



WheelTug®

Investor Overview

15 May 2018

**For decades, the commercial
airline industry has seen only
incremental improvements**

**WheelTug® is a game-changing
new technology for aviation**



Airplanes Soar Through the Skies



Airplanes are highly efficient machines in the air...

But they produce revenue only while they fly





On the Ground, Time = Money



On the ground, airplanes are not as efficient.

Every minute spent on the ground generates no revenue - and has an opportunity cost of \$150.¹

Most short-haul flights spend nearly as much time on the ground as they do in the air.



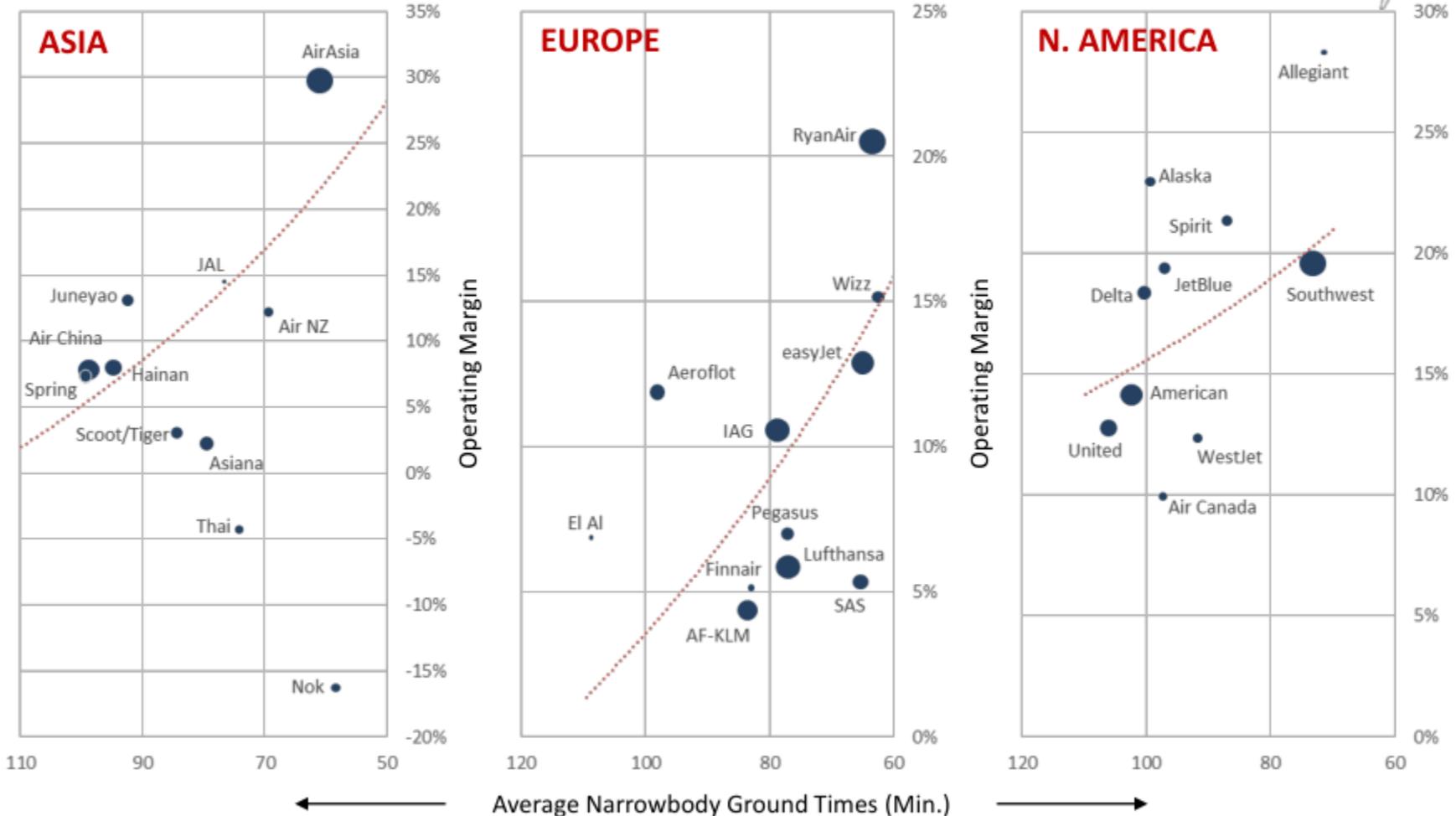
LaGuardia, Terminal C

¹ <http://airlines.org/data/per-minute-cost-of-delays-to-u-s-airlines/>



Slower on the ground = trailing financial performance

Ground Efficiency Is Critical



2 million + flights:
 14-20 Aug 2016
 22-28 Nov 2016
 19-26 Apr 2017

- Carriers reporting > 2000 flights
- Excludes ground times > 180 minutes
- Narrowbodies only for FY2015 and 2016





The Big Problem on the Ground



Airplanes cannot maneuver easily or move in reverse. They must hook up to a tow tug to push them back from terminal gates.



This process is expensive and time-consuming.



How to Solve the Ground Problem?



The aerospace industry has tried to solve this problem for more than 70 years.

The obvious solution: build electric motors into the plane's wheels - but the technology and engineering needed to do this are very complex.

Since we began work on WheelTug, the following large aerospace companies have launched programs to develop competing products: Crane, L-3, Lufthansa, and EGTS (Safran + Honeywell). No matter what approach they've taken, all have abandoned their efforts.



WheelTug Has the Solution...



**WheelTug makes flying faster –
by making planes faster *on the ground*.**

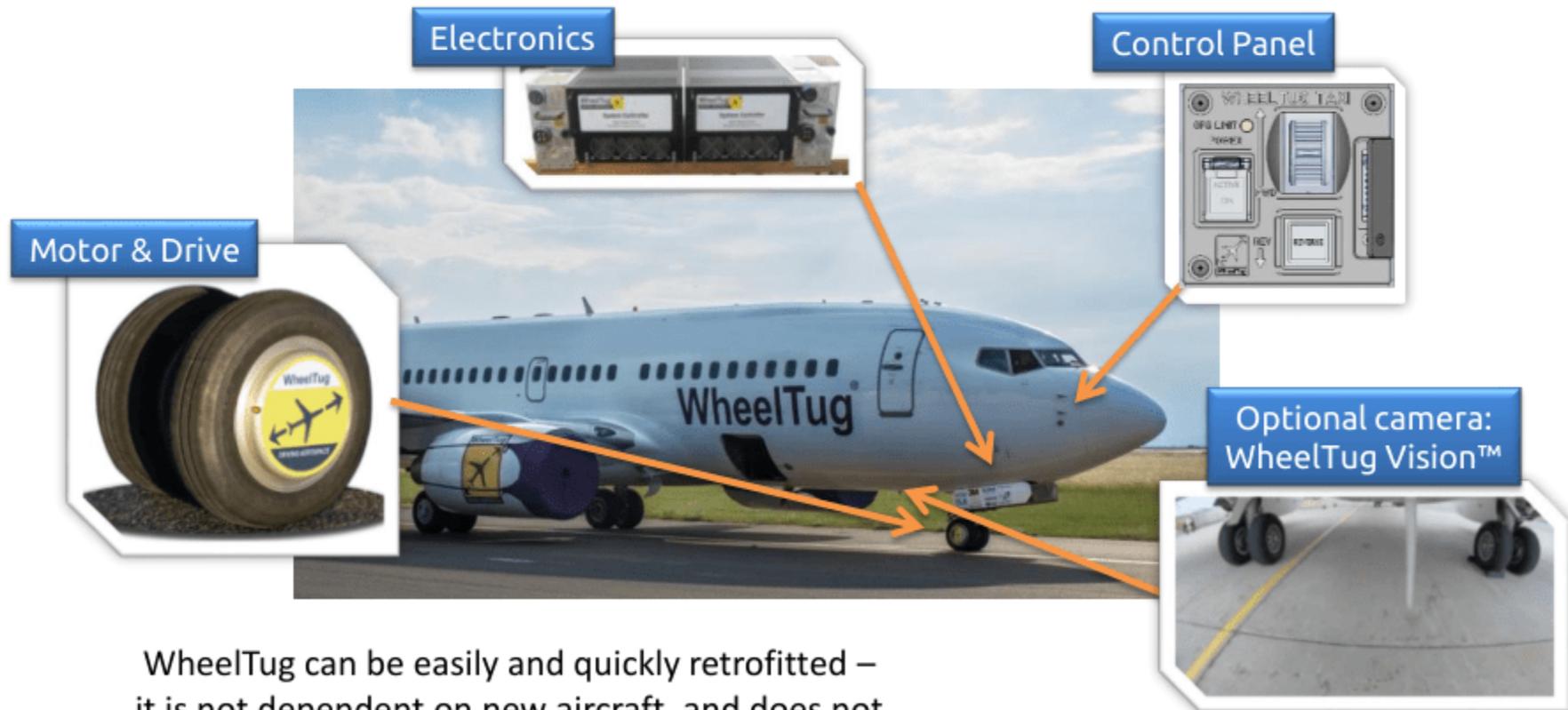




...Electric Taxiing



WheelTug is a unique electric taxi system with these major components installed on the aircraft



WheelTug can be easily and quickly retrofitted – it is not dependent on new aircraft, and does not take existing aircraft out of service for weeks.



WheelTug Offers Many Benefits



Using electric motors in the nosewheels, WheelTug enables airplanes to taxi forward and backward.

WheelTug aircraft can easily maneuver in tight terminal areas while keeping jet engines off.

WheelTug reduces fuel consumption and many other costs, eliminates the need for tow tugs (safer), and enables faster flight turnarounds.

WheelTug lets airplanes spend more time flying - and less time on the ground.

See WheelTug at <https://www.youtube.com/watch?v=cYYOMJH4gYg>



Saving Time & Money



- Saves 7-20 minutes per flight
- Enables more flights per day, thus
- Enables airlines to raise an airplane's productivity by up to 20%
- Unlocks multiple cost savings and efficiency gains
- Creates total airline benefits of \$2 MM to \$7 MM per airplane per year, depending on airline usage

(For a midsize airline with 100 airplanes, savings might reach \$700 million per year)

WheelTug is also greener, safer, and quieter, making passengers, neighbors, and airports happier.



WheelTug Saves Time in Two Ways



- In pushback from gates and beginning to taxi forward
(WheelTug lets airlines do this immediately)
- In parallel parking at gates, using two doors to deplane and board (the WheelTug Twist)
(It will take airlines a while to implement this one)



Faster pit stops =
increased earnings



Streamlined Operations



Conventional Pushback



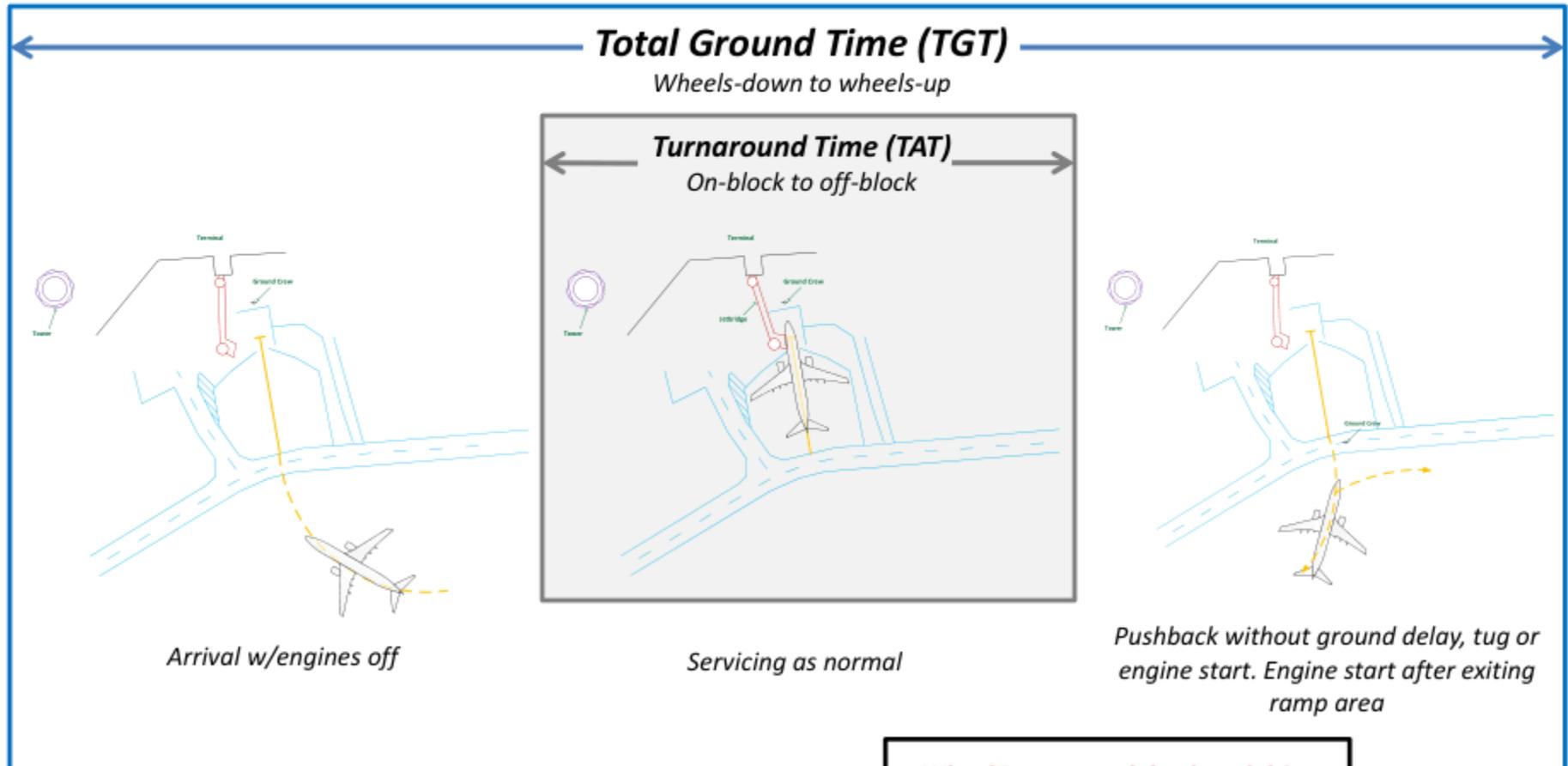
WheelTug

with WheelTug Vision





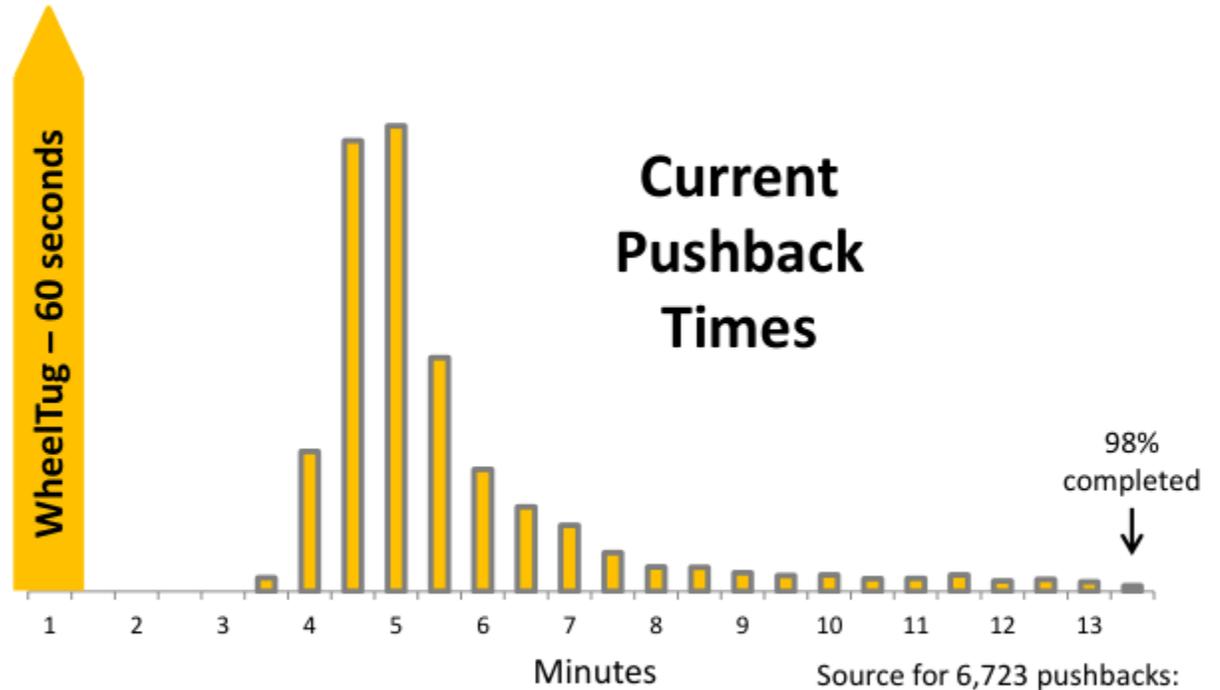
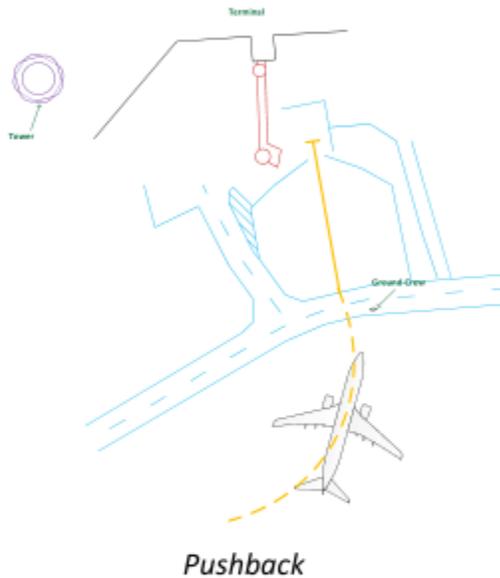
WheelTug = Faster Pushback



**WheelTug can push back and drive forward in 60 seconds!
NO TUG REQUIRED**



Faster Pushback Time = Savings



Every minute saved on pushback saves the average airline at least **\$150**.

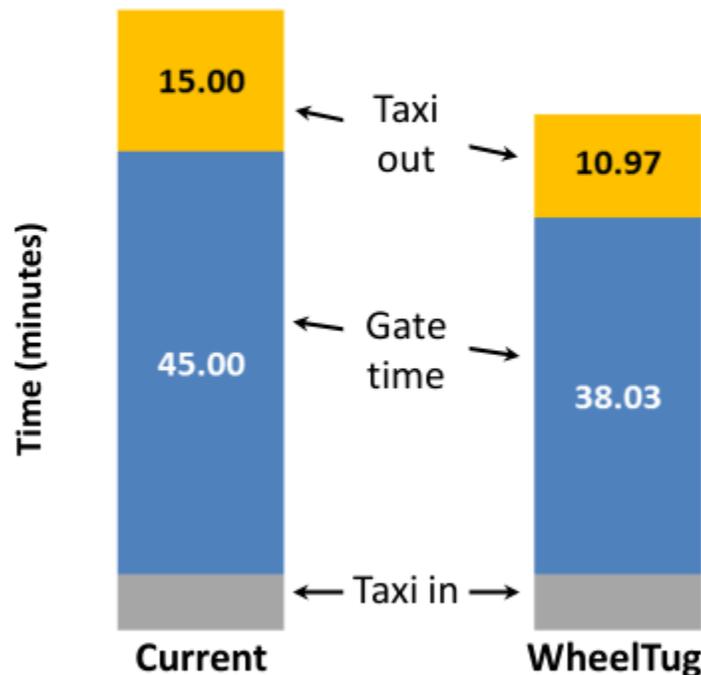
WheelTug will reduce up to 30% of ground time.



WheelTug Enables More Flights



Non-flight time



Savings in this scenario (year 5) are 11.01 minutes/flight of *scheduled* time.
Savings from two-door (Twist) handling included.

WheelTug pushback times are not only shorter, they are also more dependable, requiring less schedule padding by airlines to meet on-time metrics.

With these efficiencies, WheelTug can open up significant schedule gains for any airline.

*Depending on an airline's current fleet and schedule, WheelTug productivity gains may increase **10% or more**.*



WheelTug Also Reduces Costs...



Every flight, WheelTug saves other costs...

- Pushback (no tug or crew)
 - Fuel (main engines not running while taxiing)
 - Engine maintenance
 - Engine damage
 - Brake wear and maintenance
- ...totaling more than \$250/flight

For a fleet of 100 airplanes, these ancillary savings add up – more than \$40 million, every year.



...And Adds Operational Benefits



Benefits:

- Cuts at least 7 minutes from total ground time
- Reduces fuel burn by 75+% during stop-and-go taxi, de-icing queues
- No waiting for a tug after a weather delay

Impacts:

- Higher aircraft utilization
- Fewer knock-on delays, crew time-outs
- Fewer ground crew required
- Happier passengers



...Plus Large Environmental Benefits



Lower Emissions in the Takeoff Queue

Per flight fuel savings for a 5-minute queue assumes dual-engine @ 2.9 gal/minute	14.5 gal
Annual fuel savings, one plane 4.5 turns/day @ 360 days	23,500 gal
Annual CO ₂ reduction for 1,050 aircraft: @ 9.6 kg CO ₂ /gal Jet A; 1,050 = current WheelTug LOIs with airlines	236,000 tonnes
Annual CO ₂ reduction for 14,000 aircraft: hypothetical expansion across the industry – B737 / A320 only	3.15M tonnes

One B737/A320 generates the same CO₂ (and NO_x) as 48 cars.*
Deploying WheelTug *just among those airlines that have already signed LOIs* will be the equivalent of removing 50,000 cars from the road for the entire year, every year.

Adoption of WheelTug industry-wide would offer the equivalent of taking 670,000 million cars off the road annually.

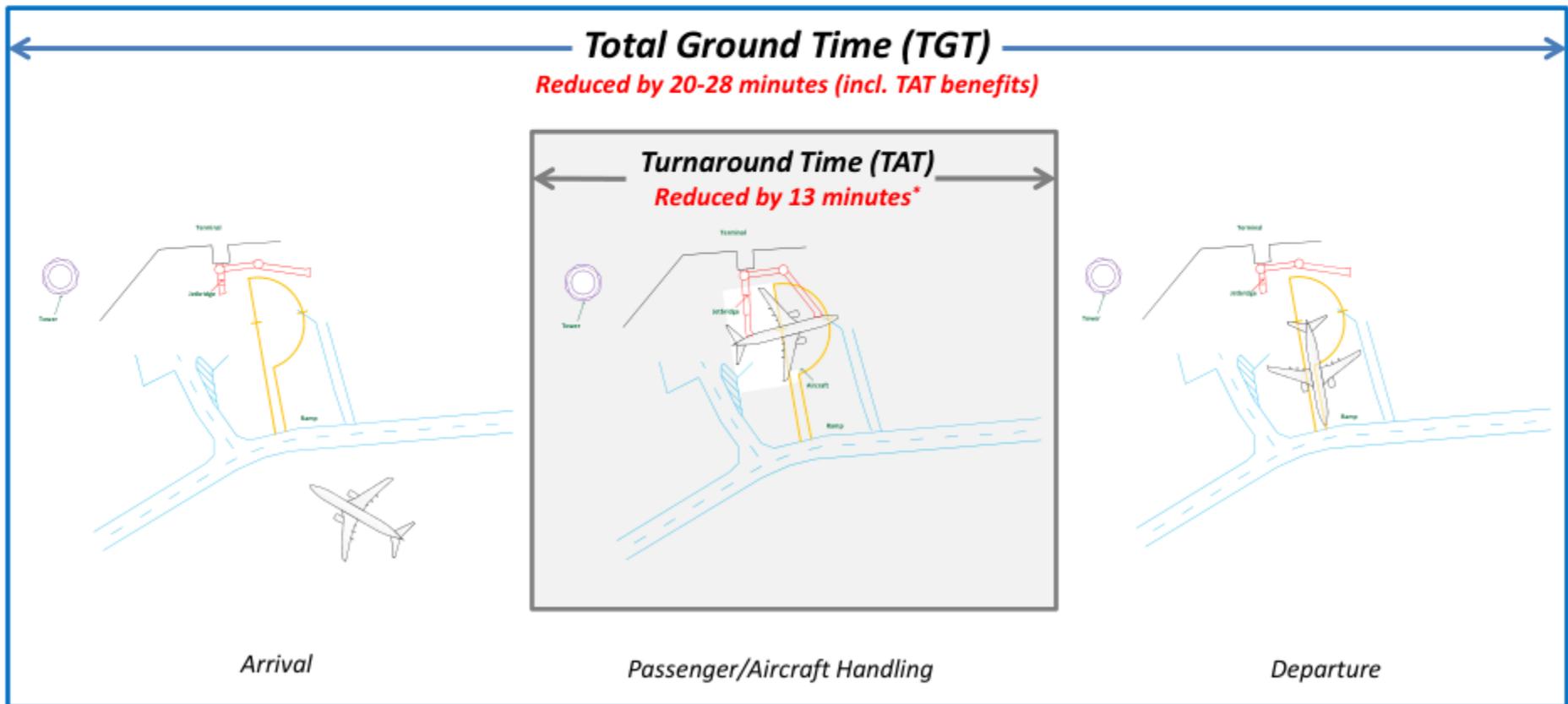
* <https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle>



Future Savings: The Twist™



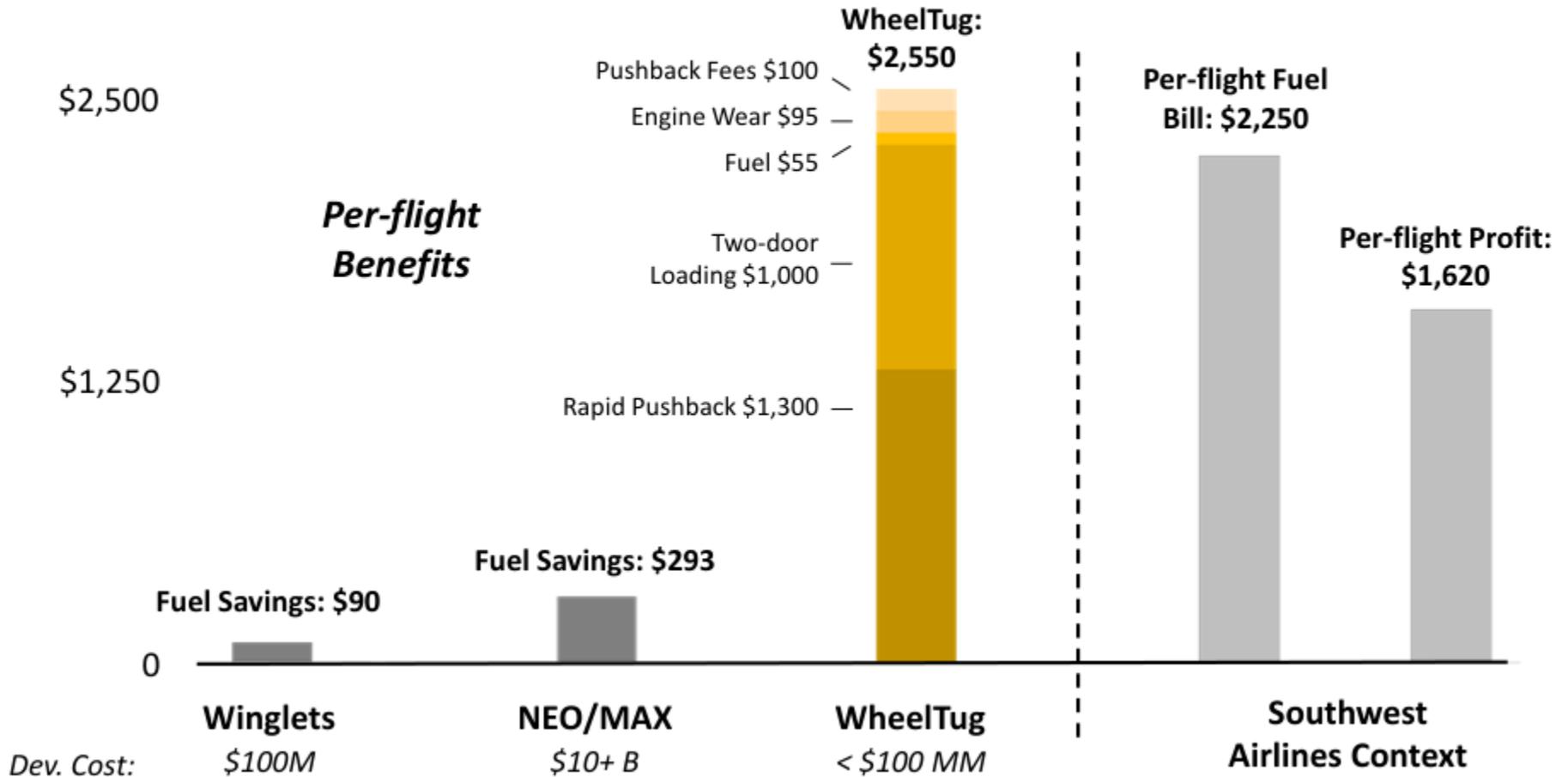
WheelTug enables parallel parking at gates (the WheelTug Twist), thus enabling use of two doors for faster boarding and deplaning. The Twist can save another 13-15 minutes per flight. Some terminals in Asia are already built with this capability.



* Based on UniTED two-door over-the-wing operations in Denver



Revolutionary Impact

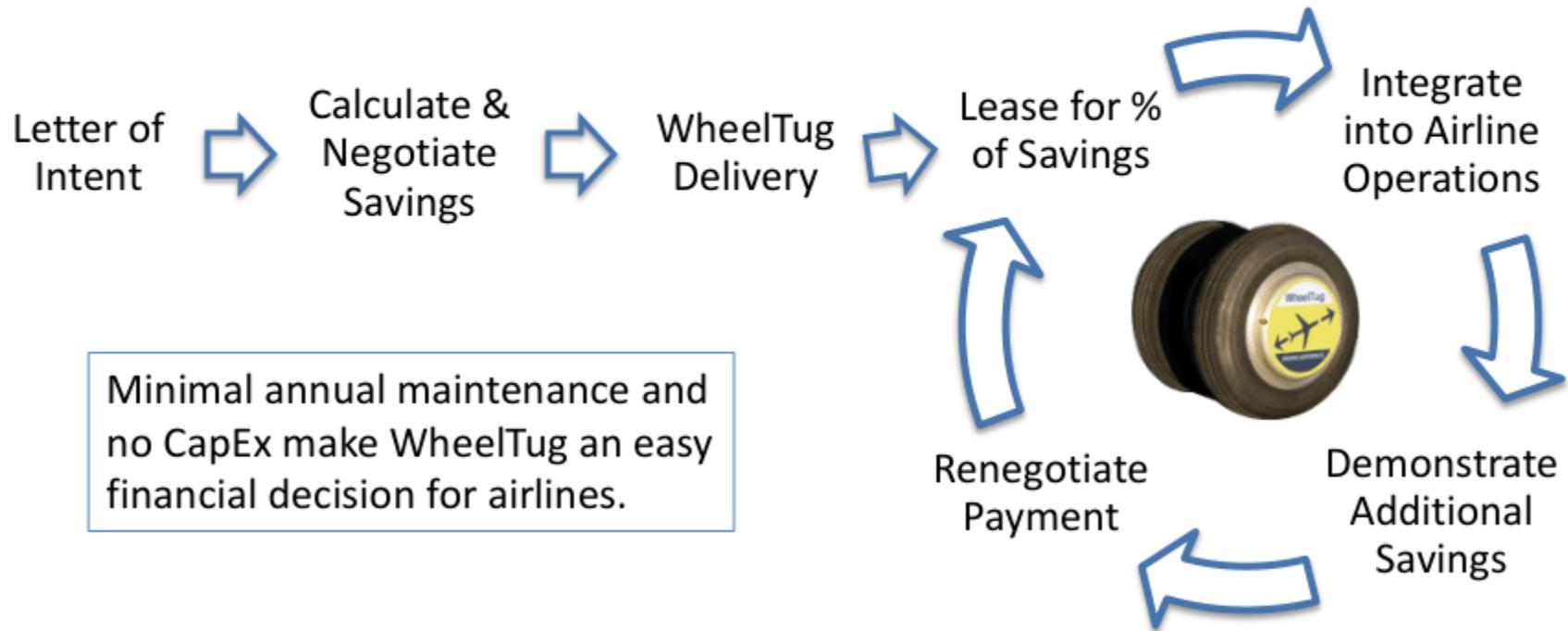


NEO/MAX and winglet savings based on Southwest Airlines fuel/flight @\$1.50/gallon. SWA profits from 2017.

Full WheelTug savings per flight (\$2,550) reached in year 8 of Financial Model / year 6 of service. Savings in year 1 of service - approx. \$1,120 / flight.



Lease Model





WheelTug Markets



Initial Markets	Potential markets
Boeing 737NG in service (6,000+)	Regional jets (Embraer, Bombardier, Mitsubishi)
Airbus A320 family in service (7,000+)	Larger widebody aircraft (B777/787, A350/380)
Future 737 and A320 planes (1,000+/yr), incl. MAX/neo	Private jets and certain military aircraft



WheelTug Competition



	WheelTug	SAFRAN
Aircraft <i>different markets</i>	Boeing 737-700 and -800 Other aircraft families to follow	Airbus 318-321 Expansion uncertain
Status	FAA Cert Plan Accepted	Marketed, not yet re-started
Enter Service	2019	2021?
Retrofit?	Yes	Yes
Removable?	Yes	NO
Weight (lb / kg)	300 / 135	880 / 400
Patent families	100+ issued	25-30?
Savings due mostly to	Time (always valuable)	Fuel (lower savings if fuel is cheap)
Est. savings / flight	\$2,550	\$150



The First to Fly Faster



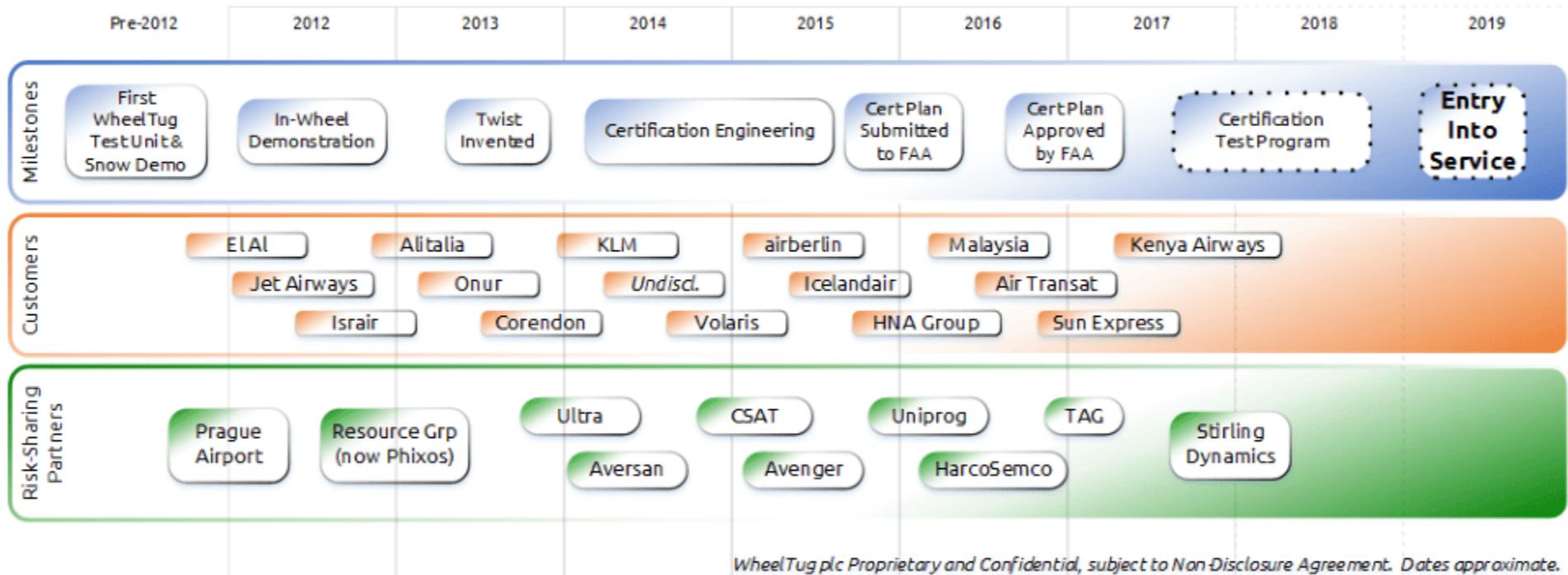
One more huge difference between
WheelTug and the competition?



WheelTug has already signed more than
20 airlines representing 1,000+ aircraft
(the competition: zero)



WheelTug Timeline and Milestones



HNA Group includes Hainan Airlines and several other subsidiary airlines.

Status of airberlin slots tbd.



FAA Acceptance of the Cert. Plan



- Certification Plan acceptance
December 2016
- Clear and agreed path to
approval
- Entry into service mid 2019
- International certification via
bilateral agreements



103 N. Main Street – Suite 106, Greenville, SC 29601-2756

(864) 232-8073

Date: March 2, 2017

Subject: Wheel Tug FAA Certification

Avenger Aerospace Solutions, Inc is highly experienced at working with aerospace development programs and the FAA at all levels. We possess particular experience within the realm of Supplemental Type Certificates and other very involved FAA projects such as OEM Style Type Certificates (new aircraft) and Parts Manufacturing Authority (new parts). For more information on Avenger Aerospace Solutions, feel free to visit our web page at www.AvengerAerospace.com.

Our experience with the FAA is deep and thorough and I, personally, have held an FAA delegation to approve engineering data for over fifteen years. By applying for a Supplemental Type Certificate, receiving a Project Number from the Seattle ACO, and now with the completed FAA acceptance on the Project Specific Certification Plan, WheelTug is on track to secure its Supplemental Type Certificate for the WheelTug system on the 737NG family of aircraft, and then on other aircraft models in the future as well.

We have been working with the WheelTug team since the middle of 2015. In our opinion, the team possesses all of the capability necessary to execute the technical phases of the certification project and has exercised great diligence and a "working together" attitude with all teammates involved. I have full confidence this will continue until full FAA certification is obtained.

The purpose of the Project Specific Certification Plan is to have an agreement between WheelTug and the FAA on an acceptable path to certification of the WheelTug product. With a Cert Plan that has now been agreed upon by the FAA, our customers have experienced a 99% STC issuance rate. In only a single instance in our history was an approved PSCP not followed by eventual FAA approval and entry into service and that particular instance was generated by a customer oriented budgetary concern (business case) and was not due to any technology issue, FAA prohibition, etc. In other words, the FAA typically adheres to the PSCP and if they have agreed to this plan as the path to success, they will continue to do so for the duration of the project. In the end, our customers are always provided a path forward to completion of the project, will obtain FAA certification and have the product entered into service once the PSCP is approved and that has now taken place. With all discussions with the FAA taken into consideration that have occurred thus far, it is our expert opinion that WheelTug will similarly succeed.

David Misencik
President
Avenger Aerospace Solutions, Inc.



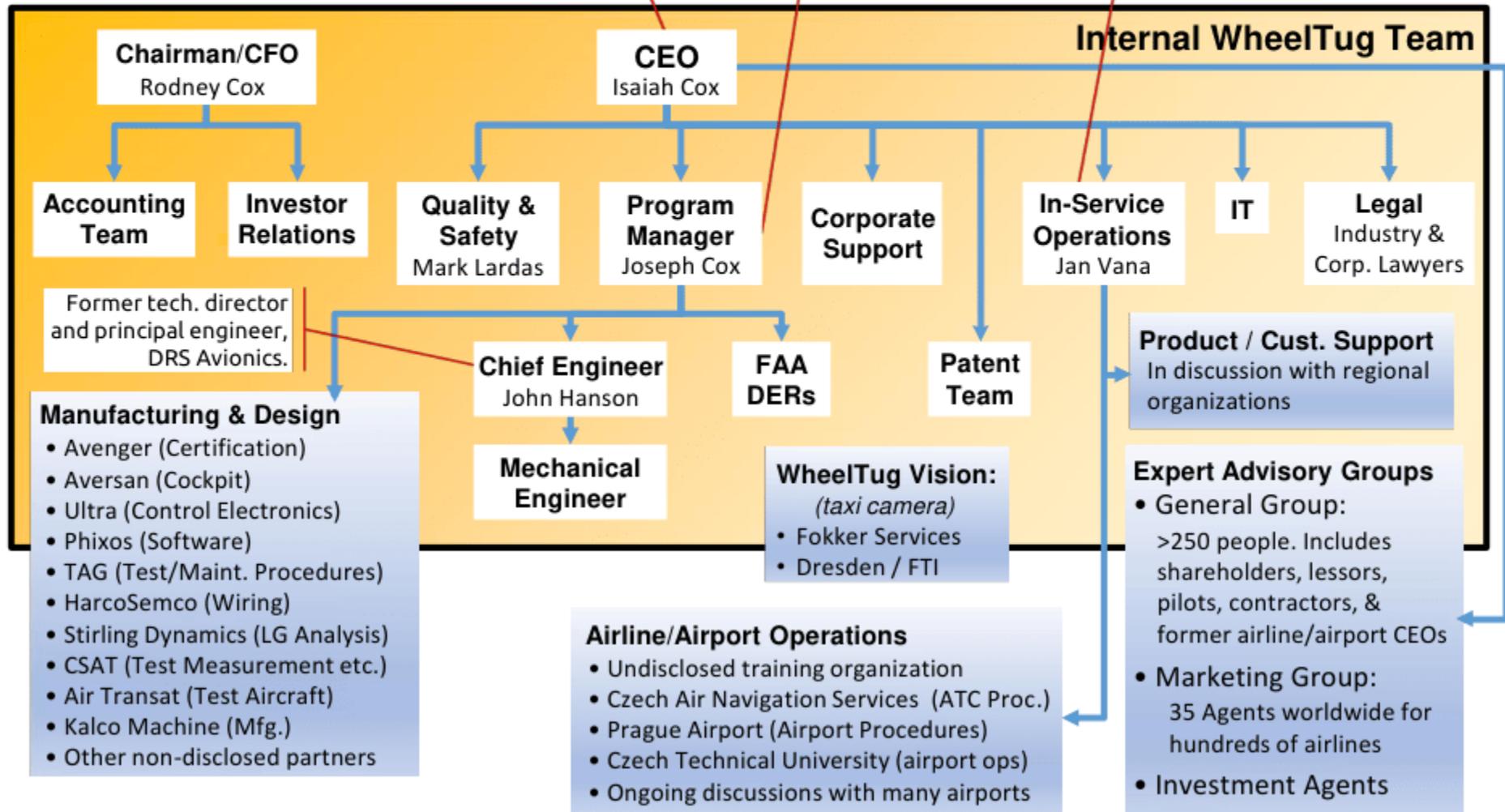
WheelTug Program Team



With WheelTug or parent since 1992. Oversight of development, finance, and strategy. Responsible for shareholder, industry, and partner relationships (Princeton).

Systems & finance expert (Nike, IBM, Mercedes Benz, Intel) (UPenn).

Former Commercial Director of ABS Jets, Strategic Director Czech Airlines, Vice-Minister of Defense (Czech).





Recent Press



AVIATIONWEEK
A SPACE TECHNOLOGY

Daily Updates, Access Anywhere

WheelTug Begins E-Taxi Certification And Promises Pushback Savings

Graham Warwick | Aviation Week & Space Technology

Jan 10, 2017

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WheelTug has begun work to complete development of its electric taxi system, after the FAA signed off on its certification plan. Aiming for FAA approval on the Boeing 737NG by late next year, the startup is focusing on the benefit to airlines of time savings during

A push please

14 Dec 2017

Motorised nose wheels will let planes leave gates by themselves

The Economist

FlightGlobal

WheelTug reveals timeframe for planned service entry

19 JANUARY 2017 | SOURCE: FLIGHTGLOBAL PRO | BY MICHAEL GURBICH | LONDON

Electric taxi specialist WheelTug expects its nose wheel drive

LE JOURNAL DE L'AVIATION
AEROCONTACT

WheelTug entame son programme de certification avec le feu vert de la FAA

Emilie Drab

AVIATIONPROS

WheelTug Receives FAA Go-Ahead for Airplane E-Taxi System Certification Plans

SOURCE: WHELTUG PLC JAN 11, 2017

ATW AIR TRANSPORT WORLD
Premium News, Analysis, and Data Insights

WheelTug touts taxi system's time savings

Graham Warwick | ATW Plus

Jan 10, 2017

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RELATED MEDIA

Gallery: WheelTug electric taxi system

WheelTug has begun work to complete development of its electric taxi system after FAA

HOSPODÁŘSKÉ NOVINY

Pražské letiště může mít jako první na světě převratnou novinku v pohybu letadel po ploše

Marek Miler - redaktor 12. 12. 2016 00:00 (aktualizováno 12:26) Události 10



Extensive Patent Protection



WheelTug holds well over 100 issued patents, providing worldwide protection for our intellectual property and product.

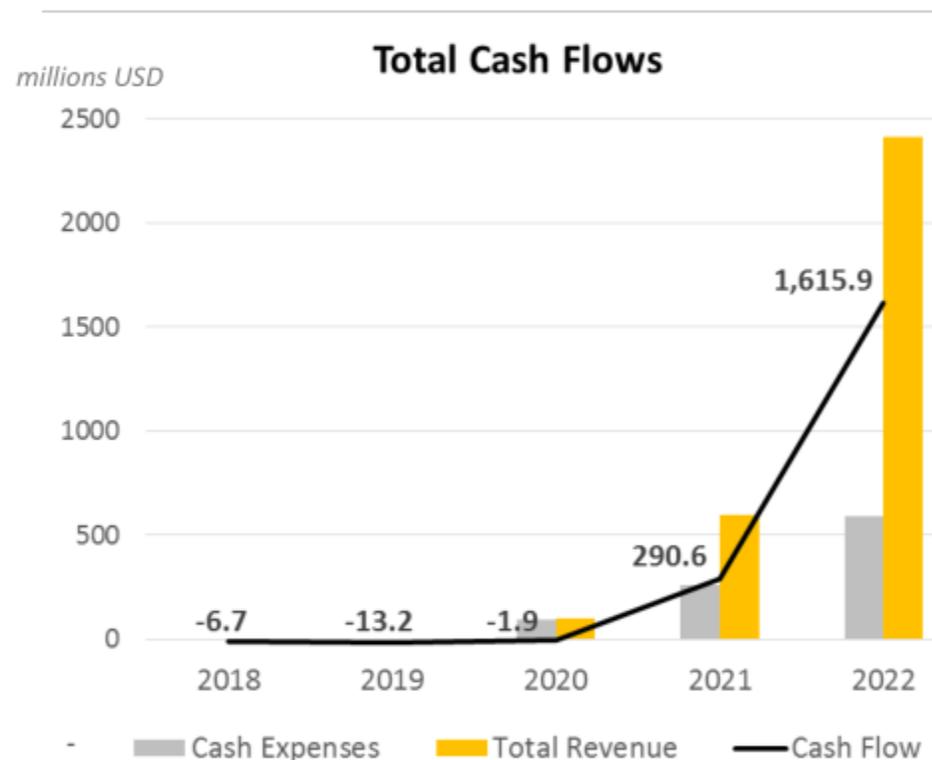
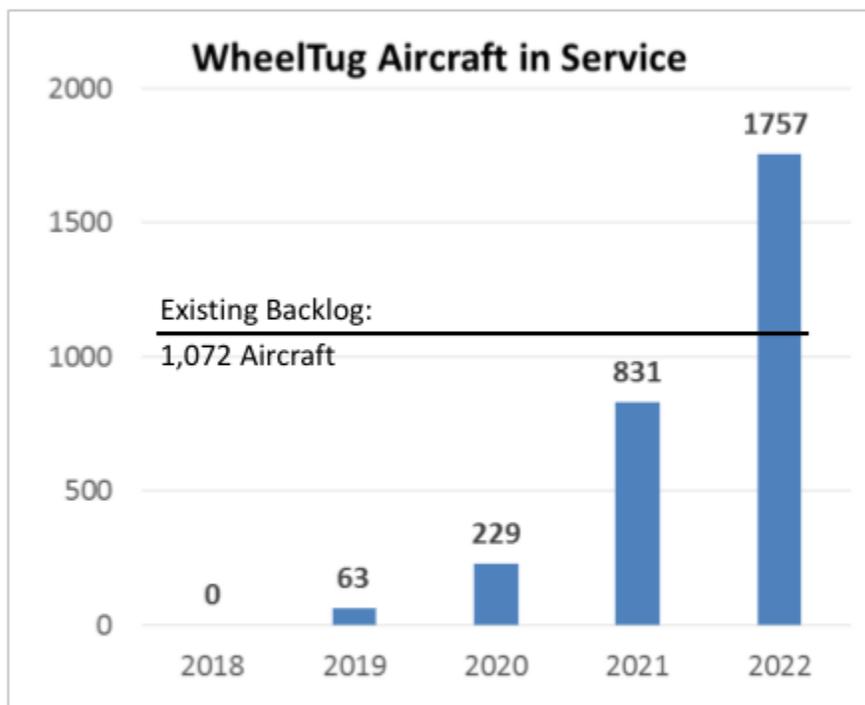
Dozens more patent applications are pending.

We continue to apply for further patents in multiple jurisdictions worldwide.

In 2017 alone, WheelTug was granted **27** patents.



Pro Forma

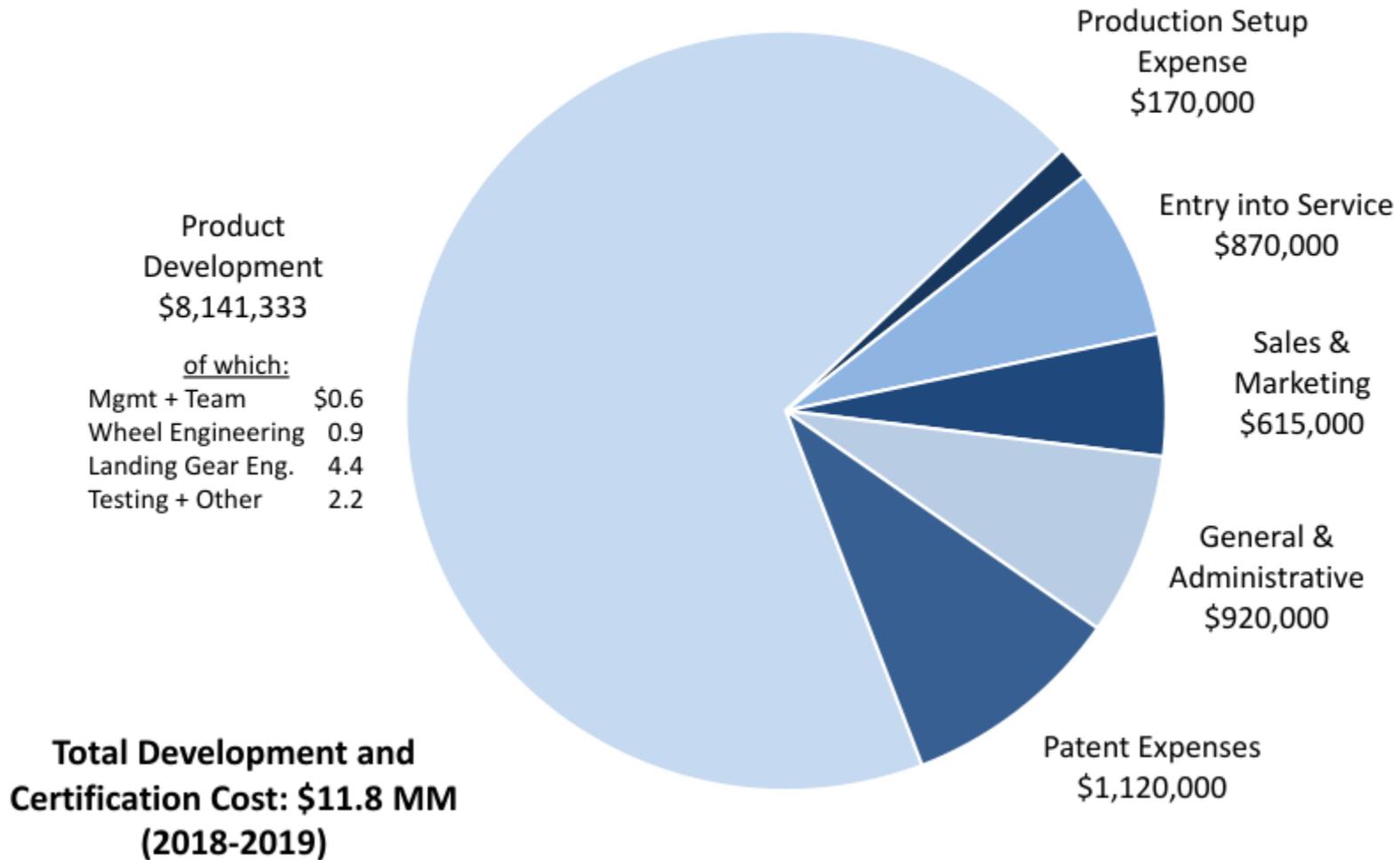


Year	Estimated EPS (6.93M issued)
2018	\$ -0.97
2019	-0.38
2020	9.09
2021	62.09
2022	264.12

WheelTug Confidential



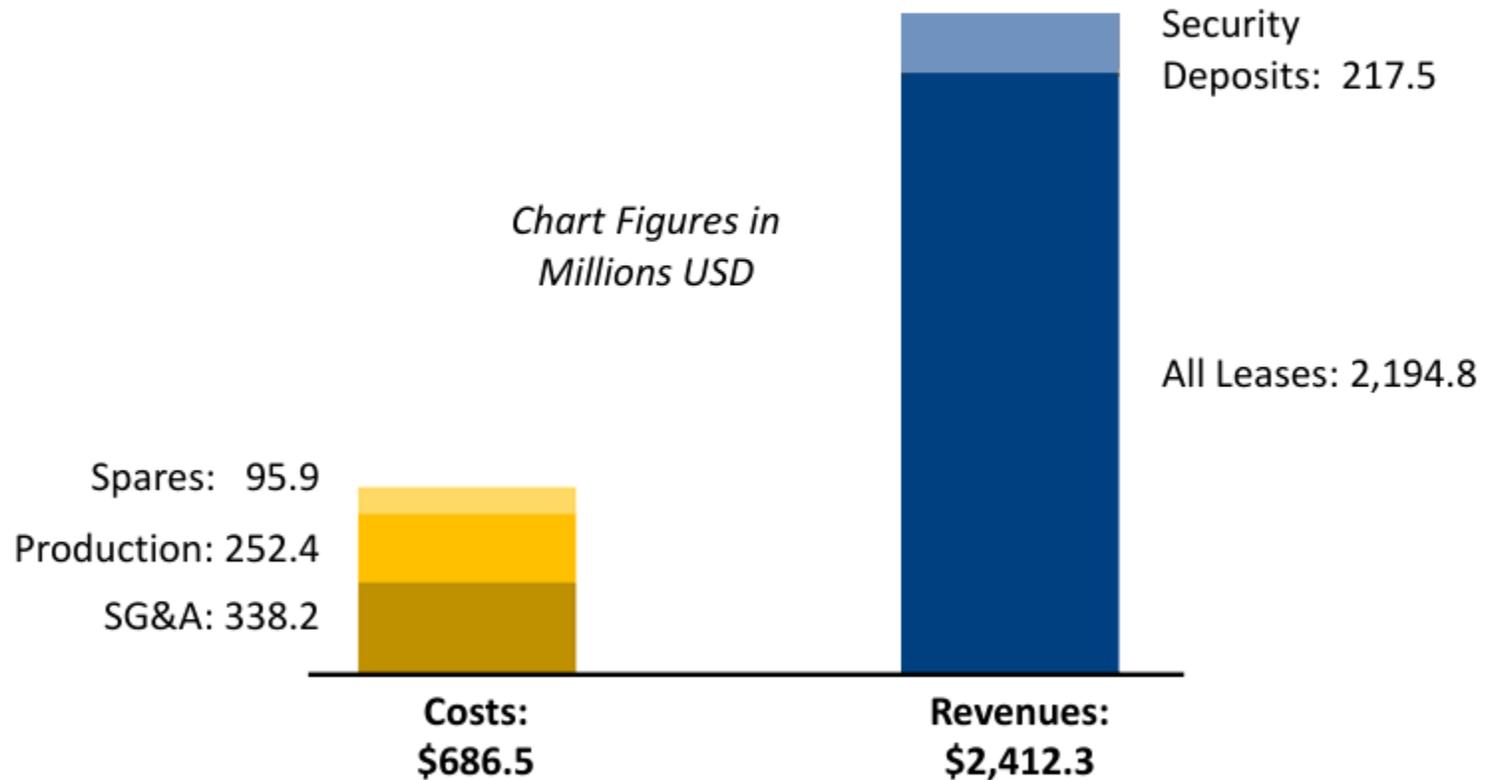
Development & Certification Expenses



WheelTug Confidential



2022 Operating Cash Flow

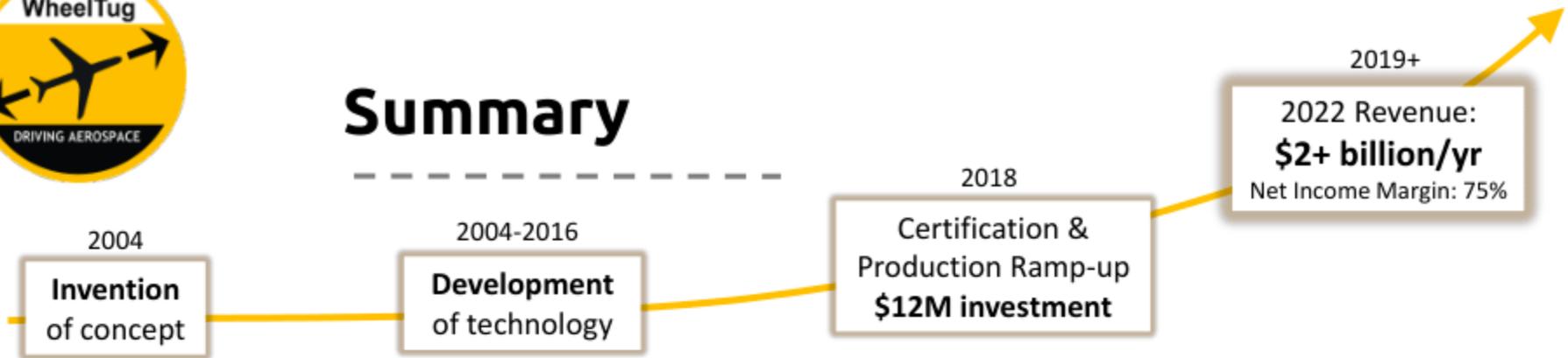


**1,757 WheelTug Systems
in Service by the End of 2022**

WheelTug Confidential



Summary



Value

- Ground efficiency vital
- WheelTug Ground time reduction: up to 30%
- Savings/aircraft: \$2+ million/yr

Technology

- Unique capability
- 100+ issued patents, 30+ pending



FAA Accepted

- Cert Plan: December 2016
- Clear path to service

Backlog

- 1,000+ aircraft (~7% of market)
- Market growth: 1000 aircraft/year



Challenges for Potential Competitors

- Unique Capability
- Technical Alliances
- Strong IP Protection
- Certification Process



Investment Opportunity



- We are seeking to raise \$12 million to fund the remaining certification testing and FAA approval for the Boeing 737NG family.
- We're open to a variety of deal structures, including revenue purchase plans.
- Strategic deals that will raise these funds are in the works. Until they close, we'll continue with large and mid-size investors - the same way we always have.
- We welcome your interest and participation.
- Let's talk! exec@wheeltug.com

www.wheeltug.com

Forward-looking statement available at <http://www.wheeltug.com/fls.shtml>



WheelTug Makes Flying Faster



Note: While our product will first go into service for the 737NG family, no endorsement by Boeing is implied.