

EdgeGallery Introduction

2021 - 09



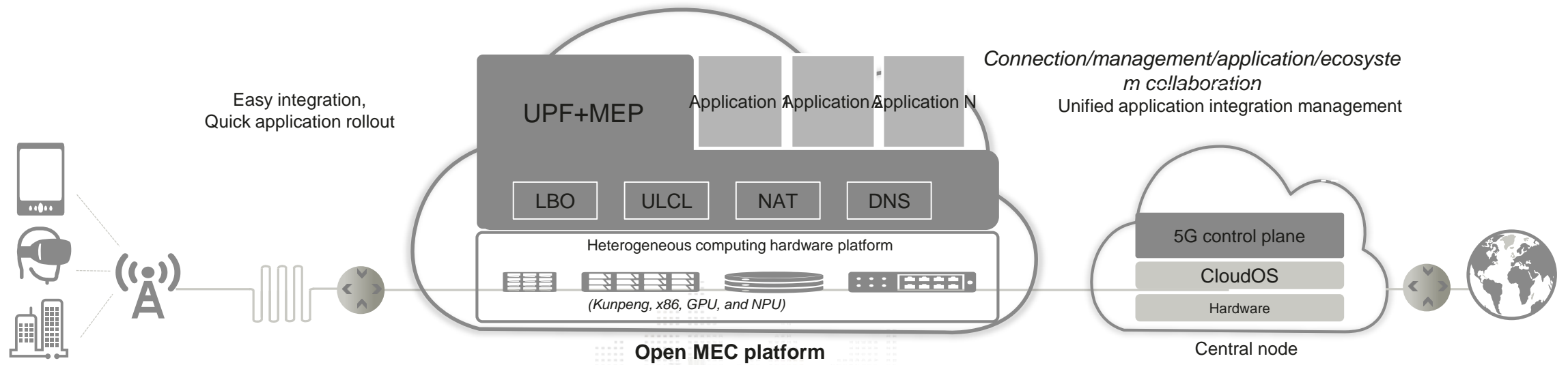
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- ◆ **EdgeGallery Positioning and Scope**
- ◆ EdgeGallery Technical Architecture
- ◆ EdgeGallery Community Progress

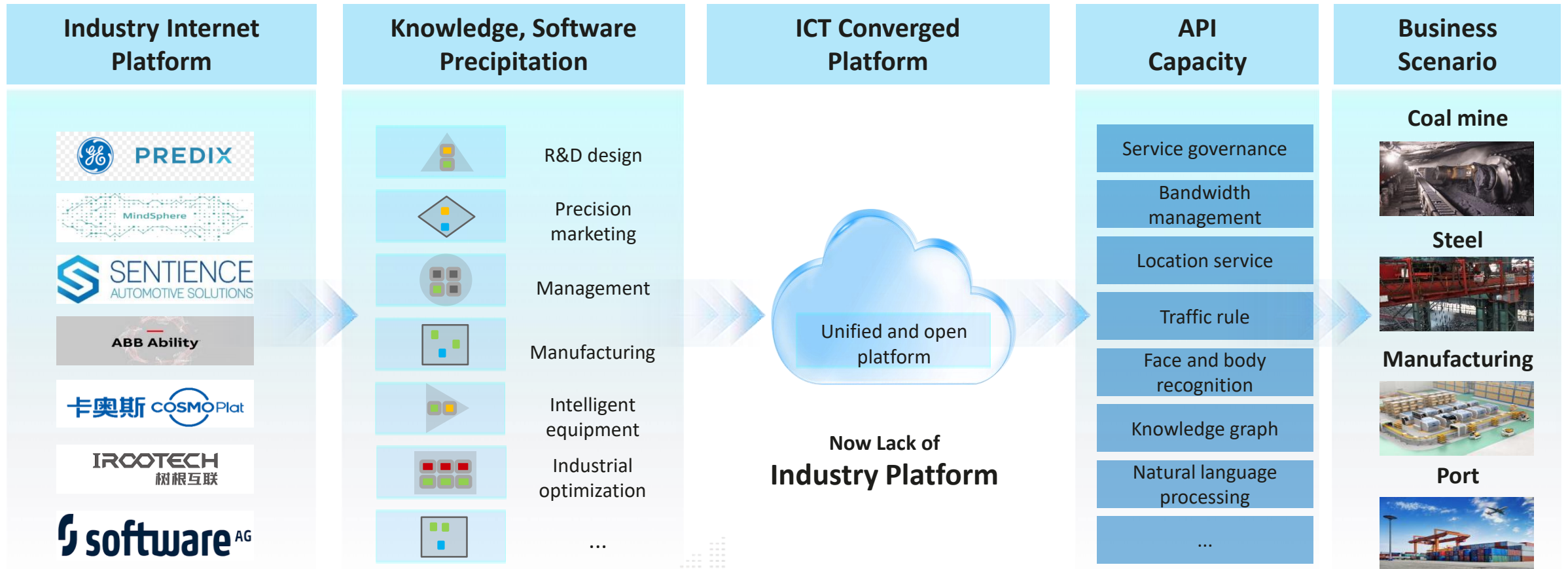
5G ToB Ecosystem Depends on MEC Industry Application Ecosystem Prosperity



Industry application ecosystem



Lack of a unified platform to build a unified platform for enterprise digital transformation to accelerate knowledge transformation.



EdgeGallery Positioning and Scope: Build a Unified MEC Ecosystem and Accelerate the Commercial Use of MEC



Project Positioning

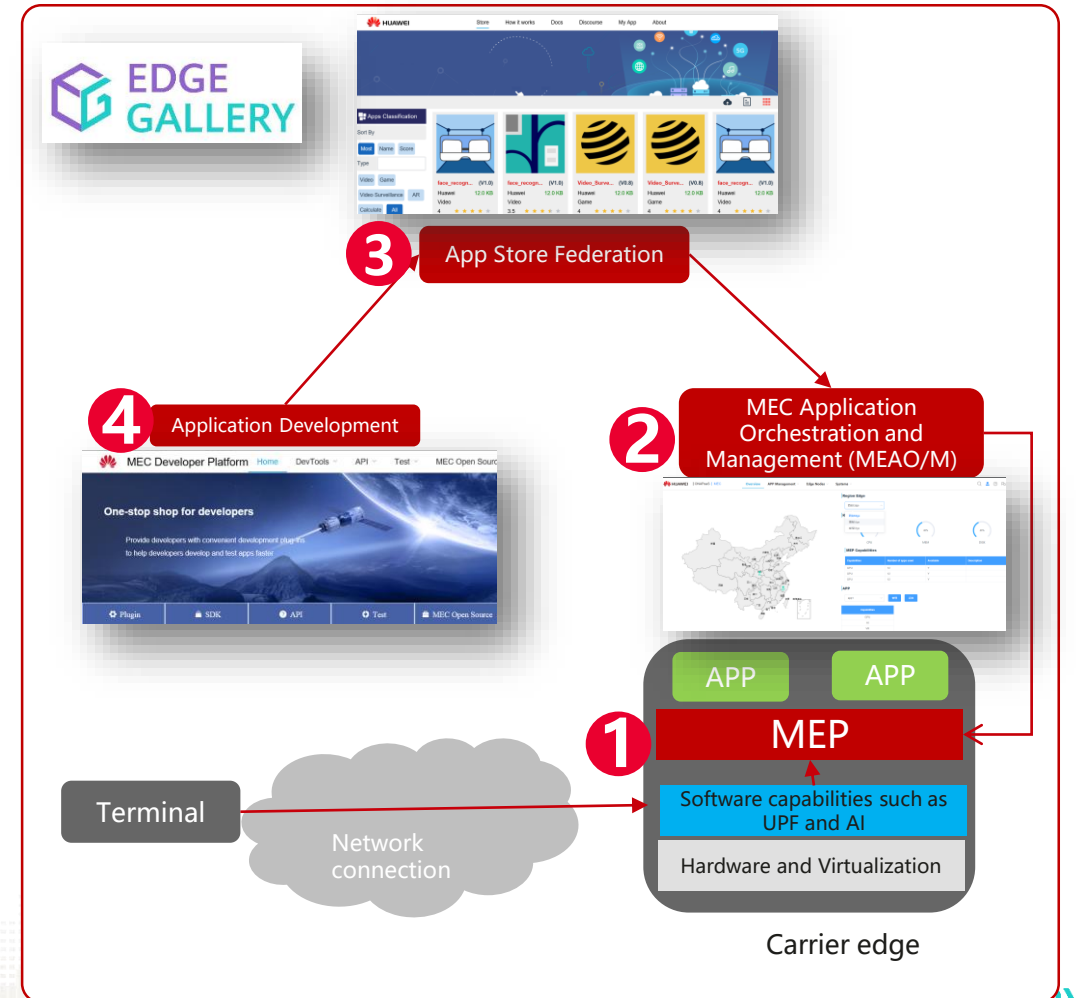
- Carrier-led edge computing architecture and capability openness de facto standards
- Lower the threshold for enterprise application deployment, build a scale, and build a 2B business ecosystem.



Open Source Scope

Common platform of carrier MEC:

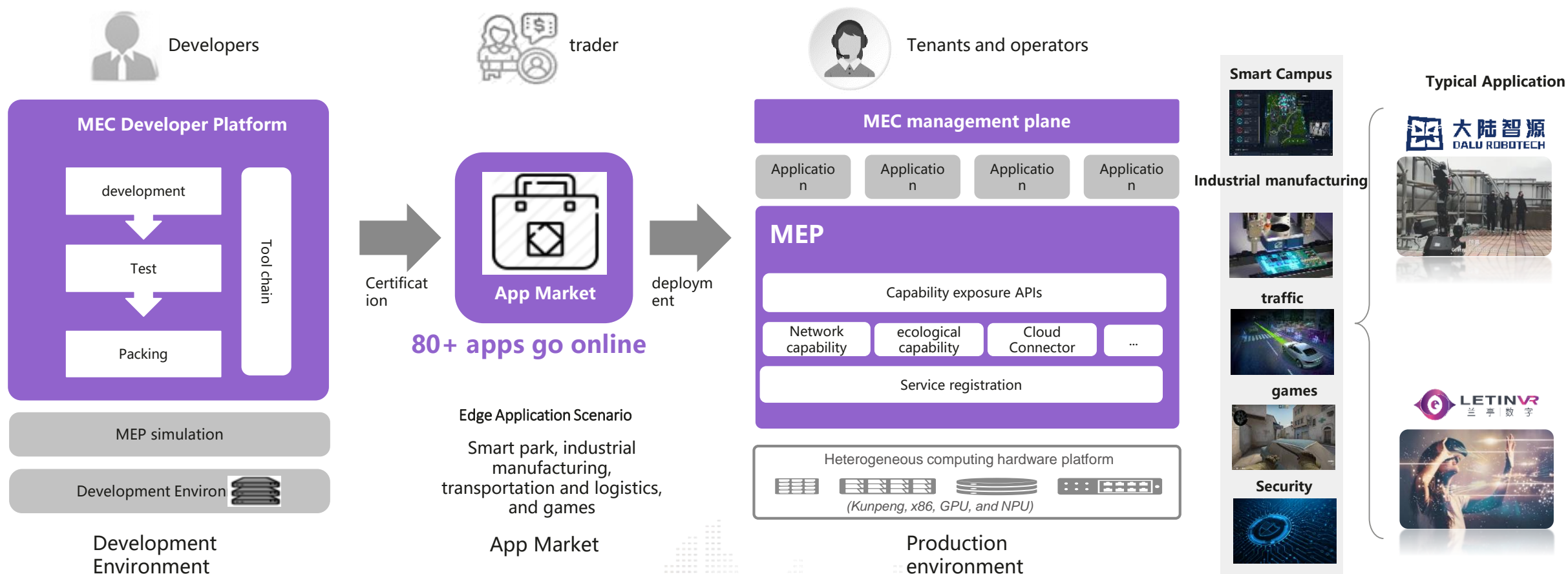
- MEP running state: supports heterogeneous hardware and virtual computing platforms, unified application and service management, unified network capability openness APIs, and unified MEP management interfaces.**
- MEC management orchestration: unified application lifecycle management and resource and application monitoring**
- App Store Federation: Unified App Repository and Smooth Interconnection with Commercial App Markets**
- MEC application development tool: provides code integration of standard MEP APIs to package and test applications.**



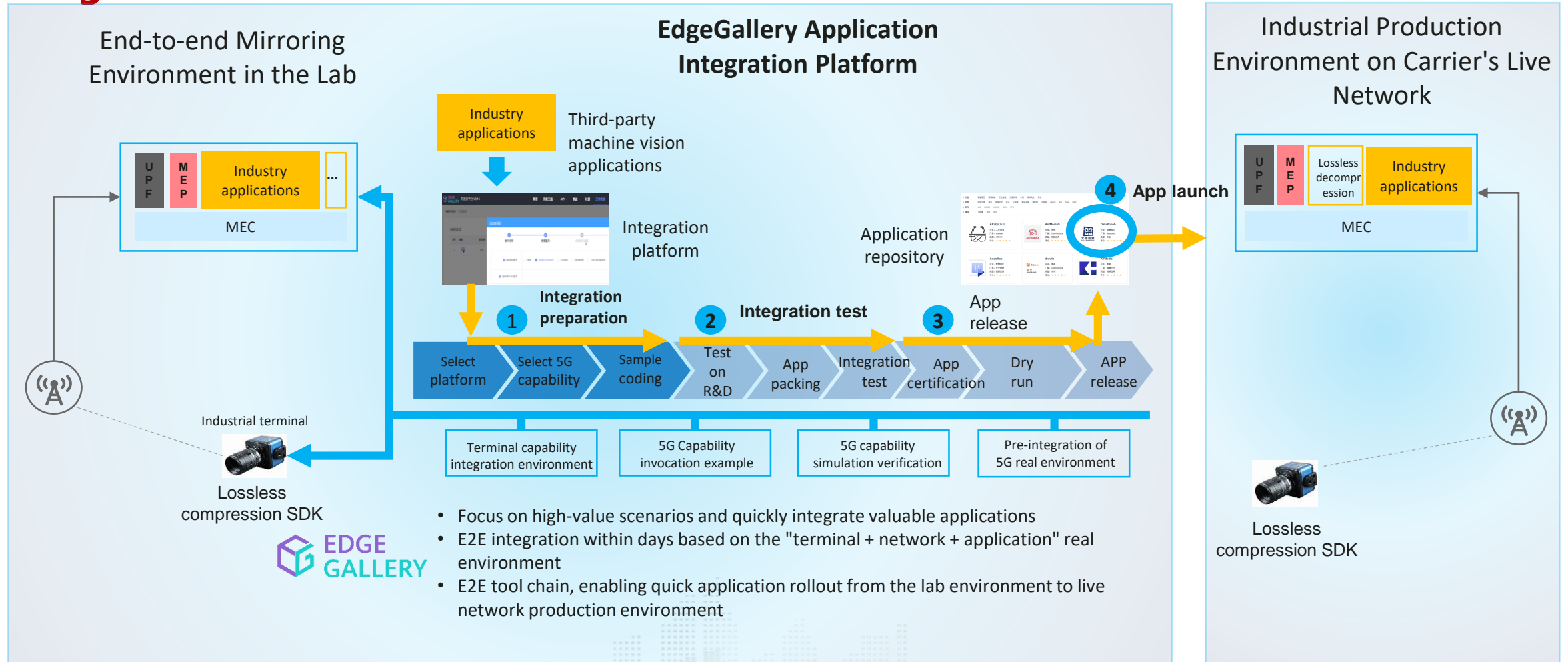
Build an open-source edge computing project that is most compatible with "connection + computing" in the telecom industry.



EdgeGallery Positioning and Scope: Accelerating Enterprise Digitalization and Knowledge Transformation



Positioning and Scope of EdgeGallery: Accelerating Application Development Integration and Rollout



- Focus on high-value scenarios and quickly integrate valuable applications
- E2E integration within days based on the "terminal + network + application" real environment
- E2E tool chain, enabling quick application rollout from the lab environment to live network production environment

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EdgeGallery Technology Vision: Making 5G Capabilities at the Edge



Native 5G connectivity Bringing 5G capabilities within reach

- Interconnection with the latest 5G network
- 3GPP/ETSI-compliant 5G capability invoking: wireless information, location, terminal identity, and bandwidth management
- Efficient network data plane and latency-sensitive network TSN
- Built-in value-added network functions



Edge native platform architecture Reliable and manageable edge services

- Edge Native Open Platform Framework
- Lightweight resource management
- Full-stack security mechanism
- Highly trusted management and operation: MEC mesh scheduling, blockchain ledger, etc.
- Edge AI



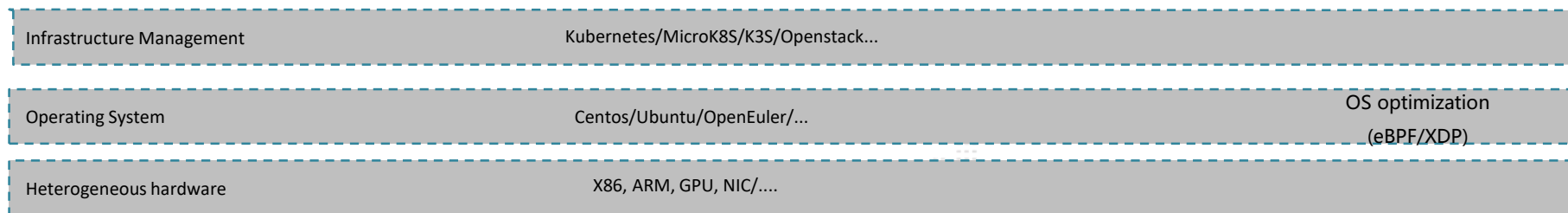
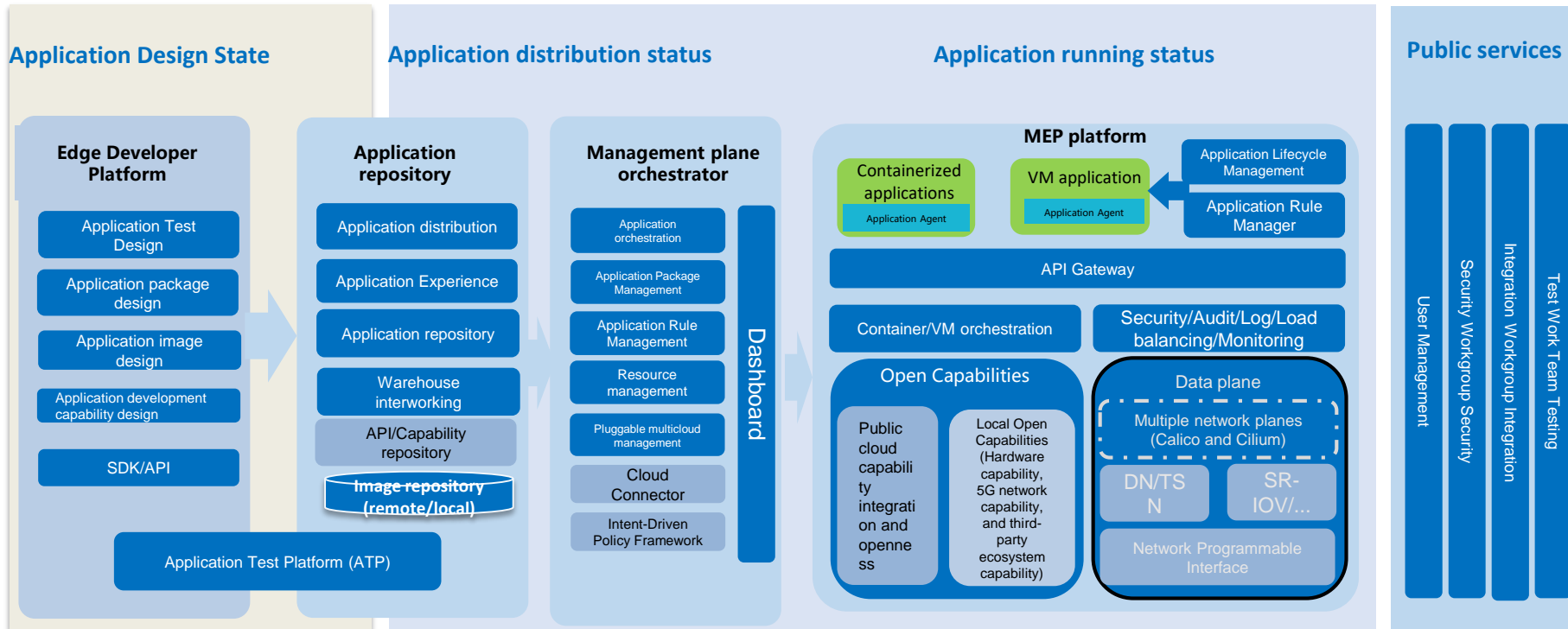
Diversified open edge ecosystem Commercially replicable

- Simplified application development and application migration tool chain support
- Convenient application verification: online simulation sandbox and 5G experimental network
- Unified application entry: Unified authentication, interworking, and migration from the AppGallery
- Multi-ecosystem sharing: Integrate with the public cloud and interoperate with the commercial platform.

EdgeGallery Introduction Video



EdgeGallery Edge Native Architecture



Architecture Design Principles

Industry-friendly: Model-driven, scenario-specific, and code-free/low-code applications...
 >> Troubleshooting Application Replication

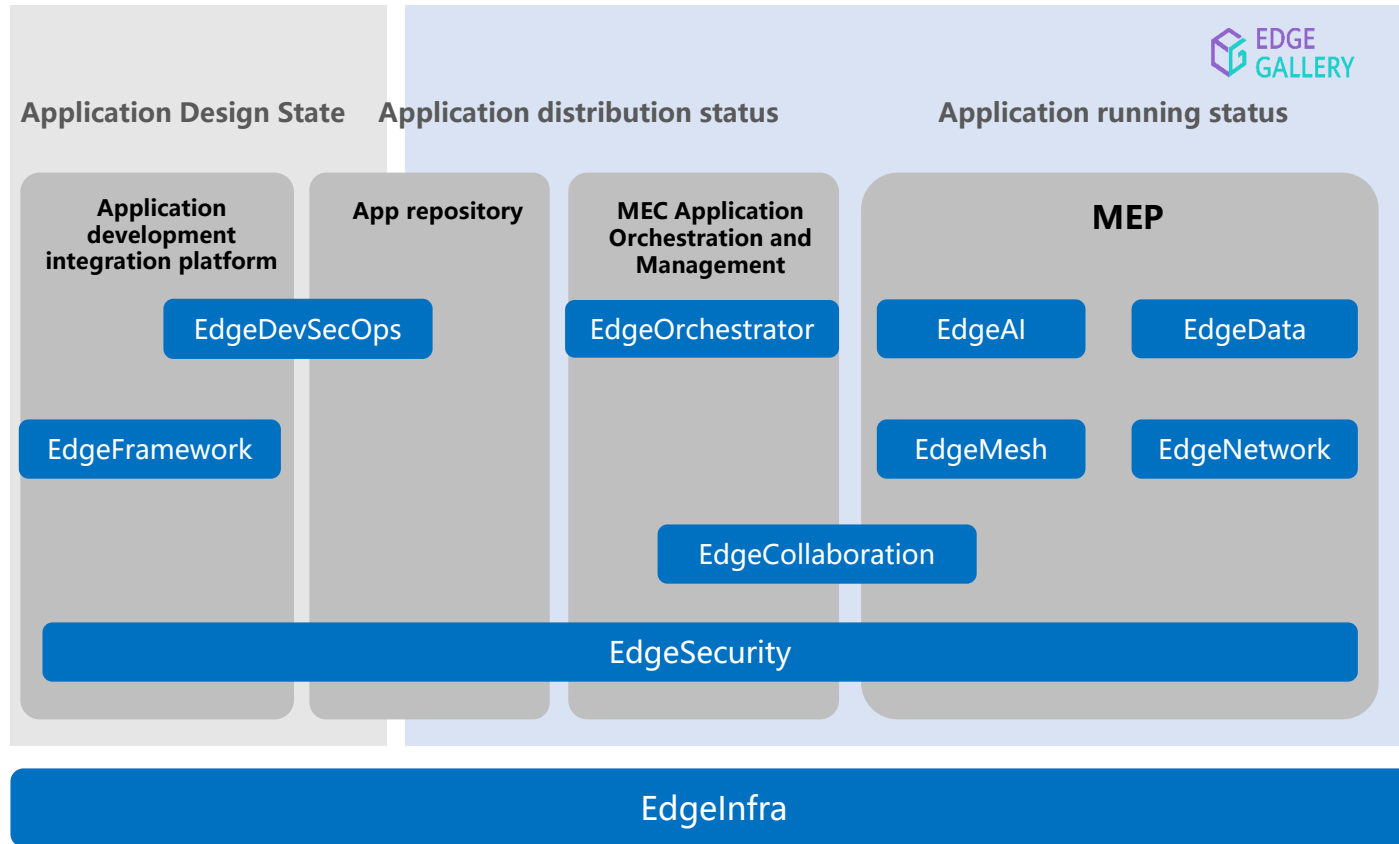
Developer-friendly: full-journey design for developer experience, including development design, deployment and commissioning, and installation and rollout
 >> Addressing high development barriers

Business-friendly: unified authentication, distributed federation, and integrated DevSecOps edge security development and O M
 >> Resolve the problem of difficult commercial monetization

User-friendly deployment: Infrastructure independent, modular design, on-demand deployment, meeting different application scenarios
 >> Addressing Industry Deployment Diversification

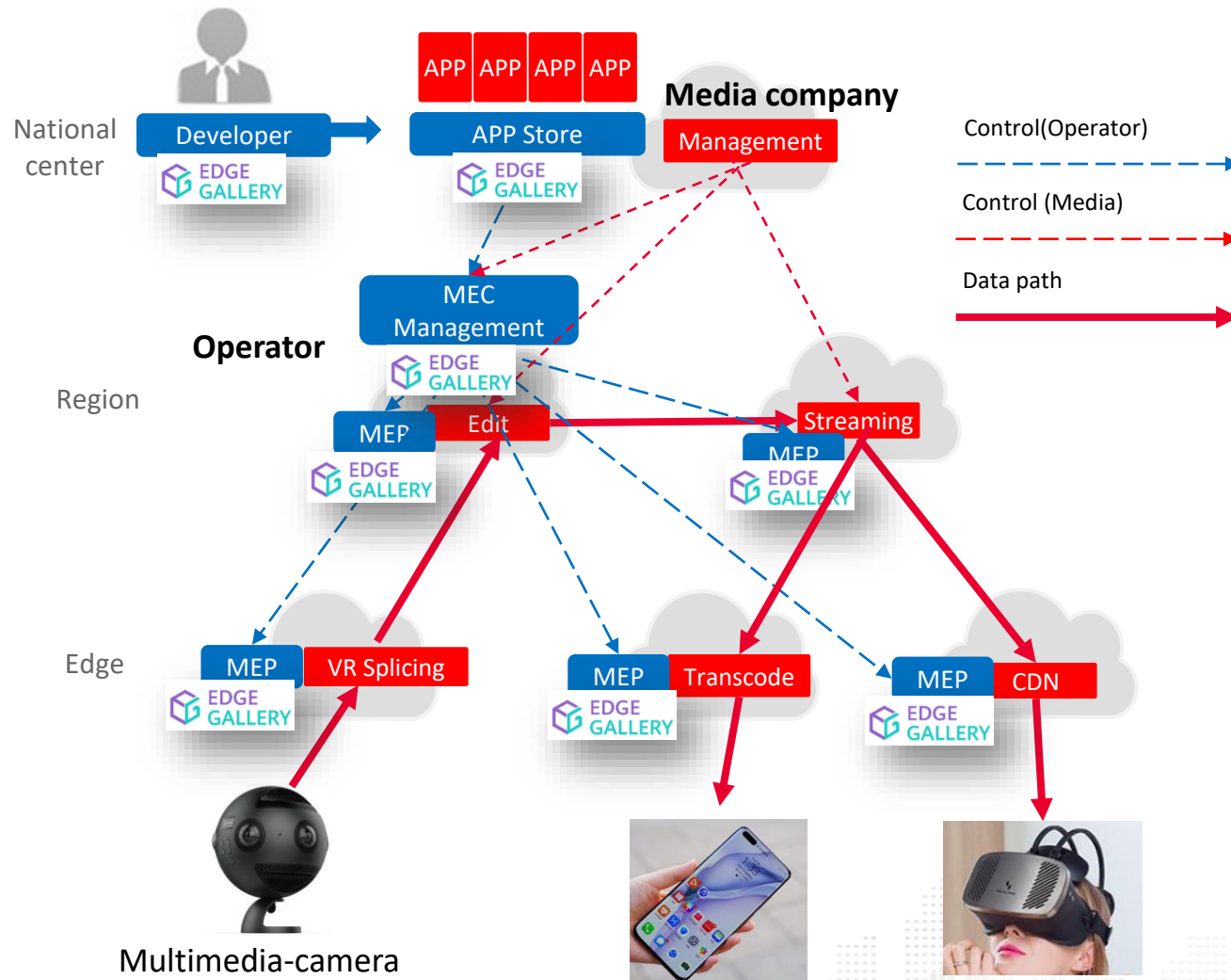


Top 10 Native Edge Native Technologies Enable Digital Transformation in the 5G Network Industry



- Edge Infrastructure EdgeInfra
- Edge Network EdgeNetwork
- EdgeOrchestratorEdgeOrchestrator
- Edge Collaboration Edge Collaboration
- Edge AI
- Edge SecurityEdgeSecurity
- Edge Mesh EdgeMesh
- Edge Storage EdgeData
- EdgeFramework EdgeFramework
- Edge Security Agile Development EdgeDevSecOps

EdgeGallery supports hierarchical deployment of different edge applications.



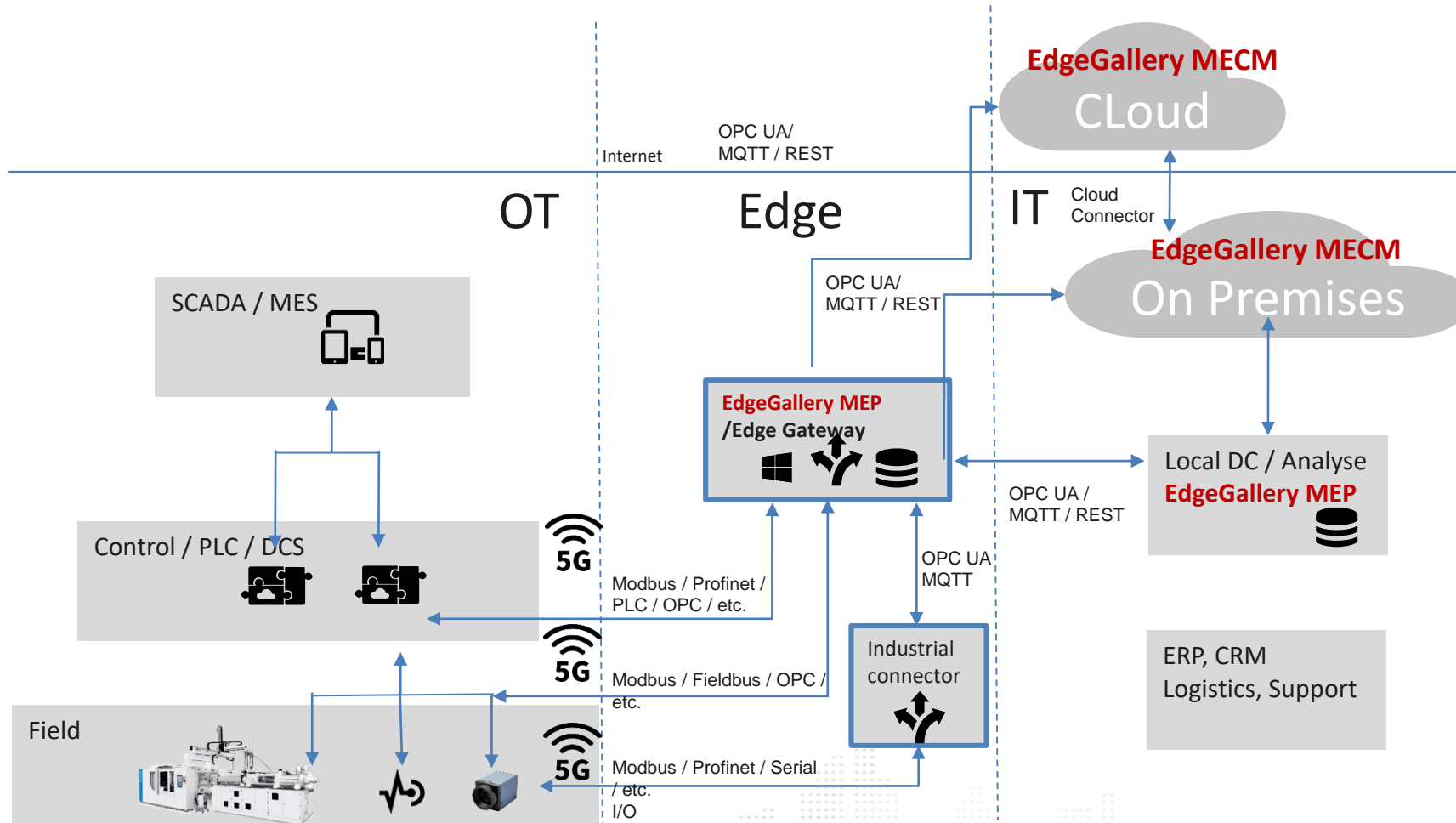
Use Cases

1. Cloud VR splicing: Multi-channel video access to the nearest MEC for VR cloud splicing
2. Live guide :Multimedia editing.
3. Dynamic streaming: According to the distribution of users to dynamically streaming.
4. Caching Sinking: Caching to the edge to save bandwidth and enhance the experience

Benefits

- Lightweight field equipment replacing expensive professional broadcast truck.
- Improve user experience and reduce terminal equipment costs.
- On-demand deployment, transcoding, and streaming to reduce bandwidth costs

EdgeGallery in Lighthouse Factory



Applications:
 Advanced Analytics
 Processes digitalization
 Agile Innovation

Applications:
 Advanced Analytics
 Synchronized operations
 Collaborative

Applications:
 Predictive Maintenance
 Augmented Reality
 Operational Intelligence

Applications:
 Data aggregation
 M2M, Quality Control
 Collaborative Processes

EdgeGallery in Industrial Vision System

3C Electronic Product Quality Inspection



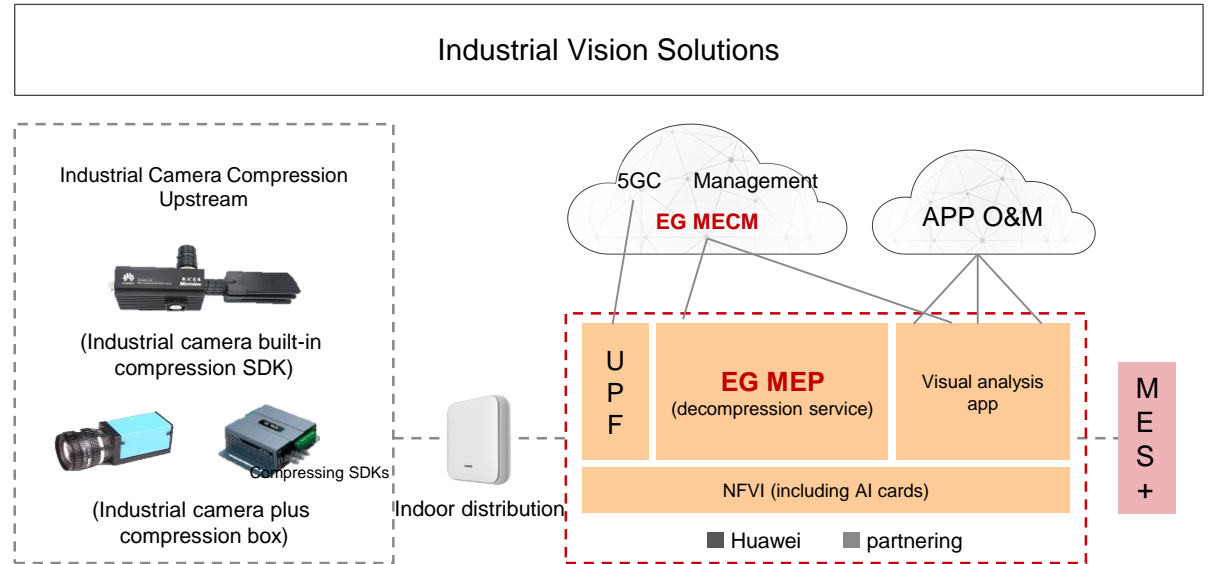
Appearance inspection of household appliances



Steel plate surface quality inspection



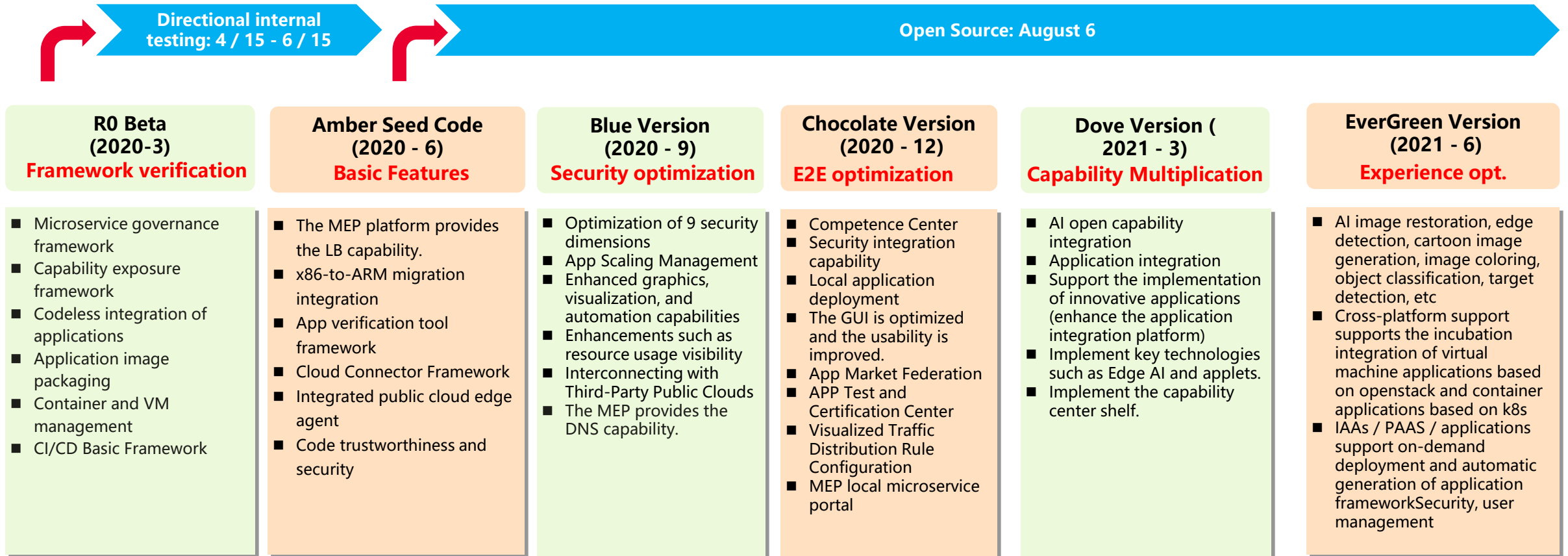
Service capability	Key Indicators
Bandwidth	Uplink bandwidth: 80 Mbit/s to 500 Mbit/s per terminal Downlink bandwidth: 500 kbit/s to 1 Mbit/s per terminal (control)
Latency	Uplink delay: 1s Downlink delay: < 20 ms
AI computing power	High-density computing power: 64 TOPS/INT8 per card
lossless compression	3–6x lossless compression, compression delay < 100 ms



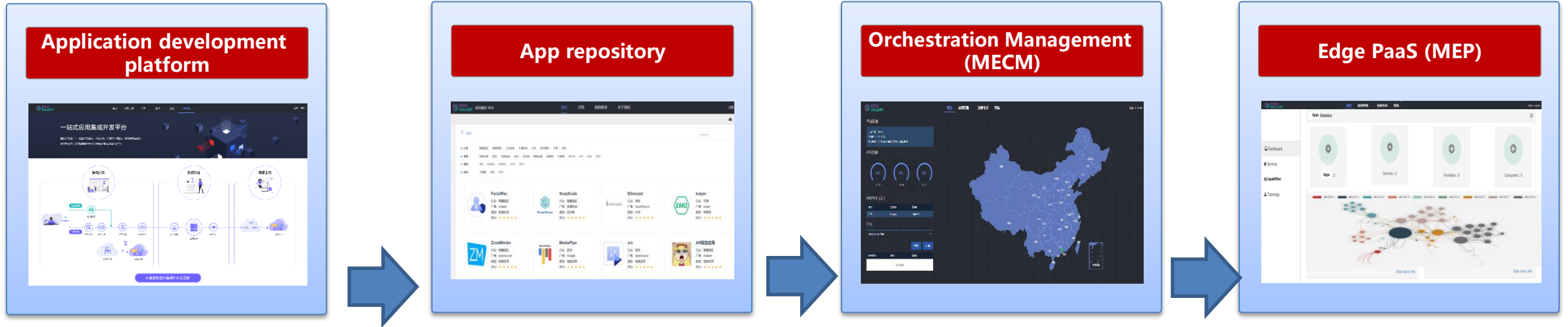
1. Elastic lossless compression: The combination of software and hardware (secondary coding residual result) and controllable quantization matrix (different from human eye input and meeting machine input) accurately controls the high-frequency information of the original image (all details are reserved). The compression ratio is 3 to 6 times.

2. Cell-level centralized bandwidth scheduling: Improves the overall cell bandwidth utilization, avoids congestion during proactive scheduling, and improves production efficiency by 10% to 20%.

EdgeGallery Roadmap Introduction



Key Features of the EdgeGallery Version



E2E application development and deployment

- **API Competence Center:** Provides more open capabilities for app developers.
- **Development and commissioning environment change:** Provide the 5G MEC development and commissioning sandbox and field environment.
- **5G network integration:** UPF interconnection and DNS and traffic rule configuration capabilities

App Store federated authentication

- **Third-party app store management:** provides the registration management function for third-party app stores.
- **App Store distributed federation:** implements app push and sharing with third-party app repositories.
- **APP ID card:** provides an APP authentication platform for carriers to customize test cases.

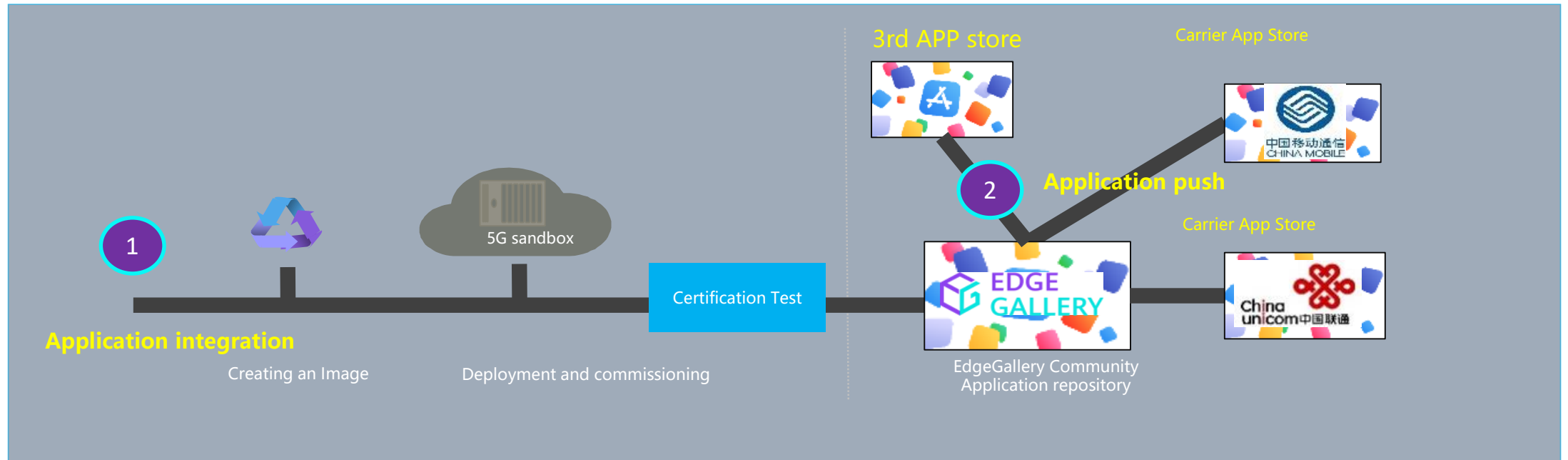
Visualized node management

- **GIS management of edge nodes:** provides online map-based edge node and resource management, and provides detailed street-level MEP topologies.
- **5G UPF traffic distribution rule configuration:** visualized configuration of UPF traffic forwarding rules and DNS rules

Visualization of edge applications and services

- **Local portal:** The MEP single-node management page is added to manage applications and services and implement basic service governance visualization.
- **Node service governance:** provides health check for single-node services, multi-node service isolation, and 5G network integration capabilities.

EdgeGallery application federated push process



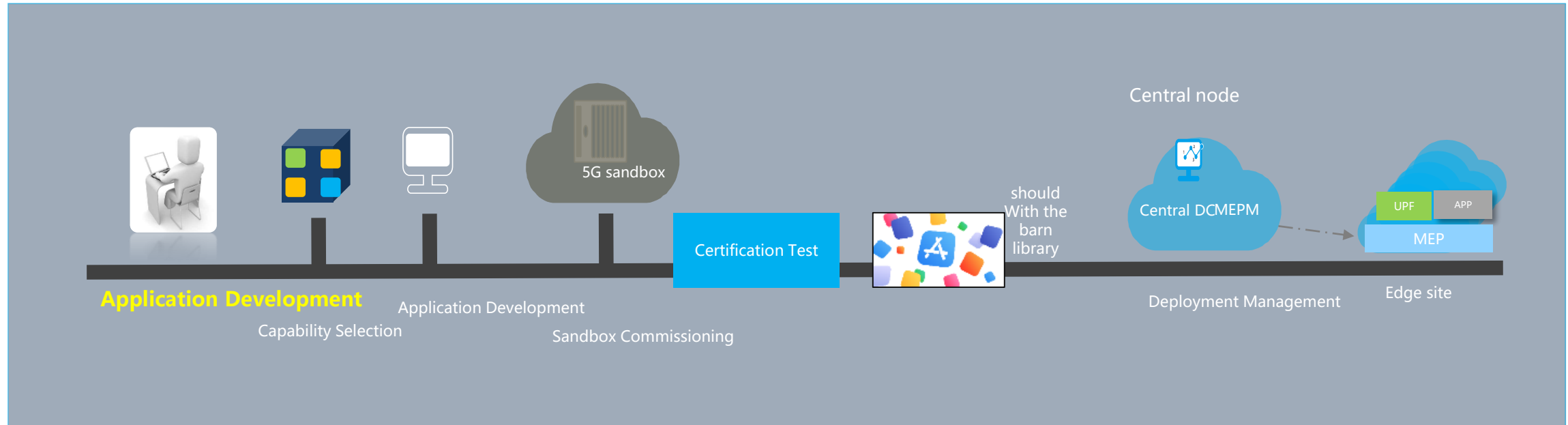
Application integration: Four Steps to Streamline Business Breakpoints

- Application automatic test and certification platform ATP
- Test case management, which can be customized
- Visualized test process

Application push: One-click push and free application sharing

- App repository federated sharing
- App authentication report display
- Pushing apps between app repositories

One-stop deployment and release of EdgeGallery application development and service governance



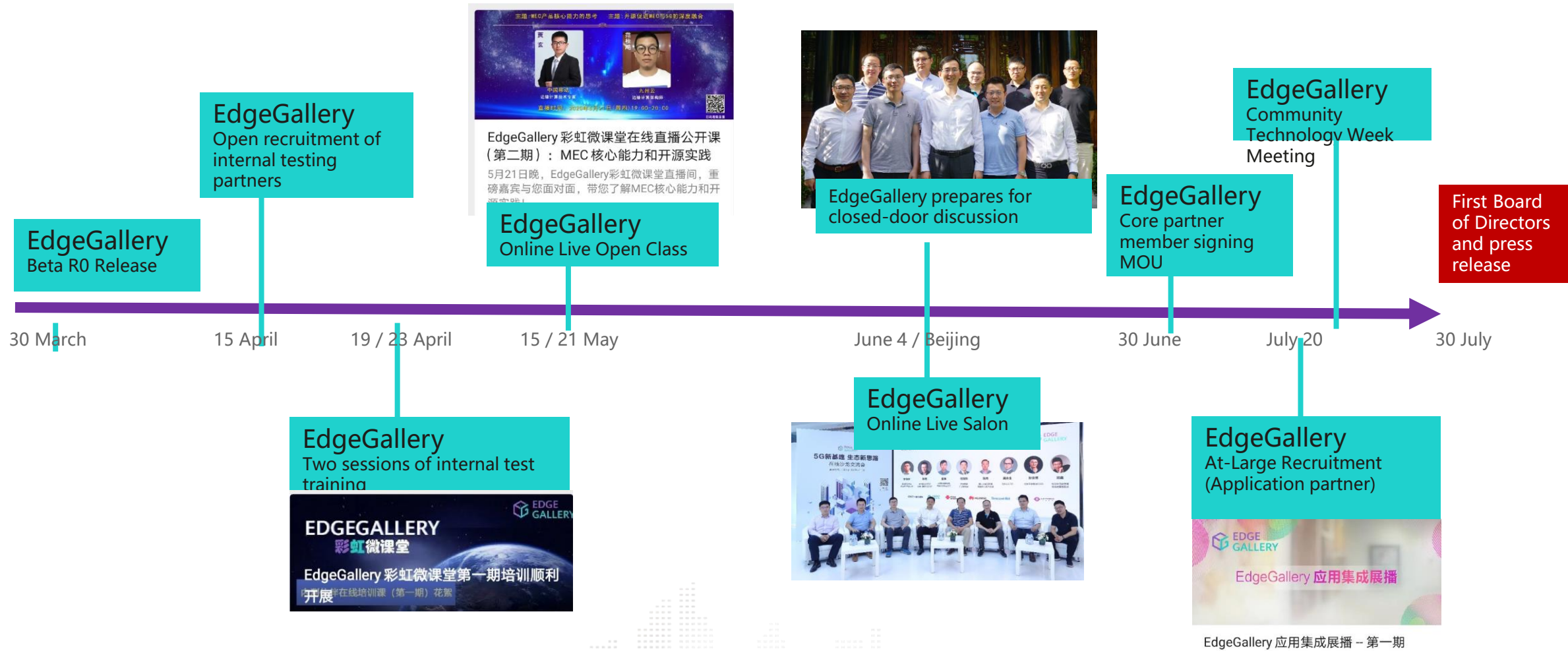
One-stop application development Deployment release and service governance

- Wizard-based application development process
- Abundant API capabilities
- Multi-language development support
- Visualized application/service governance

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Preparation for EdgeGallery



It was officially released on August 6, 2020, and has 25 community members in March 2021.



EdgeGallery Innovation Incubation Base, Facilitating Industry Digital Transformation

EdgeGallery Implementation: Deployment of 25+ Innovation Incubation Bases

Five Cities City-tour Developers Offline Salon 2020, Continued in 2021



August 28 @ Xian

September 26 @ Shanghai

October 28 @ Nanjing

November 7 @ Beijing

December 19 @ Dongguan

Huawei's commercial version focuses on industries such as industrial manufacturing, port mining, and pan-media, 120+ commercial deployment and 30+ POC verification

EdgeGallery works extensively with upstream and downstream industry organizations.



- Huawei/CMCC/Tecent/ARM lead Akraino 5G MEC BP family
- Aim to run as a LF Edge project later this year



- As Operator Platform Telco Edge Computing reference implementation
- Joint define OP -MEC resource manager Interface



- Architecture align with ETSI MEC standards.
- Implement ETSI API (location/bandwidth/RNIS...)



- Jointly build 5G field innovation network for application developers
- Manage MEC by EdgeGallery



- Jointly setup EdgeGallery community labs.
- Future Networking Research projects



- EdgeGallery as 5GNDA innovation test lab
- 5G DNA Deterministic Network feature implementation

EdgeGallery Actively Expands Community Members and Aggregates Industry Applications

8 senior members

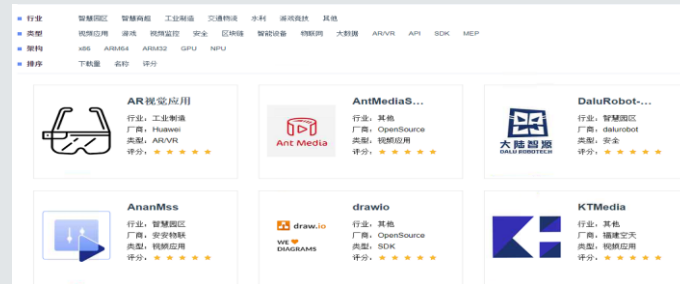


19 ordinary members



150 + Apps

Classification	Quantity	Scenario
• B2B	• 65 +	• Safety, Transportation, Robotics
• B2C	• 85 +	• Gaming, VR



Focus on 5 industry scenarios

- Smart Campus
- Industrial Manufacturing
- Transportation and Logistics
- Game athletics
- Safety and Other

Developer participation

- 50+ organizations, 300+ people in the community
- 500,000+ visitors to the official website, with a total of over 200,000+ visitors. Distributed in 40+ countries and regions, covering 33 provinces and cities in China

25+ Innovation incubation base deployment



EdgeGallery Websites and Communication Platforms

Catagory	URL
Website	www.edgegallery.org
Mail-list	https://groups.io/g/edgegallery
Codes	https://github.com/EdgeGallery https://gitee.com/EdgeGallery
Video	https://www.youtube.com/watch?v=CovSM57JUyc
Offline Installation	https://release.edgegallery.org/
Demo	https://gitee.com/edgegallery/community/blob/master/TSC/Release/v0.9/EdgeGallery%20Demo%20Recording.mp4
Document	http://docs.edgegallery.org/zh_CN/latest/

WeChat Assistant



Book Links



Thank you.

