InterSystems and BagDrop systems

Self-service check-in and baggage drop off
And how to manage an operation in a multi stakeholder environment

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Antwerp 07.06.2011
What can you expect the coming 20 minutes …

**Agenda**

1. What is changing in the airport / airline industry
2. What does BagDrop do
3. What is the impact of new Operational Concepts
4. The functionality of the BagDrop solution
5. How to perform operation, service & maintenance
6. Value focus and Business case for Change
7. Q&A
The passenger journey - requiring effectivity and affecting emotions

Single customer touch point:
- Passenger information
- Baggage information
- Flight information

Reservation → Check-In → Baggage Drop off → Security & Border → Retail → Gate processing - boarding

CUPPS platform
(including Remote Monitoring, Logging & Reporting)
Meeting the future demand for the passenger journey requires rethinking of the entire operational model.

**Goals:**
1. Improved passenger experience
2. Maximized terminal throughput
3. Optimized revenue
4. Reduced operating cost

Facilitate different airline business models

- Process chain from curb to gate
- Trends & Changing passenger behavior
- Normal processing (happy flow) but also how to handle the exception situations
- Increase processing quality
- Align off-site & on-site passenger processes
- Integrated passenger, systems & agent solutions, methods and organization

- Functions in a terminal hall
- Flow design
- Configuration design infrastructure
- Resulting Service Levels (simulation)
- System and operational set-up

Right operational data enabling to manage operation and service levels

- Choice in service level
- No repeating process steps
- Fast processing (perception)
- Waiting lines (availability)
- Tailored offerings to the passenger

Systems and supporting tools need to be designed to fulfill the business goals as well as facilitate the operational concept

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What process does the BagDrop unit facilitate

Fourth Generation Installation in Amsterdam Airport 2009
(Movie Made by KLM)
BagDrop initiated operation of the first unit in Amsterdam in 2008

BagDrop

- BagDrop is part of the Scarabee Aviation Group
- BagDrop was spun off as a separate company end 2007
- Focus of BagDrop is innovative passenger self service solutions
- The company is privately owned by management
- First operational installation of a BagDrop unit was in 2008
- Installed base in Amsterdam and Zurich Airport
- Latest installation of 12 units initiated 2nd may in Amsterdam

About BagDrop

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High Lights

- BagDrop Concept developed within Scarabee Group
- 2007 First Generation Installation - prototype
- 2007 BagDrop registered as separate company
- 2008 Second generation installation in Amsterdam, operation for KLM/Skyteam
- June 2009 Fourth generation installation in Amsterdam
- January 2011 Fifth generation installation in Zurich
- May 2011 Full roll out in Amsterdam
The operational check-in concept influences directly terminal throughput and passenger perception.

Potential Passenger Check-In and Drop off Touch Points

- **Self-service (off-site)**
  - Mobile & Web check-in

- **Self-service (on-site)**
  - Automated Drop off with Check-in
  - Kiosk check-in

- **Staffed**
  - Conventional check-in & drop off
  - Exception handling

**Security**

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The BagDrop concept is to increase efficiency, improve the passenger experience and save cost

BagDrop concept

The BagDrop unit is a single customer touch point which integrates all passenger check-in & baggage drop off processes in one step which a passenger can autonomously perform with minimal use of staff.

Increased infrastructure utilization through maximal availability, Improved passenger experience through reduced waiting times & control of journey, Operational cost reduction through staff savings, and facilitation of increased passenger revenue through the integrated unit with pay terminal add value to the airport and airline businesses.
The self-service drop-off process is simple and efficient

Description

The unit can handle:

1) pre-tagged bags which have been tagged with kiosk printed and attached to the bag

2) Un-tagged bags for which the unit will print a label which the passenger is instructed to attach to the bag

Demonstration movie

Complete check-in in five steps

1. Place luggage

General process: Un-tagged bag
The BagDrop unit creates a safe and secure barrier between the public and the non public areas.
The kiosk side of the unit can be tailored to the specific requirements and process setup.

<table>
<thead>
<tr>
<th>Description</th>
<th>Kiosk part</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barcode scanner (BP’s, mobile)</td>
<td></td>
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<tr>
<td>Touch screen</td>
<td></td>
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<tr>
<td>Payment Card reader</td>
<td></td>
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<tr>
<td>Pay terminal - Pin pad</td>
<td></td>
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<tr>
<td>Indicative lighting</td>
<td></td>
</tr>
<tr>
<td>ID reader, passport, visa, FF, etc.</td>
<td></td>
</tr>
<tr>
<td>Agent card / NFC reader</td>
<td></td>
</tr>
<tr>
<td>Claim tag / multi-purpose printer</td>
<td></td>
</tr>
<tr>
<td>Label printer</td>
<td></td>
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<tr>
<td>Different branding options</td>
<td></td>
</tr>
</tbody>
</table>
Similarly is the baggage handling part adoptable to specific requirements and needs

<table>
<thead>
<tr>
<th>Description</th>
<th>Baggage handling part</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security door – with safety feature (jam detection)</td>
<td></td>
</tr>
<tr>
<td>Inside of the unit:</td>
<td></td>
</tr>
<tr>
<td>1) Barcode scanners</td>
<td></td>
</tr>
<tr>
<td>2) Sensors for determination of the bag dimensions</td>
<td></td>
</tr>
<tr>
<td>3) Determination 3D bag image</td>
<td></td>
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<tr>
<td>4) Determination of odd-size or rolling bags</td>
<td></td>
</tr>
<tr>
<td>5) Camera: for picturing of bag and remote view</td>
<td></td>
</tr>
<tr>
<td>6) Life detection</td>
<td></td>
</tr>
<tr>
<td>1) Second belt: Tilting conveyor, in order to lay down the bag in its most stable position</td>
<td></td>
</tr>
<tr>
<td>2) Third belt: Buffering bag if needed</td>
<td></td>
</tr>
<tr>
<td>Access sensors and measuring of outside dimensions</td>
<td></td>
</tr>
<tr>
<td>Weighing unit display</td>
<td></td>
</tr>
<tr>
<td>First belt with weighing scale and life detection</td>
<td></td>
</tr>
</tbody>
</table>

3D imaging

Normal imaging & streaming video
The Graphical User Interface guides the passenger through each step intuitively.
The new liner-less label is an enabler for an efficient and error free process

Description

• Self tagging is the most time consuming and error prone part of self-service baggage drop off

• BagDrop and Partners have therefore jointly developed a new liner-less label to simplify the process

Advantages:

• Easy attachment
• Error free attachment
• Reacts with itself, strong bonding within 10 seconds
• Does not stick to bags
• No remaining rubbish
• Safe

Demonstration movie

“Linerless label”:
Label sticks on nothing else but itself
Three tools are available for the floorwalker to facilitate the process and eventually solve minor disturbances:

**Service Card**
- The service card is used to get a service screen available on the unit.
- From the screen specific disturbance solving can be performed.
- The card is individual and only provided to personnel who has completed training.

**“How-to” Manual**
- The manual provides specific procedures for most common disturbances.
- For any other disturbances there will be technical support.

**Personal Digital Assistant**
- Shows the status of the unit.
- Starts vibrating and ringing in case of alerts or operational messages.
The Service card enables direct insight into the unit and the opportunity to remove a bag from the unit.

**Apply Service Card**

**Service Application**

Card reader

Baggage system: Operational. Door open.
The operational tools allows one floorwalker to operate and supervise six BagDrop units

Six BagDrop units and associated passengers can be operated by one floorwalker enabling significant savings in operational cost
The BagDrop CUPPS IT architecture and monitoring
The real-time dashboard provides information about the Operation, Performance, Process, Error and Revenue.
Functionality of the Dashboard

- The Dashboard is a web-based tool which allows users to visualize the data in the CUPPS database.
- Different dashboard for different stakeholders (operational, management, capacity) can be made.
- Presented can be all available and processed data as well.
- The data is represented from the database after logging but can be considered almost real-time (updated ~ 1 second).
- This ‘real-time’ dashboard can provide information about:
  - Operation
  - Performance
  - Process
  - Error
  - Revenue
- The tool can automatically generate and send out (performance) reports.
Data vs information; enabling active management

• Summary industry environment
  – Changes within industry
  – Many stakeholders involved and interdependencies
    • Airport departments
    • Airlines
    • Handling agents
    • Security parties
  – Little information available over the value chain
  – Management at equipment level
  – Equipment monitoring

• Dashboards enable:
  – From data to information available
  – From equipment monitoring to process monitoring
  – From reactive to pro-active – real-time actions
  – Over the complete value chain
Determining the opportunity is done by comparing the BagDrop solution with conventional counters.

### Business Case

#### BagDrop
- BagDrop unit costs
- Service desk costs
- Employee cost
- Operational cost
- Maintenance cost
- (Kiosk cost)\(^1\)
- (Excess luggage revenue)\(^2\)

#### Service Desk
- Service desk costs
- Employee cost
- Operational cost
- Maintenance cost
- (Kiosk cost)\(^1\)
- (Excess luggage revenue)\(^2\)

### Output
- Initial investment difference
- Operational cost difference
- (Revenue generation difference)

#### NPV

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1) Kiosks are only included if the BagDrop solution includes check-in and boarding pass printing. Kiosk costing for the BagDrop solution are to cover passengers not handled by the unit.

2) Excess luggage revenue is only included in the model if this option is activated on the BagDrop units.
The dashboard provides an immediate overview of the potential for self service by an NPV

### Business Case Model Dashboard

**BagDrop configuration**
- Check-in and BagDrop configuration: Config 1
- Anticipated utilization: 65% of capacity
- Number of BagDrop units: 16 units
- Overweight activated on unit: No
- Include BMI improvements: No
- Check-in and 1 luggage: 90 seconds
- Check-in and 2 luggage: 110 seconds
- Luggage only, 1 piece: 65 seconds
- Luggage only, 2 pieces: 90 seconds

**Conventional desks**
- Kiosk check-in: 60 seconds
- Check-in and 1 luggage: 90 seconds
- Check-in and 2 luggage: 110 seconds
- Desk luggage drop, 1 piece: 65 seconds
- Desk luggage drop, 2 pieces: 90 seconds

**Passenger Profiles**
- Average daily departing passengers: 10,000 passengers
- Passengers with luggage no BC: 25% of total
- Passengers with 1 luggage: 80% of total
- Passengers with 2 luggage: 10% of total
- Passengers with >2 luggage: 5% of total
- Passengers with excess luggage: 5% of total
- Passenger flow: Mix

**Economic configuration**
- Cost of capital: 8% WACC
- Cost of floorwalker employee: 60,000 Euro/year
- Cost of desk employee: 50,000 Euro/year

**Value Focus and Business Case for Change**

<table>
<thead>
<tr>
<th>Business Case for:</th>
<th>Net Monthly Savings / Unit</th>
<th>€8,235</th>
</tr>
</thead>
<tbody>
<tr>
<td>BagDrop solution with 16 Units, 22 Desks and XX Kiosks</td>
<td>Vs. Conventional solution with 36 Desks and XX Kiosks</td>
<td></td>
</tr>
</tbody>
</table>

**Payback Period (NPV, Million Euro)**

<table>
<thead>
<tr>
<th>Years</th>
<th>NPV (10 years)</th>
<th>NPV (15 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>€12</td>
<td>€14</td>
</tr>
<tr>
<td>5</td>
<td>€10</td>
<td>€15</td>
</tr>
<tr>
<td>10</td>
<td>€8</td>
<td>€18</td>
</tr>
<tr>
<td>15</td>
<td>€6</td>
<td>€22</td>
</tr>
</tbody>
</table>

**Check-in Utilization**

**Passengers Handled / Hour**

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BagDrop operation at AMS and ZRH

Schiphol Group

KLM

ZURICH AIRPORT

SWISS

Swiss International Airlines

STAR ALLIANCE

swissport
The roll-out in Schiphol for KLM / Skyteam: Started begin May 2011
Q&A

• What is next for BagDrop
• How do we work with Intersystems
• Questions?

“Logic takes you from A to B. Imagination takes you everywhere.”
Albert Einstein