1 ENVELOPE APIs overview for the open call

The ENVELOPE APIs are a set of APIs that are implemented within the context of the ENVELOPE project, and they are made available through the ENVELOPE Platform. The ENVELOPE APIs are accessed by a Vertical Service to interact with the Beyond 5G System. They enable a Vertical Service to retrieve network information and influence network configuration. The ENVELOPE APIs, that will be available, are briefly introduced in the following:

- **Quality on Demand (QoD) APIs** – they allow vertical applications to request adaptation of QoS parameters for specified PDU sessions to guarantee their network requirements, e.g., minimum requested bandwidth for the uplink or downlink.

- **Device Location APIs** – these APIs allow the retrieval of geographical information of a device. Provided functionalities can include the verification of a device location, the retrieval of the location of a device and geofencing information (i.e., notification of devices entering or leaving a certain area.

- **Edge application management APIs** – they allow the deployment and management of applications on compute resources, and they provide information to vertical applications about the closest edge cloud server given the current device location. Furthermore, they provide information about the available services at a given edge server, and they enable the registration of new services. These APIs also provide support to the migration of applications between edge servers.

- **Traffic Influence APIs** – they provide the optimal routing from the user device (e.g. a smartphone) to the optimal application instance deployed in a specific geographical location, installed in an Edge Cloud zone.

- **Performance metrics** APIs – the retrieval of information about device performance metrics is provided as functionality by these APIs.

- **Predictive QoS (pQoS) APIs** – deliver analytics to vertical services (via AI/ML model inference), enabling the prediction of changes or degradation in network-level or service-level QoS parameters.

- **ATSSS APIs** – enable multi-connectivity traffic steering over heterogeneous networks (e.g., 5G and WiFi) by providing multipath packet scheduling based on ATSSS policies. The APIs allow to select the policies (e.g., MinRTT or RL-based Load Balancing) that define how flows are split and routed across the available interfaces, ensuring more efficient resource utilization and improved QoS for the application.