

# GEOSEMANTICS EXCHANGE (GSX) V.01

## RESEARCHERS & DEVELOPERS

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# VISION

Enabling semantic querying within  
ArcGIS Enterprise Platform



# PROBLEM

- Multiple Datasets:  
There is a disconnect between geospatial datasets.
- This makes it difficult and time consuming to perform complex geospatial queries.

**GeoFoundation Exchange  
(GFX) Data  
35+ Datasets**

Point of Interest					
#	Data & Associated	Neighbourhood_Municipal			
1	Objectid	#	Data & Associated Fields	Keep	GFX
2	Shape			Ontology	Note
3		Road Segment			
4					
5		Data & Associated Fields	Keep	GFX	Ontology
6	Objectid		Yes		
7	Shape		Yes	Yes	
8	Feature ID		No		
9	Feature Hash		No		
10	National Unique ID		No		
11	Address Range NID		No		
12	Road Jurisdiction		Yes	Yes	No
13	Route Name English 1		Yes	No	No
14	Route Name English 2		No		
	Route Name English 3		No		
	Route Name English 4		No		

# OBJECTIVES

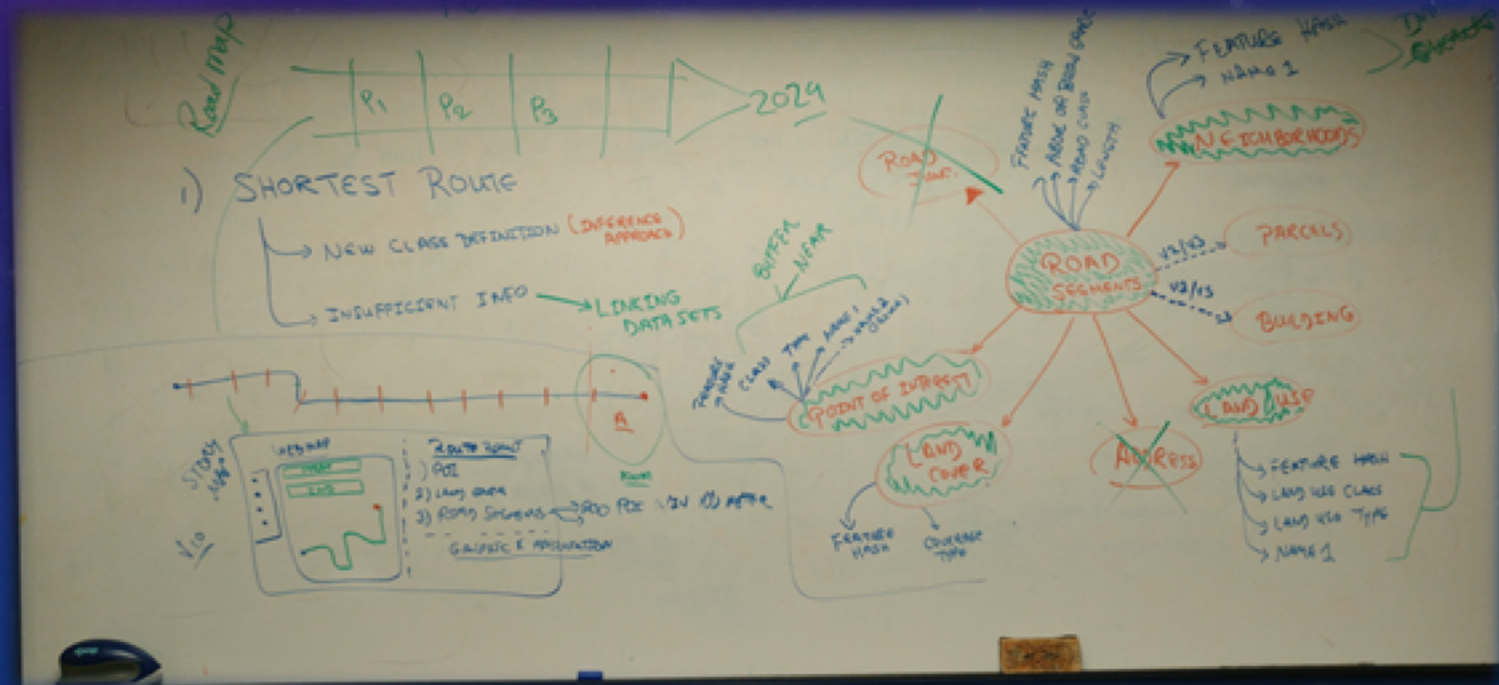
Investigate a solution that uses  
the iCity Ontology to integrate the datasets  
and enable semantic querying.



# SOLUTION & CASE STUDY

- In-Depth Context of Shortest Route Tool
- Feature Classes in Scope:
  - Point-of-Interest (POI)
  - Neighbourhoods
  - Land Use
  - Road Segments
  - Other

4+ Datasets

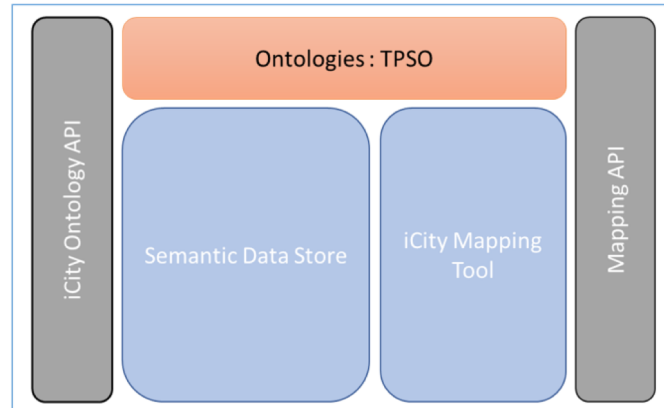


# ARCHITECTURE

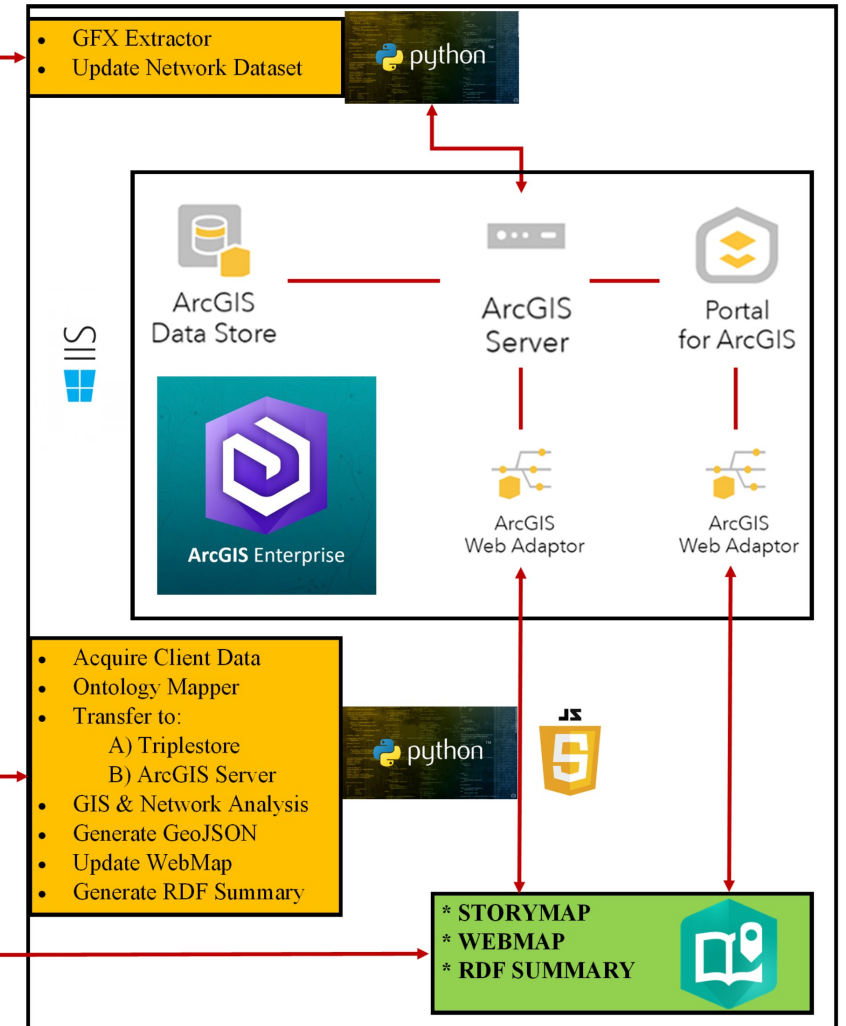
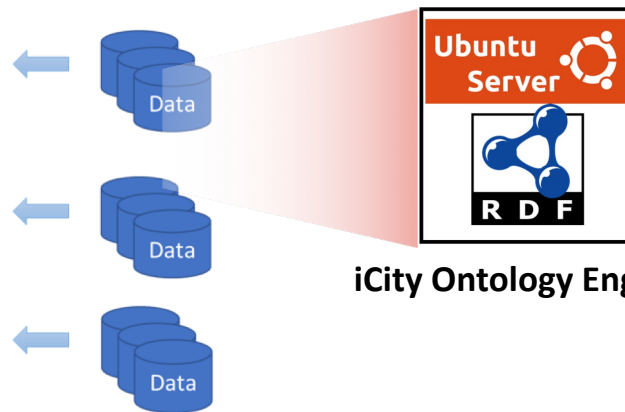
## GeoFoundation Exchange (GFX) Data



## iCity Ontology Engine



## iCity Ontology Engine





# CURRENT STATUS

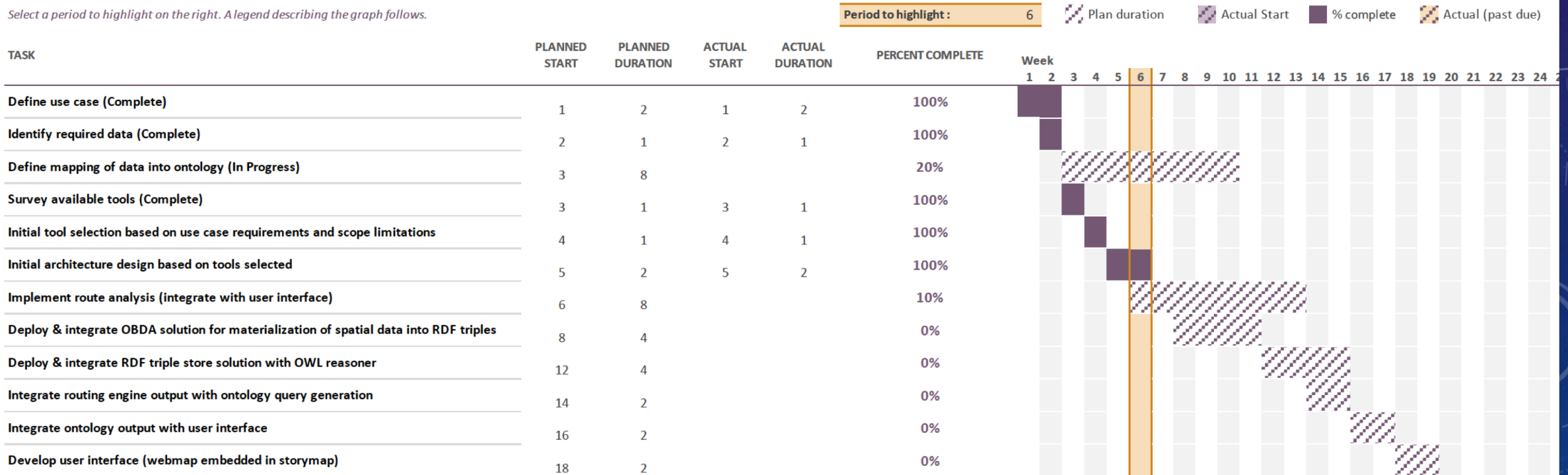
- First use case identified
- Project plan defined
- Initial architecture design completed
  - Tools reviewed and selected
- Started implementation
- Projected prototype completion date: February 2020

# PROJECT PLAN

ESTIMATED COMPLETION: FEBRUARY 2020

## GSX Project Plan

Select a period to highlight on the right. A legend describing the graph follows.





# FUTURE WORK

## Applications:

- This case study is one of many possible uses of semantic querying in the Esri toolset
- Future possible applications include:
  - Dataset verification (e.g. with respect to the GFX)
  - Extended support for NextGen-911
  - Incorporation of external data
- Investigate connections with other UTTRI projects

## Functionality:

- Automatically update data through GFX (GeoFoundation Exchange)
- Export and map data from ArcGIS on-demand
- Expand scope and scale (outside of Toronto)
- Support for user interaction (attribute selection, filtering)
- Compute multiple routes and use constraints to filter routes

