

# Edge-to-cloud computing infrastructure inspired by the emerging needs of Telco applications.

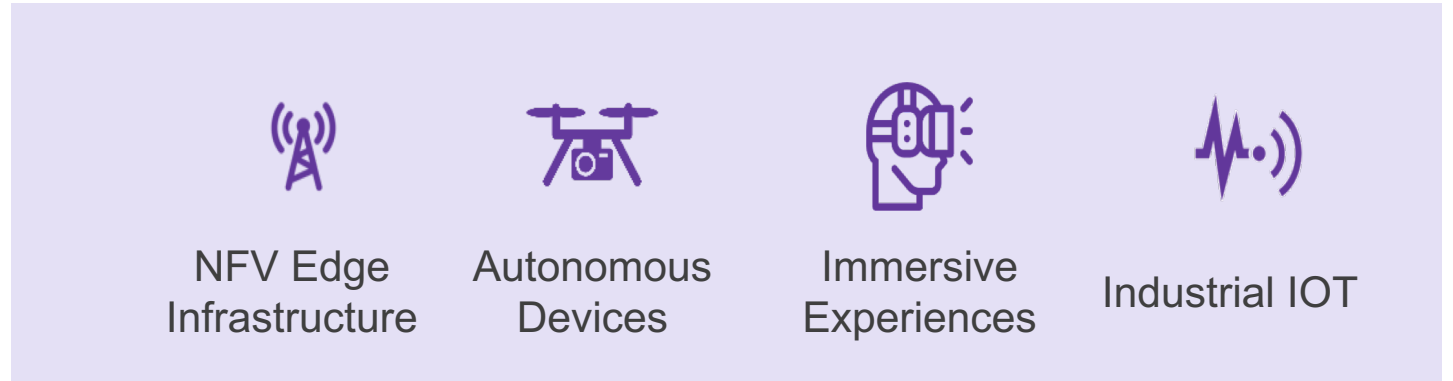
April 14th, 2019 – 11:00 AM – 11:30 AM

Kandan Kathirvel – Director, AT&T. TSC-Chair, Akraino



# Why Edge Computing?

Emerging technologies are demanding lower latency and accelerated processing at the edge



## Edge Cloud

Performs data processing at the edge of the network, near data sources

Low-Latency  
< 20 ms

Optimal



## Central Cloud

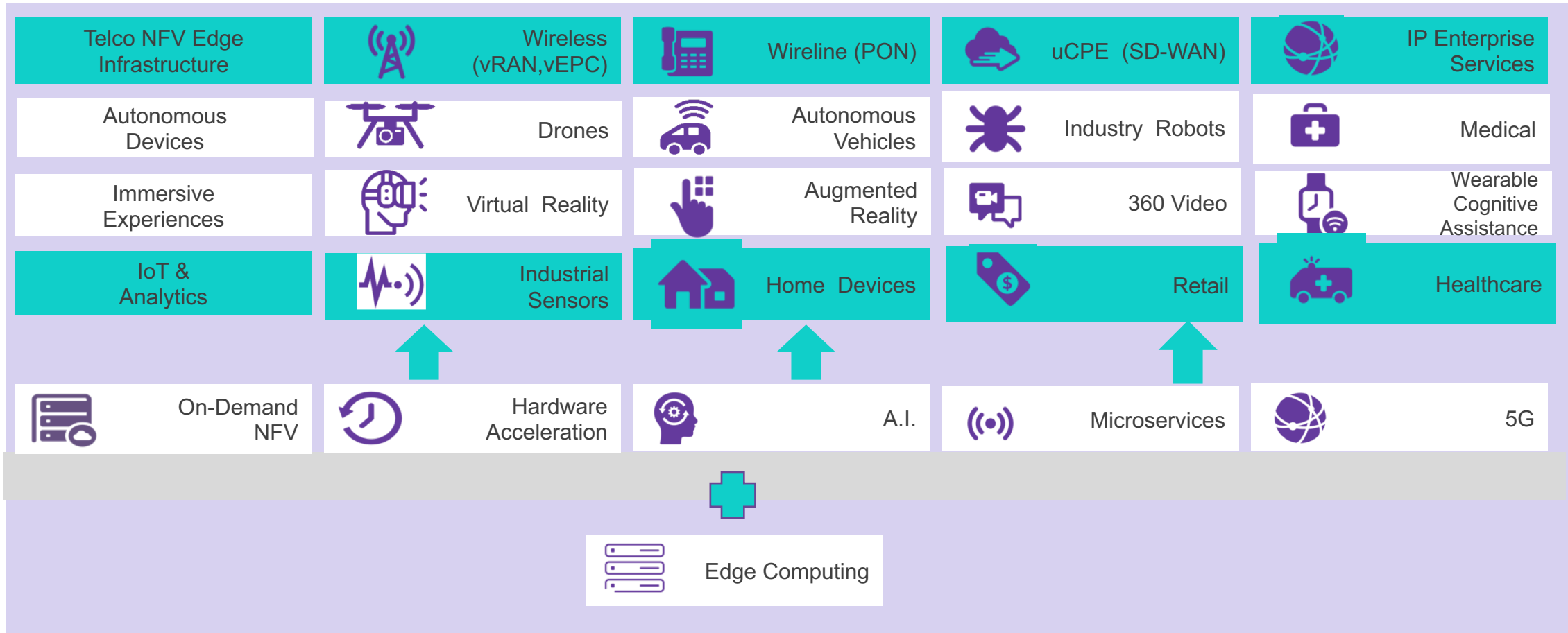
Highly centralized computing resources of cloud service providers

High-Latency  
~25-200 ms

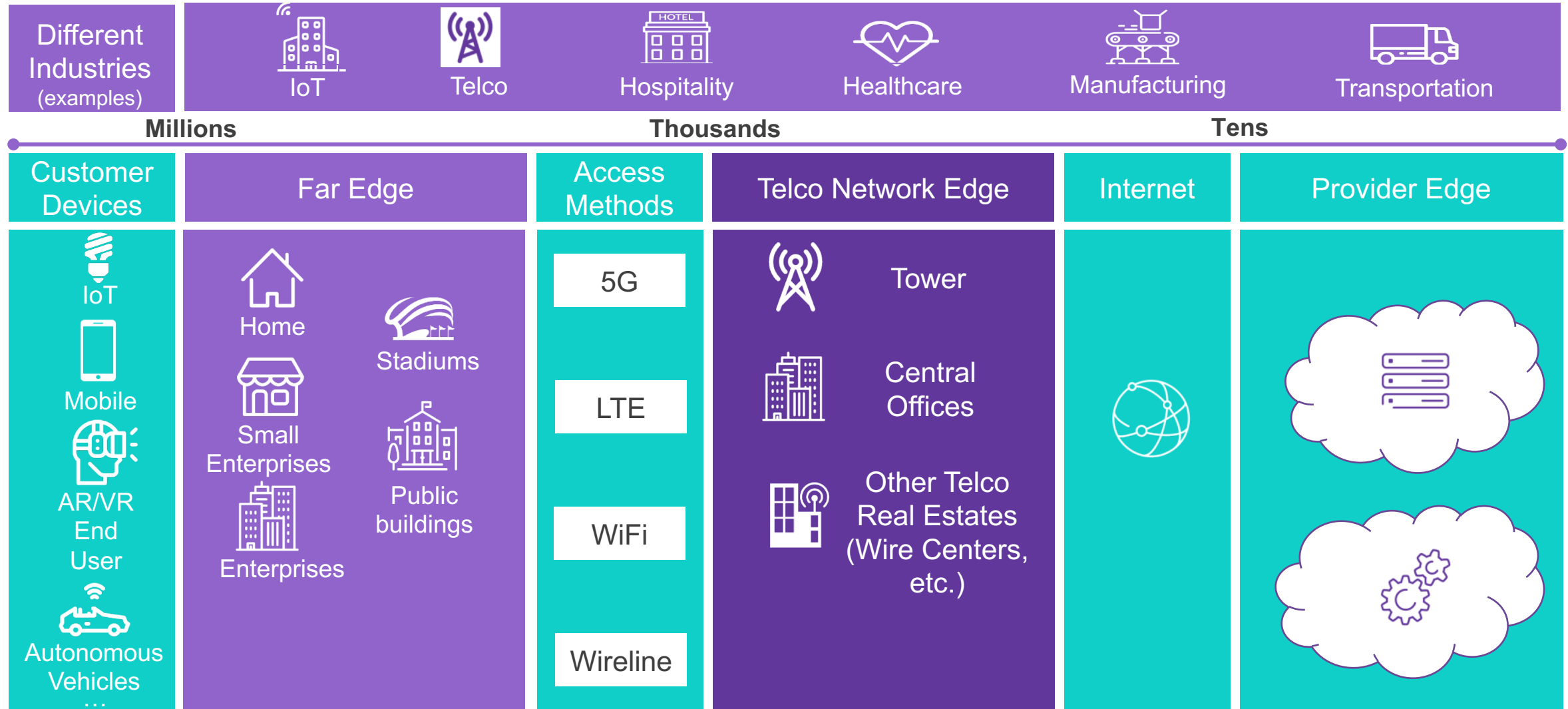
Not Optimal

# Emerging Technologies in IOT and Networks

are demanding lower latency and accelerated processing at the edge



# Akraino Supports Telco, Enterprise, IOT,... use cases & variety of edge deployment types



# LF Edge - Founding projects

Bringing several Edge verticals and domains under one umbrella



EDGE X FOUNDRY™



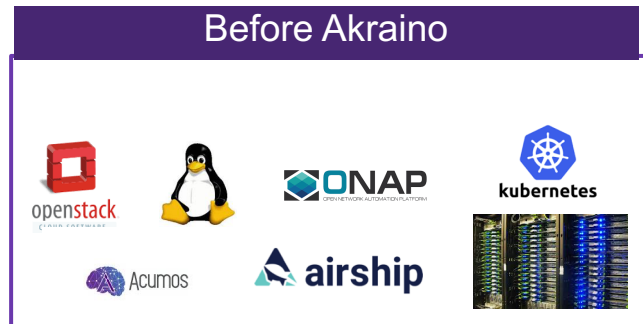
OPEN GLOSSARY  
OF EDGE COMPUTING

## Platinum Members:

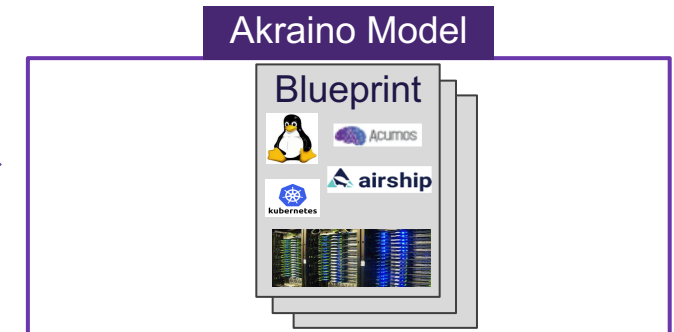


60 + Members already

# Why Akraino Edge Stack?



- User integrates multiple opensource
- Multiple gaps
- No integrated solution for Edge use cases
- Complex CI
- No guaranteed working of the solution



- Akraino Community Integrates multiple opensource for edge use cases.
- Bridge gaps (development of code in upstream and at Akraino)
- Fully integrated solution
- Simple CI
- Validated with multiple testing

# Akraino Blueprints

The Akraino Edge Stack community delivers fully integrated, “ready and proven” Edge Stacks

Real use case driven & Architecture Agnostic

Akraino Blueprints



## Edge Use Case Driven

Development of features to support fully functional Edge Solution.



## Integration of Multiple Opensource Software

Fully Integrated Edge Stack



## Production Readiness

Multiple Validations with declarative stack



## Bridge gaps & Standardize Edge Features and APIs

Compliant and Secure



## Vendor Support Eco-system

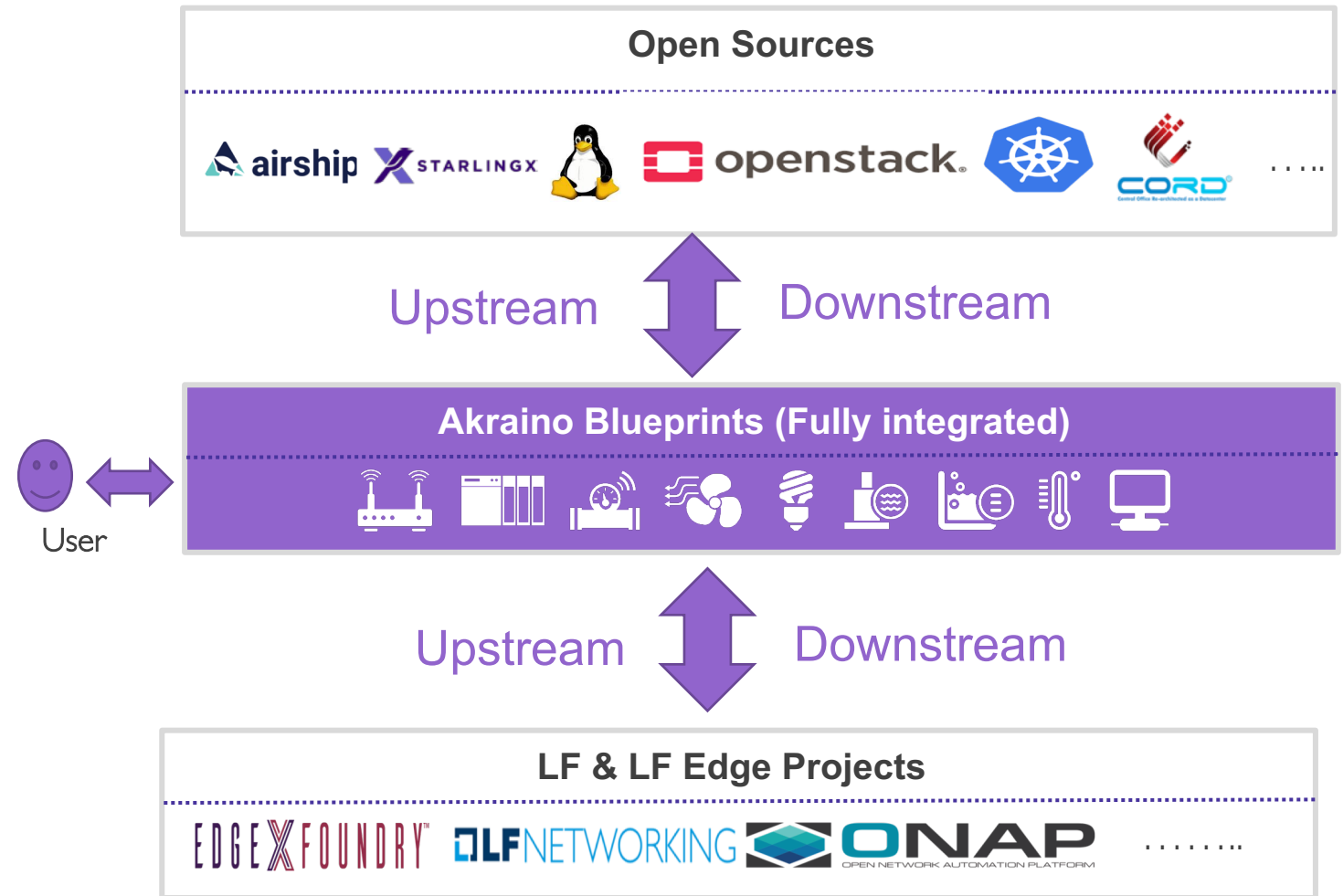
Suppliers and Users upfront collaboration

# How Akraino fits in the opensource eco-system?



## Facts

- › Akraino is complimentary to many opensource projects
- › Akraino uses many of the upstream opensources within its blueprints
- › Many opensources could use Akraino blueprints
- › Users gets fully integrated, “ready and proven” Edge Stacks





# Akraino Blueprints - Incubation Projects

Note: Companies listed and blueprint listed are not an exhaustive list.

## IOT & Far Edge Use Cases

**NOKIA**

**Micro MEC**

Can be installed on light poles, vehicles, etc...  
Target Industry: Smart City, Far Edge Cloud



**Edge Light & IoT**

uCPE use cases, IoT appliances  
Target Industry: Manufacturing & Customer Premise



**Time Critical Edge Compute**

IoT use cases, appliances  
Target Industry: Manufacturing, IoT & Safety

**arm**

**Integrated Edge Cloud**

IoT use cases, appliances  
Target Industry: Remote Edge Locations

## Telco Use Cases



**Radio Edge Cloud**

Cloud appliance to address ORAN RIC requirements  
Target Industry: Telco – Radio Edge



**SDN Enabled Broadband Access**

Virtual broadband access – higher bandwidth, symmetric version of GPON  
Target Industry: Telco – Access



**Network Cloud**

Telco 5G use cases and beyond  
Target Industry: Telco – 5G and generic use cases. Airship Based



**Tungsten Fabric Integration**

Enhancement to NC blueprint to support Contrail Tungsten Fabric

## Other Use Cases



**OVS-DPDK Integration**

Enhancement to NC blueprint to support OVS-DPDK

**arm**

**ARM Servers/Appliance**

Enhancement to NC blueprint to support ARM Servers & Appliances



**Kubernetes Native Infrastructure**

Focused on Native Container workloads  
Target Industry: Industrial Automation



**StarlingX Edge Cloud**

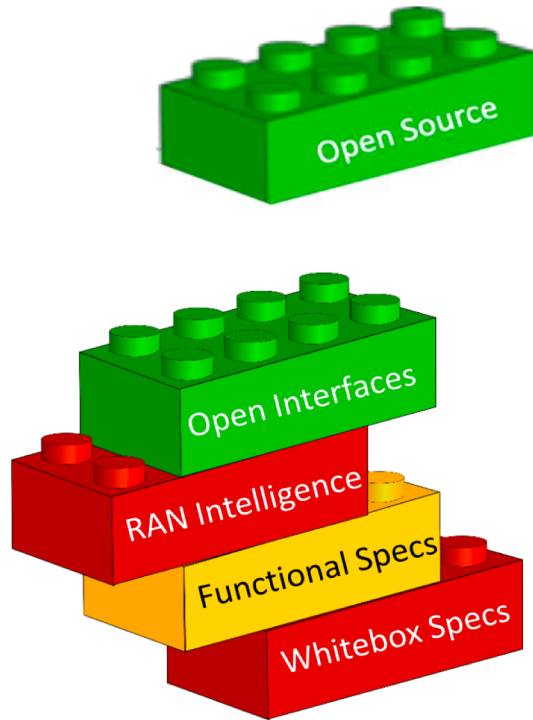
Addresses Industrial Edge Usecases  
Target Industry: Far Edge Automation

**Connected Car**  
Connected Car use case

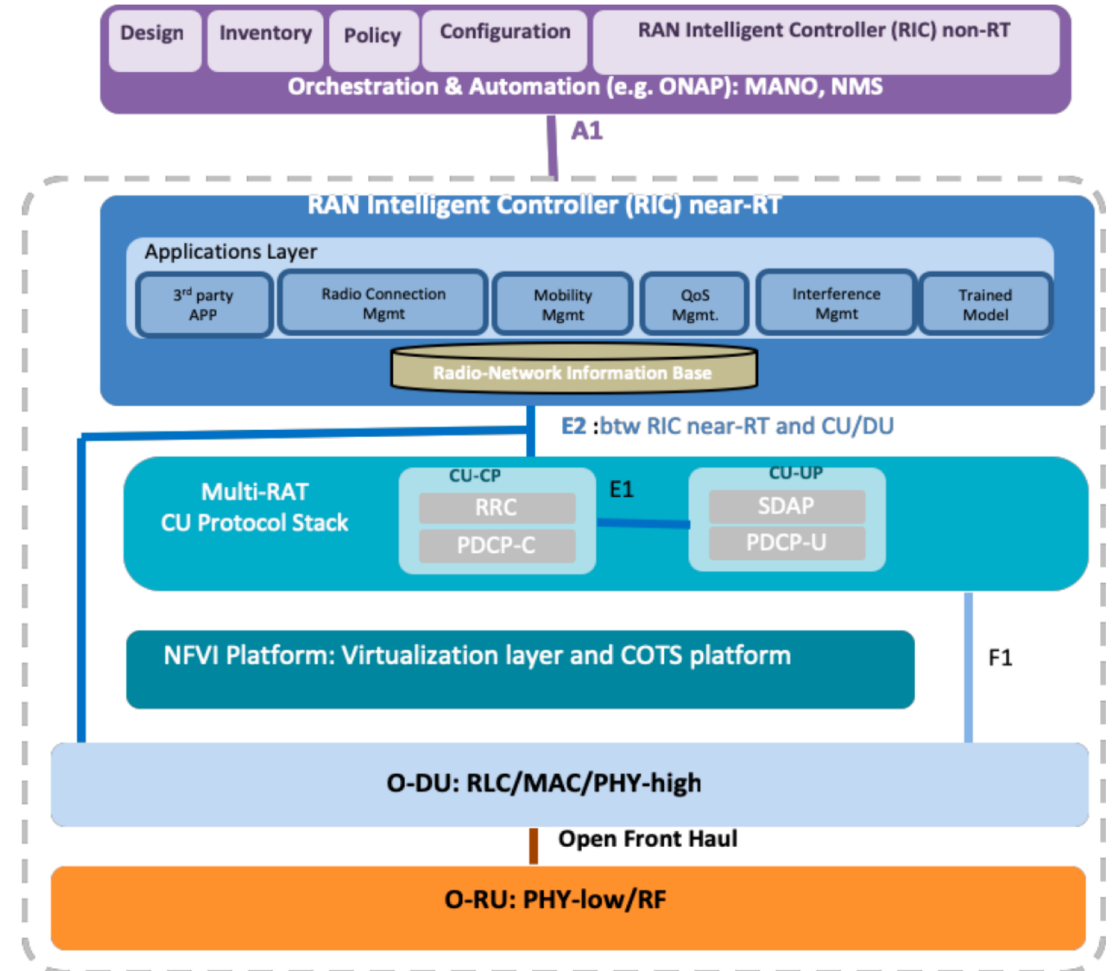


# Mobility Core to RAN virtualization

## The O-RAN Architecture



O-RAN Alliance is aiming at building an “Open” and “Smart” Radio Access Network (RAN) for future wireless systems



# Technology Gaps - Where Academia could help?

- › AI/ML based efficient algorithms to handle data placement and movement between Edge to Cloud and vice versa -
- › Real time processing using Virtualized compute on COTS
- › Efficient large scale distributed real-time databases
- › Low latency Edge APIs (Application, RAN, Cloud, etc.) definition and test results
- › Cost effective Hardware acceleration at a small scale edge devices

# Akraino Community Progress

## Akraino Release 1 Highlights



- **8+ Blueprint Families with 19+ Blueprints under development to support variety of Edge use cases.**



- **Community Development started in Jan'19 and 1st release targeted in 2Q2019**

# Akraino Community Lab

## Lab Collaboration



- **Akraino blueprints are validated in the dedicated validation labs**



- **Akraino hosts community lab for additional validation of blueprints**



- **Automated testing of blueprints**

# Akraino Edge Stack Technical Community

## Technical Community Collaboration



- **Akraino Technical Community Calls take place once a week as a platform to discuss:**
  - **New Project Proposals**
  - **Collaborate with other communities**



- **Community Calls Occur weekly on Thursdays' at 11:00am-12:00pm ET**

# How to get involved..

- › Join Akraino Community Events and calls
- › Join the projects' mailing lists and participate in the discussions

## Key Links:

Website:

<https://www.lfedge.org/projects/akraino>

Wiki:

<https://wiki.akraino.org>

Gerrit:

<https://wiki.akraino.org/display/AK/documentation>

Mail Lists:

<https://lists.akraino.org/g/main>

Blueprints:

<https://wiki.akraino.org/pages/viewpage.action?pageid=1147243>

Calendar:

<https://wiki.akraino.org/display/AK/Akraino+TSC+Group+Calendar>

