

**Arthur D Little**

# Airports 4.0: Impact of Digital Transformation on Airport Economics

Viewpoint

May, 2015



## Agenda

- 1 **What is Airport 4.0 ?**
- 2 A holistic view at digital airport economics
- 3 Key success factors of a digital transformation

## 1. What is an Airport 4.0 ?

Airports are at the fore-front of global challenges and innovations of our society and business, among which Digital Transformation

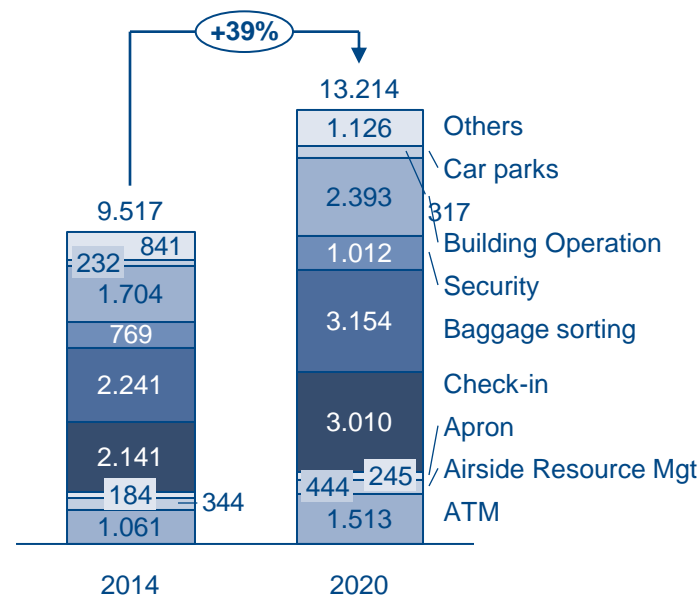


## 1. What is an Airport 4.0 ?

The airport expenses into “smartization”, i.e. into digital based solutions, should grow by ~40% in 2020 vs today with the objective of better customer experience and improved operations

- As a public service infrastructure, an airport is a processor / connector between the flow of aircrafts and the flow of [passengers + baggage]...
- ...Hence the strong focus on airport operations for “smart airport” spending (see besides)
- As an economic entity, it leverages this position in the value chain to monetize those flows through many different approaches, at each step of the journey...
- ...Smart airport investment should then demonstrate an attractive business case, with high impact on growing revenues and lowering the costs and capital expenditures

Smart airport spending – in Bn\$ 2014



## 1. What is an Airport 4.0 ?

**Airports are currently mature to implement 2.0 digital solutions but should look forward for the next 10-15 years in order to implement an Airports 4.0 model**

### Airport models

#### Airport 1.0

- All about manual and analogic processes
- Long lag-time between resource solicitation and the airport answer

#### Airport 2.0

- Implementation of self-service thanks to the automation of some key flow processing tasks (bag-drop, passport check)

#### Airport 3.0

- Several focused initiatives to leverage digitalization so that to optimize flow monitoring and processing

#### Airport 4.0

- Full-connected with all stake-holders
- Superior proactivity and reactivity to adapt to the real-time solicitation of the airport (operational needs, customer requests etc...)



## Agenda

- 1 What is Airport 4.0 ?
- 2 Economics of Full Digital 4.0 Airports**
- 3 Key success factors of a digital transformation

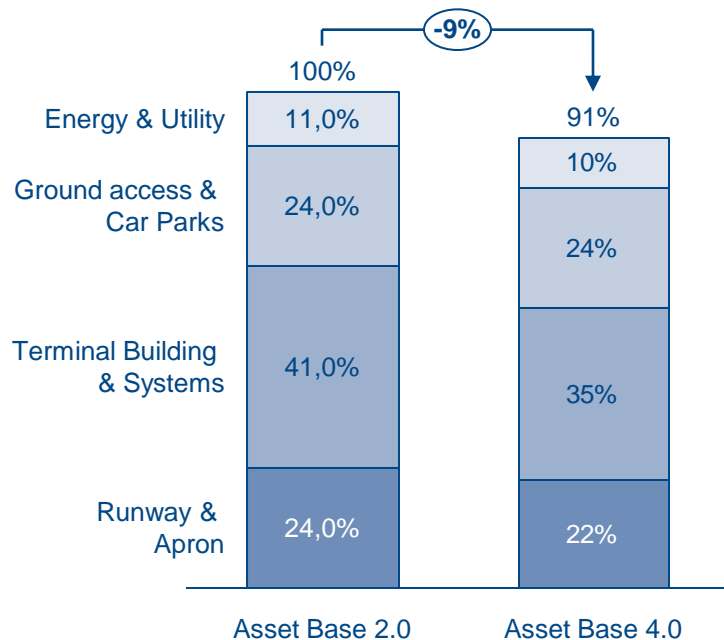
### A Full Digital Airport leverages 6 technology clusters to optimize its economics by increasing capacity of existing facilities, lowering OPEX and boosting revenues





### Digital transformation as clearly a great impact on capacity utilization and therefore on required CAPEX for extension

In % of airport assets



### Examples of capacity increase

- Non-CAPEX focused solutions, i.e. process optimization through data-analytics :
  - Runway capacity increase by +10% (LGW)
  - Check-in capacity >20% (CPH)
- CAPEX-based solutions :
  - Automated bag-drop +30% (ORY)
  - IATA future security check-point concept
  - ...

**Airside : 10% to 15% capacity increase**  
**Landside : up to 30% capacity gain, but unit cost +15% for intelligent building & equipment**

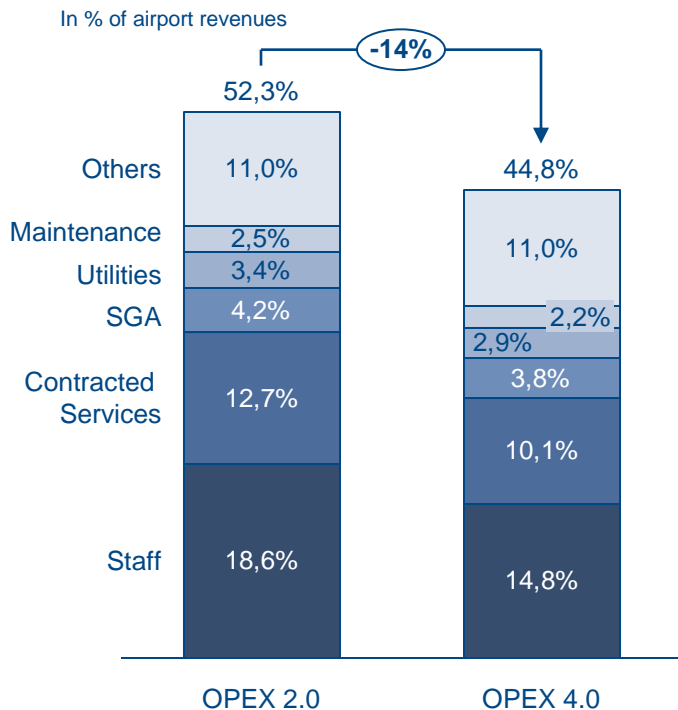
Source : ACI average world airport P&L 2014, Arthur D. Little analysis







### Process automation and Energy & Building management could have a great impact on OPEX



### Examples of OPEX optimization

- Automation of passenger treatment processes saving 20% to 50% of staff
- Sharing of real-time situation awareness for ground operating staff of airports, handlers, airlines and other 3<sup>rd</sup> parties : -10% supervision costs
- Reduced labor-cost and external purchasing for maintenance (linked to CAPEX optimization and intelligent assets)
- Automated administrative processes (revenue accounting and billing, basic training etc...)
- Reduced energy consumption (lighting, heating...)

**Organizational challenges are also key to be considered to leverage those gains potential**

Source : ACI average world airport P&L 2014, Arthur D. Little analysis



### From an helicopter-view the impact of the Digital Transformation of airports on revenues seems quite significant



#### Revenue Growth Accelerator

- Increased dwell-time thanks to better operation efficiency driven by digitalization
- Enhanced interaction with customers:
  - Better flow knowledge and tracking of individuals at the airport terminal
  - Ability to push sales and to propose hyper-segmented offers, instantly
- Dynamic pricing (today in car parks, tomorrow in retail with discount coupons / bundled offers etc...)



#### Potential threats on airport revenue streams

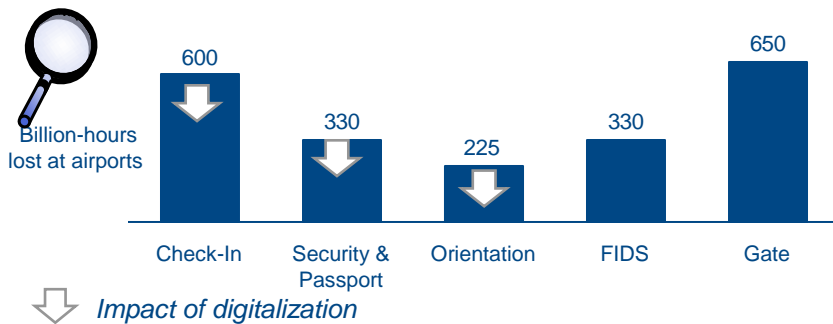
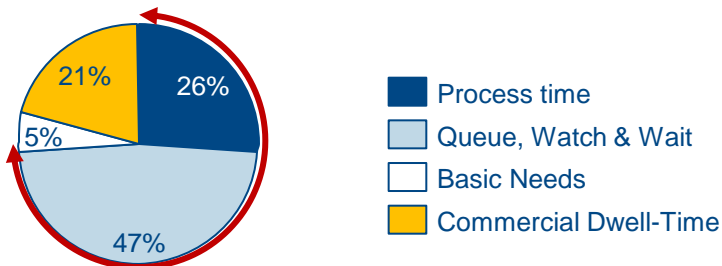
- Moving some transactions away from the airport :
  - Duty-free online...
  - ... with pick-up on-board of goods purchased
- Disintermediation of services providers operating at airports :
  - Car sharing solutions using long-term parked vehicles
  - ...





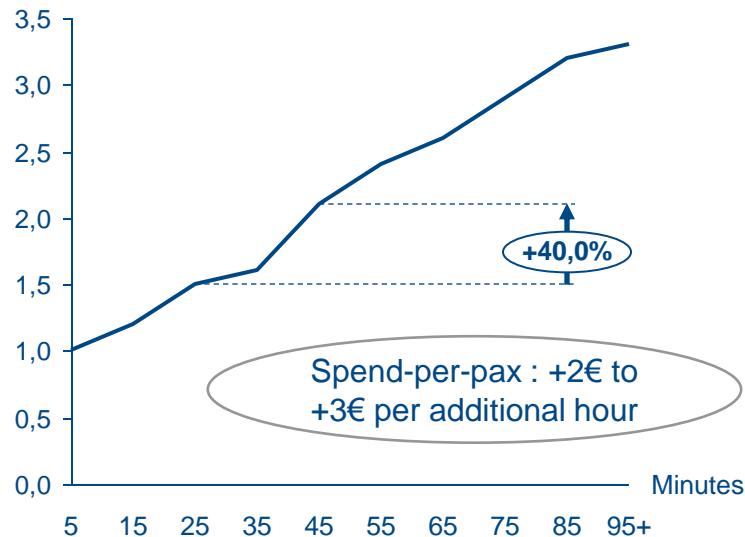
Obviously, more efficient and faster processes are the key for customer spending increase at airports

### Split of passenger dwell time at airports



### Correlation between dwell time and spend-per-pax at airports

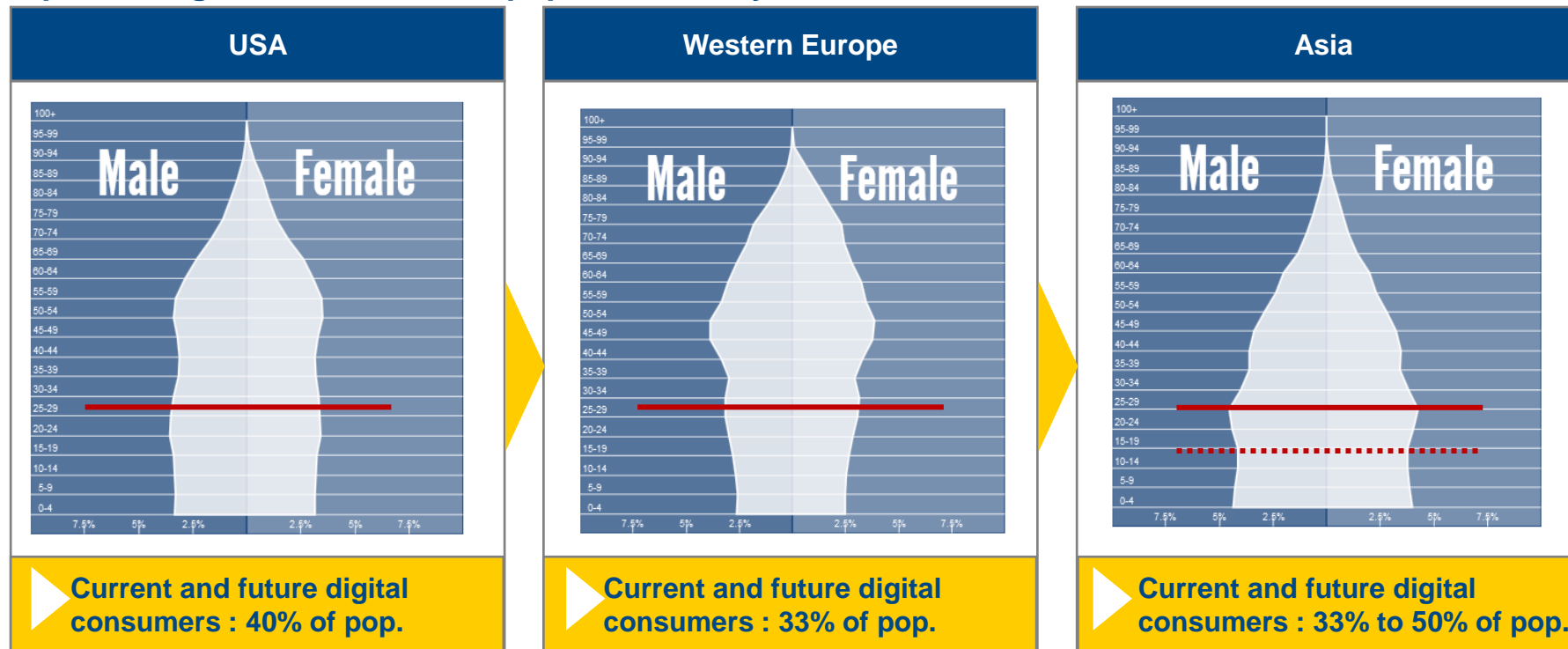
Spending ratio



Source : Dolby & Holder, Arthur D. Little projects



Digital Transformation is also key to address the current and future Digital consumers, that are representing ~40% of the world population today



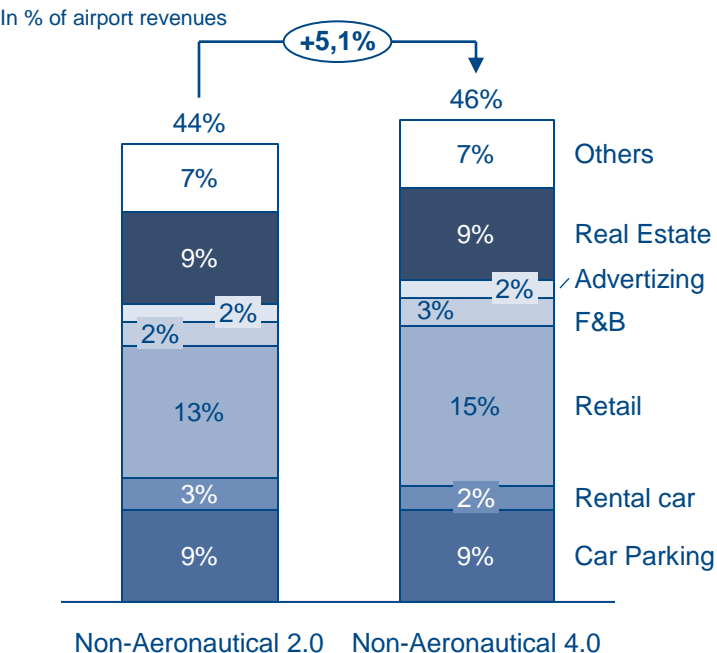
Source : United Nations

Travel & Transportation





Actually, revenue increase lead by Digitalization is still uncertain today : revenue upside can be threaten by “digital competitors” ; nevertheless digital interaction is a must-have



### Examples of revenues upsides and downsides because of digitalization

#### Retail + F&B :

- +5% to +15% thanks to increased dwell-time
- > +10% (?) potential from enhanced customer interaction
- ? competition from online dutyfree ?

#### Advertising :

- Spectacular sales increase for products being advertised digitally today (but will it last ?), ... hence higher revenues for advertising operators...
- ... but that are not converted into higher advertising fee for airports has ad operators claim for higher CAPEX for digital displays

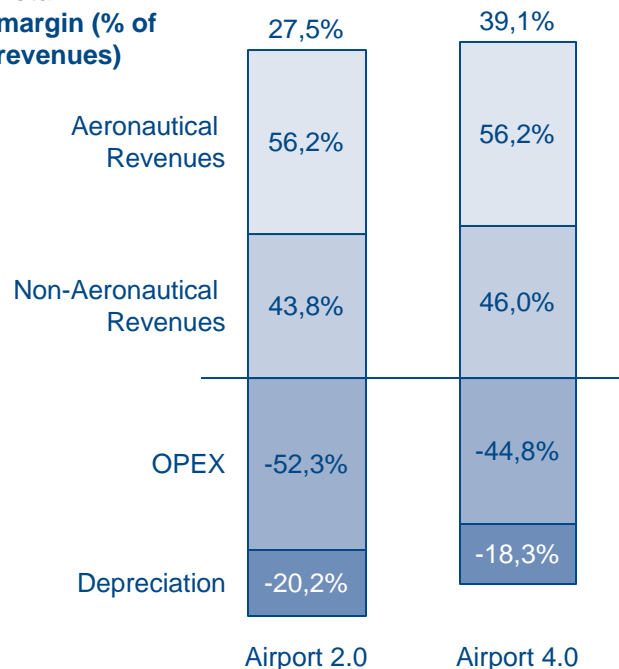
#### Car park and car rental :

- Yield management enables +6% to +10% sales increase...
- but price comparators or car sharing solutions might take-way 10% to 20% of revenues

Source : ACI average world airport P&L 2014, Arthur D. Little analysis

**Overall, unleashing the potential value of Airport 4.0 economics looks quite attractive vs the current Airport 2.0 business model with a significant EBIT improvement potential**

**Total EBIT margin (% of revenues)**



**A “full-digital greenfield” airport would generate more than +10pts EBIT margin**

- Capacity increase by 15-20% minimum, but CAPEX reduction only by -10% (cost of intelligent building & equipment)
- OPEX reduction by 15%
- Revenue growth mainly induced by the “side-effect” of better customer satisfaction and increased dwell-time

**Challenges for airport operators are the following :**

- At what pace can we achieve our full digital transformation ? What are the key success factors ?
- How to preserve most gains for the airports while sharing part of this additional profit between stakeholders ?

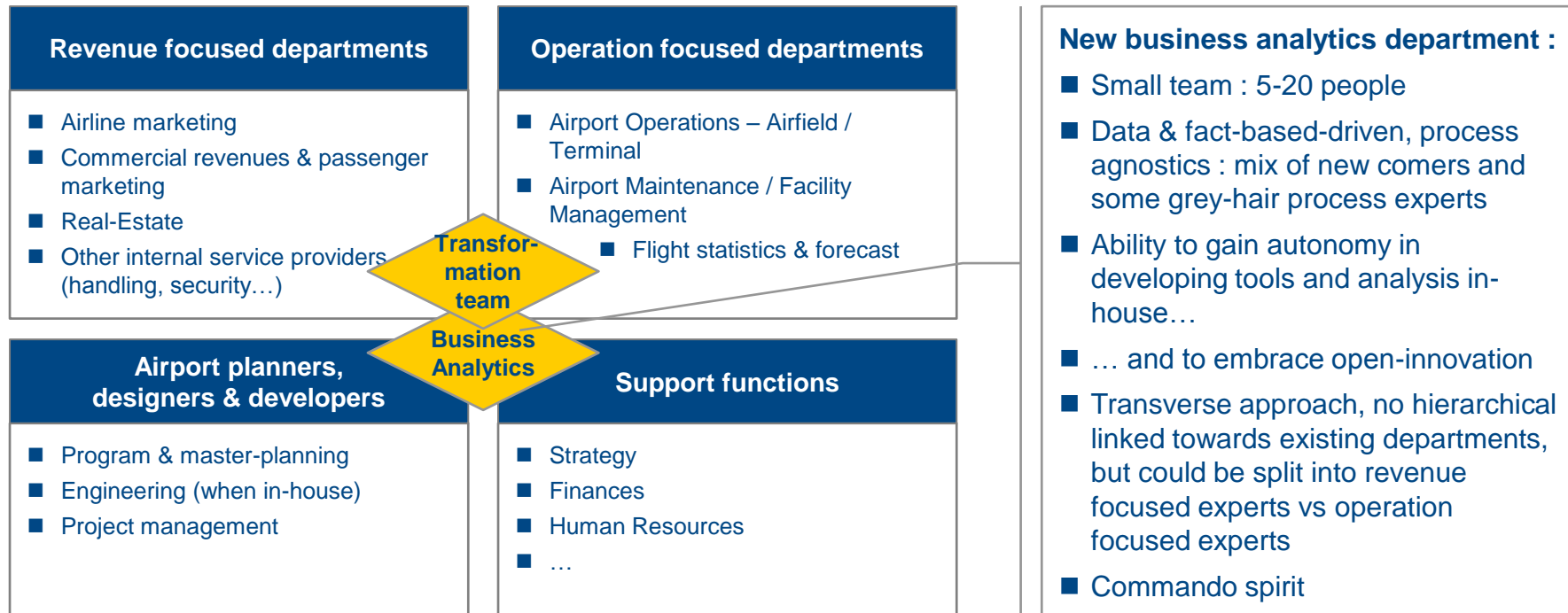
Source : ACI average world airport P&L 2014, Arthur D. Little analysis

## Agenda

- 1 What is Airport 4.0 ?
- 2 Economics of Full Digital 4.0 Airports
- 3 Key Success Factors of a digital transformation**

## 3. Key Success Factors of a digital transformation

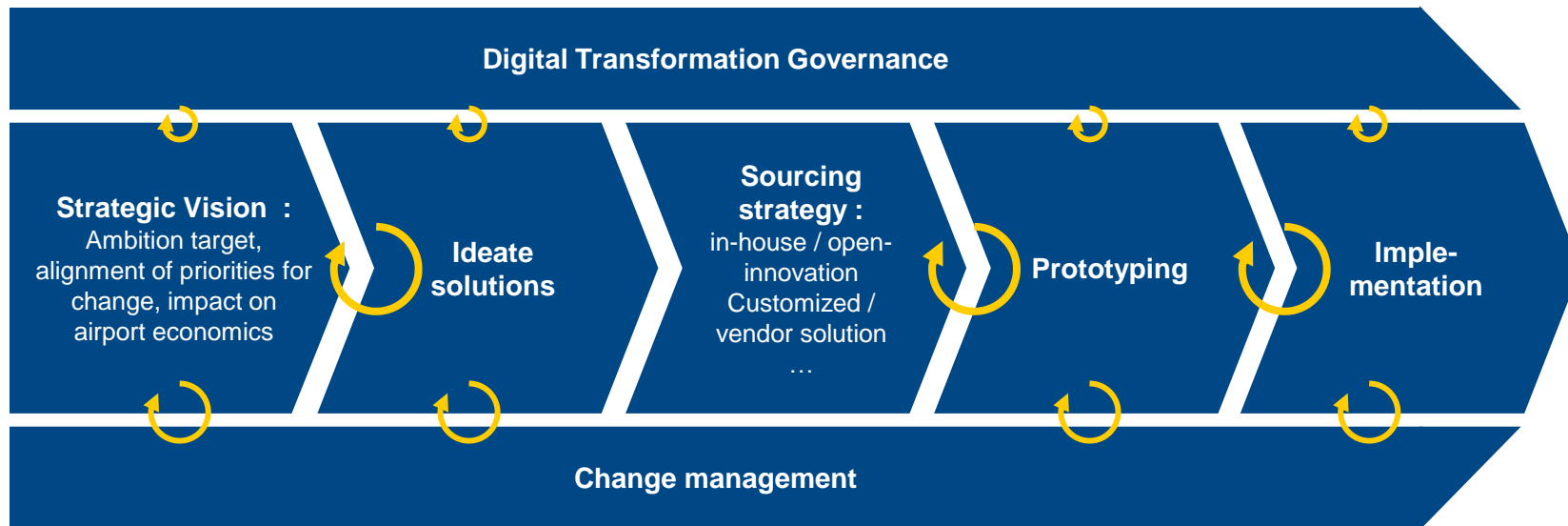
### A Digital Transformation requires new skills and talents ; it should involve the entire airport organization





## 3. Key Success Factors of a digital transformation

Achieving a Digital Airport Vision and Business Model requires the combination of (1) a usual strategic planning approach and of (2) Design Thinking bricks



▶ Boosting creativity, shortening “go-to-market” cycles, winning the buy-in of the organization...  
... while focusing efforts and managing potential conflicts of interest

## 3. Key Success Factors of a digital transformation

### A successful Digital Transformation must provide tangible and economic benefit to every stakeholders of an Airport 4.0

#### Airports & Investors :

- Implement lean & agile business model :
  - Skills and activities of tomorrow ?
  - Integrator vs Orchestrator ?
  - “Flexible” CAPEX ?

#### Airports & Airlines :

- Transform into a « Smart airport » , consider risk-sharing and value-based relationships
- Find a modus vivendi with airlines to manage the battle for consumer ownership through digital media

#### Airports & The City

- Contribute to the aviation industry green effort
- Contribute to & prescribe mobility strategies based on digital-enabled solutions

**Next generation airport  
business model**

#### Airports & Consumers :

- Leverage big data & technology to understand « hyper-consumers » and boost both customer experience and commercial revenues
- Find the right balance between being “a connector” and a “place of enjoyment”



### Contact details

As the world's first consultancy, Arthur D. Little has been at the forefront of innovation for more than 125 years. We are acknowledged as a thought leader in linking strategy, technology and innovation. Our consultants consistently develop enduring next generation solutions to master our clients' business complexity and to deliver sustainable results suited to the economic reality of each of our clients.

Arthur D. Little has offices in the most important business cities around the world. We are proud to serve many of the Fortune 500 companies globally, in addition to other leading firms and public sector organizations.

For further information please visit [www.adlittle.com](http://www.adlittle.com)

#### Main Authors:

##### **Mathieu Blondel**

Principal - France

E : [blondel.mathieu@adlittle.com](mailto:blondel.mathieu@adlittle.com)

##### **Michael Zintel**

Principal – Germany

E : [zintel.michael@adlittle.com](mailto:zintel.michael@adlittle.com)

##### **Hiroto Suzuki**

Principal - Japan

E : [suzuki.hiroto@adlittle.com](mailto:suzuki.hiroto@adlittle.com)

#### Other contributors :

##### **Akitake Fujita**

Manager - Singapore

E : [fujita.akitake@adlittle.com](mailto:fujita.akitake@adlittle.com)

##### **Russell Pell**

Principal – UK

E : [pell.russell@adlittle.com](mailto:pell.russell@adlittle.com)

