SENSURON

ENGINEERING AT THE SPEED OF LIGHT

Vita COTS Hardware Simplifies the Design and Integration of High-end Instruments

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Agenda

- Sensuron Introduction
- OFDR Fiber Optic Sensing Introduction
- Case study: RTS150 Lab Instrument
- Case study: RTS125 Air Cooled Ruggedized Instrument
- Moving Forward

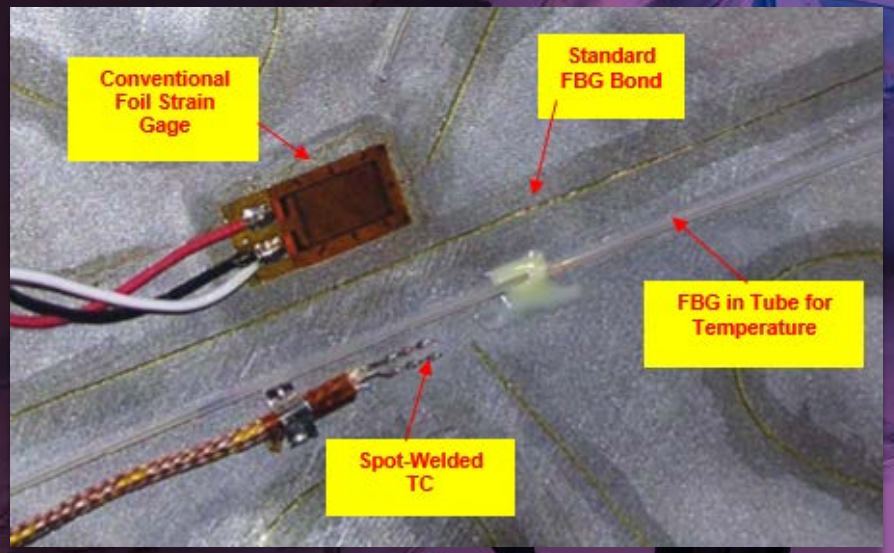
SENSURON

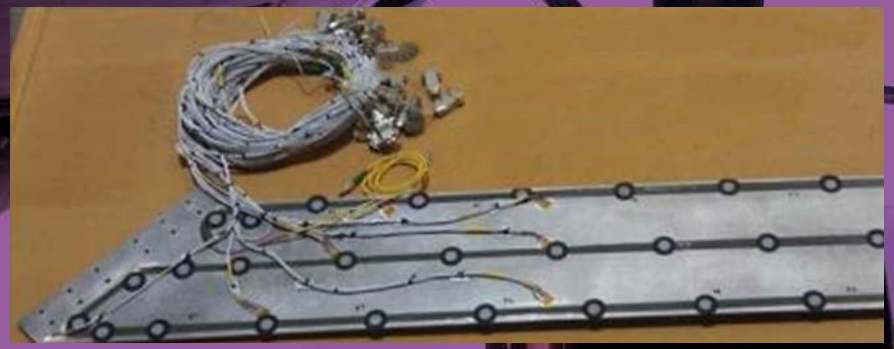
ENGINEERING AT THE SPEED OF LIGHT

- Sensuron LLC headquartered in Austin, TX
- Privately-held company
- Spun-Off from 4DSP in 2015
- Fastest FOS solutions available in the market
- Strategic relationship with NASA
- Winner of 2013 R&D 100 Award
- Industry Focus: Aerospace, Automotive, Energy and Medical.

Why Fiber Optic Sensing?

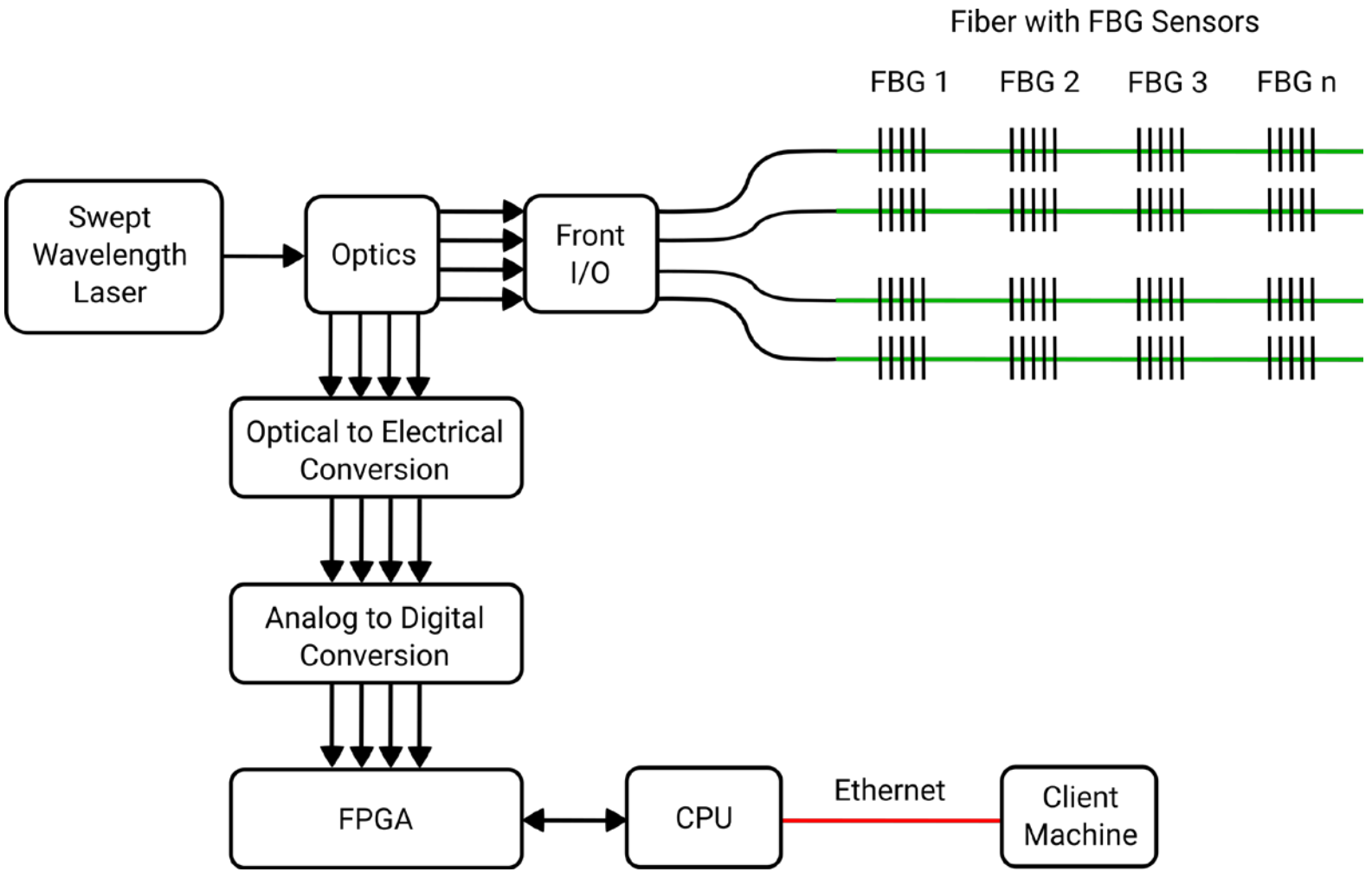
- Absolute Measurement
- Small: 125-195 micron diameter
- Extremely Lightweight
- Immune to EMI
- Wide temperature range
- Long term stability
- 1000s of sensors on a single fiber
- Suitable for harsh environments
- Embeddable





Gray: 21 strain gages
Yellow: 628 FOS sensors

OFDR-FOS
System Architecture



OFDR: Optical Frequency Domain Reflectometry

Signal Conversion + Frequency Analysis and Processing

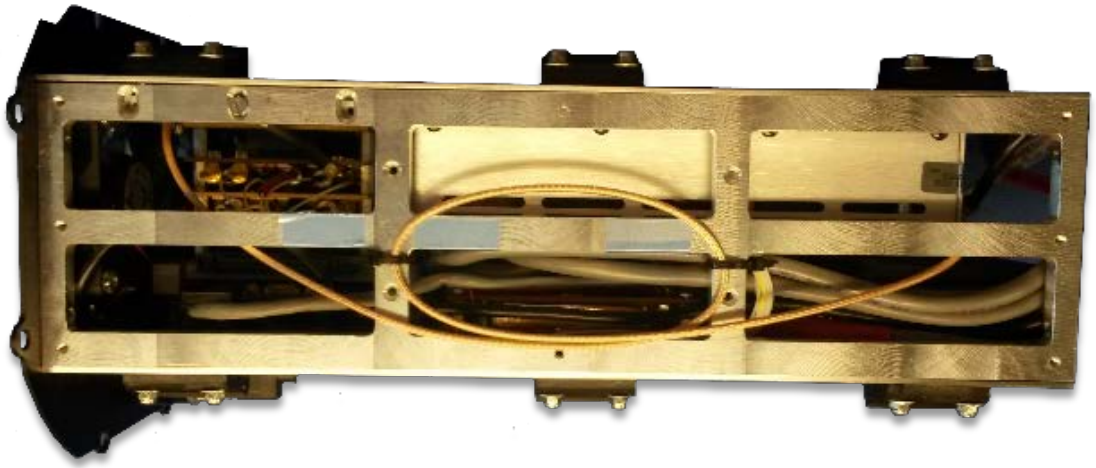
RTS150

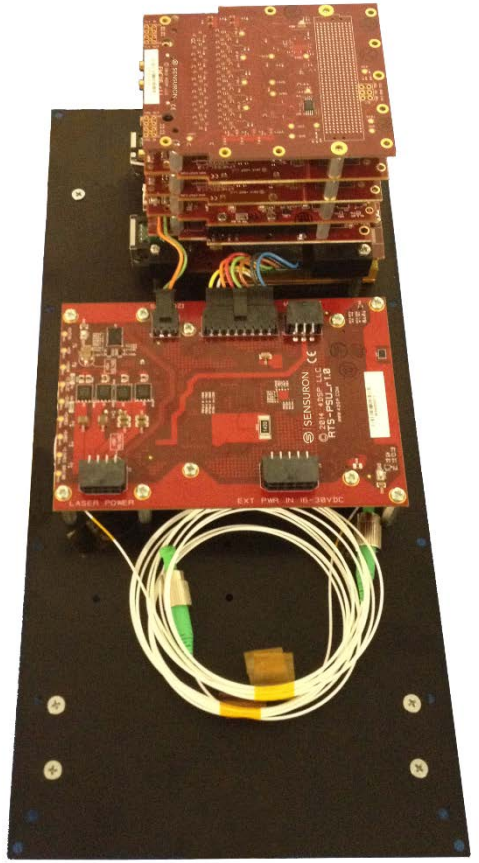
Production

Prototype

- Standardized COTS Hardware
- Non-Standardized
- System Design Evolution

RTS125





- RTS150 provided confidence in technology
- Increased custom components
- Design Reuse

Moving Forward

- New Products and Product upgrades
- Scaling Hardware
- VITA 49.0 VRT
- VITA 75 Ruggedized Conduction Cooling

COTS Standardized Components

Pros

- NRE Cost
- Reduced Integration Effort
- Prototyping
- Time to Market
- BSP (FPGA Firmware and Software)
- Interoperability
- Repair
- Modular Upgrades
- Sell developed byproducts, reusability

Cons

- Lack of control and ownership
- Not as efficient
- Not as cost effective for high volume

Current Applications

- Strain
- Temperature
- 2D and 3D shape sensing
- Liquid level sensing (e.g. cryogenic fuel tank)
- Composite overwrapped pressure vessel with embedded and surface mounted optical fiber
- Design Validation