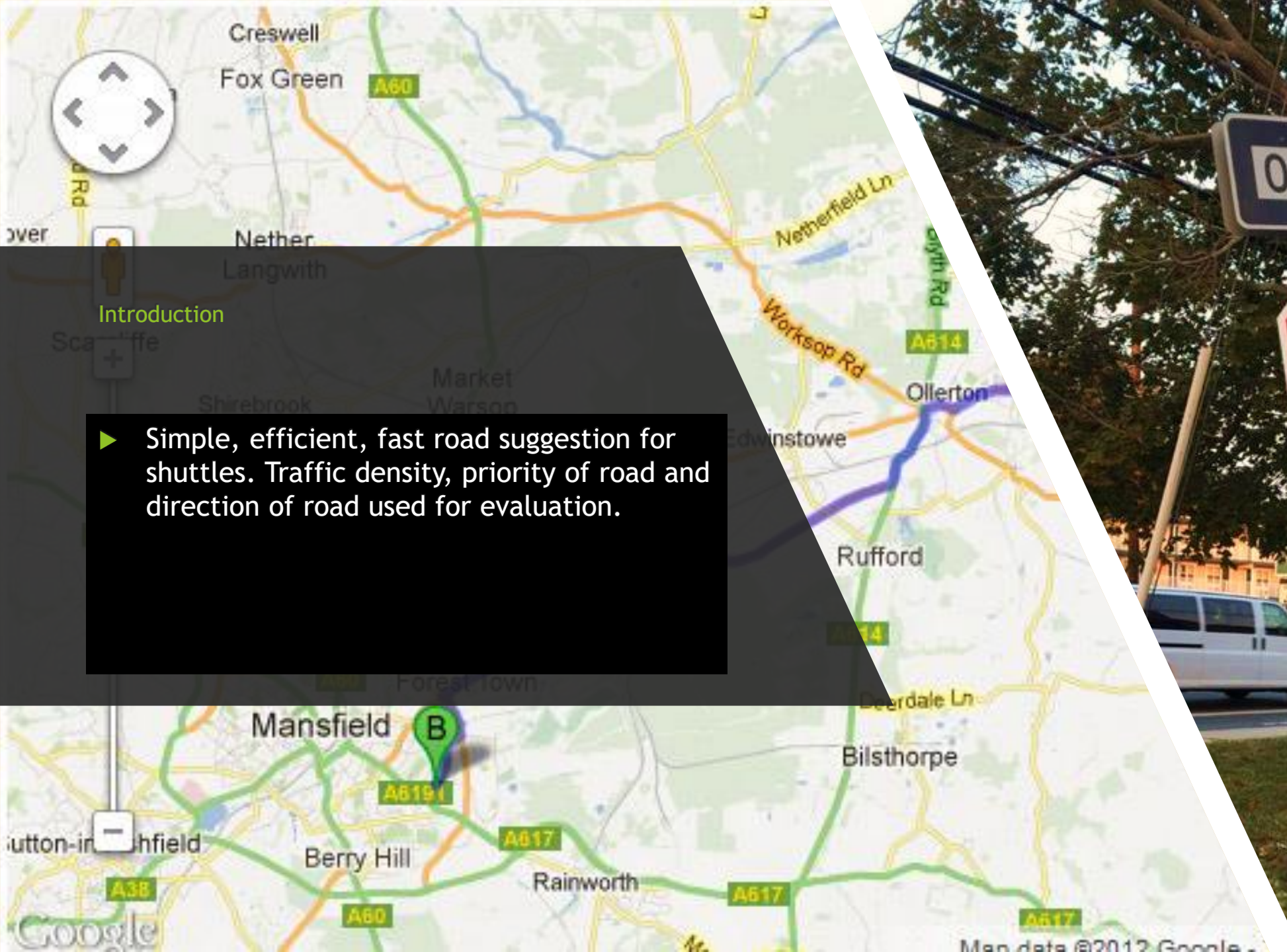


BBM 474 PROJECT REPRESENTATION

- Evaluation of the shuttle routes for the employees
- 21426515-Cankat ADILOĞLU
- 21327929-Tolgahan DİKMEN
- 21328155-Furkan KARAKÖKÇEK



- Simple, efficient, fast road suggestion for shuttles. Traffic density, priority of road and direction of road used for evaluation.

Method Followed

- ▶ Working area was selected Bahçelievler and WGS84
- ▶ Locations of employees were entered manually.
- ▶ Traffic density of each road was entered manually according to Google Traffic Conditions of Bahçelievler at 8:00 am.
- ▶ All employee locations buffered according to their walking distance(20,200 meters).
- ▶ Intersection of each location' buffer with routes found.
- ▶ Disabled employees intersections combined with all other intersections.
- ▶ Appropriate road was evaluated for each employee by algorithm.

Location feature for employees

OBJECTID	Shape	point_name	xField	yField	walk_distance
2	Point Z	<Null>	32.822527	39.921662	200
3	Point Z	<Null>	32.817986	39.917352	200
4	Point Z	<Null>	32.819185	39.924085	200
5	Point Z	<Null>	32.830603	39.917891	200
6	Point Z	<Null>	32.813091	39.92765	200
7	Point Z	<Null>	32.800796	39.924368	200

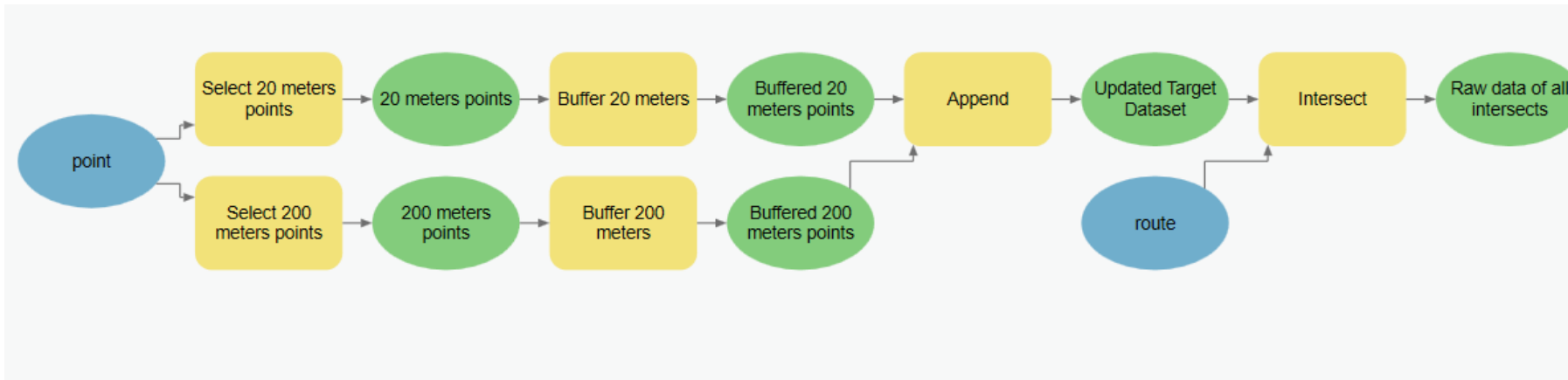
Route feature

OBJECTID ▲	Shape	Shape_Length	nameField	directionField	priorityField	densityField	
35	Polyline Z	1553.552844	<Null>	2	1	3	
36	Polyline Z	1013.062736	<Null>	2	2	3	
37	Polyline Z	1101.913922	<Null>	2	3	3	
38	Polyline Z	1705.703343	<Null>	2	2	2	
39	Polyline Z	450.857169	<Null>	2	4	3	
40	Polyline Z	1061.553606	<Null>	2	1	3	

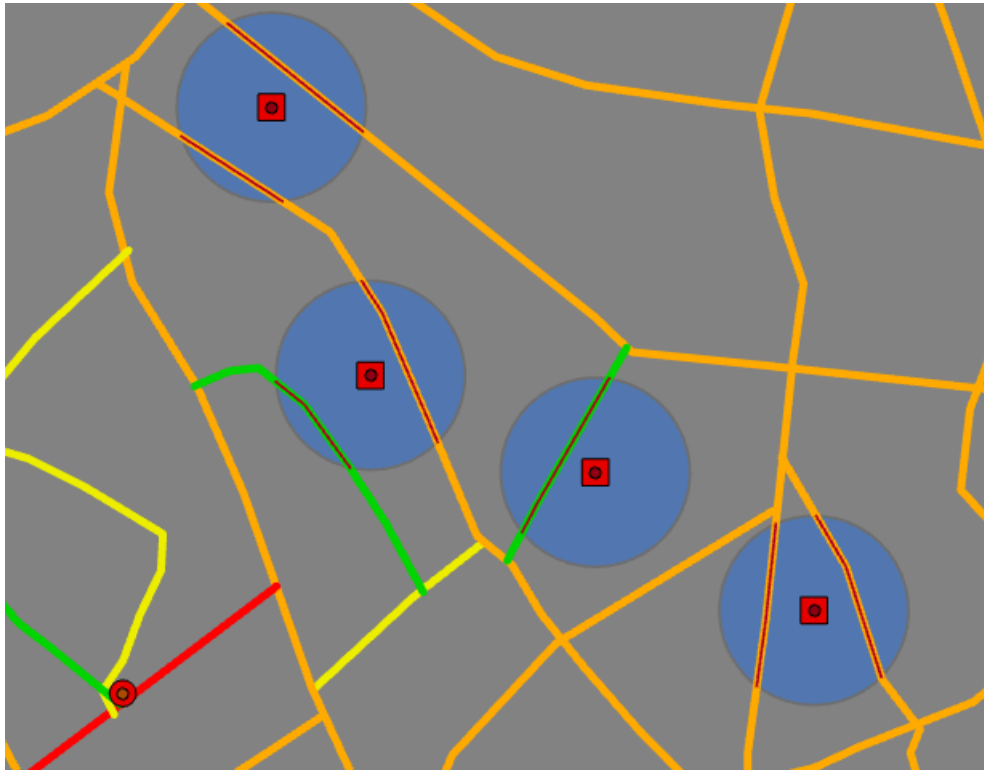
Decision Model and Scoring

- ▶ Right decision for each location we preferred to score each road. This are;
- ▶ Traffic density,
- ▶ Type of road,
- ▶ Direction of road.

Flowchart of Project



Intersections



Traffic Density Scoring

- Score of the traffic density is 15. First table has the biggest scores for decision points. If traffic density value is 1, its' score will be 3 so that means it is not usually preferred road for decision point.

Traffic density	15
1	3
2	7
3	9
4	15

Road Type Scoring

- ▶ Score of the road type is 9.
The table helps the decision point which road is main road or by-road.
- ▶ It is actually priority of road.

Type of Road	9
1	9
2	7
3	5
4	1

Road Direction Scoring

- Score of the road direction is 5. But it is also important. If shuttle enters on one-way road, it must return back to same road.

Direction of Road	5
1	1
2	5

Decision Making System and Support

- ▶ We designed an algorithm for scoring then each road compared by score.
- ▶ Biggest score means efficient road for location.
- ▶ For comparison and managing scores python dictionary structure used.

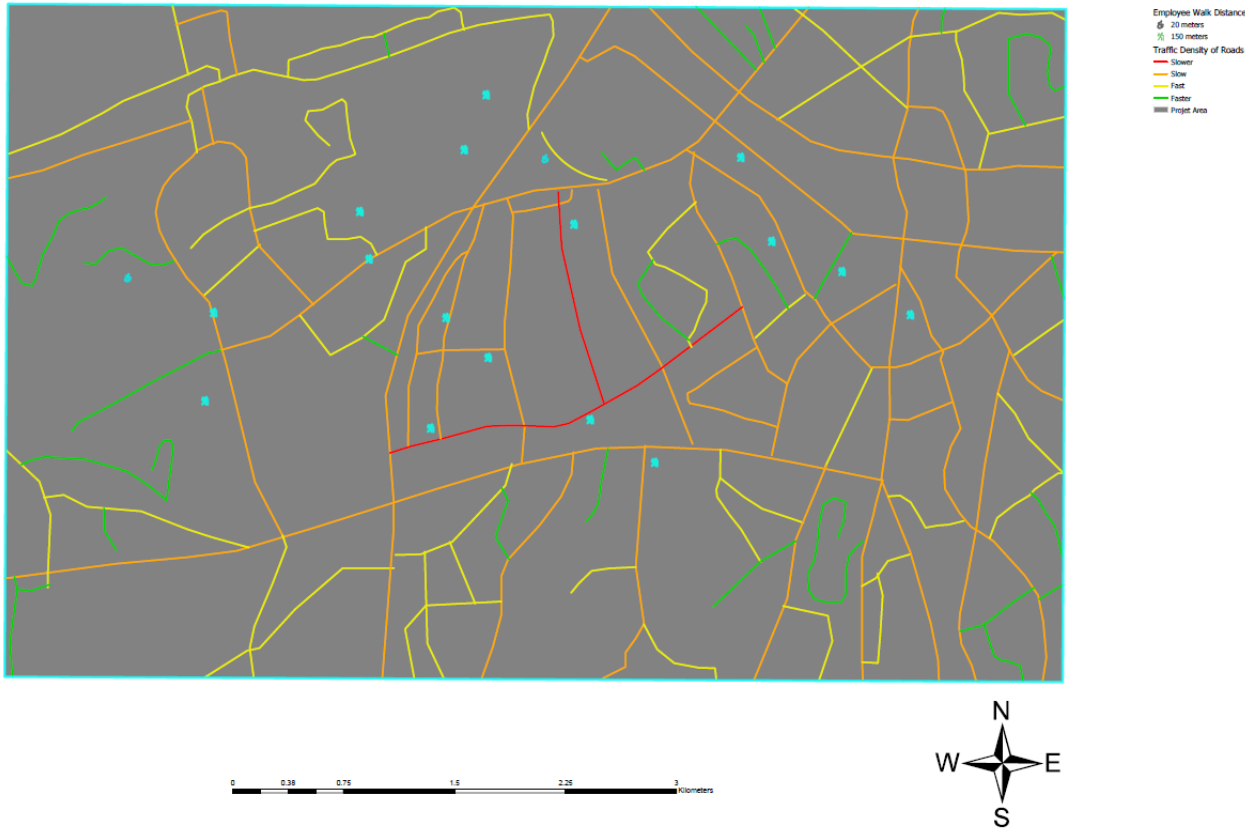
Output of Python Script

- Keys of dictionary represents OBJECTID of employee location. Values are array which stores the ROUTEID and ROUTESCORE respectively.

```
(arcgispro-py3) C:\Program Files\ArcGIS\Pro\bin\Python\envs\arcgispro-py3>python C:\gis\scripts
g.py
8 [16, 17]
4 [96, 17]
1 [19, 19]
15 [24, 21]
6 [30, 21]
7 [30, 21]
9 [48, 21]
5 [49, 21]
12 [65, 21]
10 [103, 25]
2 [98, 21]
3 [98, 21]
11 [104, 25]
13 [100, 21]
```

Layout

Bahçelievler Employee and Traffic Density Map



Final Results





Thanks for listening

- ▶ Any questions?