General Regulation
Regulation is used to foster and sustain competition

Competitiveness

Public Monopoly

Private Monopoly

Partial Competition

Full Competition

Need for regulation

Limited regulation: Government supplied telecoms services

Increased regulation: Regulation of monopoly supplier

Increased regulation: Regulation must foster and sustain competition

Decreased regulation: Competitive market, relying on ex-post regulation

Source: ICT Regulation Toolkit
Why Regulate?

To avoid market failure
To foster effective competition
To protect consumer interest
To increase access to services

LEADING TO...

Abuse of market power
Under-investment
Lack of consumer choice
Lack of innovation
Too high prices
If dominant firms are unregulated they may demonstrate...

- Excessive Pricing
  - Customers pay high prices

- Predatory Pricing
  - Competitors go out of business

- Margin Squeeze
  - Competitors go out of business
Two approaches – Ex-Ante and Ex-Post

Ex-Ante
Before problems arise
Regulation
Sets out rules in advance

Ex-Post
Fixes problems after they occur
Competition Law
“Rules” set by precedence
Defining the market

Market reviewed

SMP or Dominance found

Remedies imposed

**Ex ante approach**

- The regulator carries out an assessment into all relevant markets to determine whether dominance/significant market power exists
- Regulator then imposes remedies where it considers future potential for market abuse

**Ex post approach**

- A complaint is made under competition law and/or an investigation made by competition authorities into alleged past or current market abuses
- Market then reviewed under competition law to assess whether the defendant has market power and whether it has then abused it
Reducing number of markets subject to ex-ante review in EU

- 2003: 7 retail, 11 wholesale
- 2007: 1 retail, 6 wholesale
- 2014: No retail, 5 wholesale
• **Competition Law**: Jointly held (most EU countries and US)
• **Ex-ante regulation**: Only by sector regulators
Interconnection
The principle of access and interconnection: any-to-any
Connecting networks: Interconnection and Access

Economic bottlenecks

Access:
Using a part of another operator’s network

Interconnection:
Two or more networks communicating with each other

Examples

Physical: Access to ducts
Physical: Access to local loop
Virtual: Access to wholesale calls
Virtual: Broadband access
Mobile to Mobile
Fixed to Fixed
Fixed to Mobile

Potential concerns

Refuse access as access strengthens competing firms.
Refuse to interconnect as this strengthens competing firms. Offset by benefits interconnecting firms obtain from access to each other.
Interconnection in 1980s – TDM networks
Introduction of competition is complex – even with one technology.
Time Division Multiplexing (TDM) networks

Incumbent’s non-IP (TDM) network       New-entrant (TDM) network

Solutions:
• Prices regulated
• Incumbents required to interconnect with other networks
Interconnecting TDM and IP networks

Incumbent's non-IP (TDM) network

New-entrant (IP) network

Solutions:
- Regulation based on “old” technology
- Incumbents still required to interconnect with IP networks
VOIP
Traditionally, fixed and mobile networks were distinct

- Fixed and mobile networks were distinct, but had to interconnect to send calls from one network to another.
VOIP – can be used in many parts of the value chain

- Internet calling (Skype to Skype)
- Internet calling (Skype to other)
- Internet VOIP
- Non-Internet VOIP
# EU Regulation of VOIP - Requirements

<table>
<thead>
<tr>
<th>Area</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>Security and integrity of networks and services.</td>
</tr>
<tr>
<td>Emergency services</td>
<td>Access to emergency services.</td>
</tr>
<tr>
<td>Caller Location Information</td>
<td>Provide Caller Location Information (where it is ‘technically feasible’)</td>
</tr>
<tr>
<td>Access</td>
<td>Availability and reliability of access (although the regulations recognise that this may not apply to ‘network-independent undertakings’ which may not have control over the networks their service is provided over.)</td>
</tr>
<tr>
<td>Quality of service</td>
<td>The revised directives set out a number of obligations for providers including the right for users to have a detailed contract</td>
</tr>
<tr>
<td>Privacy</td>
<td>Providers are required to ensure privacy of data relating the services they provide.</td>
</tr>
</tbody>
</table>

- Requirement are for the providers of Electronic Communication Services (ECS)
- ECS providers are those that operate a network of some kind
- Would apply to a VOIP operator like VONAGE
- Wouldn’t apply to a VOIP operator like SKYPE
Determining what a “telecoms” service is complex

<table>
<thead>
<tr>
<th>Example firm</th>
<th>Phone/Computer</th>
<th>Phone number</th>
<th>Data connectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eg Viber</td>
<td>Smartphone</td>
<td>Mobile</td>
<td>3G, 4G, Fixed broadband</td>
</tr>
<tr>
<td>Eg Skype</td>
<td>Smartphone/Computer</td>
<td>Landline</td>
<td>3G, 4G, Fixed broadband</td>
</tr>
<tr>
<td>Eg BT One-Phone</td>
<td>Smartphone/Converged fixed/mobile phone</td>
<td>Mobile OR landline</td>
<td>Various – includes picocell technology</td>
</tr>
<tr>
<td>Eg VONAGE</td>
<td>VOIP Phone</td>
<td>Landline</td>
<td>Fixed broadband</td>
</tr>
</tbody>
</table>
Net Neutrality: What does it actually mean?
Net Neutrality: Concept defined in 2003 in United States

Net Neutrality = Having a “neutral network”
“an internet that does not favour one application (say, the world wide web) over others (say e-mail)”

Netflix: Same content – multiple delivery methods

Netflix available on:
- TVs
  - Cable TV (via cable)
  - Smart TVs (eg via broadband)
  - Dumb TVs (eg via Chromecast)
- Laptops (via broadband)
- Mobiles
  - Via mobile
  - Via Wifi (via broadband)
Netflix: Same content – multiple delivery methods

“Cable TV service”: Service coming via a cable TV supplier, via a cable TV box, onto a TV.

“Broadband service”: Service comes via a broadband supplier, via a router, onto a TV

What’s the difference to the consumer?
Voice: Same service – multiple delivery methods

Consumers can make voice calls via:
- Fixed voice (via a traditional fixed operator)
- Mobile or Fixed broadband (via eg Skype)
- Mobile voice (via mobile operator)

Distinction between these services increasingly blurred
• **Internet v non-internet:** There has been an attempt to distinguish between “internet” and non-internet services in the net neutrality debate. However, the distinction is debatable:
  • “Non-internet” services could include dedicated IPTV service or VOIP service
  • An internet service might be watching TV over the internet (eg BBC iPlayer)
  • **One access “pipe” may be used to deliver many services:** Cable firms (eg Virgin) deliver both their TV service and broadband service over joined infrastructure.
Net Neutrality: EU and US perspectives
Concerns over non-neutrality – EU and US perspectives differ

- **Blocking**
  - Blocking access to legal content and services

- **Throttling**
  - Slowing down access to the internet for certain users.

- **Paid prioritisation**
  - Creating of so-called “fast lanes” for some forms of internet traffic

- **Traffic management**
  - Prioritising certain forms of traffic
# Concerns over non-neutrality – EU and US perspectives differ

<table>
<thead>
<tr>
<th>Category</th>
<th>EU</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blocking</td>
<td>Typically prohibited</td>
<td>Prohibited</td>
</tr>
<tr>
<td>Throttling</td>
<td>Prohibited, with limited exceptions</td>
<td>Prohibited</td>
</tr>
<tr>
<td>Paid prioritisation</td>
<td>Allowed, must not affect “internet services”</td>
<td>Prohibited</td>
</tr>
<tr>
<td>Traffic management</td>
<td>Allowed in some circumstances</td>
<td>“Reasonable Network Management”</td>
</tr>
</tbody>
</table>

- **Blocking**: Blocking access to legal content and services
- **Throttling**: Slowing down access to the internet for certain users.
- **Paid prioritisation**: Creating of so-called “fast lanes” for some forms of internet traffic
### EU in more depth – Proposed EU Council rules

| Blocking          | Blocking access to legal content and services | • May be required to block as a matter of public policy.  
|                  |                                              | • Not allowed to block for business purposes |
| Throttling        | Slowing down access to the internet for certain users. | • Allowed if different quality of service requirements exist and can be “objectively justified”  
|                  |                                              | • Other throttling not permitted |
| Paid prioritisation | Creating of so-called “fast lanes” for some forms of internet traffic | • Allowed, but must not be a “replacement” for internet services  
|                  |                                              | • Shouldn’t affect “internet” services |
| Traffic management | Prioritising certain forms of traffic | • Allowed, should be transparent  
|                  |                                              | • Rules should be made clear |
### EU in more depth – Proposed EU Council rules

<table>
<thead>
<tr>
<th>Topic</th>
<th>Rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blocking</td>
<td>Allowed for PUBLIC POLICY REASONS not for BUSINESS REASONS</td>
</tr>
<tr>
<td>Throttling</td>
<td>Allowed if there are OBJECTIVE DIFFERENCES between quality requirements</td>
</tr>
<tr>
<td>Paid prioritisation</td>
<td>Allowed, but must not affect STANDARD INTERNET SERVICES</td>
</tr>
<tr>
<td>Traffic management</td>
<td>Allowed, rules must be TRANSPARENT and COMMON RULES needed</td>
</tr>
</tbody>
</table>
EU Legislation – the path to Net Neutrality

April 2014
EU Parliament proposes suggested measures for the EU Council

Jan 2015
EU Council proposes measures for all EU states

Mar 2015
EU Council proposes measures for all EU states

The March 2015 seems to allow EU Countries to enact the concept of Net Neutrality in a variety of ways allowing:

- **Paid priorisation**: Although subject to the requirement that it doesn’t affect “standard internet”
- **Traffic management**: The exemptions from the general principle of no traffic management have been expanded over time to allow operators to take account of potential network congestion.
- **Blocking/Throttling**: Operators wouldn’t be typically allowed to do this for business reasons, but Governments could require it for public policy reasons.
US Approach: Clear rules...almost

**Bright Line Rules**

- **No Blocking**: broadband providers may not block access to legal content, applications, services, or non-harmful devices.
- **No Throttling**: broadband providers may not impair or degrade lawful Internet traffic on the basis of content, applications, services, or non-harmful devices.
- **No Paid Prioritization**: broadband providers may not favor some lawful Internet traffic over other lawful traffic in exchange for consideration of any kind—in other words, no “fast lanes.” This rule also bans ISPs from prioritizing content and services of their affiliates.

**Applies to all broadband providers**

- **Broadband services considered “telecommunications” services**: The approach reclassifies broadband services as “telecommunications” instead of “information” services.
- **Applies broadly**: Applies not just to “open Internet” services, but other data services (e.g., VOIP from a cable service).
- **Unclear how this applies to bundled services**: Cable operators sell both TV and internet services together. Unclear whether the TV services are also subject to these rules.

**Some ambiguity remains**
Mobile number portability
MNP may be a more pressing issues for regulators

GSMA Intelligence, Majority of developing countries have no plans for MNP, November 2013
Other regulatory topics
Illegal international traffic by pass

http://dx.doi.org/10.1787/5jz2m5mnlvkc-en

http://www.slideshare.net/firdausf1/sim-box-issue