

# Technical Challenges & Opportunities of Near Space

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# About Pericle

- **Developer of Near Space Payloads**
- **Specialized HF Receiver**
  - 6 lb. payload, lighter than air platform
- **Specialized VHF/UHF Receiver**
  - 6 lb. payload, lighter than air platform
- **Combat Airborne Network**
  - 6 lb. payload, LTA, 17 hour mission life
  - Broadband 802.11 wireless network,
  - Multi-node, self-organizing and adaptive
  - Video, VOIP, Internet Video
- **Talon LOTUS**
  - A passive bistatic radar for air surveillance
  - Tested from tethered aerostat

# Partners

- **Space Data Corporation**
- **Global Near Space Systems**
- **SkySentry, LLC**
- **Various Government Agencies**

# Why Near Space?

- **Some Missions Cannot Be Done from Space**
  - Physics drives us to near space solutions
- **Faster Deployments**
  - Can put payload over target in hours, not years
- **Greater Loiter Time**
- **Lower Cost, Faster Development**
  - Pericle's first payload was developed in 120 days
  - COTS hardware works at altitude, but not always in space







AEROSTAR

# Challenges

- **Platforms**
  - A reliable balloon with controllable altitude for loitering
  - Latex vs. plastic vs. other?
  - Ballast and gas valve methodologies
- **Telemetry Links Over Long Distances**
  - Directional antennas difficult
  - Omnidirectional antennas shorten links
  - Mesh networks hold some promise
- **Payload Issues**
  - Size, weight, power
  - High capacity batteries that don't freeze
  - Environment - heat dissipation especially