



OPEN EDGE COMPUTING INITIATIVE

FALL WORKSHOP 2019

3 – 4 December 2019

Carnegie Mellon University, Pittsburgh

Introductions: Workshop Attendees

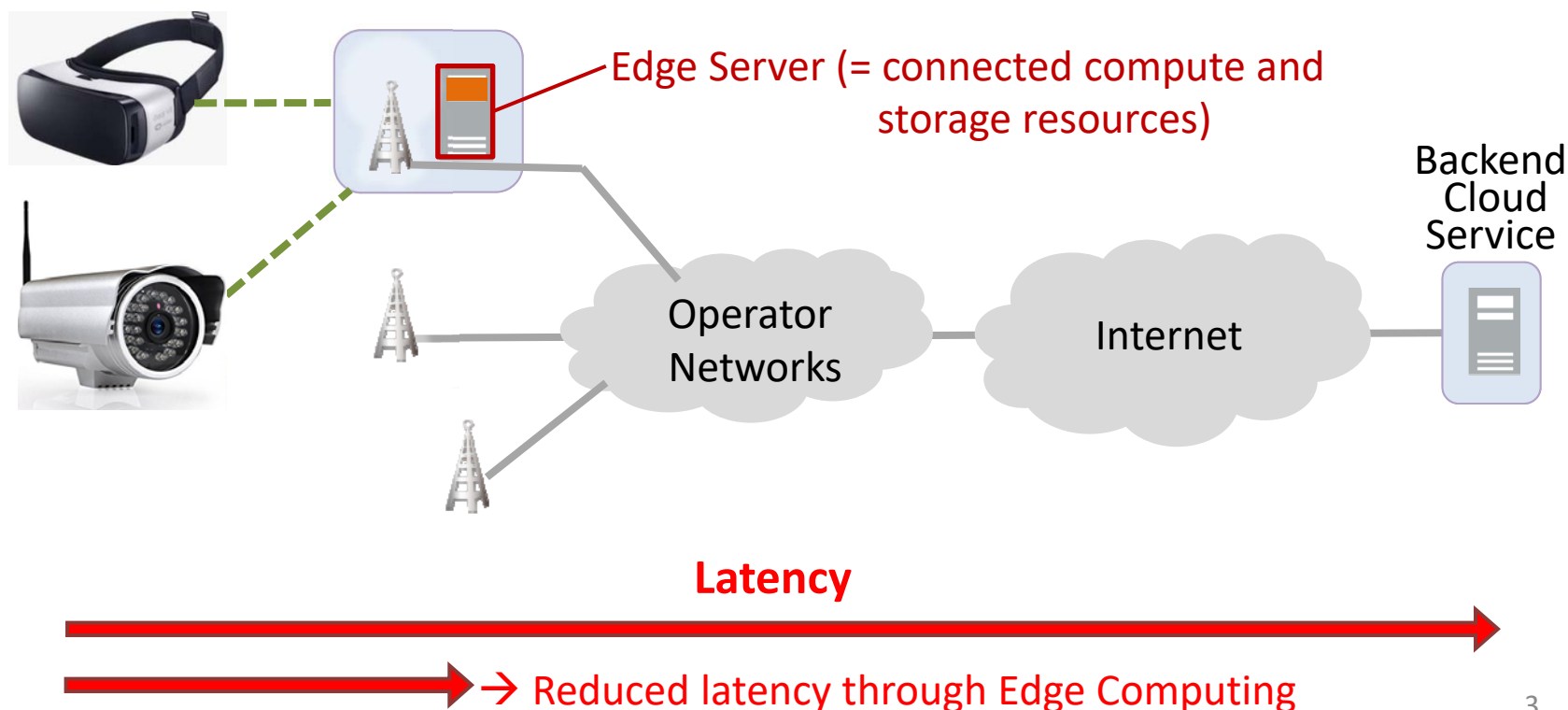
CMU	Mahadev	Satyanarayanan	Intel	Padmanabhan	Pillai	Guests		
	Jan	Harkes		James	Blakley	Airspan	Uzi	Shalev
	Tom	Eiszler		Michael	Kozuch			
	Junjue	Wang				Atrius Ind.	Jeff	DeCoux
	Ziqiang	Feng	InterDigital	Dough	Castor			
	Shilpa	George		Robert	Gazda	Cirrus360	Chaitali	Sengupta
	Roger	Iyengar		Kevin	Di Lallo		Sudipta	Sengupta
	Haithem	Turki						
	Natalie	Janosik	Microsoft	Yongguang	Zhang	Charter	Dhananjay	Lal
	Karen	Lightman				Communicati	Percy	Kwong
	J. Ray	Scott	MobiledgeX	Vikram	Siwach		Wystan	Schmidt
	Brian	Pasquini						
	Manuel	Olguin	OEC	Rolf	Schuster	ComCast	Filip	Liharik
	Christoph	Mertz					Mike	Zhang
	Canbo	Ye	Seagate	Jason	Feist			
				David	Dickerson	Jio	Ravi	Sinha
Crown	Mark	Reudink				JMA	Gopal	Ghaghada
Castle	Hiren	Surti	Verizon /	Raheel	Khalid			
	Christopher	Bluemle	Envrmnt	Carl	Keifer	OpenStack	Ildiko	Vansca
Deutsche	Joseph	Noronha				Small Cell	Prabhakar	Chitrapu
Telekom /						Forum		
DETECON			VMware	Greg	Bollella			
						VAPOR	Rebecca	Hunter
Huawei	Sami	Kekki						
			Vodafone	Marco	Silva	Western	Eyal	Shani
						Digital		

What is Edge Computing?

➔ Edge Computing: small data centres at the network edge that offer connected compute and storage resources right next to the user

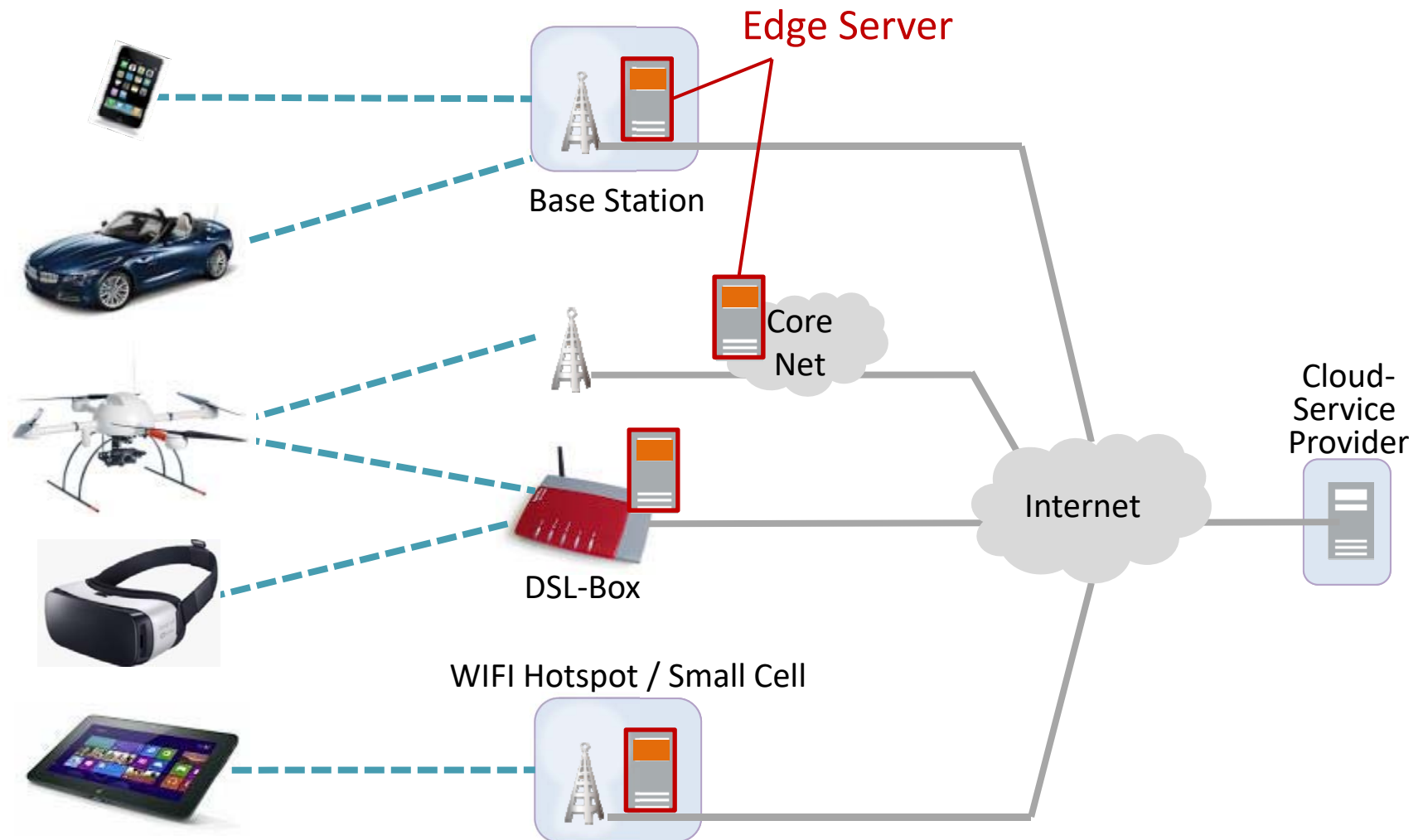
Example Use Cases:

- Virtual reality application connected with head mounted display
- Analyzing large volumes of data right at the edge (Edge Analytics)



Open Edge Computing Vision:

All network edge components offer edge resources through open and standardised mechanisms to any application, device or sensor to enable Edge Computing



Open Edge Computing Initiative - Current Partners

(as of December 2019)

Industry Partners

- Crown Castle
- Deutsche Telekom
- Intel
- Microsoft
- NOKIA
- NTT
- Seagate
- Verizon
- VMware
- Vodafone



Academic Partner

- Carnegie Mellon University



Open Edge Computing Initiative: Key Activity Area

Mission: ... a collective effort ... driving the business opportunities and technologies surrounding edge computing.

- **Drive Cross-Operator Edge Alignment**
 - Agree and establish an Open Edge API, drive global alignment of edge enablers and edge service levels
- **Drive Edge Acceptance**
 - Develop impressive edge applications and drive engagement with edge application developers
- **Living Edge Lab**
 - provide and utilize an E2E testbed for Edge applications and technologies
- **Engagement and Alignment**
 - Engagement with ETSI MEC specification group
 - shape the Open Edge API in phase 2 ETSI MEC specification
 - Develop Engagement with other edge communities
 - for example Linux Foundation Edge Project, OpenStack, GSMA, TIP



openstack

Open Edge Computing Initiative

Fall Workshop 2019 – Overview Targets

General Workshop Target

- Update on Edge Computing
- Voice of the customer – Look at Edge Applications and Trials
- OEC workstreams – Review existing / initiate new workstreams
- OEC partner edge activities – Share insight / findings
- Future of OEC – Update direction and structure



Special focus this workshop:

- Review results of workstreams „Edge API Convergence“ and „Global Edge Developer Lab“
- Consider new work areas (e.g. Edge Federation)
- Look at upcoming edge technologies, startups & services

Workshop Agenda – First Day (1/2)

Tuesday, 3 December
2019 (morning)

8:00 Coffee / Continental Breakfast

8:30 Introduction

Welcome (Satya & Rolf)

Introduction of participants (all)

Workshop Overview & Targets (Rolf)

9:00 Edge Applications and Edge Services

Drone Control Services with Edge Computing

Jeff DeCoux, Atrius Industries

Engaging with Mobile Gaming Developer Communities

Raheel Khalid, Envrmnt

10:00 Edge Services and The Cloud

Update on Microsoft Edge Products

Yongguang Zhang, Microsoft

Overview on VMware Edge Products and Strategy

Greg Bollella, VMware

11:00 Edge Technology and Infrastructure

Update on Seagate Edge Activities and Roadmap

Jason Feist, Seagate

Update on Vapor IO Edge Activities

Alan Bock, Vapor IO

Overview Stackpath Edge Services and Roadmap

Wen Temitim, Stackpath

12:00 Lunch Break

Workshop Agenda – First Day (2/2)

Tuesday, 3 December 2019 (afternoon)

12:00 **Lunch Break**

13:30 **Edge Service Platforms**

MobiledgeX - Update on Edge Platform and Roadmap

Vikram Siwach, MobiledgeX

Altran - Update on Edge Platform and Roadmap

Shamik Mishra, Altran

Update on ETSI MEC 3rd Party API's

Sami Kekki, Huawei

15:00 **Synchronisation with other Edge Communities**

Overview Small Cell Forum

Prabhakar Chitrapu, AT&T

15:20 **Edge Demonstrators and Student Projects**

Envrmnt, Interdigital, CMU Student Groups

17:00 **End of First Day**

18:00 **Dinner at Casbah (<https://casbah.kitchen>)**

229 South Highland Avenue, Pittsburgh, PA 15206

Workshop Agenda – Second Day (1/2)

Wednesday, 4 December 2019 (morning)

8:00 Coffee / Continental Breakfast

8:30 CMU Research Update

Latest Edge Computing Research Results @ CMU

Satya & Team

KTH - New Edge Research Center

James Gross, KTH

10:00 OEC Workstreams

Overview OEC Workstreams

Rolf

Overview Altran Edge Federation Solution

Shamik Mishra, Altran

Alignment between Cloud Edge and Telco Edge

Greg Bolella, VMware

Edge Hackathon @ CMU

Satya

11:30 Lunch Break

Workshop Agenda – Second Day (2/2)

Wednesday,
4 December
(afternoon)

13:00 **Edge Computing - Partner and Guest Activities**

Overview Comcast Edge Activities and Roadmap

Filip Liharik, Comcast

AdvantEDGE: Experiences with Edge Computing Emulation

Bob Gazda, InterDigital

Round Table on Edge Activities

All OEC Partners and Guests

14:00 **Synchronisation with other Edge Communities (cont.)**

Update on Edge Activities at OpenStack

Ildikó Vancsa, OpenStack Foundation

14:20 **Edge Start-up Companies**

RoadBotics and Edge Computing

Christoph Mertz, RoadBotics

Edge Computing with FPGA's

Chaitali Sengupta, Cirrus 360

15:00 **Other Matters**

Feedback Session: Future of OEC

Rolf

Workshop Wrap-Up

Satya & Rolf

15:30 **End of Workshop**

Edge Computing - Update on key developments



- Many 5G operator trials by now include edge computing
- Edge computing business success: private LTE/5G with edge computing
 - pre-processing IoT data at the edge for example in production sites
 - edge computing for autonomous driving on enterprise campus
- Launch of Cloud Gaming → relevant for Edge Computing eventually
- More and more edge infrastructure deployed (at telcos and data center providers)
- Many relevant edge trials, demonstrators and hackathons
- First tier cloud services provider: by now full edge product suite in the market (IoT focus)
- Technology providers are starting to deliver edge specific products (data centers, storage, variety of edge nodes etc.)
- Key edge problems are being solved step by step (handoff, GPU-sharing, FPGA etc.)
- Telecom operators start to look at interoperability between their edge services