
VSORA

Outline

- ➢Company & Focus
- Why designing a new DSP architecture ?
- Build your own DSP
- User friendly SDK
- Cloud Hardware Platform

Company Background

- VSORA founded in 2015
- Headquarter: France, Paris area
- Each founder has more than 10 years experience in DSP design
- Focus on a new generation of DSP architecture

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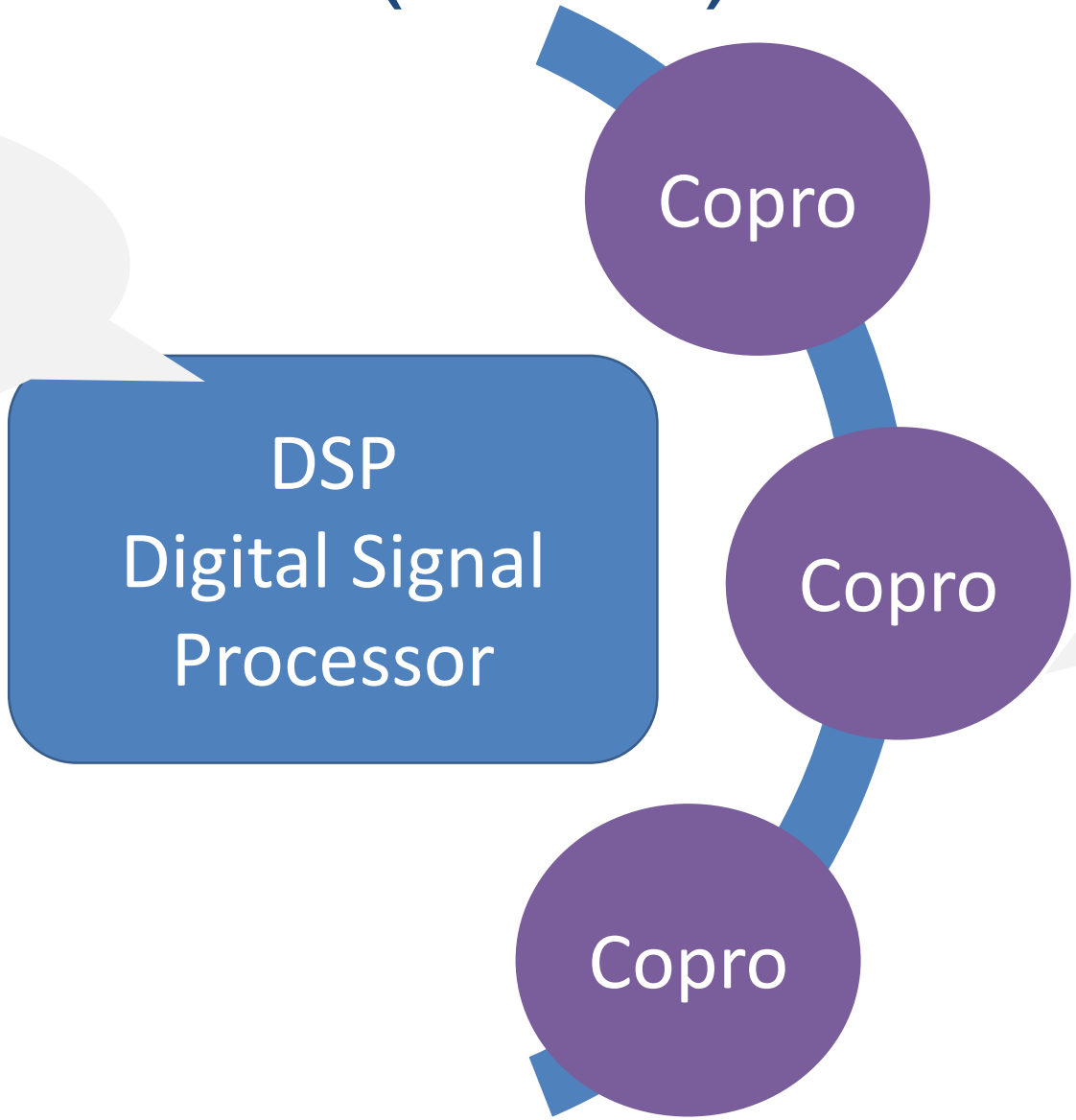
Existing solutions (4G …)

Flexible but low processing power



High processing power but not flexible

5G Baseband requirements

High Processing Power

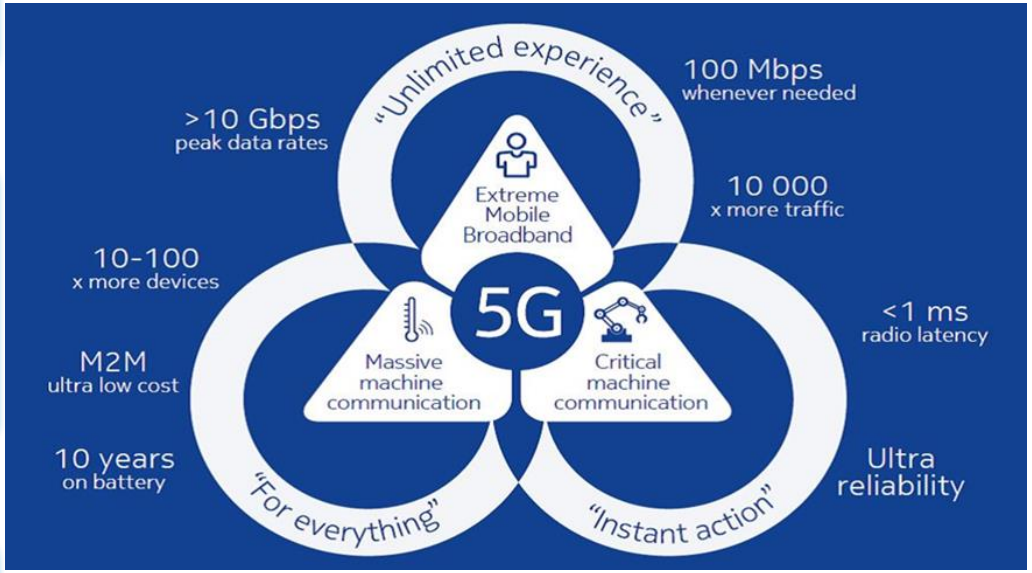
- mmWave / MiMo
- Beamforming
- Carrier aggregation

Design flexibility

- Follow market evolution
- Modem update

Complex system

- High level design flow



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Build your own DSP

BASE UNIT:

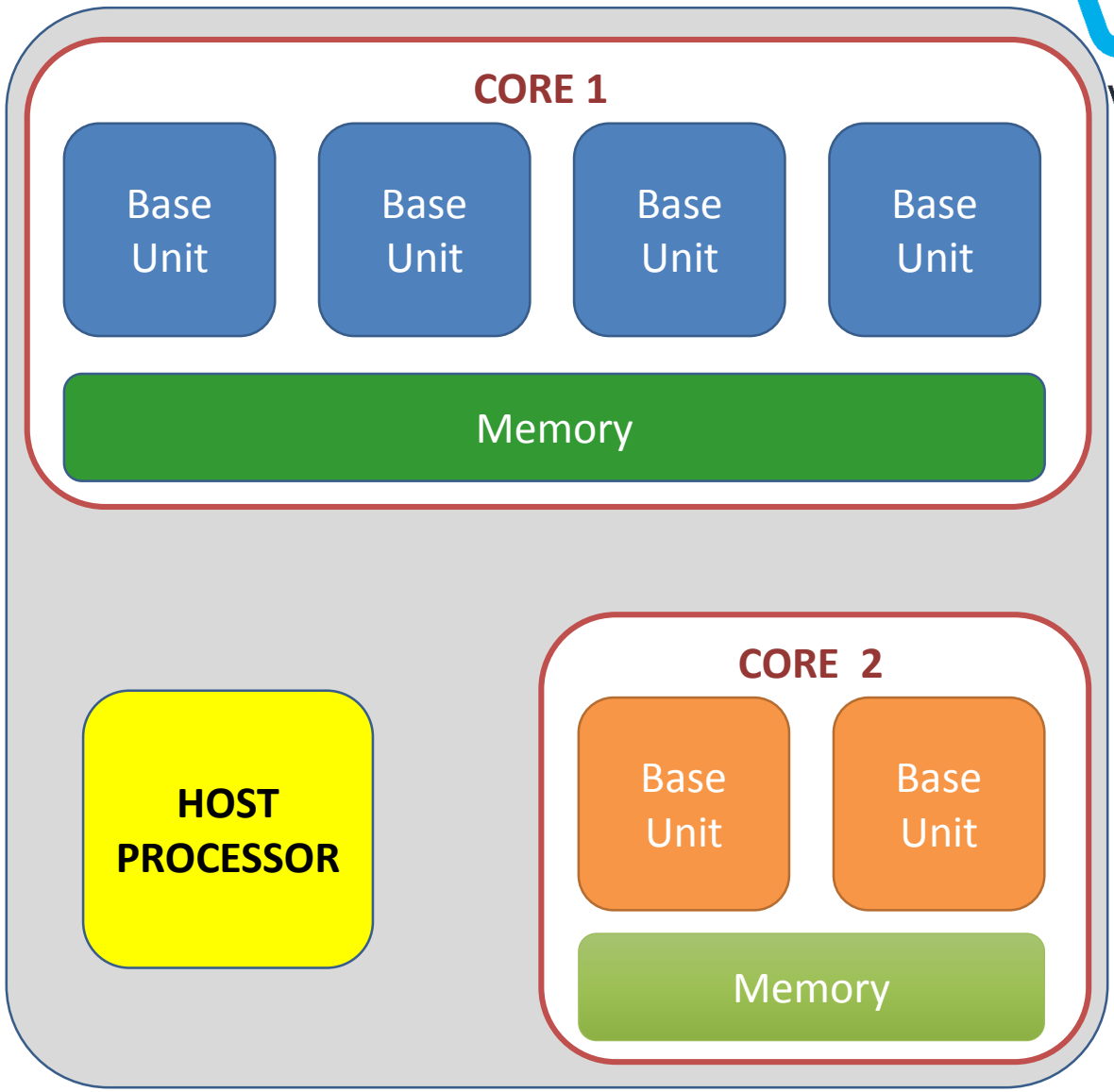
- 4 ALUs / SIMD architecture
- Native complex operators
- Floating point (IEEE 754 like)

CORE / MPU:

- Number of Base Units
- Memory size

DSP:

- Host processor
- Number of Cores
- Interface (DMA …)



High Flexibility

- Algorithms are not all suitable for parallelism (e.g: Cholesky decomposition, …)
- Need to adapt MPU-ALUs topology to the algorithm implementation
- No Specific Hardware

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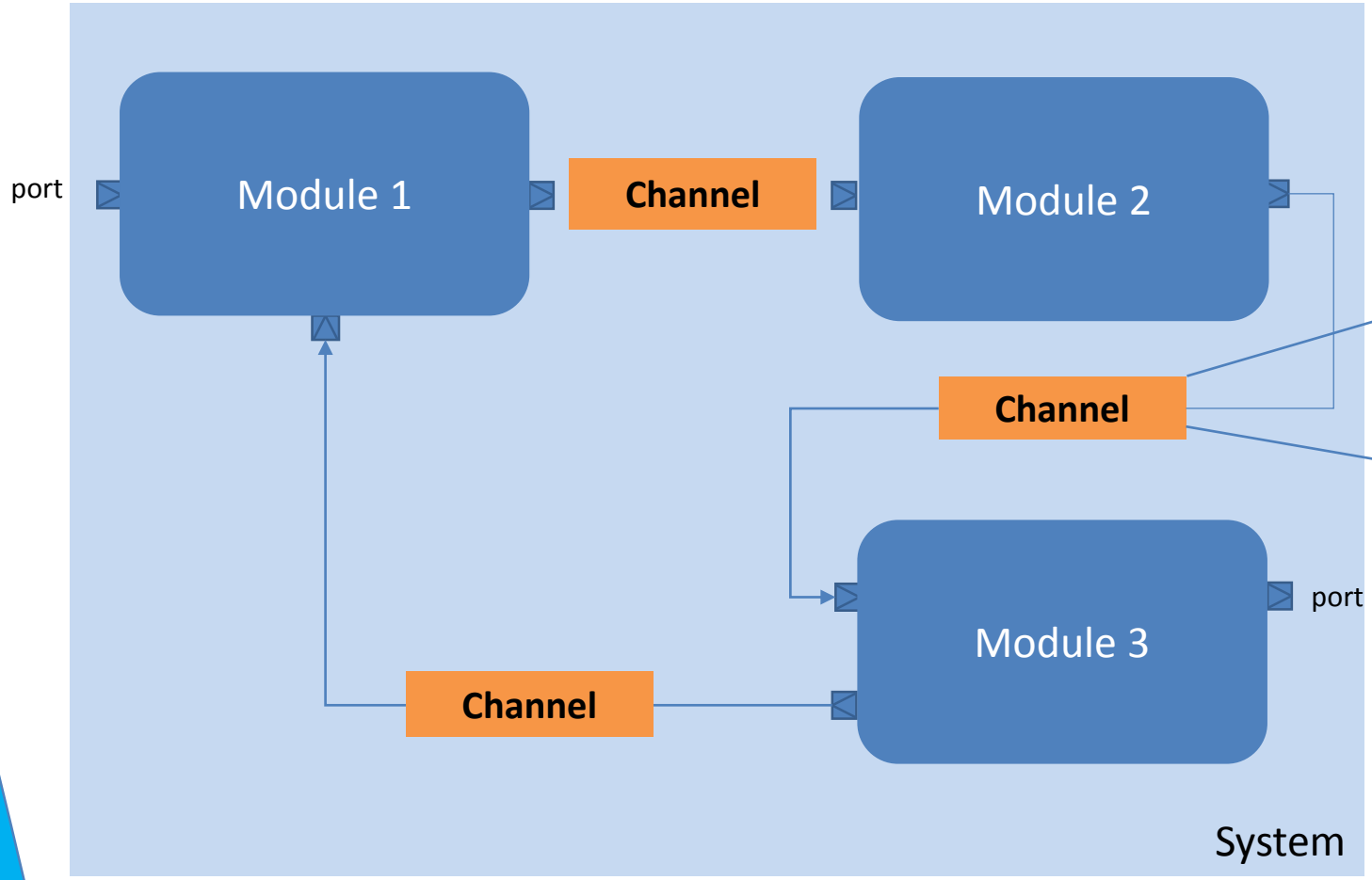
DSP to be used by signal processor engineers

- C++ library defining matrix 1D, 2D, 3D
- Matlab like coding
- OS, Real time issues behind the curtain
- One single code through all steps of development

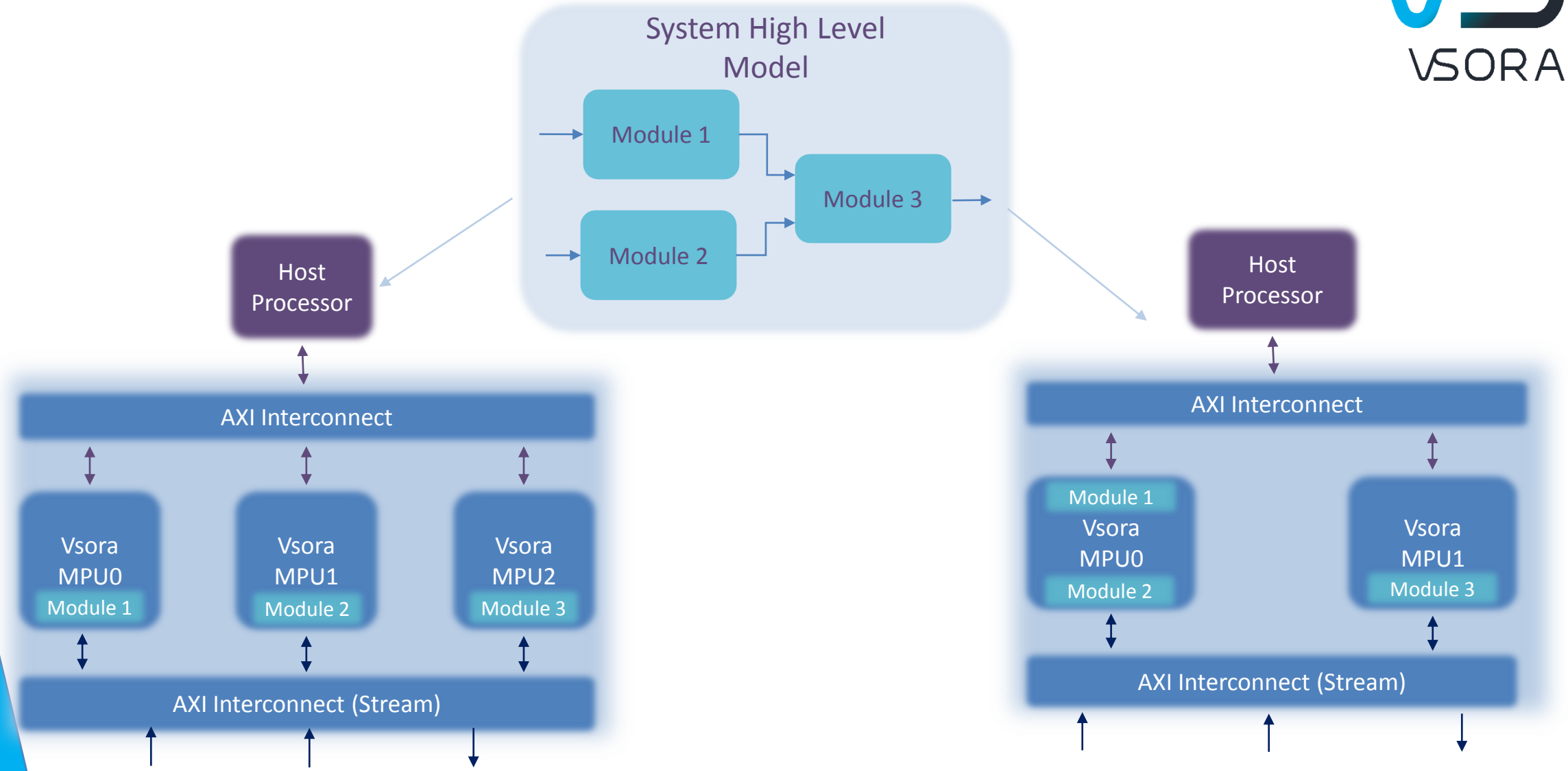
System split into Modules



- Abstracted at system level
- Defined in configuration file

- Transparent
- DMA
- IPC Socket (Linux Queue / IP)
- …

System to multi-core mapping



End user impact

- Cell Phone baseband performance:
  - Upgraded through SW update
- Solution matures faster without necessary new Silicon re-spin
- Baseband algorithms can be adapted to the network.

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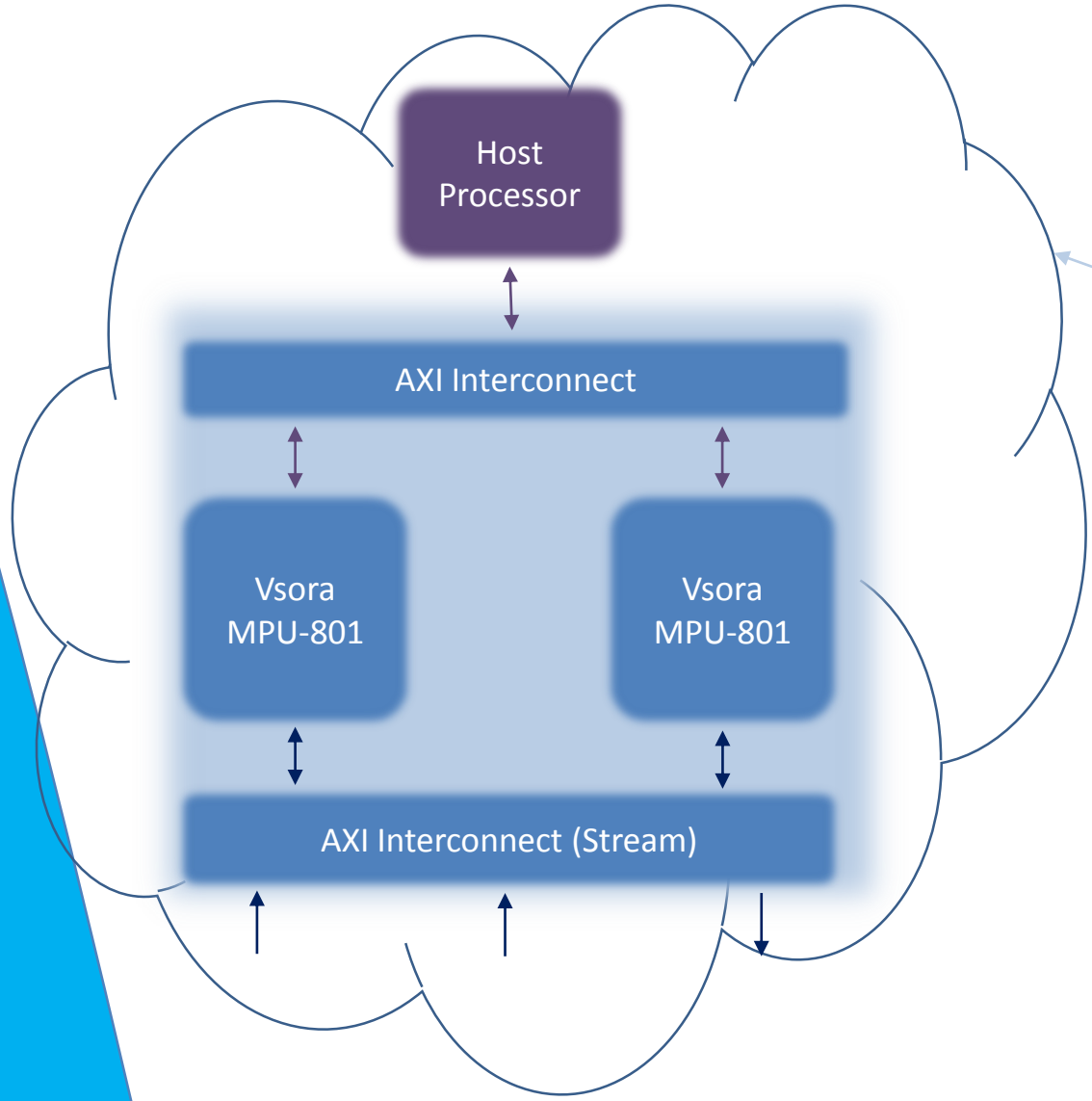
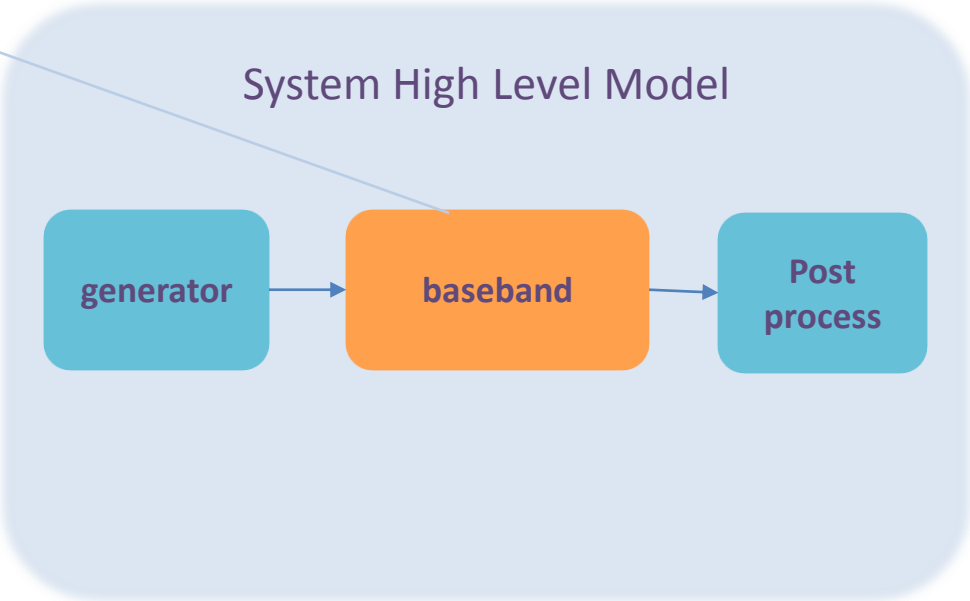
➢Cloud Hardware Platform

System to the cloud FPGA mapping





Key elements

Easy to use	• Matlab-like code to a system running almost real time within few seconds
Availability	• “Unlimited” number of platforms
Cost	• Usage-basis cost (few $ per hour)

Key differentiating factors

High Efficiency	• Signals handling in Hardware • Multiple-instructions per cycle
High Flexibility	• Macro-instructions to get rid of Coprocessors
Customizable	• Computing power • Computing accuracy
Development flow	• Matlab-like code • Easy to use • Single dev platform for all engineers • FPGA cloud platform

Thank you