Instance Query/Rules Interface

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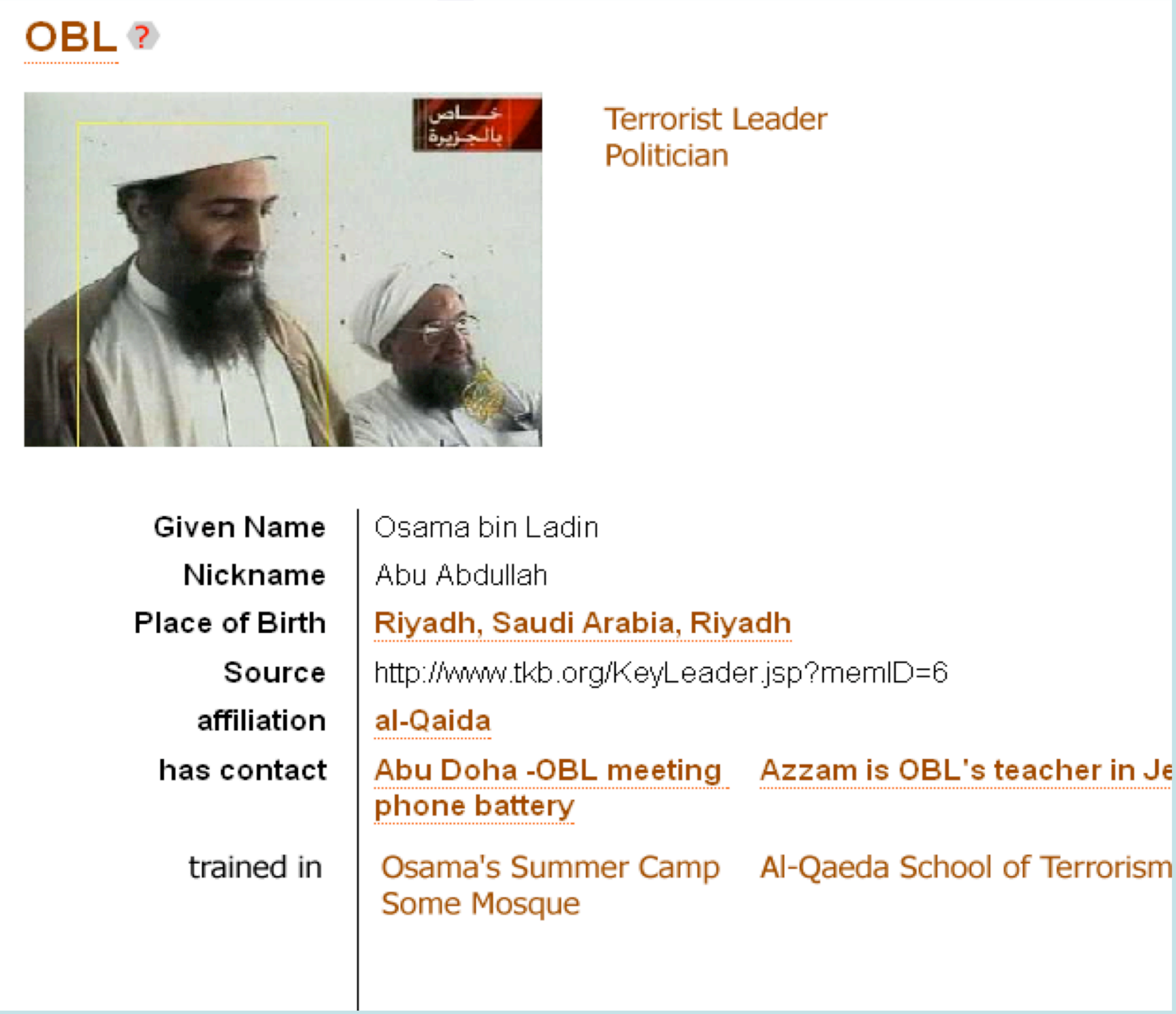
Fast overview

- These slides are a fast walkthrough of a design approach for a rules interface for querying ontology driven spaces
- Exemplar is the PIT or Profiles in Terror project, MindLab, UMD

Running Use-case



OBL ?

Terrorist Leader
Politician

Given Name	Osama bin Ladin	
Nickname	Abu Abdullah	
Place of Birth	Riyadh, Saudi Arabia, Riyadh	
Source	http://www.tkb.org/KeyLeader.jsp?memID=6	
affiliation	al-Qaida	
has contact	Abu Doha -OBL meeting phone battery	Azzam is OBL's teacher in Je
trained in	Osama's Summer Camp Some Mosque	Al-Qaeda School of Terrorism

What do Rules look like

If…

?x trainedIn ?z.

?y trainedIn ?z.

?x a TerroristLeader.

?y a TerroristLeader.

Body of the Rule
(Conditions)

then…

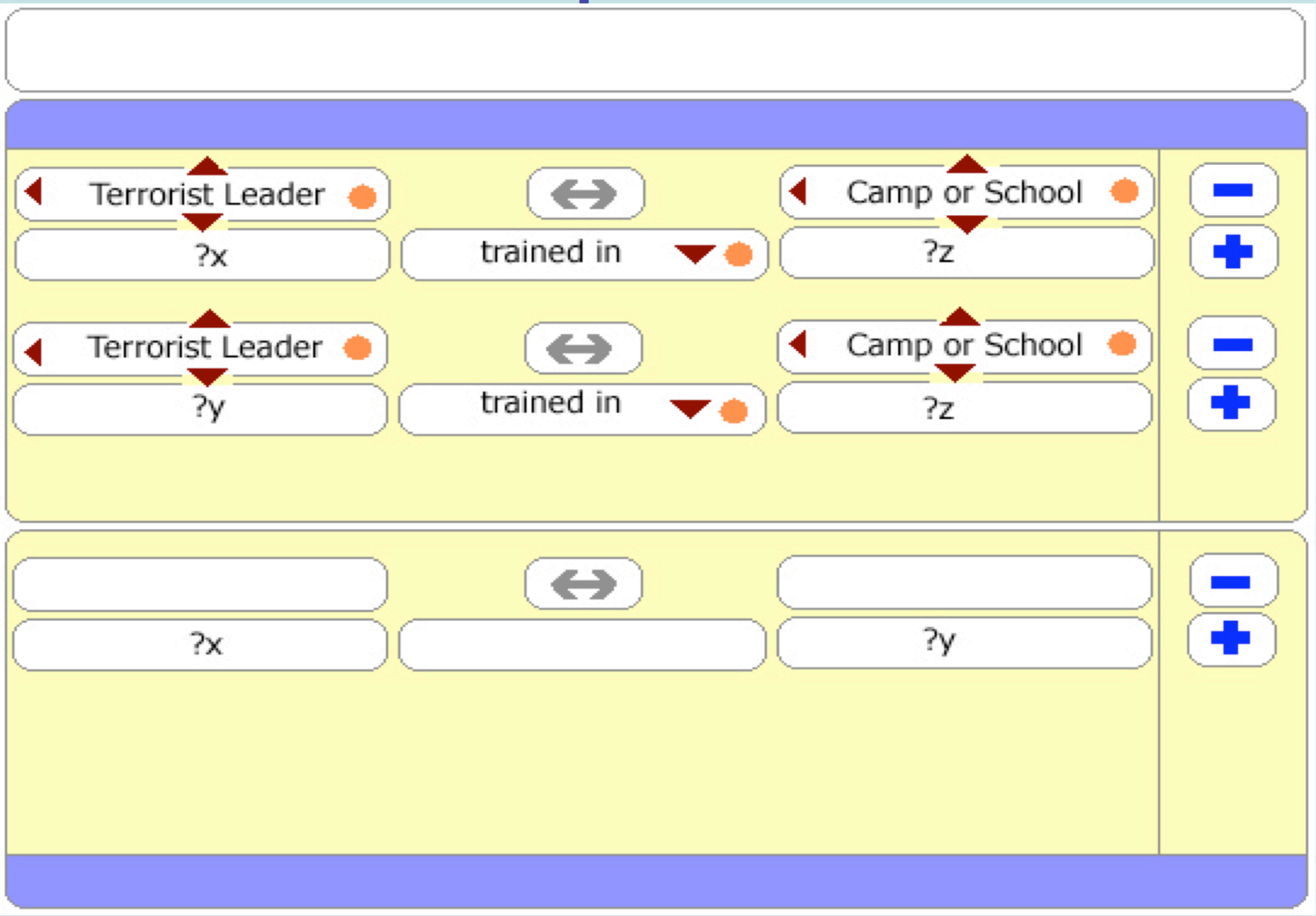
?x trainedTogether ?y.

Head of the Rule

(Conclusions)

-Can specify arbitrary AND/OR combinations of conditions
-Can have multiple conclusions
-Want to extract away this type of free-form rule-writing
 -Eliminate typing mistakes
 -Reduce level of familiarity of ontology required to write rules
 -Reduce amount of duplication needed for logic combinations

Proposed Interface



Terrorist Leader ⇔ Camp or School
?x trained in ?z

Terrorist Leader ⇔ Camp or School
?y trained in ?z

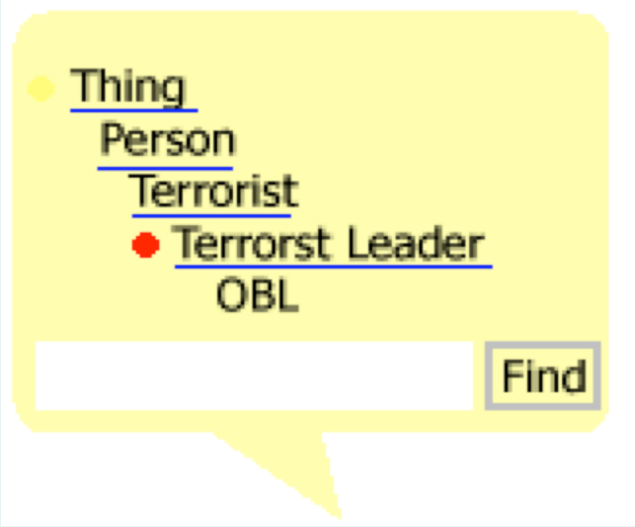
Body of the Rule

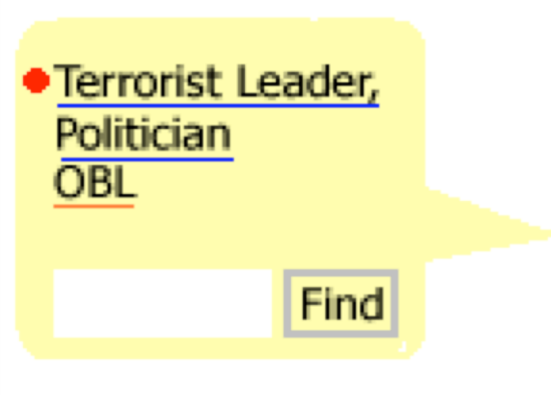
⇔
?x ?y

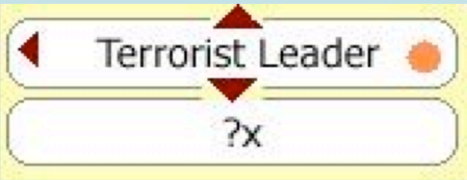
Head of the Rule

-Accessible from wherever there is a class/instance/property.

Variables and Variable Typing



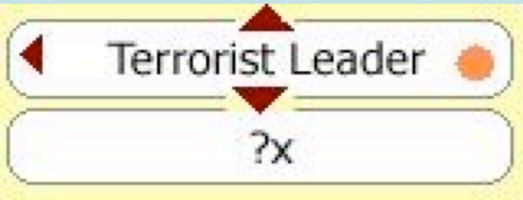


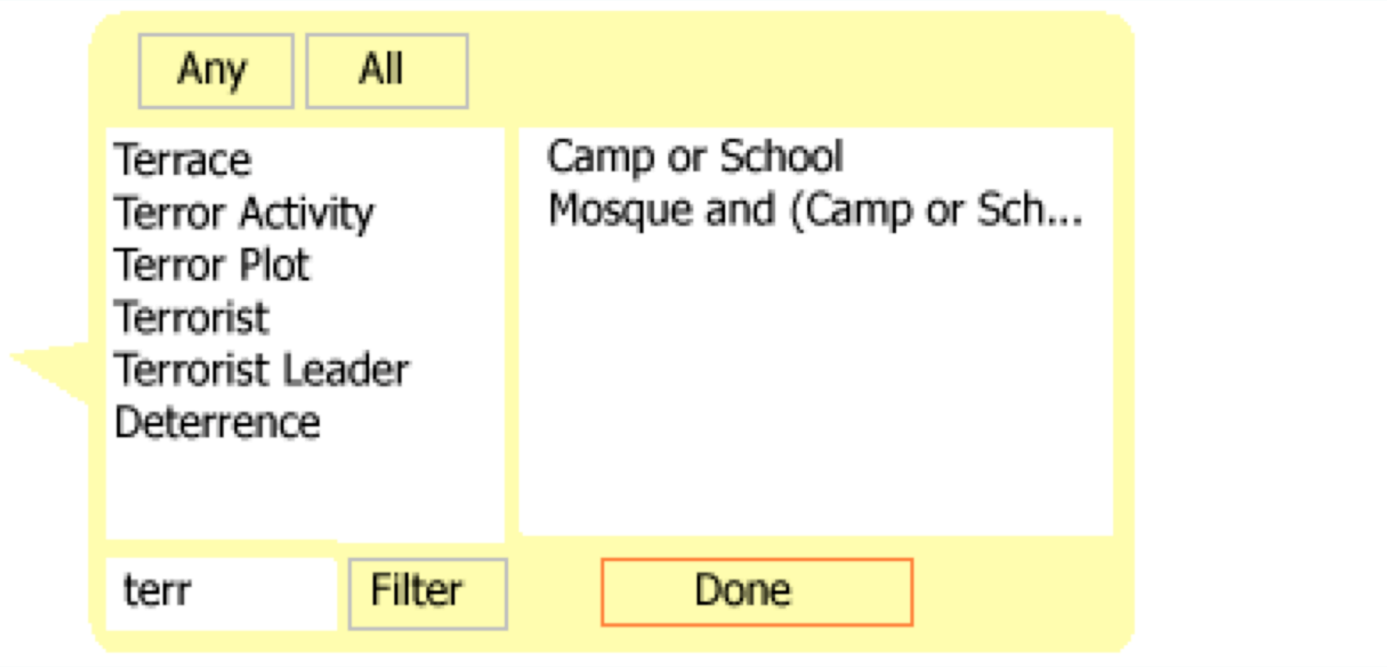


-Types can be initially populated with a default value from the point where the user decides to create rules/queries.

- -This shows default “Terrorist Leader”, and up-down the hierarchy
- -OBL is shown because user came to the interface from OBL page.

Specifying And/Or combinations





Terrace
Terror Activity
Terror Plot
Terrorist
Terrorist Leader
Deterrence

Camp or School
Mosque and (Camp or Sch...

terr

-Use the orange circle to create boolean combination of class types

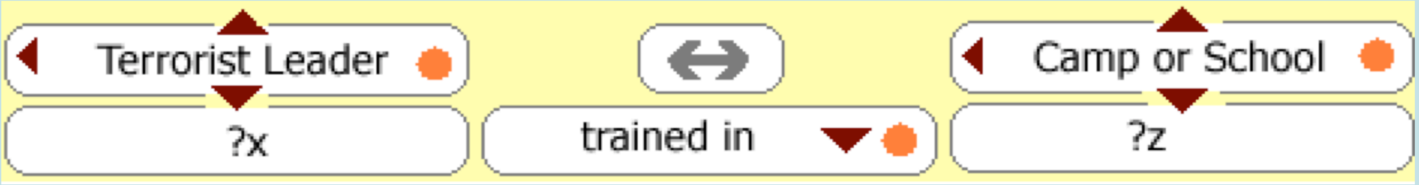
-use Filter to textually filter available type in view

-Multiply select atomic types or combined ones (on right) to create more complex ones

-Select one type (atomic or complex) and press Done to finish

Property Filtering

- Given a variable type (or actual instance), we can filter and reorder the properties presented to the user
- Can also use frequency of usage (require queries to db)



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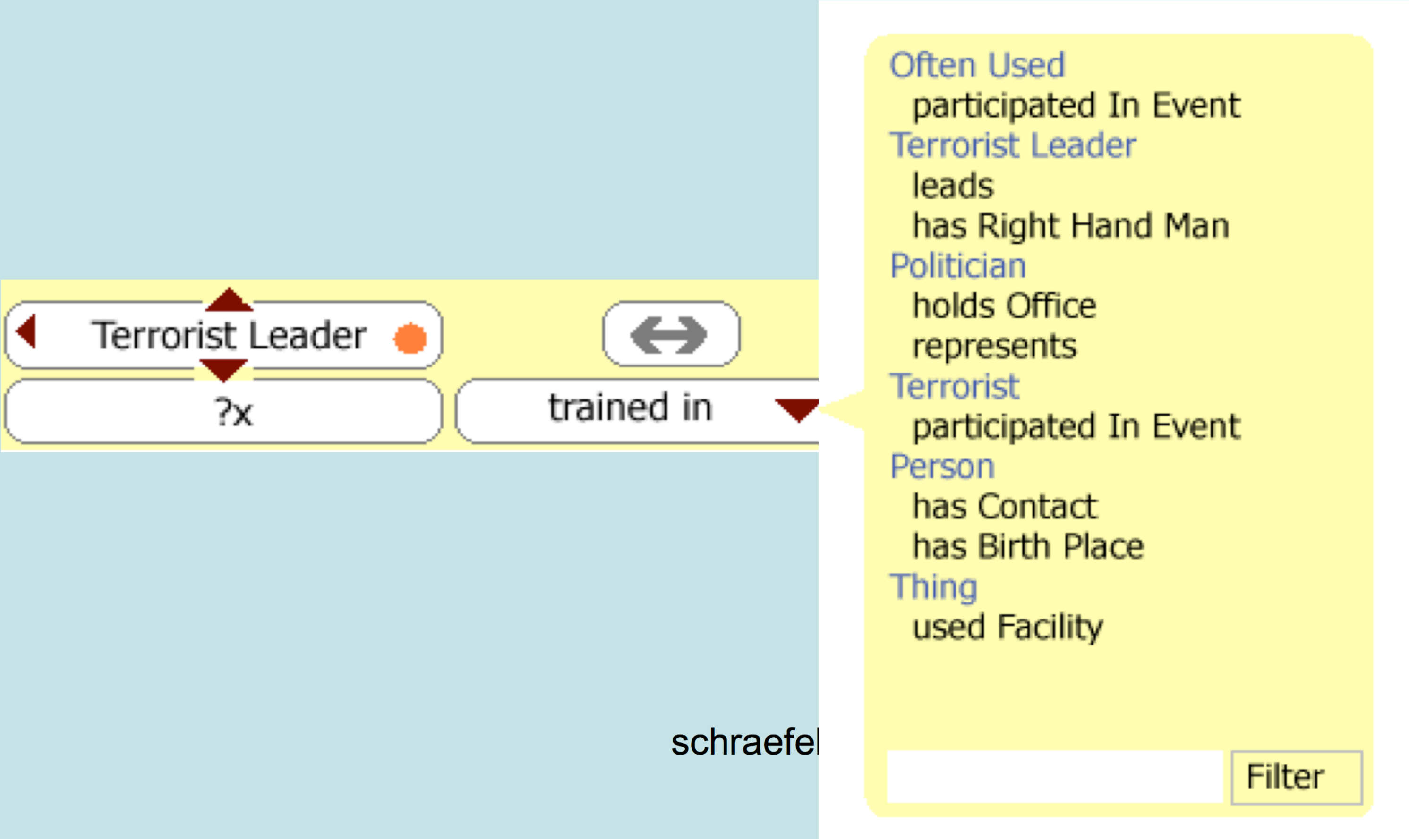
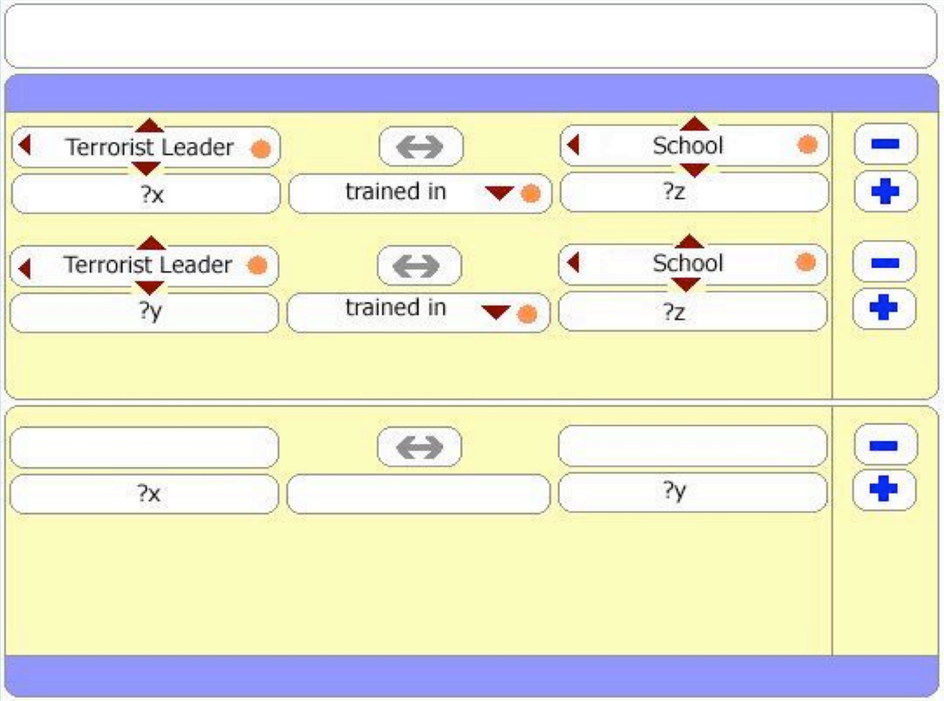


Graph Representation

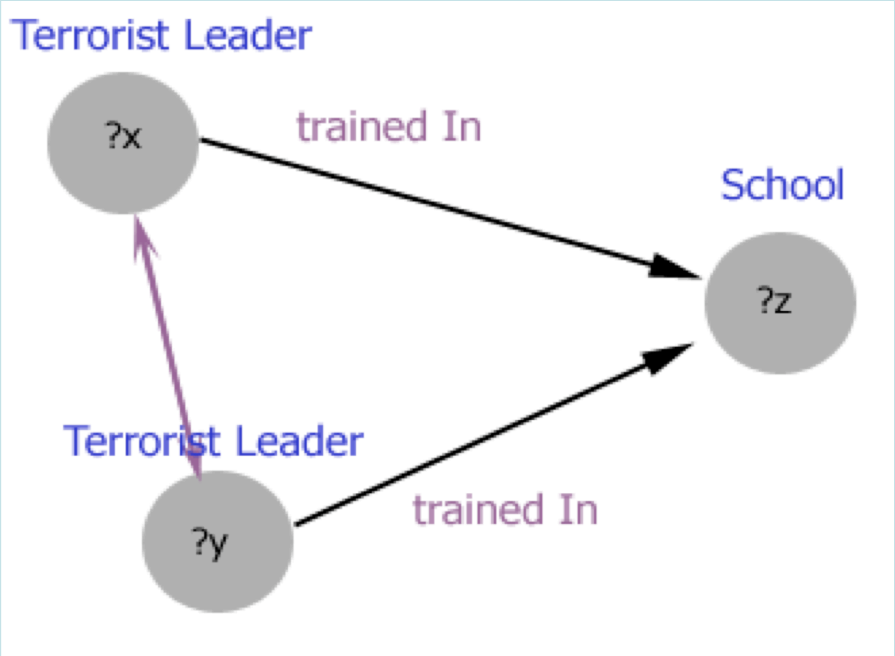
- Re-enforce user’s cognitive map of the rules
- Immediate reflection to/from widgets
- Disjunctions => multiple graphs



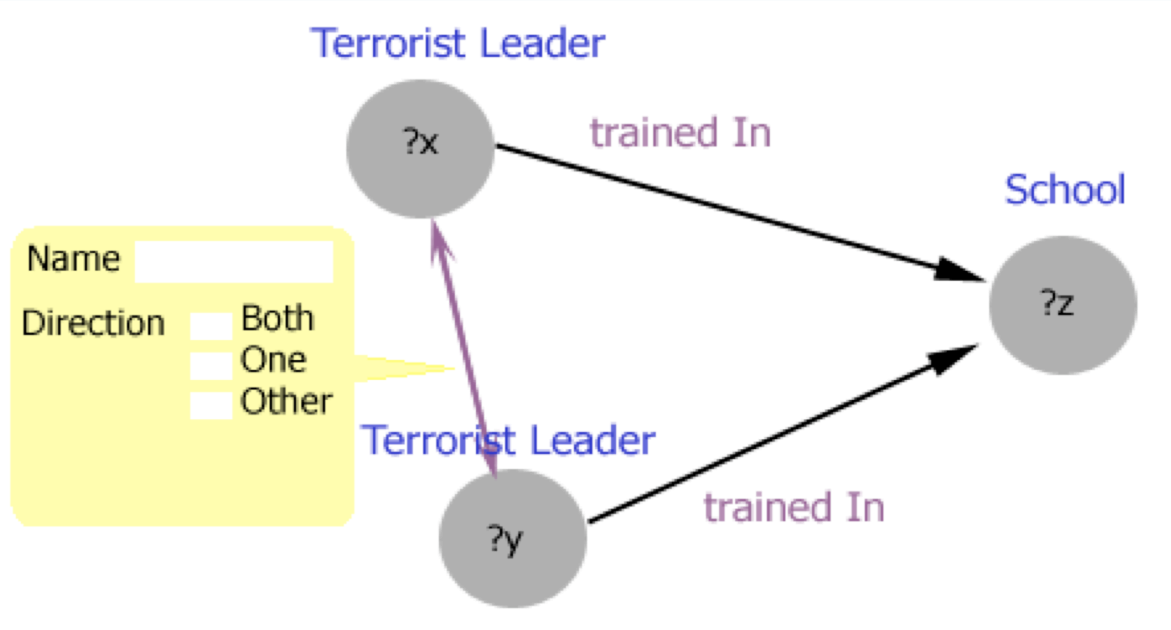
Terrorist Leader ⇔ School
?x trained in ?z

Terrorist Leader ⇔ School
?y trained in ?z

⇔
?x ?y



Graph Representation



- Once name of the result set is decided (say, “trained Together”), the graph displays “The result ‘trained Together’ is a set of relations between qualifying Terrorist Leaders”.

  -Unary results can say: “the results are a set of Schools”

- Graphical representation of result sets for future reference

Additional features

- Rubber band: put a rubber band around area of graph where you want to keep results of THAT PART of the query persistent
- Combination Of: rather than only Any or ALL can also have “any combination of X out of Y” conditions - upper range of 5 on y so not combinatorially, computationally nuts - for now.
- Plain language reflection of query in process: while the rule is being built up, see plain language feedback of how the system is interpreting the entries to validate the query.
- Query rules data results while building query: a question we have is is it useful to show the results for a rule as it is being built up?

Still more to ponder

- Can we have better representation of variables (than ?x)?
  - A richer annotation language for describing ontologies so interfaces can take advantage of these? (e.g. custom icons)
- How to best represent results? (can we perform analysis (given user’s rules/queries) to highlight ‘important’ portions of the results)