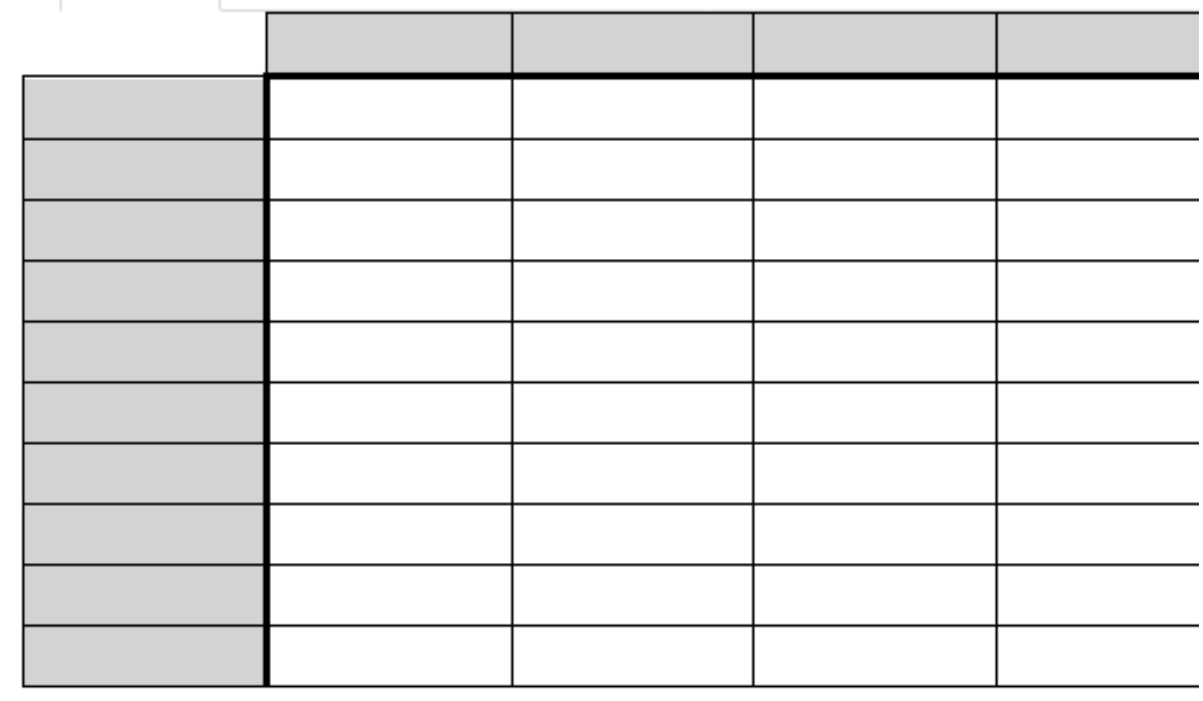


# RDF Spreadsheet Editor: Get (G)rid of Your RDF Data Entry Problems

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## Abstract

Spreadsheets are widely used by knowledge workers, especially in the industrial sector. Their methodology enables a well understood, easy and fast possibility to enter data. As filling out a spreadsheet is more accessible to common knowledge workers than defining RDF statements, in this demo, we present a tool which uses the spreadsheet metaphor to enable various kinds of users to easily create RDF data whether they are RDF experts or novices. Our approach aims at supporting users in manually filling a knowledge base with their expertise. This is usually a collaborative process involving a team of domain experts and knowledge engineers. To immediately see modelling consequences and updates by others, each entry is simultaneously transferred into triple statements.



Each entry into a cell of this spreadsheet is simultaneously transferred to RDF statements



## Introduction



### ➤ Spreadsheets

- Well understood
- Easy and fast possibility to enter data
- More accessible to common knowledge workers than defining RDF statements

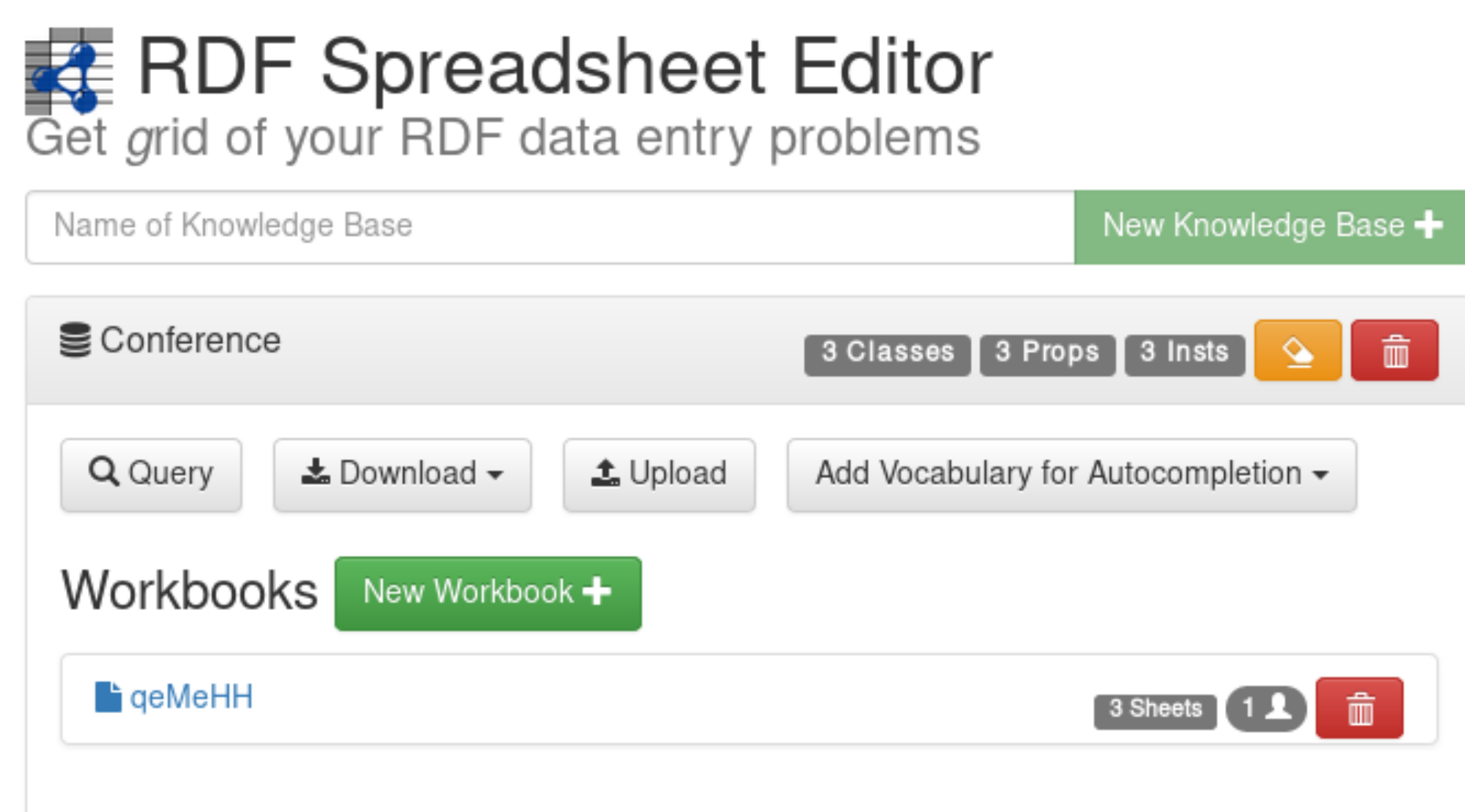
## Approach

- Support users in manually **filling a knowledge base** (primarily A-Box) with their expertise
- By using the spreadsheet metaphor we enable users to work with semantic data in a familiar way

## Features

- Class per sheet & entity per row mapping
- Automatically inferring and creating domain and range statements
- Auto completion of resource labels
- Prepending single quotation mark to create a literal
- Copy & paste a resource from one cell to another
- Comment resources using a text area

## Administration Interface



- Create knowledge bases
- Query entered spreadsheet data with SPARQL
- Download spreadsheet content as RDF
- Add vocabulary for auto completion (e.g. FOAF)
- Create workbooks and share link to work cooperatively

## Workbook Page

| Person  | Color | firstName | lastName | age | married | favorite color |
|---------|-------|-----------|----------|-----|---------|----------------|
| David   |       | David     | Hunt     | 44  | true    | Purple         |
| James   |       | James     | Garcia   | 50  | false   | Green          |
| Jimmy   |       | Jimmy     | Hill     | 48  | true    | Blue           |
| Jamey   |       | Jamey     | Ruppert  | 79  | true    | Orange         |
| Kenneth |       | Kenneth   | Curtis   | 41  | false   | Purple         |

| Person | Color | dep  |
|--------|-------|--|
| Purple |       | depicts  |
| Green  |       | depiction  |
| Blue   |       | ...present some thing (ie. those depictions which are particula... |
| Orange |       |  |

| Person | Color |   |
|--------|-------|---|
| Purple |       |   |
| Green  |       |   |
| Blue   |       | Purple is a color intermediate between blue and red |
| Orange |       |   |

Purple is a color intermediate between blue and red

## Automatically Generated RDF

```
<urn:uuid:047687f8-d336-470a-8278-15f57a066dfc>
  a foaf:Person , owl:Thing ;
  rdfs:label "David"@en ;
  foaf:firstName "David"@en ;
  foaf:lastName "Hunt"@en ;
  <urn:uuid:0ebba68c-43eb-45c5-9946-e2adc59c85c0>
    44 ;
  <urn:uuid:4f21d3df-b882-4ced-8a59-c189c6277df4>
    <urn:uuid:0f3aa2d4-cb53-4b89-86de-05bff850fe93> ;
  <urn:uuid:90befbac-5667-49a8-a42c-56d3c4599ec5>
    true .

<urn:uuid:0f3aa2d4-cb53-4b89-86de-05bff850fe93>
  a owl:Thing , <urn:uuid:4136df6c-f596-430b-b52d-6fb71173711> ;
  rdfs:comment "Purple is a color intermediate
  between blue and red"@en ;
  rdfs:label "Purple"@en .

<urn:uuid:0ebba68c-43eb-45c5-9946-e2adc59c85c0>
  a rdf:Property ;
  rdfs:domain foaf:Person ;
  rdfs:label "age"@en ;
  rdfs:range <http://www.w3.org/2001/XMLSchema#int> .

<urn:uuid:90befbac-5667-49a8-a42c-56d3c4599ec5>
  a rdf:Property ;
  rdfs:domain foaf:Person ;
  rdfs:label "married"@en ;
  rdfs:range <http://www.w3.org/2001/XMLSchema#boolean> .

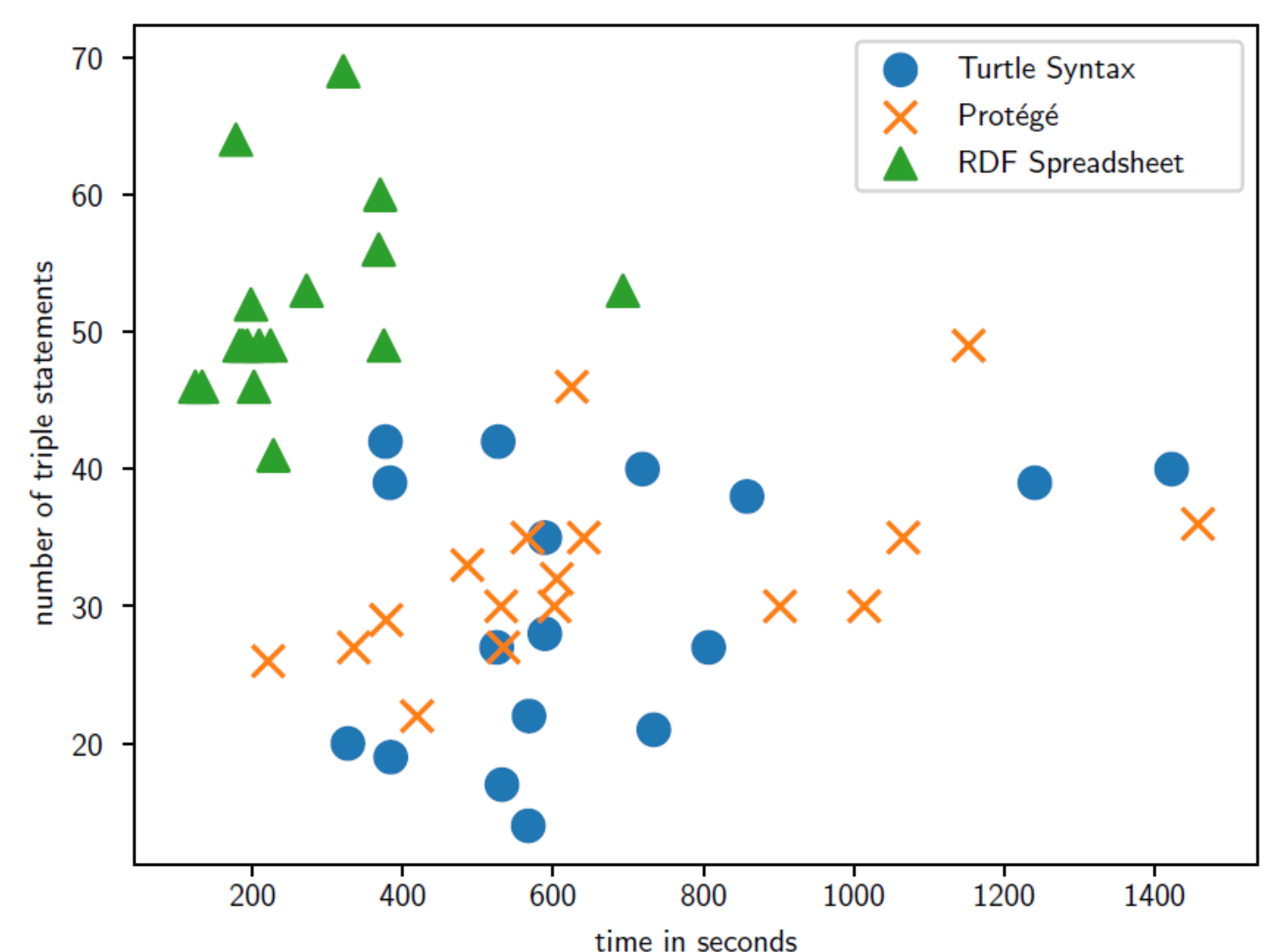
<urn:uuid:4136df6c-f596-430b-b52d-6fb71173711>
  a rdfs:Class ;
  rdfs:label "Color"@en .
```

## Early Evaluation

- 17 participants asked to develop an ontology by modeling the given information

“Max attends the conference ISWC 2017. The ISWC 2017 is located in Vienna. The keywords Semantic Web and Knowledge are related to ISWC 2017. Vienna is a city and lies within the country Austria.”

- Baselines: writing turtle syntax and using ontology editor Protégé (version 5.2.0)
- Measured: time to create the respective triples and number of created triples
- Our application leads to the creation of **more statements in less time** compared to competing approaches



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