

ASSESS

AUTOMATIC SELF-

ASSESSMENT



AKSW



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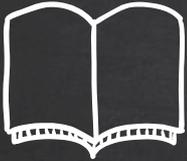
INTRODUCTION





RDF & THE EDUCATIONAL DOMAIN...

Educational
Domain



Linked Data





A LONG TERM GOAL ...

- ✗ generation of education material directly from RDF data
- ✗ possible use cases:
 - preparation of tests on a particular domain
 - training of employees on novel products
 - generation of tests for exams
 - casual gaming
 - ...

WHAT IS ALBERT EINSTEIN'S
BIRTHPLACE?

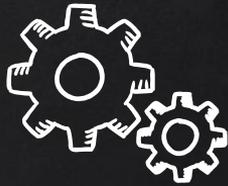
- Bethlehem, PA
- Ulm
- Berlin
- Vadakadu



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2.

THE ASSESS SYSTEM





OUR PROCESS IS EASY?

Linked
Data



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Quiz



HOW IT WORKS

Domain Retrieval

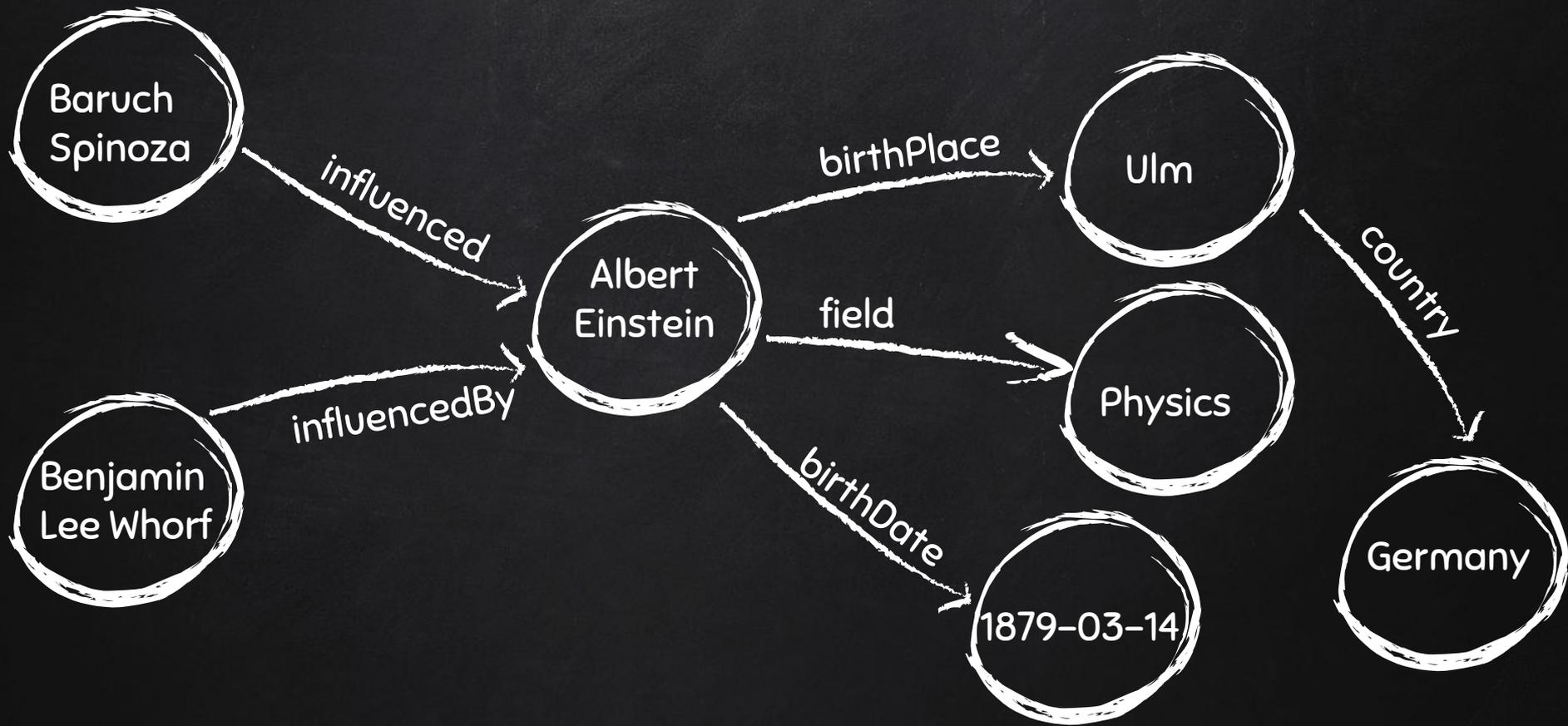
- entity selection based on a given domain of interest
- e.g. entity, class, ...

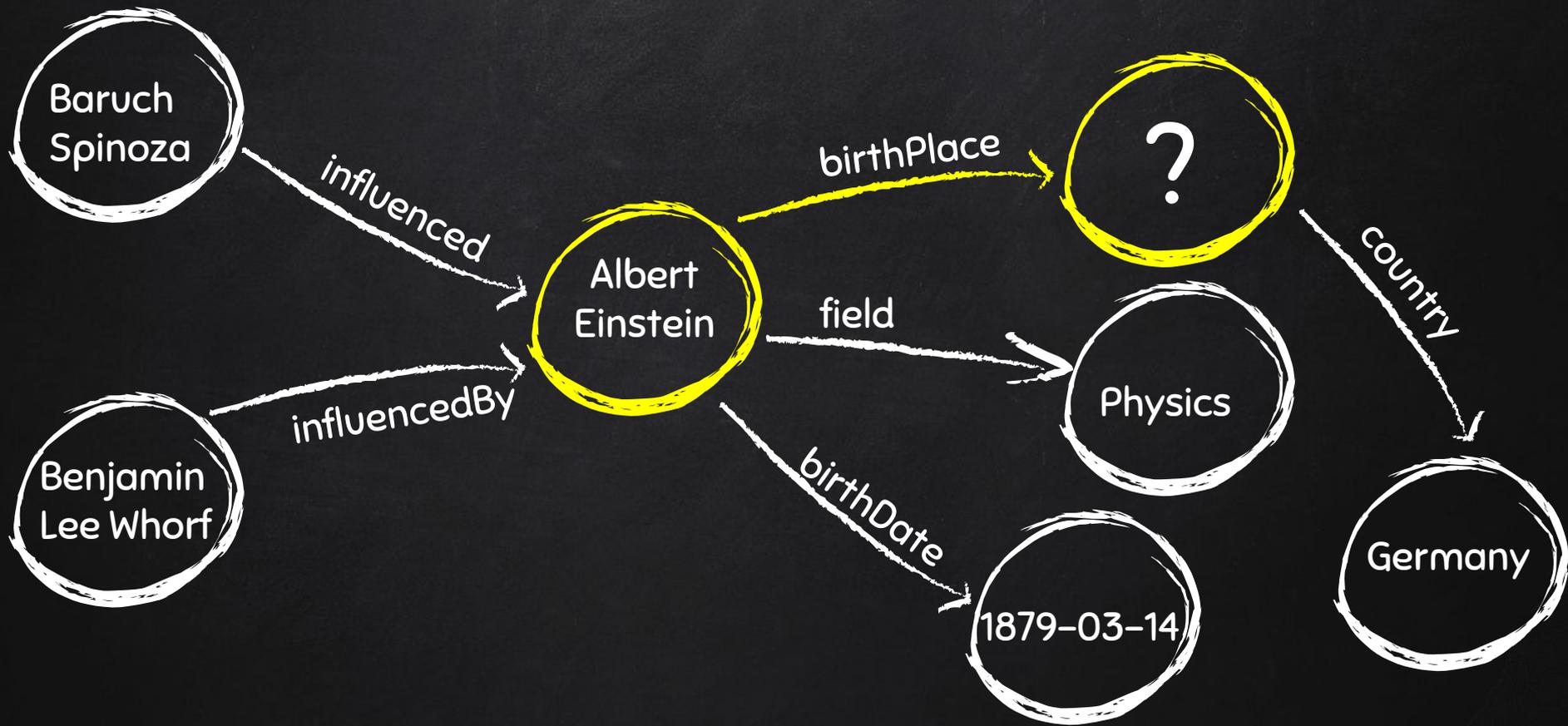
Data Selection

- choose appropriate triples/subgraphs
- heuristics, e.g. popularity, informativeness

Question & Answer Generation

- transform triples into questions
 - MC
 - Yes/No
 - Jeopardy
- verbalize the answers





WHAT IS ALBERT EINSTEIN'S
BIRTHPLACE?

- Bethlehem, PA
- Ulm
- Berlin
- Vadakadu



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HOW TO VERBALIZE A TRIPLE PATTERN?

:Albert_Einstein dbo:birthPlace :Ulm

HOW TO VERBALIZE A TRIPLE PATTERN?

:Albert_Einstein

dbo:birthPlace

:Ulm



NNP's

NN 'be'

NNP

HOW TO VERBALIZE A TRIPLE PATTERN?

:Albert_Einstein

dbo:birthPlace

:Ulm

NNP's

NN 'be'

NNP

Albert Einstein's

birthplace is

Ulm.

HOW TO VERBALIZE A TRIPLE PATTERN?

:Albert_Einstein

dbo:birthPlace

:Ulm

NNP's

NN 'be'

NNP

Whose

birthplace is

Ulm?

HOW TO GET CORRECT ANSWER(S)?

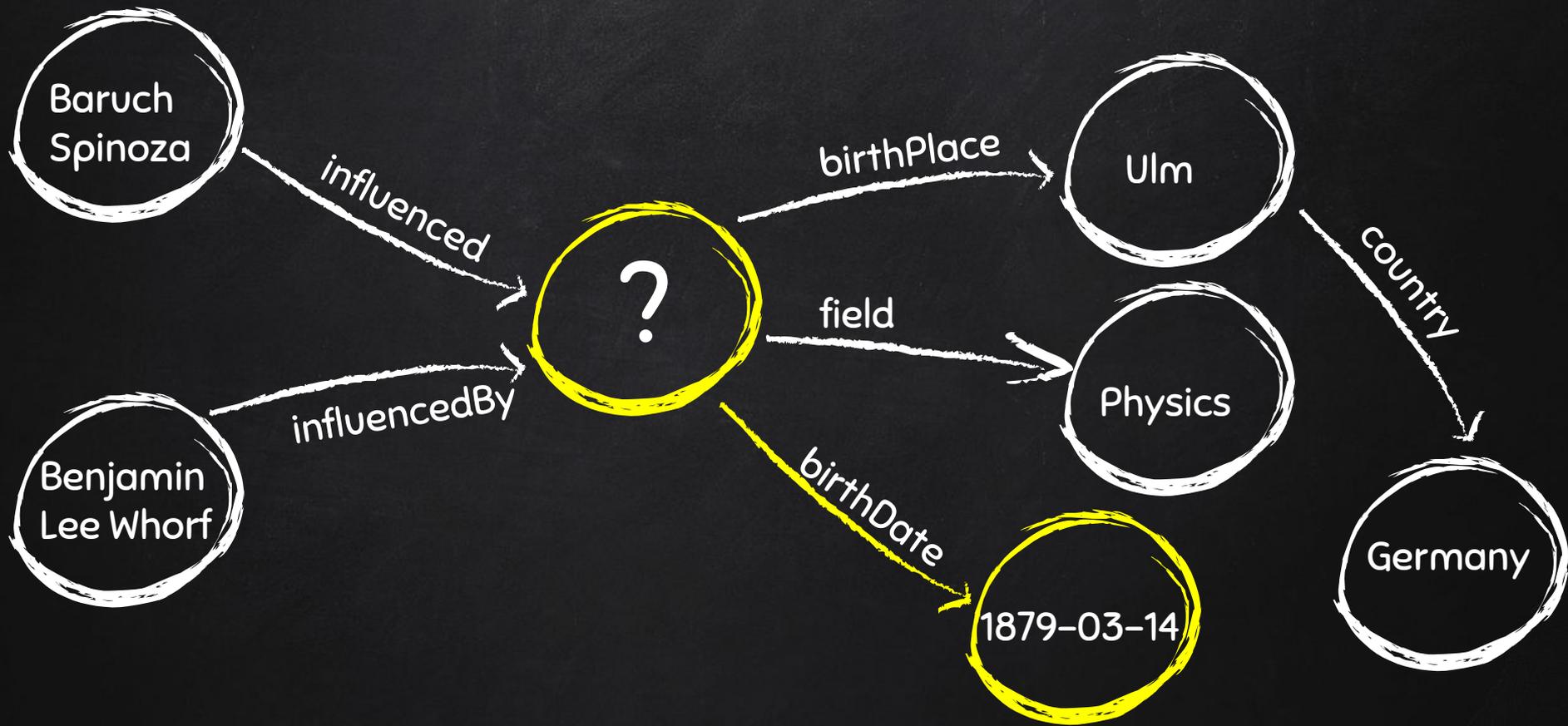
```
SELECT ?x WHERE {  
    :Albert_Einstein dbo:birthPlace ?x .  
}
```

:Ulm

HOW TO GET WRONG ANSWERS?

```
SELECT DISTINCT ?x WHERE {  
  [] dbo:birthPlace ?x .  
  FILTER NOT EXISTS {  
    :Albert_Einstein dbo:birthPlace ?x  
  }  
}
```

:Berlin, :London, :Bethlehem, PA, :Vadakadu, ...

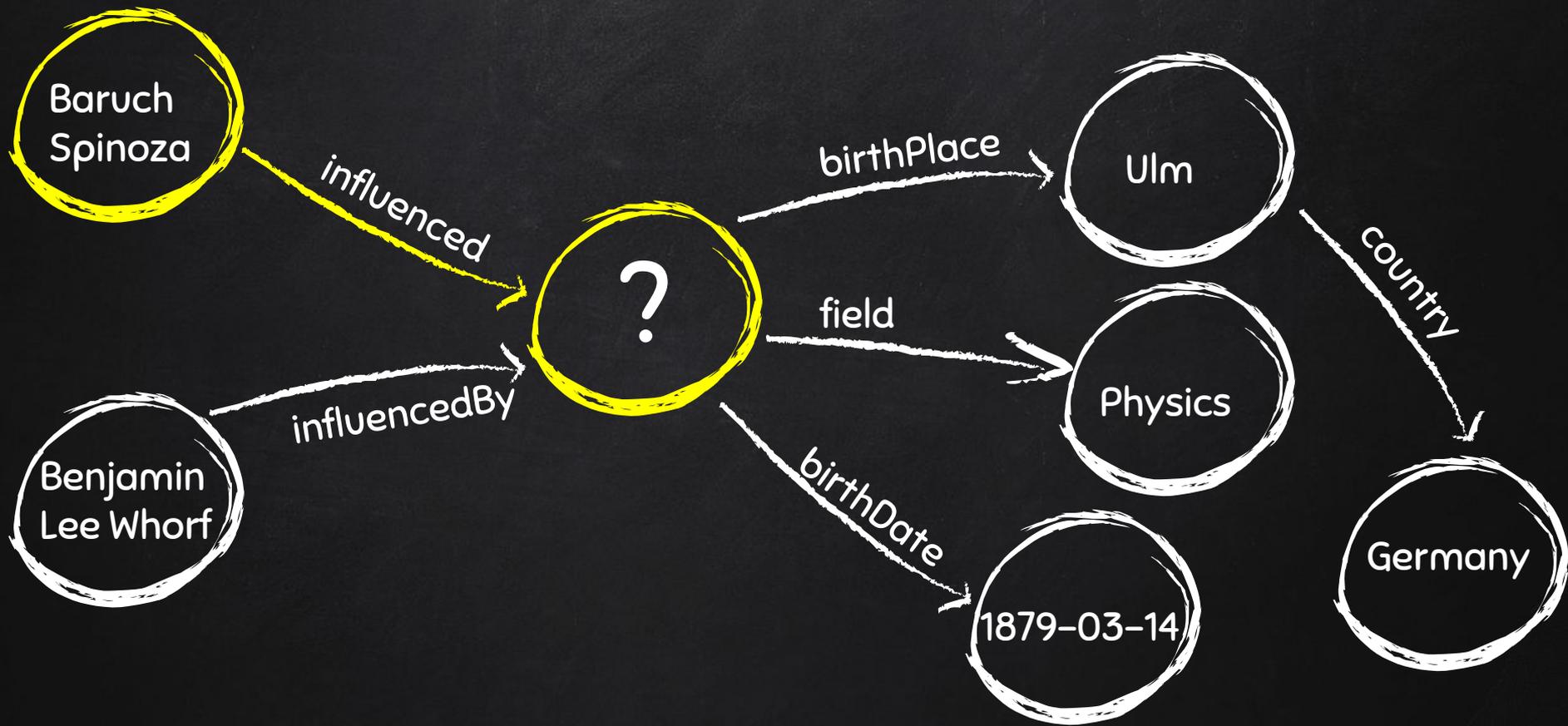


WHOSE BIRTHDATE IS MARCH
14, 1879?

- Gaius Julius Caesar
- Abel Adams
- Steven Spielberg
- Albert Einstein



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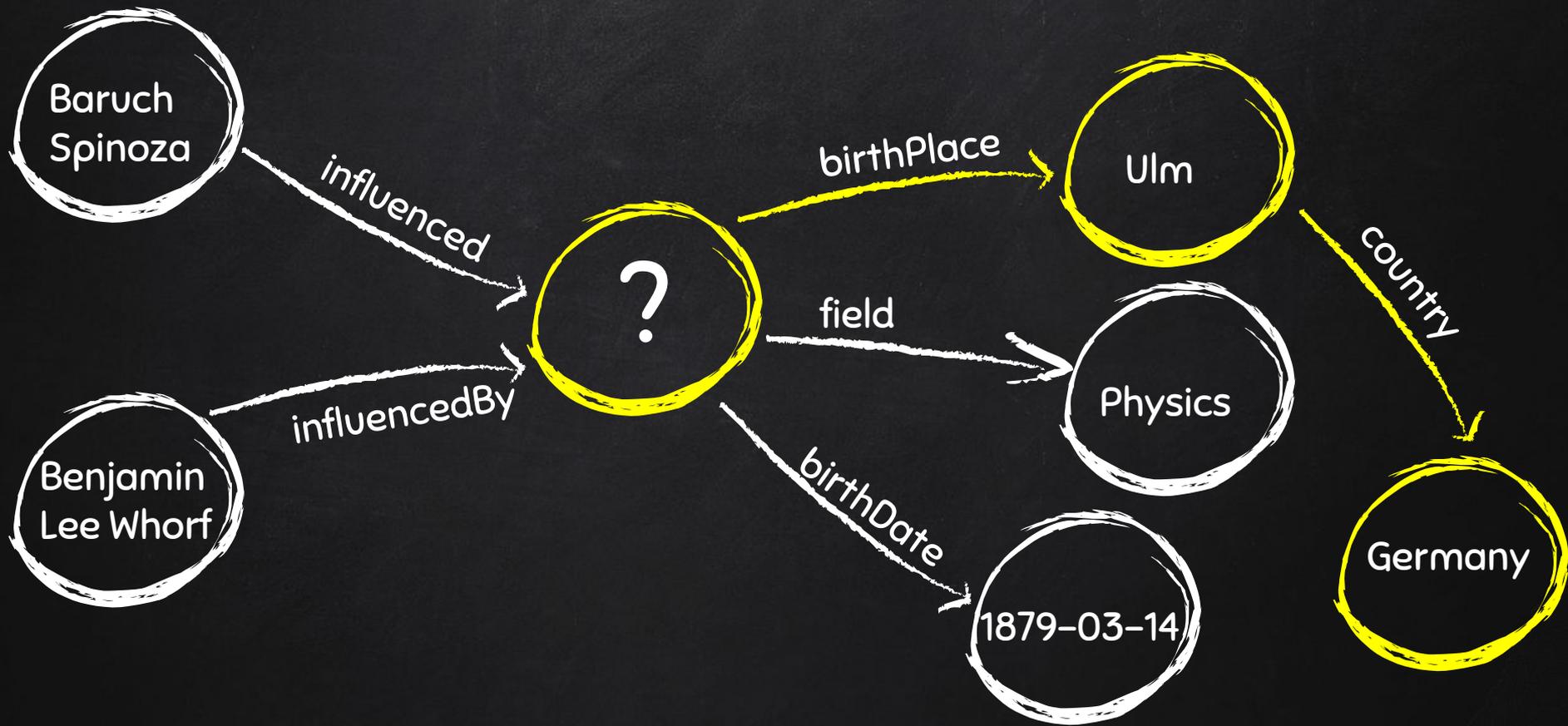


BARUCH SPINOZA INFLUENCED
WHO?

- Albert Einstein
- Friedrich Nietzsche
- Karl Marx
- Sigmund Freud

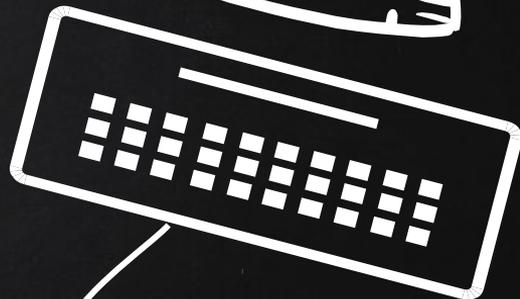


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WHOSE BIRTHPLACE IS A TOWN
WHOSE COUNTRY IS GERMANY?

- Kylie Minogue
- Albert Einstein
- Barack Obama
- Angela Merkel



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IS ALBERT EINSTEIN'S
BIRTHPLACE SYDNEY?

YES

NO



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THIS SCIENTIST WAS BORN IN ULM. HIS BIRTHDATE IS MARCH 14, 1879 AND HE IS KNOWN FOR MASS ENERGY EQUIVALENCE.

- Kylie Minogue
- Albert Einstein
- Barack Obama
- Angela Merkel



ASSESS



INSTRUCTIONS FOR USE

ASSESS is implemented in Java and available as an open source GitHub project licensed under the Apache 2 license.

Maven Project

REST Service

More info on how to use ASSESS at <https://github.com/AKSW/SemWeb2NL/wiki/ASSESS>

3.

EVALUATION



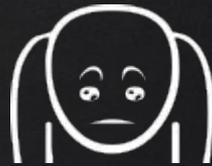


HOW GOOD IS ASSESS?



HOW GOOD IS ASSESS?

WE DON'T KNOW — YET





HOW GOOD IS THE NLG OF ASSESS?



HOW GOOD IS THE NLG OF ASSESS?

WE ALREADY KNOW!





HOW GOOD IS THE NLG OF ASSESS?

- x 120+ participants in previous user study
- x measures: **fluency** and **adequacy** (score between 1 and 6)

FLUENCY

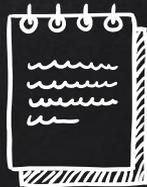
4.56 \pm 1.29

ADEQUACY

5.31 \pm 1.08

4.

SUMMARY





WHAT ASSESS CAN DO

- x ASSESS generates questions out of Linked Data
- x MC, Yes/No and Jeopardy questions
- x different complexity is possible



WHAT ASSESS CAN'T DO - YET

- ✗ no proper model for difficulty of
 - a single question
 - a set of questions
- ✗ complex domain definitions in a simple way
- ✗ multilingual support
- ✗ ...



WHAT MAKES A QUESTION DIFFICULT?

- x domain
- x entities, concepts and properties used in question
 - o Which vein drains from Azygos vein?
- x possible answer space
 - o Which person was born in Ulm?
 - o Which scientist was born in Ulm?
 - o Which scientist in the field of Physics was born in Ulm?



Created by Michael Wohlwend
from the Noam Project

THANK YOU!

Any questions?



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CREDITS

Special thanks to all the people who made and released these awesome resources for free:

- ✘ Presentation template by [SlidesCarnival](#)
- ✘ Photographs by [Unsplash](#)