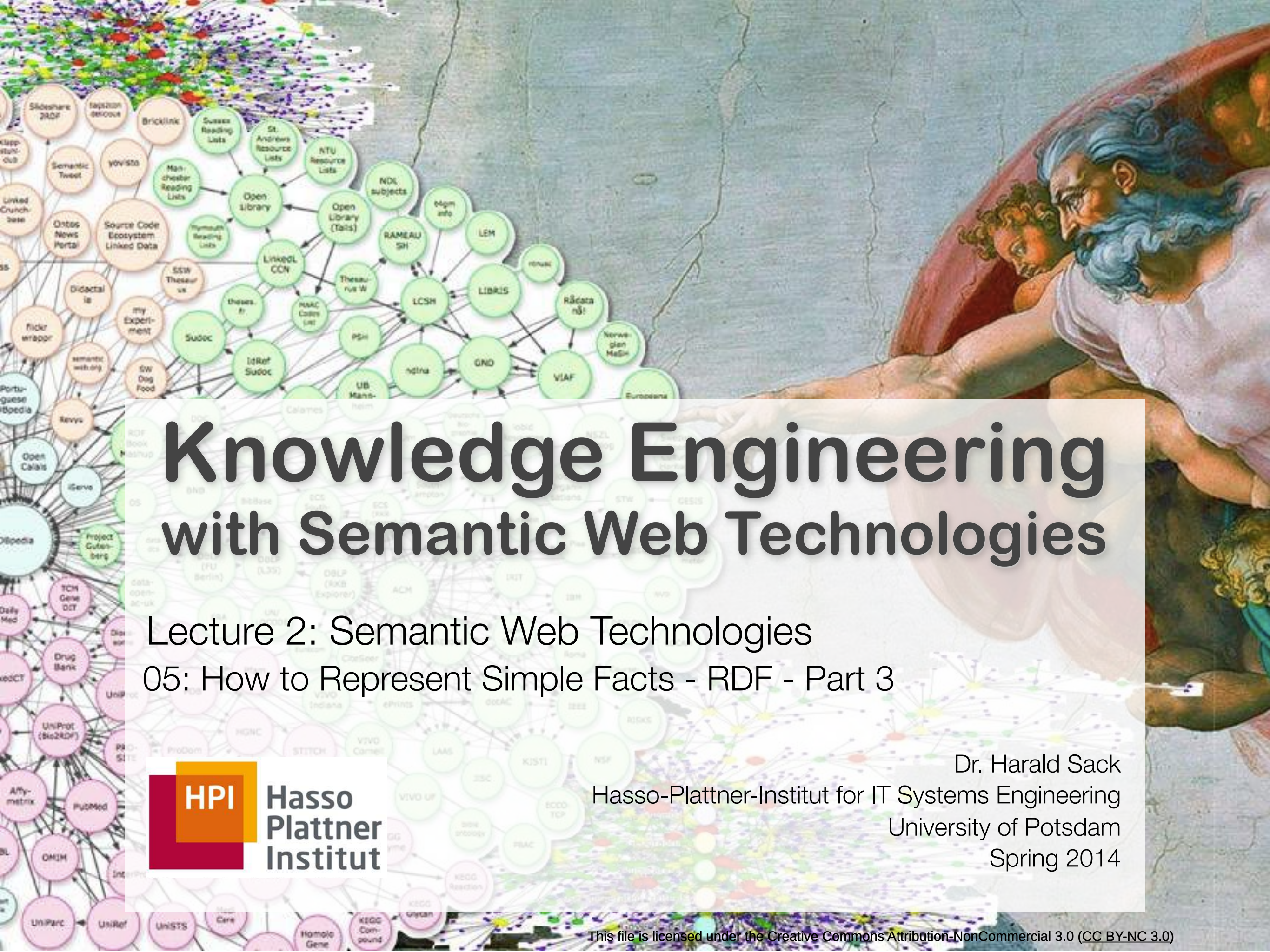




Knowledge Engineering with Semantic Web Technologies

Lecture 2: Semantic Web Technologies

05: How to Represent Simple Facts - RDF - Part 3



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Lecture 2: Semantic Web Technologies - Part 1

Open HPI - Course: Knowledge Engineering with Semantic Web Technologies

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Lists in RDF

05 How to Represent Facts? - RDF (3)

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Lecture 2: Semantic Web Technologies Part I



Resource Description Framework



*More Syntactic
Sugar....*



Resource Description Framework

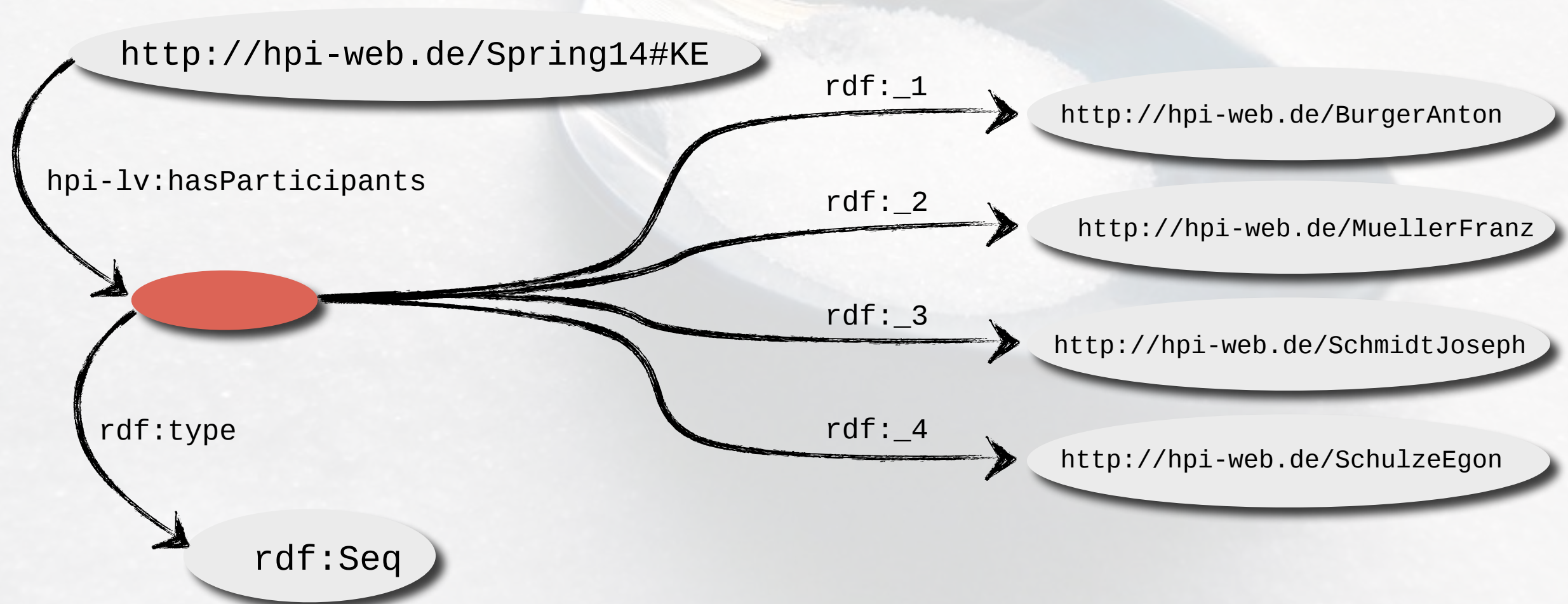
Lists

- General Data structure to enumerate any resources or literals
- Only shortcuts, no additional semantic expressivity
- Distinguish between
 - **Container**
open list, i.e. extension (new entries) possible
 - **Collections**
closed list, i.e. no extension possible



Resource Description Framework

RDF Container



@prefix hpi-lv: <http://hpi-web.de/Lecture#> .

@prefix rdf: http://www.w3.org/1999/02/22-rdf-syntax-ns#> .



Resource Description Framework

RDF-Container

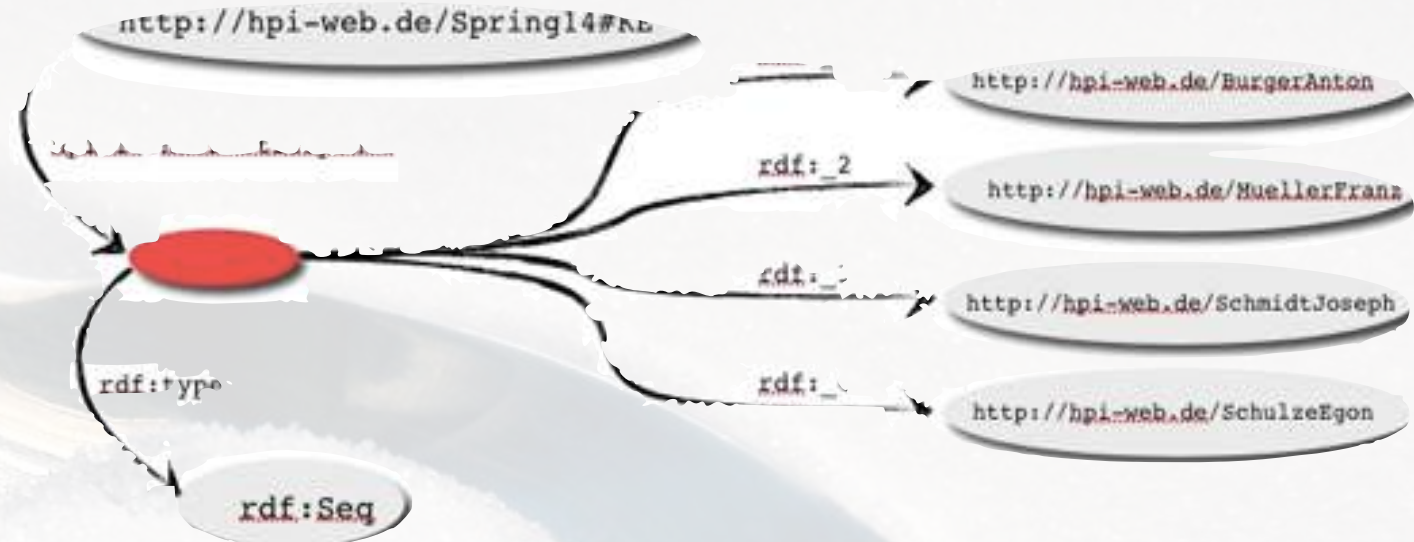
- the root node of the container is assigned a container-type via `rdf:type`
- **`rdf:Bag`**
unordered set of elements,
there is no given order of elements
- **`rdf:Seq`**
ordered set of elements,
- **`rdf:Alt`**
defines alternatives of elements
only one element of the given alternatives is relevant for the application





Resource Description Framework

RDF Container



```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .  
@prefix lv: <http://hpi-web.de/Lecture#> .  
@base <http://hpi-web.de/>.
```

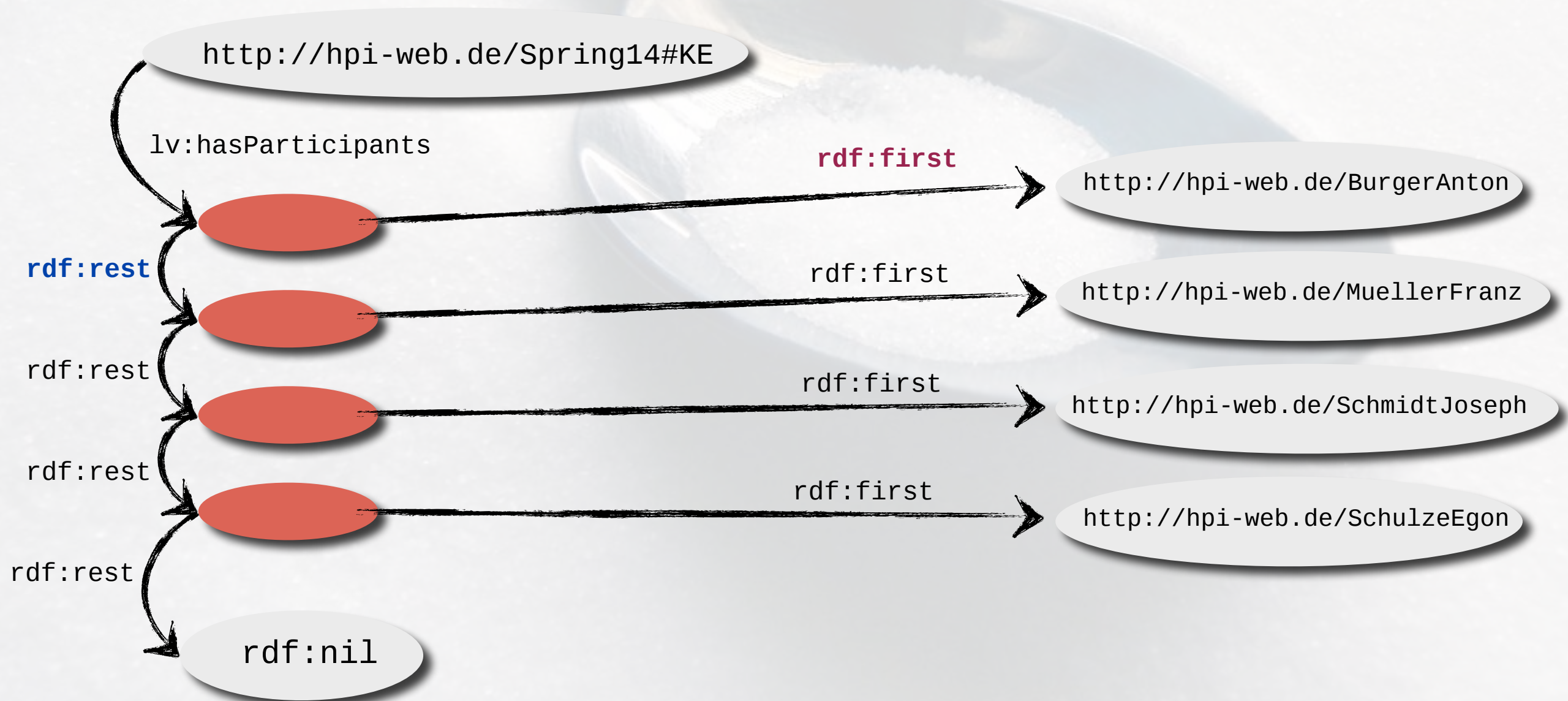
```
<Spring14#KE> lv:hasParticipants [  
  a rdf:Seq;  
  rdf:_1 <BurgerAnton>;  
  rdf:_2 <MuellerFranz>;  
  rdf:_3 <SchmidtJoseph>;  
  rdf:_4 <SchulzeEgon>  
].
```



Resource Description Framework

RDF-Collection

@prefix hpi-lv: <http://hpi-web.de/Lecture#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .



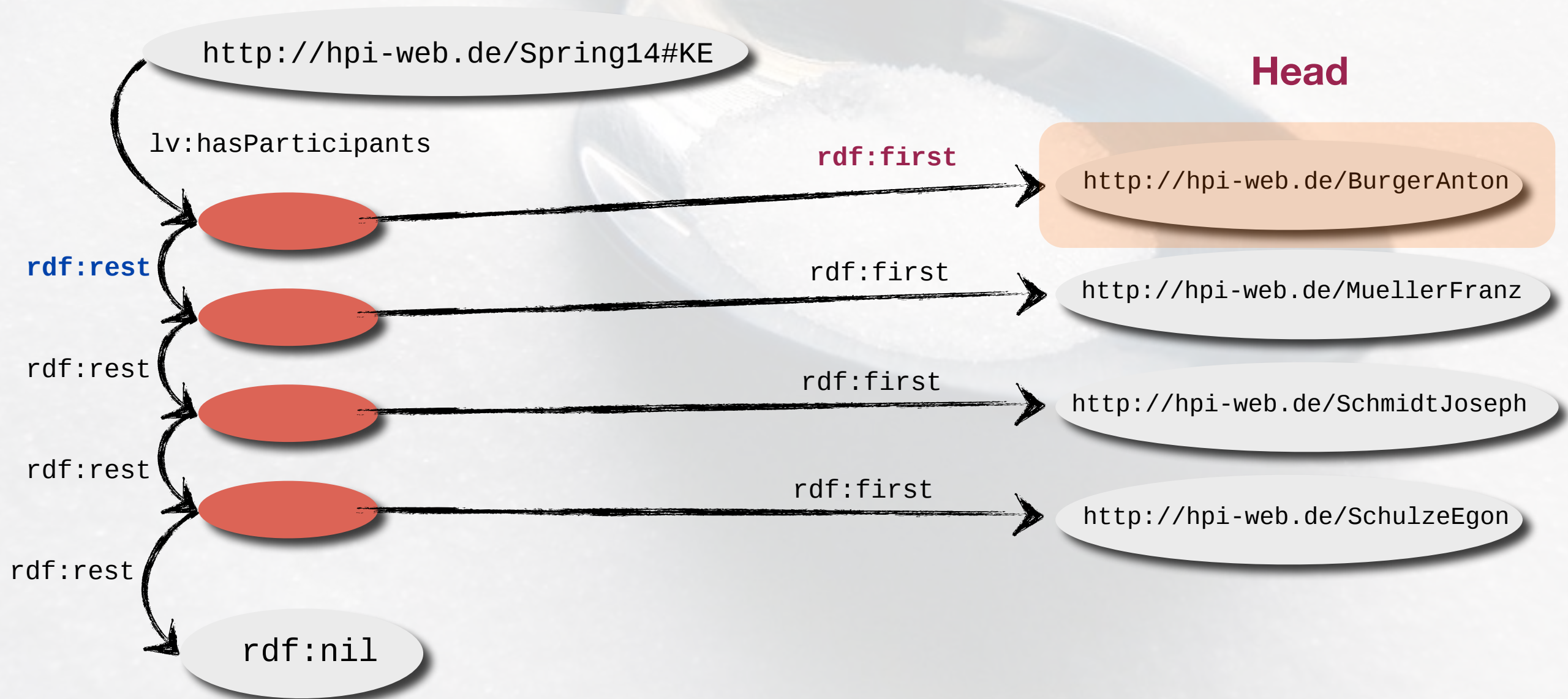
List is splitted recursively in **Head** (first) and **Tail** (rest).



Resource Description Framework

RDF-Collection

@prefix hpi-iv: <http://hpi-web.de/Lecture#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .



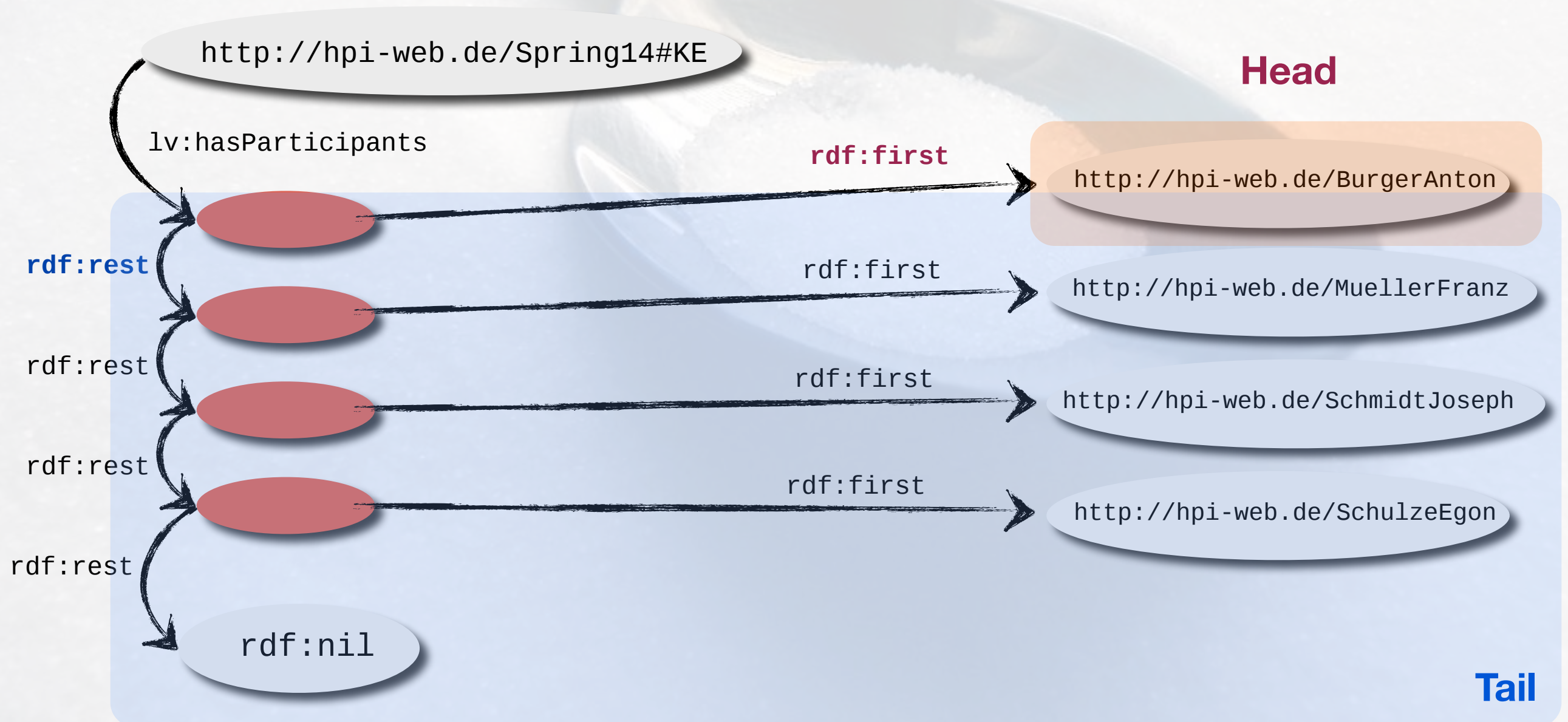
List is splitted recursively in **Head** (first) and **Tail** (rest).



Resource Description Framework

RDF-Collection

@prefix hpi-iv: <http://hpi-web.de/Lecture#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .



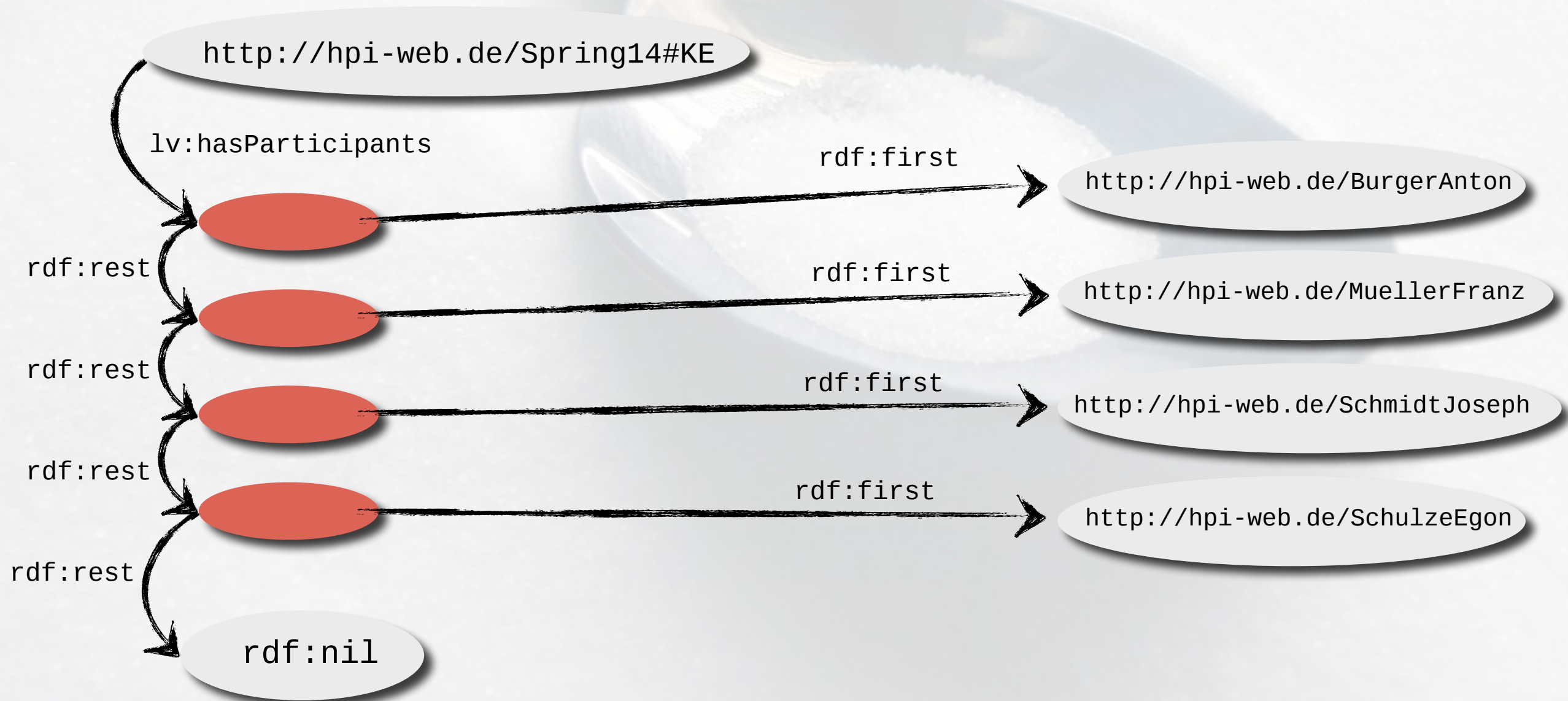
List is splitted recursively in **Head** (first) and **Tail** (rest).



Resource Description Framework

RDF-Collection

@prefix hpi-lv: <http://hpi-web.de/Lecture#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .



List is splitted recursively in **Head** (first) and **Tail** (rest).



Resource Description Framework

RDF-Collection



```

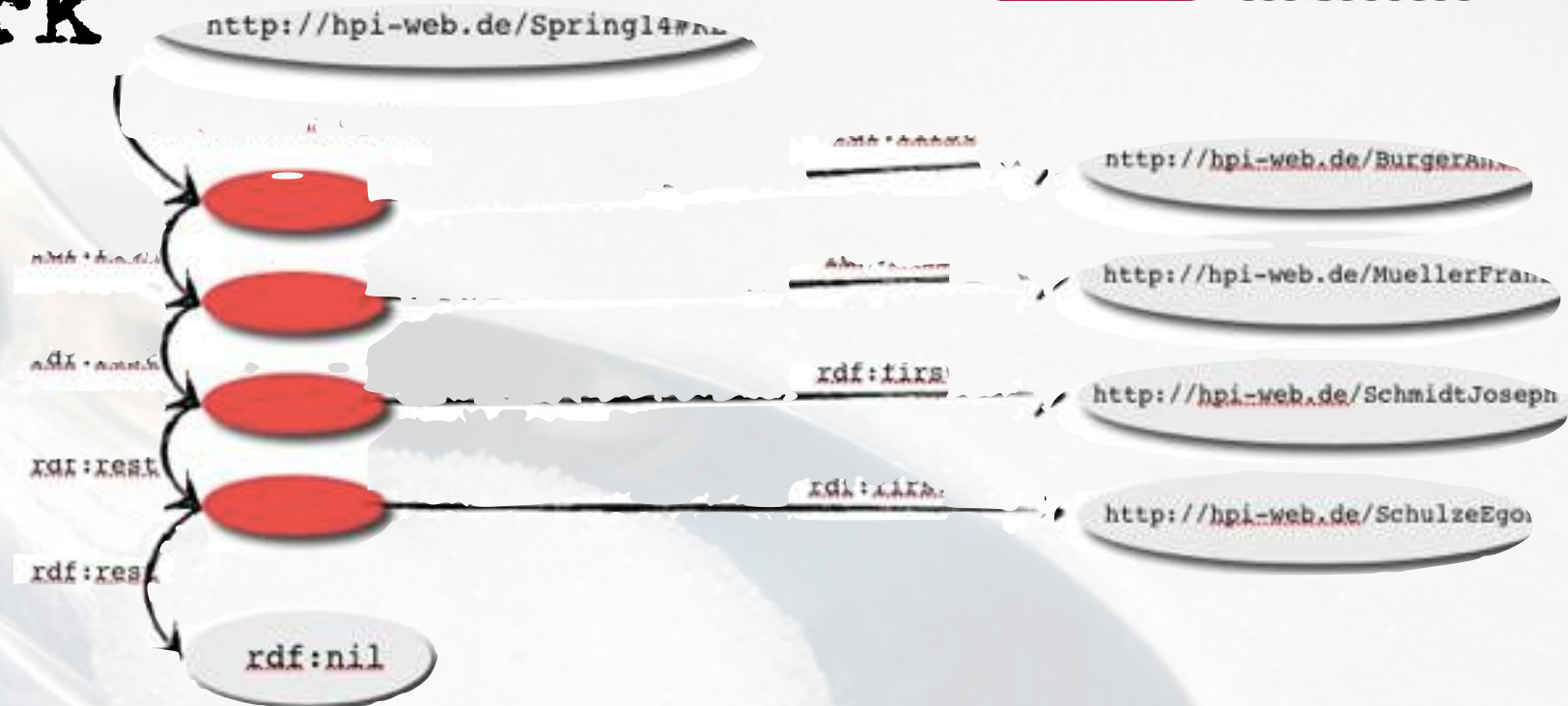
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix lv: <http://hpi-web.de/Lecture#> .
@base <http://hpi-web.de/>.
  
```

```

<Spring14#KE> lv:hasParticipant [
  rdf:first <BurgerAnton>; rdf:rest [
    rdf:first <MuellerFranz>; rdf:rest [
      rdf:first <SchmidtJoseph>; rdf:rest [
        rdf:first <SchulzeEgon>;
        rdf:rest rdf:nil
      ]
    ]
  ]
].
  
```

Resource Description Framework

RDF-Collection



```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
```

```
@prefix lv: <http://hpi-web.de/Lecture#> .
```

```
@base <http://hpi-web.de/>.
```

```
<Spring14#KE> lv:hasParticipant (<BurgerAnton> <MuellerFranz>  
<SchmidtJoseph> <SchulzeEgon>).
```

Reification

06 How to Represent Facts? - RDF (4)

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Lecture 2: Semantic Web Technologies Part I