


# Mass Transit Modes: How They Fit

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TransLink

# Presentation Outline

1. Historical Development of Transit Modes
2. Typical Transit Mode Types (Where Streetcars Fit)
3. Common Operating Alignments
4. Approach to Planning
5. TransLink Rapid Transit Studies
6. Concluding Thoughts

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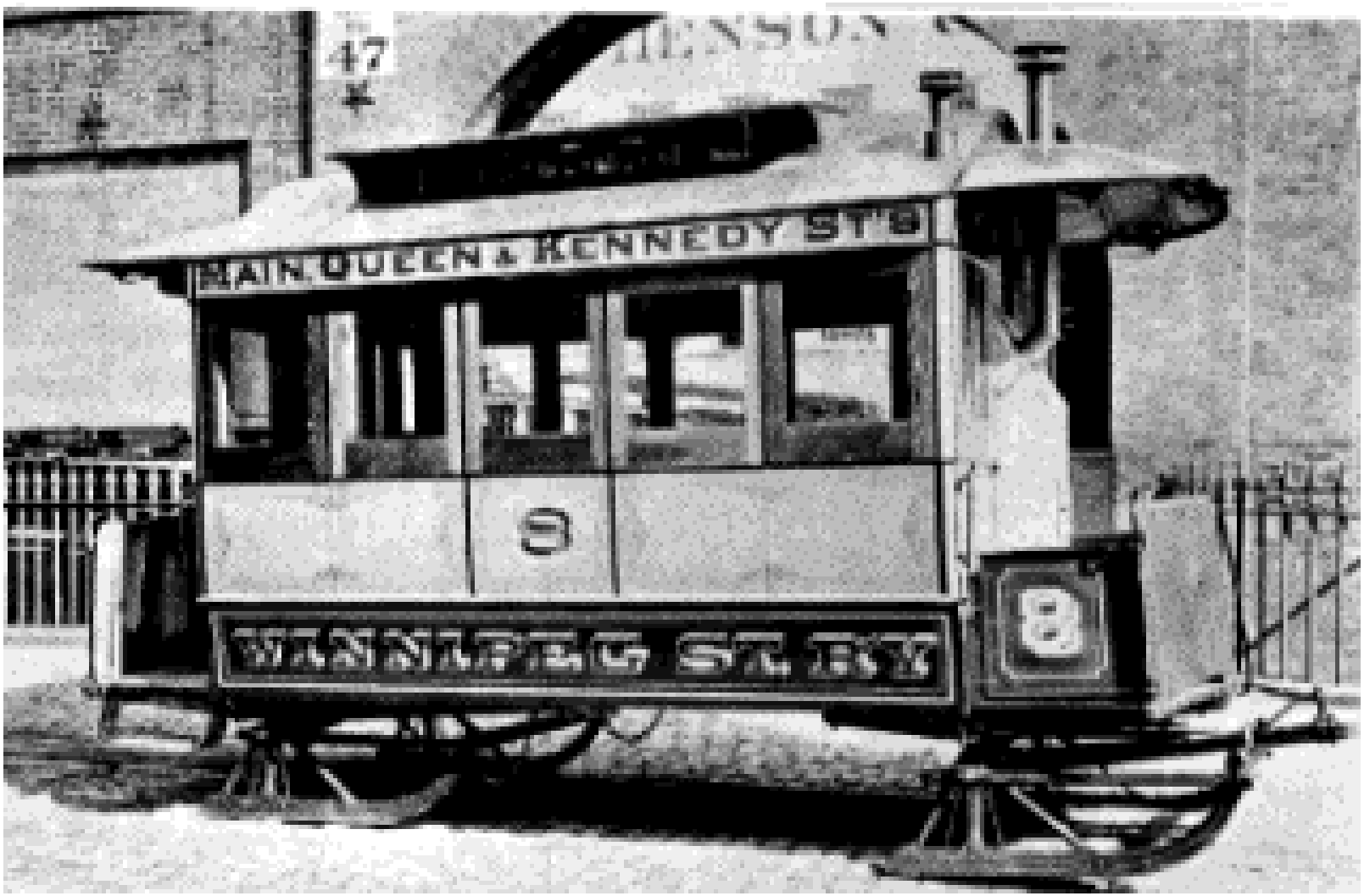

47
MAIN QUEEN & KENNEDY ST'S
9
WANLESS ST.


They are hard to catch—

And still harder to get into safely

But they are a great convenience.

The roof is generally a trifle low.

A hint to feminine passengers

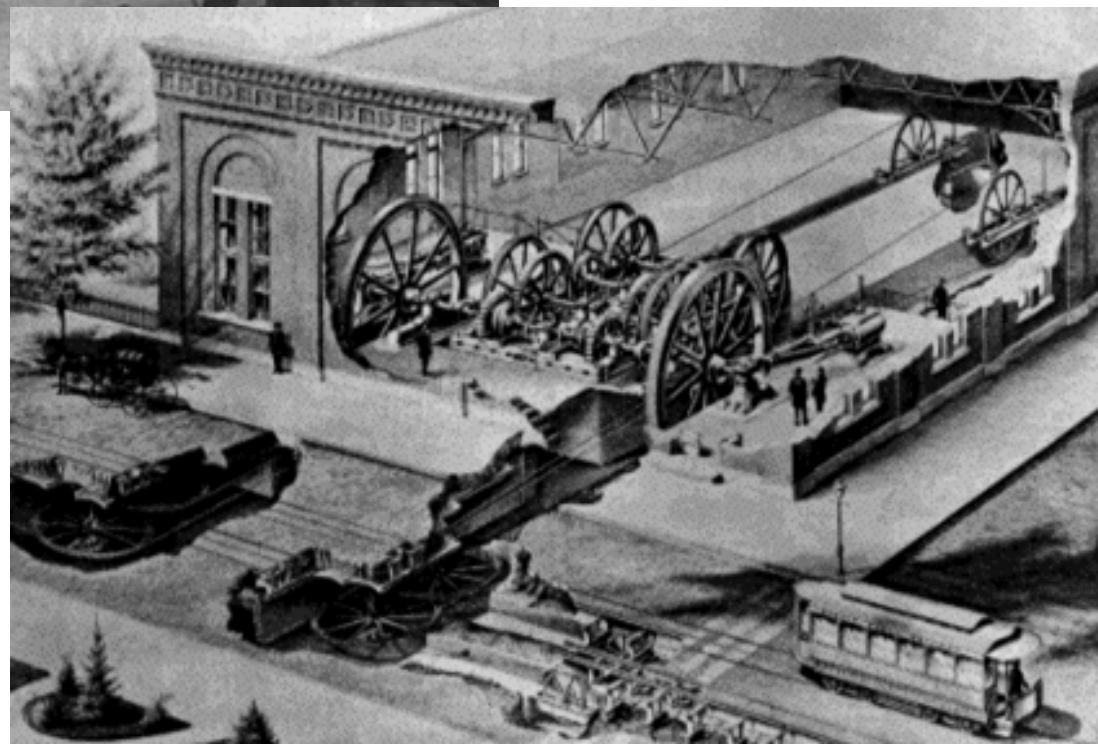
"Scuse me, mum!"

The safest way to get into them.

The safest way to leave them—is


CAMERON'S R.R. TICKET
TAKE this CAR for the
GRAND HOTEL.
HASKELL'S PHARMACY.
TOILET ARTICLES
DRUGS CIGARS
SODA WATER
DRUGS
Sexine Pills CURE NERVOUS DISORDERS.
HASKELL'S PHARMACY.
Go to BANNISTER Furniture
For UNDERTAKING
1st Street Car. 1887

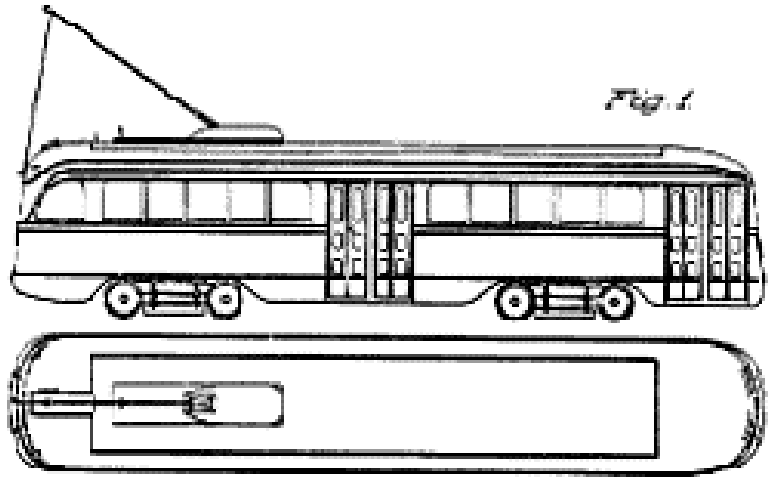

1325




RUSNAK
BROS.
DENTIST
BEN BE
CAN ES


1400


ENTRANCE




SHORES
ENTER
FRONT


"WE ARE BEING RETIRED"
"WE ARE TAKING THEIR PLACE"


NEW FLYER TROLLEYS - 2008


NEW FLYER TROLLEYS - 1982

BRILL TROLLEYS - 1948

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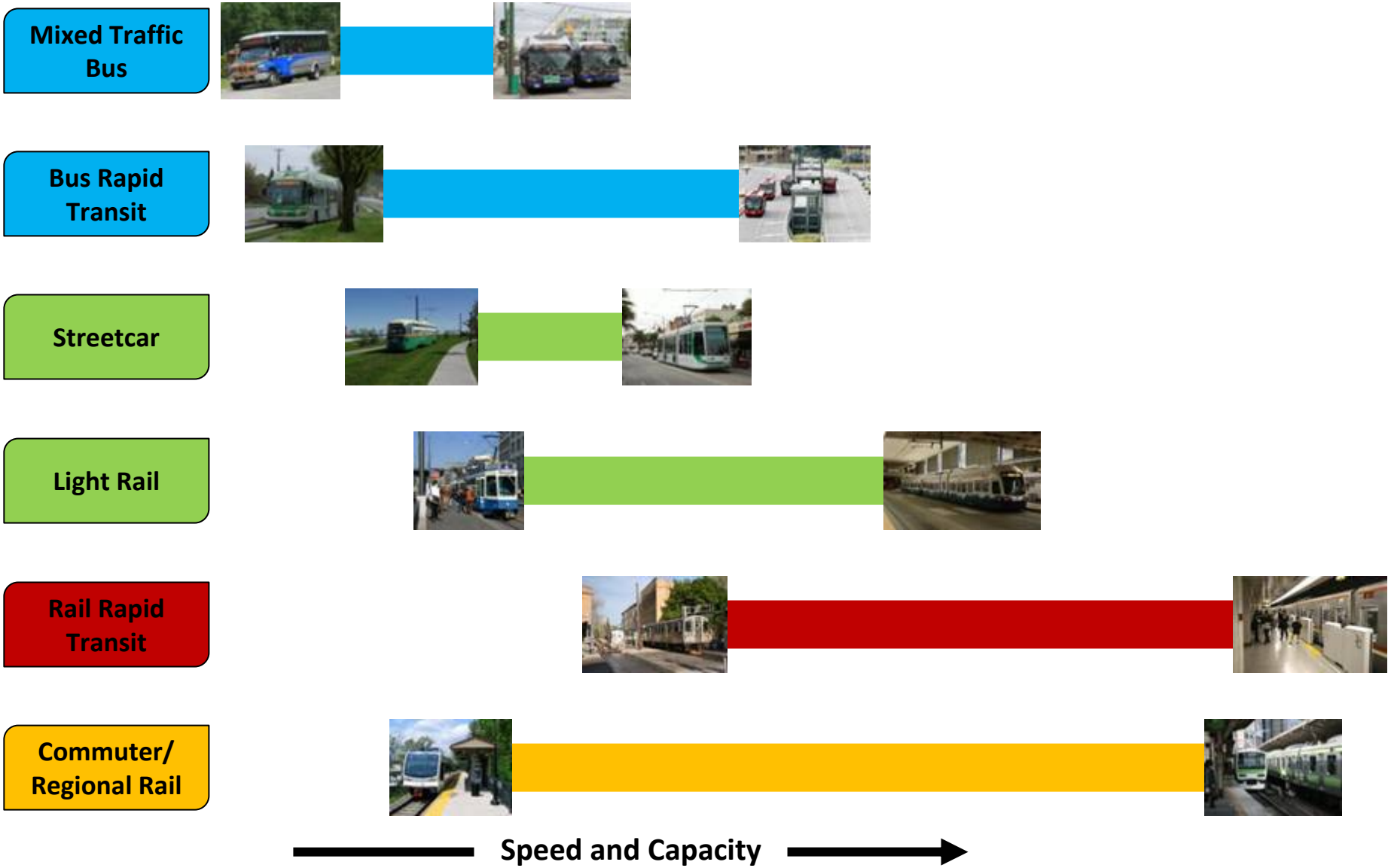
# Diverse range of urban transport technologies

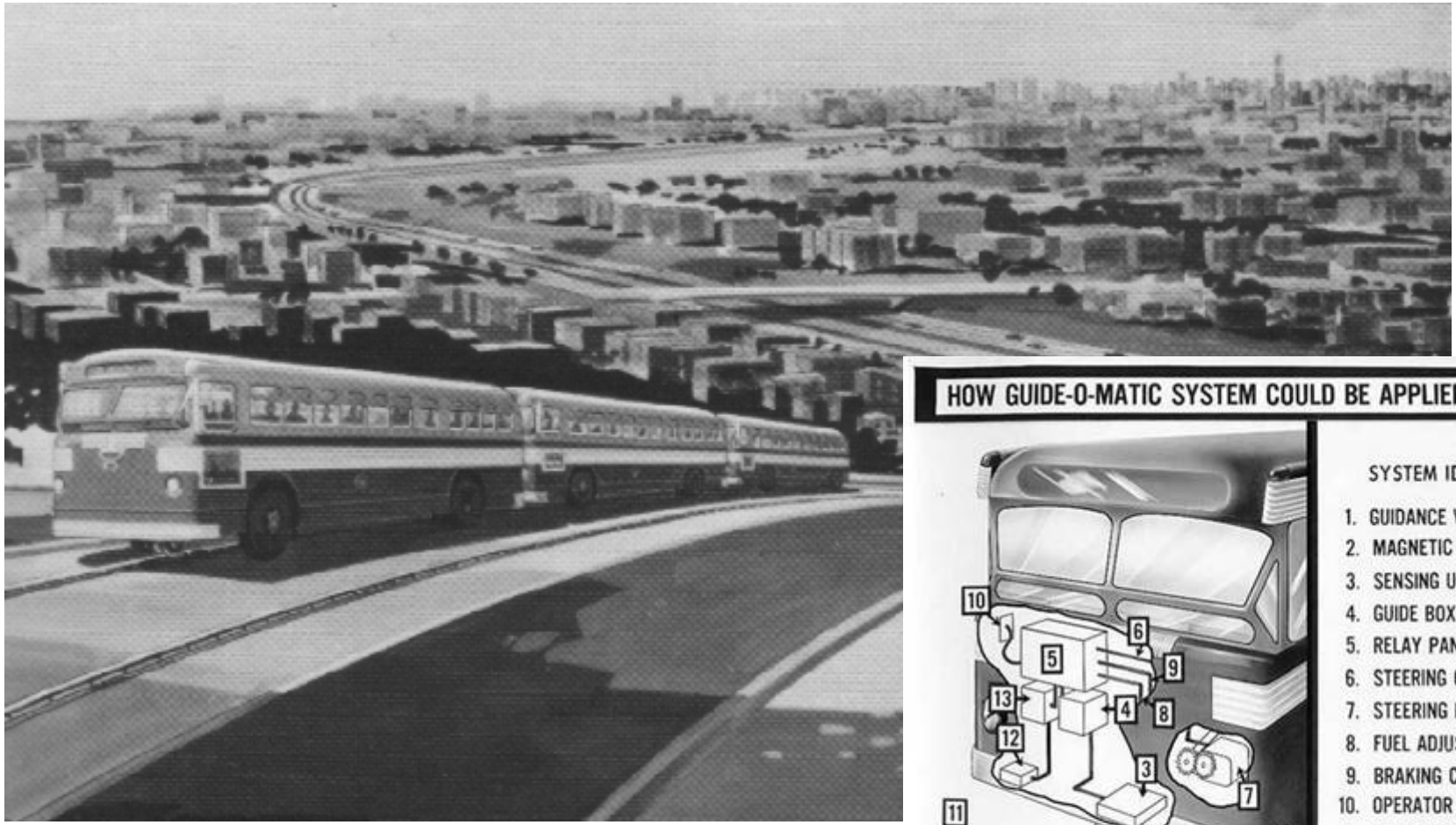

# Transit Mode Performance

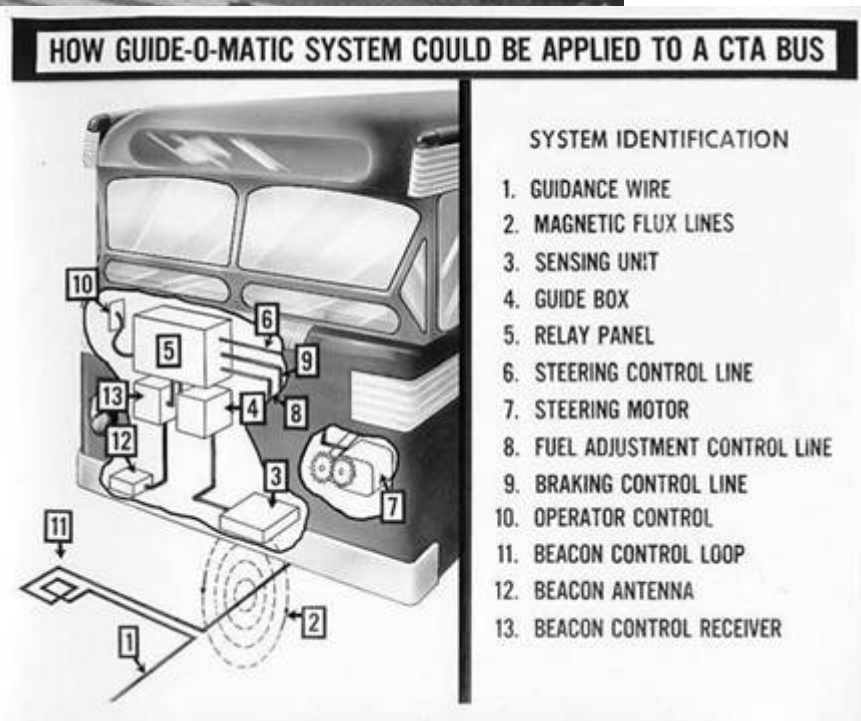


# Bus Rapid Transit (BRT)


- Typically diesel. Hybrid, CNG and electric possible.
- Largely separated from other traffic – dedicated bus lanes or roads.
- Routes typically 5-20 km long.
- For urban arterials:
  - Headway: 2-10 minutes
  - Average speed: 30 km/h
  - Stops: 400m – 1.5 km apart
  - Moderate capacity: 2,000-3,000+ passengers/hour/direction

# Bus Rapid Transit (BRT)





# Bus Rapid Transit (BRT)

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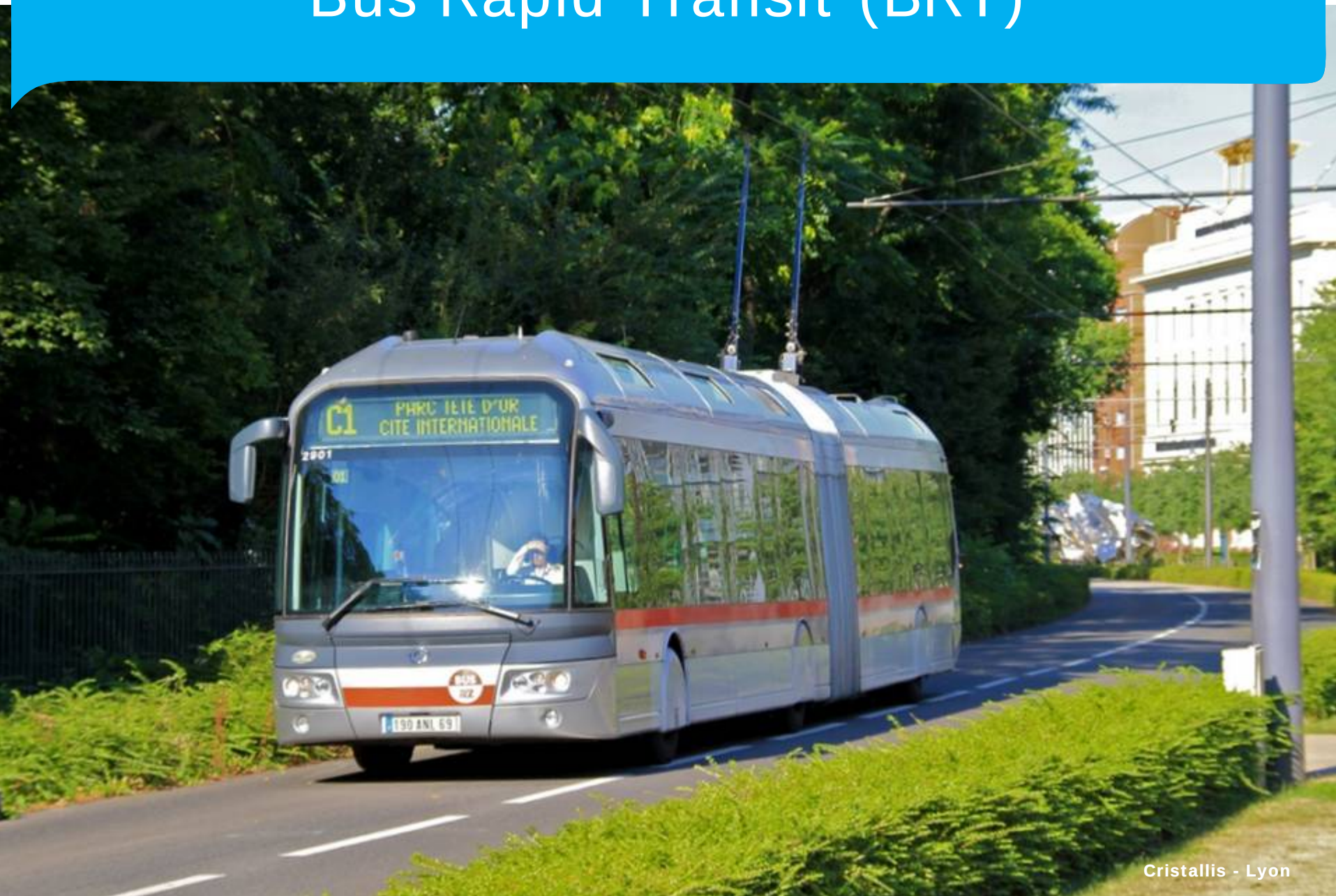
Bus Rapid Transit – Eugene, OR

# Bus Rapid Transit (BRT)

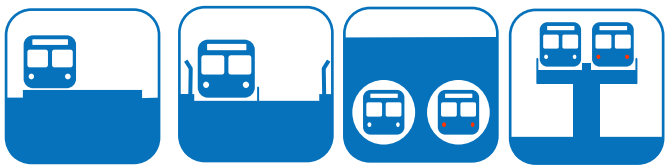



Cristallis - Lyon

# Bus Rapid Transit (BRT)


Bus Rapid Transit – Lima, Peru

# Light Rail Transit (LRT)



- Used extensively worldwide
- Typically Electrically powered
- Segregated or in-street
- Routes typically 10-30 km long
- Headway: 2-15 minutes
- Average speed: 25-40 km/h
- Stops: 400 – 1.5 km apart
- Moderate capacity: 6,000-10,000+ passengers/hour/direction

# Light Rail Transit (LRT)

Mulhouse, France

# Light Rail Transit (LRT)

Strasbourg, France

# Light Rail Transit (LRT)


Strasbourg, France

# Light Rail Transit (LRT)

Wire-Free LRT - Bordeaux, France

# Light Rail Transit (LRT)



LUAS LRT – Dublin, 1reland

# Light Rail Transit (LRT)

Trams – Melbourne, Australia

# Streetcar: part of the LRT family

- LRT technology in a “lighter” application:
  - Lower capacity
  - Lower speeds
    - More frequent stops
    - Less priority over other traffic
  - Less intense infrastructure
    - Track, stations, power, etc.

**Modern Streetcar – Seattle, WA**

# Streetcar: part of the LRT family


TTC Streetcar – Toronto, ON

# Streetcar: part of the LRT family


**“F” Streetcar – San Francisco, CA**

# Streetcar: part of the LRT family


Streetcar – Portland, OR

# Streetcar: part of the LRT family


Olympic Line – Vancouver, BC

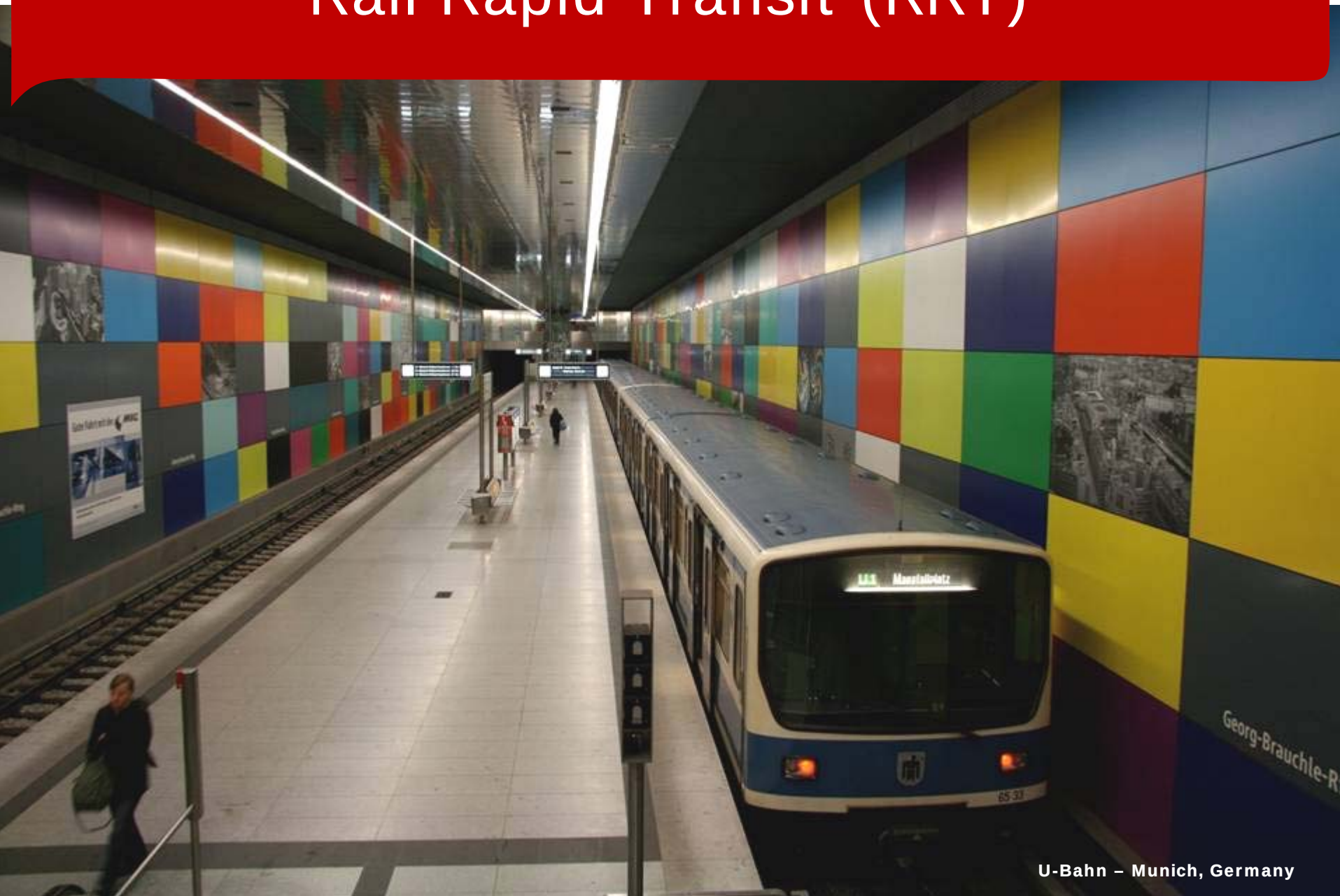
# Rail Rapid Transit (RRT)


- SkyTrain, Canada Line; subways & metros worldwide
- Electrically powered; usually by 3rd rail
- Segregated from traffic
- Automated or driver-operated
- Routes typically 10-30 km long
- Headway: 1.5 - 10 minutes
- Average speed:  40 km/h
- Stops: 800 m - 2.5 km apart
- High capacity: 10,000 – 25,000+ passengers/hour/direction

# Rail Rapid Transit (RRT)


CTA 'L'- Chicago, IL

# Rail Rapid Transit (RRT)




U-Bahn – Munich, Germany

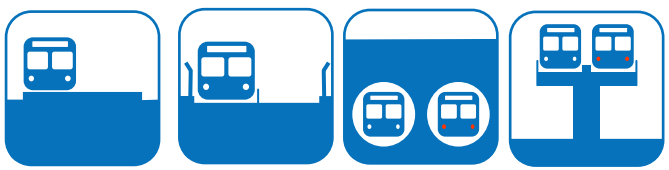
# Rail Rapid Transit (RRT)


Fukutoshin Line, Tokyo

# Regional (Commuter) Rail Transit


West Coast Express – Vancouver, BC

- Used extensively worldwide
- Electrically or diesel powered
- Typically segregated on existing railway right of way
- Routes typically 30-70 km long
- Headway: 10-120 minutes
- Average speed: 70 km/h
- Stops: 5-10 km apart
- Variable capacity: 2000-8000+ passengers/hour/direction



# Regional (Commuter) Rail Transit


CityRail – Sydney, Australia

# Regional (Commuter) Rail Transit

O-Train, Ottawa, Ontario

# Regional (Commuter) Rail Transit


Raperswil (Zurich S-Bahn) - Switzerland

# Regional (Commuter) Rail Transit

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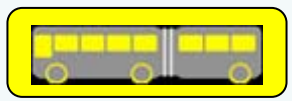
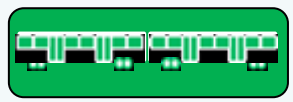
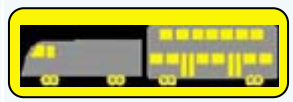
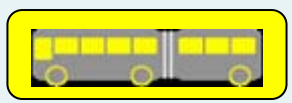
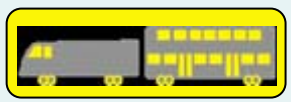
# Summary: Alignment Compatibility

Compatible
Challenging
Incompatible

| | | Bus Rapid Transit | Light Rail Transit | Rail Rapid Transit | Regional Rail |
|---|---|---|---|---|---|
| | |  |  |  |  |
| In-street reserved lane |  |  |  |  |  |
| Physically reserved in-street |  |  |  |  |  |
| Private at-grade right-of-way |  |  |  |  |  |
| Elevated |  |  |  |  |  |
| Underground |  |  |  |  |  |

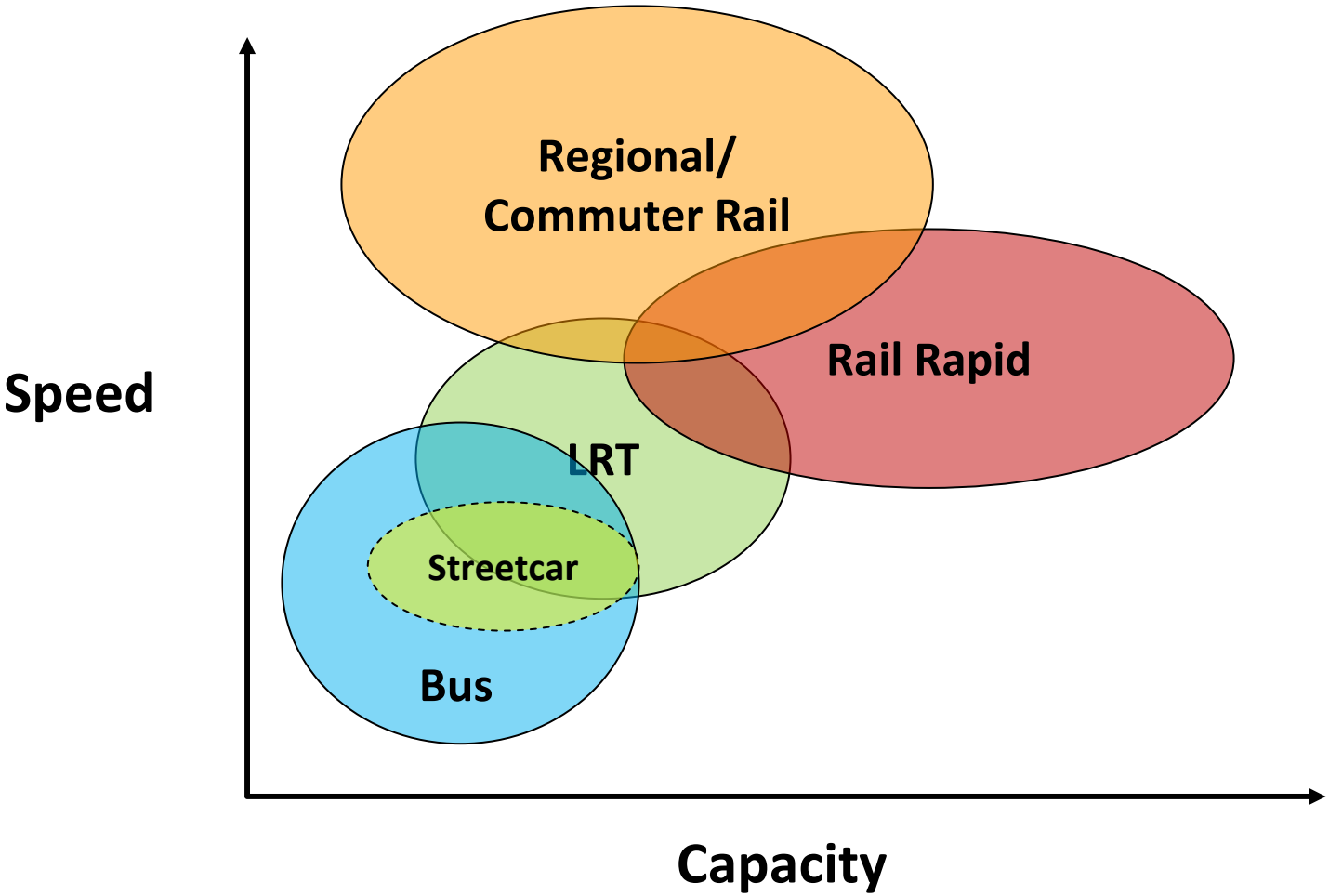
# Mixed Traffic


# Reserved In-street

Mobilien– Paris

# Fully Segregated


# Summary: Speed and Capacity



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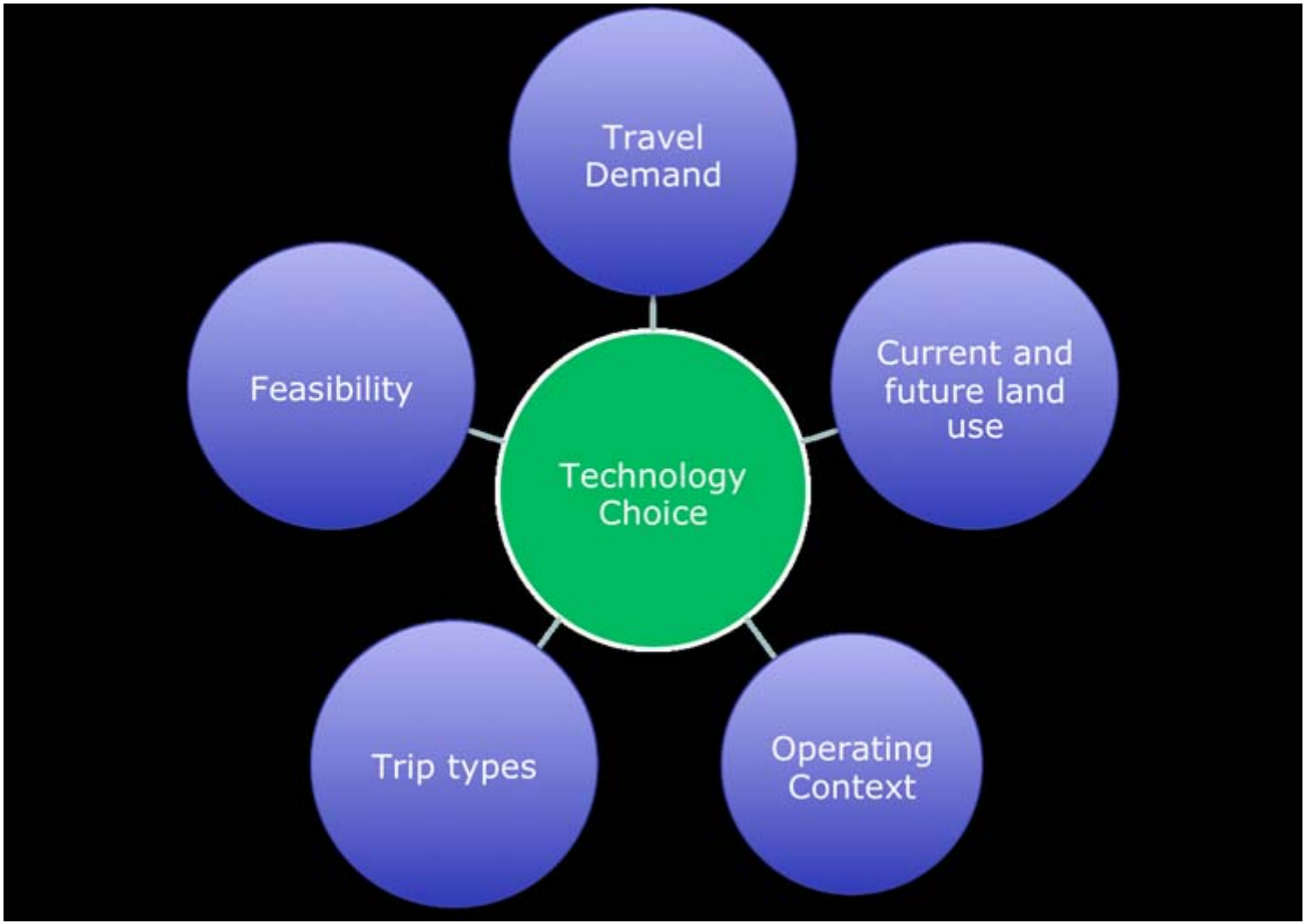
# How to identify the ‘right’ technology?



# Alternatives Analysis

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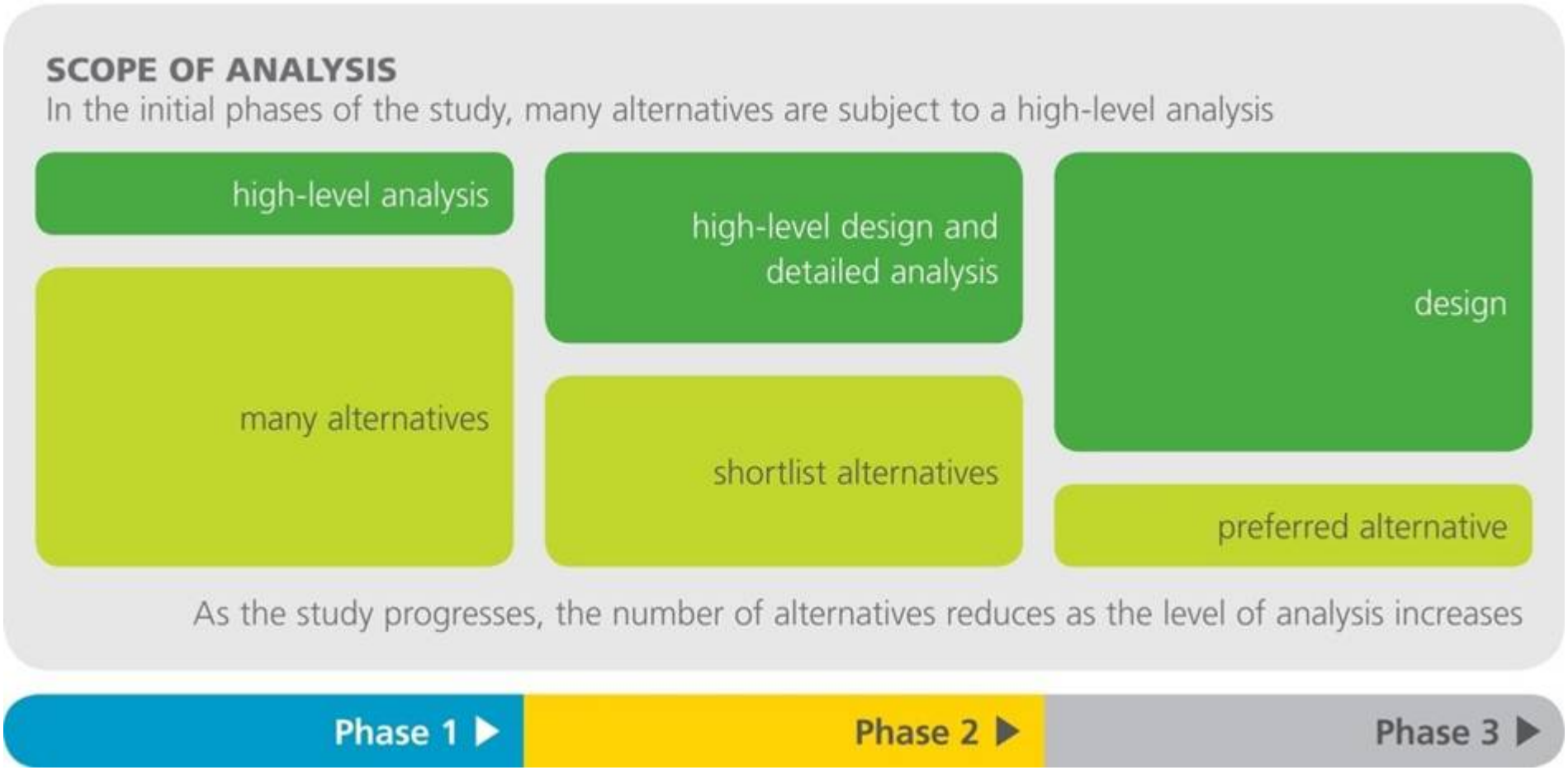
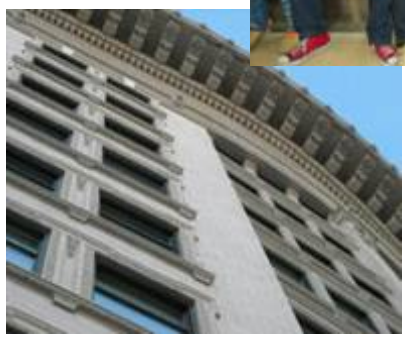


# Multiple Account Evaluation

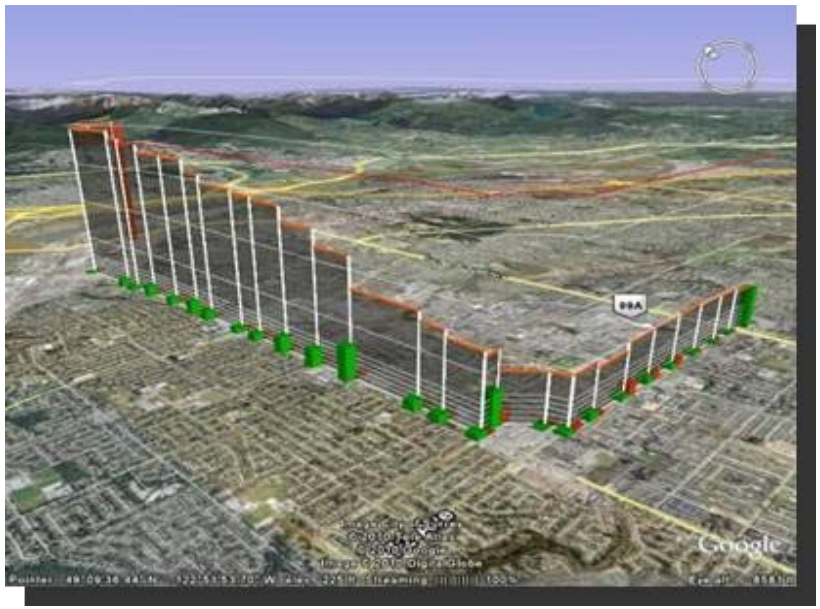
- Economic development
- Environmental
- Financial
- Social community
- Transportation
- Urban development
- Deliverability





# Approach to Planning




# Approach to Planning

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# A collaborative approach

**Study Sponsors**

TRANS LINK

BRITISH COLUMBIA

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**Study Partners**

Municipal Governments

Metro Vancouver

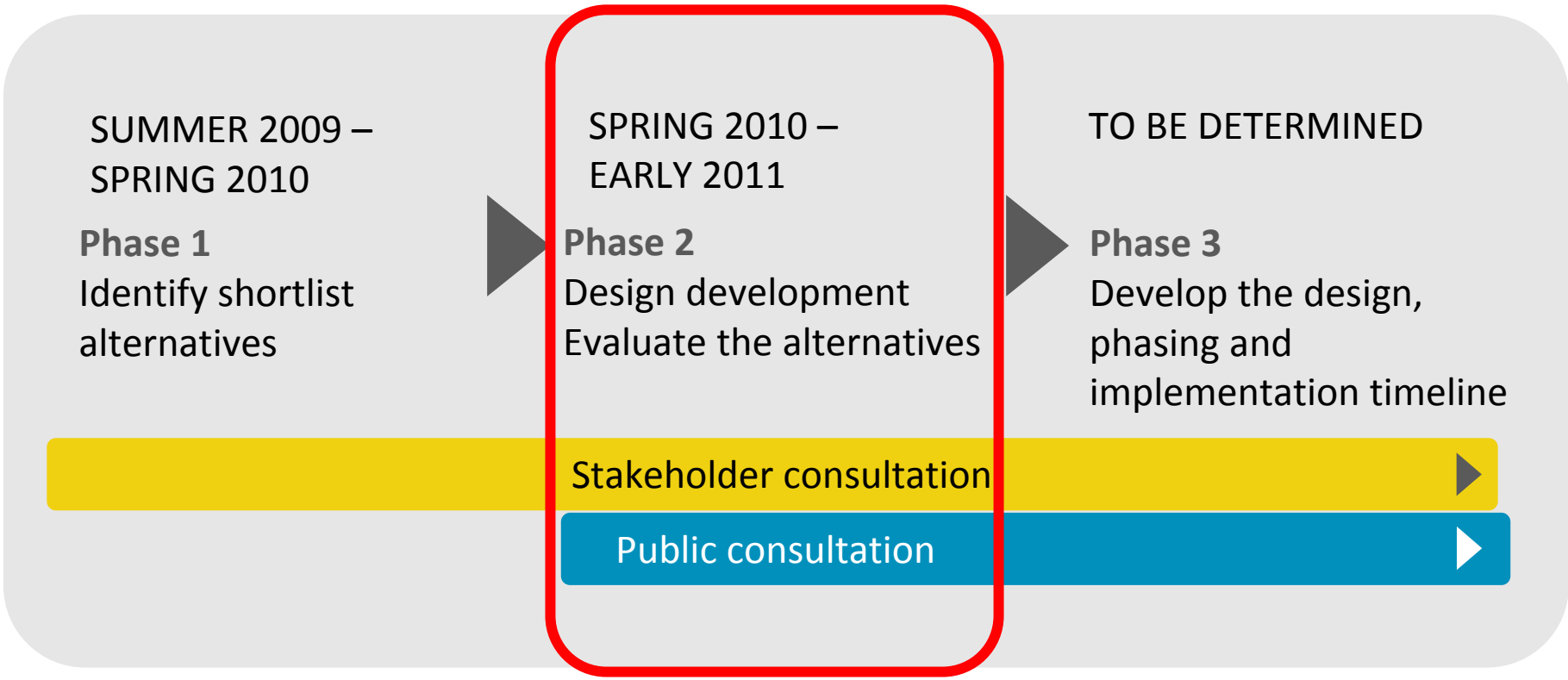
UBC

University Endowment Lands

# UBC Line Rapid Transit Study


- Regionally important corridor: connects major population, employment and institutional centres
- Central Broadway and UBC are the largest transit destinations outside downtown
- Busiest bus corridor in North America
- Service reaching capacity, growing demand
- Priority for rapid transit expansion (Transport 2040, Provincial Transit Plan)

# UBC Line Study: Timeline



# Surrey Rapid Transit Study

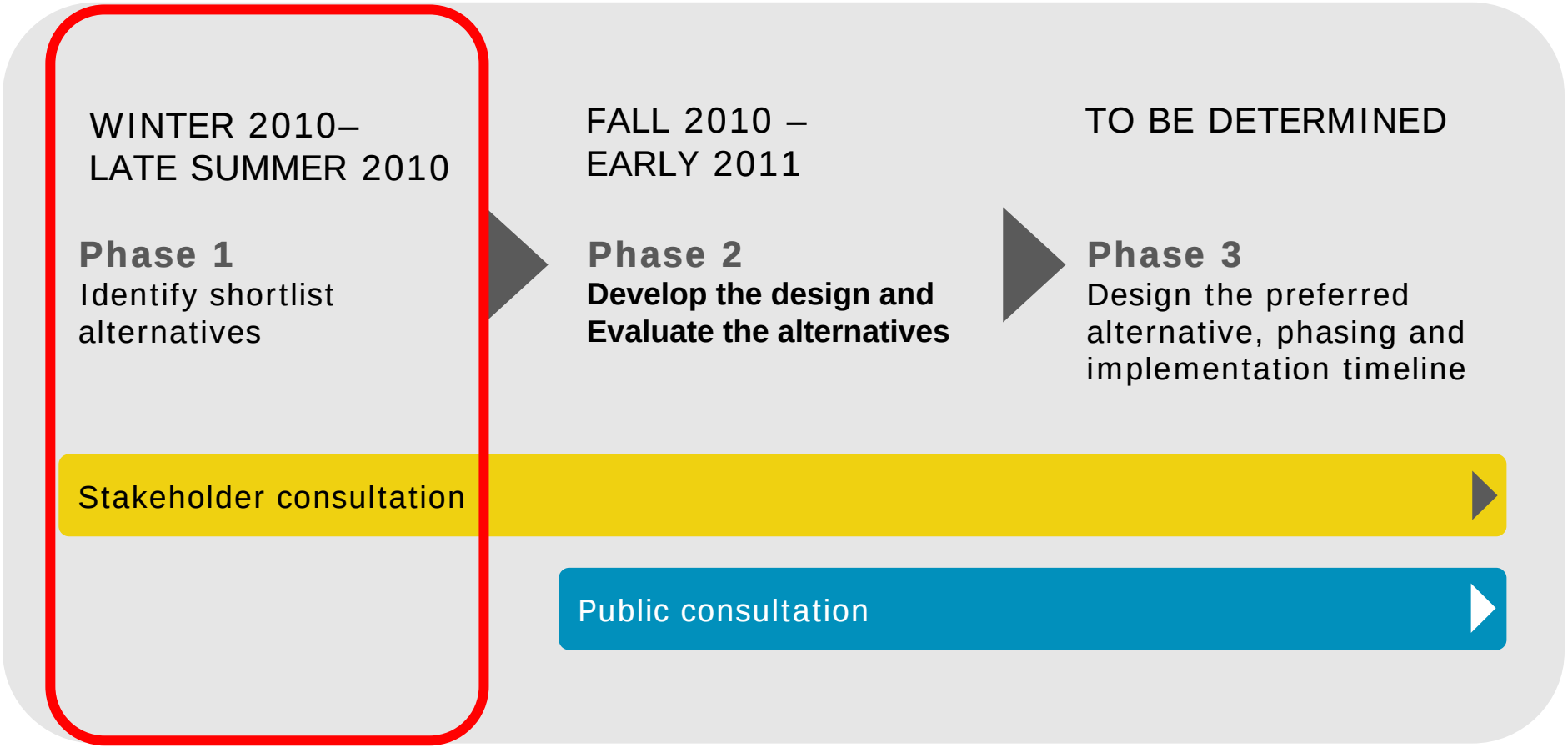

- Area of rapid growth
- Significant opportunity to shape transit-supportive land use
- Identified as a priority in past plans

Study will:

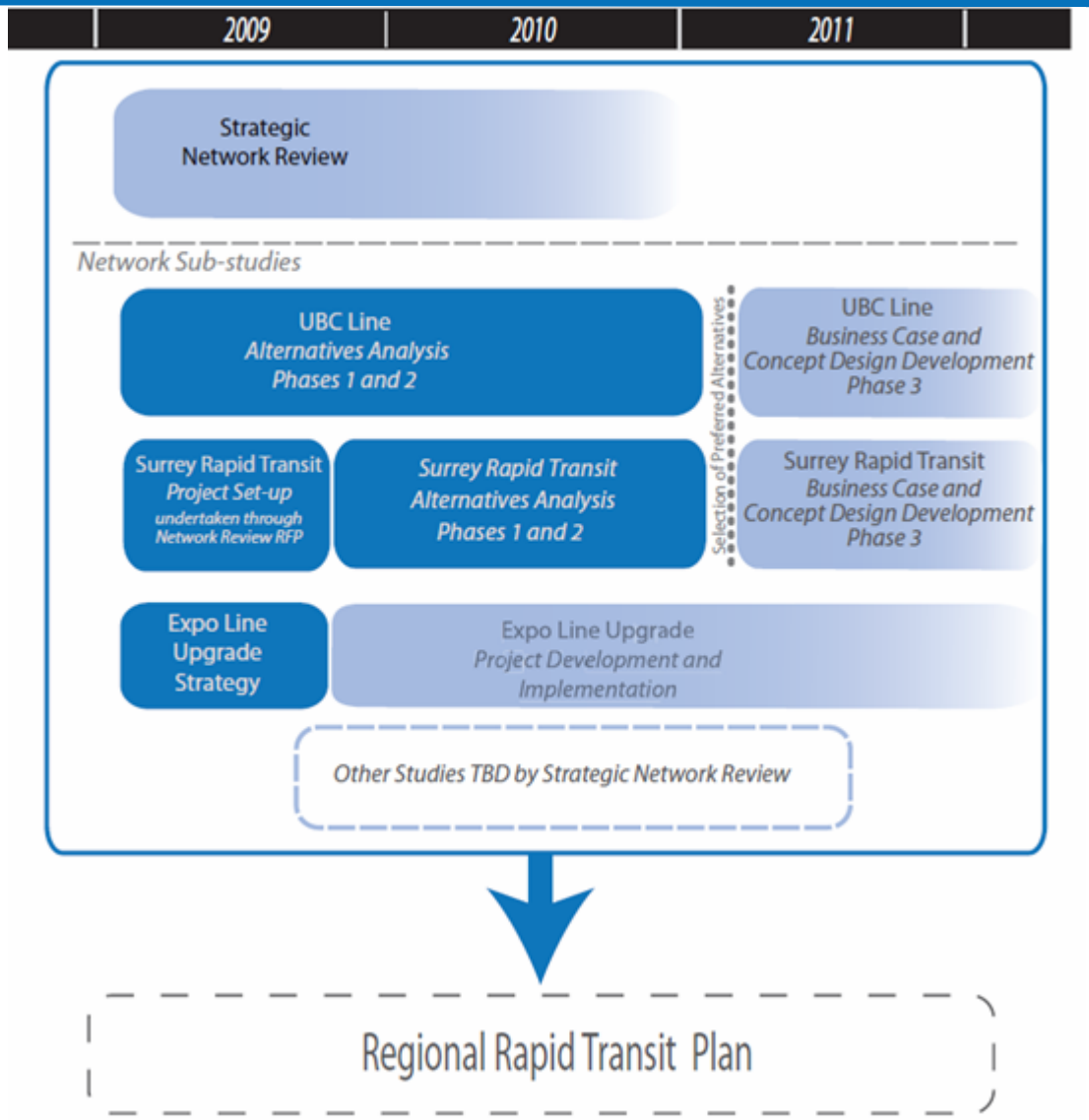
•Identify and evaluate a range of technology and alignment network alternatives on several corridors

•Identify a preferred network alternative

# Surrey Rapid Transit Study: Timeline



# Rapid Transit Studies



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# Concluding Thoughts

- The streetcar is one of a family of transit modes very closely related to Light Rail Transit.
- Performance is largely a function of operating environment.
- Transit mode choices are based on a range of locally specific criteria.
- Alternatives analyses consist of public input and a systematic approach to recommend transportation solutions that support goals and objectives.

# Bus, BRT, LRT or Streetcar?

Caen, France

# Thank you.

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