Mobile Applications and Open Innovation

– and what it could mean to public transport in Denmark

Conference on IT in Public Transport

TØF, 2 May 2011

Søren Have

Attractive public transport is key to providing sustainable passenger transport …

Green transport policy (Jan 2009)

- Special focus on public transport

- Shorter and more cost efficient travel time, increase attraction to deselect individual travel by car

- CO2 agenda

- (and since then: no more money for large projects)

Political wish to increase the use of public transport

Passenger transport

Mobile applications

The online revolution
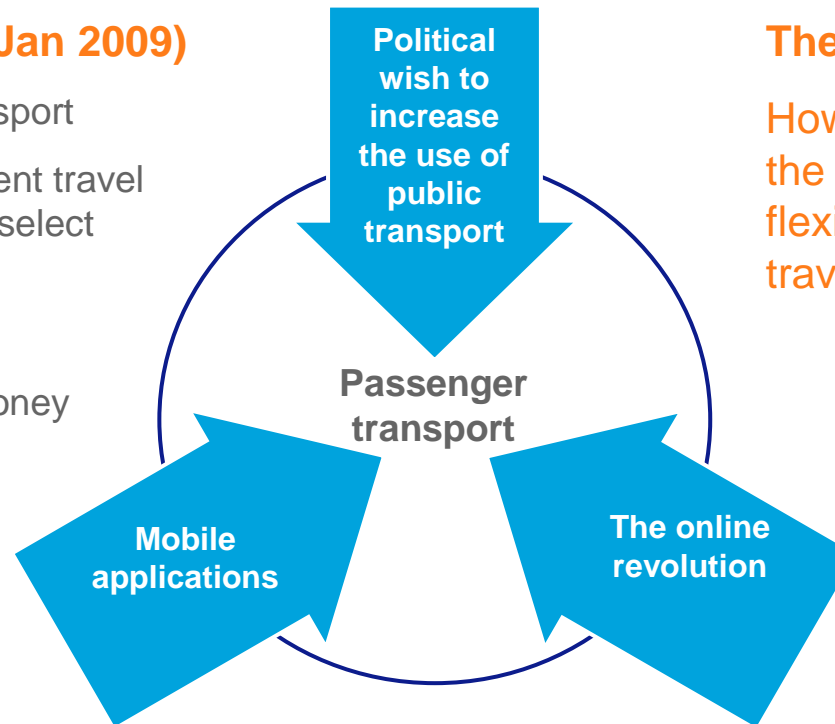
The challenge:

How can each passenger get the same sense of control and flexibility as they get when traveling by their cars?

Context-based "here and now" information

- The Mobile technology has increased the expectation of real time (what happens here and now) and personalised information (be in control, be able to act in the situation, get intelligent help in the situation)
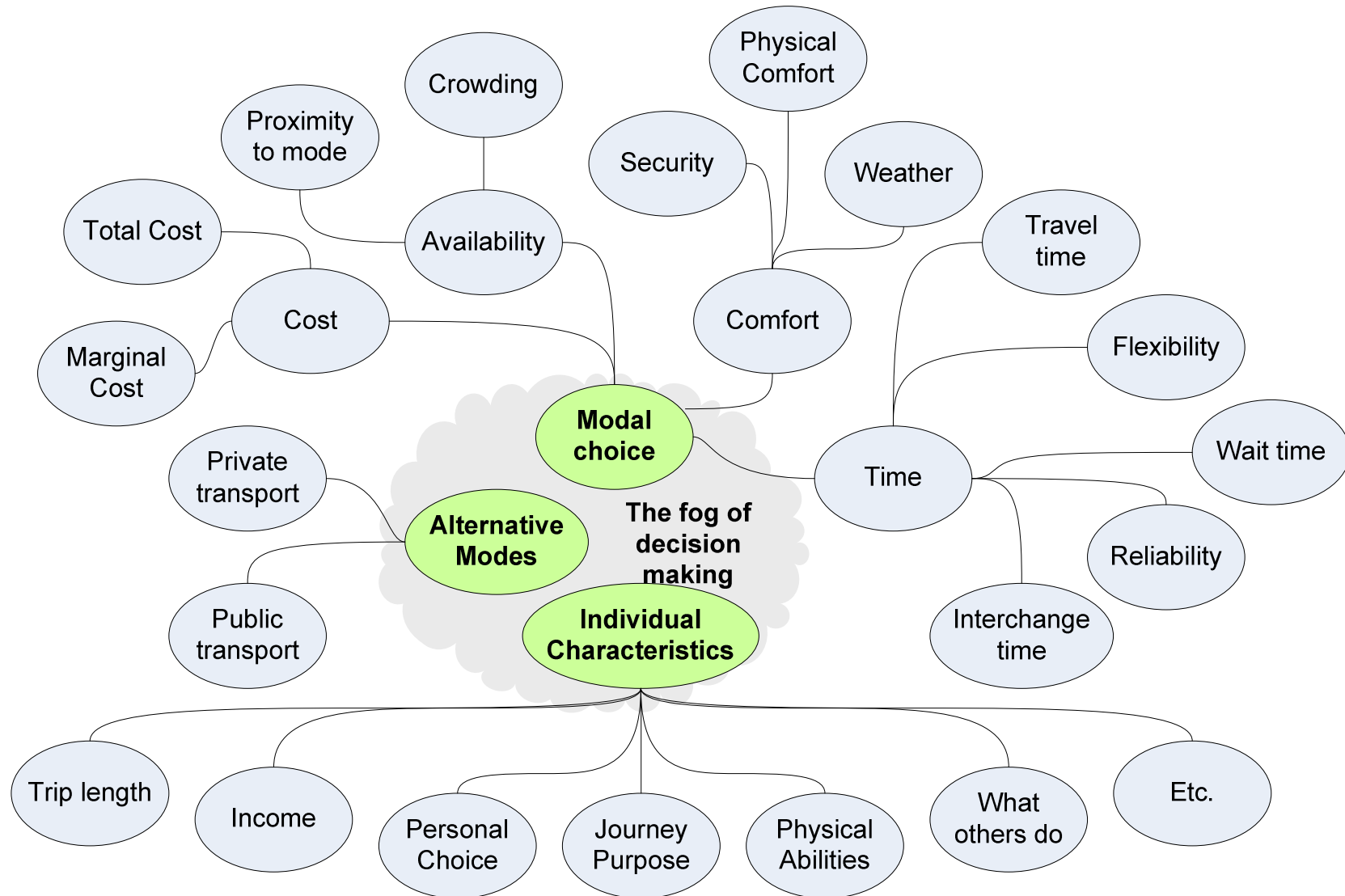
Web 2.0

- Created basis for new and powerful networking culture that shares knowledge and co-operates to create value

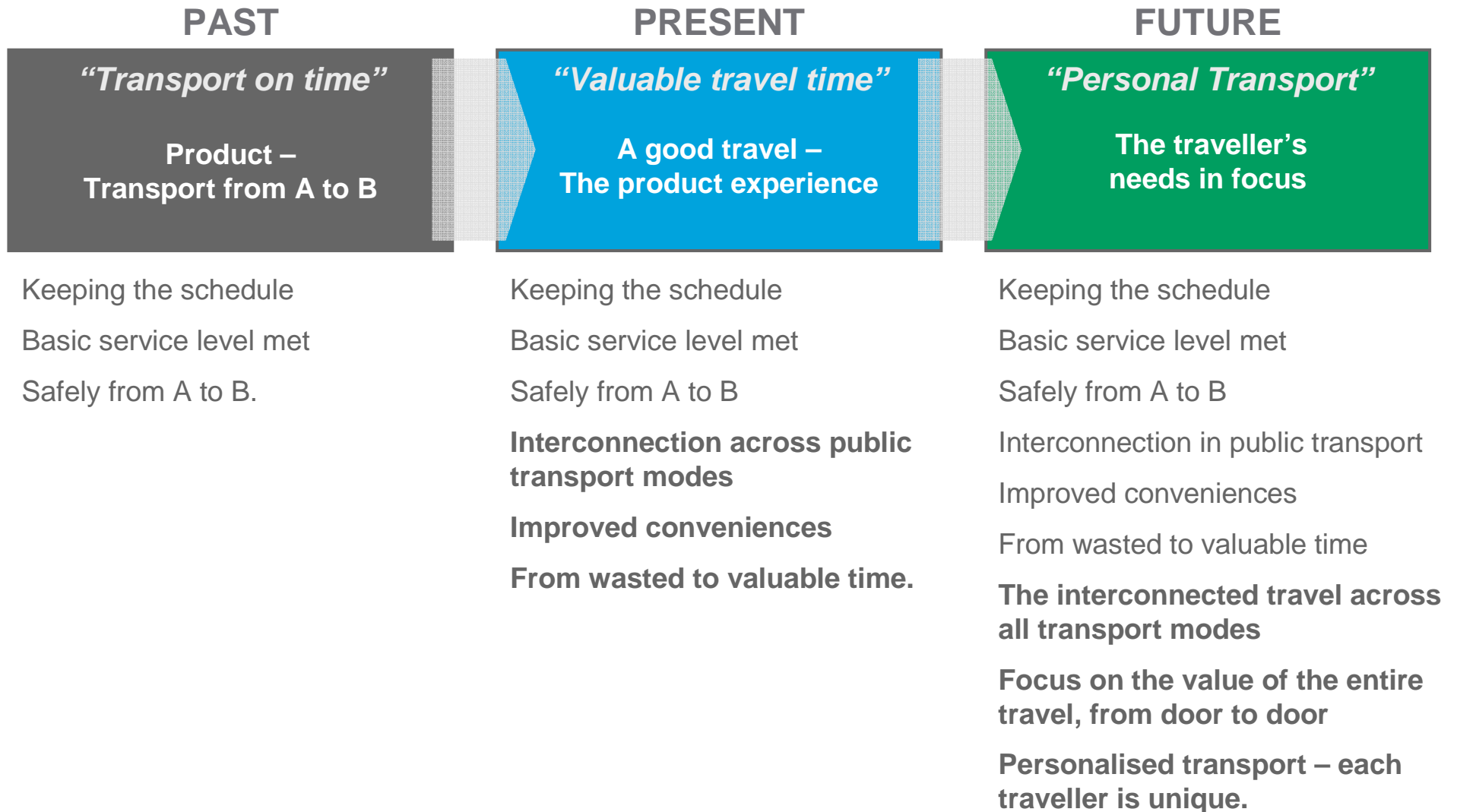- Key words: Open source, crowd sourcing, open innovation

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… and IT is seen as one of the main enablers of attractive public transport

- *National Danish Strategy for ITS*, ITS Udviklingsforum, March 2011

    - "With the large growth in use of advanced mobile phones new services are available for providing access to public transport information"

    - [In the future] "you will get a new travel plan to your mobile if irregularities happen"

    - "Access to data is crucial in order that private and public organisations can develop effective ITS-applications – to the benefit of drivers, passengers and the society"

- UITP2011 World Congress, Dubai, 10-14 April 2011:

    - *"A happy customer is an informed customer:* One of the key requirements that must be fulfilled in order to enhance the attractiveness of public urban passenger transport is comprehensive passenger information. […]. This can be achieved by providing wireless or on-line connectivity to travellers' mobile devices and the distribution of multimedia entertainment and traffic information in real-time – at the stop and inside the vehicle. "

- ITS Denmark's annual meeting 12 April 2011:

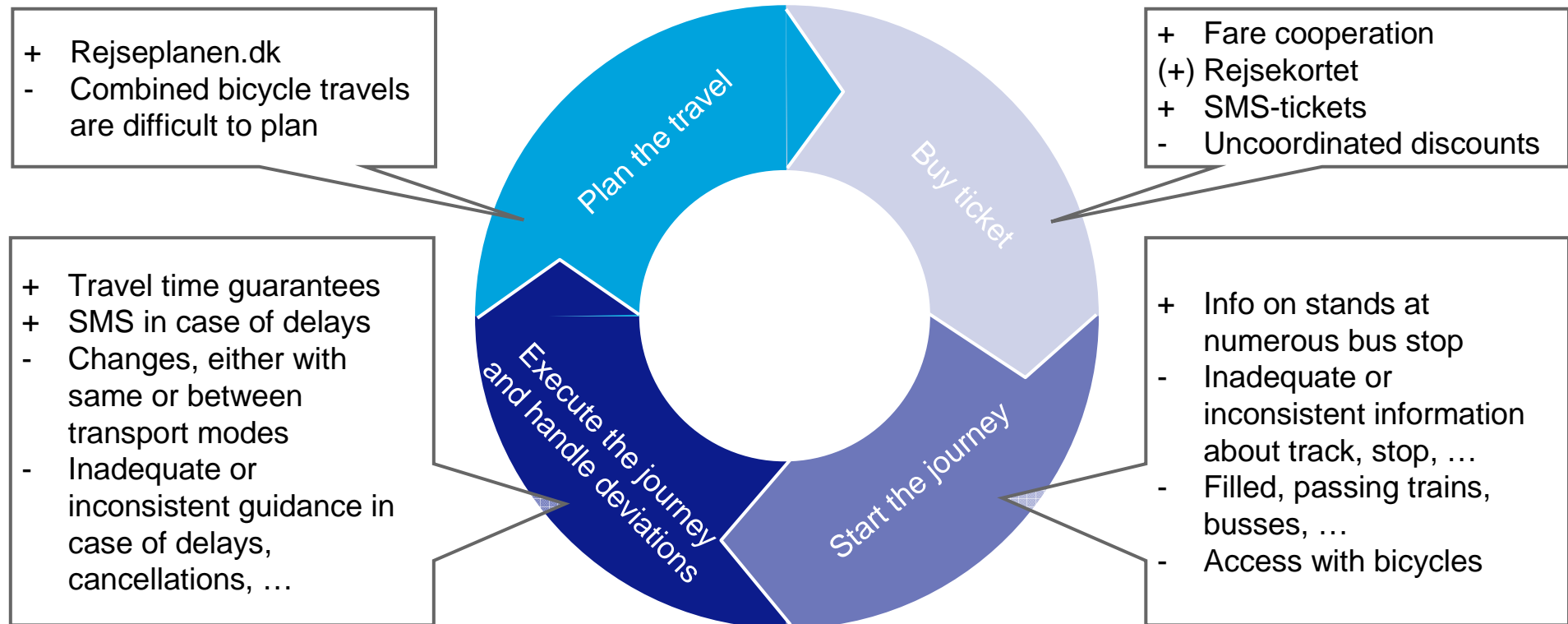   - Theme on "Apps – the future communication platform".

Transport habits are very much about emotions … and the passengers have many different considerations in their choice of transport mode

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So passengers expect a change from mass transport to personalised transport

PAST	PRESENT	FUTURE
"Transport on time"	*"Valuable travel time"*	*"Personal Transport"*
Product – Transport from A to B	**A good travel – The product experience**	**The traveller's needs in focus**

PAST

Keeping the schedule

Basic service level met

Safely from A to B.

PRESENT

Keeping the schedule

Basic service level met

Safely from A to B

Interconnection across public transport modes

Improved conveniences

From wasted to valuable time.

FUTURE

Keeping the schedule

Basic service level met

Safely from A to B

Interconnection in public transport

Improved conveniences

From wasted to valuable time

The interconnected travel across all transport modes

Focus on the value of the entire travel, from door to door

Personalised transport – each traveller is unique.

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However, it is difficult to ensure the interconnected travel – especially when it has already started

Plan the travel
+ Rejseplanen.dk
- Combined bicycle travels are difficult to plan

Buy ticket
+ Fare cooperation
(+) Rejsekortet
+ SMS-tickets
- Uncoordinated discounts

Execute the journey and handle deviations
+ Travel time guarantees
+ SMS in case of delays
- Changes, either with same or between transport modes
- Inadequate or inconsistent guidance in case of delays, cancellations, …

Start the journey
+ Info on stands at numerous bus stop
- Inadequate or inconsistent information about track, stop, …
- Filled, passing trains, busses, …
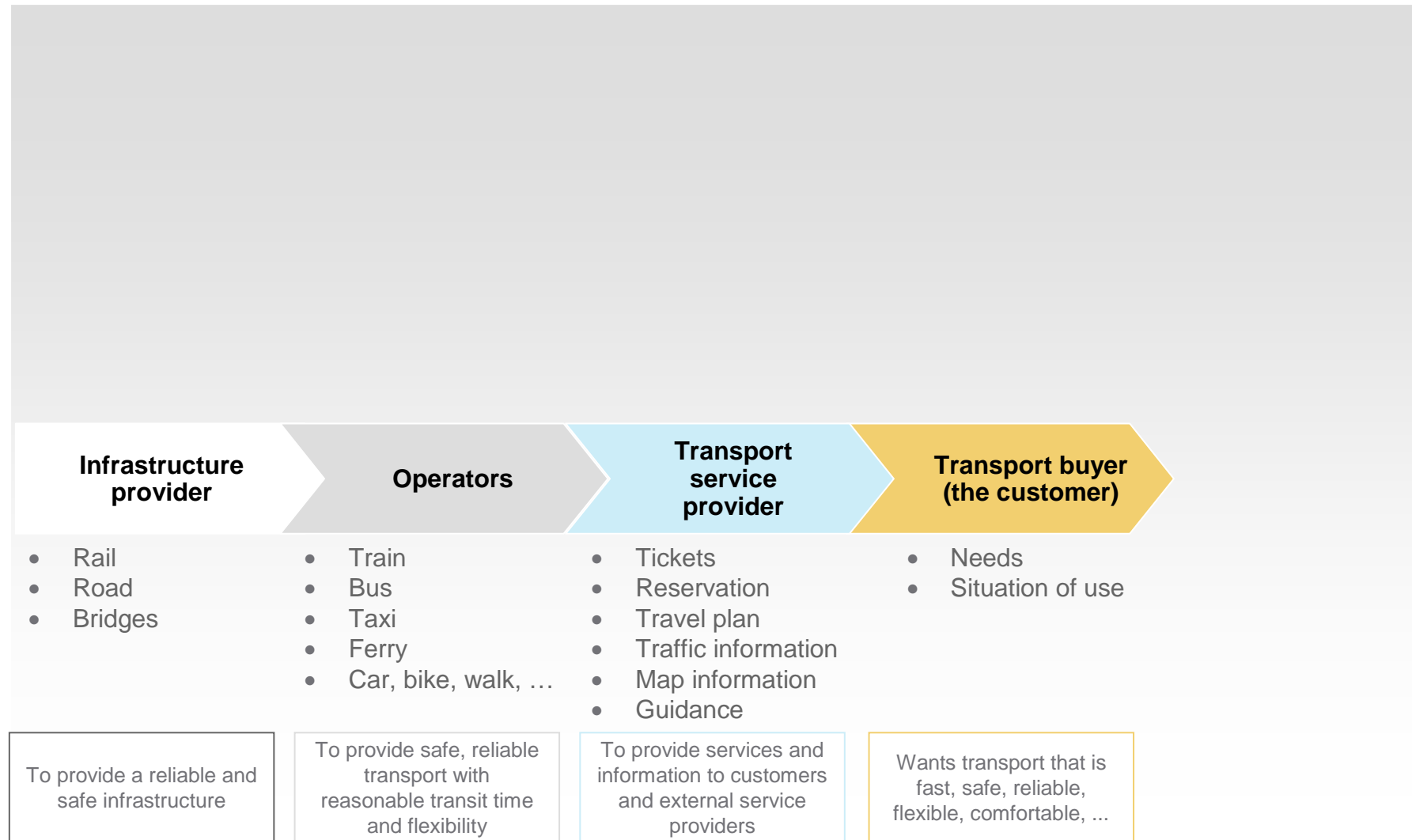- Access with bicycles

"It is important that the customers experience an interconnected offer from public transport – whether it is about traffic information, ticket types or the possibility of flexibly changing between the various modes of transport. The report on public transport states that the operators in a number of cases do not cooperate on eg new tickets or customer service.
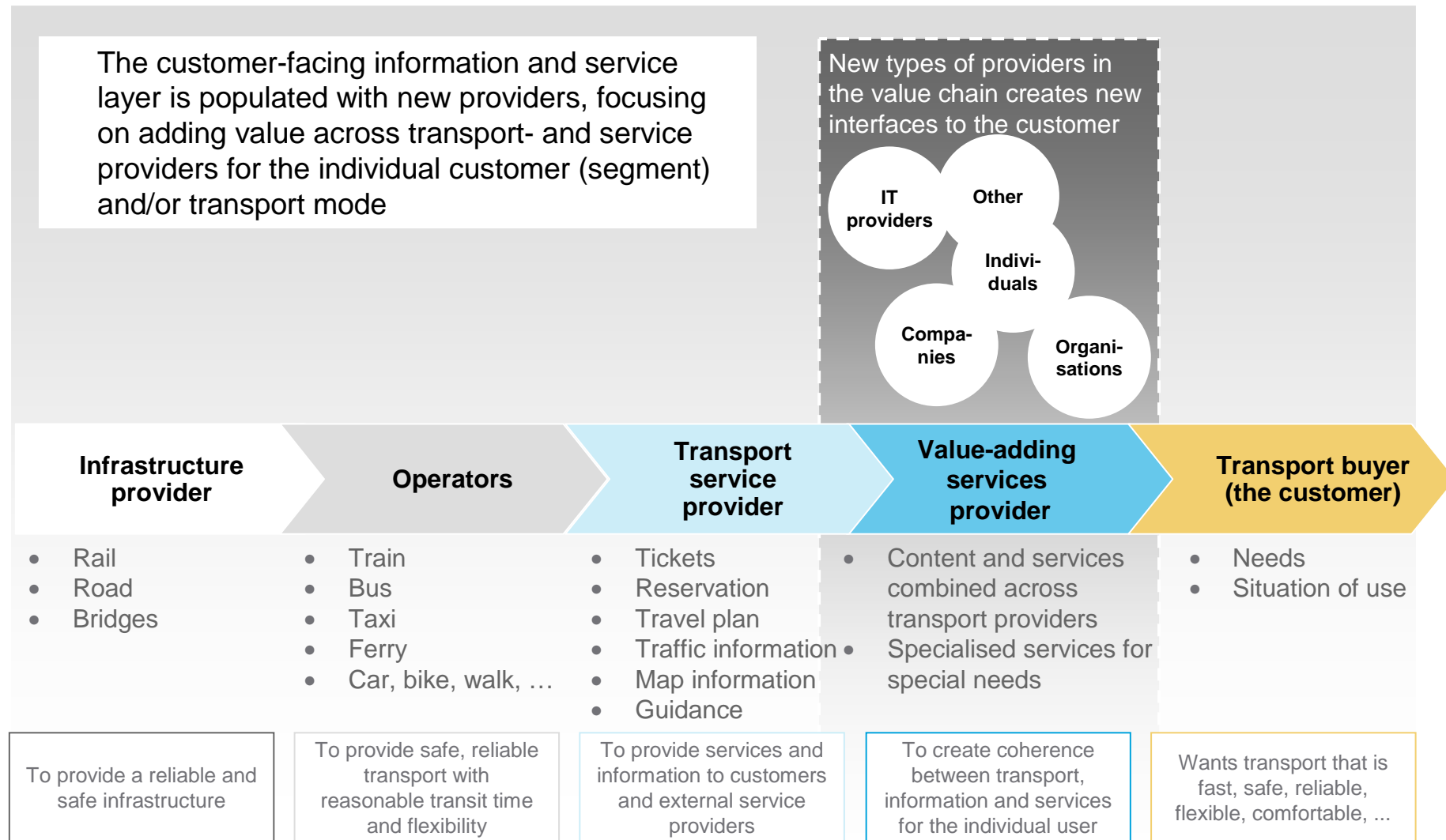
Especially in the capital area this problem is significant due to the many operators."

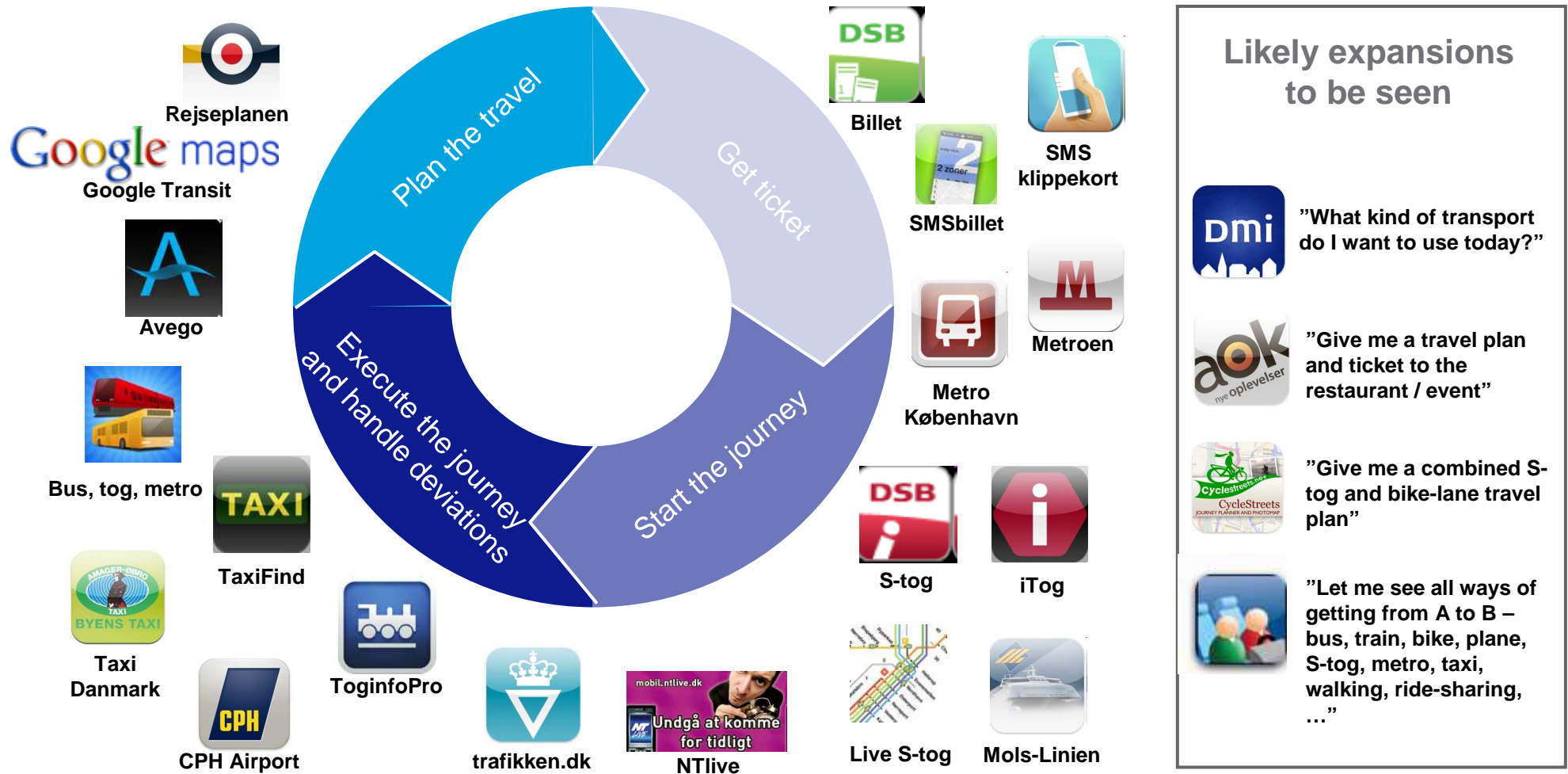Report on public transport, Ministry of Transport, press statement of 28th of April 2010.

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The value chain of passenger transport

Infrastructure provider	Operators	Transport service provider	Transport buyer (the customer)
• Rail • Road • Bridges	• Train • Bus • Taxi • Ferry • Car, bike, walk, …	• Tickets • Reservation • Travel plan • Traffic information • Map information • Guidance	• Needs • Situation of use
To provide a reliable and safe infrastructure	To provide safe, reliable transport with reasonable transit time and flexibility	To provide services and information to customers and external service providers	Wants transport that is fast, safe, reliable, flexible, comfortable, ...

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The value chain of passenger transport is currently being augmented …

The customer-facing information and service layer is populated with new providers, focusing on adding value across transport- and service providers for the individual customer (segment) and/or transport mode

New types of providers in the value chain creates new interfaces to the customer

- IT providers
- Other
- Indivi-duals
- Compa-nies
- Organi-sations

Infrastructure provider	Operators	Transport service provider	Value-adding services provider	Transport buyer (the customer)
• Rail • Road • Bridges	• Train • Bus • Taxi • Ferry • Car, bike, walk, …	• Tickets • Reservation • Travel plan • Traffic information • Map information • Guidance	• Content and services combined across transport providers • Specialised services for special needs	• Needs • Situation of use
To provide a reliable and safe infrastructure	To provide safe, reliable transport with reasonable transit time and flexibility	To provide services and information to customers and external service providers	To create coherence between transport, information and services for the individual user	Wants transport that is fast, safe, reliable, flexible, comfortable, ...

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… with new providers making a range of mobile applications, supplementing those made by the operators

Rejseplanen

Google Transit

Avego

Bus, tog, metro

TaxiFind

Taxi Danmark

ToginfoPro

CPH Airport

trafikken.dk

NTlive

Plan the travel

Get ticket

Start the journey

Execute the journey and handle deviations

Billet

SMSbillet

SMS klippekort

Metro København

Metroen

S-tog

iTog

Live S-tog

Mols-Linien

Likely expansions to be seen

Dmi — "What kind of transport do I want to use today?"

aok nye oplevelser — "Give me a travel plan and ticket to the restaurant / event"

CycleStreets JOURNEY PLANNER AND PHOTOMAP — "Give me a combined S-tog and bike-lane travel plan"

"Let me see all ways of getting from A to B – bus, train, bike, plane, S-tog, metro, taxi, walking, ride-sharing, …"

Note that many of the apps can be used more places in the wheel.
For example, Rejseplanen can be used when re-planning a journey due to irregularities

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Engaging the users / customers is generally a powerful way of fast response

Consequently, PA suggests to actively engage the new providers through adopting Open Innovation policies

What is Open Innovation? The opposite – closed innovation – assumes that the company controls the process of idea development, and that it takes place within the company walls.

Open Innovation, on the other hand, involves users/customers, suppliers, …, and the process is not necessarily controllable.

Examples of Open Innovation:

- LEGO: Mindstorms

- Danske Bank: Mobile banking

- Peugeot: Design competition.

Within IT, Open Innovation has been known for many years (eg Linux) – however, the difference has been that it has not been on commercial terms.

Therefore, business models for Open Innovation must ensure that those who get the ideas also benefits.

”… the most innovative companies are recognizing that

- The best solutions aren't necessarily purely home grown

- Today's information age makes it easier to share insight and learn from others

- A culture of internal openness and sharing is key

- Speed is of the essence”.

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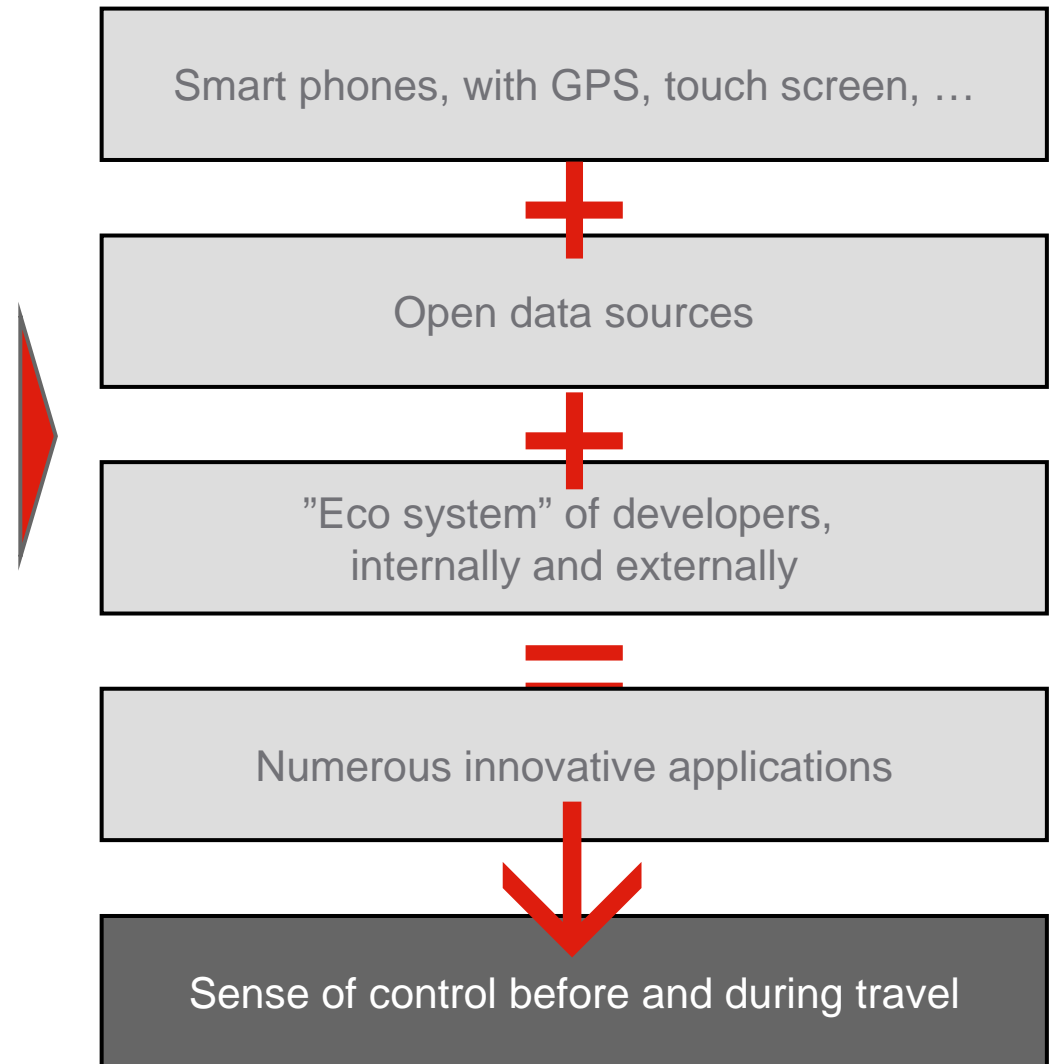# Open Innovation will increase customer satisfaction through improved personalised traveller services

In general, mobile applications increase the traveller's experience of being in control, especially during the travel, where there is no easy access to a PC.

Furthermore, Open Innovation permits

- Fast development for new mobile platforms

  - Eg: Google Android telephones.

- Possibility of meeting specialised requirements

  - Eg: Planning and managing group transport, eg when school classes are on excursions

- Possibility of meeting requirements that go across modes of transport

  - Eg: Application for booking of combined car share + train journey

- Possibility of meeting requirements out of the transport sector

  - Eg: Application that coordinates weather forecast, traffic information and actual S-train status, and on this basis recommends mode of transport

  - Eg: Integrated purchase of transport when buying tickets to concerts, football matches, …

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Many organisations have therefore recently started sharing their data

- In June 2010, the Department for Transport (UK) released numerous data

- In August 2010, DSB opened for access to data via DSBlabs (dsblabs.dk)

- In October 2010, Rejseplanen extended the access to data via labs.rejseplanen.dk, arranged an competition and started to collect ideas from users – truly Open Innovation!

- In November 2010, the National IT and Telecom Agency held a "Data Camp" at the IT University, where developers used Copenhagen Municipality's data on P-spaces and made the app 'P-space'.
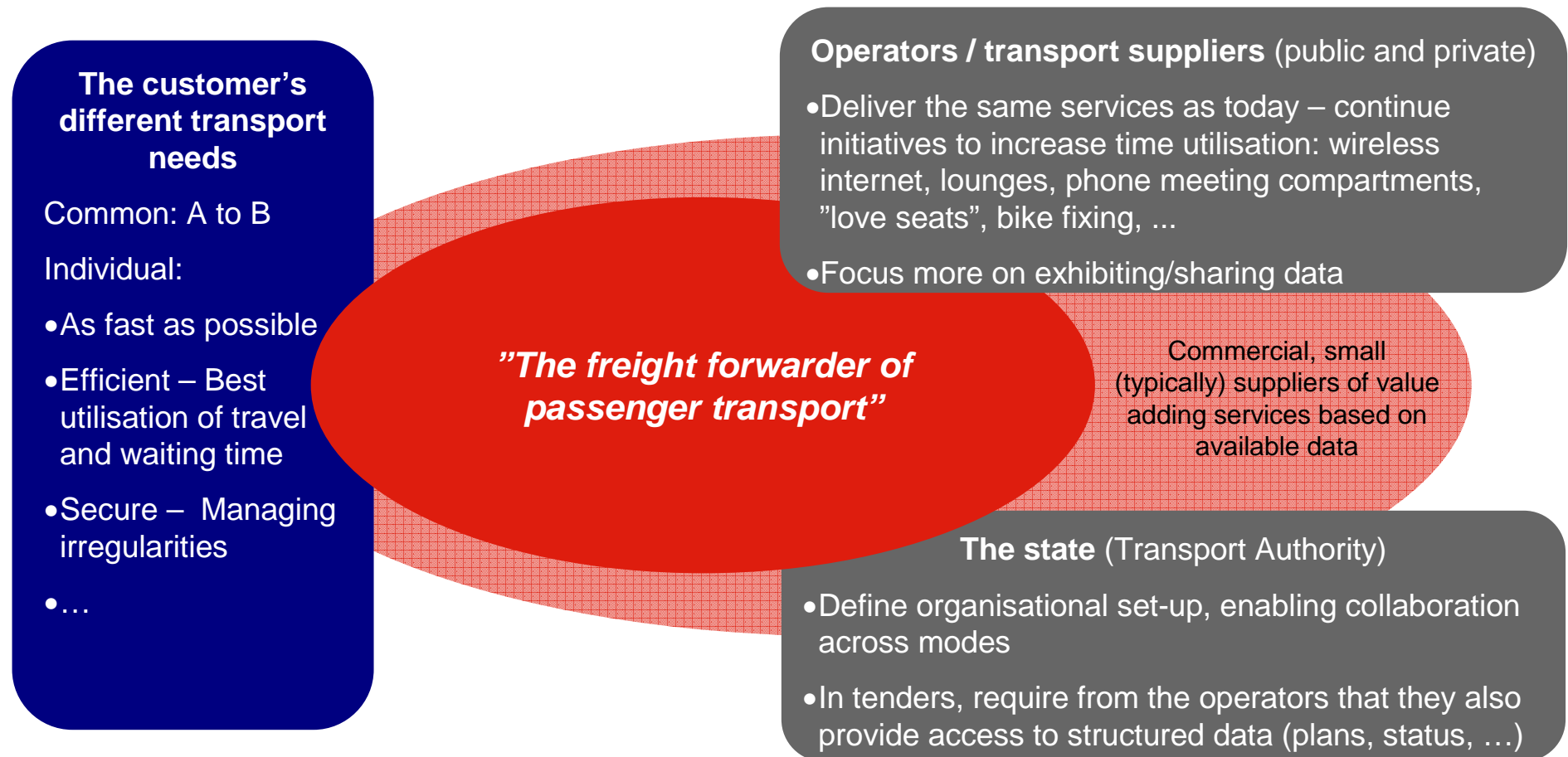
Smart phones, with GPS, touch screen, …

+

Open data sources

+

"Eco system" of developers, internally and externally

=

Numerous innovative applications

Sense of control before and during travel

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So, how to get started?
Our advice to "setting your data free":

- Define what data
  - Seek to make as much data available as possible. Just because you can't think of how it can be used, doesn't mean someone else won't be able to think of a great application
  - Don't make available personal, classified, commercially sensitive or third party data
  - Be aware of possible subsidy issues, if going into competition with private data providers
- Publish the data
  - Make the data available in a consistent, reusable, machine-readable form using open standards and following the recommendations of relevant public bodies (in Denmark, IT- & Telestyrelsen)
  - Do not worry too much about data formats – leave it to the data consumers to make the necessary re-formatting
  - Make the data easy to find (and announce them on digitaliser.dk) - don't bury it away on your website
  - Set in place a simple and clear license agreement that enables free reuse (including commercial re-use). Spell out what the expectations are from both sides
- Collaborate to reap the benefits
  - Embrace the developer community – engage with them, listen to them and try to help them
  - Set in place mechanisms to capture and respond to any data quality/inaccuracies
  - Remember that data provision is two-way. Consider how the developer community could provide you with crowd-sourced data and/or feed-back.

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Ultimately, this could enable a new business model, delivering the integrated, personalised and informed transport of the future

The customer's different transport needs

Common: A to B

Individual:

- As fast as possible
- Efficient – Best utilisation of travel and waiting time
- Secure – Managing irregularities
- …

"The freight forwarder of passenger transport"

Operators / transport suppliers (public and private)

- Deliver the same services as today – continue initiatives to increase time utilisation: wireless internet, lounges, phone meeting compartments, "love seats", bike fixing, ...
- Focus more on exhibiting/sharing data

Commercial, small (typically) suppliers of value adding services based on available data

The state (Transport Authority)

- Define organisational set-up, enabling collaboration across modes
- In tenders, require from the operators that they also provide access to structured data (plans, status, …)

The customer does not have to worry "am I going to make it on time", "what do I do now?", "whereto?" ...
The "mental burden" is transferred to the service supplier (… for a fixed fee)

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And remember: The challenge is a moving target …

Hosted by Google [Search News] [Back to Google News]

Google brain drives cars in quest for next auto revolution

By Charlotte Raab (AFP) – Oct 11, 2010

NEW YORK — An electronic brain devised by US Internet titan Google has driven cars nearly a quarter of a million kilometres in California, on a quest for the next great revolution in the auto industry.

News of the experiment emerged from Google this weekend, revealing what the New York Times describes as an attempt to use artifical intelligence to revolutionize the automobile.

But the software, linked to GPS satellite navigation technology, was nearly fooled by a humble cyclist who jumped a red light.

The Google research program is using artificial intelligence to

prevent traffic accidents, free up people?s time and reduce carbon emissions by fundamentally

office and on to Hollywood Boulevard. They?ve driven down Lombard Street, crossed the Golden Gate bridge, navigated the Pacific Coast Highway, and even made it all the way around Lake Tahoe," he added.

"All in all, our self-driving cars have logged over 140,000 miles (225,302 km). We think this is a first in robotics research."

case they are needed, Thrun's posting said.

Google (and others) develops driverless (electric) car

So now, time will be your own in the car as well

And possibly, transport happens in a CO2-neutral electric car

Therefore, it takes even more to compete with the car as the mode of transport regarded as giving most control …

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