



INNOVATION@AIRPORTS

Session 7: Examples of Current Airport Innovation Programs

Dave Wilson, Director Airport Innovation

January 15, 2019

SEATTLE-TACOMA INTERNATIONAL AIRPORT

Presentation Overview

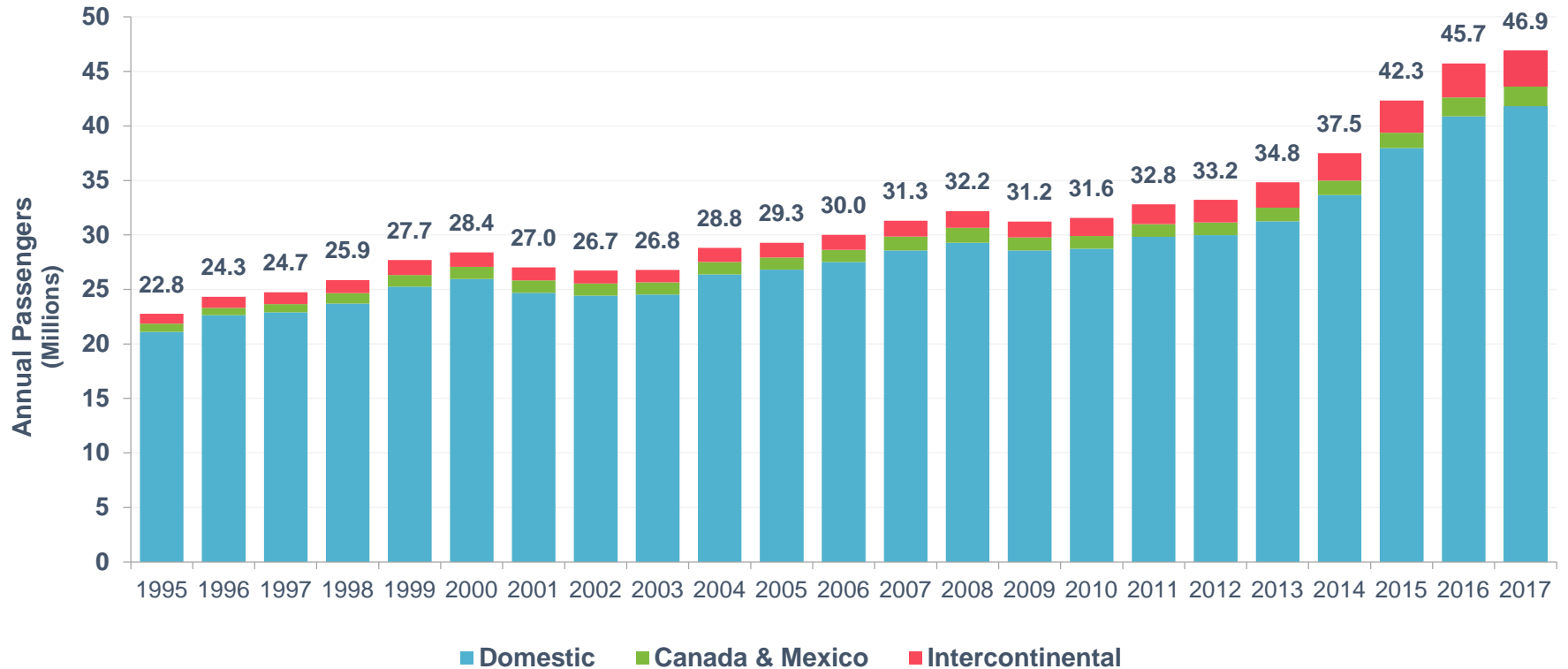


- Leveraging Innovation to Manage Growth
- Building an Employee Innovation Culture
- Public Agency R&D Opportunities

SEATTLE-TACOMA INTERNATIONAL AIRPORT

Seattle's growth has been consistent and strong

SEA has grown by more than 40% in just the last 5 years



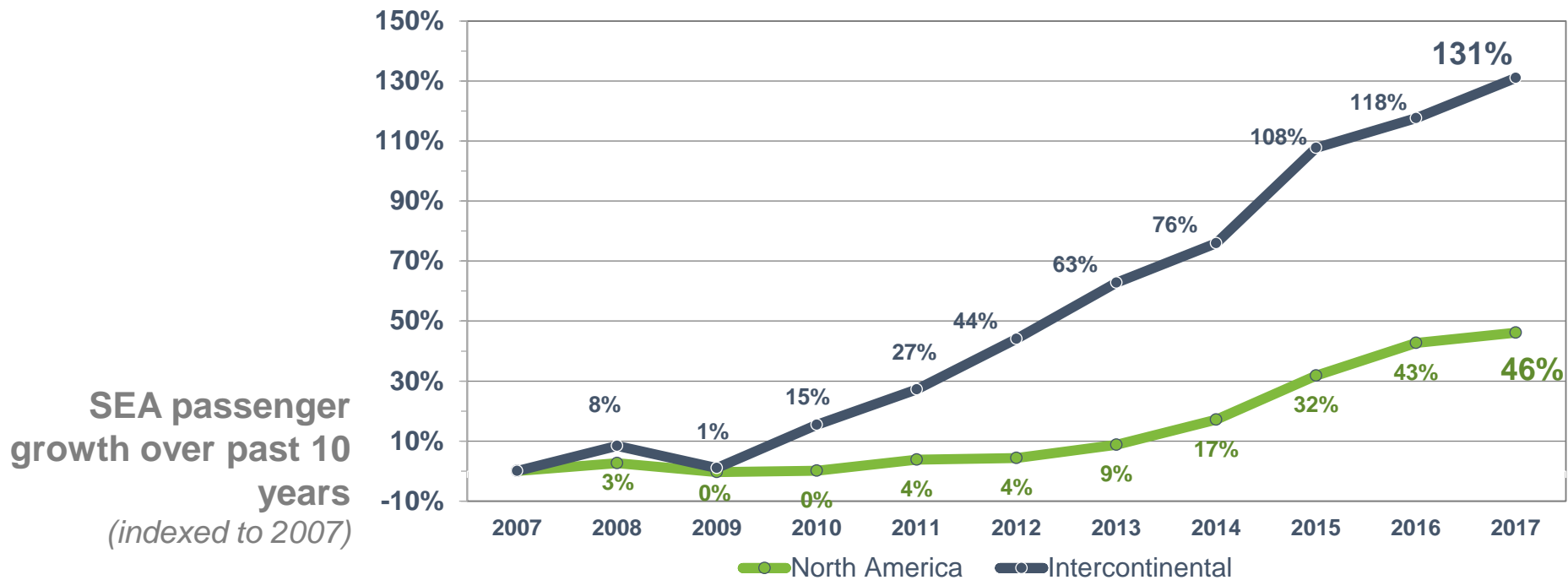
SEATTLE-TACOMA INTERNATIONAL AIRPORT

SEA has rapidly risen from the 17th to 9th largest N.A. airport

2011	2012	2013	2014	2015	2016
1. ATL	1. ATL	1. ATL	1. ATL	1. ATL	1. ATL
2. ORD	2. ORD	2. ORD	2. LAX	2. ORD	2. LAX
3. LAX	3. LAX	3. LAX	3. ORD	3. LAX	3. ORD
4. DFW	4. DFW	4. DFW	4. DFW	4. DFW	4. DFW
5. DEN	5. DEN	5. DEN	5. DEN	5. JFK	5. JFK
6. JFK	6. JFK	6. JFK	6. JFK	6. DEN	6. DEN
7. SFO	7. SFO	7. SFO	7. SFO	7. SFO	7. SFO
8. PHX	8. CLT	8. CLT	8. CLT	8. CLT	8. LAS
9. LAS	9. LAS	9. LAS	9. LAS	9. MIA	9. SEA
10. IAH	10. PHX	10. MIA	10. PHX	10. PHX	10. MIA
11. CLT	11. IAH	11. PHX	11. IAH	11. LAS	11. CLT
12. MIA	12. MIA	12. IAH	12. MIA	12. IAH	12. YYZ
13. MCO	13. MCO	13. YYZ	13. YYZ	13. SEA	13. PHX
14. EWR	14. YYZ	14. EWR	14. SEA	14. YYZ	14. MCO
15. YYZ	15. EWR	15. SEA	15. MCO	15. MCO	15. IAH
16. MSP	16. SEA	16. MCO	16. EWR	16. EWR	16. EWR
17. SEA	17. MSP	17. MSP	17. MSP	17. MSP	17. MSP
18. DTW	18. DTW	18. DTW	18. DTW	18. BOS	18. BOS
29. YVR	29. YVR	29. YVR	29. YVR	28. YVR	27. YVR
32. PDX	32. PDX	32. PDX	32. PDX	32. PDX	32. PDX

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Seattle's growth strong in long-haul international markets



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Peak periods on South Satellite



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Today's International Arrivals Facility



SEATTLE-TACOMA INTERNATIONAL AIRPORT

Responding to Growth and Optimizing Operations



- Major Capital Improvements & Innovation

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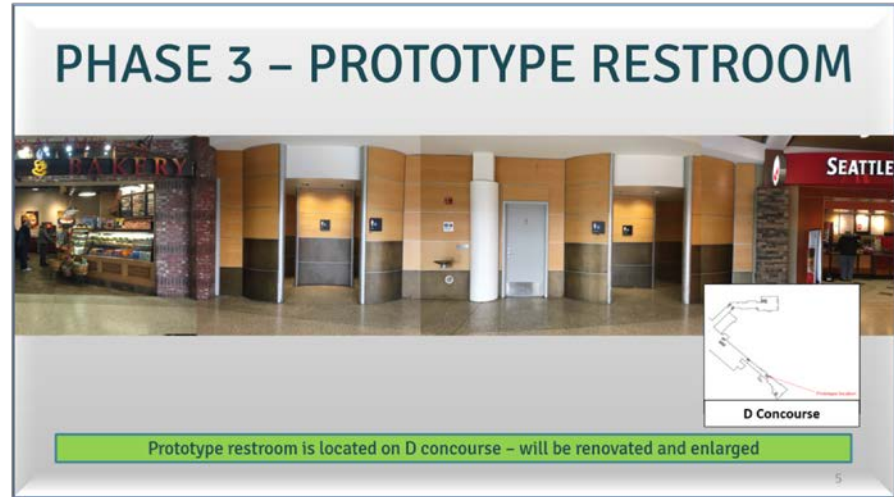
Growth & Required Construction



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Incorporating Innovation in the Capital Program

AV/PMG Estimate of Project Cost							Port of Seattle
Seattle-Tacoma International Airport							
Restroom Upgrades - Phase 2							
C800697 WPU00403			Date: Wednesday, August 01, 2018				Estimate Type: 100%
CP Program: Terminal and Tenant							
Estimated Direct Costs							
	QTY	UM	UP	CAPITAL	EXPENSE	ERTL	TOTAL
PAMP-LEVEL NORTH	8,330	SF	\$ 30.23	\$ 250,000	\$ -	\$ -	\$ 250,000
PAMP-LEVEL SOUTH (SKYWEST)	560	SF	\$ 30.179	\$ 169,000	\$ -	\$ -	\$ 169,000
AIR HANDLING UNIT (AHU)	1	LS	\$ 528,000.00	\$ 528,000	\$ -	\$ -	\$ 528,000
Subtotal Major Construction Direct Costs: 9,490 SF				\$ 2,307,000	\$ -	\$ -	\$ 2,307,000
Design Development Allowance				10%; \$ 23,000	\$ -	\$ -	\$ 23,000
Construction Phasing				13.4%; \$ 307,000	\$ -	\$ -	\$ 307,000
Evaluation @ 0.5% to mid-point of construction				4.2%; \$ 98,000	\$ -	\$ -	\$ 98,000
Subtotal Construction Direct Costs				\$ 2,762,000	\$ -	\$ -	\$ 2,762,000
GC, Home Office OH, Bond & Profit				27.0%; \$ 746,000	\$ -	\$ -	\$ 746,000
Market Contingency				18.0%; \$ 494,000	\$ -	\$ -	\$ 494,000
Estimate of Probable Construction Cost (Est. Bid Amount)				\$ 413.28	\$ 3,922,000	\$ -	\$ 3,922,000
Other POS Direct Costs (Includes Construction Contingency)							
Utility Costs (Design, Construction, Permit Fees)				\$ -	\$ -	\$ -	\$ -
Contingencies							
Construction Contingency				18.0%; \$ 568,000	\$ -	\$ -	\$ 568,000
Other POS Direct Costs (Excludes Construction Contingency)							
Owner Furnished Material & Equipment				\$ -	\$ -	\$ -	\$ -
Subtotal				\$ 4,510,000	\$ -	\$ -	\$ 4,510,000
PCS Costs							
PCS ENV /HAZMAT / RMM				\$ 90,000	\$ -	\$ -	\$ 90,000
PCS Bid Amount (including Contingency)				\$ 28,000	\$ -	\$ -	\$ 28,000
PCS Materials				\$ -	\$ -	\$ -	\$ -
PCS Equipment				\$ -	\$ -	\$ -	\$ -
Subtotal PCS Construction Costs				\$ 38,000	\$ -	\$ -	\$ 38,000
PCS Construction Management				\$ -	\$ -	\$ -	\$ -
Subtotal Construction Costs w/ ODC's & Contingency				\$ 4,548,000	\$ -	\$ -	\$ 4,548,000
Washington State Sales Tax (VST)				10.0%; \$ 452,000	\$ -	\$ -	\$ 452,000
Other POS Direct Costs (Excludes Sales Tax and Const. Contingency)							
Owner Furnished Equipment (Tax Exempt)				\$ -	\$ -	\$ -	\$ -
Maintenance Support				\$ 13,000	\$ -	\$ -	\$ 13,000
Portable toilets				\$ 41,000	\$ -	\$ -	\$ 41,000
Subtotal Final Construction Cost				\$ 5,054,000	\$ -	\$ -	\$ 5,054,000
PMG & Other Soft Costs							
Design (DS)							
A/E Design and Construction Support - Consultant				6.0%; \$ 275,000	\$ -	\$ -	\$ 275,000
Design and Construction Support - In House				0.0%; \$ -	\$ -	\$ -	\$ -
Project Management (PM)							
Project Mgmt (Des & Const)				8.0%; \$ 364,000	\$ -	\$ -	\$ 364,000
Commissioning				0.0%; \$ -	\$ -	\$ -	\$ -
Construction Management (CM)							
Construction Management				10.0%; \$ 457,000	\$ -	\$ -	\$ 457,000
Testing & Inspection				0.9%; \$ 40,000	\$ -	\$ -	\$ 40,000
Safety				1.4%; \$ 62,000	\$ -	\$ -	\$ 62,000
Survey				0.2%; \$ 8,000	\$ -	\$ -	\$ 8,000
Central Procurement Office (CPO)							
Central Procurement Office				1.7%; \$ 77,000	\$ -	\$ -	\$ 77,000
Administration (AD)							
Airport Director				2.3%; \$ 105,000	\$ -	\$ -	\$ 105,000
Environmental & Permitting (EP)							
Environmental Support & Reviews				0.5%; \$ 23,000	\$ -	\$ -	\$ 23,000
Legal				0.0%; \$ -	\$ -	\$ -	\$ -
Building Dept / Permitting				\$ -	\$ -	\$ -	\$ -
Subtotal PMG & Other Soft Costs				32%; \$ 1,456,000	\$ -	\$ -	\$ 1,456,000
Other Project Costs							
Art Program				0.5%; \$ 27,000	N/A	N/A	\$ 27,000
Technology Innovation Contingency				0.5%; \$ 25,000	N/A	N/A	\$ 25,000
ICT Systems Components (Estimate by ICT)				\$ -	\$ -	\$ -	\$ -
Project Contingency				5.0%; \$ 326,000	\$ -	\$ -	\$ 326,000
TOTAL ESTIMATED PROJECT COST				\$ 6,888,000	\$ -	\$ -	\$ 6,888,000



Subtotal PMG & Other Soft Costs	32%	\$ 1,456,000	\$ -	\$ -	\$ 1,456,000
Other Project Costs					
Art Program	0.5%	\$ 27,000	N/A	N/A	\$ 27,000
Technology Innovation Contingency	0.5%	\$ 25,000	N/A	N/A	\$ 25,000
ICT Systems Components (Estimate by ICT)		\$ -	\$ -	\$ -	\$ -
Project Contingency	5.0%	\$ 326,000	\$ -	\$ -	\$ 326,000
TOTAL ESTIMATED PROJECT COST		\$ 6,888,000	\$ -	\$ -	\$ 6,888,000

Innovation Contingency
(1/2% of project construction cost)

SEATTLE-TACOMA INTERNATIONAL AIRPORT

Responding to Growth by Optimizing Operations

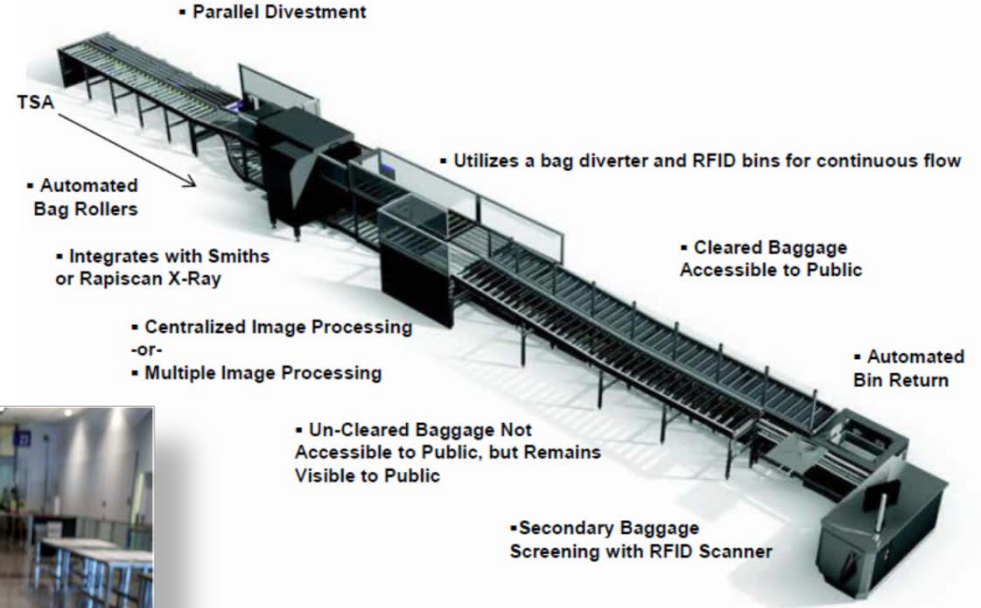


- Optimizing Operations & Innovation

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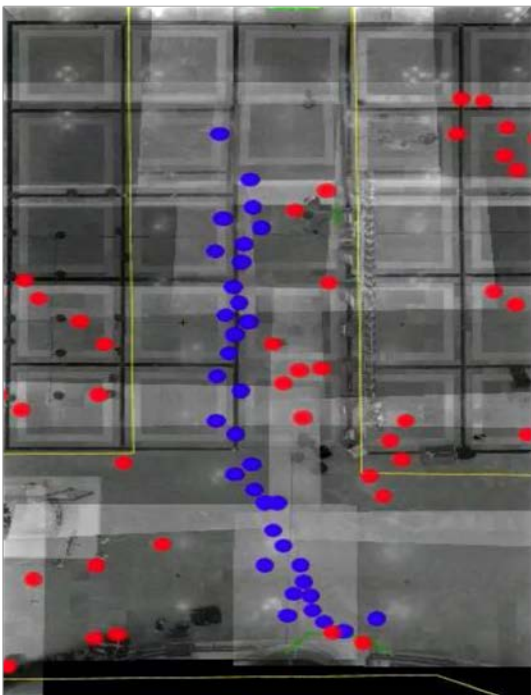
Automated Screening Lanes

- Faster security screening
- Domestic and international

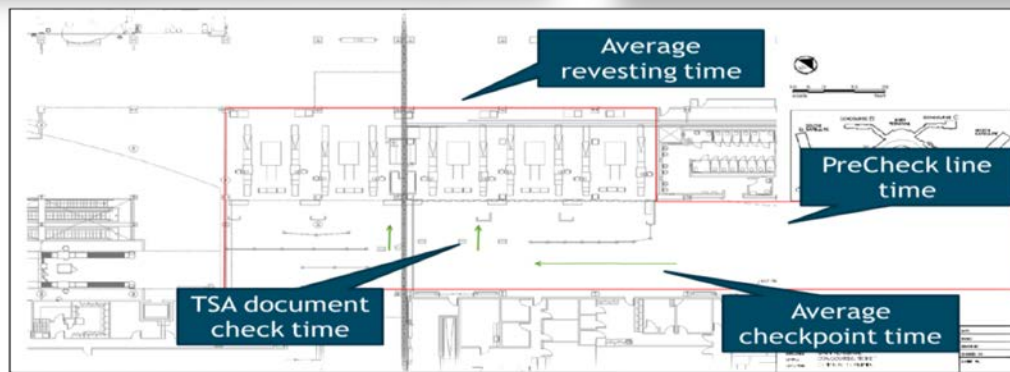


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Checkpoint Wait Time



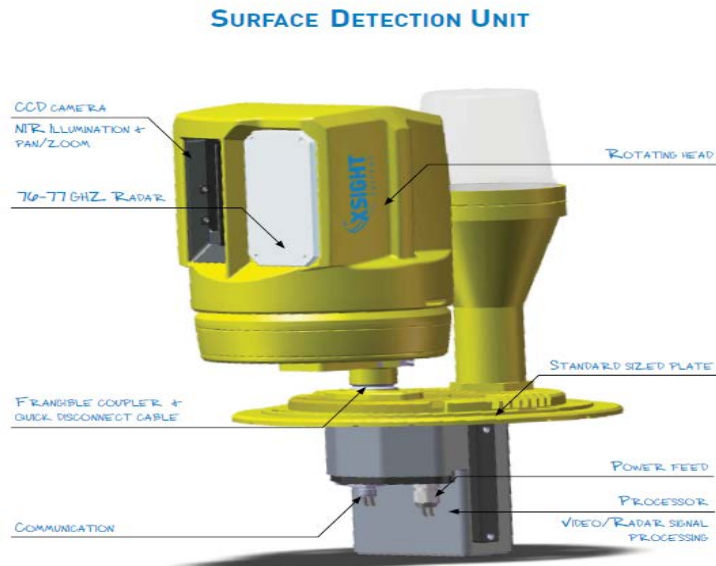
Passenger Flow Management



Installation underway using video analytics

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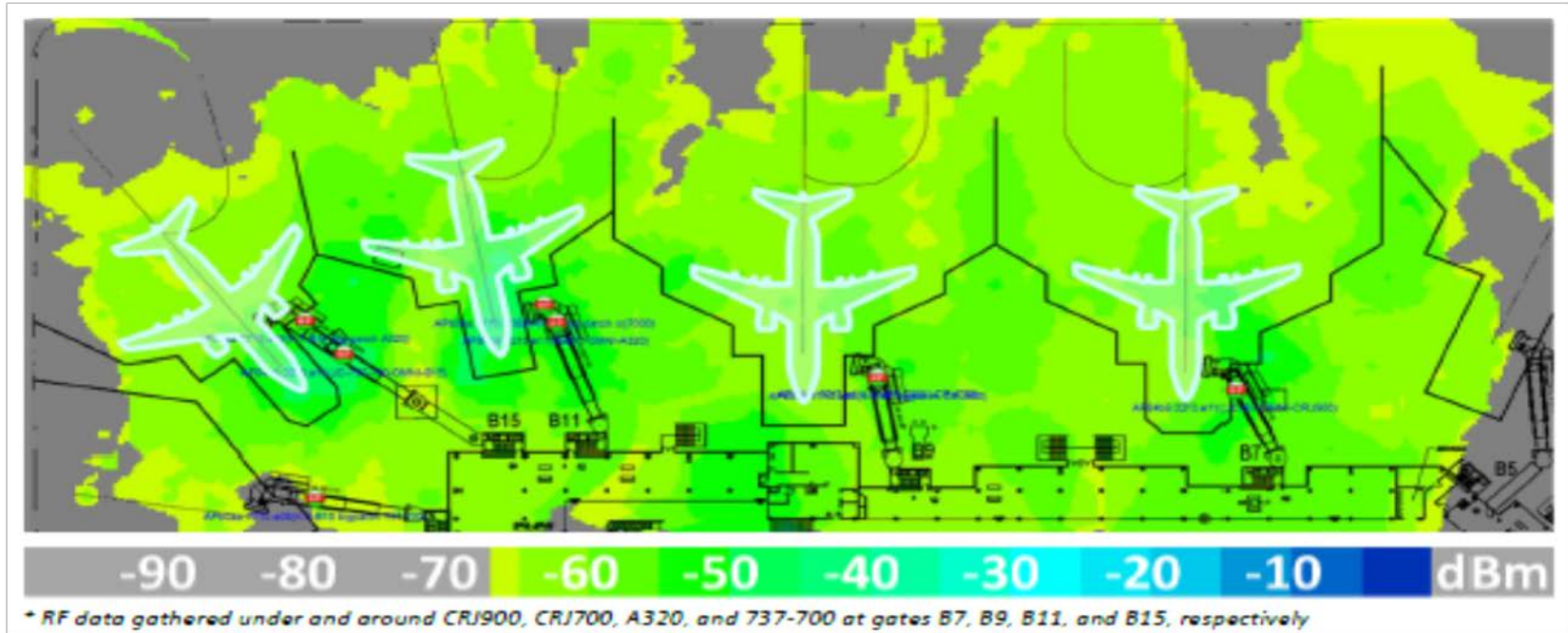
Airfield Technologies



FOD Detection System

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Ramp Wi-Fi to Optimize Operations



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Building an Employee Innovation Culture



- Executive Leadership
- Employee Engagement

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Innovation Requires Executive Support



Steve Metruck
Executive Director
Port of Seattle

“Innovation is vital for us to succeed. By listening to front-line employees and creating the atmosphere that encourages them to innovate on the job, I am confident we can come up with the best solutions in the shortest amount of time. This not only improves efficiency and effectiveness, it also increases employee engagement.”

2018 Innovation Award Examples

Port of Seattle Traffic LIFT

Team members:

- Geraldine Poor
- Jeff Wolf
- Vicky Ausbun
- Sue Adams
- Nic Longo
- Thomas Hooper
- Crissa Adams
- Heather Karch
- Jerred Jones
- Nick Terrana
- Mandela Thomas
- Barbara Hummel
- Rosa Johnson
- Doug Pessemier
- Jim Witzman
- Alan Parsley
- Rina Sinha
- Jeff Hoevet
- Michael Ehl

External team members:

- Will Appleton, City of Seattle
- Ben Sacks, Lyft
- Raj Bal, Limo
- Alexis Maxwell, Uber
- Jon Pascal, Consultant



Reduced wait times despite rapid growth

More 3D Printing: ITB Tamper Switch Printing, Card Reader Templates, & Power Source Brackets

Team members:

- Navtej Sahota
- Dan Reichel
- Miles Gala
- Teri Grosvenor



Employee driven designs leverage 3D printing to save thousands

Origami: Technology that supports safety engagement

Team members:

- Tiffany Olson
- Juan Martel
- Tim Mitchel
- Dave Epstein
- Britney Gallagher
- Manette Moses



Mobile app allows for immediate safety reporting

Baggage System Data Collection: Maximizing Port resources

Team members:

- Angie Schmitke
- Ryan Pazaruski
- John Street
- Jerry Price
- Phil Allan
- Erik Knowles



Real-time data collection ensures actionable improvements

2018 3rd Quarter Innovation Award winner

"Port of Seattle
Traffic LIFT"



SEATTLE-TACOMA INTERNATIONAL AIRPORT

Airport's Managing Director Promotes Innovation

[Port Internet](#) [Sustainability](#) [My Site](#) [Phonebook](#)

COMPASS

Wilson, David E.

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Innovation accelerator



[Learn more about the Innovation Accelerator Program](#)

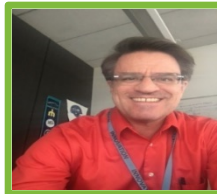
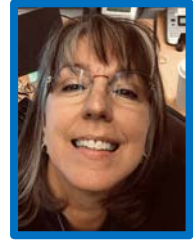
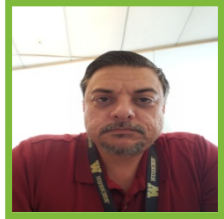
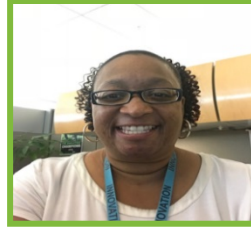
Aviation Managing Director Lance Lyttle and Director of Innovation Dave Wilson are introducing a new program to encourage innovation – an opportunity to leverage good ideas from anyone who works at the Port. Employees will be able to submit their ideas to an online suggestion box as part of the Innovation [Accelerator Collaboration website](#). Below are several videos to learn about the program and how you can become involved, just click on the questions and hear from Lance!

Check it out and think INNOVATION! [Click here to go to the Innovation Accelerator Collab website](#) and keep watching there for additional information in the future!

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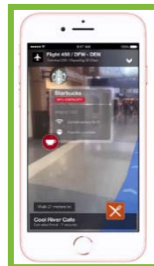
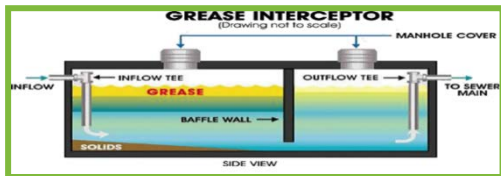
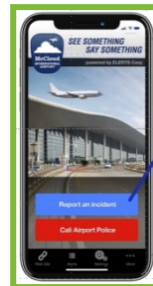
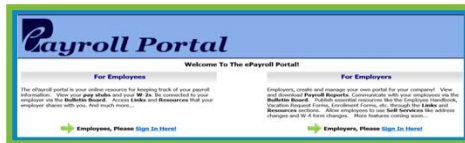


Shark Tank Innovations 2017-2018



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Innovations Moving Forward



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How do we measure innovation success?

App helps visually impaired navigate Sea-Tac airport

The app is a first of its kind used at Sea-Tac Airport.



For Disabled Travelers, Technology Helps Smooth the Way. But Not All of It.

The New York Times

Seattle airport trials smart glasses to help blind passengers find their way



Sea-Tac Airport creating “an entirely new passenger experience”



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Employee Shark Tank Innovations in the news

Seattle-Tacoma International Airport pass allows visitors beyond security checkpoints



Seattle Airport Will Soon Allow People to
Pick Up Their Friends and Family at the
Gate



Pilot program launched to allow visitors past security at Sea-Tac Airport



New Sea-Tac Airport program allows visitors to go beyond security, get to gate without a ticket



Sea-Tac Airport to allow visitors beyond security checkpoints



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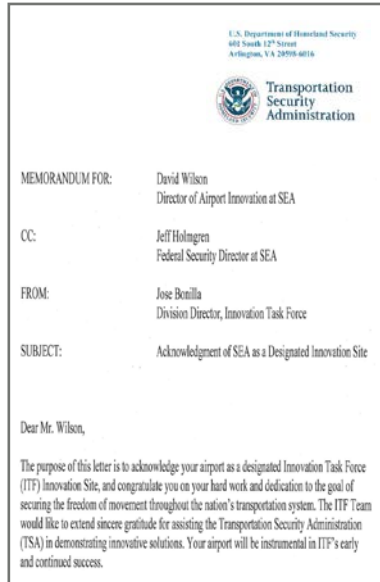
Public Agency R&D Opportunities



- Collaborate with FAA, DHS and TSA
- Proof of Concept Demonstrations

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SEA Industry Collaboration



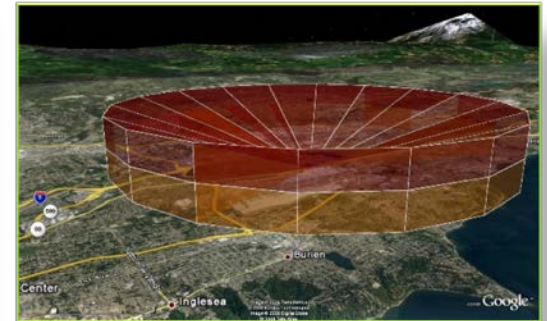
TSA Innovation Task Force



DHS Silicon Valley Innovation Program



Proposed TSA/SEA Demonstration



Avian Radar FAA Study

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Public Agency R&D Opportunities

PROOF OF CONCEPT AGREEMENT

This Proof-of-Concept Agreement is made and entered into as of January 18, 2018 by and between [REDACTED], and the Port of Seattle, a Washington municipal corporation.

1. Purpose

The purpose of this agreement is for [REDACTED] to provide the Port of Seattle with a means to evaluate voice-augmented smart signage (VASS) technology at Seattle-Tacoma International Airport. The Port of Seattle will provide key use cases and feedback to [REDACTED] based on user tests performed during the proof-of-concept period.

[REDACTED] NC, will supply, configure and assist in the installation of voice-augmented smart signage prototype in the Seattle-Tacoma International Airport. The evaluation would determine whether VASS will work in an airport environment and how well it is accepted by passengers. Port of Seattle staff will assist [REDACTED] staff with both the installation of the VASS prototype and testing of the prototype in a modern, busy international airport.

This will be a collaborative effort to gain a greater understanding of the potential benefits of voice recognition and artificial intelligence technology for airport operators and our passengers. This memorandum of understanding will be used to define the scope of the proof of concept and the relationship between [REDACTED] and the Port of Seattle.

2. [REDACTED] NC. Deliverables

[REDACTED] will provide a voice-augmented smart signage prototype with the following features and corresponding support activities:

2.1. Voice-augmented smart signage prototype features:

2.1.1. Voice recognition of passenger queries base on Microsoft Cortana voice recognition (Cortana)

2.1.1.1. Record and send verbal commands to Cortana cloud service based on passenger queries.

2.1.1.2. Audible messages returned from Cortana queries and their response to an integrated speaker

2.1.1.3. Context sensitive - positive and negative - responses to passenger questions after processing with the Cortana cloud service

2.1.1.4. The prototype will demonstrate six queries identified below:

2.1.1.4.1. Points of interest examples:

2.1.1.4.1.1. "How do I get to gate N6?" (or other gate)

2.1.1.4.1.2. "Where is the nearest restroom?"

2.1.1.4.1.3. "Where is the Alaska check-in counter?"

2.1.1.4.1.4. "Where is the fastest security checkpoint?"

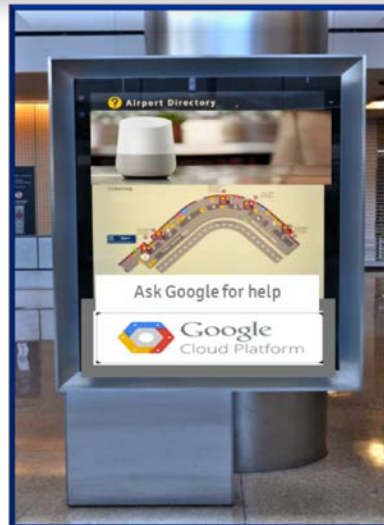
2.1.1.4.1.5. "Where is duty free?"

2.1.1.4.2. Information requests



iBeacon POC

(4)



AI POC & Hackathons

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Thank you

Dave Wilson, Director Airport Innovation
wilson.d@portseattle.org

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