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International Telecommunication Union
International Multimedia Telecommunications Consortium

IPTV Standards Perspective

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Joint ITU-T Workshop and IMTC Forum 2006 "H.323, SIP: is H.325 next?"
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Agenda

- Introduction
  - What is IPTV?
- Current Status
  - Relations to NGN and IMS
- IPTV Services Delivery Chain
  - Roles, Functions, Objectives
- Standards Map
- Conclusion
  - Main Challenges

What is IPTV ?

Definition

Scope

What is IPTV ?

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- IPTV is a (set of) provider to consumer Service(s) including their business and operational aspects
- IPTV minimal scope is the secure delivery of streamed visual and audio content over a managed IP network to a consumer for display on a TV
- IPTV is a part of the whole N-play (voice, video, data, wireless, …)
- IPTV is to cross a chain of networks and domains (e.g. content providers, service providers, core networks, access networks, and the home networks)

The Status

Relations to NGN and IMS

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The Status in Brief

- End-to-end Solutions are being implemented, trialed, and deployed
- The solutions are based on a combination of standard and proprietary technologies
- Existing standards don't cover all IPTV needs; when in existence, multiple standards could "compete" for meeting certain requirements
- Standardization bodies and industry forums are eager to take on the IPTV charter

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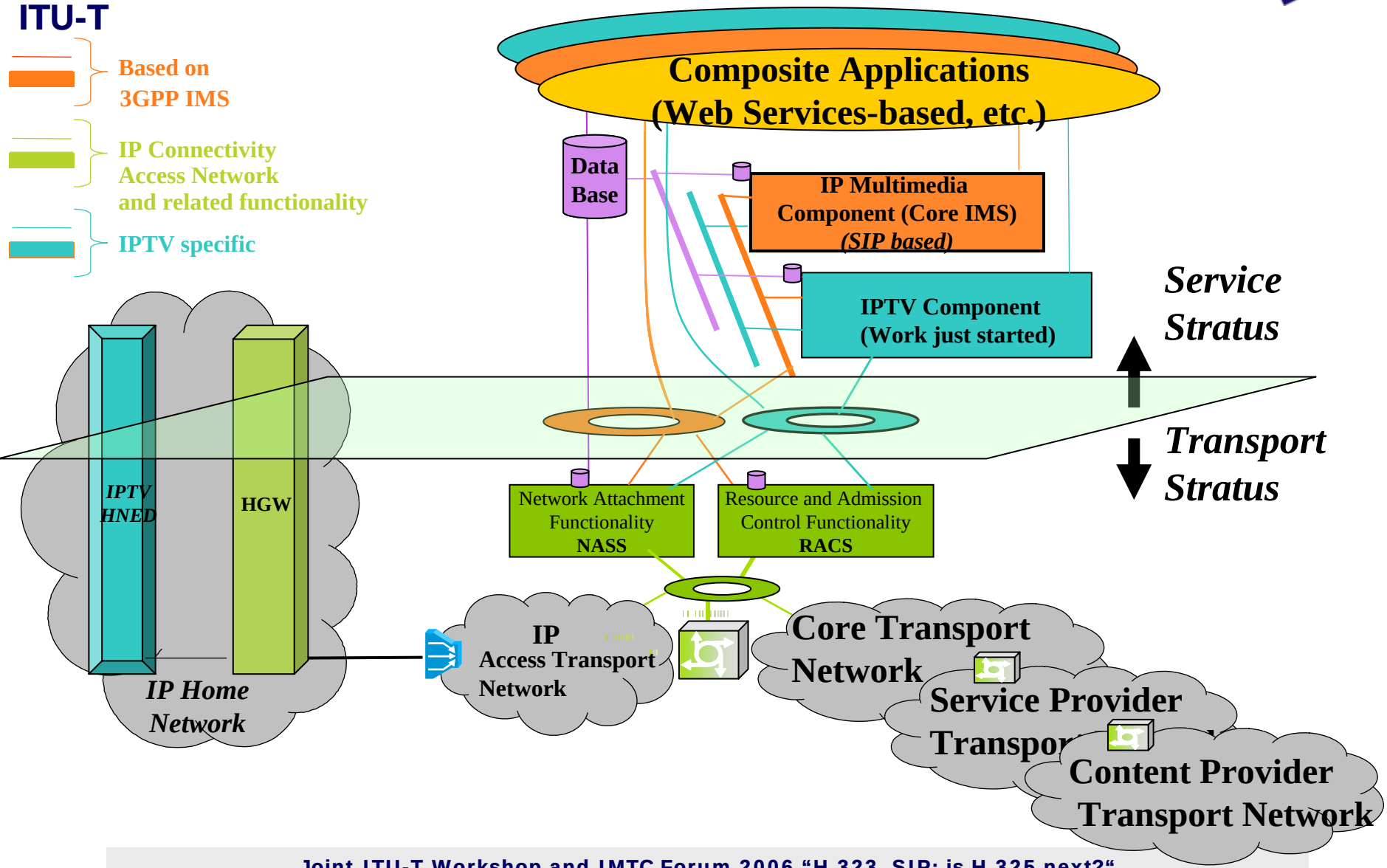
IPTV Industry Current Consensus

- Use existing technologies whenever it makes sense
- Don't duplicate work, instead coordinate the numerous standardization efforts
- The TISPAN/ETSI Next Generation Network (NGN) architecture can be a good starting point
- Consider IP Multimedia System (IMS) for transport network and for interactive SIP-based services

IPTV in the IMS/NGN Environment



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The IPTV Services Delivery Chain

Functions

Objectives

The IPTV Service Delivery Chain

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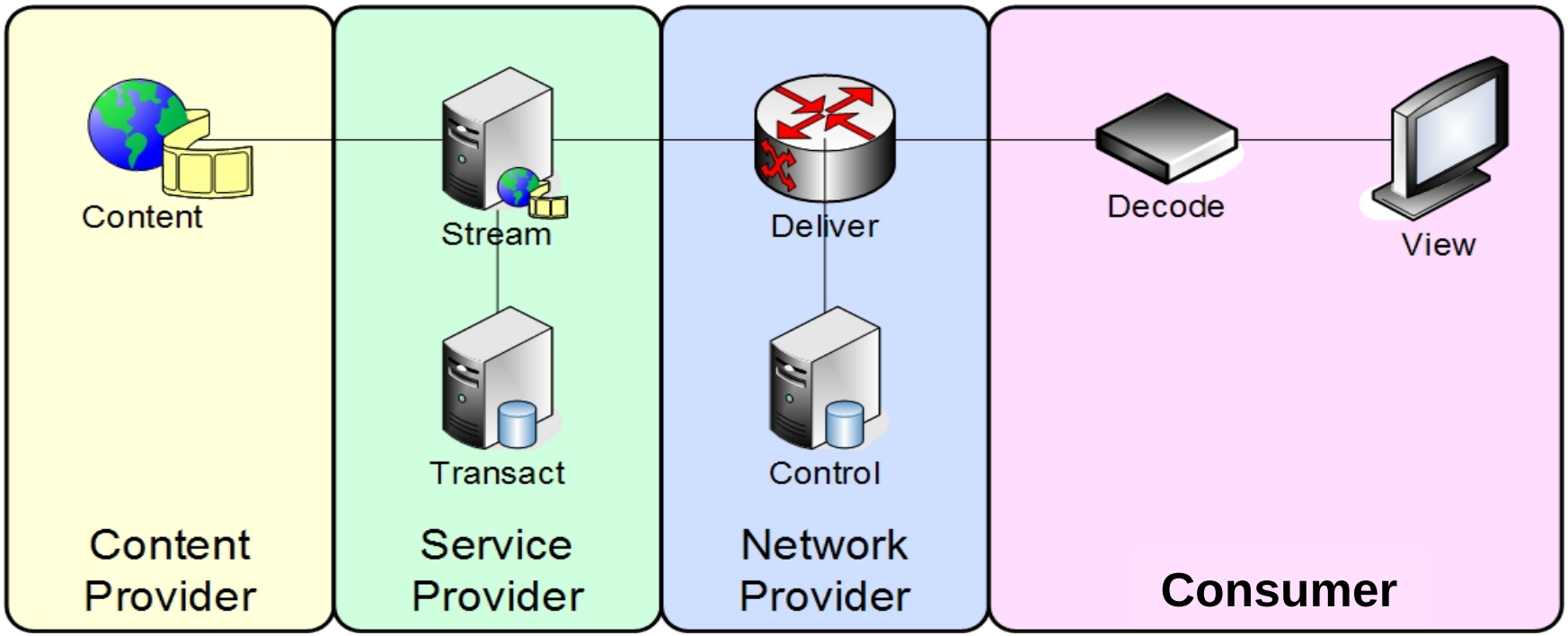

The commercial and technological relationships between the IPTV players in the chain are often different from the physical boundaries!

IPTV Players: Content Provider

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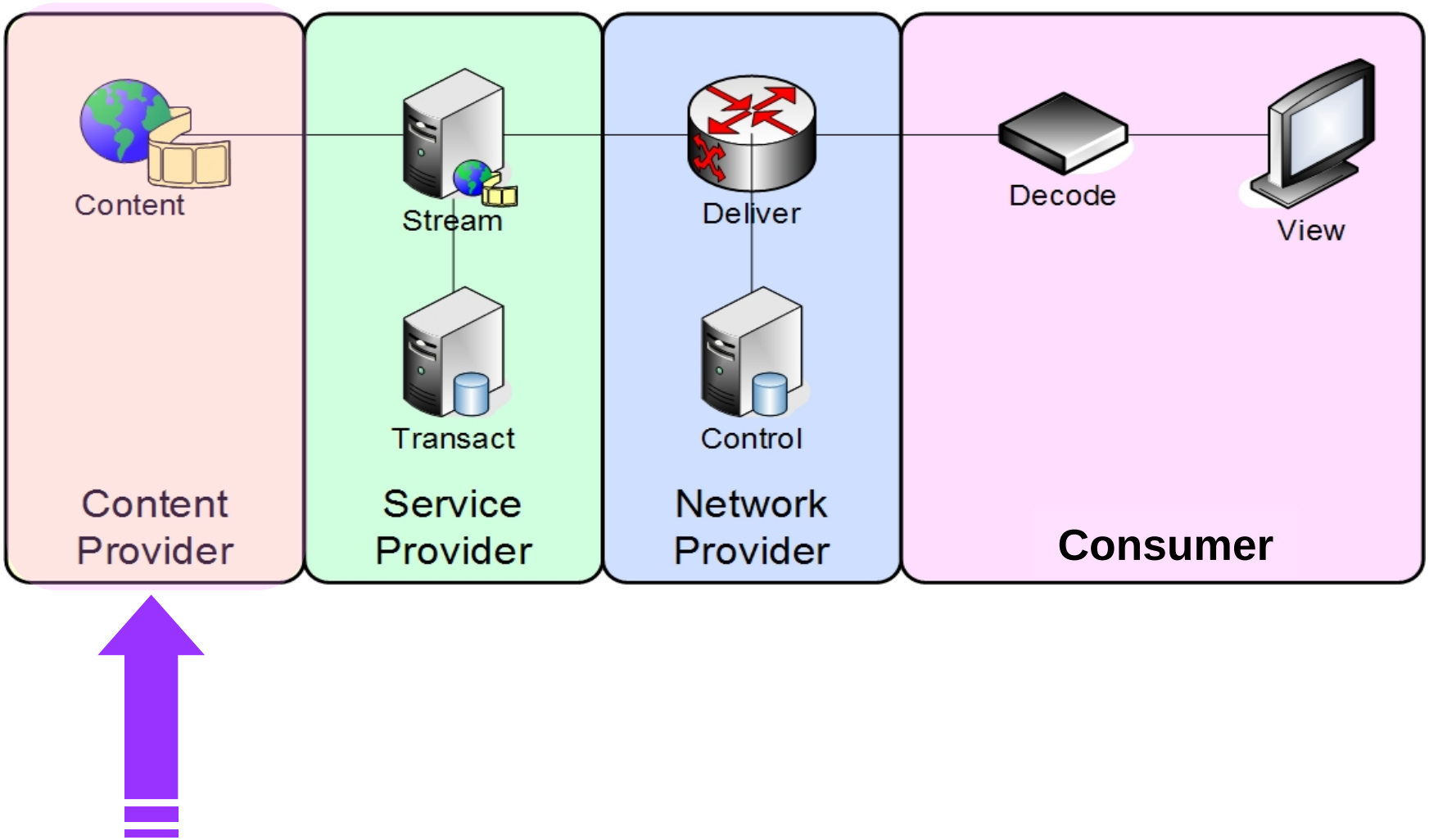

Content Provider Perspective

- Owner of Content
- Delivers contents as: Streams (including off-air), Files, Tapes
- Digital Rights Management (DRM) is a MUST
  - Not for “IPTV” only

IPTV Players: Service Provider

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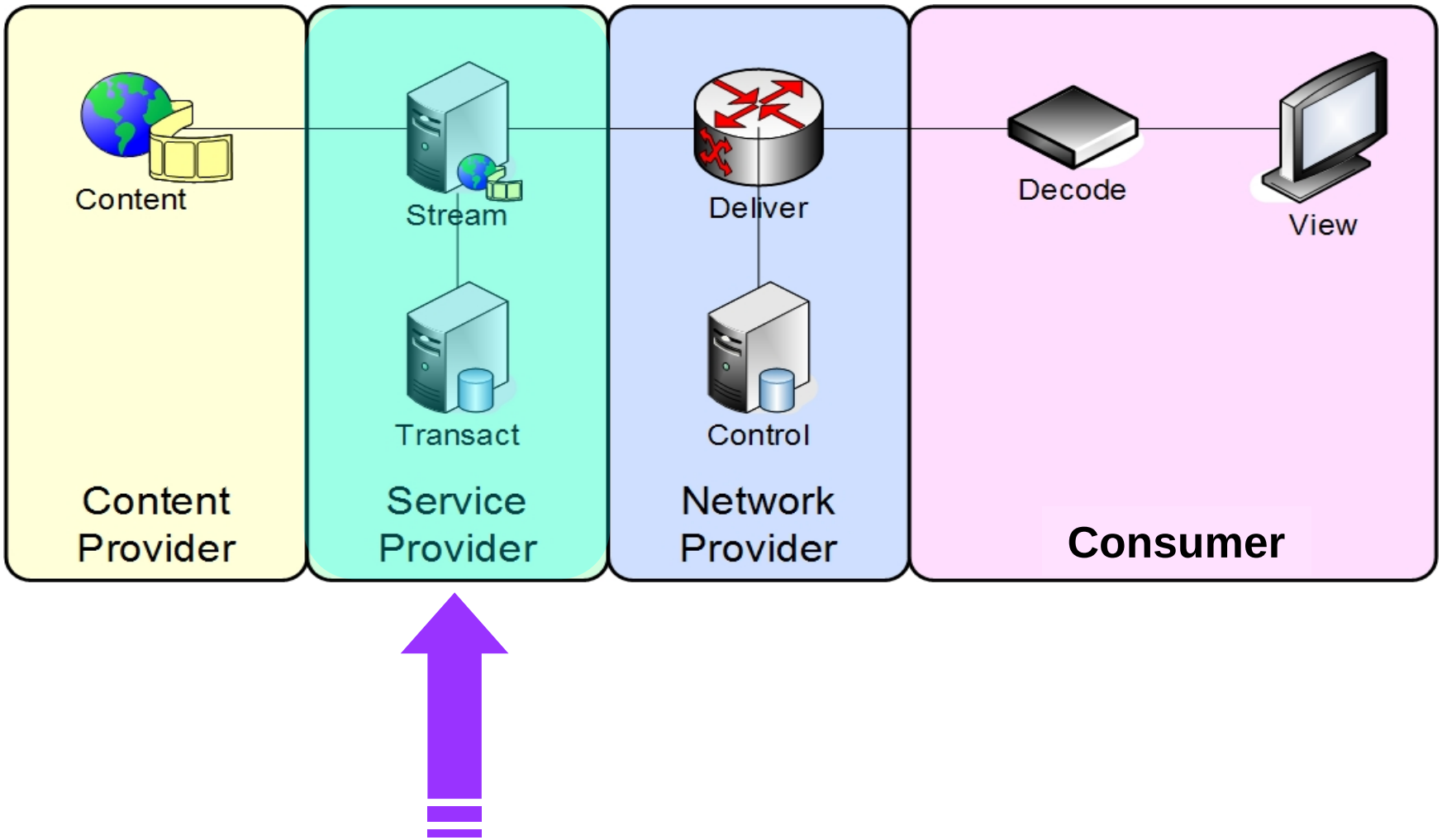

Service Provider Perspective

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- Provides IPTV Services
  - Generates IPTV Streams
  - Ingests and protects IPTV content (DRM)
  - Exposes service portals
  - Manages the services
- Supports Different Commercial Models
  - Free
  - Subscription
  - Pay-per-view
- Responsible for Customer Management
  - Customer Relationship Management (CRM)
  - Billing
  - Customer Profiles
  - Customer Identity, Service

Typical Services in the IPTV Context

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- Entertainment
  - Broadcast TV (+ with Trick Modes), PPV, VOD, Interactive TV (polling, …)
- Regulatory Information
  - Emergency, closed capturing, …
- Advertising
- Service Information
  - Program Guide, Parental Control, Notifications, …
- Hybrid Services (i.e. out-of-band Content Delivery)
- 3rd Party Content Services
- Interactive Communications (IM, Voice, Video,)
- Games, Pictures, Etc.

Service Creation and Delivery Challenges

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- Cost Reduction ->
  - Services are independent from the physical infrastructure
- Rapid Services Creation ->
  - Easy 3rd party integration
- Smooth transition from the existing solutions ->
  - Translation Functions
    - In home gateways
    - As a stand-alone application

Standard Web Services Interfaces

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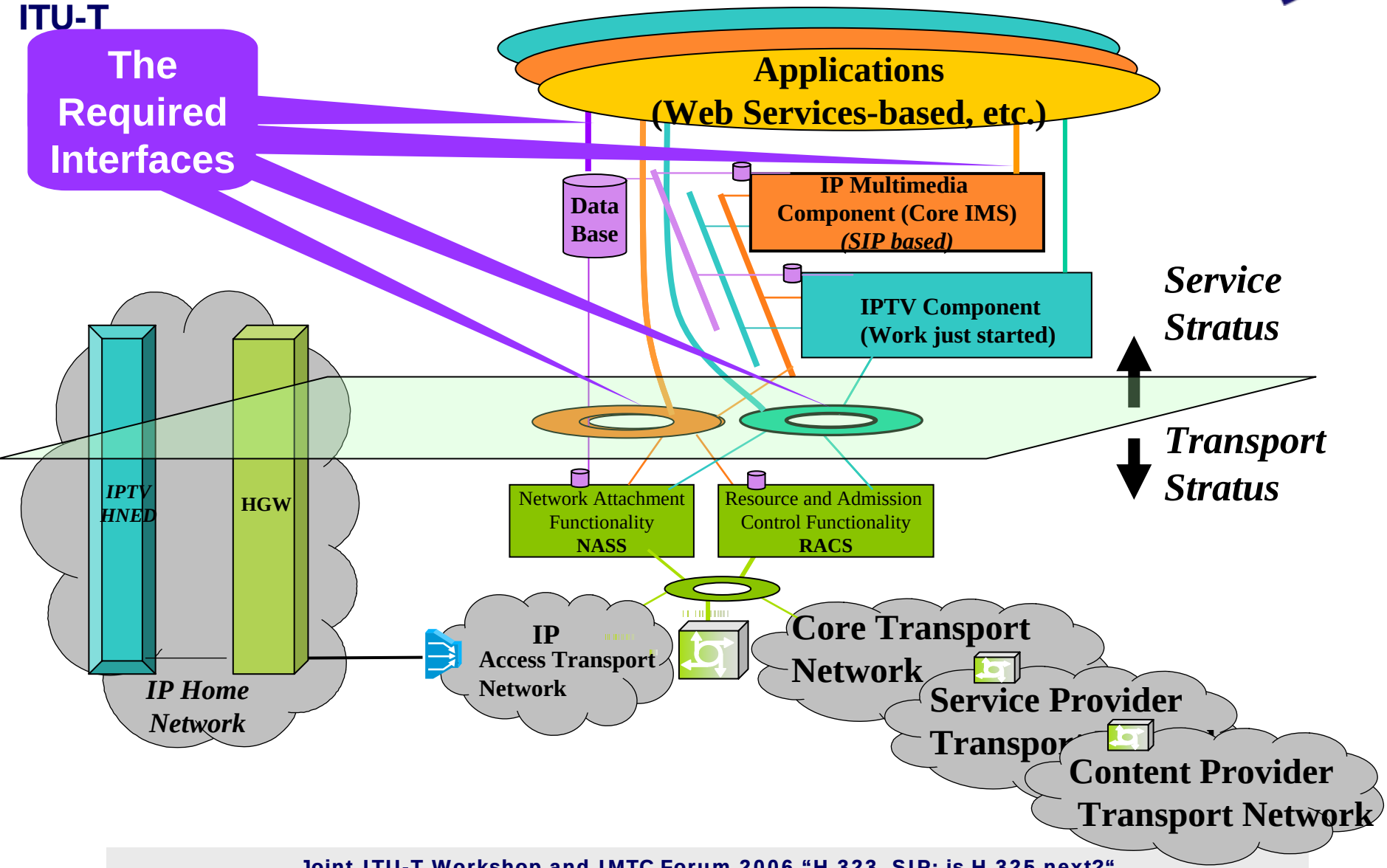

Standard Web Services Interfaces

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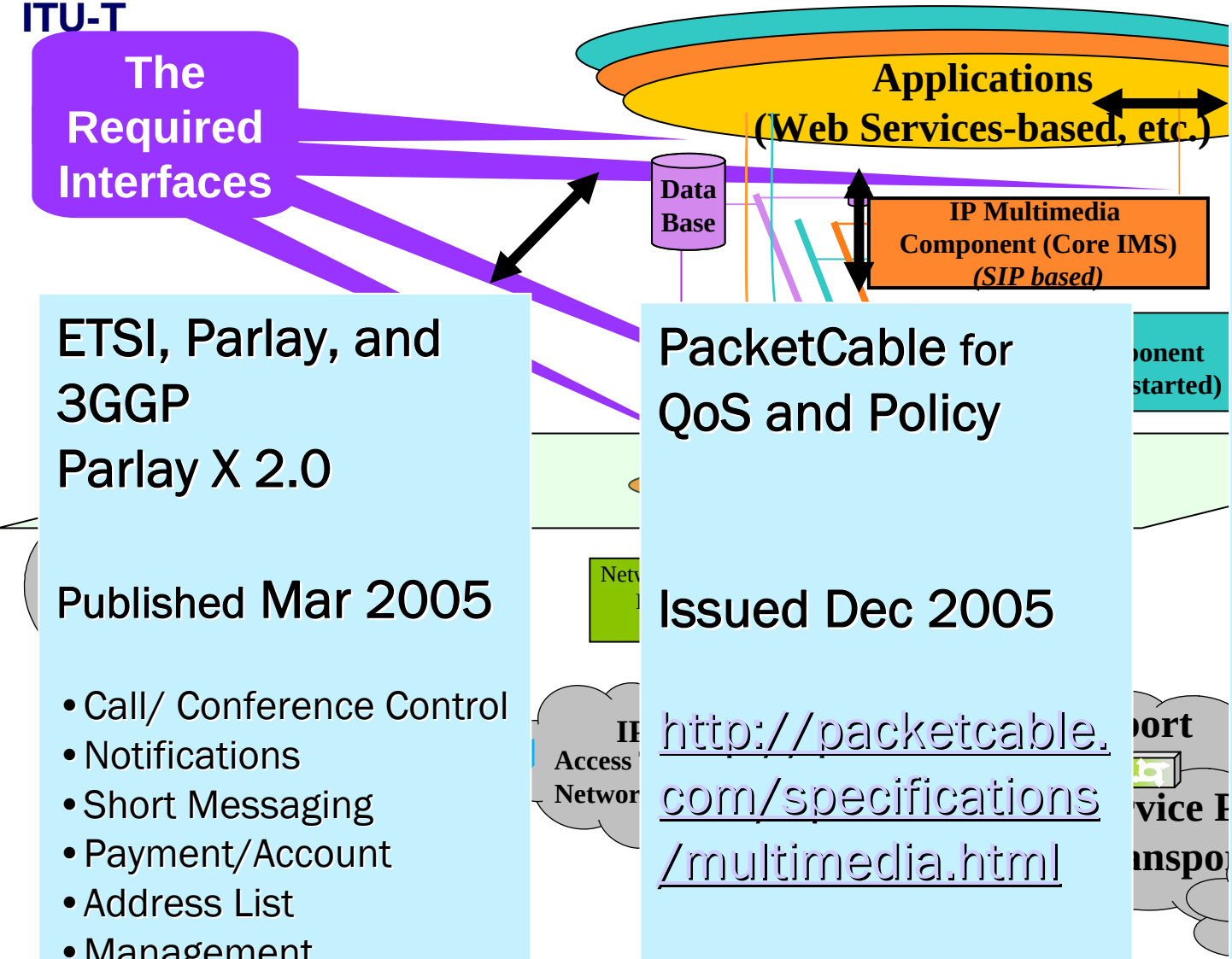
The Required Interfaces



ETSI, Parlay, and 3GGP
Parlay X 2.0

Published Mar 2005

- Call/ Conference Control
- Notifications
- Short Messaging
- Payment/Account
- Address List
- Management
- Presence, etc.

PacketCable for QoS and Policy

Issued Dec 2005

http://packetcable.com/specifications/multimedia.html

Next Generation Operation Support Systems (NGOSS) / TeleManagement (TM) Forum

Order Handling, Service Configuration, etc

Web Services for Application Interactions

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- ETSI, Parlay, and 3GGP jointly defined the public Parlay X 2.0 (Third Party Call, Call Notification, Short Messaging, Payment, Account Management, Audio Call, Multimedia Conference, Address List Management, Presence, etc.)
- PacketCable Multimedia Web Service Interface http://packetcable.com/specifications/multimedia.html
  - Issued on December 21, 2005
  - Defines Web Services Interface between a generic Application Server (AS) and a Multimedia Application Manager (AM) for requesting network resources (QoS and others)

Web Services for Application Management and Interactions

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- Next Generation Operation Support Systems (NGOSS) / TeleManagement (TM) Forum
  - Order Handling, Service Configuration, etc.
- Organization for the Advancement of Structured Information Standards (OASIS)
  - Web Services Distributed Management (WSDM) – Model for managing distributed services
  - WSDM Management Using Web Services (WSDM-MUWS)
  - Universal Description, Discovery, and Integration (UDDI) – a method for publishing and discovering network-based software components in a Service-Oriented Architecture (SOA)
  - Etc.

CSF from Microsoft
Connected Services Framework

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- http://www.sqlsoft.com/public/promos/csf/
- A Service Delivery Platform (SDP)
  - .NET serves as SLEE and SCE
- 3rd Party Interfaces
  - World Wide Web Consortium (3WC) Web Services compliant
  - SLEE and SCE independent
- Standard Interfaces Implemented and Demonstrated
  - Parlay-X for Billing
  - NGOSS for Order Handling
  - IMS to follow

IPTV Players: Network Provider

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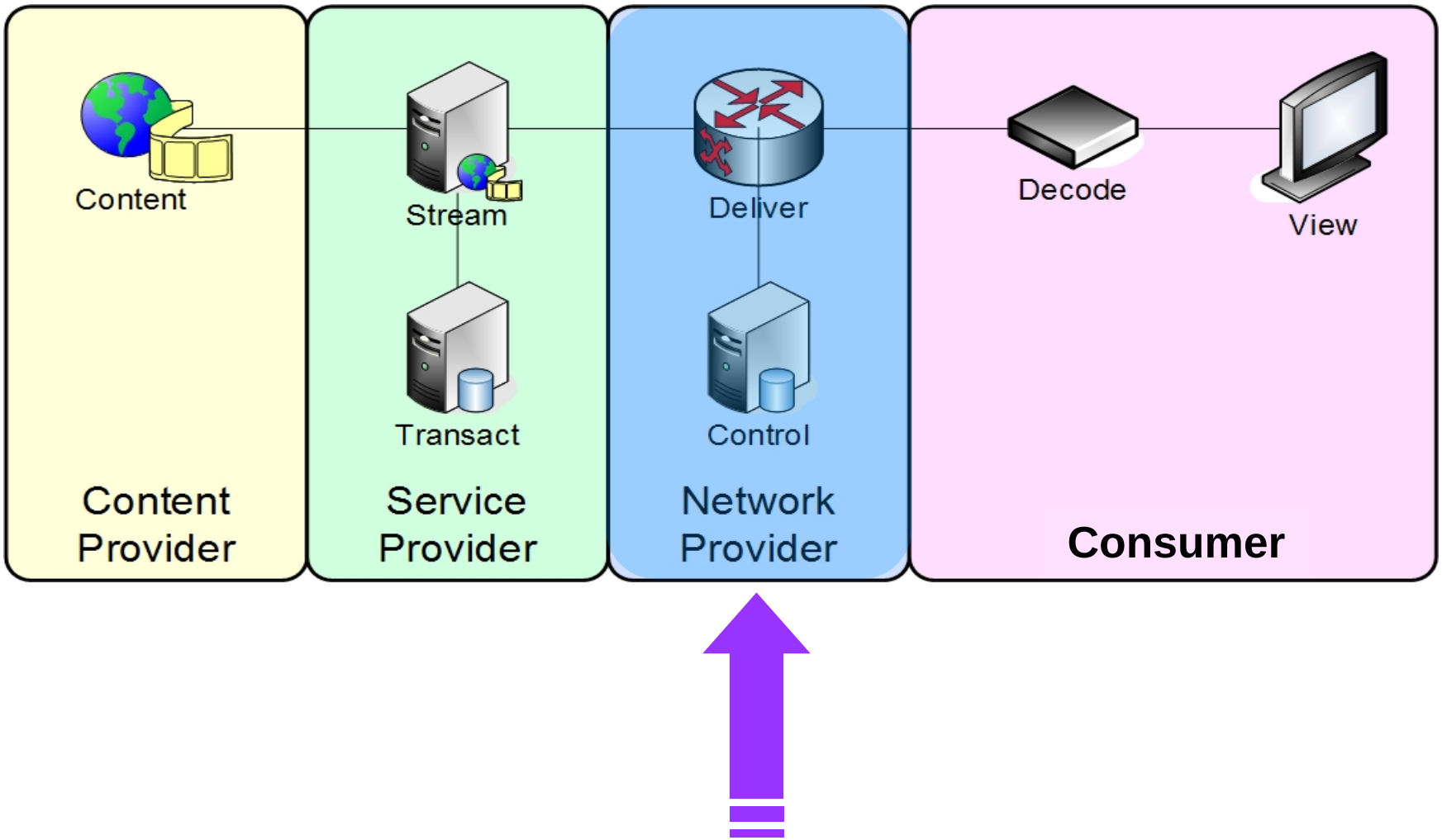

Network Provider Perspective

- Function
  - Delivers IP streams from Service Provider to Consumer (Multicast and Unicast)
- Transport
  - Fixed (DSL, Fibre, Cable)
  - Mobile
- Responsible for Control & Quality of service
  - IPTV is to use a common infrastructure shared with other applications in terms of transport, QoS, etc. (e.g. IMS)

IPTV Players: Consumer

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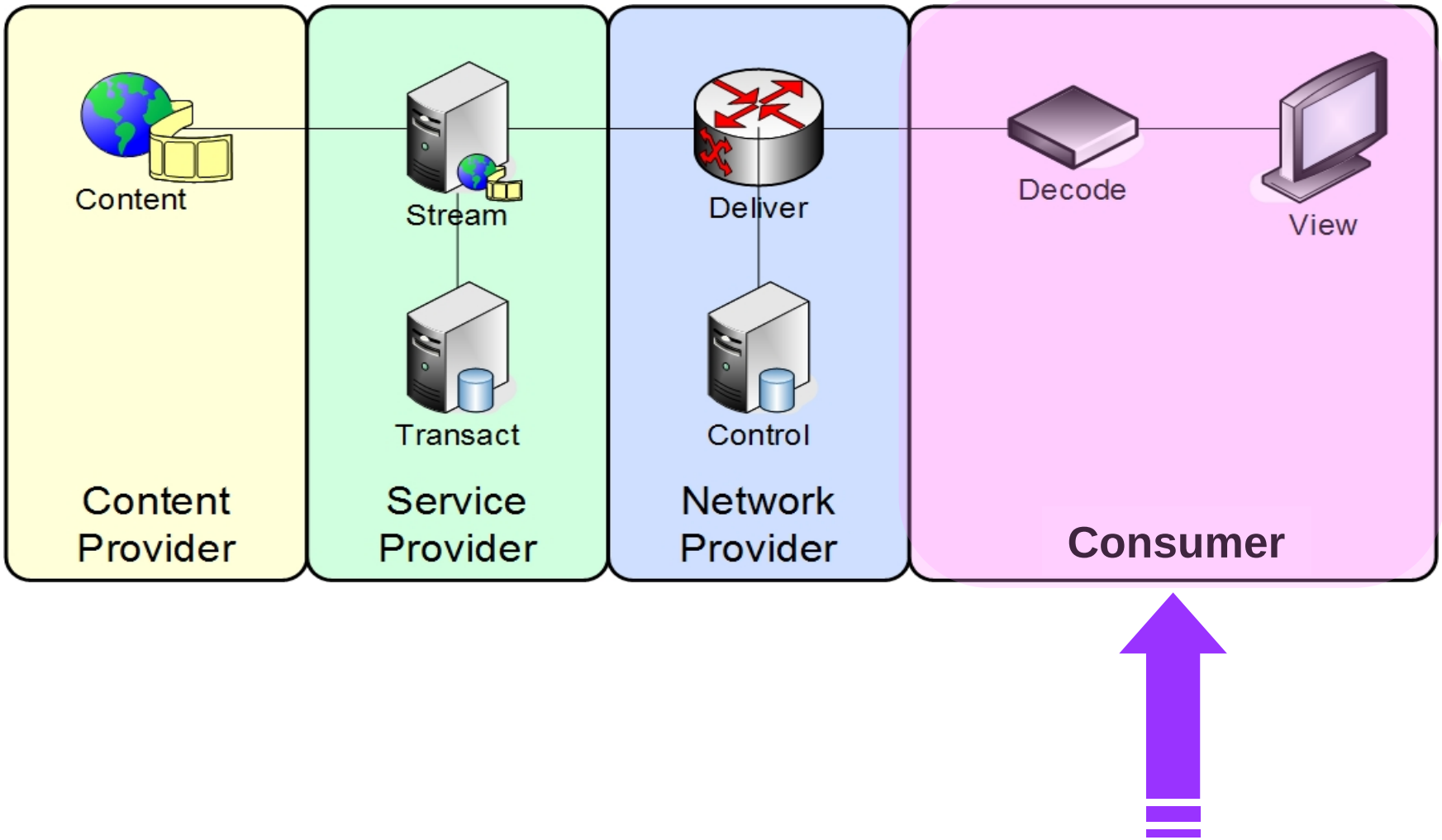

End User / Consumer Perspective

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- Wants to select and consume content and
  - Is willing to pay bills
- IPTV content is not terminated in a TV box; data needs to be shared and distributed across devices and users ->
  - Easy to use Digital Rights Management (DRM) is needed and is a positive thing!
- "Set-top box" Functionality
  - Government regulations around consumer choices are expected
  - The functionality can be in any home equipment
- Choice of Delivery Networks
  - Providers of different types: telecoms, cables, satellite, and Internet
  - Even multiple Network Providers in parallel
- "Network Neutrality"
  - Multiple "Service Providers" over a common network
  - Open "Service"/"Content" publishing and discovery

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IPTV Standards Map

Standardization Bodies

Consortia

Fora

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MPEG: Origin in TV and Video, Moving to IPTV

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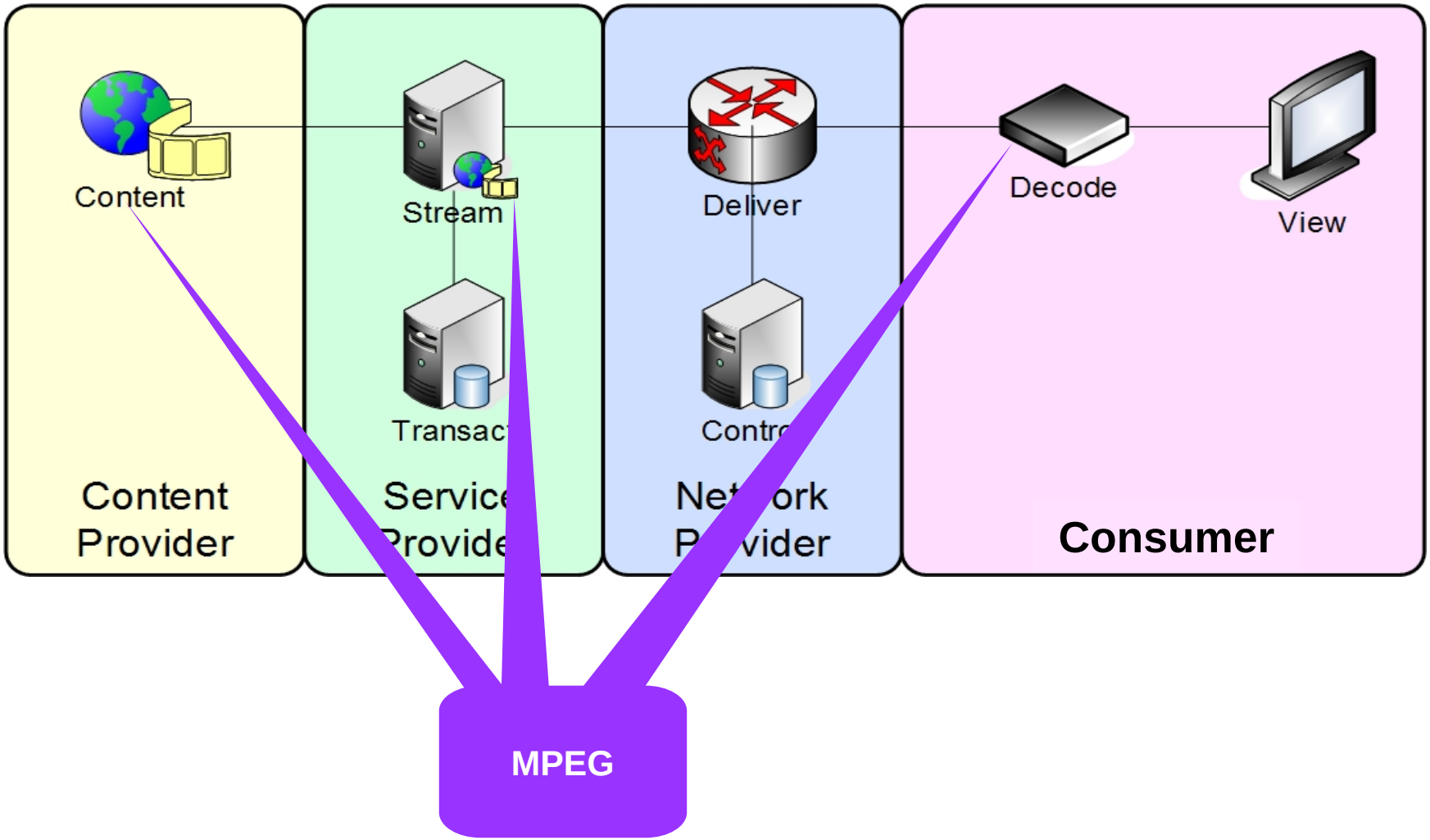

MPEG

- A DRM candidate: MPEG-21 “Multimedia Framework”
  - Purposely does NOT define: key management, encryption algorithms, certification infrastructures, etc.
  - Defines a structured (hierarchal) Data Model: Digital Item Declaration (DID)
  - Allows for various inclusive identification schemas: Digital Item Identification (DII)
  - Defines Intellectual Property Management and Protection (IPMP) Components and the Rights Expression Language (REL)

Access technologies: DSL Forum

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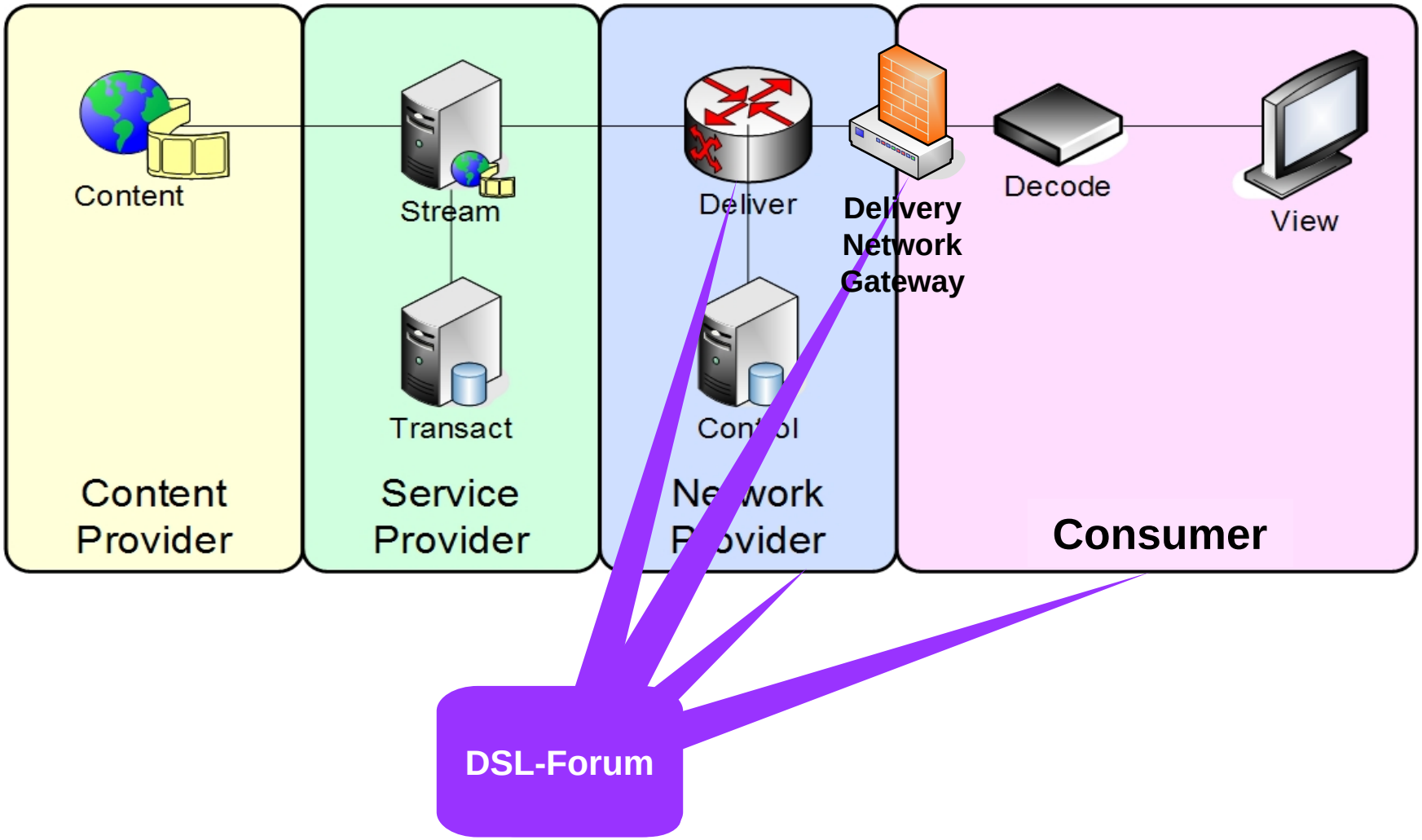

- TR-069 Remote Management Protocol
  - Access technology neutral
  - Bi-directional SOAP/HTTP-based messaging
  - Bootstrap communication and discover device capabilities
  - Ability to set/get configuration information, diagnostics, status and performance info
  - SW/firmware version management
  - DSLF wants to push TR-069 for other access technologies, such as fibre
- TR-098 QoS
- Etc.

Home Network and Equipment

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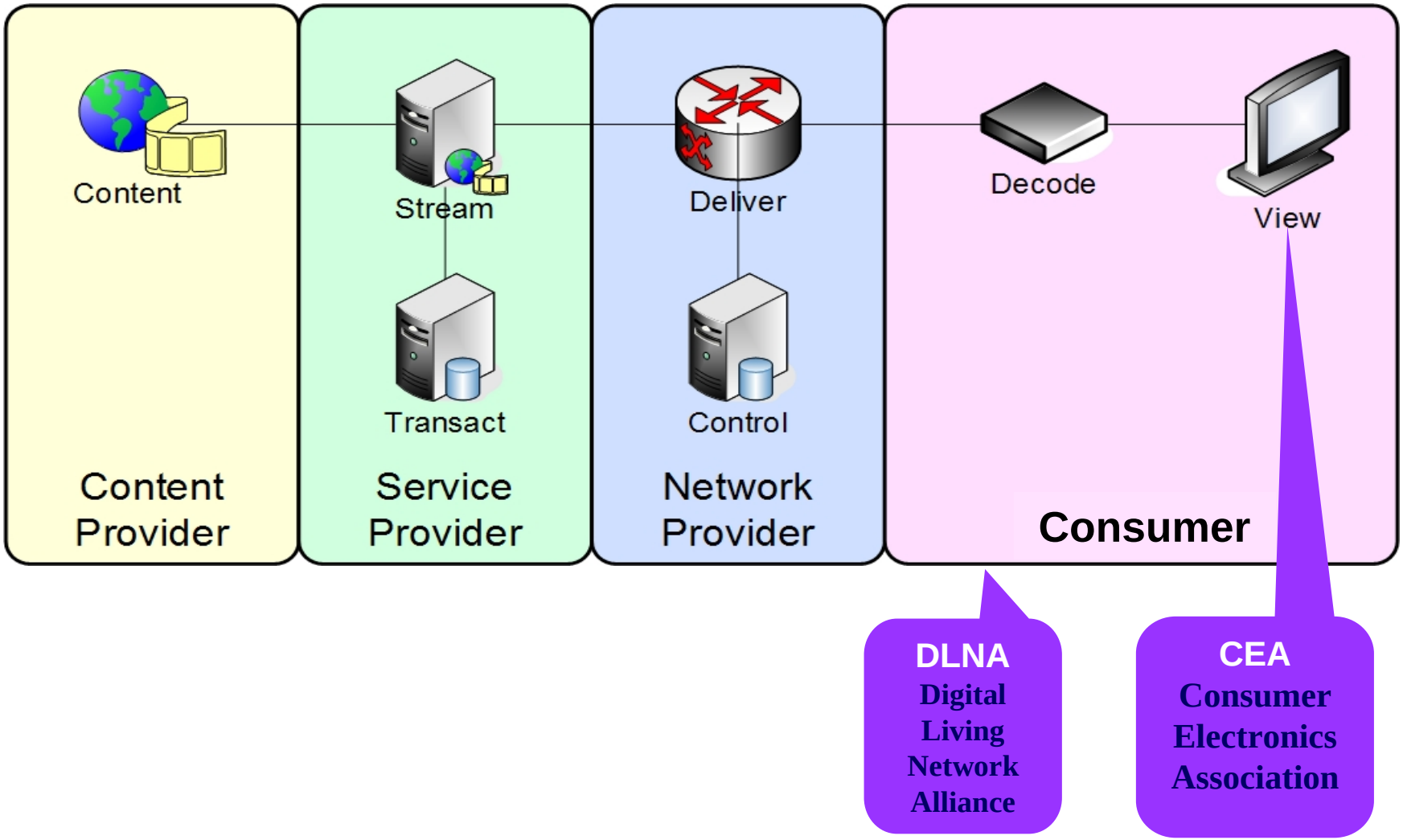

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Digital Living Network Alliance (DLNA)

- http://www.dlna.org
- Established by the Consumer Electronics Association (CEA)
- Origin in networking, now embracing IPTV
- Specifications
  - "Home Networked Device Interoperability Guidelines" Version 1.5
  - UPnP for Device Discovery & Control and Media Management

Digital Video Broadcasting (DVB/ETSI)
Origin in TV and Video, Moving to IPTV

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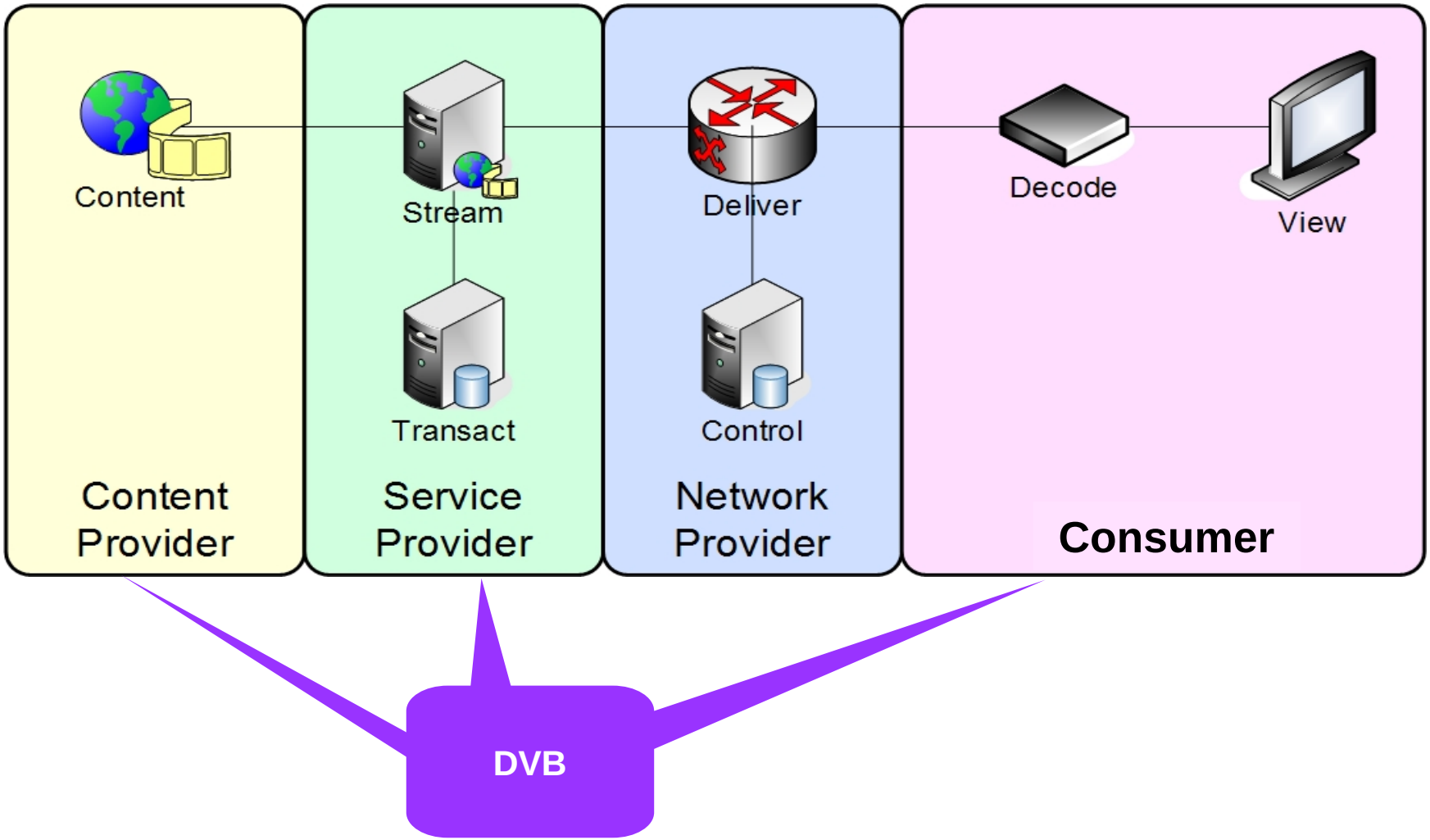

Digital Video Broadcasting (DVB/ETSI)

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- Origin in TV and Video, Moving to IPTV
  - http://www.dvb.org/
- The TV over IP-based networks effort launched Nov 2000
  - V.1 has been completed
  - More TV broadcast than Internet in spirit
- In the next version plans to align with
  - the DLNA Home Network architecture
  - IIF/ATIS

Wider Focus Standards Embracing IPTV

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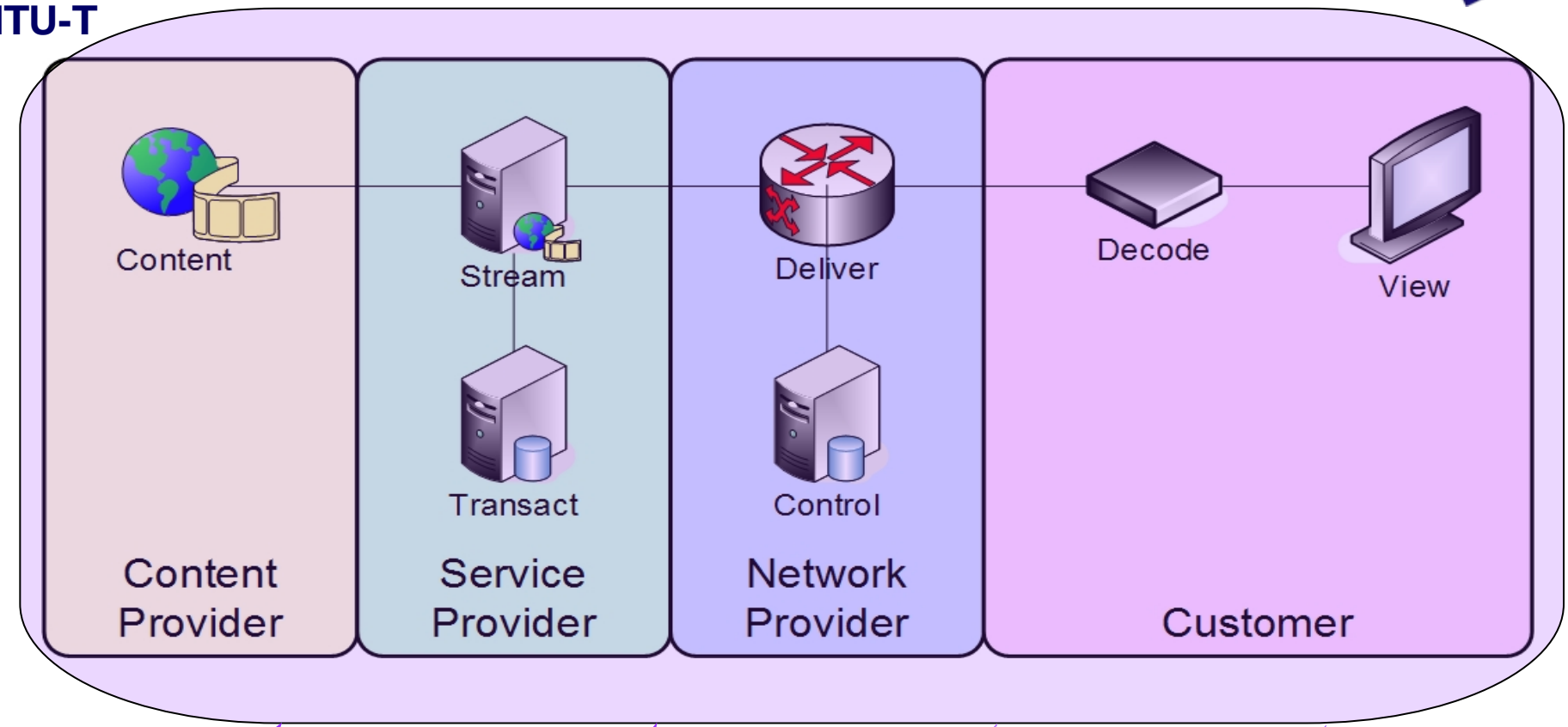

IIF/ATIS

ITU

IETF

ETSI

Wider Focus Standards are Embracing IPTV ATIS and ITU-T

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- The IPTV Interoperability Forum/ Alliance for Telecommunications Industry Solutions (IIF/ATIS)
  - http://www.atis.org/IIf/
  - Established June 2005
  - Provider-to-consumer oriented architecture
- ITU-T IPTV Focus Group formed Apr 13th 2006 to coordinate the IPTV global standardization efforts
  - http://www.itu.int/ITU-T/IPTV/
- Strong push from Korea, China, and Japan
  - Korea: Telecommunications Technology Association (TTA)
  - China Communication Standards Association (CCSA)
  - Japan: Association of Radio Industries and Businesses (ARIB)
- IETF candidates are IGMP, SIP, RTP, RTSP, ...

To Conclude...

The Main Challenges

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To Conclude: The Main Challenges

- Bridge between Providers and Home Network objectives and technologies
  - Home Network Gateway for management, QoS, etc.
  - End-to-end formats and protocols for TV applications
- Bridge DRM (Digital Rights Management) Technologies
  - Address both Secure Access and Data Replication Protection (e.g. content owner protection)
  - Lay out a graduated approach to allow using existing solutions by pluggable HW and downloadable SW
- Coordinate Web Services activities in terms of
  - Harmonizing and/or translating data models
  - Laying out interfaces (Management, Control, QoS, etc.)
    - *ITU-T can be very helpful in promoting the definition of the IMS Web Services interfaces !!!*

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Microsoft

Your potential. Our passion.™

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