

Using Patent Analytics to Identify Innovation Growth Areas



Today's speakers



Kolin Schunck
Lufthansa Innovation Hub



Carsten Guderian
LexisNexis



Gene Quinn
IPWatchdog





THE RISE OF AIR TAXIS

Kolin Schunck
Future Aerial Mobility Manager
Lufthansa Innovation Hub



Volkswagen explores flying cars in China

By Reuters Staff

2 MIN READ

EDITORS' PICK | Feb 10, 2021, 09:06am EST | 26,688 views

Lilium's New Course: On Verge Of Going Public, It's Working Taxi. Can It

...order from United

Archer
Airlines

Wisk Aero sues Archer Aviation for alleged patent infringement, trade secret theft

Japan
Development

Joby Aviation is going public
electric aircraft in flight

POLICY | TECH | TRANSPORTATION

Judge rejects Wisk Aero's effort to block rival air taxi startup Archer from using 'stolen' patents

Silicon Valley's first 'flying car' legal drama is heating up

By Andrew J. Hawkins | @andyjayhawk | Jul 23, 2021, 10:37am EDT

The company is the latest to go public via a reverse merger with a SPAC

By Andrew J. Hawkins | @andyjayhawk | Feb 24, 2021, 11:24am EST

REVOLUTION

opter, Lilium: Diese
gen auf den Markt

die größten Wetten der
Studie sieht auch andere
etwa das deutsche Volocopter.

Porsche teams up with Boeing to build flying cars for rich people

'Premium' being the operative word here

ON THE RADAR

ARE AIR TAXIS READY FOR PRIME TIME? LET'S ASK LUFTHANSA

Hyundai Planning Extensive Line-Up of Flying Vehicles
Takeoff planned for 2028.

The air taxi market matures

TNMT

THE AIR TAXI ECOSYSTEM LANDSCAPE

Aviation Players



Automotive Players



- Startups (170+) drive the conversation
- Automotive & Tech firms enter the space
- Where are the airlines?

Startups



Technology Players





The Lufthansa Innovation Hub



At a glance

- The Lufthansa Innovation Hub (LIH) is Lufthansa Group's primary unit for the development of new business in the digital context
- Strategic answer to the accelerating dynamics in the global Travel & Mobility space
- Our mission:
Create and capture value beyond flying
- Locations:
Established in Berlin, Germany (09/2014),
extended to Singapore (office launch 01/2019)
and Shanghai, China (2021)

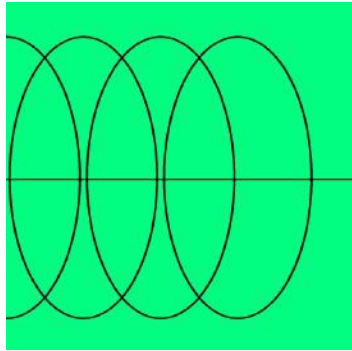


Travel and Mobility Tech ecosystem



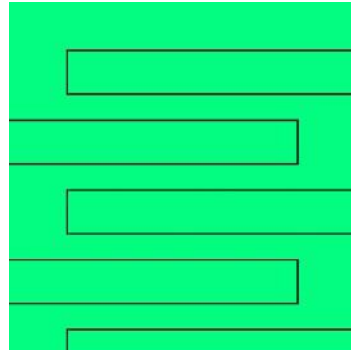
**Lufthansa
Group**

Our capabilities



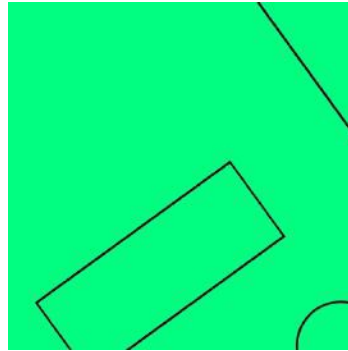
Discover

Data-driven
research and
market
intelligence



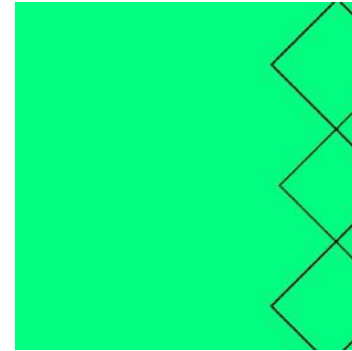
Partner

Strategic
partnerships
btw. LHG and
tech players



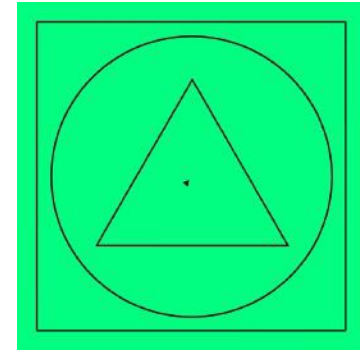
Build

End-to-end
incubation of
digital ventures



Invest

Strategic
investments in
tech players



Transform

Cultivating a
market-oriented
innovation
culture in the
LHG



Our Mission

WE CREATE
AND CAPTURE
VALUE
BEYOND
FLYING



The Acceleration Of The Air Taxi Space

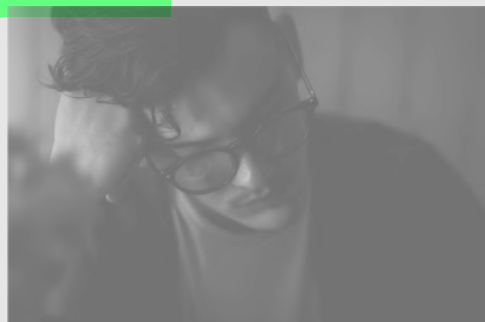


Provide clarity

TNMT

ELEMENTS OF THE LUFTHANSA INNOVATION HUB AIR TAXI STUDY

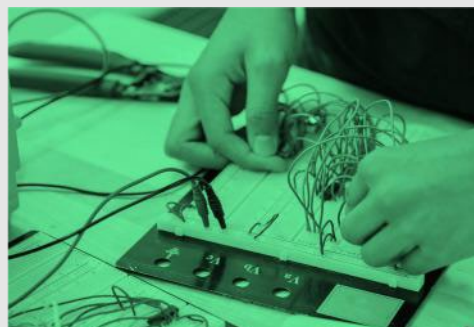
SENTIMENT



VC INVEST



RESEARCH



TECHNOLOGY





VC Dollars Determine Future Winners



VC Investments

The air taxi space is gaining a stronger position in our ecosystem

\$5.4 B

VC funding in air taxi
startups in H1.2021

+432%

compared to overall VC
funding in 2020

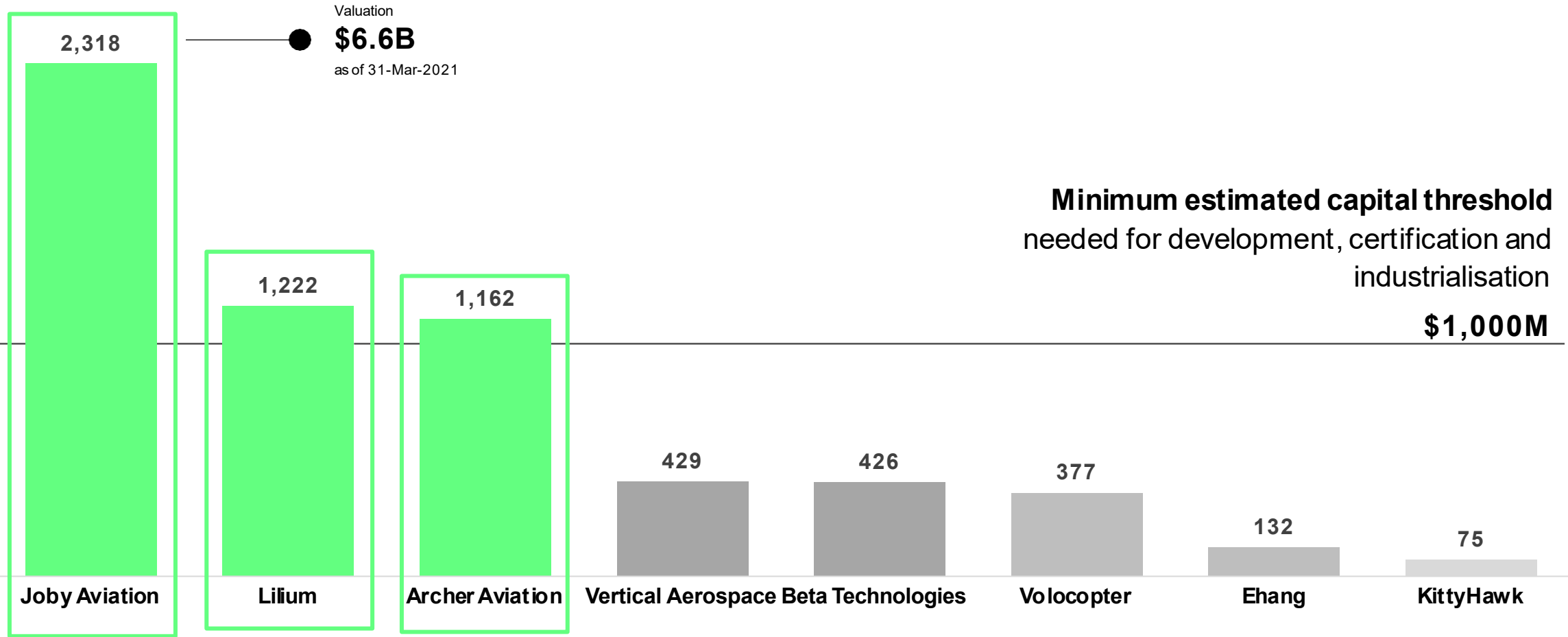
5

unicorns
(Joby, Archer, Lilium,
Vertical, BETA)

The billion Dollar runway

TNMT

MOST WELL-FUNDED AIR-TAXI STARTUPS (IN \$M) INCL. SPACs



Source: Lufthansa Innovation Hub Analysis, TNMT.com, Pitchbook, Aviation Week, McKinsey, Morgan Stanley, Porsche Consulting



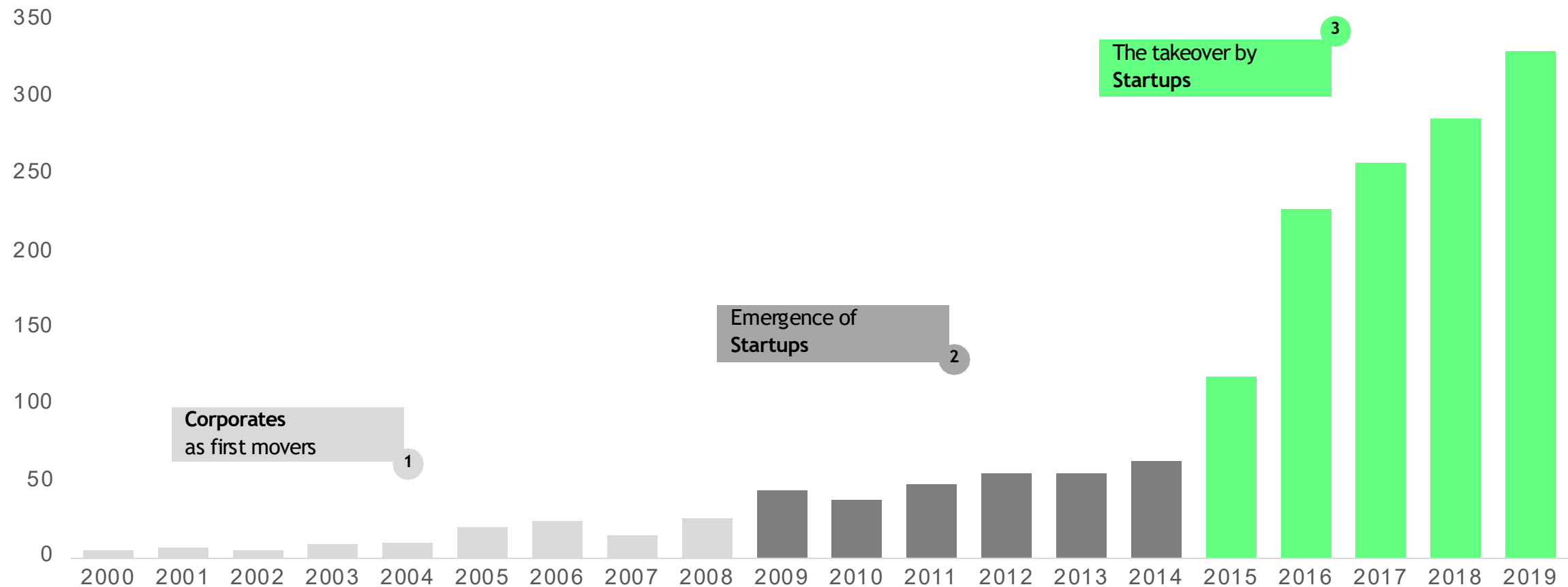
Startups Among The Tech Leaders



Patent filings show strong growth

TNMT

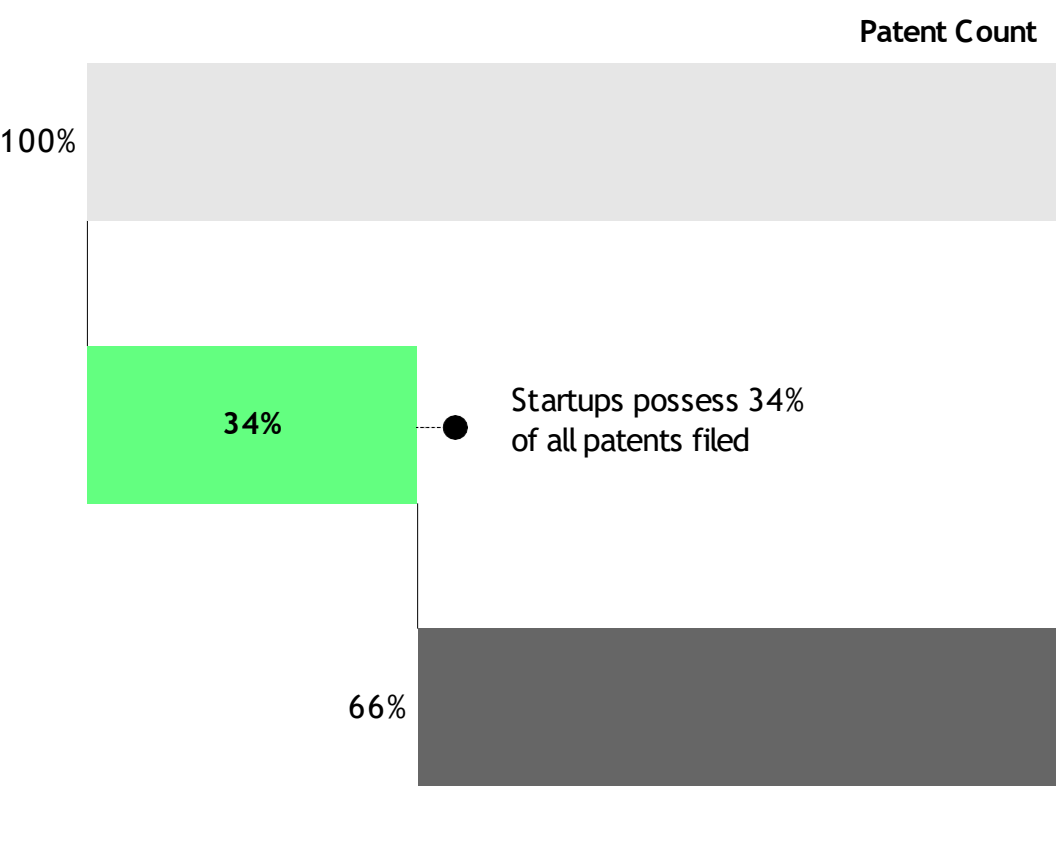
NUMBER OF PATENT FILINGS RELATED TO AIR TAXIS WORLDWIDE



Startups with an impressive technology base

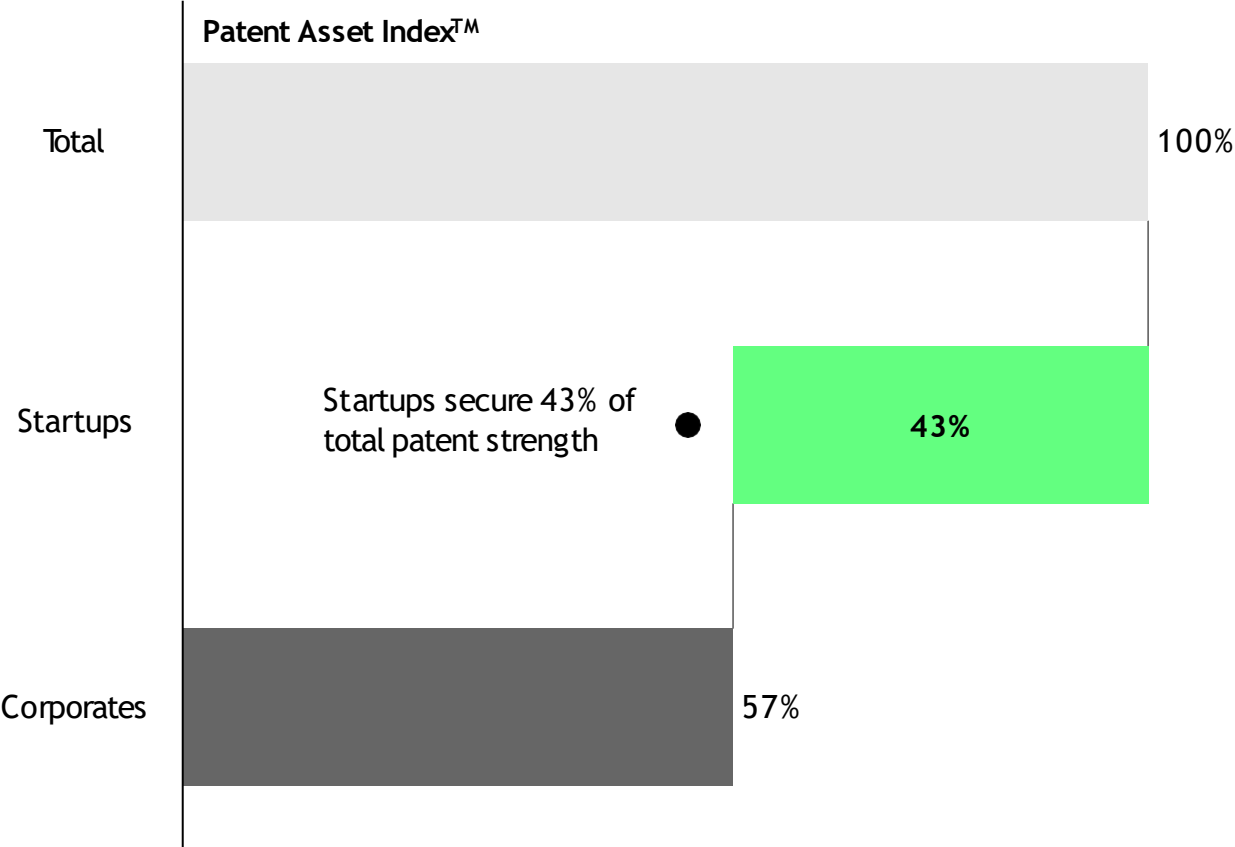
TNMT

DISTRIBUTION OF PATENT OWNERSHIP BY PATENT COUNT



TNMT

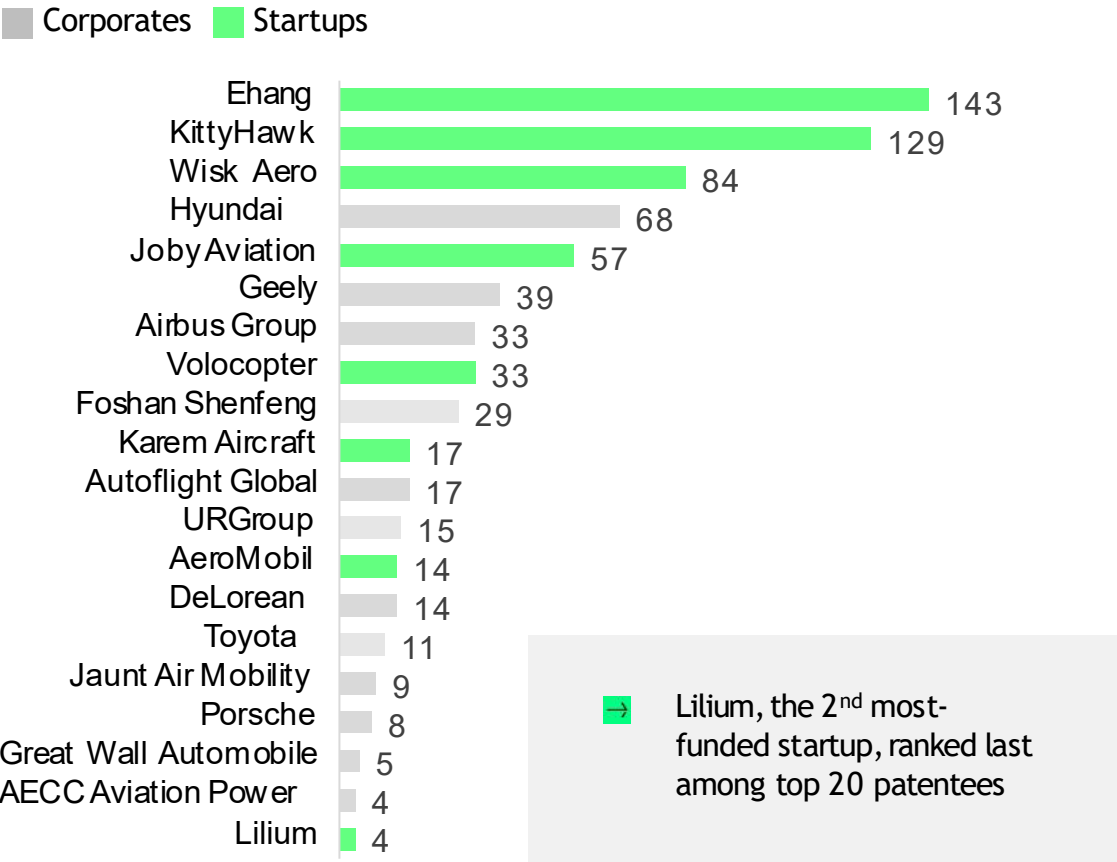
DISTRIBUTION OF PATENT OWNERSHIP BY PATENT ASSET INDEX™



Many startups among the strongest patent filers

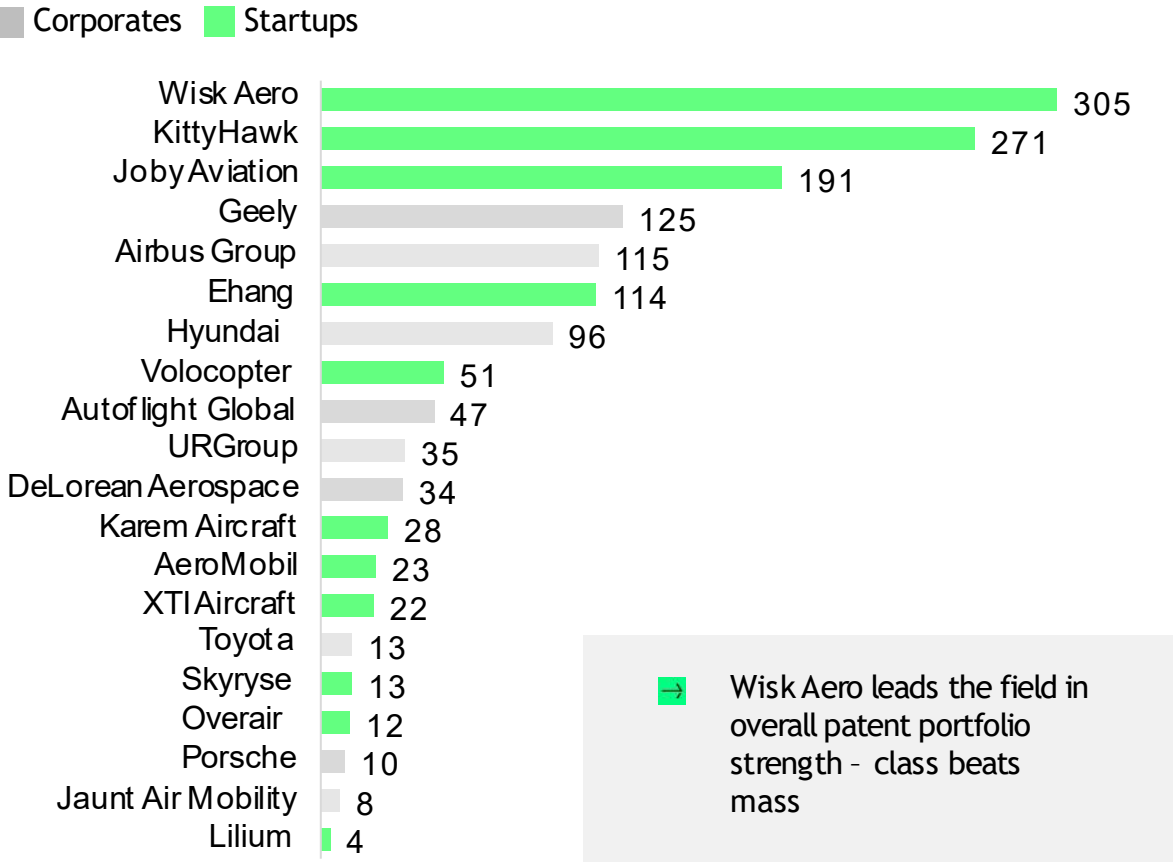
TNMT

KEY PLAYERS IN AIR TAXI TECHNOLOGY BY PATENT COUNT



TNMT

KEY PLAYERS IN AIR TAXI TECHNOLOGY BY PATENT ASSET INDEX™



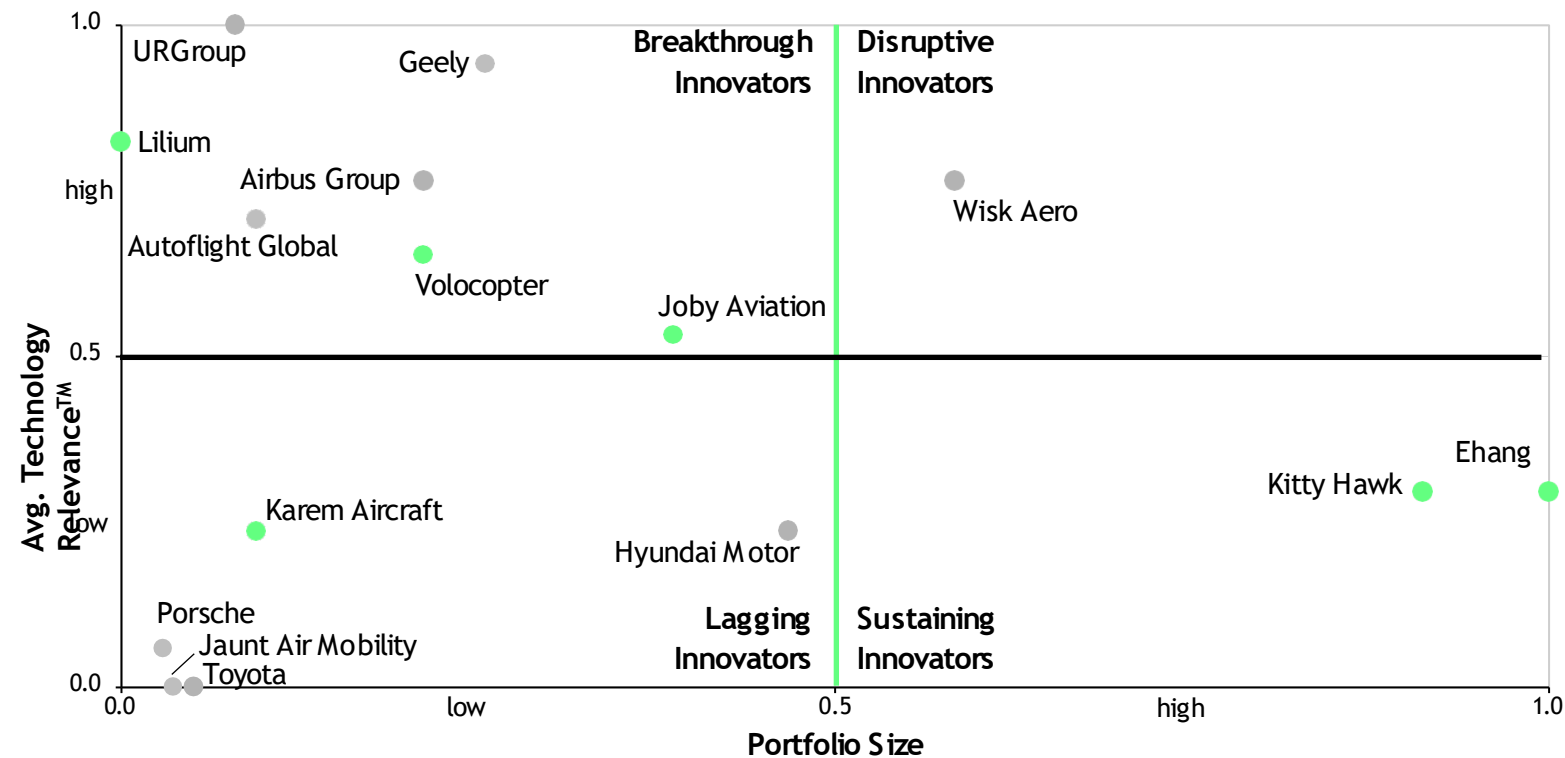
Notes: Time period covered: 2000 to 2020; the top 20 active air taxi patentees are selected as of June 30, 2021.
Source: Lufthansa Innovation Hub Analysis, TNMT.com, PatentSight GmbH - A LexisNexis Company.

Wisk Aero the current technology leader

TNMT

THE AIR TAXI TECHNOLOGY LEADERBOARD

Startups Corporates



Notes: For comprehensibility values for portfolio size and Technology Relevance™ are normalized (value 0 to 1). The top 25 active air taxi patentees are selected holding three or more active patents as of June 30, 2021. Source: Lufthansa Innovation Hub Analysis, TNMT.com, PatentSight GmbH - A LexisNexis Company.



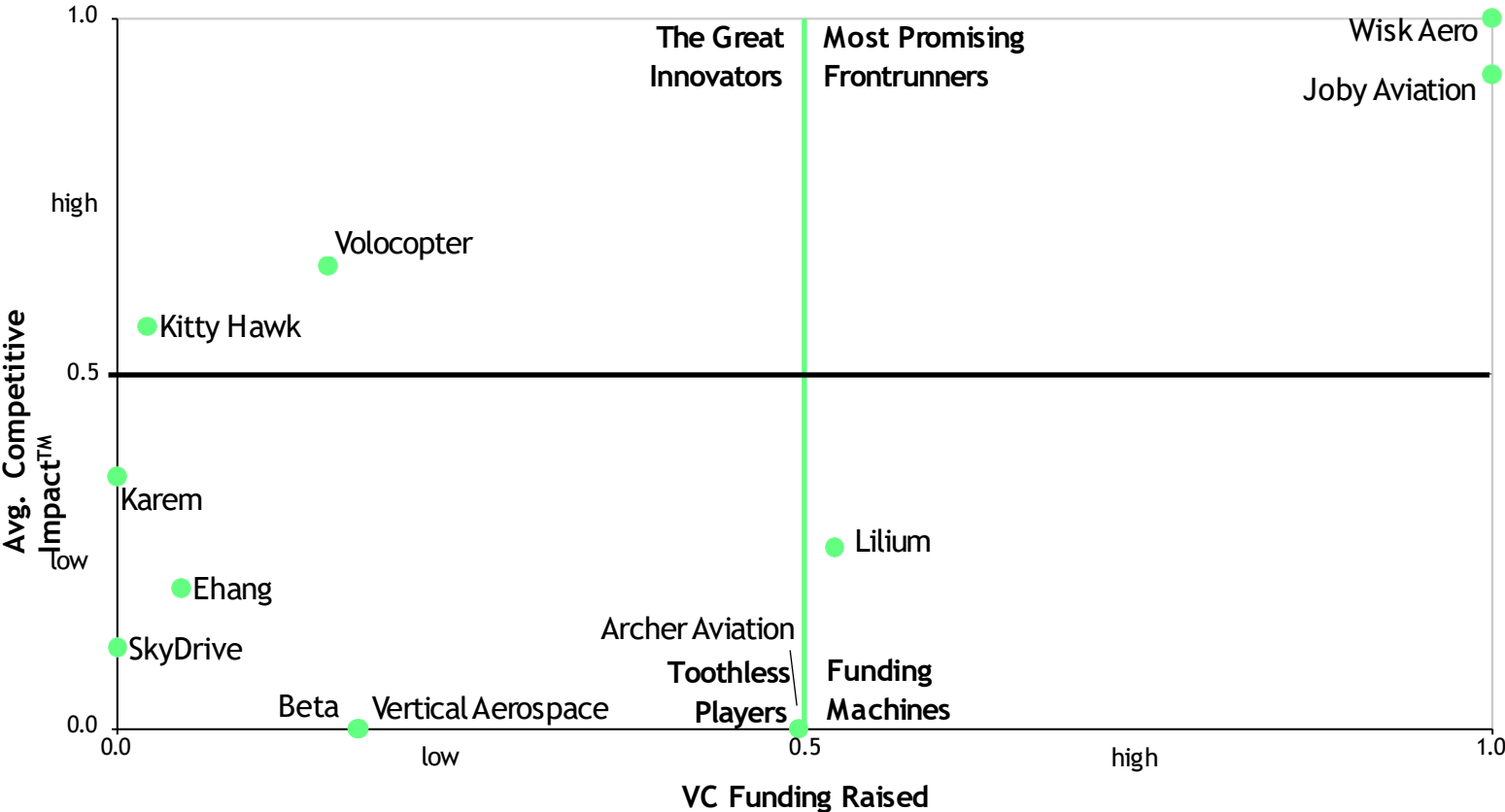
The Power of Combining Data



Wisk and Joby the most promising startups

TNMT

THE AIR TAXI STARTUP SUCCESS MATRIX



Notes: For comprehensibility values for VC funding raised and Competitive Impact™ are normalized (value 0 to 1). The top 12 funded startups are selected holding three or more active patents as of December 31, 2020. Incl. Wisk Aero as backed by Boeing. Source: Lufthansa Innovation Hub Analysis, TNMT.com, Pitchbook, PatentSight GmbH - A LexisNexis Company.





Conclusion



Can you spot the car?



Can you spot the horse?

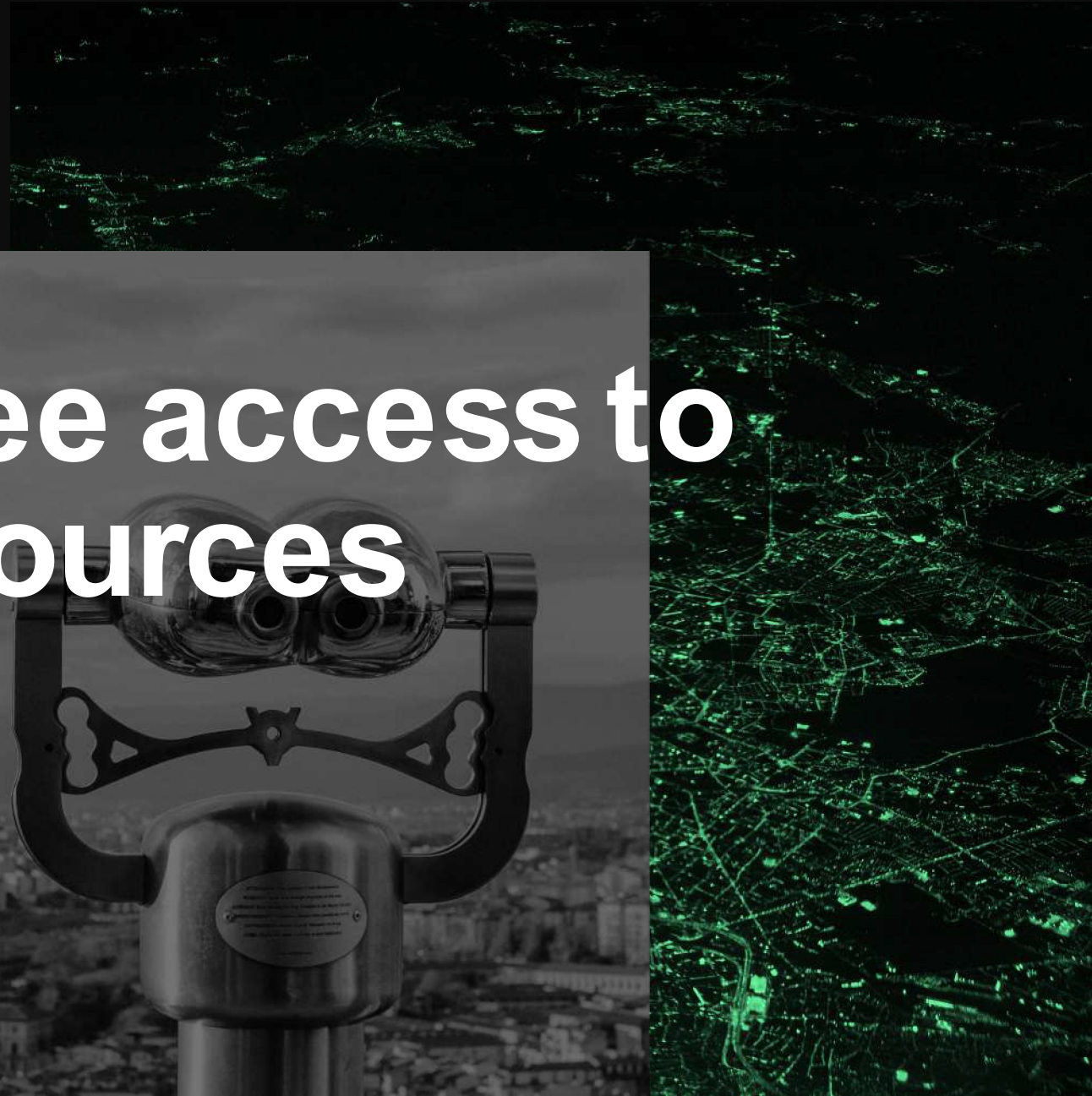


Can you spot the Air Taxi?





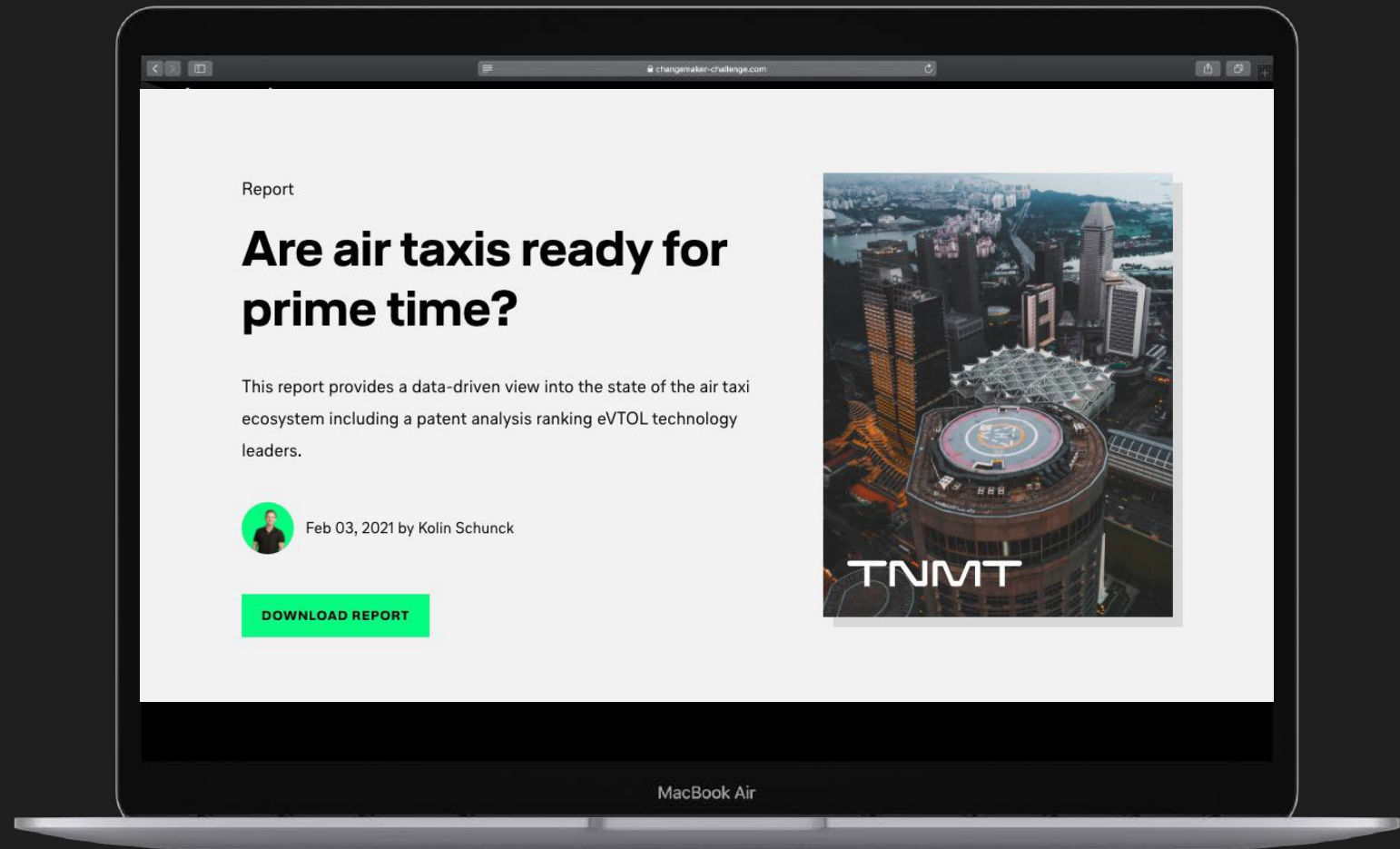
**Gain free access to
our resources**



The Air Taxi Study



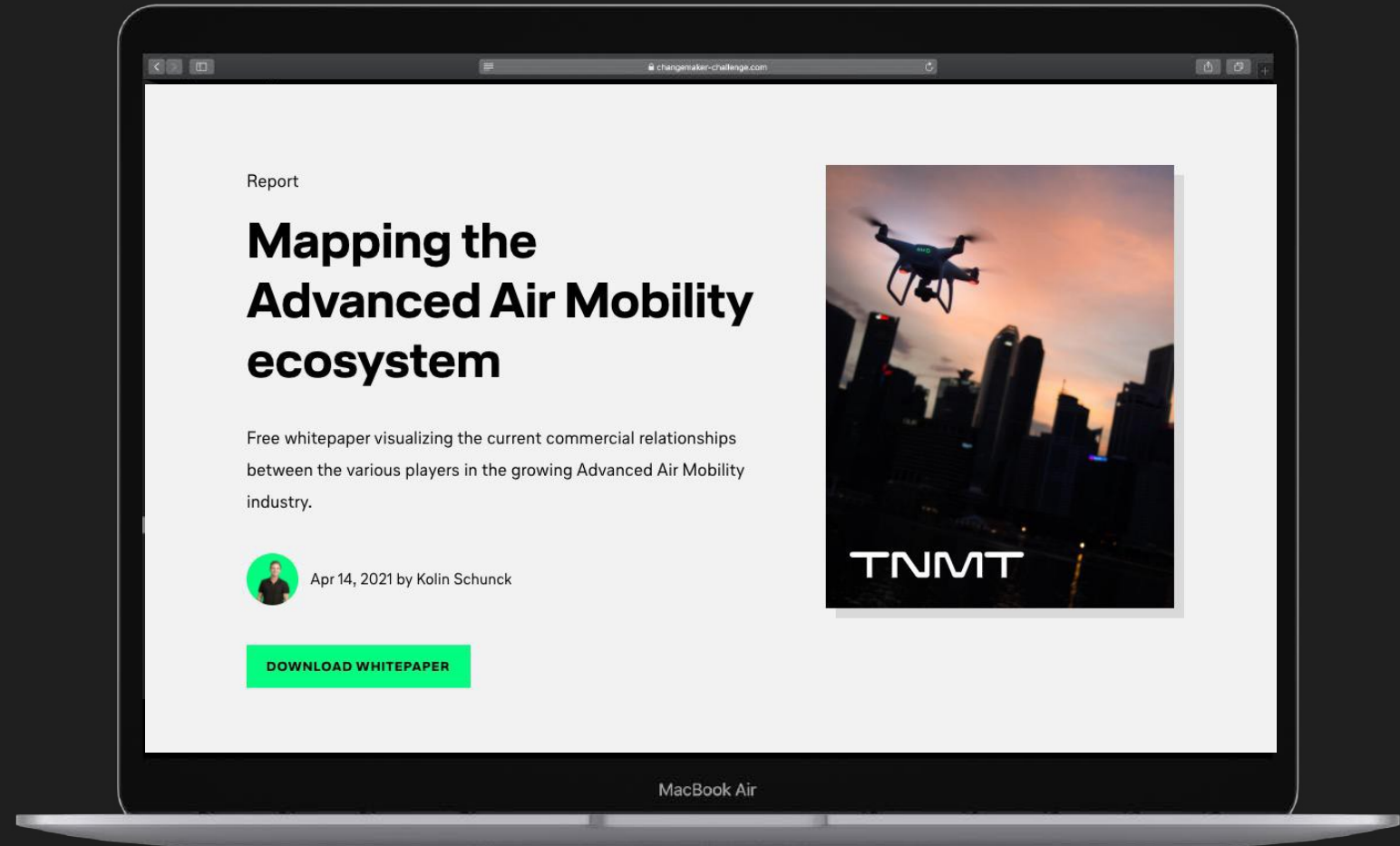
SCAN ME



The AAM Ecosystem



SCAN ME

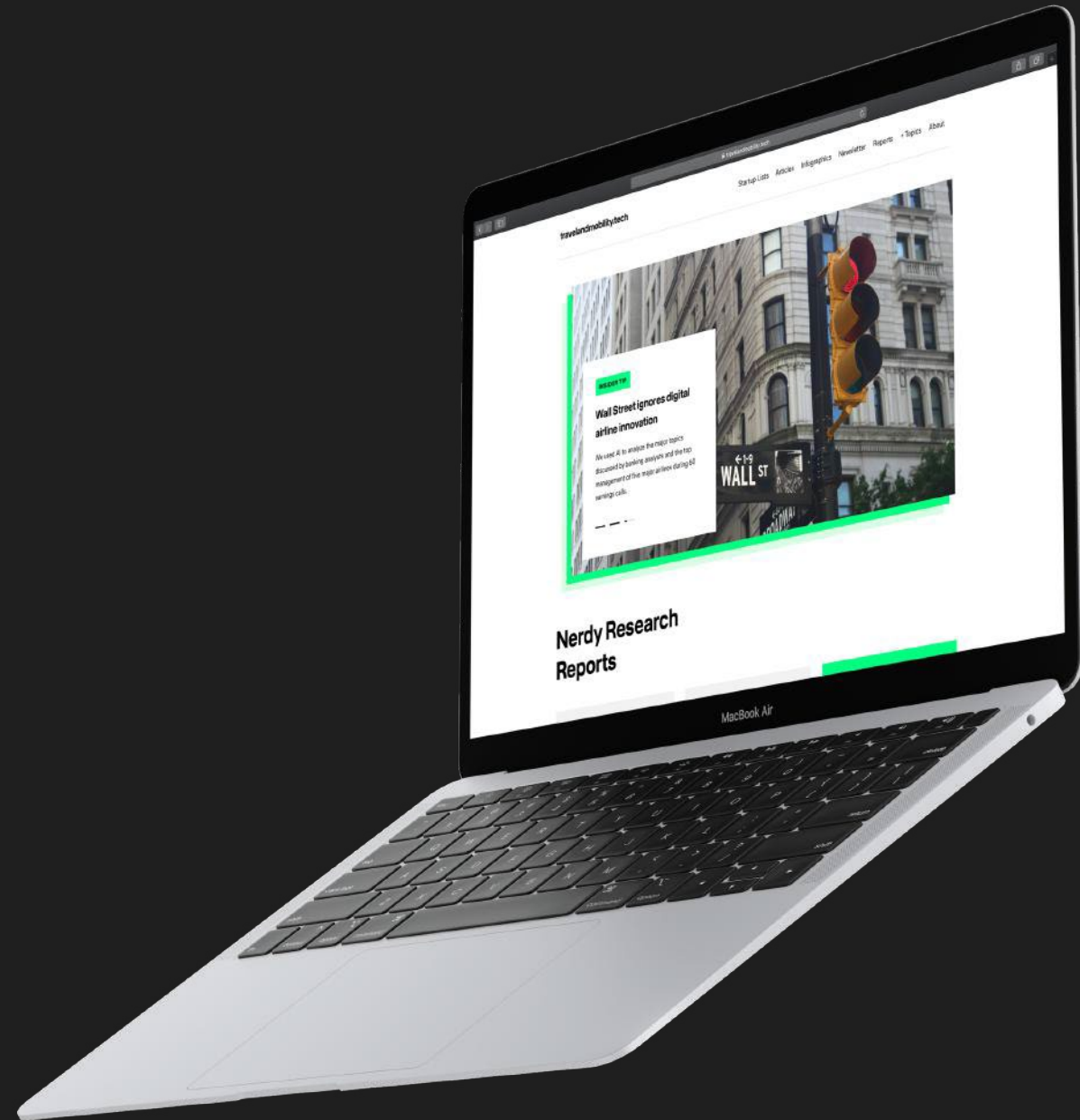


TNMT.com

- The industry deepdive into Travel & Mobility Tech
- Knowledge platform for data-based market intelligence on Travel & Mobility Tech



SCAN ME



A futuristic flying car, resembling a helicopter with a transparent cockpit and multiple rotors, is shown in flight over a dense urban skyline. The entire image is overlaid with a green tint. The city features numerous skyscrapers, including a prominent pointed tower on the right. In the foreground, a body of water with some industrial structures is visible.

Our Vision

**OWN A SHARE
IN EVERY TRIP**

Wisk Aero LLC vs. Archer Aviation Inc.

The Story unfolds...



Why We're Taking Legal Action Against Archer Aviation



Wisk Aero files injunction in trade secret lawsuit against Archer Aviation



Wisk has asked the court to immediately prohibit Archer from using 52 trade secrets that it alleges were stolen by former employees who were later hired by Archer. The trade secrets “span the gamut of systems within the aircraft and processes for development,” a Wisk spokesperson told TechCrunch.

<https://wisk.aero/news/blog/040621-blog-post/>; <https://techcrunch.com/2021/05/19/wisk-aero-files-injunction-in-trade-secret-lawsuit-against-archer-aviation>

...Response from Archer Aviation



Archer Aviation hits back against rival Wisk Aero's request for injunction in trade secret suit



Wisk's filing is a desperate attempt to deflect attention away from its own misconduct and the material falsehoods at the heart of its lawsuit. Archer has presented the Court with irrefutable evidence, including testimony by Wisk's own employees, showing that the centerpiece of its case—a drawing in its patent application supposedly depicting a new eVTOL design that it alleges Archer stole—is nothing more than a litigation prop created from information it received from Archer. Specifically, Wisk rushed to prepare and file the patent application at issue almost immediately after Archer's founders disclosed Archer's eVTOL designs to Wisk's Chief Engineer during a recruiting meeting. Contrary to the litigation story Wisk has crafted, Wisk did not begin any design or development program for a 12-tilt-6 eVTOL aircraft until after it learned of Archer's designs, as proposed by Archer's independent consultant, FlightHouse Engineering.



Wisk claimed [in its April lawsuit](#) that its design is nearly identical to Archer's, and that the similarities are the result of a former Wisk employee (who was later hired by Archer) stealing proprietary work files. In this new filing, Archer alleged that it shared its plans for a 12-rotor tilting design with **Geoff Long**, a senior engineer at Wisk, whom Archer was considering recruiting. Archer alleges that Long shared Archer's plans with Wisk executives weeks before Wisk filed its patent application.

<https://archer.com/news/our-response-to-wisks-latest-filing-july-15>; <https://techcrunch.com/2021/06/24/archer-aviation-hits-back-against-rival-wisk-aeros-request-for-injunction-in-trade-secret-suit/>

Wisk Aero LLC's Key Inventors

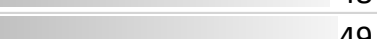
Original Inventor	Patent Asset Index™	Portfolio Size	Competitive Impact™	Technology Relevance™	Market Coverage™
Geoffrey Long	46	17	2.7	1.6	1.6
John Melack	24	12	2.0	1.1	1.7
Thomas Muniz	27	12	2.2	1.2	1.8
Lewis Hom	6	5	1.3	0.8	1.5
Nihal Murthy	9	5	1.8	1.1	1.7
Eric Allison	19	4	4.8	3.4	1.3
Patrick Herring	2	4	0.5	0.8	0.9
James Tighe	24	4	6.1	3.8	1.6
Brian Robert Viele	6	4	1.4	0.9	1.3
Ilan Kroo	37	3	12.3	5.8	1.8
Cody Patrick Leuck	3	3	0.8	0.8	1.4
Chen Li	2	3	0.6	1.0	0.7
Diederik Marius	3	3	1.1	1.1	1.0
Robert Moore	7	3	2.3	1.4	1.4
Bernard Ahyow	1	2	0.7	0.6	1.6
Colin Brey	4	2	2.2	1.0	2.1
Justin Char	2	2	1.1	1.1	1.0
Ian Fernandez	1	2	0.3	0.2	1.6
Scott Furman	4	2	1.8	0.6	2.1
Sampson Lau	4	2	2.2	1.1	2.1
Herve Martins-rivas	2	2	1.1	1.1	1.0
Laura Weeks Shane	2	2	1.1	1.1	1.0
Sheldon Wong	2	2	1.0	1.0	1.0
Jing Xue	2	2	1.1	1.1	1.0

The Patent Asset Index™ and its Constituent Indicators – Development since 2012

Geoff Long's Patents

Year	Patent Asset Index™	Portfolio Size	Competitive Impact™
2016	 3	 1	 3,5
2017	 6	 3	 1,9
2018	 21	 6	 3,5
2019	 22	 7	 3,1
2020	 27	 7	 3,9
July 15, 2021	 30	 7	 4,3

Wisk Aero LLC's Patents

Year	Patent Asset Index™	Portfolio Size	Competitive Impact™
2012	 3	 2	 1,7
2013	 13	 4	 3,2
2014	 20	 5	 3,9
2015	 28	 6	 4,6
2016	 43	 8	 5,4
2017	 43	 10	 4,3
2018	 104	 30	 3,5
2019	 115	 40	 2,9
2020	 134	 48	 2,8
July 15, 2021	 143	 49	 2,9

How to Use Patent Analytics to Identify Innovation Growth Areas



Incorporate Ownership information



Incorporate Legal information



Incorporate Longitudinal Data



Combine Patent and other Data Sources



Focus on Quantity- and Value-Driven Metrics



Focus on Various Indicator Combinations



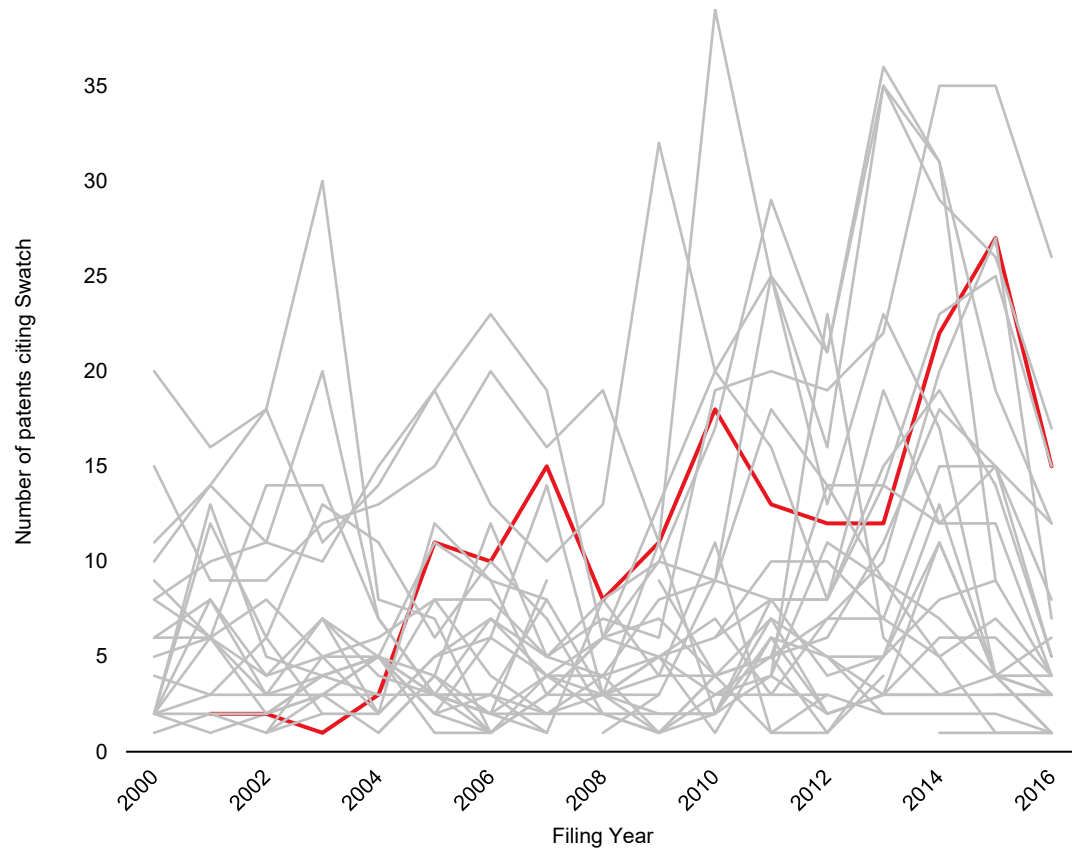
Drill into the Data – Special Focus, etc.



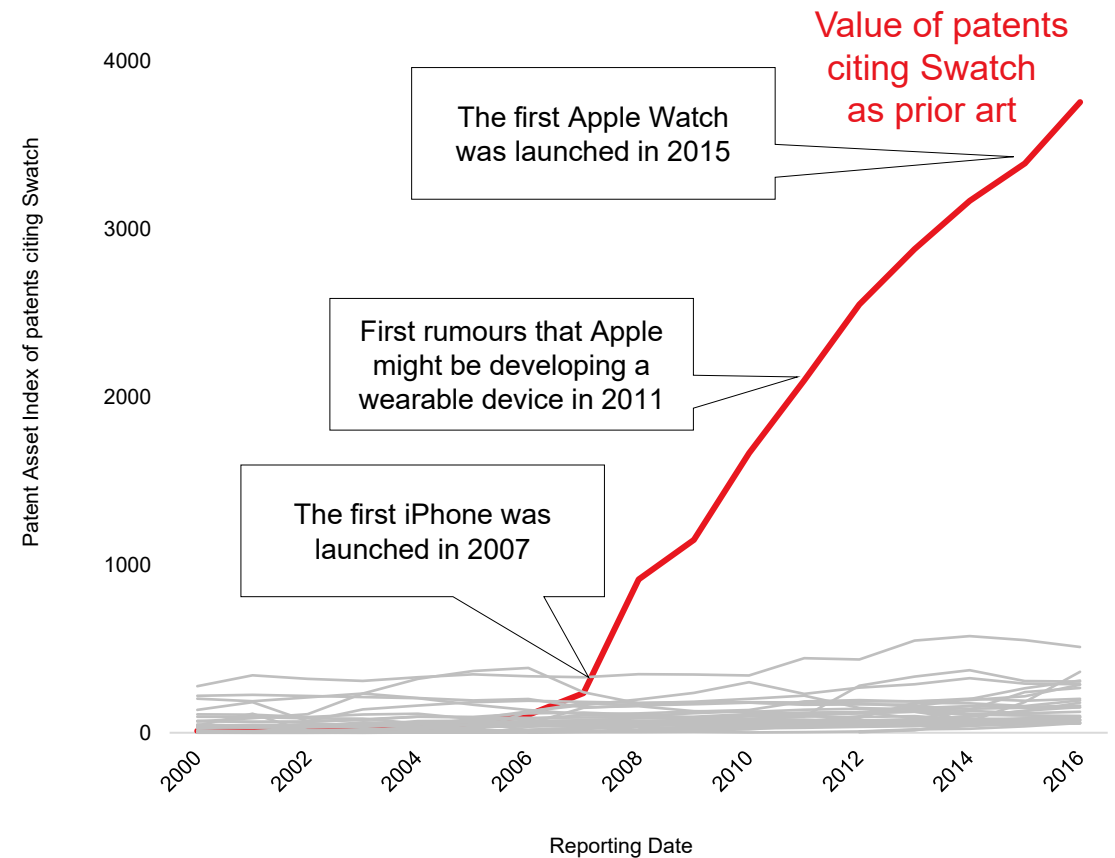
Repeat!

How to Use Patent Analytics to Identify Innovation Growth Areas

Analysis with conventional patent data



Analysis with Patent Asset Index™ concept applied



QUESTIONS?

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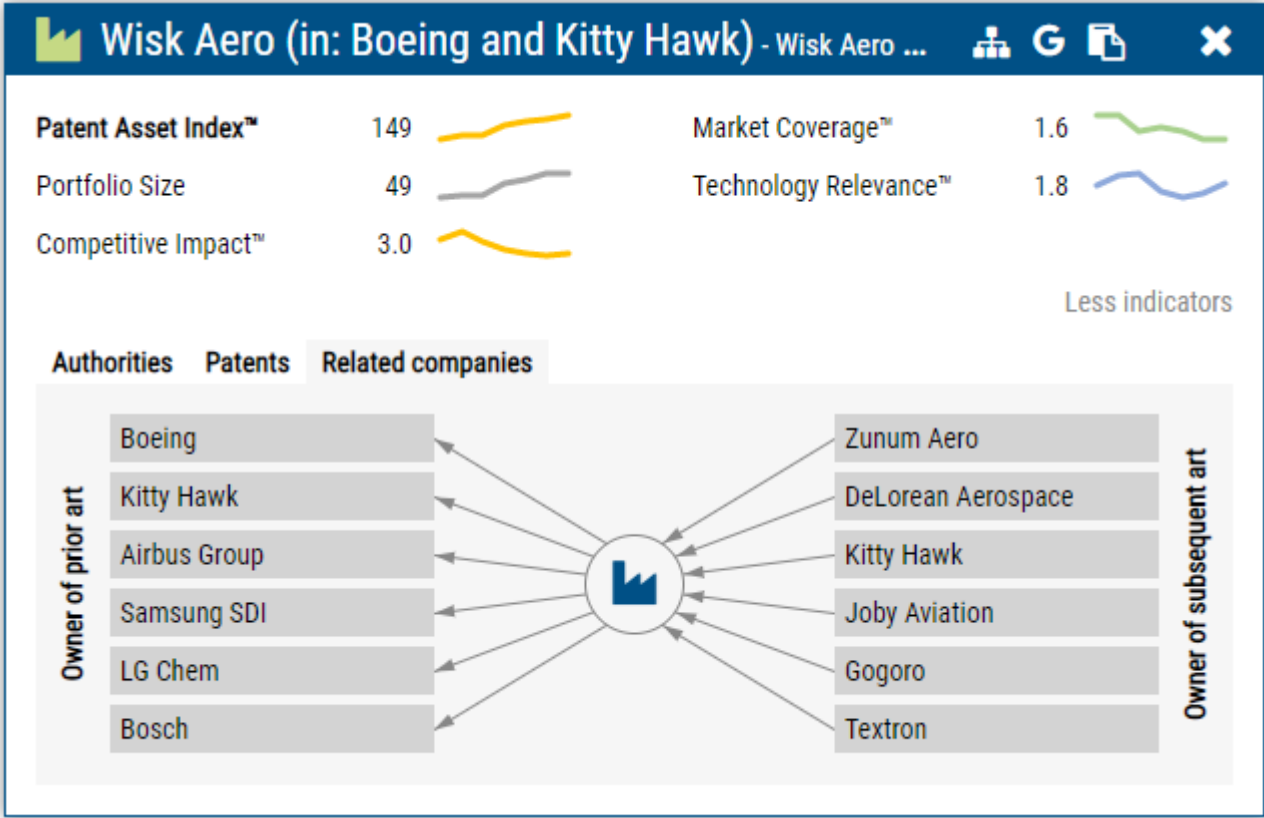


Lufthansa
Innovation Hub

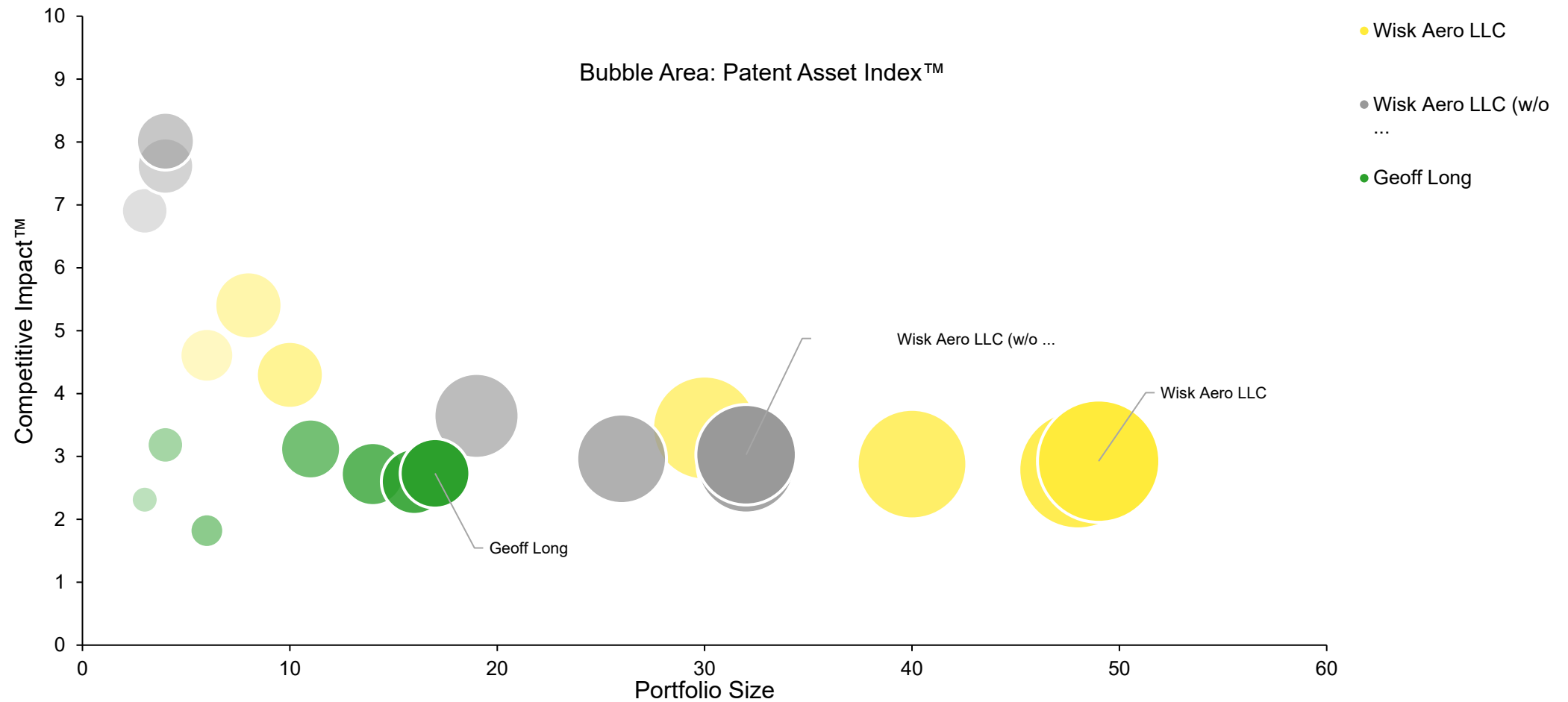


APPENDIX

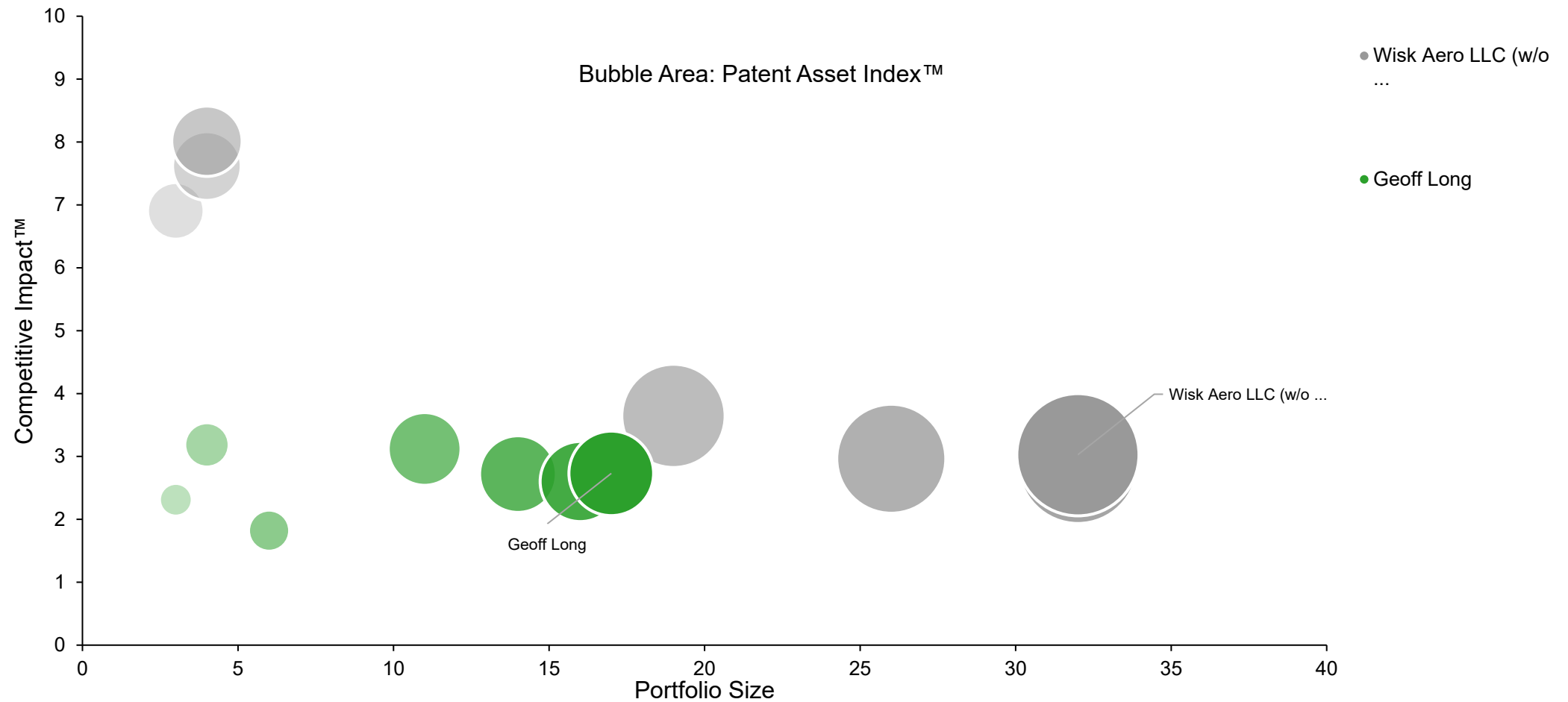
Wisk Aero LLC



Patents – Wisk Aero LLC vs. Geoff Long



Patents – Wisk Aero LLC vs. Geoff Long

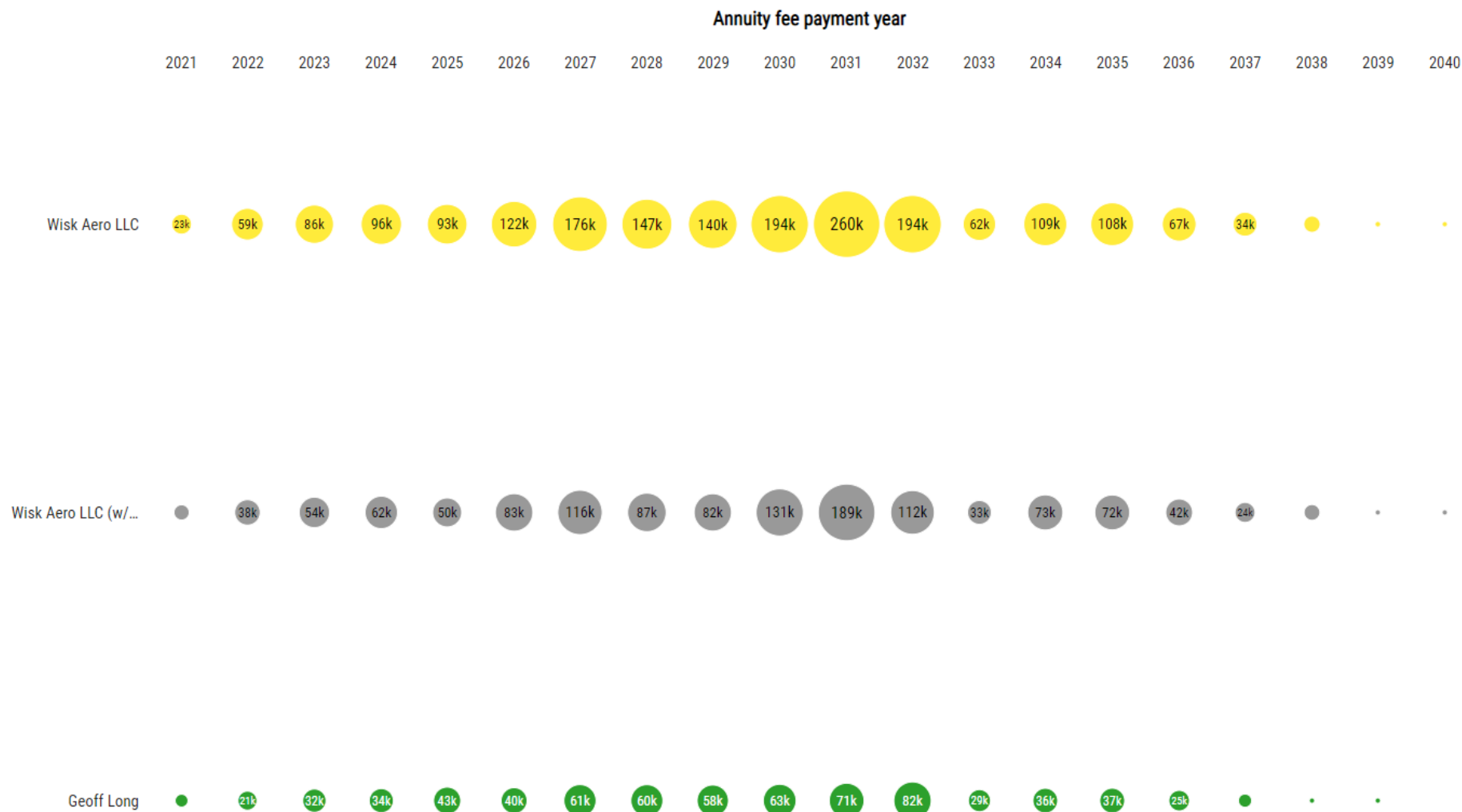


The Patent Asset Index™ and its Constituent Indicators – Development since 2012

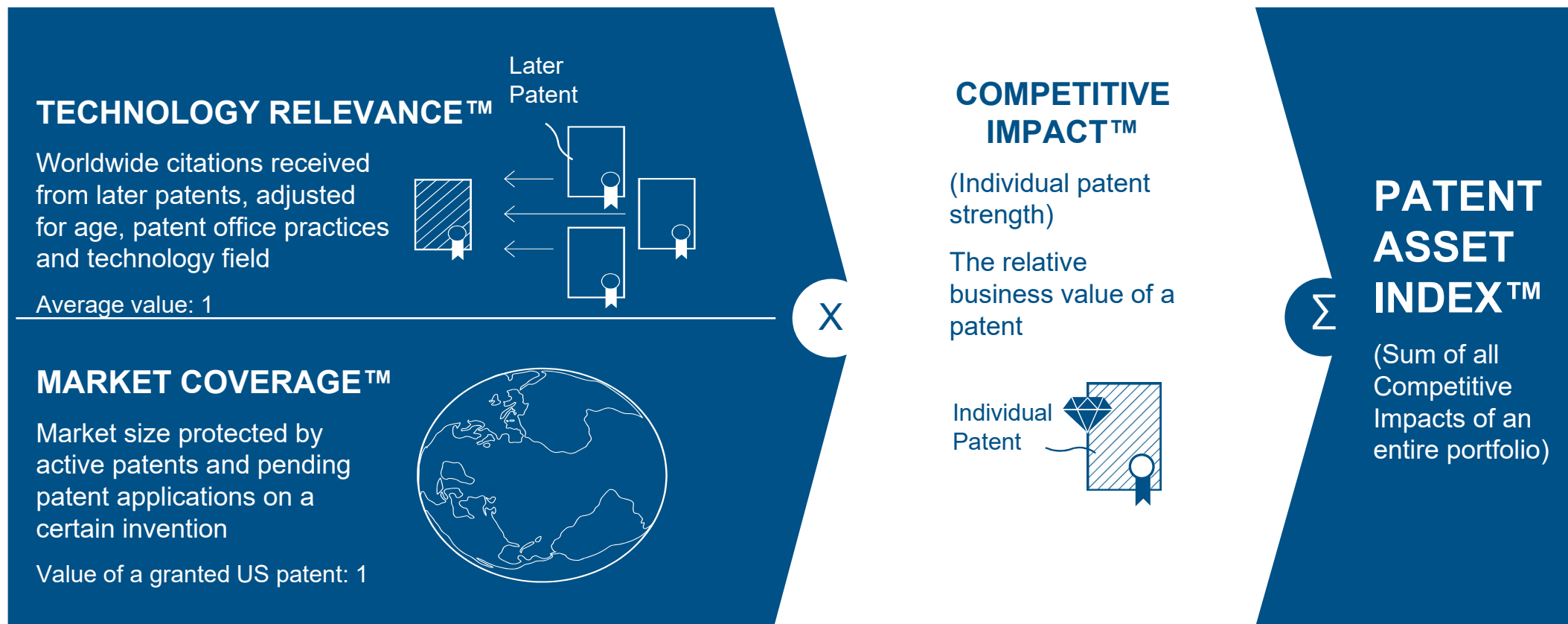
Wisk Aero LLC's Patents without Geoff Long's Patents

Year	Patent Asset Index™	Portfolio Size	Competitive Impact™
2012	3	2	1,7
2013	13	4	3,2
2014	20	5	3,9
2015	28	6	4,6
2016	40	7	5,7
2017	37	7	5,3
2018	83	24	3,4
2019	93	33	2,8
2020	106	41	2,6
July 15, 2021	113	42	2,7

Annuity Fees for Wisk Aero LLC's Patents, their Other Patents and Geoff Long's Patents



The Patent Asset Index™ Methodology



Corresponding scientific publication:

Ernst, H., Omland, N. (2011): The Patent Asset Index – A New Approach to Benchmark Patent Portfolios. World Patent Information 33(1), 34–41.