
# STANDARD WIRELESS ACCESS COMMON STACK LAYER1

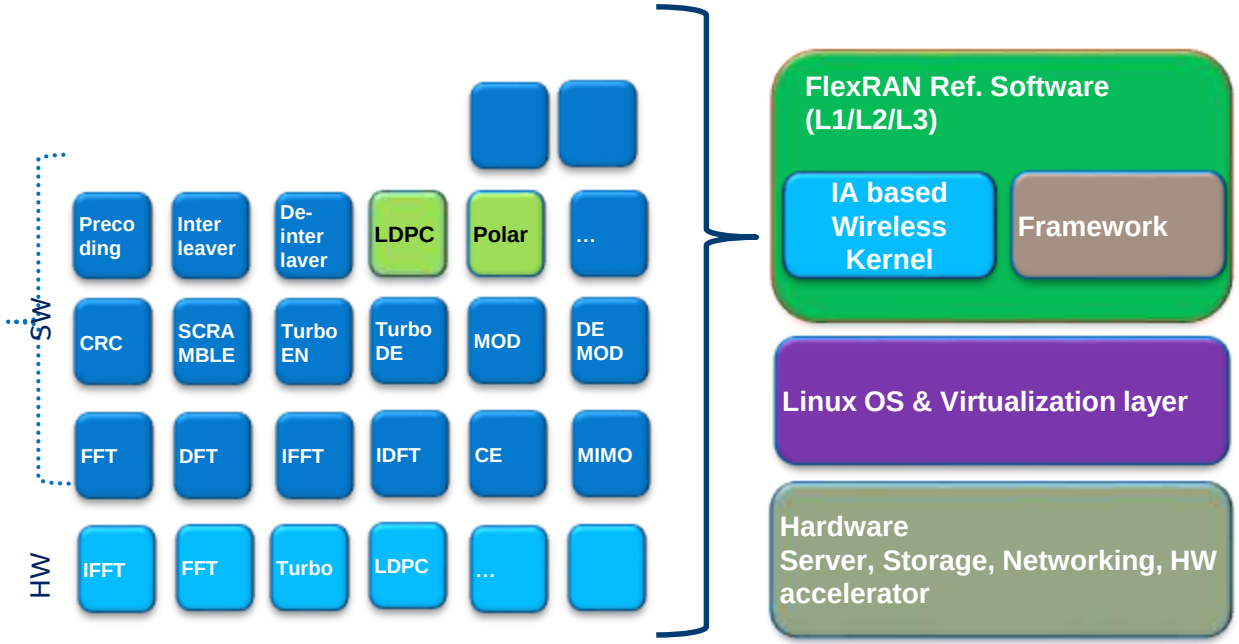
# Agenda

- Overview
- Advantage
- Folder structure Analysis
- Demo

# SDK Overview

## Optimized, high performance library for Wireless Access on IA

- Library of Wireless Access Modules
- High performance Signal algorithms
- Optimized for IA platform
- 4G to 5G



# SDK Advantages

## Modularity

- Each module has its individual source code folder and unit test
- Details will be in folder analysis

## Compatibility

- Automatically detect intrinsic type, and choose proper implementation function

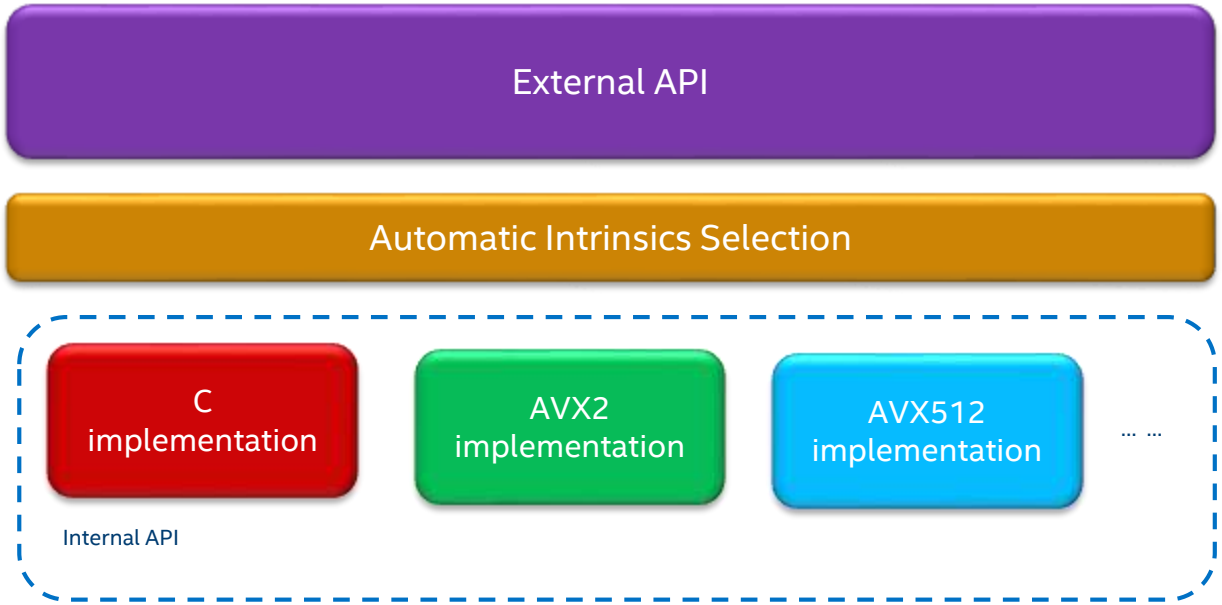
## Expandability

- SDK now focus on L1 in eNB, can be extended to high layers
- Hierarchical design, to share the same external API, and extendibility with C code, SSE/AVX II/AVX512… instruction, RTL image/driver.

## Perfect Test Environment

- Unit test based on Google test framework ( cycles, Consistency test )
- Modules integrated into RefStack

# SDK Advantages (cont.)




- All the internal APIs share the same external API
- Unique request/response structure for all the modules
- Automatic Intrinsics Selection by script and MACRO
- Doxygen for auto customer docs generation
- Cmake for cross-platform building

# Radio Access Kernel Achievement

## LTE kernels

- Cover most kernels in PUSCH/PDSCH.
- Most of them integrated into LTE RefStack, and improve the performance significantly

## 5GNR kernels

- Cover bit operation modules in fxp in PUSCH/PDSCH (CRC, Scramble/Descramble, Rate matching / dematching for LDPC)
- Some modules for modem in PUSCH / PDSCH
  - ✓ Channel Estimation in fxp
  - ✓ MMSE MIMO in fxp/flp
  - ✓ Modulation in fxp
  - ✓ Demodulation & LLR demapper in fxp
  - ✓ Layer mapper in flp
  - ✓ Phase noise estimation & compensation in flp
  - ✓ Eigen beamforming in flp
  - ✓ DMRS Gen & ZC Gen in flp
- Some fxp modules in fxp in control channel (Polar encoder / decoder)

# Folder Structure Anlysis and Demo