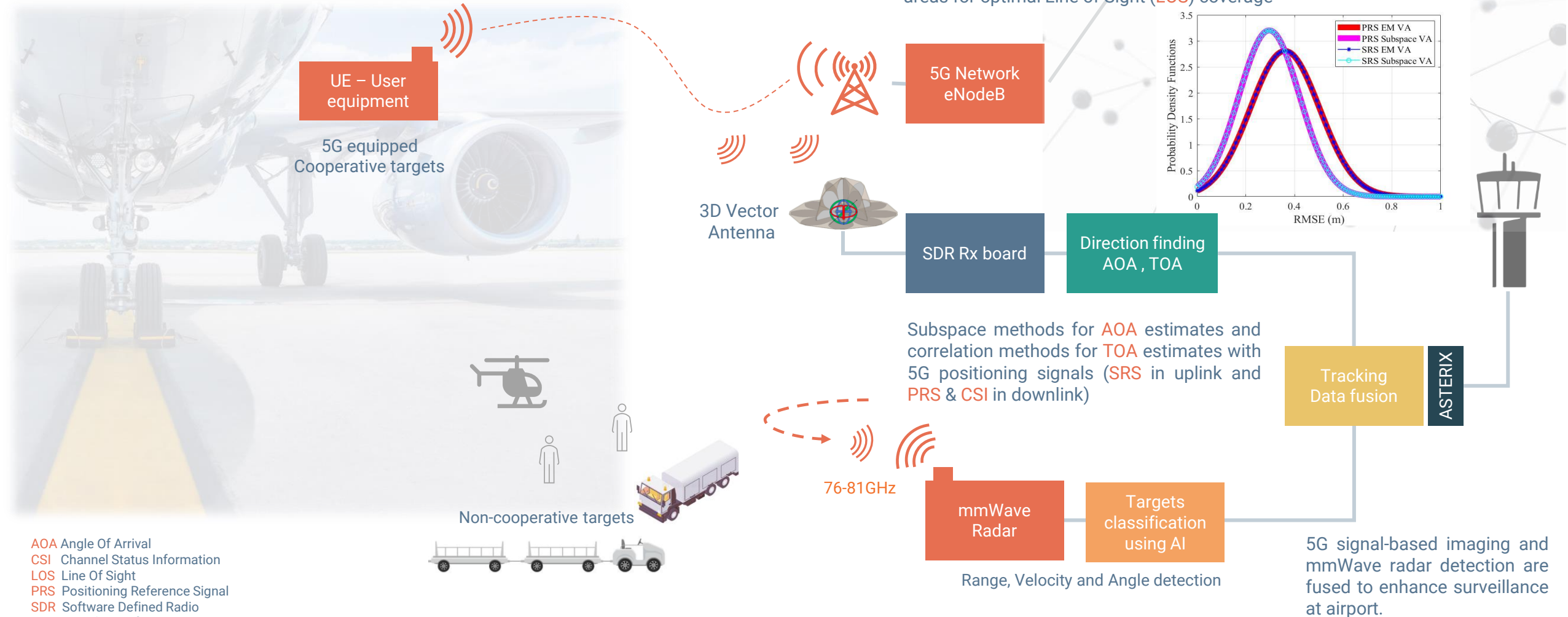


New 5ense

Improved Sensing and Positioning via 5G and mmWave radar for Airport Surveillance

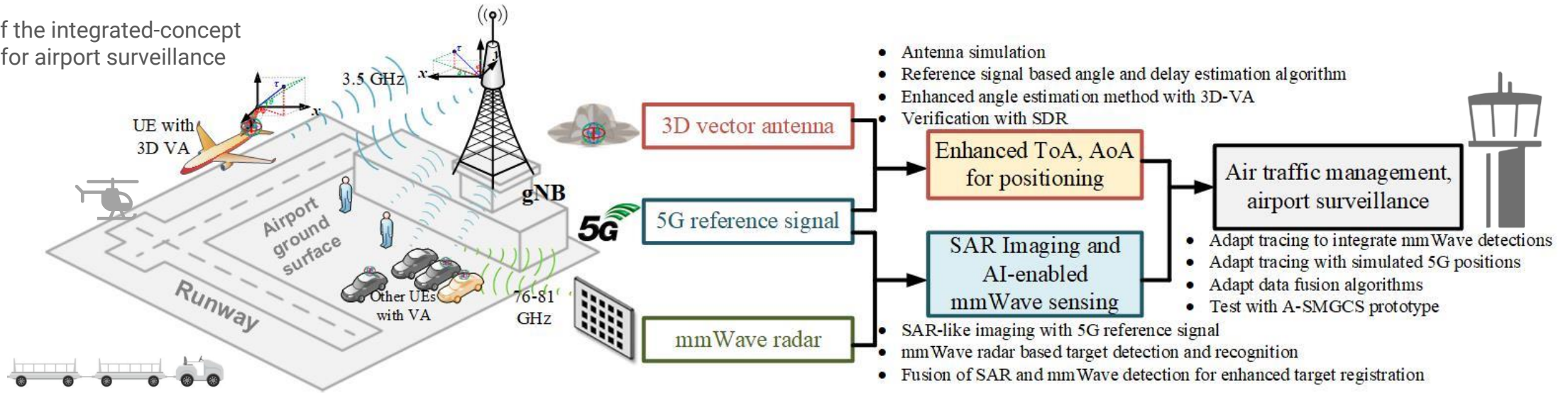


AOA Angle Of Arrival
 CSI Channel Status Information
 LOS Line Of Sight
 PRS Positioning Reference Signal
 SDR Software Defined Radio
 SRS Sounding Reference Signa
 TOA Timer Of Arrival

New 5ense

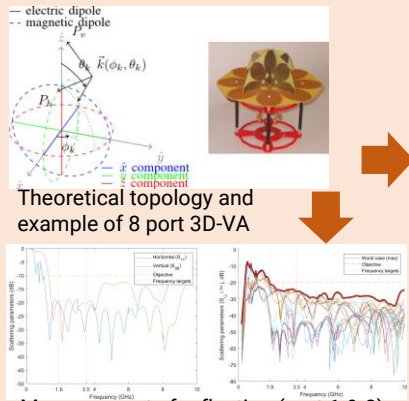
Improved Sensing and Positioning via 5G and mmWave radar for Airport Surveillance

Illustration of the integrated-concept architecture for airport surveillance

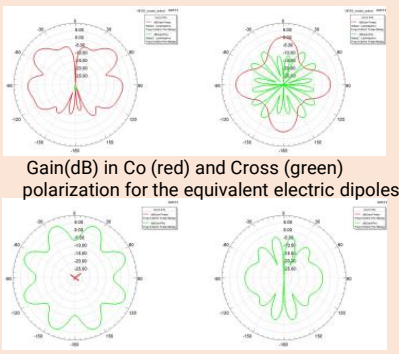


3D Vector Antenna

- Wide angular coverage in 3-D
- Compact size, wideband coverage
- Good polarization discrimination



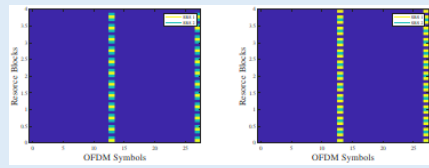
Measurement of reflection (port 1 & 8) and isolation coefficients



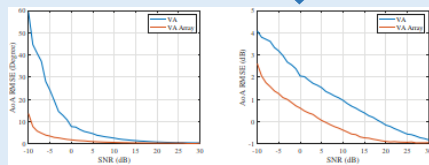
Gain (dB) in Co (green) and Cross (red) polarization for the equivalent magnetic dipoles

5G Reference Signal

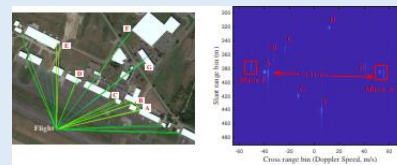
- Uplink SRS; downlink PRS, CSI-RS
- Direct transmission \rightarrow Subspace-based, EM-base angle-time estimation
- Echoes \rightarrow imaging



Example 5G SRS signal



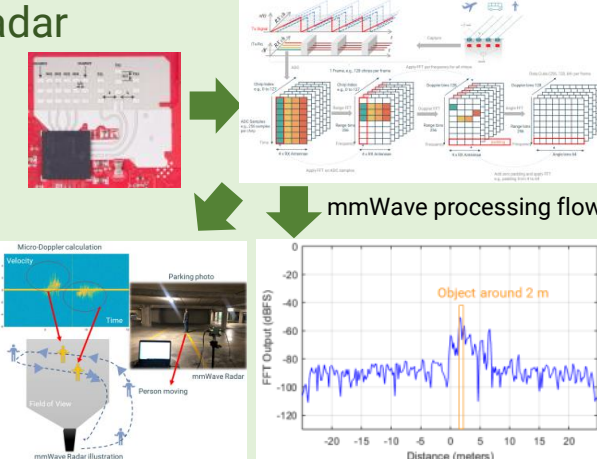
SRS based AoA estimation with 3D VA array



SRS based SAR simulation

mmWave Radar

- Range, velocity, angle detection
- Targets characterization
- Targets classification using AI



Range-Doppler information

mmWave range detection