Lexycom Technologies

OEM of Software Defined Radios

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About Lexycom

- ✓S-Corp. founded in 2004, facilities are in CO
- ✓OEM of SDRs for Gov., Comm. & Ind. App.
- ✓R&D, Design & Manufacture of flight-certified SDRs
- ✓Received the 1st U.S. FCC Certification for UHF SDRs

Next-Generation EVA Software Defined Radio

EVA SDR Developed under:

2007 Phase 2 SBIR: Subtopic O1.06 – Miniaturized Digital EVA Radio

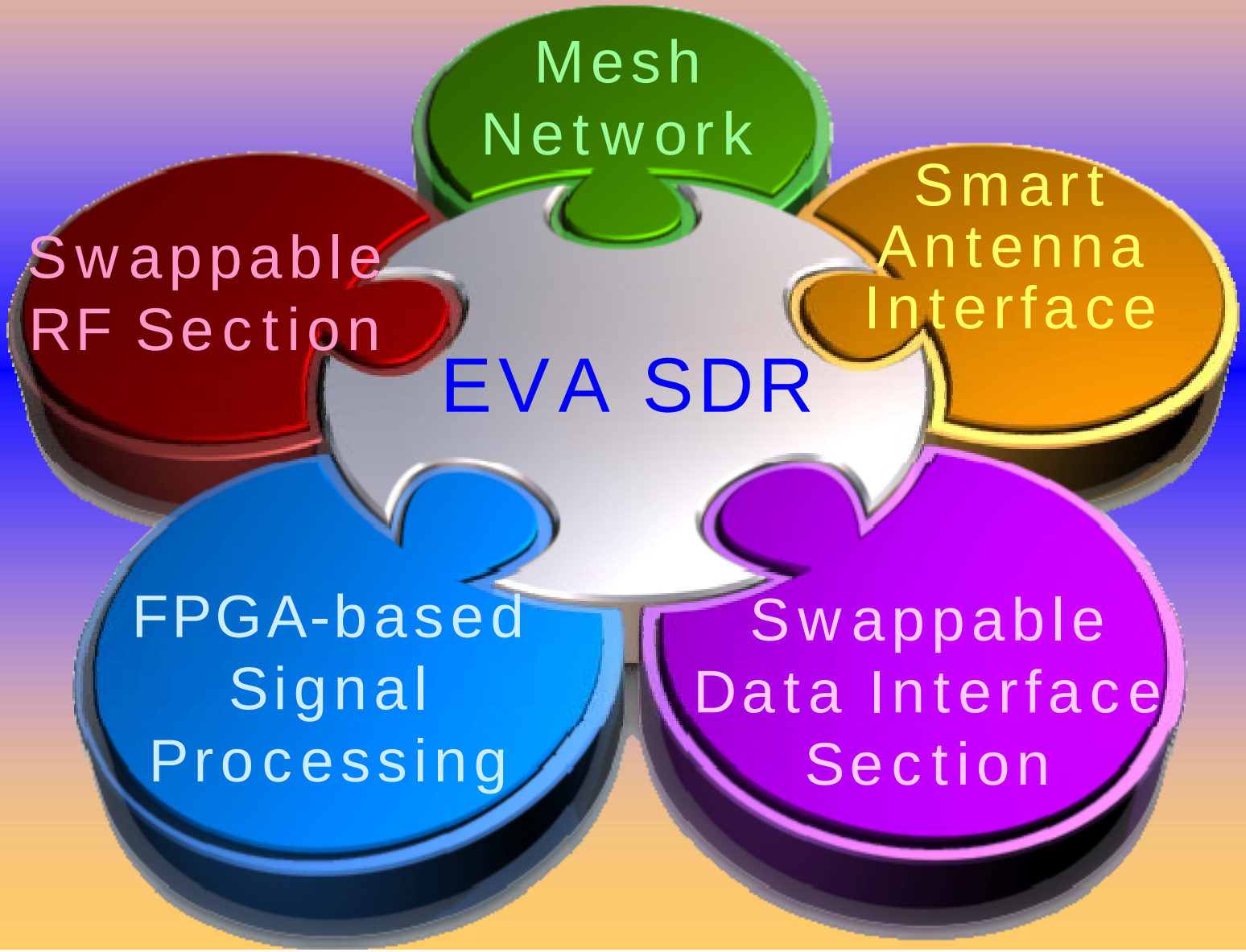
Goals and Objectives

Design a Multi-Service, S-band, Power Efficient, Miniature Software Defined Radio that addresses the following:

- Crew Safety and Mobility
- Interoperability
- Reconfigurable
- Scalability and Flexibility
- Reliable and Secure Communications
- Facilitates Faster Migration to New Standards
- Affordability
- Sustainability
- Reduced Maintenance and Design Lifecycle Costs

EVA SDR Enablers

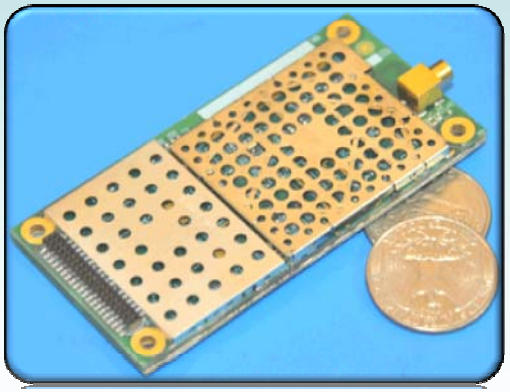
EVA SDR Leverages Software Defined Flexibility



Why EVA SDR?

SDRs provide unprecedented operational flexibility allows on-the-fly changes, multiple data types

Supports real-time HighDef. Video, Voice, other Data Types



EVA SDR

Small size, weight, and power is achievable for all SDRs, ideal for mobile units (EVAs, rovers, manned, unmanned missions) similar to cell phones

Board level weighs < 4 oz., cell phone size, ~3Watts

Upgradeable functions can be changed across mission phases

Has built-in large FirmwareBank (s/w storage & in-flight upgrades)

Software defined functionality enables software defined radios to be tailored for specific missions with reusable software

Modular design, not ASIC-based (flexible h/w)

Standardization, Interoperability are realized with software defined radio Technology

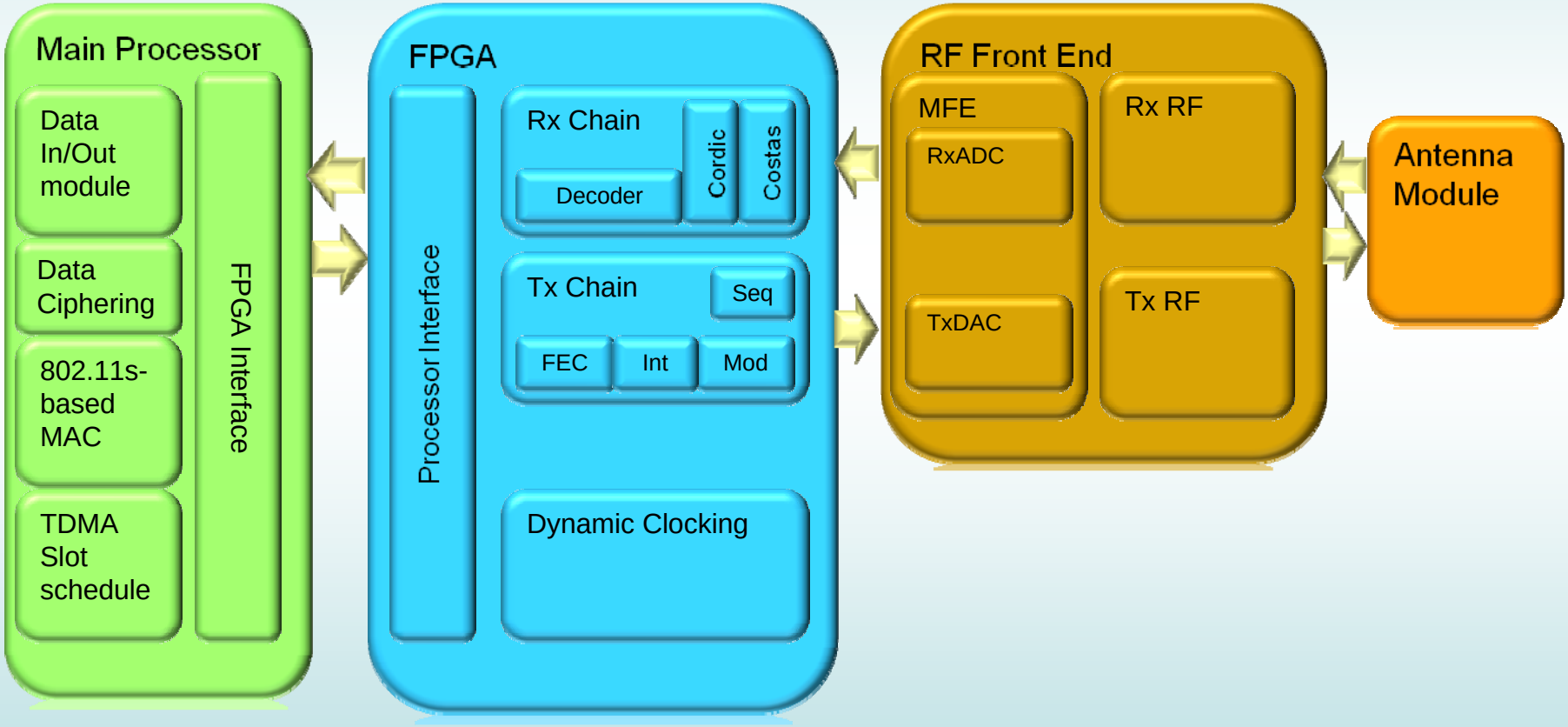
Provides Mesh Network (future growth, allows for Cognitive Radio)

Cost reductions are realized with Common hardware and reprogram-mable software

Uses Scalable Architecture, Reprogrammable

EVA SDR Enablers

EVA SDR Leverages Modular Architecture



Optimized Power Efficiency

Software driven rather than h/w-based

MEMS technology (fast, narrow-band tunable filter)

EVA Software Defined Radio

CORE FEATURES

- ✓ **The smallest & lightest SDR on the market**
- ✓ **Small UAVs, Prox. Links, Mobile app.**
- ✓ **Battery powered**
- ✓ **Multiple Data types (simultaneously)**

Parameter		
Mass		board level weighs < 4 oz.
Frequency		2400-2483 MHz
Output Power		1 Watt (adj. in 1 dB)
Noise Figure		1 dB
Power Consumption		~ 3 Watts
Data Types		Video, Voice, Biomed. Sensors, Files, C&T
Modularity		RF Section, Digital Section, Data Interface Section
Reconfigurability		RF Section is interchangeable (the SDR can be adopted to different Frequencies).

EVA Software Defined Radio

Commercial, Industrial, Space

Capabilities

SIZE, WEIGHT, POWER:
1.5”x3.18”x0.47”, <4 oz., 3 W power @ HighDef video

DATA INTERFACES:
IP-based, Ethernet, IOs, 2 x serial

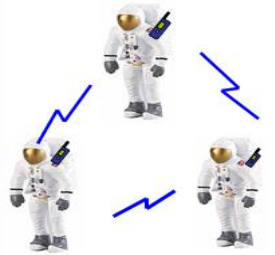
SECURITY:
AES, SHA, CRCs, on-the-fly Re-keying

DATA RATES:
Pckt-by-pckt QoS-based, 8kbps…6.5Mbps, capable 20Mbps

NETWORK:
Hybrid Mesh

ANTENNA:
Interface for Beam Steering Antenna

Applications


Interoperable Mesh Network

Defense

Unmanned Vehicle

SCADA/Automation

Space Communications

Space-to-Space Proximity Links

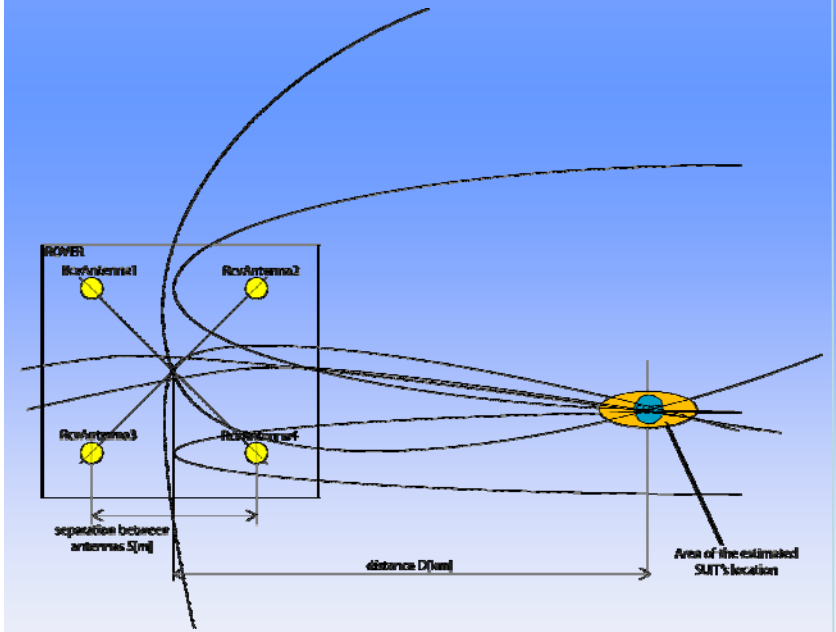
Remote Monitoring

LEXYCOM TECHNOLOGIES

EVA Software Defined Radio

Location Determination in non-GPS Environments

Preliminary Research



No GPS or GPS-like equipment is needed.

Utilizes properties of the RF signal. Does not need special location signals to be present.

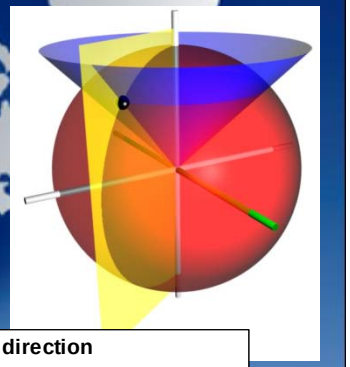
Jamming of GPS frequencies will not affect system functionality.

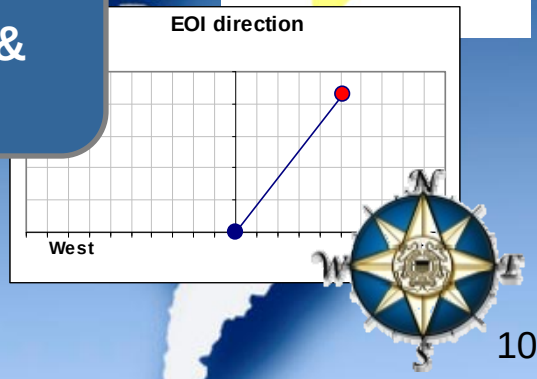
EVA Software Defined Radio

Feasibility Study Results

Full spherical direction accuracy maintained
Typical Accuracy of +/-0.5 degrees

- **Tracks several RF Emitters simultaneously**
- **Wide frequency band, no RF decoding (up to 2.5 GHz)**
- **The simple version is 100% passive (no RF leakage -> RF 'stealth')**
- **Real-time detection (a RF packet of a few msec can be detected)**
- **Distance is provided for near proximity devices**
- **Simple version can provide rough Amplitude & Freq.**
- **Detects many types of devices (Zigbee, Bluetooth, WiFi, & Cell phones)**





Lexycom Software Defined Radios

L-Band, S-Band, UHF

Board Level for System integration

Telion Series *L-Band*
(board level)

Board Level for System integration

Eva SDR *S-Band*
(board level)

Development Kit
(Ethernet, 2xSerial, cables)

Development Kits

Lexycom Technologies

Manufacturer of Software Defined Radios

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