

Visualizing Complex Urban Areas & Traffic Data in 2D & 3D

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About Ourselves

Education and Research | Higher Education:

Supporting Innovation in GIS Research

Engaging with the academic community across all disciplines
to foster collaboration and encourage innovation



Education and Research | Higher Education:

Promoting GIS in Teaching and Learning

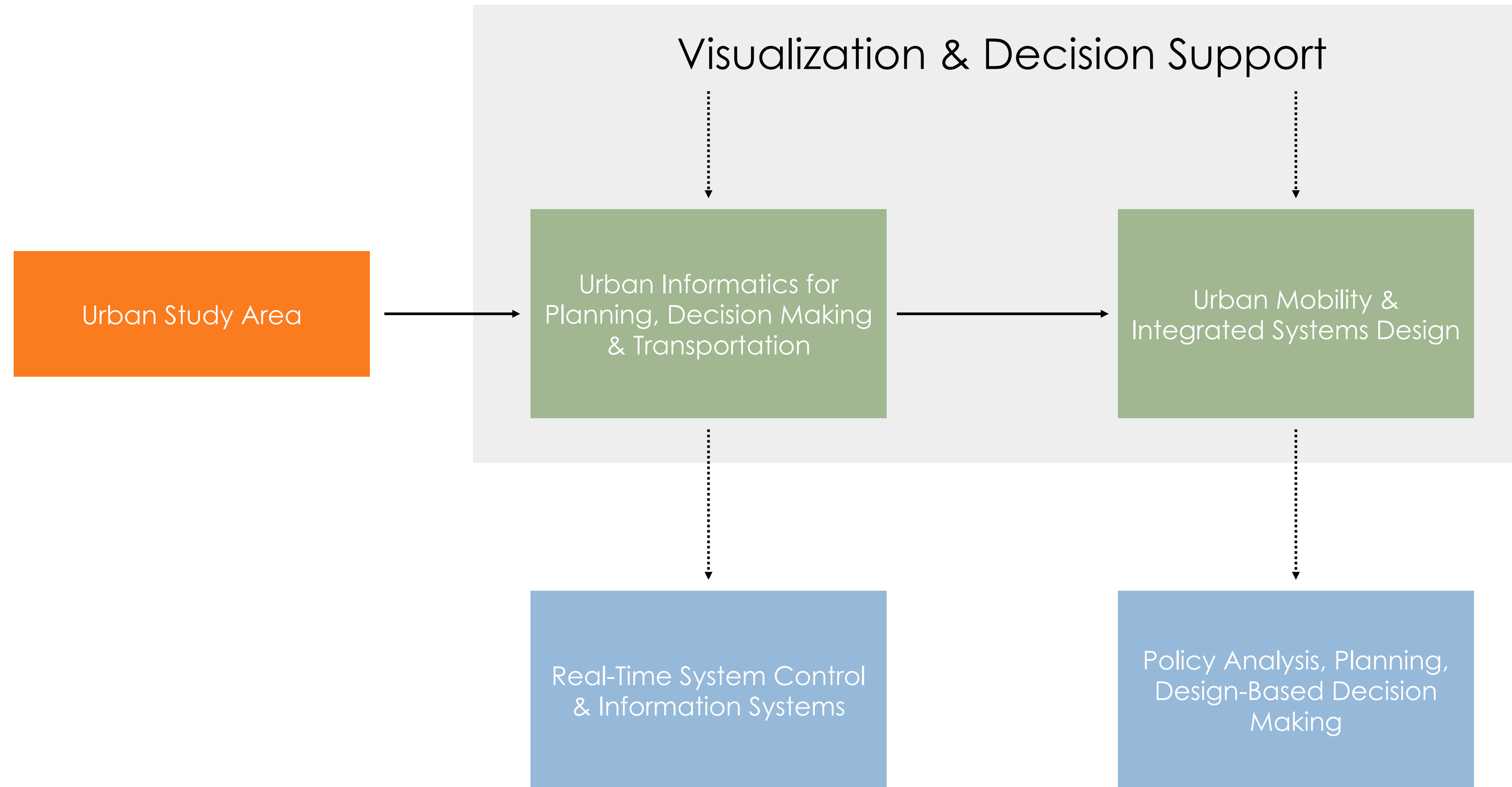
Helping students develop geographic literacy,
spatial awareness, critical thinking and analytical skills

Education and Research | Higher Education:

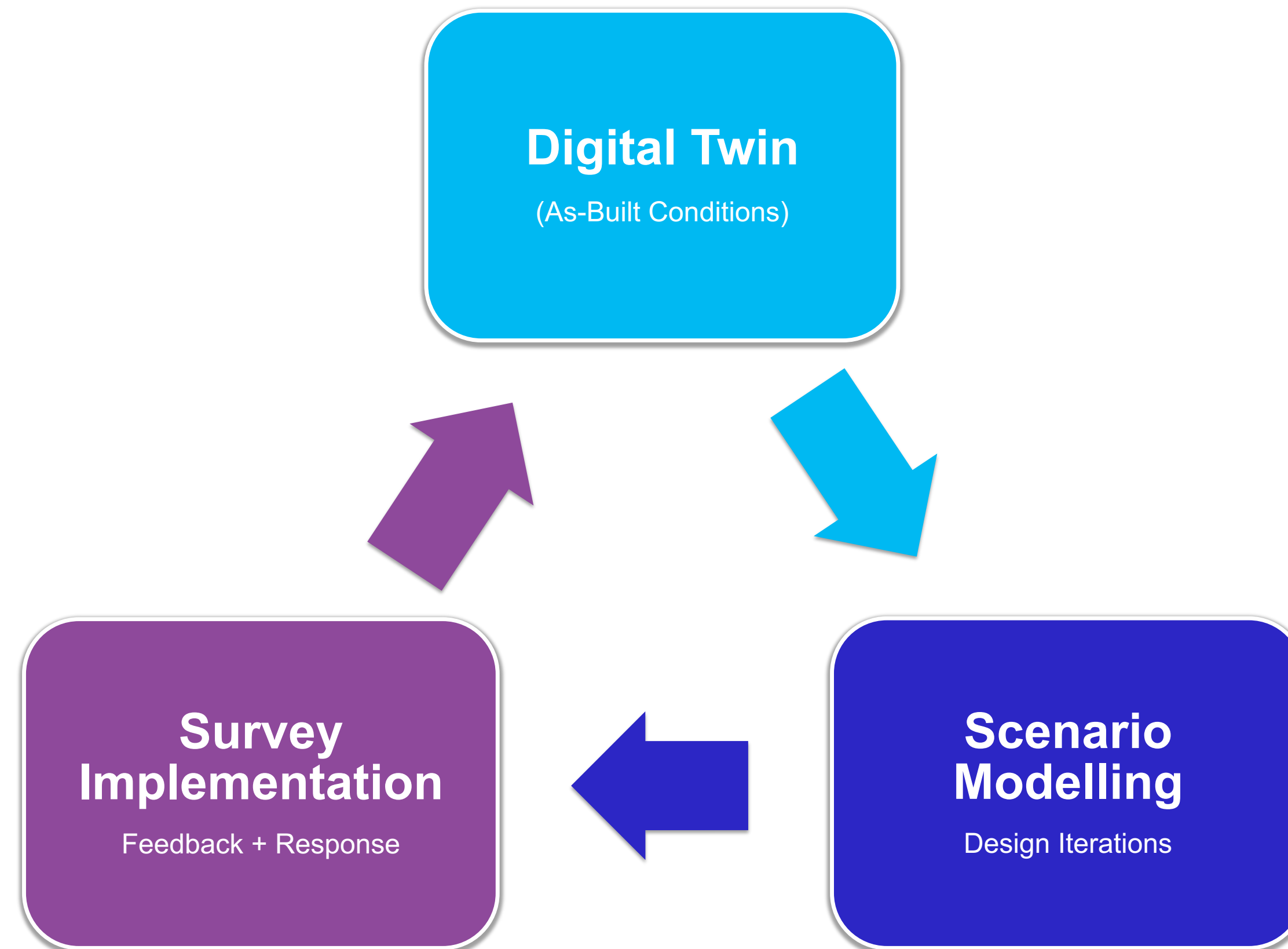
Recognizing Exemplary Students

Esri Canada GIS Scholarships provide funding, software, books and training
to top students in GIS programs across Canada

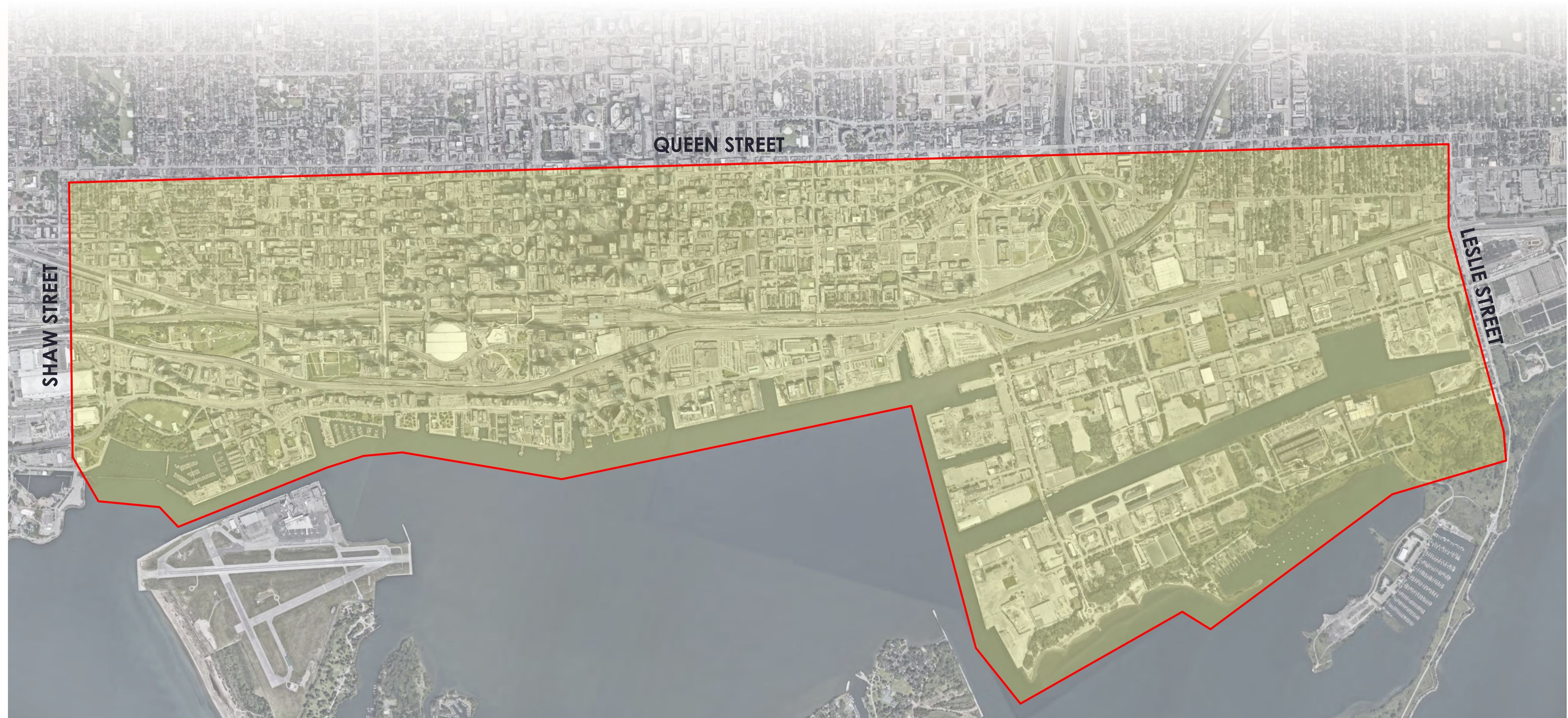
Involvement in the iCity Project



Collaborative Cycle



iCity Area of Focus



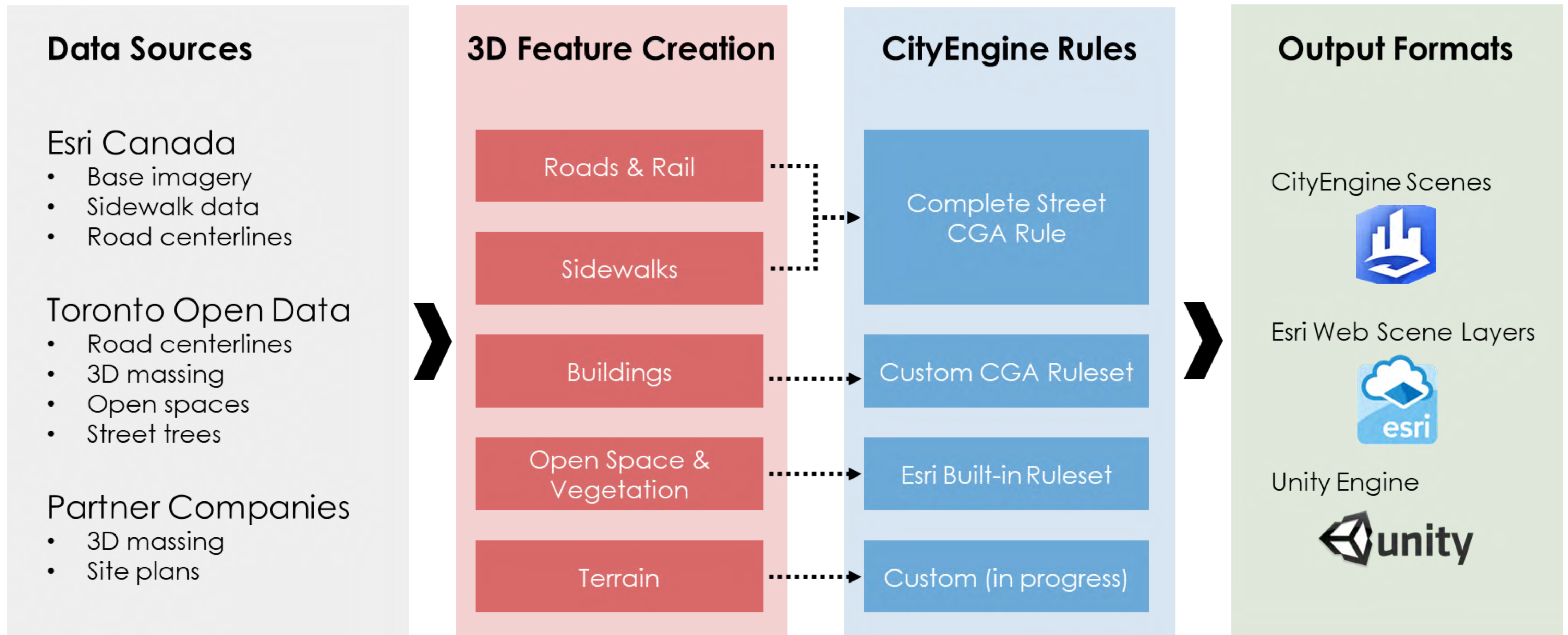
Creating a “Digital Twin” of Toronto

A “digital twin” is a digital replica of physical assets, processes and systems.

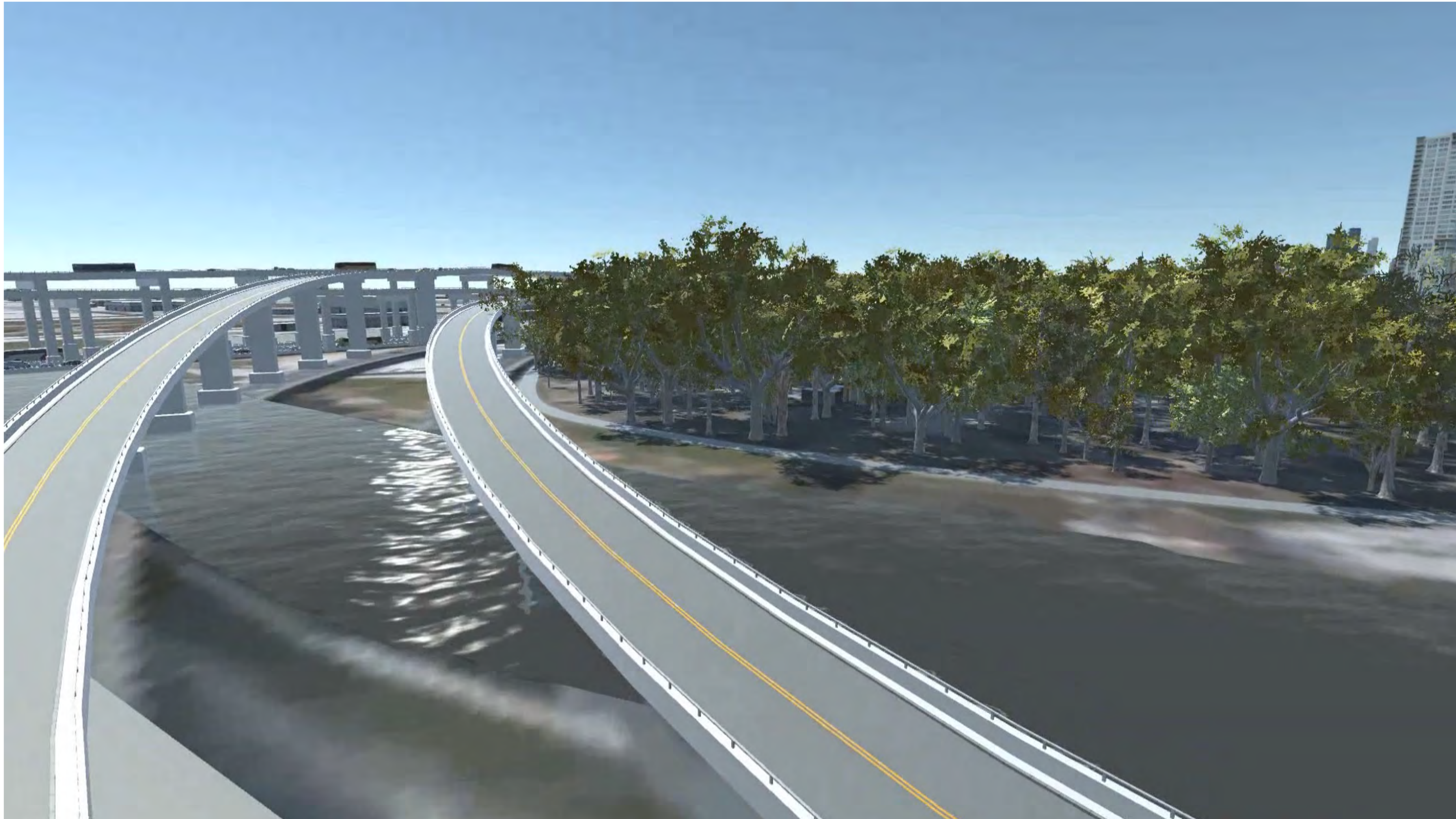
A digital twin acts as a test-bed for new ideas, where we can run simulations and consider improved, and even radical scenarios without actually impacting the physical world.



3D Visualization Workflow

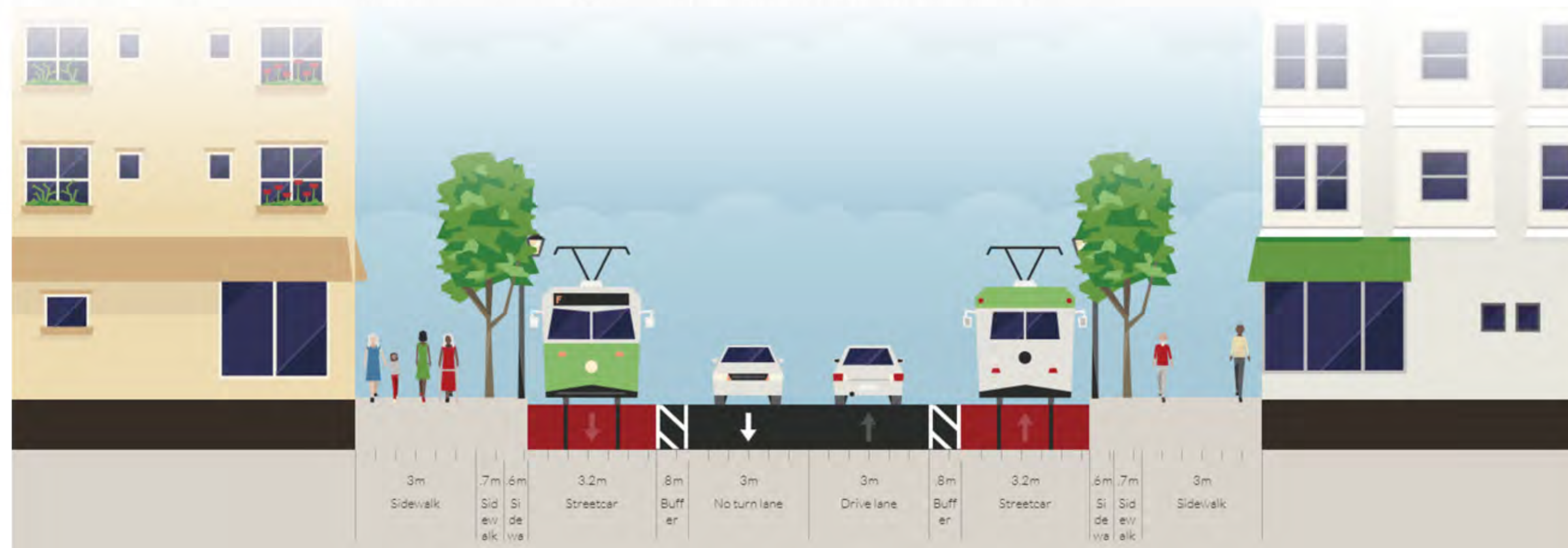


City-Level Modelling

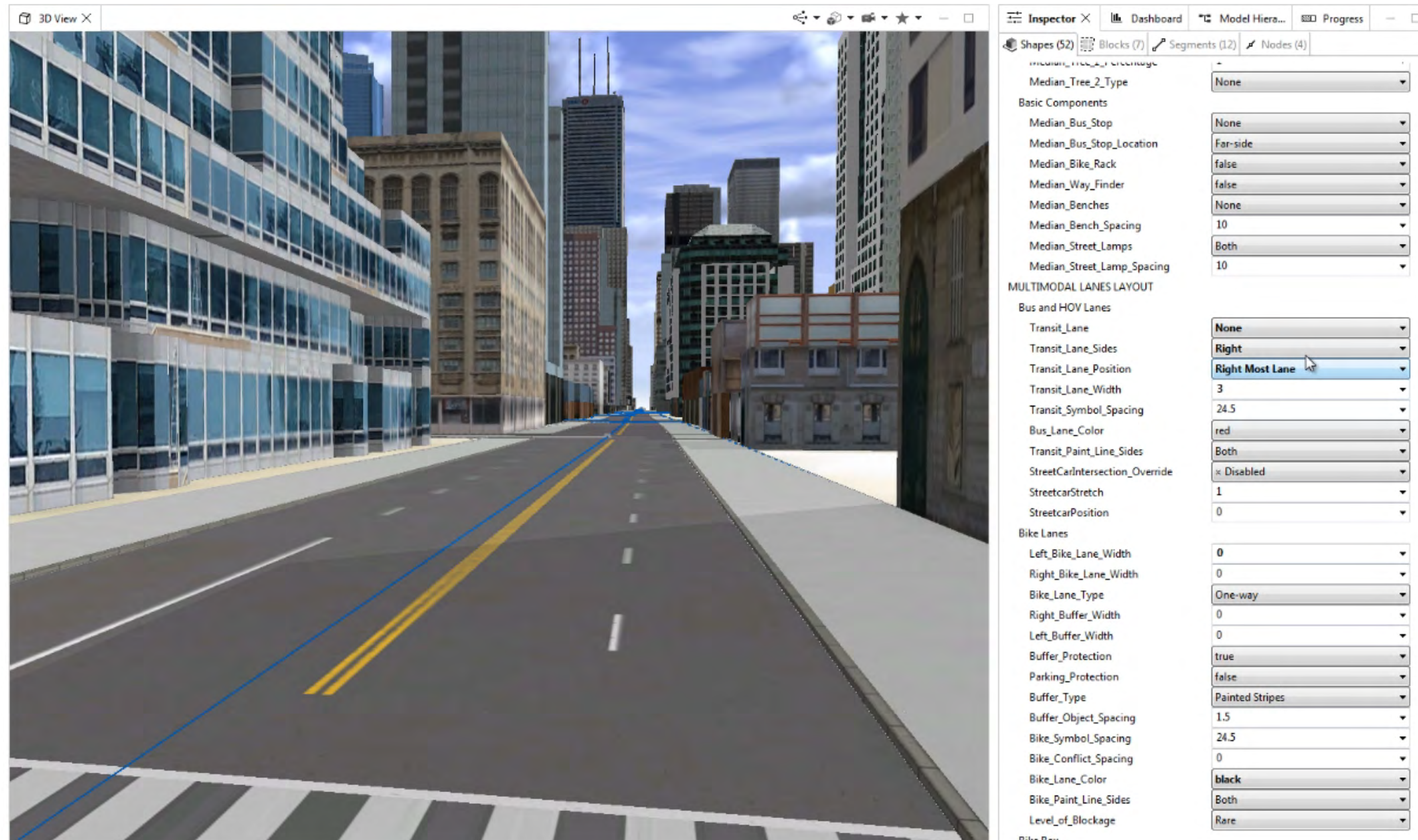


Street-Level Modelling

Scenario #	Through Lane	Curb Lane	Sidewalk
King Street			
1	transit+car+car+transit	none	medium edge+wide clearway
2	car+car	cycle path+on street parking	medium edge+normal clearway
3	car+car	cycle path_one way	narrow edge+normal clearway+outdoor dining
4	transit+transit	cycle path_one way	medium edge+wide clearway
5	car+car	cycle path_two way	outdoor dining+normal clearway
6	car+car+car+car	none	medium edge+normal clearway



Complete Street Ruleset in CityEngine



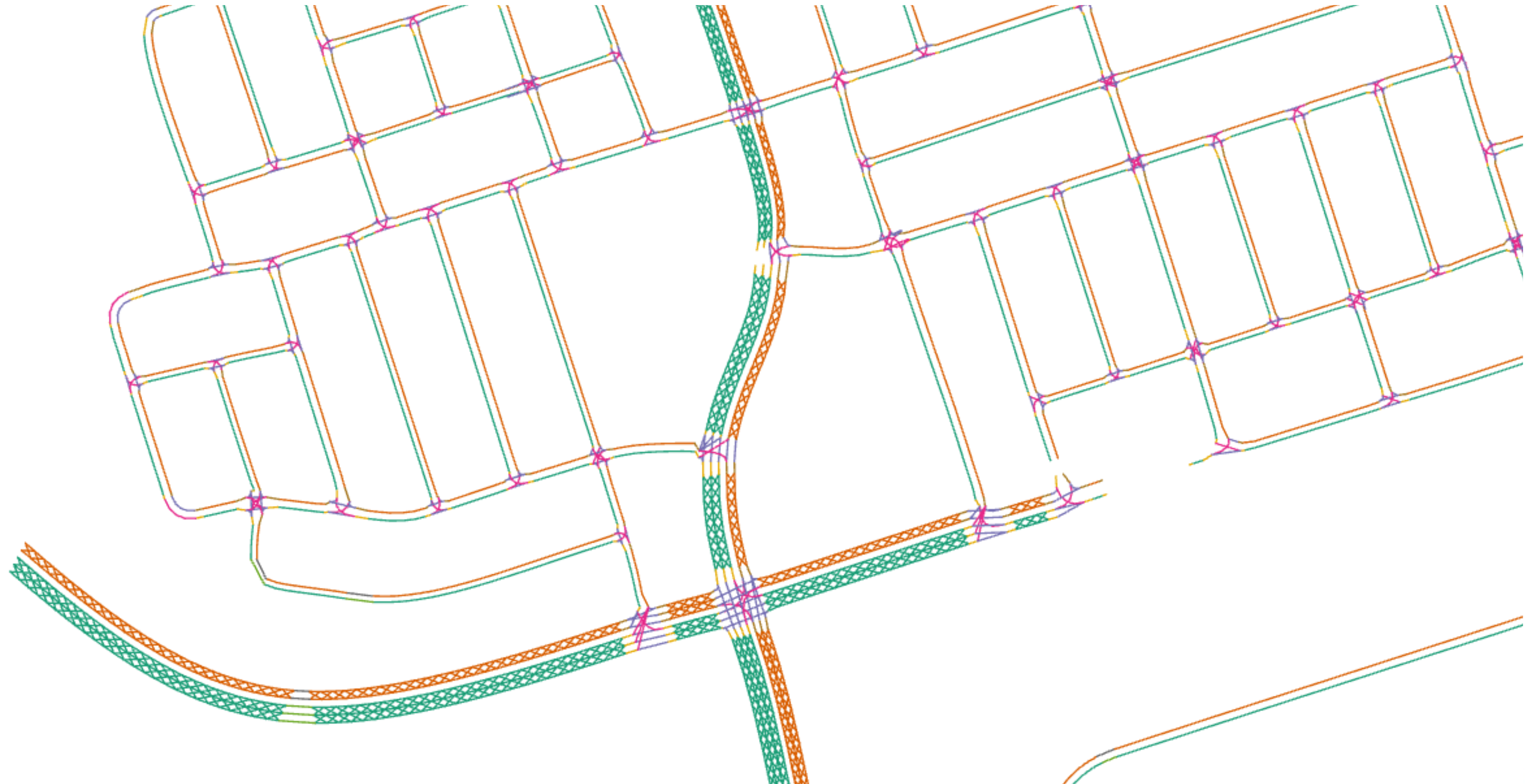
Complete Street Scenario Visualizations



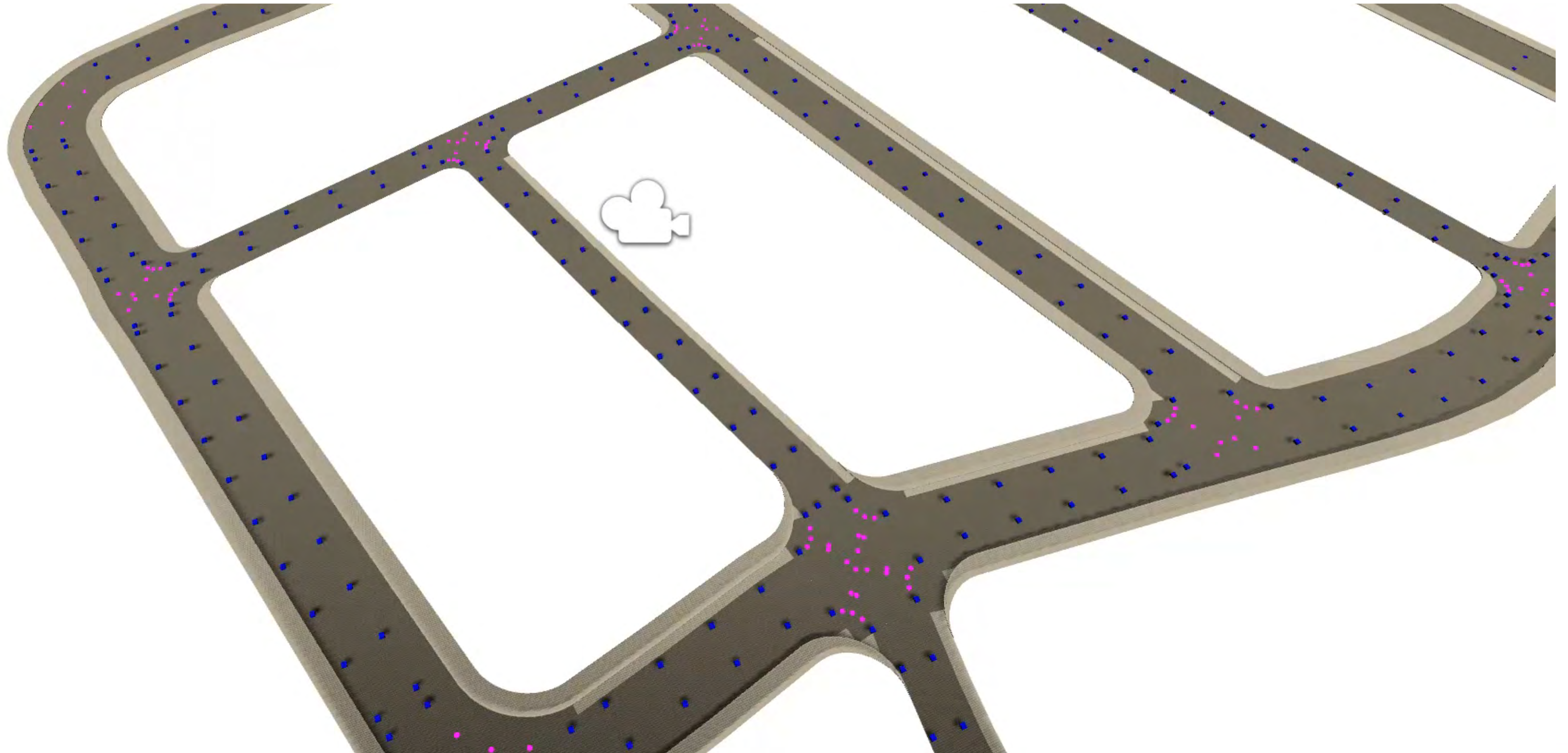
Vehicle & Pedestrian Modelling



Vehicle Path Creation & Animation



Vehicle Path Creation & Animation



Complete Street Survey



Scenario A

Two car lanes, two transit lanes, on-street parking, one-way bike lanes, 3.2m sidewalk



Scenario B

Four car lanes, two-way bike lane, 5.6m sidewalk with outdoor dining



Scenario C

Four car lanes, on-street parking, one-way bike lanes, 4.8m sidewalk

Real-Time Data Feeds

Scenario Lookup Table

Queens Quay between Lower Jarvis and Lower Sherbourne

ID	Description
1	"Two car lanes, two transit lanes, on-street parking, one-way bike lanes, 3.2m sidewalk"
2	"Two car lanes, two transit lanes, one-way bike lanes, 4.8m sidewalk with outdoor dining"
3	"Four car lanes, two-way bike lane, 5.6m sidewalk with outdoor dining"
4	"Two car lanes, two transit lanes, two-way bike lane, 4.8m sidewalk"
5	"Four car lanes, on-street parking, one-way bike lanes, 4.8m sidewalk"
6	"Two car lanes, two transit lanes, two-way bike lane, 4.0m sidewalk"

Queens Quay between Yonge and Freeland

ID	Description
7	"Two car lanes, two transit lanes, two-way bike lane, 4.8m sidewalk"
8	"Two car lanes, one-way bike lanes, on-street parking, 4.8m sidewalk"
9	"Two car lanes, two transit lanes, two-way bike lane, 4.0m sidewalk"
10	"Four car lanes, one-way bike lanes, 4.0m sidewalk"
11	"Two car lanes, two transit lanes, 5.6 m sidewalk with outdoor dining"
12	"Two car lanes, two transit lanes, one-way bike lanes, 3.2m sidewalk"

Villiers Street – Don to Cherry

ID	Description
13	"Two car lanes, two transit lanes, one-way bike lanes, on-street parking, 5.6m sidewalk with outdoor dining"
14	"Two car lanes, two transit lanes, one-way bike lanes, on-street parking, 4.8m sidewalk"

Queens Quay: Lower Jarvis & Lower Sherbourne
Top Choice Selection - Round 1

Scenario Number	Number of Votes
1	2
2	8
3	1
4	5
5	2
6	2

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Queens Quay: Lower Jarvis & Lower Sherbourne
Top Choice Selection - Round 2

Scenario Number	Number of Votes
1	2
2	6
3	1
4	7
5	2
6	2

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Queens Quay: Yonge & Freeland
Top Choice Selection - Round 1

Scenario Number	Number of Votes
7	7
8	1
9	4
11	3
12	5

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Queens Quay: Yonge & Freeland
Top Choice Selection - Round 2

Scenario Number	Number of Votes
7	6
8	2
9	1
10	2
11	1
12	8

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Villiers Street: Don to Cherry
Top Choice Selection - Round 1

Scenario Number	Number of Votes
13	3
14	7
15	1
17	2
18	3

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Villiers Street: Don to Cherry
Top Choice Selection - Round 2

Scenario Number	Number of Votes
13	3
14	6
15	1
17	4
18	6

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Confidence in Top Choice - Round 1

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Confidence in Top Choice - Round 2

Last update: a few seconds ago

Confidence in Top Choice - Round 1

Last update: a few seconds ago

Confidence in Top Choice - Round 2

Last update: a few seconds ago

Confidence in Top Choice - Round 1

Last update: a few seconds ago

Confidence in Top Choice - Round 2

Last update: a few seconds ago

Number of Responses

20

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1 of 20

Individual Responses

st1_pref1a 3.00

st1_pref2a 5.00

st1_pref3a 6.00

st1_pref1b 2.00

st1_pref2b 4.00

st1_pref3b 1.00

st2_pref1a 12.00

st2_pref2a 8.00

st2_pref3a 10.00

st2_pref1b 7.00

st2_pref2b 11.00

st2_pref3b 9.00

st3_pref1a 14.00

st3_pref2a 16.00

st3_pref3a 18.00

st3_pref1b 17.00

st3_pref2b 13.00

st3_pref3b 15.00

st4_pref1a

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#CASCON2018

Questions?



Dr. Brent Hall, *Education & Research*



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