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Telecom Service Delivery Platforms and Application Stores

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International
Telecommunication
Union

Committed to connecting the world

Outline

o Telecom SDP

o Telecom SDP developments in ITU-T

o Telecom SDP integration with Application Stores

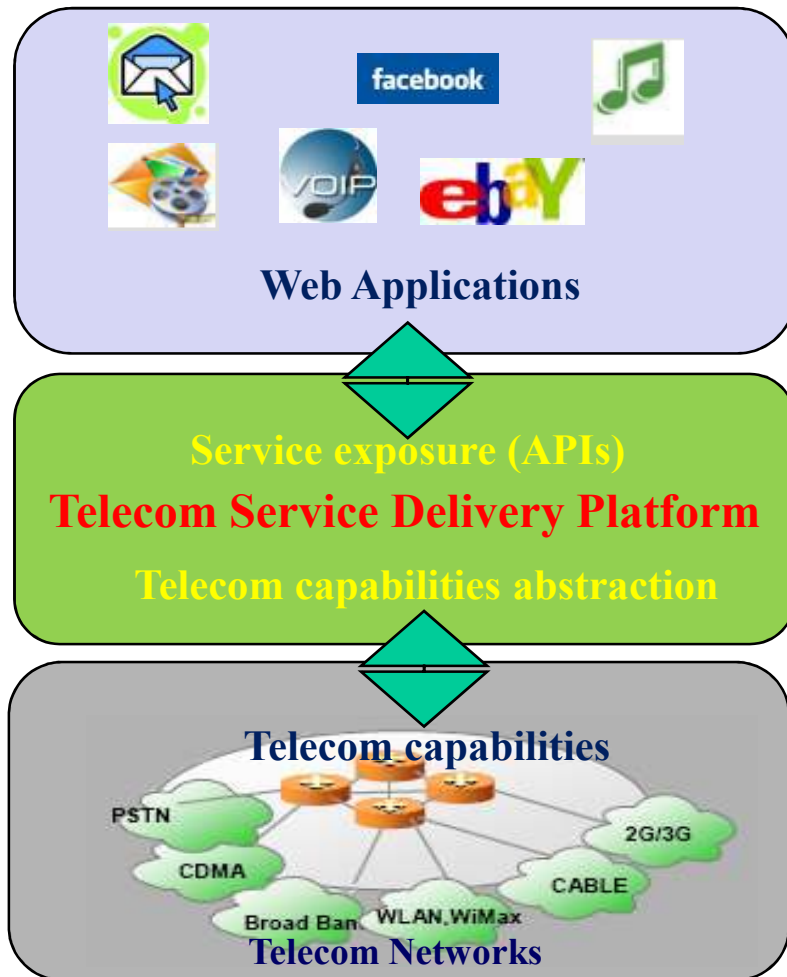o Current Telecom SDP status and evolution paths (SDPaaS)

Telecom SDP

An open service environment
for the Telecom Infrastructure

Applications

Application to Network Interface

Open Service environment

Reusable Telecom capabilities
Telecom Infrastructure (NGN)
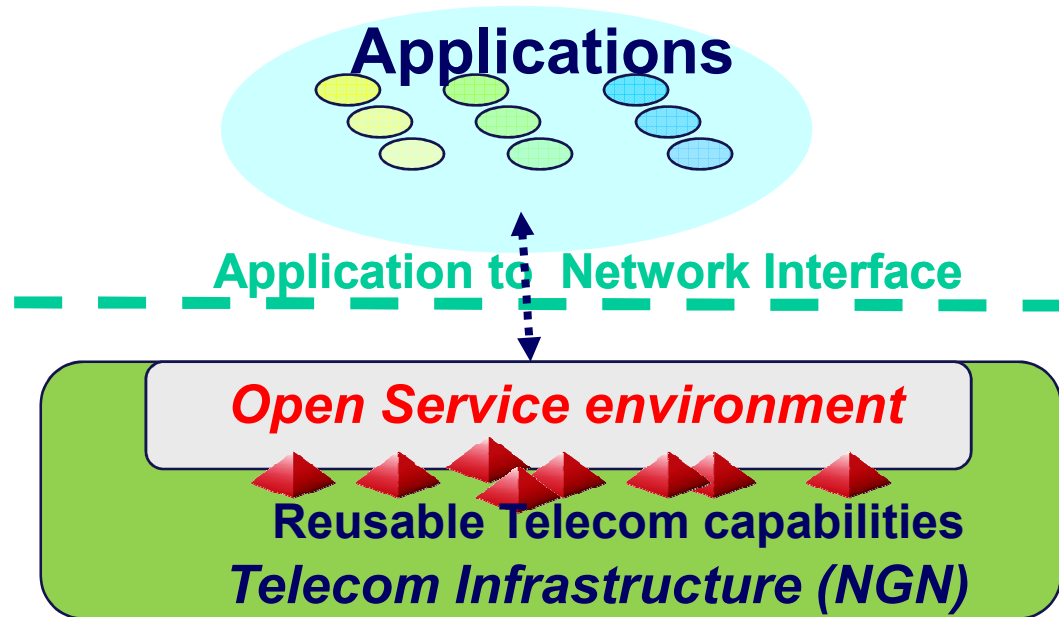
o **Reusable Telecom capabilities for reduced service development costs**
  - o Applying the development approach from IT industry to telecoms
o **Open service environment** for flexible and agile service creation, execution, management and deployment
  - • "Rapid change" is key for satisfying the changing customer needs
  - • New business opportunities via an environment integrating applications and telecom infrastructure

⇨ Telecom "Service Delivery Platform" (SDP)

A Telecom SDP for competing with Web Companies

Web Applications

Service exposure (APIs)
Telecom Service Delivery Platform
Telecom capabilities abstraction

Telecom capabilities

PSTN
2G/3G
CDMA
CABLE
Broad Ban   WLAN,WiMax
Telecom Networks

Telecom Providers and Web reality

Web apps: many, diverse, rich, high speed dev.

« Web » is the platform of Web companies

Telecom providers face the risk to become only 'bit pipe' providers (Over The TOP services)

New services are a strategic differentiator for Telecom Providers and a way to counter lower voice revenues

Inefficiency and cost of Legacy service delivery

Telecom SDP as a new framework for service deployment

- ❑ **Multi-party business model**
- ❑ **Multi service**
- ❑ **Web orientation, mashups**

NOTE: No standardized definition of "SDP" (different market perspectives/focus).
Service Delivery Platform [from MORIANA]: System architecture/environment enabling efficient creation, deployment, execution, orchestration and management of one/more service classes.

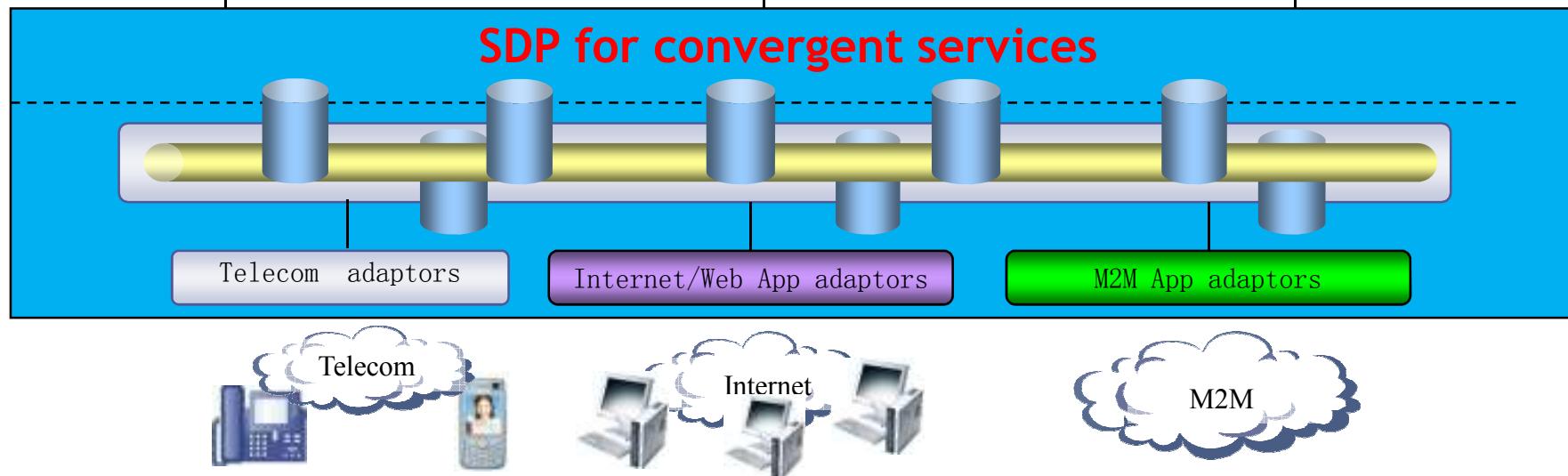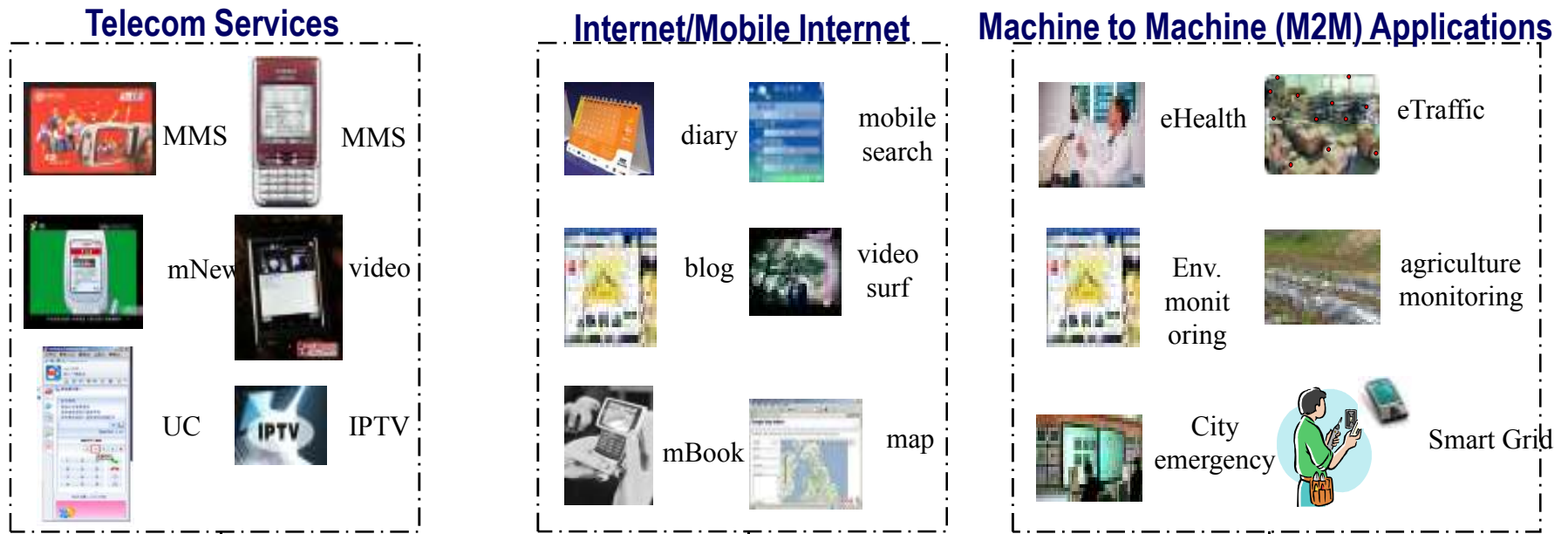# A SDP ecosystem increases the business opportunities

Personalisation

On-Demand

Self-Service

Communities

Collaboration

End user created applications

3rd Party applications

Network Provider/Service Provider services

Common Telecom capabilities

SDP for convergent services (service examples)

Telecom Services

MMS MMS

mNew video

UC IPTV

Internet/Mobile Internet

diary mobile search

blog video surf

mBook map

Machine to Machine (M2M) Applications

eHealth eTraffic

Env. monitoring agriculture monitoring

City emergency Smart Grid

SDP for convergent services

Telecom adaptors

Internet/Web App adaptors

M2M App adaptors

Telecom

Internet

M2M

Industry Business Integration by SDP

Inventory, fleet, monitoring, navigation, identification, cargo

Equipment, safety, energy conservation

Equipment, clinical, diagnosis, course of disease

Lighting, signals, emergency, disaster, identifying

Land surveying, forest, earthquakes, ocean

Production, safety, disaster prevention, water and oil and gas

Intelligent Transport

Intelligent Building

Digital Health

Public Safety

Pollution detection, alarm

Industrial Automation

Telemetry

Logistics, retail, auto service

Mobile POS

Environmental Protection

Supply Chain

SDP platform

Fire

Linkage, fire hydrants, location, scheduling

Transactions, orders, tracking, recognition

Military

Danger, oil, transport, pipeline

Petrochemical

Linkage, fire hydrants, location, scheduling

Weather

Coal

Precipitation, flood control, remote device

Agriculture

Finance

Power

Greenhouse, soil, irrigation, environment, tracking

Forestry

Water

Ventilation, gas, relief orientation

Meter reading, monitoring, energy saving

Fire prevention, investigation, police

Water, pollution, safety

Electronic payment, real-time information

Position of SDP in Telecom Infrastructure

Applications

Streaming **Download** **Video Mail** **Location** **E-business** **Multimedia Messaging** **Mobile Payment**

Service Delivery Platform

Enablers

LCS   Content Download   WAP Gateway   MMSC   SMSC   Streaming Server   DRM

Underlying networks

CDMA2000   WCDMA   Cable   Fixed Broadband   GPRS   GSM   PSTN
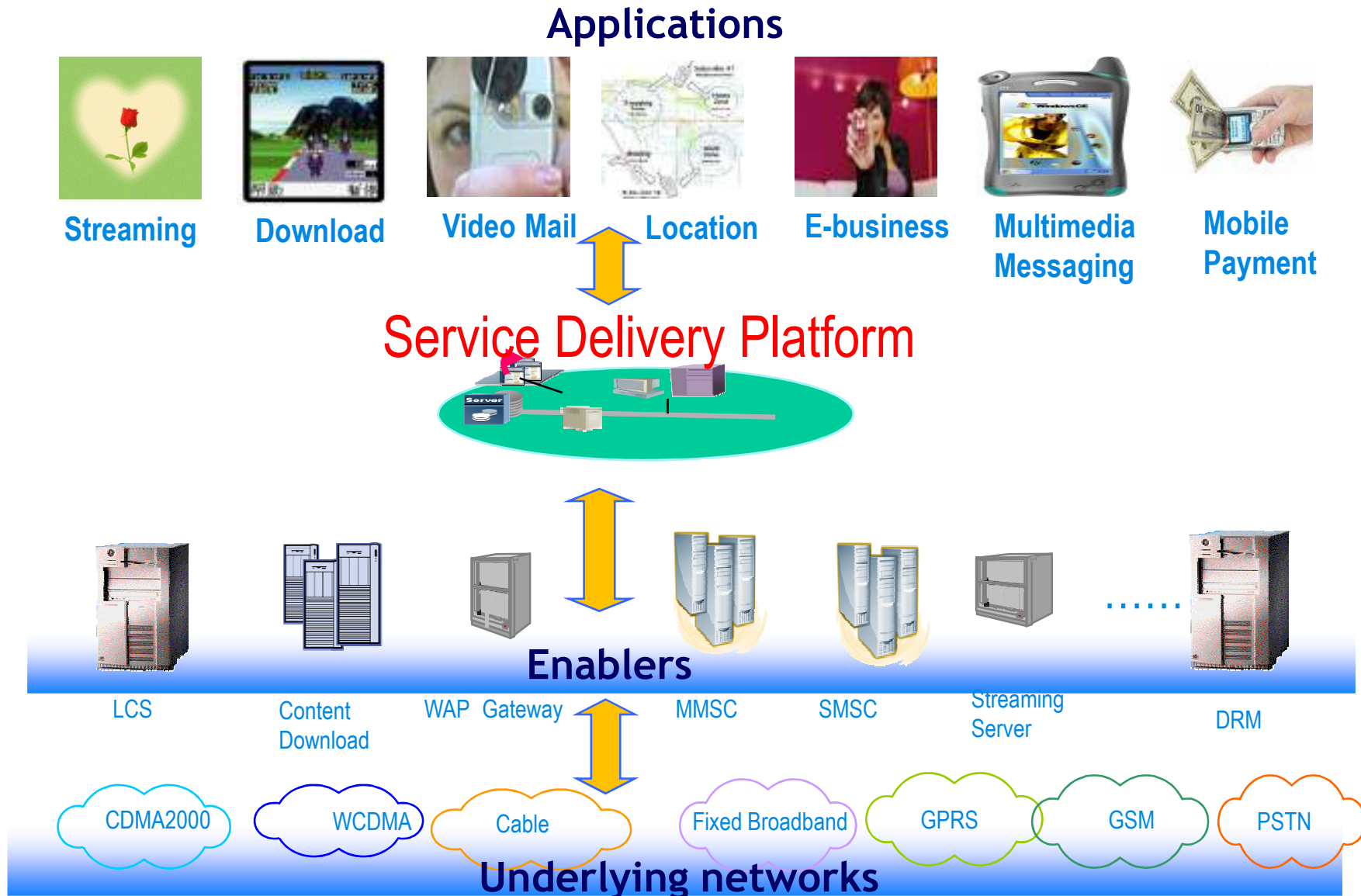
Telecom SDP developments in ITU-T

Telecom SDP in NGN: NGN-SIDE

ITU-T Recommendation Y.2240 "Requirements and capabilities for NGN Service Integration and Delivery Environment (NGN-SIDE)"

o NGN-SIDE ecosystem
- Business roles

o NGN-SIDE functional framework
- Layered view and functional view

o NGN-SIDE requirements
- At application, integration, adaptation and security levels

o NGN-SIDE capabilities
- Description and requirements for each capability

o Requirements of NGN-SIDE interfaces
- Positioning within the NGN architecture
- Resource Interfaces, Service Interfaces (UNI, NNI, ANI, SNI)
- *No reqts among different NGN-SIDE components*

o Appendixes
- Business deployment scenarios in the NGN-SIDE ecosystem
- Application scenarios (3rd party app., In-house app., M2M app.)
- Cloud services and supporting role played by NGN-SIDE
- Survey of standards for APIs (*no survey of overall SDP aspects*)

NGN-SIDE ecosystem

NGN-SIDE aims to support a multi-fold business model and **a comprehensive ecosystem for all stakeholders in the NGN value chain**

Business role relationships in the NGN-SIDE ecosystem

NGN-SIDE users
- Application providers
- Application developers
- Other NGN-SIDE users

NGN-SIDE provider

NGN-SIDE resource providers
- Content providers
- other resource providers
- Application providers
- Service enabler providers
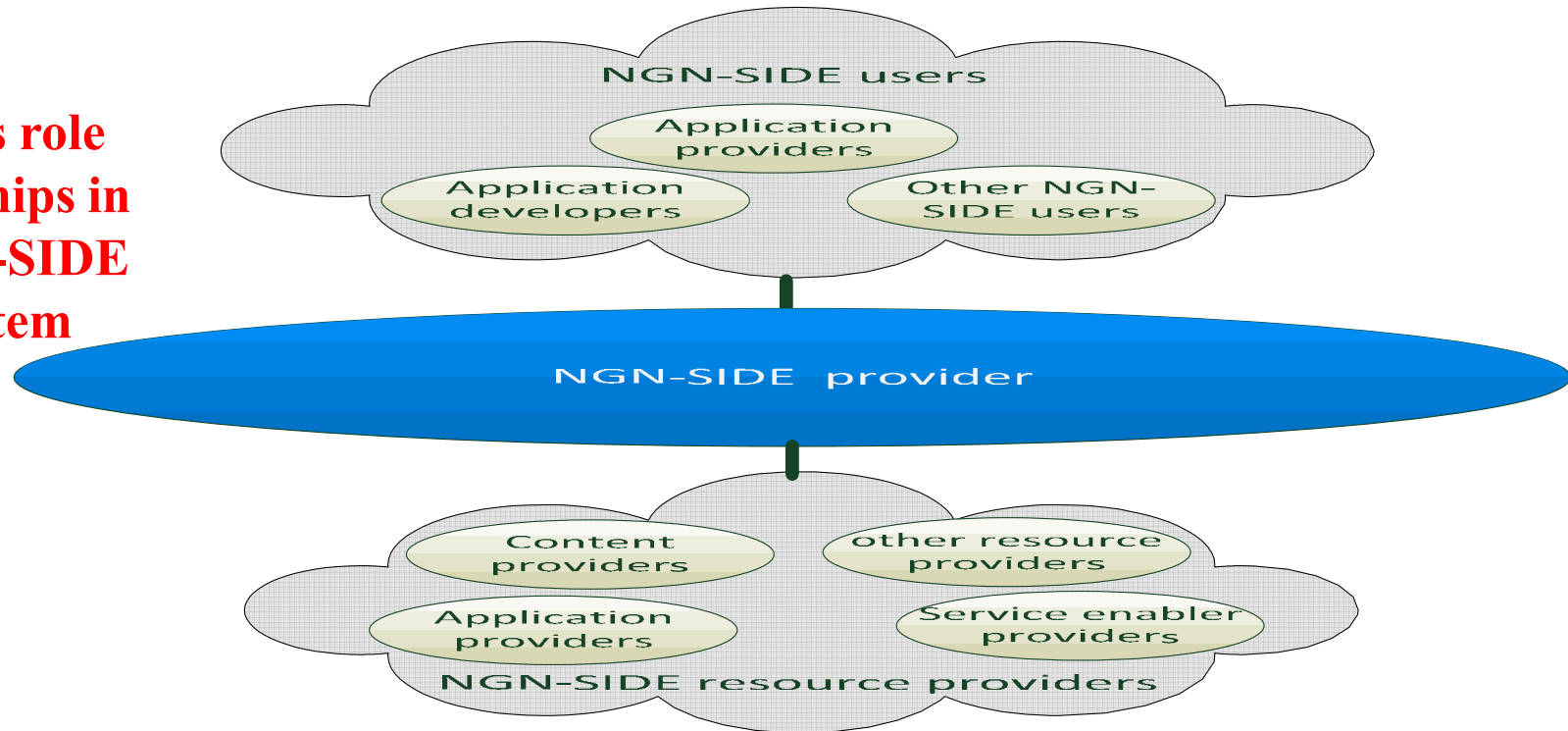
NGN-SIDE provides an open environment in NGN, with integration of resources from different domains, including Telecom domain (e.g. Fixed and Mobile Networks), Internet domain, Broadcasting domain, Content Provider domain

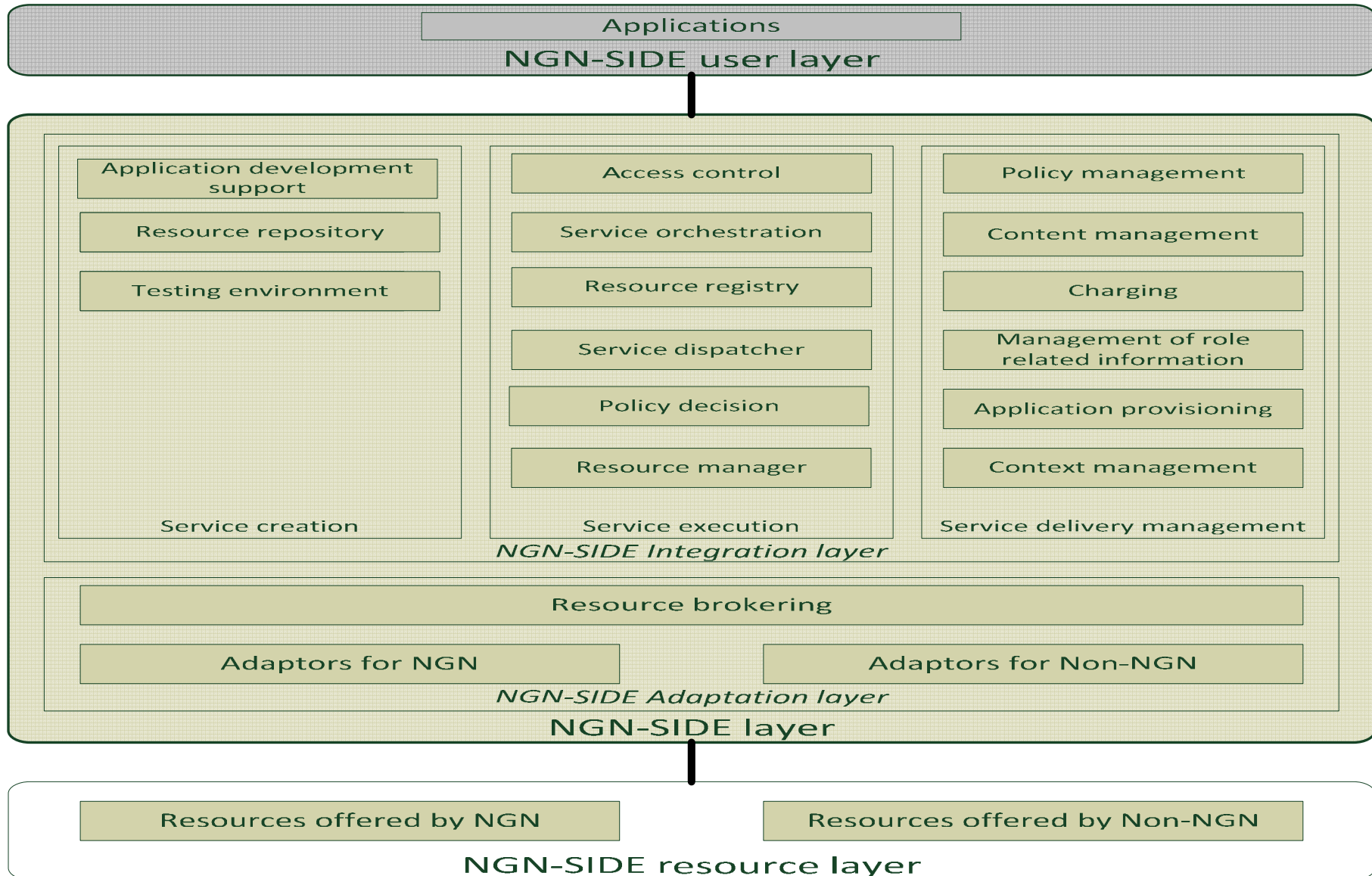# NGN-SIDE business deployment scenarios

Example scenario where the "NGN Provider" actor plays the "NGN-SIDE provider" role
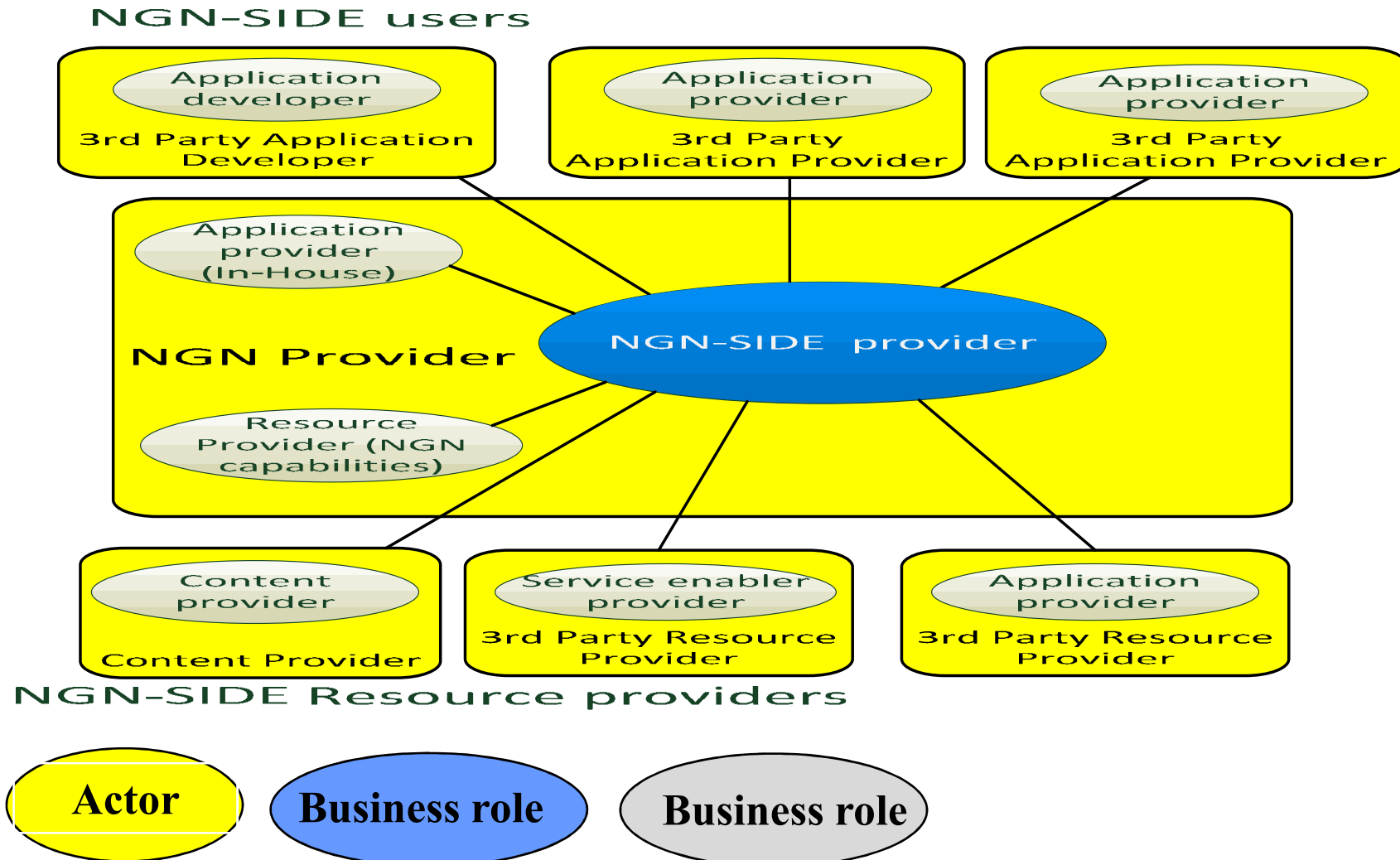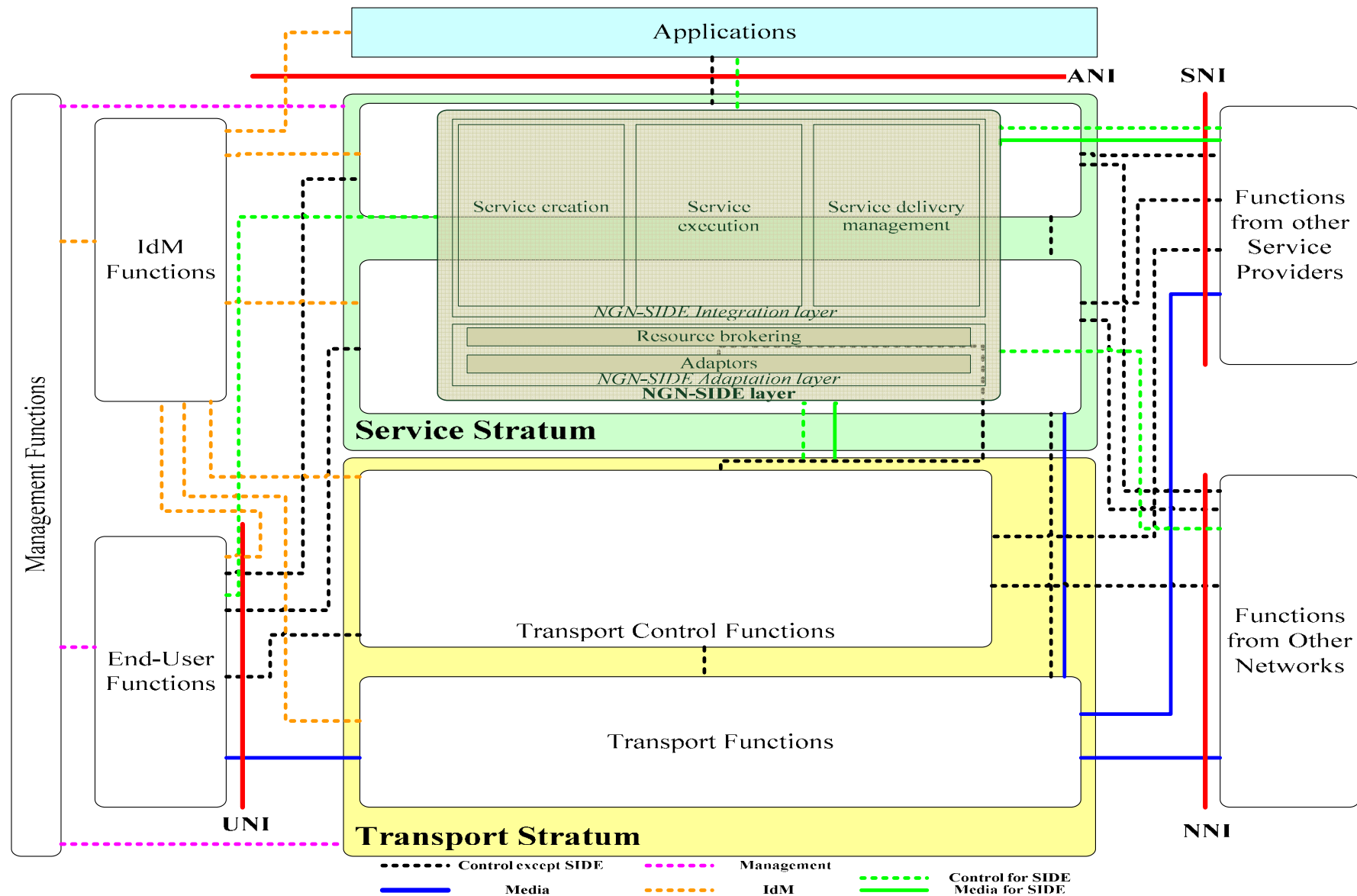
Main functionalities of NGN-SIDE

o **Integration of resources from different domains** over NGN (e.g. telecom domain (fixed and mobile networks), broadcast domain, internet domain, content provider domain etc.)

o **Adaptation, including abstraction and virtualization, of resources** from different domains

o **Resource brokering for mediation** among applications and resources

o **Application development environment** for application developers

o **Different service interfaces across ANI, UNI, SNI and NNI for exposure** of NGN-SIDE capabilities and access to resources in different domains

o **Mechanisms for support of diverse applications,** including cloud, machine to machine, and ubiquitous sensor network applications

o **Mechanisms for support of applications making usage of context-based information**

o **Mechanisms for content management**

NGN-SIDE functional view

Applications

NGN-SIDE user layer

Service creation	Service execution	Service delivery management
Application development support	Access control	Policy management
Resource repository	Service orchestration	Content management
Testing environment	Resource registry	Charging
	Service dispatcher	Management of role related information
	Policy decision	Application provisioning
	Resource manager	Context management

NGN-SIDE Integration layer

Resource brokering

Adaptors for NGN | Adaptors for Non-NGN

NGN-SIDE Adaptation layer

NGN-SIDE layer

Resources offered by NGN | Resources offered by Non-NGN

NGN-SIDE resource layer

NGN-SIDE within the NGN Functional Architecture (Y.2012)

NOTE: SG13 is now progressing the NGN-SIDE Functional Architecture (Y.NGN-SIDE-Arch)

Overall standardization efforts on Telecom SDP

Various SDOs/Forums are involved in this ongoing process

o Framework perspective
- ITU-T: SG13 (NGN/Future Networks), SG16/SG9 (IPTV), (FG CC)
- OMA : OMA Service (Provider) Environment, Enablers, APIs
- IEEE: NGSON (Next Generation Service Overlay Network)
- *ATIS: Service Oriented Networks (SON) [now renamed as Cloud Services Forum]*

o Management perspective: TMF Service Delivery Framework

o IMS focus: 3GPP [SDP can build over IMS or not]

o Others (Wholesale Application Community etc.)

o Testbeds (e.g. Fraunhofer FOKUS)

Some challenges of the standardization process

o Process coordination among relevant SDOs

o A minimum set of standardized APIs to be adopted by each SDP

o Interoperability among different SDP implementations
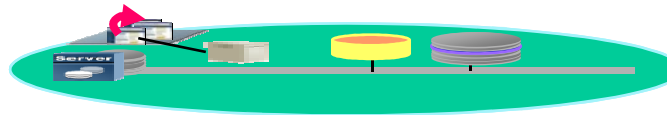
Telecom SDP integration with Application Stores

Application Stores can use SDP capabilities as support for application building

Mobile Phone   PC   IPTV   Tablet

App Store

App   Video   Music   Message   Photo   Game   Search   Book   Voice   E-Goods
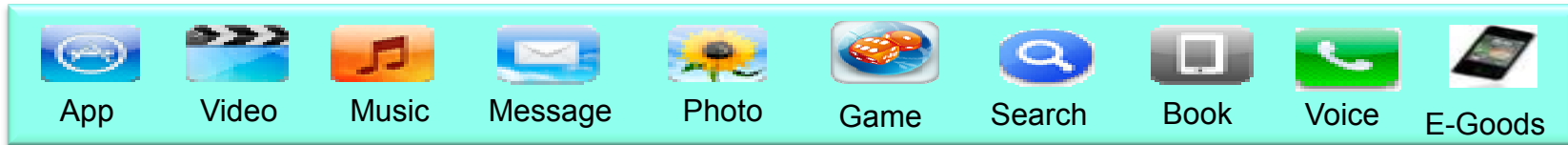
Basic capabilities (e.g. network storage, instant messaging, search engine)

SDP

- Capabilities from various domains
- Openness & exposure
- Store portal
- Developer Community
- Online service creation
- Unified Management
- Service Hosting
- etc.

Mobile Network (2G/3G/4G)

NGN & IP Network (IMS/IPTV)

Social Network (Twitter/Face book)

o Value for End Users: rich services and contents

o Value for Telecom Providers: keeping a role in the value chain, low cost and quick service development

o Value for Developers: access to Telcos' capabilities, unified APIs, revenue sharing

Value chain integration and cooperation

Current Telecom SDP status and evolution paths

Telecom SDPs today and Web (platform) attributes

Status of current Telecom SDPs

o Emphasis on "control and management" - SDP (and IMS) are centralized environments (centralized servers controlling the network capabilities)

o Services are geographically-bound (with service interoperability issues between Telecom Providers)

o Function-centric service architectures

o Not so open

- Proprietary control mechanisms, SDK, market is restricted

■ Convergence of Telecoms, Internet, IT, Entertainment and resulting diversification of value chains

■ Existence of multiple domain-specific SDPs (for mobile, IPTV, legacy and broadband services, Machine-to-Machine applications etc.)

**The good attributes of Overlay SDPs (Web 2.0 platforms)**

o A single and distributed environment

o Services are global, always available

o Data-centric service architectures

o Open APIs for 3rd parties and social features

Some interesting evolution paths for an enhanced value Telecom SDP

o Service Oriented Architecture (SOA) model and open APIs pave the way to **open and decentralized (distributed) SDPs**

o All services on demand: **a Cloud-based SDP**

o **SDP as a Service from the Cloud (SDPaaS)**

o **Modular SDP architecture** with common/general purpose functional modules and device/service-specific functional modules

o **Data enhanced SDP** (e.g. via data mining and knowlegde-based capabilities)

o **Interconnection/federation of SDPs for geographical pervasiveness**
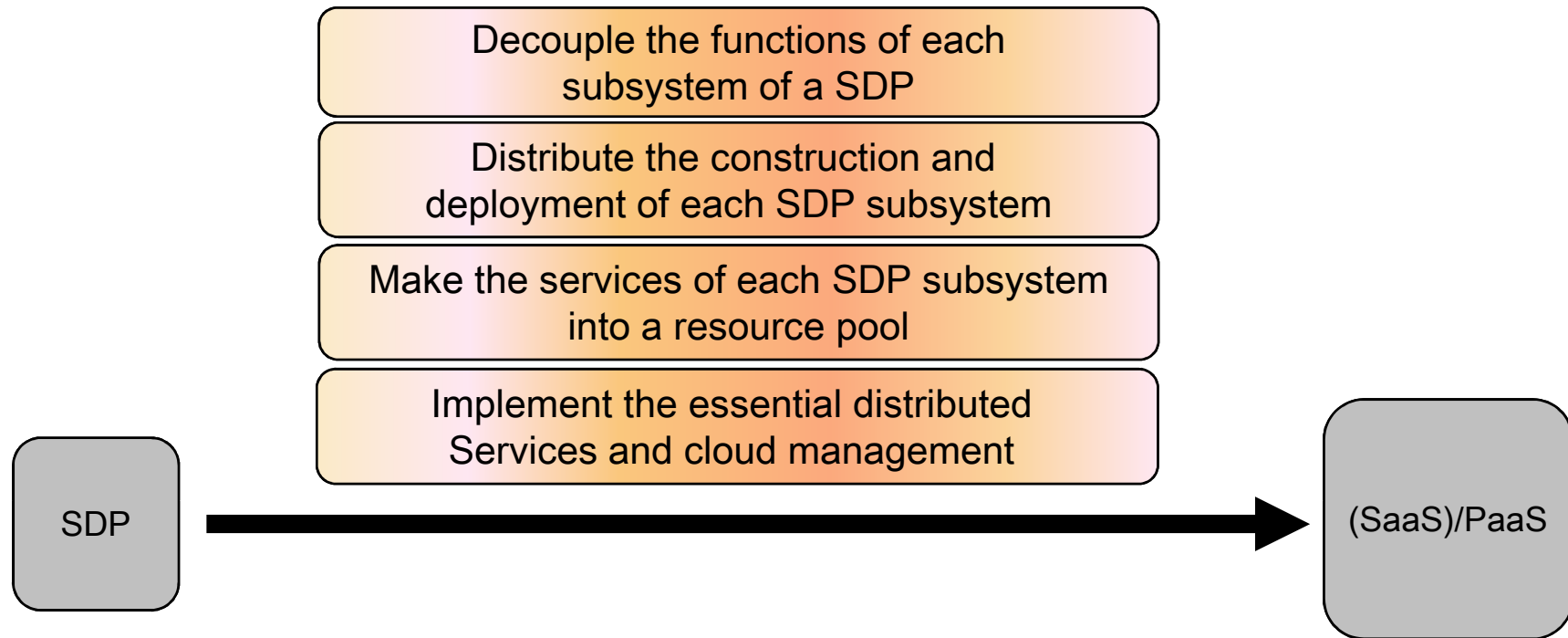
o Others (SDP as a Broker)

SDP as a Service from the Cloud

SDPaaS functional view: Ongoing work within the ITU-T FG Cloud Computing
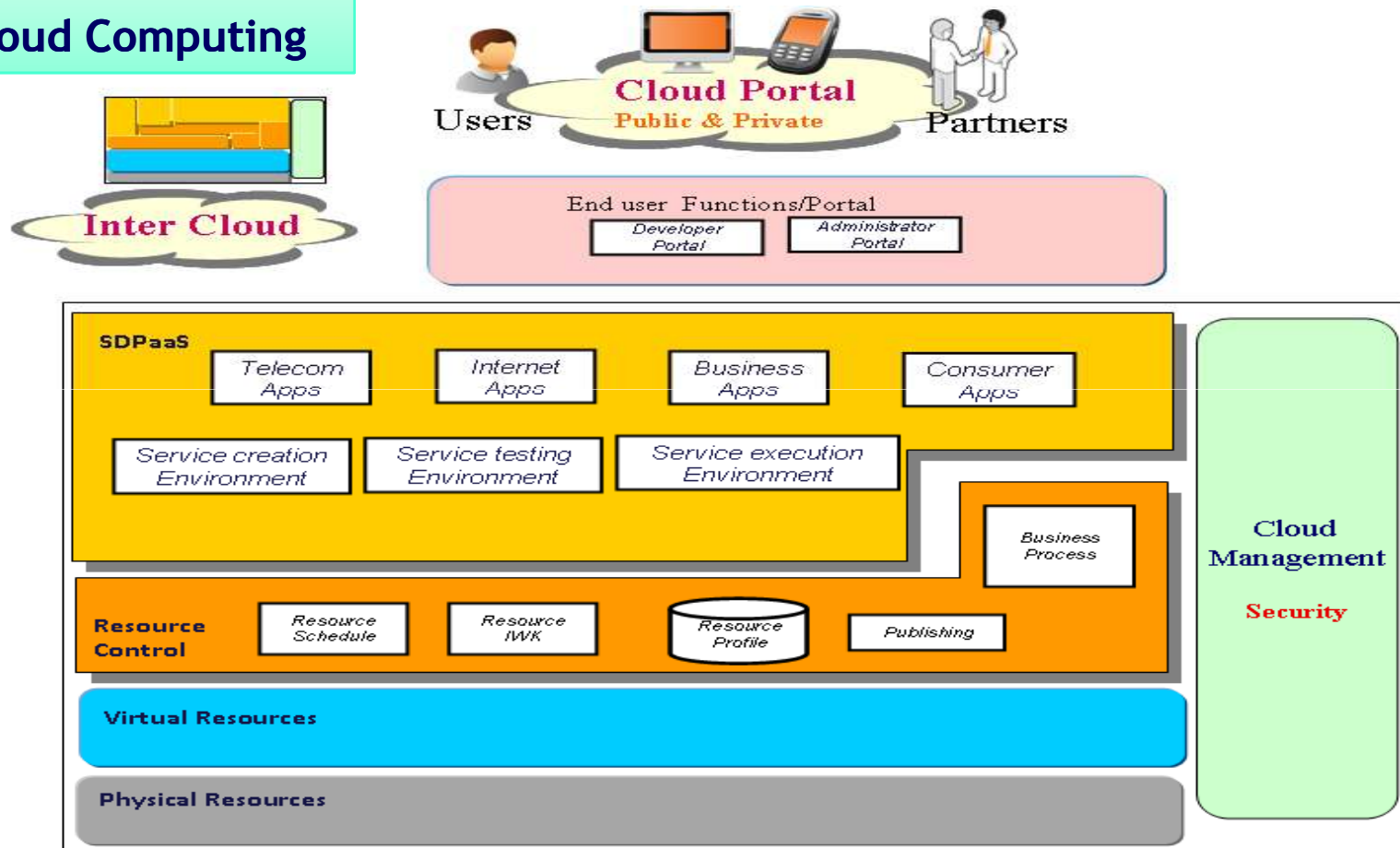
SDPaaS may be implemented via utilization and intermediation of different basic SaaS and Paas cloud services

Evolution into the Cloud

Decouple the functions of each subsystem of a SDP

Distribute the construction and deployment of each SDP subsystem

Make the services of each SDP subsystem into a resource pool

Implement the essential distributed Services and cloud management

SDP → (SaaS)/PaaS

SDP as a Service from the Cloud

❑ Today' s Web platforms include Application Stores and SDP in the cloud (developer support, SDP capabilities as a Service, API-based mashups)

Thus some key requirements of a Telecom SDP into the cloud

o platform exposure in the cloud

o developer support and governance with respect to 3rd parties

o service discovery and agile service composition and provision

Conclusion

o   A Telecom SDP ecosystem enables new business opportunities and a way for Telecom providers to compete with Web platforms

o SDOs and Forums are involved in SDP standardization from different perspectives and ITU-T is part of this effort

• Telecom SDP integration with Application Stores can bring additional value

• Cloud based approach and SDP as a Service from the cloud are interesting evolution paths for an enhanced value Telecom SDP

Thank you for your attention

Questions ?