Modal choice in a multimodal transport system

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Brussels

Smarter Travel Technology Review for Investment DEcisions

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#CEDR_Multimodal

Work packages

- **User needs**
  - Literature review
  - Stakeholder consultation
- **Technology review**
  - Political, Economic, Social, Technological, Legal, Environmental drivers and barriers
  - Market, innovation, impacts on changes in mode use
- **Evaluation framework**
  - Based on international best practice
  - Consultation with NRAs in Ireland and Sweden
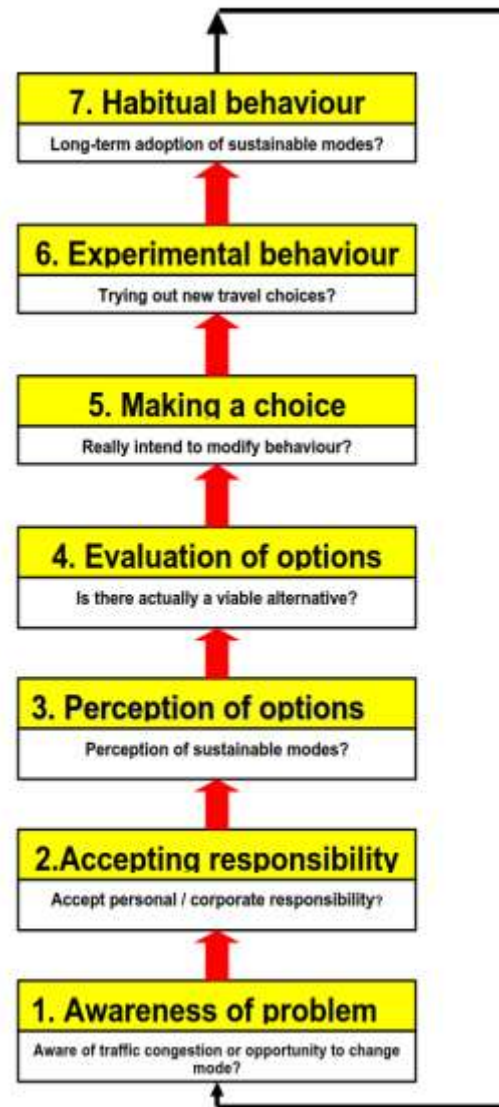
User needs and mode choice

- Convenience
- Comfort
- Travel time
- Direct cost
- "Generalised cost" used in modelling

- *Only 12% of journeys involve active consideration of modal choice*
- habitual behaviour is hard to change
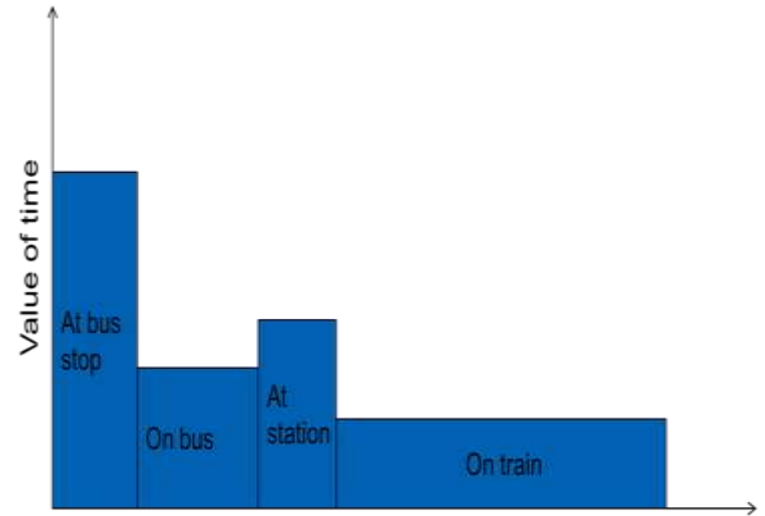
Changing behaviour

- Modal shift measures interact with each other

- Wider policy context and drivers

- Target opportunities when people are most open to change

- Attitudes & needs are changing e.g. willingness to share

- IT offering new opportunities to facilitate behaviour change

7. Habitual behaviour
Long-term adoption of sustainable modes?

6. Experimental behaviour
Trying out new travel choices?

5. Making a choice
Really intend to modify behaviour?

4. Evaluation of options
Is there actually a viable alternative?

3. Perception of options
Perception of sustainable modes?

2.Accepting responsibility
Accept personal / corporate responsibility?

1. Awareness of problem
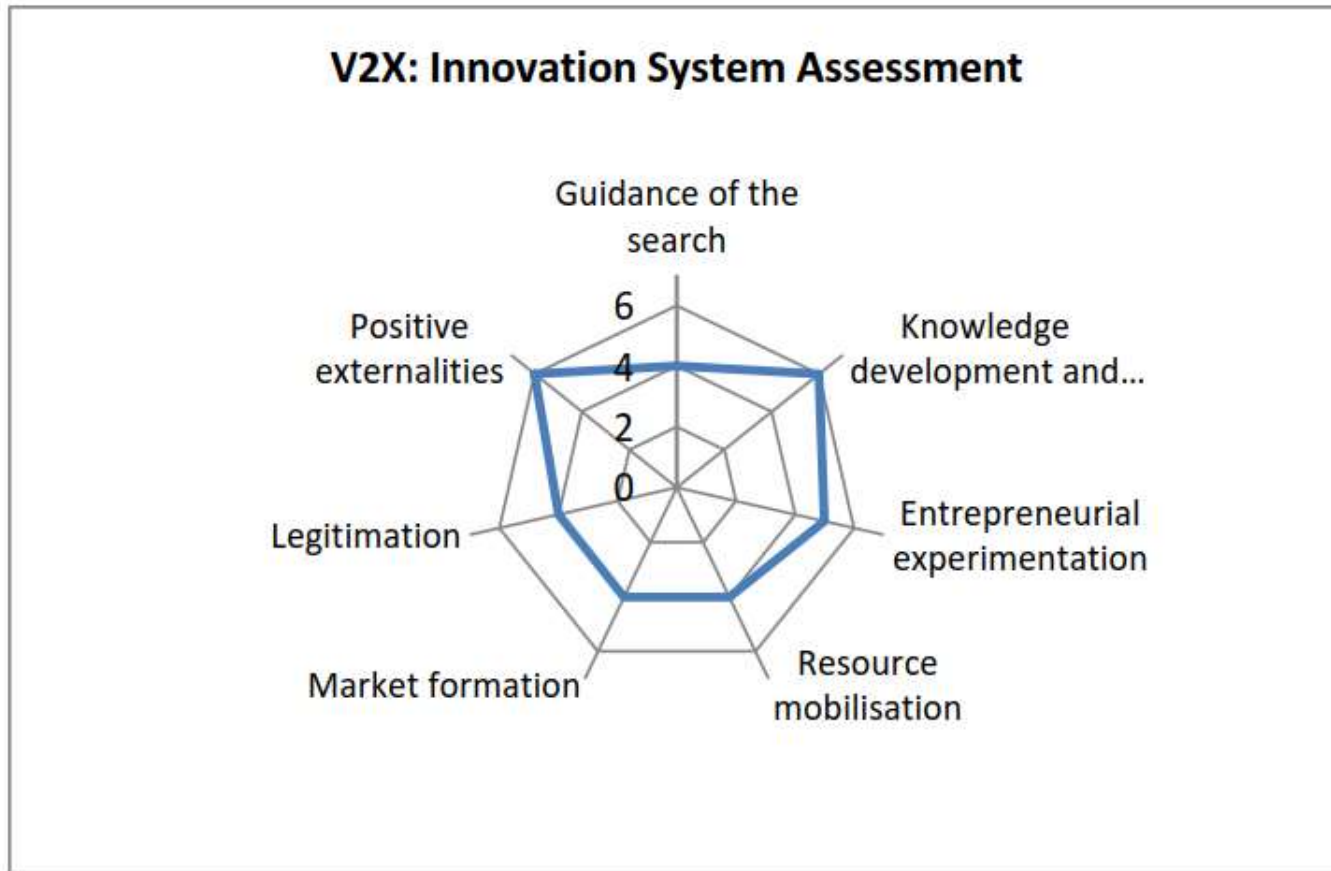Aware of traffic congestion or opportunity to change mode?

TAPESTRY project

Example technologies considered

- **Technology-based services:**
  - Advanced fare management and beacon-based ticketing
  - Traffic management systems
  - Electric vehicles
- **Technology enablers:**
  - Voice recognition
  - Augmented reality
  - Wearable technology and smart textiles
  - Open data and information integration
  - High definition road maps and databases
  - Vehicle to everything communication
  - Powering smart infrastructure

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Innovation System Assessment
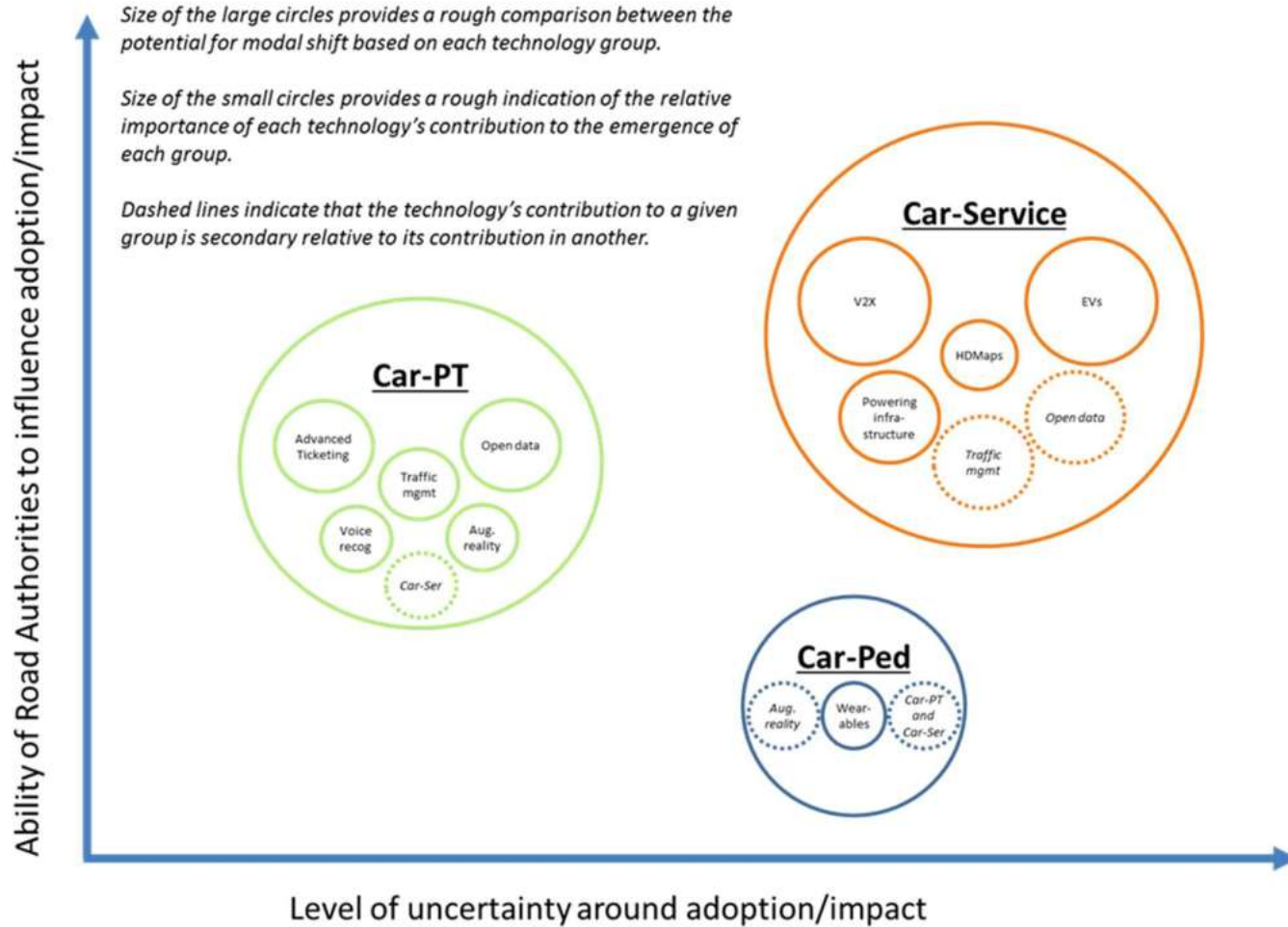

V2X: Innovation System Assessment

Technology Innovation System (TIS) framework's seven functions related to the development potential of the innovation.

Technology potential assessment

Type of Modal shift encouraged	Technologies	User needs met	Impact on modal shift	Nature of impact NRA role	Time to market maturity	Barriers to development/deployment
Individual car use →Public transport	Tech 1	Reduced cost, ease of use	Medium impact	Impact direct NRAs play key role	Mature	Concerns about data security, privacy issues
	Tech 2					
Individual car use →Mobility service	Tech 3	Ease of use, reduced travel time	High impact	Impact indirect NRAs influence weak	5-7 years	Uncertain EU strategy
	Tech 4					
Individual car use→Walking, cycling	Tech 5					

Assessing adoption and impact

Size of the large circles provides a rough comparison between the potential for modal shift based on each technology group.

Size of the small circles provides a rough indication of the relative importance of each technology's contribution to the emergence of each group.

Dashed lines indicate that the technology's contribution to a given group is secondary relative to its contribution in another.

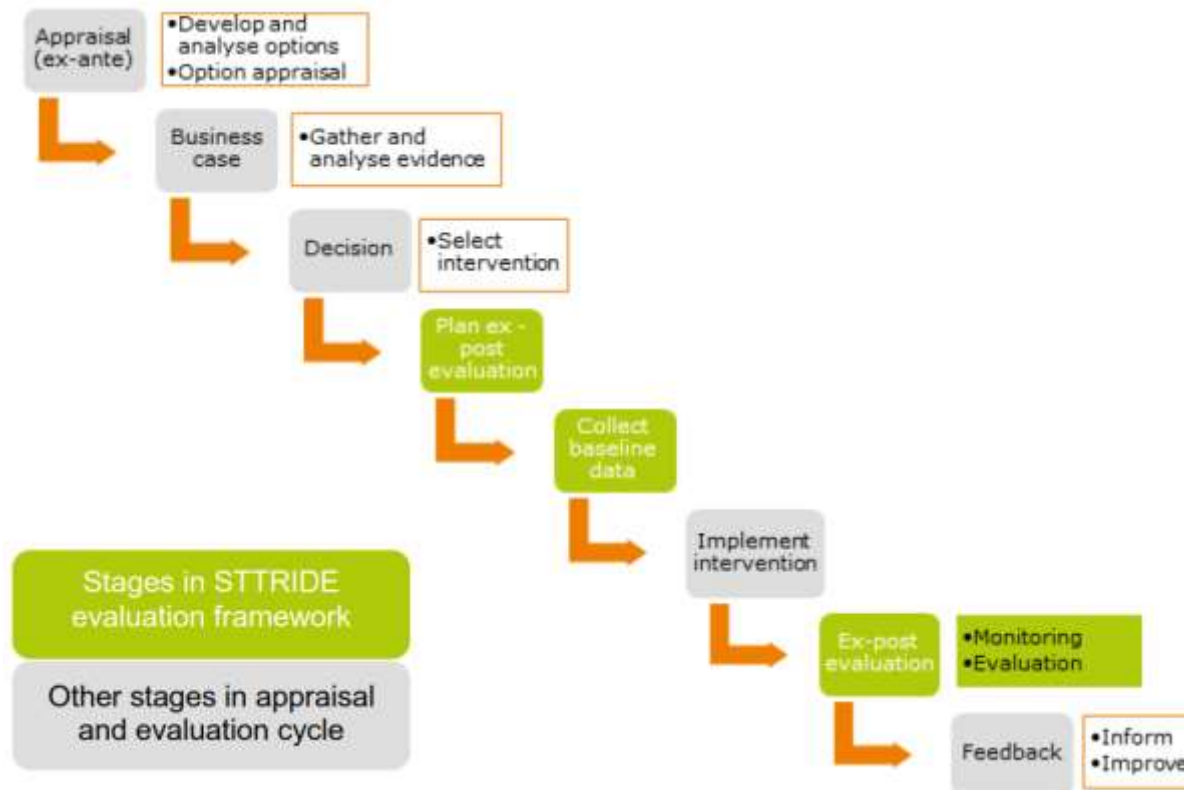Ability of Road Authorities to influence adoption/impact

Level of uncertainty around adoption/impact

Need for impact evaluation guidance

- Not usually included in transport appraisal (ex ante) studies
- Clarity on objectives- research questions
- Choice of indicators
- Baseline/ control definition
- Confounding factors
- Unintended consequences
- Data availability
- Often planned after intervention has started

# Where STTRIDE fits into other processes

The evaluation process

Define user needs for results and resource plan

↓

Describe the intervention

↓

Describe the intervention logic

↓

Define evaluation objectives

↓

Frame the research questions

↓

Pre-assessment of outcomes and impacts

↓

Define assessment methods and write evaluation plan

↓

Data collection and analysis

↓

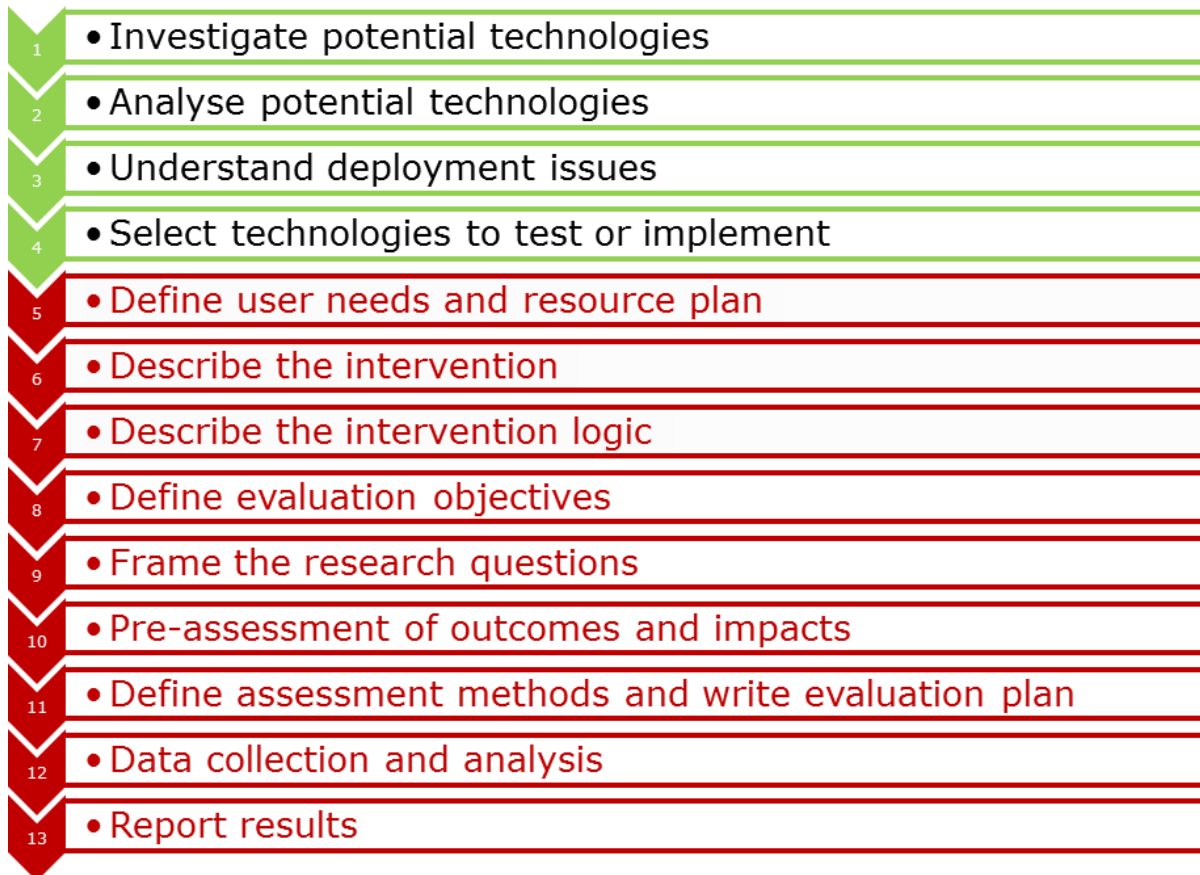Report results

Mapping the intervention logic

- **Context:** policy objectives etc
- **Inputs** i.e. resources and activities;
- **Outputs** e.g. the services, products or infrastructure implemented
- **Outcomes** i.e. the direct short and medium-term effects of the outputs, such as changes in or traffic flows or speeds, journey times
- **Impacts** i.e. the longer-term consequences of the outcomes, such as increased safety, environmental benefits
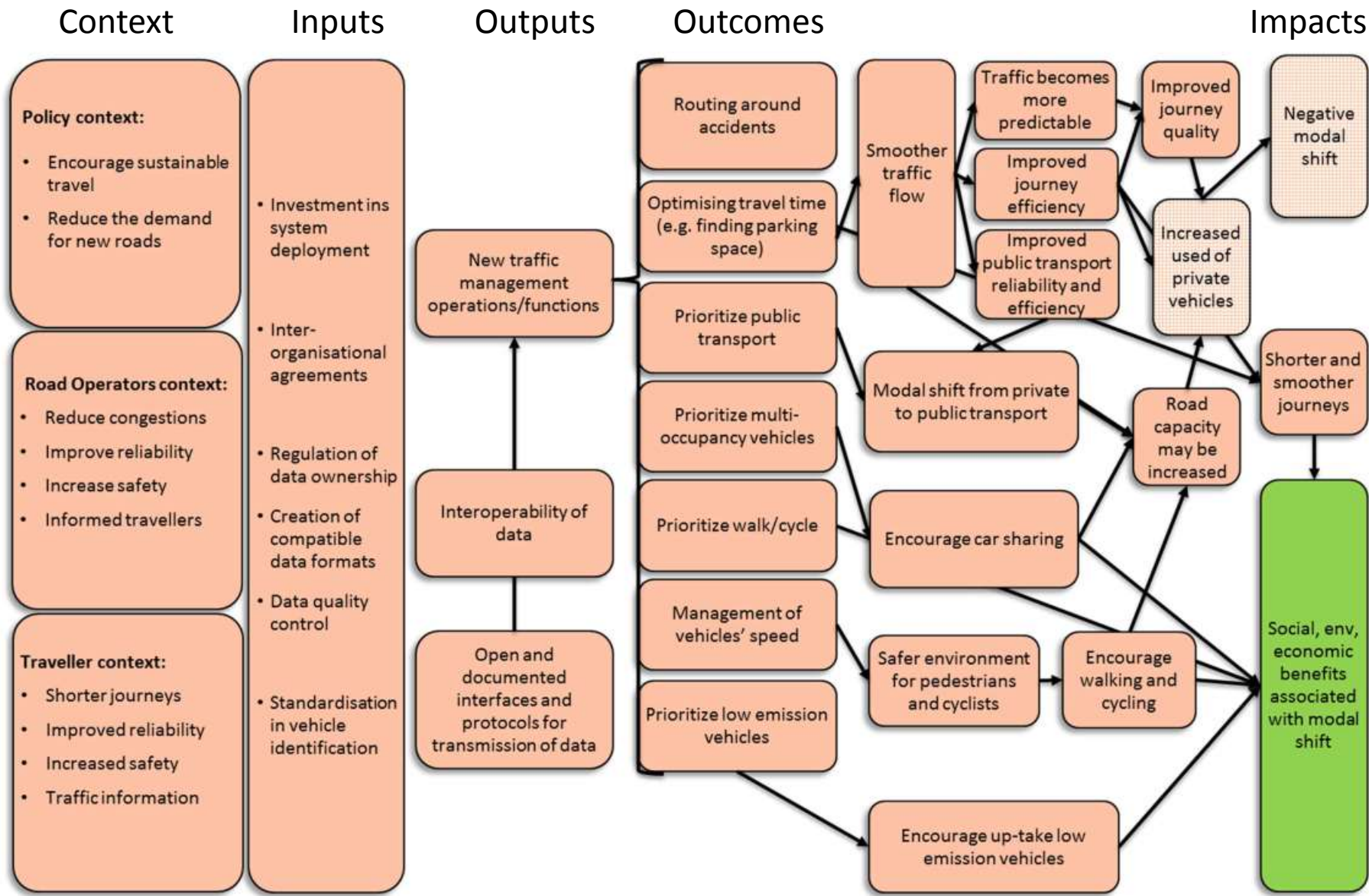
Modal shift indicators
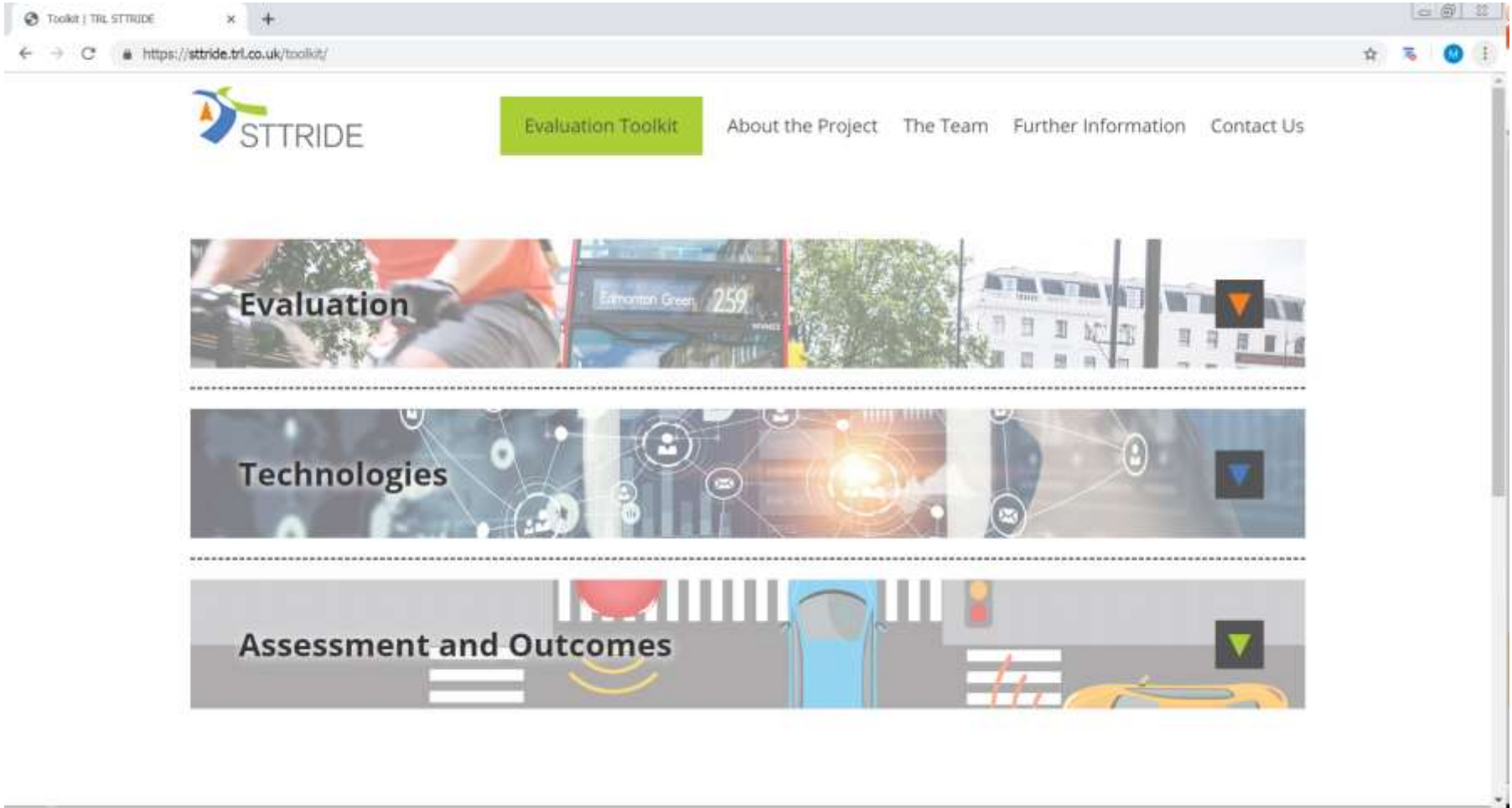
Mode shift outcome	Trips	Passenger km	Vehicle km
Share car journeys			✔
Change mode			✔
Replace car trip with shorter or more efficient trip		✔	✔
Avoid travel altogether	✔	✔	✔

Final output: Evaluation Process Guidelines

1. • Investigate potential technologies
2. • Analyse potential technologies
3. • Understand deployment issues
4. • Select technologies to test or implement
5. • Define user needs and resource plan
6. • Describe the intervention
7. • Describe the intervention logic
8. • Define evaluation objectives
9. • Frame the research questions
10. • Pre-assessment of outcomes and impacts
11. • Define assessment methods and write evaluation plan
12. • Data collection and analysis
13. • Report results

- Guidance
- Templates
- References

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Try it yourself…

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