



Real-time risk management at scale

Insuring future air mobility

Tommy Wilson, Drone Partnerships Manager
flockcover.com



Give us a shoutout:

@flockcover

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Introduction to Flock

The Flock team

combines academia, engineering, insurance, and industry experience.



AON

 UNIVERSITY OF
OXFORD

 UNIVERSITY OF
CAMBRIDGE

Imperial College
London

 GUY CARPENTER

ebay


Audi

Flock has raised \$ 4M

from grants and global investors

**UK
GOVERNMENT**

 **NORTON ROSE
FULBRIGHT**

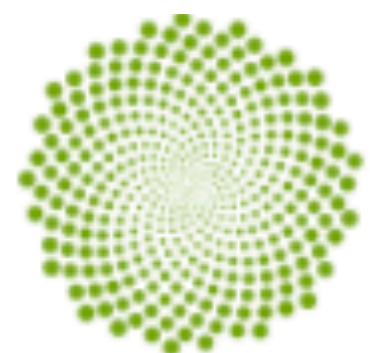
**SLAUGHTER
AND MAY**

\$ 450K grants

Downing 

 **R/GA**

\$ 550K pre-seed



anthemis | group

PLUGANDPLAY

\$ 3M seed

The drone industry has a problem

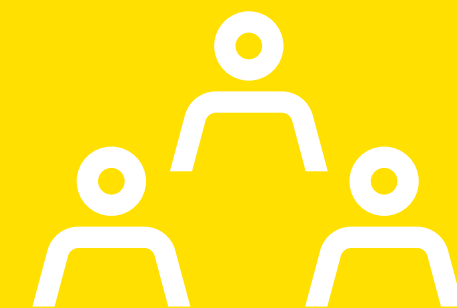
It's impossible to **identify and quantify** drone flight risks in real time



Air hazards



Ground hazards



People



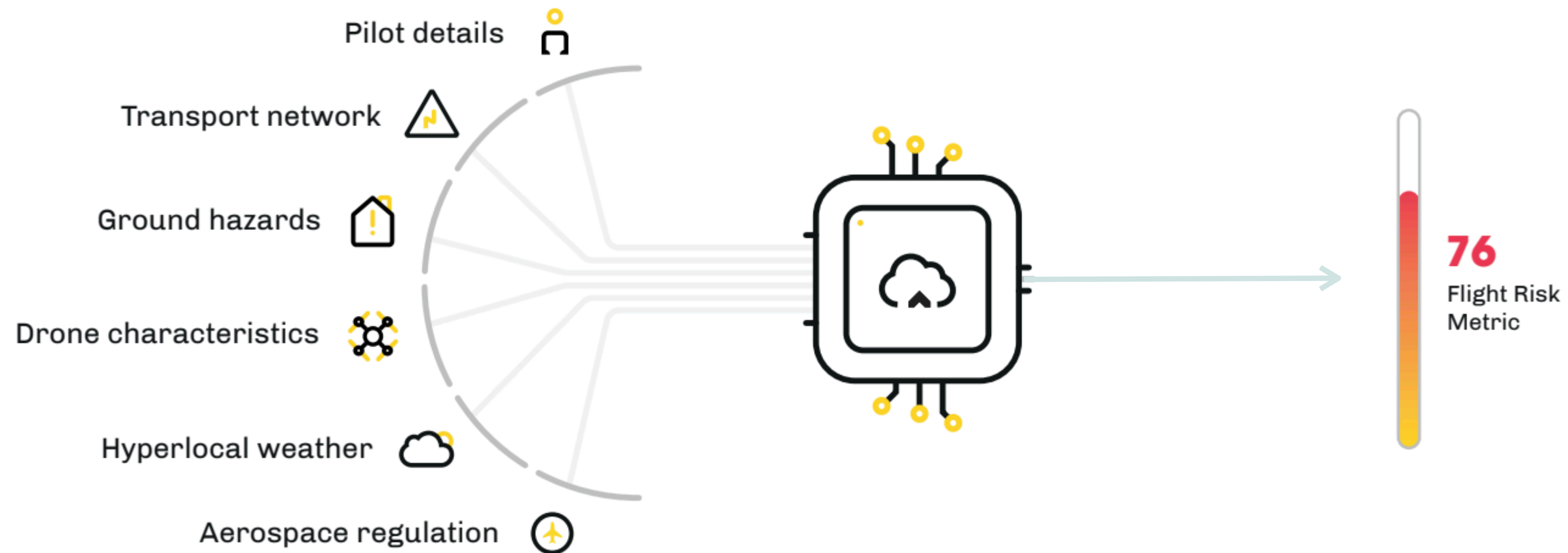
**A suite of data-driven products
to identify, mitigate and insure
drone risk**

2 Flock Cover

Pay-as-you fly
drone insurance

Flock's Risk Intelligence Engine quantifies risk



Data in: Risk out



1 Collect data

2 Analyse data

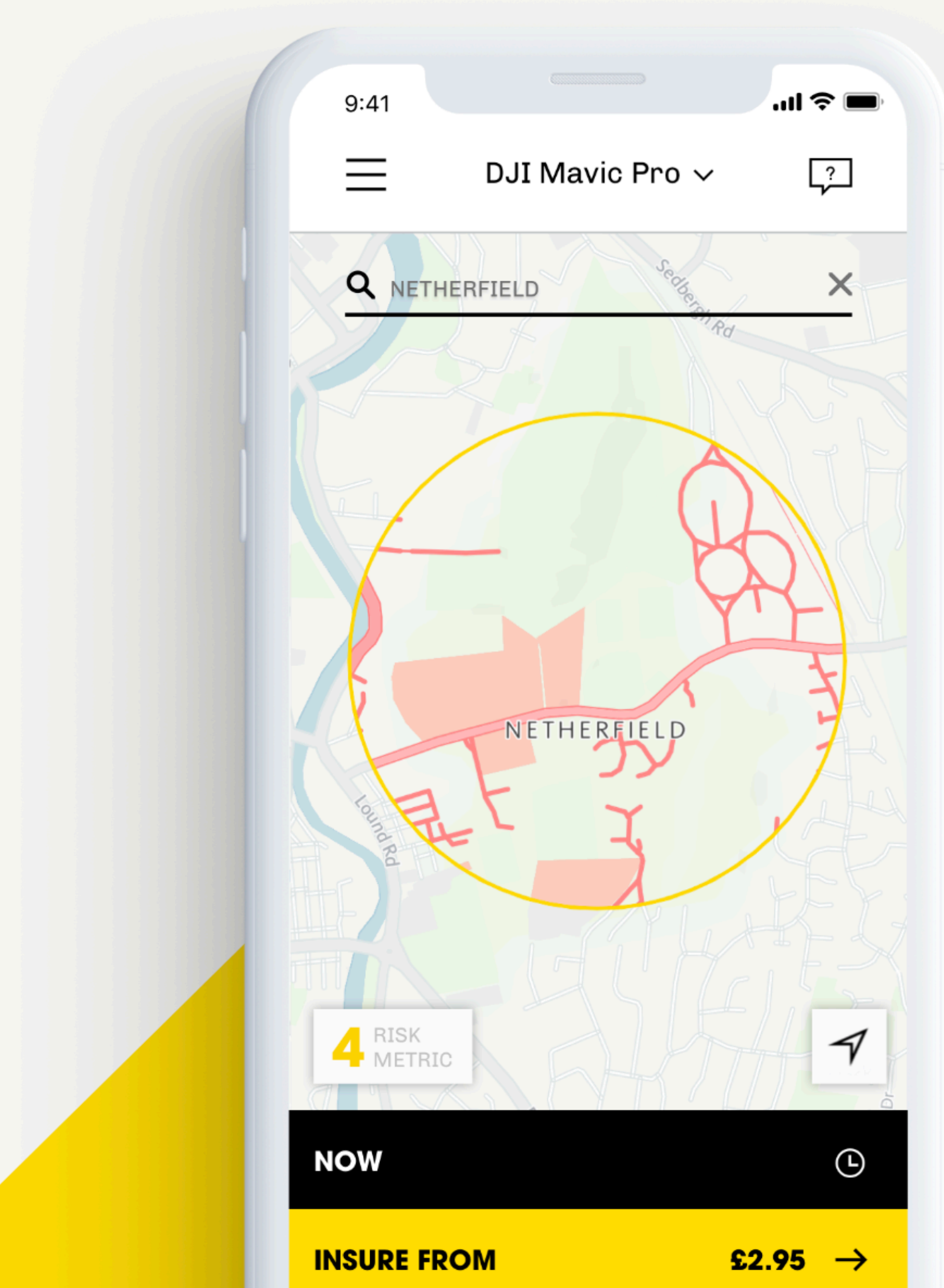
3 Quantify risk

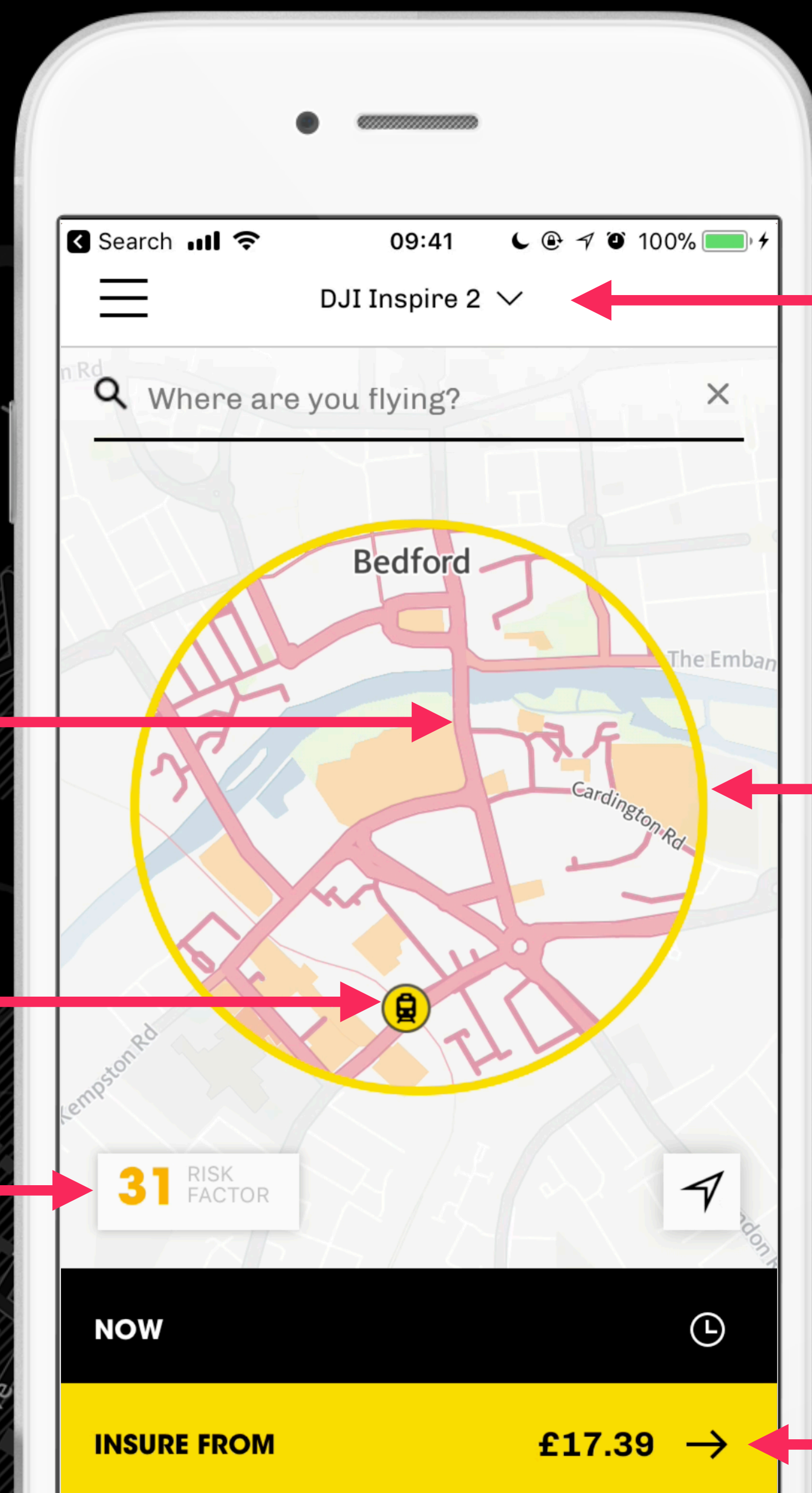
FLOCK  **+** **Allianz** 

Pay-as-you-fly drone insurance

With Flock Cover, receive fully customised drone insurance, precisely when you need it. Download the app and get a real-time quote in seconds.

Download →





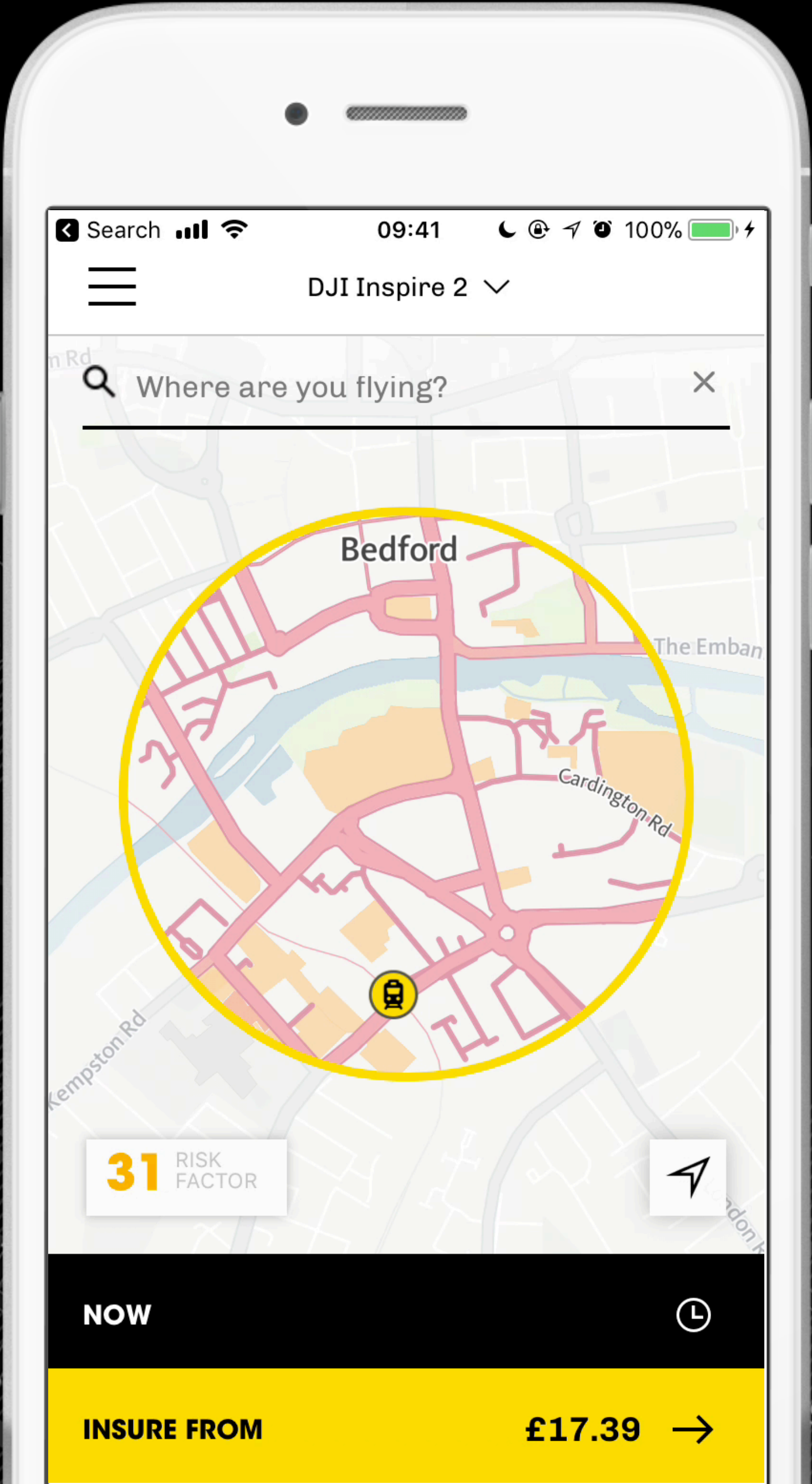
Drone model

**Real-time
Hazards**

**Flight Area
(500m Radius)**

Risk Factor

**Risk-dependent
Price**



Does it work?

We analysed the data (> 500,000 quotes)

We saw that it was good.

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**Flock's pilots
adjust their flights,
fly safer,
and save money**

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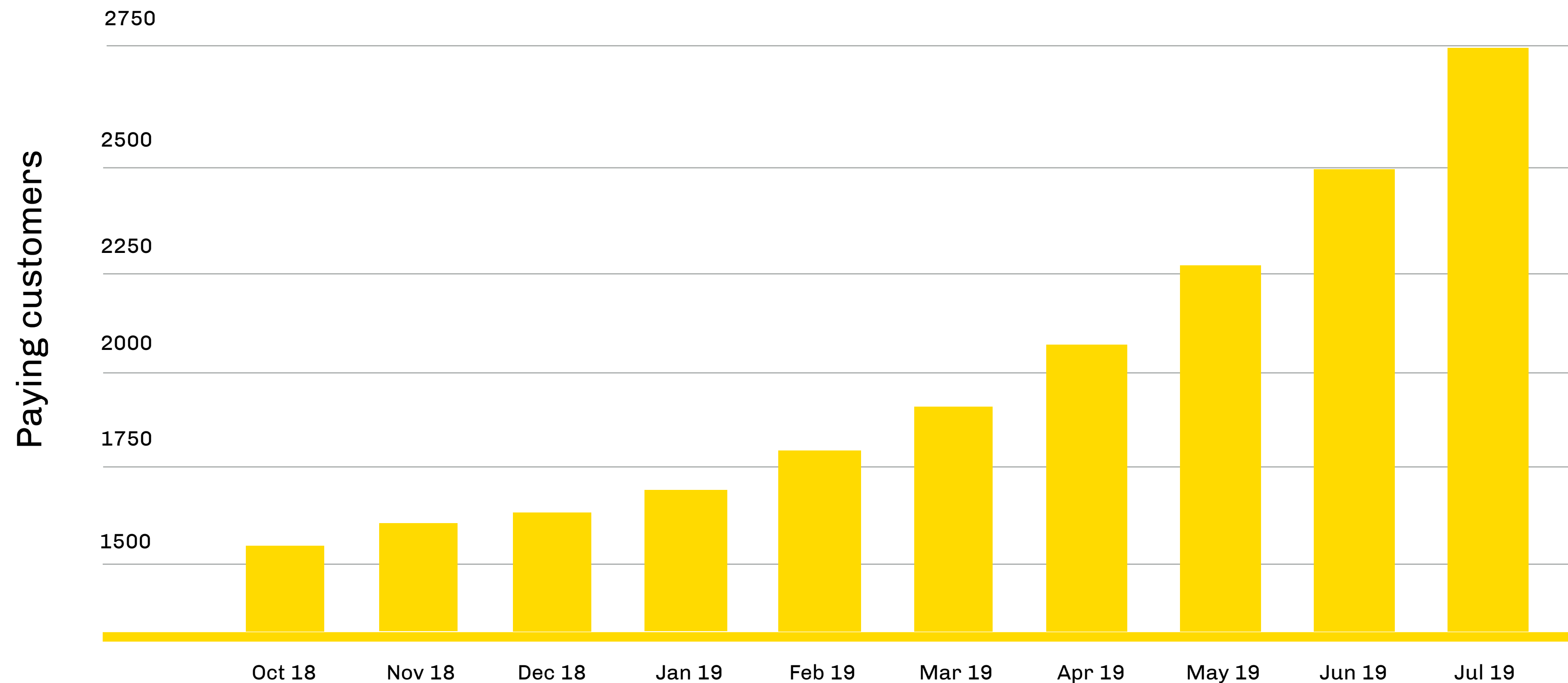
**Flock's pilots
adjust their flights,
fly safer,
and save money**

15 changes per flight

**4.50 point reduction in
risk metric per flight**

**15% reduction in
policy price**

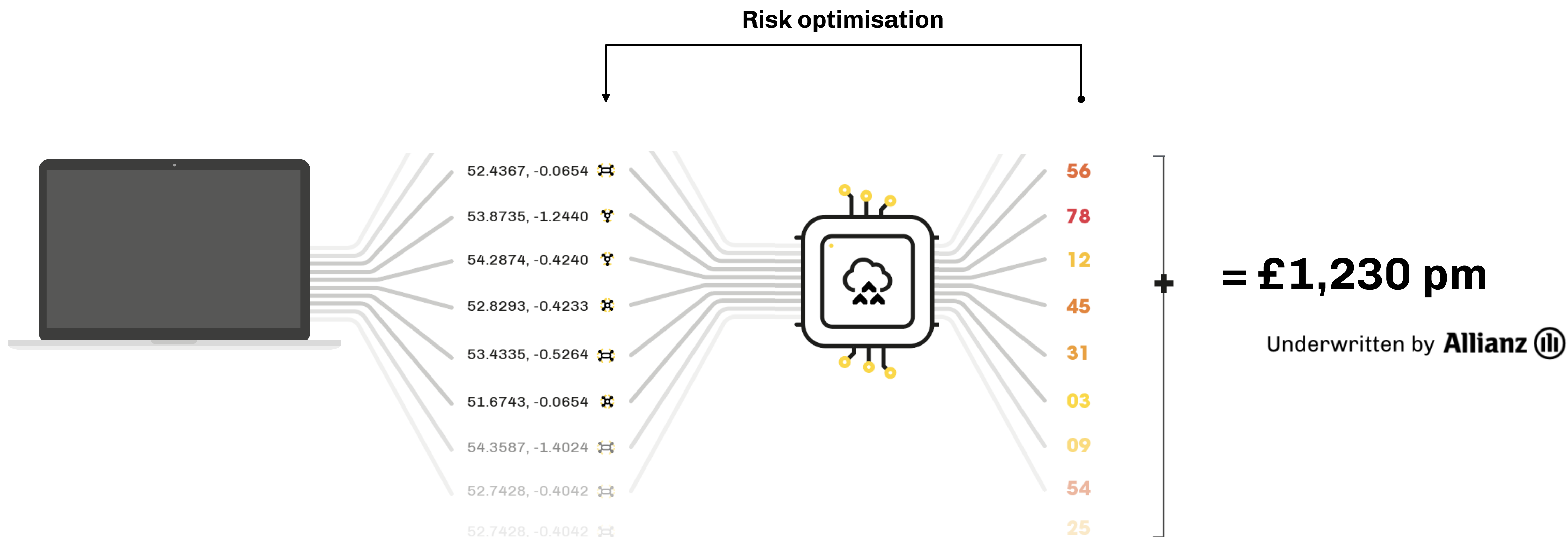
Thousands of UK SMEs and Enterprises now use Flock



3 Flock Enterprise

Real-time risk
management at scale

Flock Enterprise leverages batch analytics



1 Collect historical flight data

2 Quantify risks

3 Assess aggregated risk

Flock Enterprise reinvents drone insurance from the ground up

Enables risk
mitigation at scale

Rewards safer
organisations

Aligns insurance
costs & revenues

4 Use-case

Real-time insurance for
urban delivery drones

FLOCK 

+



Skyports







VOLOCOPTER
IN COLLABORATION WITH
Skyports

**Flock
visualises,
simplifies,
and
quantifies
aerial risks**



Flock's vision

**Make the world a
safer, smarter place**





An exposure-based approach to real-time risk management in a connected and autonomous world

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The future of insurance for connected drone fleets

An exposure-based approach to real-time risk management in a connected and autonomous world

The rapid emergence of connected and autonomous drones brings with it a range of unprecedented opportunities, both economically and for social good. However, this novel technology has also given rise to a broad range of new and complex risks, which drone operators sometimes struggle to understand, and which insurers struggle to price.

The application of traditional insurance pricing methods in the drone industry has led to many drone operators and enterprises paying substantially more for their insurance than their risk actually requires. This opaque 'one-size-fits-all' approach means that proactive risk mitigation is not incentivised or rewarded by insurers, despite the likelihood of fewer claims.

Thankfully, the rise of flying robots has coincided with the rise of Big Data. When used intelligently, Big Data can be harnessed to quantify, intelligently price, and mitigate drone flight risks in real-time. As such, insurance is more transparent, with fairer pricing tailored to individual risk profiles. What's more, rich data insights can enable drone operators to fly safer, and be rewarded for doing so.

This new alternative to traditional insurance is known as an 'exposure-based' approach. This white paper will detail this innovative approach, with the case studies serving to illustrate how the benefits of 'exposure-based' insurance are already being realised by drone operators throughout the industry, from SMEs all the way up to world-leading drone enterprises.

The changing face of insurance

In 2017, The Economist proclaimed that data has overtaken oil as the world's most valuable resource—with good reason¹. Data is being generated at a rate that in 2018 humans created 2.5 billion gigabytes per day, compared to 1.5 billion produced in the last two years alone². Gathering and analyzing this data allows businesses in various markets to draw powerful insights and make decisions to serve their customers.

Big Data has immense implications for the future of the However, despite the explosion of data from connect insurers for individualised risk models is still largely in

For enterprises seeking more tailored insurance solutions, there is good news on the horizon. According to McKinsey, insurance will evolve to contain highly dynamic, usage-based insurance products that adapt to customer behaviour⁴. McKinsey predicts that insurance will move from a traditional model to a continuous cycle, with products that constantly evolve to meet changing patterns.

The future of the insurance industry does not stop at using data to turn customers into predictive risk mitigation. As model sophistication increases, Data, insurers will have the ability to provide transparent pricing and predict claim events⁶. Such a shift in the relationship between insurers and policyholders is a social trend PwC uncovered in their 'Insurance 2020' report.

In some markets, dynamic and tailored insurance solutions demonstrate how both personalised insurance and data can be leveraged at scale in the rapidly growing drone industry. We will compare traditional insurance pricing methods, and discuss how data-driven insurance — exposure-based pricing — is transforming the way drone fleets are insured. We will conclude by laying out a framework for a drone fleet insurance.

The emerging drone industry is undergoing rapid expansion. Drones will represent a \$100 billion market globally by 2020, with 80% of that occurring in commercial activity⁷. This, in turn, will fuel the growth of the drone insurance market, due in part to the regulatory requirement for commercial insurance policies in place⁸.

Whilst the growth trajectory is steep, the industry is still a relatively small amount of historical data that insurers have to work with. This presents a number of obstacles for insurers to intelligently price policies for customers, calling into question whether traditional underwriting in the drone industry.

- 1 The Economist (2017). 'The world's most valuable resource is no longer oil, but data'. <https://www.economist.com/finance-and-economics/2017/05/02/the-worlds-most-valuable-resource-is-no-longer-oil-but-data>.
- 2 Forbes (2018). 'Big Data Analytics Adoption Soared in the Enterprise in 2018'. <https://www.forbes.com/sites/bernardmarr/2018/01/25/big-data-analytics-adoption-soared-in-the-enterprise-in-2018/#500000000000>.
- 3 Insurance Journal (2018). 'Global Insurance Premiums Rise by 1.5% in 2017, Driven by E&O'. <https://www.insurancejournal.com/news-northwest/2018/01/25/441111.htm>.
- 4 McKinsey & Company (2017). 'Insurtech—the threat that inspires'. <https://mck.co/29h9yGk>.
- 5 Raconteur (2018). 'Insurance moves from reactive to predictive'. <https://bit.ly/2WUy46k>.
- 6 PwC (2012). 'Insurance 2020: Turning change into opportunity'. <https://pwc.to/2JfJ0gk>.
- 7 Goldman Sachs (2016). 'Drones: Reporting for Work'. <https://bit.ly/2PmCpJg> [Accessed: 15 January 2018].
- 8 Civil Aviation Authority (2004). 'Aircraft Insurance'. <https://bit.ly/2Zz6d0H> [Accessed: 15 January 2018].

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tommy@flockcover.com

