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Managing dwell times – a key challenge for the D2D target

Cook, A.J. and Tanner, G.

Conference Keynote presented at the *SESAR Innovation Days 2017 - DATASET2050 workshop,* Belgrade, Serbia, 27 November 2017 Innaxis.

Managing dwell times
– a key challenge for the D2D target

Andrew Cook, Graham Tanner

Overview
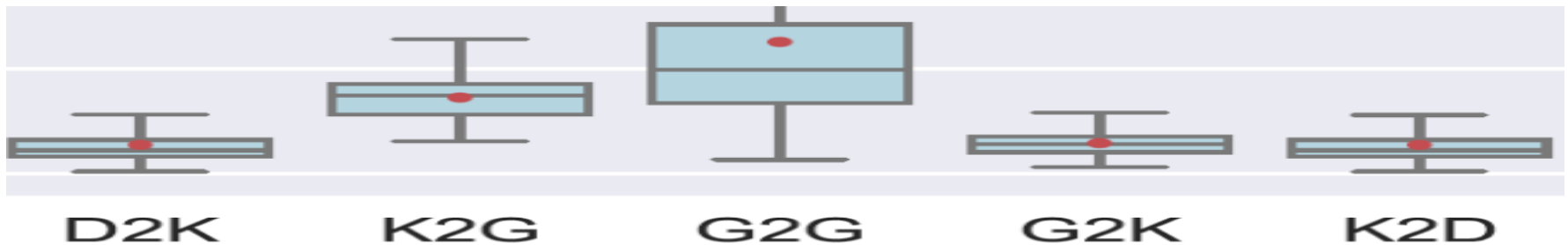
>> *Challenge in context*

> **> Definition, data, issue**

>> *Exploring dwell times*

> **> Behaviours, trends, relationships**

>> *Future solutions*

> **> Airport business model**

> **> Airline business model**

>> *Issues for debate*

Challenge in context
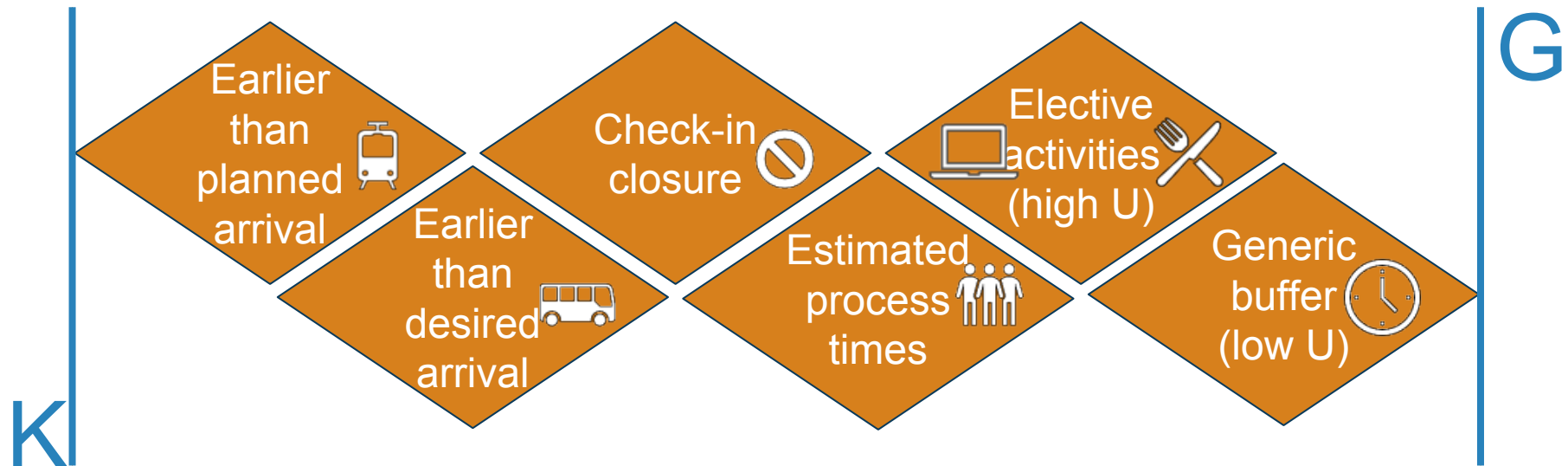
Challenge in context
Dwell time definition

>> *Dwell time = K2G*

> **some variation in metrics used by different airports**

>> *Different components*

> **complex definitions, overlaps, mutual dependencies**

> **typical minima across AOs, LHR–EU: kerb: -2H00 (rec.), check-in: -0H45, gate: -0H20**

> **several analogies with airline buffer and turnaround times**

Challenge in context
Data sources and wider model

>> *Dwell time data source (for following example slides)*

> *large European hub*

> *appx. 200k dwell time records in survey*

> *mid-2012 to mid-2017*

> *cleaned: outliers etc.*

> *filtered: non-connecting, intra-European*
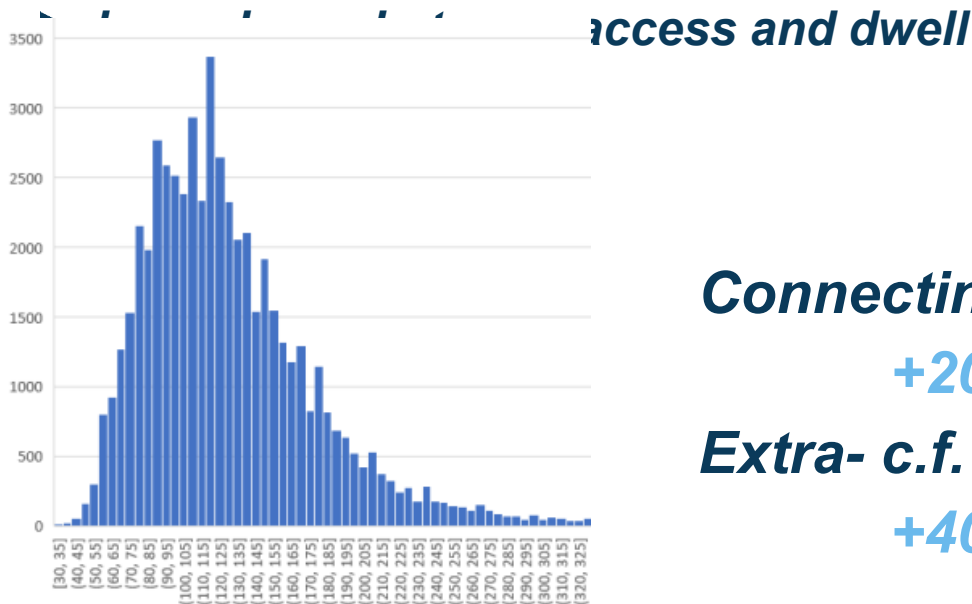

>> *Data (limited) from other large hubs to support validation*

>> *Wider model results and context in final presentation*

Challenge in context
The issue

>> *Average dwell time:*   *2H15*

>> *Average access time:*   *1H20*

>> *Simplistic sum for <u>non-G2G</u>:*   *1H20 + 2H15 + (0H40) +*
(1H20) = *5H35*

    > *several caveats*

    access and dwell

Connecting c.f. NC pax:

    +20%

Extra- c.f. intra-European:

    +40%

Exploring dwell times

Generic no-show rates: **3-6%**
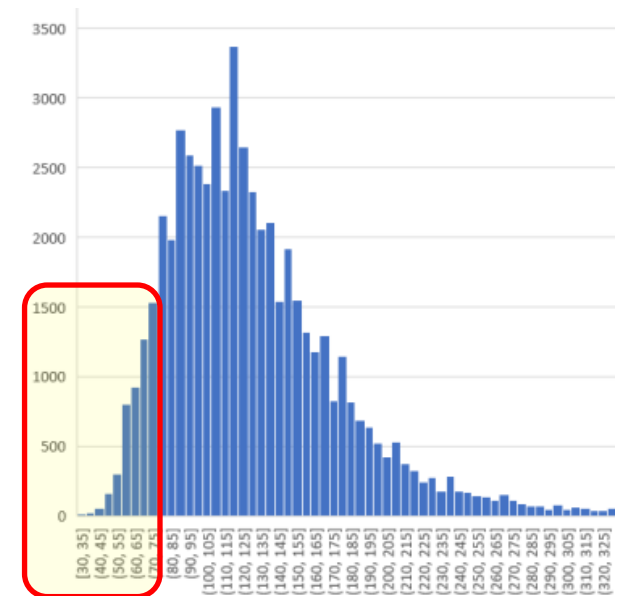
Rebooking straw-polls:

Traditional carrier, <u>return</u> **€170-210**
fares **€370-<u>760</u>**

Missed flight, rebook next **up to €100**

LCC 'rescue' fees **est. €100**

GatwickConnects 'protected connection'

Average: **2H15**
Median: **2H00**
Lower 4.5 percentile: **1H10**

Exit expected utility theory ... enter prospect theory

Exploring dwell times
Trends

Mean dwell time (mins)
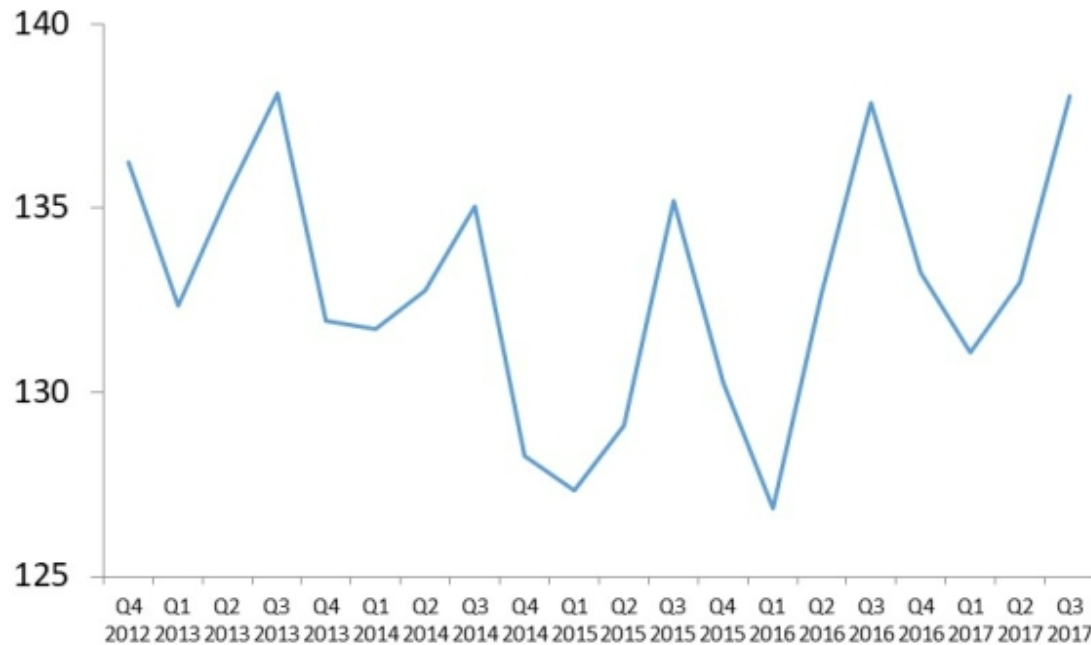
Quarter

Exploring dwell times
Trends

Dwell time variance (mins)

Quarter

Exploring dwell times
Trends

Extra- c.f. intra-European:

+30%
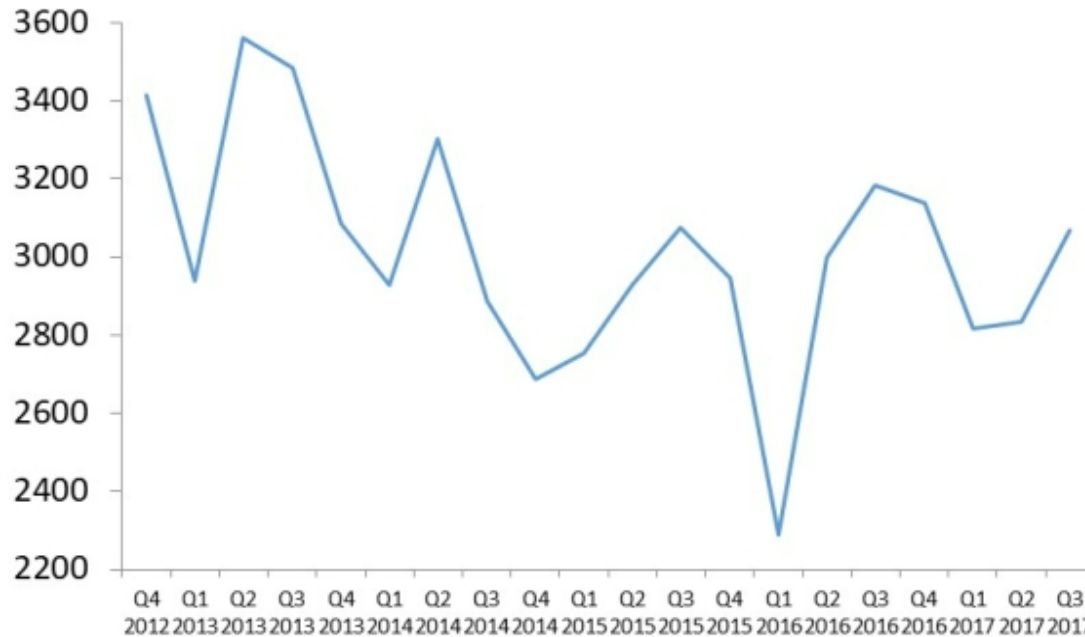
Mean
access
time (mins)
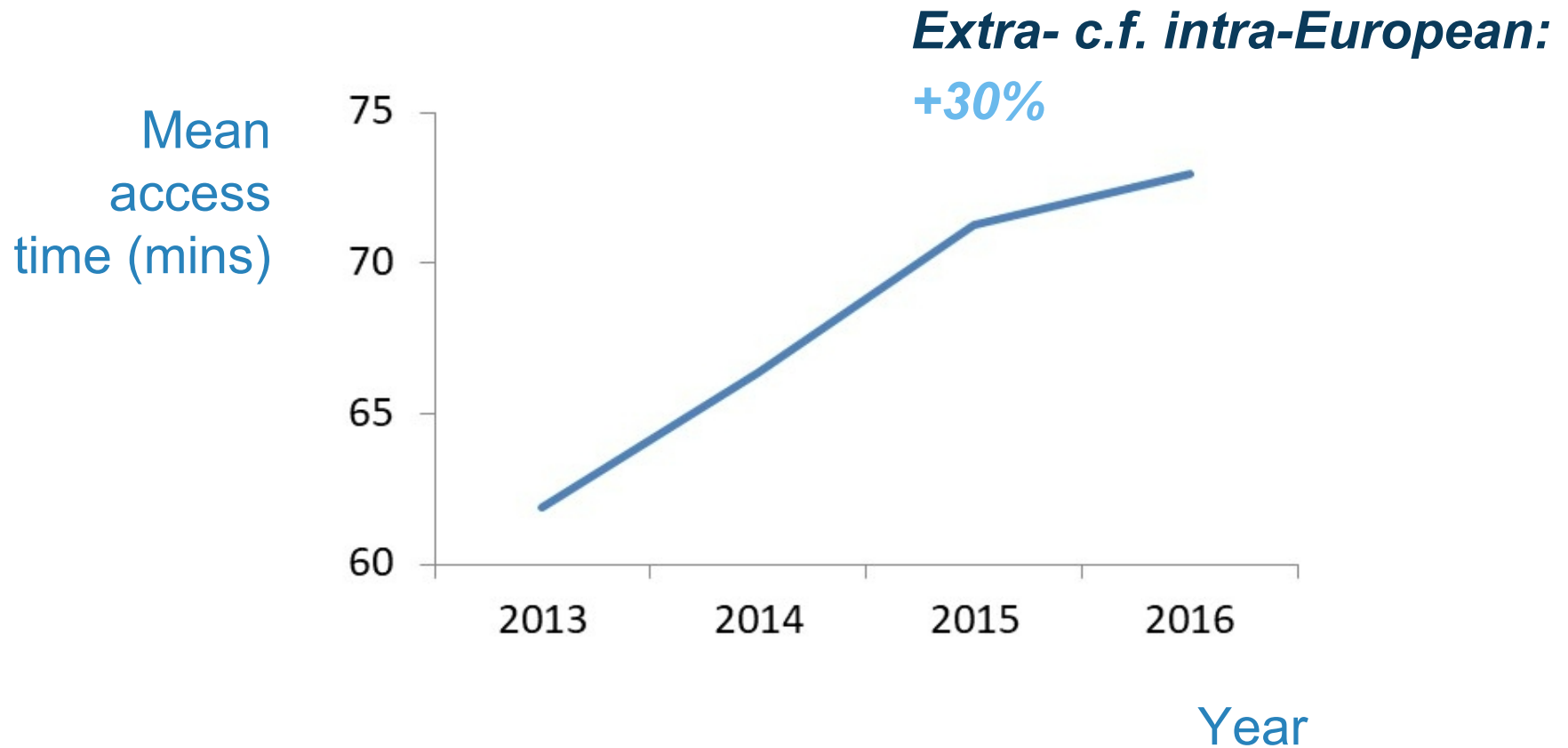
Year

Exploring dwell times
Trends

Options used (multiple)

ZRH

Year

Exploring dwell times
Relationships

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2H15, 15 €/H

Mean dwell
time (mins)

60 ?

Spend rate
(€/H)
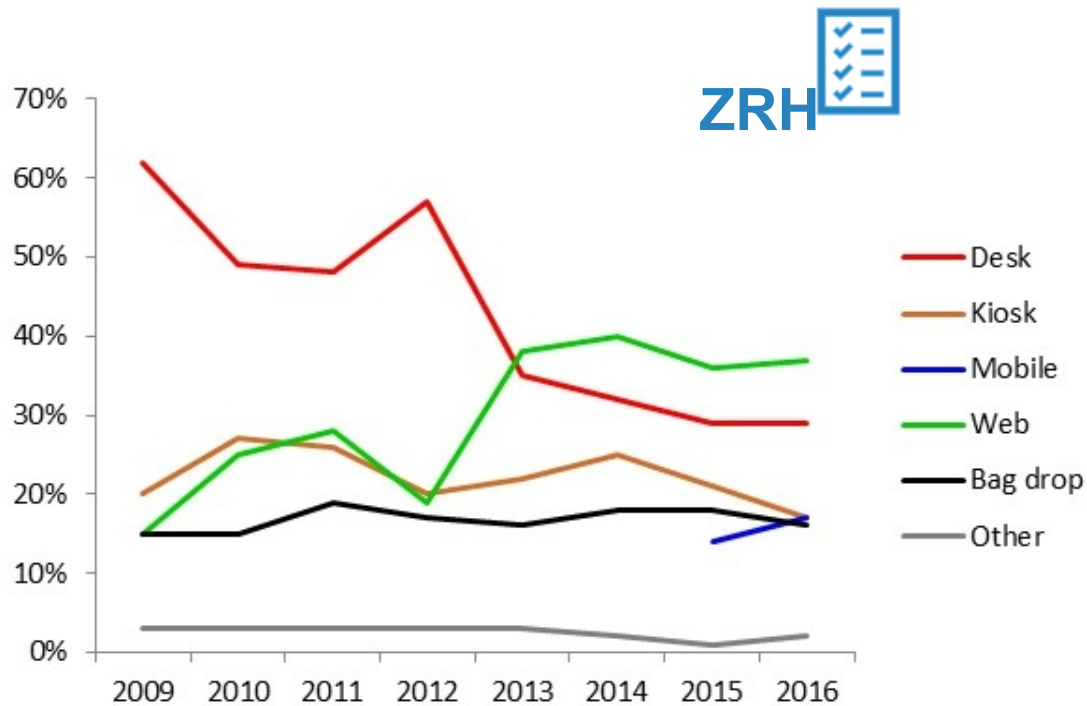
Mean dwell time (mins) vs Age

Exploring dwell times
Relationships

Mean dwell time (mins)

€

Trips/year

Exploring dwell times
Relationships
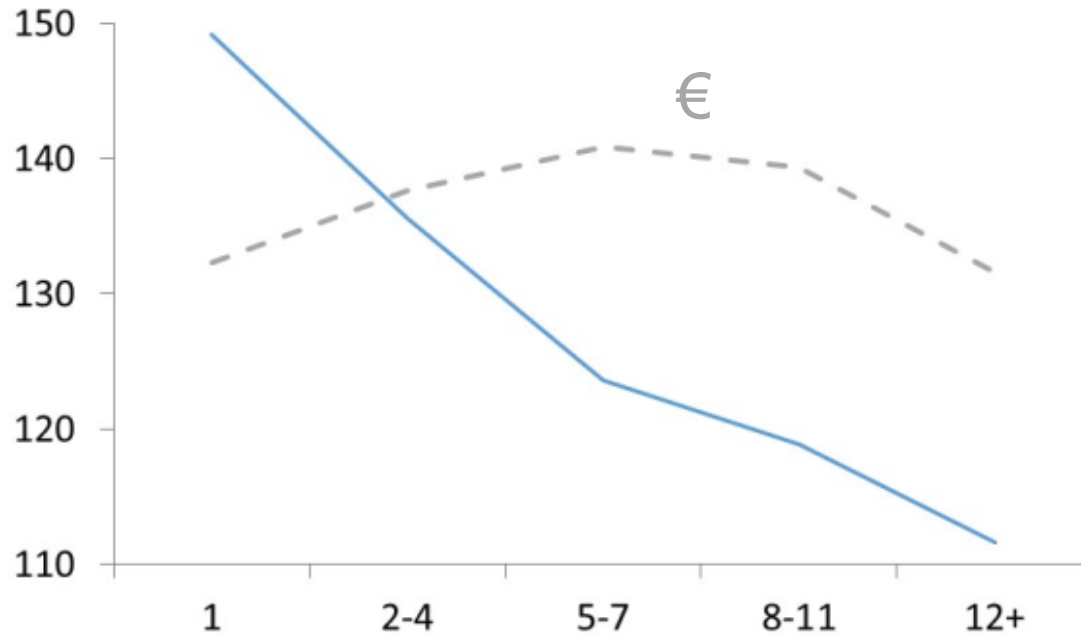
>> *The story so far*

> *loss aversion*

> *no downward dwell trend*

> *access times not rescuing D2D target ...*

> *... but (K2G) technologies are poised*

>> *Airport business model: effects on spe*

> ageing population: compensating / mixed ef

> decreased frequencies: complex / mixed

> decreased dwell times: downward press

Future solutions

Future solutions
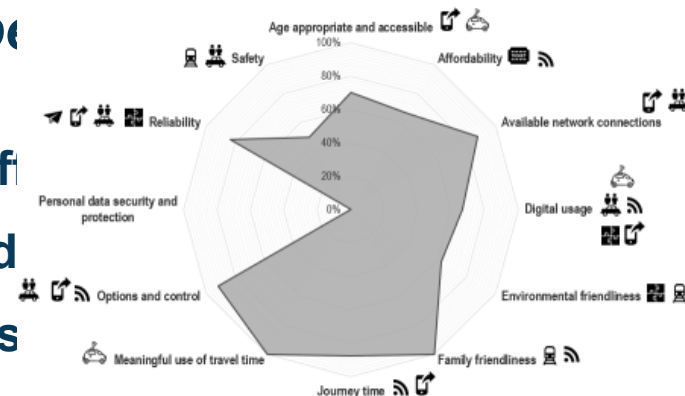## Airport business model

>> *Airport preparedness and development*

>> *Example: e-commerce implementation, Frap*

>> *'Omni-channel' functionalities*

> *order gifts, e.g. en-route to airport: many concessions, any terminal*

> *'Reserve & Collect', or delivered to gate (real-time info); also currency*

> *delayed flight, directed beacon technology*

> *invitation to restaurant with reserved table*

> *buy from concessions, delivered to home*

> *order groceries from in-bound flight, collect after recla*

>> *Largest shopping complex in Germany*

>> *Concessions pay revenue-based rents*

>> *Aligned with general on-line retail fulfilment trends*

>> Airline business model

> *maximise yields, maximise profits*

> *increasing load factors (c. 85%), decreasing flexibility (resilience)*

> *economic incentive?*

>> Integrated / regulatory solutions

> *'Rail&Fly' such as AccessRail* (AMS to <u>QYG</u> in GDS)

> *CIV guarantees* (Convention Internationale pour le transport des Voyageurs)

> *Nederlandse Spoorwegen – commercial insurance* (free market)

> *'Social capacity' reserves* (controlled market, with echoes of rescue fees)

> *c.360-day inventory cycle – cost implications, yield management*

Issues for debate

Issues for debate

>> *No silver bullet*

> cost of reducing dwell times?

> cost of doing nothing?

>> *Airport model*

> how close to turn-up-and-go could wor

>> *Airline model*

> economic incentive for increased flexibility?

> sustainable capacity–cost equilibrium under regulatory approach?

>> *Alternative dwell time solutions*

> full intermodal mobility management – (cost of) delay trade-offs?

> [insert your idea here this afternoon!]

Thank you