

MOSAICrOWN



Multi-Owner data Sharing for Analytics and Integration respecting Confidentiality and OWNer control

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

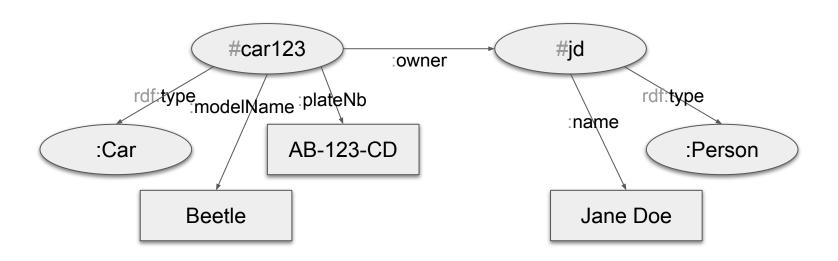
On the web Machine-readable data
Non-proprietary formal
RDF standards
Linked RDF

YOUR DATA 5

RDF, SPARQL, SHACL, OWL, JSON-LD...

Linked Data: example

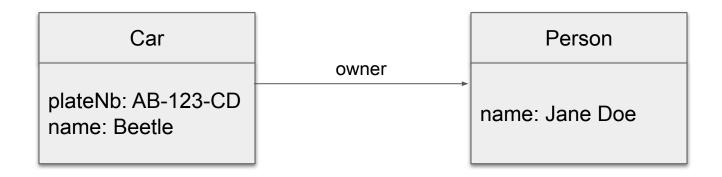




Property Graphs



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



Property Graphs

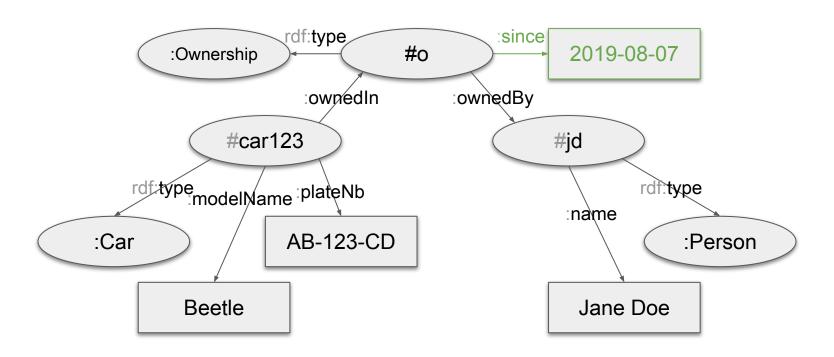


Nodes and edges can have properties



N-ary relationship in RDF

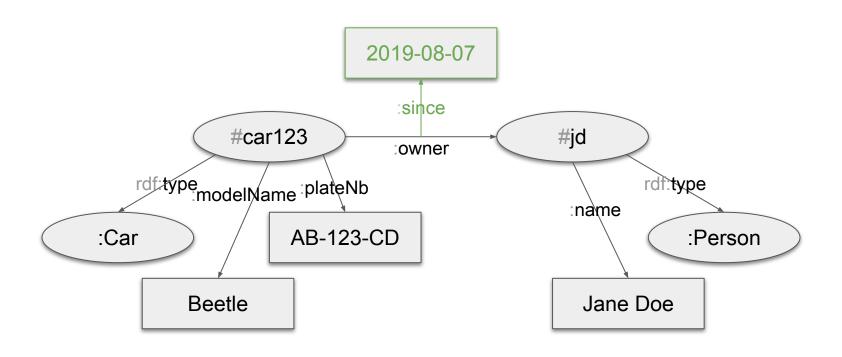




See https://www.w3.org/TR/swbp-n-aryRelations/ (2006)

RDF-star





Status of RDF-star

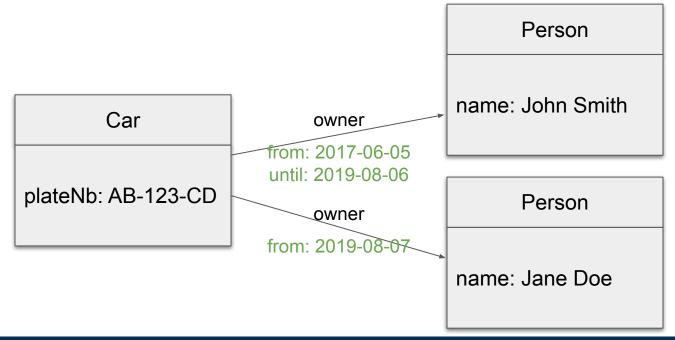


- Initial paper in 2014 (Hartig & Thompson)
- Already implemented in open-source and commercial products: https://w3c.github.io/rdf-star/implementations.html
- Community Group report: https://w3c.github.io/rdf-star/cg-spec/
- W3C Working Group in preparation

Property Graphs and assertions

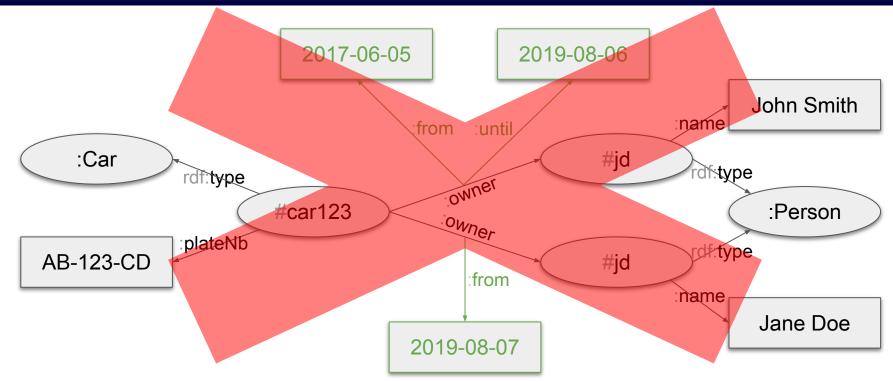


Edges's semantics in property graph is contextual



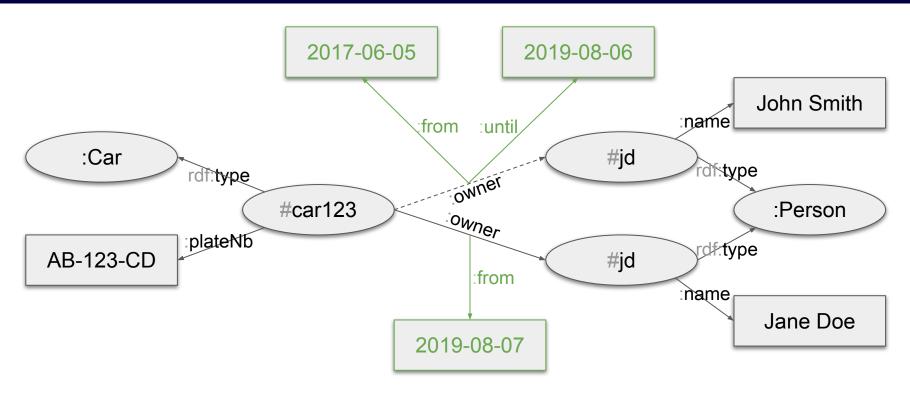
RDF-star and assertions





RDF-star and assertions





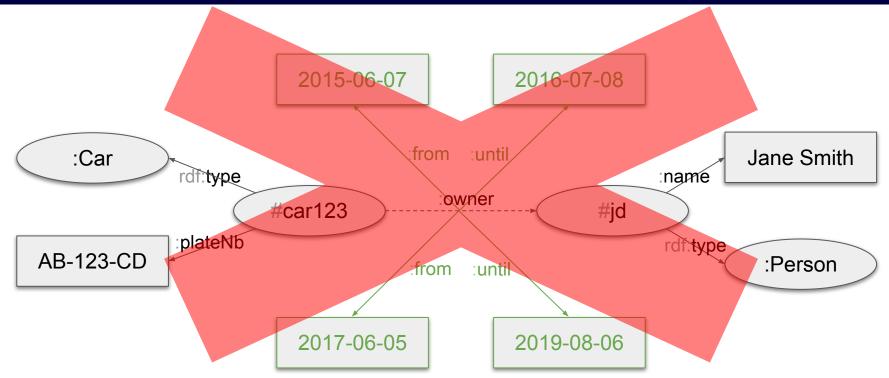
PGs and multiple relationships





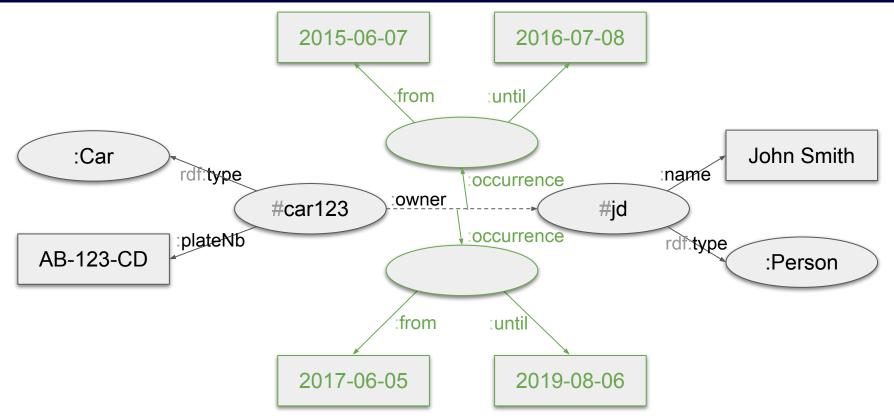
RDF-star and multiple relationships





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/















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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".
                                                                     2019-06-01
<#id> a :Person ;
                                                                       since
                                                             #car123
                                                                                 #jd
                                                                       owner
     :name "Jane Doe".
                                                                                      rdf:type
                                                       rdf:type modelMame plateNb
                                                                                  :name
                                                                AB-123-CD
                                                     :Car
                                                                                         :Person
                                                          Beetle
                                                                                  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" |}.
                                                                       2019-06-01
<#jd> a :Person ;
     :name "Jane Doe".
                                                                         since
                                                              #car123
                                                                                  #jd
                                                                         owner
                                                         df:type modelName :plateNb
                                                                                        rdf:type
                                                                                   :name
                                                                  AB-123-CD
                                                      :Car
                                                                                           :Person
                                                            Beetle
                                                                                    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".
                                                            2017-06-05
                                                                         2019-08-06
                                                                                       John Smith
                                                                   from until
<#js> a :Person ;
                                               :Car
                                                                              #jd
     :name "John Smith".
                                                           #car123
                                                                                        :Person
                                                     :plateNb
                                                                                   rdf.type
                                             AB-123-CD
                                                                              #jd
                                                                       from
                                                                                  name
<#jd> a :Person ;
                                                                                       Jane Doe
                                                                   2019-08-07
     :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"],
                                                                  2015-06-07
                                                                              2016-07-08
     [:from "2017-06-05", :until "2019-08-06"].
                                                                                           John Smith
                                                      :Car
<#js> a :Person ;
                                                                            occurrence
                                                                        owner
                                                                 #car123
                                                                                   #jd
     :name "John Smith".
                                                           |:plateNb
                                                                            occurrence
                                                    AB-123-CD
                                                                                            :Person
                                                                        from
                                                                             :until
                                                                  2017-06-05
                                                                              2019-08-06
```