RDF-star: bridging the gap between Linked Data and Property Graphs

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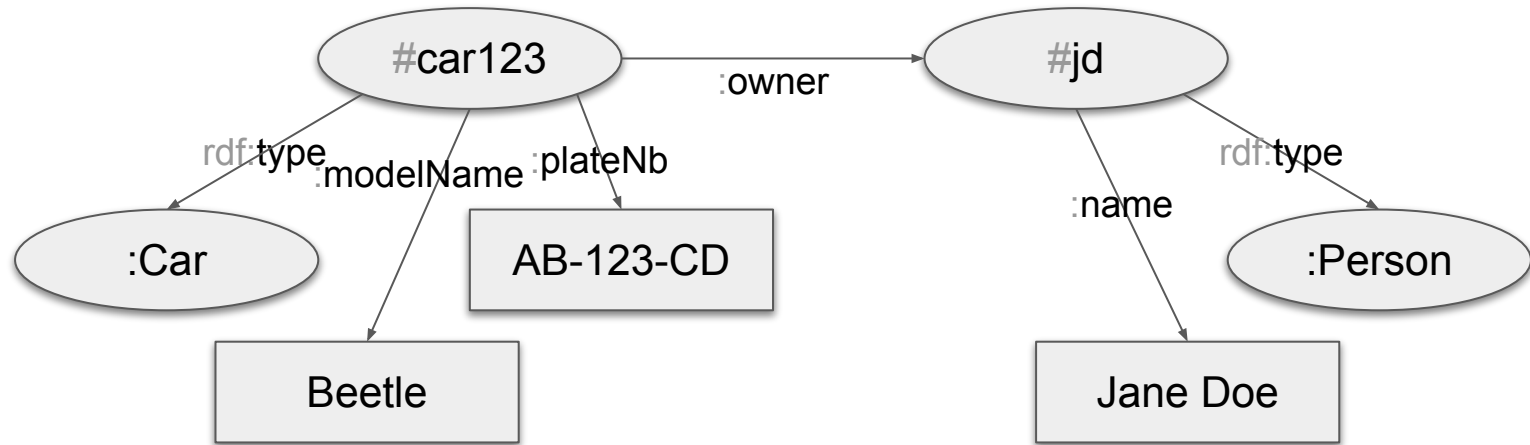
Linked Data

- A set of <u>standards</u>
- for exchanging data <u>on the web</u>
- in an <u>interoperable</u> way
  - syntactically interoperable
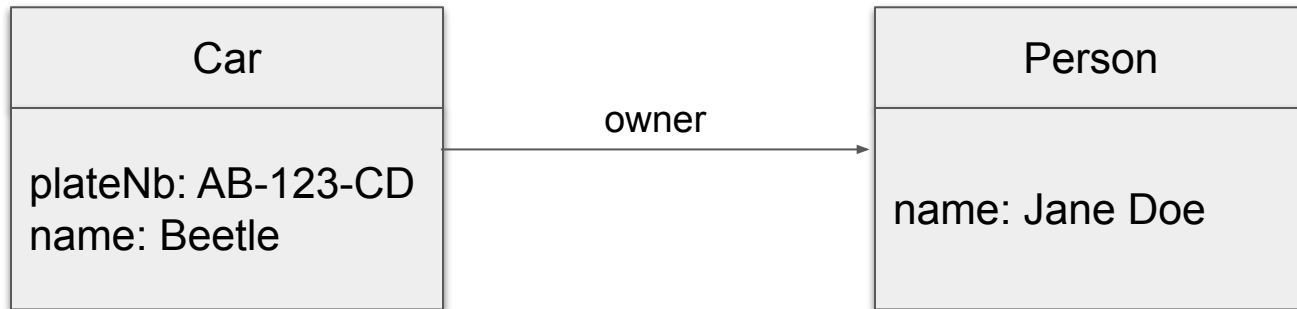 - <u>semantically</u> interoperable
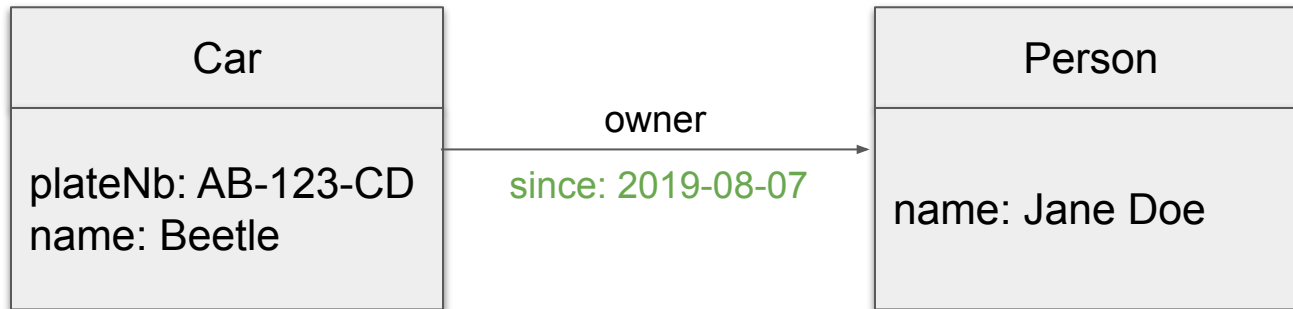
RDF, SPARQL, SHACL, OWL, JSON-LD…

LINKED OPEN DATA
On the web OPEN LICENSE
Machine-readable data
Non-proprietary format
RDF standards
Linked RDF
IS YOUR DATA 5 ⭐?

Linked Data: example

Property Graphs

A popular (family of) graph data model(s)

Car
plateNb: AB-123-CD name: Beetle

owner →

Person
name: Jane Doe

Property Graphs

Nodes __and edges__ can have properties

Car
plateNb: AB-123-CD name: Beetle

owner
since: 2019-08-07

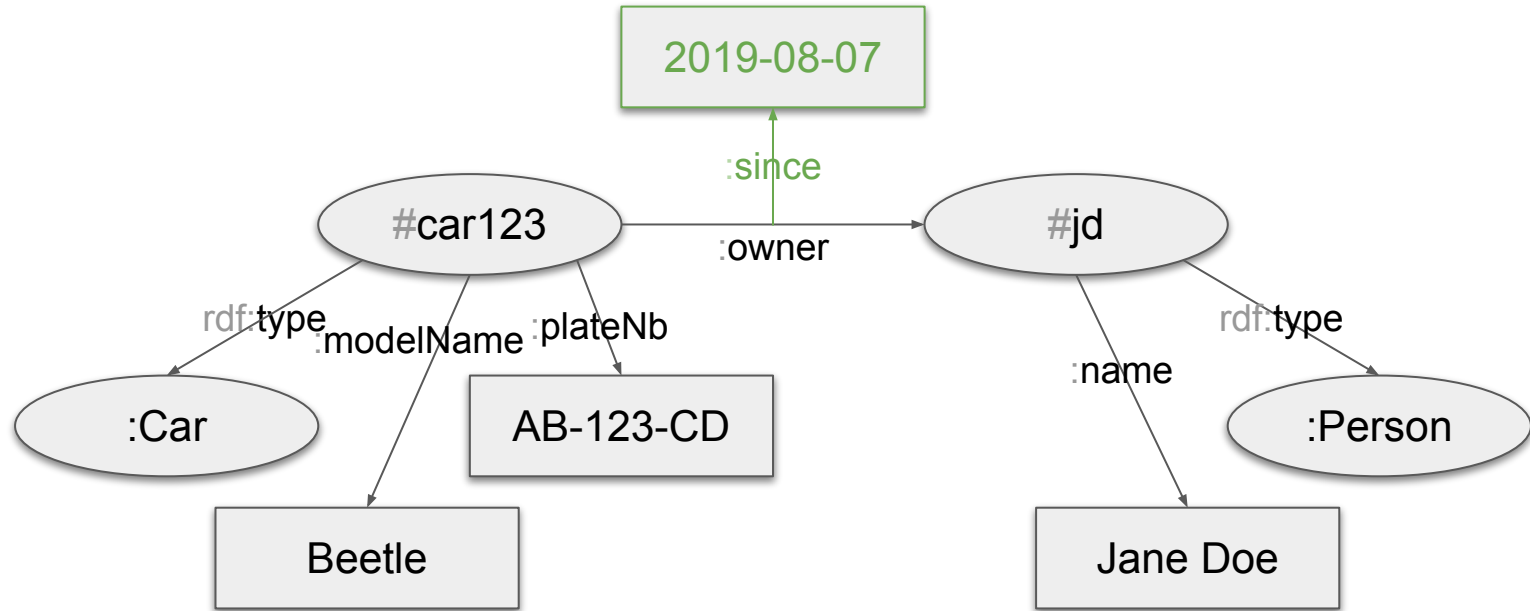| Person |
|---|
| name: Jane Doe |

N-ary relationship in RDF
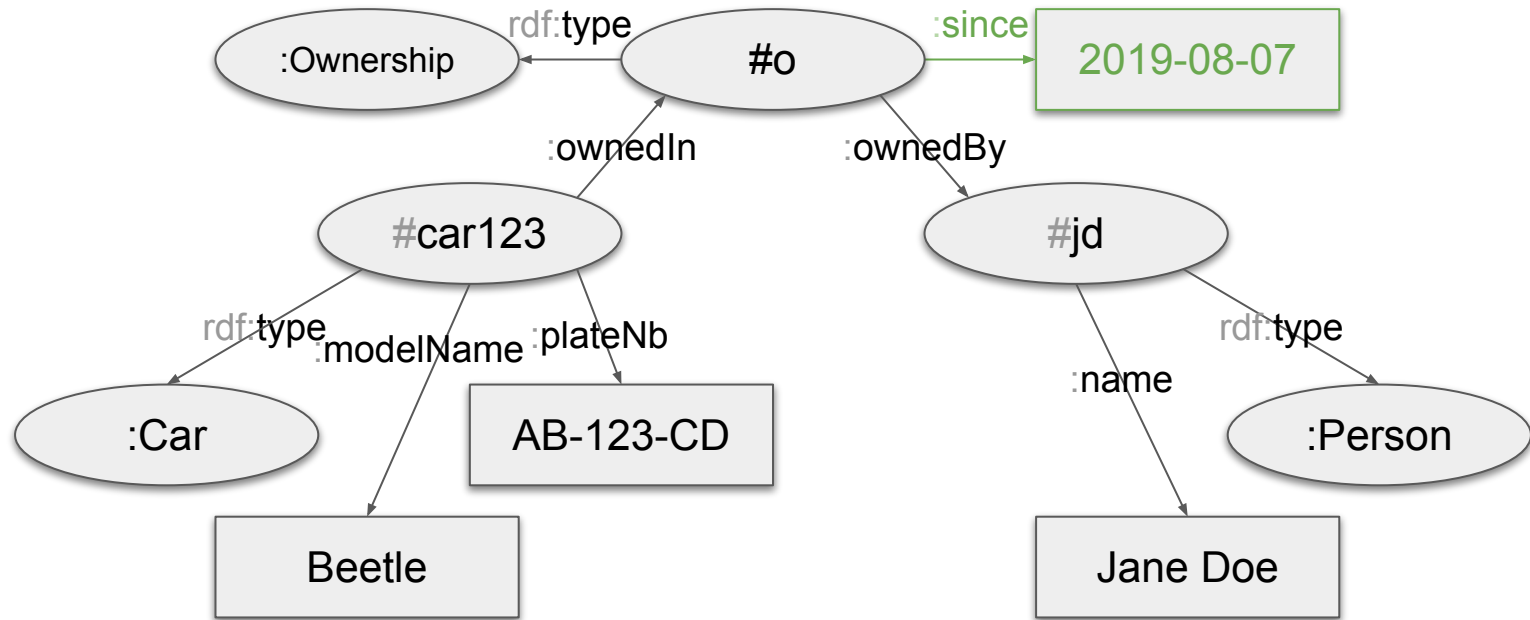
See https://www.w3.org/TR/swbp-n-aryRelations/ (2006)

RDF-star

Status of RDF-star

- Initial paper in 2014 (Hartig & Thompson)
- Already implemented in open-source and commercial products: https://w3c.github.io/rdf-star/implementations.html
- Community Group report: https://w3c.github.io/rdf-star/cg-spec/
- W3C Working Group in preparation

Property Graphs and assertions

Edges's semantics in property graph is <u>contextual</u>

Person
name: John Smith

Car
plateNb: AB-123-CD

owner
from: 2017-06-05
until: 2019-08-06

owner
from: 2019-08-07

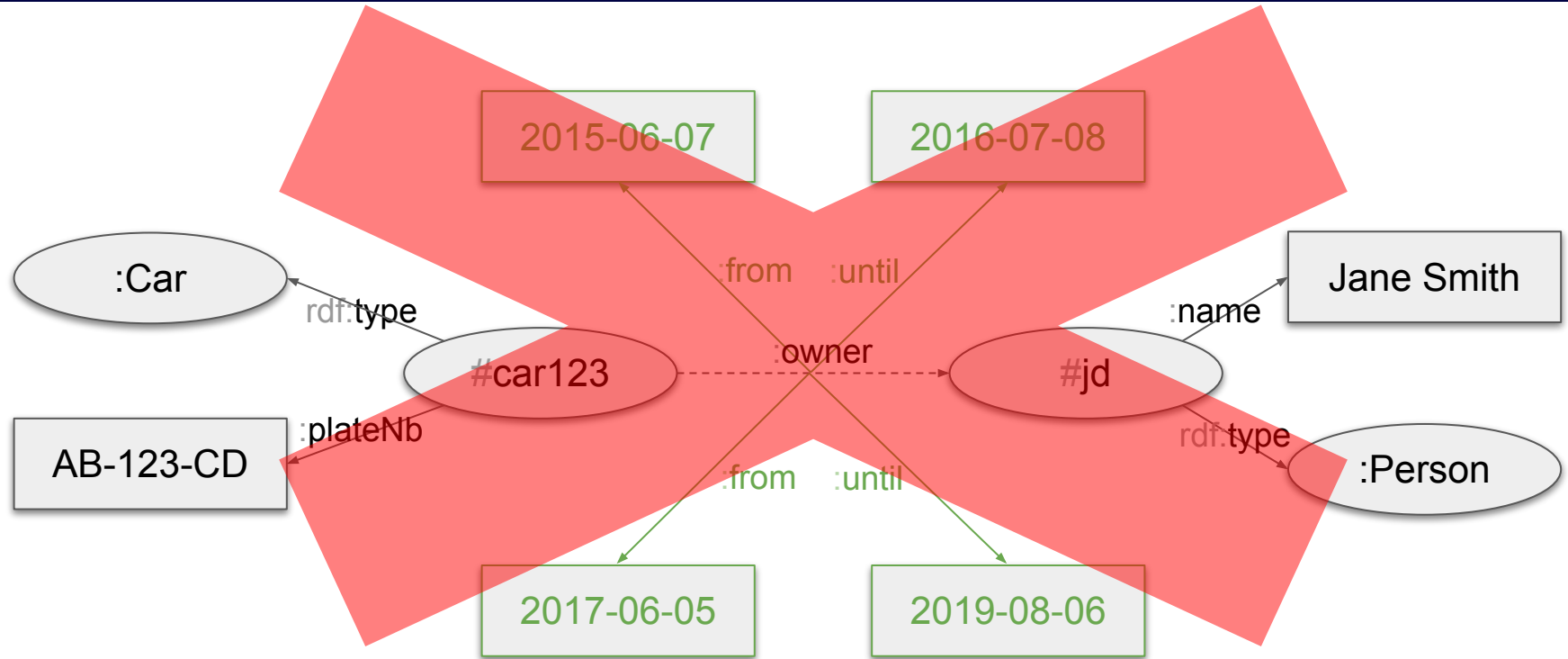| Person |
|---|
| name: Jane Doe |
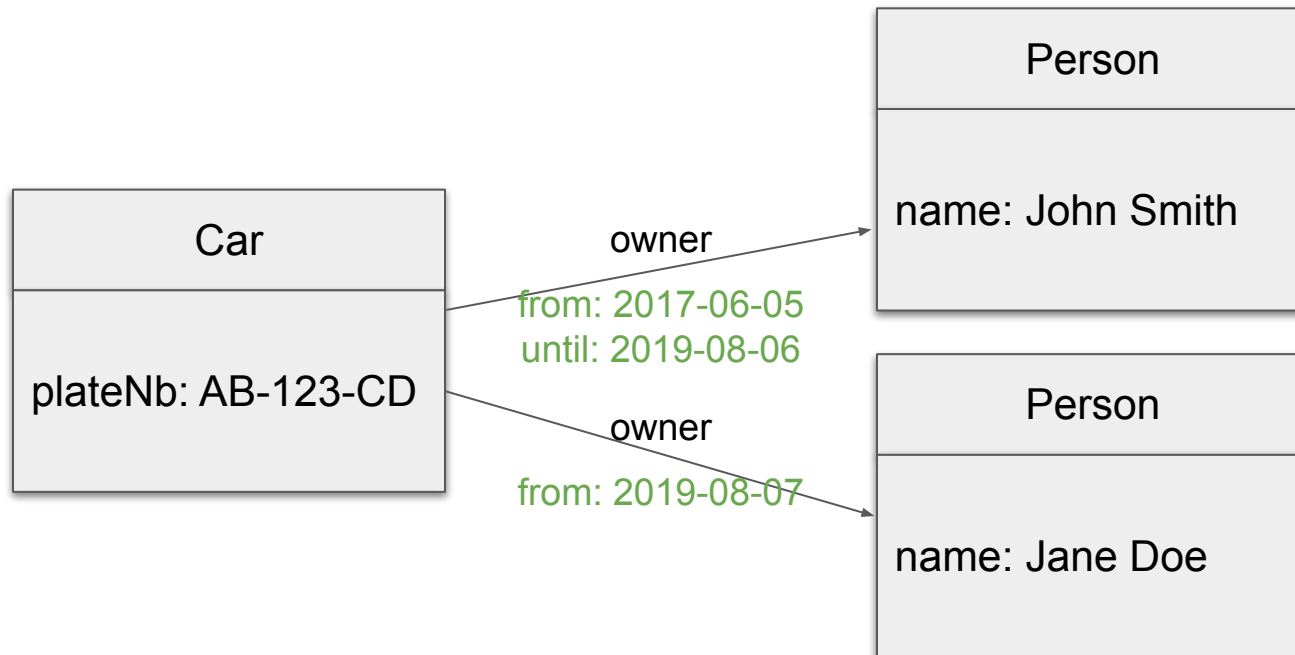
RDF-star and assertions
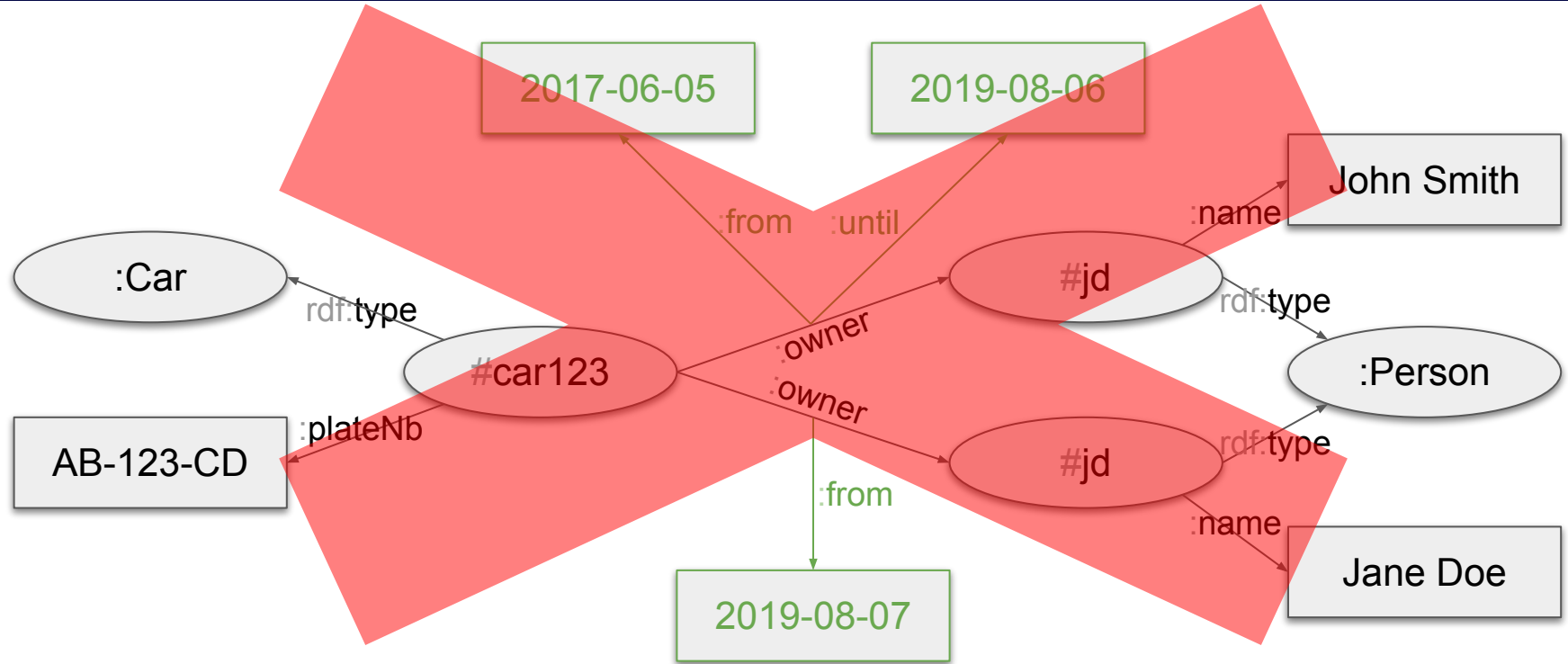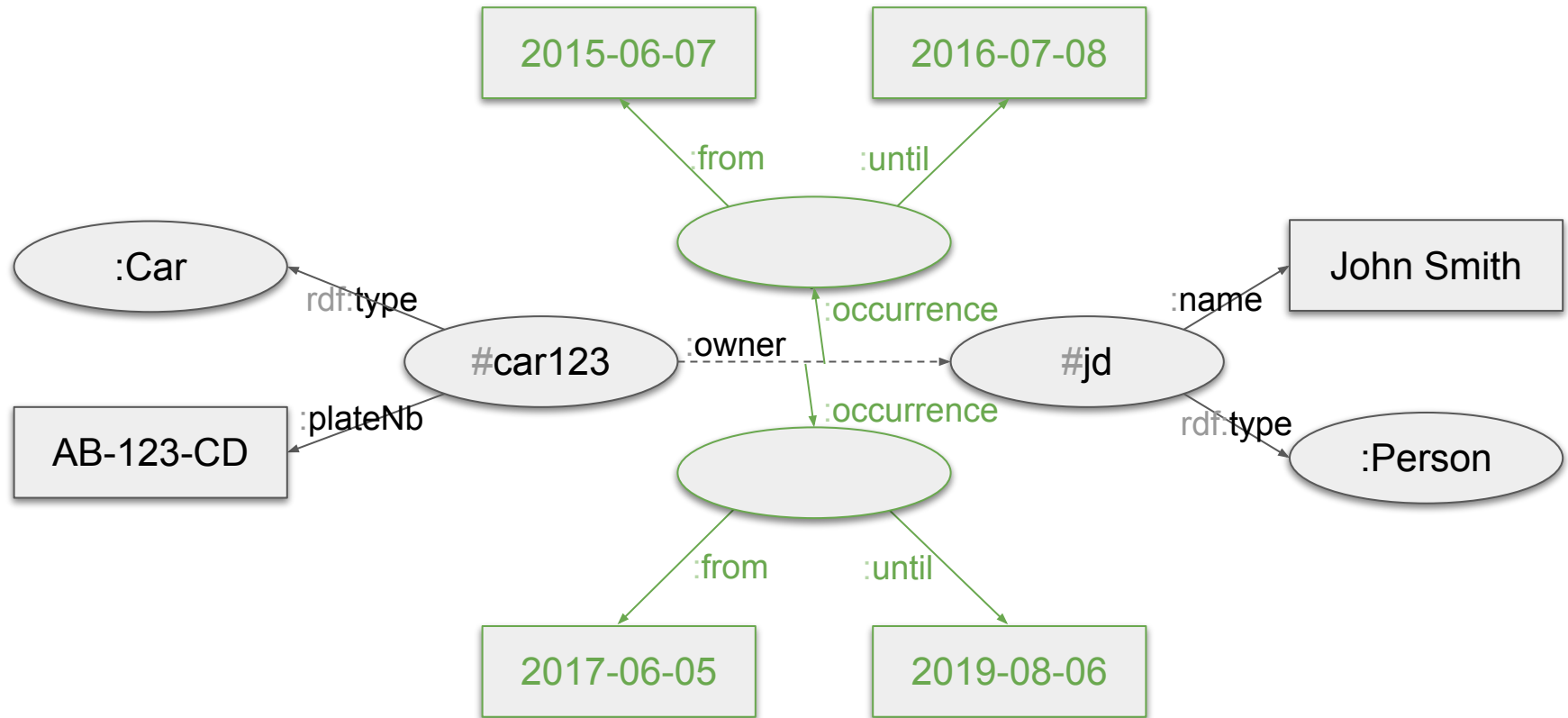
RDF-star and assertions
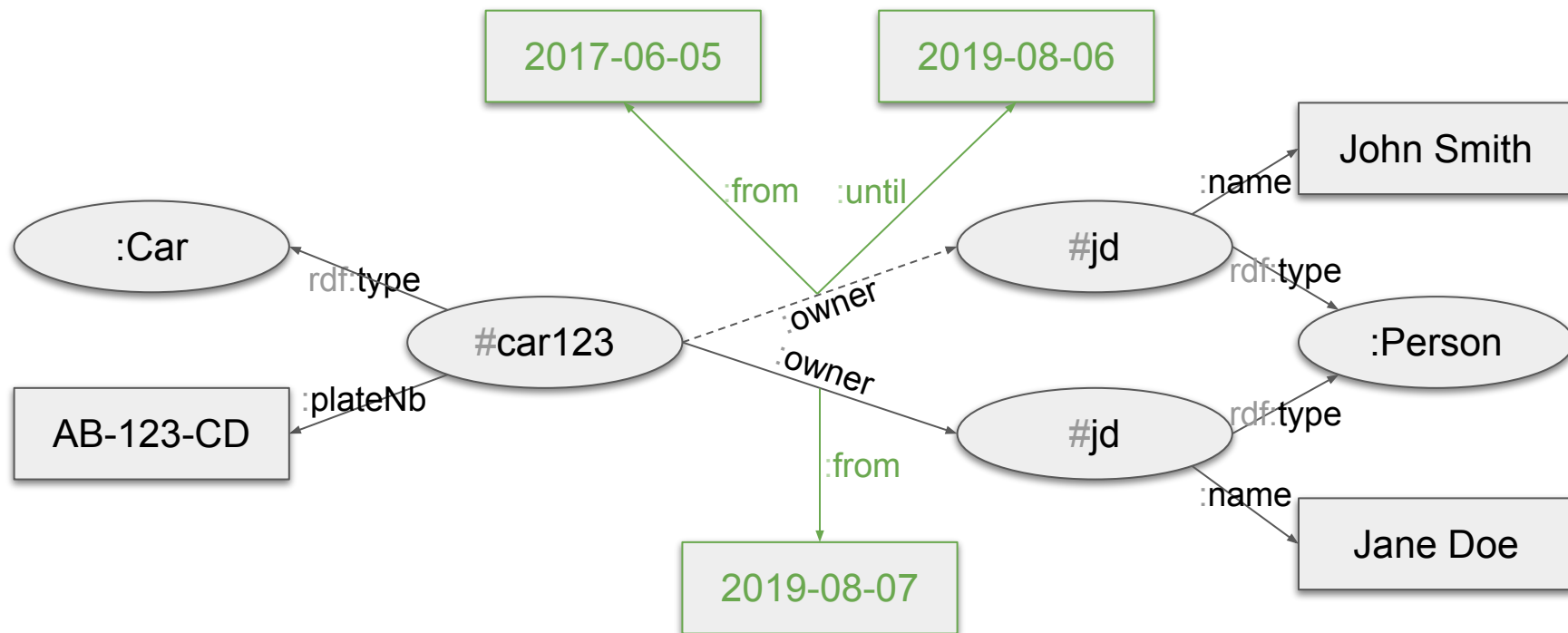
PGs and multiple relationships

RDF-star and multiple relationships

RDF-star and multiple relationships

Conclusion

- RDF-star reduces the impedance mismatch between Linked Data and Property Graphs

- It is not cast in stone:
  join the Community Group or the future Working Group

Thank you!

https://w3c.github.io/rdf-star/

Turtle-star

```
@prefix : <http://example.com/ns#>.

<#car123> a :Car ;
    :modelName "Beetle" ;
    :plateNb "AB-123-CD" ;
    :owner <#jd>.
<< <#car123> :owner <#jd> >> :since "2019-08-07".

<#jd> a :Person ;
    :name "Jane Doe".
```
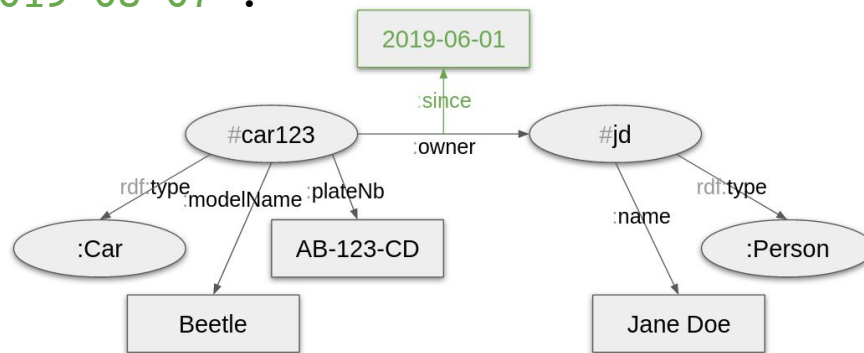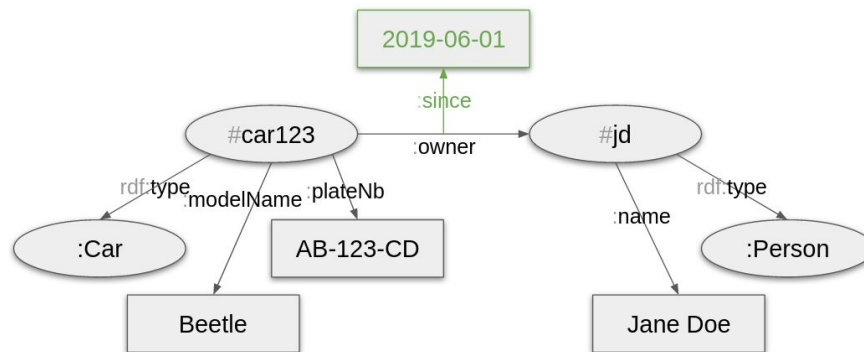
Turtle-star with annotation

```
@prefix : <http://example.com/ns#>.

<#car123> a :Car ;
    :modelName "Beetle" ;
    :plateNb "AB-123-CD" ;
    :owner <#jd> {| :since "2019-08-07" |}.

<#jd> a :Person ;
    :name "Jane Doe".
```

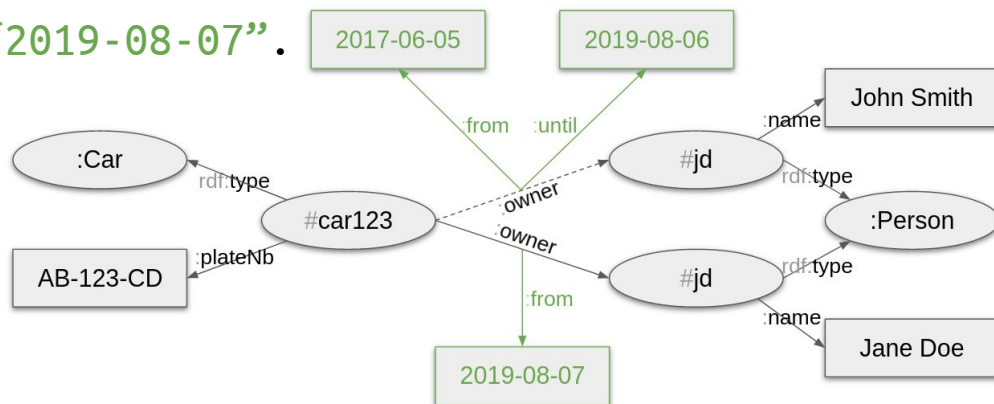# Turtle-star and assertions

```
@prefix : <http://example.com/ns#>.

<#car123> a :Car ;
    :plateNb "AB-123-CD" ;
    :owner <#jd>.
<< <#car123> :owner <#js> >> :from "2017-06-05";
                             :until "2019-08-06".
<< <#car123> :owner <#jd> >> :from "2019-08-07".

<#js> a :Person ;
    :name "John Smith".

<#jd> a :Person ;
    :name "Jane Doe".
```

Turtle-star and multiple relationships

```
@prefix : <http://example.com/ns#>.

<#car123> a :Car ;
    :plateNb "AB-123-CD".

<< <#car123> :owner <#js> >> :occurrence
    [ :from "2015-06-07", :until "2016-07-08"],
    [ :from "2017-06-05", :until "2019-08-06"].

<#js> a :Person ;
    :name "John Smith".
```