



Terrestrial Microwave Data Network

WiFi Emergency Wireless Network

WiFi in the context of RACES

Overview

- ❖ EWN History (Brief)
- ❖ The Technology (In Context)
- ❖ Complexity (The Enemy)
- ❖ Higher Level Design
- ❖ The Role of RACES



EWN History

Reasons

When RACES Shows Up To An Incident - We have PTT, We have Packet
We must have better toys than they have if we want to add value
Merge Government & Corporate Strengths

Started in late 2005

2004 Tsunami & Katrina
Non-profit - could carry no weight
for-profit - SLAs, value
no-one wanted to talk to government

Technology

- ❖ Voice Radio
- ❖ 25 word message - 3 to 5 minutes on a quiet channel



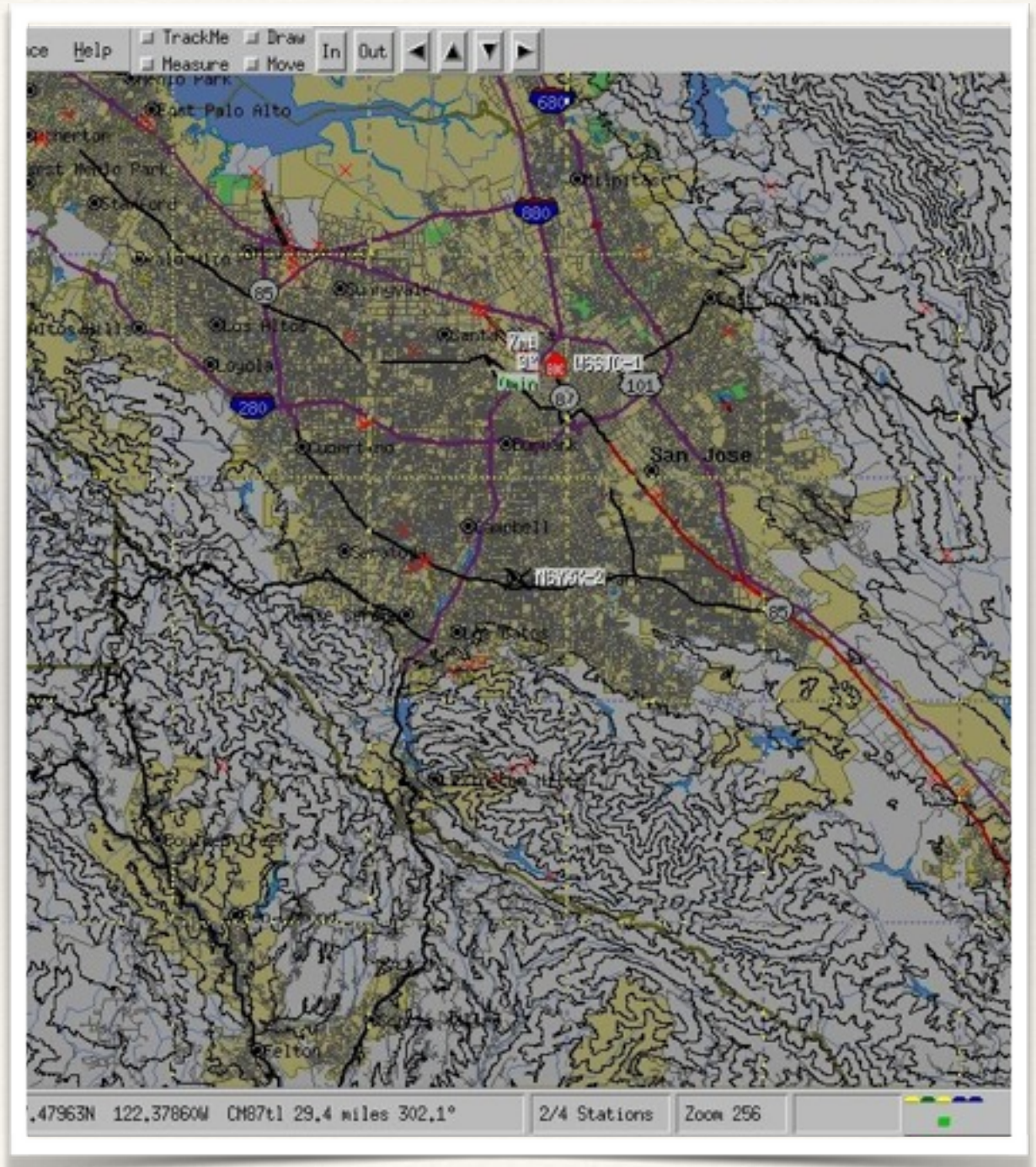
Technology (Cont.)

- ❖ Packet Radio
- ❖ 25 word message - 10 seconds
- ❖ Text only - no MS Office tools
- ❖ Size Limits
- ❖ The Served Agency's Tools
- ❖ PacForms is a protocol - use tags



Technology (Cont.)

- ❖ APRS
- ❖ Provides a shared distributed blackboard
- ❖ All disasters are local - with local resources & constraints
- ❖ Safety of deployed personnel



Technology (Cont.)

- ❖ Part15 v.s. Part97
- ❖ Cost & Complexity
- ❖ Message Security
- ❖ Public doesn't care Part15/97
- ❖ We shouldn't be defending Part97 while the ship is sinking



Technology (Cont.)

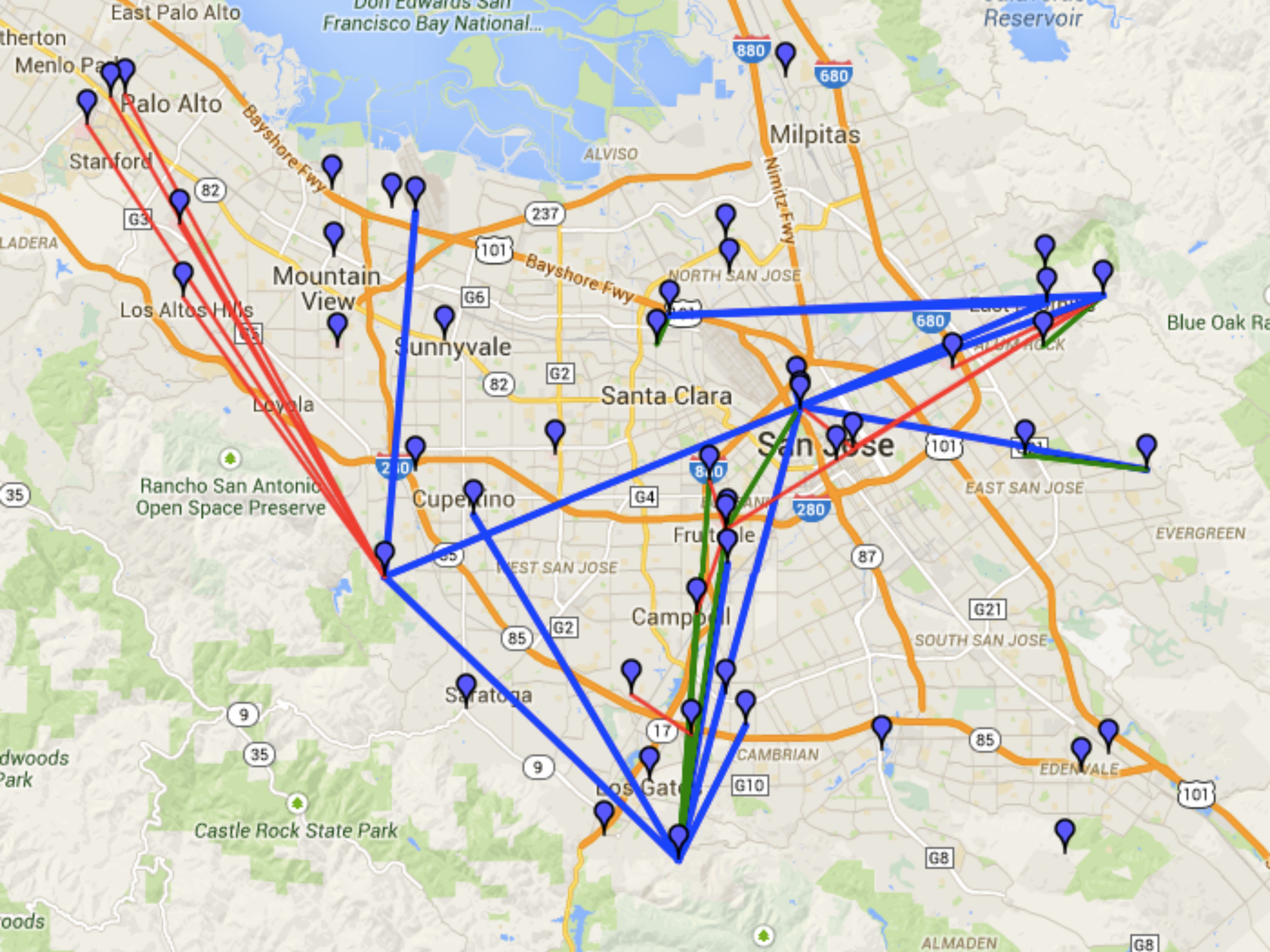
- ❖ MESH v.s. Point-To-Point
- ❖ MESH != Magic
- ❖ Perfect for Ad Hoc Networking
- ❖ MESH as a leaf network — not core
- ❖ No more than 3 MESH hops before a non-MESH node



Technology (Cont.)

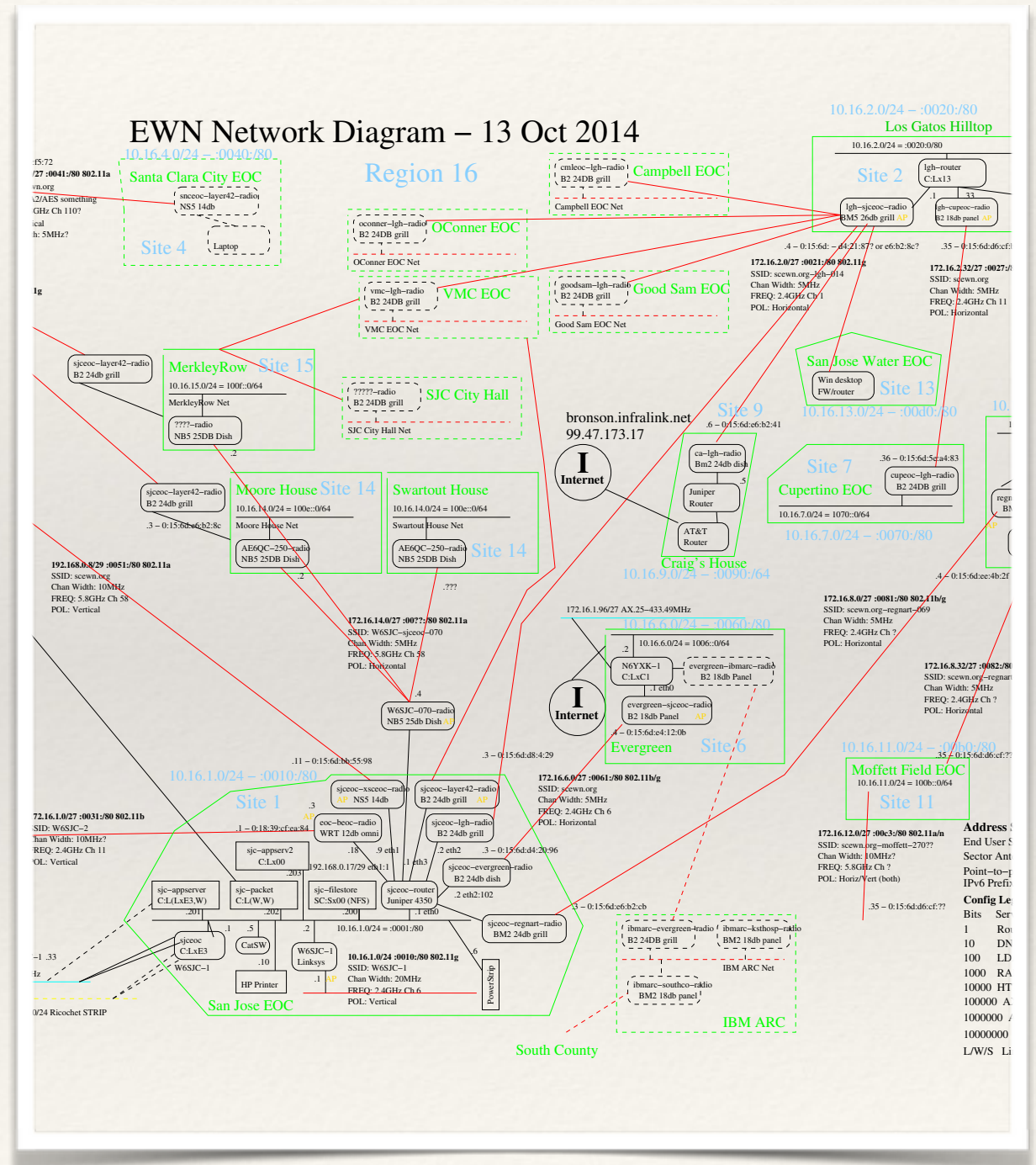
- ❖ Adaptable Networking
- ❖ Hi-Gain to Omni
- ❖ 3-4 mile radius line of sight





Complexity

❖ “The only difference between Networking and Notworking is 1 letter.”



Complexity (Cont.)

- ❖ Complexity Is The Enemy
- ❖ Complexity is Fragile & Expensive
- ❖ The Internet v.s. Your HT
- ❖ Complexity is a relative term



Complexity (Cont.)

- ❖ Complexity Will Be Managed Over Time
- ❖ Complexity gets encapsulated into building blocks
- ❖ The Internet Of Things: Embedded Linux - Not Windows



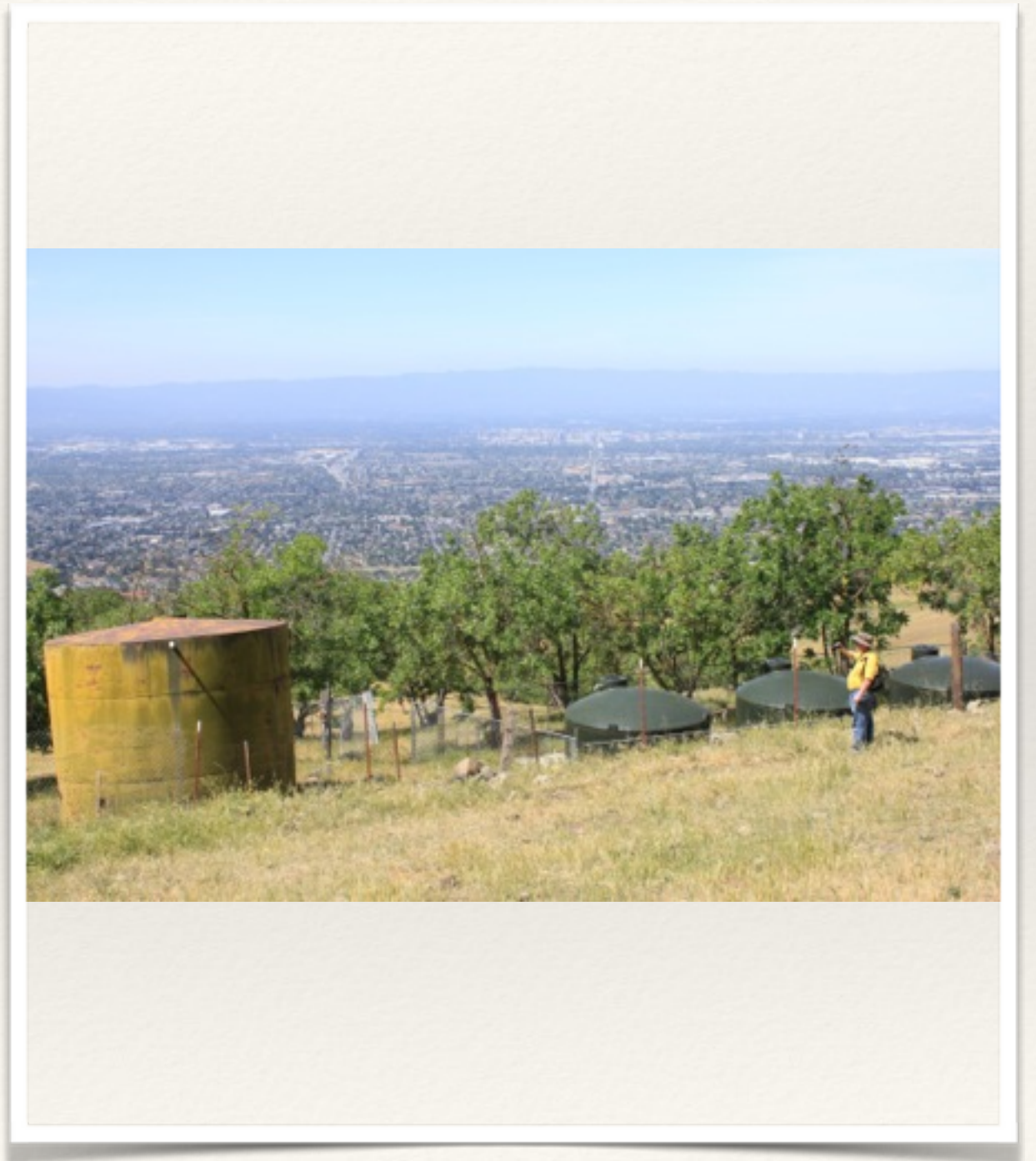
Complexity (Cont.)

- ❖ VoIP over WiFi v.s. Simplex Voice Channel
- ❖ We must wrap our operations plan around new capabilities
- ❖ Do not let the fear of complexity stop the correct solution: Manage It



Higher Level Design

- ❖ Plan For Failure!
- ❖ We Need To Plan For A Graceful Degradation In Services
- ❖ WiFi -> Packet -> Voice



Higher Level Design (Cont.)

- ❖ VoIP Phones
- ❖ Network Printing
- ❖ Anonymous FTP
- ❖ Walled UseNet NetNews Servers w / Web Interface - ICS Newsgroups
- ❖ Replicated Wiki Servers
- ❖ Map Server - OpenStreetMaps
- ❖ Sahana
- ❖ TicketsCAD / MDB
- ❖ APRS / Xastir



RACES Role in the Future

- ❖ Can't do SLA's & Daily deployment
- ❖ Local FD's R&D Dept.
- ❖ IT Infrastructure at the ICP
- ❖ Preserve a Mobile / Distributed EOC Capability

RACES Role in the Future (Cont.)

- ❖ EWN Structure in RACES
- ❖ Local RACES Groups - Intra-city Comm
- ❖ Non-profit umbrella group - Inter-city links

