



What's happening at Envirosuite

SPEAKER: Matthew Barry



FORUM23

Flightpath to the Future: Reconnect & Collaborate

Key challenges



Environmental sustainability

Changed noise exposure expectations
Global warming



Effective engagement

Accuracy
Timeliness
Consistency



Cyber threats

Protection of systems
Control of access
Personal Identifiable Information

Measuring – Aircraft noise exposure

- Why monitor?
 - Legal
 - Community engagement
 - Understand change in exposure
 - Verify noise models
- Where do you need to monitor?
 - Fixed by legal framework
 - Contour boundary
 - Community driven
 - Change is happening
- How accurate do you need to be?
 - Will the data be scrutinised?
 - Does it have legal consequences?
 - Can it affect planning permissions?
 - Is community trust important?

According to Meng's office, the omnibus bill clause "directs the FAA to evaluate other methods to address community airplane noise concerns, and encourages the FAA to make these recommendations based on actual noise levels."

Take Bayside resident Janet McEneaney. She said her neighborhood is categorized at 55 DNL — within the current acceptable level. But a noise monitoring instrument installed in her neighbor's backyard shows the daily stream of jets overhead can reach 90 decibels, she said.

A 1st in Quebec, lawyer says

The class action go-ahead, granted by Justice Chantal Tremblay, means the airport and the ministry must hand over information, including takeoff and landing practices as well as statistics on airplane noise.

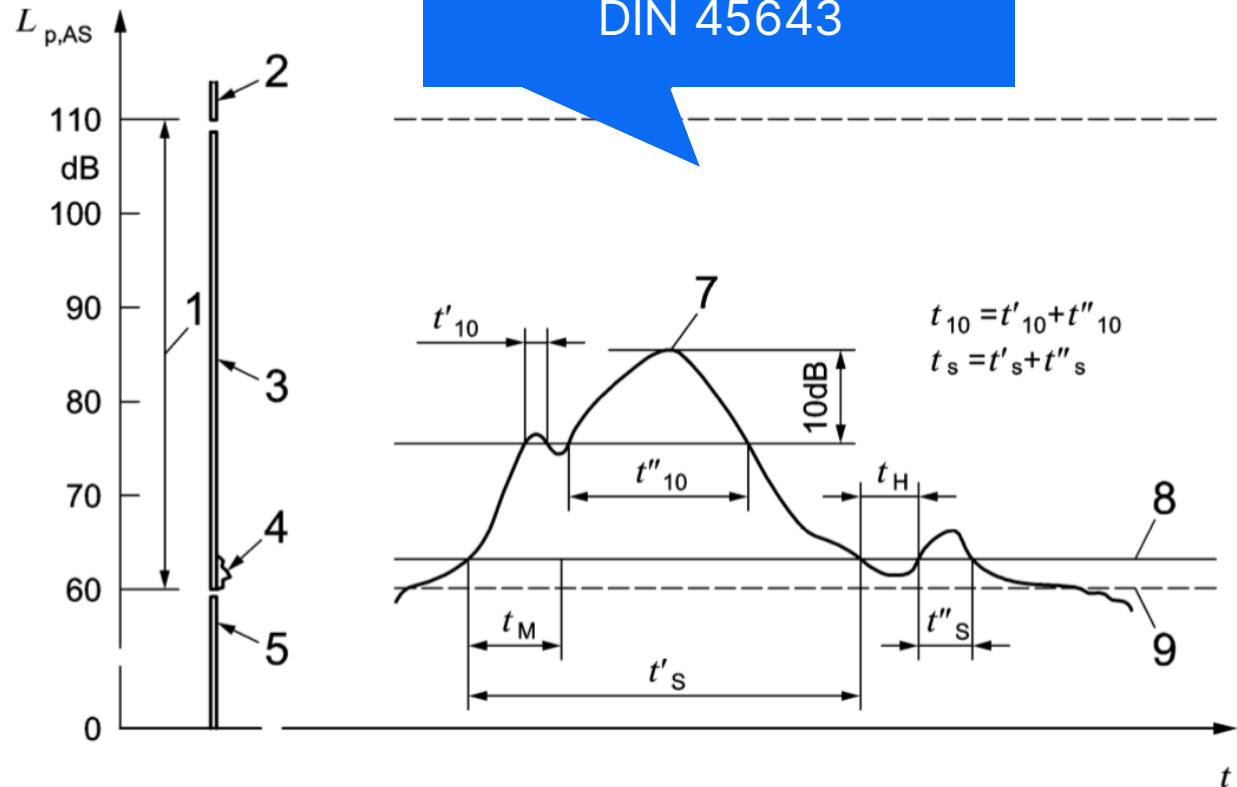
Measurement – Location

- Location
- Threshold Challenges
 - Hiding something
 - Over estimation
 - Under estimation
 - Attacks on credibility

Effort to check and correct

ISO 20906

sound and the sound level at the onset of a measurement should be at least 5 dB. Therefore, sound monitors should only be installed at sites where the maximum sound pressure levels, $L_{p, AS, \max}$, of aircraft events of interest are at least 15 dB greater than the level of the average residual sound.



Envirosuite Event Correlation



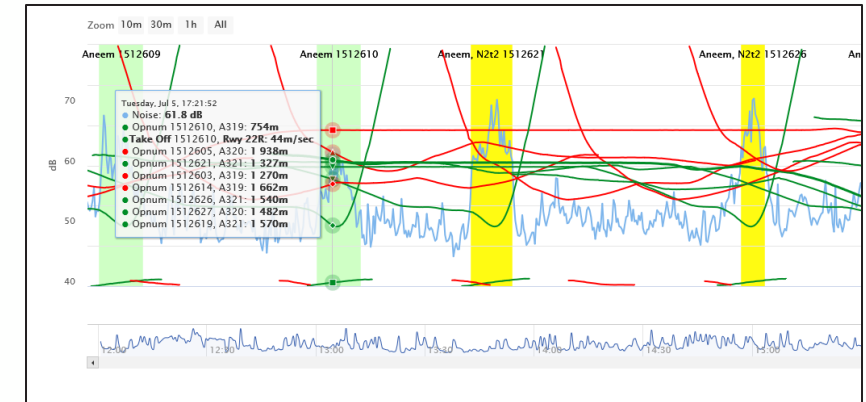
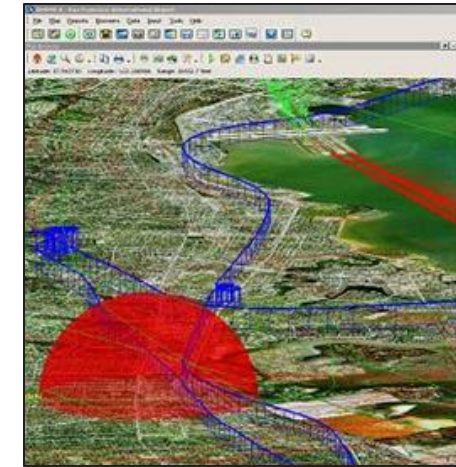
Traditional Noise to Track correlation (N2T2/NPD)
(Standard ANOMS)

- Noise Event above Threshold and Aircraft within a cylinder at the time



Aircraft Noise Event Extraction Methodology
(ANEEM)

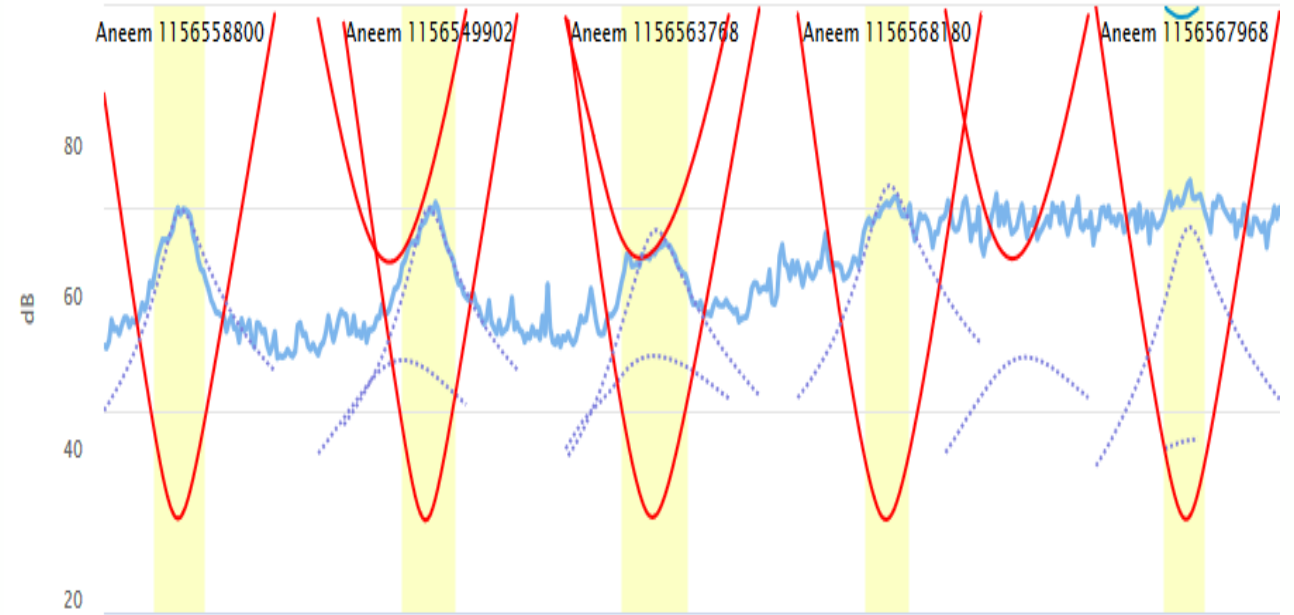
- Make use of the non-acoustical information; generate noise events after the raw data is collected
- Knowing where and when an aircraft is in the airspace enables you to target the localised maxima in the sample stream to extract noise events that are of interest



Methodology	Location A	Location B
Thresholds	2532	221
ANEEM	2970	2258

ANEEM - Better result with less work

- High precision without effort
- Responds to change
- Checks plausibility
- Audited



ANEEM – How does it work?

■ Adaptive to conditions

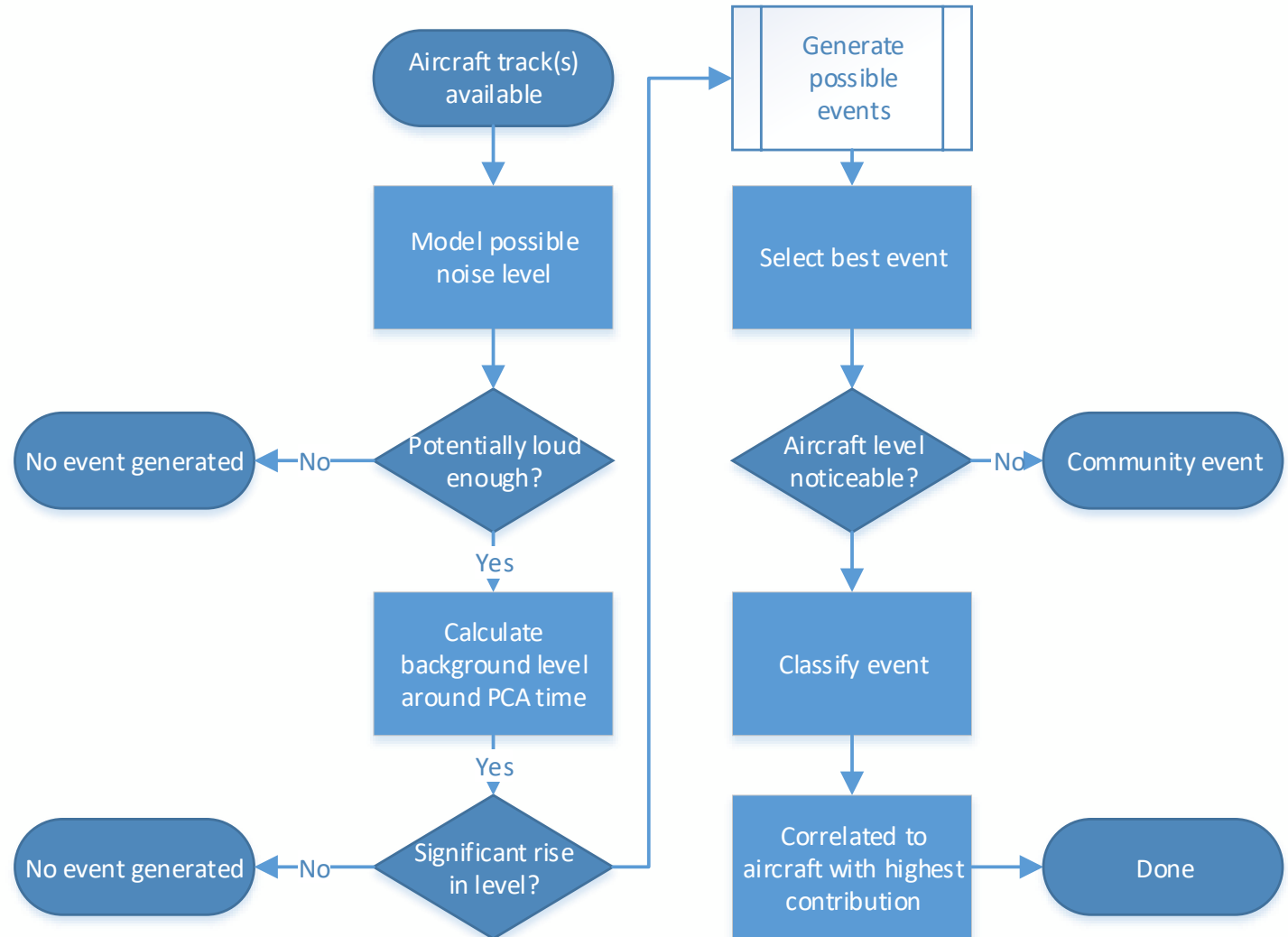
- Can it see a rise in noise?

■ Precision

- Is the level plausible?
- Could the aircraft be significant?

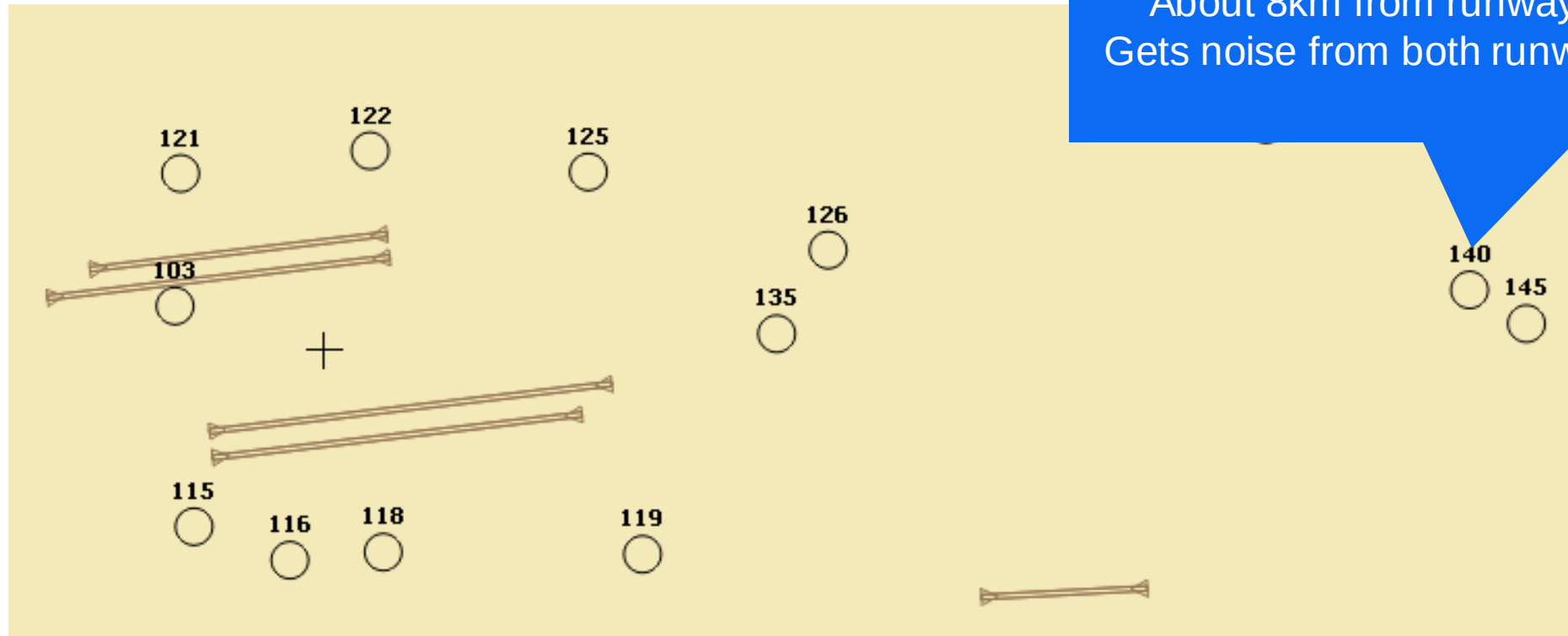
■ Traceable

- Documented performance on installation
- Annual audit

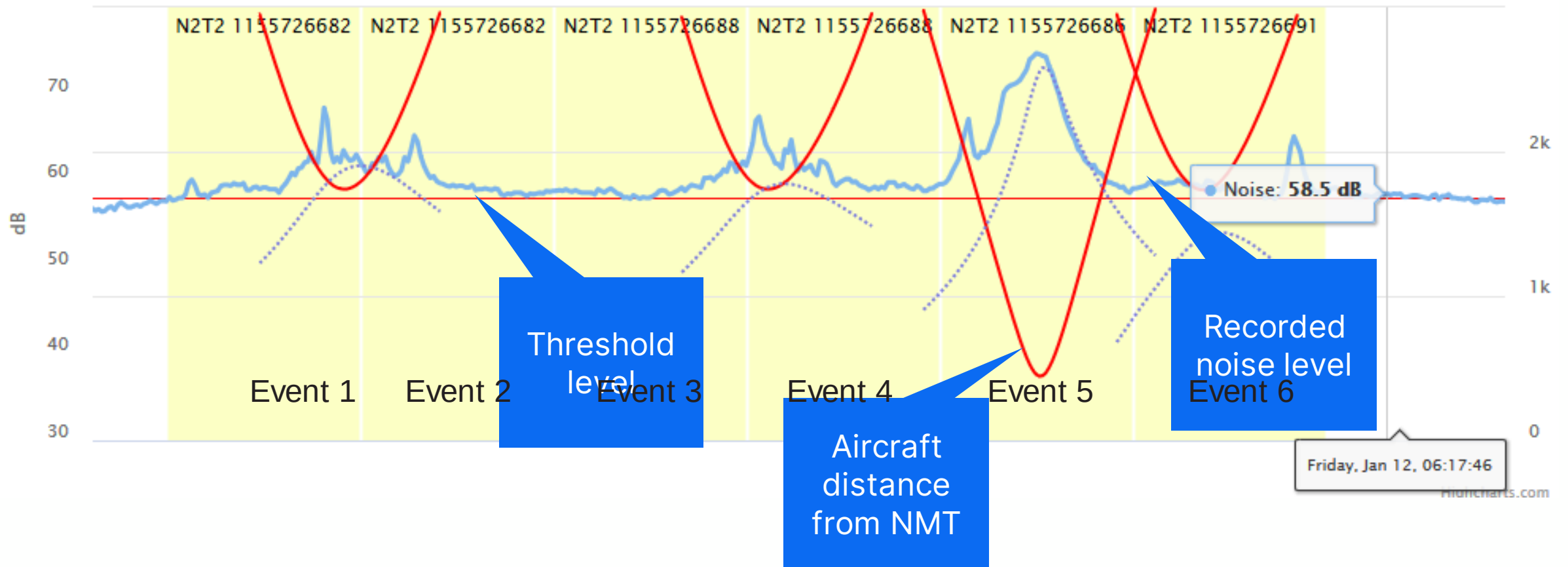


ANEEM – How does it work?

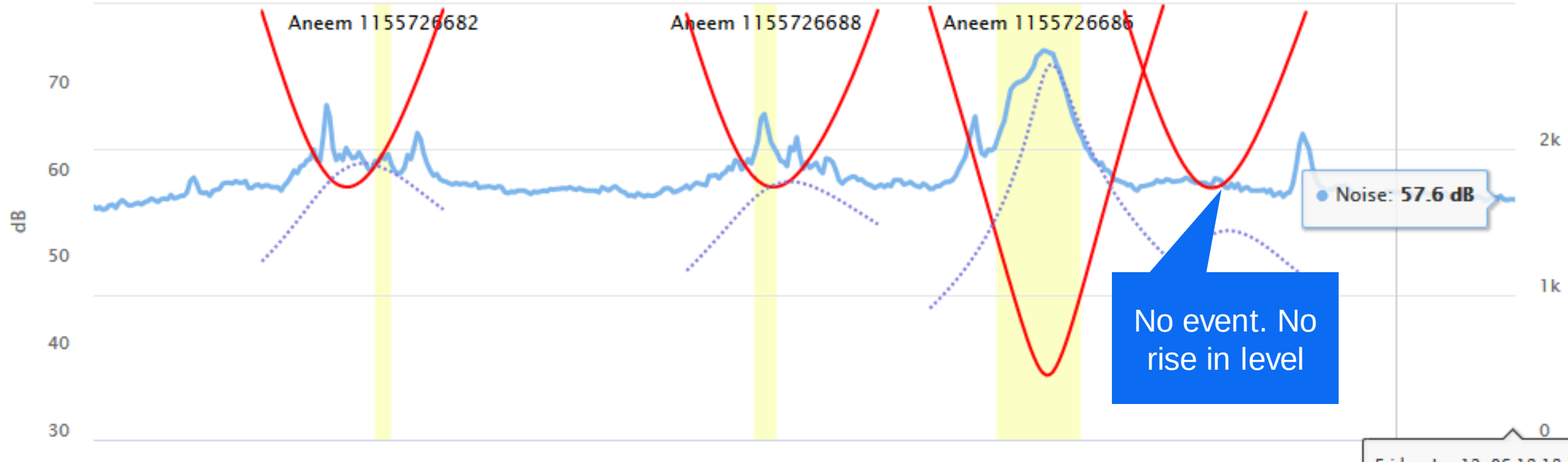
- Commercial jets
- Parallel runway operations
- Urban environment



ANEEM – Improved precision

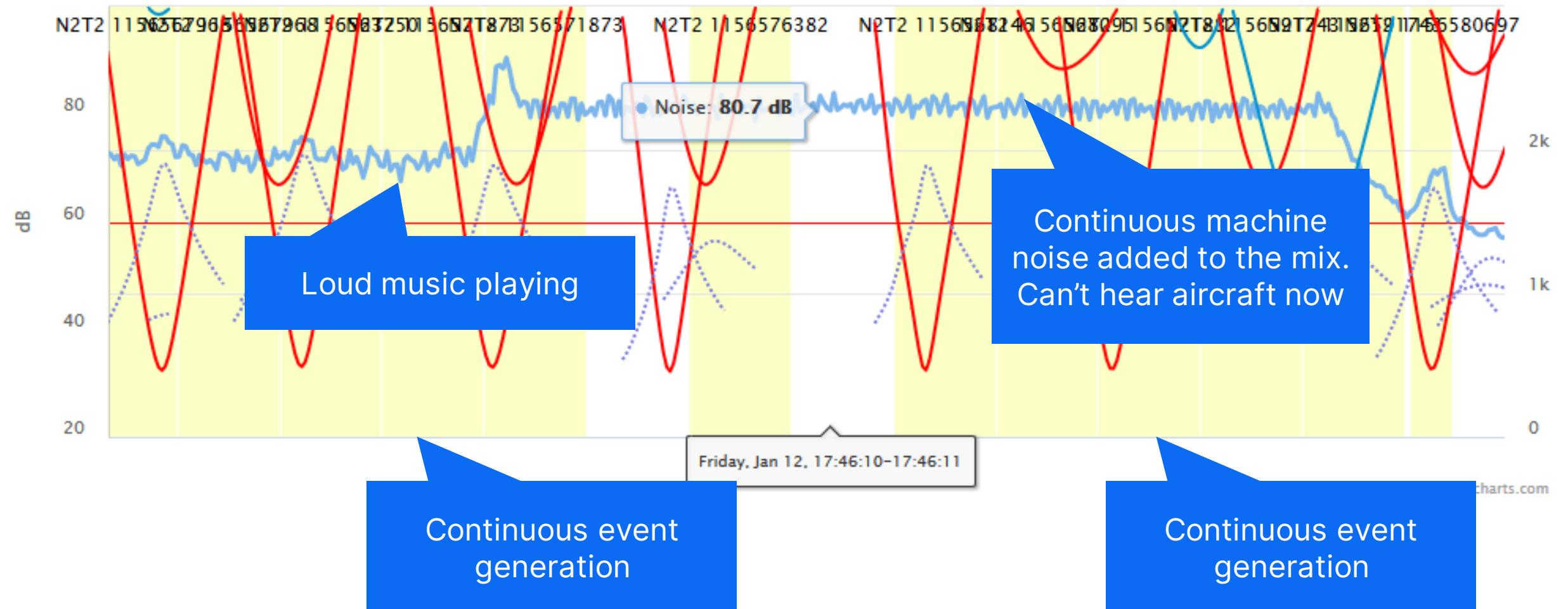


ANEEM – Improved precision

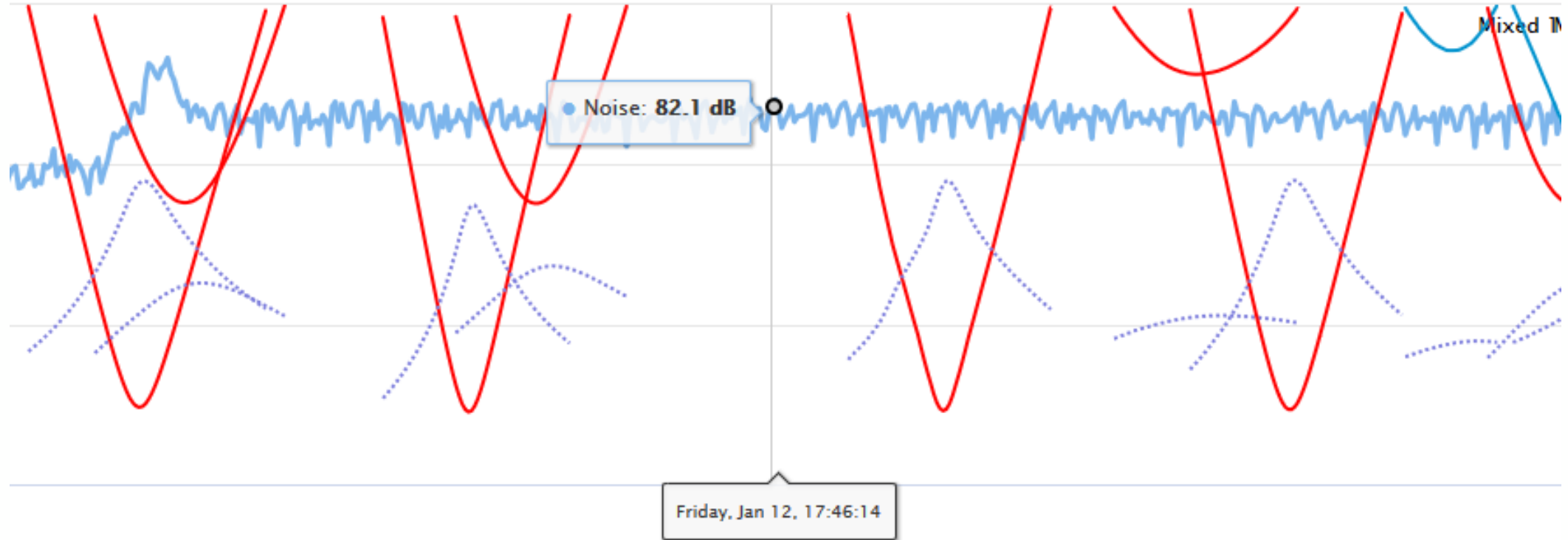


- Events much shorter – focussed on aircraft
- Contamination from community noise reduced
- Operation that did not change levels ignored

ANEEM – Adapting to change



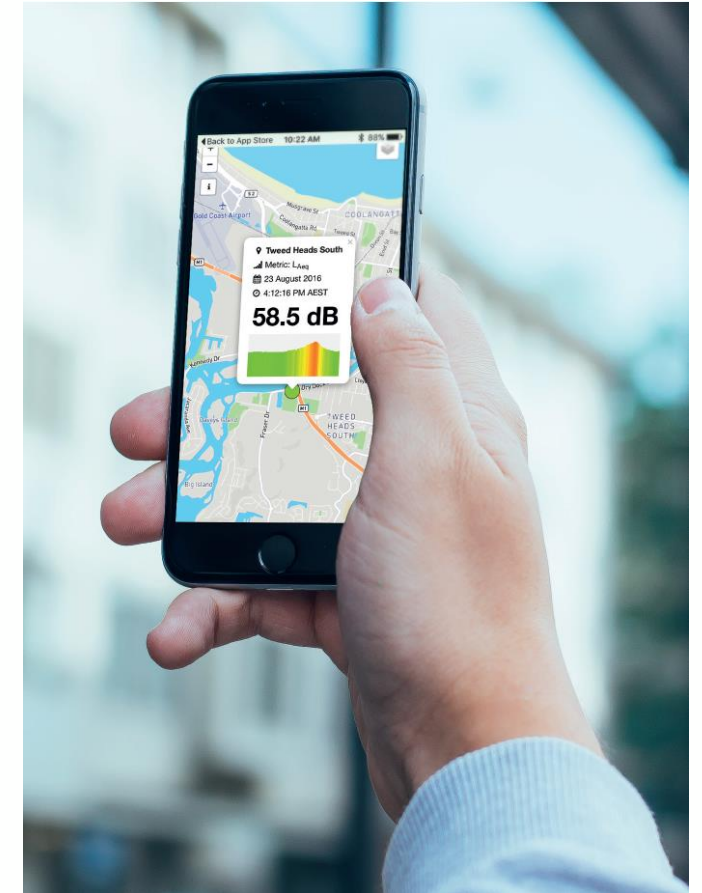
ANEEM – Adapting to change



- ANEEM is not making events
- A similar effect happens with high winds or a train passing etc.

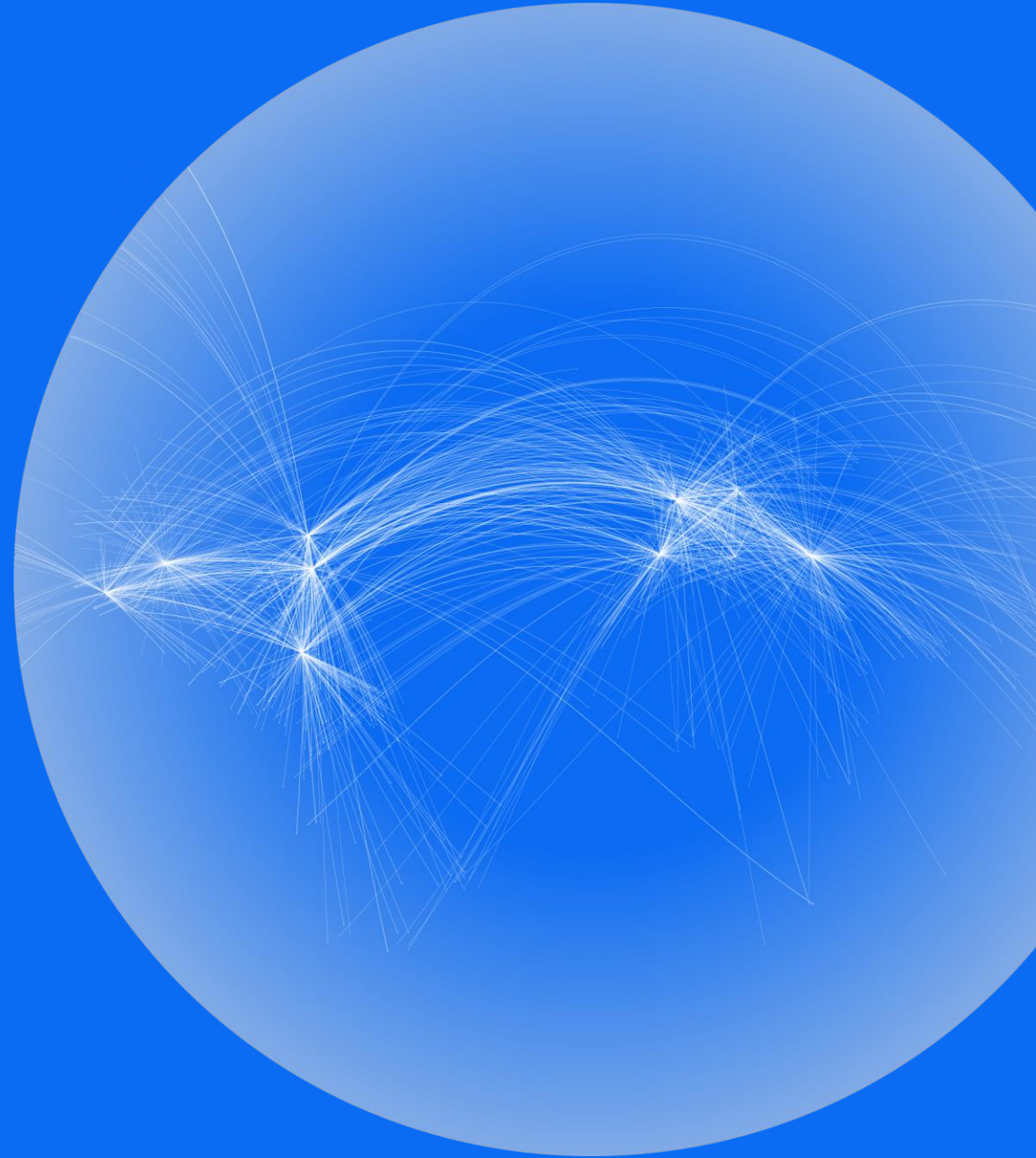
ANEEM – Improvement

- More accurate aircraft noise
 - 11.1 dB additional Aircraft LEQ
 - 11,829 additional seconds of aircraft noise
 - Multiple correlations removed
- Community noise not allocated to aircraft
- More credible noise data with less work



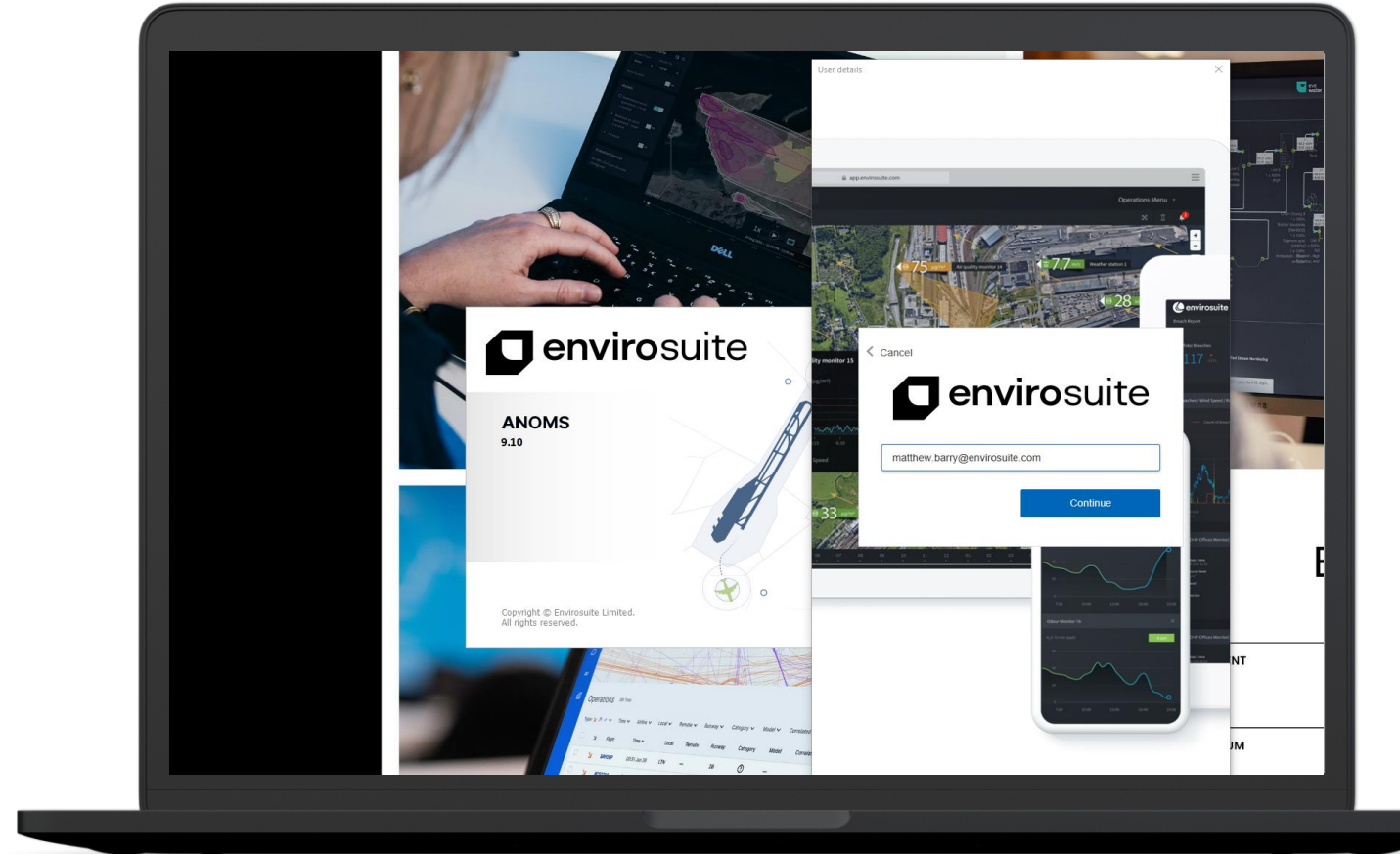
ANEEM – Roadmap

- Dynamic Audio Recordings
 - EMU 3
 - 3639



ANOMS Single Sign-On (SSO)

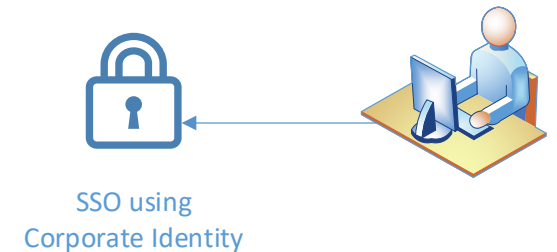
-  ANOMS Advanced
-  ANOMS NoiseDesk
-  Carbon Emissions



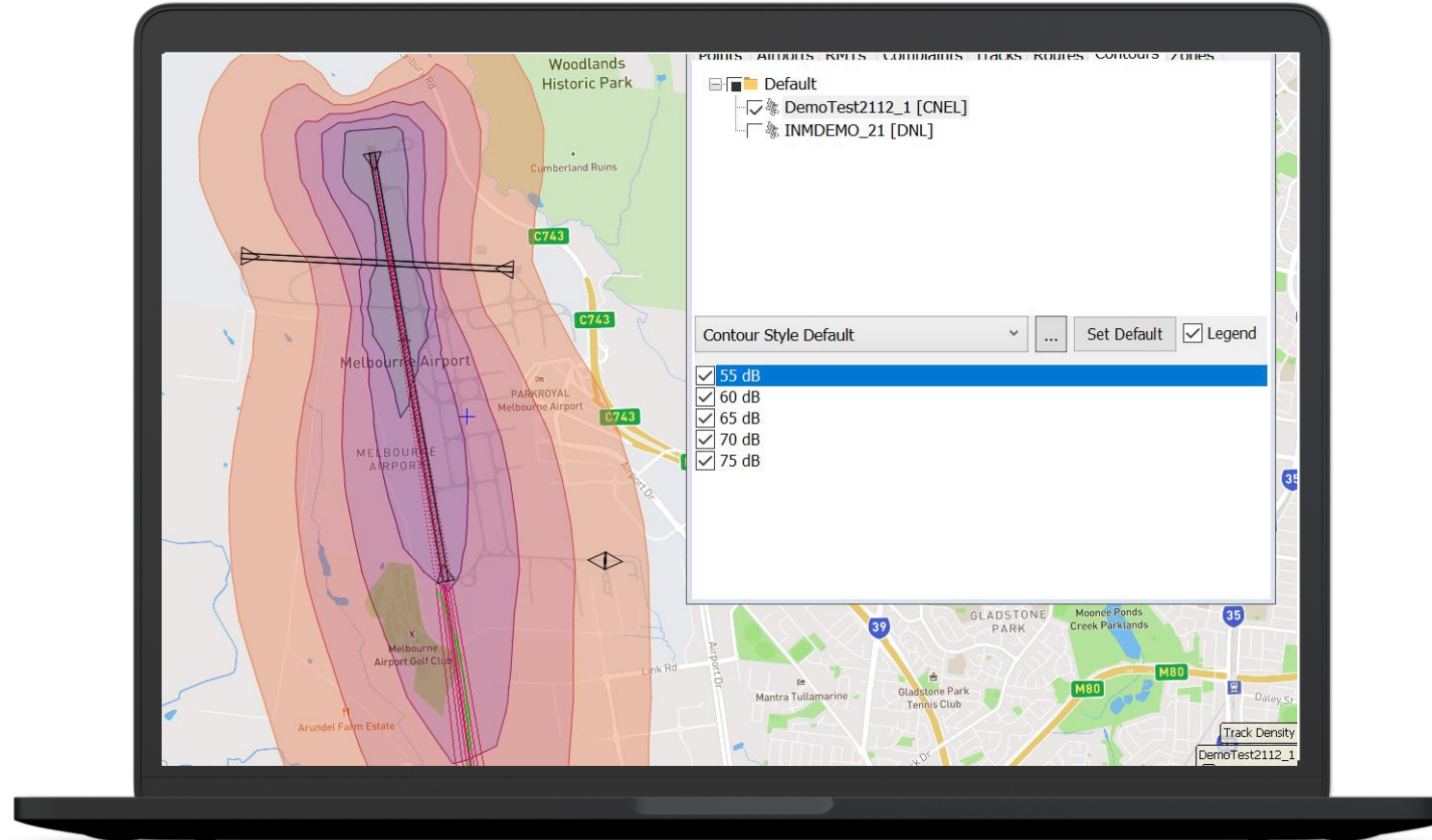
Security – Single sign-on

-  ANOMS Advanced
-  ANOMS NoiseDesk
-  Carbon Emissions

- ANOMS 9.10.2 and later support Single sign-on
- SSO allows federation with your Active Directory
- Efficiency:
 - Use your corporate username and password
 - Less passwords to remember
- Security:
 - IT account policies (expiry, 2FA, etc.)
 - Simple management of user access
 - Less likely to reuse credentials



ANOMS Noise Modelling



What is ANOMS Noise Modelling?

- Use ANOMS data to generate scenario for model
- Clean up the data for noise model
 - Stage length, periods of day, map aircraft types, track dispersion
- Manipulate to correct missing data
- Make alternative scenarios starting from ANOMS data
- Import contour output into ANOMS

LDEN-2022 43 Total [New](#) [Generate](#) [Bulk Edit](#)

Aircraft Type ▾ Stage ▾ Modeling Route ▾ Runway ▾ Operation ▾

✕ Clear filters

☐	Aircraft Type ▾	Stage	Modeling Route	Runway	Operation	Day	Evening	Night	
☐	737MAX8\CFMLeap1B27	1	RWY16DEP	16	Departure	100	23	0	
☐	737MAX8\CFMLeap1B27	2	RWY16DEP	16	Departure	72	11	1	
☐	737MAX8\CFMLeap1B27	3	RWY16DEP	16	Departure	18	9	0	
☐	737MAX8\CFMLeap1B27	4	RWY16DEP	16	Departure	7	4	0	
☐	A320-211\CFM56-5A1	2	RWY16DEP	16	Departure	3	0	0	
☐	A320-232\V2527-A5	1	RWY16DEP	16	Departure	42	25	2	
☐	A320-232\V2527-A5	2	RWY16DEP	16	Departure	38	12	0	
☐	A320-232\V2527-A5	3	RWY16DEP	16	Departure	13	2	5	
☐	A320-232\V2527-A5	4	RWY16DEP	16	Departure	7	0	0	
☐	A320-271N\PW1127G-JM with mod16073	1	RWY16DEP	16	Departure	11	6	0	
☐	A320-271N\PW1127G-JM with mod16073	2	RWY16DEP	16	Departure	7	4	1	
☐	A320-271N\PW1127G-JM with mod16073	3	RWY16DEP	16	Departure	4	1	0	
☐	A320-271N\PW1127G-JM with mod16073	4	RWY16DEP	16	Departure	1	1	0	
☐	A321-232\V2530-A5	2	RWY16DEP	16	Departure	1	1	0	
☐	A321-232\V2530-A5	3	RWY16DEP	16	Departure	9	1	1	
☐	A321-232\V2530-A5	1	RWY16DEP	16	Departure	10	4	0	
Add record						Totals	877	245	23

Demo



Select Data

Jul 1, 2022 - Sep 30, 2022

Candidates

Name

01QFY22

Start

hh:mm

to

End

hh:mm

Airports

EGLL ▾

Operation Type

  ▾

Runways

All ▾

Aircraft Categories

All ▾

Model

All ▾

Operator Type

All ▾

Airline

All ▾

Route

All ▾

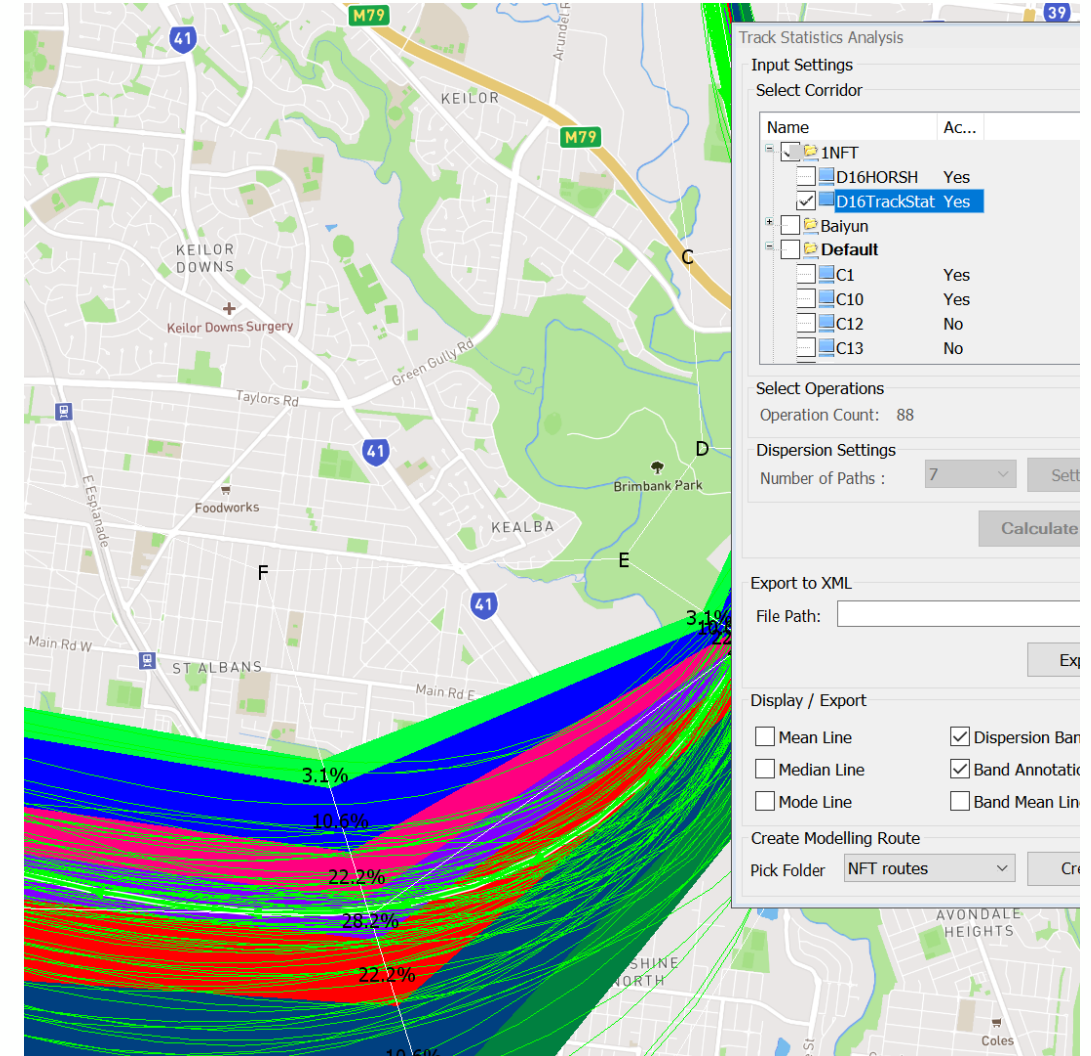
Create

 | FORUM23

Noise modelling availability

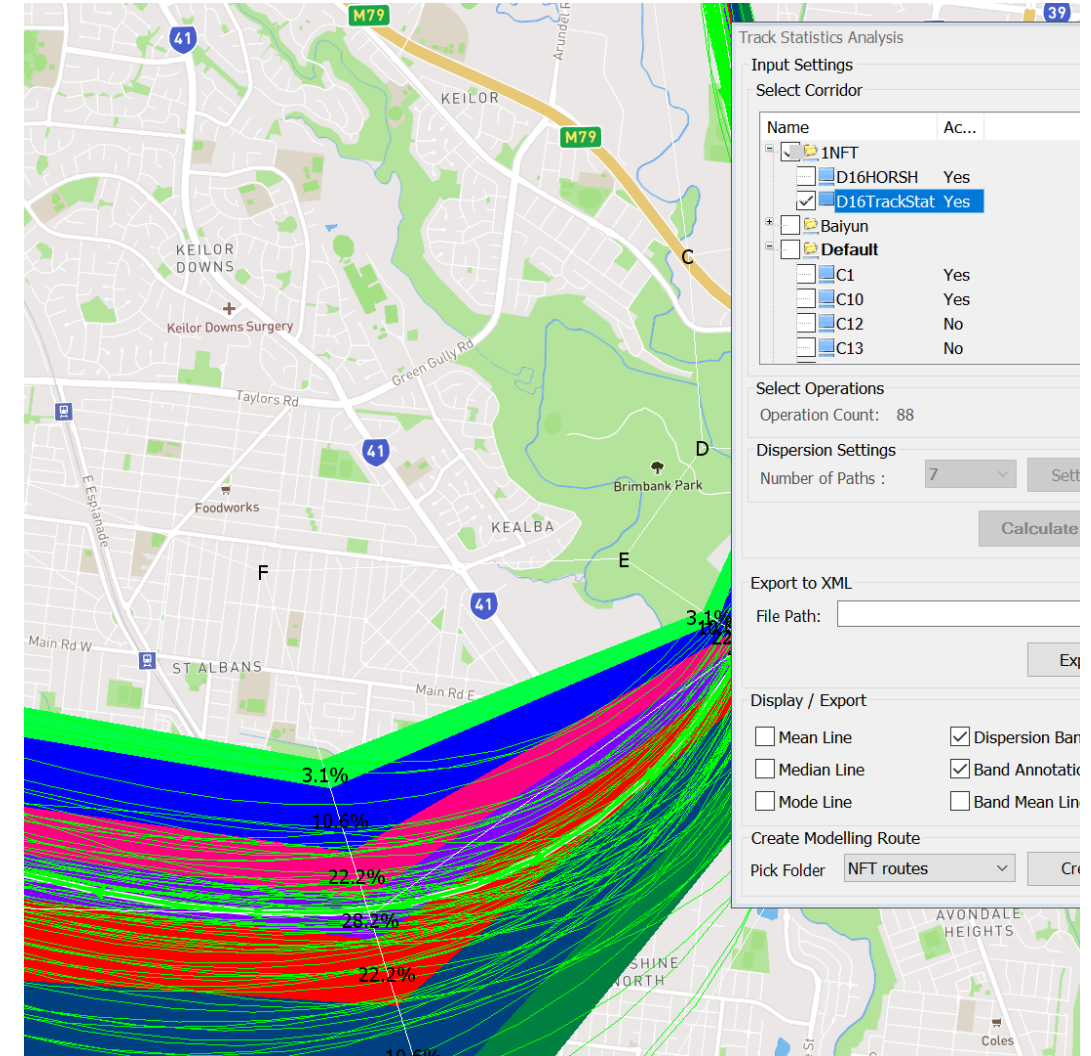
- ANOMS 9.10.0 or later
- Hosted
- Deployed
 - Possible. Not recommended
 - but not closed systems
 - Complex to set up. Needs additional servers
- ANOMS extension module
 - Users must have an ANOMS seat licence

Supports AEDT 3 or INM 7



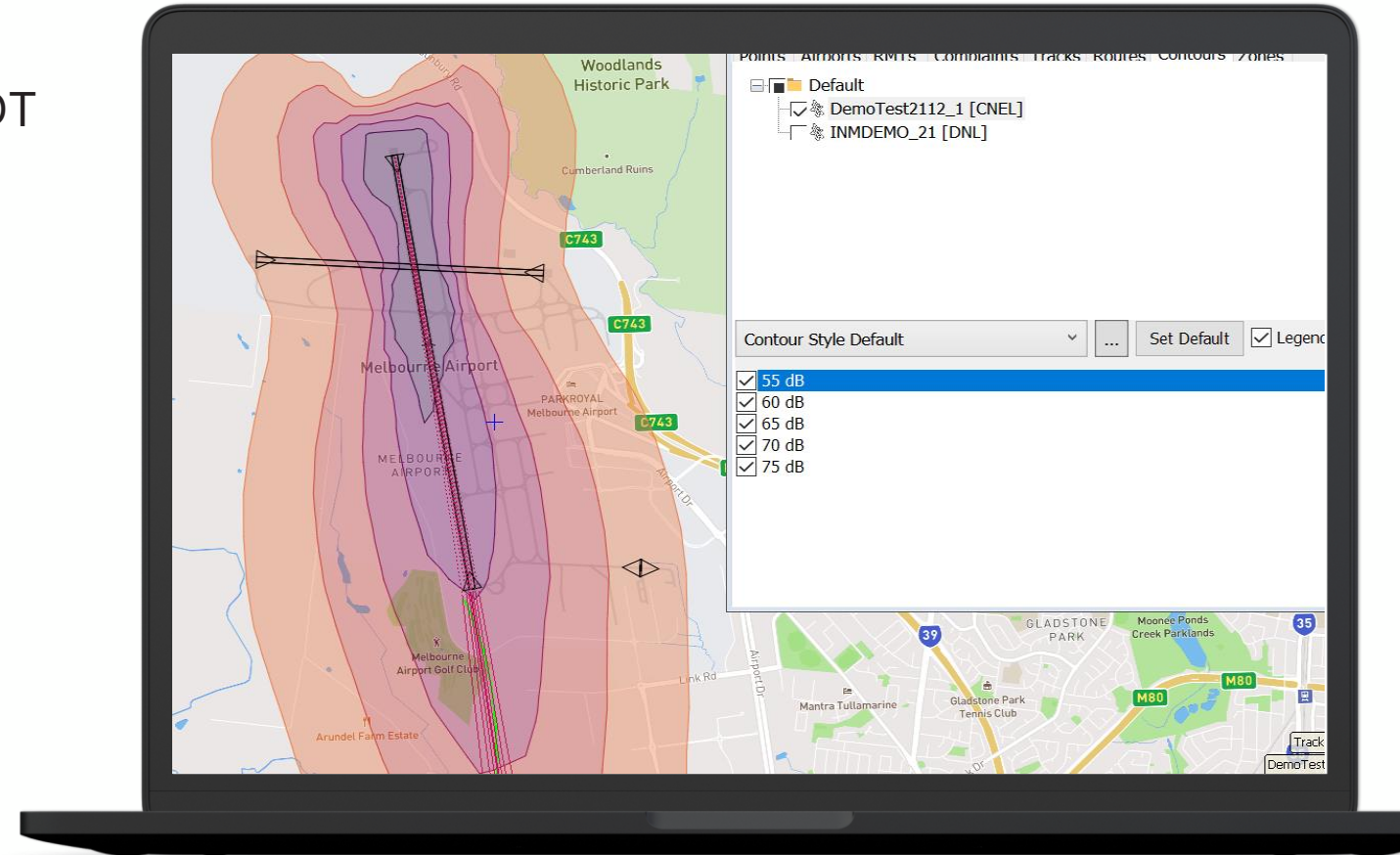
Noise modelling advantages

- Accurate and consistent generation of scenarios
- Leverage data grooming work in ANOMS
- Efficient extraction of data for modelling
- Easy to adjust AEDT scenarios
- Using ANOMS data ensures consistency of reporting
- Keeping modelling routes and aircraft mappings in ANOMS ensures consistency between model runs

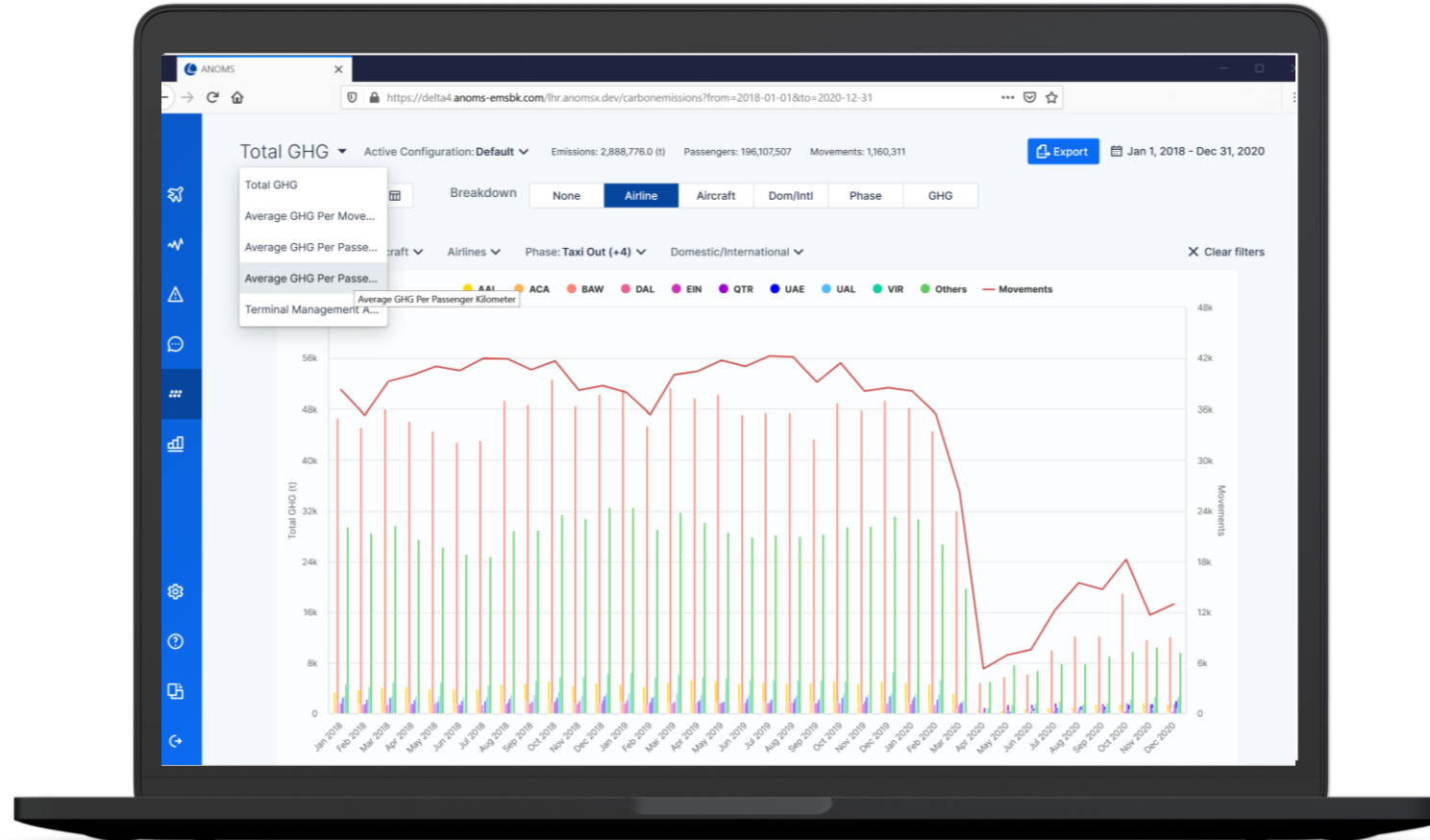


Noise Modelling - Roadmap

- Export actual track for processing in AEDT
 - Not INM
- Provide AEDT actual track modelling support for NoiseDesk



ANOMS Carbon Emissions



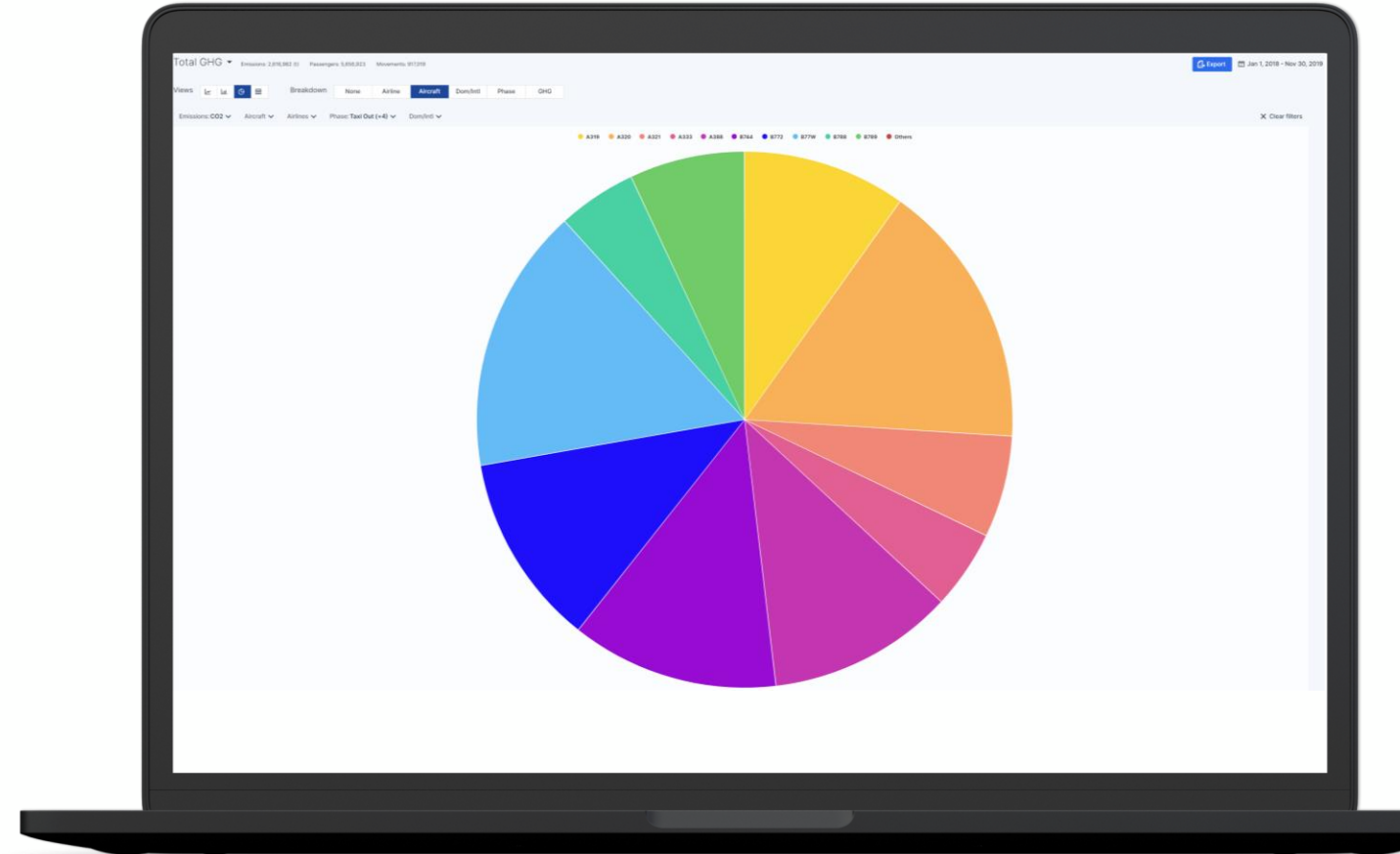
ANOMS Carbon Emissions

- Calculation of Aviation Greenhouse Gas Emissions
 - Scope 3
 - ICAO 9889 and EMEP (Corinair) calculation
- Based on actual track and weather data
- Automatic calculation
- Easy to use Web interface
- Simple scenario capability



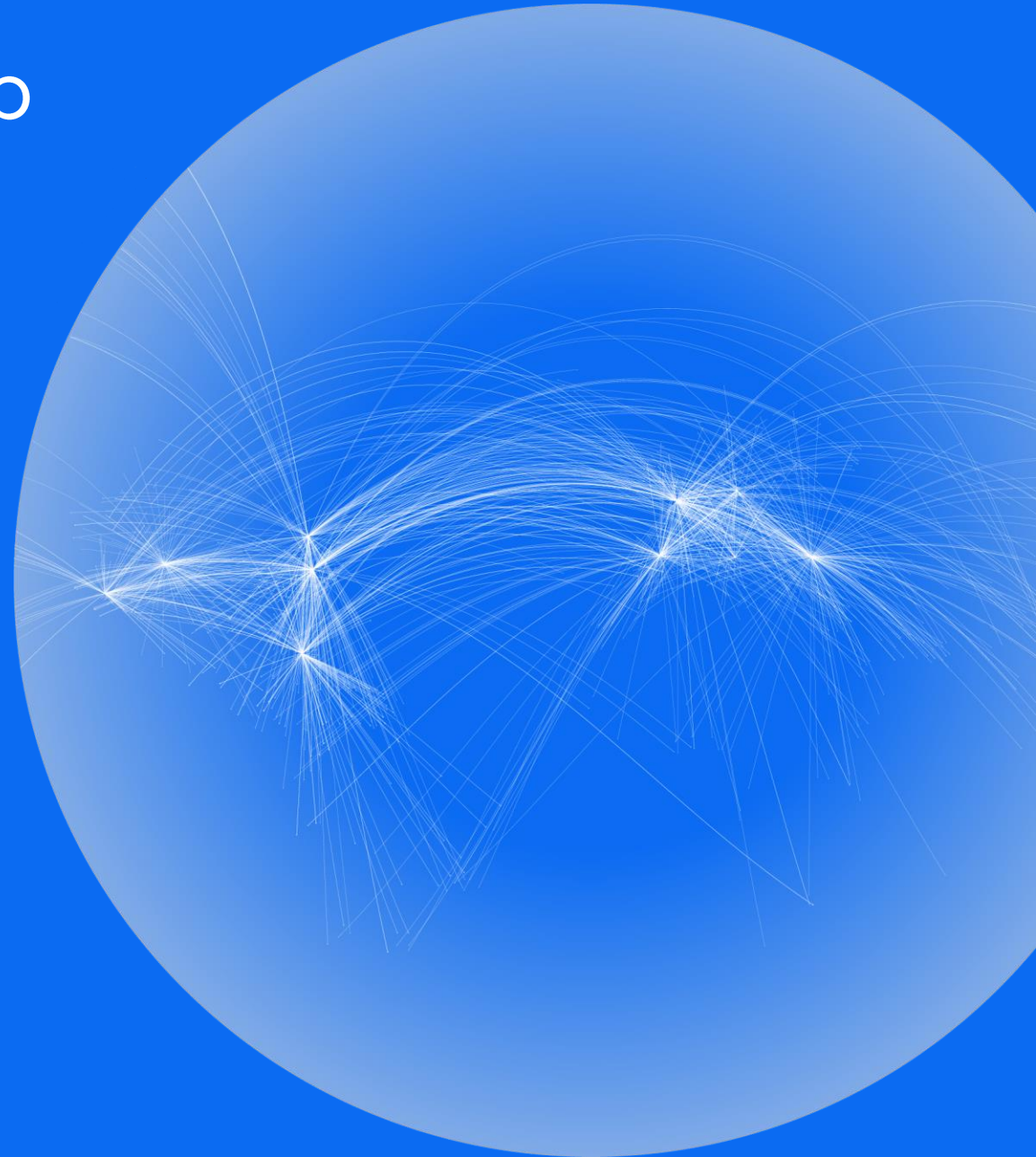
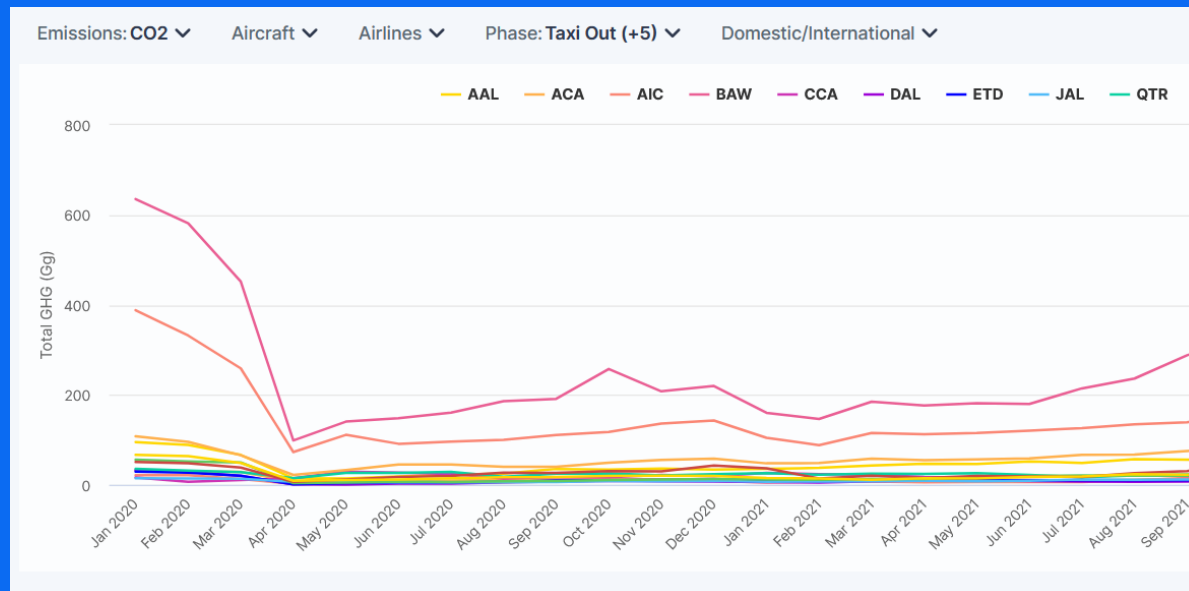
Carbon Emission - Advantages

- Accurate
 - Industry standard calculations
 - Actual track and weather
- Reduced labour/costs
 - Leverage ANOMS data
 - Shared grooming
- Timely and granular
 - Data needed to engage
- Scenarios
 - SAF, aircraft change, factors change

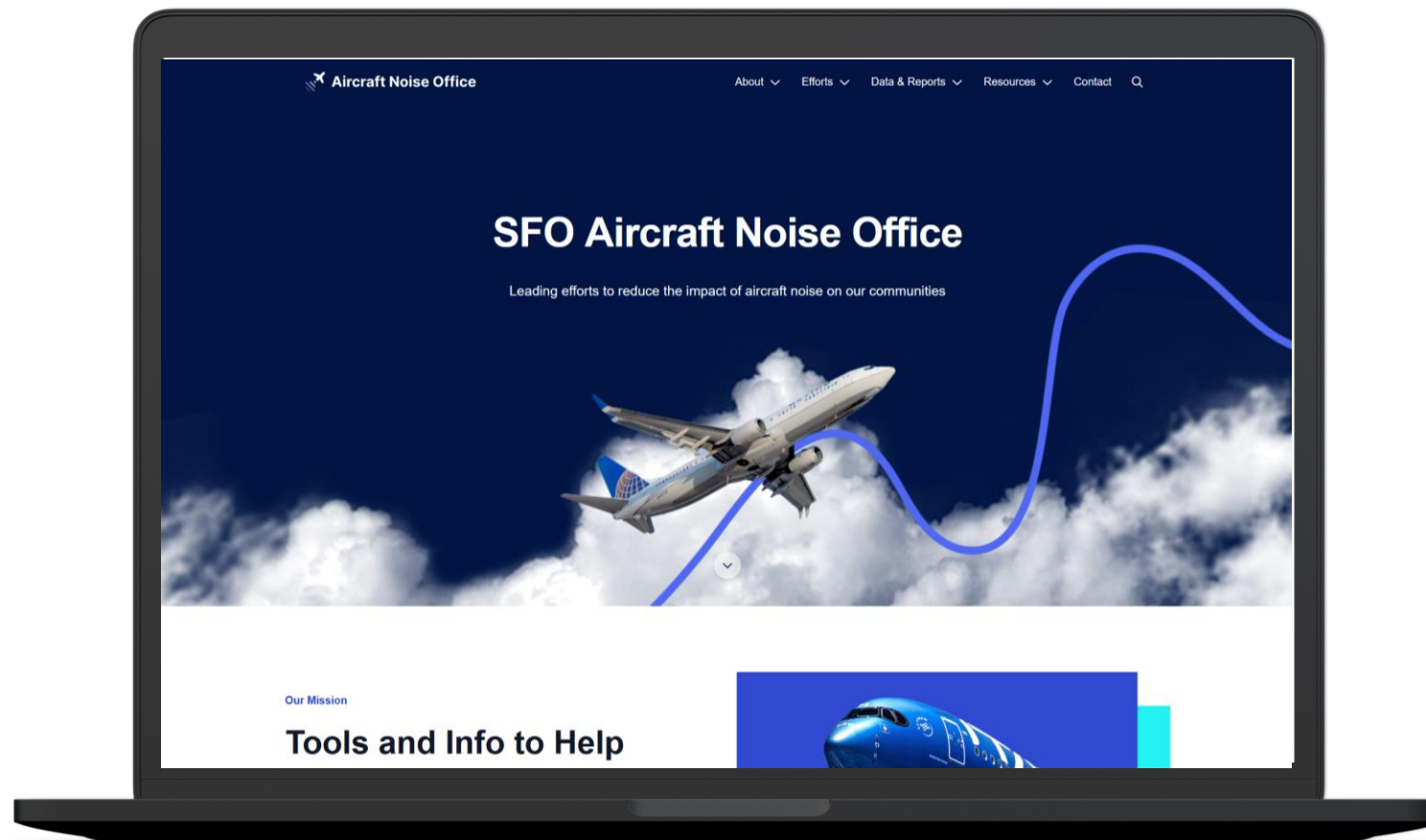


Carbon Emissions - Roadmap

- Additional gases
 - CO2 equivalent (Global Warming Potential)
 - CH4
 - N2O

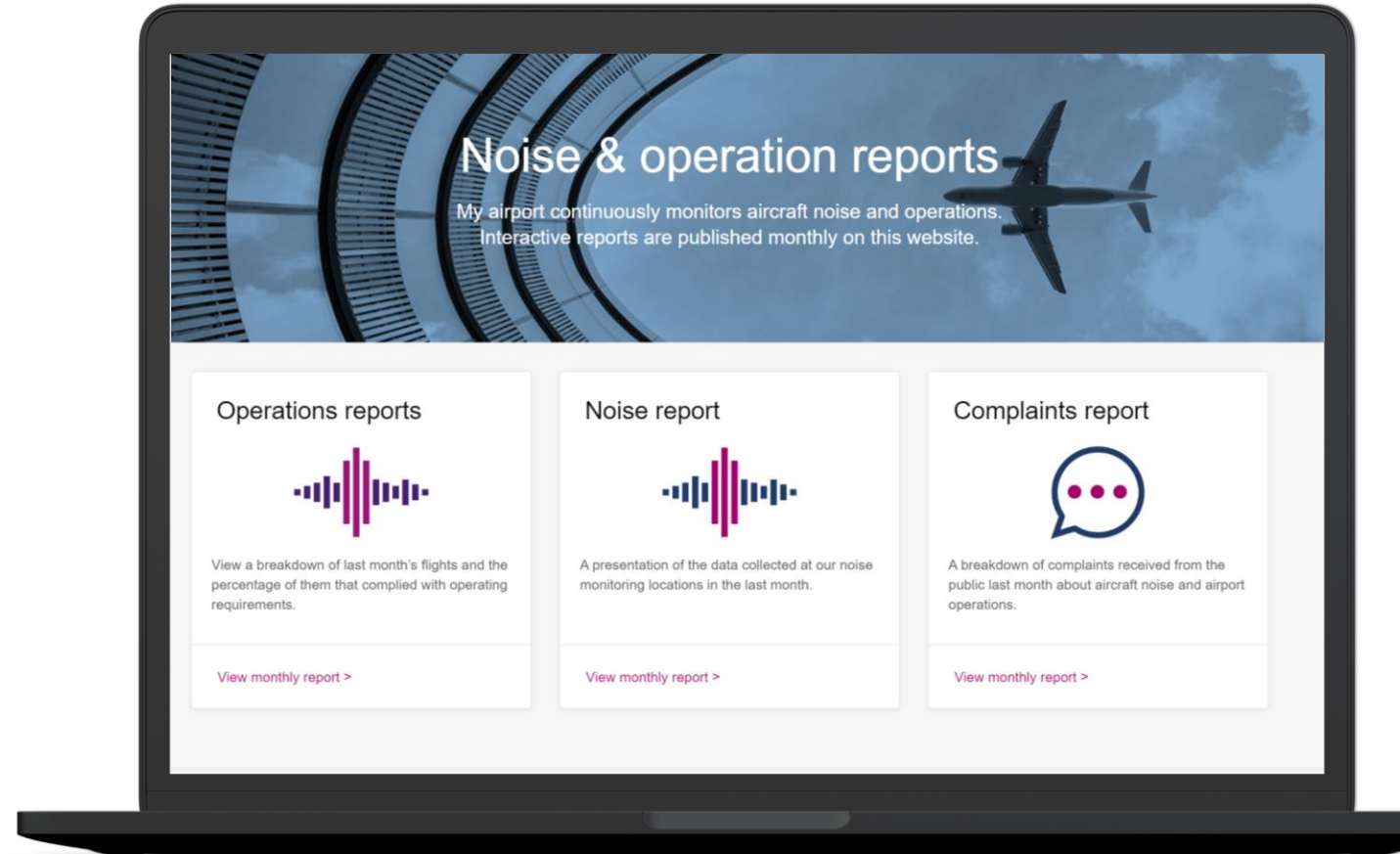


Publishing ANOMS data

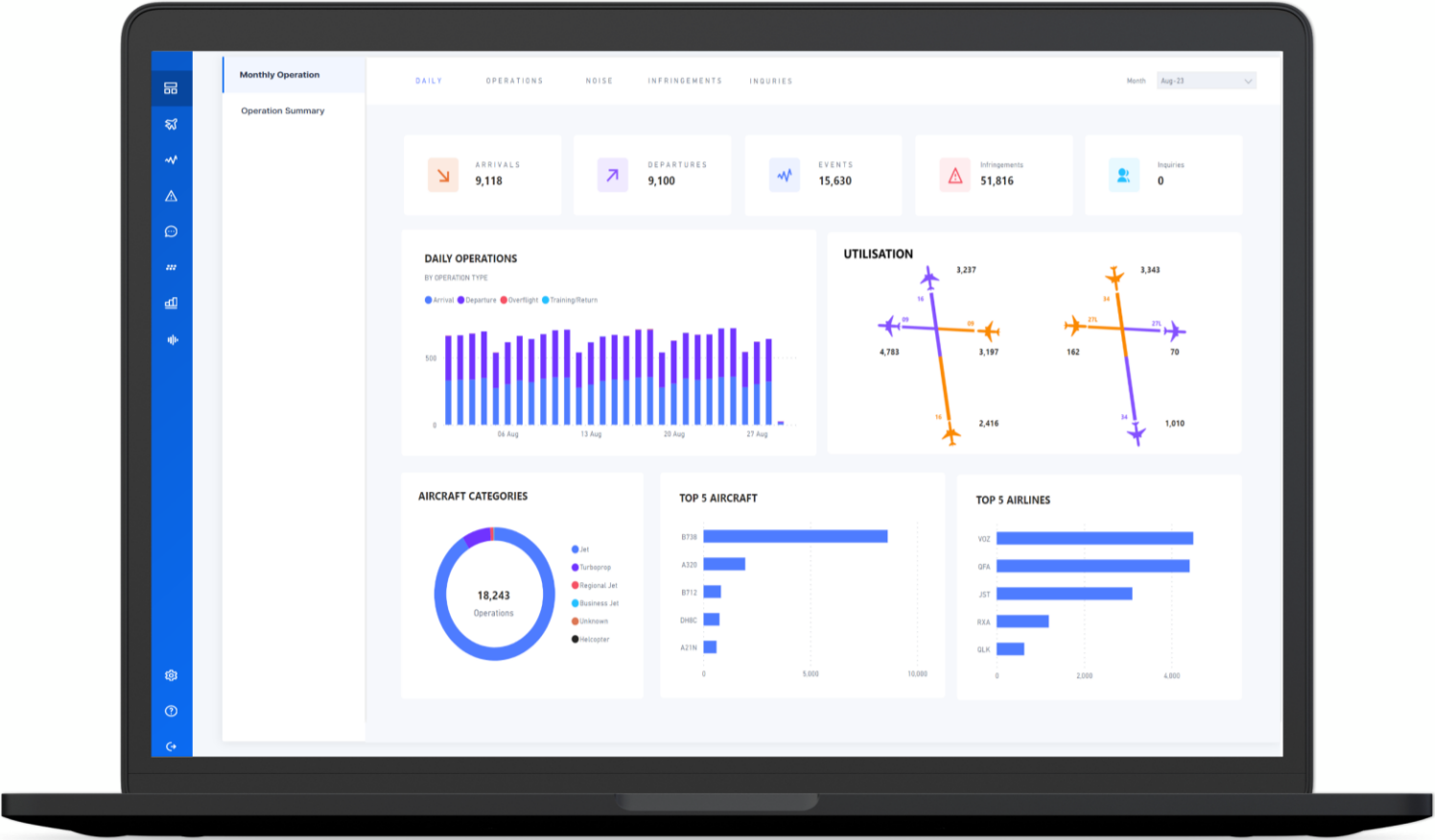


Efficiently informing stakeholders

- InsightFull
- Airport Metrics
- Always Ready Reports templates
- Dashboards



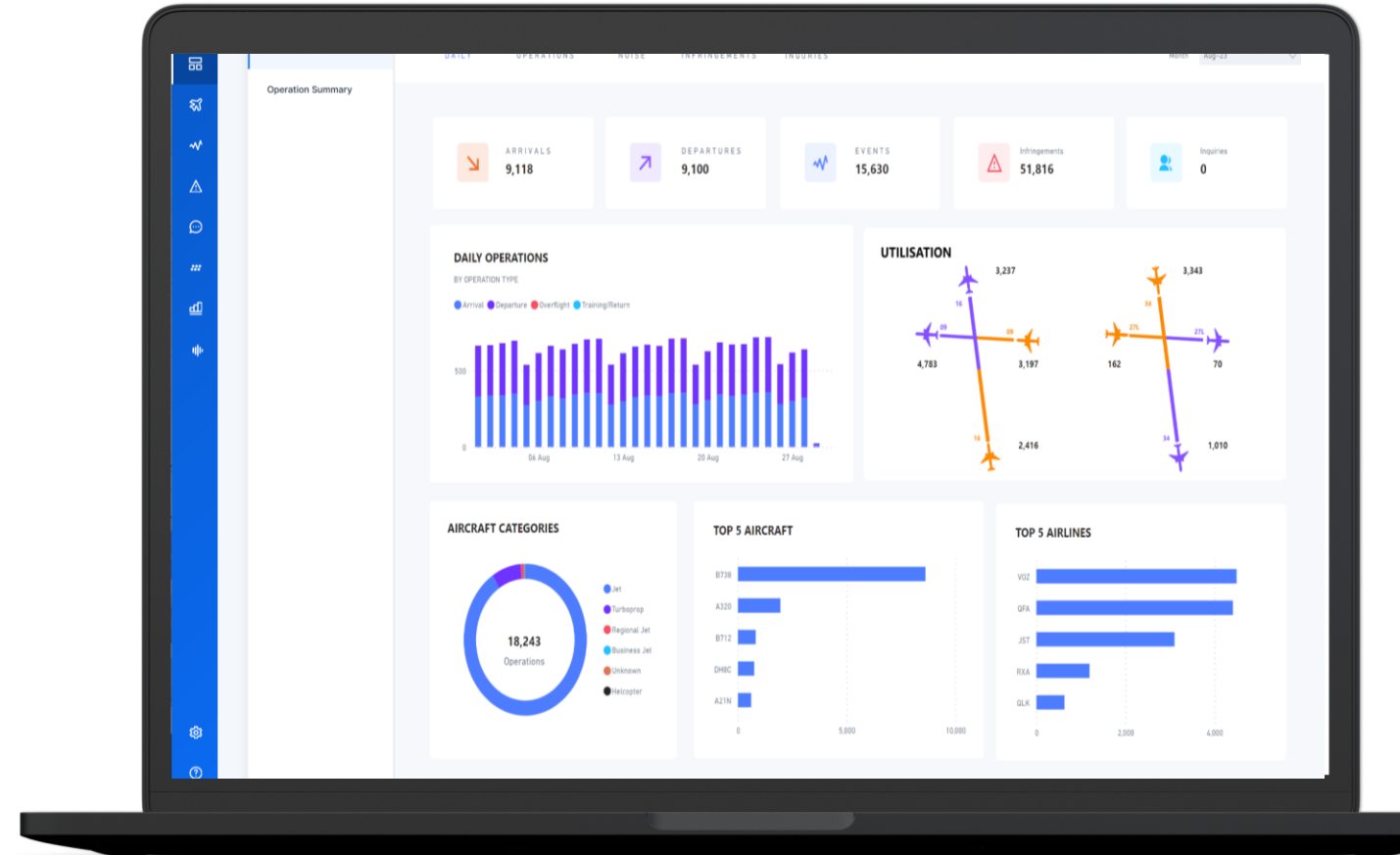
Demo



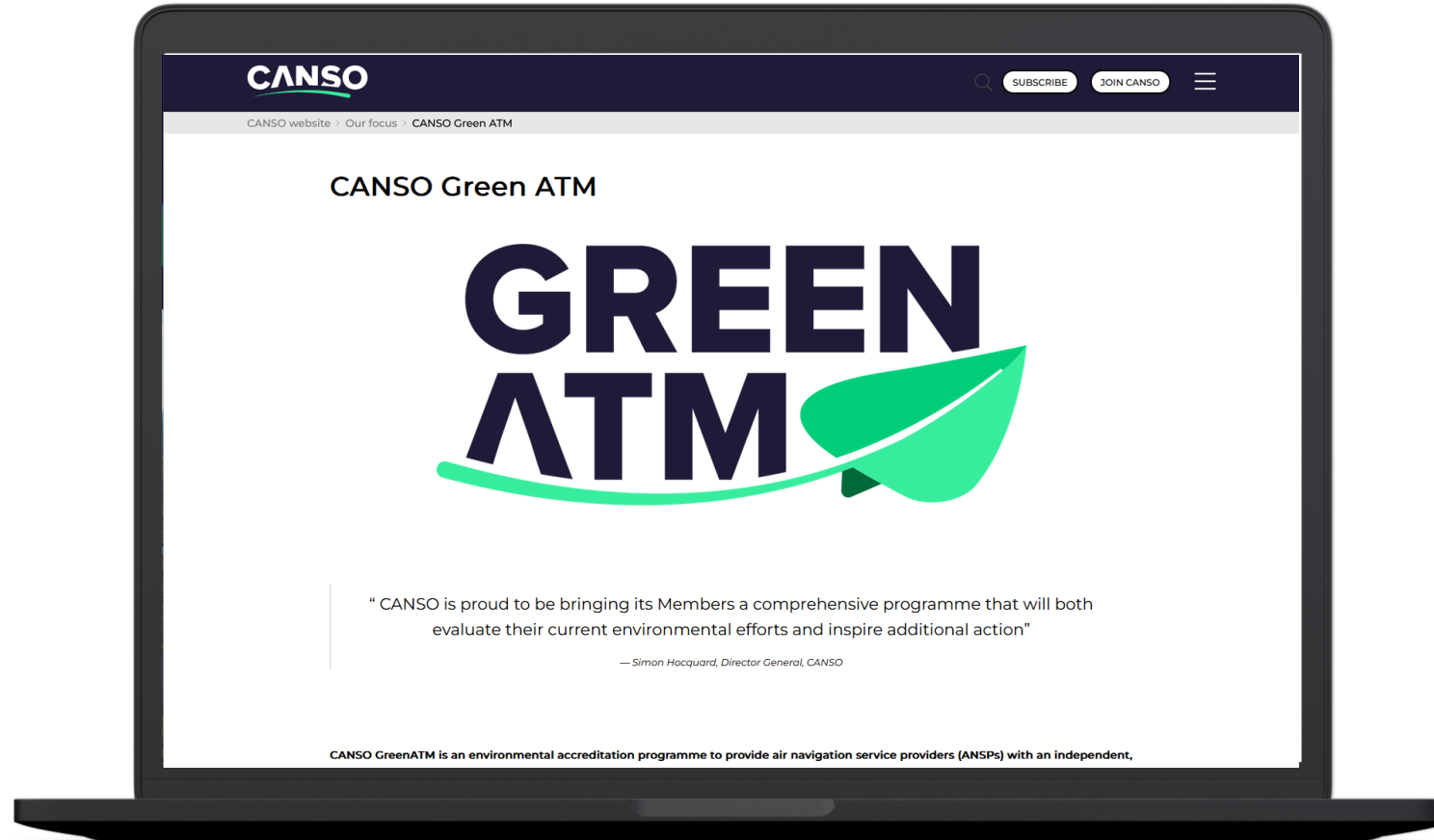
Dashboard - Roadmap

 ANOMS Advanced
 ANOMS NoiseDesk

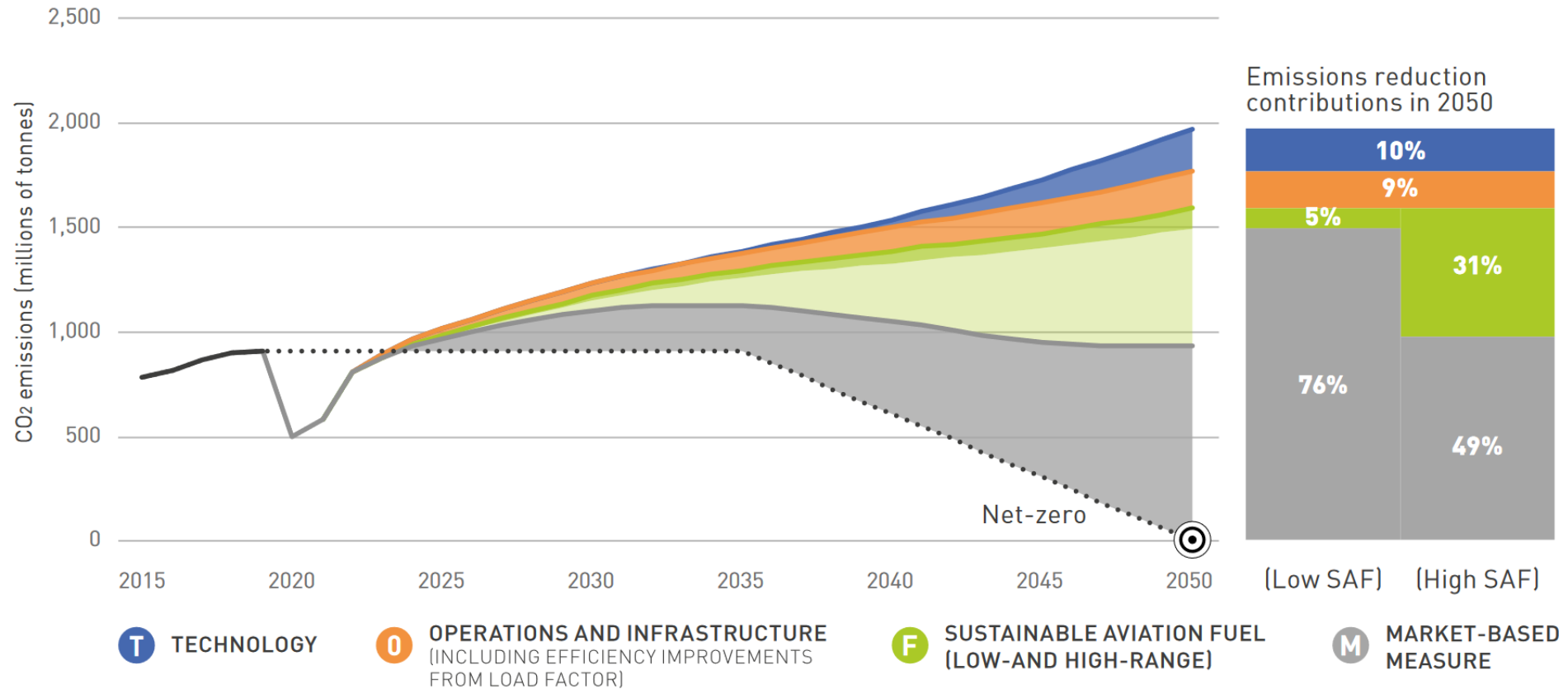
- Set a standard set of dashboards
- Available with ANOMS Advanced and NoiseDesk
- Paginated reports
- Self-service report customization



Net-Zero aviation



Decarbonisation roadmap



Aviation efficiency monitoring - Roadmap

■ Measure airspace efficiency

- Actual vs ideal/expected

■ On the ground efficiency

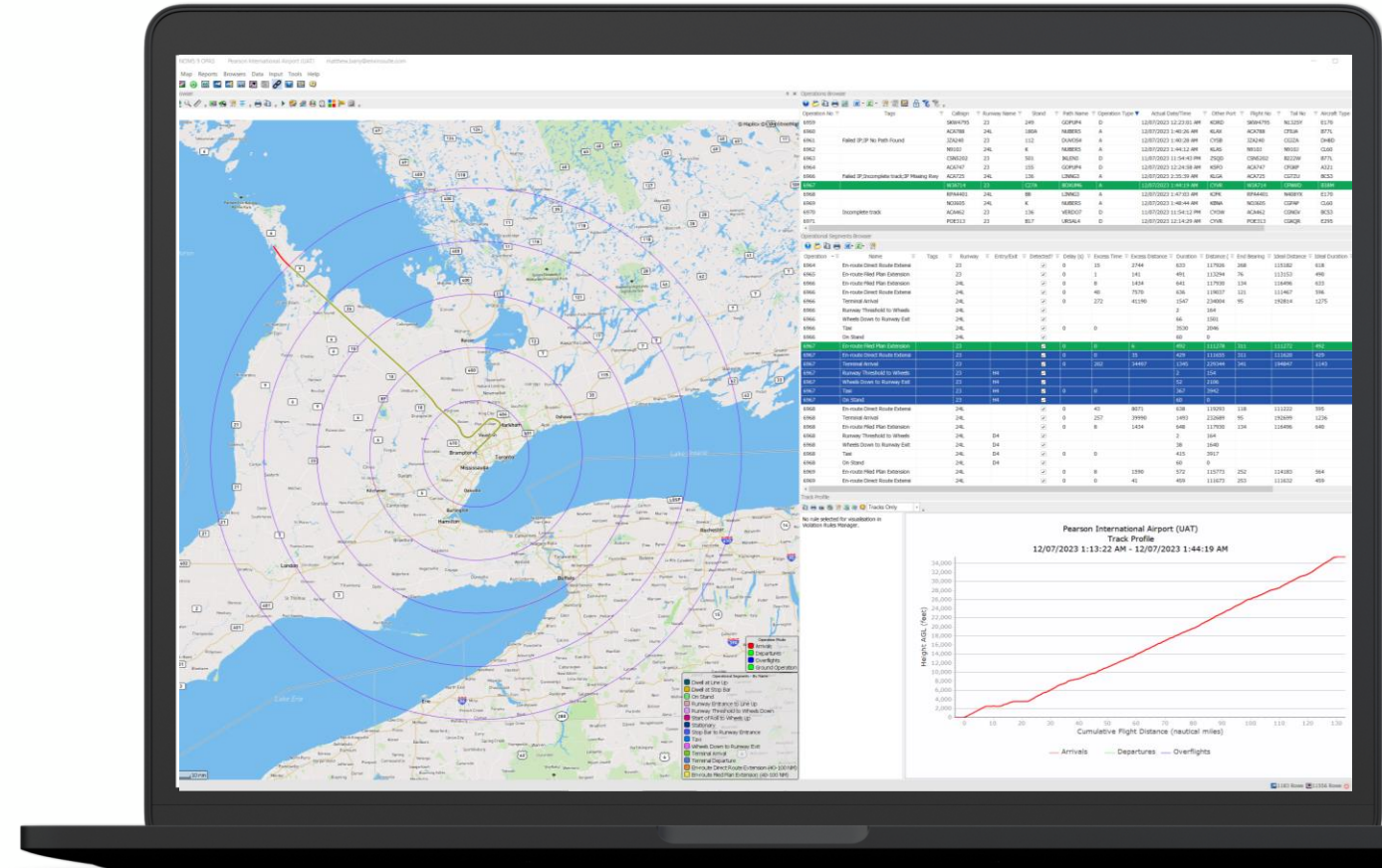
- Gate departure delay
- Taxi delays
- Runway occupancy
- Gate arrival delay

■ Airborne efficiency

- Holding patterns
- Sequencing delays

■ Procedural efficiency

- Measurement of level flight





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Flightpath to the Future: Reconnect & Collaborate

