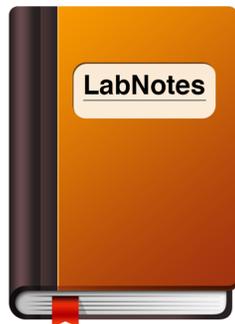


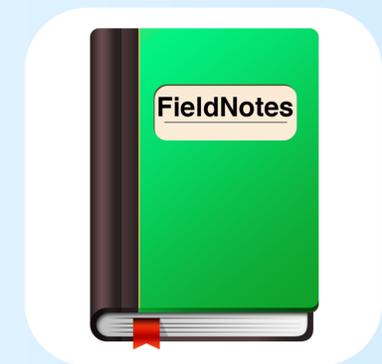


# LabNotes and FieldNotes: A Mobile Suite for Scientific Instrument Control, Data Collection, and Collaborative Exploration

Carl Hostetter & Troy Ames  
Computer Engineers/587



IS&T Colloquium  
Goddard Showcase  
Sept. 11, 2013





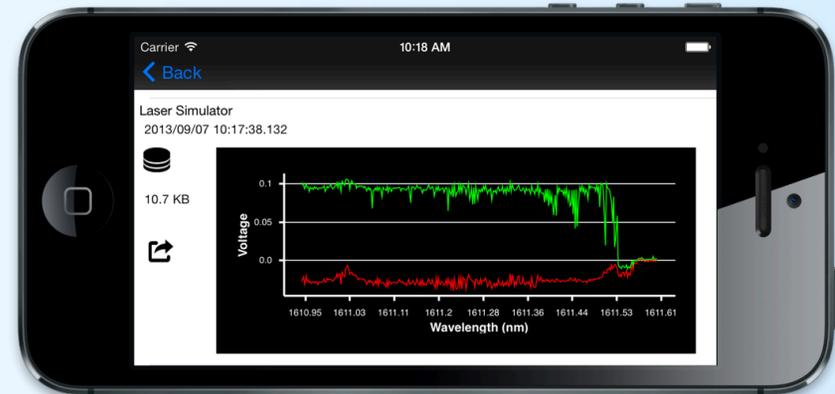
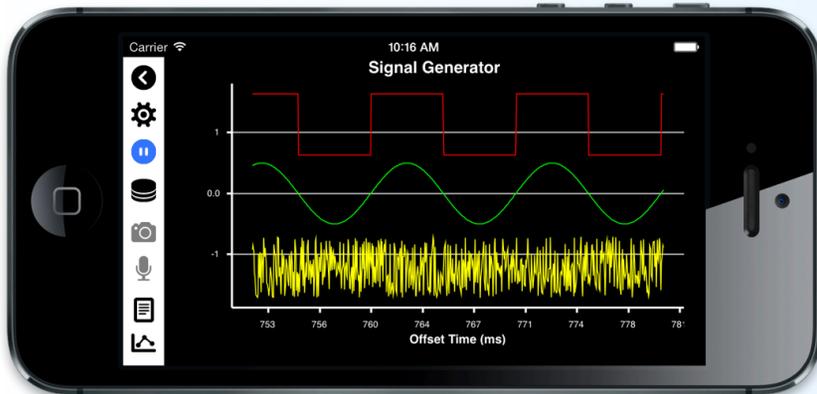
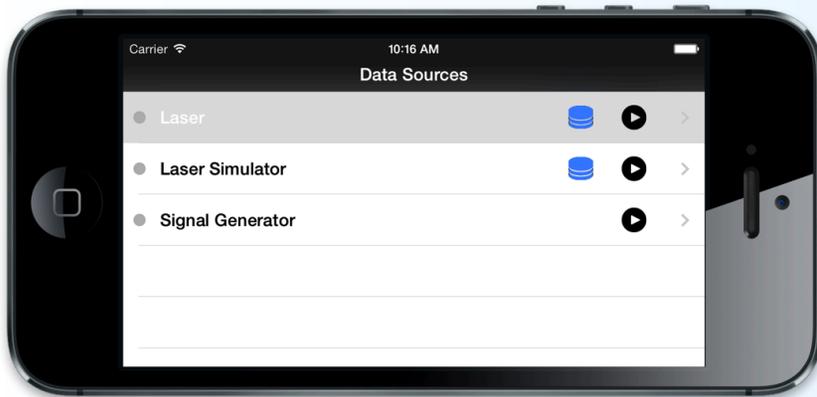
# Motivation

- **The advent of powerful, inexpensive, lightweight, sensor-rich, and multimedia-capable mobile devices allows anyone to be equipped with highly-portable devices that combine powerful computing and display capabilities with real-time, geo-located data streams.**
- **Teams of scientific investigators equipped with such mobile devices, and apps that coordinate and facilitate the capture and exchange of scientific data and observation information collected with these devices, could thus collaborate in real-time and in situ, and explore environments more efficiently and thoroughly, for much less cost and with far less bulk than ever before.**
- **LabNotes and FieldNotes are just such a suite of mobile apps designed to enable this greatly improved acquisition and collaborative capability and efficiency.**



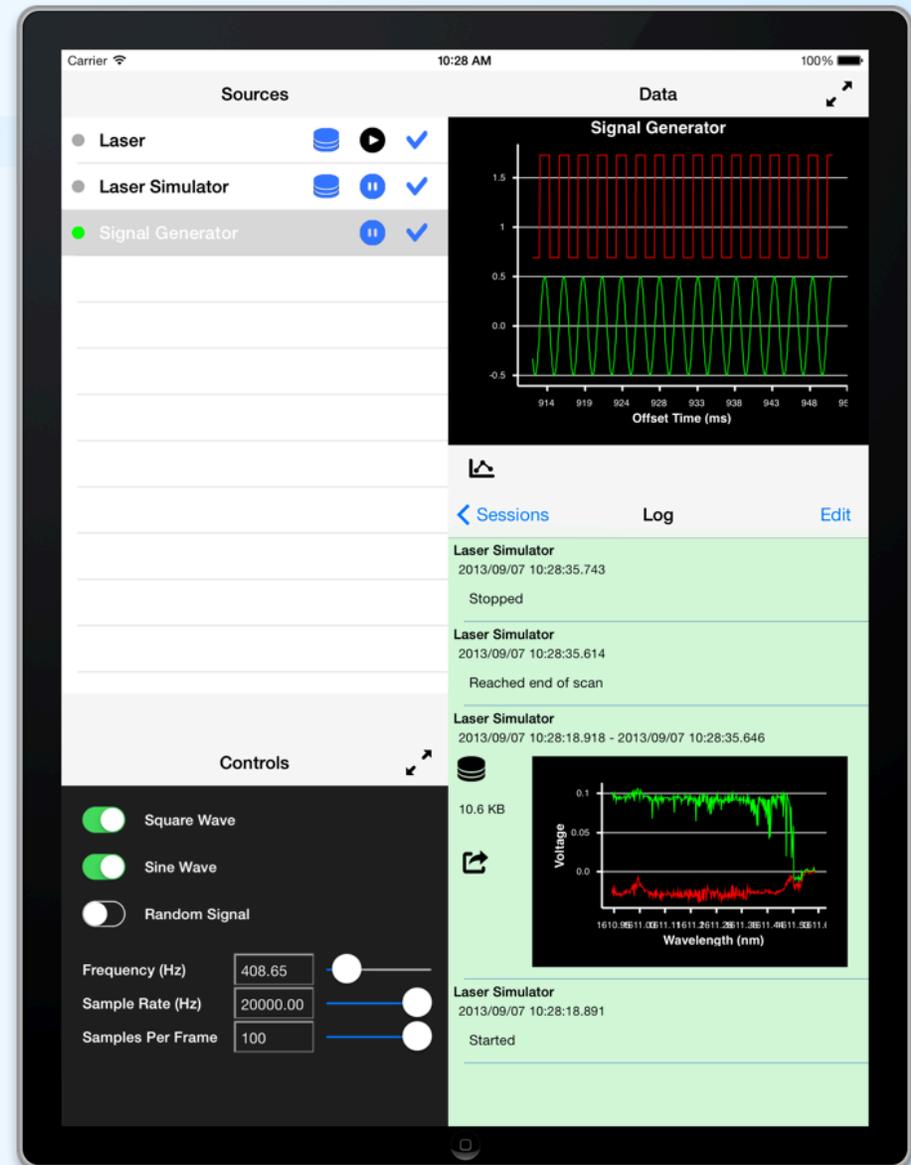
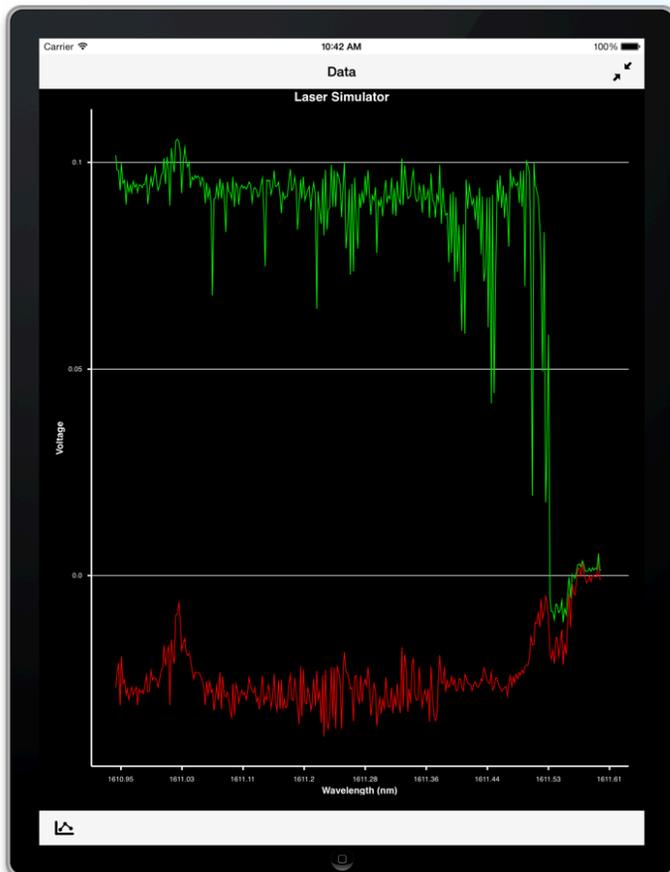
# LabNotes

- iPhone/iPod/iPad-based instrument command, DAQ, visualization, archive, and export capabilities.





# LabNotes



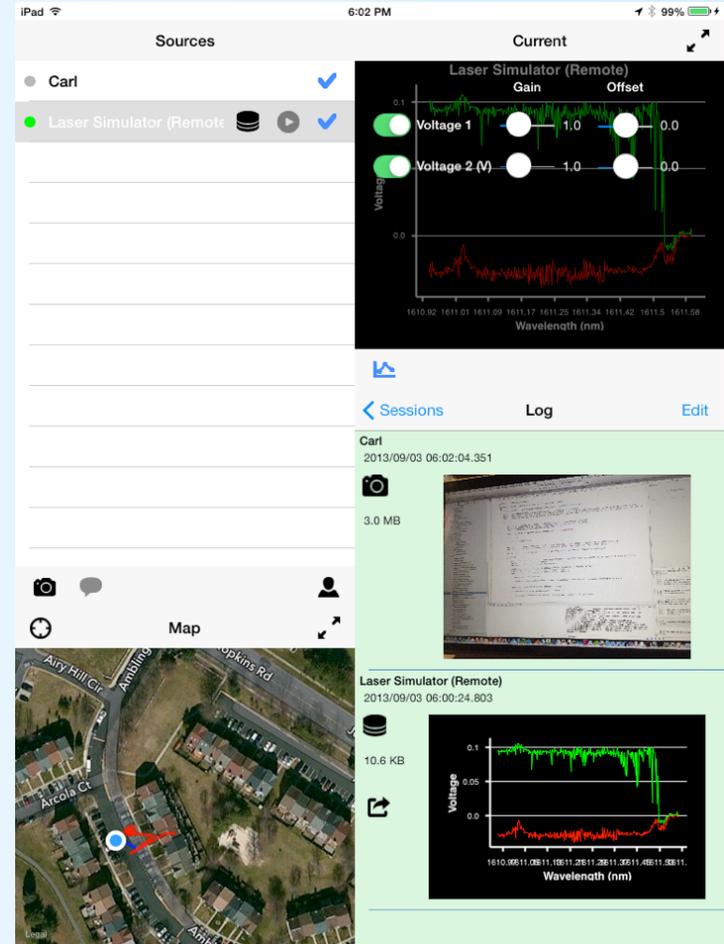
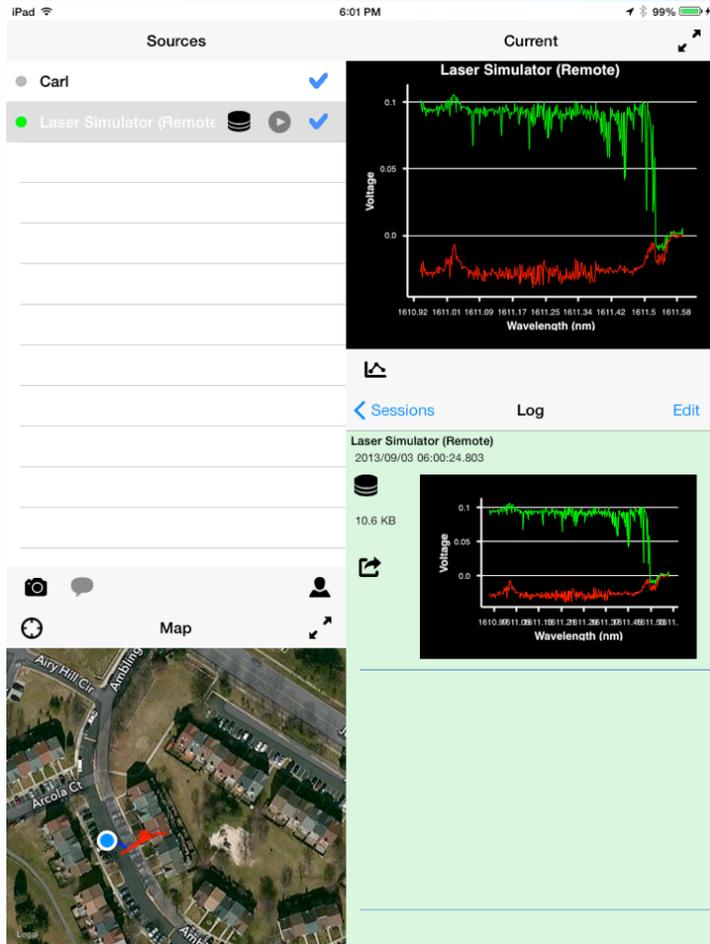


## FieldNotes

- iPad-based peer-to-peer, delay-tolerant, and location-aware scientific data collection and real-time collaboration.
- Allows *in situ* collection and sharing of time- and location-tagged observation data with team of explorers, with real-time mapping of collaborators.
- Provides scrolling, time-ordered log of all gathered and shared observation data, which can be filtered by source.
- Log entries are location-tagged and can be highlighted on map.
- Currently supports image sharing, voice chat, and real-time streaming and plotting of data from instances of LabNotes, via WiFi or Bluetooth.
- If a collaborator goes out of network range, location and observation data are stored and forwarded to others when connection is reestablished.

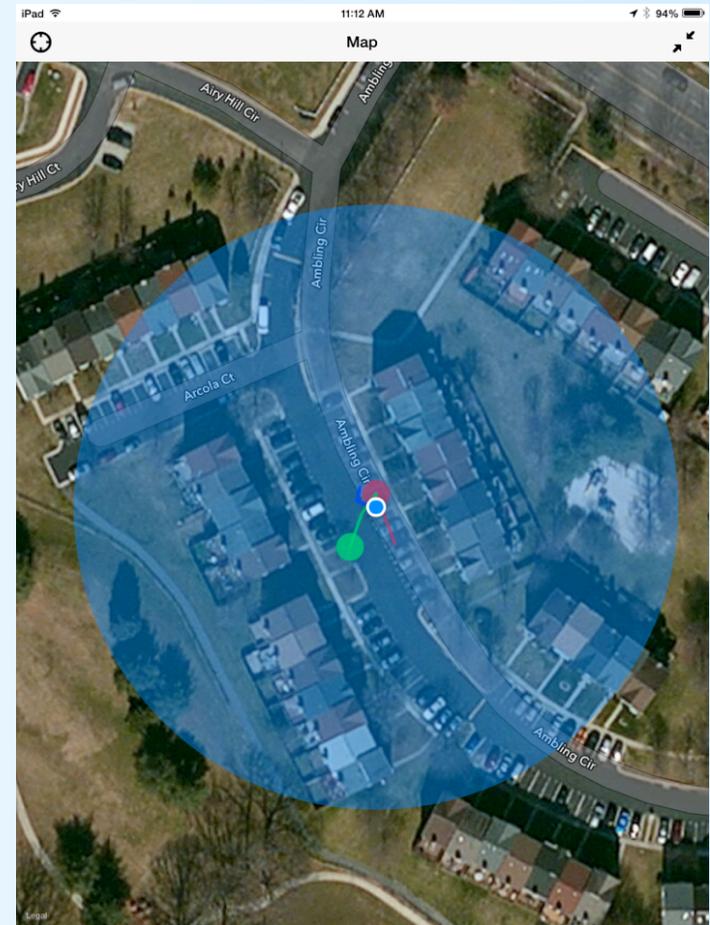
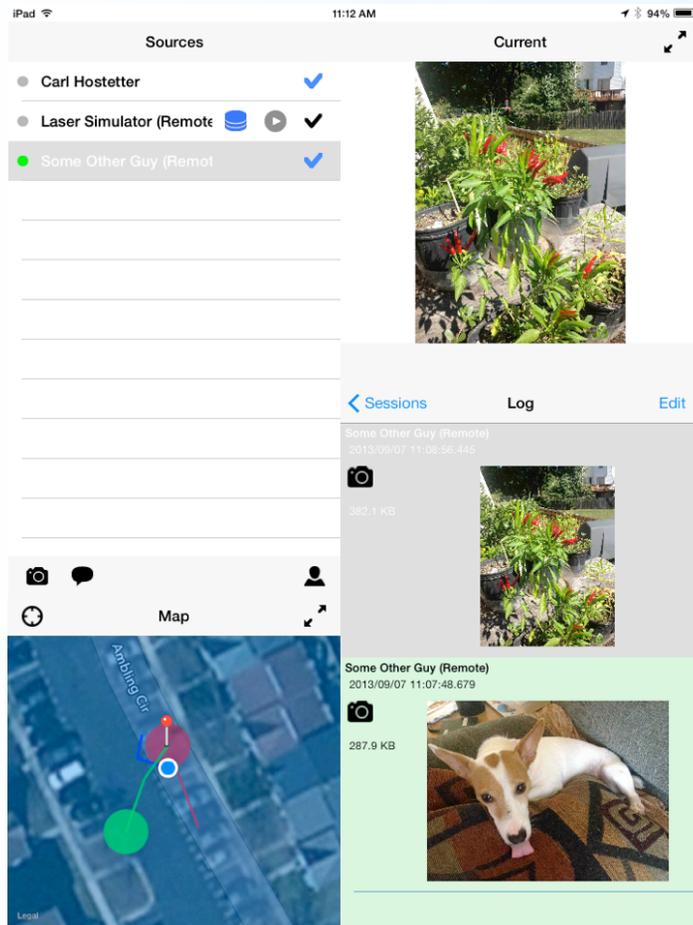


# FieldNotes





# FieldNotes





# LabNotes and FieldNotes

- Demo





# LabNotes and FieldNotes

- **Questions?**



## Bio

- **Carl Hostetter is a Computer Engineer with the Science Data Processing Branch/587.0 of the Software Engineering Division of NASA Goddard Space Flight Center. With Troy Ames/587.0, he is a co-developer of the Interoperable Remote Component (IRC) software framework, which was the NASA Goddard Software of the Year award winner and NASA SOTY runner-up for 2007. LabNotes and FieldNotes deploy the core concepts and capabilities of IRC in the mobile age, and thus leverage the opportunities presented by the proliferation of powerful, low-cost, low-energy, connected, and location-aware devices for scientific and exploratory applications.**