

# SESSION: CURRENT AND NEW OEC WORKSTREAMS

OVERVIEW CURRENT OEC WORKSTREAMS

ROLF

ALIGNMENT BETWEEN CLOUD EDGE AND TELCO EDGE

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# Update on OEC Workstreams

## **Overview Current Workstream from OEC Spring Workshop (May 2019)**

- Living Edge Lab
- Global Edge Developer Lab
- Edge Platform API Convergence
- Common Enablers for Telco Edge Products (on hold)

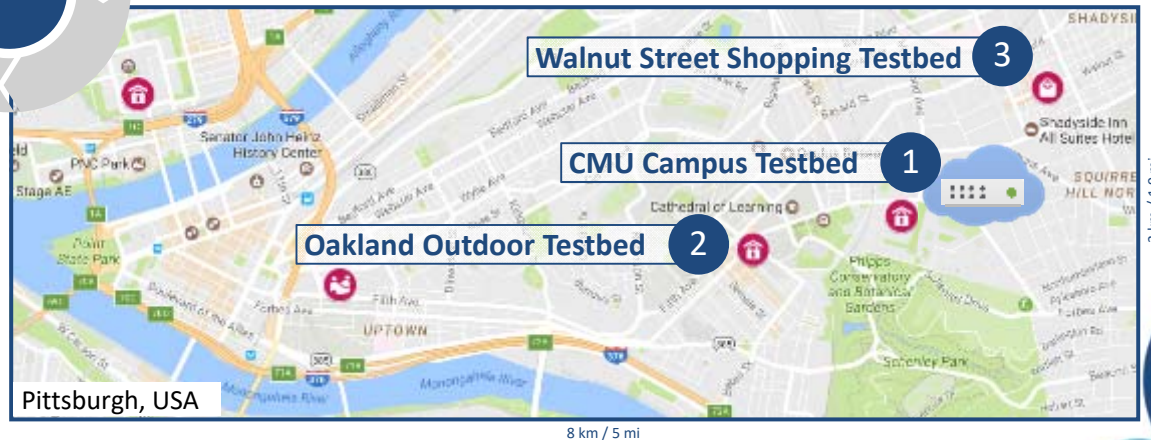
# Workstream “Living Edge Lab”

We Provide an E2E Testbed for Edge Applications and Technology  
(launched in May 2018)

## Living Edge Lab (LEL)

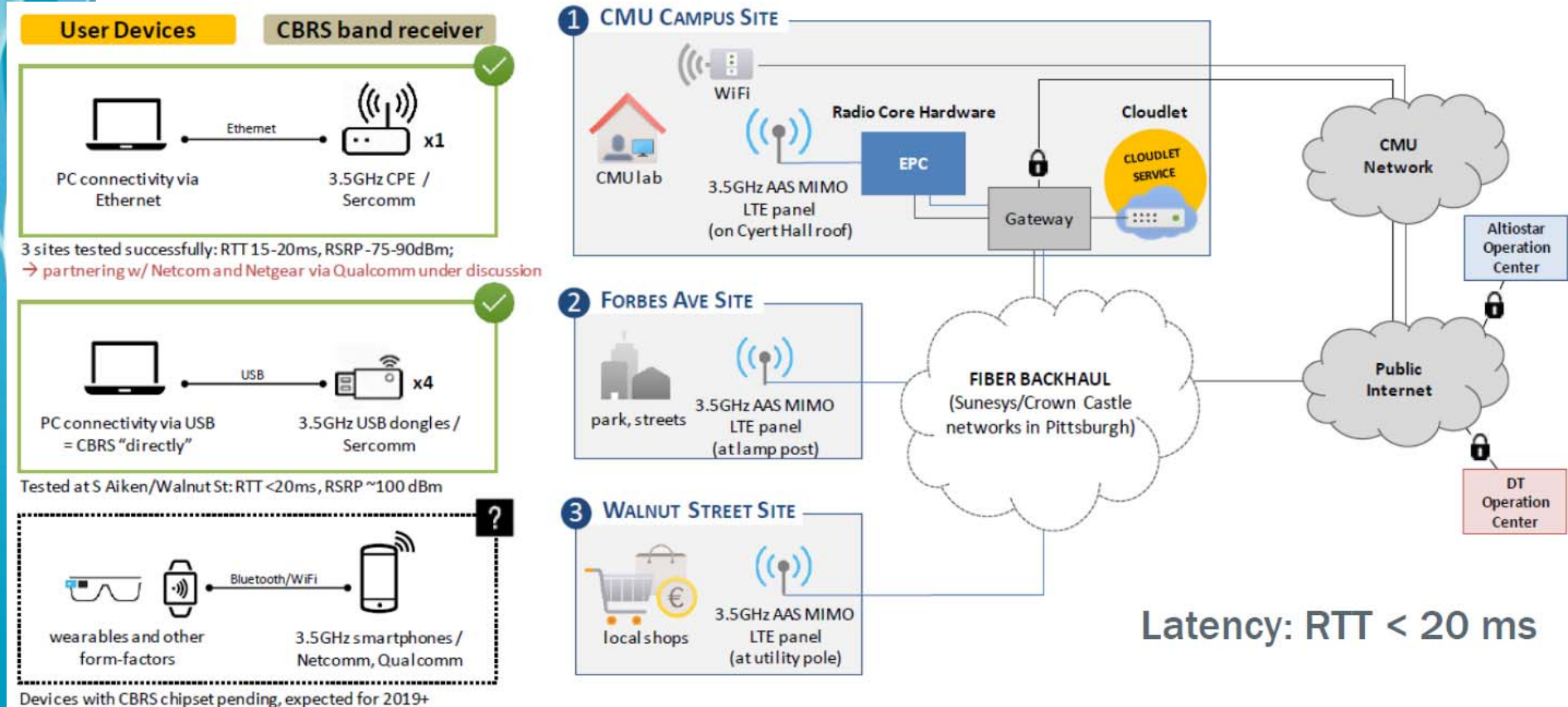
### Mission Statement

“We are building a **real-world testbed** for Edge Computing with leading **edge applications** and user **acceptance testing**.”



# Workstream “Living Edge Lab”

## Infrastructure Overview



# Workstream “Living Edge Lab”

## Update on Living Edge Lab activities

- Ongoing development of edge native applications  
-> Verticals: automotive, AR/VR, drones
- Installation and usage of Microsoft Azure Stack
- Installation of edge gaming platform (Envrnmnt) in Living Edge Lab

## Next Steps

- Living Edge Lab work will continue as before: experimenting with new edge technology and applications, exploring user acceptance
- Possible global expansion through the Global Edge Developer Lab



# Workstream: Global Edge Developer Lab

Agreed at last  
OEC Workshop

## Key Project Targets

- Provide non-commercial edge services to friendly edge application developers to
  - demonstrate the advantages of edge computing for edge applications
  - show that edge application development can be very simple and quick
- Provide these edge service infrastructure globally focussing on developer hotspots to
  - create trust in the upcoming edge infrastructure for example provided by telecom operators
- Provide these edge services with several edge platforms and edge infrastructure providers to
  - try out API-compliance towards the application between edge service platforms and infrastructure providers
  - provide a test-bed run run edge applications with several (compliant) edge service platforms and infrastructure providers



# Workstream: Global Edge Developer Lab

Agreed at last  
OEC Workshop

## Key Project Targets (cont.)

- Provide a edge application developer portal to
  - make it easy for developers to develop edge applications quickly
  - Be able to test edge applications globally and with several edge service platforms
- Provide a test-bed for edge technologies
  - Create an distributed infrastructure that allows global technical experiments around edge computing (expansion of LEL in Pittsburgh)
  - Be able to run global technical experiments around edge computing (handoff, local cross connect etc.)

# Global Edge Developer Lab - Overview

## Edge Developer Portal

- General edge information, tutorials, training, discussion forum
- Sample code for edge apps
- Sandbox to develop, test and deploy edge app locally and globally
- Access to Central Services of edge platform operator
- Access to globally distributed edge nodes

Central Services		Billing and Accounting
Discovery and Orchestration	App Repository and Management	Identity and Authorisation

App Developer & User

Living Edge Lab

Edge Nodes  
USA

App Developer & User

Edge Nodes  
Great Britain

App Developer & User

Edge Nodes  
Germany

App Developer & User

Edge Nodes  
Poland

App Developer & User



# Existing Workstream: Global Edge Developer Lab

## Update on Workstream Activities

- Identified potential partners who are willing to provide local edge infrastructure
  - COSMOS project in Manhattan
  - Edge Test Infrastructure in Poland (Deutsche Telekom)
- Agreed with partners
  - to jointly set-up the Global Edge Developer Lab
  - to run joint experiments (e.g. cross continent hand-off)
- Installation of commercial edge platforms in Living Edge Lab
  - MobileEdgeX completed, Altran and Ori under way
- Integration of CMU edge applications in commercial edge platforms
  - MobileEdgeX completed, Alef, Altran and Ori under way

## Next steps

- Get agreed projects with infrastructure partners (COSMOS and DTAG) finalised
- Create a usage framework for the Global Edge Developer Lab
- Further the development of the sandbox and the developer portal

**Support needed:** We need more edge infrastructure in developer hotpots!

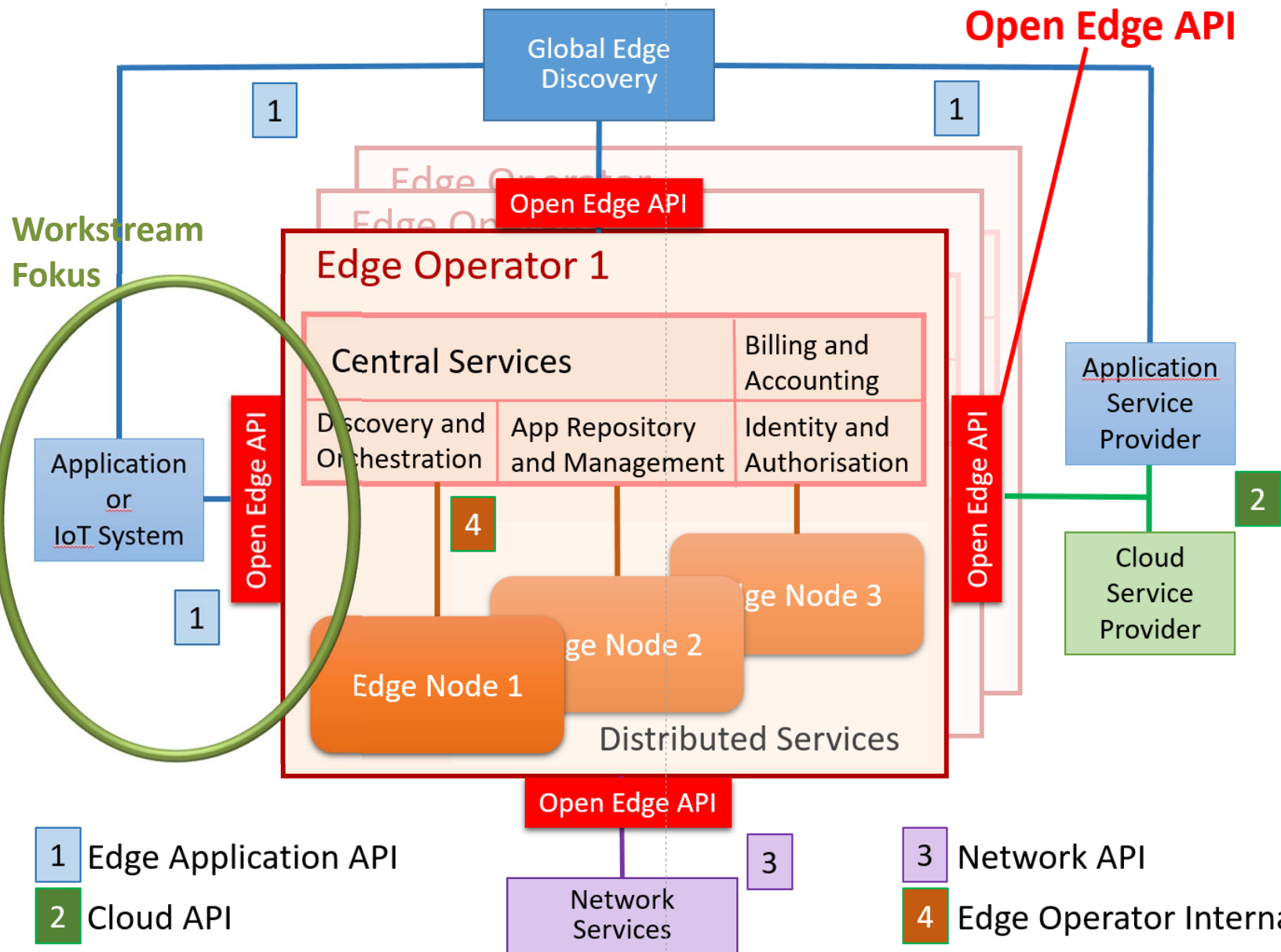


# Worksteam: Edge Platform API Convergence

## Challenges and Targets

- There is a growing number of Edge Infrastructure Platforms coming to market now: MobileedgeX, Altran, Ori, ETSI MEC (e.g. Saguna) etc.
- However, edge application developers can't develop different versions of their applications for each of these Edge Infrastructure Platforms
  - we need a globally uniform mechanism to utilise the edge
  - we need convergence of the edge platform API's
- There is a relevant risk that the edge market & edge technology will be fragmented

# Overview Edge Platform API's



# Workstream: Edge Platform API Convergence

## Agreed Workstream Priority Areas:

- Agreed API functions for convergence:  
Discover edge node; Offer & select edge node; Deploy application on edge node
- The workstream will deliver one Edge Application API to make sure that an edge application will run on any edge platform node

## Update on Workstream Activities

- Identified specific API functions that need to be converged (3 function calls) between Ori and MobileEdgeX
- Ongoing work between Altran and Ori on converging their API's

## Next steps

- Continue work between Altran and Ori on converging their API's
- Share the results with other edge platform providers & ETSI MEC
- Alternative approach: overlay API interfacing with many different edge platforms (to be proposed by CMU)

**Support needed:** Edge operators should request converged APIs from their edge platform vendors!

## Update on OEC Workstreams

### **Suggestion: we continue with the current workstreams as planned**

- Living Edge Lab
- Global Edge Developer Lab
- Edge Platform API Convergence

### **Comments?**

- Feedback from perspective of
  - Edge application providers
  - Edge operators
  - Other edge platform and technology providers





# **OPEN EDGE COMPUTING INITIATIVE: NEW WORK AREAS?**



# Potential New Work Area for OEC:

## Alignment between Telco Edge and Cloud Edge

### Situation

The edge model of cloud service providers (AWS, Microsoft Azure, VMWare) is very different from the edge model of telecom edge operators (Deutsche Telekom, Vodafone etc.).

### Possible Areas of Alignment

- Make sure that edge products from Cloud Service Providers run seamlessly on telco edge infrastructure (easy to install & manage, agreed service levels etc.)  
→ with uniform API's across all telco edge platforms
- Make sure that edge discovery, edge node hand-off and edge operator federation works seamlessly for the customers of Cloud Service Providers
- Making converged telco edge application API available to developer communities of Cloud Service Provider



There are possibly attractive business opportunities through alignment of Telco Edge and the Cloud Provider Edge models!

# Potential New Work Area for OEC: Edge Federation

## Challenges

There will be many different edge operators with their own independent edge infrastructure management

- How can we provide global edge operator discovery?
  - e.g. edge customer is roaming internationally
  - e.g. edge customer has very specific edge requirements
- How can we ensure seamless customer experience
  - e.g. when roaming from edge operator 1 to edge operators 2 (mobility support across edge operators)
- How can an edge operator deploy an edge application on another edge operators infrastructure?
- How can an edge developer be enabled to deploy an edge application globally?



We need globally agreed interfaces and processes between the edge operators!



We need a global edge discovery mechanism!

## Other Potential OEC Work Areas?

- Edge Infrastructure Manager  
→ develop new dynamic approach to edge infrastructure management
- Automatic Application Splitting  
→ provide an approach to suggest the “optimal” split of applications in an device, edge and cloud component
- GPU Sharing  
→ share details about the GPU sharing across users / customers

 Feedback: Any interest in these areas?