**TSG SA Meeting #SP-102 SP-231669**

**11 - 15 December, 2023, Edinburgh, Scotland**

**Title: [DRAFT] LS on collaboration and alignment of 3GPP defined application enablers with GSMA Open Gateway**

**Source: 3GPP TSG SA**

**To: GSMA Open Gateway**

**CC: GSMA OPG, 3GPP SA2, 3GPP SA5, 3GPP SA6**

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**Attachments: None**

# 1 Overall description

3GPP SA6 specified Application Enablement standards including, service frameworks (CAPIF, EDGEAPP, SEAL services including NSCE, ADAE, SEALDD) and vertical application enabler architectures (V2XAPP, UASAPP, 5GMARCH, PINAPP), to enable various industry vertical applications over 3GPP networks. For a quick overview, you can refer to [Application Enablement Standards in 3GPP](https://www.3gpp.org/technologies/sa6-app-enable), and [3GPP SA6 R18 – 5G Critical Communications and Application Enablement Standards](https://www.3gpp.org/newsletter-issue-07-nov-2023#flipbook-flip8/15/). You may also find additional information on the [3GPP SA6 page](https://www.3gpp.org/3gpp-groups/service-system-aspects-sa/sa-wg6).



As shown in the above figure, SA6 defined Application Enablement layer serves as an application middleware, with capabilities which are reusable application components that can be used to develop Applications. 3GPP Application Enablement APIs are designed to hide the complexity of underlying the 5G core capabilities, and enable interactions between the Application Developers/Service Providers (ASPs) and the 3GPP Network Layer, across both user equipment (UE) and the core network.

3GPP SA6 is making continuous efforts to align 3GPP defined EDGEAPP architecture with GSMA Operator Platform (OP) architecture and requirements. These efforts have resulted in features such as Edge Node Sharing, Federation and Roaming in Rel-18 EDGEAPP work in [3GPP TS 23.558](https://www.3gpp.org/ftp/Specs/archive/23_series/23.558/23558-i40.zip).

3GPP SA6 believes that such collaboration and alignment with GSMA maybe mutually beneficial for example in area such as GSMA Open Gateway initiative, taking into consideration the SA6 Application Enablement standards such as CAPIF, SEAL services (including NSCE, ADAE, SEALDD), V2XAPP, UASAPP, 5GMARCH, and PINAPP.



With reference to the above figure from [GSMA Open Gateway architecture](https://www.gsma.com/futurenetworks/wp-content/uploads/2023/05/The-Ecosystem-for-Open-Gateway-NaaS-API-development.pdf), 3GPP SA6 indicated that application enablement standards and the related APIs (see the 3GPP Application Enablement APIs list in the Annex below) can bring additional value to the developer/operator ecosystem. 3GPP Application Enablement APIs can be viewed as aPaaS (Application Platform as a Service). They may be directly considered as transformation functions and/or third-party facing APIs and/or as Network/Cloud Capabilities, depending on the GSMA API requirements.

SA kindly asks GSMA to consider the above information.

# 2 Actions

**To GSMA Open Gateway**

**ACTION:** 3GPP TSG SA kindly asks GSMA to consider the above information in the area of Application Enablement work within the GSMA Open Gateway initiative.

# 3 Dates of next TSG SA meetings

SA#103 19 - 22 March 2024 Maastricht, NL

SA#104 18 - 21 June 2024 China (TBC)

# 4 Annex: 3GPP Application Enablement APIs list

|  |  |  |
| --- | --- | --- |
| **CAPIF** (Common API Framework) | **SEAL** (Service Enabler Architecture Layer) | **EDGEAPP** (Enabling Edge Applications) |
|  [Discover Service](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29222_CAPIF_Discover_Service_API.yaml) [Publish Service](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29222_CAPIF_Publish_Service_API.yaml)  [Events](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29222_CAPIF_Events_API.yaml)  [API Invoker Management](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29222_CAPIF_API_Invoker_Management_API.yaml)  [Security](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29222_CAPIF_Security_API.yaml)  [Access Control Policy](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29222_CAPIF_Access_Control_Policy_API.yaml)  [Logging API Invocation](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29222_CAPIF_Logging_API_Invocation_API.yaml)  [Auditing](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29222_CAPIF_Auditing_API.yaml)  [AEF Authentication](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29222_AEF_Security_API.yaml)  [API Provider Management](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29222_CAPIF_API_Provider_Management_API.yaml)  [Routing Information](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29222_CAPIF_Routing_Info_API.yaml) | * [Network Resource Adaptation](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29549_SS_NetworkResourceAdaptation.yaml)
* [Network Resource Monitoring](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29549_SS_NetworkResourceMonitoring.yaml)
* [Network Slice Adaptation](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29549_SS_NetworkSliceAdaptation.yaml)
* [User Profile Retrieval](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29549_SS_UserProfileRetrieval.yaml)
* [Events](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29549_SS_Events.yaml)
* [Group Management](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29549_SS_GroupManagement.yaml)
* [Location Reporting](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29549_SS_LocationReporting.yaml)
* [Location Area Information Retrieval](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29549_SS_LocationAreaInfoRetrieval.yaml)
* [Key Information Retrieval](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29549_SS_KeyInfoRetrieval.yaml)
* [VAL Service Data Retrieval](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29549_SS_VALServiceData.yaml)
* [VAL Service Area Configuration](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29549_SS_VALServiceAreaConfiguration.yaml)
* [SEALDD Data Transmission](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29548_SDD_Transmission.yaml)
* [SEALDD Context Relocation](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29548_SDD_DDContext.yaml)
* [SEALDD Transmission Quality Measurement](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29548_SDD_TransmissionQualityMeasurement.yaml)
 |  [EAS Registration](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29558_Eees_EASRegistration.yaml)  [UE Location](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29558_Eees_UELocation.yaml)  [UE Identifier](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29558_Eees_UEIdentifier.yaml)  [Application Client Information](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29558_Eees_AppClientInformation.yaml) [ACR Management Event](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29558_Eees_ACRManagementEvent.yaml) [Session with QoS](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29558_Eees_SessionWithQoS.yaml)  [EEC Context Relocation](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29558_Eees_EECContextRelocation.yaml) [EEL Managed ACR](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29558_Eees_EELManagedACR.yaml)  [ACR Status Update](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29558_Eees_ACRStatusUpdate.yaml)  [EES Registration](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29558_Eecs_EESRegistration.yaml)  [Target EES Discovery](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29558_Eecs_TargetEESDiscovery.yaml)  [EEC Registration](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS24558_Eees_EECRegistration.yaml)  [ECS Service Provisioning](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS24558_Eecs_ServiceProvisioning.yaml) [EAS Discovery](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS24558_Eees_EASDiscovery.yaml)  [EES ACR Events](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS24558_Eees_ACREvents.yaml)  [EES App Context Relocation](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS24558_Eees_AppContextRelocation.yaml) [EES ACR Parameters Information](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29558_Eees_ACRParameterInformation.yaml)  [EES Common EAS Announcement](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29558_Eees_CommonEASAnnouncement.yaml)  [CAS Selected EES](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29558_Ecas_SelectedEES.yaml) |
| **V2XAPP**(V2X Application Enabler) | **UASAPP**(UAS Application Enabler) | **5GMARCH** (Enabling MSGin5G Service) |
|  [V2X Message Delivery](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29486_VAE_MessageDelivery.yaml) [File Distribution](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29486_VAE_FileDistribution.yaml)  [Application Requirement](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29486_VAE_ApplicationRequirement.yaml) [Dynamic Group](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29486_VAE_DynamicGroup.yaml)  [Service Continuity](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29486_VAE_ServiceContinuity.yaml)  [HD Map Dynamic Information](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29486_VAE_HDMapDynamicInfo.yaml) [Session Oriented Service](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29486_VAE_SessionOrientedService.yaml)  [V2V Config Requirement](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29486_VAE_V2VConfigRequirement.yaml) [PC5 Provisioning Requirement](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29486_VAE_PC5ProvisioningRequirement.yaml) |  [C2 Operation Mode Management](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29257_UAE_C2OperationModeManagement.yaml) [Real-time UAV Status](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29257_UAE_RealtimeUAVStatus.yaml) [USS Change Management](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29257_UAE_ChangeUSSManagement.yaml)  [DAA Support](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29257_UAE_DAASupport.yaml) |  [AS Registration](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29538_MSGS_ASRegistration.yaml)  [MSGin5G Server Message Delivery](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29538_MSGS_MSGDelivery.yaml)  [L3G Message Delivery](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29538_MSGG_L3GDelivery.yaml) [N3G Message Delivery](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29538_MSGG_N3GDelivery.yaml) [Broadcast Message Delivery](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29538_MSGG_BGDelivery.yaml) |
| **PINAPP**(Personal IoT Network Application) |
|  [PINServer PAS Registration](https://forge.3gpp.org/swagger/editor-versions/v3.18.0/?url=https://forge.3gpp.org/rep/all/5G_APIs/raw/REL-18/TS29583_Ppinserver_ASRegistration.yaml) |