**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**
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
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 …
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:
    - Nowadays RRH
    - Private Networks

- Mandatory for Active Antenna and Ran-Sharing
  - Reduce Front-Haul Throughput
  - Beam Forming Control
    - Massive Mimo Terrestrial & Stratospherical
    - NTN Stratospherical & LEO
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