

元数据层构建

构建原因

- RDF表达能力有限：缺乏抽象能力
- 扩展图谱隐含信息（知识推理）

三层架构

数据层

rdf三元组的构建，不涉及抽象

例. 学生 读书

```
@prefix student: <http://www.kg.com/student/> .
@prefix book: <http://www.kg.com/book/> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

student:1 student:name "ming"^^xsd:string.
student:1 student:age "19"^^xsd:integer.
student:2 student:name "hong"^^xsd:string.
student:2 student:age "10"^^xsd:integer.

book:1 book:name "Python Program Design"^^xsd:string.
book:1 book:price "55.1"^^xsd:string.
book:2 book:name "Design Pattern"^^xsd:string.
book:2 book:price "24.2"^^xsd:string.
```

模式层

涉及到基本的类和对象的概念（rdfs）

构建基本的类，以及相对简单的关系

实验室图谱主要类

- 纯物理层面：server environment
- 纯逻辑层面：namespace service
- 基于物理+逻辑层面：pod container

例.

```
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix : <http://www.kg.com/ontology/> .
```

```
### 定义学生和书两个类 -> 节点
:Student rdf:type rdfs:Class.
:Book rdf:type rdfs:Class.
```

```
### 定义属性
```

```
:name rdf:type rdf:Property;
      rdfs:domain :Student;
      rdfs:range xsd:string .
:age rdf:type rdf:Property;
     rdfs:domain :Student;
     rdfs:range xsd:integer .
```

```
:name rdf:type rdf:Property;
      rdfs:domain :Book;
      rdfs:range xsd:string .
:price rdf:type rdf:Property;
       rdfs:domain :Book;
       rdfs:range xsd:string .
```

逻辑层

涉及到复杂的逻辑关系 (owl)

构建对象属性和数据属性

例.

```
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix : <http://www.kg.com/ontology/> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
```

```
### 定义学生和书两个类 -> 节点
:Student rdf:type rdfs:Class.
:Book rdf:type rdfs:Class.
```

```
### 定义属性
```

```
:name rdf:type owl:DatatypeProperty;
      rdfs:domain :Student;
      rdfs:range xsd:string .
:age rdf:type owl:DatatypeProperty;
     rdfs:domain :Student;
     rdfs:range xsd:integer .
```

```
:name rdf:type owl:DatatypeProperty;  
  rdfs:domain :Book;  
  rdfs:range xsd:string .  
:price rdf:type owl:DatatypeProperty;  
  rdfs:domain :Book;  
  rdfs:range xsd:string .
```