ETICS: Economics and Technologies for Inter-Carrier Services

Session Handling use case

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ETICS contributor's

ETICS in a nutshell

Economics and Technologies for Inter-Carrier Services

3 Years: Jan. 2010 – Dec. 2012

EC contribution: 8 M€

Total cost: 12.8 M€

Consortium:

- 17 partners incl. technical people and economists
- 6 EU Operators, 5 vendors, 6 research centers/univ

Advisory Panel:

- Additional profiles: Vendor (Juniper), Cloud/HPC provider (Oxalya), Application Content Provider (Akamaï), IP interconnection expert (Bill Norton), Content Producer (RAI Net), coordinator (S. Avessta)

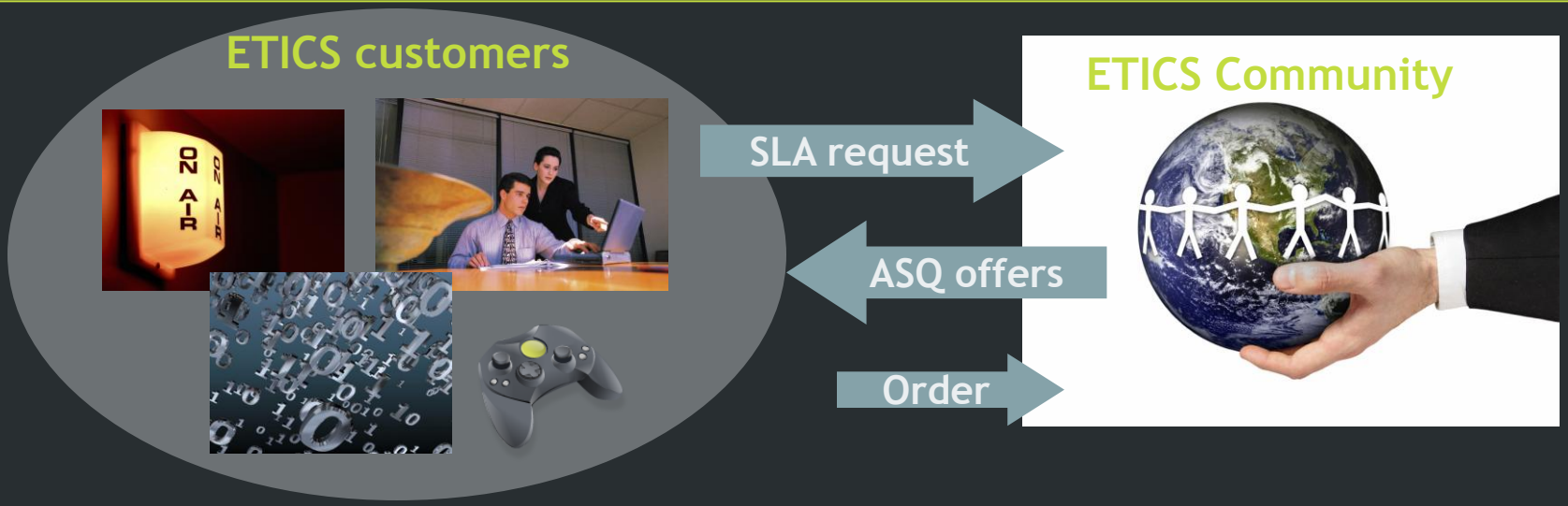
ETICS *3 main objectives*

Objective 1 : Propose **new business, regulatory, pricing and accounting models** for network interconnection services enabling the delivery of **end-to-end multi-carrier network services supporting service differentiation**

Objective 2: Define and **prototype business processes interworking with control and management planes** and automating end-to-end QoS-compliant network service delivery across **heterogeneous** carrier and access networks

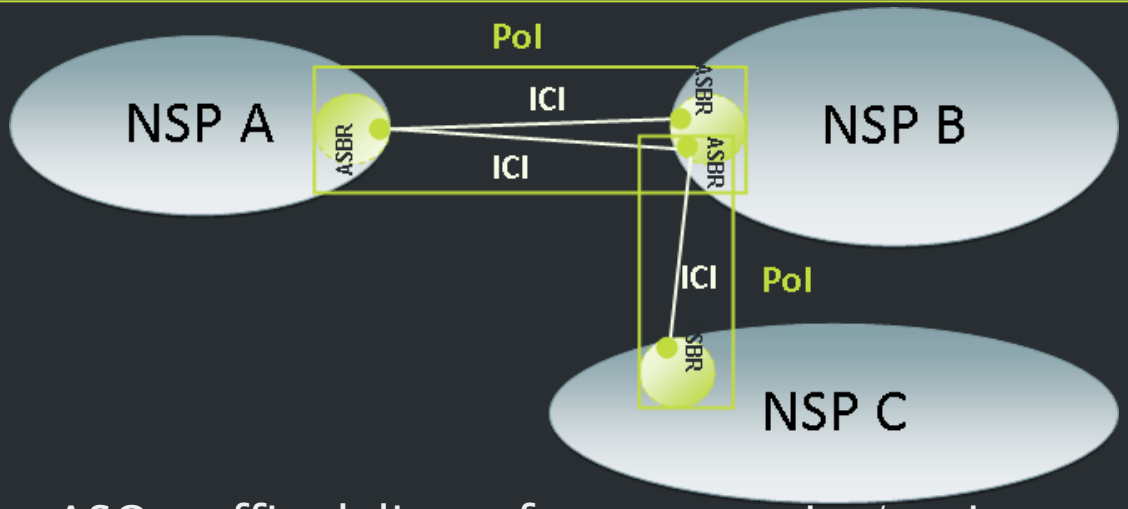
Objective 3: Experiment and **test** the feasibility of new interconnection models on **lab platforms**, and **disseminate** the new proposed architectures and protocols at **standard bodies**, industrial **workshops** and key scientific events

Basics concepts



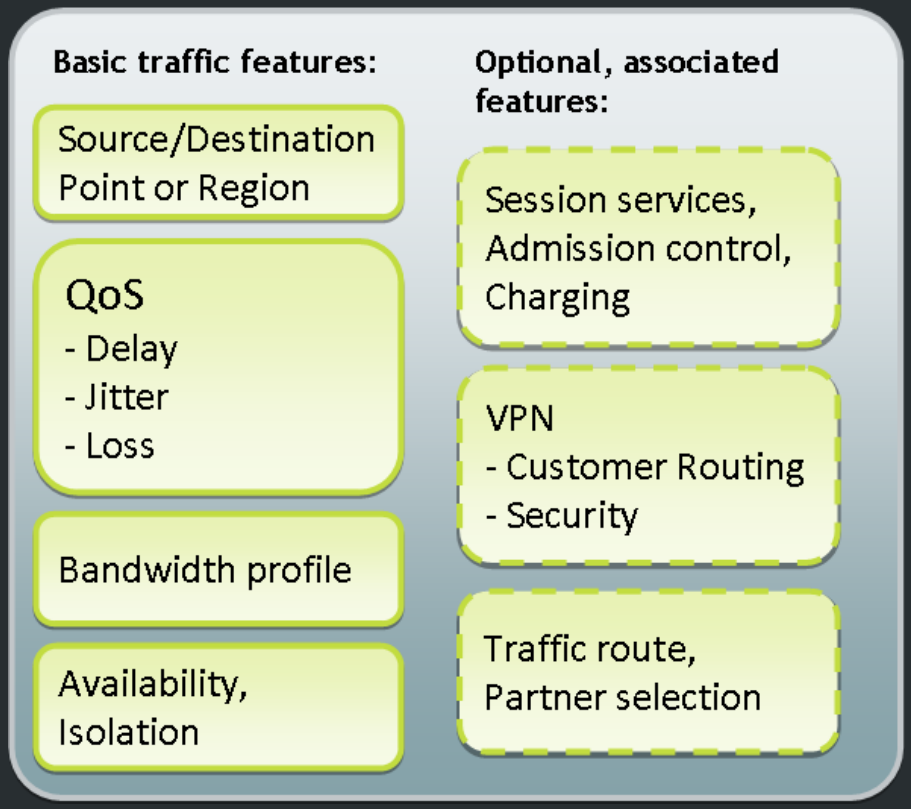
- ETICS community: a set of Network Service Providers (NSP) that support the ETICS architecture.
- **Each NSP provides assured service quality (ASQ) connectivity products**
  - Each product is described as an SLA including technical & business parameters
  - A final ETICS community connectivity offer results from the stitching or the combination of per-NSP products.
- ETICS community customers can be: NSPs, End-Users (mostly business), Information service providers (e.g. OTTs, CDN provider)

NSP Product characteritics



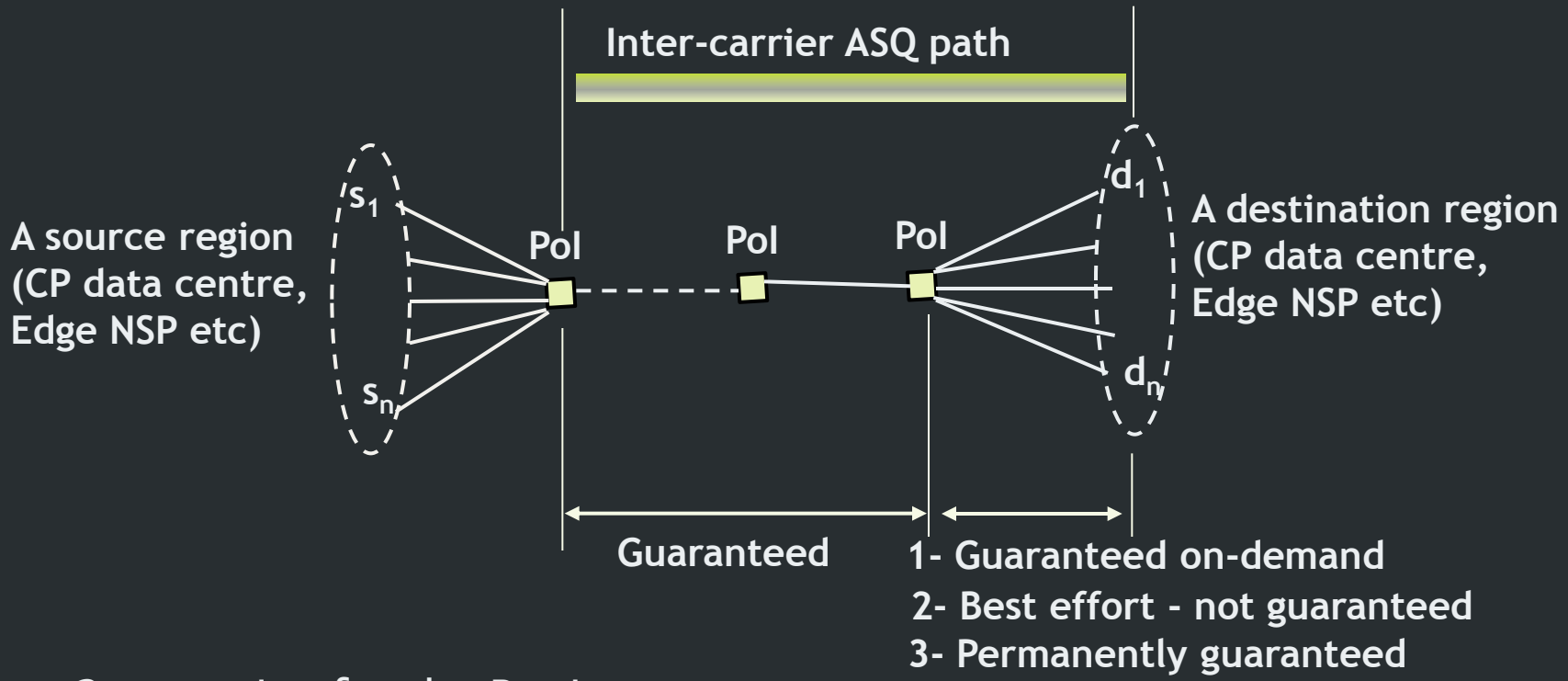
- Definition: ASQ traffic delivery from one point/region to another point/region
- Technical boundaries
  - Point of Interconnect (PoI): region where two NSPs interconnect
    - A POI may include several ASBRs; An ASBR may be part of several POIs
  - Interconnect interface (ICI): physical interface on a border router used for the NSP interconnection
    - A POI may include several ICIs
- Business boundaries: Traffic delivery Points (TDPs)
  - Limit the areas where the responsibility of each NSP applies
  - A TDP is a specific instance of an NSP product on a ICI

NSP Product characteritics (2)



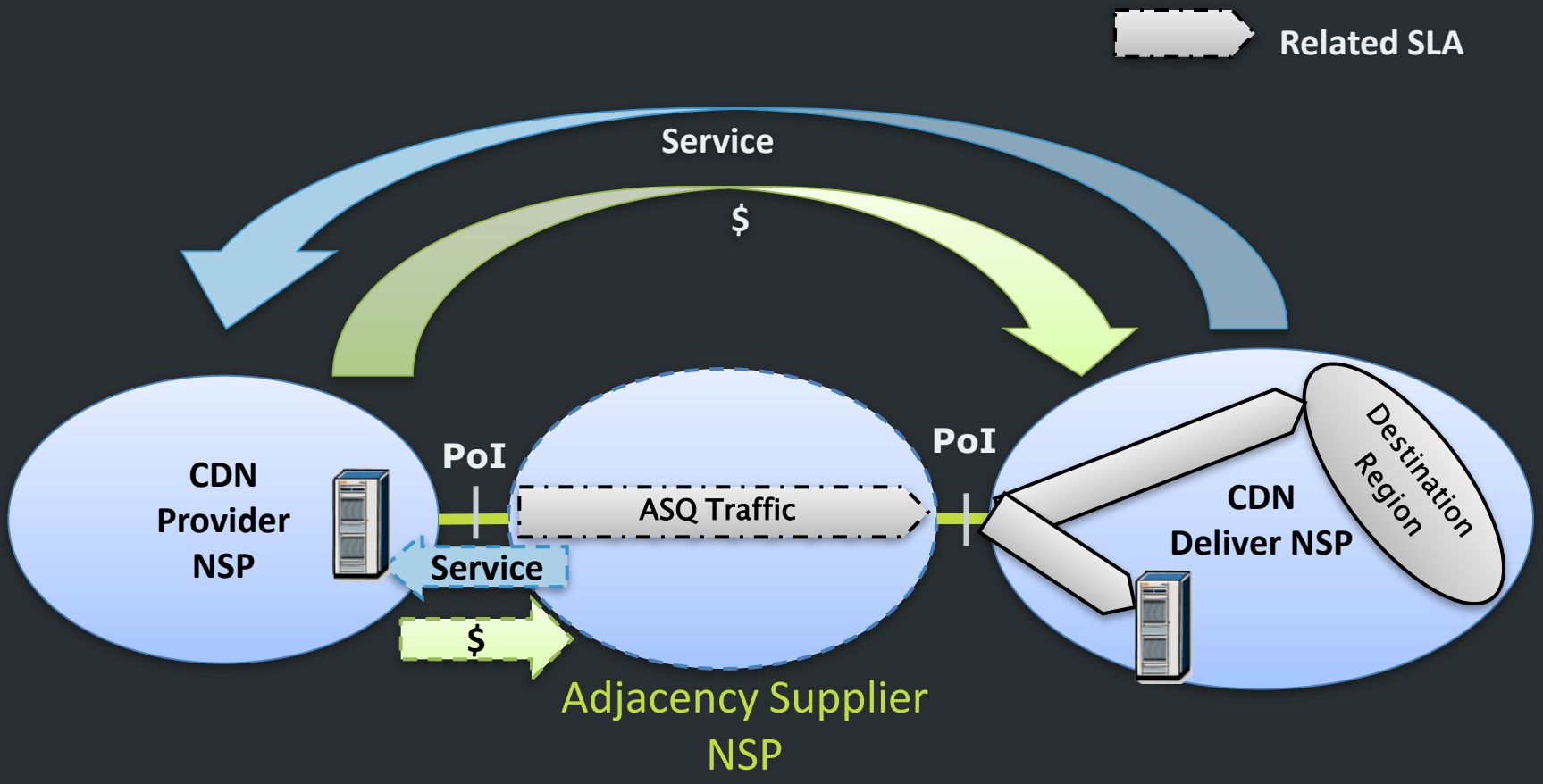
- The E2E SLA encompasses several NSP products.
  - SLAs are independent from the technology used to provide the assured quality per NSP segment
  - SLAs are monitored to check contract conformance and possibly avoid service failures.
  - SLA violation reports may be used by NSPs as a signal to trigger new investments and/or for penalty computation
- Each NSP product can be charged differently
  - Allows different business models
- NSP products can be complemented with application level charging and revenue flows

Point of Interconnect (PoI) to Region



- 2 scenarios for the Region:
  - Region is owned by only one NSP and the ASQ end at the PoI of the NSP
  - Region is shared by different NSP and Inter-Carrier Connectivity is composed by several ASQ (i.e. sort of P2MP)

Products composition for CDN



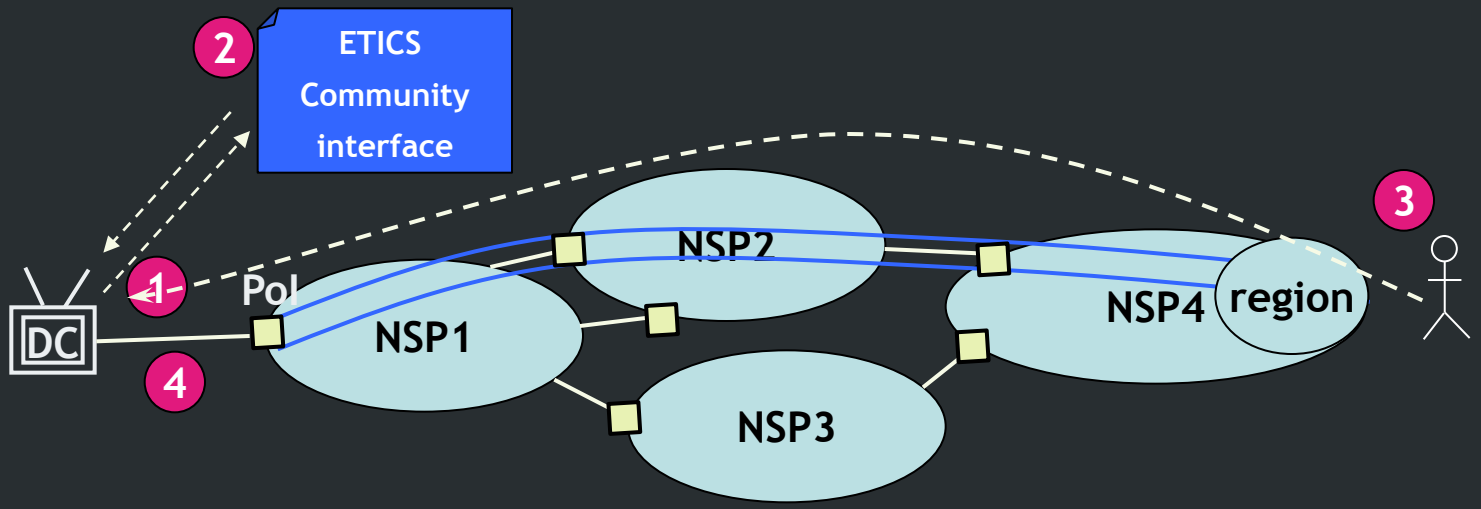
Motivation for Service Enhancement Function

Why is it needed?

- Service Enhancement Function (SEF) provides the possibility to gather information/parameters in order to create added value services or provide information/parameters for external added value services on top of ETICS architecture.
  - Generation of added value needs interaction between SEF, network, service, device and customer.
- Even if ETICS focuses on other main issues, such as ASQ path establishment, it is important to consider added value enabler in future network architectures and thus, in the ETICS architecture as well.

Using of ASQ path (a PoI to a region service)

ETICS community = NSP1, NSP2, NSP3, NSP4



1. Request a PoI to region service
2. Provide inter-carrier service

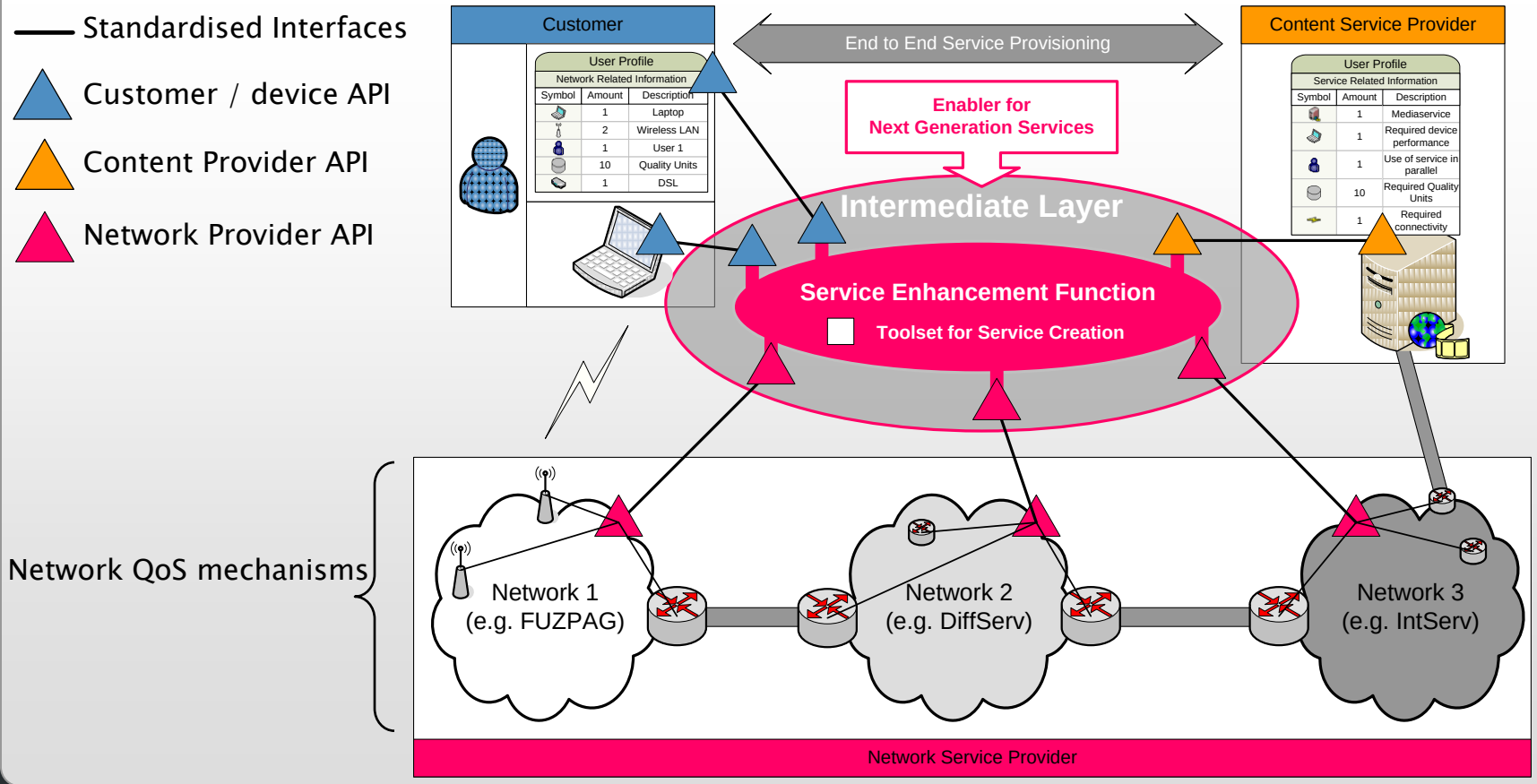
3. Connect to CP portal, request premium content
4. Check service availability (eventually interact with NSPs)
5. Provision the service

Inter-carrier services (“big pipes”)

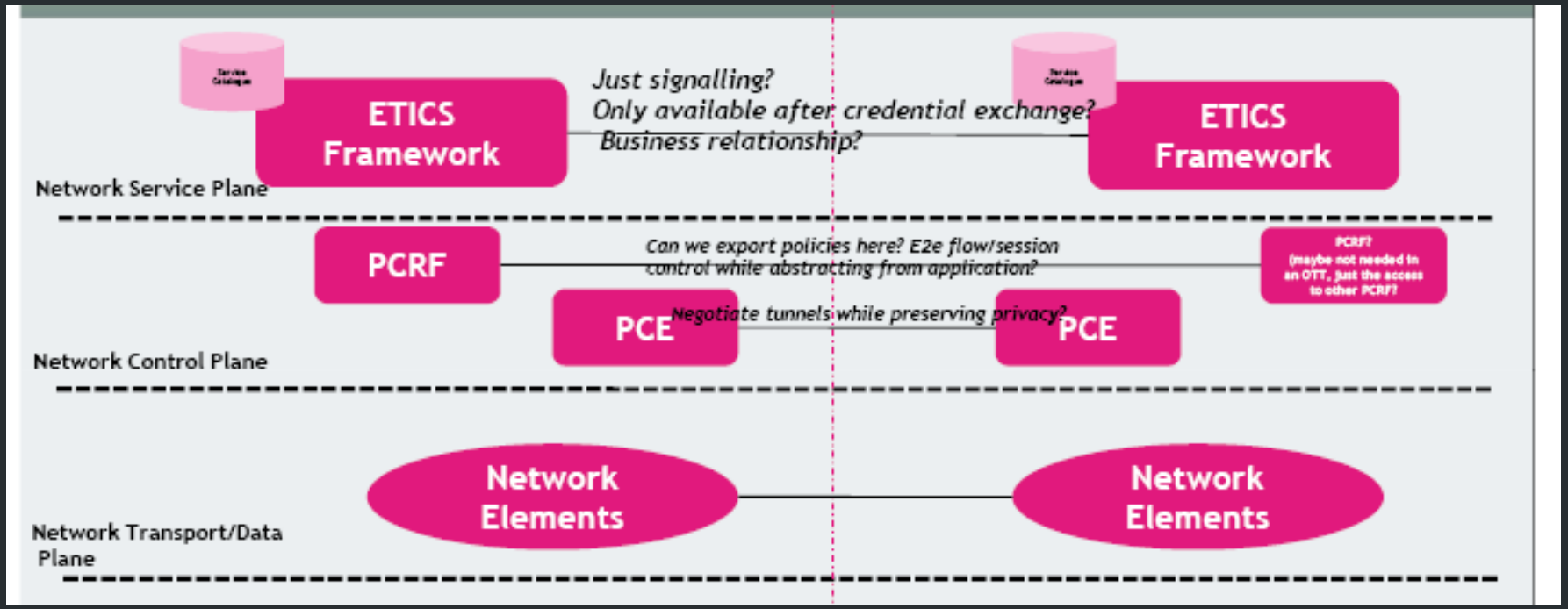
SEFA: Service Enhancement Functional Area (“individual sessions”)

Service Enhancement Function Area (SEFA)

Application and network QoS mechanisms are orchestrated by the service enhancement function within the intermediate layer using APIs & interfaces



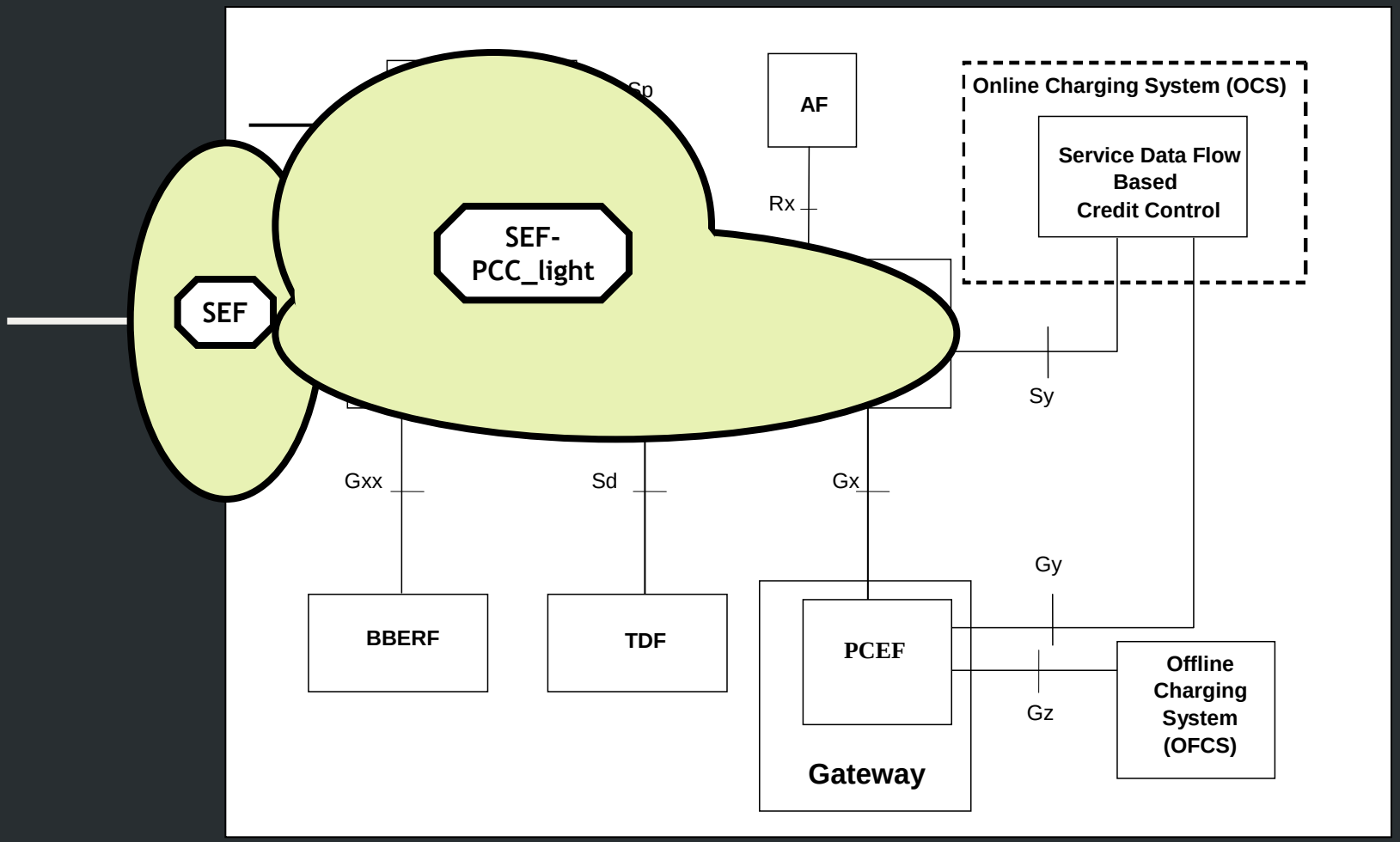
SEF with the IMS PCRF



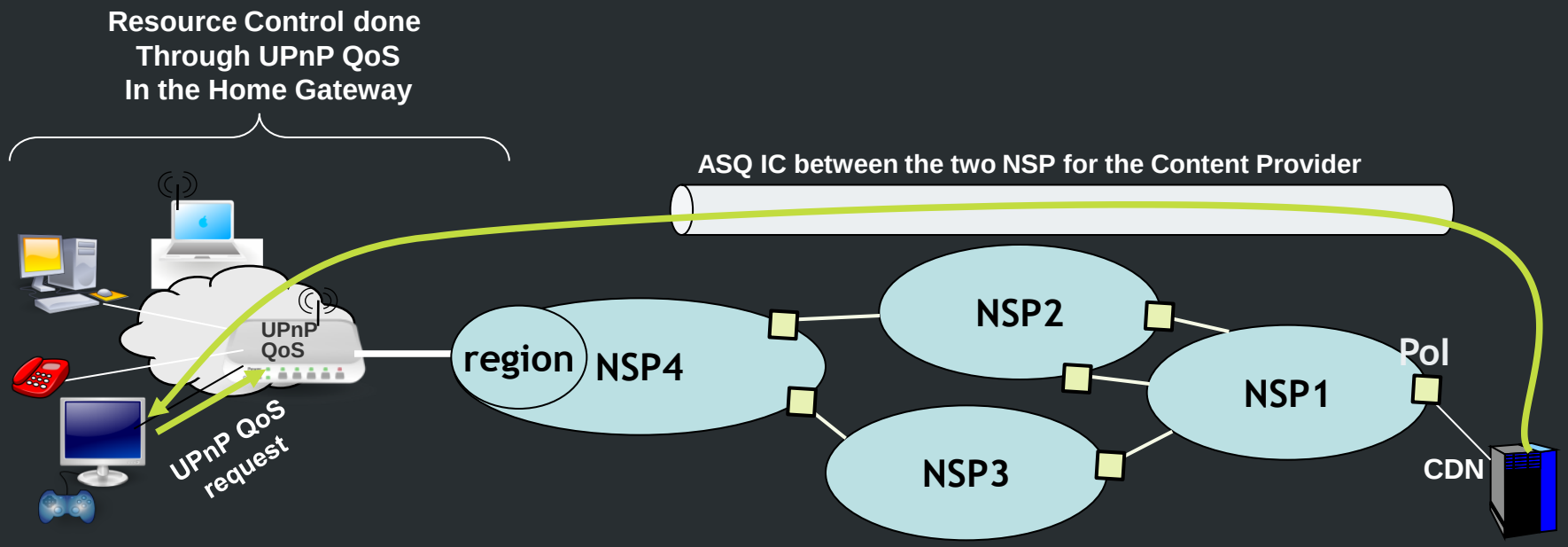
The Network Service Provider gives access to its IMS PCRF devices to the Content Provider who have buy an ASQ that terminates in the region deserved by this NSP

Prior to retrieve the data, the Content Provider checks the ASQ availability (is there remaining bandwidth to send traffic to this region) and interrogates the PCRF to determines if the customers could received correctly the traffic

Integration scenarios of SEF within the PCRF



SEF with UPnP QoS Infrastructure



The Network Service Provider provides to its eyeball access through box with UPnP QoS support. This UPnP QoS inside the box check also the access line (WAN interface) of the customer

The Content Provider is in charge to add a standard UPnP QoS control point into its application deployed on the eyeball devices

Prior to retrieve the data, the server check the ASQ (is there remaining bandwidth to send traffic to this region) and the application check that the customers devices could received correctly the traffic

Conclusion

ETICS is providing a framework build on Assured Service Quality networks

- The aim is create additional value from the network infrastructure offering new products to other NSPs or to content providers

How NSP products are offered is the subject of the ETICS business modelling framework

- NSP product discovery & assembly:
  - PUSH (offer based) or PULL (on demand) model
- Chain of responsibilities & revenue sharing

How NSP products are implemented is the subject of the ETICS architecture analysis

- B2B collaboration at the network service plane
- Network resource “provisioning” at control/management & data planes
- Session Handling during usage of ASQ between Eyeball and Content Provider provides QoS support at the session level and also for the last mile
  - SEFA is a new principle that must be adopted at large scale and needs time to be deployed
  - IMS PCRF reuse IMS components but impose to open a north interface on the PCRF
  - UPnP QoS is more scalable (distributed model) but impose more development to the Content Provider

Thank You!

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