Modern Observability in the Aviation Ecosystem

Bobby Anderson
VP/GM, Commercial Aviation

SHIFT5

Who We Are

Shift5 provides real-time observability of operational technologies (OT)

We apply state of the art dual-use technology to collect serial data, enrich it and alert on anomalies in real-time across all onboard systems.

2019
Founded in 2019, and headquartered in D.C.

100+
100 full-time employees and hiring more.

Defense	Commercial
Transport & Special Mission	Aviation
Combat	
Unmanned	Rail
Heavy Vehicles	

Military Partners

SOCOM · Army · Airforce · Navy

Commercial Partners

- Major US-based airlines and OEM
- US passenger and freight railway operators

SHIFT5

Reducing security risk and gaining operational insights starts with a foundational element: **data**.

But why do we know more about the IT data on laptops than we do about the OT data on modern aircraft?

SHIFT**5**

The Challenge: Gaining Observability Into Onboard Systems

Commercial aircraft are flying data centers.

- Serial systems were not designed with visibility in mind

- Traffic traveling across onboard OT networks is ephemeral

- Data is obscured by the complexity of systems

- Retrofitting is complicated and impractical

- Disparate component vendors and architectures limit data observability

- Offloading vast data has been impractical and costly

SHIFT5

Reveal Critical Insights Into Modern Aircraft

Modern observability starts here.

Cybersecurity & Threat Hunting

Protect the growing cyber attack surface and respond quickly to threats.
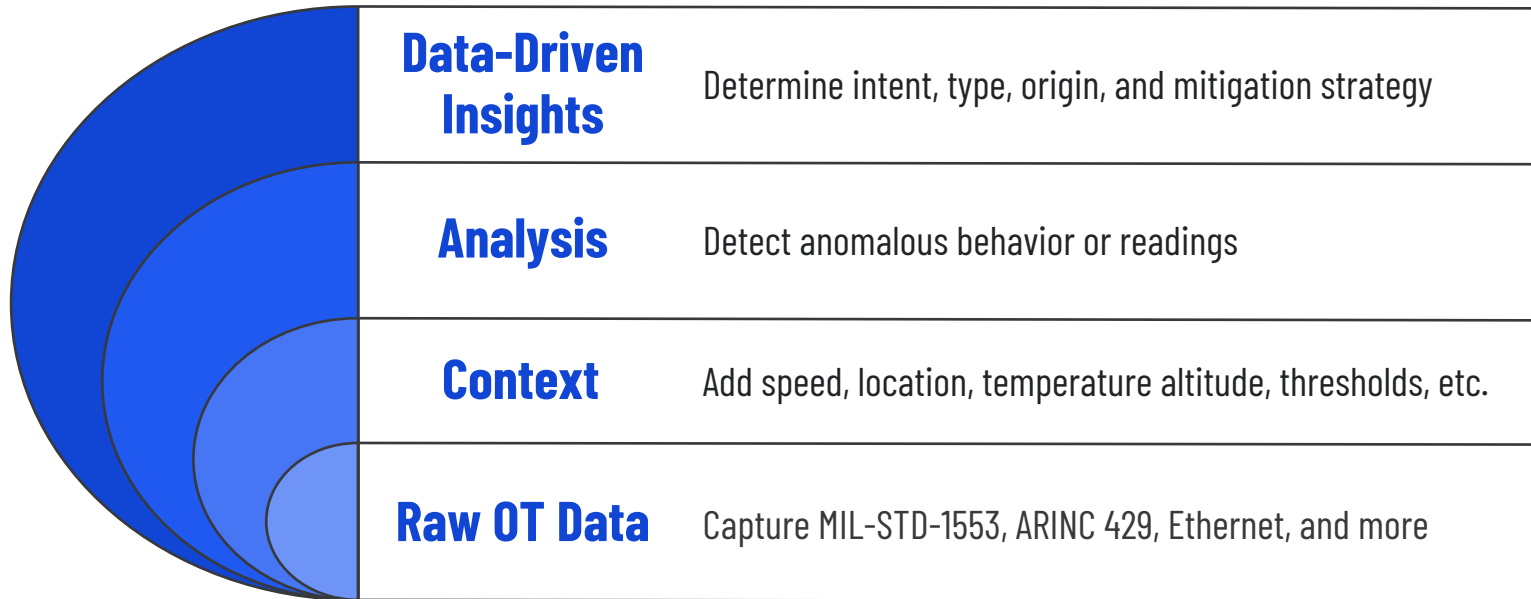
Maintenance & Operations

Gain critical insights that improve operational efficiency.

Regulatory Compliance

Automate and ease the burden of regulatory requirements.

SHIFT**5**

Modern Observability: What is it and why does it matter?

Data-Driven Insights	Determine intent, type, origin, and mitigation strategy
Analysis	Detect anomalous behavior or readings
Context	Add speed, location, temperature altitude, thresholds, etc.
Raw OT Data	Capture MIL-STD-1553, ARINC 429, Ethernet, and more

SHIFT5

Observability relies on OT data

Enabling predictive maintenance, compliance, and platform security
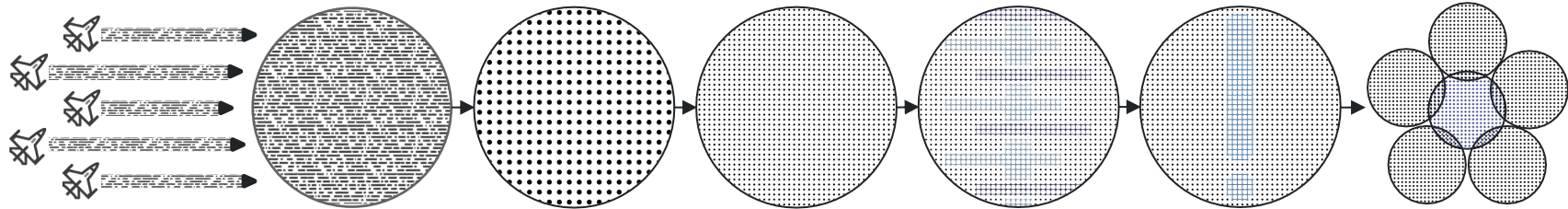
Capture

Retain all of the data crossing the serial bus. Every bus, every protocol, all the time.

Collect

Gather raw serial data captured from every asset across your entire fleet.

Translate

Transform data from raw to human-readable volumes in real-time.

Compress

Enable up to 100:1 data compression designed around your mission type, not our platform.

Analyze

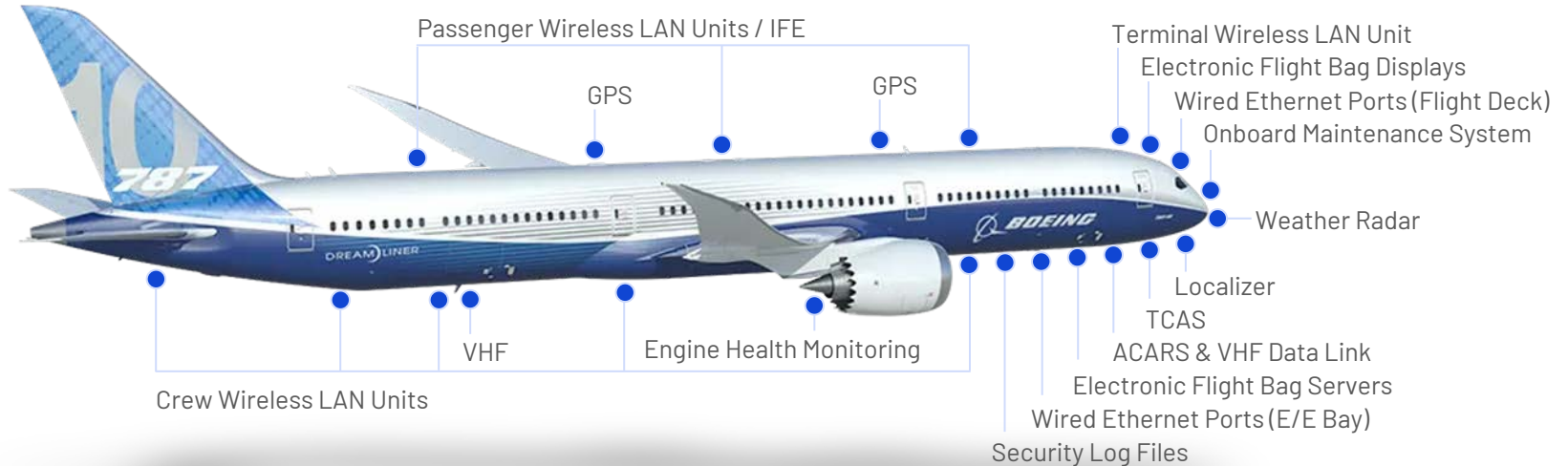Detect patterns and anomalies in data and in the behavior of onboard components.

Alert

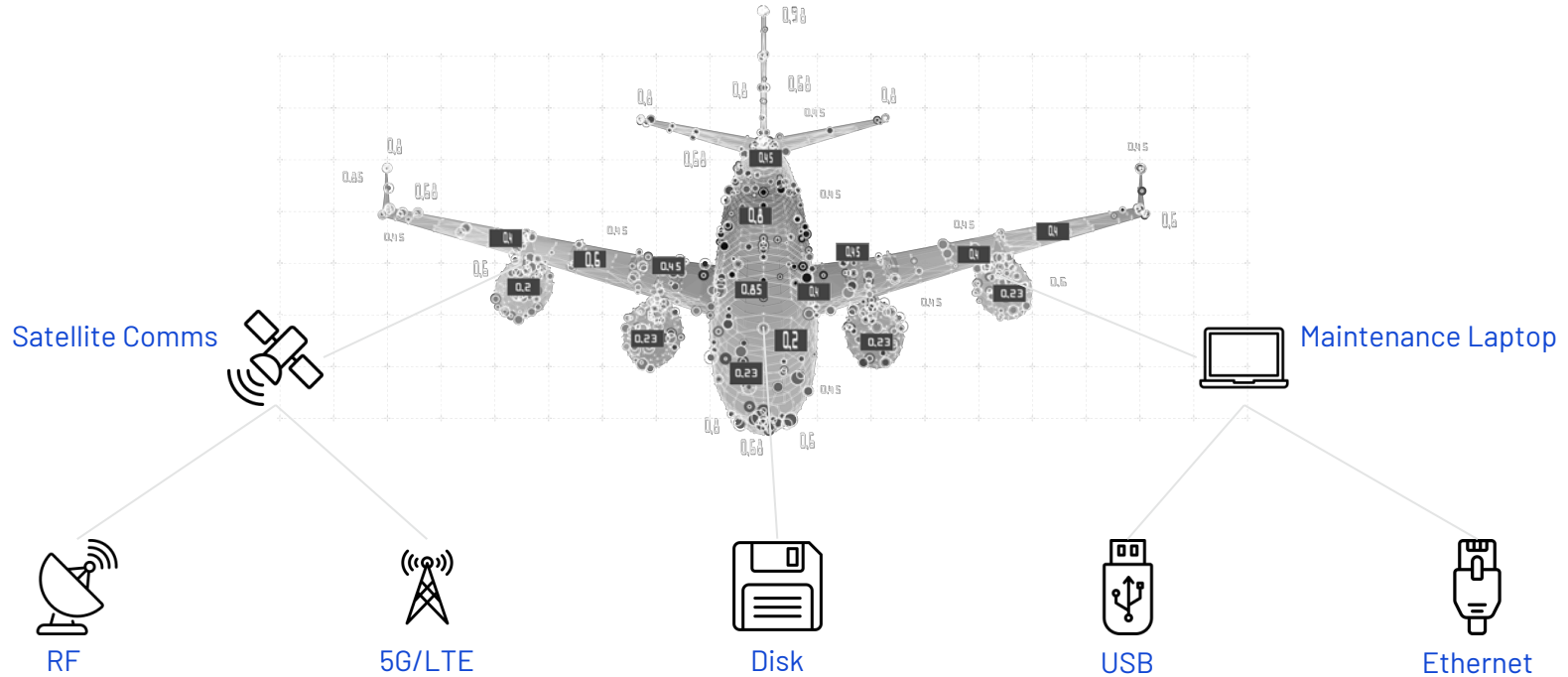Receive real-time alerts for events both onboard and at remote locations.

Democratize

Maximize onboard data by integrating it seamlessly into your systems of authority.

SHIFT**5**

THANK YOU

SHIFT**5**

Each platform is a data center, which requires data security

Passenger Wireless LAN Units / IFE

GPS

GPS

Terminal Wireless LAN Unit

Electronic Flight Bag Displays

Wired Ethernet Ports (Flight Deck)

Onboard Maintenance System

Weather Radar

Localizer

TCAS

ACARS & VHF Data Link

Electronic Flight Bag Servers

Wired Ethernet Ports (E/E Bay)

Security Log Files

Engine Health Monitoring

VHF

Crew Wireless LAN Units

SHIFT5

Collecting & Transmitting Onboard Data

Satellite Comms

Maintenance Laptop

RF

5G/LTE

Disk

USB

Ethernet

Ground Systems and Backoffice: Maintenance, Operations, Suppliers, etc.

SHIFT5