INTERNATIONAL ASSOCIATION OF

IABSC

BAGGAGE SYSTEM COMPANIES

SESSION 3

Future Planning & Flexibility

January 18, 2018

INTERNATIONAL ASSOCIATION OF

IABSC

BAGGAGE SYSTEM COMPANIES

Global/Future Planning Considerations

January 18, 2018

If you have seen one airport…

…you've see **one** airport!!

Not all airports are created equal!

Global/Future Planning Considerations

- Cultural/Psychological Behaviors
- Aircraft Design Advancements
- Airline Policy
- Security Trust
- Geographic/Network Factors
- Technology Trends and Terminal Planning

Cultural/Psychological Behaviors

- *Not all baggage is created equal*

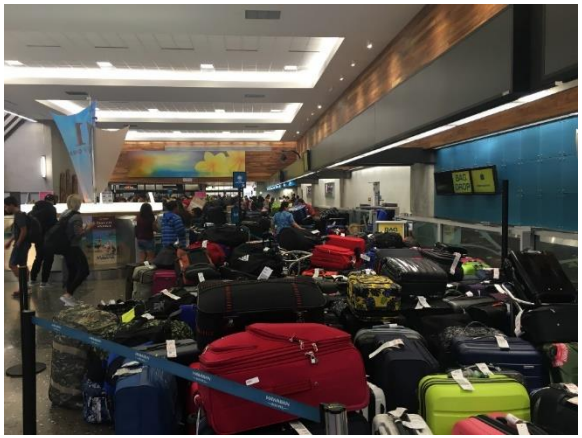



- Many travelers fly from one country to another with the singular purpose to buy goods and fly them back as passenger baggage – not cargo
- Often observed in emerging / developing countries
  - Case in point : we once observed a passenger in JNB trying to check in a new Peugeot engine block to Senegal!!

Cultural/Psychological Behaviors

- Technology uptake – either by personal choice or by economics
  - Some passenger will probably always want personal as opposed to automated service

- Passenger arrival profiles drives need for space
  - Drives the need for early bag storage



Cultural/Psychological Behaviors

- Some destinations/catchments attract different bag/passenger ratios than others

- Serving niche markets
  - Surfboards in Hawaii
  - Skis in Geneva/Denver

Aircraft Design Advancements

- With the advent of larger and sturdier overhead bins, the requirement for checked baggage has reduced in some markets, with subsequent BHS load reduction



Airline Policy

- À la carte pricing policies drives passenger behavior regarding checked baggage
- In competitive overseas markets, the differentiation between carriers often comes down to their ability to offer passenger extra baggage allowance, thus driving a higher BHS impact
- In others (low cost or fuel/performance critical cases) baggage policy is the knife's edge of safety and/or profit

Security / Trust

- Some passengers make their decisions regarding checking their bags based on potential of theft
  - Have you ever heard someone say – *"I never check bags into some destinations knowing that theft would be rife"*
- Electronic and batteries prohibitions
  - We saw this last year with laptops and batteries being banned in cabins of ME originating airlines

Geographic/Network Factors

- The airline network feeding an airport has an impact
  - If predominantly short-haul business = low use of BHS
  - If mostly long-haul leisure = high use of BHS
- Number of different/unique destinations or number of different/unique carriers
  - This impacts the level of sorting complexity required
- Sophistication of Labor Market
  - In a low cost, low education labor market, manual sortation often makes more sense

Technology Trends and Terminal Planning

- Pre-Arrival/Arrival
- Check-in
- Security
- Claim
- International Arrivals “Bags First”

Innovations & Technology (Pre-Arrival)

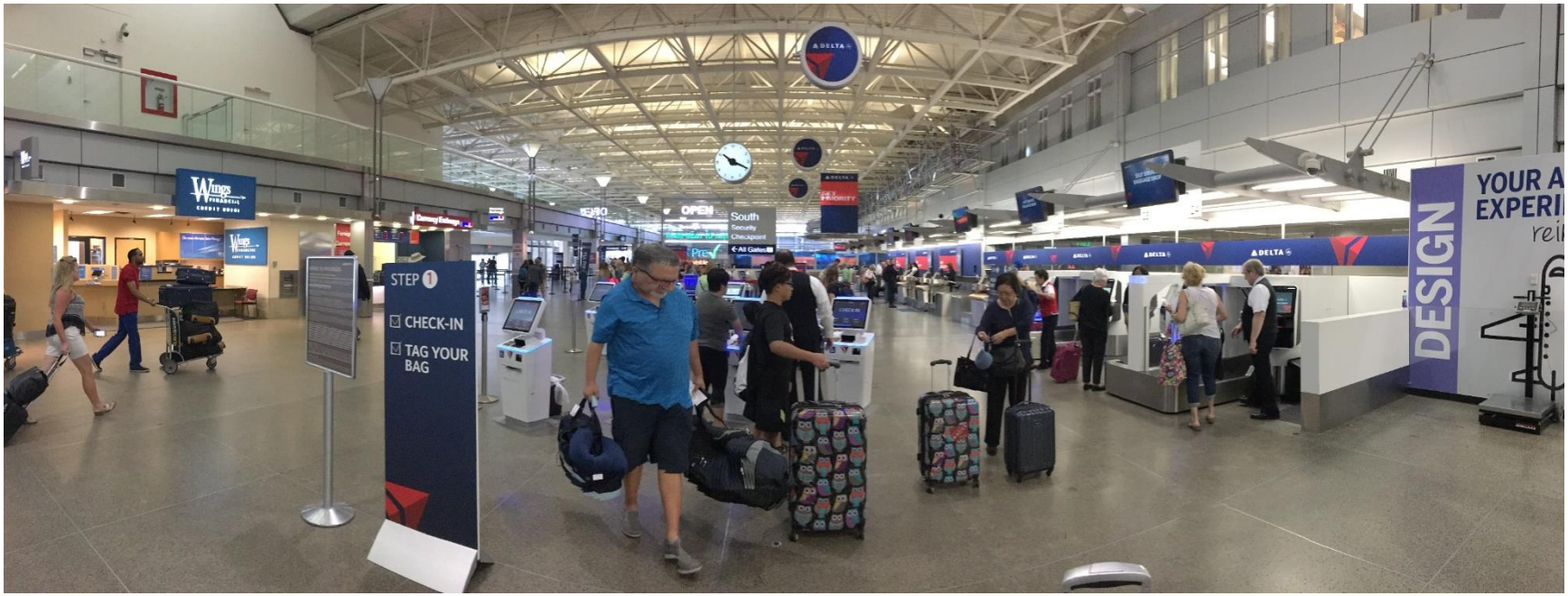
- Leo Curbside Baggage Robot
  - Roaming baggage robot is able to check in, print bag tags, and carry two bags (max weight of 32 kg / 70 lb)

- Off-Airport Baggage Collection Heathrow, Gatwick, and London City
  - British Airways has partnered with AirPortr to collect bags off-airport the day of travel or the day prior

Innovations & Technology (Check-In)

- One/Two Stop Check-in/Bag Drop Systems
  - Fully automated self-serve check-in system
  - Passengers check in, select seats, print their boarding passes, luggage tags, and check in their luggage
  - Passengers deposit their bags without any assistance on a self-service bag drop
  - Sensors integrated in the bag drop unit automatically detect the bag tag, measure and weigh the bag

Innovations & Technology (Check-In)

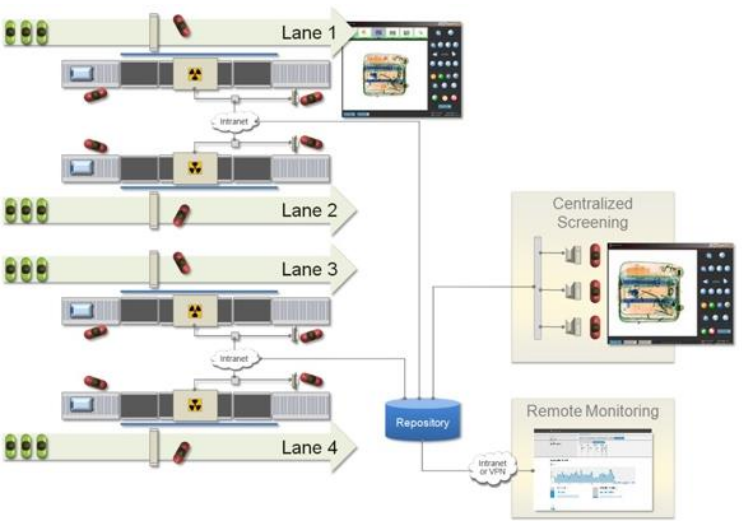


- Self Drop with Facial Recognition
- Delta at MSP
  - Print boarding pass & bag tags at kiosk
  - Facial recognition system for identity verification and then drop their bag (passport holders only)

Innovations & Technology (Check-In)

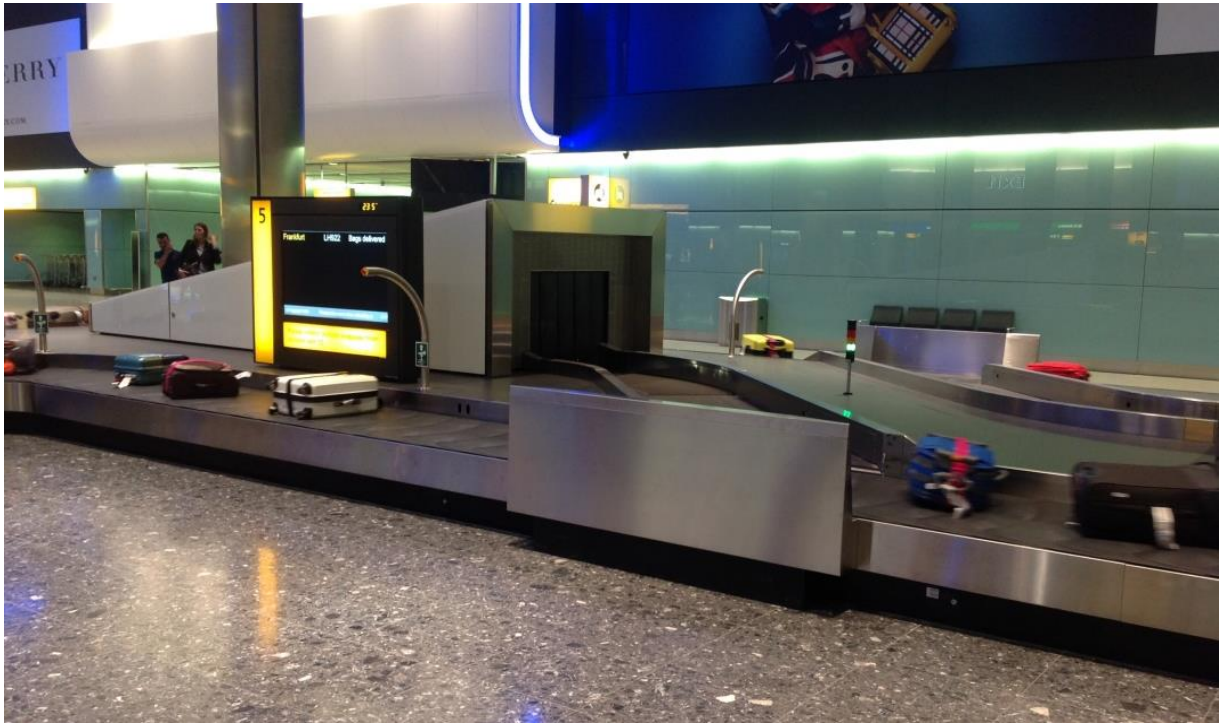
- Permanent/Home Printed Bag Tags with RFID
  - Improve bag tracking for both airlines and passengers
  - Allows for expedited bag-drop

Innovations & Technology (Security)



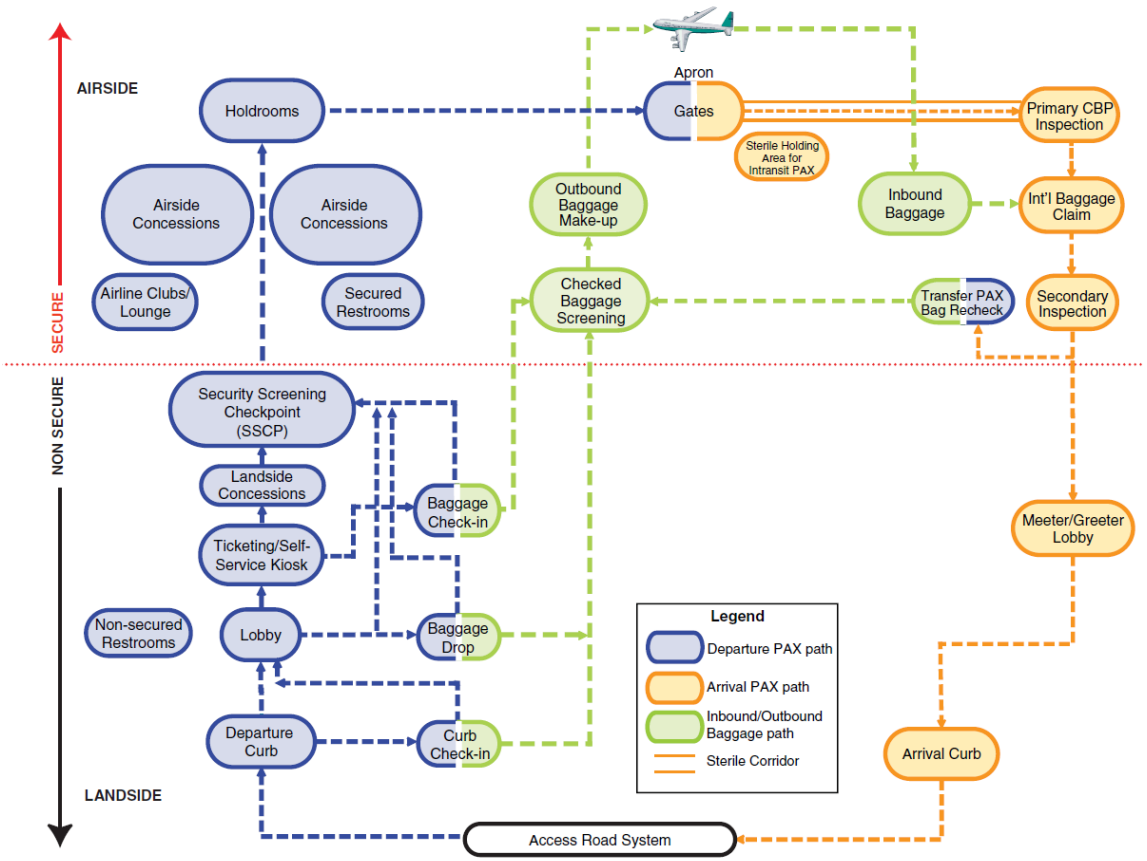
- CT Cabin Baggage Screening at Checkpoint
  - Allows users to keep some liquids and laptops in bag
  - Increased throughput
  - Automated threat detection
- Remote Resolution of Checkpoint Bags
  - No impact during staff changes
  - Higher throughput
  - Multiple agents viewing bags

Innovations & Technology (Claim)



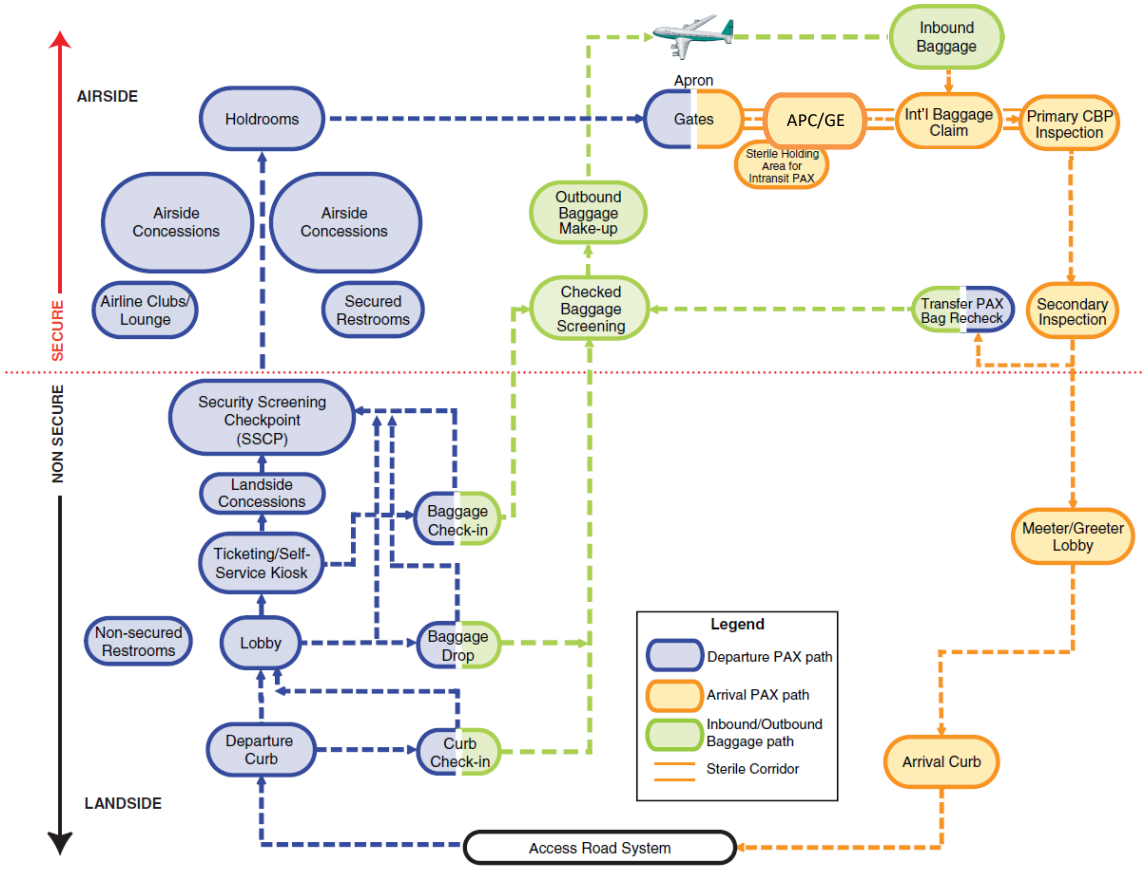
- Flat Place Baggage Claim London Heathrow (LHR)
  - Eases the removal of baggage from the claim devices

International Pax/Bag Flows – Today



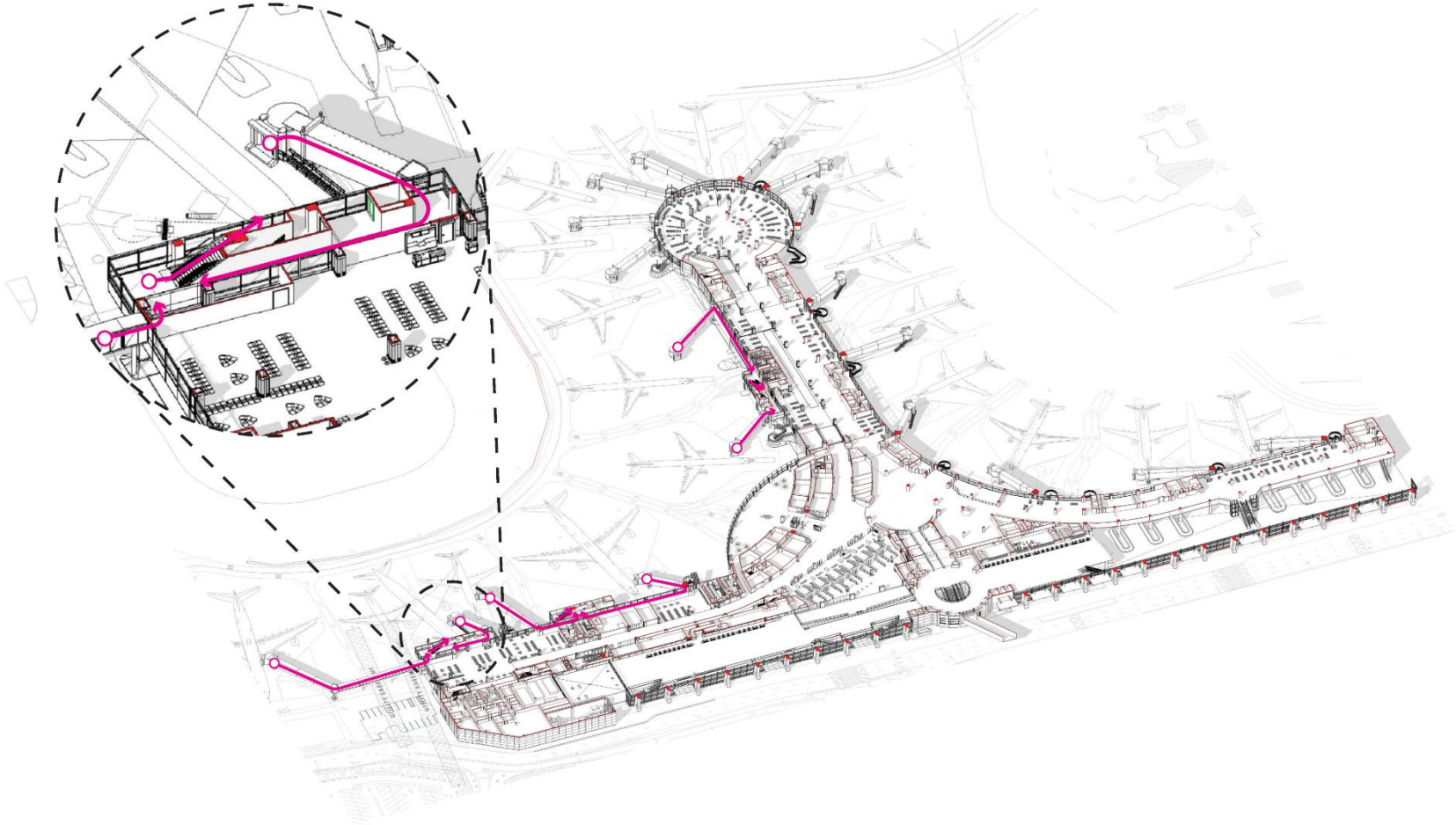
- Standard arrivals and departures flows
- International arrival passenger processing at FIS then claim bags
- Process through USDA inspection
- Transition from sterile to non-secure area

International Pax/Bag Flows – "Bags First"

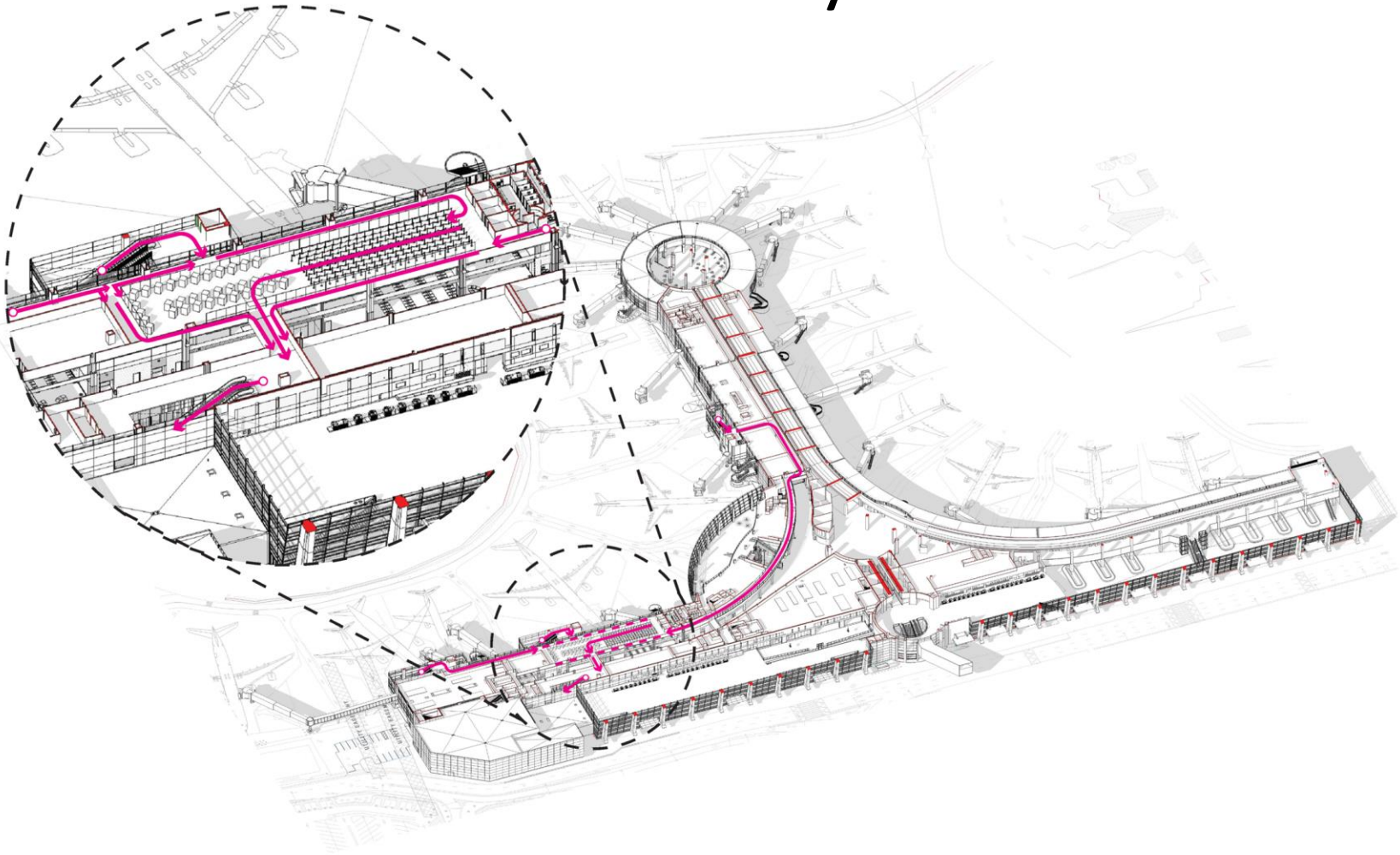


- No Change for departures
- International arrival passengers claim bags before processing at combined CBP/USDA FIS desk
- Only suspect pax/bags go through secondary USDA/Customs screening
- Transition from sterile to non-secure area

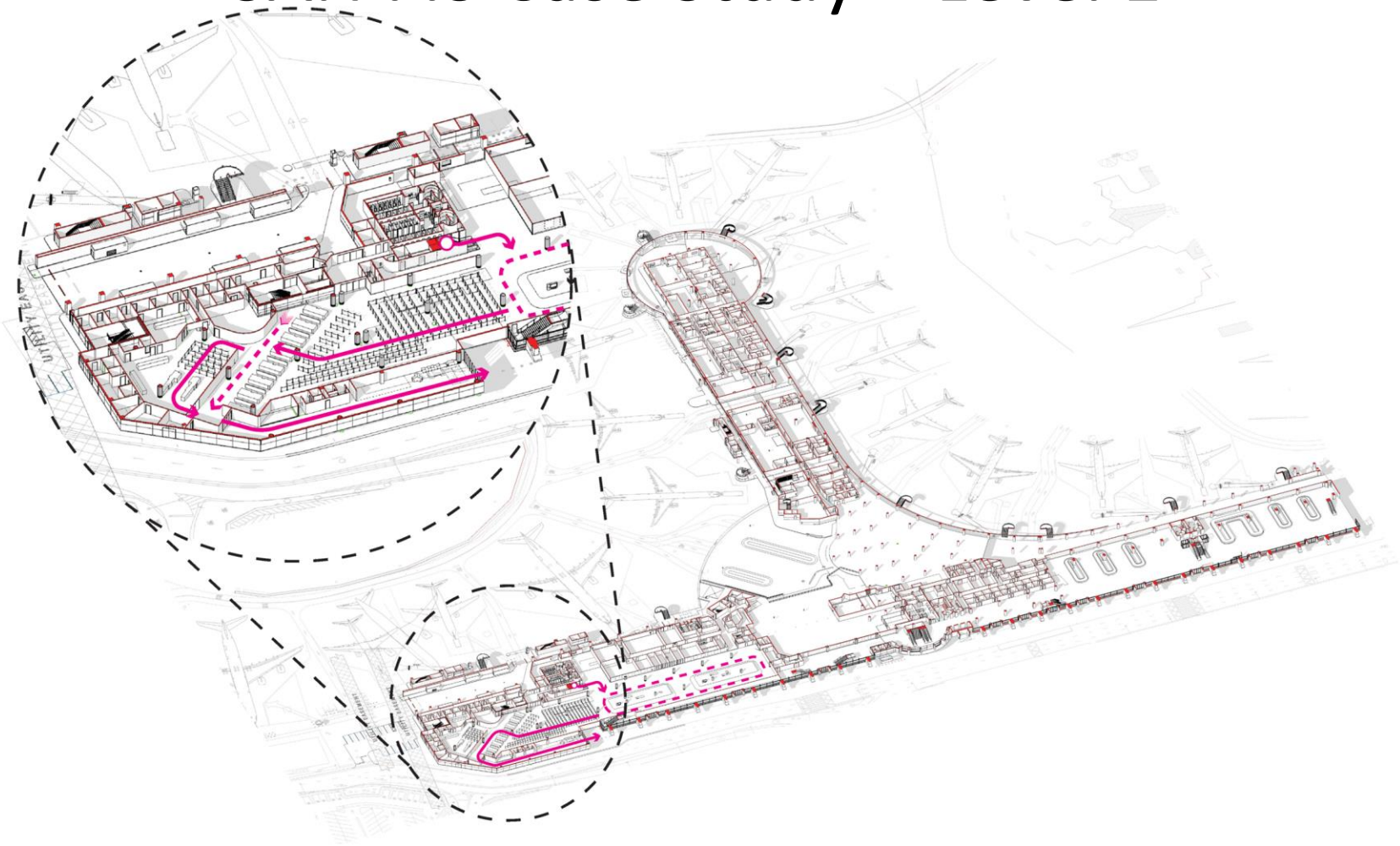
SAN FIS Case Study – Level 2



SAN FIS Case Study – Level 3



SAN FIS Case Study – Level 1



INTERNATIONAL ASSOCIATION OF

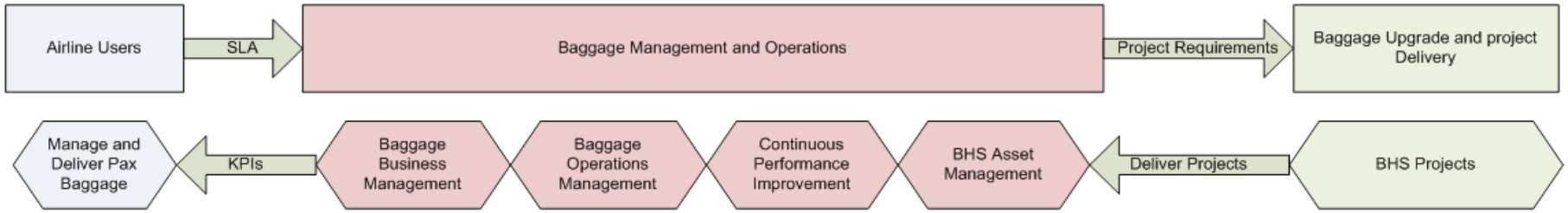
IABSC

BAGGAGE SYSTEM COMPANIES

Airport Baggage:
Where is my bag? Growth is your problem…

Where is my bag?

Baggage Operations Strategy – Service Oriented Baggage Operations (SOBO)



Functions

1. Provide Baggage Handling Services to meet Airline customer Service Standards

2. Ensure Baggage operations are appropriately Planned and managed to achieve Key Airline Customer services Targets

3. Ensure that Operational capacity contingencies are suitable and invokable within predefine notice periods.

4. Negotiate suitable BHS Service Level Agreements with YVR Baggage operations to support the Airline BHS Service Performance requirements

5. Provide the resources as necessary to deliver the BHS services required

Functions

1. Negotiate and Manage Baggage KPI's and related Service Level Agreements(SLA'a) with Airline users

2. Baggage Revenue management

3. Manage Costs of Baggage Asset Ownership.

4. Manage the Baggage Business development activities of YVR

Functions

1. Manage the Process Availability of baggage assets.

2 Develop and Implement SOP's and SOS's

3. Coordination of Operational resource Planning and Allocation of BHS resources with Airline Users iaw of SLA's

4. Ensure the right operational resources and suitable environment including Technical and Operational competencies are Available/Accessible to deliver the BHS service i.a.w SLA's

Functions

1. Monitor Operational performance of Baggage Assets against KPIs

2. Identify performance improvements to Organisation, Process, Technology that can/ should be implemented

3. Develop and agree the business cases for identified BHS improvements in terms of:-
a. Handling capacity
b. Process productivity
c. Legislative compliance

4. Define Improvement requirements for Operations and Engineering

Functions

1. Carry out BHS equipment operations and maintenance activities to comply with Service Level Agreement

2. Carry out BHS equipment maintenance to ensure BHS process availability in accordance with SLA's

3. Maintain and modify the configuration of BHS assets to support Airline operational and process requirements

4. Ensure the right maintenance resources and maintaining the BHS environment

5. Ensure the right Technical and Operational competencies are Available/Accessible to Manage the BHS i.a.w SLA's

Functions

1. Responsible for managing the process of defining Project requirements, Design development, Project management, Project procurement, Acceptance and Handover to Operations

2. Responsible for maintaining the project as built records and system configurations and handing them into a central data repository.

3. Responsible for developing and agreeing with Operations the BHS Technical Policies and Service Standards needed to meet the Baggage Business Requirements

4. Ensure the right Technical Competencies and Resources are available and accessible to deliver BHS projects.

Service Oriented Baggage Operations

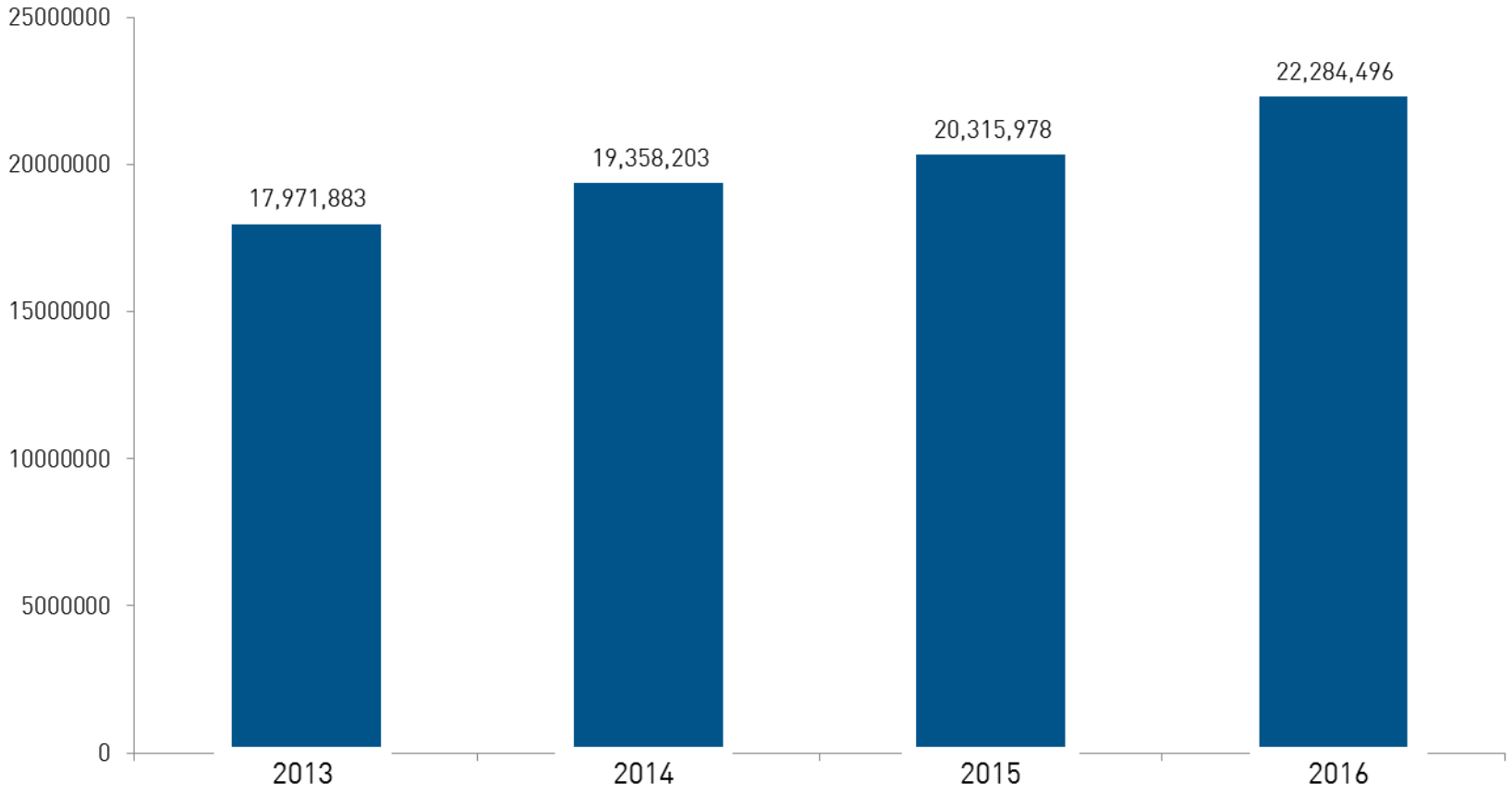
SCOPE OF BAGGAGE SERVICES

Main Process	Sub-Processes	Main Process	Sub-Processes
Baggage Operations Planning	• Negotiate & Manage Baggage KPI's & related SLA with airline users • Baggage Revenue Management • Manage Costs of Baggage Asset Ownership (Not currently done) • Manage Baggage Business development activities	Continuous Improvement	• Monitor Operational performance of Baggage Assets against KPIs • Identify performance improvement to Organization, Process, Technology • Develop and agree on the business cases for improvements in Handling capacity, process productivity and legislative compliance • Define improvement requirements for future operations • Identify performance improvement to Information Technology • Identify performance improvement to other Technology (i.e. PLC's)
Service Delivery & Management	• Manage the Availability of Baggage assets • Develop & implement SOP's • Coordinate Operation resource planning and allocation of Baggage resources with Airline Users (Day of) • Coordinate Operation resource planning and allocation of Baggage resources with Airline Users (Future) • Communication with airlines (Strategic)	Change Management	• Review & approve all proposed changes to baggage assets & system through a structured process (ie.CAB) • Manage Change associated with any capital projects or continuous improvement initiative • Provide Training for Baggage Ops related to capital projects, continuous improvement or ongoing professional development
Monitor	• Actively monitor baggage equipment functionality • Identify an alarm, assess the impact of the baggage or system issue(s) that triggered the notification • Determine the severity & priority of the issue • Contact the appropriate responder(s) according to the problem type and severity • Communicate with all impacted SH until issue is resolved • Manage impact of the issue on Bags • Provide updates to all impacted parties about the issue until it is resolved	Support & Maintenance	• Support Baggage IT systems (VIBES, BIDS, CCTV, Smartsuite, etc) • Maintain Baggage IT systems (VIBES, BIDS, CCTV, Smartsuite, etc) • Standard Maintenace on Electrical/Mechancial Baggage system • Preventative Maintenance • PLC Maintenance • WinCC • iFIX • Technology Infrastructure/WinCC & iFix

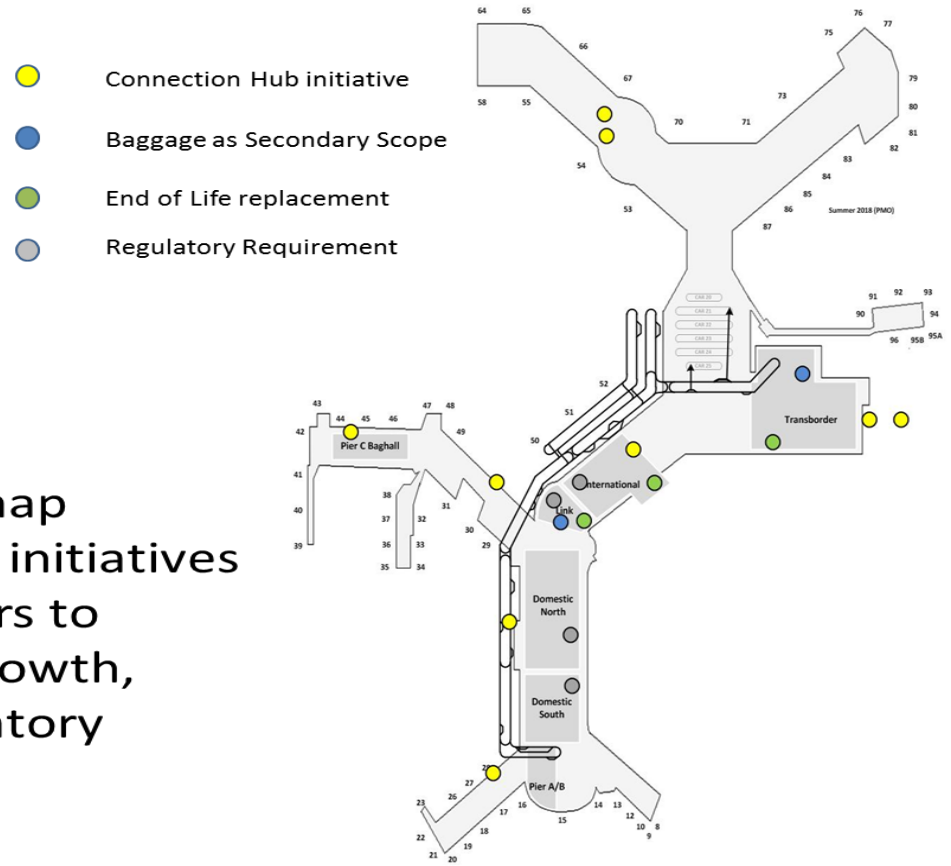
Internal Service Providers are Department within YVR that deliver components of the Baggage services

External Service Providers listed are organizations that provide component of baggage related services to YVR. There may be several agreements between internal Service Providers and one YVR Department or across multiple Departments

Annual Growth Passenger Numbers



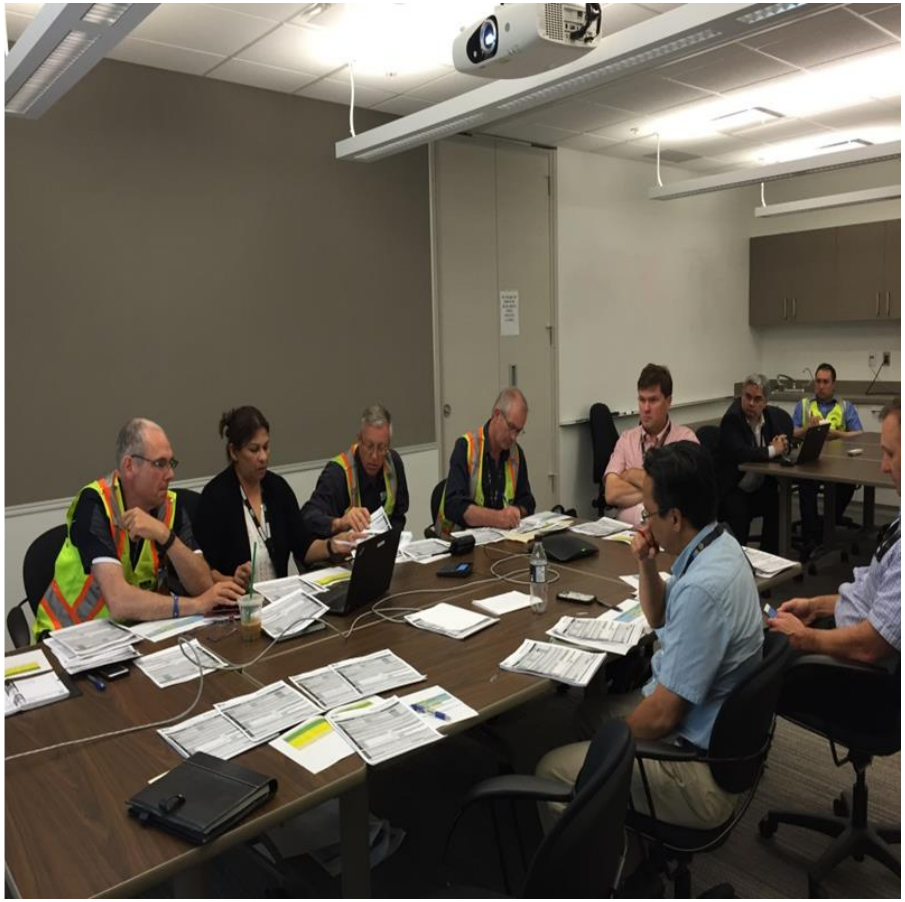
Baggage Project Roadmap



- Baggage Project Roadmap
  - A series of baggage initiatives over the next 5 years to address strategy, growth, lifecycle, and regulatory requirements

Maintain Operational Integrity During Change

- Integrated Change Management: Weekly meeting of Baggage Change Advisory Board (CAB)



Remote Outbound Baggage Operations

NEXT STEPS

YVR VANCOUVER INTERNATIONAL AIRPORT

Beyond, Every Day.

INTERNATIONAL ASSOCIATION OF

IABSC

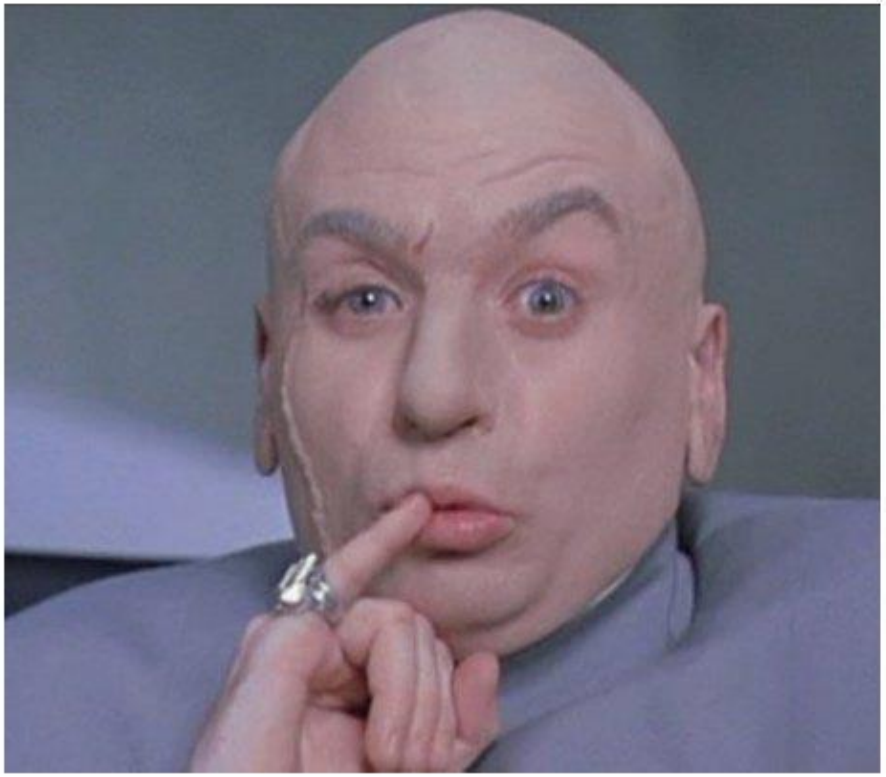
BAGGAGE SYSTEM COMPANIES

KPI Driven Customer Satisfaction

January 18th, 2018


HELLO
my name is
NATHAN SIMS

Dr. Evil



Our future Boss!

Why KPIs Matter?

Airlines vs. Amazon

Metric	Airlines[1]	Amazon
Market capitalization	$132.7B	$628.9B
2016 sales revenue	$136.8B	$136B
2016 profits	$11.6B	$2.4B
Employees	343,000	542,000
Traffic (pax. vs. views)	823M[2]	5B views

[1]Airlines =  combined

[2] US DOT BTS all US airlines combined total passengers in 2016

KPI Considerations

What to measure?

How to measure?

When to baseline?

- Safety
- Security
- On-time performance
- Missed bag rate (MBR)

Performance Metrics

Customer satisfaction is one of the most important performance measures we use to determine how well you are doing as a seller on Amazon. The **Account Health Dashboard** can provide you with greater insight into how you are doing with respect to customer satisfaction.

To learn more, please see Performance metrics.

Related Topics:

Account Health Dashboard FAQ
Valid Tracking Rate
Valid Tracking Rate - All Categories
Return Dissatisfaction Rate
Customer Service Dissatisfaction Rate

amazon

Customer Satisfaction

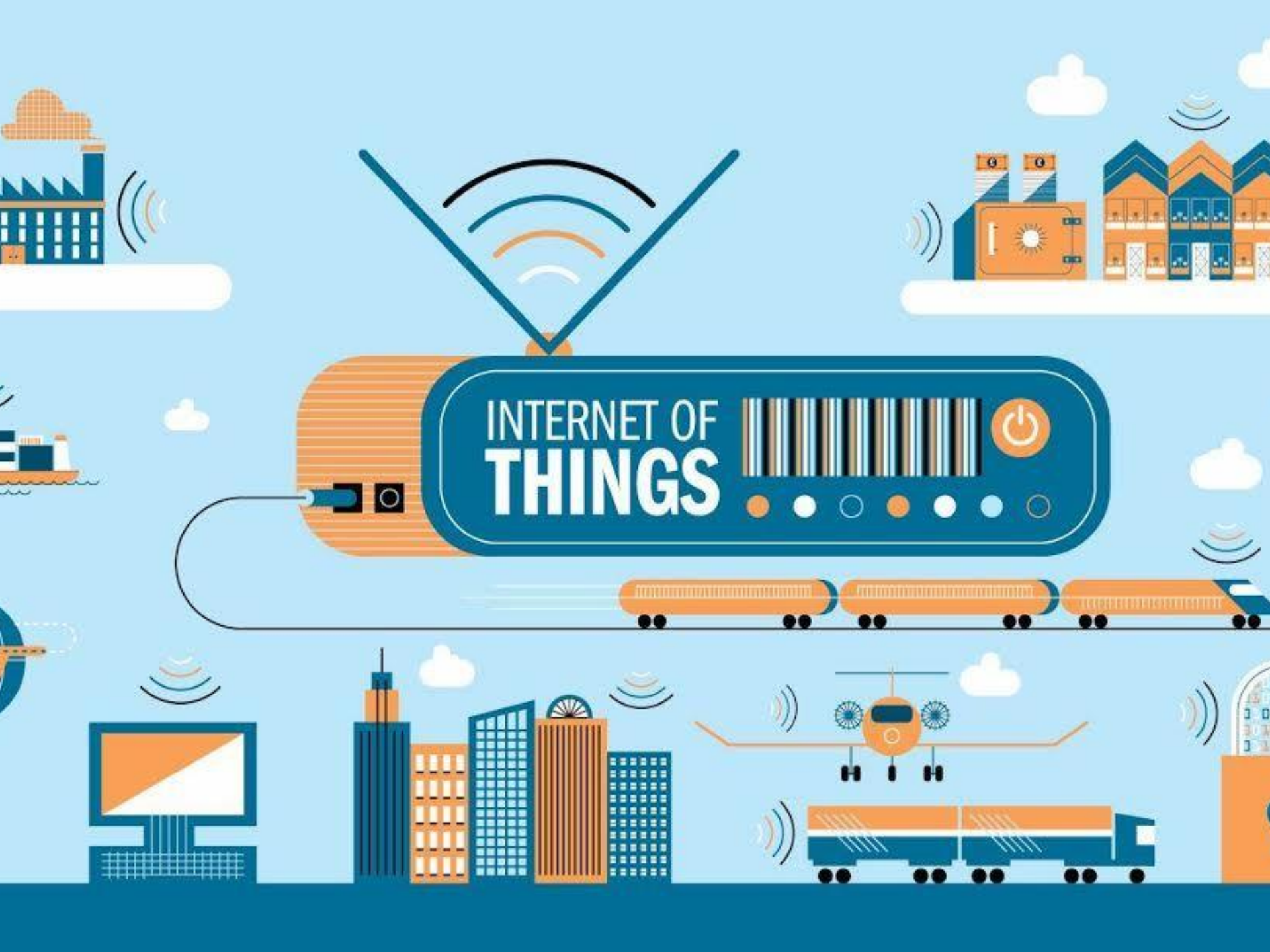
Airlines

	Base-line	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	Previous Year % Change	First Year % Change
JetBlue	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	81	83	79	81	80	82	2.5	1.2
Southwest	78	76	76	76	74	72	70	70	74	75	73	74	74	76	79	81	79	81	77	81	78	78	80	80	0.0	2.6
Alaska	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	75	77	78	1.3	4.0
American	70	71	71	62	67	64	63	62	63	67	66	64	62	60	62	60	63	63	64	65	66	66	72	76	5.6	8.6
Delta	77	72	67	69	65	68	66	61	66	67	67	65	64	59	60	64	62	56	65	68	71	71	71	76	7.0	-1.3
Airlines	**72**	**69**	**69**	**67**	**65**	**63**	**63**	**61**	**66**	**67**	**66**	**66**	**65**	**63**	**62**	**64**	**66**	**65**	**67**	**69**	**69**	**69**	**72**	**75**	**4.2**	**4.2**

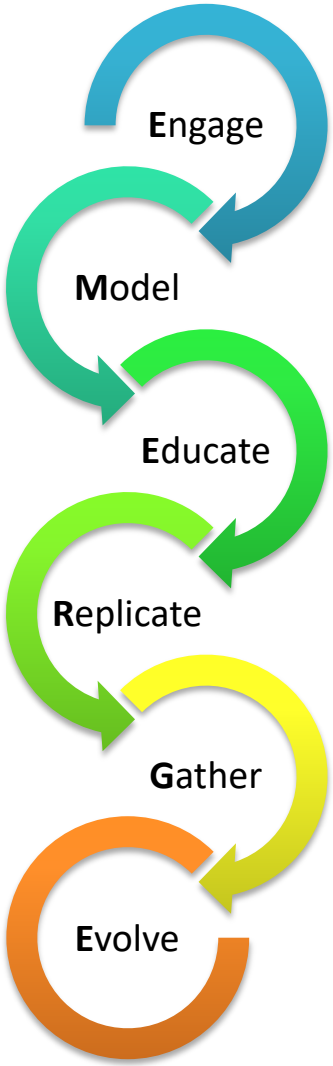
Internet Retail

	Base-line	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	Previous Year % Change	First Year % Change
Amazon							84	84	88	88	84	87	87	88	86	86	87	86	85	88	86	83	86		3.6	2.4
Internet Retail							**78**	**77**	**83**	**84**	**80**	**81**	**83**	**83**	**82**	**83**	**80**	**81**	**82**	**78**	**82**	**80**	**83**		**3.8**	**6.4**
Newegg							NM	NM	NM	NM	NM	NM	NM	87	88	86	84	85	84	83	81	79	83		5.1	-4.6
All Others							77	75	82	83	79	80	82	82	82	83	78	80	82	75	81	80	82		2.5	6.5
eBay							80	82	82	84	80	81	80	81	78	79	81	81	83	80	79	75	81		8.0	1.3
Netflix							NM	NM	NM	NM	NM	NM	NM	84	85	87	86	74	75	79	81	76	79		3.9	-6.0


PITFALLS


INTERNET OF
THINGS

The Way Forward…



INTERNATIONAL ASSOCIATION OF

IABSC

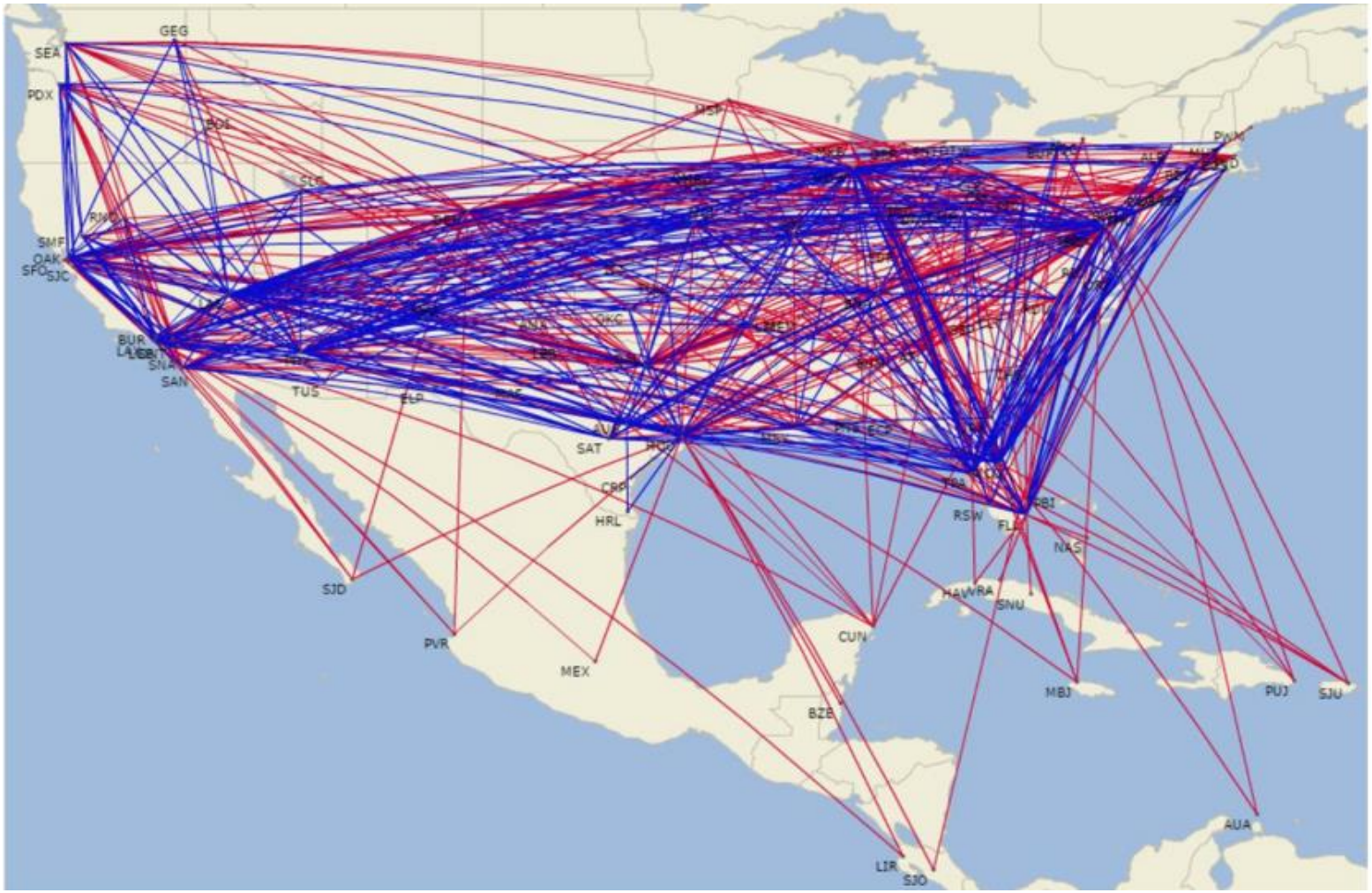
BAGGAGE SYSTEM COMPANIES

Planning for the Southwest Effect

January 18, 2018

1971 Flight Map

Current Day Route Map



25 Years ago

- No special focus on BHS systems
- Mostly Reactive maintenance

2001

- SWA team formed focusing on BHS design
- Team quickly grows to 4 team members

2006

- Team formed within Facilities to oversee BHS maintenance
- Grows to 3 team members
- Directly managing sites focusing on system availability
- Not much focus on cities where SWA didn't hold contract

2014

- Combined teams to create ASO division within Corporate Facilities
- Direct oversight grew to 8 cities with major involvement in 3 consortiums.
- More focus on all cities where BHS challenges are present.

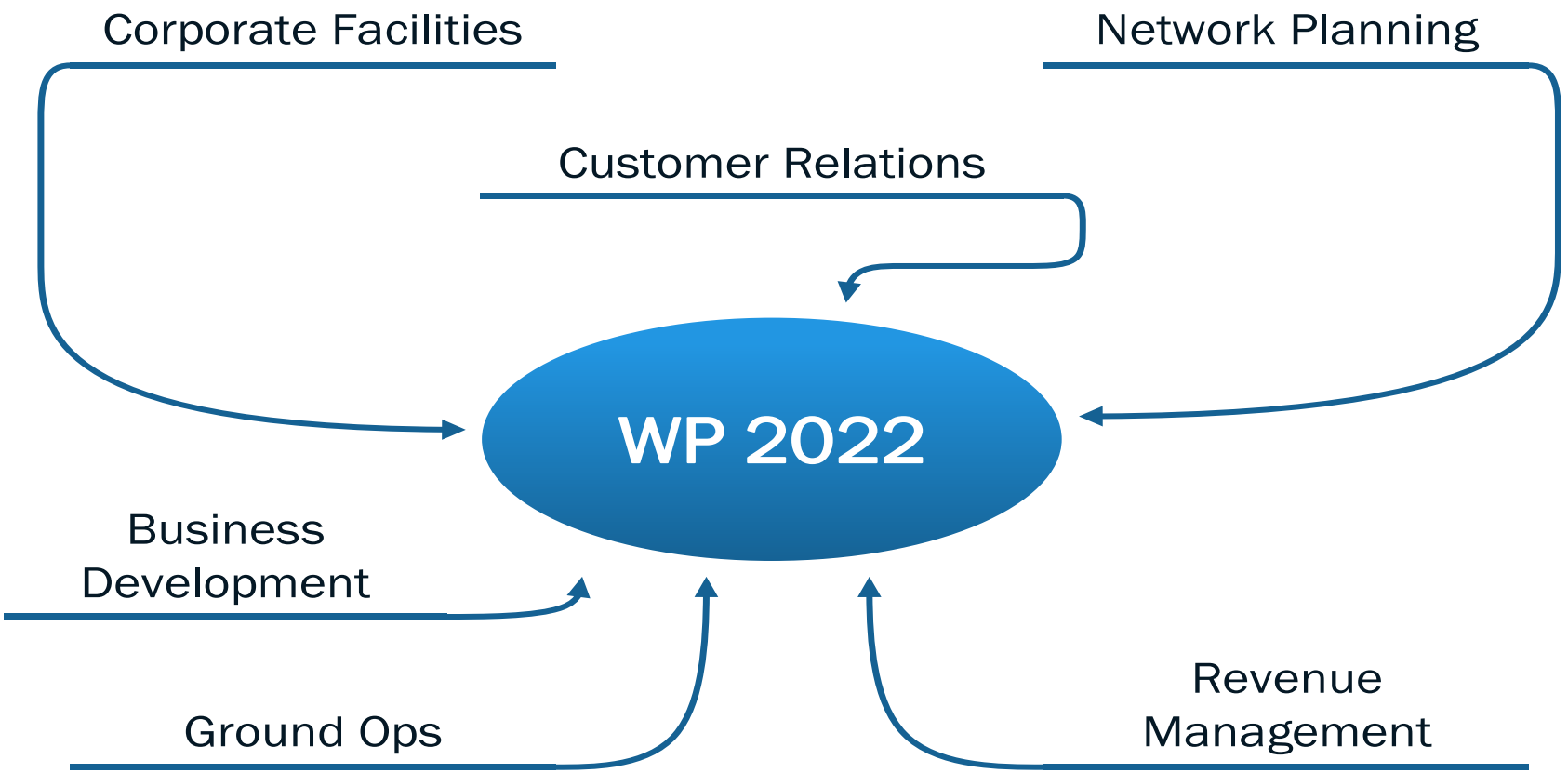
Today

Larry Norman Sr. Manager - Airport Screening Operations Cell: 480-310-6557					
Rick Weaver West Region Manager Cell:702-328-4595			Mark Baker East Region Manager Cell: 480-231-1939		
Region 1	Region 2	Region 3	Region 4	Region 5	Region 6
Greg Huchko	Troy Caperton	Kevin Patten	Andy Mena	Kim Perkins	David Rolfe
Cell: 724-810-3000	Cell: 281-702-4464	Cell: 214-454-6478	Cell: 979-422-8136	Cell: 770-546-7660	Cell: 410-504-4941
BUR	AMA	ABQ	CLE	ATL	ALB
GEG	AUS	BMH	CMH	CHS	BDL
LAS	CRP	BNA	CVG	CLT	BOS
LAX	ELP	BOI	DEN	ECP	BUF
ONT	HOU	DAL	DSM	FLL	BWI
PDX	IND	HRL	DTW	GSP	DCA
PHX	LBB	ICT	FNT	JAX	EWR
SAN	LIT	MCI	GRR	MCO	IAD
SEA	MAF	MSY	MDW	PBI	ISP
SFO	OAK	OKC	MEM	PNS	LGA
SJC	RNO	OMA	MKE	RDU	MHT
SMF	SAT	SLC	MSP	RSW	ORF
SNA	TUL	TUS	PIT	SDF	PHL
			ROC	TPA	PVD
			STL		PWM
					RIC

Challenges

- Age of Airports preventing BHS improvements needed to support growth
- Outpacing our own growth forecast stressing system during peak hours.
- Condensed peaks from STK
- System Scalability
- Outgrowing Current BHS Design practices
- Flexibility

Outpacing Growth Plans


Corporate Facilities
Network Planning
Customer Relations
WP 2022
Business Development
Ground Ops
Revenue Management

IABSC

BNA Airport

CURRENT FLIGHTS	WP2022 FORECASTED FLIGHTS	SWA LEASED GATES	POTENTIAL AVAIL GATES	RON

Key

- ✓ GREEN = Growth Opportunities
- ● Yellow = Capacity Concerns
- ✗ RED = Current Capacity Issues
- ☒ BLACK = Conflicts with WP2022

FINANCIAL CONSIDERATIONS

	FY17	FY18	FY19
R&L Fees	TOTAL PROJECT COSTS		
CPE	TOTAL MAINTENANCE COSTS		

BNA

		(CONSTRAINTS)	(SOLUTIONS)
✓	**CUSTOMER PROCESSING** (CURBSIDE, T/C, HOLDROOMS, BAGGAGE CLAIM, PARKING)	• Constraint is peak hour push from 5:30a-7:00a because of the ICO banks.	
✓	**SECURITY CHECKPOINT** (PASSENGER CHECKPOINTS)	• SSCP is adequate	• Airport is consolidating queue lines into one checkpoint.
●	**BAGGAGE HANDLING** (BHS/CBRA/TPOINT)	• Airport also investigating off-site baggage check and lower level group check in. Will not increase BHS throughput, it will assist with PAX processing. • T-Point concerns for cart-staging. • BHS screening constraints move from yellow to red in 2022	• We can lease the old American carousel and ask the Airport to update the sortation server so we can implement BSM's • Projects evaluating concepts to add Carousel and relocate default pier.
✓	**OPS INFRASTRUCTURE** (GATES, RONS, SUPPORT SPACE)	• Adequate.	• Concourse C has 3 unleased gates and only 1 of those 3 currently has a loading bridge installed. Airport is looking to add loading bridge on other 2 vacant gates in the next 2 years. • Masterplan Underway.
✓	**ANCILLARY FACILITIES** (CARGO, PROVD, GSE)	• Adequate	• Multi-purpose building next to cargo is available for any needed expansion.
●	**FUEL CONSIDERATIONS**	• Supply quality constraints on Colonial Pipeline • Insufficient fuel infrastructure	• Airport Lease Executed in June to allow funding for Fuel Upgrades to be completed by Mar 2018. Airport expecting 2-3% volume increase/year, in line with our increase in departures from WP21.

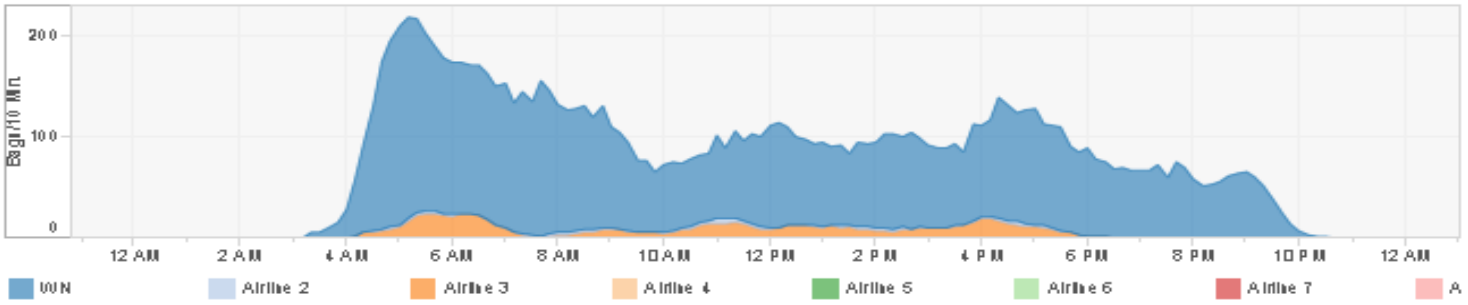
2018	2019	2020	2021	2022

OPERATIONS FEEDBACK

DAL TSA Screening Report for June Base 2018 Monday

System Type	Number of Screening Machin..	Number of ETD Tables	TSA System Throughput	Alarm Rate	Out of Gauge	Peak Bags Per Hour	Processing Rate Per Table
In-Line	3	8	2,001	8.00%	2.00%	1,336	18

TSA EDS/ETD Demand Graphs (DAL)



Southwest

Station
DAL

Schedule
June Base 2018

Date
Monday

Flight Type
(●) Domestic
( ) International

Departures

Domestic	International
180	0

Time of Day
All values

TSA EDS Baggage Peak

Daily

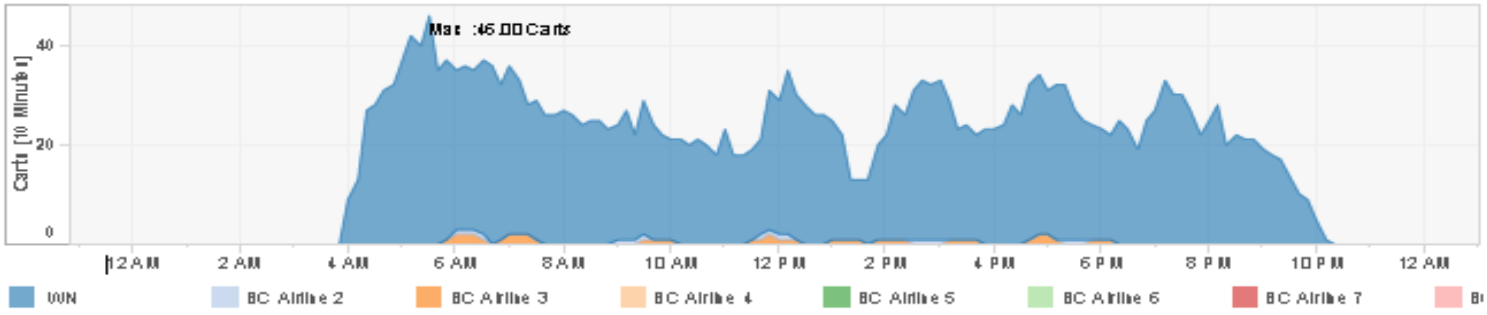
Historic Passenger Metrics

Avg. Load Factor	0.8828
Avg. Pax Group Size	1.3000
Avg. Local %	0.6190
Bags Per Checked Pax	1.3100
% Pax Checking Bags	55%

DAL Cart Staging Report for June Base 2018 Monday

Make-Up Device Type	Cart Staging Type	Bags Per Cart	Obstruction Factor	Presentation Lineal Footage	Staff at Peak	Pick Rate Per Hour
Sloped Plate	Perpendicular	45	8.00%	569.0	16.0	60.0

Bag Cart Staging Demand All Airlines (Assumes single row staging)



Southwest

Station
DAL

Schedule
June Base 2018

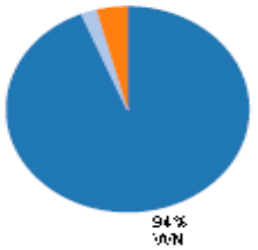
Date
Monday

Departures

Domestic	International
180	0

Time of Day
All Lanes

Bag Cart Usage at Peak



Peak

Historic Passenger Metrics

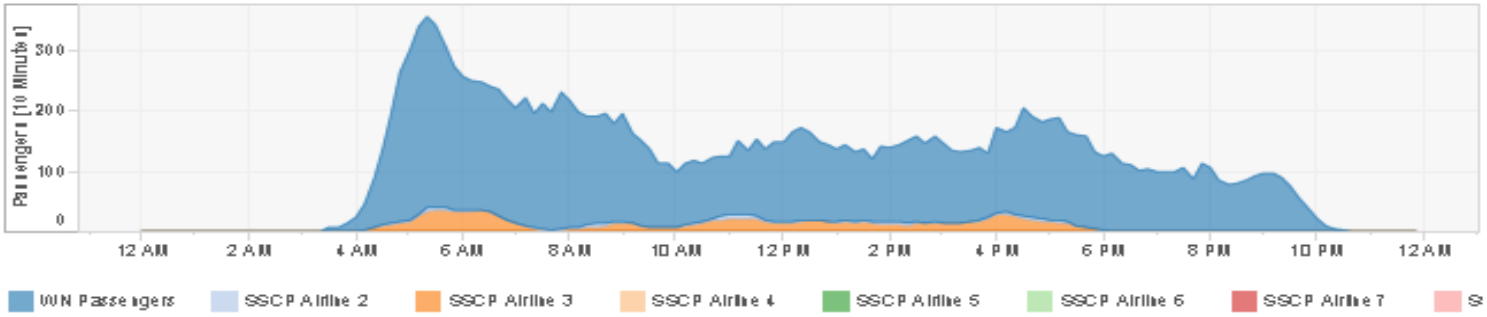
Avg. Load Factor	0.8828
Avg. Pax Group Size	1.3000
Avg. Local %	0.6190
Bags Per Checked Pax	1.3100
% Pax Checking Bags	55%

IABSC

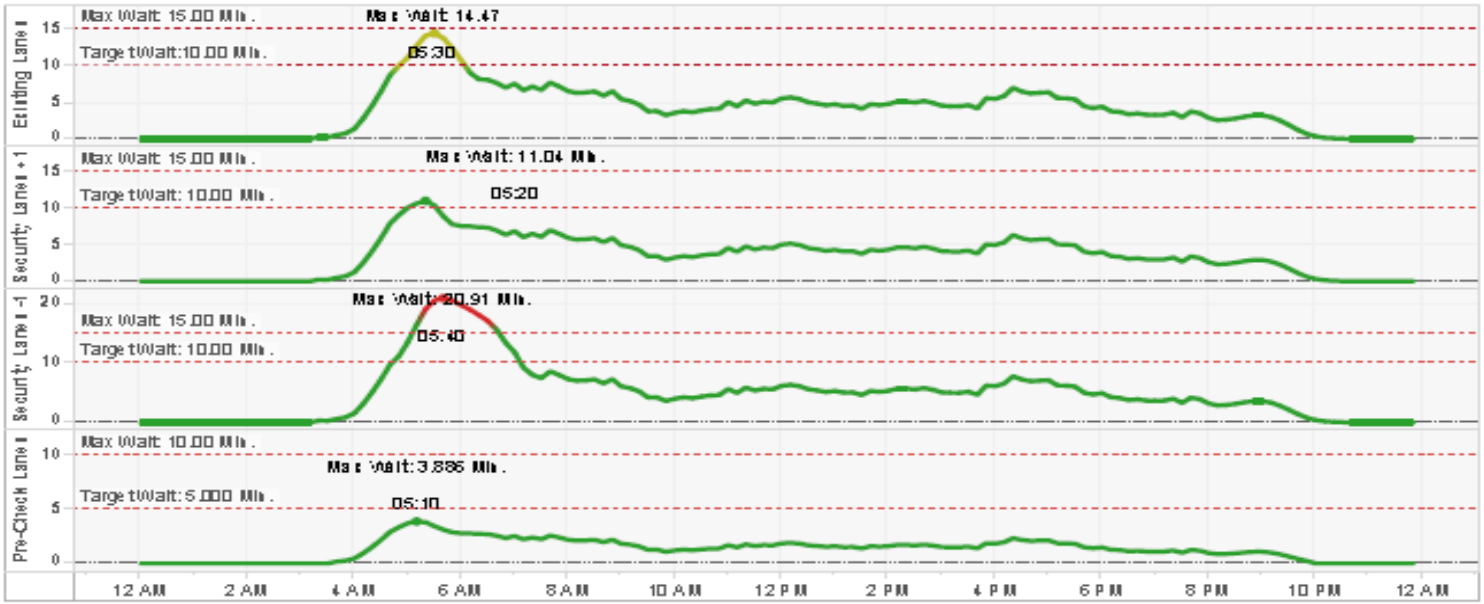
DAL Existing Security Screening Checkpoint for June Base 2018 Monday

Security Lanes	Pre-Check Lanes	Percentage of Pre-Check Passengers	Pax Processing Per Lane	Pre-Check Pax Processing Per Lane	Average Wait Time Per Lane
10	1	5.00%	170.0	250.0	5.0

Security Checkpoint Demand (OAL Included)



Security Checkpoint Wait Times



Southwest

Station
DAL

Schedule
June Base 2018

Date
Monday

Departures

Domestic	International
180	0

Time of Day
All values

SSCP Passenger Splits at Peak

Daily

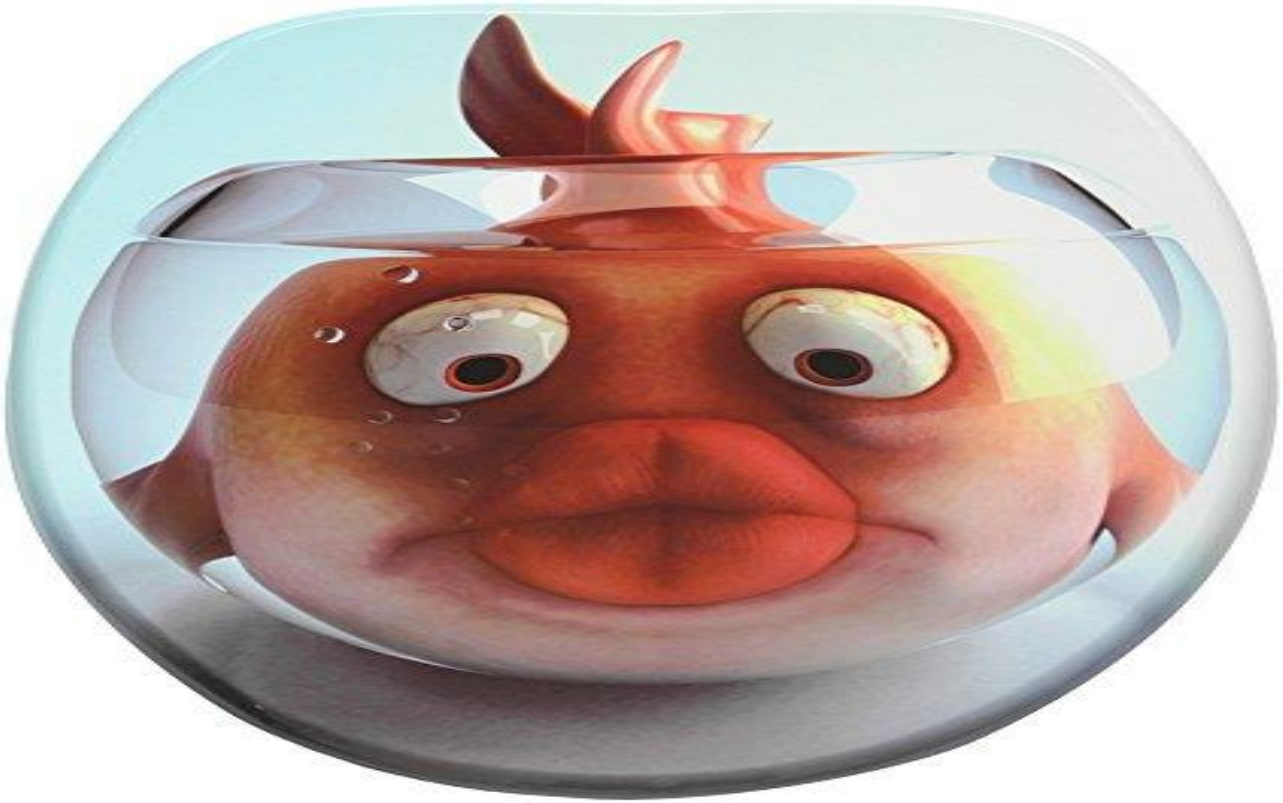
Historic Passenger Metrics

Avg. Load Factor	0.8828
Avg. Pax Group Size	1.3000
Avg. Local %	0.6190
Bags Per Checked Pax	1.3100
% Pax Checking Bags	55%

Scalability

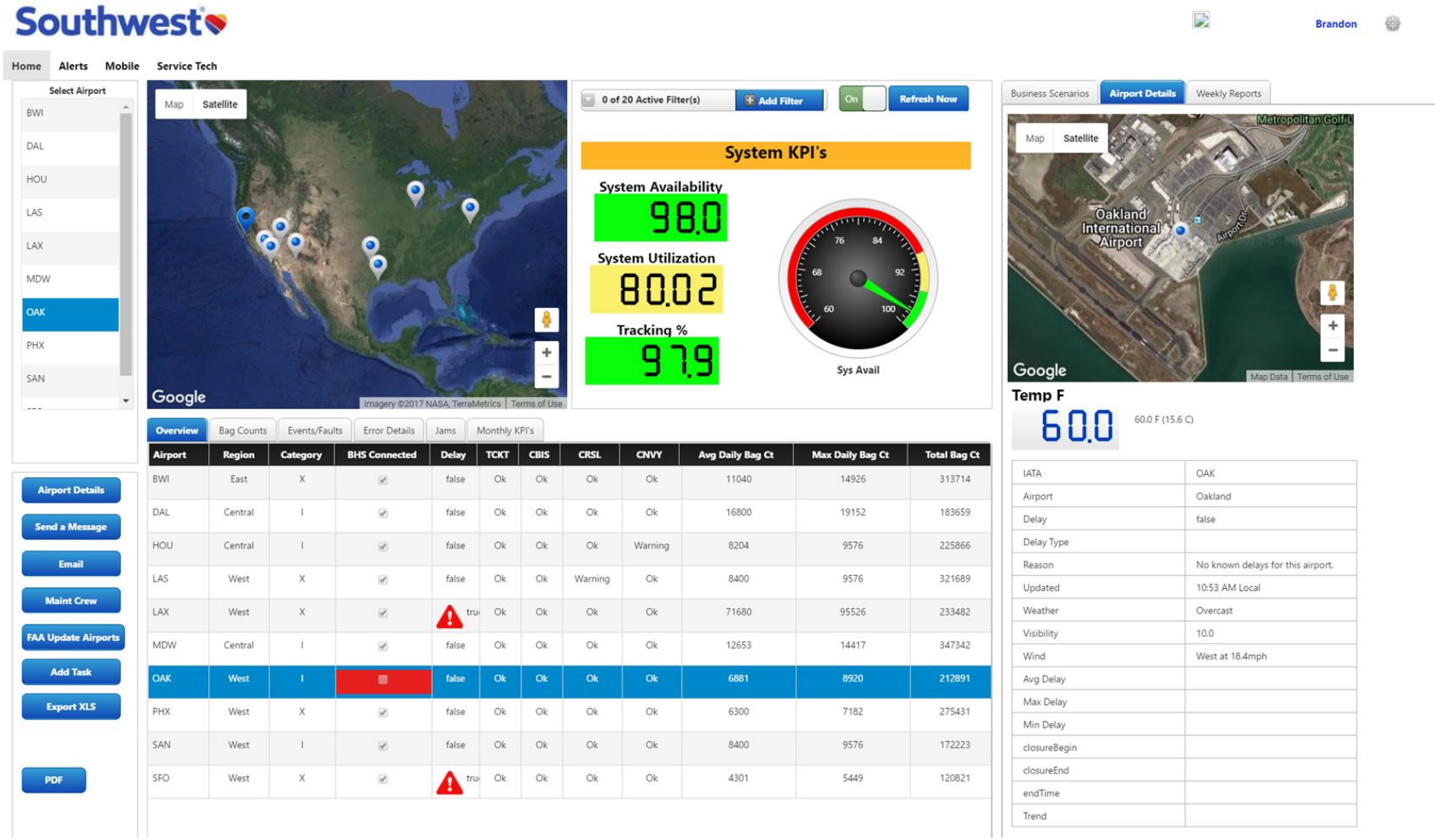
- Current Practice DBU+5
- Conveyor design sized to EDS throughput
- Looking farther out for system throughput design.
- Reduced impact to Airlines

Outgrowing BHS Design Practices



- 3000 Bags per hour and beyond
- Currently adding mainline and crossovers
- Times of saturation making crossovers less efficient
- New technology
- Faster machines
- Migrating from traditional conveyor


FLEX
ability



Airport	Region	Category	BHS Connected	Delay	TCKT	CBIS	CRSL	CNVY	Avg Daily Bag Ct	Max Daily Bag Ct	Total Bag Ct
BWI	East	X	☑	false	Ok	Ok	Ok	Ok	11040	14926	313714
DAL	Central	I	☑	false	Ok	Ok	Ok	Ok	16800	19152	183659
HOU	Central	I	☑	false	Ok	Ok	Ok	Warning	8204	9576	225866
LAS	West	X	☑	false	Ok	Ok	Warning	Ok	8400	9576	321689
LAX	West	X	☑	tru	Ok	Ok	Ok	Ok	71680	95526	233482
MDW	Central	I	☑	false	Ok	Ok	Ok	Ok	12653	14417	347342
OAK	West	I	☐	false	Ok	Ok	Ok	Ok	6881	8920	212891
PHX	West	X	☑	false	Ok	Ok	Ok	Ok	6300	7182	275431
SAN	West	I	☑	false	Ok	Ok	Ok	Ok	8400	9576	172223
SFO	West	X	☑	tru	Ok	Ok	Ok	Ok	4301	5449	120821

IATA	OAK
Airport	Oakland
Delay	false
Delay Type	
Reason	No known delays for this airport.
Updated	10:53 AM Local
Weather	Overcast
Visibility	10.0
Wind	West at 18.4mph
Avg Delay	
Max Delay	
Min Delay	
closureBegin	
closureEnd	
endTime	
Trend	

Thank You!