instancias/instanciascursolight.rdf">
  <curhlight:Encargado rdf:ID="Encargado_4">
    <curhlight:cargo>Profesor</curhlight:cargo>
    <curhlight:NombreEncargado>Emma Lam Osnaya</curhlight:NombreEncargado>
    <curhlight:correoEncargado>dam@lol.com</curhlight:correoEncargado>
  <curhlight:daCurso>
    <curhlight:Curso rdf:ID="Curso_7">
      <curhlight:numeroHorasSemana>3</curhlight:numeroHorasSemana>
      <curhlight:claveGrupo>4055</curhlight:claveGrupo>
      <curhlight:claveAsignatura>0010</curhlight:claveAsignatura>
      <curhlight:nombreCurso>Calculo Diferencia e Integral II</curhlight:nombreCurso>
      <curhlight:Periodo>20102</curhlight:Periodo>
    </curhlight:Curso>
  </curhlight:daCurso>
</curhlight:Encargado>
</rdf:RDF>
```


Published RDF with the same info

```
<rdf:RDF xml:base="http://proyectos.matem.unam.mx/instancias/instanciascursolight.rdf">
  <curslight:Encargado rdf:ID="Encargado_4">
    <curslight:cargo>Profesor</curslight:cargo>
    <curslight:NombreEncargado>Emma Lam Osnaya</curslight:NombreEncargado>
    <curslight:correoEncargado>dam@lol.com</curslight:correoEncargado>
  <curslight:daCurso>
    <curslight:Curso rdf:ID="Curso_7">
      <curslight:numeroHorasSemana>3</curslight:numeroHorasSemana>
      <curslight:claveGrupo>4055</curslight:claveGrupo>
      <curslight:claveAsignatura>0010</curslight:claveAsignatura>
      <curslight:nombreCurso>Calculo Diferencia e Integral II</curslight:nombreCurso>
      <curslight:Periodo>20102</curslight:Periodo>
    </curslight:Curso>
  </curslight:daCurso>
</curslight:Encargado>
</rdf:RDF>
```

Name

Published RDF with the same info

```
<rdf:RDF xml:base="http://proyectos.matem.unam.mx:8085/papiit/vocabularios/instancias/instanciascursolight.rdf">
  <curhlight:Encargado rdf:ID="Encargado_4">
    <curhlight:cargo>Profesor</curhlight:cargo>
    <curhlight:NombreEncargado>Emma Lam Osnaya</curhlight:NombreEncargado>
    <curhlight:correoEncargado>dam@lol.com</curhlight:correoEncargado>
  <curhlight:daCurso>
    <curhlight:Curso rdf:ID="Curso_7">
      <curhlight:numeroHorasSemana>3</curhlight:numeroHorasSemana>
      <curhlight:claveGrupo>4055</curhlight:claveGrupo>
      <curhlight:claveAsignatura>0010</curhlight:claveAsignatura>
      <curhlight:nombreCurso>Calculo Diferencia e Integral II</curhlight:nombreCurso>
      <curhlight:Periodo>20102</curhlight:Periodo>
    </curhlight:Curso>
  </curhlight:daCurso>
</curhlight:Encargado>
</rdf:RDF>
```

Published RDF with the same info

```
<rdf:RDF xml:base="http://proyectos.matem.unam.mx:8085/papiit/vocabularios/instancias/instanciascursolight.rdf">
  <curhlight:Encargado rdf:ID="Encargado_4">
    <curhlight:cargo>Profesor</curhlight:cargo>
    <curhlight:NombreEncargado>Miguel Ángel</curhlight:NombreEncargado>
    <curhlight:correoEncargado>ma@matem.unam.mx</curhlight:correoEncargado>
  <curhlight:daCurso>
    <curhlight:Curso rdf:ID="Curso_7">
      <curhlight:numeroHorasSemana>3</curhlight:numeroHorasSemana>
      <curhlight:claveGrupo>4055</curhlight:claveGrupo>
      <curhlight:claveAsignatura>0010</curhlight:claveAsignatura>
      <curhlight:nombreCurso>Calculo Diferencia e Integral II</curhlight:nombreCurso>
      <curhlight:Periodo>20102</curhlight:Periodo>
    </curhlight:Curso>
  </curhlight:daCurso>
</curhlight:Encargado>
</rdf:RDF>
```

Relation "gives Course"

Published RDF with the same info

```
<rdf:RDF xml:base="http://proyectos.matem.unam.mx:8085/papiit/vocabularios/instancias/instanciascursolight.rdf">
  <curhlight:Encargado rdf:ID="Encargado_4">
    <curhlight:cargo>Profesor</curhlight:cargo>
    <curhlight:NombreEncargado>Emma Lam Osnaya</curhlight:NombreEncargado>
    <curhlight:correoEncargado>dam@lol.com</curhlight:correoEncargado>
  <curhlight:daCurso>
    <curhlight:Curso rdf:ID="Curso_7">
      <curhlight:numeroHorasSemana>3</curhlight:numeroHorasSemana>
      <curhlight:claveGrupo>4055</curhlight:claveGrupo>
      <curhlight:claveAsignatura>0010</curhlight:claveAsignatura>
      <curhlight:nombreCurso>Calculo Diferencia e Integral II</curhlight:nombreCurso>
      <curhlight:Periodo>20102</curhlight:Periodo>
    </curhlight:Curso>
  </curhlight:daCurso>
</curhlight:Encargado>
</rdf:RDF>
```

Published RDF with the same info

```
<rdf:RDF xml:base="http://proyectos.matem.unam.mx:8085/papiit/vocabularios/instancias/instanciascursolight.rdf">
  <curhlight:Encargado rdf:ID="Encargado_4">
    <curhlight:cargo>Profesor</curhlight:cargo>
    <curhlight:NombreEncargado>Emma Lam Osnaya</curhlight:NombreEncargado>
    <curhlight:correoEncargado>dam@lol.com</curhlight:correoEncargado>
  <curhlight:daCurso>
    <curhlight:Curso rdf:ID="Curso_7">
      <curhlight:numeroHorasSemana>3</curhlight:numeroHorasSemana>
      <curhlight:claveGrupo>4055</curhlight:claveGrupo>
      <curhlight:claveAsignatura>0010</curhlight:claveAsignatura>
      <curhlight:nombreCurso>Calculo Diferencia e Integral II</curhlight:nombreCurso>
      <curhlight:Periodo>20102</curhlight:Periodo>
    </curhlight:Curso>
  </curhlight:daCurso>
</curhlight:Encargado>
</rdf:RDF>
```

Course name and semester

Published RDF with the same info

```
<rdf:RDF xml:base="http://proyectos.matem.unam.mx:8085/papiit/vocabularios/instancias/instanciascursolight.rdf">
  <curhlight:Encargado rdf:ID="Encargado_4">
    <curhlight:cargo>Profesor</curhlight:cargo>
    <curhlight:NombreEncargado>Emma Lam Osnaya</curhlight:NombreEncargado>
    <curhlight:correoEncargado>dam@lol.com</curhlight:correoEncargado>
  <curhlight:daCurso>
    <curhlight:Curso rdf:ID="Curso_7">
      <curhlight:numeroHorasSemana>3</curhlight:numeroHorasSemana>
      <curhlight:claveGrupo>4055</curhlight:claveGrupo>
      <curhlight:claveAsignatura>0010</curhlight:claveAsignatura>
      <curhlight:nombreCurso>Calculo Diferencia e Integral II</curhlight:nombreCurso>
      <curhlight:Periodo>20102</curhlight:Periodo>
    </curhlight:Curso>
  </curhlight:daCurso>
</curhlight:Encargado>
</rdf:RDF>
```

Adding information from Courses published in RDF.

- We need Courses information published in RDF
- **We add an Action to our CV-Courses Datatype to import information from RDF.**

Adding the information

[Add, edit or remove a portlet above the content](#)

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by [admin](#) — last modified Mar 11, 2010 09:03 PM

Cursos regulares, de actualización y cursillos impartidos

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Importar curso usando RDF

Favor de proporcionar la direccion del RDF con el curso que desea importar

Direccion RDF:

 Importar

 Cancelar

[Add, edit or remove a portlet below the content](#)

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Importar curso usando RDF

Favor de proporcionar la direccion del RDF con el curso que

Fill the field with RDF
address

Direccion RDF:

 Importar

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Confirmar Cursos

Favor de seleccionar los cursos que desea importar

8080 Complejidad Computacional 20072

3040 Procesos Paralelos 20022

[Add, edit or remove a portlet below the content](#)

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Confirmar Cursos

Favor de seleccionar los cursos que

Choose courses to import

8080 Complejidad Computacional 20072

3040 Procesos Paralelos 20022

Add, edit or remove a portlet below the content

[Add, edit or remove a portlet above the content](#)

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by [admin](#) — last modified Mar 11, 2010 09:03 PM

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[Complejidad Computacional \(20072\)](#)

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[Add, edit or remove a portlet above the content](#)

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Cursos

by [admin](#) — last modified Mar 11, 2010 09:03 PM

Cursos regulares, de actualización y

Courses data in our system =)

 [Agregar nuevo](#)

[Complejidad Computacional \(20072\)](#)

[Procesos Paralelos \(20022\)](#)

[Add, edit or remove a portlet below the content](#)



Sharing staff information.

- Personal information input is constantly required across several institutions.
- Our researcher can publish their personal information in RDF.
- Other institutions can use that information and avoid inconsistencies.

Publishing researchers Personal info into RDF

- We add an action to our FSD-Person Datatype to publish personal info in RDF.
- Other institution may use this information

Publishing researchers Personal info into RDF

- **We add an action to our FSD-Person Datatype to publish personal info in RDF.**
- Other institution may use this information

Sharing Information

Contenidos Visualizar Editar Compartir Relations
Traducir al... Sub-types Acciones Mostrar CV Agregar Folder CV Estado: Visible Member

Sergio Rajsbaum

Correo electrónico: [✉ rajsbaum@matem.unam.mx](mailto:rajsbaum@matem.unam.mx)
Teléfono: 562-24492

Página web:
<http://www.matem.unam.mx/~rajsbaum>

Líneas de investigación:
05-xx Combinatoria:
[[Asigna un área de investigación](#)]
68-xx Ciencias de la computación:
[[Asigna un área de investigación](#)]

Información académica:
[CV](#)

Publicaciones, áreas y coautores según el MathSciNet:
[MR Author ID: 271874](#)

Publicaciones según:
[Google scholar](#)

Biografía:
I was born in Mexico City, Mexico in 1962. I received a degree in Computer Engineering from the National Autonomous University of Mexico (UNAM) in 1985, and a PhD in the Computer Science Department at the Israeli Institute of Technology-Technion in 1991, under the supervision of Shimon Even. In 1991 I joined the Institute of Mathematics at UNAM, where I am currently a Professor. I was a visiting scientist at the Laboratory for Computer Science of MIT 1993-1995, in the Theory of Distributed Systems Group of Nancy Lynch. I was a Research Staff member of HP Labs from September 1999 to September 2002, on Sabbatical leave. My research interests are in the theory of distributed computing, especially issues related to coordination, complexity and computability. I am also interested in graph theory and algorithms. I have been a Program Committee member of many international conferences, and I was chair of the program committee for Latin American Theoretical Informatics LATIN02, for PODC03, and for ENC06. Steering Committee member of: DISC, LADC, LATIN, PODC (2003-2005).



problems with
ExtendSchema, it doesn't
give you getters and
setters.

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Sharing Information

Contenidos Visualizar Editar Compartir Relations Traducir al... Sub-types Acciones Mostrar Agregar Folder CV Estado: Visible Member

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Academic Profile



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ExtendSchema, it doesn't
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Sharing Information

Contenidos Visualizar Editar Compartir Relations Traducir al... Sub-types Acciones Mostrar Agregar Folder CV Estado: Visible Member

Sergio Rajsbaum

Correo electrónico: rajsbaum@matem.unam.mx
Teléfono: 562-24492

Página web:
<http://www.matem.unam.mx/~rajsbaum>

Líneas de investigación:
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[Asigna un área de investigación]
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vCard — Exportar Info — Enviar — Imprimir —

Academic Profile



problems with
ExtendSchema, it doesn't
give you getters and
setters.

Click export action

RDF published with the researcher information

```
- <rdf:RDF xml:base="http://localhost:8890/infomatem/fsd/rajsbaum/rdf/info.rdf">
- <personaUNAM:investigador rdf:ID="me">
  <foaf:name>Sergio</foaf:name>
  <foafMexico:CURP>RAGS820112HDFV</foafMexico:CURP>
  <foafMexico:RFC>RAGS820112</foafMexico:RFC>
  <foaf:mbox rdf:resource="mailto:rajsbaum@matem.unam.mx"/>
  <foaf:phone>tel:56224492</foaf:phone>
  <foaf:homepage rdf:resource="http://www.slap.pal"/>
  <personaUNAM:adscritoActualmente>Instituto de Matematicas</personaUNAM:adscritoActualmente>
  <personaUNAM:numeroExpediente>59890300</personaUNAM:numeroExpediente>
  <foafMexico:segundoApellido>Gorodezky</foafMexico:segundoApellido>
  <personaUNAM:gradoMaximoEstudios>Doctorado</personaUNAM:gradoMaximoEstudios>
```

RDF published with the researcher information

researcher relation

```
<rdf:RDF xml:base="http://local.../matem/fsd/rajsbaum/rdf/info.rdf">  
- <personaUNAM:investigador rdf:ID="me">  
  <foaf:name>Sergio</foaf:name>  
  <foafMexico:CURP>RAGS820112HDFV</foafMexico:CURP>  
  <foafMexico:RFC>RAGS820112</foafMexico:RFC>  
  <foaf:mbox rdf:resource="mailto:rajsbaum@matem.unam.mx"/>  
  <foaf:phone>tel:56224492</foaf:phone>  
  <foaf:homepage rdf:resource="http://www.slap.pal"/>  
  <personaUNAM:adscritoActualmente>Instituto de Matematicas</personaUNAM:adscritoActualmente>  
  <personaUNAM:numeroExpediente>59890300</personaUNAM:numeroExpediente>  
  <foafMexico:segundoApellido>Gorodezky</foafMexico:segundoApellido>  
  <personaUNAM:gradoMaximoEstudios>Doctorado</personaUNAM:gradoMaximoEstudios>
```


RDF published with the researcher information

researcher relation

basic info relations

```
<rdf:RDF xml:base="http://local.../matem/fsd/rajsbaum/rdf">  
  <personaUNAM:investigador rdf:ID="me">  
    <foaf:name>Sergio</foaf:name>  
    <foafMexico:CURP>RAGS820112HDFV</foafMexico:CURP>  
    <foafMexico:RFC>RAGS820112</foafMexico:RFC>  
    <foaf:mbox rdf:resource="mailto:rajsbaum@matem.unam.mx"/>  
    <foaf:phone>tel:56224492</foaf:phone>  
    <foaf:homepage rdf:resource="http://www.slap.pal"/>  
    <personaUNAM:adscritoActualmente>Instituto de Matematicas</personaUNAM:adscritoActualmente>  
    <personaUNAM:numeroExpediente>59890300</personaUNAM:numeroExpediente>  
    <foafMexico:segundoApellido>Gorodezky</foafMexico:segundoApellido>  
    <personaUNAM:gradoMaximoEstudios>Doctorado</personaUNAM:gradoMaximoEstudios>
```

Publishing researchers Personal info into RDF

- We add an action to our FSD-Person Datatype to publish personal info in RDF.
- **Other institution may use this information**

Future Work

- Currently we just translate from one datatype to one specific vocabulary.
- We want to be able to translate to and from any vocabulary .
- We want Plone to get involved in the Semantic Web.

Tool overview

Any
Content type
Fields

RDF


Attributes

Tool overview

Any
Content type
Fields

RDF

Attributes




We
have this
info

Tool overview

Any
Content type
Fields

RDF

Attributes



We
have this
info



We
want this
info

Tool overview

Any
Content type
Fields

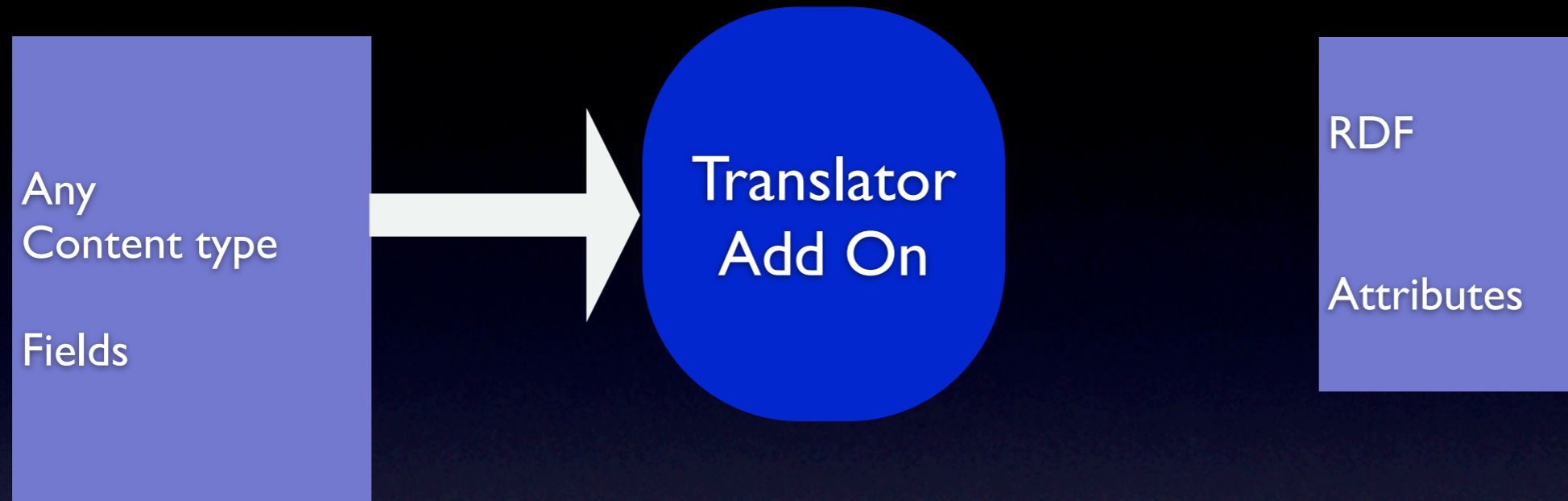
Translator
Add On

RDF
Attributes

We
have this
info

We
want this
info

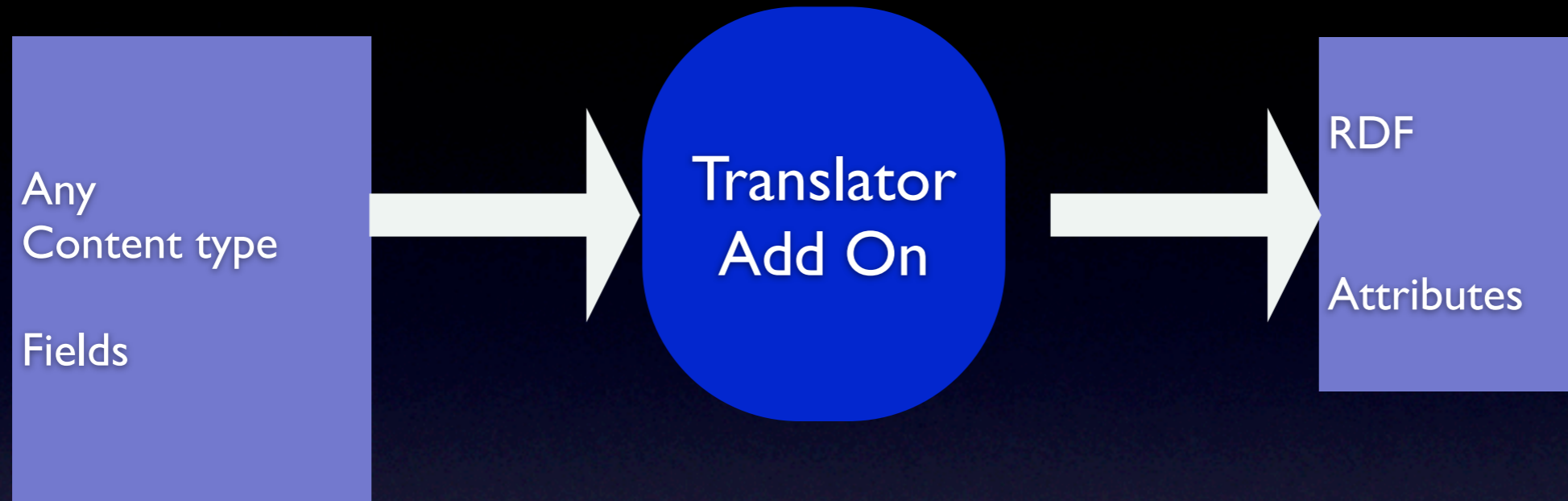
Tool overview



We
have this
info

We
want this
info

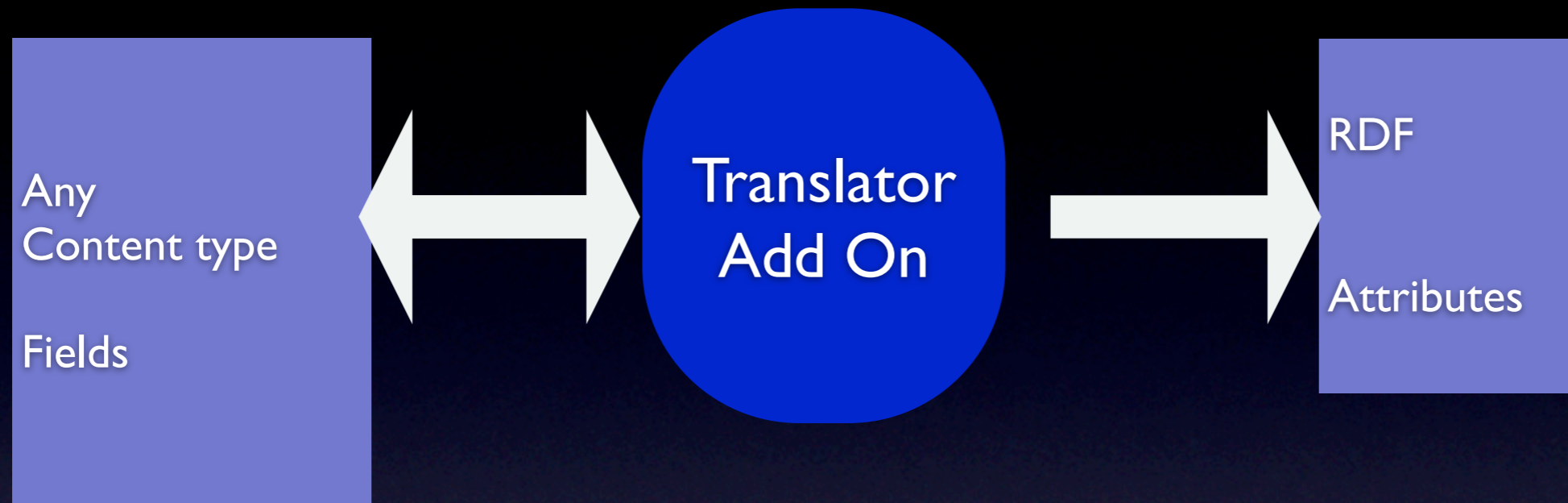
Tool overview



We
have this
info

We
want this
info

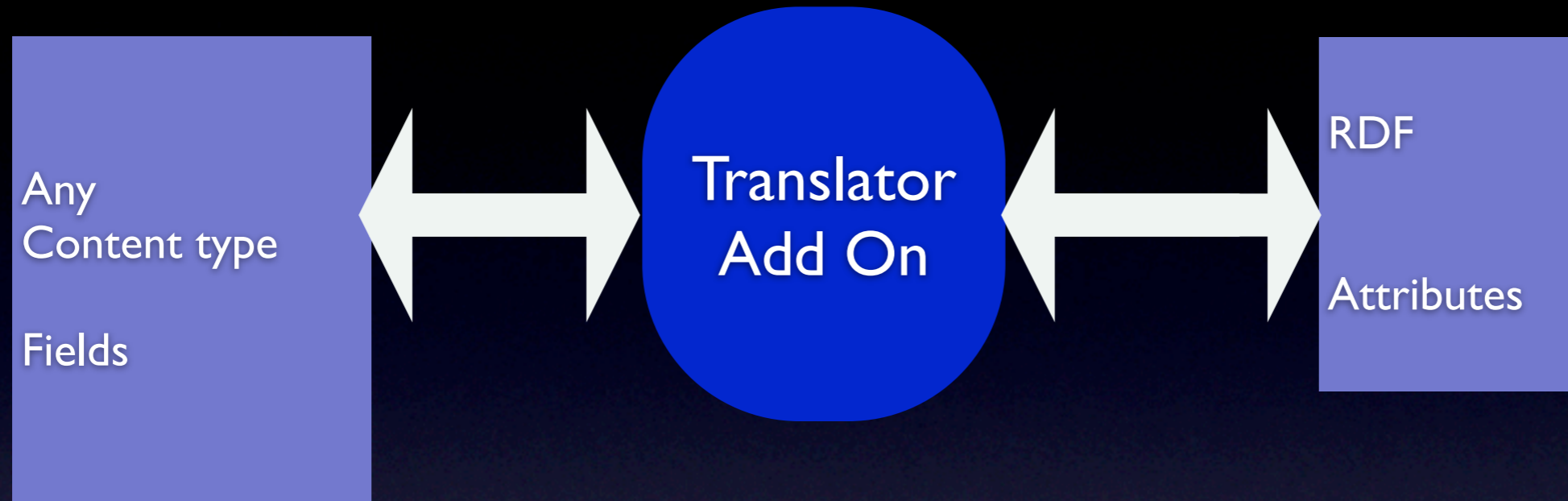
Tool overview



We
have this
info

We
want this
info

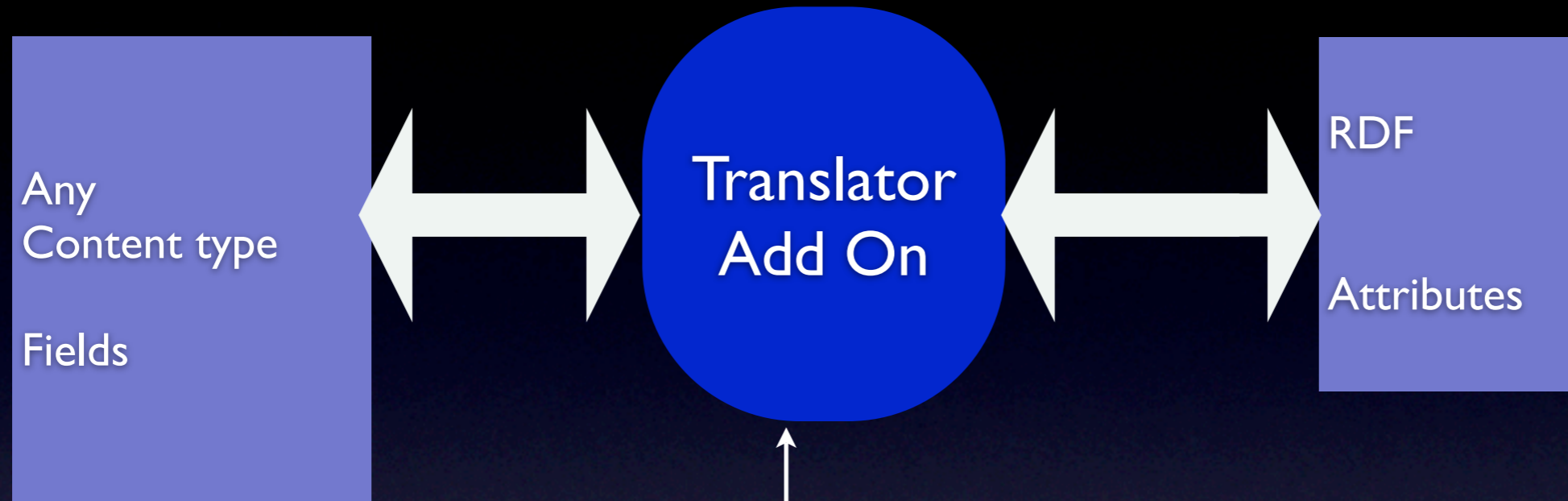
Tool overview



We have this info

We want this info

Tool overview



We have this info

We want this info

configurable file that tells us what Field maps to what Attributes.