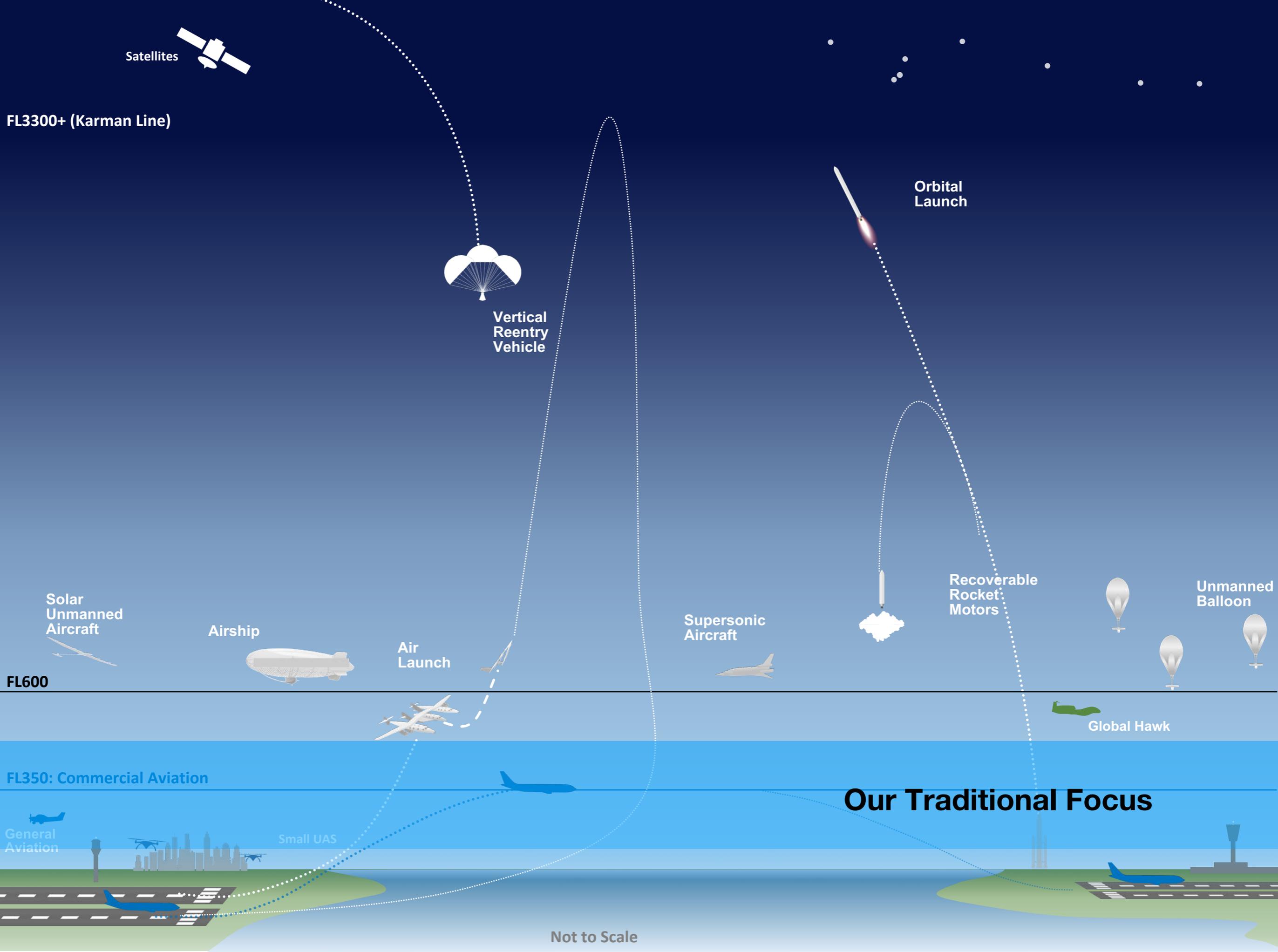


# **Very High Altitude Operations Lessons From UTM**

ICAO Drone Enable/2



Satellites



FL3300+ (Karman Line)



Vertical Reentry Vehicle

Orbital Launch



### New Entrants

Solar Unmanned Aircraft



Airship



Air Launch



Supersonic Aircraft



Recoverable Rocket Motors



Unmanned Balloon



FL600

Global Hawk



FL350: Commercial Aviation

### New Entrants

General Aviation



Small UAS



Not to Scale

# This is happening - now

- **Ultra High - Highly Autonomous....along the lines of the ICAO GANP**
  - **First to Market (Loon) been flying 4 years; 1st 1: Many Ops**
  - **Next to Enter ~ Airbus Zephyr w/ Facebook ~ then Stratobus**
  - **And then Supersonics**
  - **Operational Trials between Loon and Airbus 2019; likely Africa or Latin America**
- **Ultra Low - Highly Autonomous....in a different way**
  - **Small Drone rapid expansion; new rules everywhere**
  - **More 1: Many Ops Planned**
  - **UTM Critical ~ should be harmony between ultra high and ultra low**
  - **Operational Trials will occur in many Countries**
- **Collaboration is necessary for AIRSPACE DNA HARMONIZATION**
  - **Lets use this opportunity to rethink traditional CNS implementation**
  - **If we get ultra upper and ultra low right; allows easier transition controlled airspace ~ which shrinks over time consistent with performance capability and risk**
  - **FAA, Eurocontrol, SESAR JU already working on common CONOPS based on actual ops**
  - **AN Conference in October will discuss this concept and forward plans**
- **Encourage the “new industry” to help pave the way; they want to be good aviation citizens BUT.....they work differently.....so finding new ways to collaborate is essential.**