LODGOV

Data Governance in the era of the Data Web

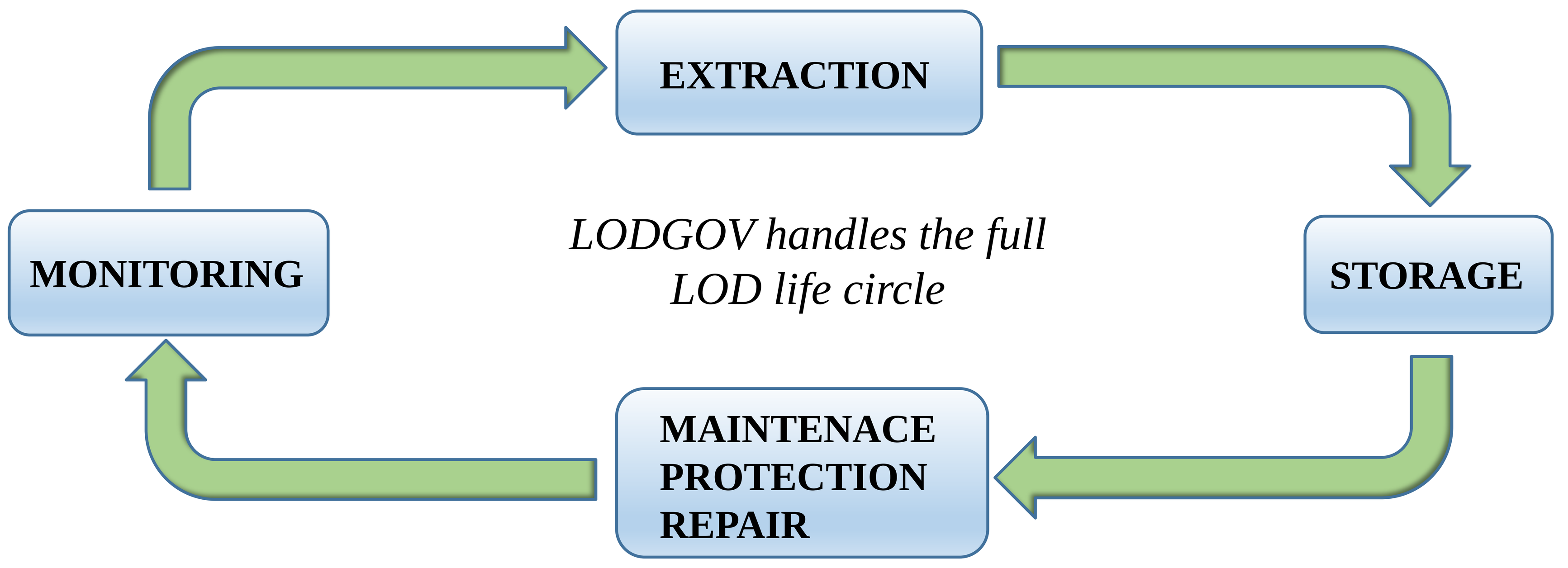
http://web.imis.athena-innovation.gr/projects/lodgov

ATHENA Research & Innovation Information Technologies

OBJECTIVES

Linked (Open) Data (LOD): *practices to publish, share and connect data on the Web.*

- Query methods, retrieval algorithms and ranking techniques for LOD.
- Methods for LOD interlinking and fusion from different data sources on the Web.
- Provenance models and methods to trace LOD origins and transformations.
- Models and query languages to track, represent and query LOD changes.
- Models and methods for LOD privacy and anonymization.



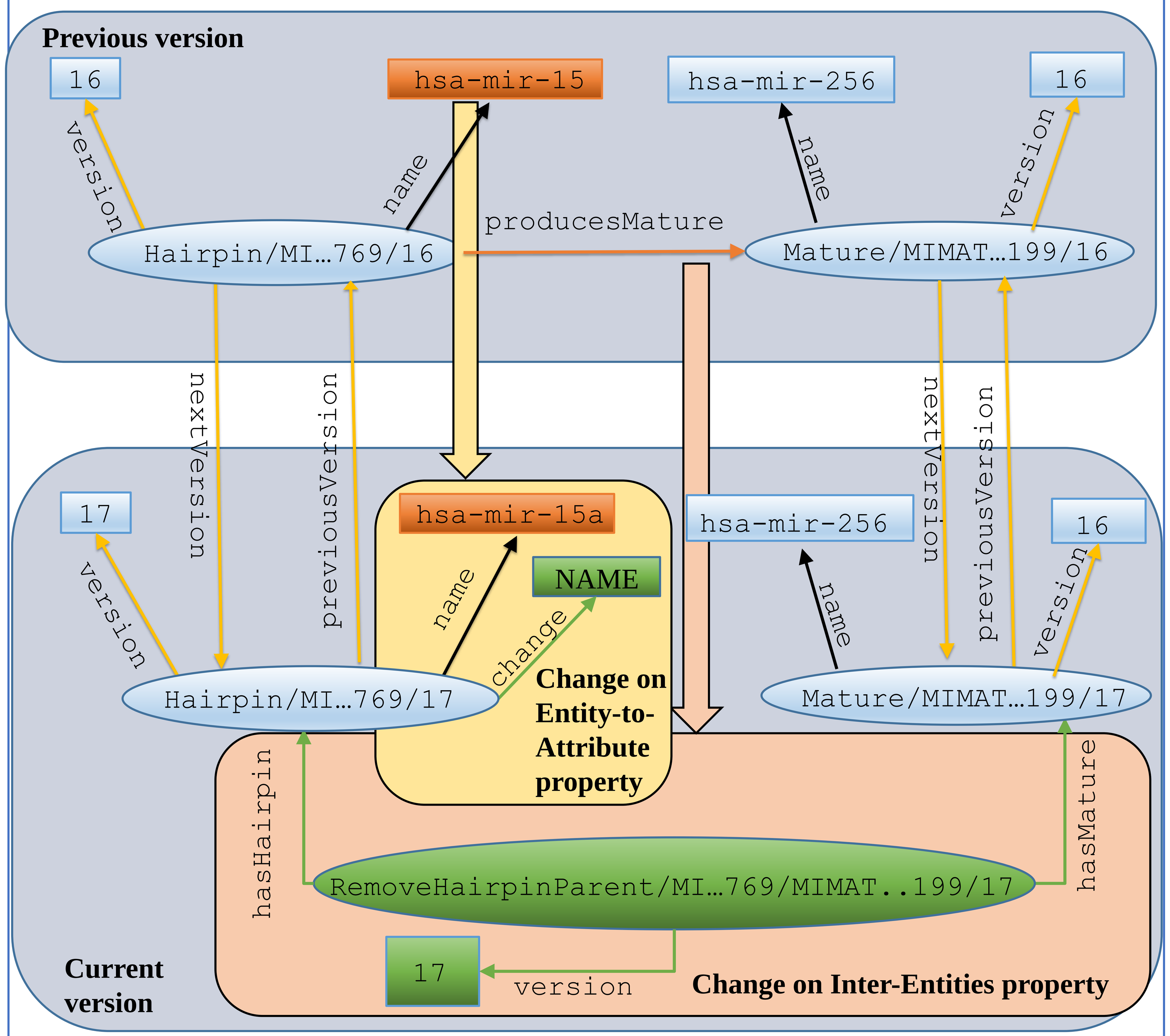
MODELLING EVOLVING LOD

Requirements:

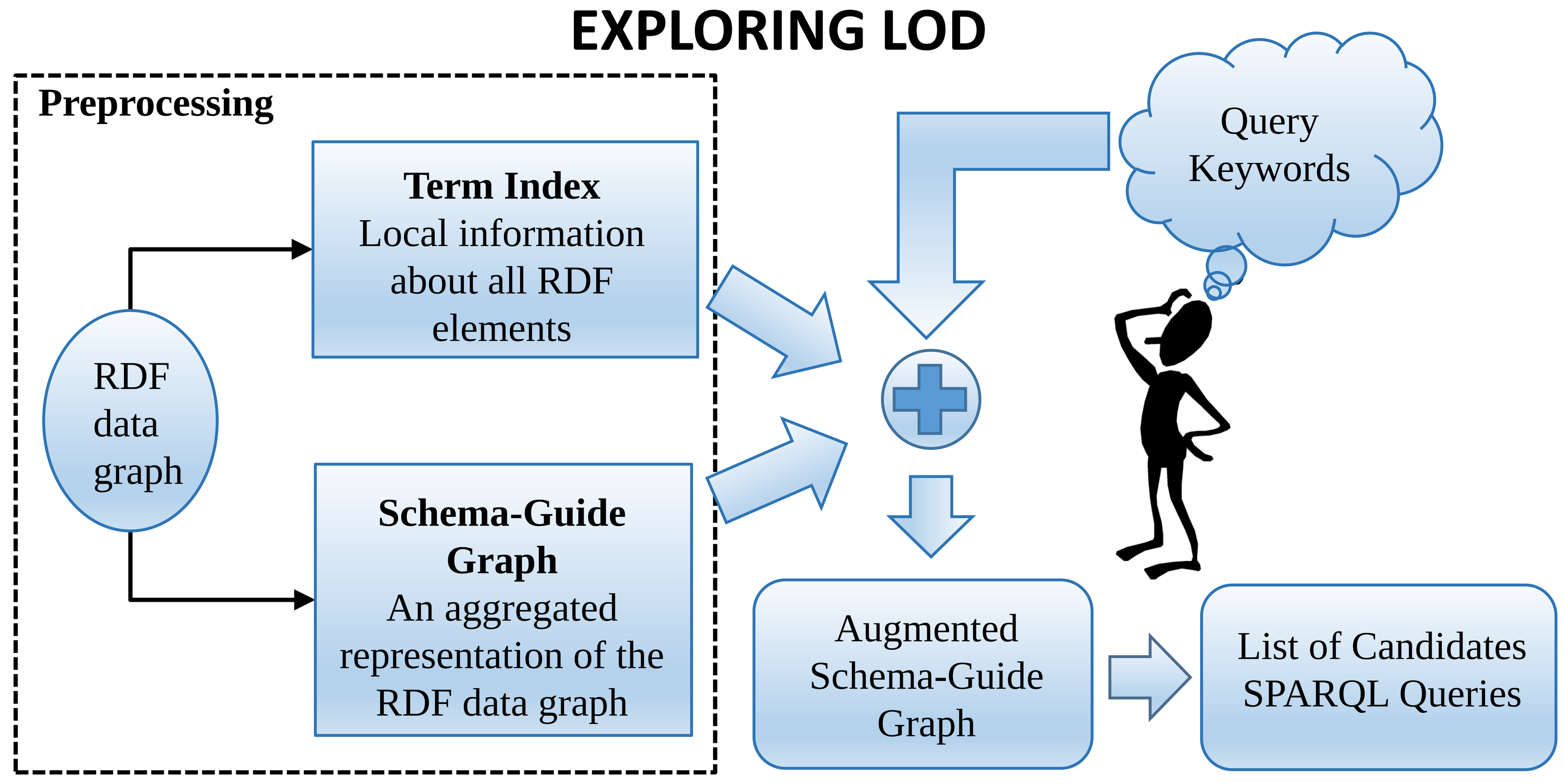
1. Access not only to up-to-date LOD, but to any of its previous versions.
2. Track the changes across versions, their causes and effects.

Proposed Solutions:

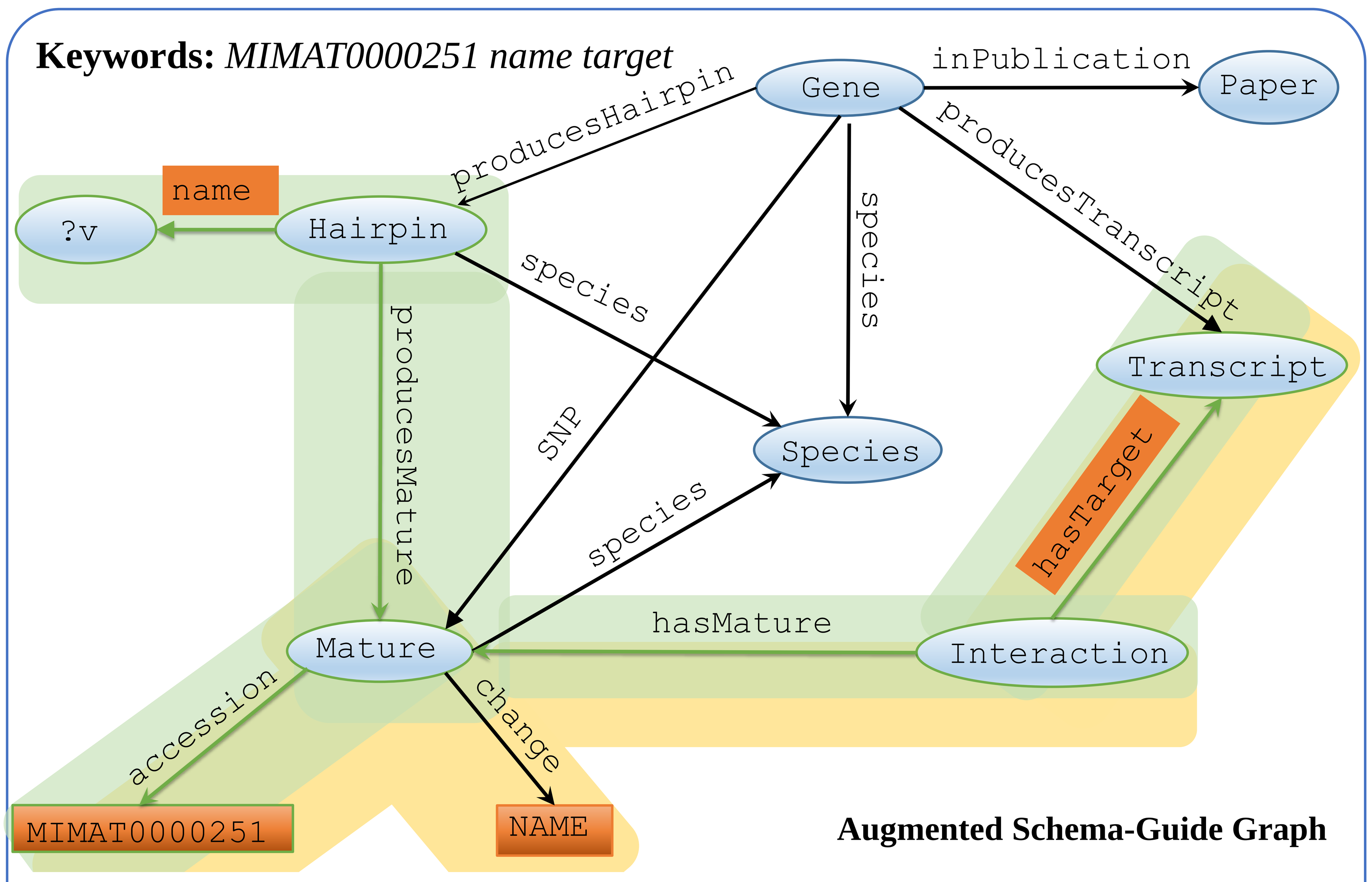
1. Versioned RDF entities and "version" properties.
2. Change modelling as RDF properties and entities.



EXPLORING LOD



Keywords: *MIMAT0000251 name target*



Augmented Schema-Guide Graph

2 Candidate Queries:

- Retrieves Interactions ?I, Transcripts ?T3 and mature miRNAs ?M such that ?M's miRBase identifier is "MIMAT0000251", ?I's mature is ?M, ?I's transcript is ?T and ?M's change is "NAME".
- Retrieve Interactions ?I, hairpin miRNAs ?H and their name, Transcripts ?T and mature miRNAs ?M such that ?M's miRBase identifier is "MIMAT0000251", ?I's mature is ?M, ?I's transcript is ?T, and ?H produces mature ?M.

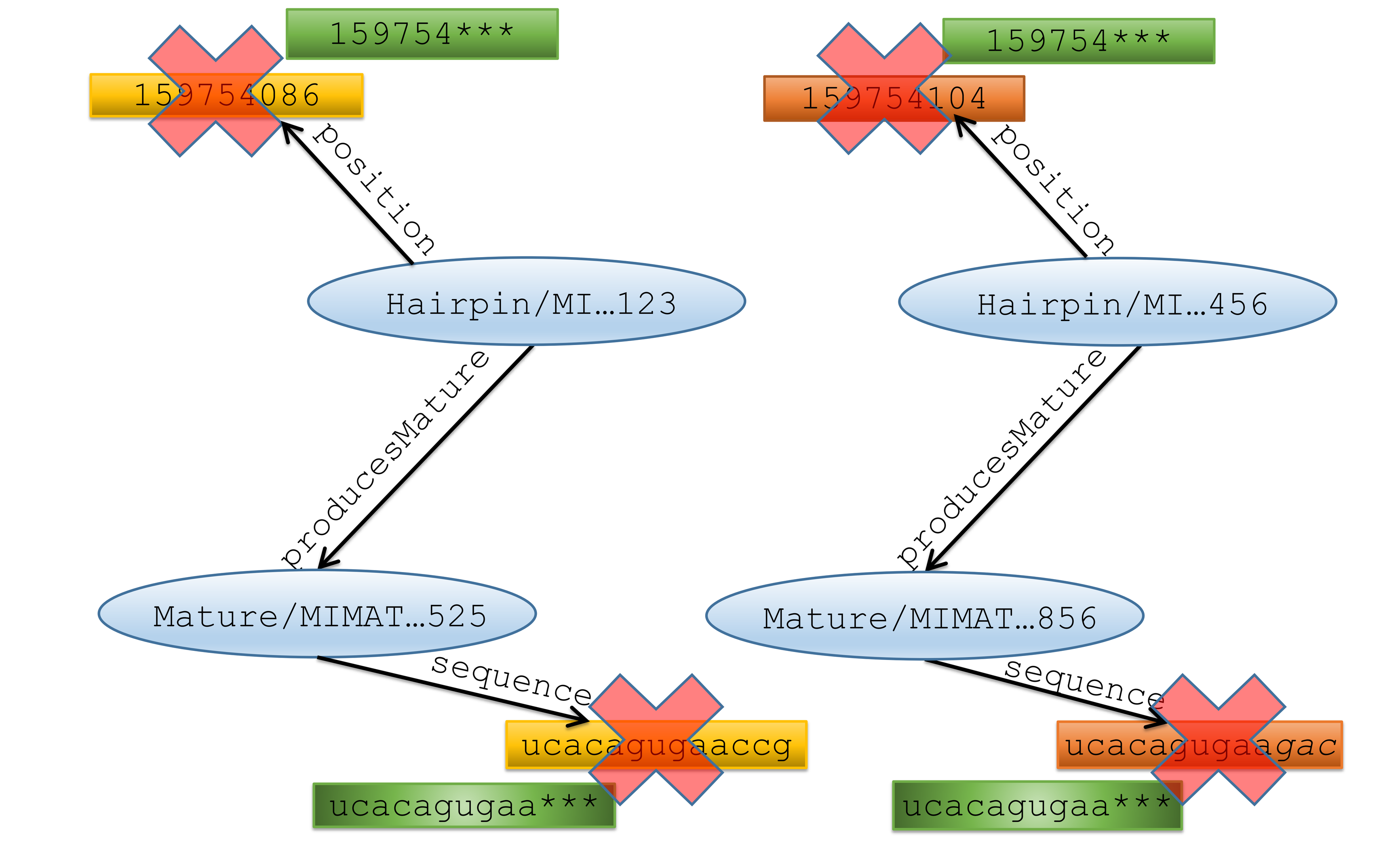
```
SELECT ?H ?M ?I ?T ?v WHERE
{
  ?M a diana:Mature.
  ?M diana:accession
"MIMAT0000251".
  ?H a diana:hairpin.
  ?H diana:producesMature ?M.
  ?H diana:name ?n.
  ?I a diana:Interaction.
  ?I diana:hasMature ?M.
  ?I diana:hasTarget ?T.
  ?T a diana:Transcript.
}
```

ANONYMIZING LOD

Problem: Knowing sensitive information about the sequence and the position at the chromosome (e.g. *"ucacagugaagac"* and *"159754086"*), can you distinguish uniquely a miRNA molecule from a human sample?

Proposed Solution:

- Transformation {159754086, 159754104} → 159754***
- Transformation {ucacagugaaccg, ucacagugaagac} → ucacagugaa***



Result: Entities *Hairpin/MI…123* and *Hairpin/MI…456* that are mRNA molecules become **indistinguishable**.

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Contact: Katerina Gkirtzou, Ph.D. (katerina.gkirtzou@imis.athena-innovation.gr)

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