Symposium: “Look back, think ahead, move forward”, Vienna, 4-5 May 2017

How to shape transport in the face of an uncertain future?

Challenges for research, innovation and policy

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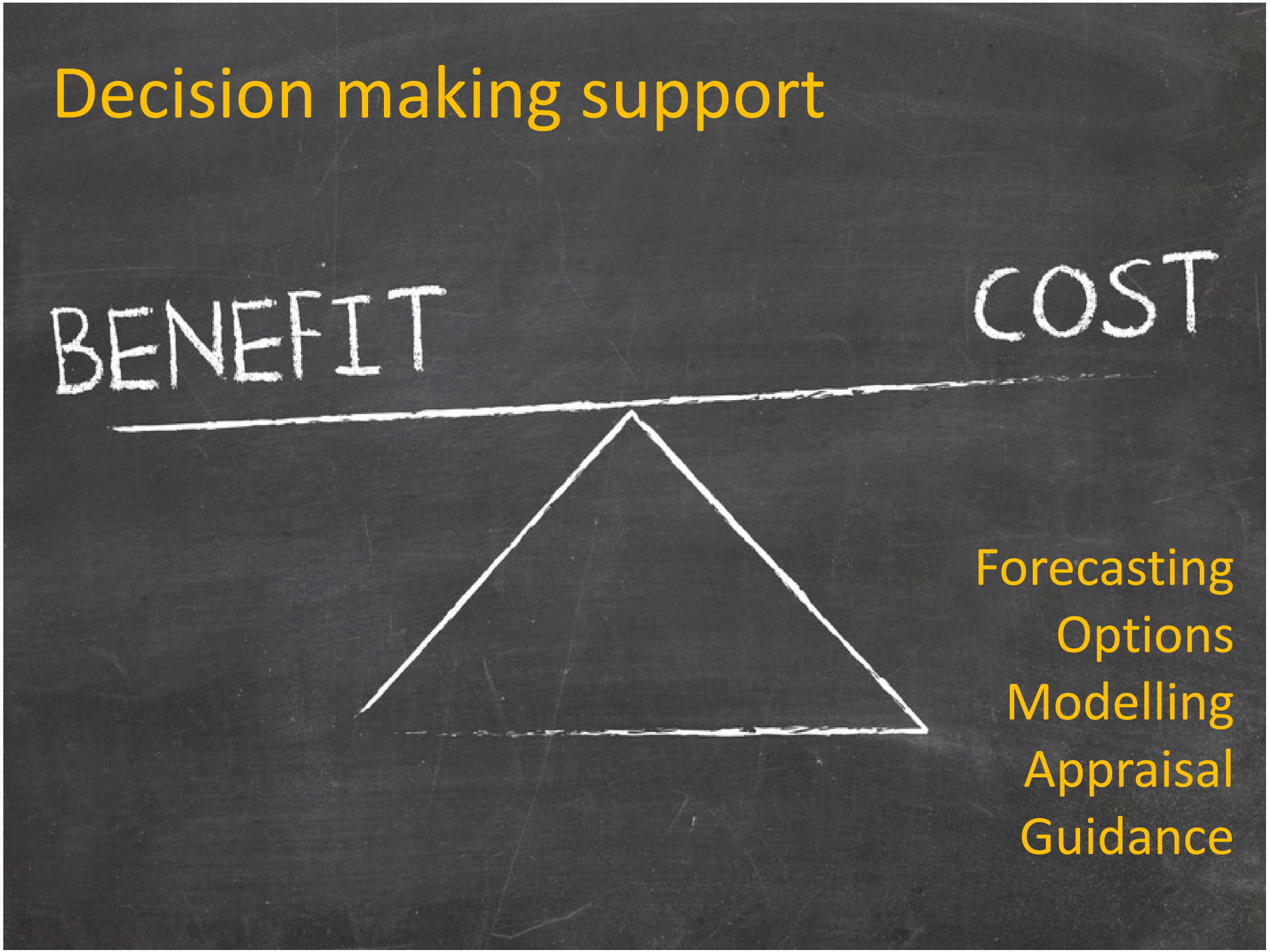
UWE Bristol | University of the West of England

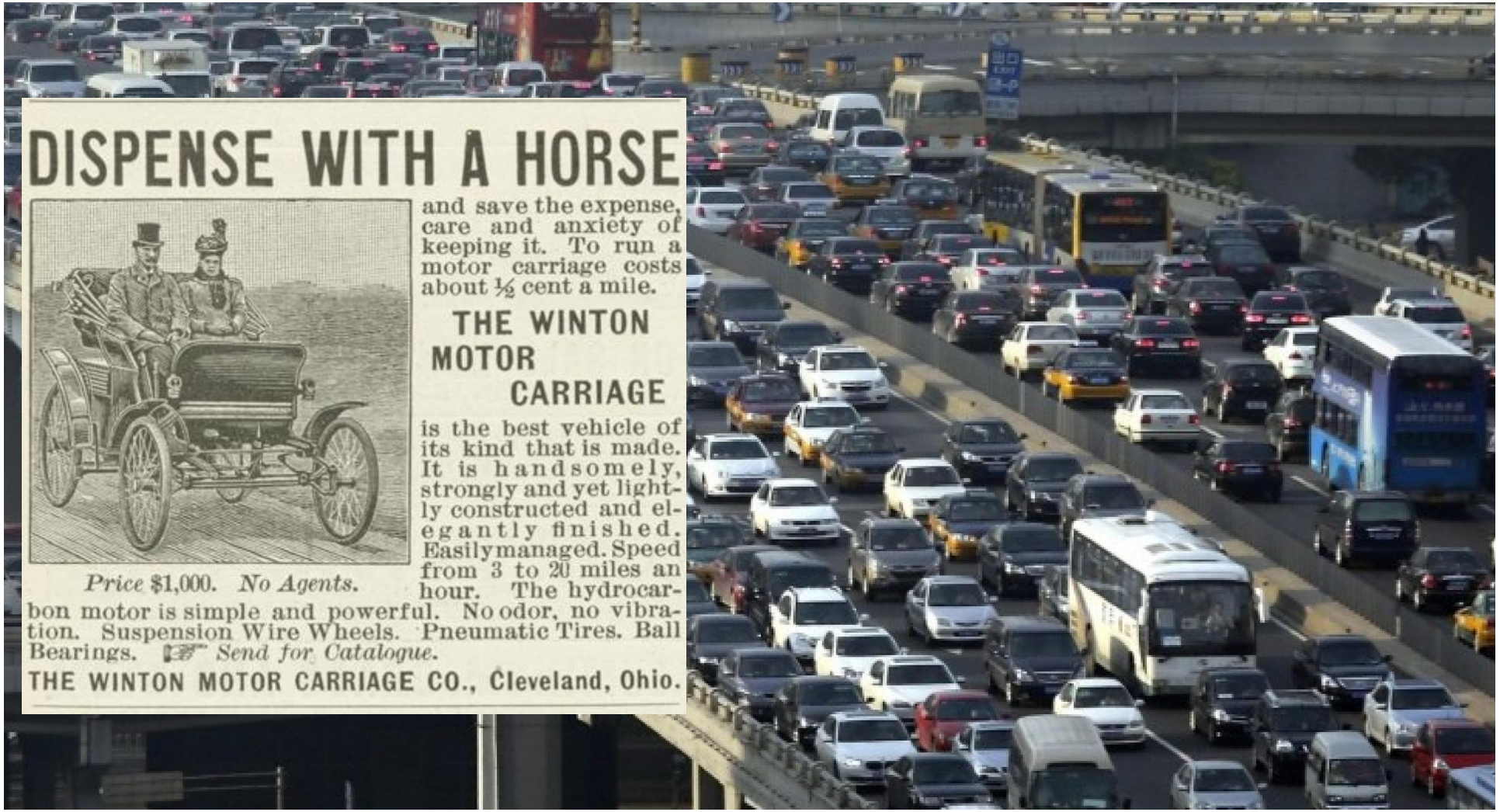
Making sense of supply and demand

Decision making support



Forecasting
Options
Modelling
Appraisal
Guidance

Deep uncertainty and transition

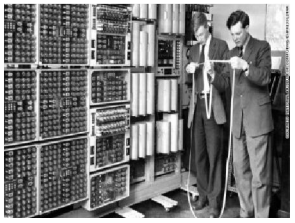


When the rear-view mirror no longer feels like such a good indicator of the road ahead

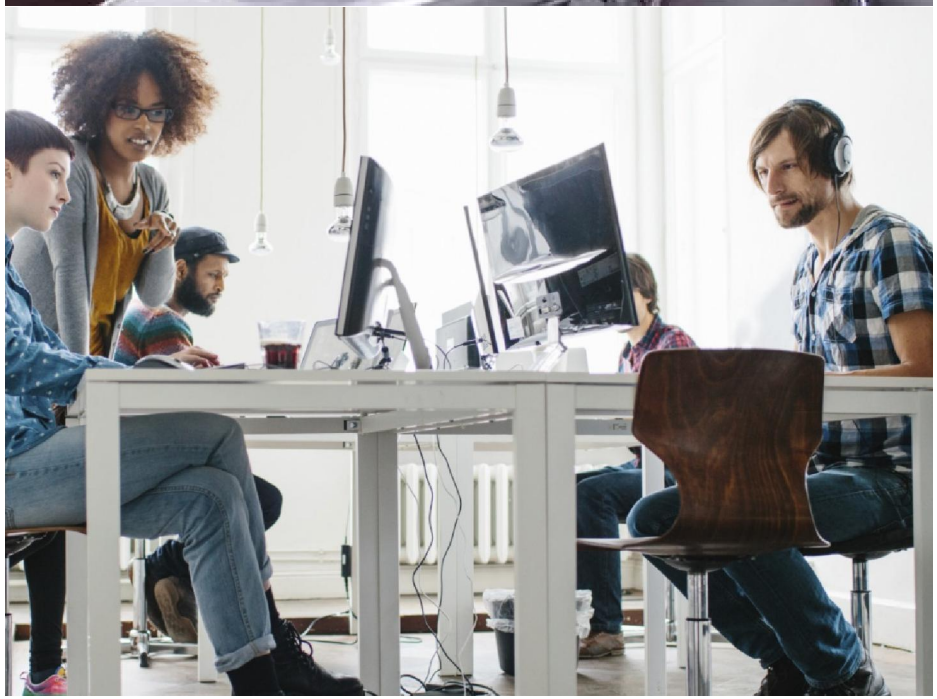
The motor age and the digital age collide and merge




T I M E







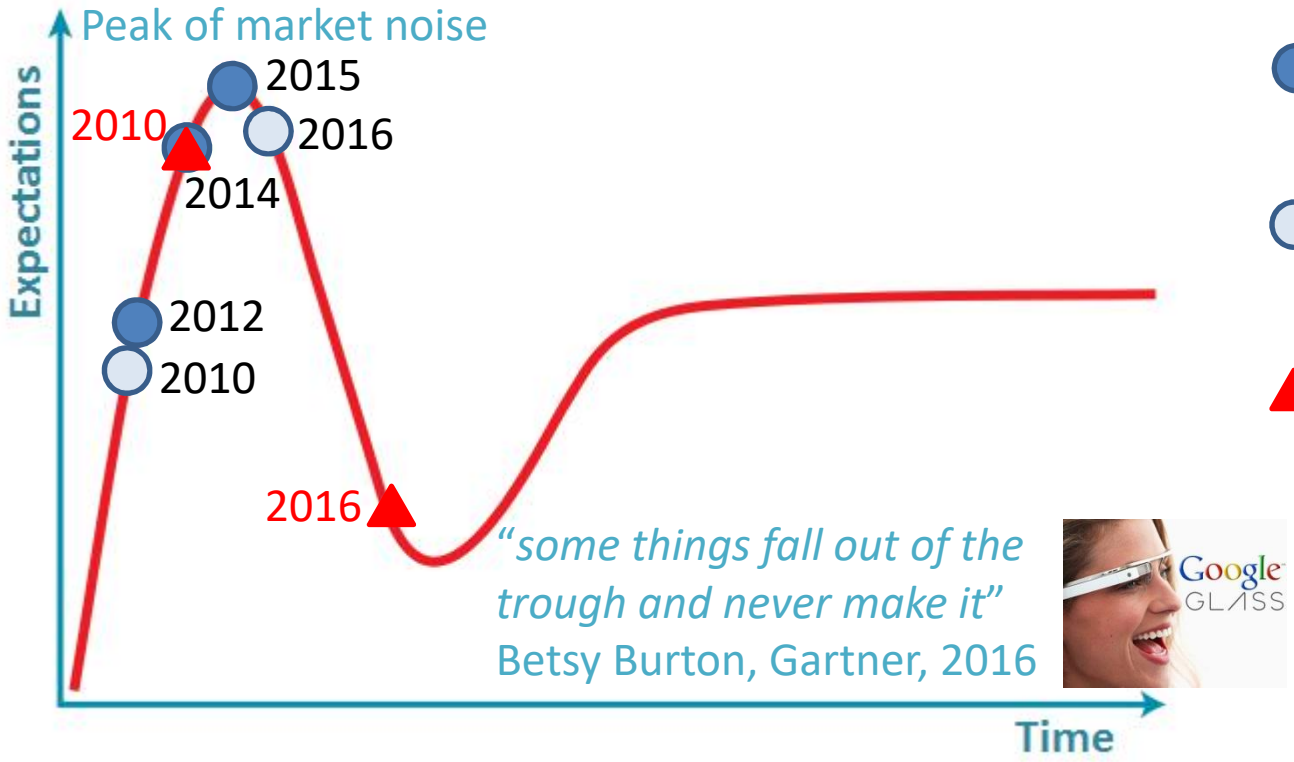
Driver-less

Futures

Drive-less

Vehicle occupancy levels?

Autonomous vehicles



- Autonomous vehicles (5-10 years to plateau)
- Autonomous vehicles (>10 years to plateau)
- Augmented reality


“Uncertainty is an uncomfortable position.
But certainty is an absurd one.” Voltaire, 1694-1778

We need open minds

and must beware of biases

Cognitive fluency

Confirmation bias

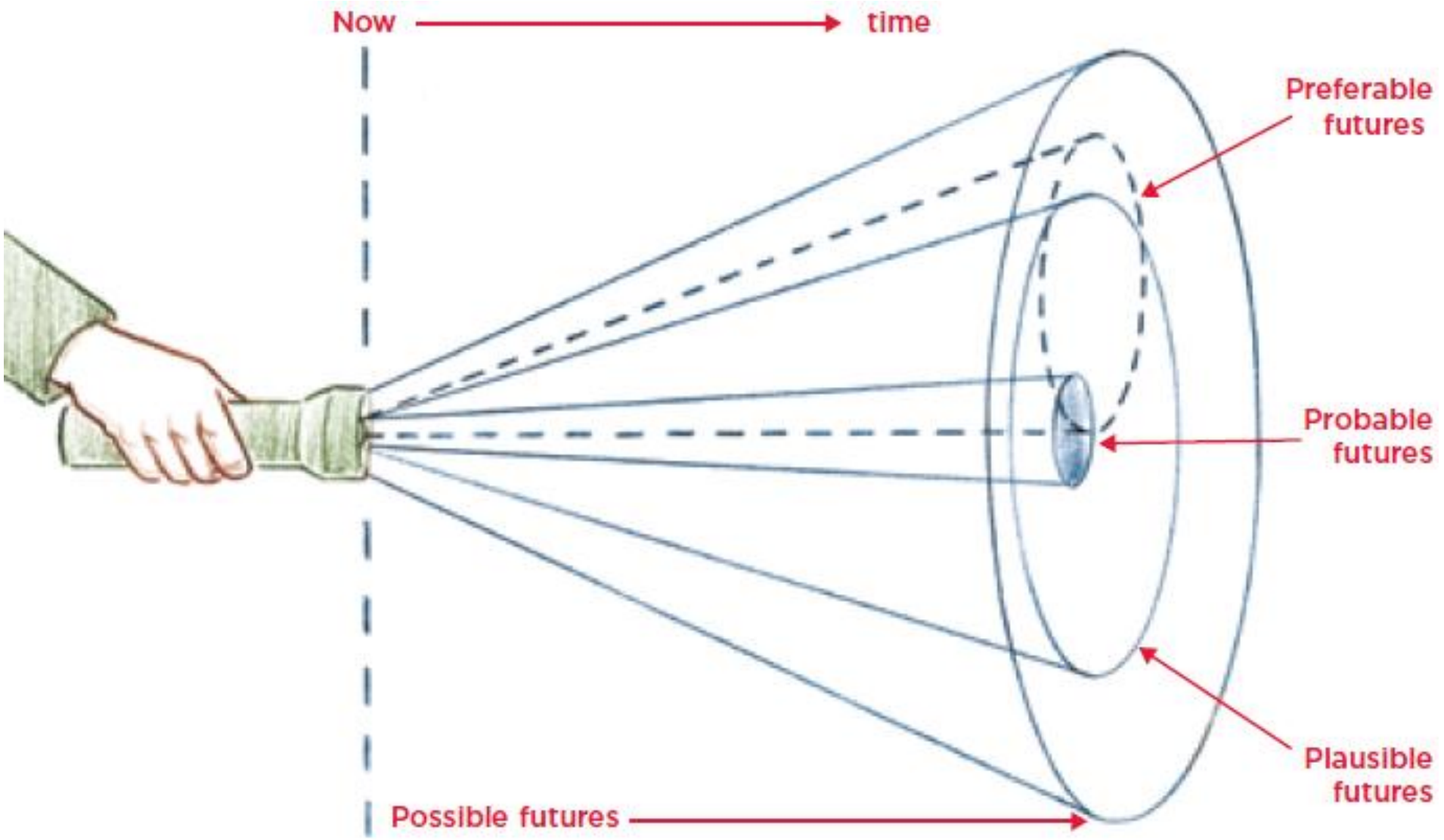
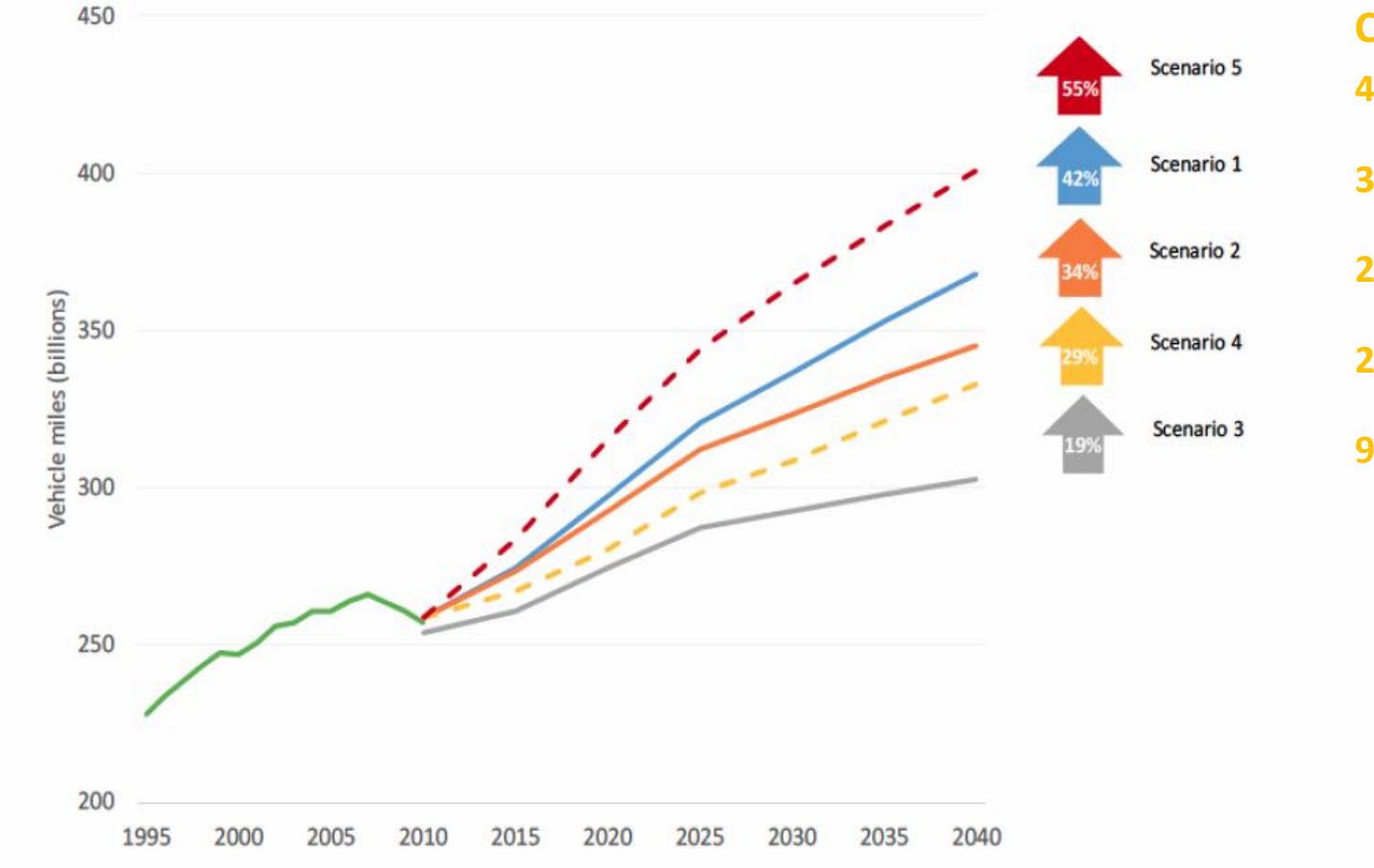


Image taken from:

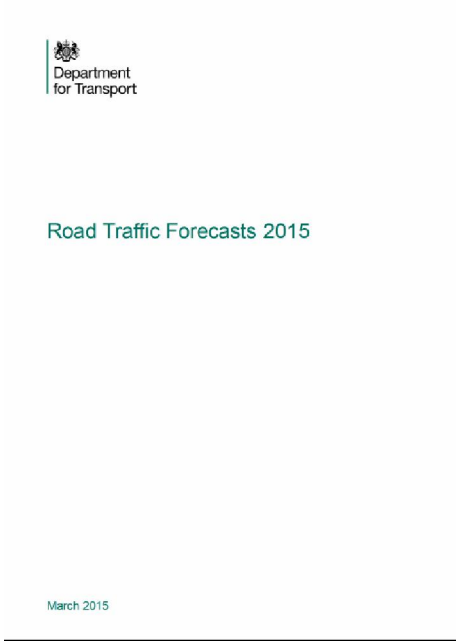
https://www.nesta.org.uk/sites/default/files/dont_stop_thinking_about_tomorrow.pdf

Forecasting

Traffic growth by scenario (billion miles, all vehicles)



Source: Department for Transport 2015 Road Traffic Forecasts for England



"when controlling for errors in the economic and demographic inputs, **the model was able to predict reasonably well** the period of flat growth"

however…

"Uncertainty in the model can result from three key sources:

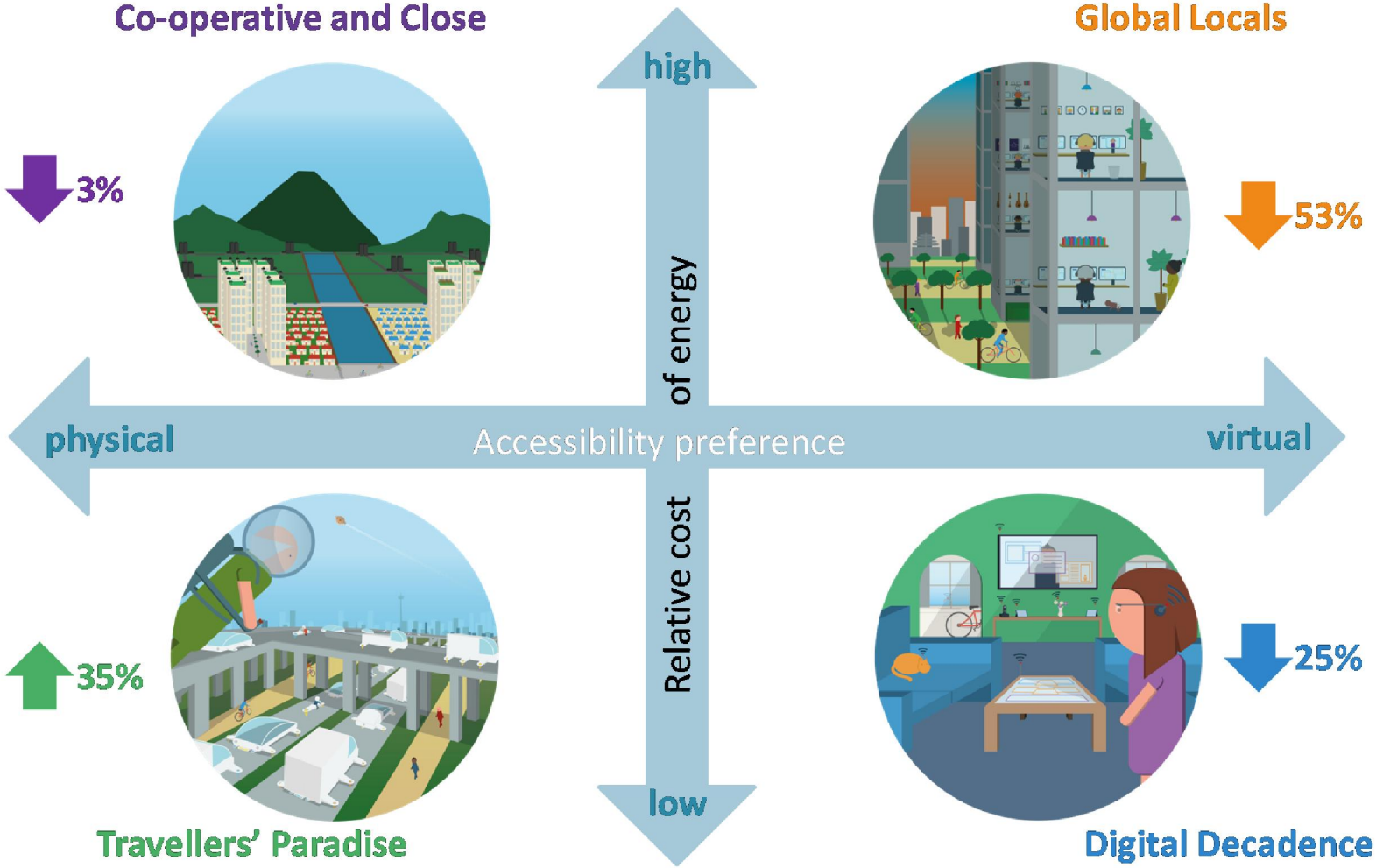
- Forecasts of key inputs, such as the forecasts of GDP, fuel prices and population
- The relationship between these key drivers and traffic demand.
- The emergence of new factors which affect travel behaviour"

and…

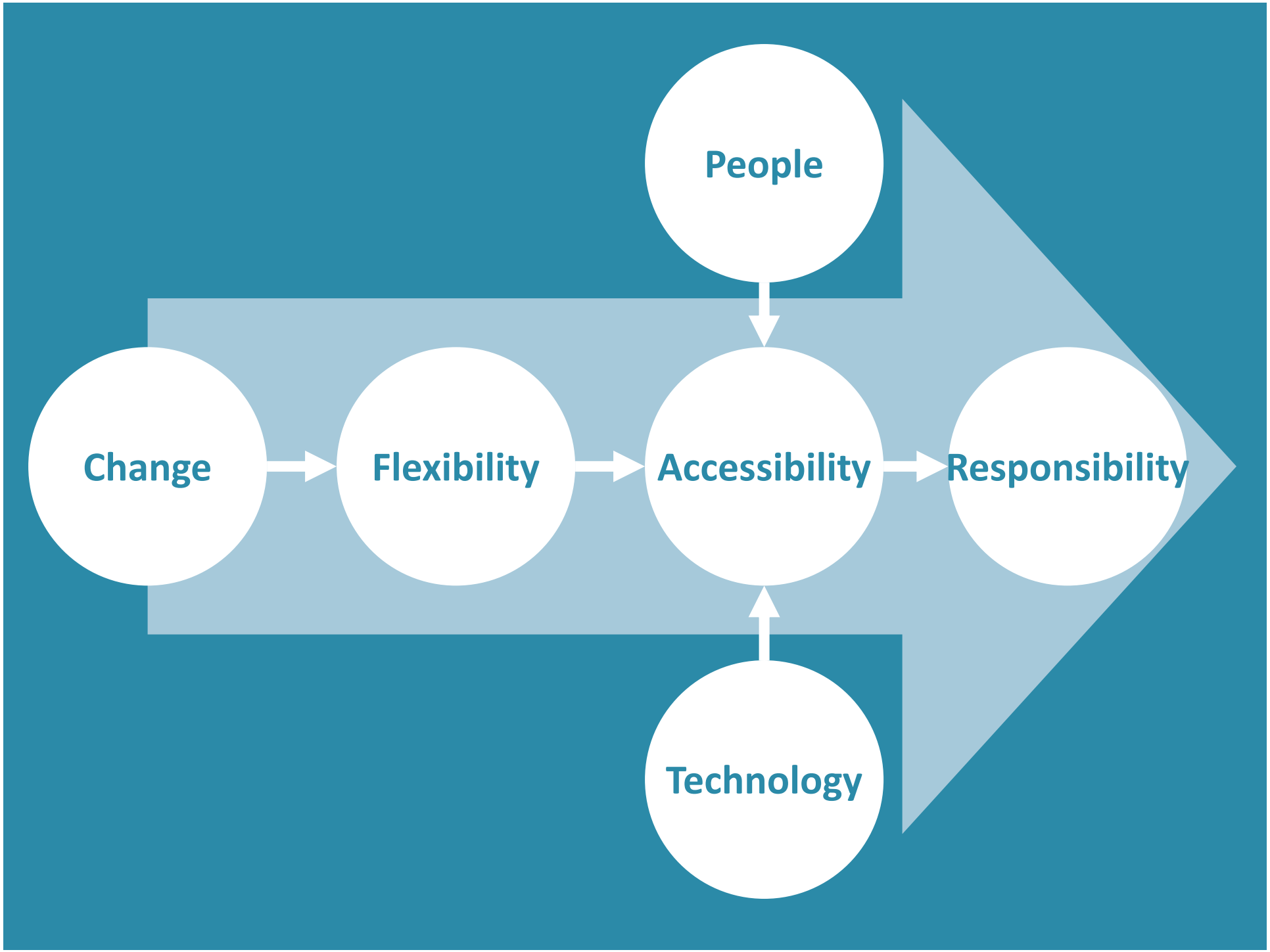
"Clearly **forecasts of the inputs are very uncertain**"

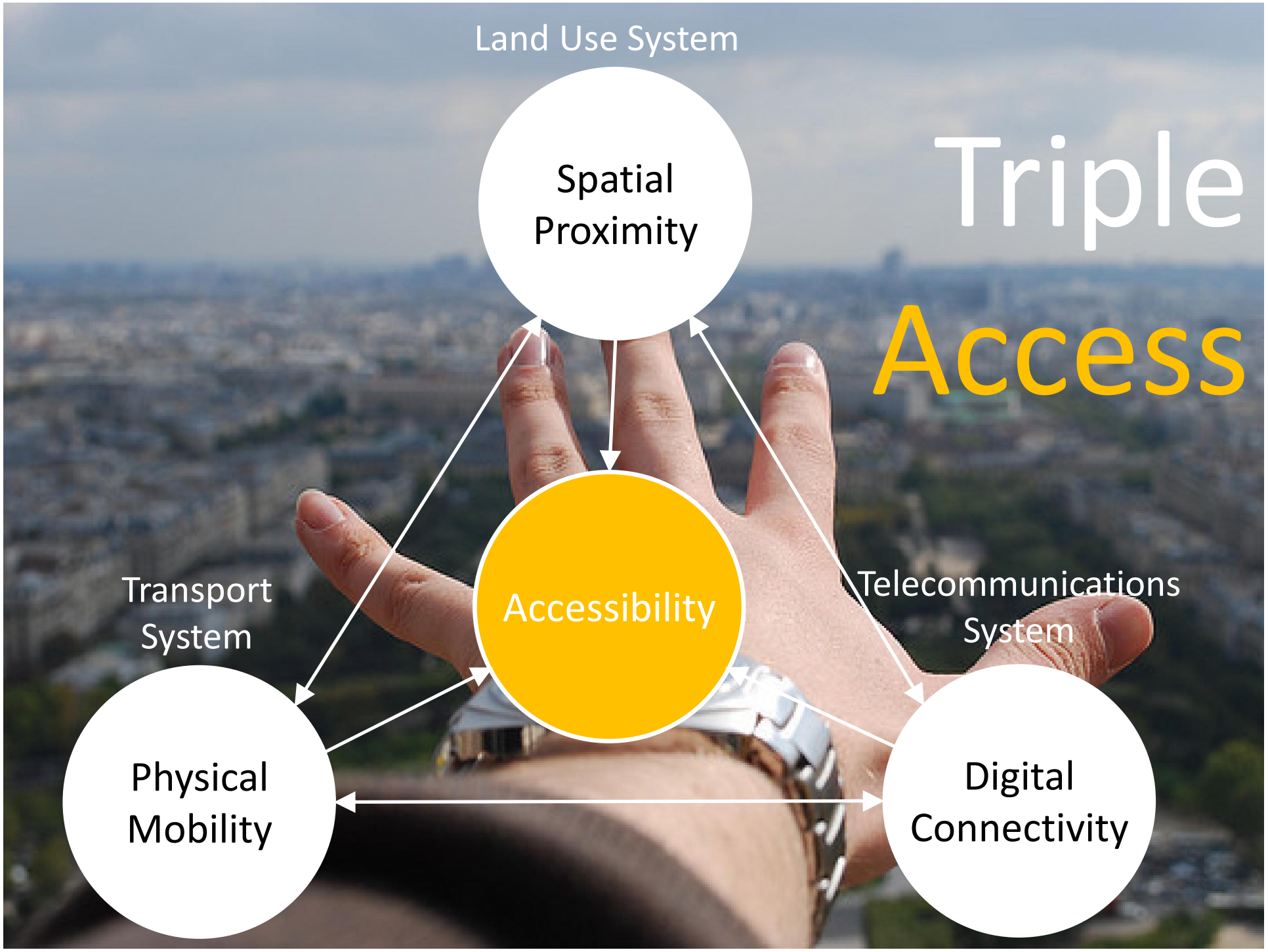
"there is still much uncertainty around travel behaviour"

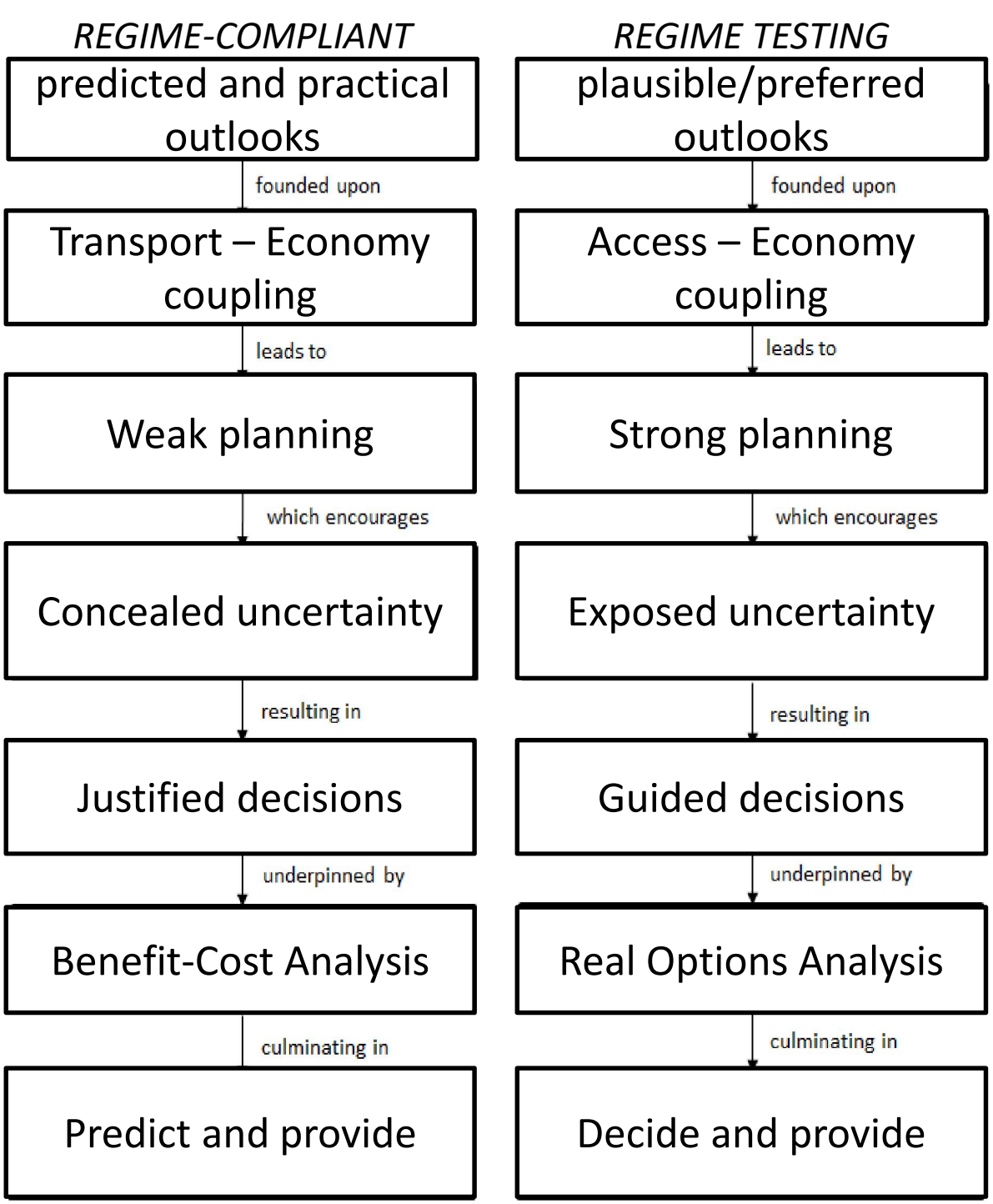
Scenario Planning



Percentage change in total distance travelled by car from 2014 to 2042


People
Change
Flexibility
Accessibility
Responsibility
Technology

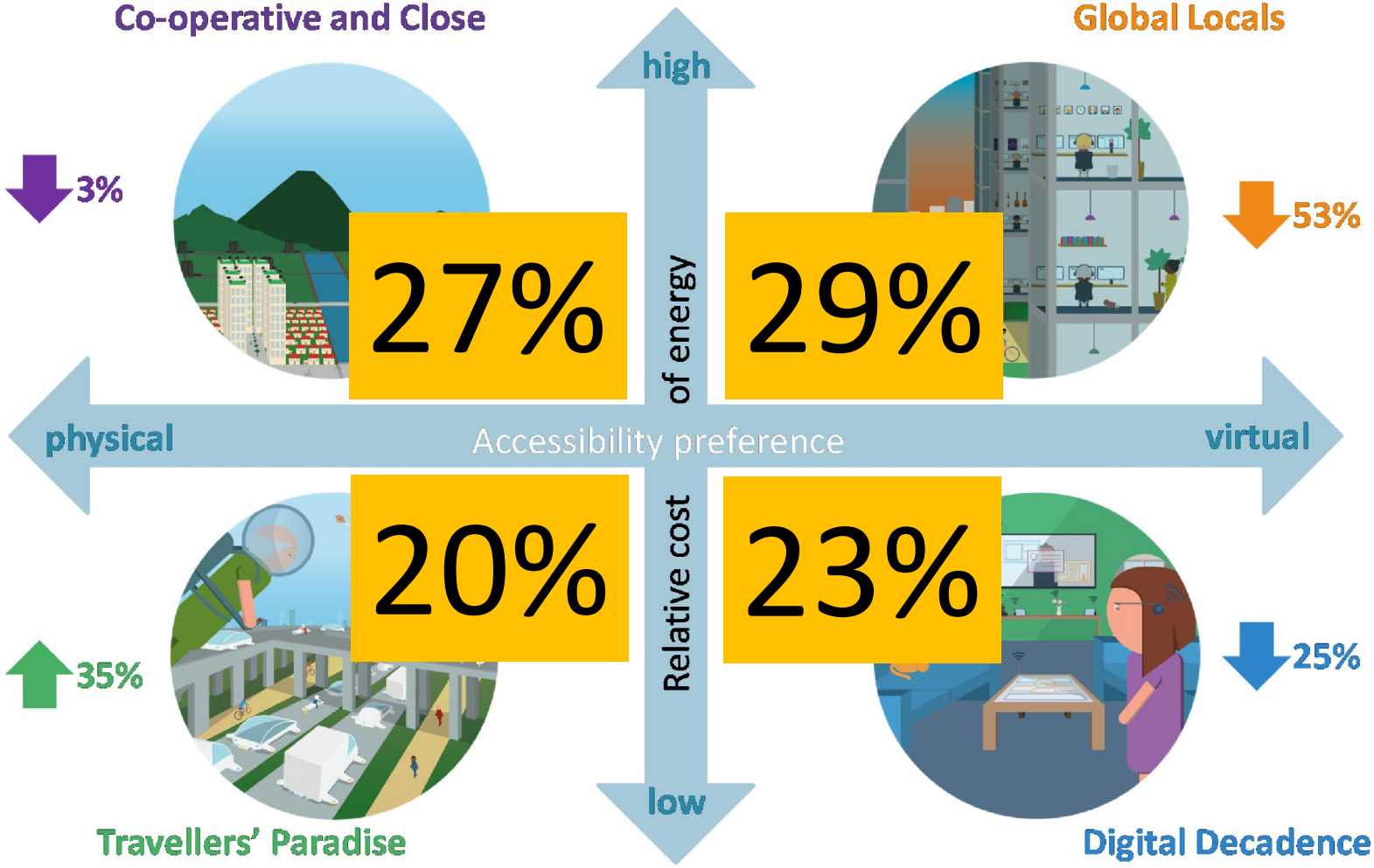

Land Use System
Spatial Proximity
Triple Access
Transport System
Accessibility
Telecommunications System
Physical Mobility
Digital Connectivity



Which path-way are we on?

Which path-way is desirable and achievable?

Relative plausibility



Percentage change in total distance travelled by car from 2014 to 2042

Regime compliance dominates

Accountability versus responsibility

Concerns over professional impotence

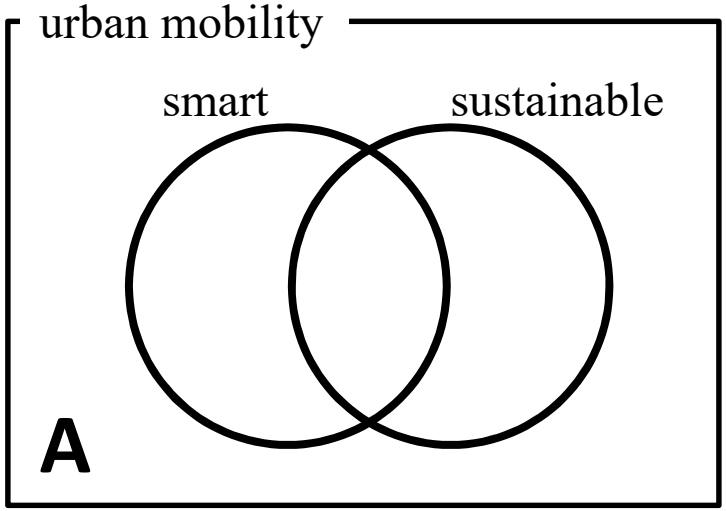
Strong appetite for regime-testing

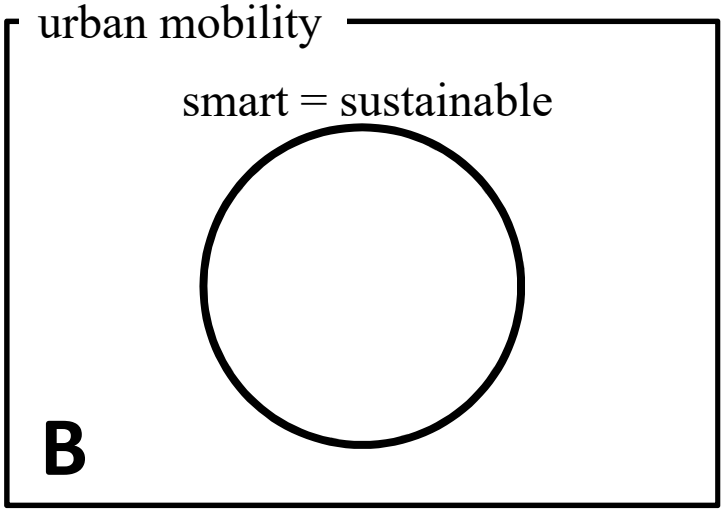
Stronger planning

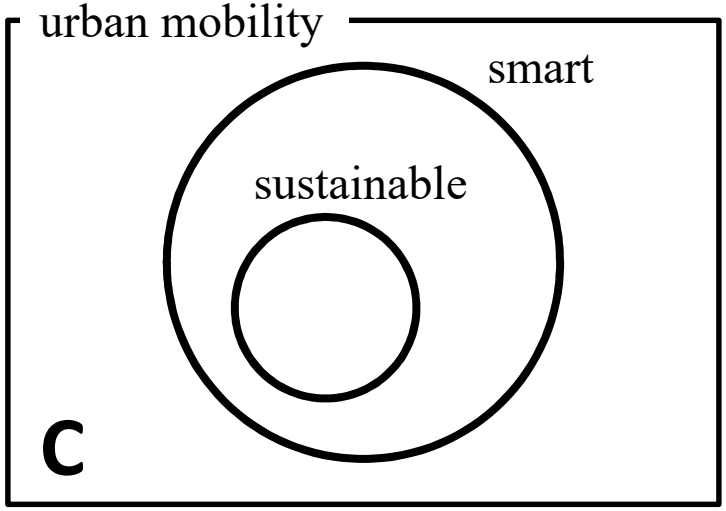
Requires challenge, collaboration and consensus building amongst multiple actors, domains of knowledge and of responsibility

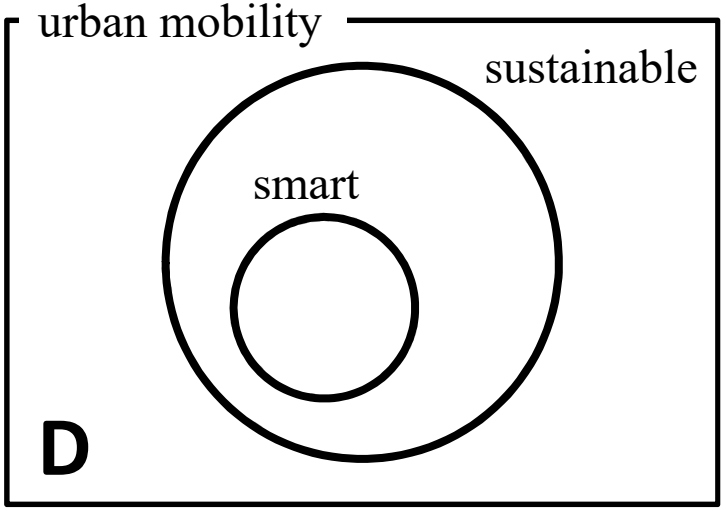

How to accommodate an
appropriate level of future demand
in the most appropriate way to
support society's future needs?
when we don't know what the question means
or what those needs are

Getting smart about mobility?









Clarity of **purpose**

Smart Urban Mobility - Connectivity in towns and cities that is affordable, effective, attractive and sustainable

MaaS | Mobility as a Service
Mobility aimed at Sustainability?
Mobility aimed at Shareholders?

Responsible Innovation - **socio-technical change** that is sustainable for society while being beneficial for different stakeholders (Behaviour in Mobility - http://www.verdus.nl/2487)


I suppose it is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail
Abraham Maslow, 1966
Wicked problems call for interdisciplinary, collaborative approaches amongst analysts

Summary

- Transport analysis concerns the transport system and the behaviour of its users
- Yet the behaviour of analysts themselves and the system of decision making in which they operate are key
- Faced with deep uncertainty, attitudes and behaviours of analysts and the pathway of policymaking need to change
- Analysis must focus upon accessibility not (only) mobility
- **Embracing uncertainty is an opportunity to take greater responsibility over shaping the future**
- **To do so requires our own limitations to be acknowledged and overcome through interdisciplinary challenge, collaboration and consensus building**
- For a recent pan-European attempt to elaborate on key questions for research that arise, see http://www.verdus.nl/2487

Further reading from the speaker

Lyons, G. (n.d.). Getting Smart About Urban Mobility – Aligning the Paradigms of Smart and Sustainable. *Transportation Research Part A: Policy and Practice*, Special Issue on Smart Urban Mobility. http://dx.doi.org/10.1016/j.tra.2016.12.001

Lyons, G. (2016). *Uncertainty Ahead: Which Way Forward For Transport?* Final Report from the CIHT FUTURES initiative, Chartered Institution of Highways & Transportation, August, London. http://www.ciht.org.uk/en/knowledge/futures/

Lyons, G. (2016). Transport Analysis in an Uncertain World. Editorial for *Transport Reviews*, 36(5), 553-557. http://dx.doi.org/10.1080/01441647.2016.1194613 (open access)

Lyons, G. and Davidson, C. (2016). Guidance for transport planning and policymaking in the face of an uncertain future. *Transportation Research Part A: Policy and Practice*, 88, 104-116. http://dx.doi.org/10.1016/j.tra.2016.03.012 (open access)

Lyons, G. (2015). Transport's Digital Age Transition. *Journal of Transport and Land Use*, 8(2), 1-19. https://www.jtlu.org/index.php/jtlu/article/view/751 (open access)

Lyons, G., Davidson, C., Forster, T., Sage, I., McSaveney, J., MacDonald, E., Morgan, A. and Kole, A. (2014). *Future Demand: How could or should our transport system evolve in order to support mobility in the future*? Final Report. New Zealand Ministry of Transport, Wellington, New Zealand. http://www.transport.govt.nz/ourwork/keystrategiesandplans/strategic-policy-programme/future-demand/