

Sémantika RDF(S) Co znamená?



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Zuzana Nevěřilová | Centrum zpracování přirozeného jazyka

Příklad grafu

Bob is interested in The Mona Lisa .

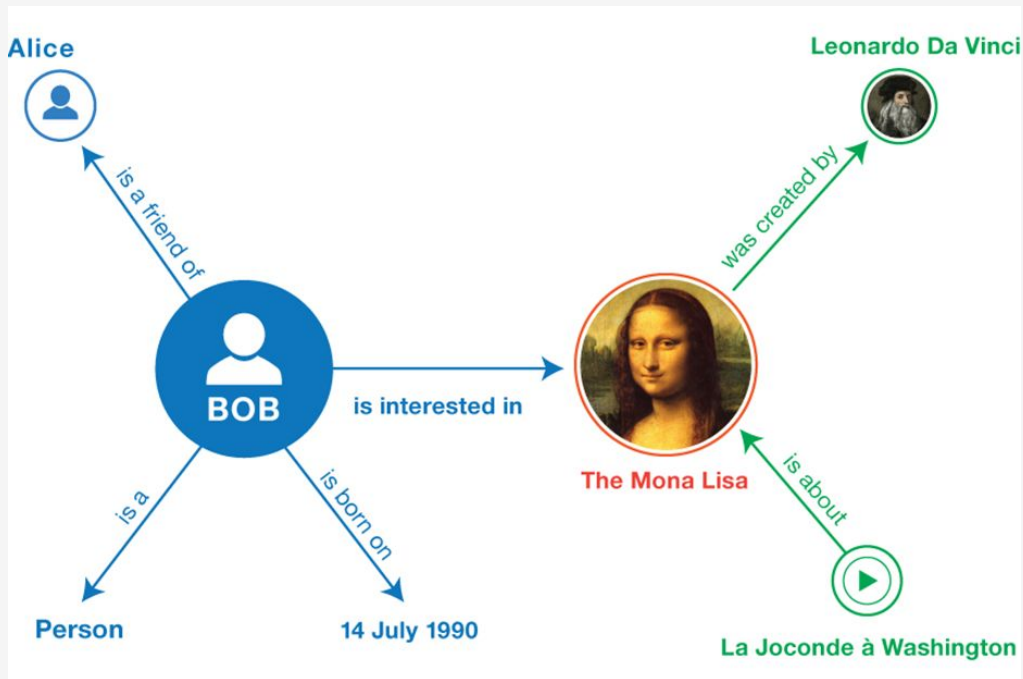
Bob is born on 14 July 1990 .

Bob is a Person .

Bob is a friend of Alice .

La Joconde a Washington is about The Mona Lisa .

The Mona Lisa was created by Leonardo Da Vinci .



Příklad grafu

Bob is interested in The Mona Lisa . `<Bob> <interestedIn> <TheMonaLisa> .`

Bob is born on 14 July 1990 . `<Bob> <DoB> "14 July 1990" .`

Bob is a Person . `<Bob> <isA> <Person> .`

Bob is a friend of Alice . `<Bob> <friendOf> <Alice> .`

La Joconde a Washington is about `<LaJocondeAWashington> <about>`
The Mona Lisa . `<TheMonaLisa> .`

`<TheMonaLisa> <createdBy>`

The Mona Lisa was created by `<LeonardoDaVinci> .`

Sémantika - co data znamenají

Exactly what is considered to be the 'meaning' of an [assertion](#) in RDF or RDFS in some broad sense may depend on many factors, including social conventions, comments in natural language or links to other content-bearing documents. Much of this meaning will be inaccessible to machine processing and is mentioned here only to emphasize that the [formal semantics](#) described in this document is not intended to provide a full analysis of 'meaning' in this broad sense; that would be a large research topic. The semantics given here restricts itself to a [formal](#) notion of meaning which could be characterized as the part that is common to all other accounts of meaning, and can be captured in mechanical [inference](#) rules.

<https://www.w3.org/TR/rdf-mt/>

Sémantika - co data znamenají

Potřebujeme:

- syntax

`<ex:Rodič> <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://www.w3.org/2000/01/rdf-schema#Class> .`
`<ex:Rodič> <http://www.w3.org/2000/01/rdf-schema#subClassOf> <ex:Člověk> .`

- deskripční logiku

`<ex:Rodič>, <ex:Člověk>`

$\text{Rodič} \sqsubseteq \text{Člověk}$

T-Box

- interpretaci

V ontologii lidských vztahů platí, že rodič je člověk.

$I \models \text{Rodič} \sqsubseteq \text{Člověk}$

Sémantika - co data znamenají

Slovník (vocabulary):

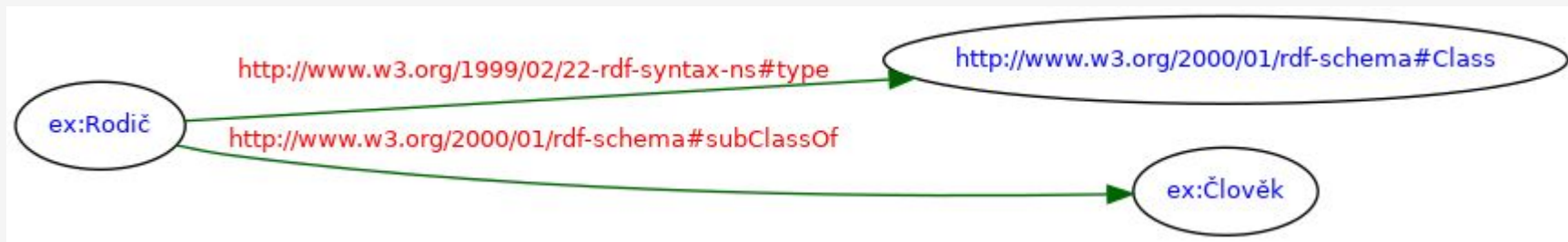
- `http://www.w3.org/1999/02/22-rdf-syntax-ns#type`
- `http://www.w3.org/2000/01/rdf-schema#subClassOf`
- `ex:Rodič`
- `ex:Člověk`
- `http://www.w3.org/2000/01/rdf-schema#Class`

Jmenné prostory (namespaces):

- `rdf` - `http://www.w3.org/1999/02/22-rdf-syntax-ns#`
- `rdfs` - `http://www.w3.org/2000/01/rdf-schema`
- `ex`

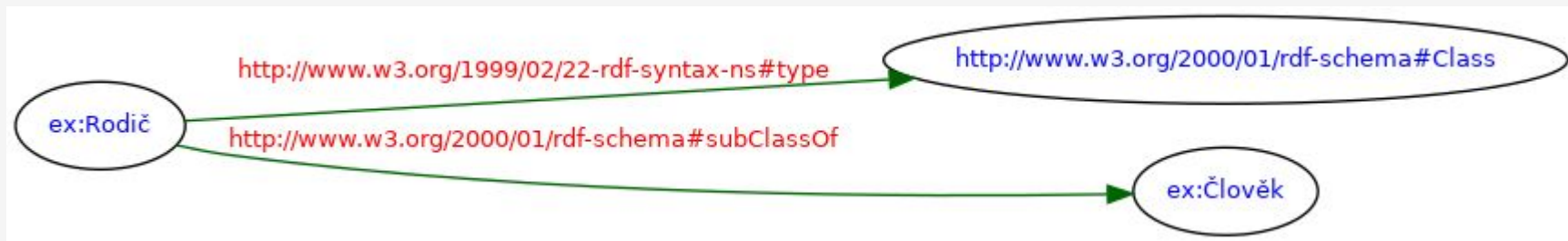
Sémantika - co data znamenají

Graf (seznam trojic):



```
<ex:Rodič> <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://www.w3.org/2000/01/rdf-schema#Class> .  
<ex:Rodič> <http://www.w3.org/2000/01/rdf-schema#subClassOf> <ex:Člověk> .
```

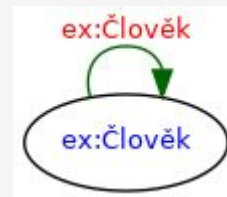
Odvození a omezení



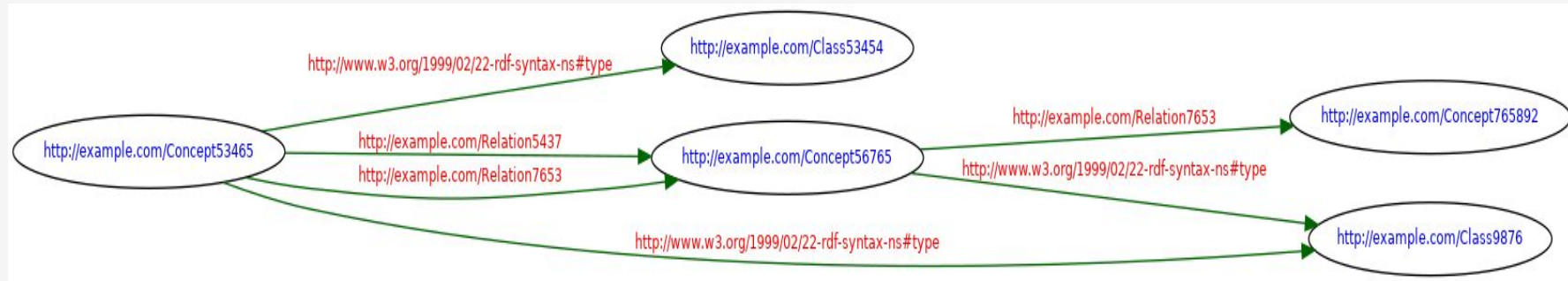
Nevíme nic o tom, že `Člověk` je (také) třída.

I nesmysl může v RDF existovat:

`<ex:Člověk> <ex:Člověk> <ex:Člověk> .`



Sémantika z pohledu počítačového programu



Uzly musí být popsány jako třídy/individua.

Hrany musí být popsány jako relace určitého typu.

Pak je možné použít deskripční logiku a “porozumět” (tj. umět odvodit novou znalost).

Odvození

Člověk je třída (podtřídou owl:Thing).

owl:Thing je všechno (\top).

owl:Nothing je nic (\perp).



Query (class expression)

Query results

Equivalent classes (1 of 1)

● Člověk

Superclasses (1 of 1)

● owl:Thing

Direct superclasses (1 of 1)

● owl:Thing

Direct subclasses (1 of 1)

● Rodič

Subclasses (2 of 2)

● Rodič

● owl:Nothing