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HELDIG
Helsinki Centre for Digital Humanities

Using Wikibase for Managing Cultural Heritage Linked Open Data Based on CIDOC-CRM

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Agenda

- **Wikibase**
  - Introduction/motivation
  - Data model
- **WB-CIDOC**
  - Idea
  - Basics
  - Example
- **Limitations**
- **Conclusion**

Wikibase

Technology

Mediawiki → **Wikipedia**

Wikibase Mediawiki plugin → **Wikidata**

- Structured information about 90 million entities

→ **Wikibase for research**

"Wikibase will not be about the truth, but about statements and their references"

https://www.mediawiki.org/wiki/Wikibase/DataModel/Primer

Wikibase - Data model (simplified)

Main domain types

- **Item**
- **Property**

Common properties

- **Identifier**
- **Multilingual description**
- **Statements**
  - Claim
    - *Property*
    - *Value*
    - *Qualifiers*
  - References
  - Rank

Turin

https://www.wikidata.org/wiki/Q495

population

882,523

point in time	1 January 2018
determination method	demographic balance

1 reference

reference URL	http://demo.istat.it/pop2018/index3.html
title	Popolazione Residente al 1° Gennaio 2018 (Italian)
retrieved	16 March 2019
publisher	Italian National Institute of Statistics

875,698

point in time	1 January 2019
determination method	demographic balance

1 reference

870,952

point in time	1 January 2020

1 reference

908,318

point in time	30 June 2010

1 reference

imported from Wikimedia project	Azerbaijani Wikipedia
Wikimedia import URL	https://az.wikipedia.org/?oldid=5060640

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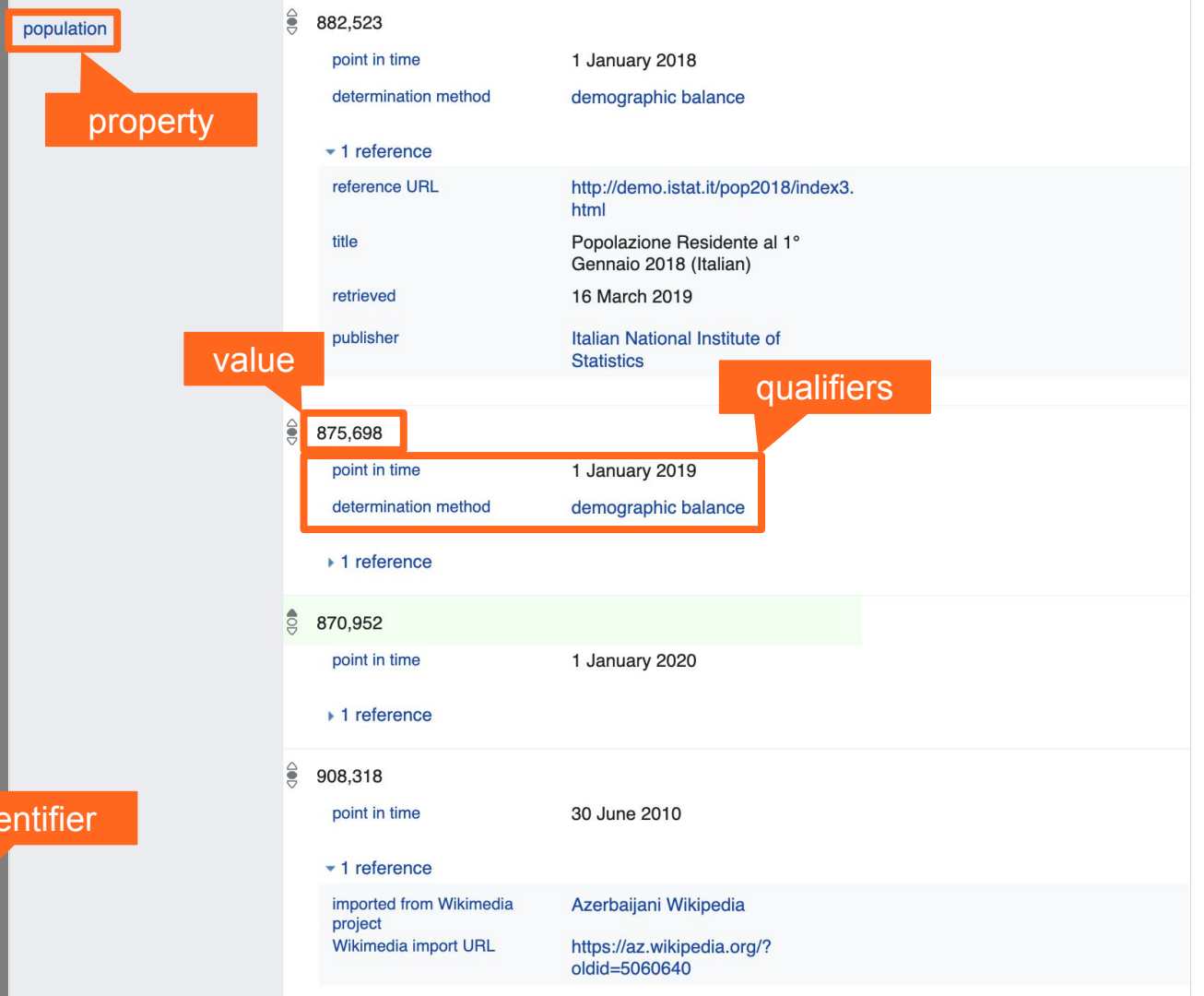

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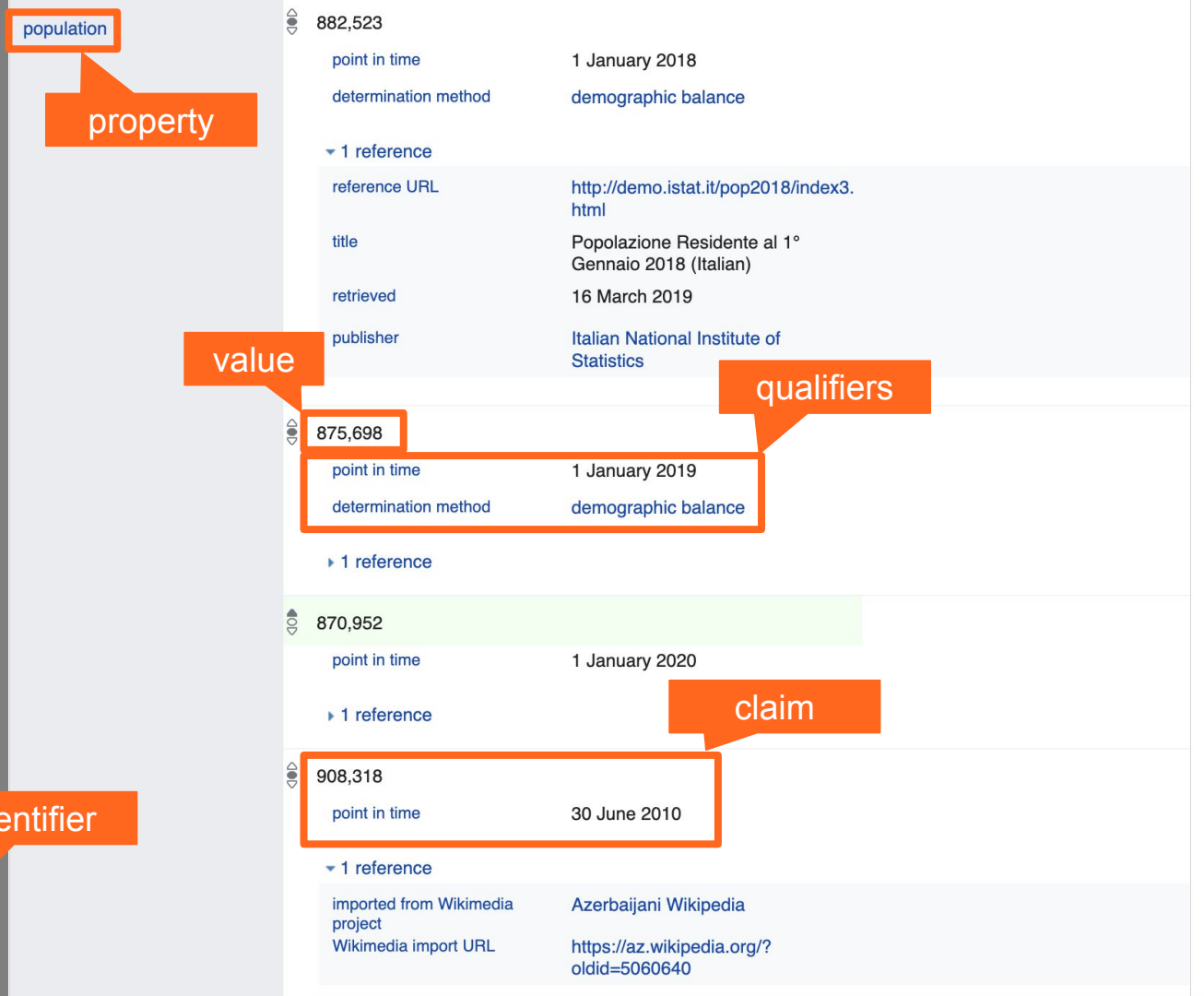

identifier

Turin

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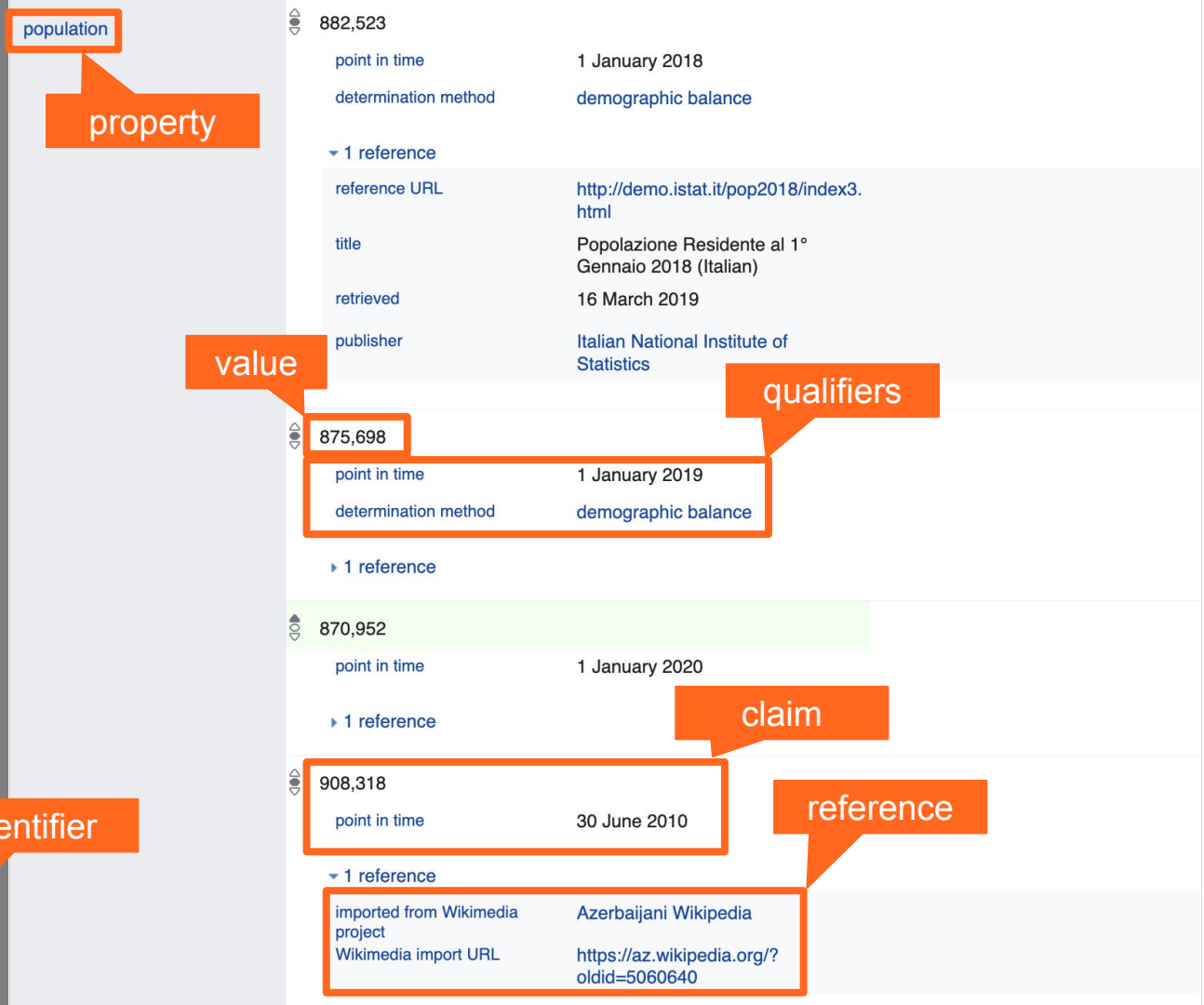

Turin

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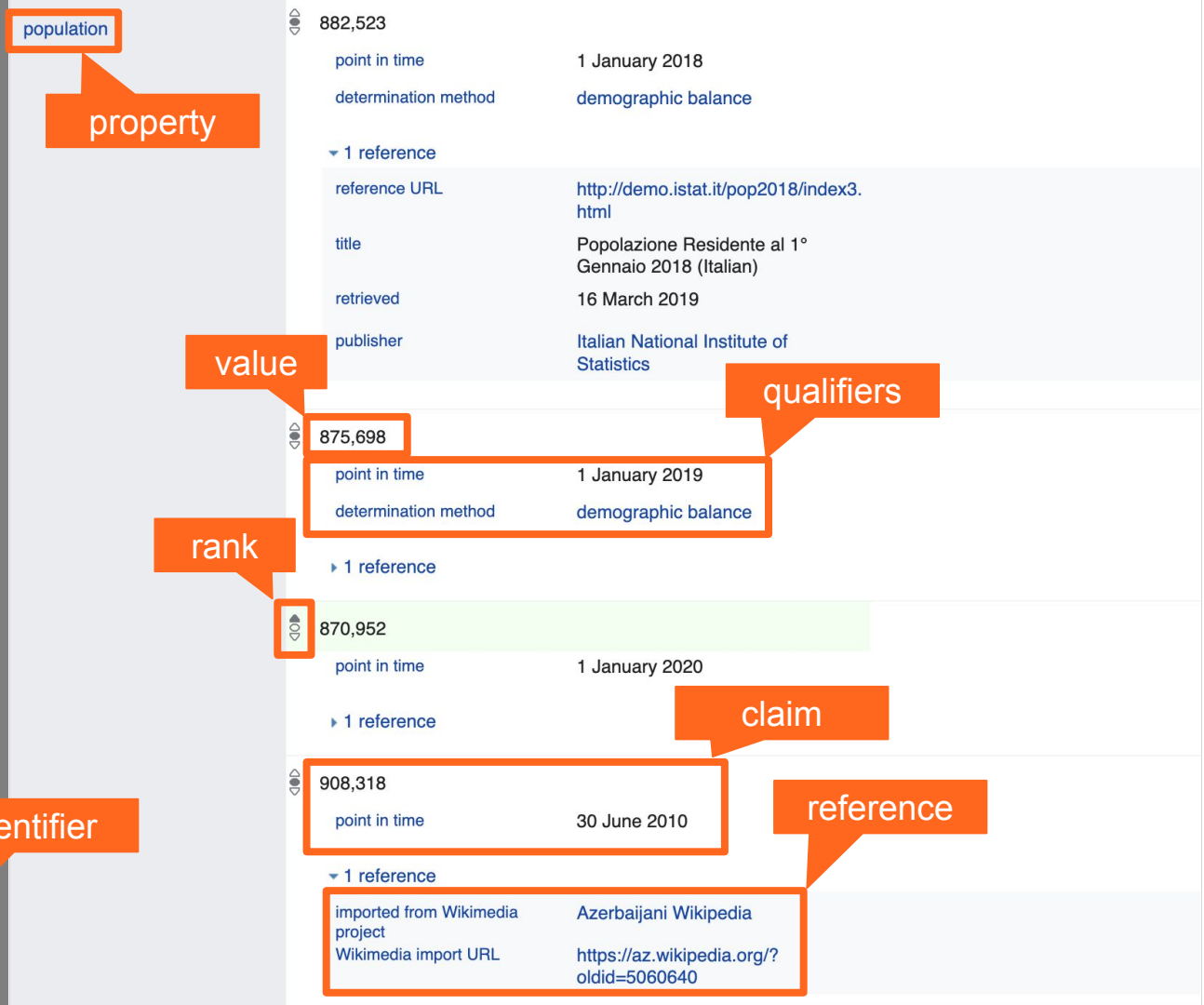


WB-CIDOC

- **What?**
  - Using Wikibase instance in a way that allows for general CIDOC-CRM RDF generation.
- **Why?**
  - Wikibase provides based management features for KGs
  - Less resources to be maintained when compared to vanilla CIDOC-CRM RDF.
  - Limited maintenance required for software involved due to general transformation rules.

WB-CIDOC - How?

- **Setup your own Wikibase instance**
- **Add required WB-CIDOC properties**
  - Instance of
  - URI mapping
  - Event type
- **Add domain ontology information as Wikibase Items and Properties**
- **Populate Wikibase with instance data using WB-CIDOC input conventions**

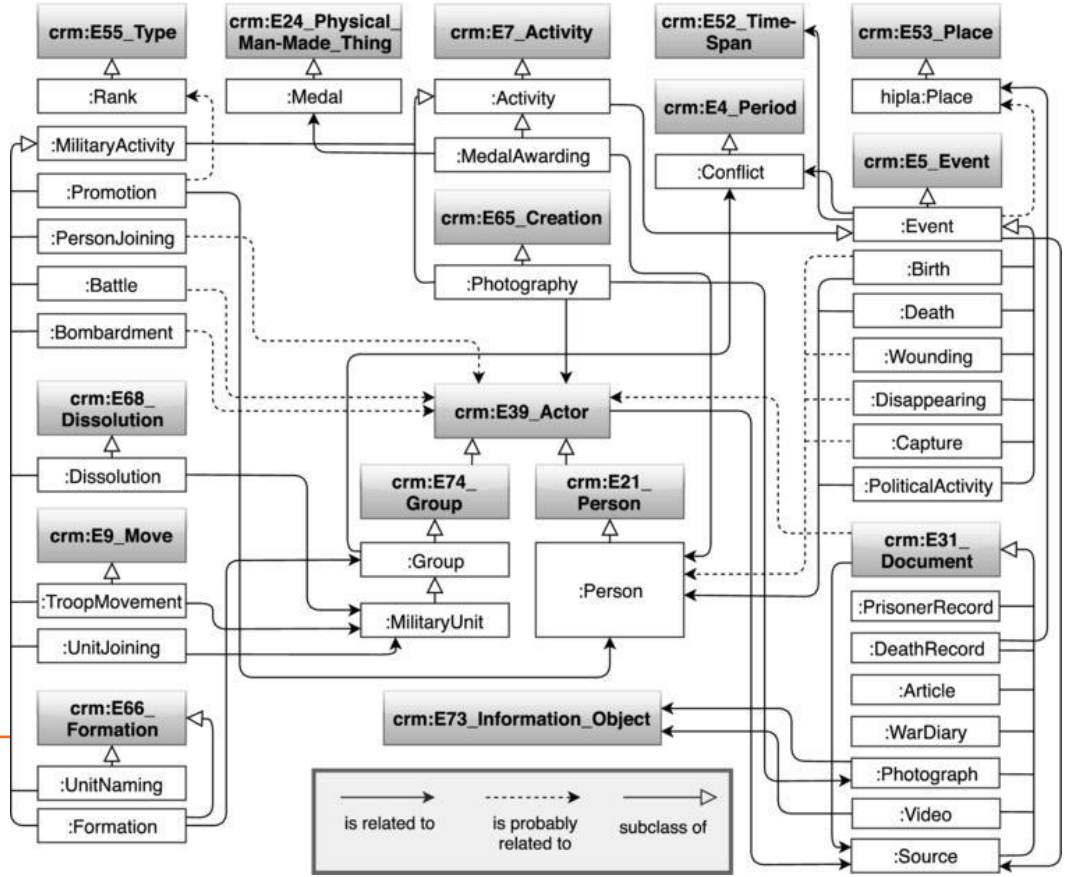
WB-CIDOC - Input conventions

- **Implicit events**
  - Event is generated for properties with an Event type
  - Qualifiers are used to describe the generate event within the same resource (Item)
- **Time-spans for implicit events**
  - Time-spans are generated by extracting the Time-span related properties from the qualifiers
  - Linked to the implicit event

WarSampo WB-CIDOC example

- **WarSampo is a semantic portal and a linked data service about Finland in the Second World War**

Image from Koho, Mikko et al. 'WarSampo Knowledge Graph: Finland in the Second World War as Linked Open Data'. 1 Jan. 2021 : 265 – 278.



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WarSampo example

- Aerial victory from the WarSampo data.
- Let’s work our way backwards from the RDF output, through implicit event and time-span to the Wikibase ontology items.

WarSampo example

Actor

```
<http://ldf.fi/warsa/actors/person_p752153>
  a crm:E21_Person ;
  skos:prefLabel "Erkinheimo, Niilo Johannes"@en ;
  crm:P11i_participated_in warsa-event:Q90117-1 .

warsa-event:Q90117-1
  a crm:E5_Event ;
  skos:prefLabel "Aerial victory in Seiskari: I-153 shot down
                  by Sergeant Niilo Erkinheimo"@en ;
  crm:P11_had_participant
       <http://ldf.fi/warsa/actors/actor_437> ;
  crm:P11_had_participant
       <http://ldf.fi/warsa/actors/person_p752153>;
  crm:P4_has_time_span warsa-event:Q90117-1-ts1 ;
  crm:P7_took_place_at wcm:k1334 .
```

Event

Actor

```
<http://ldf.fi/warsa/actors/actor_437>
  a asc:MilitaryUnit, crm:E74_Group ;
  skos:prefLabel "No. 32 Squadron"@en .

warsa-event:Q90117-1-ts1
  a crm:E52_Time-Span ;
  crm:P82a_begin_of_the_begin "1942-04-03"^^xsd:date ;
  crm:P82b_end_of_the_end "1942-04-03"^^xsd:date ;
  skos:prefLabel "1942-04-03" .
```

Time-Span

Wikibase page showing the data related a person who participated in the battle.

Erkinheimo, Niilo Johannes (Q90117)

No description defined edit

In more languages
Configure

Language	Label	Description	Also known as
English	Erkinheimo, Niilo Johannes	No description defined	
Finnish	No label defined	No description defined	

Statements

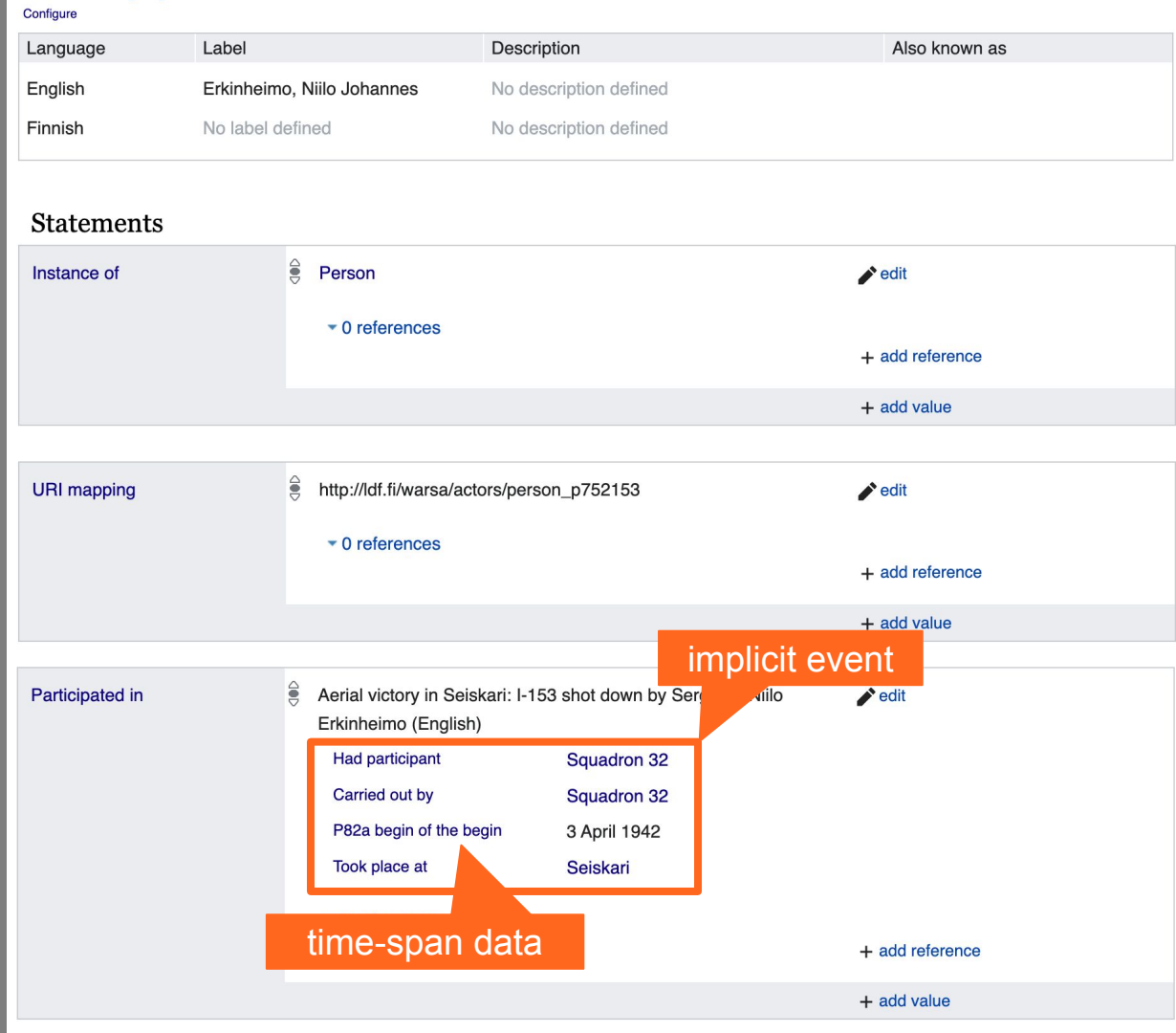
Instance of — Person — edit
0 references
+ add reference
+ add value

URI mapping — http://ldf.fi/warsa/actors/person_p752153 — edit
0 references
+ add reference
+ add value

Participated in — Aerial victory in Seiskari: I-153 shot down by Sergeant Niilo Erkinheimo (English) — edit

Had participant	Squadron 32
Carried out by	Squadron 32
P82a begin of the begin	3 April 1942
Took place at	Seiskari

Wikibase page showing the data related a person who participated in the battle.



No. 32 Squadron (Q94683)

No description defined edit

In more languages
Configure

Language	Label	Description	Also known as
English	No. 32 Squadron	No description defined	
Finnish	No label defined	No description defined	

Statements

Instance of — MilitaryUnit — edit
0 references
+ add reference
+ add value

URI mapping — http://ldf.fi/warsa/actors/actor_437 — edit
0 references
+ add reference
+ add value

	Description	Also known as
annes	No description defined	
	No description defined	

edit
ferences
+ add reference
+ add value

df.fi/warsa/actors/person_p752153 edit
ferences
+ add reference
+ add value

victory in Seiskari: I-153 shot down by Ser… …illo edit
eimo (English)

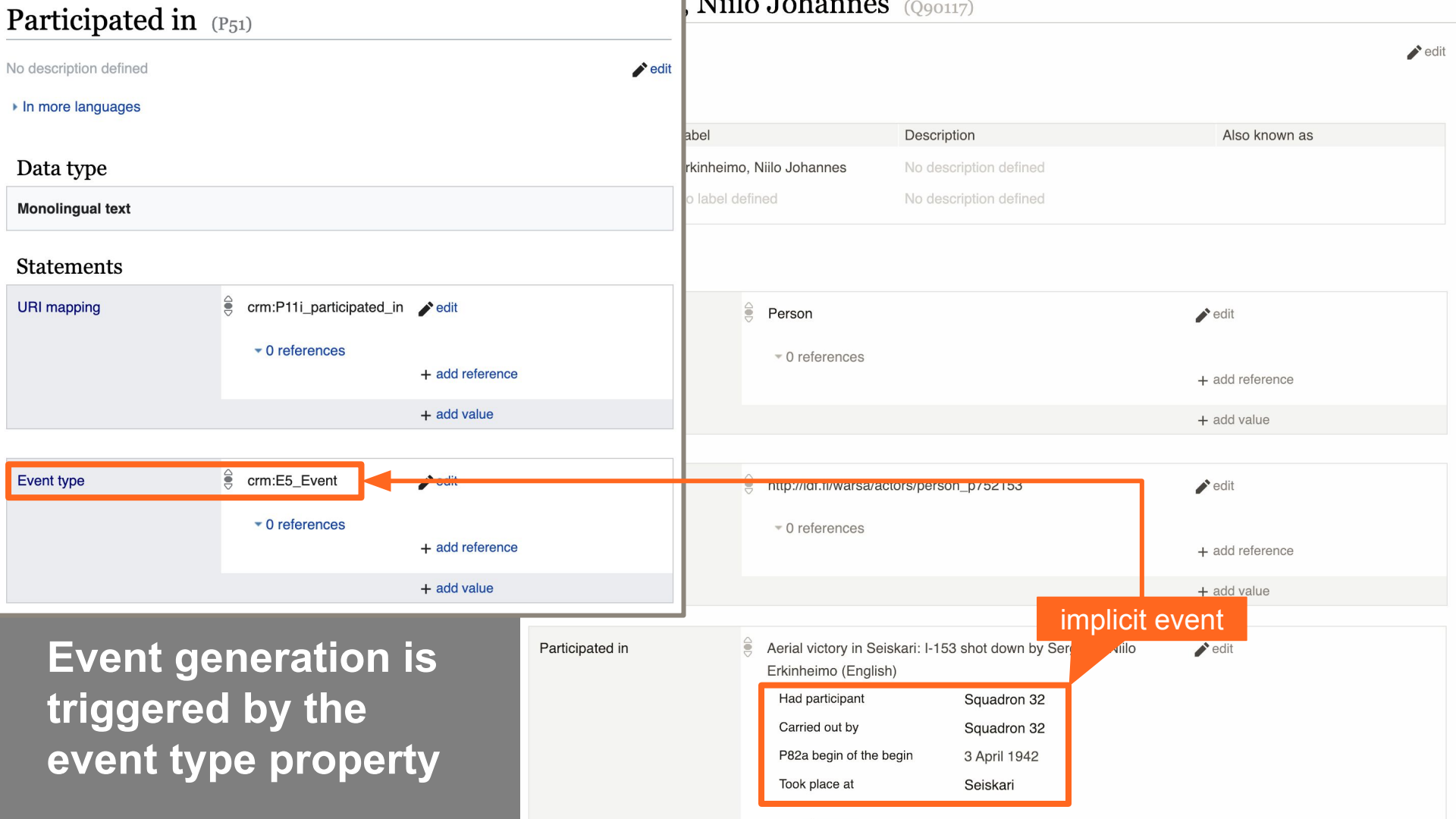
participant	Squadron 32
ed out by	Squadron 32
P82a begin of the begin	3 April 1942
Took place at	Seiskari

+ add reference
+ add value

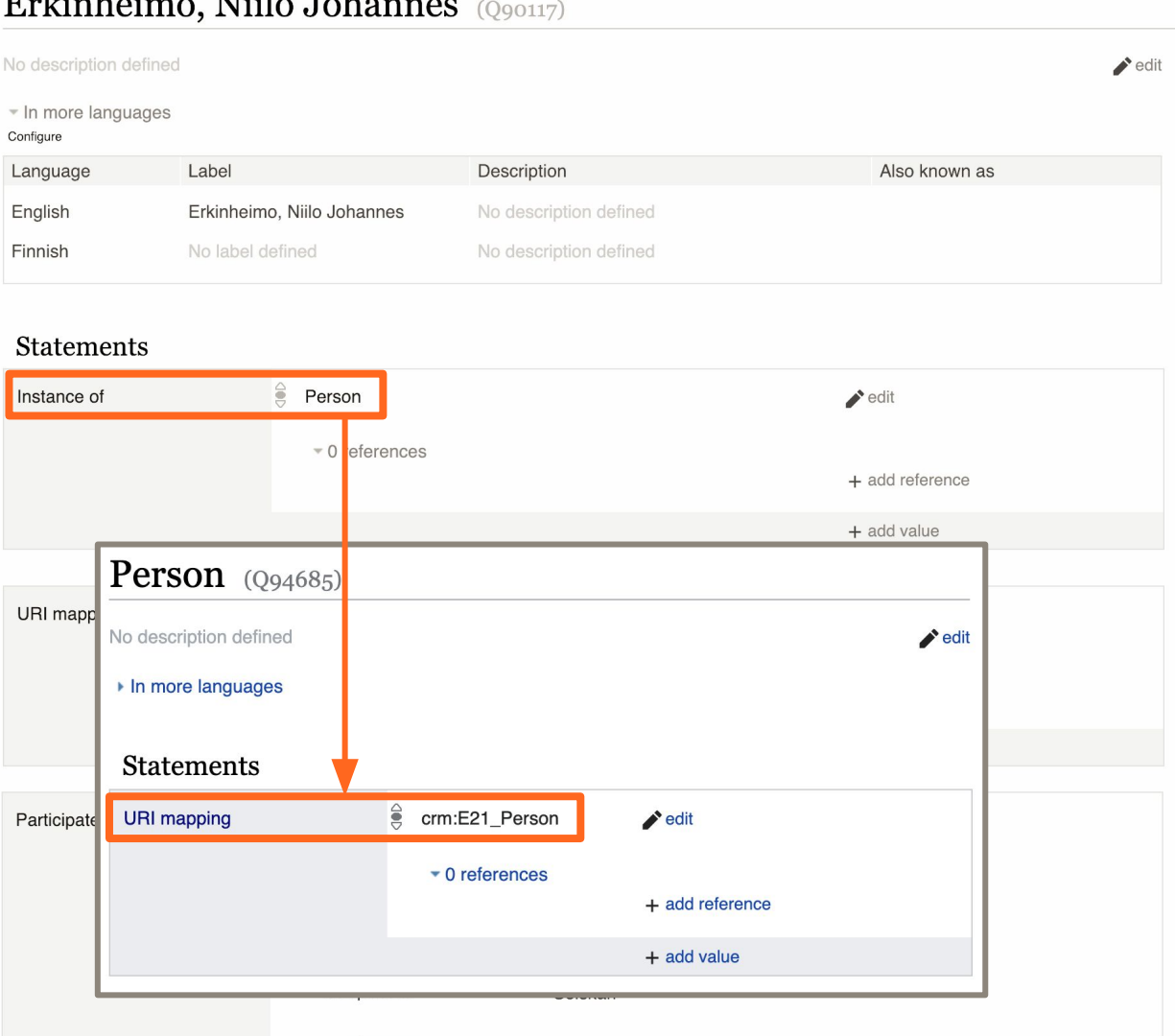
implicit event

time-span data

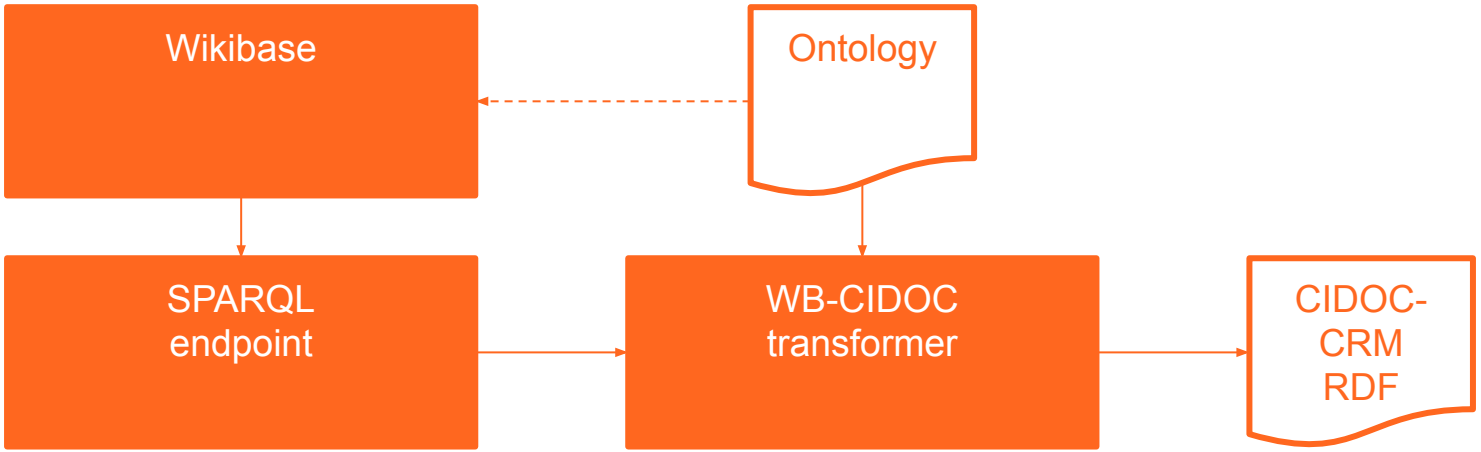
Linked items have their own pages.


Participated in (P51)
No description defined
edit
In more languages
Data type
Monolingual text
Statements
URI mapping
crm:P11i_participated_in
edit
0 references
add reference
add value
Event type
crm:E5_Event
edit
0 references
add reference
add value
Niilo Johannes (Q90117)
edit
Description
Also known as
No description defined
No description defined
Person
edit
0 references
add reference
add value
http://ldf.fi/warsa/actors/person_p752153
edit
0 references
add reference
add value
implicit event
Participated in
Aerial victory in Seiskari: I-153 shot down by Ser Niilo Erkinheimo (English)
edit
Had participant Squadron 32
Carried out by Squadron 32
P82a begin of the begin 3 April 1942
Took place at Seiskari
Event generation is triggered by the event type property

Output type is determined by combination of instance of and URI mapping properties



Components and data flows



Limitations

- **Limited to simple cases for now**
- **Implicit events are only visible from one side of the relation**
  - Person vs. Squadron Item page (from WarSampo example)
- **WB-CIDOC validation not available**
- **No systematic evaluation conducted**

Conclusions

- **Early stage idea and prototype**
- **We are working with different kinds of Wikibase based solutions for cultural heritage knowledge graphs with the National Archives of Finland**

Thank you!

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Aalto Universtiy