



AUTOMOTIVE EDGE  
COMPUTING CONSORTIUM

# Traffic Steering for Traffic Digital Twin powered by Traffic Influence API

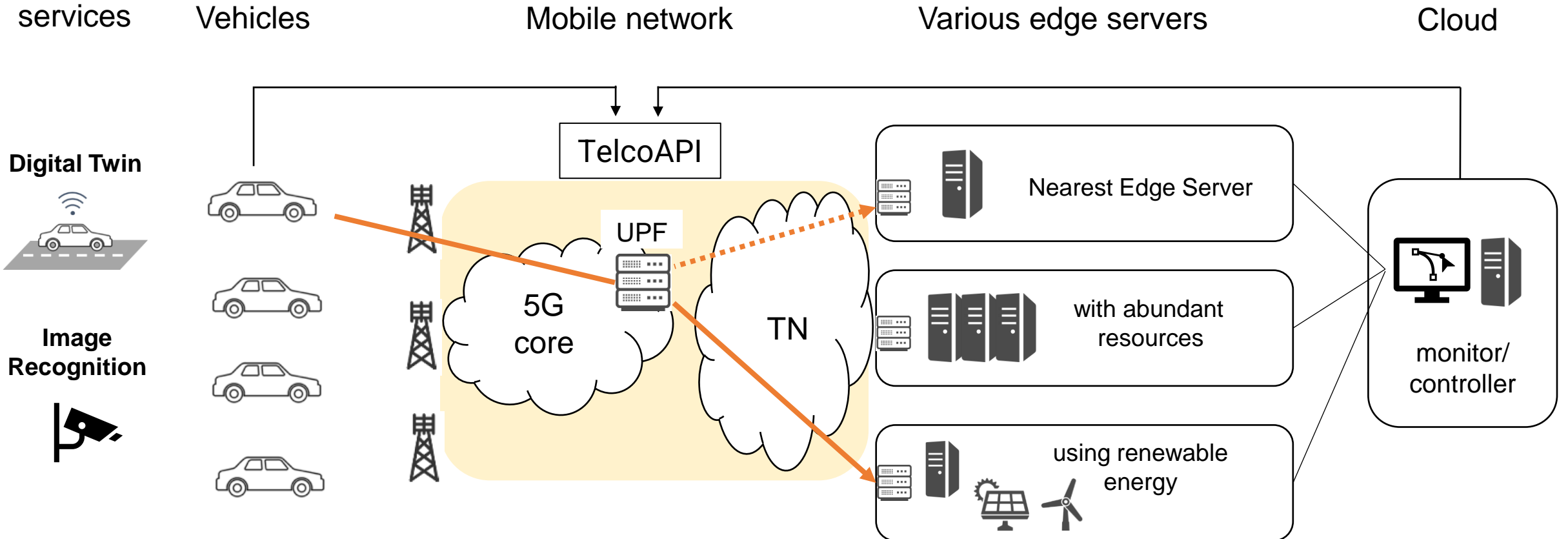
ORACLE, KDDI, EQUINIX, TOYOTA

Feb 2025



# PoC Technical Overview

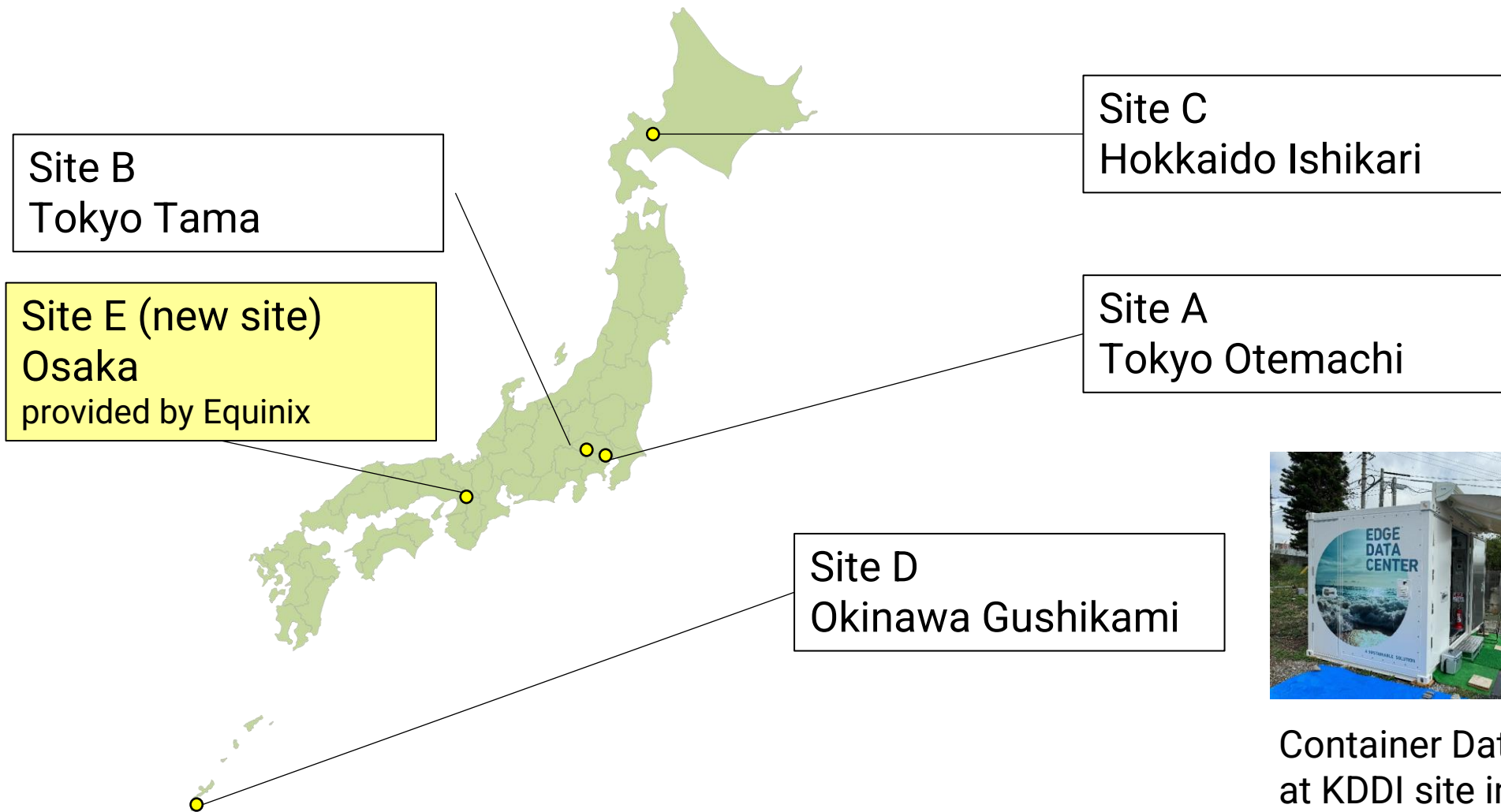
Vehicle applications have diverse requirements, requiring optimal edge server selection. TelcoAPI enables flexible edge selection based on application requirements.





# Distribution method : Edge Sites

In this PoC, we used five sites across Japan.  
The Osaka site provided by Equinix was added.



Container Data center  
at KDDI site in Okinawa

# Distribution method : TelcoAPI used in this PoC

## Edge Cloud API :

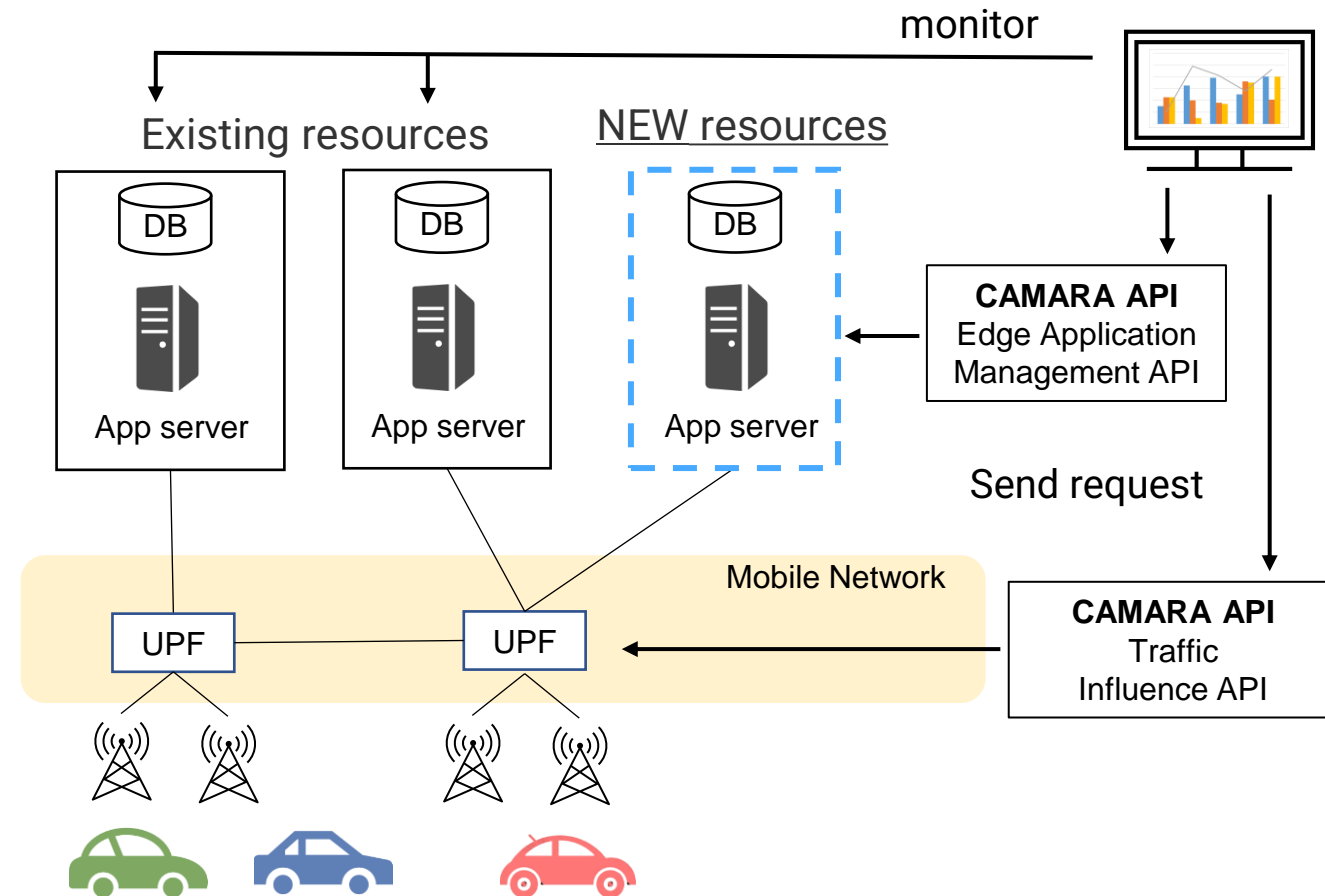
A set of functions for utilizing and managing edge servers. (<https://camaraproject.org/edge-cloud/>)  
The following two APIs are included:

## Edge Application Management API :

Provides lifecycle management for applications, enabling Application Providers to deploy and manage applications efficiently.

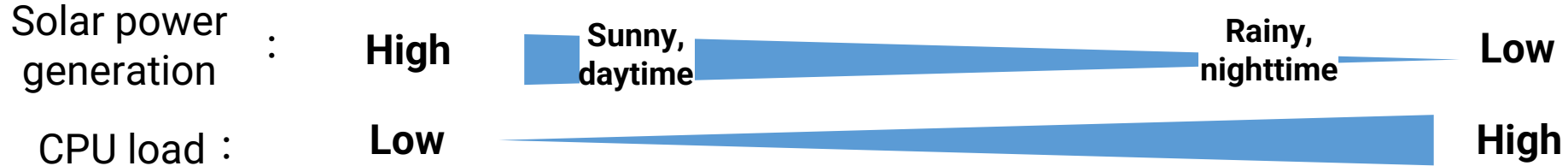
## Traffic Influence API :

Enables the establishment of optimal routing between user devices and edge servers.



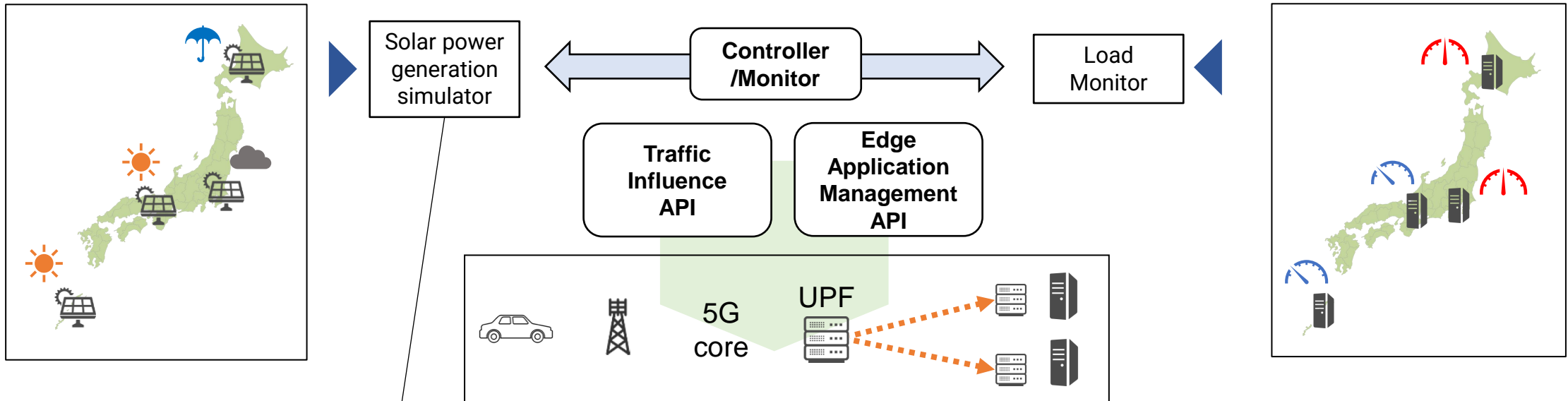
# Optimal Edge Selection : Functional Architecture

Distribution metrics are adjusted based on the status of solar power generation and CPU usage at each site to select the optimal edge server.



Distribution based on solar power generation

Distribution based on CPU usage

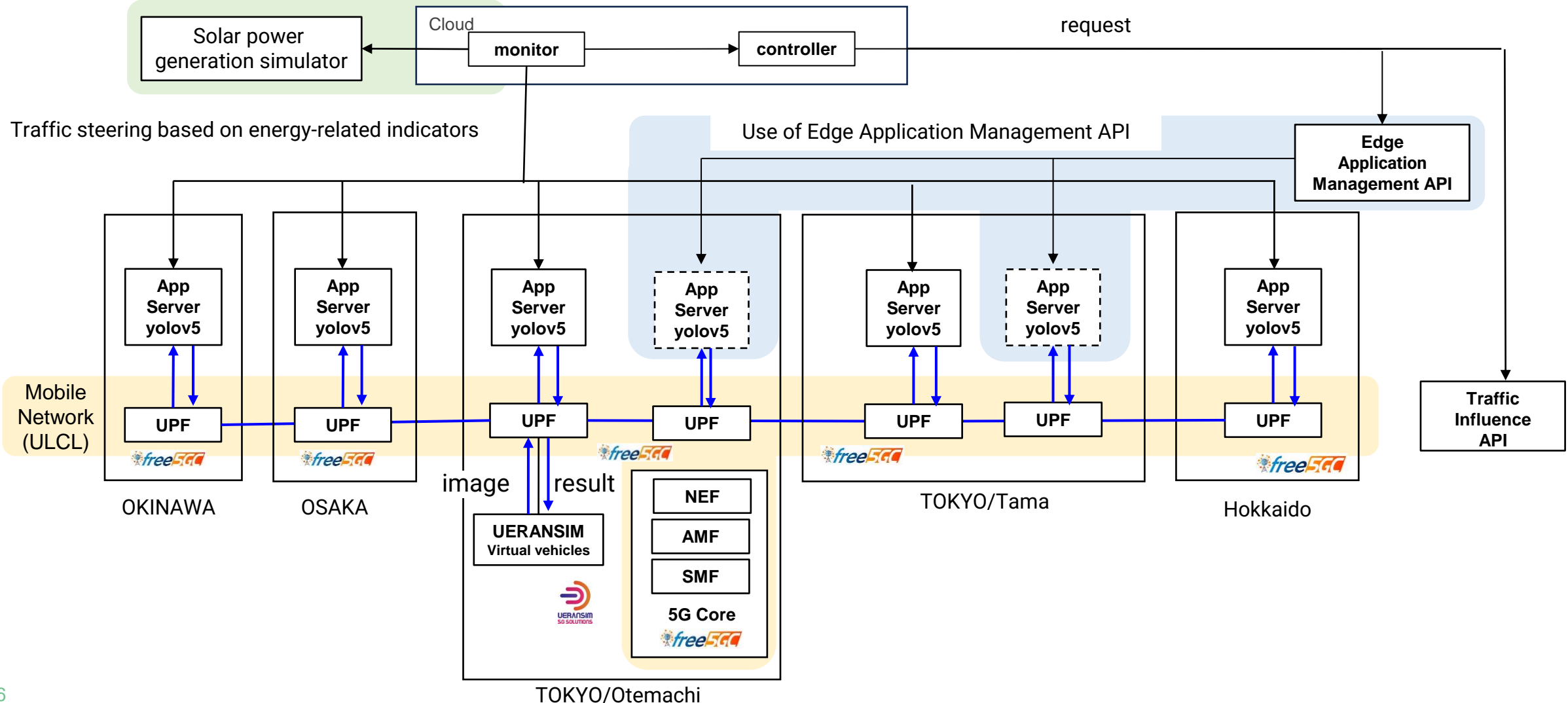


This simulator is implemented in the Green Connected Platform Field Trial (Cisco, KDDI and TOYOTA)



# Optimal Edge Selection : PoC System Configuration

we used the image recognition application.  
By increasing the number of vehicles, we applied additional load to the server.



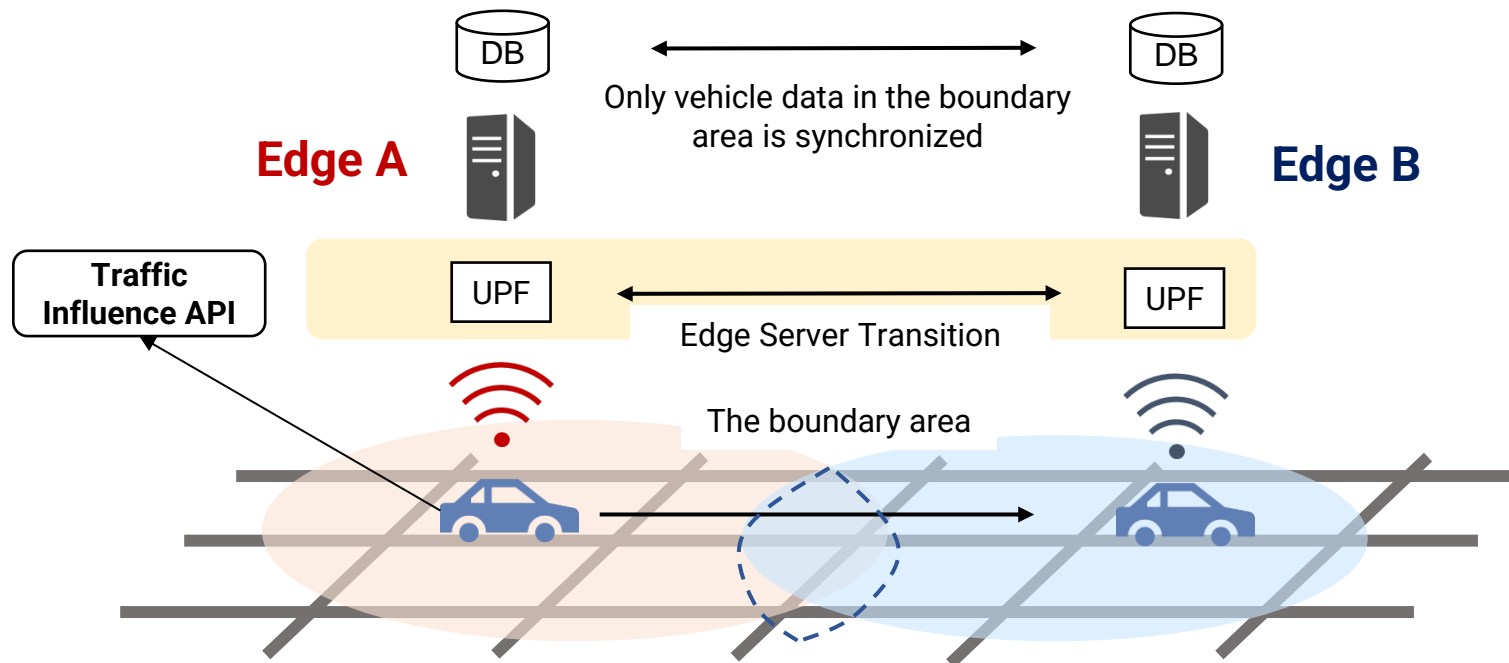
# Traffic Digital Twin : Functional Architecture

Low latency and efficient data transmission are required for the realization of digital twins. \*  
 Processing local data on local edge servers may enable efficient service delivery.  
 However, since vehicles move between regions, switching edges according to their movement is necessary.

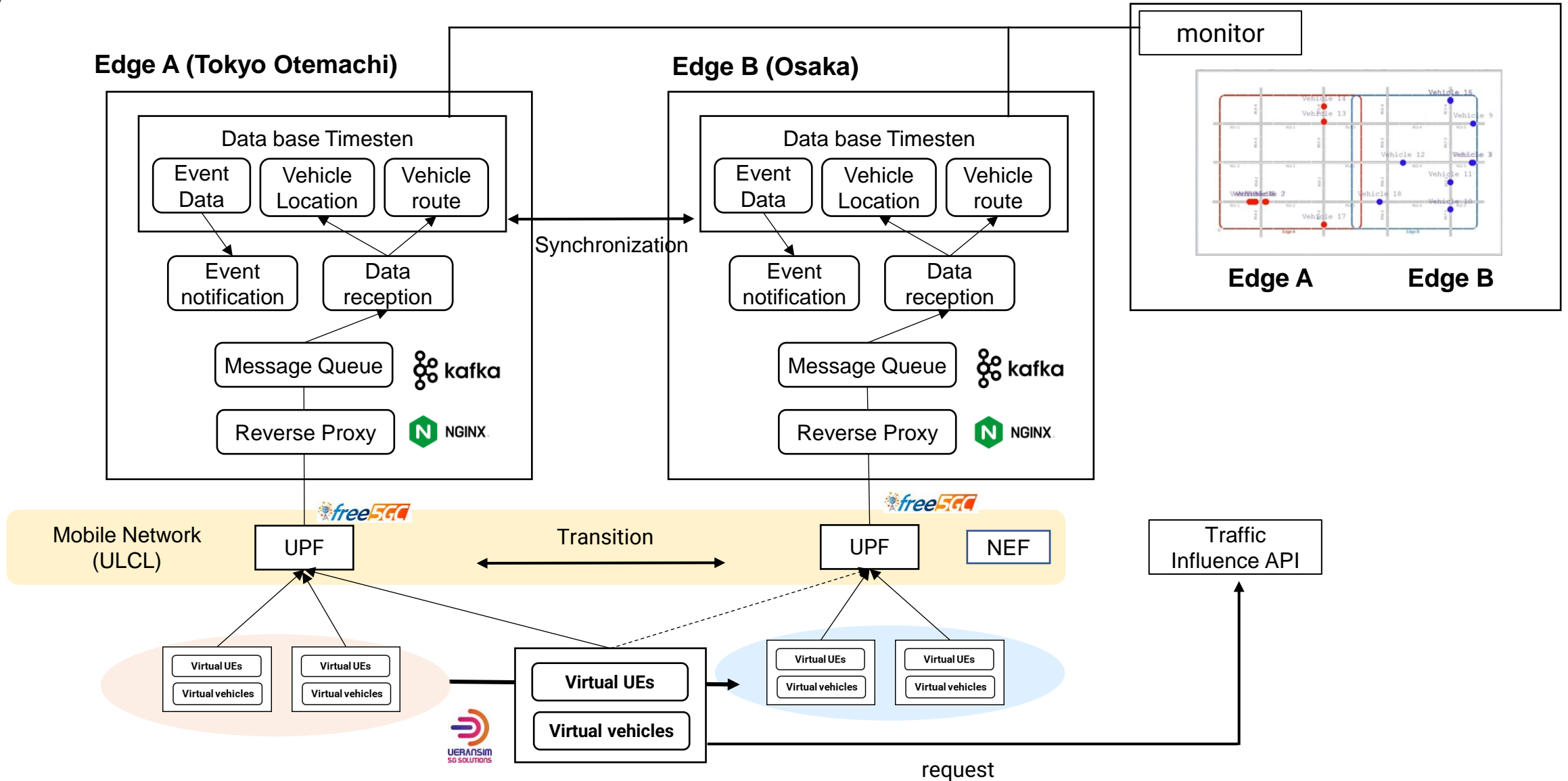
**In This PoC, the following two functions were implemented.**

- Traffic Influence API is used to switch edges based on vehicle movement.
- By synchronizing only the vehicle data in the boundary areas between edges, a seamless transition is achieved.

\*AECC Digital Twins (White Paper) Version 1.0 June 1, 2024



# Traffic Digital Twin : PoC System Configuration







Thank you!