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Acceleration of emerging telecom applications using FPGAs in the cloud

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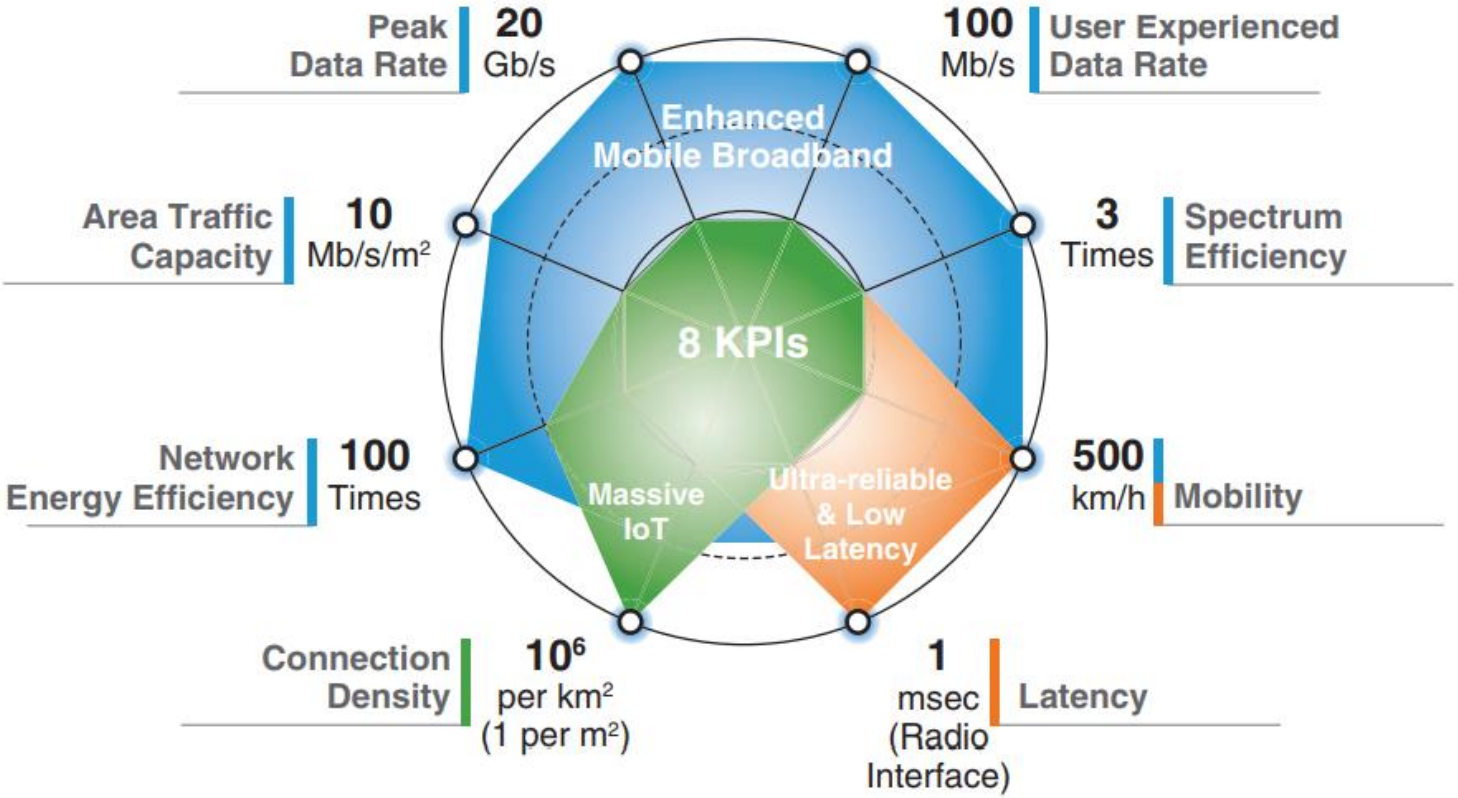
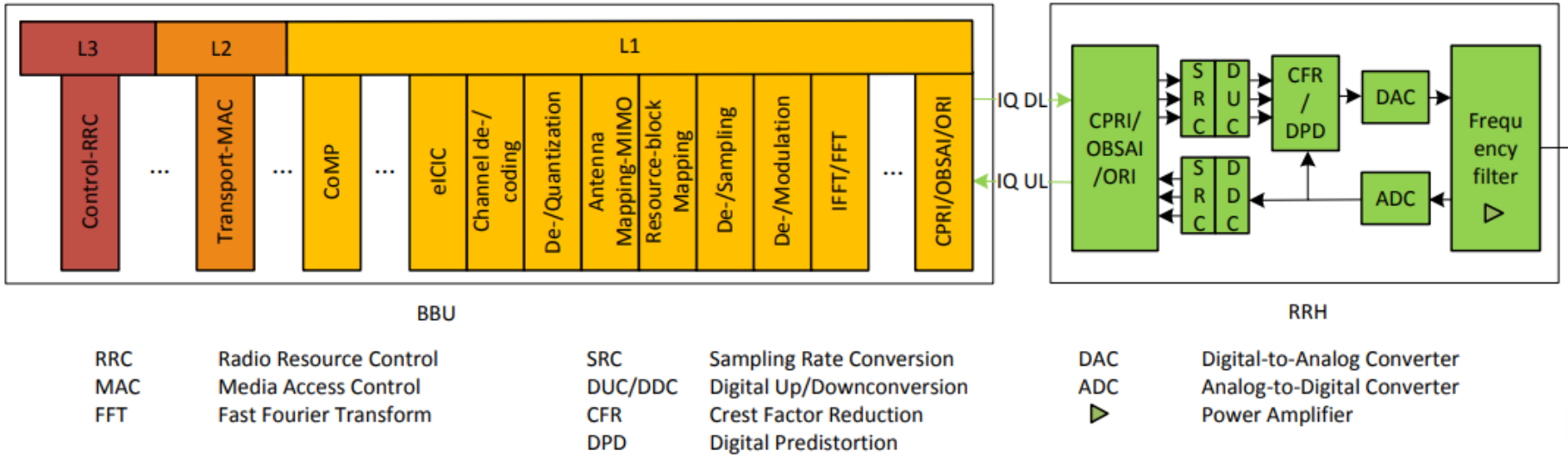
5G complexity vs 4G



New technologies such as **massive MIMO, multiple antenna, and frequency bands**, increase the complexity **100** times that of 4G.

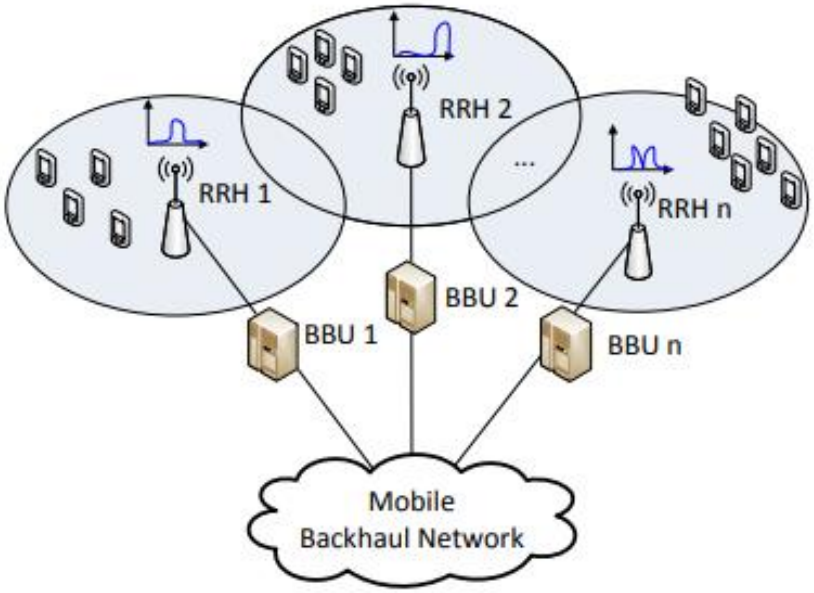
Source: ETRI RWS-150029, 5G Vision and Enabling Technologies: ETRI Perspective 3GPP RAN Workshop Phoenix, Dec. 2015

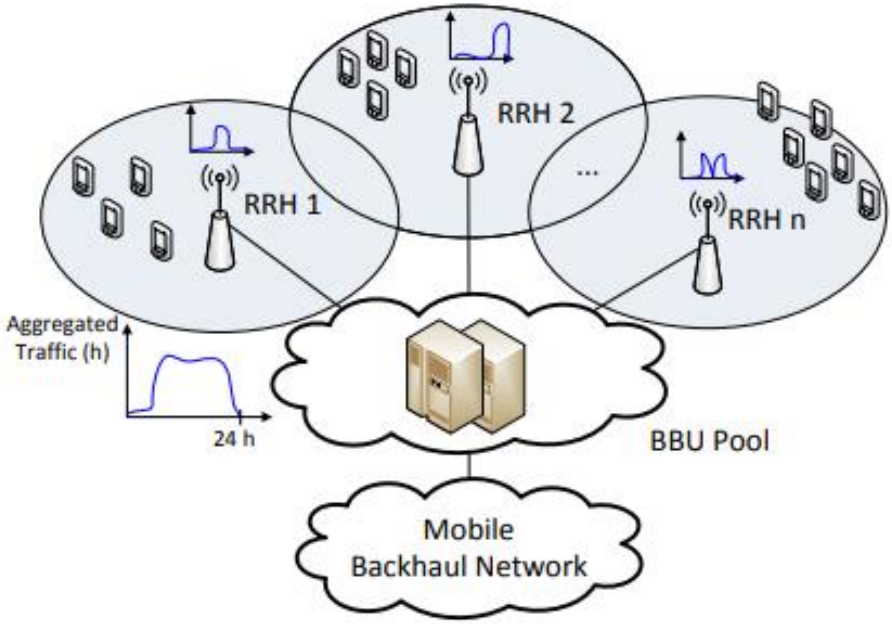
Processing requirements in 5G



- Baseband processing requirements

Shift to CloudRAN





More processing power shifting to the Cloud

Data Center applications

Hardware acceleration

Hardware acceleration is the use of specialized hardware components to perform some functions faster (10x-100x) than is possible in software running on a more general-purpose CPU.

- Hardware acceleration can be performed either by **specialized chips (ASICS)** or
- By programmable specialized chips (**FPGAs**) that can be configured for specific applications

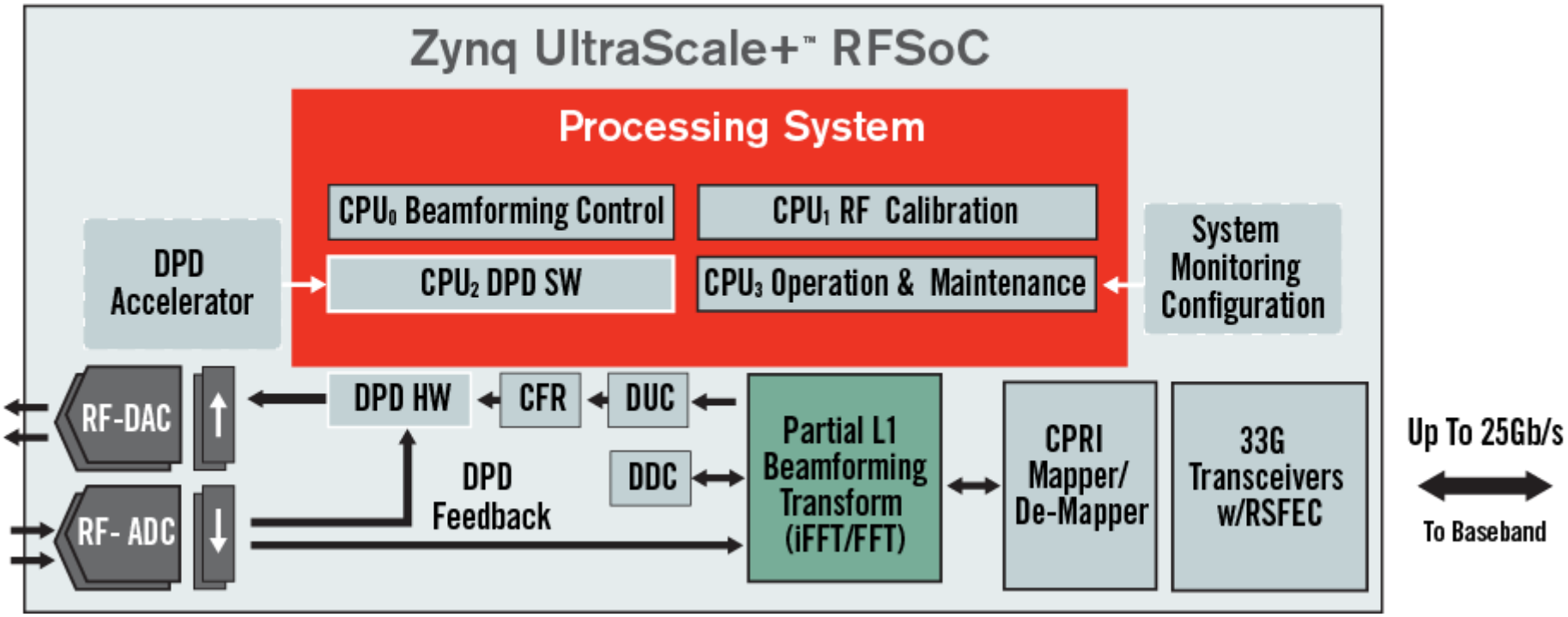
Accelerators in the cloud

Accelerated Cloud Service Partners

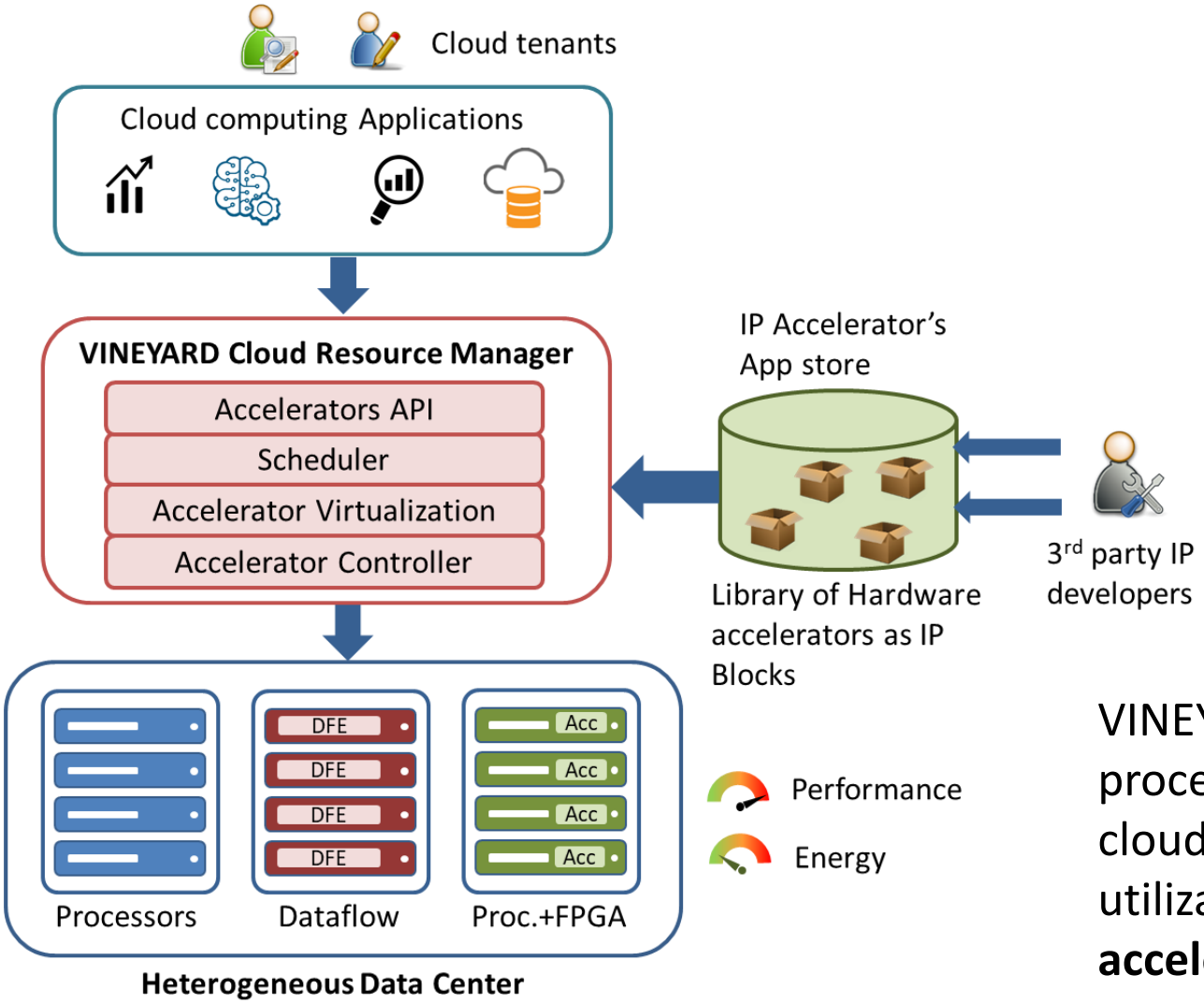
Click to learn more

Alibaba Cloud aws Baidu HUAWEI NIMBIX Tencent Cloud

FPGAs for 5G on the edge



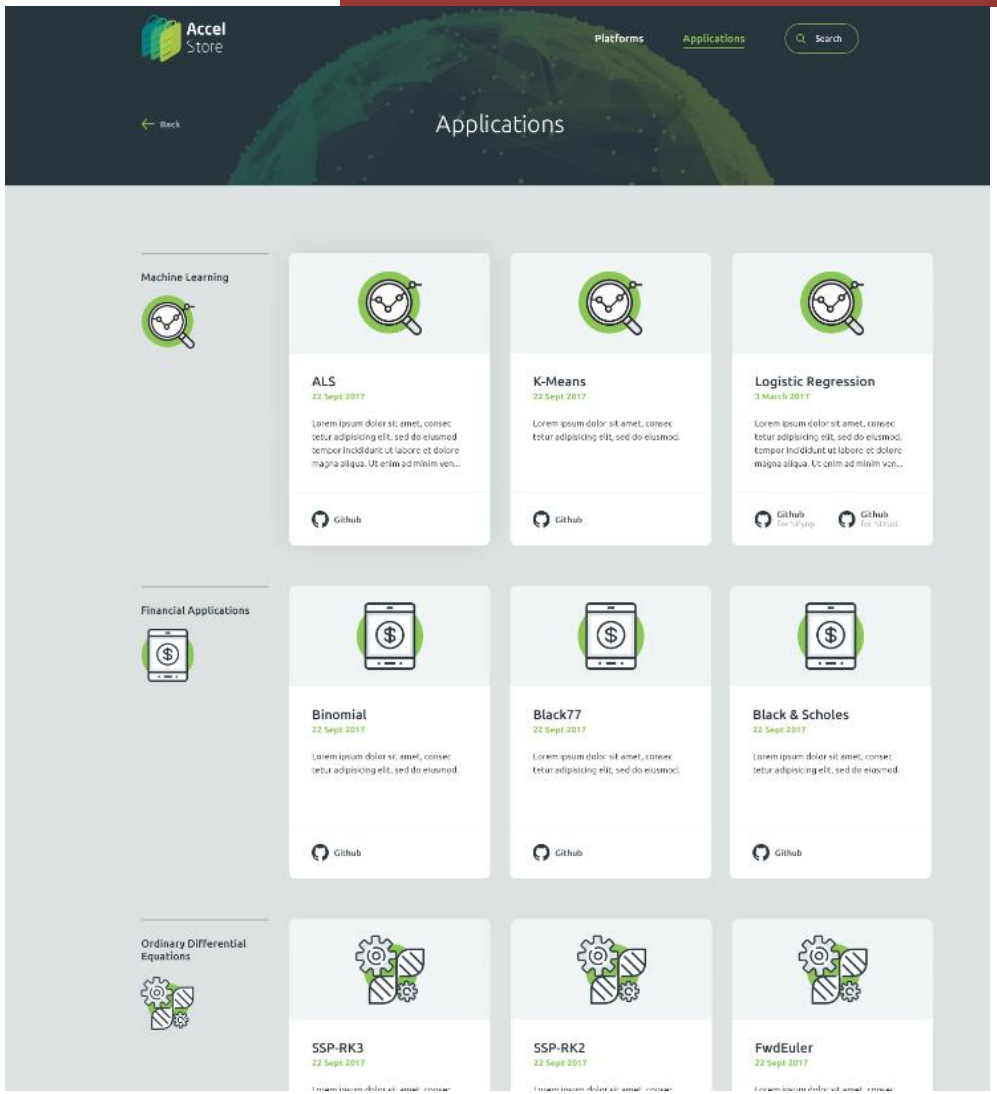
VINEYARD H2020 project



VINEYARD
Versatile Integrated Accelerator-based Heterogeneous Data Centers

VINEYARD aims to face the processing challenges in the cloud by the efficient utilization of **hardware accelerators**

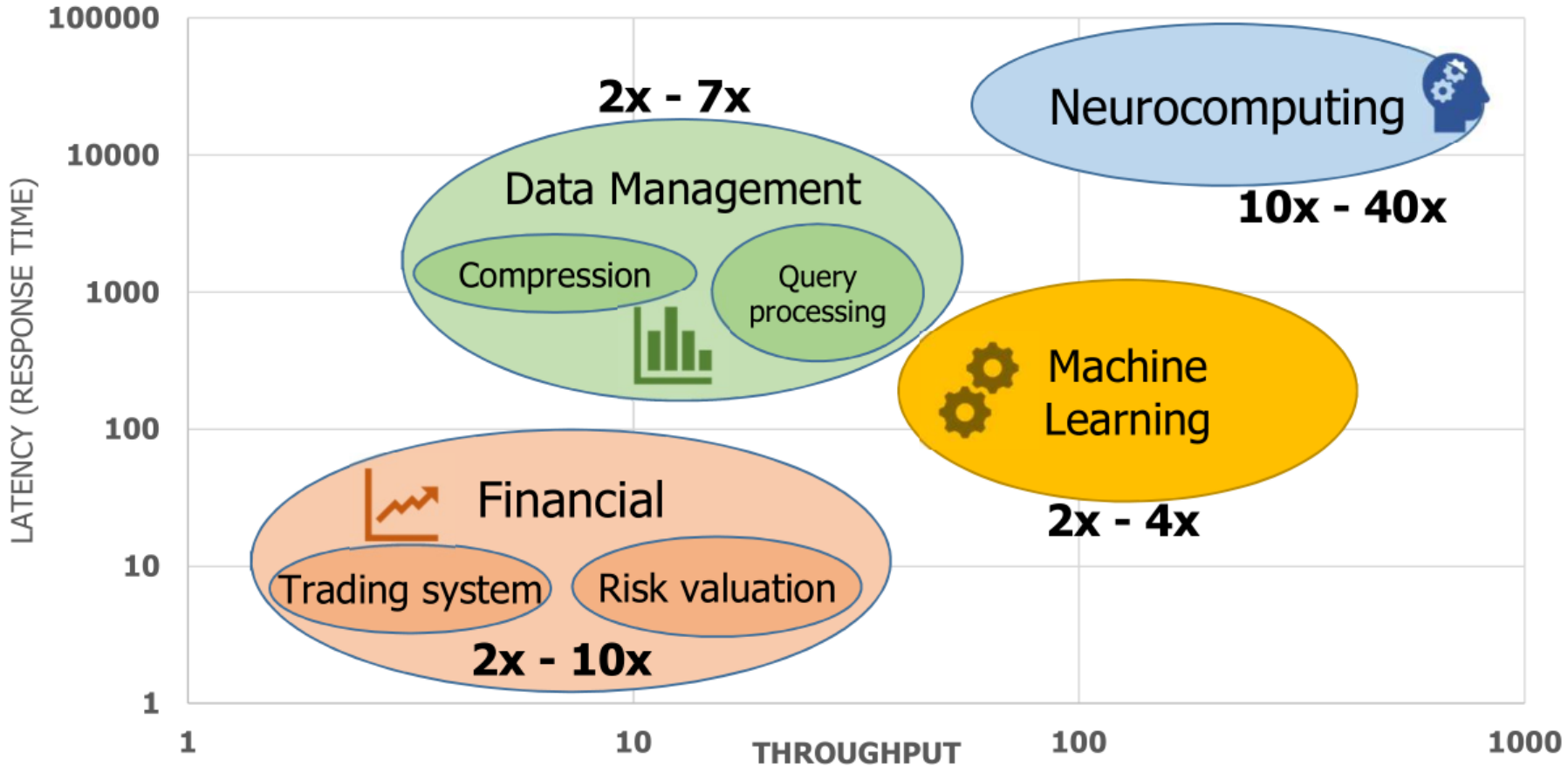
Repository of accelerators



- Marketplace for accelerators
- Encryption
- Compression
- ML
- Pattern Matching
- Data analytics

Applications Acceleration

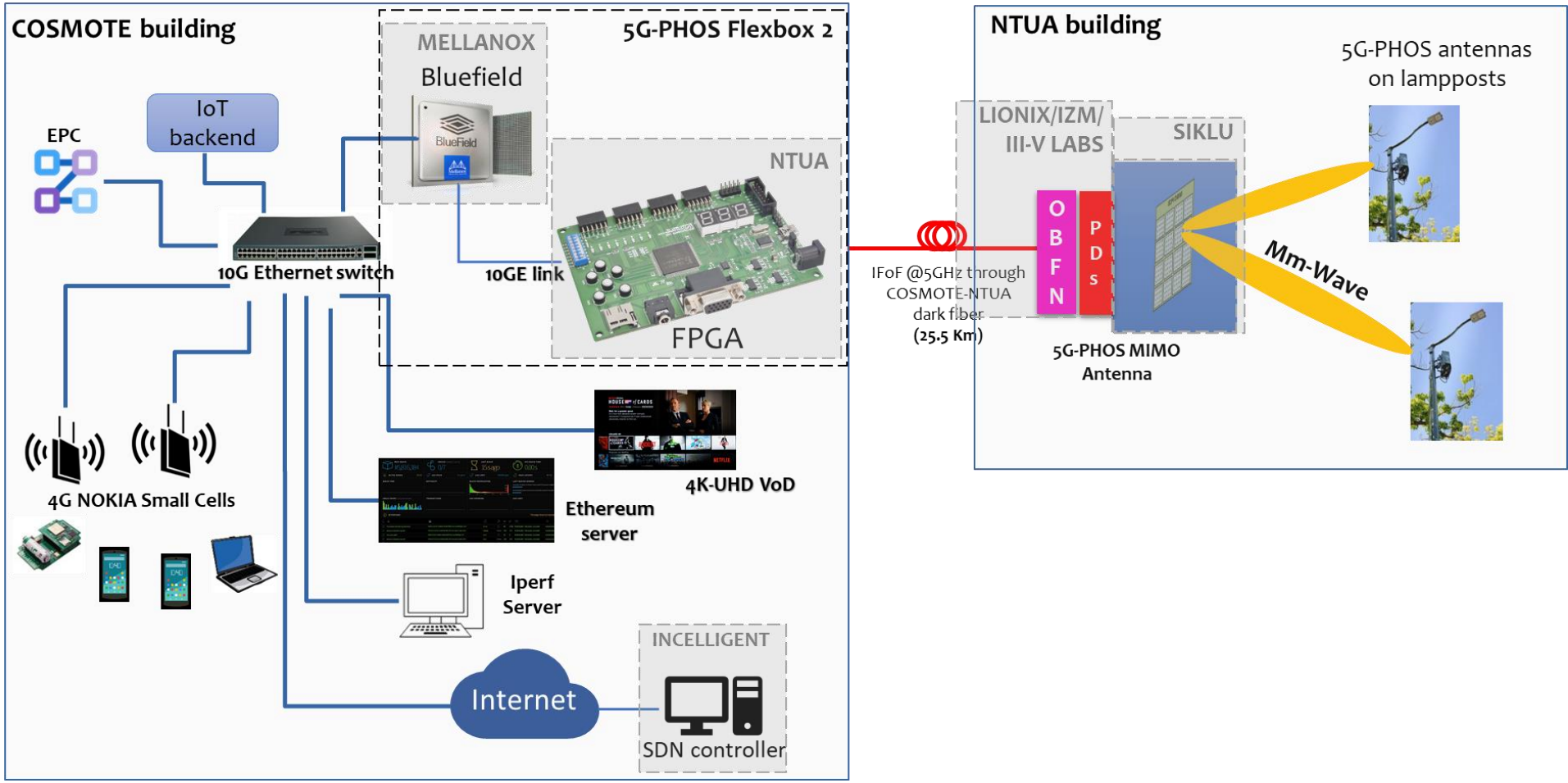
Applications evaluated based on the requirements



5G phos H2020 project

5G integrated Fiber-Wireless networks exploiting existing photonic technologies for high-density SDN-programmable network architectures

Use of specialized accelerators for 5G processing



OPPORTUNITIES FOR ACCELERATION

inaccel

3x-10x Speedup

2x Lower Cost

No code changes

www.inaccel.com

Questions?

- Adaptive architecture for the processing challenges in the 5G to
  - Increase
    - Performance
  - Reduce
    - Cost
    - Latency