QUERY REWRITING

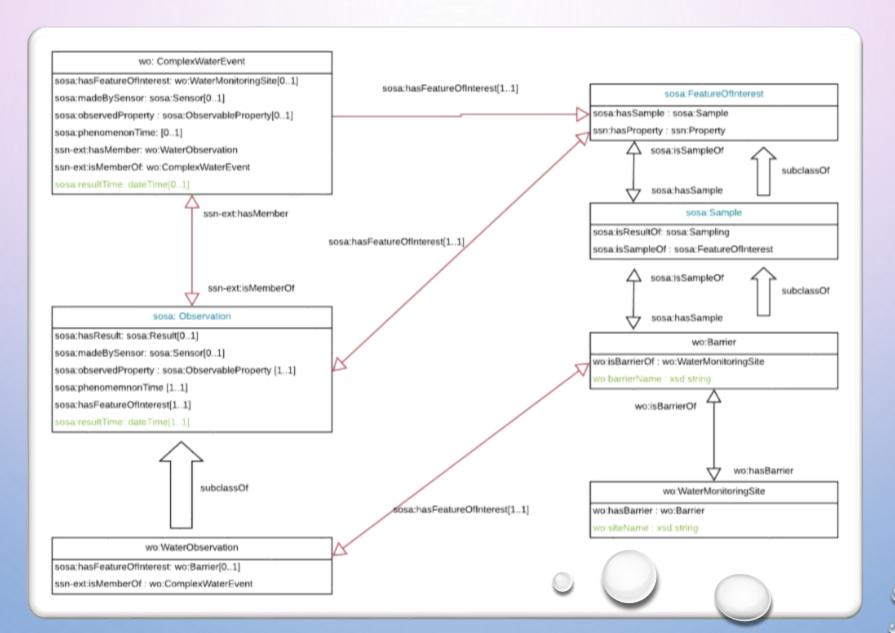


THE ONTOLOGY

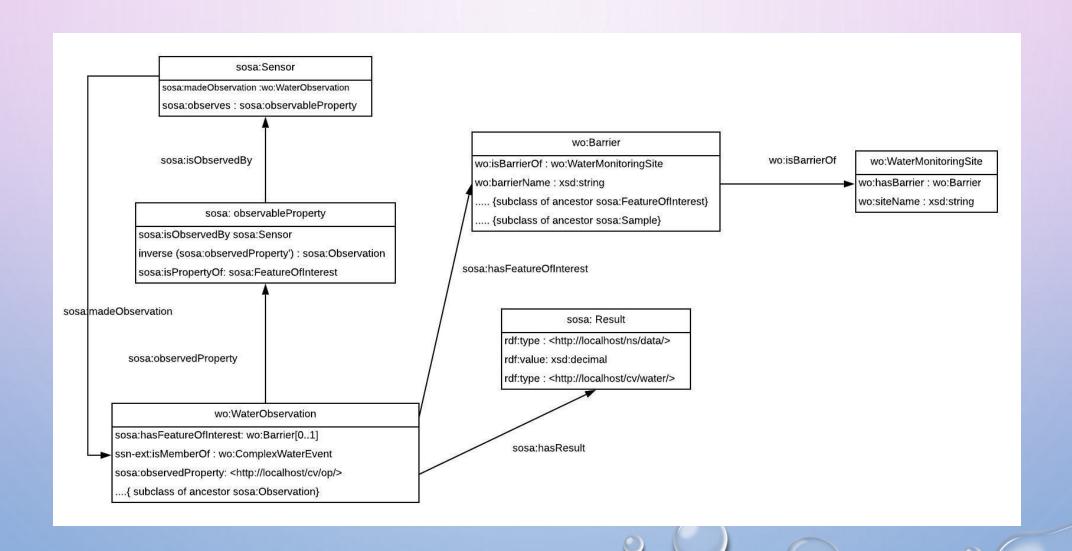
HTTPS://GITHUB.COM/SUNYI000/WATER-ONTOLOGY

- EXTENDS EXISTING ONTOLOGIES
 - SSN/SOSA ONTOLOGY
 - SSN-EXT
- CONTROL VOCABS FOR WATER MONITORING

SCHEMA



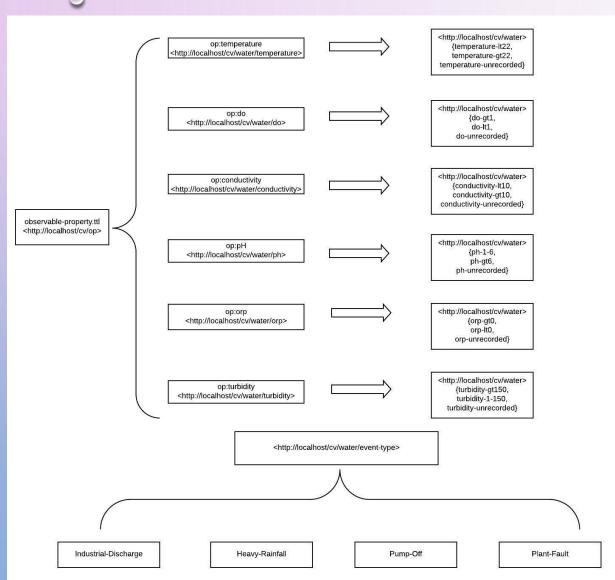
SCHEMA





DATA & CONTROL VOCABS





data.ttl <http://localhost/ns/data> data:normal

rdf:type : owl:DataProperty rdfs:subPropertyOf : rdf:value

rdfs:range : xsd:decimal

rdfs:label : "normal value"

data:low

rdf:type : owl:DataProperty rdfs:subPropertyOf : rdf:value

rdfs:range : xsd:decimal rdfs:label : "low value"

data:high

rdf:type : owl:DataProperty

rdfs:subPropertyOf : rdf:value

rdfs:range: xsd:decimal

rdfs:label : "High value"

data:Text

rdfs:subClassOf : sosa:Result

rdf:value : xsd:boolean

rdf:value : xsd:nonNegativeInteger

rdf:value : xsd:string

data:Boolean

rdfs:subClassOf : sosa:Result

rdf:value : xsd:boolean

rdf:value : xsd:nonNegativeInteger

data:unknown

rdf:type : owl:ObjectProperty

rdfs:label : "High value"



COMPLEX EVENTS

- INDUSTRIAL DISCHARGE
- HEAVY RAINFALL
- PUMP OFF
- PLANT FAULT



INDUSTRIAL DISCHARGE

- LOW PH, HIGH TURBIDITY, HIGH CONDUCTIVITY
- HIGH PH, HIGH TURBIDITY, LOW ORP



EXAMPLE HIGH LEVEL QUERIES

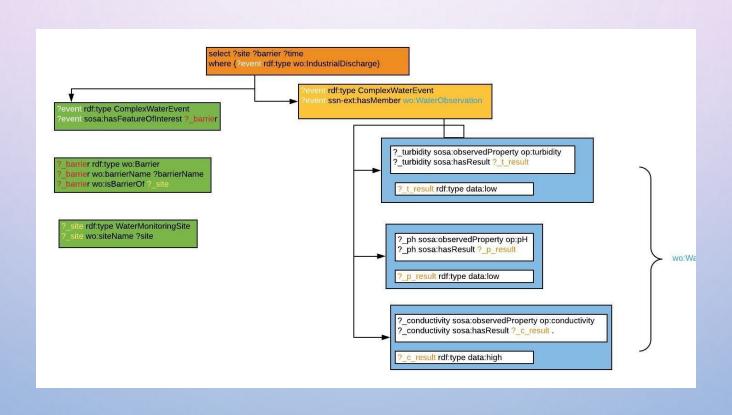
 WHAT DATE AND TIME DOES INDUSTRIAL DISCHARGE EVENT HAPPEN AT WHICH BARRIER OF WHICH SITE?

SELECT ?SITE ?BARRIER ?TIME

WHERE {?EVENT RDF:TYPE WO:INDUSTRIALDISCHARGE}



REWRITING PROCESS





REWRITING EXPLAINED

INDUSTRIAL DISCHARGE EVENT

- WATERCOMPLEXEVENT &
- HAS WATEROBSERVATION
 - OBSERVEDPROPERTY PH
 - PH LOW
 - OBSERVEDPROPERTY TURBIDITY
 - TURBIDITY HIGHT
 - OBSERVEDPROPERTY CONDUCTIVITY
 - CONDUCTIVITY HIGH