

Strathclyde Software Defined Radio (StrathSDR) Introduction

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6GSNS Brokerage Event

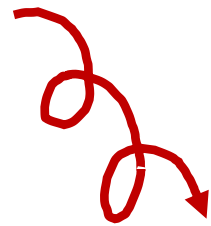


StrathSDR (and Neutral Wireless)

- **StrathSDR** = University of **Strathclyde** **Software Defined Radio**
- Comprising around 20 staff, including:
 - 4 senior academics and academic-related staff
 - 8 research staff
 - 8 PhD students
 - Interns and project students



University of
Strathclyde
Glasgow

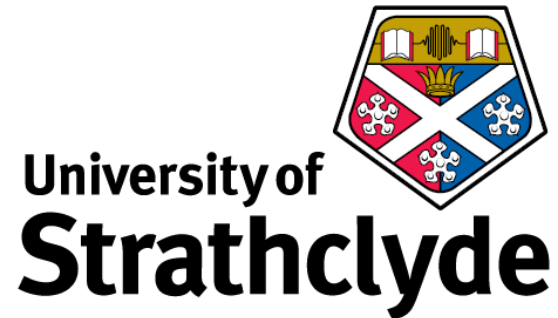


We also have a spin-out company, Neutral Wireless, with additional staff.

Neutral Wireless is a technology company specialising in 5G private networks, broadcast connectivity, SDR, consulting and training.

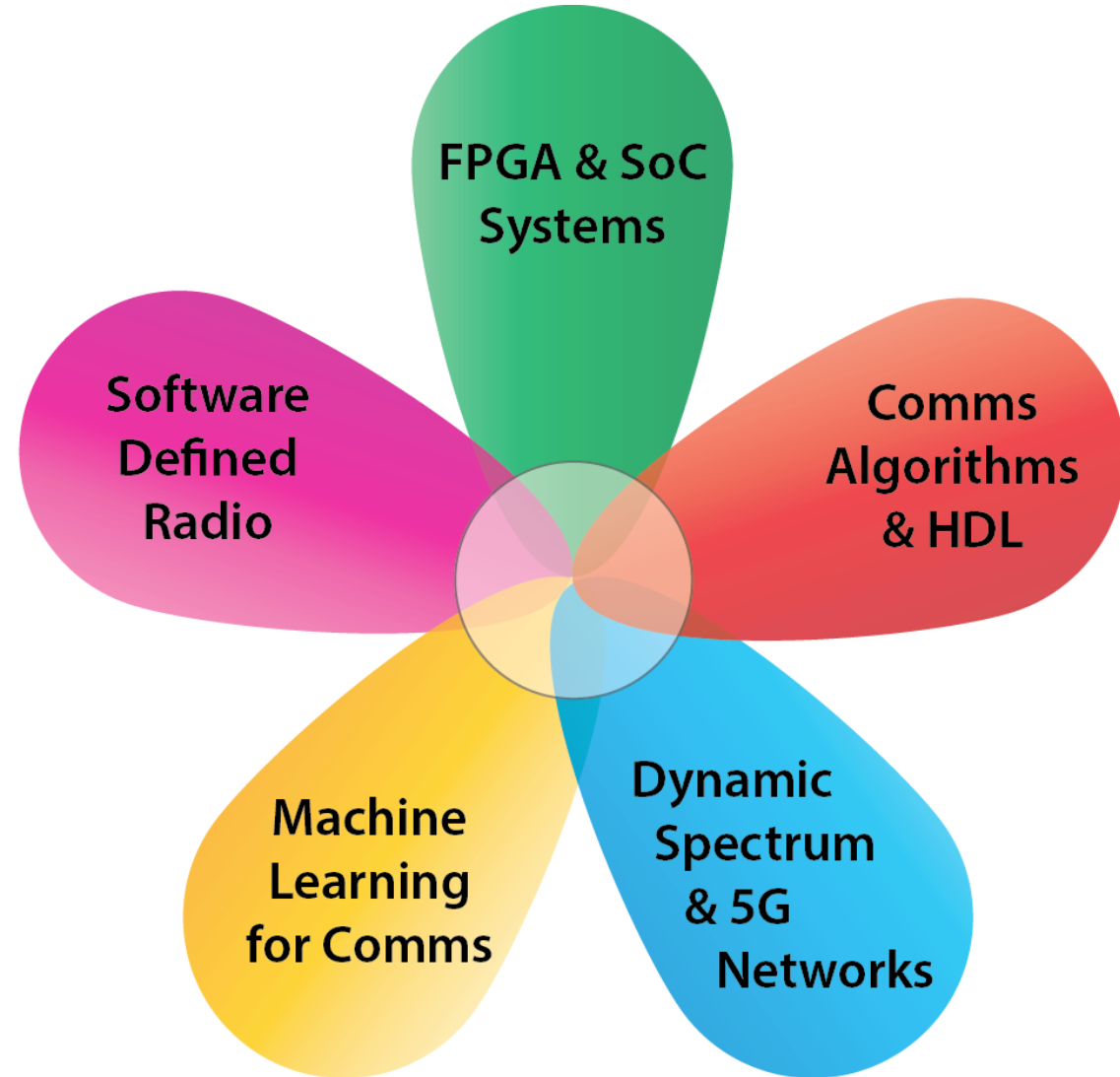


(some of!) the StrathSDR team.



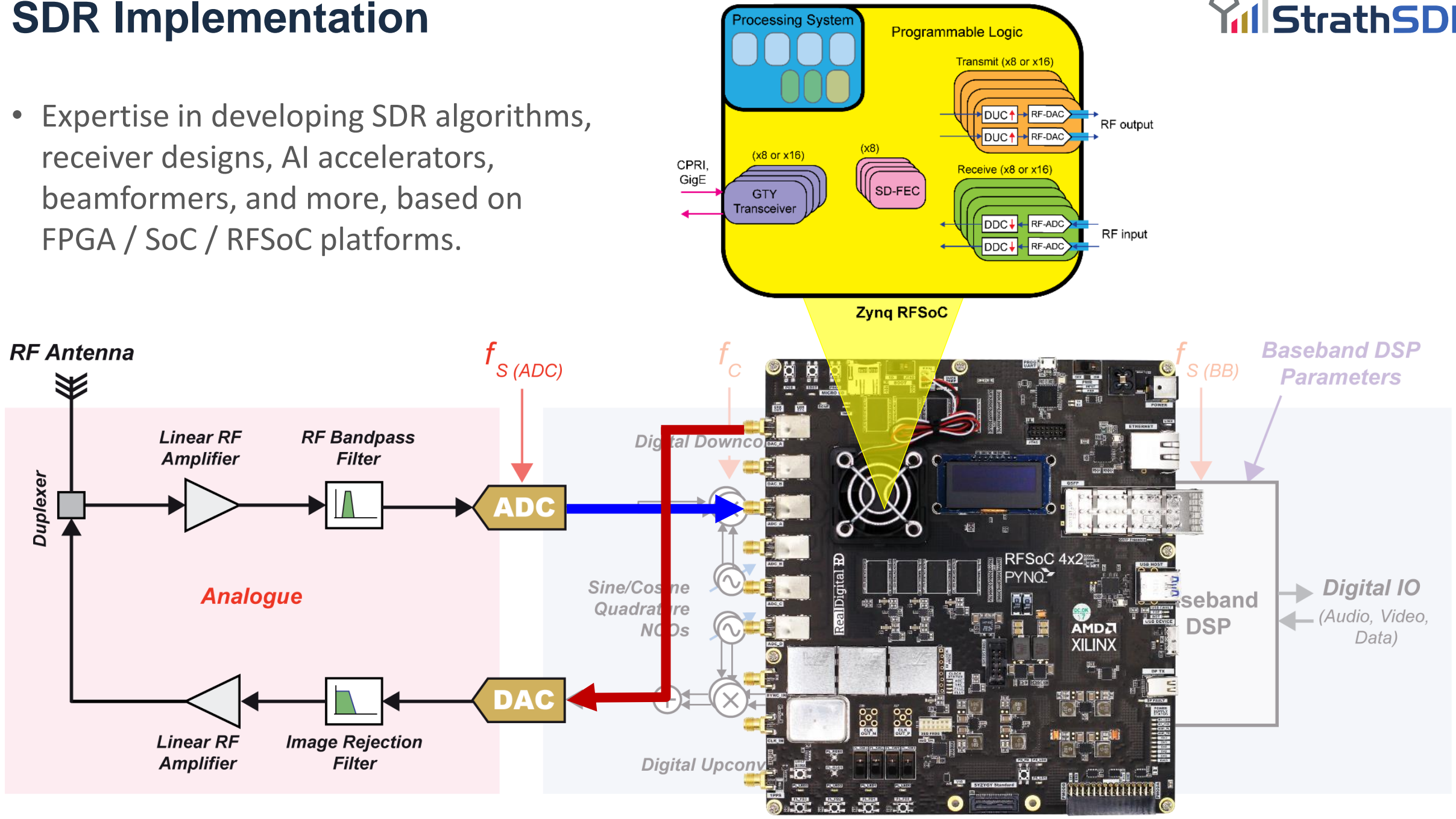
StrathSDR

(DSP enabled Communications)



SDR Implementation

- Expertise in developing SDR algorithms, receiver designs, AI accelerators, beamformers, and more, based on FPGA / SoC / RFSoc platforms.



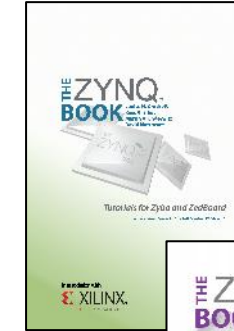
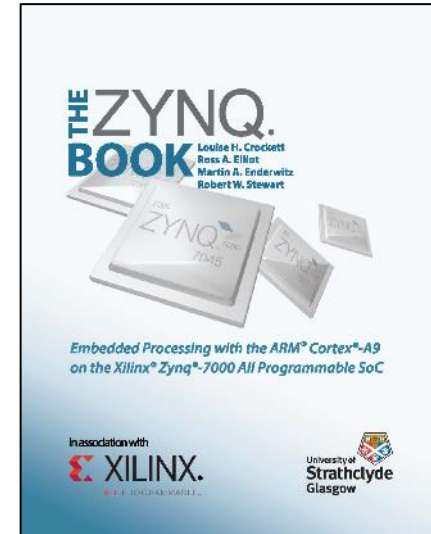
Published Expertise in System on Chip & SDR

With **Xilinx** then **AMD**:

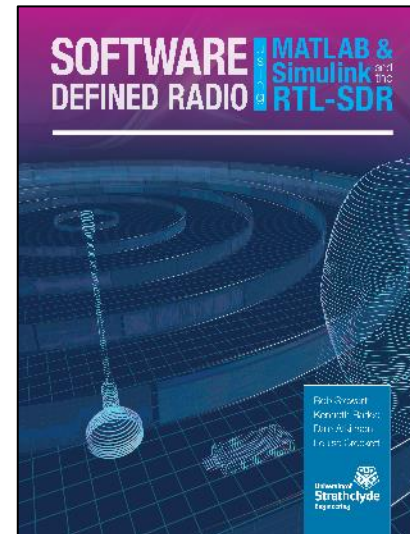
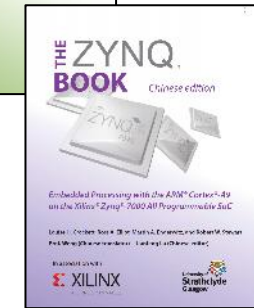
- The Zynq Book (2014)
 - The Zynq Book Tutorials
 - The Zynq Book Chinese Edition
- Exploring Zynq MPSoC (2019)
- Software Defined Radio with Zynq UltraScale+ RFSoC (2023)

Also with **MathWorks**:

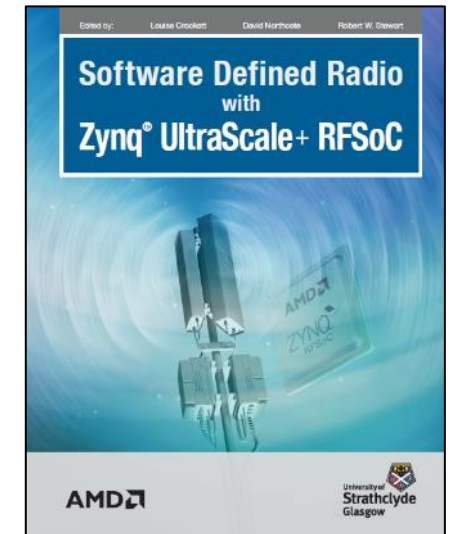
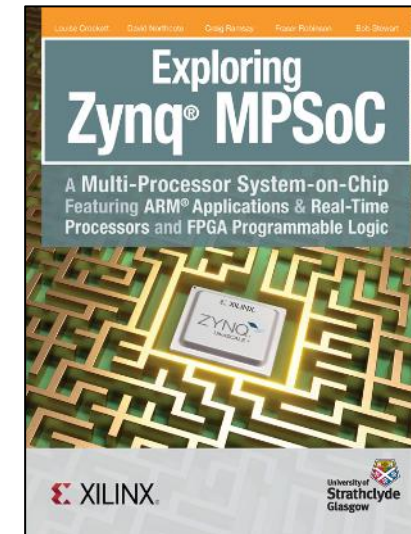
- Software Defined Radio with MATLAB, Simulink and the RTL-SDR (2015)
- *All are available as free PDF ebooks.*



www.zynqbook.com



www.desktopsdr.com



www.rfsocbook.com

5G Private Networks



LEO Satellite

Industrial IoT

Aerospace

Environmental

Agriculture

Rural

Tourism

Campus Networks

Fintech

Transport

Health

Broadcasting

Sports

Leisure

5G satellites in the sky - flexible and available coverage for emergencies and special events.

Massive MIMO / mm Wave for just mile connectivity.

Secure monitoring of key utility assets such as power generation and distribution. Optimise network performance and protect plant.

Reliable connectivity for heritage sites. Supporting tourism... not just in crisis!

Condition monitoring and maintenance substances.

5G innovation zone!

Enhanced mobile broadband in dense urban areas.

Smart public transport infrastructure - track buses on route and pay your fare.

Ubiquitous high speed data across the city... watch 5G broadcast TV in the park.

Vehicle-to-vehicle networks, supporting advanced driver assistance systems and autonomous vehicles!

Monitoring of river levels.

Smart traffic lights... Optimising traffic flow across the city.

Enhanced internet connectivity for schools.

High speed internet connectivity for rail passengers.

Secure, reliable and low latency links for rail signalling.

Smart transport signage and traffic management.

5G retail and logistics: smart checkouts and stock management; drone delivery for internet shopping.

Scalable mobile provision for concerts and sporting events.

Flexible wireless automation for manufacturing (Industrial IoT).

Augmented reality enriched museums and cultural displays.

Telemedicine: low latency, reliable connections for remote surgery.

Robust and secure communications for the emergency services.

Drones deliver other critical medical supplies.

5G Core / Beta Centre

- Software defined radio
- Network slicing
- Network as a service
- Private networks
- Network hubs
- Cloud services
- Identification
- Authentication

High speed, reliable connectivity for rural tourism, conferencing and hospitality businesses.

Wireless coverage of rural roads vital for autonomous vehicles.

5G helping to build healthy, wealthy farms.

5G connections for agricultural technology - helping farms to optimise produce and access the market.

Wireless condition monitoring of high value industrial fuel assets.

Environmental monitoring - collecting data from sensors across the city.

Smart, energy efficient buildings.

Smart, energy efficient buildings.



StrathSDR is working on **Dynamic Spectrum Management** approaches that can help to exploit shared spectrum:

- Greater automation.
- Better understanding of interference conditions.

Combining real-time **spectrum monitoring** with **RF propagation modelling** to deliver a more agile and more effective spectrum licensing model for current and next generation of communications networks.

ON-SIDE: Open Networks Shared Spectrum Innovation and Design Environment

ON SIDE

- ON-SIDE is a collaborative project currently running until September 2025.
- Funded by the UK Government Dept. for Science, Innovation, and Technology (DSIT).
- **Working with consortium partners:**
 - Exploring new methods for managing spectrum through a fully automated and adaptive system, where spectrum could be released for short-term, ‘pop-up’ networks.
 - Testing, demonstrating and evaluating these methods through a city-wide n77 design and innovation environment (in Glasgow).



With support from **AMD**

- Looking to participate in projects relating to:
 - Spectrum management and access for 6G.
 - Private networks in 6G.
 - SDR systems development for 6G.
- We offer:
 - Knowledgeable, skilled, well-established team.
 - Experience of working in large, collaborative projects.
 - Access to facilities, and links to Neutral Wireless spin-out company.

Thank You!

Engage with us...

 <https://sdr.eee.strath.ac.uk>

 @strathSDR

 github.com/strath-sdr