# ENI PoC #15
# PINet— Polymorphic Intelligent Network Progress Update

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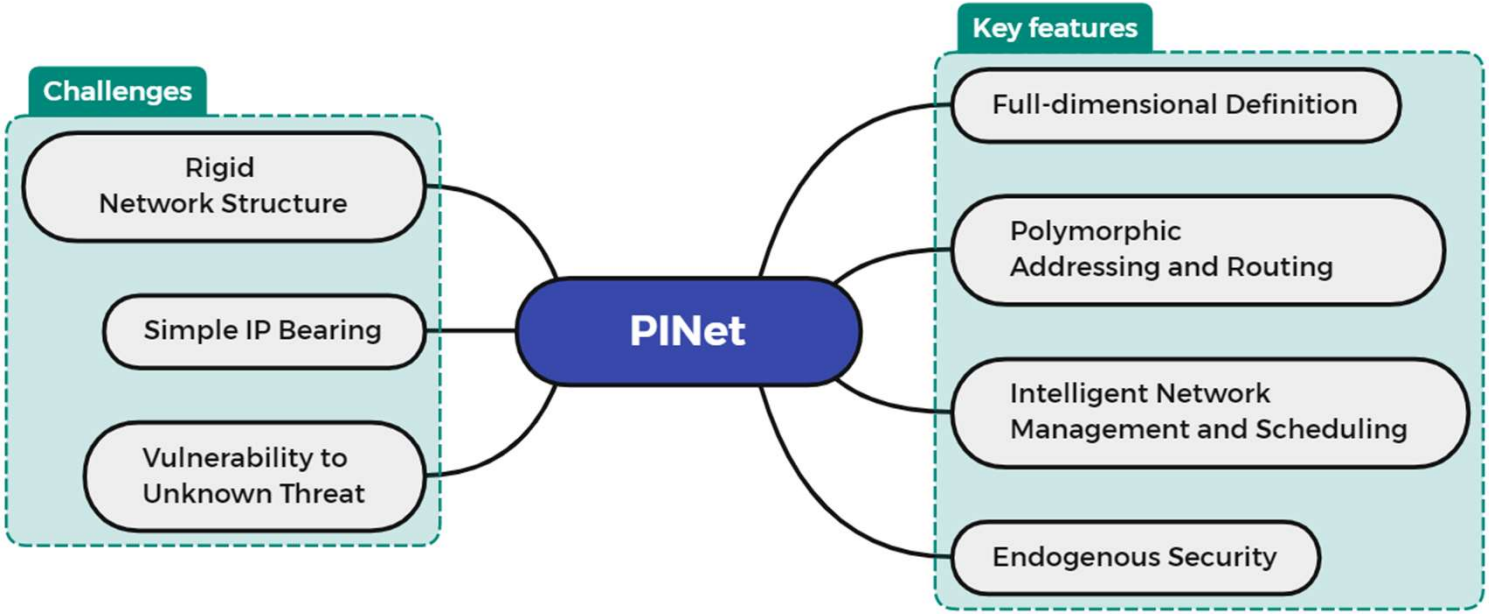
# PoC Background




**Short Description：The current network mainly faced several challenges, such as rigid network structure, simple IP bearing, and difficulty in dealing with unknown threats. Based on above challenges, the goal of this PoC project is to realize polymorphic presentation of addressing and routing, and provide feasible design strategy for operators to automatically deploy network according to different types of business and application scenarios. PINet fundamentally meets the business requirement of network intelligence, diversification, personalization, high robustness and high efficiency.**

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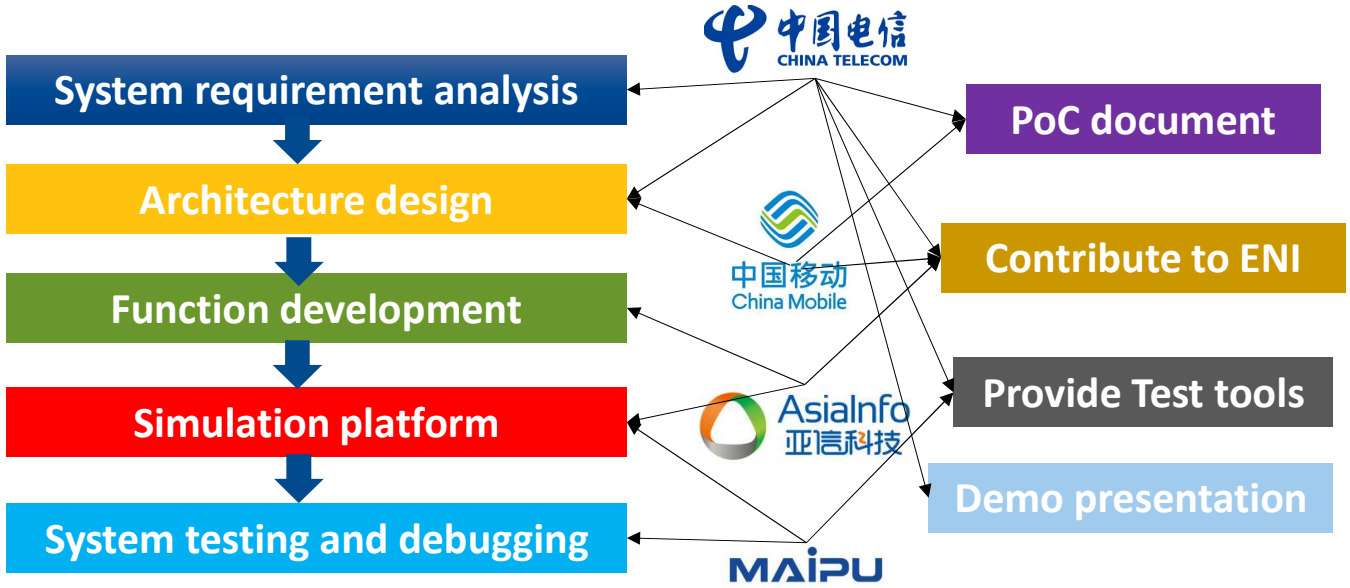
# PoC goals and PoC member task

Host/Team Leader:

中国电信 CHINA TELECOM

Team members:

中国移动 China Mobile　AsiaInfo 亚信科技　MAIPU




- **PoC Project Goal #1**: Demonstrate the use of intent-based interface to translate the network application requirement to different network modal configuration and support the coexistence and collaboration of polymorphic network.
- **PoC Project Goal #2**: Demonstrate the use of AI to realize adaptive adjustment and configuration between network resources and diversified services, optimize network structure, resource allocation, function management and service efficiency.

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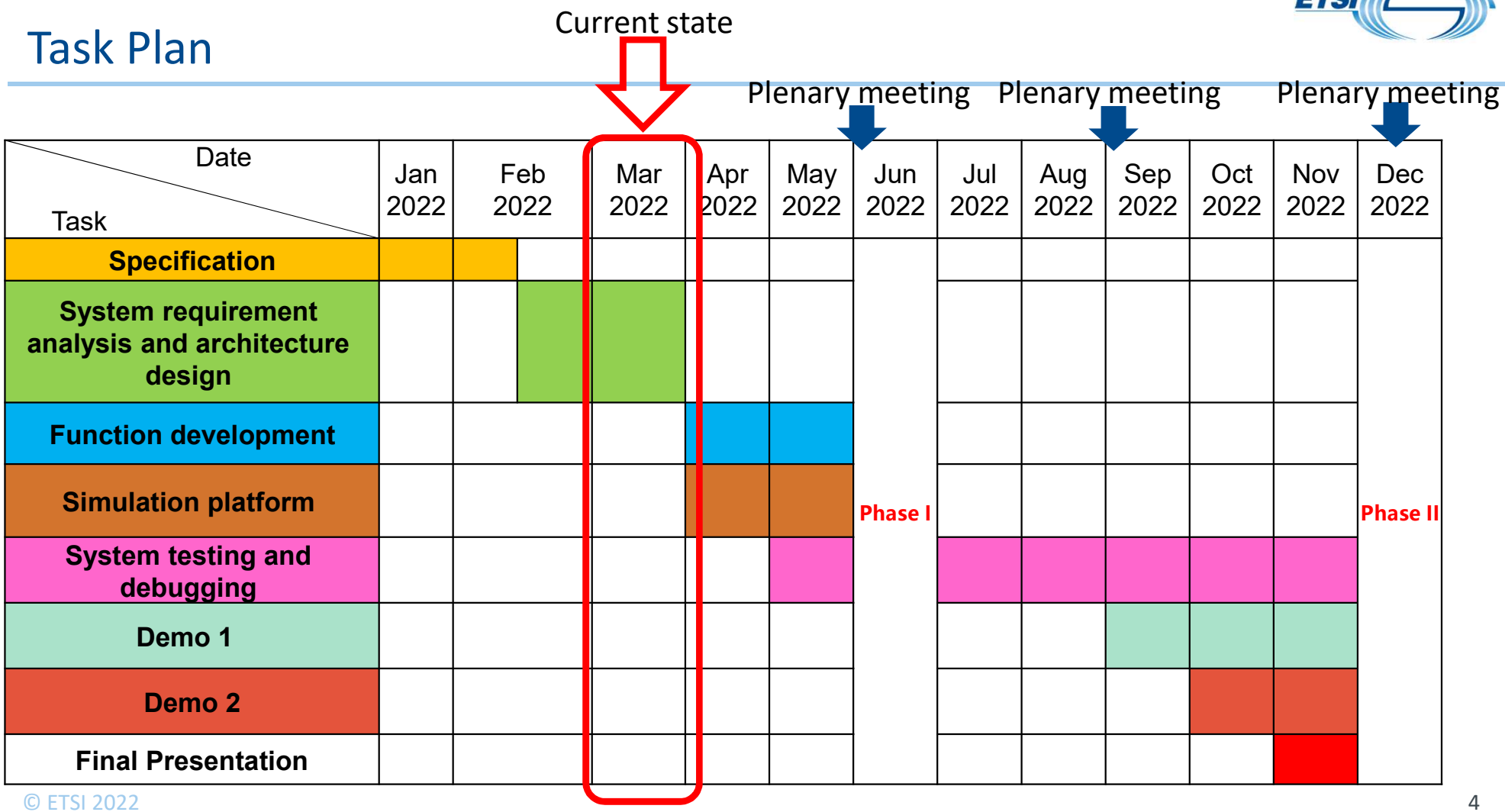
# Task Plan

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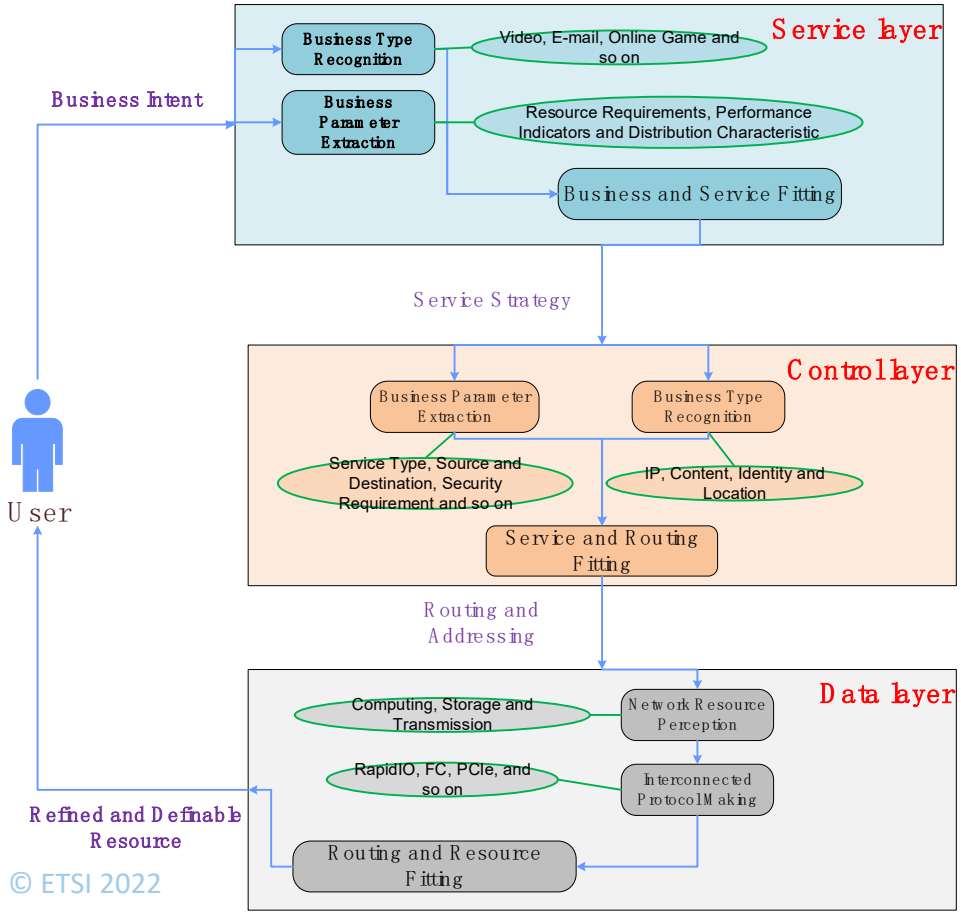
# PoC Architecture




**Response process for business intent in PINet**

- Transform the user's intent into corresponding business type or application scenarios.

- Match to the corresponding network modalities.
- Determine the routing and addressing configuration.

- Routing and resource fitting.
- Software/hardware, protocols, interfaces and chips of the basic network configuration and policy generation.

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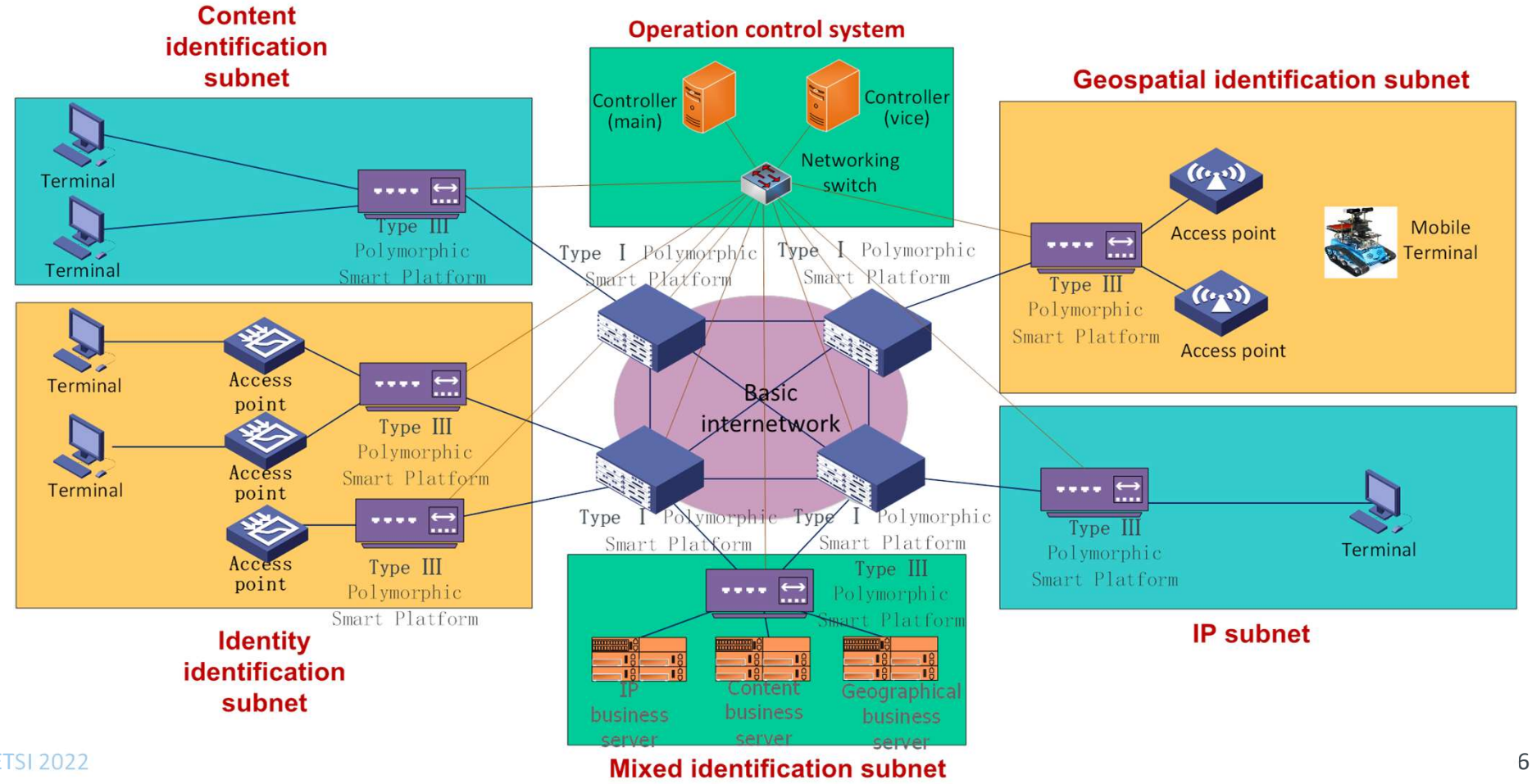
# Topology of Polymorphic Intelligent Network

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# Advantages of new network identification

**Comparison between the new network ID and traditional IP ID**

| | |
|---|---|
| **IP identification** | ➢ General scenarios are difficult to meet the requirements of dedicated application scenarios |
| **VS** | |
| **New network identification** | ➢ Customized services are suitable for specific scenarios |

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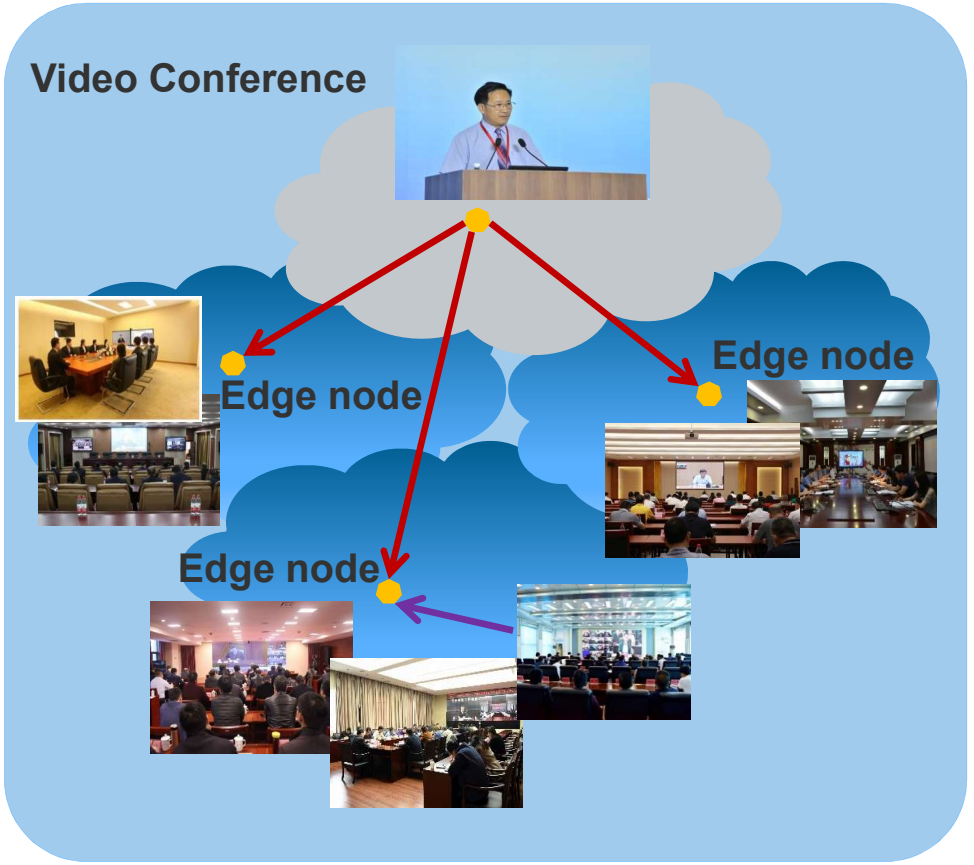
# Content Identification

## Features

- Content is stored in the network, which is decentralized and can reduce network traffic.
- Users can obtain them locally and view them on site, which improves service quality.




| | |
|---|---|
| IP | ➢ In end-to-end addressing, the content source easily becomes the central point. |
| VS | |
| Content Identification | ➢ Addressing based on content, and content distributed storage in the network, decentralized. |

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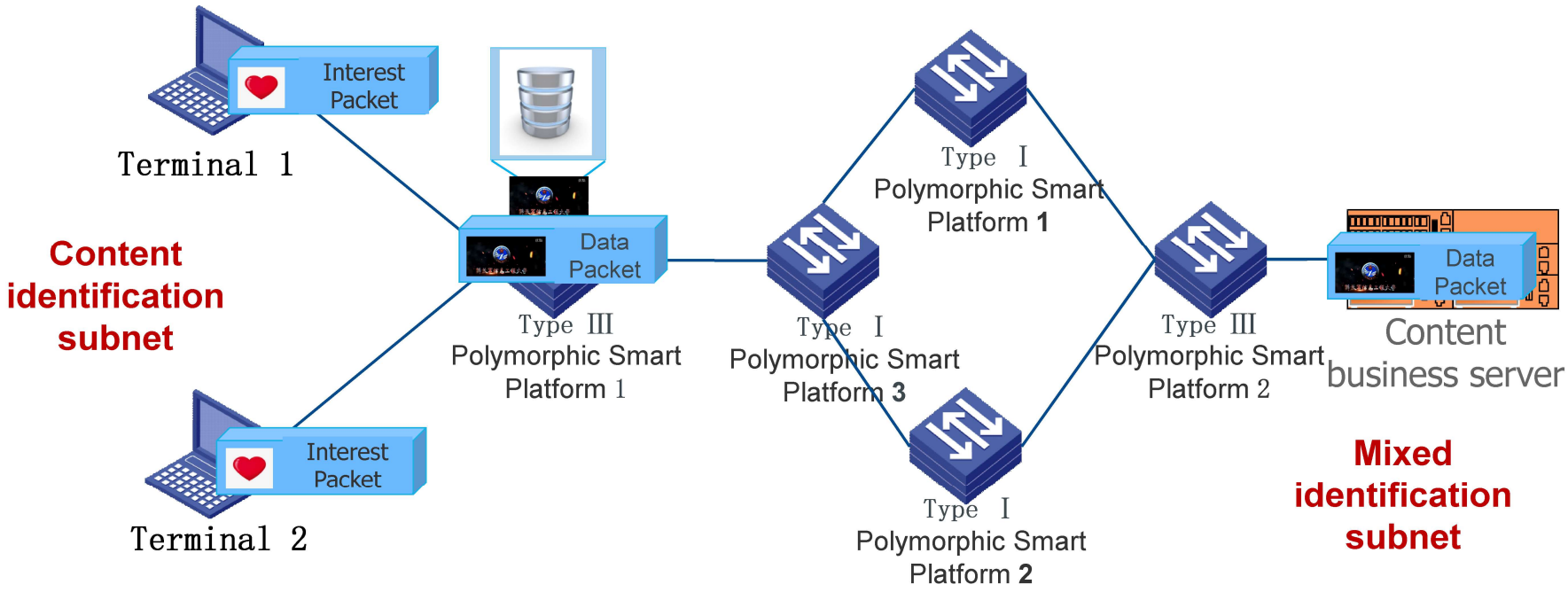
# Use case 1: Content identification service applications

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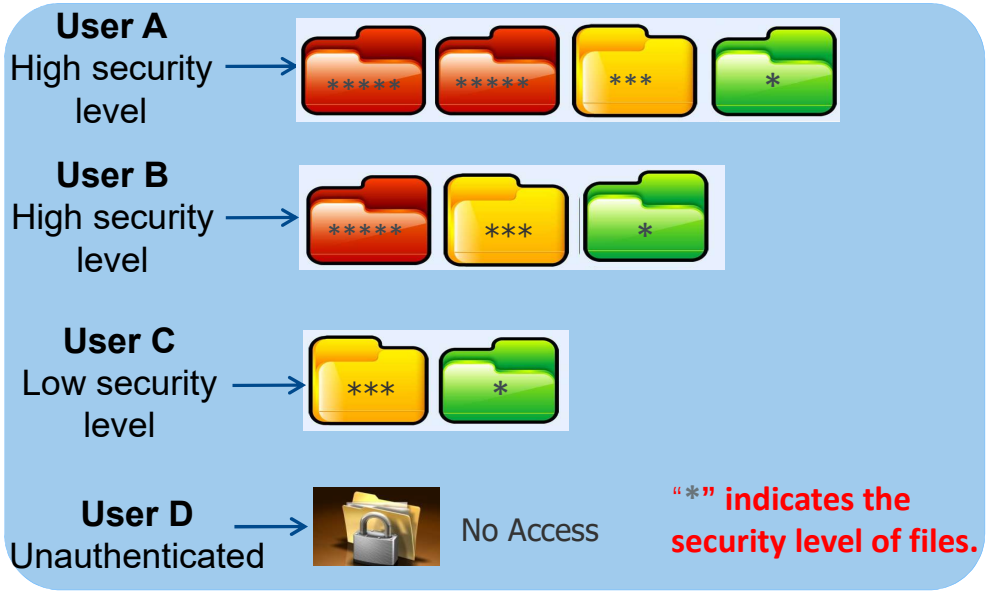
# Identity Identification

## Features

- **Uniqueness**: Implements resource permission delicacy management based on identity. Different identities have different resource permissions.
- **Mobility**: Traditional IP switching network access points require IP reassignment and identity can be seamlessly accessed from anywhere.




| | |
|---|---|
| **IP** | ➢ During the switchover, packets are lost<br>➢ A user can access a new access point only after assigning a new IP address |
| **VS** | |
| **Identity Identification** | ➢ During the switchover, no packet is lost<br>➢ Seamless access to new access points |

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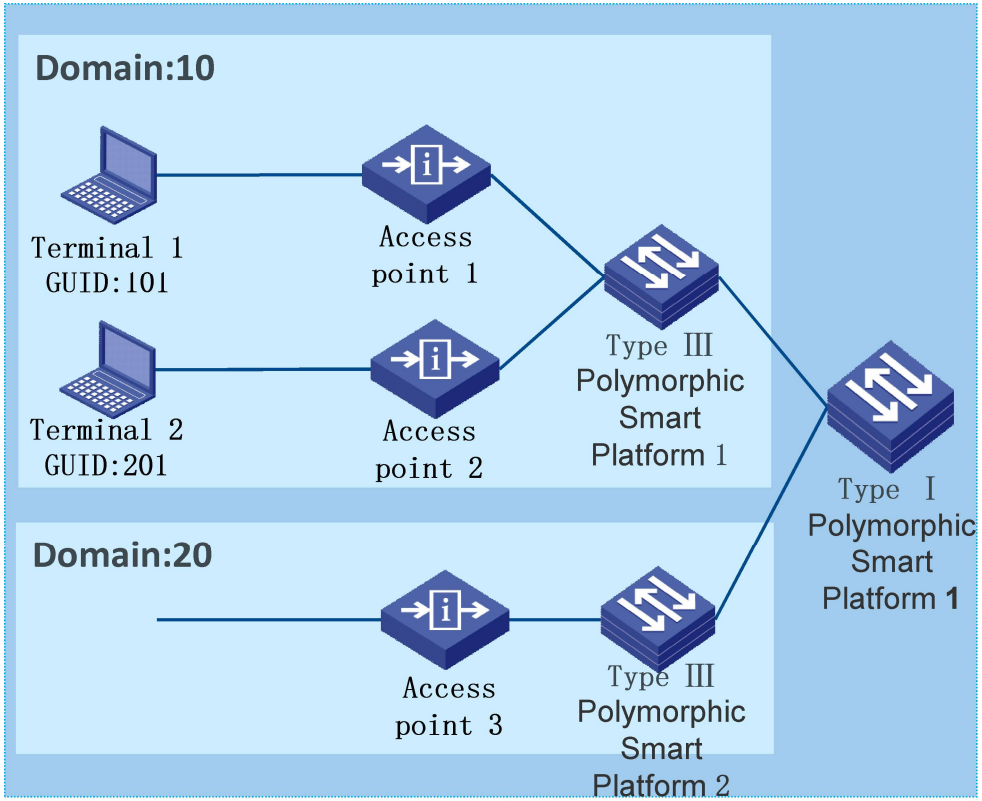
# Use case 2: Identity identification service applications

- Divide into two domains. Two access points are deployed in Domain 10 and one access point is deployed in Domain 20.
- Terminal 1 connects to Access point 1 and terminal 2 switches from Access point 2 to Access point 3
- Terminals allocate GUID in advance
- Expected result: Terminals 1 and 2 PING each other successfully, and the switchover does not lose packets

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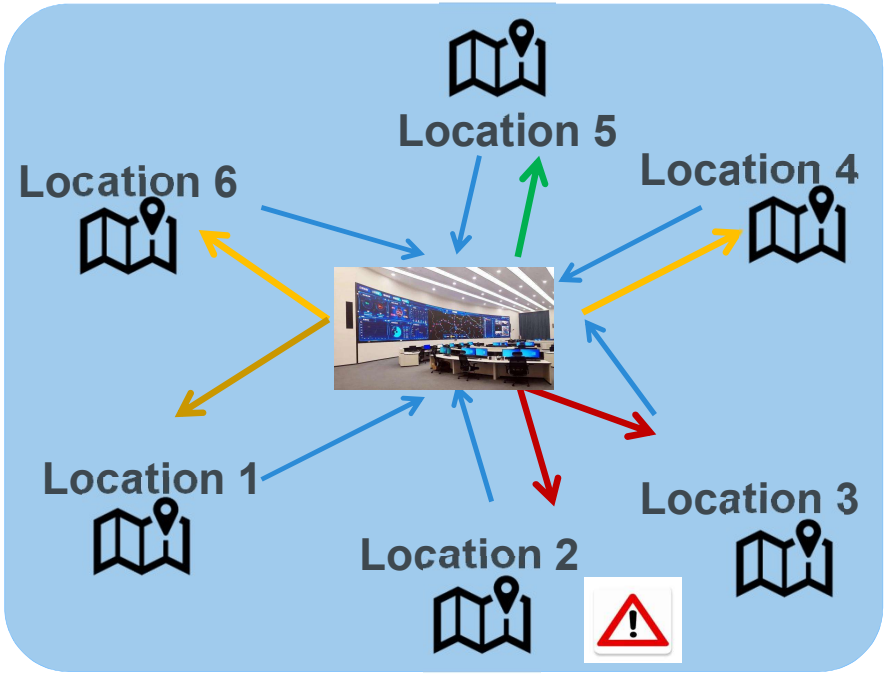
# Geospatial Identification

## Features

On the highway, when a car discovers an accident ahead, it continuously diffuses the information to the designated area.




The action team feeds back the police force and the scene situation in real time based on the geographical space location, and the command center integrates the police force to issue precise action instructions.

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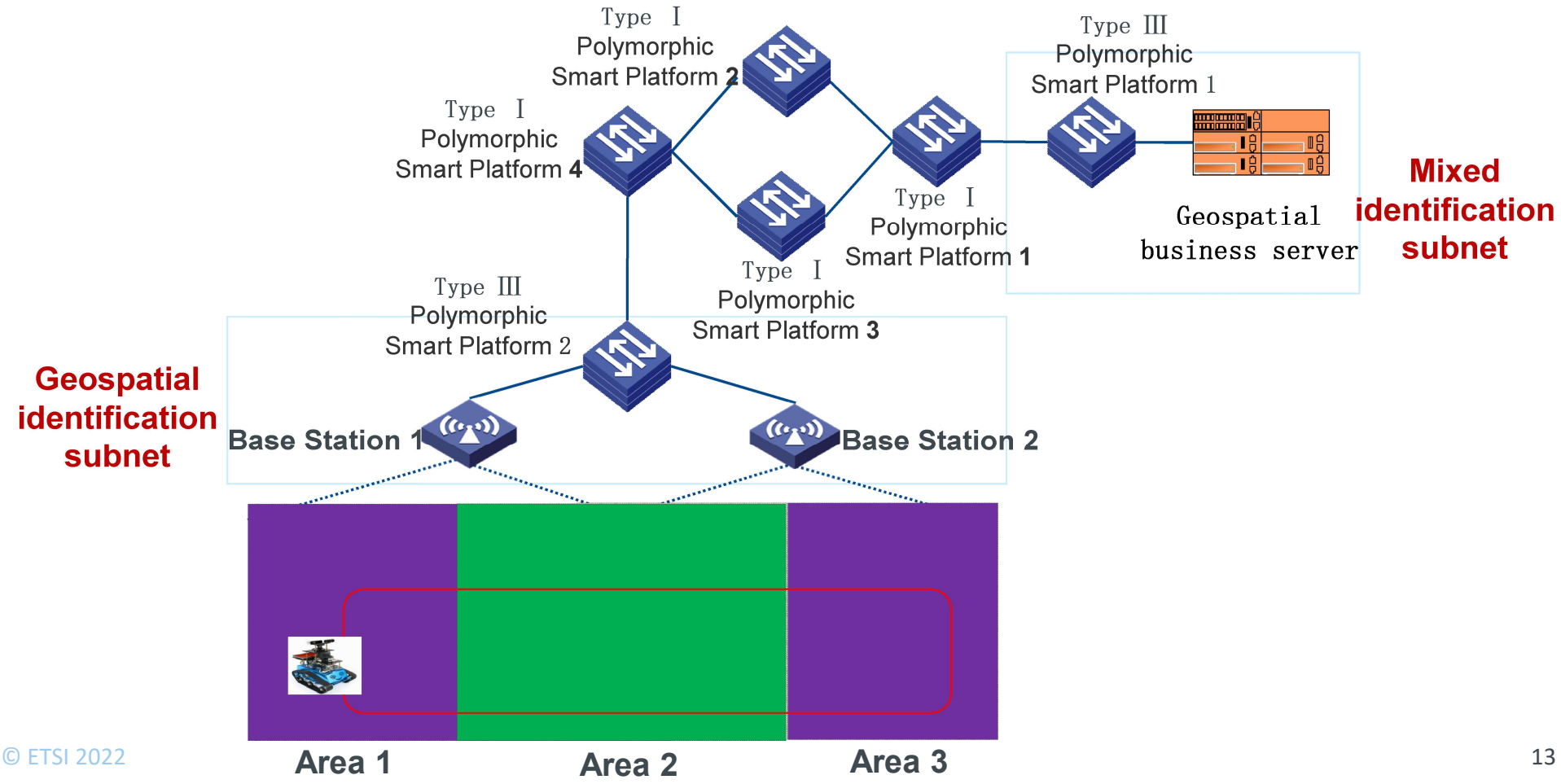
# Use case 3: Geospatial identification service applications

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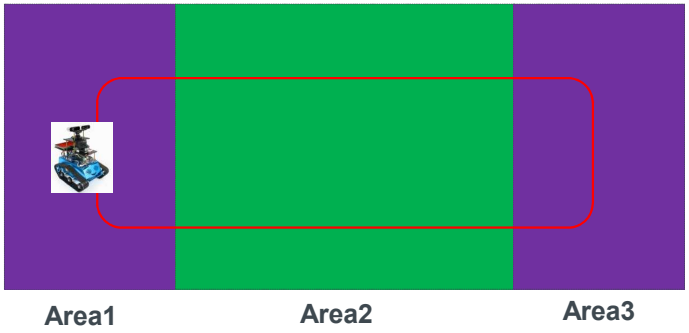
# Use case 3: Geospatial identification service applications

## Designed Scenario 1

Action: Single area message push

(Send message to area 1)

Expected result: When the car enters area 1, the light will be on. When the car leaves area 1, the light will go out.




## Designed Scenario 2

Action: Multi-area message push

(Send message to area 1 and 3)

Expected result: When the car enters area 1 or area 3, the light will be on. When the car enters area 2, the light will go out.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# PINet—Polymorphic Intelligent Network

## PoC Milestones and Current Progress

| PoC Milestone | Stages/Milestone description | Target Date | Additional Info |
|---|---|---|---|
| P.S | PoC Project Start | 12/2021 | Presentation during #ENI 20 |
| P.D1 | PoC Demo 1 | 03/2022 | Present demo at an ENI plenary meeting |
| P.D2 | PoC Demo 2 | 05/2022 | Demo at Beijing CTIDC conference 2022 |
| P.C1 | PoC Expected Contribution 1 | 07/2022 | Contributions to ENI Terminology. |
| P.C2 | PoC Expected Contribution 2 | 08/2022 | Contributions to ENI requirement. |
| P.C3 | PoC Expected Contribution 3 | 09/2022 | Contributions to ENI use case. |
| P.R | PoC Report | 10/2022 | PoC-Project-End Feedback |
| P.E | PoC Project End | 11/2022 | Presented to ISG ENI for information |
| NOTE: Milestones need to be entered in chronological order. | | | |

Current

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