



AW2S

Advanced Wireless Solutions & Services

OPEN RAN IN BUSINESS

MARCH 2022

OVERVIEW



Advanced Wireless Solutions and Services (AW2S) is specialized in the design and manufacturing of advanced and innovative Radio Product and solutions for wireless telecommunication infrastructures.

AW2S provides advanced radio solutions for systems performances enhancement: efficiency , Rx sensitivity, Tx linearity, compact integration, reliability, for markets such as :



Cellular



IOT



Railway



Military/ Defence



Space



Aerospace

A solution and system provider



Design engineering services provider



SECURE YOUR FUTURE



Open-RAN

AW2S is Open-RAN since Day-1

▶ **Legacy Front Hall interface based on ETSI ORI**

- Launched in 2010 by ETSI & NGMN Alliance
- Based on CPRI
- C&M using XML messaging on TCP/IP

▶ **Published AW2S evolution for 2G/3G/4G &5G support for ORI**

▶ **Support of eCPRI Split 8 available since 2019**

- I/Q samples over IP
 - E.G With Open Air Interface and Orange



CPRI

Common Public Radio Interface



Business Model

Open-RAN offer a variety of business model to customers with its ecosystem partners

► **Full solution**

- Based on AMRS stack 4G/5G
- All in one
- Network in Box

► **RAN solution**

- Based on AMRS stack 4G/5G
- Core network
 - Halys
 - AMRS

► **Integrator Solution**

- Only RRH sold
- Works with any BBU Down to even 2G/3G
 - Open Air Interface Stack
 - AMRS
 - ASOCS
 - AZCOM
- Integrators
 - Kontron
 - Alsatis
 - Many others ...



Architecture

Open-RAN can offer a wide variety of architecture and a mix of them

► Stand Alone

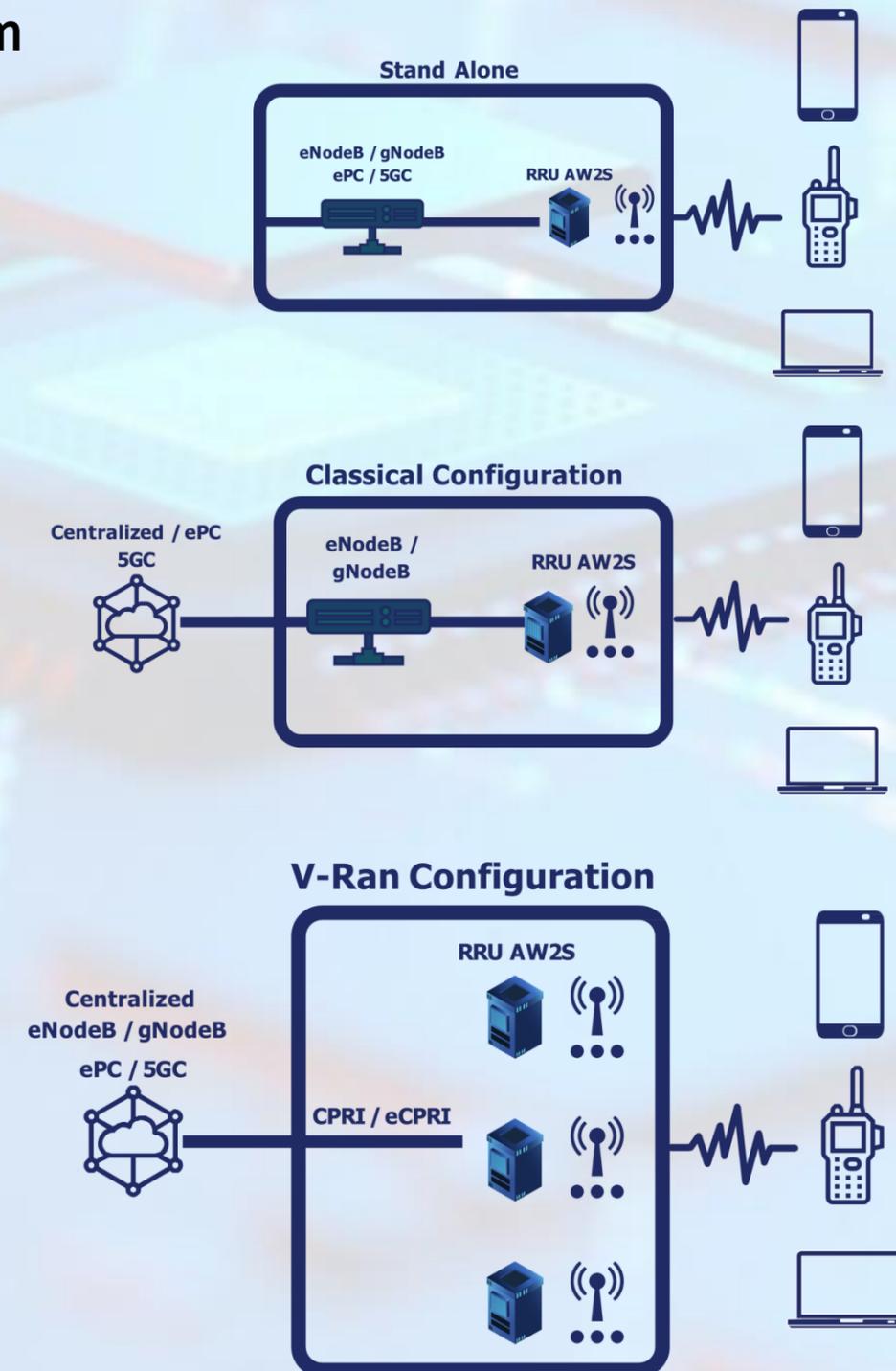
- Based on AMRS stack 4G/5G
- All RAN in a single PC
- PC even integrated to tRRH

► Classical

- BBU on site with RRHs sitting in a x86 PC
- Centralized Core network
 - Alsatis deployment with Halys ePC

► V-RAN

- Centralized BBU
- FrontHaul on CPRI or even eCPRI



Future

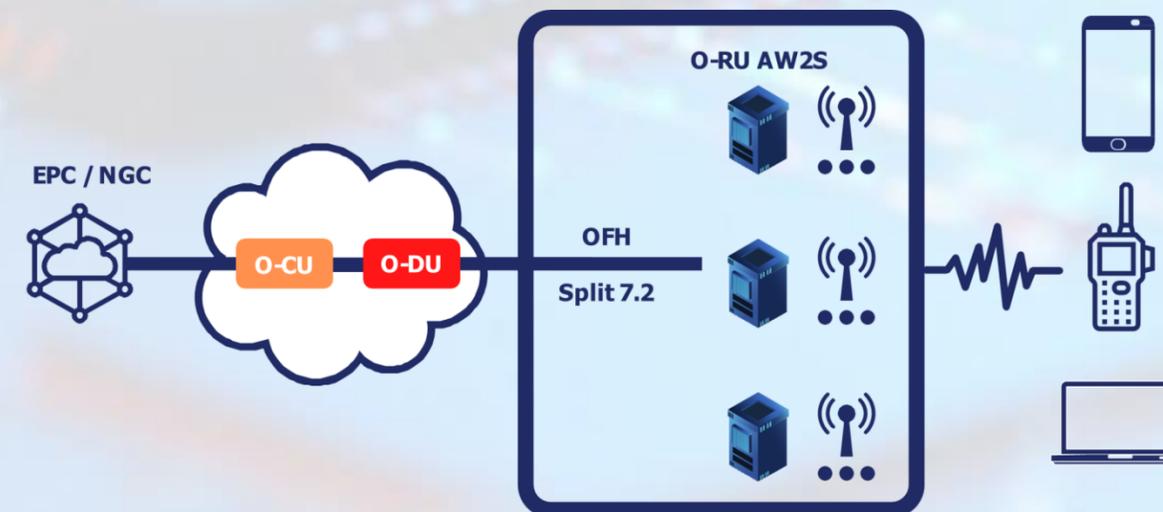
From Open-RAN to O-RAN

► Over-Kill for a standard RRH

- Add complexity & cost
- Complex C&M
- Not necessary for:
 - Nowaday RRH
 - Private Networks

► Mandatory for Active Antenna and Ran-Sharing

- Reduce Front-Haul Througput
- Beam Froming Control
 - Massive Mimo Terrestrial & Stratospherical
 - NTN Stratospherical & LEO



Technologie

AW2S propose a range of platform for all customer needs

► Legacy Platform

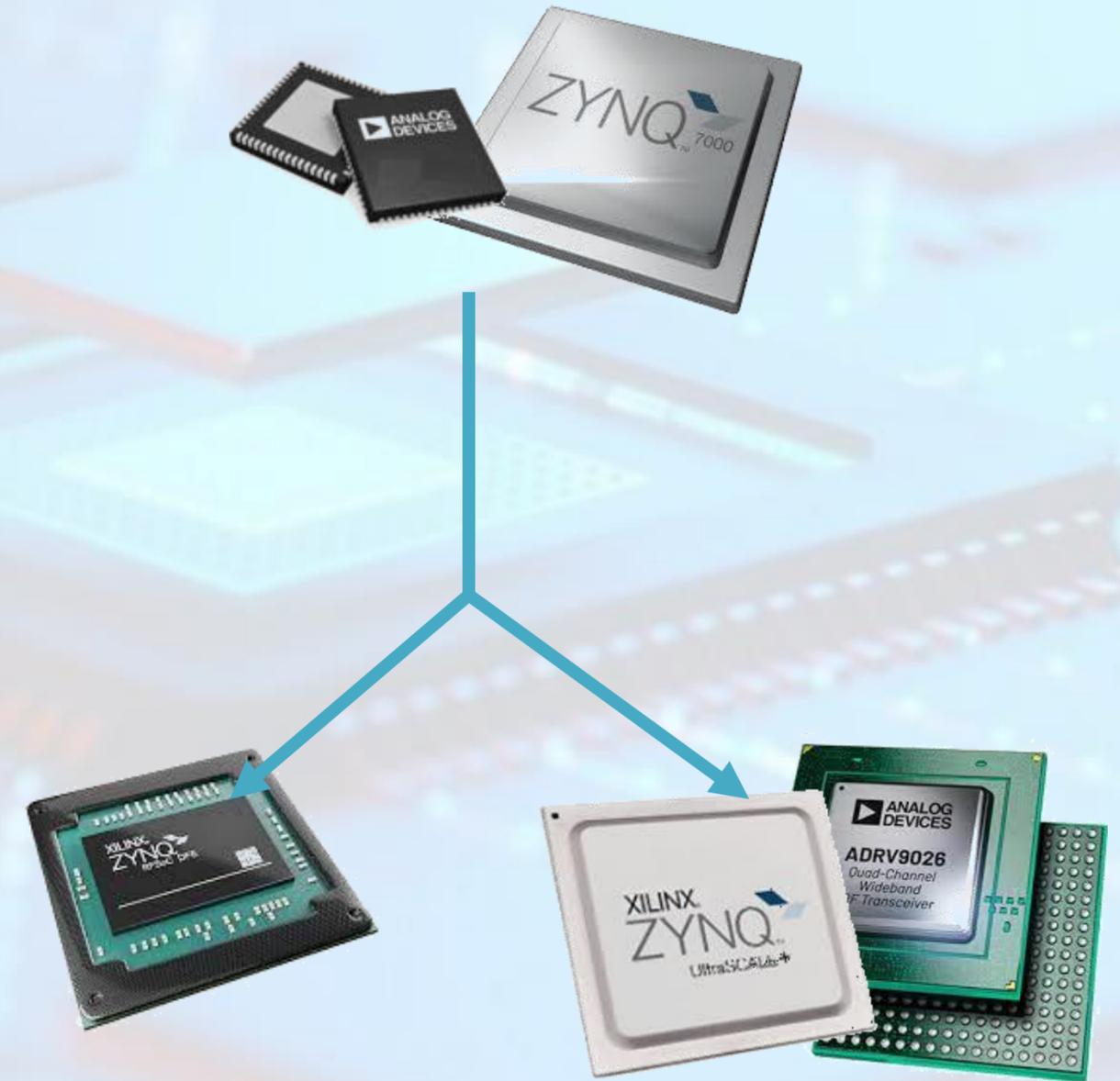
- Xilinx Zynq 7000
- Analog Device discrete DAC/ADC/LO...
- Support from 2G to 5G 100MHz FR1 1CC 4x4
- CPRI & eCPRI Split 8

► Cost Sensitive platform

- Xilinx Zynq Ultrascale+
- Analog Device ADRV902x
- Support from 3G to 5G 100MHz FR1 2CC 4x4
- CPRI, eCPRI Split 8 & O-RAN

► High End

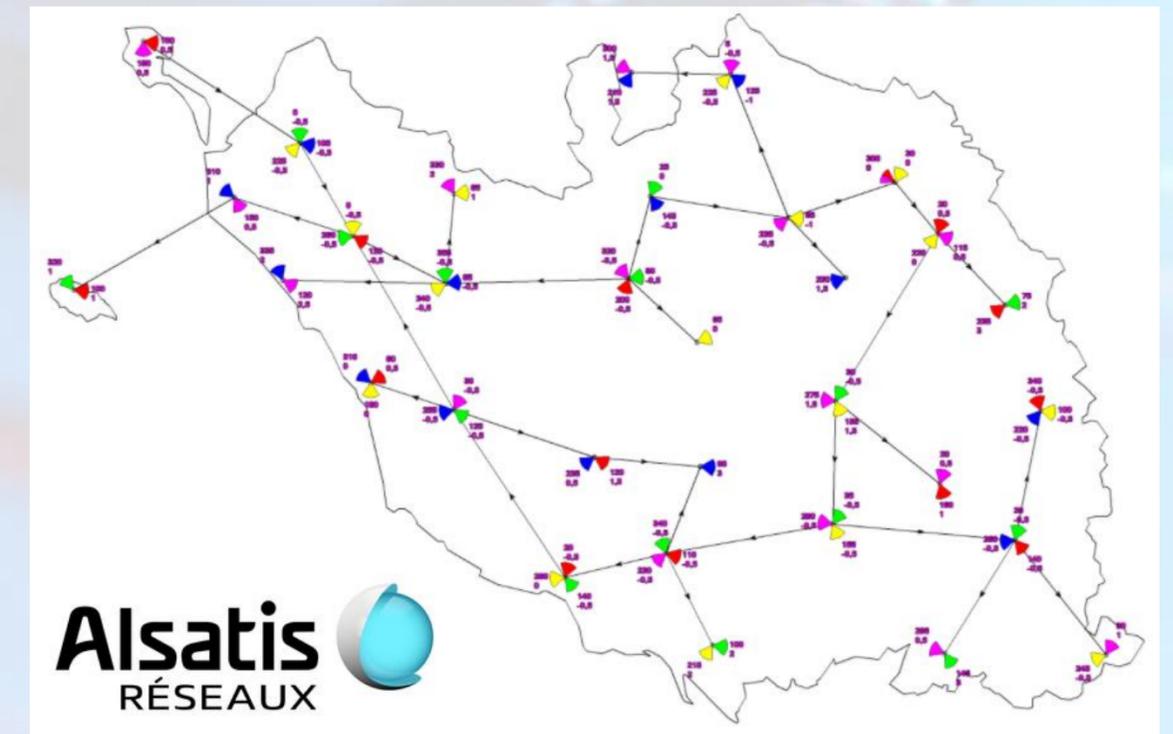
- Xilinx Zynq RFSOC DFE
- Support from 2G to 5G 100MHz FR1 4CC 64x64
- Support for 5G 400MHz FR2
- Dedicated to:
 - RAN Sharing RRH up to 8 antennas
 - Active Antennas, LEO & Stratospherical products
- CPRI, eCPRI Split 8 & O-RAN



Example

Open Ran is a reality

- ▶ Legacy Platform
- ▶ 30 LTE stations and 80 LTE cells
- ▶ Frequency: 3410-3460 MHz
- ▶ 10MHz channel
- ▶ Backbone: Optical fiber and microwave links



AW2S IN THE FIELD

AW2S has already successfully deployed its 4G/5G network solution over the world in Open-RAN:

► 5000 RRH in the field

In various frequency bands:

- LTE FDD bands 3,5,7,20,28,8
- LTE TDD bands 38,40,41,42

For several applications:



Cellular



LTE Private Networks



NB-IOT



PMR / Military



Fixed Wireless Access



5G



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