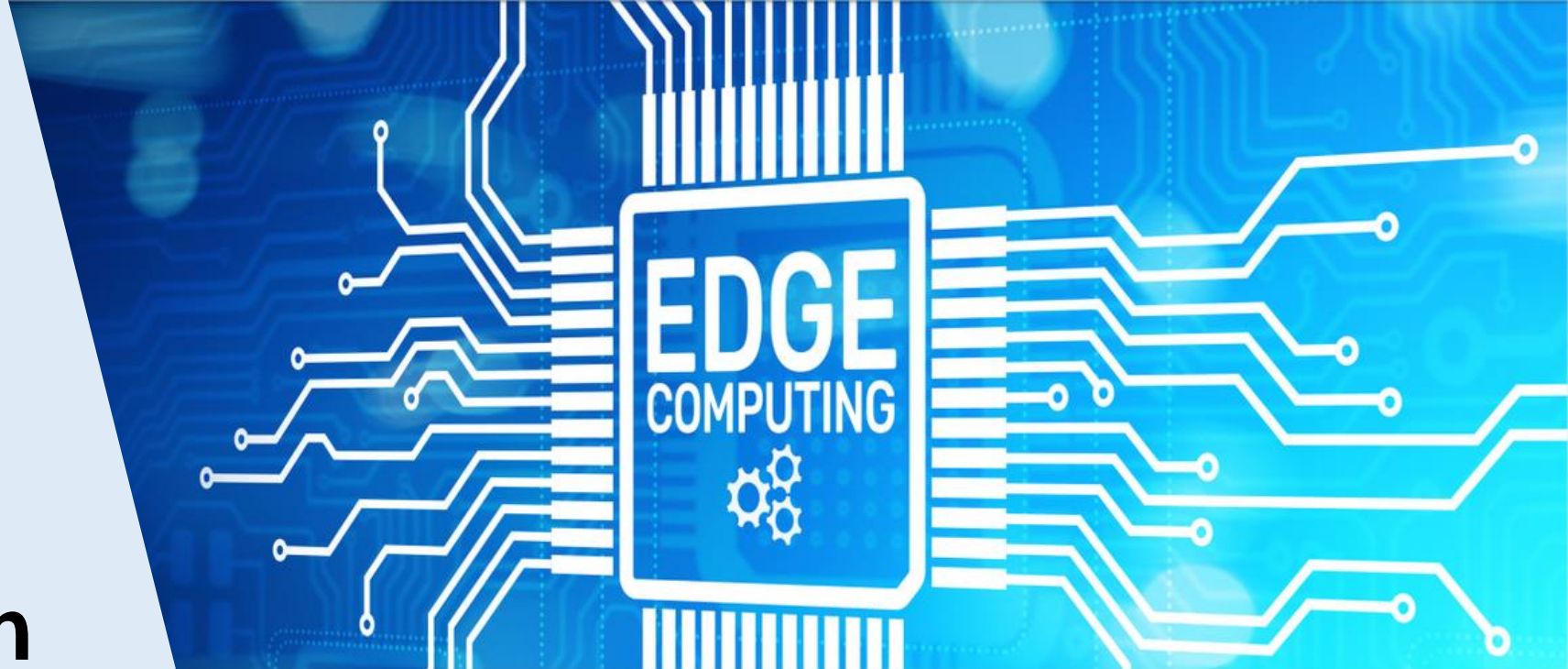




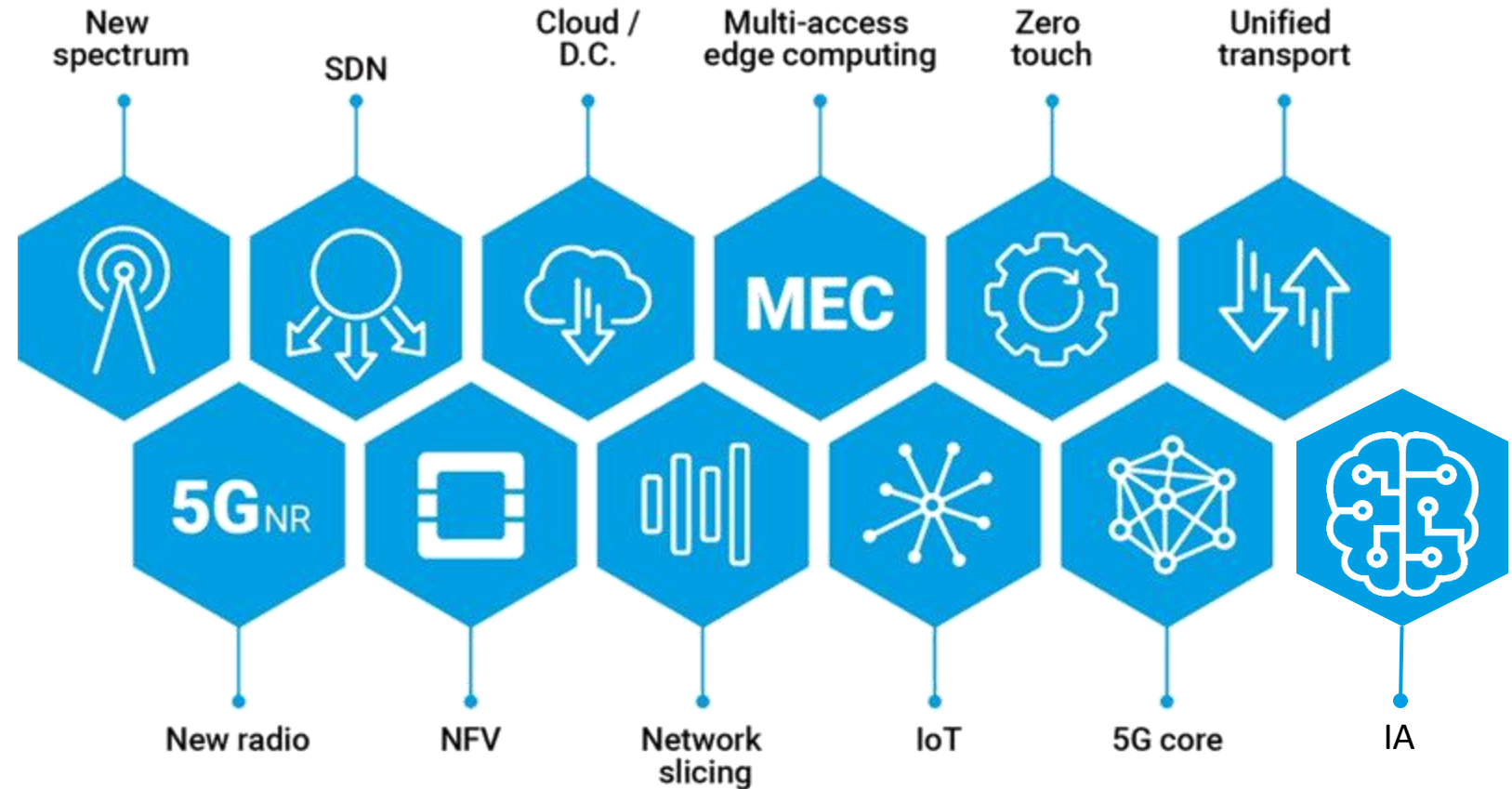
MEC Hackathon 2021

optaresolutions

atlanTTic
research center
for Telecommunication Technologies



Follow Mec: the surveillance drone mec application



Follow Mec

Context

With a focus on **security** and **surveillance**, the artificial intelligence for autonomous drone flights becomes more and more important.

The power of **Edge Computing** and the **AI** capabilities enable intelligent data analysis and recognition of potential incidents in the real-time video stream like, for example:



Follow Mec Context

Flex Drone Concept



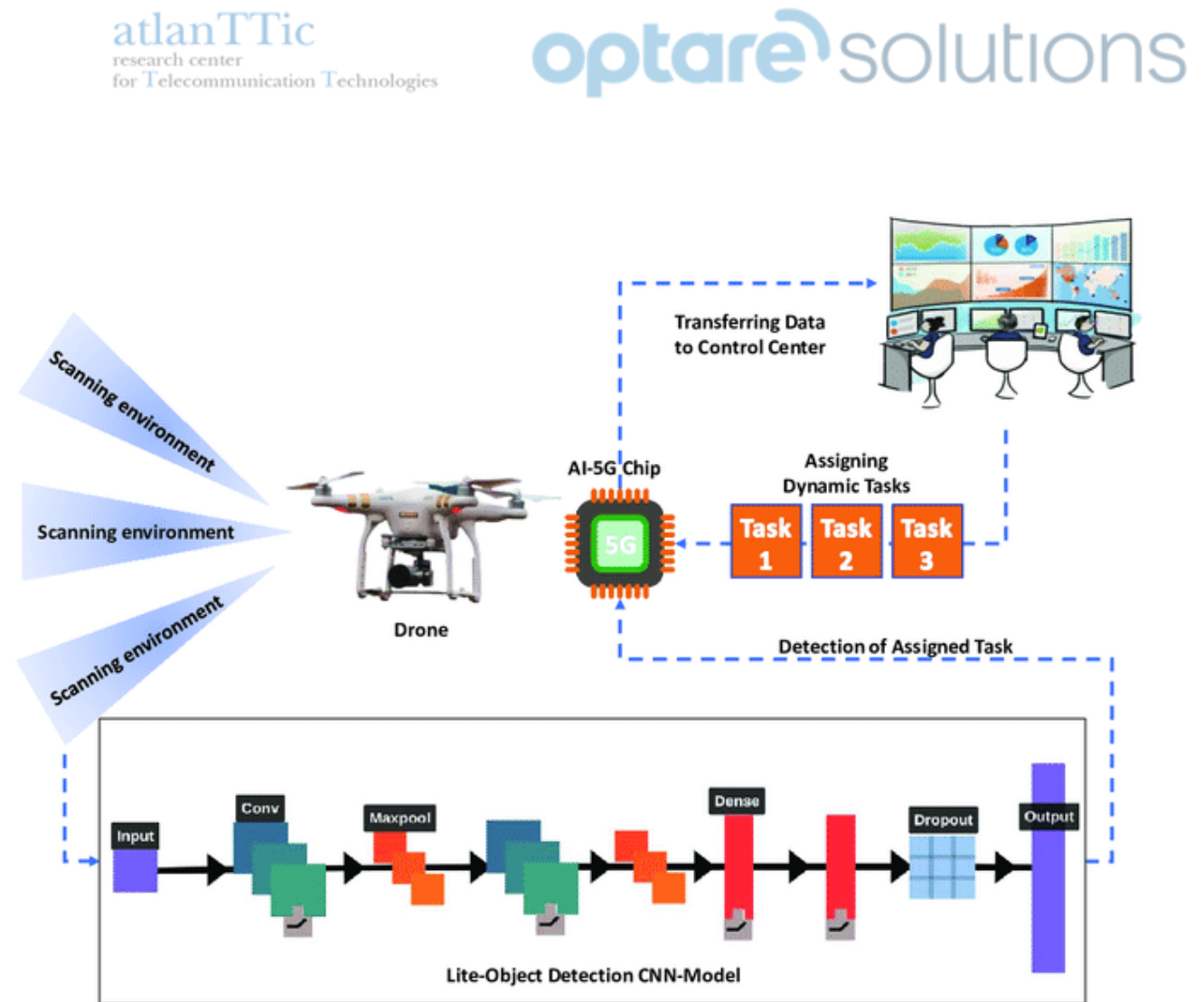
Fire Detection



Traffic Management



Crowd Surveillance



Follow Mec

Context

Flex Drone Concept Without Edge Support



Embedded AI:
expensive resources



Weight of drone:
increased



Amount of
resources: limited



TI systems affected
by flight

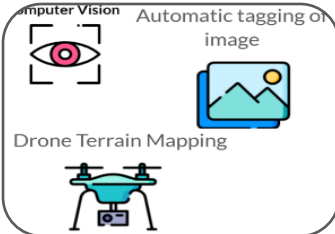
Flex Drone Concept With Edge Support



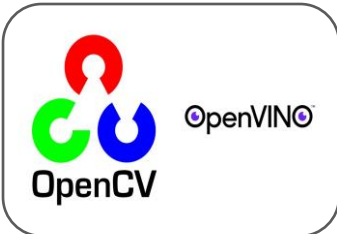
Simpler and cheap
components in drone



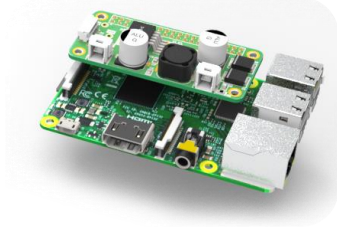
Weight reduction
gives more autonomy



Flexible suite of AI
assets



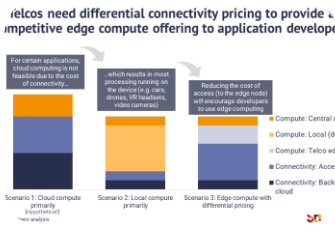
Get benefit from
open innovation



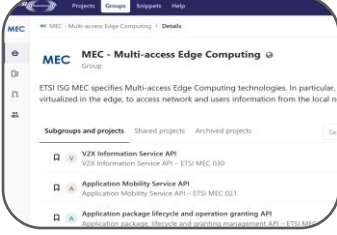
Small embedded
HW



Good support in
movement



Optimized cost



MEC APIs for
development

Follow Mec

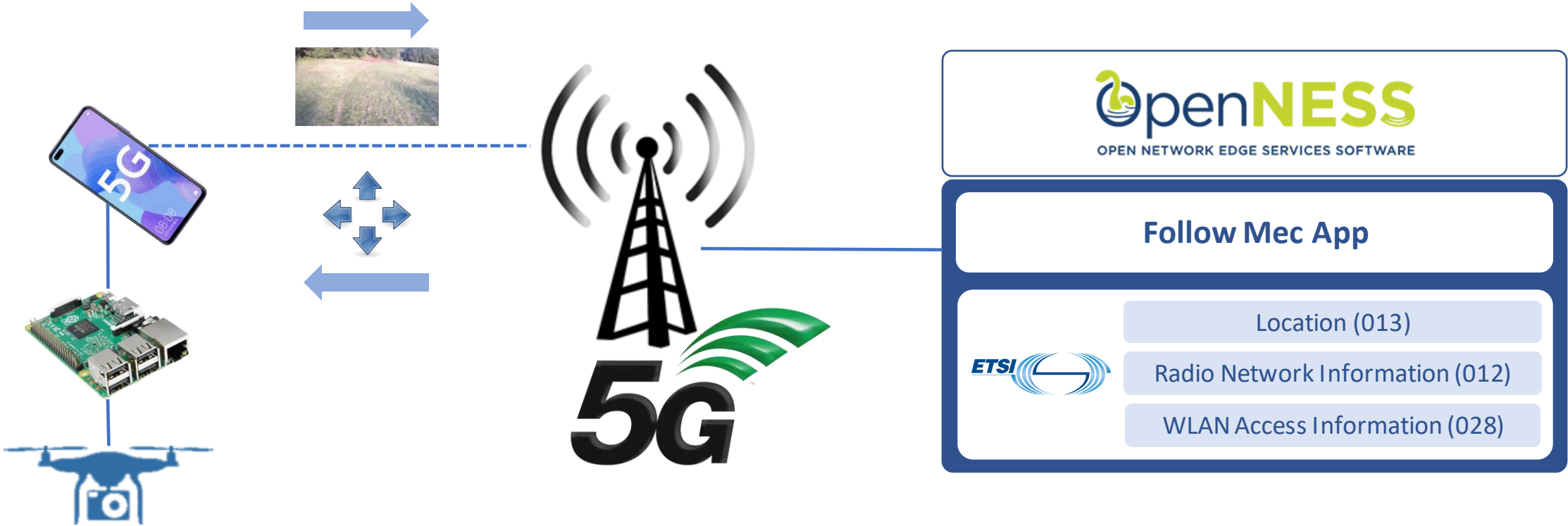
Context

5G Follow Me:

- AI pedestrian detection algorithms
- Control over the drone fly depending on the movement of the target
- App receives a video stream from the camera drone



Follow Mec Architecture



Follow Mec

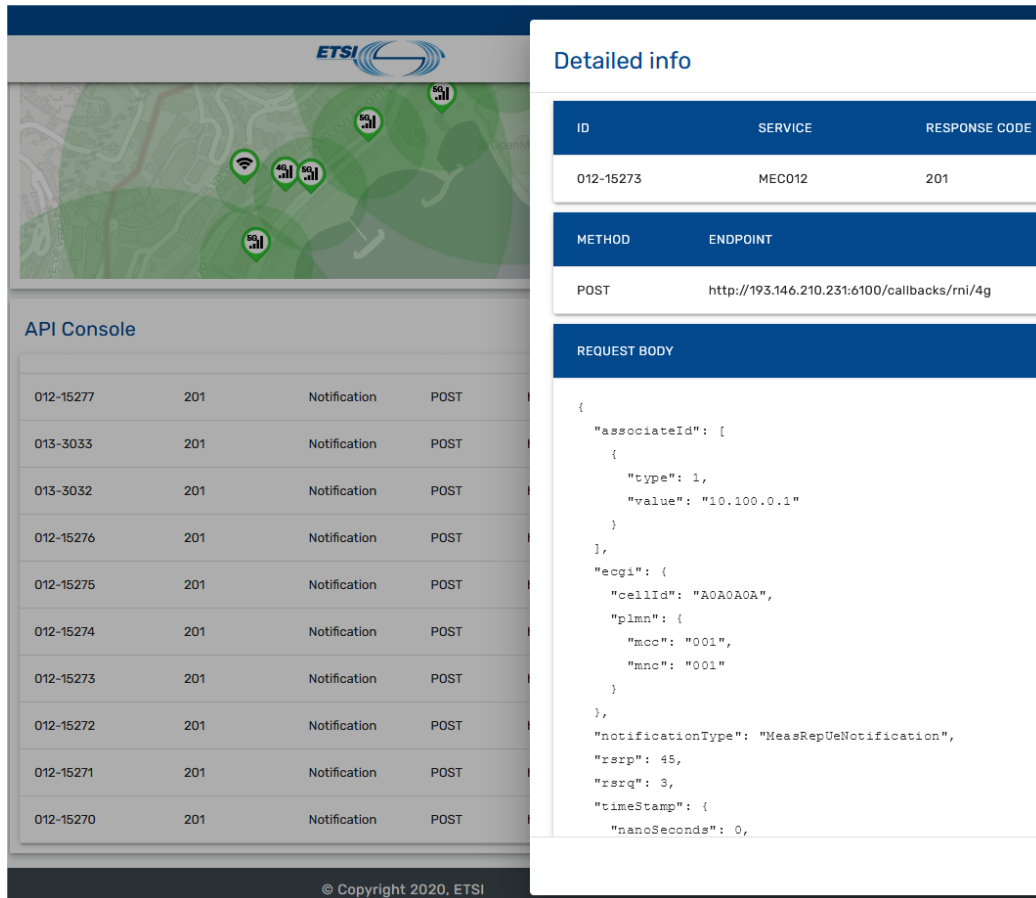
Features

- The surveillance drone flies over a predefined route that covers different coverage areas, streaming their camera images to the Edge application where the AI inference is performed.
- If a pedestrian is recognized by the object detection algorithm, the Edge application enters in Tracking mode.
- In tracking mode, flying instructions are sent to the drone allowing the target tracking.
- If the pedestrian moves away from the route, the drone returns to surveillance mode following the original path.



Follow Mec

MEC APIs Subscriptions



The screenshot displays the ETSI API Console interface. On the left, a map shows the geographical distribution of MEC instances. The main area is divided into two panels. The left panel, titled 'API Console', lists several subscriptions with columns for ID, SERVICE, RESPONSE CODE, METHOD, and ENDPOINT. The right panel, titled 'Detailed info', provides a deeper look into a specific subscription (ID: 012-15273, SERVICE: MEC012, RESPONSE CODE: 201). It shows the METHOD (POST) and ENDPOINT (http://193.146.210.231:6100/callbacks/rni/4g). The REQUEST BODY is also displayed, showing a JSON object with fields like 'associateId', 'ecgi', 'plmn', 'notificationType', 'rsp', 'rsrq', and 'timestamp'.

ID	SERVICE	RESPONSE CODE
012-15273	MEC012	201

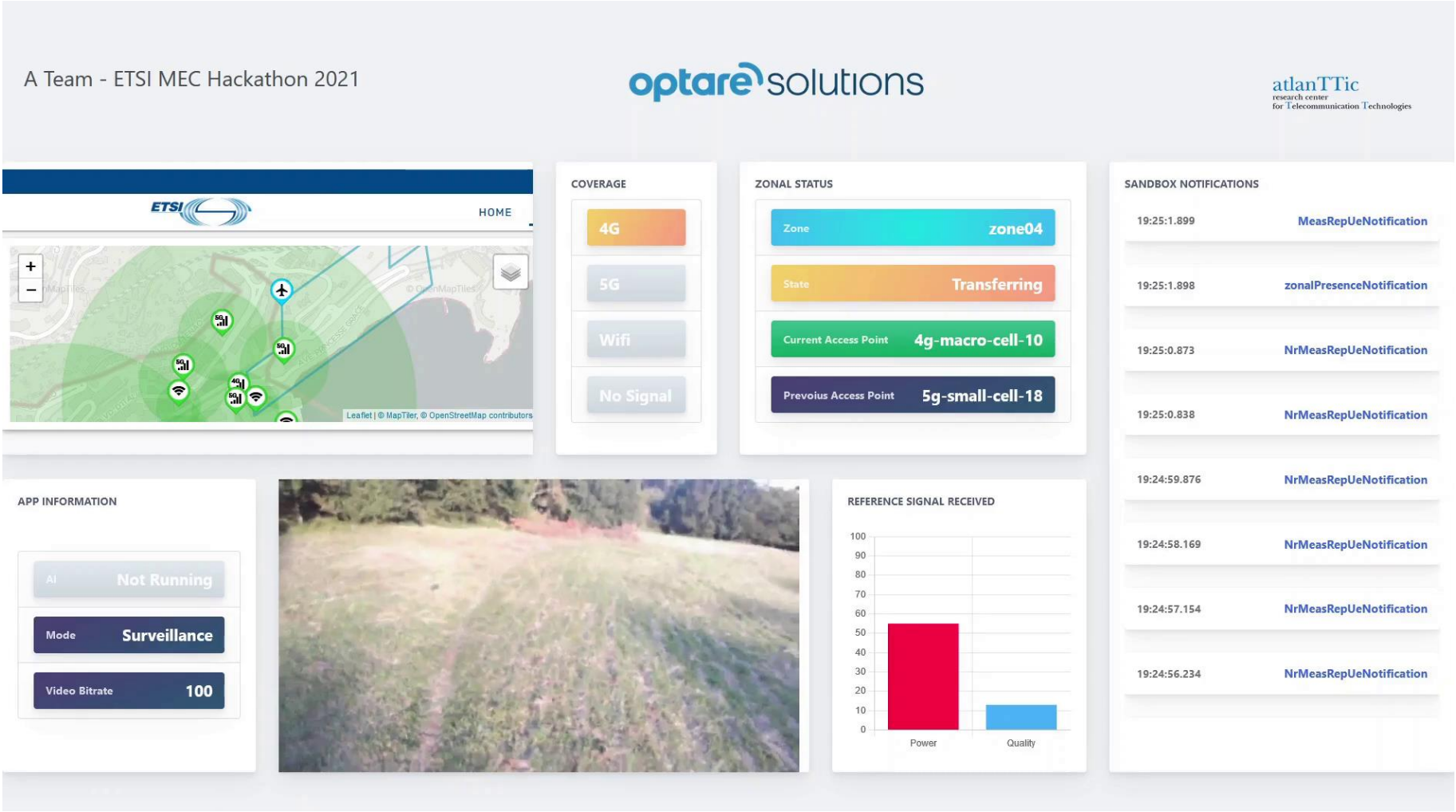
METHOD	ENDPOINT
POST	http://193.146.210.231:6100/callbacks/rni/4g

```
{
  "associateId": {
    "type": 1,
    "value": "10.100.0.1"
  },
  "ecgi": {
    "cellid": "A0A0A0A",
    "plmn": {
      "mcc": "001",
      "mnc": "001"
    }
  },
  "notificationType": "MeasRepUeNotification",
  "rsp": 45,
  "rsrq": 3,
  "timestamp": {
    "nanoseconds": 0,

```

- The Follow Mec app is subscribed to several notifications (Location, Radio Network Information and WLAN Information).
- This information is used by the Edge Application to know the availability of MEC and Connectivity resources, adapting its behaviour.

Follow Mec Dashboard



Follow Mec

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