Network Connectivity in Rural Areas

CONNECTIVITY FOR REMOTE RESEARCHERS
University of Georgia

- Founded 1875.
- Public flagship land-grant research university.
- 43,700 Students.
- 41,539 acres.
Precision Agriculture

- Research on precision agriculture at the University of Georgia (UGA) began in the mid-1990s at the Tifton Campus.

- Agriculture continues to be the No. 1 industry in the state of Georgia.

- Integrative Precision Agriculture (IPA) is one of five areas for UGA to continue investing in and building excellence.

SENSORS, DATA, & AGRICULTURE

Robotics & Automation
AI & Modeling
Imaging
Sensors & Wireless communications
Wireless

• Currently, connections of farm end points rely on Wi-Fi or Bluetooth for short-range wireless communication, while remote applications use 4G cellular.

• Emerging precision agriculture applications demand higher data rates, lower latency and high-density communication.

• The need for data flow seamlessly among field devices and cloud-based facilities for storage, processing and decision making.
Challenges

• Not all use cases can be fulfilled with the current connectivity available in rural areas of the state.
• Delivering network coverage across fields.
• Wi-Fi and 4G can cover some use cases but not all.
• Building a well engineered connectivity solution that delivers higher bandwidth to and across remote sites.
How do we address these challenges?

• 4G to 5G
• Long-range radio (LoRA)
• Private LTE
• Wireless mesh network (WMN)
• Satellite
• ??????