Insights for Edge Software Developers

Presented by: Santiago Rodríguez
Optare Solutions R&D

Episode #6 – “Follow MEC”, the implementation
In this episode ...

- We will learn how:
  - To face some of the challenges and limitations of developing an edge application for surveillance drones
  - The ETSI MEC APIs provide us with information required by our application
  - To simulate a real environment with the MEC sandbox
Technical context

We decided to participate on the 2021 ETSI MEC Hackathon, with a surveillance drone application (Follow MEC):

- The drone would fly in a predefined route
- AI models executed at the edge would look for intruders
- If a pedestrian is detected, drone would track them
- Based on coverage, power and signal quality, the application would dynamically modify its behaviour
Required data

The application should modify its behaviour based on:
- Location information
- Radio Network Information
- WLAN information

How, where?

Solution: the ETSI MEC APIs
Testing environment

Scenario limitations:

- Drone flight regulation
- 5G coverage areas
- How to experiment and test in the development phase
- Weather conditions

Solution:
the ETSI MEC Sandbox
Testing environment - Actions

Drone and predefined surveillance route simulation

```bash
POST <sandbox_url>/sandbox-ctrl/v1/events/SCENARIO-UPDATE
-H "accept: application/json"
-H "Content-Type: application/json"
-d "@drone_ue_creation.json"
```
Testing environment - Actions

Location info and RNI info subscriptions:

```
POST <sandbox_url>/location/v2/subscriptions/userTracking
  -H "accept: application/json"
  -H "Content-Type: application/json"
  -d "@location.json"

POST <sandbox_url>/rni/v2/subscriptions
  -H "accept: application/json"
  -H "Content-Type: application/json"
  -d "@measrepue.json"

POST <sandbox_url>/rni/v2/subscriptions
  -H "accept: application/json"
  -H "Content-Type: application/json"
  -d "@nrmeasrepue.json"
```
WLAN access information subscription:

POST <sandbox_url>/wai/v2/subscriptions
-H "accept: application/json"
-H "Content-Type: application/json"
-d "@assocsta_wifi.json"

POST <sandbox_url>/wai/v2/subscriptions
-H "accept: application/json"
-H "Content-Type: application/json"
-d "@assocsta_no_wifi.json"
Result

A Team - ETSI MEC Hackathon 2021

Coverage
- 4G
- 5G
- Wifi
- No Signal

Zonal Status
- Zone: zone04
- State: Transferring
- Current Access Point: 4G-macro-cell-10
- Previous Access Point: 5G-small-cell-18

Sandbox Notifications
- 19:29:1.899: MeasReportNotification
- 19:29:1.899: zonePresenceNotification
- 19:29:0.973: NotMeasReportNotification
- 19:29:0.838: NotMeasReportNotification
- 19:29:0.876: NotMeasReportNotification

App Information
- Not Running
- Mode: Surveillance
- Video bitrate: 100

Reference Signal Received
- Power
- Quality

© ETSI 2022 – All rights reserved
Conclusions and further resources

What we have learnt:

• How to deal with some of the limitations and constraints of edge drone applications
• How to use the ETSI MEC APIs to retrieve the required information
• How to simulate a real environment with the MEC Sandbox

• Interested to learn more?
  • Visit the MEC Sandbox: https://try-mec.etsi.org/
  • Check out the ETSI MEC APIs: https://forge.etsi.org/rep/mec
  • Take a look at the Follow MEC: https://www.edgecomputingworld.com/etsi-mec-hackathon-2021-the-developer-challenge/
  • Follow also the next episodes of the MEC TECH Series 😊
Enjoy the MEC Tech Series