In the context of emerging regulation for commercial drones, the Thales DroneConnect module provides a comprehensive solution to identify, connect and secure UAVs.

It combines the add-on on-boarded in UAVs, a ground server acting as a gateway and makes sure that UAVs can be:

- **Remotely e-identified** by UTM platforms, to ensure safe skies
- **Locally identified** by authorities to ensure law enforcement (Direct Remote Identification)
- **Tracked and controlled**, to quickly point out any suspicious behavior

This is done in a seamless and secure way from any UTM or Drone Operation Center.

The DroneConnect solution combines several elements:

- **An embedded SIM and an IoT Module** providing cellular connectivity. The solution can rely on SatCom technology in specific operational contexts. It also complies with US and European specifications (WiFi or Bluetooth for example) for Direct Remote Identification.

- **A real-time GNSS tracking system**

- **An embedded Secure Element (eSE)**, working as a tamper resistant ‘black box’, securely storing a drone unique ID and encryption-based ‘digital signature’, together with registered pilot and mission attributes.

The eSE ensures advanced cybersecurity as it can also store other sensitive data as drone operator information and crypto certificates. It offers an isolated trusted environment to execute sensitive crypto-based applications.

Based on cutting edge cybersecurity PKI protocols, DroneConnect creates a **trusted channel for secure authentication and flight authorization**. This means fundamentally that authorities, users and citizens can trust that:

- Every drone in the sky is authorized to be there
- Every drone in the sky is securely tracked and monitored
- Every drone in the sky is safe from being hacked
- Every drone in the sky leaves a full record of everything it does
DroneConnect Module Features
- Dimension: 65 x 75 x 25 mm
- Weight: 125 g
- LTE antenna: 5g
- GPS Active antenna: 25g
- Internal Backup Battery: 30g
- Consumption: 130 mAh

DRONE IDENTIFICATION - Data Digitally Signed
- DroneConnect unique ID
- Drone Operator ID (or UAS Registration number)
- Position time stamp
- Lat / Lon / Altitude
- Ground speed
- Takeoff position
- Additional data:
  - Mission ID
  - Data sent time stamp
  - Satellite number
  - Hdop / Vdop Horizontal / Vertical precision dilution
  - Digital signature
  - Payload post every 3 seconds or every 30 meters

CYBERSECURITY
- Multi data channel end-to-end secure communication
- TLS Encryption with mutual authentication
- Digital Signature
- PKI X509 Certificate
- Keys: RSA, Elliptic Curve

CONNECTIVITY
- 4G by default – 12 Band Worldwide
  - FDD LTE Cat 1 - DL: max. 10.2 Mbps, UL: max. 5.2 Mbps
  - HSPA+ Cat 8 - DL: max. 7.2 Mbps, UL: max. 5.76 Mbps

SCALABILITY
- Extension daughter card slot for additional functionalities, such as
  - Dual Cellular connectivity
  - Wifi, LoRa, SigFox, Iridium

INTERFACES
- Flight Controller (RS232, Serial, CAN)
- Buzzer connector
- High power Signaling LED connector
- GPIO for Flight Termination System management

Extra features supported by DroneConnect:
- C2 control link via LTE
- Support for Geocaging, Geofencing and Mission management (video streamline via LTE, real-time data transfer, etc.)
- Private Tracking
- On-Demand Connectivity: cellular smart connectivity swap from one network to another for coverage optimization