



OKBQA-4

TUTORIAL : 16-17
SYMPOSIUM : 18
HACKATHON : 18-21
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Talk #: Query Generation

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Introduction

Query Generation

- Objective
 - To generate SPARQL queries which are ready to be executed
- Given
 - SPARQL templates
 - disambiguation information
- Problem to be solved
 - representation variation

Query Generation

- Input: Template + Disambiguation
- output: SPARQL query

```
{  
  "query": "SELECT ?v4 WHERE { ?v4 ?v2 ?v6 ; ?v7 ?v3 . } ",  
  "score": "1.0",  
  "slots": [  
    { "s": "v2", "p": "is", "o": "rdf:Property" },  
    { "s": "v2", "p": "verbalization", "o": "flows" },  
    ...  
  ]  
}
```

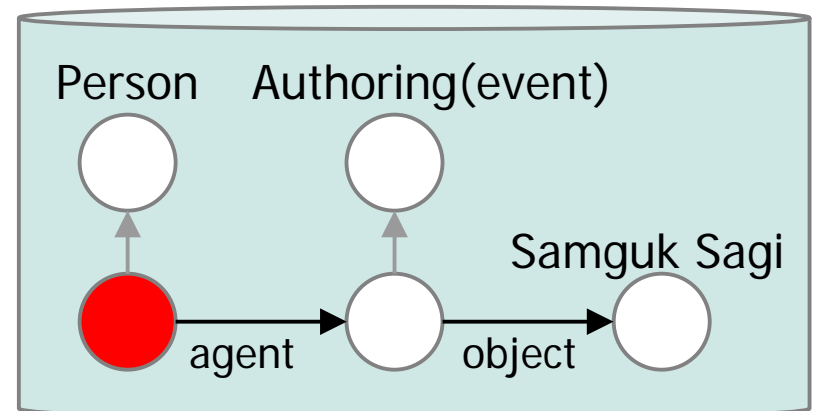
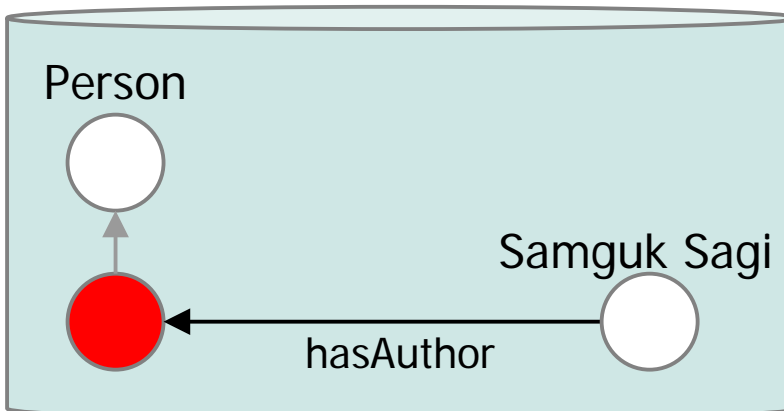
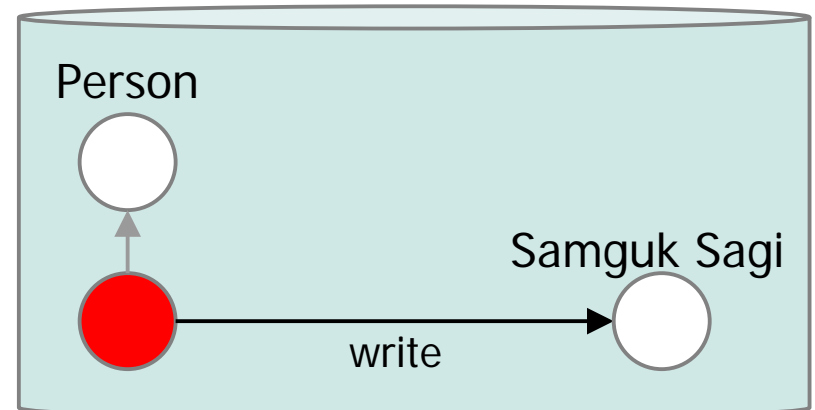
```
{  
  "classes": [  
    { "var": "v3", "value": "dbo:River" }  
  ],  
  "entities": [  
    { "var": "v6", "value": "dbr:Seoul" }  
  ],  
  ...  
}
```

```
{  
  "query": "SELECT ?v4 WHERE {  
    ?v4 dbo:city dbr:Seoul ;  
    ?v7 dbo:River .  
    FILTER (str(?v7) IN ("rdfs#type",  
      "rdfs#subClassOf"))  
  }",  
  "score": 0.5  
},  
...
```

Problem

- Template may be different from actual data
 - model representation vs. data representation

Who wrote "Samguk Sagi"?



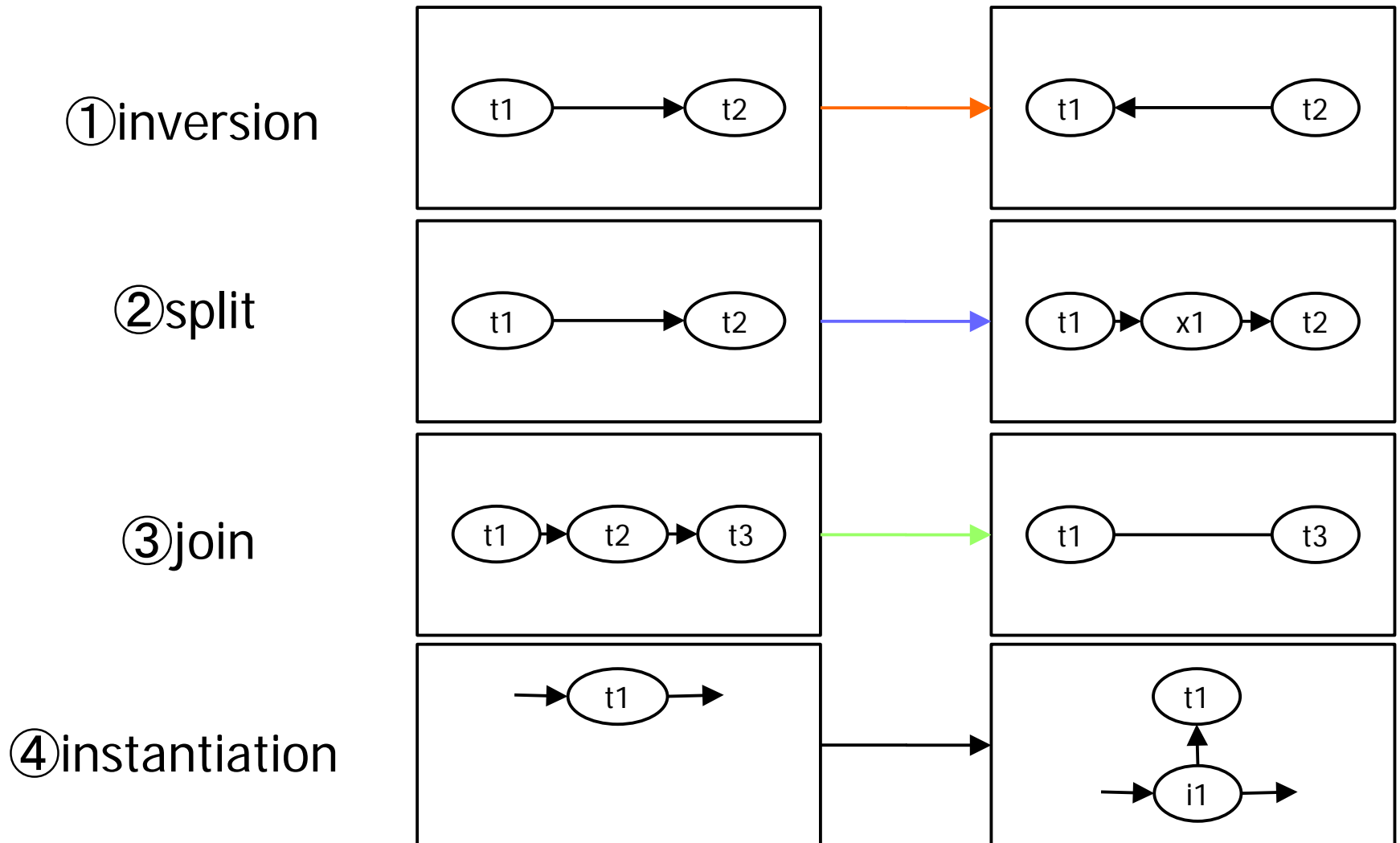
Solution

- To generate possible variations
 - GraphFinder
 - *Triple Pattern Variation Operations for Flexible Graph Search*, Jin-Dong Kim and Kevin Bretonnel Cohen, The 1'st Internatinal Workshop on Natural language interfaces for Web of Data (NLIWoD), 2014.

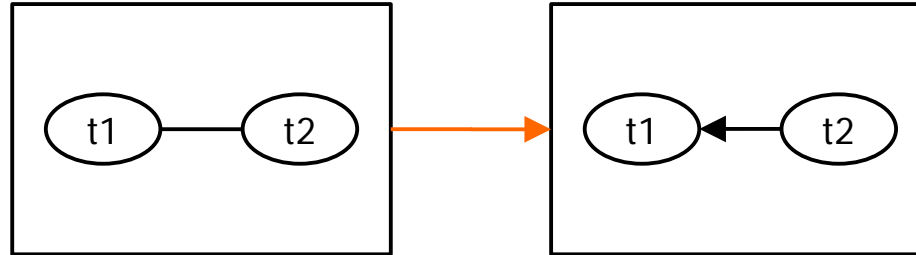
GraphFinder



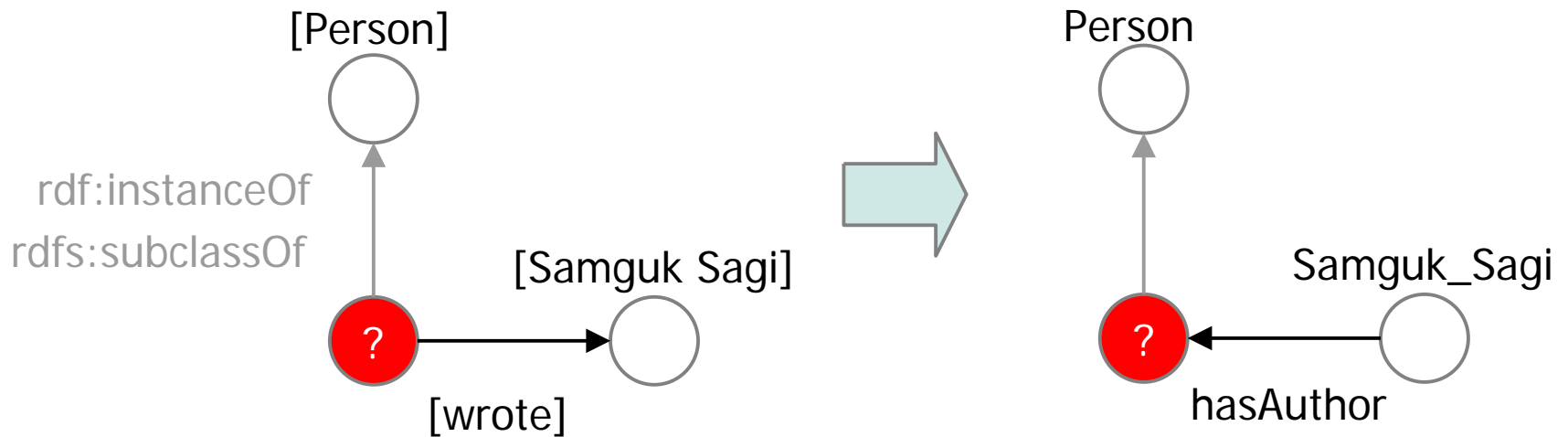
Graph Variation Operations (GVO)



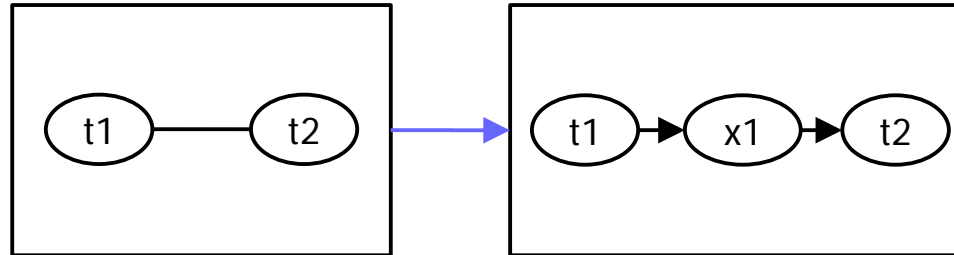
SVO 1. Inversion



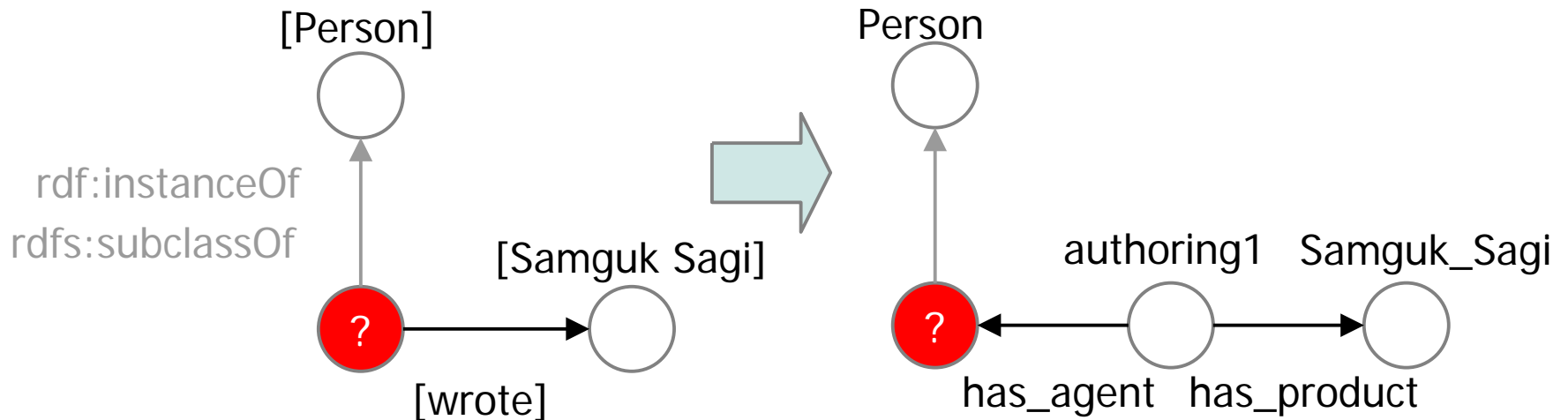
Who wrote "Samguk Sagi"?



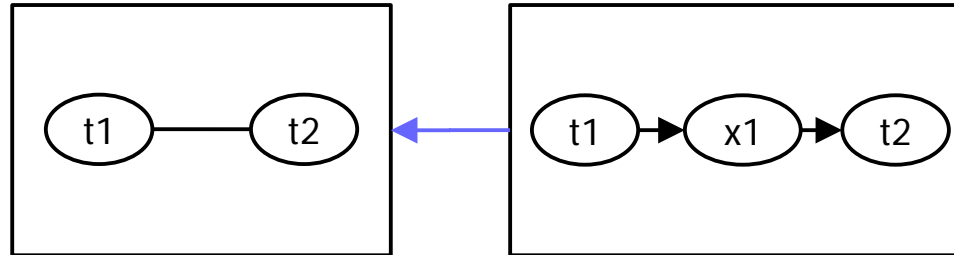
SVO 2. Split



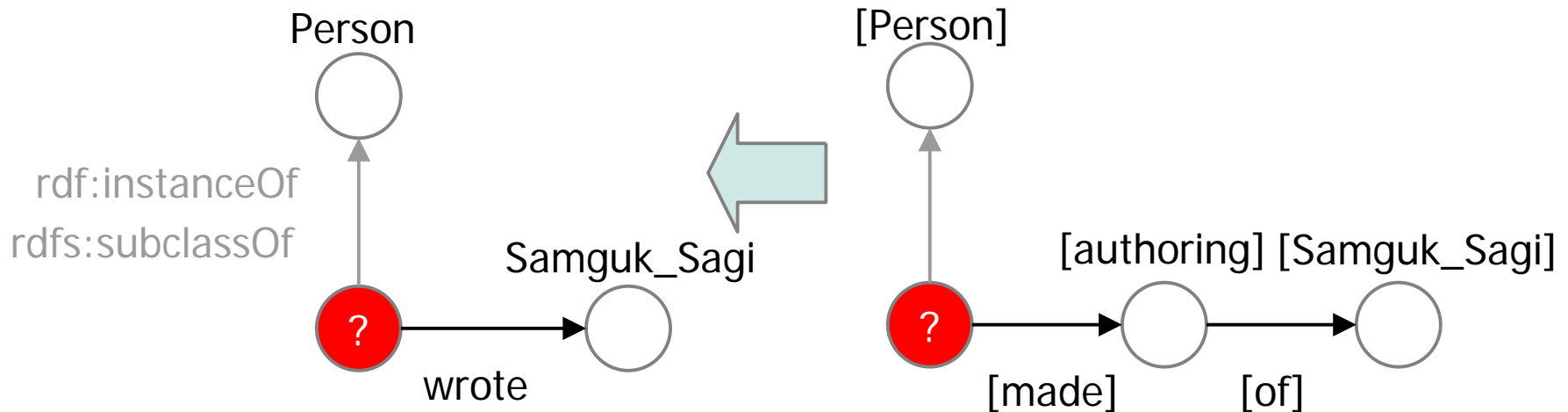
Who wrote "Samguk Sagi"?



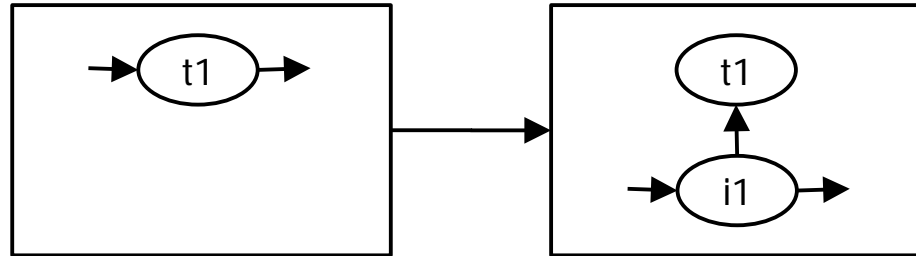
SVO 3. Join



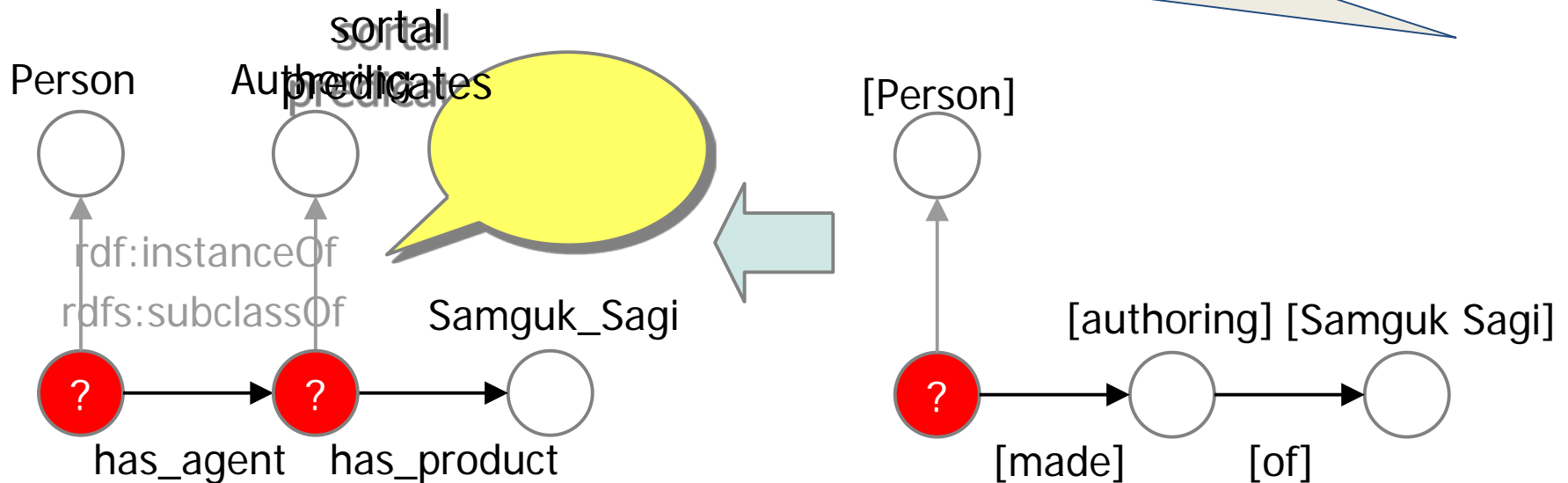
Who made the authoring of "Samguk Sagi"?



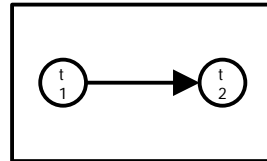
SVO 4. Instantiation



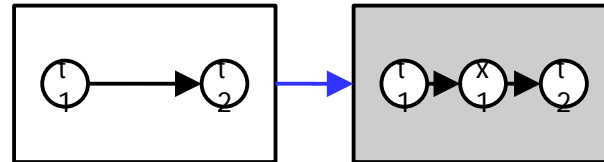
Who made the authoring of "Samguk Sagi"?



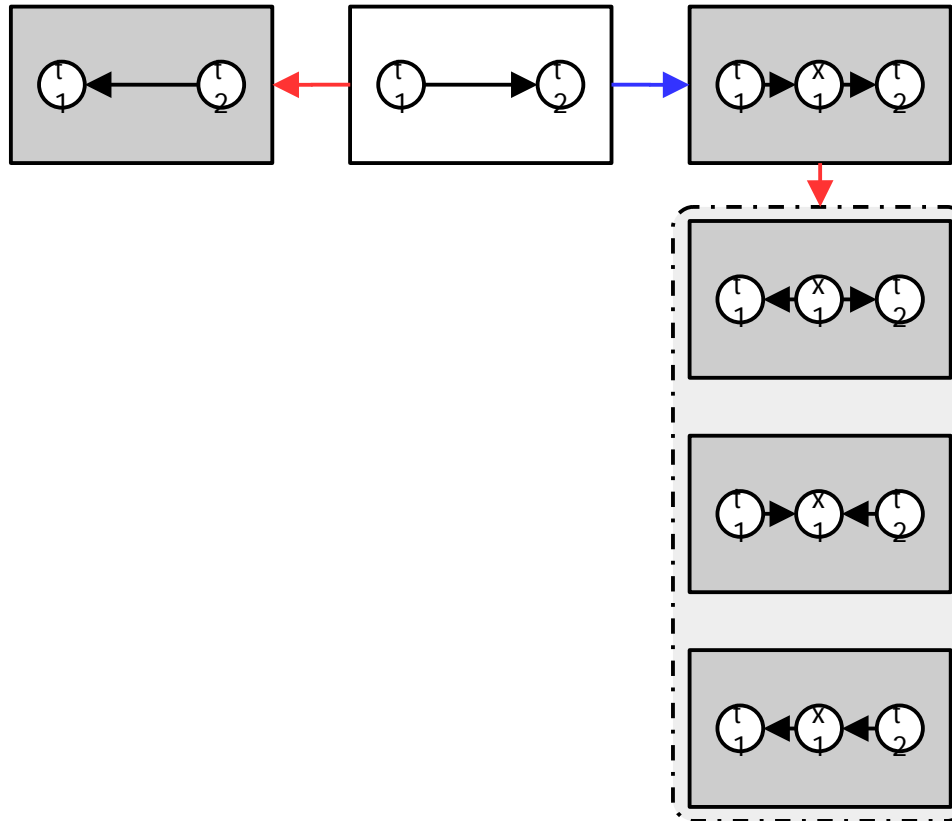
Application of GVO



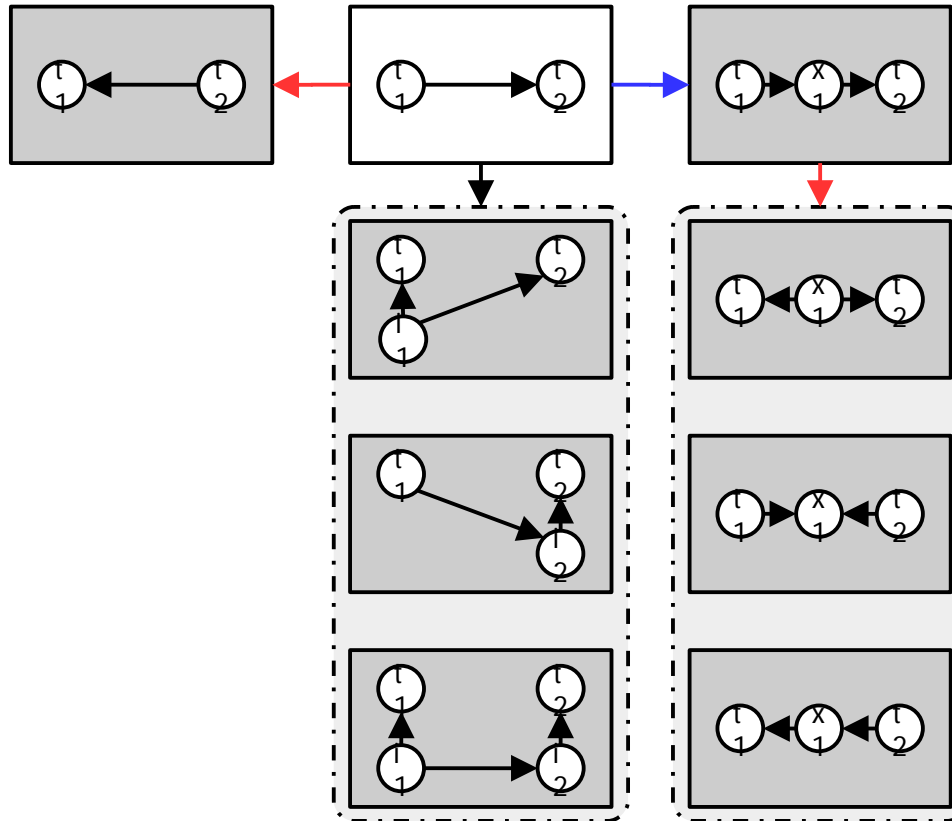
Application of GVO (split)

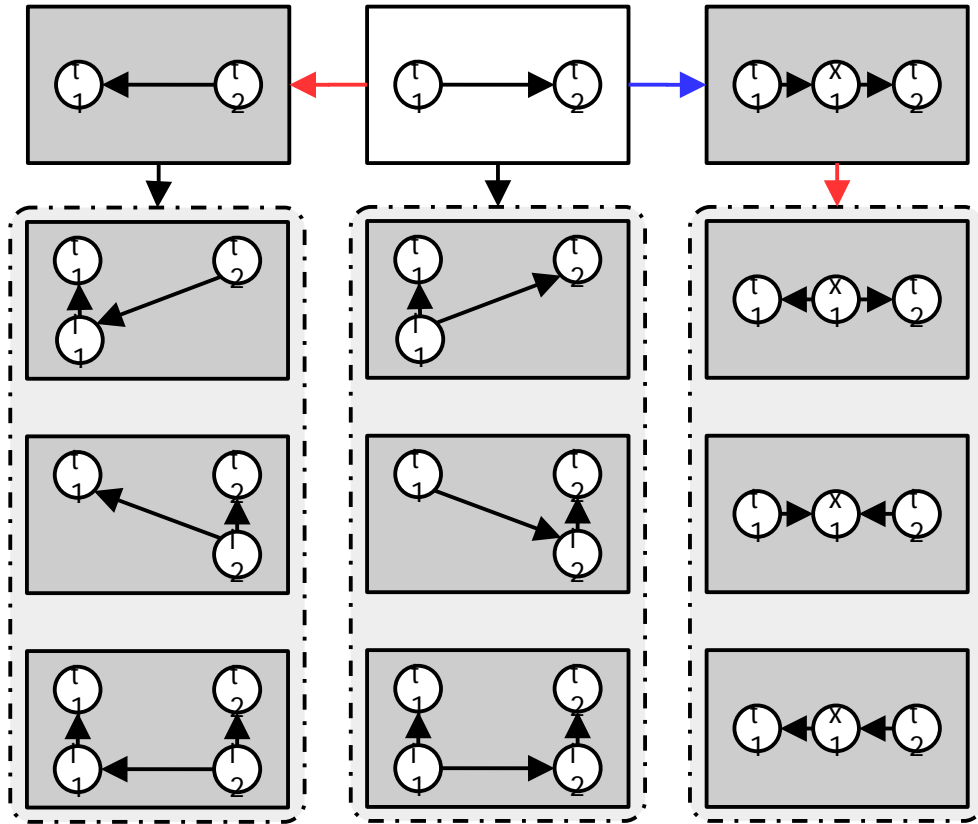


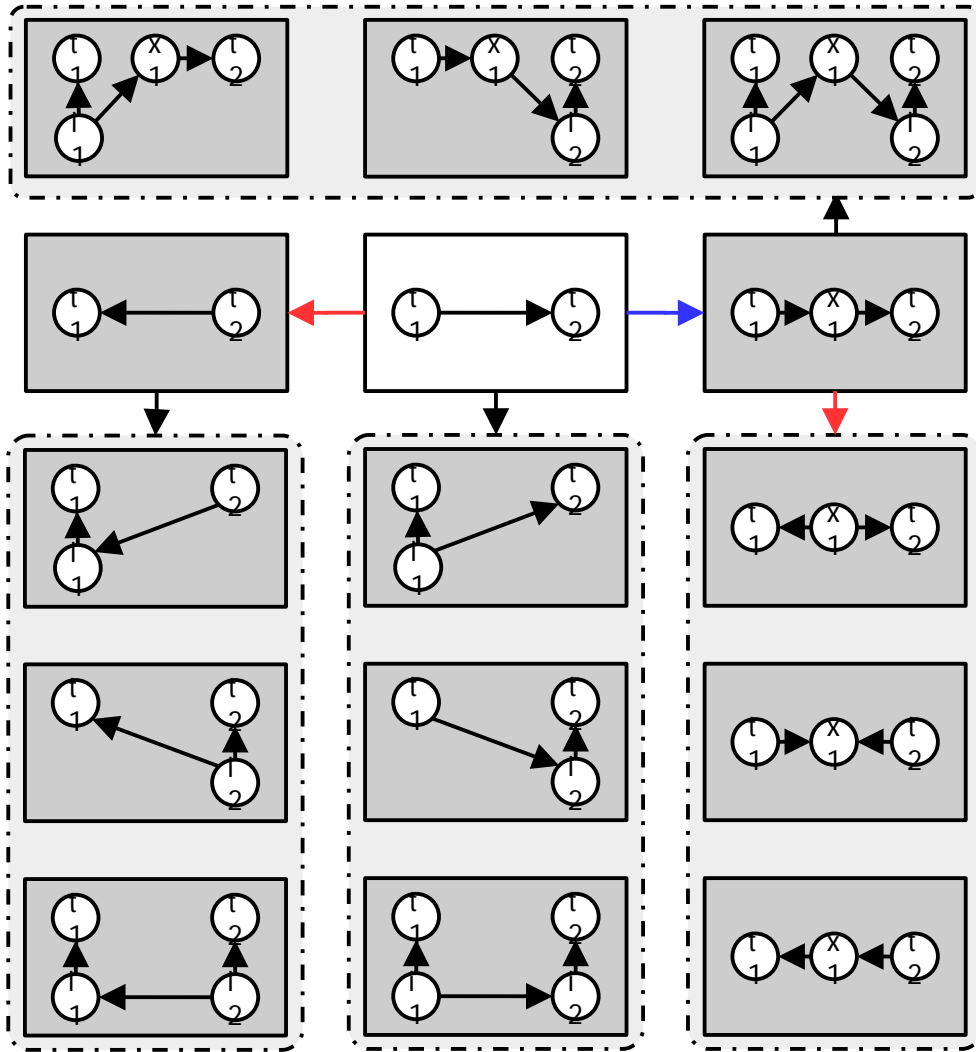
Application of GVO (inversion)

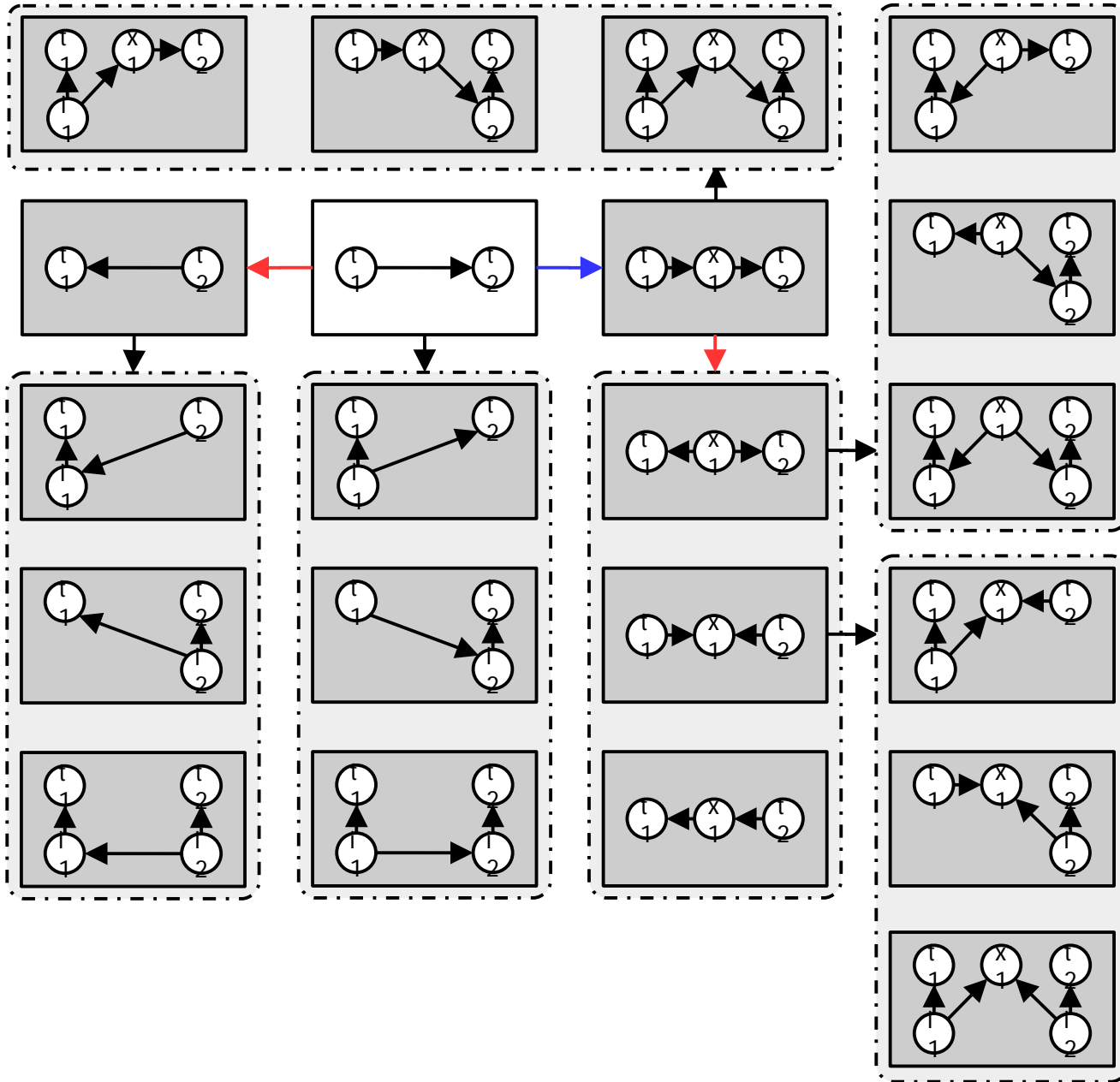


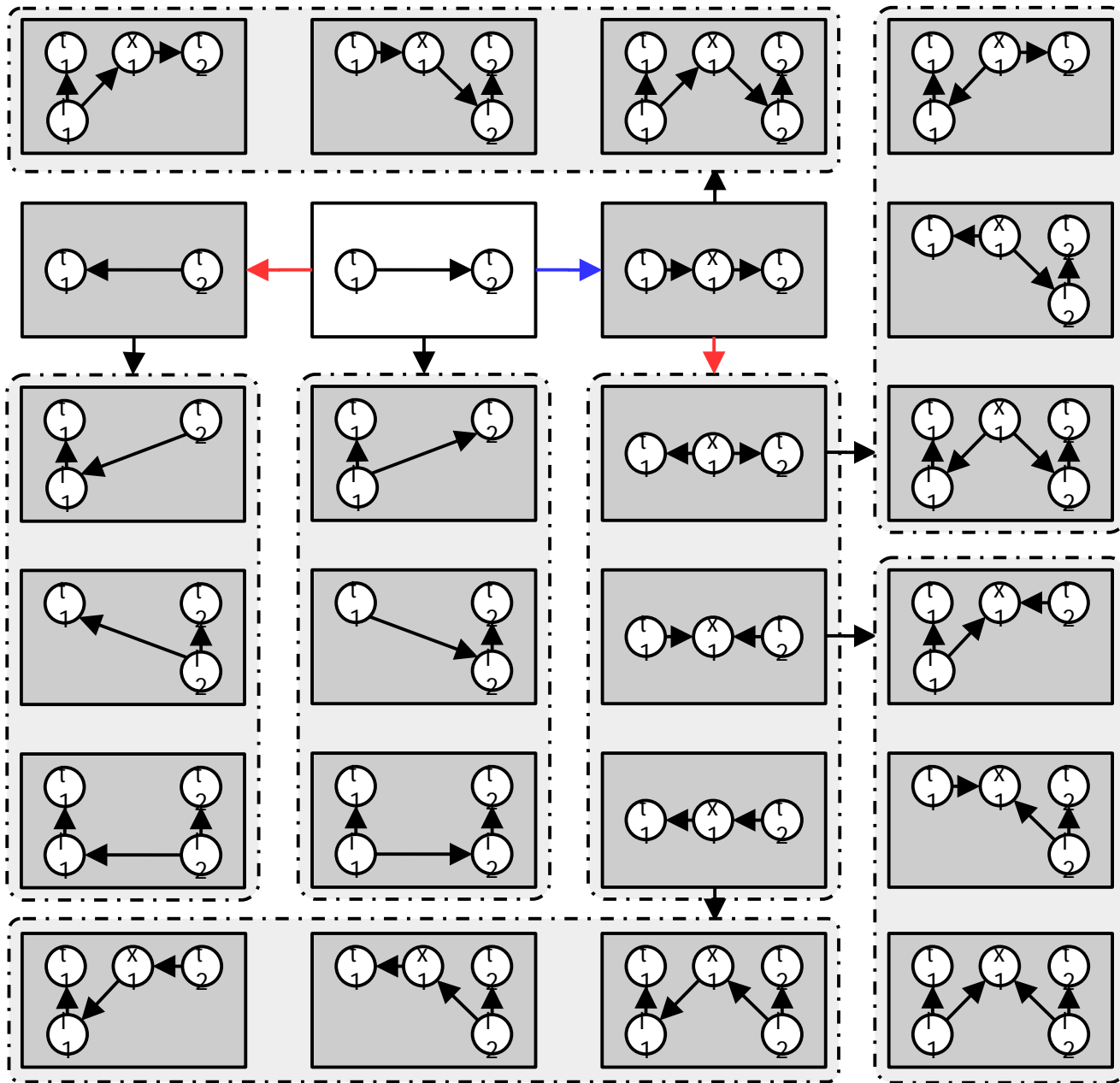
Application of GVO (instantiation)











GraphFinder

- A solution to the variable representation problem
 - improves the sensitivity
 - a method to control the specificity is required.

Demo

Demo using LODQA

- LODQA homepage
 - <http://lodqa.org>



Hands-on

1. To write a query generation module

- Input
 - Templator output
 - Disambiguator output
- Output
 - a SPARQL query

2. To configure GraphFinder

- Parameter setting
 - Max number of hops
 - Ignore predicates
 - Sortal predicates
- Using LODQA
 - LODQA configuration: <http://targets.lodqa.org>