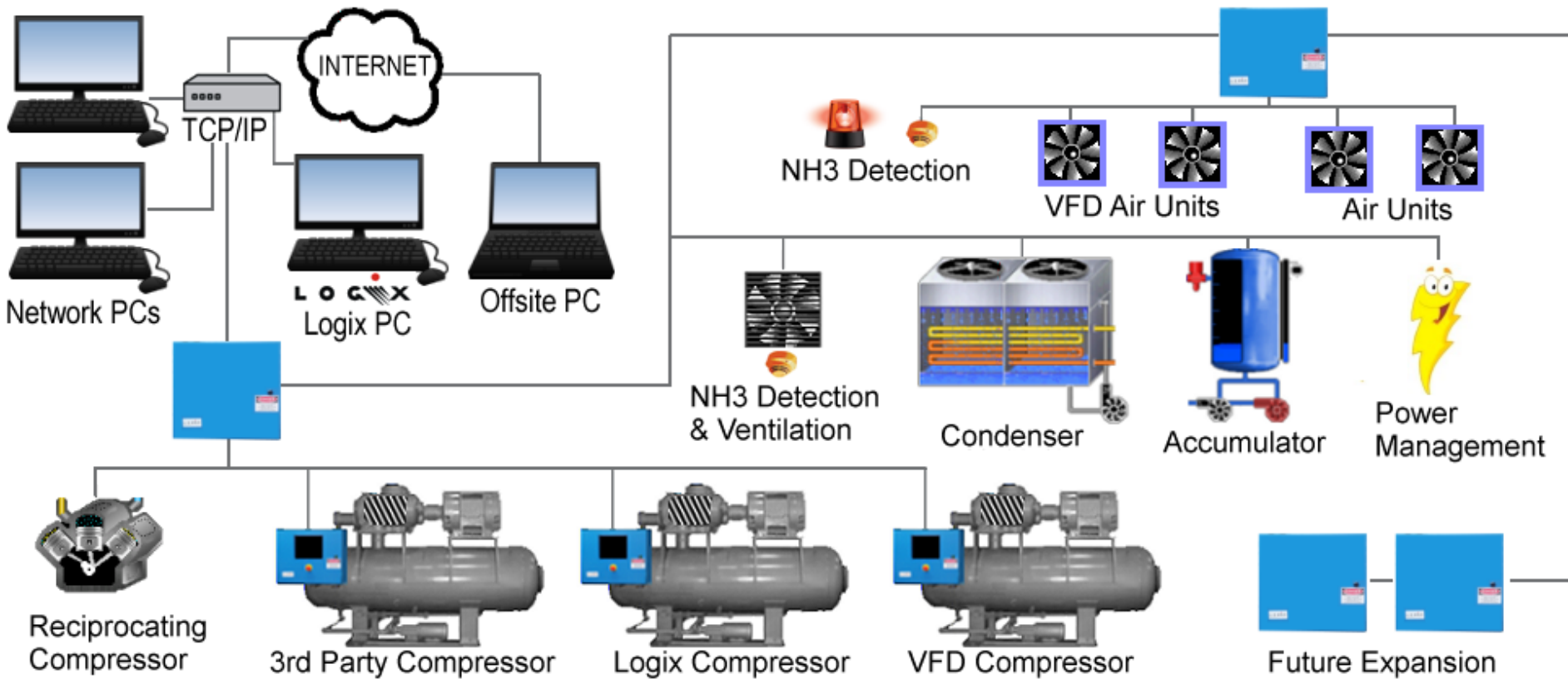# There's Forth in That

An Overview of Some Recent Commercial Forth Applications

Commercial Forth Applications

- Logix
   Industrial Refrigeration Controls
- Radeus Labs
   RL8200 Antenna Control System
- Stimwave
   Wireless Spinal Cord and Nerve Stimulation
- Schweitzer Engineering Labs
   ICON Optical Network Multiplexers

Logix Control Systems

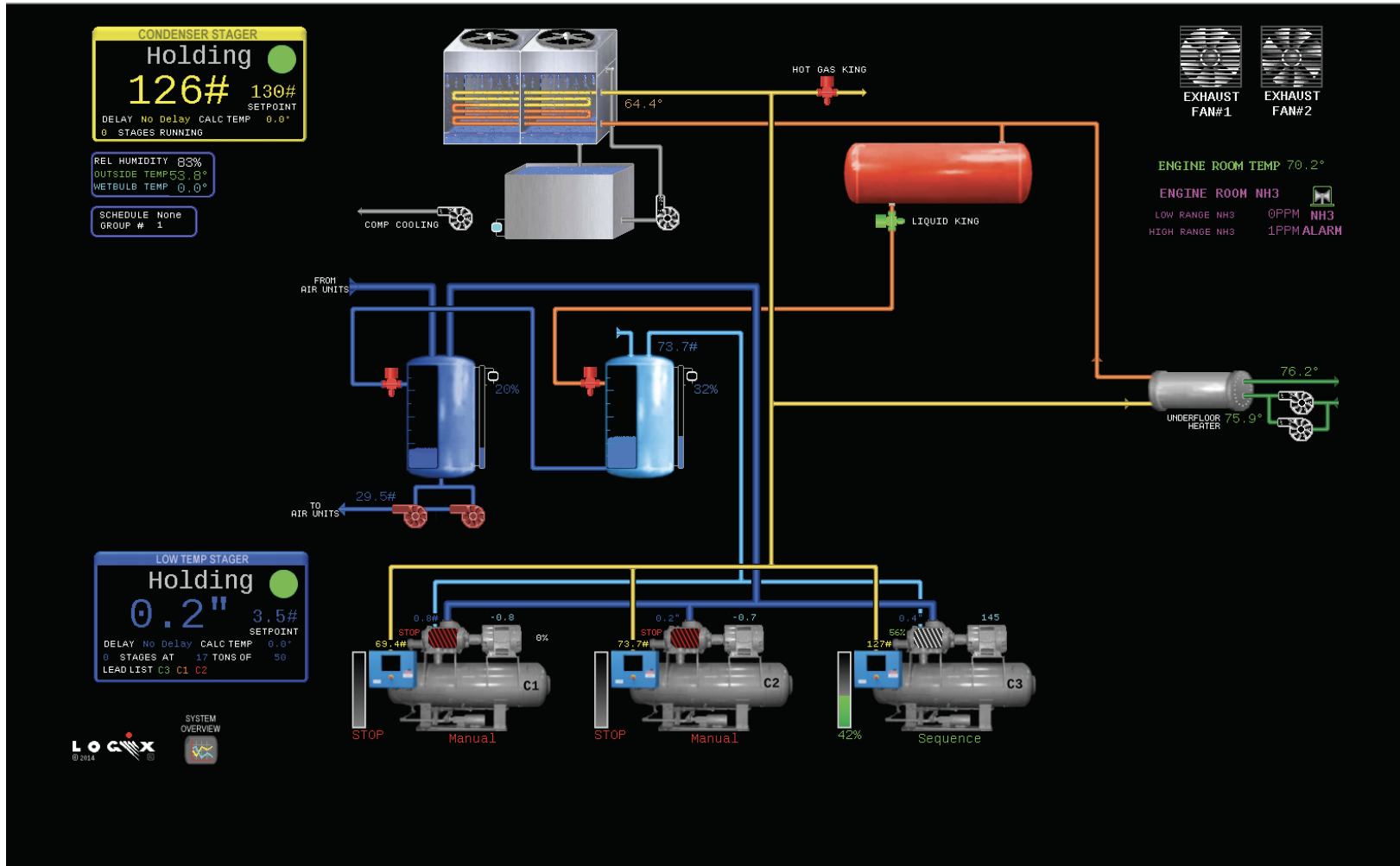## Customized industrial refrigeration controls

Clarity Refrigeration Management

SwiftForth® for Windows GUI application

- Real-time animated refrigeration graphics
- Networking and remote internet access
- Automatic alarm & failure remote notification
- Trend logging and reporting
- Equipment maintenance manager
- Diagnostic tools
- Online operations manual and documentation

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Clarity Refrigeration Management

Axiom II Control Panel

- SwiftX-ARM for Embedded Linux applications

- PC-104 bus-compliant board stack
- Communication devices
  - Ethernet
  - Telephone autodialer
  - Optically isolated serial ports
- Digital I/O
- Analog I/O

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Axiom II Control Panel

Radeus Labs

- SwiftForth for Windows GUI application
  ACU touch-panel control and status

- SwiftForth for Linux cloud server application
  Daily Intelset ephemeris updates

- SwiftX-ARM multiple embedded applications
  Motion control, position feedback, button UI

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Ancient History

Vertex RSI (now General Dynamics) Model 7200 ACU

Model 8200 ACU

Model 8250 Drive Cabinet
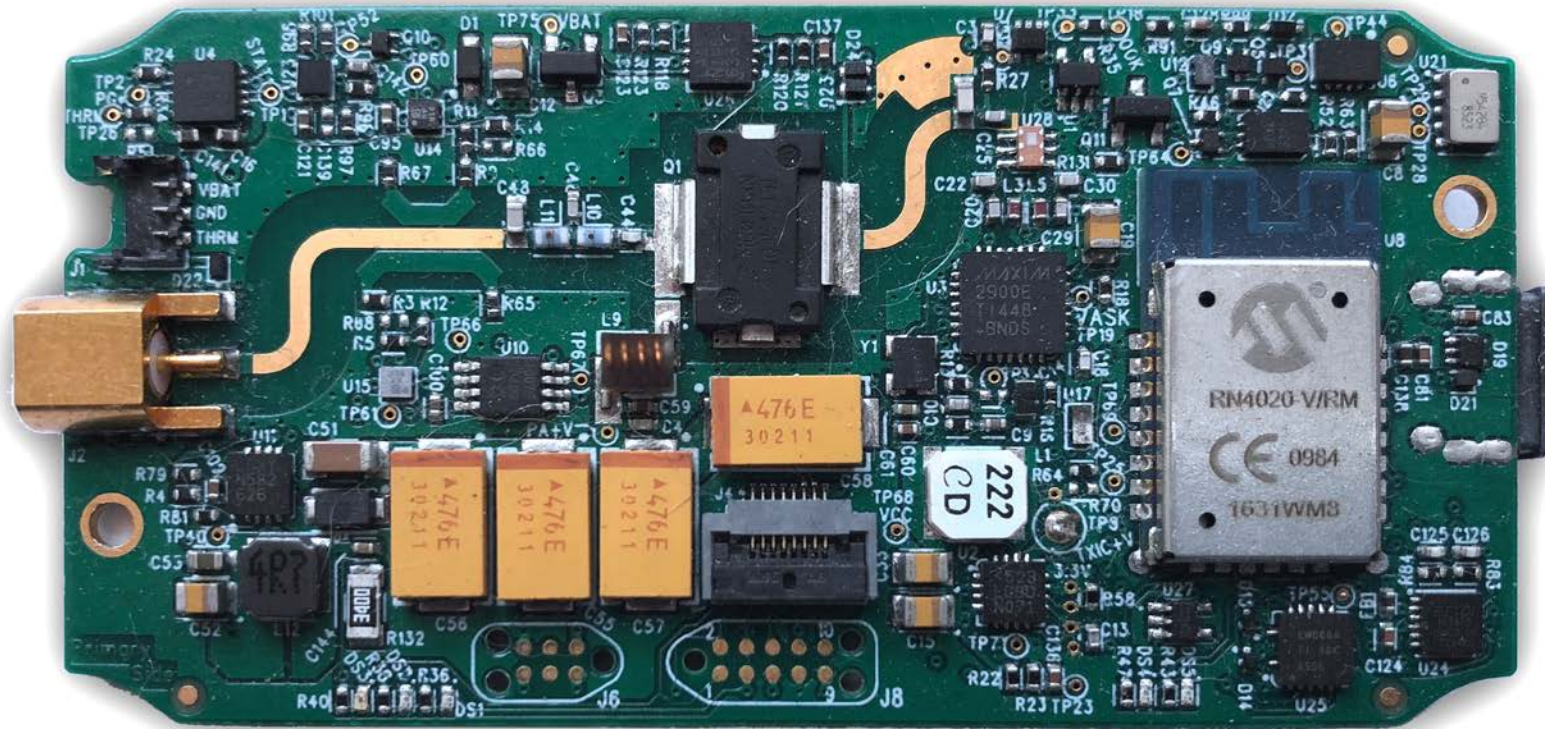
SES South Mountain Earth Station

Stimwave

- Freedom Micro Stimulator

  - Implanted in patient
  - Four or eight electrodes
  - Electrodes configurable (anode/cathode/off)
  - Current configurable

- Wearable Antenna Assembly (WAA)
  - Microwave Field Stimulator (MFS)
  - Antenna
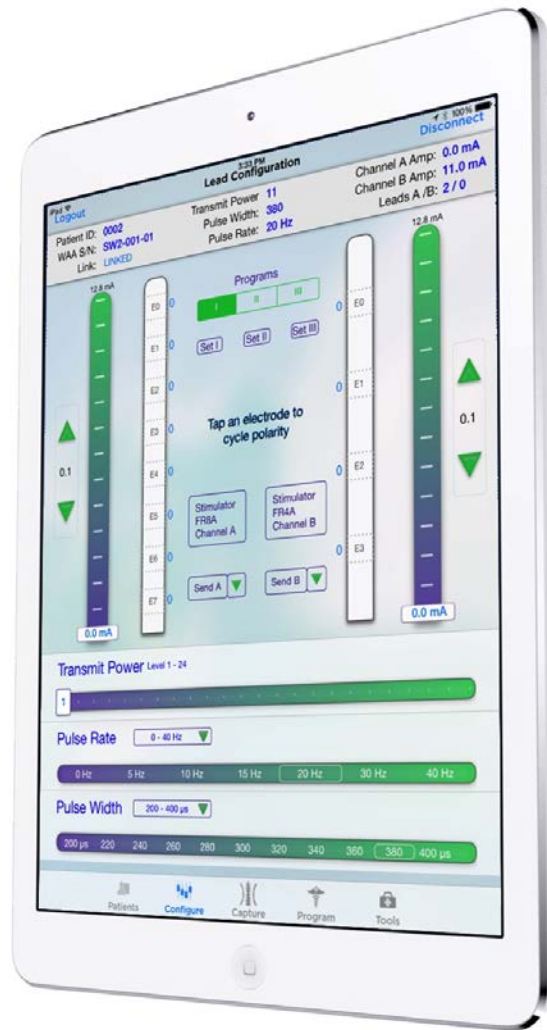
- WaveCrest Programming App (iOS)

Microwave Field Stimulator

Microwave Field Stimulator

- SwiftX-MSP430 embedded application

- Bluetooth Low-Energy data interface
- Microwave transmitter
- JTAG debug and programming interface
- USB charging and optional serial interface
- I^2C fuel gauge and RTC
- Simple user interface (buttons and LEDs)
- Piezo speaker audio feedback

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WaveCrest Programming App

Schweitzer Engineering Labs

ICON
Integrated Communications Optical Network

SEL ICON

- SwiftX-ColdFire for embedded applications
  Multiple ColdFire microcontrollers per chassis

- SwiftForth for Windows CLI programs
  Flash programming utilities for factory setup

- SwiftX-ARM for next generation embedded
  Dual-core ARM Cortex-R5 in Xilinx Zynq Ultrascale+

Zynq UltraScale+ CG