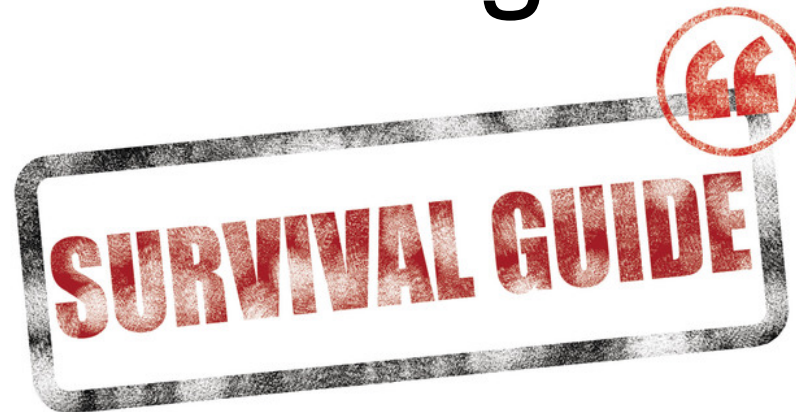


# Smart Ticketing Schemes



Buyer perspective

Presented by

Søren Sørensen

Independent Smart Ticketing Consultant

# About



## MISSION

Reduce the investment and risks inherent to creating and implementing the next generation smart ticketing system while simplifying the user experience further.

SFMCON is independent of solution providers and choice of technology

## Søren Sørensen

Msc.E.E. System Construction  
Owner and Founder  
SFMCON ApS, Denmark



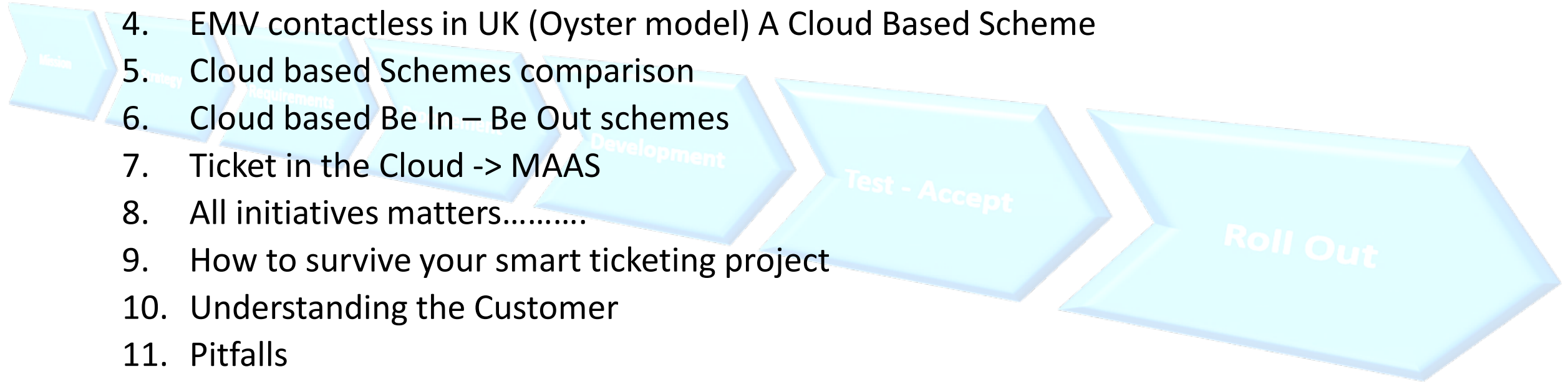
8 years in Smart Ticketing Program Management:

Program Manager DBS Rejsekort and Midttrafik Rejsekort

Managed large IT projects since 84

# Headlines

1. Rejsekort (DK) a Card Centric Scheme
2. Evolution of Ticketing methods
3. Card Centric versus Cloud based
4. EMV contactless in UK (Oyster model) A Cloud Based Scheme
5. Cloud based Schemes comparison
6. Cloud based Be In – Be Out schemes
7. Ticket in the Cloud -> MAAS
8. All initiatives matters.....
9. How to survive your smart ticketing project
10. Understanding the Customer
11. Pitfalls
12. Project crisis: signs, analysis and recovery
13. The Future trends and disruption



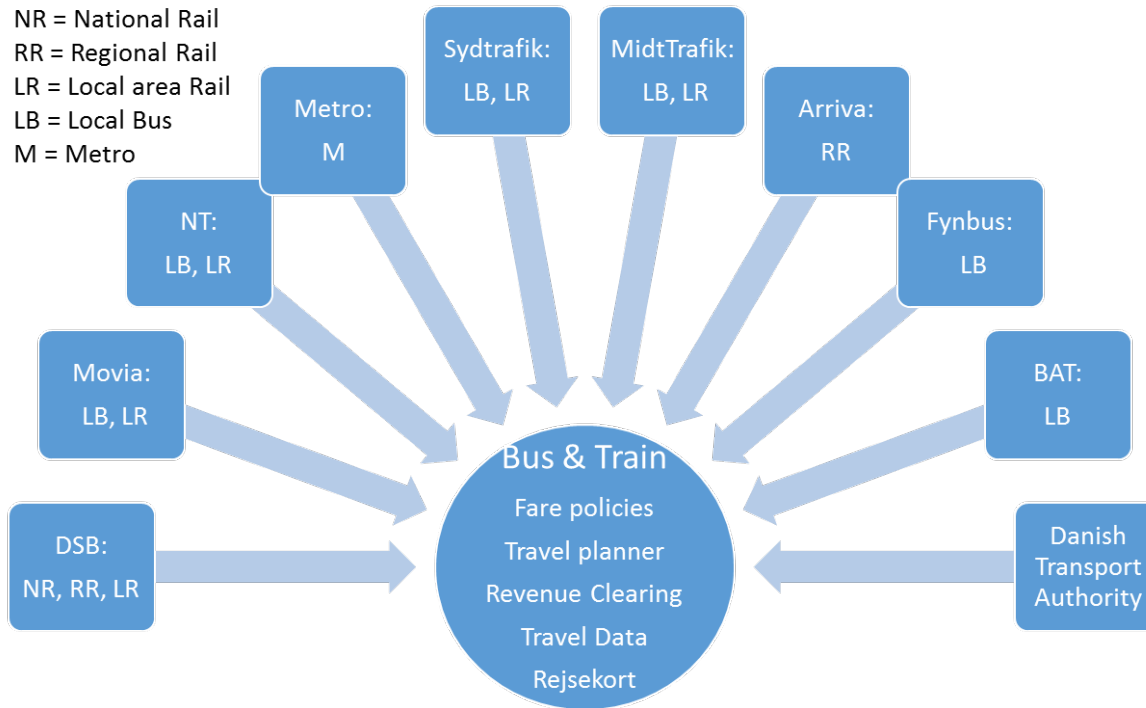
# Rejsekort (DK) a Card Centric Scheme

Rejsekort card centric (Mifare)

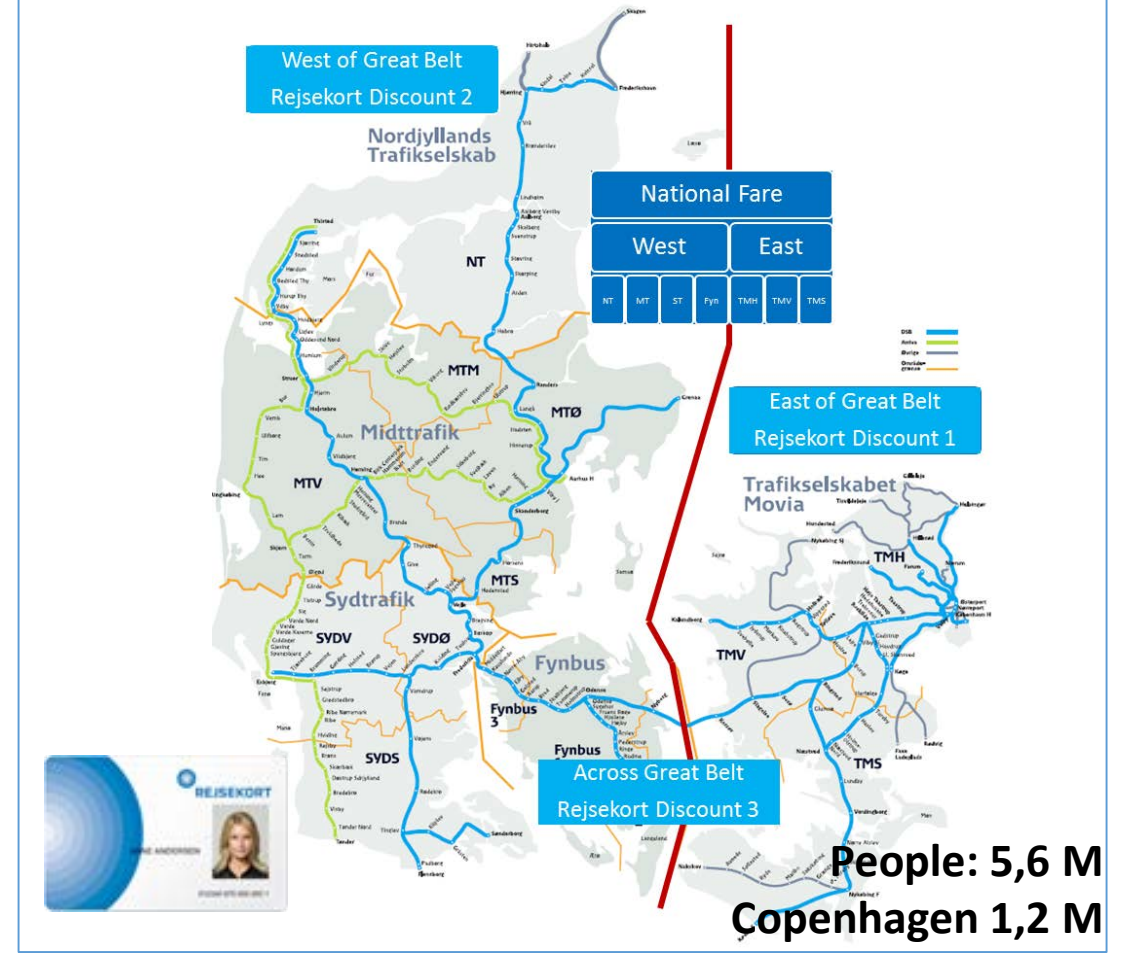
Nationwide multimodal CI-CI-CU

The Danish Public transport ECO system

NR = National Rail  
RR = Regional Rail  
LR = Local area Rail  
LB = Local Bus  
M = Metro



Denmark Tariff Areas



# Rejsekort statistics 2016

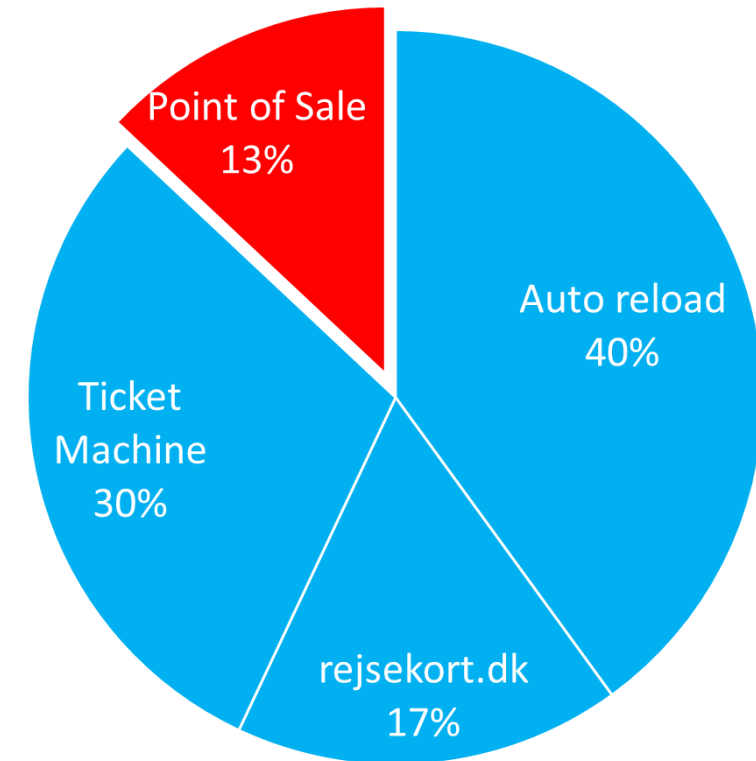
**2+** million Rejsekort issued

**98,5%** correct check out

**50+%** of population over 12 years in Copenhagen has used Rejsekort within past 12 weeks.

**69%** in survey 2015 said that Rejsekort had made it easier or much easier to use public transport

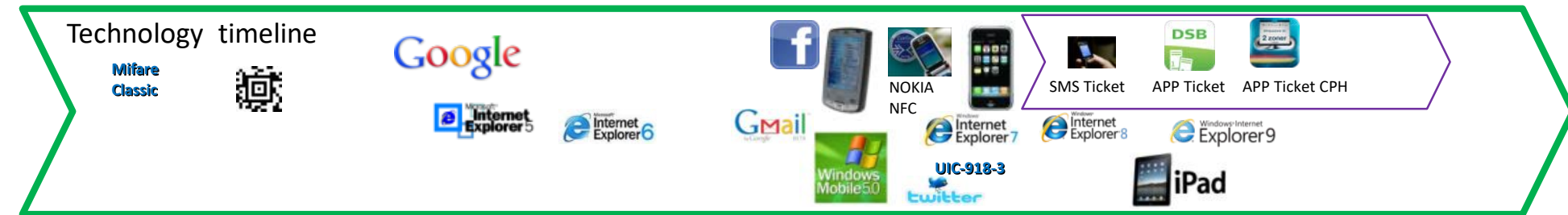
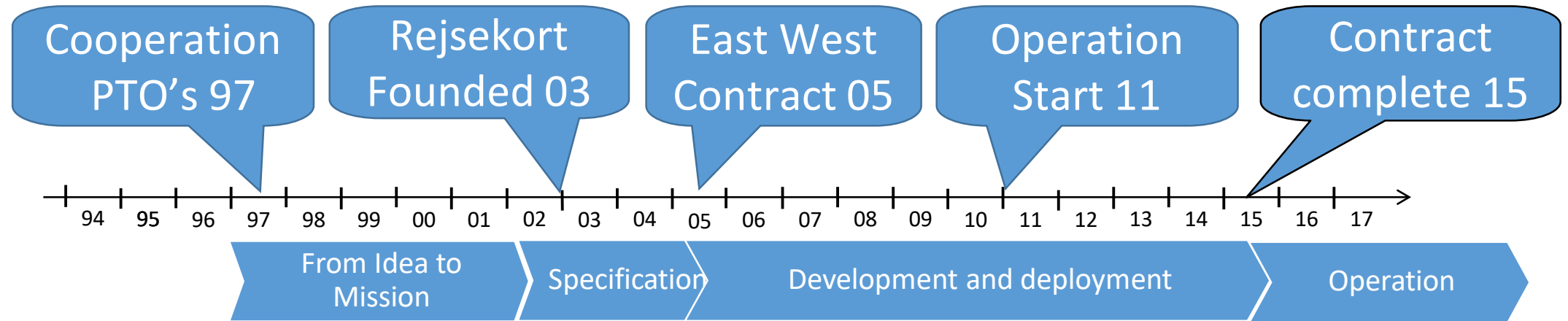
87% reload self-service



Source: Eurotransport Magazine, Issue 5, 2016: page 38 - 40

# Timeline for rejsekort

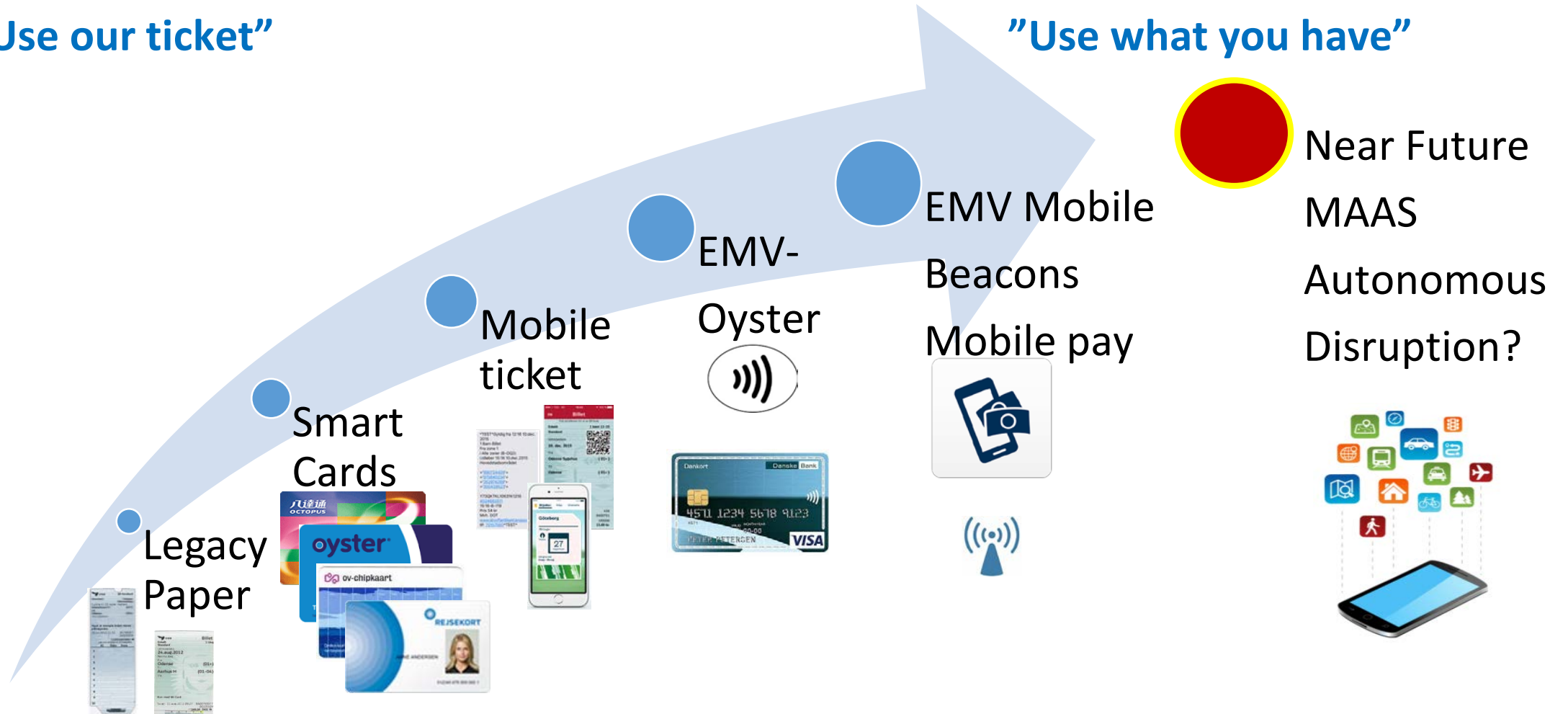
Source: Eurotransport Magazine, Issue 5, 2016: page 38 - 40



# Evolution of Ticketing methods

Operator oriented :  
"Use our ticket"

Customer oriented:  
"Use what you have"



# Card Centric versus Cloud based

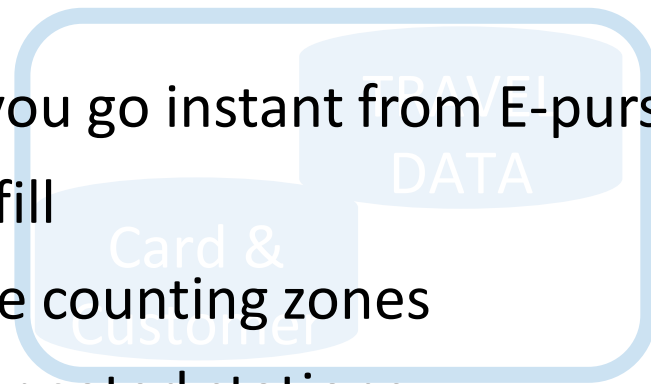
## Card Centric

### Pro

- + Pay as you go instant from E-purse
- + Auto refill
- + No more counting zones
- + Good for gated stations

### Con

- Add product = Card to reader
- Add E-money = Card to reader
- PTA mandated physical ticket format
- Subject to hacking



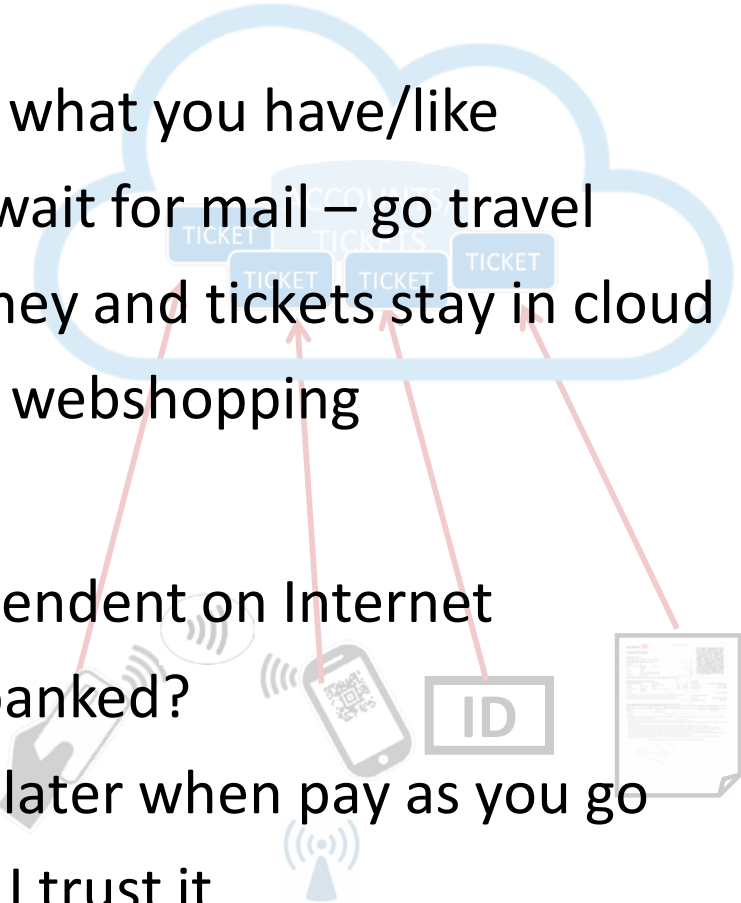
## Cloud Based

### Pro

- + Use what you have/like
- + No wait for mail – go travel
- + Money and tickets stay in cloud
- + Like webshopping

### Con

- Dependent on Internet
- Unbanked?
- Pay later when pay as you go
- Can I trust it

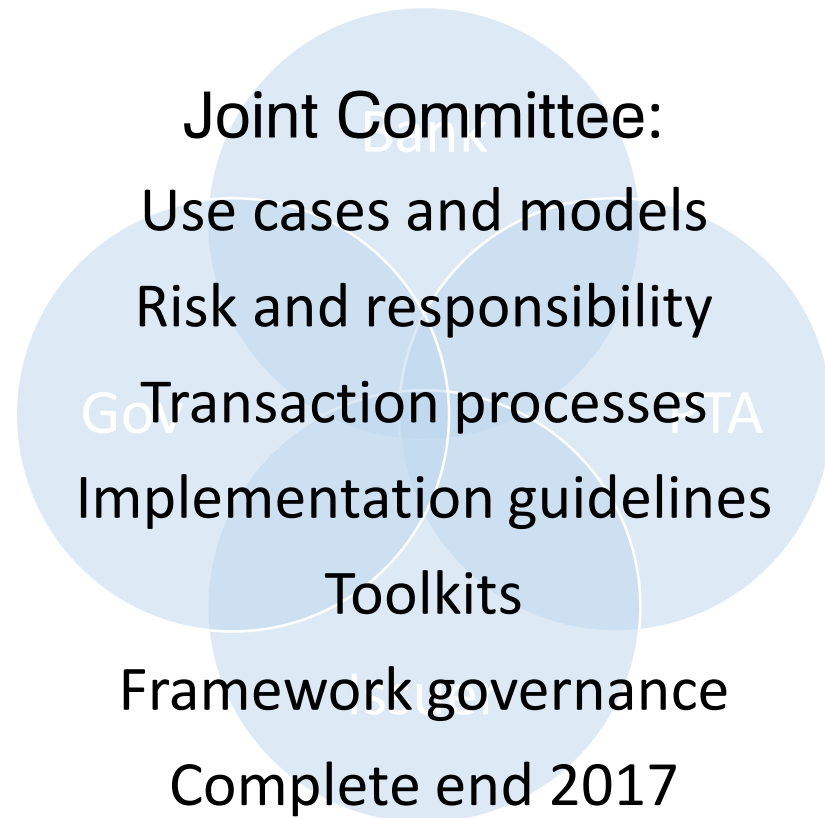


# EMV contactless in UK (Oyster model) A Cloud Based Scheme

Source: *The UK Cards Association Contactless Transit Project:*

[http://pseconsulting.com/wp-content/uploads/2015/01/mac15\\_pse\\_7\\_uk\\_contactless\\_transit\\_project\\_BKS\\_uk\\_cards.pdf](http://pseconsulting.com/wp-content/uploads/2015/01/mac15_pse_7_uk_contactless_transit_project_BKS_uk_cards.pdf)

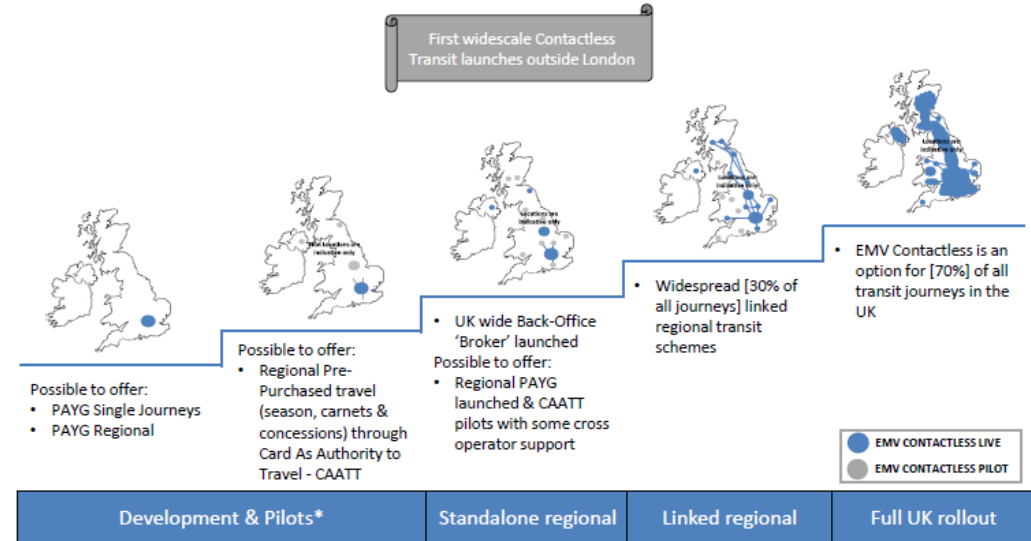
## Complex Governance



## Roll out outside London

### Draft Roadmap

2016 2017 2018 2019 2020 2021 2022 2023 2024 2025



\* Outside of TfL

# Cloud based Schemes

## EMV Credit Card

### Pro

- No scheme dependent card
- Open gates at walking speed
- Pay as you go
- Ticket carrier

### Con

- High security requirements
- Many actors
- Costly infrastructure

## App on smart phone

### Pro

- Ticket machine in your pocket
- Familiar Internet shopping model
- Pay as you go
- Simple governance

### Con

- Internet access necessary
- Loss of power
- App has to be started

# Cloud based Be In – Be Out schemes

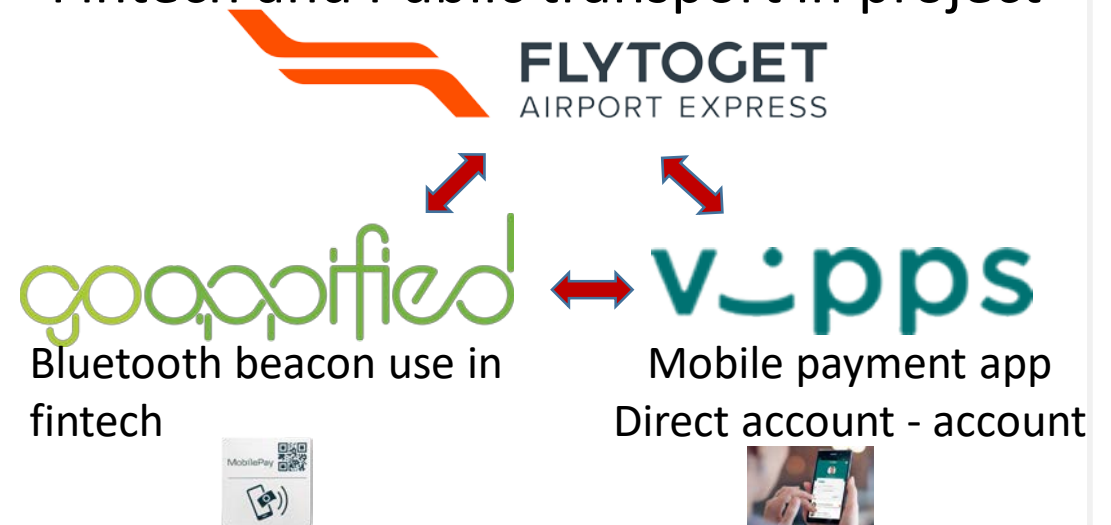
## Concept and sensors

- Ticketing by tracking passenger
  - Be in: When in Public Transport vehicle ticketing meter is on
  - Be Out: When leaving vehicle travel data is send to cloud
- GPS and WIFI tracking
  - Tracking algorithms improving
  - Inspiration from Google maps
- Bluetooth Beacon
  - Low energy active Bluetooth Beacons detects presence of passengers mobile phone when in public transport vehicle

## Flytoget (NO) Blue Tooth beacons

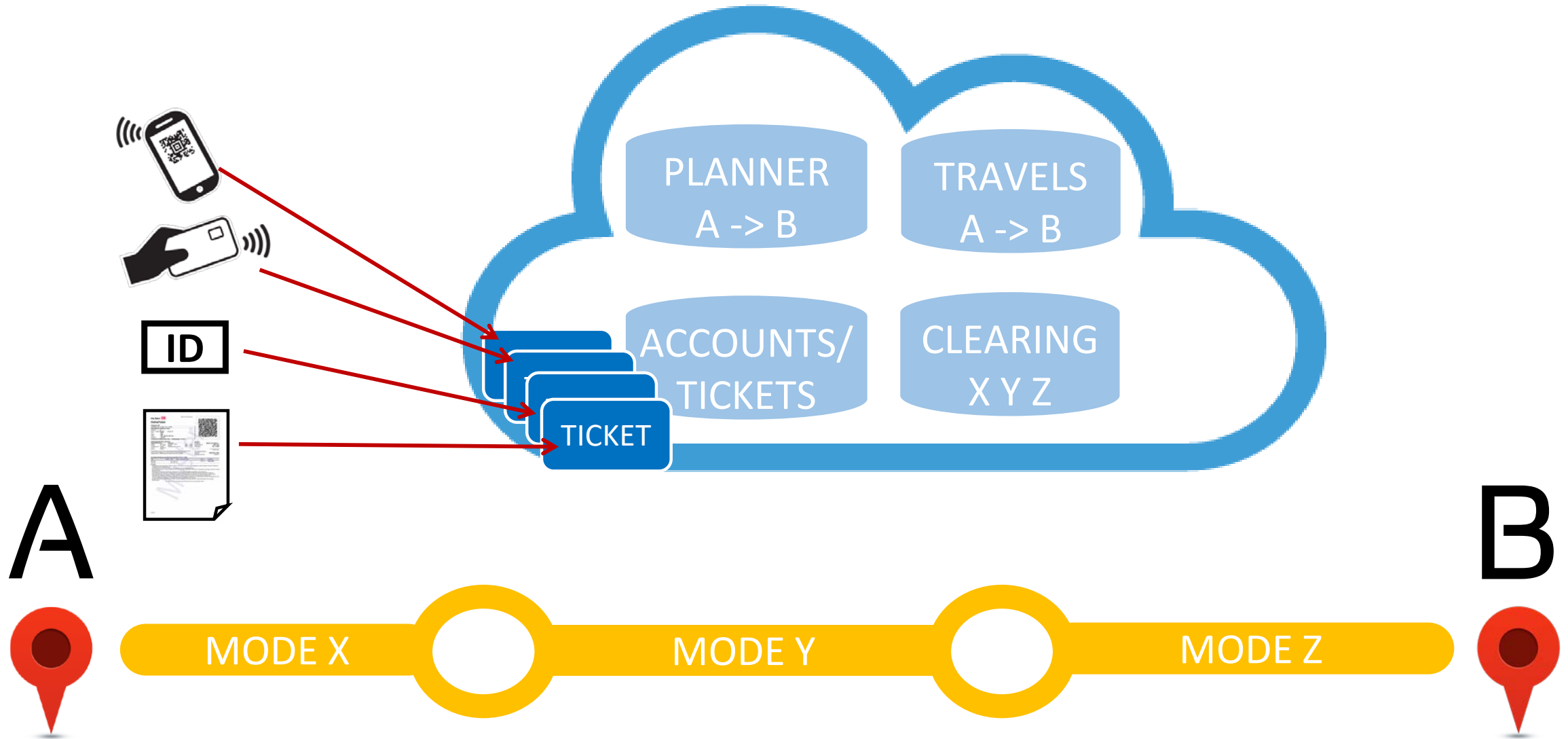
Sources: [goappified.com](http://goappified.com), [vipps.no](http://vipps.no) & [flytoget.no](http://flytoget.no)

- Fintech and Public transport in project



- Use low energy Bluetooth beacon technology to detect use of Flytoget
- Pay by a single swipe in Vipps

# Ticket in the Cloud -> MAAS



# All initiatives matters.....

Mobile data  
roaming free

Accept major international  
payment methods in  
mobile ticketing APPs

USB charge points on  
stations, terminals  
and vehicles

Free  
Wifi!

Promote Airport –  
destination transit  
options and purchase at  
time of Air ticket  
purchase

Broadcast  
travelplanner  
app at airports  
and stations

Promote use of app  
tickets at ticket  
machine queue  
lines

# How to Survive Your Smart Ticketing Project

**SUCCEED** PUBLIC TRANSPORT OPERATOR  
PUBLIC TRANSPORT AUTHORITY **MAJOR DELAYS** **REVIS** **QUALITY**  
**DISPUTES** **SMART TICKETING PROJECT** **PLANS** **PRESSURE**  
FUNCTIONALITY **SYSTEM**  
**BUMPY RIDE** **RISKS** PRODUCTS **COST** **IMPLEMENTATION**  
**CHANGE REQUESTS** MAJOR PROJECT **NEXT GENERATION**  
SCHEDULE

# Understanding the Customer



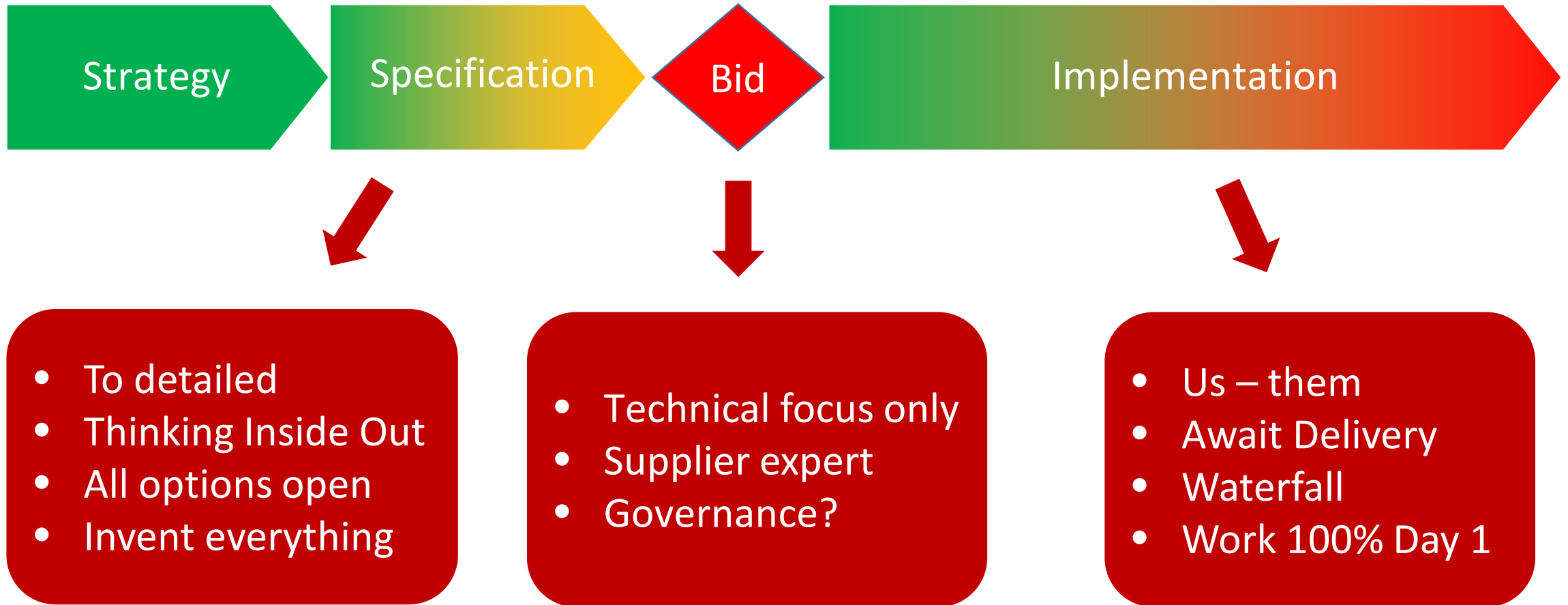
## Checklist for travel A to B

- Schedule?
- Travel time?
  - Best
  - Fastest
  - Cheapest
- Direct or multimodal?
- Comfort?
- Cost comparison?
- One click to buy?

Convenience and the best deal



# PITFALLS





# Specification

<b>Pitfalls</b>	<b>Consequence</b>	<b>Cure</b>
Specify in details	Specification outdated	Agile Approach
Thinking inside out	Losing sight of customer	Thinking outside in
All options open	Higher price tag	Cut to the bone.
Invent everything	Expensive – High risk	Beg, steal and borrow



# Implementation

<b>Pitfalls</b>	<b>Consequence</b>	<b>Cure</b>
Us - Them	Cultural clash	Esprit de Corps
Await delivery	Major delays	Transparency
Waterfall	Rigid – Long time	Agile – Short time
Isolated project organization	No ownership in Operations	Include Operations
work 100% from day one	Disappointment guaranteed	Focus on customer experience

# PROJECT CRISIS



When you think you can see  
light at the end of the tunnel  
for your project





# Crisis: Signs, Analysis & Recovery

## Sign of major crisis:

- The blame game gone ballistic
- The communication fences goes up
- Lawyers “takes over”
- Unrealistic recovery plans
- High level meetings
- Political system looking for heads to roll
- The press is everywhere guessing
- No fun to work on both sides
- Stress - Burnout - People leave

## Crisis Analysis and recovery tools

- Early detection/understanding is key
- Use a neutral party to analyze the nature of the crisis and root causes
- Mend the wounds
- Erase crisis alert and lower the fences
- Reboot the project
- Ensure early success of new approach

**Celebrate!**

# To Wrap Up on the project part

The Buyer sets the scene

Seamless Customer Experience.  
Optimize your Customers processes first

Be Agile

Transparency

Risk management from day 1

No wins from delays and cost overrun

Clear on Governance

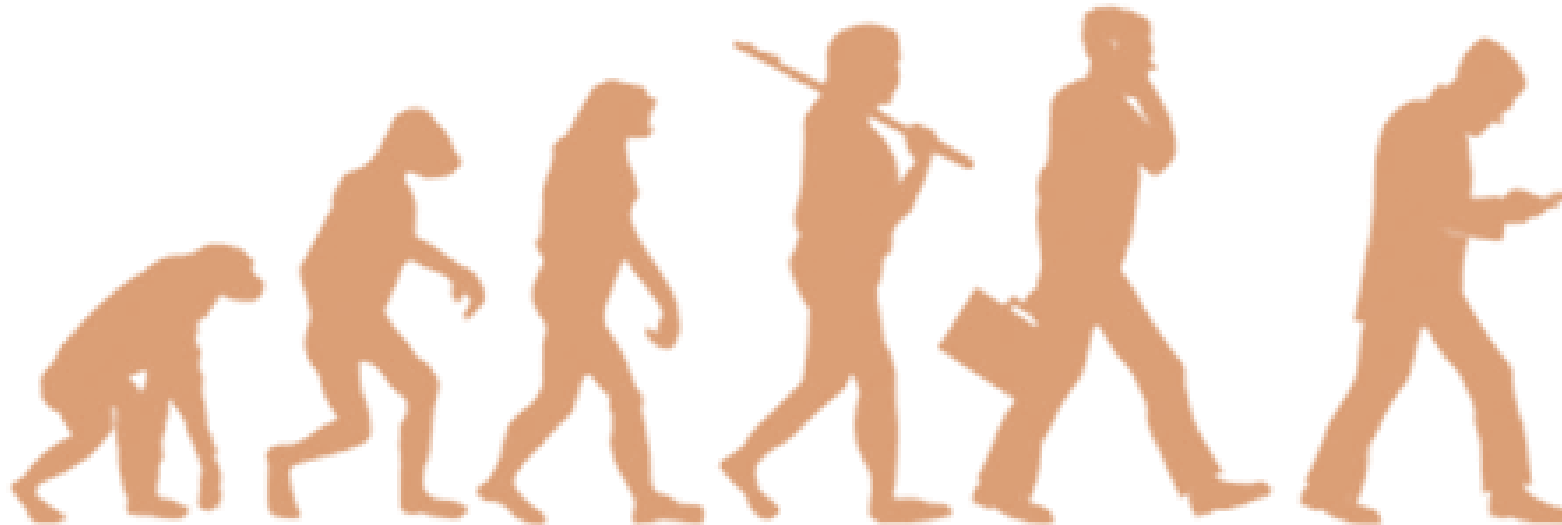
Cut the blame game - Realign - Reboot

# The Future of Smart Ticketing – Trends

Smart phone primary tool for mobility and MAAS

Contactless credit cards on mobile as tickets

Phone centric payment methods: mobile pay, apple pay, google pay etc.



# The Future: Disruption

Examples:  
Disruption: What and by what:

Nokia by Smartphones  
Kodak by Digital Cameras  
Video rentals by Netflix  
CD sale by Spotify  
Mail by E-mail

Redefine Public Transport in MAAS  
ECO systems

Role of driver disrupted by  
autonomous vehicles

Autonomous vehicles and sharing  
economics disrupt travel from A to  
B as we know it today

# Thank you

**From A to B**

**From card to cloud**

**From high to low risk**

## Continue the discussion?

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The trouble with  
doing something right  
the first time is that  
nobody appreciates  
how difficult it was

Walther J. West (1917-1984)  
American Football player & Coach