

Proposal to Akraino TSC for selecting Akraino Contact Person to ETSI MEC

June 3rd, 2021

Ike Alisson

LF Edge Akraino Documentation Sub-committee TSC Chair



1. Akraino Project Goals set towards ETSI MEC using SMART

1.1 Akraino Rel. 5 in August 2021

1.2 LF Edge TAC Annual reporting

1.3 LFN Marketing Press Release

2. ETSI MEC importance examples

2.1 IEEE from 2017

2.2 NGMN from 2021

3. Points of interest for Akraino and ETSI MEC co-operation

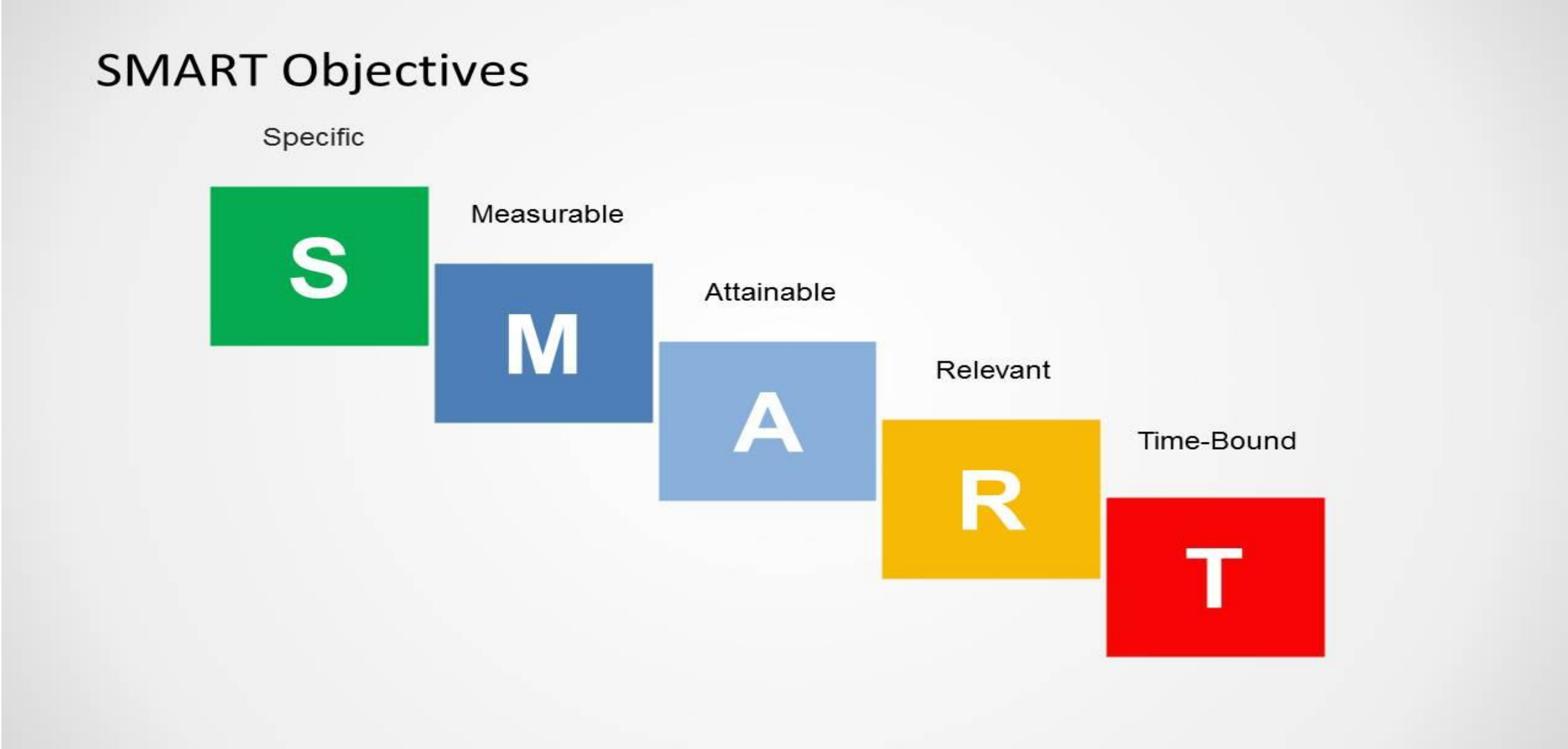
3.1 From ETSI MEC

3.2 From Akraino

4. Proposal to Akraino TSC for Contact Person representative

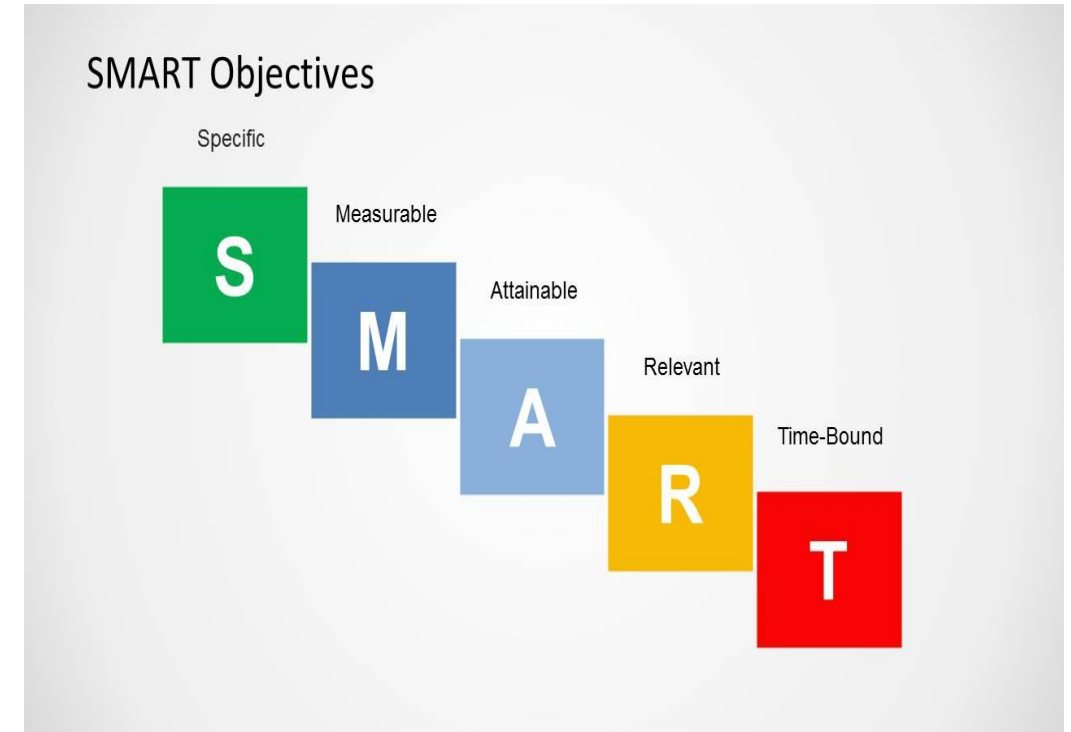


1. Akraino Project Goals set towards ETSI MEC using SMART criteria



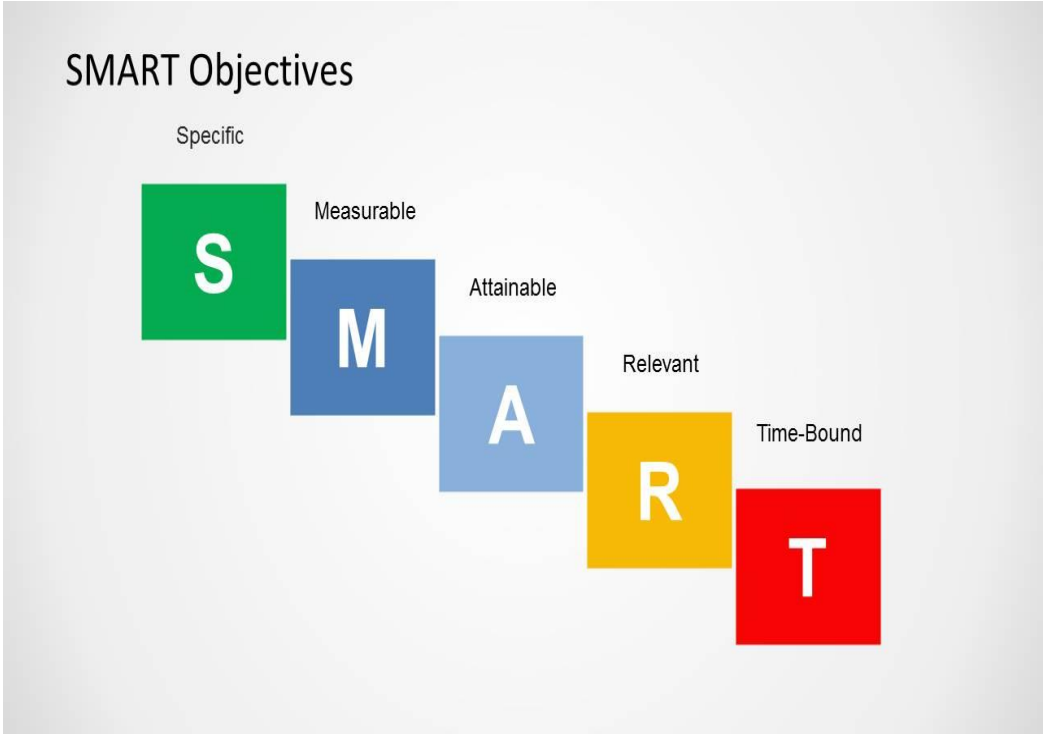
1.1 Akraino Project Goals set towards ETSI MEC using SMART

1. Akraino Rel. 5 in August 2021



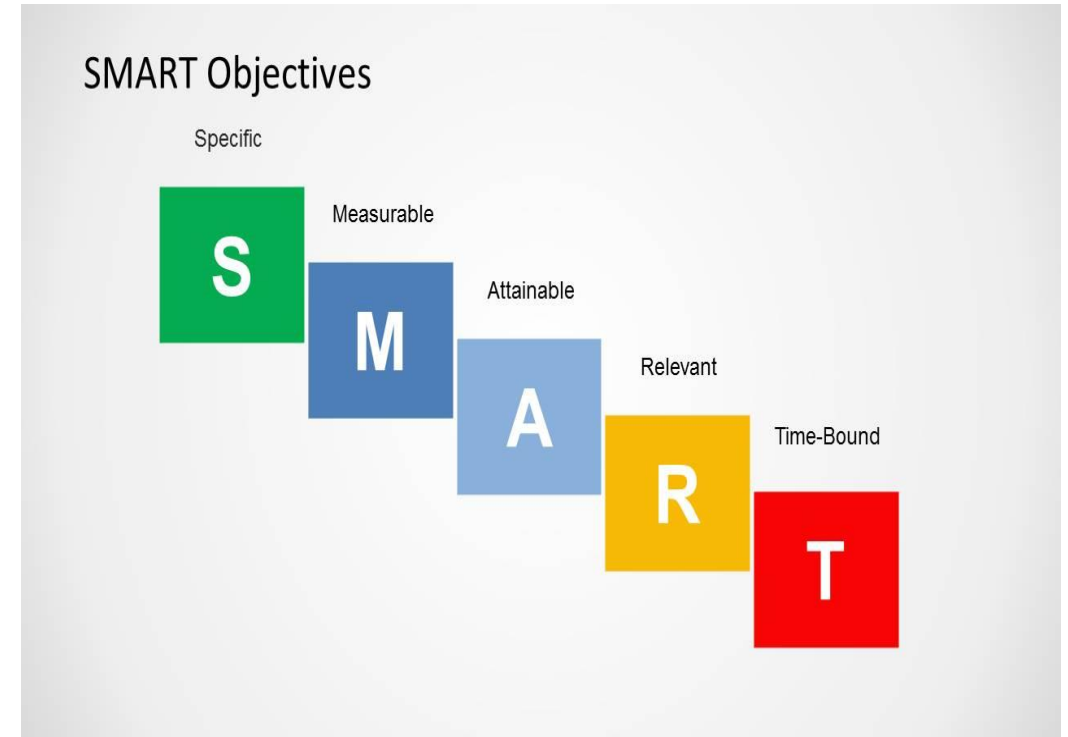
1.2 Akraino Project Goals set towards ETSI MEC using SMART

2. Akraino Annual Report to LF Edge TAC



1.3 Akraino Project Goals set towards ETSI MEC using SMART

3. Akraino Marketing (Press Release) Activities at LFN

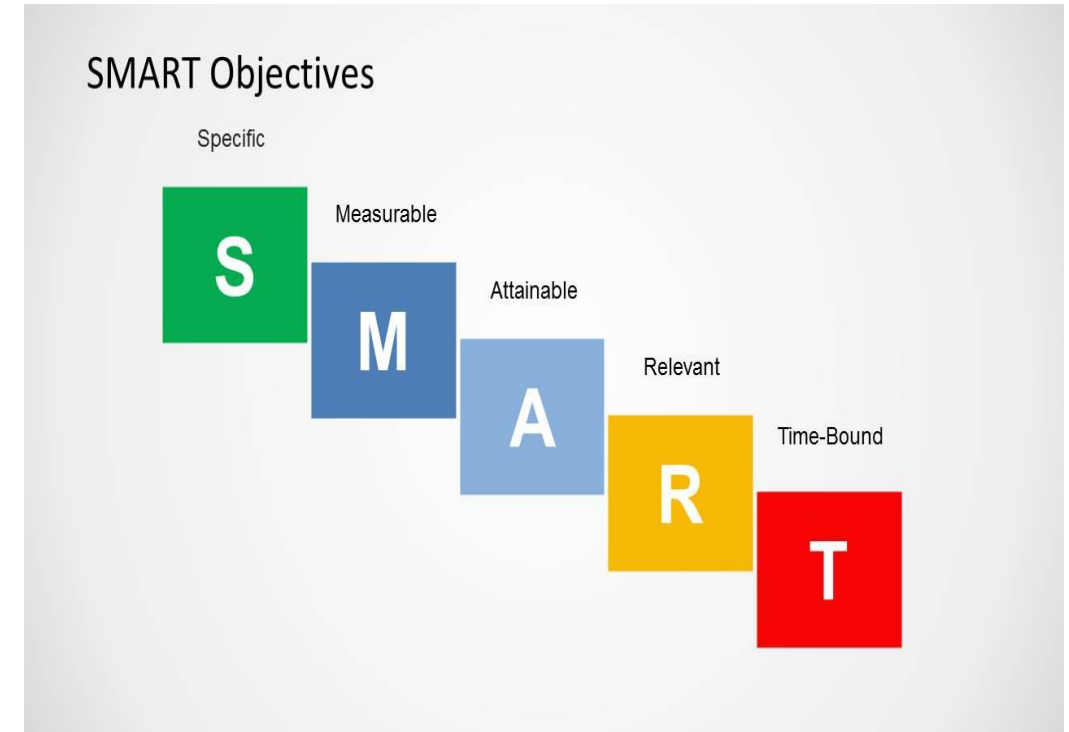


1.4 Akraino Project Goals set towards ETSI MEC using SMART - all

1. Akraino Rel. 5 in August

2. Akraino Annual Report to LF Edge TAC

3. Akraino Marketing (Press Release) Activities at LFN



2. ETSI MEC importance examples

2.1 IEEE from 2017



Multi-Access Edge Computing: An Overview of ETSI MEC ISG

Fabio Giust, *NEC Laboratories Europe, Germany*, Xavier Costa-Perez, *NEC Laboratories Europe, Germany*, and Alex Reznik, *Hewlett Packard Enterprise, US*

IEEE 5G Tech Focus: Volume 1, Number 4, December 2017

Abstract

The introduction of vertical industries use cases in future 5G networks imposes major architectural changes to current mobile networks in order to simultaneously support a diverse variety of stringent requirements (e.g. automotive, ehealth, public safety, etc.). Multi-access Edge Computing (MEC) is widely accepted as a key technology in order to enable ultra low-latency requirements as well as a rich computing environment for value-added services closer to end users. In this article we provide an overview of MEC as per the activities carried out in the ETSI MEC Industry Specification Group (ISG).

5. Concluding Remarks

Formerly known as Mobile Edge Computing, Multi-access Edge Computing is widely recognized as one of the key pillars for 5G, and definitely one of the most promising technologies to bring cloud-based applications and services into the business of network operators.

In this article we have explored the MEC technology from the point of view of ETSI, the MEC ISG being the first community tasked to produce specifications for MEC. The framework and reference architecture is, in addition to the API and management interfaces specifications, the most remarkable output of the group during the first phase of MEC. Expanding the scope of MEC to multiple access technologies brings new use cases and requirements that the ISG is now endeavoring to explore to augment the capabilities of MEC in its second phase.



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2. ETSI MEC importance examples

2.2 NGMN 2021 - 1



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Confidentiality Class:	P-Public

2. ETSI MEC importance examples

2.2 NGMN 2021 - 2



ETSI MEC target is to create a **Standardized, Open Environment** to allow an efficient and seamless **Integration of Applications across a Multi-Vendor, Multi-Access, Edge Computing Platforms**.

An Open Telco Platform must exploit **Telco oriented APIs**. Focusing on the Edge, this area is covered by **ETSI MEC** (Multi-Access Edge Computing). ETSI MEC extends the NFV MANO at the Edge with specific enactments to enable Applications deployment at the correct location at the right time.

ETSI MEC offers Cloud-computing Capabilities and an IT Service Environment at the Edge of the Network also exploiting Telco APIs. The ETSI MEC approach is built around technical solutions and models to foster the adoption of the defined API, anyway the adoption of such a model should be evaluated also considering the **New Exposure Capabilities and Solutions of the 5G Network**.

The Federation among the Telcos, promoted by GSMA, is a key enabler for a proficient **Edge Hybrid Cloud ecosystem developers and Verticals need a “Public Cloud”** like approach to deploy their Application seamlessly in different geographical areas leveraging on Service and Telco Edge Capabilities of different providers. ETSI MEC was the 1st group working on Edge Computing and it is **currently enhancing its Architecture to support MEC interworking in a Hybrid environment**.

The Hybrid Cloud Architecture at the Edge can be logically composed by two interworking **Cloud Native** environments, a **Telco Edge Node (TEN)** and a **Service Edge Node (SEN)**. The **TEN** hosting **Network Functions** and the **SEN** hosting **Cloud-based Applications** (a possible implementation of the 3GPP AFs) are potentially provided by different players.

The Goal is to place Solutions and Applications near the End Users independently on the underlying serving MNO. The MNOs differentiate themselves providing the most efficient and performing **TEN**, deeply integrated with the **SEN** providing the **Data Network** and the Applications. GSMA underlines, with the Telco Federation Concept, the importance of Telcos level interworking to enable Multi Regional End-to-End (E2E) Service delivery. This implies defining a common way of enabling actors to interact with each other.



3. Points of interest for Akraino Project and ETSI MEC co-operation

3.1 From ETSI MEC - 1

16 mars 2021 12:13:39 +01:00, skrev Sabella, Dario

Hi Ike and Oleg,

Thanks again for your interest to present Akraino at ETSI MEC.

In order to effectively manage our time there, I would simply ask you to drop me an email (few days before the talk) with your planned agenda, e.g. few bullet points that you want to cover in your 40mins of presentation. The rest of the time (20mins) will be for Q&A, as anticipated.

For example, Walter was curious to know if you can cover not only the Release 4 achievements, but also quickly give an idea of plans for Release 5.

Then, from my side I would be happy to investigate with you what we can get from this presentation, e.g. to discuss in the Q&A ways to further collaborate in Rel 5.

Looking forward to see your nice updates

Thanks!

BR, Dario

3. Points of interest for Akraino Project and ETSI MEC co-operation

3.1 From ETSI MEC - 2

Från: Sabella, Dario

Datum: 21 maj 2021 09:13:13 +02:00

Ämne: RE: LF Edge Akraino ETSI MEC co-operation

Till: ike 'Tina Tsou' 'Oleg Berzin'

Cc: wdudhnath 'Ike Alisson' <ike. Jane Shen , Walter Featherstone

Dear all,

I hope this email finds you well.

In the past weeks I was glad to arrange with you all the 2 invited talks between Akraino and ETSI MEC.

Since in the email exchange below there was an idea to think more about ways to collaborate, let me now have a follow up, on the possible ideas and topics for collaboration:

- addition of other MEC specs in their Akraino API map; i.e. increasing the number of Akraino projects using MEC (to be practical, I believe here we could identify some contact points, both from ETSI MEC and Akraino)
- simple promotion of MEC APIs in the Akraino projects, and related alignment with Open APIs (in this perspective, we can arrange some specific meetings, on selected topics),
- have MEC009-related discussions with Akraino, i.e. helping you to consider future implementations based on the MEC 009 generic guidelines for APIs design (as a followup of the recent Uwe's presentation)
- aligning with PCEI on the ETSI MEC activities about MEC Federation (note: this is very important, and perhaps some deepdive from Akraino would be very useful, to see the mapping with current MEC Federation activities in ETSI MEC)

These are just preliminary ideas, for your elaboration/feedback

In general, I don't think we need to setup a fixed and recurrent slot, but instead define 1 contact person from both sides, and agree on common goals, to make things happen. Meetings can be instead on-demand, and based on needs to address these goals. So that, we don't fill our (already full!) calendars with other meetings, but instead take a more lean approach.

Comments/feedback are welcome.

Cheers, Dario

PS: For this purpose, let me CC also @Jane Shen, who was instrumental in the past for the ETSI MEC collaboration with Akraino.

I'm glad to see that she's happy to be involved again in this open source collaboration, and also I plan to soon appoint her more officially, from ETSI MEC side.

3. Points of interest for Akraino Project and ETSI MEC co-operation

3.1 From ETSI MEC - 3



STANDARDS

TECHNOLOGIES

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ISG MEC Activity Report 2020

EDGE COMPUTING

INDUSTRY SPECIFICATION GROUP (ISG) ON MULTI-ACCESS EDGE COMPUTING (MEC)

Chair: Dario Sabella, Intel

LOOK OUT FOR IN 2021 – ISG MEC WORK IN PROGRESS:

MEC

- Group Specification (GS) on MEC Framework and Reference Architecture
- GS on Application Package Format and Descriptor Specification
- GS on IoT API
- Revision to GS MEC 002 on use cases and requirements
- Revision to GS MEC 009 on general principles, patterns and common aspects of MEC Service APIs
- Revision to GS MEC 010-2 on MEC management; Part 2: Application lifecycle, rules and requirements management
- Revision to GS MEC 011 on edge platform application enablement
- Revision to GS MEC 028 on WLAN Information API
- Revision to GS MEC 030 on V2X Information Service API
- **Group Report (GR) on inter-MEC systems and MEC-cloud systems coordination**
- GR on MEC in resource constrained terminals, fixed or mobile
- GR on MEC in park enterprises deployment scenario

MEC DECODE

- Revisions to multi-part GS MEC-DEC 032 on API conformance test specification

3. Points of interest for Akraino Project and ETSI MEC co-operation



3.2 From Akraino - Akraino BPs in ETSI MEC Ecosystem (DECODE) - 1



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MEC Ecosystem

This page provides information very much related to the work of the ETSI ISG MEC Deployment and ECOSystem DEVELOPMENT (DECODE) Working Group, whose aim is to accelerate the development of the MEC ecosystem:

- **Forge Projects**: Includes OpenAPI/Swagger & Protobuf descriptions of the APIs specified by ISG MEC.
 - **OpenAPI development guidelines**: How can I contribute to the API development?
- **MEC Sandbox**: MEC Service API playground
 - **MEC Sandbox Scenarios** (EOL account required): Macro/micro network emulation scenarios
- **MEC Applications**: 3rd party solutions
- **MEC Solutions**: 3rd party solutions

MEC Applications

List of MEC Applications made available by third parties

<p>Connected Vehicle Blueprint (Aka CVB)</p> 	<p>CVB provides a V2X focused MEC platform, which offers services to connected vehicles. These services are delivered to applications hosted on vehicles based on a set of policies for data dispatch and response. As the blueprint continues to be developed, further connected-vehicle applications and services are being incorporated into the blueprint.</p>	<p>MEC Platform(s), MEC Platform Manager</p>	<p>MEC 011 Mp1 & Mm5</p>	<p>Link</p>	<p>Yarg Yang</p>
<p>Enterprise Applications on Lightweight 5G Telco Edge (EALTEdge)</p> 	<p>Lightweight telco edge platform, enabling Enterprise applications on telco edge. Offering a: Unified Portal for platform management and for App developers; Sandbox with SDKs and tools chains for MEC app developers; Heterogeneous deployment on Multi-Arch; ETSI MEC Compliance.</p>	<p>MEC Platform(s), MEC Platform Manager</p>	<p>MEC 011 Mp1 & Mm3</p>	<p>Link</p>	<p>Gaurav Agrawal</p>
<p>Public Cloud Edge Interface (PCEI)</p> 	<p>The purpose of Public Cloud Edge Interface (PCEI) Blueprint family is to specify a set of open APIs for enabling Multi-Domain Inter-working across functional domains that provide Edge capabilities/applications and require close cooperation between the Mobile Edge, the Public Cloud Core and Edge, the 3rd-Party Edge functions as well as the underlying infrastructure such as Data Centers and Networks.</p>	<p>Provides an enabler layer that facilitates interworking between Edge Computing platforms, including Multi-Access Edge Compute, Public Cloud and 3rd-Party Edge Compute, and Mobile Networks</p>	<p>MEC 013 Location API</p>	<p>Link</p>	<p>Oleg Berzin</p>

- Main page
- OpenAPI development guidelines
- MEC Ecosystem
- Proofs of Concept
- Ongoing PoCs
- PoC Topics
- PoC Framework
- Logos&Guidelines
- Q&A
- Deployment Trials



3. Points of interest for Akraino Project and ETSI MEC co-operation



3.2 From Akraino - 2

Question:

What is the Akraino BPs experience from their membership at the ETSI MEC Ecosystem (DECODE)?

The screenshot shows the ETSI MECwiki page for 'MEC Ecosystem'. It includes a navigation menu on the left with links like 'Main page', 'OpenAPI development guidelines', and 'MEC Ecosystem'. The main content area has a search bar and a list of bullet points under 'MEC Applications'.

Application Name	Description	Platform/Manager	MEC Standard	Link	Contributor
Connected Vehicle Blueprint (Aka CVB) 	CVB provides a V2X focused MEC platform, which offers services to connected vehicles. These services are delivered to applications hosted on vehicles based on a set of policies for data dispatch and response. As the blueprint continues to be developed, further connected-vehicle applications and services are being incorporated into the blueprint.	MEC Platform(s), MEC Platform Manager	MEC 011 Mp1 & Mm5	Link	Yarg Yang
Enterprise Applications on Lightweight 5G Telco Edge (EALTEdge) 	Lightweight telco edge platform, enabling Enterprise applications on telco edge. Offering a: Unified Portal for platform management and for App developers; Sandbox with SDKs and tools chains for MEC app developers; Heterogeneous deployment on Multi-Arch; ETSI MEC Compliance.	MEC Platform(s), MEC Platform Manager	MEC 011 Mp1 & Mm3	Link	Gaurav Agrawal
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3. Points of interest for Akraino Project and ETSI MEC co-operation



3.2 From Akraino - 3



Oleg Berzin

ons 17 mars 02:13



till ike,

Tina, Jeff, mig ▾

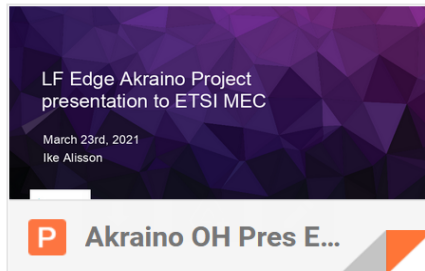
Hello Ike,

I made two revisions for your consideration:

1. Slide 3 – add the Kubernetes icon to the graphics on the right next to Openstack.
2. Added slide 15 to reflect AWS talk during Akraino's tech event.

Thanks,

Oleg

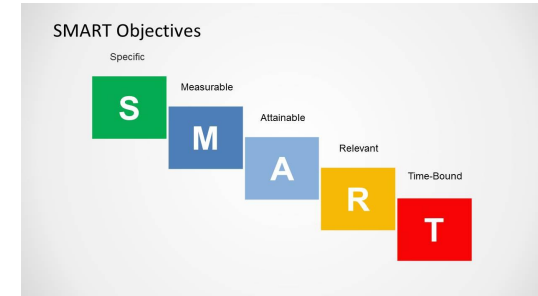


3. Points of interest for Akraino Project and ETSI MEC co-operation

3.2 From Akraino - 4



Identify/Select Akraino PCEI BP Key 3-5 Objectives related to ETSI MEC and share it with ETSI MEC to verify/check the room for synergies



AKRAINO Platser ▾ Frågor

- Public Cloud Edge Interface (PCEI) Blueprints
 - Anthos Blueprint of Public Cloud Edge Interface
 - Edge Computing Machine (ECM) Blueprint
 - Federated Multi-Access Edge Cloud Platform
 - PCEI Blueprint Meetings
 - PCEI Documentation
 - PCEI Engineering Plan
 - PCEI Landing Application
 - PCEI Source Code Analysis
- KubeEdge Edge Service Blueprint
- IoT Area
- Tami COVID-19 Blueprint Family
- Automotive Area
- Blueprint Proposals
- Akraino Feature Projects (a.k.a Development Projects)
 - Point of Delivery (POD)
 - Technical Steering Committee (TSC)
 - Shared Community Lab

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Dashboard / ... / Approved blueprints

Public Cloud Edge Interface (PCEI) Blueprint Family

Skapad av Tina Tsou, senast ändrad av xinhuili den jan 30, 2021

The purpose of the Public Cloud Edge Interface (PCEI) Blueprint family is to specify a set of open APIs for Telco Edge Blueprints to expose towards Public Cloud Service Provider instances at the Edge. As Public Cloud Service Providers deploy Edge instances to better serve their end-users and applications, Telco Edge deployments offer many opportunities for collaboration by exposing their network capabilities to provide value added services.

The need to interface and exchange information through these open APIs will allow competitive offerings for Consumers, Enterprises, and Vertical Industry end-user segments. For instance, open APIs will be provided between Telcos and public cloud edge compute platforms such as Google Cloud Platform (GCP) Anthos, [AliCloud Edge Node Service \(ENS\)](#), AWS Wavelength, Microsoft Azure Edge Zones, Tencent Edge Computing Machine (ECM), to name a few. These APIs are not limited to providing basic connectivity services but will include the ability to deliver predictable data rate, predictable latency, reliability, service insertion, security, AI and RAN analytics, network slicing and more. These capabilities are needed to support a multitude of emerging applications such as AR/VR, Industrial IoT, autonomous vehicles, drones, Industry 4.0 initiatives, Smart Cities, Smart Ports. Other APIs will include exposure to edge orchestration and management, Edge monitoring (KPIs), and more. These open APIs will be the foundation for service and instrumentation APIs when integrating with public cloud development environments and will be defined as part of the implementation. Even though these APIs will be common across all Telco operators, the differentiation will be based on services provided through those APIs.

The purpose of this blueprint family is to address all aspects of API interoperability to include API definition, API gateway functions (AAA, policy, security) so as to offer a secure, controllable, traceable, scalable and measurable way for accessing APIs by public edge cloud service providers.

The partnership announcement between AWS and Verizon/KDDI/SKTelecom/Vodafone during last November's AWS re:Invent signified the official entrance of Hyperscalers into the edge domain. Over the last 12 months, AT&T has announced



4. Proposal to Akraino TSC for Contact Person representative

Proposal to Akraino TSC:

**Appoint the PCEI PTL Oleg Berzin
as an Akraino Contact Person for
ETSI MEC**





Questions?