



# The Digital Evolution of Interoperability

## Central Interoperability System

# Greek Toll Industry Interoperability Platform Evolution

From Peer 2 Peer  
From 2010

to  
to

Central Interoperability System  
2023

Modern Toll Roads – A New Chapter in Social Responsibility

JUNE 20-22, 2010 :: HOTEL GRANDE BRETAGNE :: ATHENS, GREECE

2011

The Digital Evolution of Interoperability 2023



“GRITS – GRreek Interoperable  
Tolling Systems ”

Real Time Interoperability in Greece via SOA (Service Oriented  
Architecture)

Thomas Siozopoulos, Strategy & Technology Advisor to AODOS

Athens, 17/06/10



CIS

CENTRAL INTEROPERABILITY SYSTEM

Login

Username

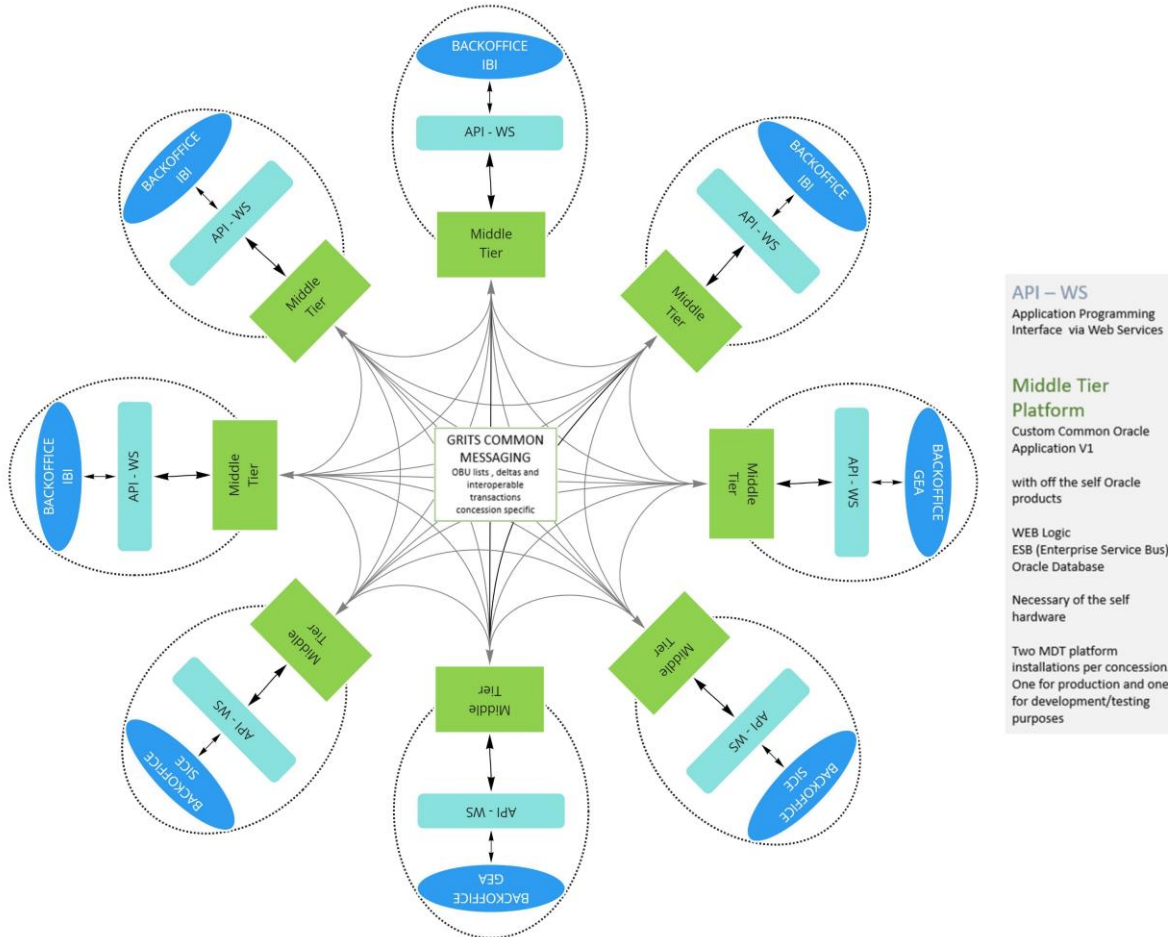
Password

Sign in

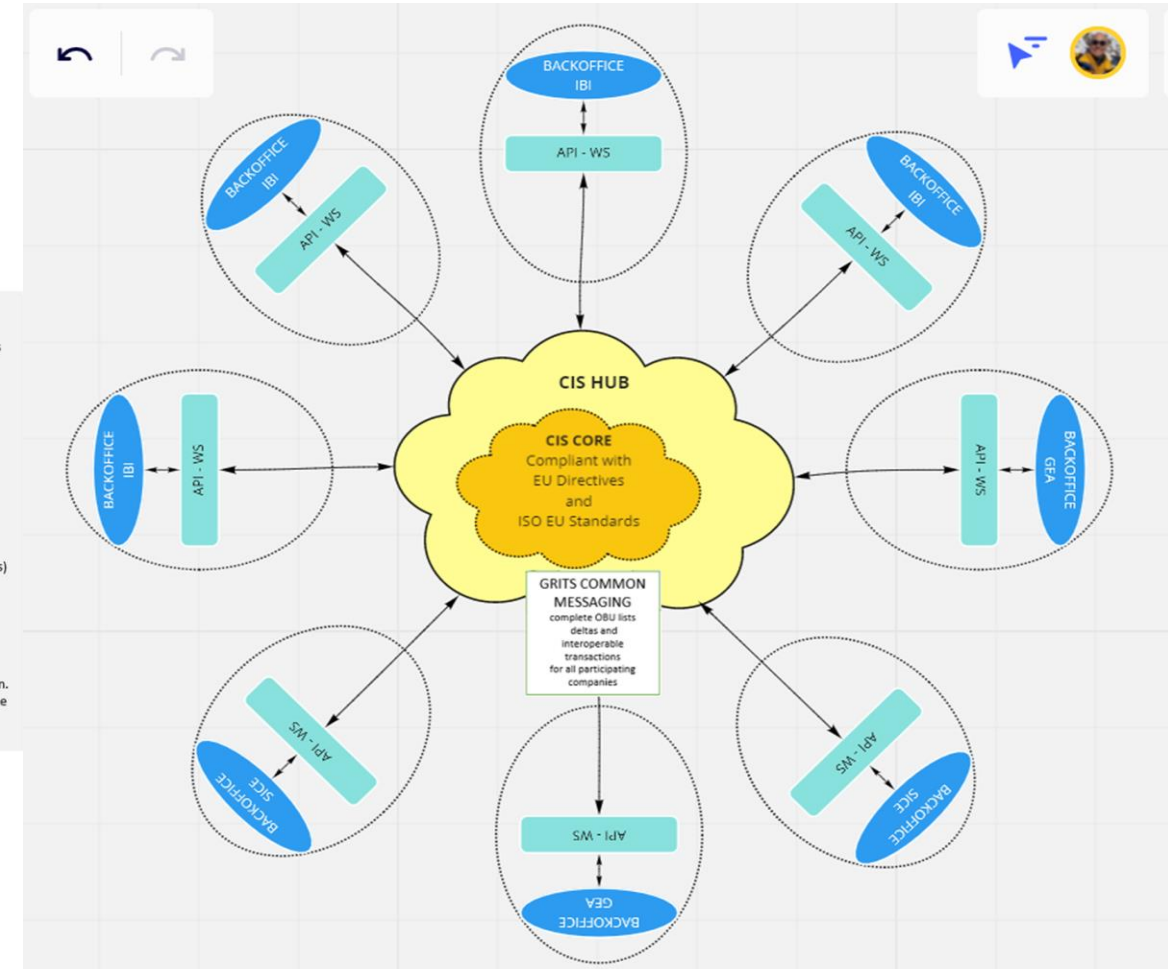


# Greek Toll Industry Interoperability Evolution from 2010 to 2023

On Premises GRITS, 8 Installations  
56 Connections



On CLOUD CIS , 1 Installation  
8 Connections



# Global Interoperability Programs with different levels of success



Ireland's **central clearing house** has become a model of public authority - led interoperability.

The structure supports 11 different toll roads and 14 service providers, processing over 50 million interoperable transactions per year



The European Electronic Toll Service (EETS) programme is the only truly international interoperability project. New legislation has allowed for the use of emerging technologies for interoperability.



Russia has also developed a clearing house which allows toll operators to exchange charging and billing information



The US is currently applying lessons learned from the ATI Hub program to create several regional hubs to increase interoperability



Colombia's national interoperability mandate was set to be completed in 2019 but has seen delays due to implementation complexity and COVID.



The Balkans' interoperability program is the first step towards integrating the Western Balkans into EETS



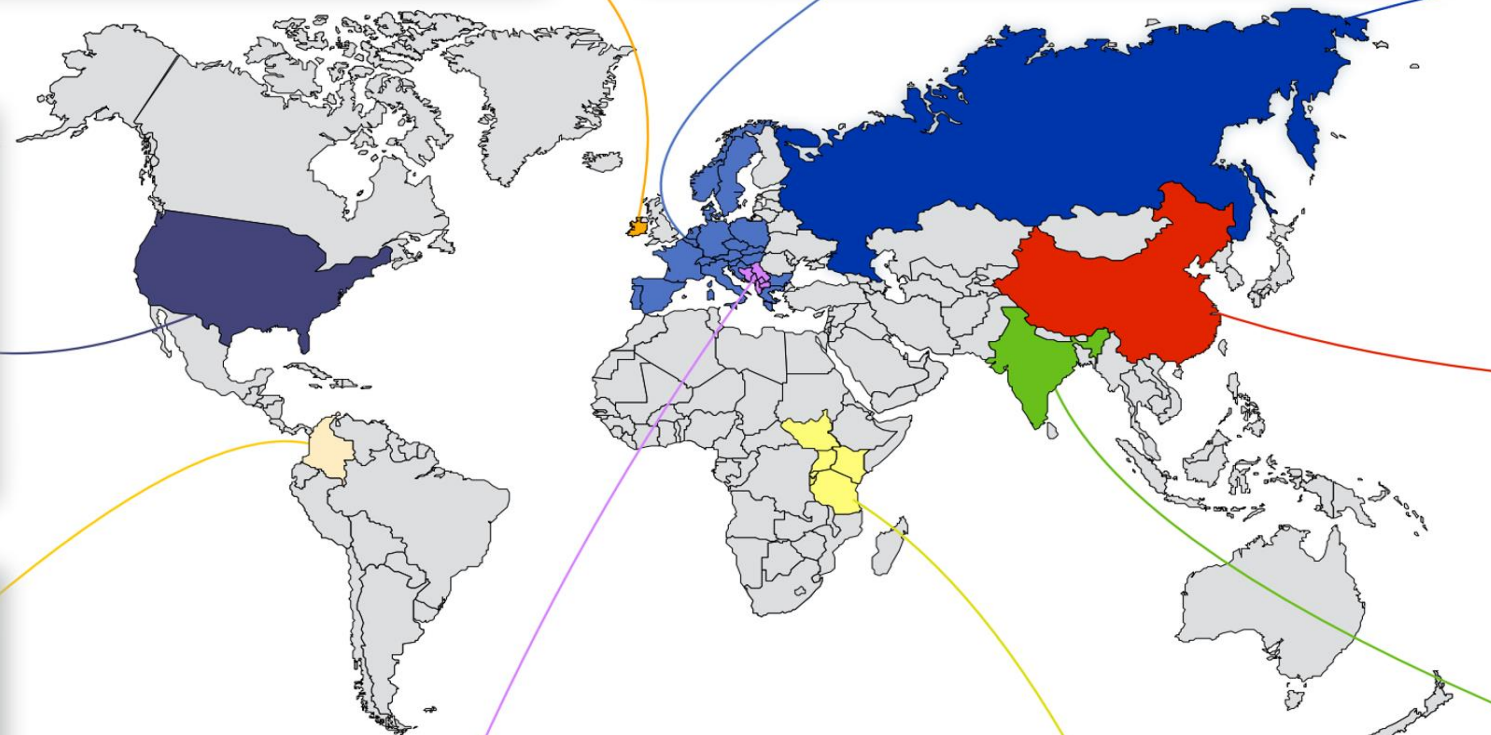
The Eastern African Community has also began discussing potential future interoperability for its new roads



China has mandated the use of a single DSRC protocol across the country. However signs suggest long-term interoperability will come from licence plate recognition and smartphone apps



India's fully interoperable FASTag, launched in 2014, is now mandatory countrywide.





# In Europe new RUC schemes are emerging driven by new legislation.

## EETS European Electronic Toll Charging is supported across the EU

### Summary of key changes in Member States and at EU level

#### NEW IMPLEMENTATIONS

Hungary launches Hu-Go, the world's first open device GNSS scheme for HGVs

Russia launches Platon, the world's largest GNSS toll with a network of over 50,000km and Europe's 5th GNSS toll

Following the German model, Belgium launches Viapass, Europe's 6th GNSS toll

Germany opens to EETS providers

Czech Republic launched HGV RUC scheme via GNSS

Bulgaria launched BG Toll, Europe's 7th GNSS truck toll

Launch of Polish RUC scheme

Launch of the Netherlands scheme

2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025

Eurovignette COM(2017) 275

PSD2

Smart tachograph reg.

European Green Deal

EETS compliance across the EU





EC target for introduction of EU-wide 'user pays' principle for road use

Revised EETS directive

#### REGULATORY CHANGES

PTOLEMUS source

# Emerging Technologies are competing with Traditional Technologies since customer demand for Value Added Services grows.

Technology	DSRC	GNSS/ Hybrid	ANPR/ ALPR	RFID	Infrared	Fleet telematics	Smartphone	Embedded
Devices								
Implementation	<ul style="list-style-type: none"> <li>E-Toll (China)</li> <li>Libert-T (France)</li> <li>Telepass (Italy)</li> <li>ETC 2.0 (Japan)</li> </ul>	<ul style="list-style-type: none"> <li>Toll Collect (Germany)</li> <li>ERP (Singapore 2020)</li> <li>Platon (Russia)</li> <li>Viapass (Belgium)</li> </ul>	<ul style="list-style-type: none"> <li>HGV charge (New Zealand)</li> <li>London congestion charge</li> <li>Colorado turnpike (USA)</li> </ul>	<ul style="list-style-type: none"> <li>FASTag (India)</li> <li>E-Toll (Vietnam)</li> <li>E-ZPass (USA)</li> <li>HGS (Turkey)</li> </ul>	<ul style="list-style-type: none"> <li>E-Toll (Indonesia)</li> <li>Westerschelde Tunnel (Netherlands)</li> </ul>	<ul style="list-style-type: none"> <li>Hu-Go (Hungary)</li> <li>Bulgaria</li> </ul>	<ul style="list-style-type: none"> <li>AmberOne (Poland)</li> <li>Autuma (Spain)</li> </ul>	<ul style="list-style-type: none"> <li>Audi's Integrated Toll Module in the US</li> </ul>
Device cost	€5 - 15	€70 - 150	n.a.	€0.20 - 20	€10 - 20	€15-50	€0	n.a.
Opportunity for VAS	Medium	High	Low	Medium	Low/Medium	High	High	High
Read rate	>99%	Device dependent	90-98%	>99%	>99%	>99%	90-98%	n.a.

TRADITIONAL TECHNOLOGIES

EMERGING TECHNOLOGIES

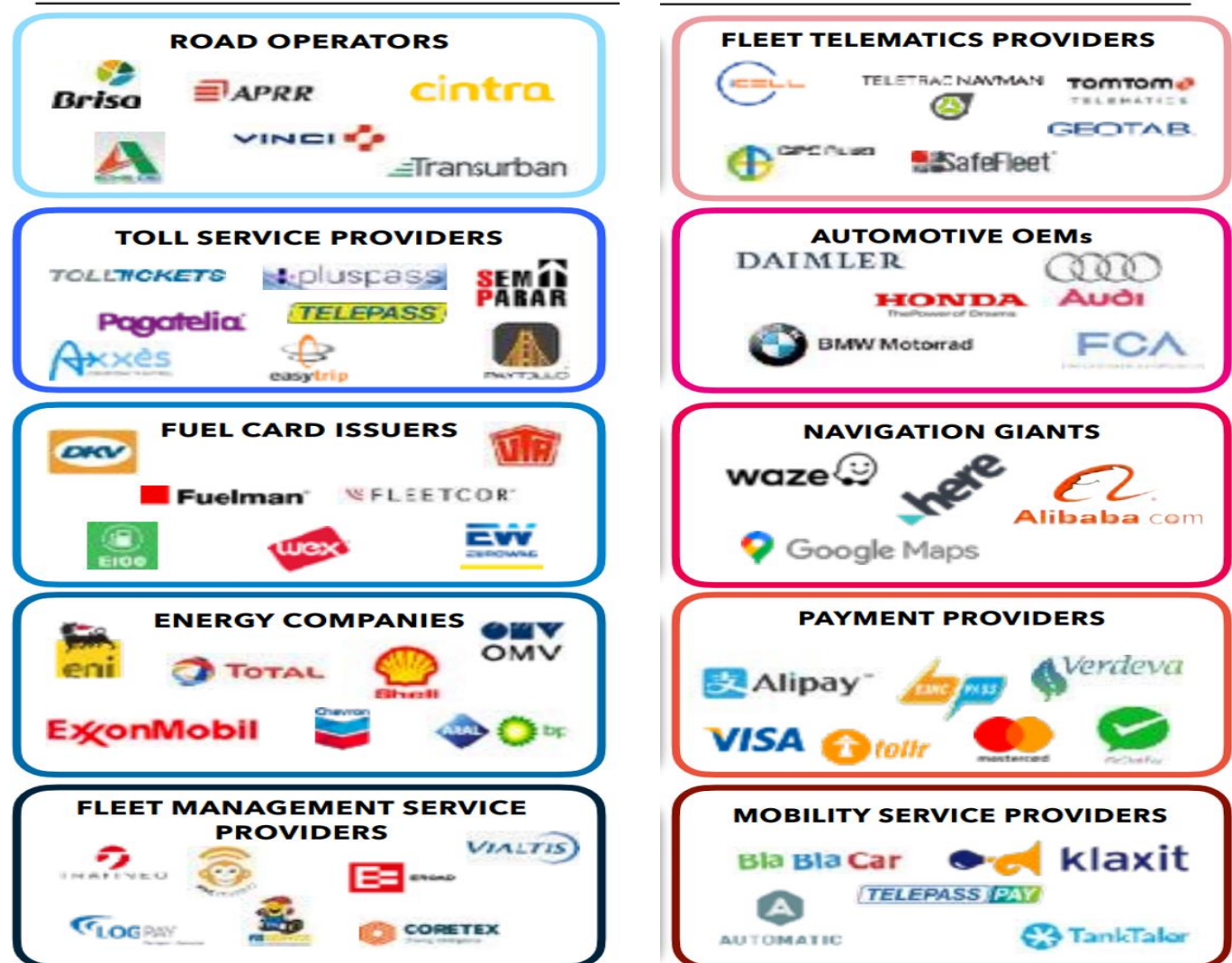
PTOLEMUS source




# Road operators in member states are facing competition for tolling payments and customer services.

**10 Industry Groups**  
are currently positioned as toll  
service providers.

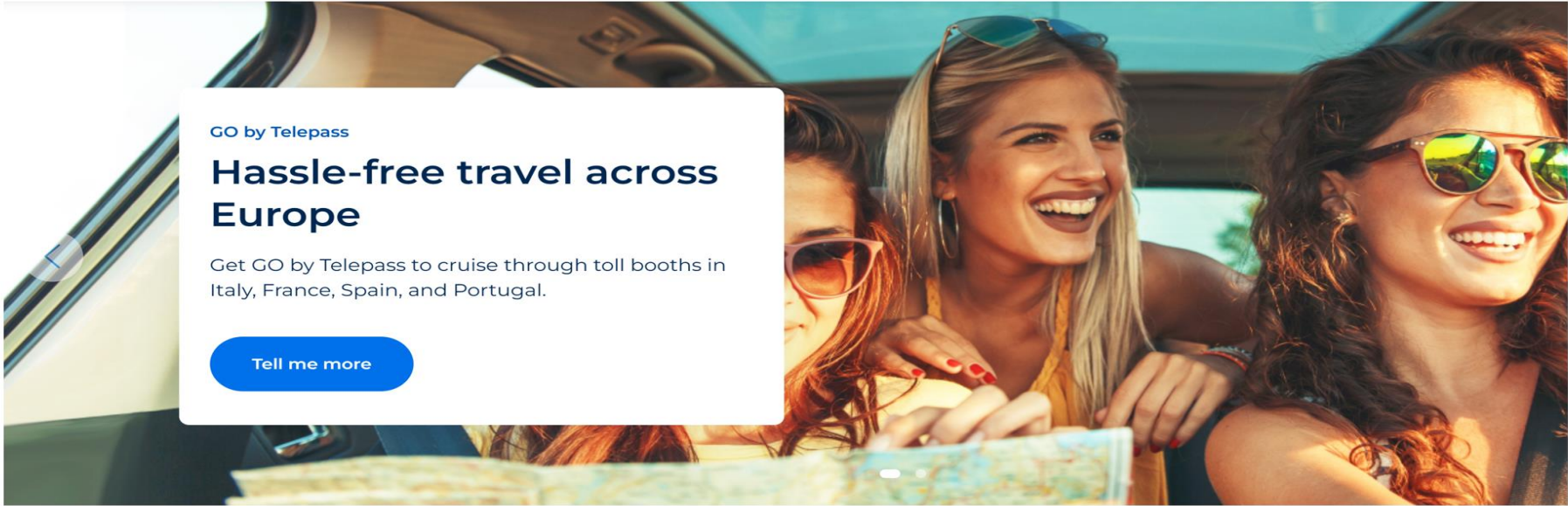
EU Member States incumbent  
**Road Operators are**  
**defending**  
their market by adopting  
**New Technologies**  
and providing VAS  
**Value Added Services**  
to Customers.



# European Electronic Toll Service Providers with many Value Added Services



PlansServicesInsuranceCashbackWhere to find usSupport




GO by Telepass

Hassle-free travel across Europe

Get GO by Telepass to cruise through toll booths in Italy, France, Spain, and Portugal.


Tell me more



PlansServicesInsuranceCashbackWhere to find usSupport

Log in


Get moving with just a tap



Cashback


Motorways

No more stopping at motorway toll booths with our handy Telepass device.




Affiliated Car Parks

Use your device to park in railway stations, airports, exhibition centres, and cities.



On-street Parking

Use your app to park in cities and pay only for the parking duration.



Taxis

Book the closest taxi and pay for your ride with your app.



# European Electronic Toll Service Providers with many Value Added Services

## eurotoll opens the doors to Europe for you

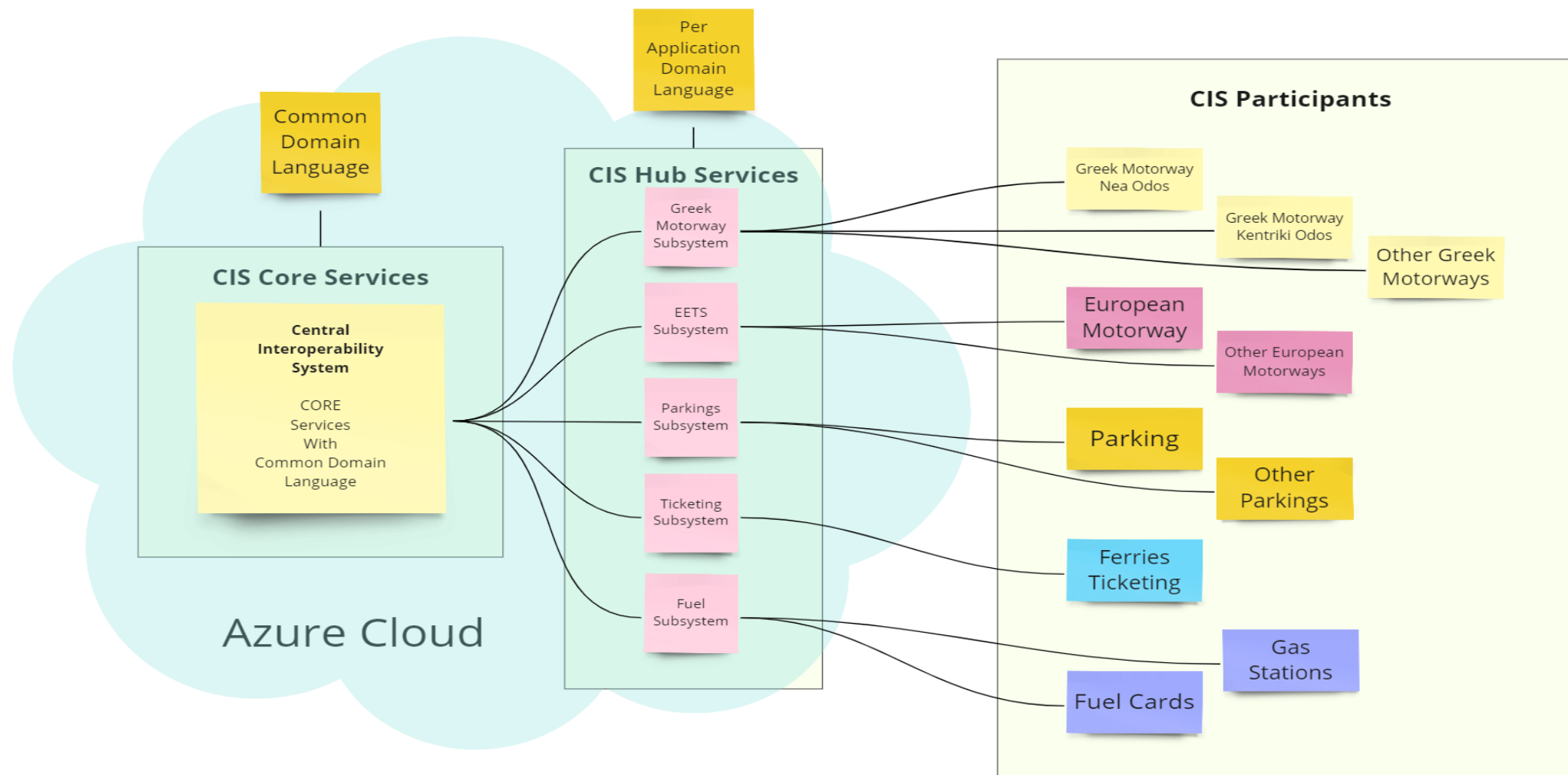
Toll system leader in Europe, eurotoll provides you with all the devices you need : OBUs, cards, tax disks to drive on the 92,000 kilometres of european toll payment network and offers you the best discounts.

To know more about our offers, select on the map the country in which you want to travel.

**DISCOVER THE EUROTOLL OFFERS  
AND THE ASSOCIATED SERVICES**



# Central Interoperability System Conceptual Design with real time functionality.







## CENTRAL INTEROPERABILITY SYSTEM

Winning in the toll services market will depend on the ability to provide a

**Fully Open**

Interoperability Platform with

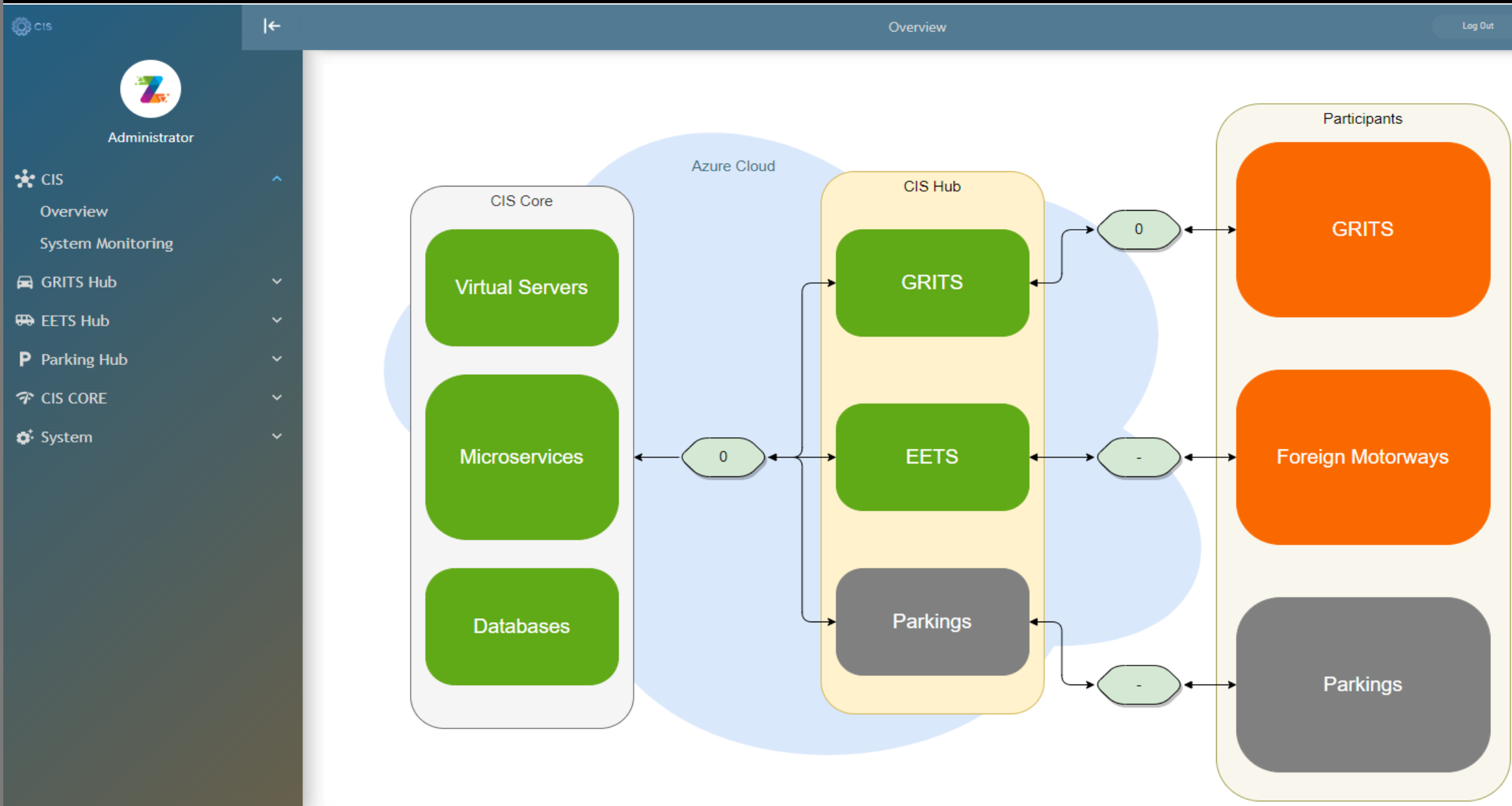
**EETS connectivity**

along with a large spectrum of

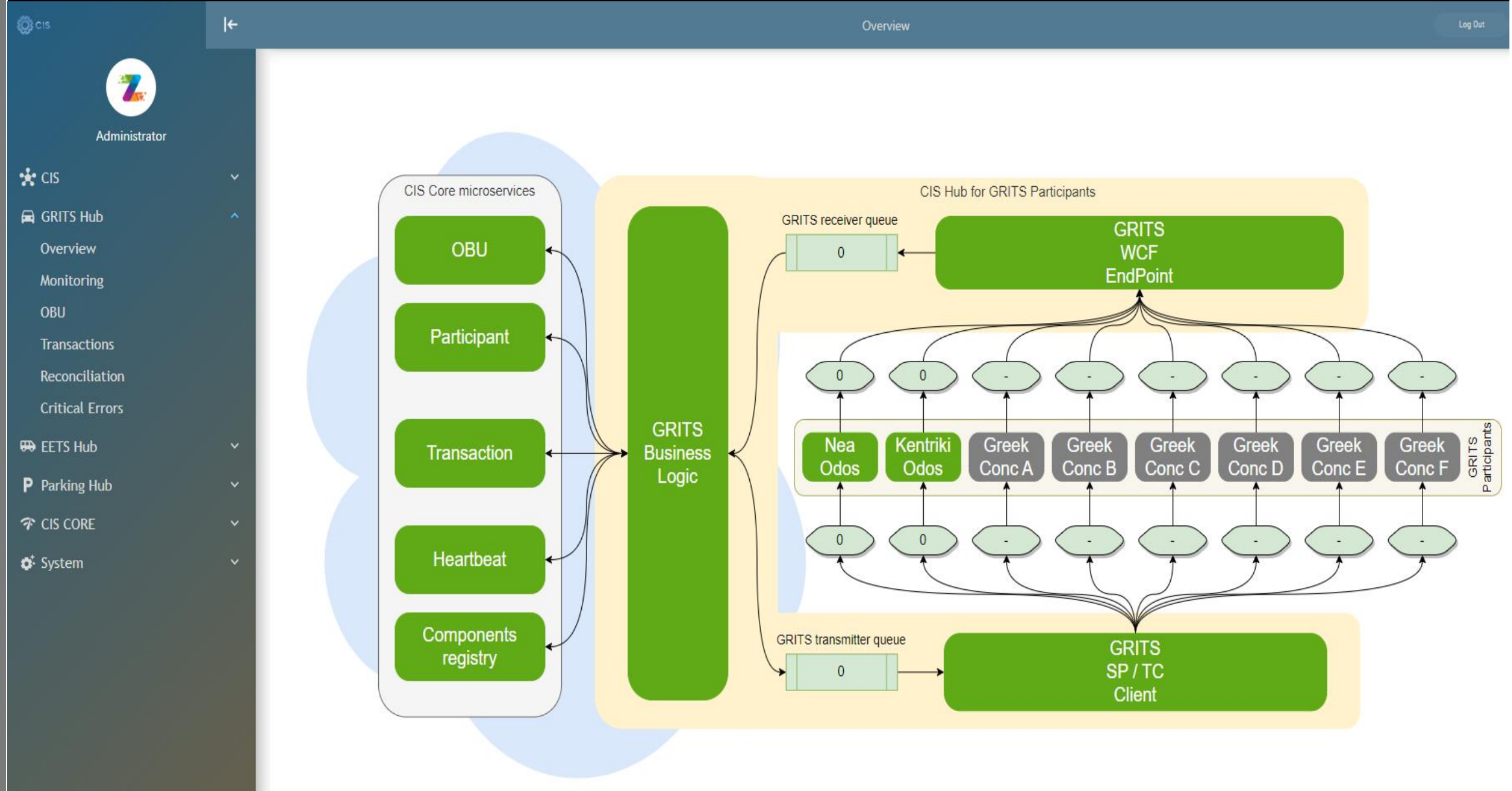
**Value Added Services**

through data integration for non-tolling related data

from a range of non-ETC service providers.





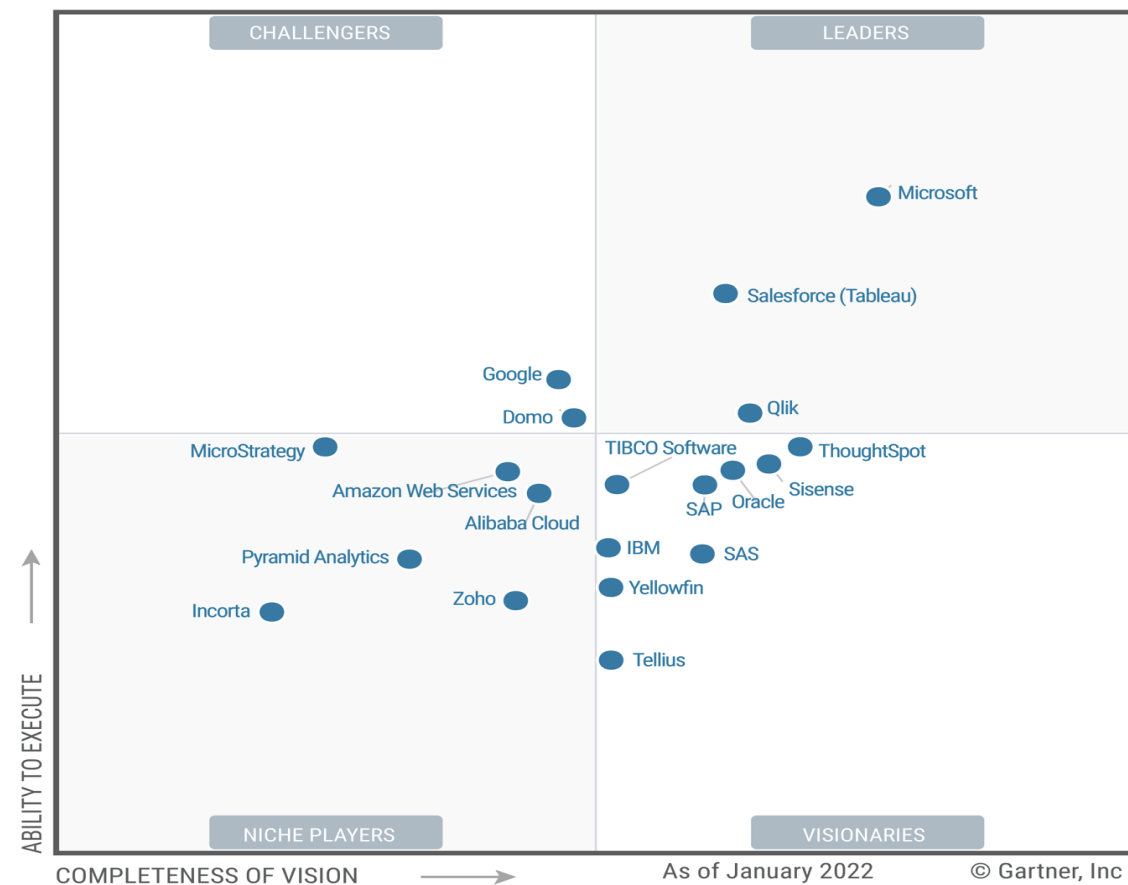


# CIS APPLICATION TECHNOLOGIES FRAMEWORK

## MICROSOFT TECHNOLOGIES IMPLEMENTED FOR DEVELOPMENT AND OPERATION

**AZURE CLOUD**  
**AZURE DEVOPS**  
**.NET CORE**  
**C#**  
**MICROSERVICES**  
**AZURE SERVICE BUS**  
**DOCKER CONTAINERS**  
**POWER BI**

## POWER BUSINESS INTELLIGENCE BY MICROSOFT 2022 Gartner® Magic Quadrant™ for Analytics and Business Intelligence Platforms





## Conclusion and Proposals

CIS is a unique FULLY OPEN--REAL TIME--AZURE CLOUD NATIVE--INTRAMODAL--EEC STANDARDS Interoperability technology platform that combines completeness of vision with ability to execute.

### Greek national service providers (NSP s) could:

1. Empower their cooperation towards a new improved bottom line and a leading role in the Toll Services area.
2. Adopt new tech that minimizes OPEX and provides value added services to the customer.
3. Promote hybrid GNSS+DSRC tech for HGVs as a future proof system, using RRF funding.

Nea Odos and Kentriki Odos along with ZENTECH, anticipated these challenges many years before and decided to invest on developing the state of the art CIS platform to address these needs proactively.

### Greek State could play a key role:

1. Cooperate with Greek Road Operators/Concessions to implement interoperability with EETS service providers, and apply related European legislation for EETS to the Greek market.
2. Support & promote hybrid GNSS+DSRC tech for HGVs as this solution has zero demand for new DSRC infrastructure and the project could get RRF funding.
3. GNSS systems can help fight fuel and other types of smuggling (via Truck Satellite Tracking), targeting tax evasion, and dramatically improving state revenue

THANK YOU FOR ATTENDING



**ZENTECH**  
YOUR DIGITAL PARTNER