



# QoS Framework for Consumer Protection in Pakistan



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## **PTA's VISION**

**“Create a fair regulatory regime to promote investment, encourage competition, protect consumer interest and ensure high quality information and Communication Technology Services.”**

# Sequence of Presentation

Overview of Cellular Industry

Need to have QoS?

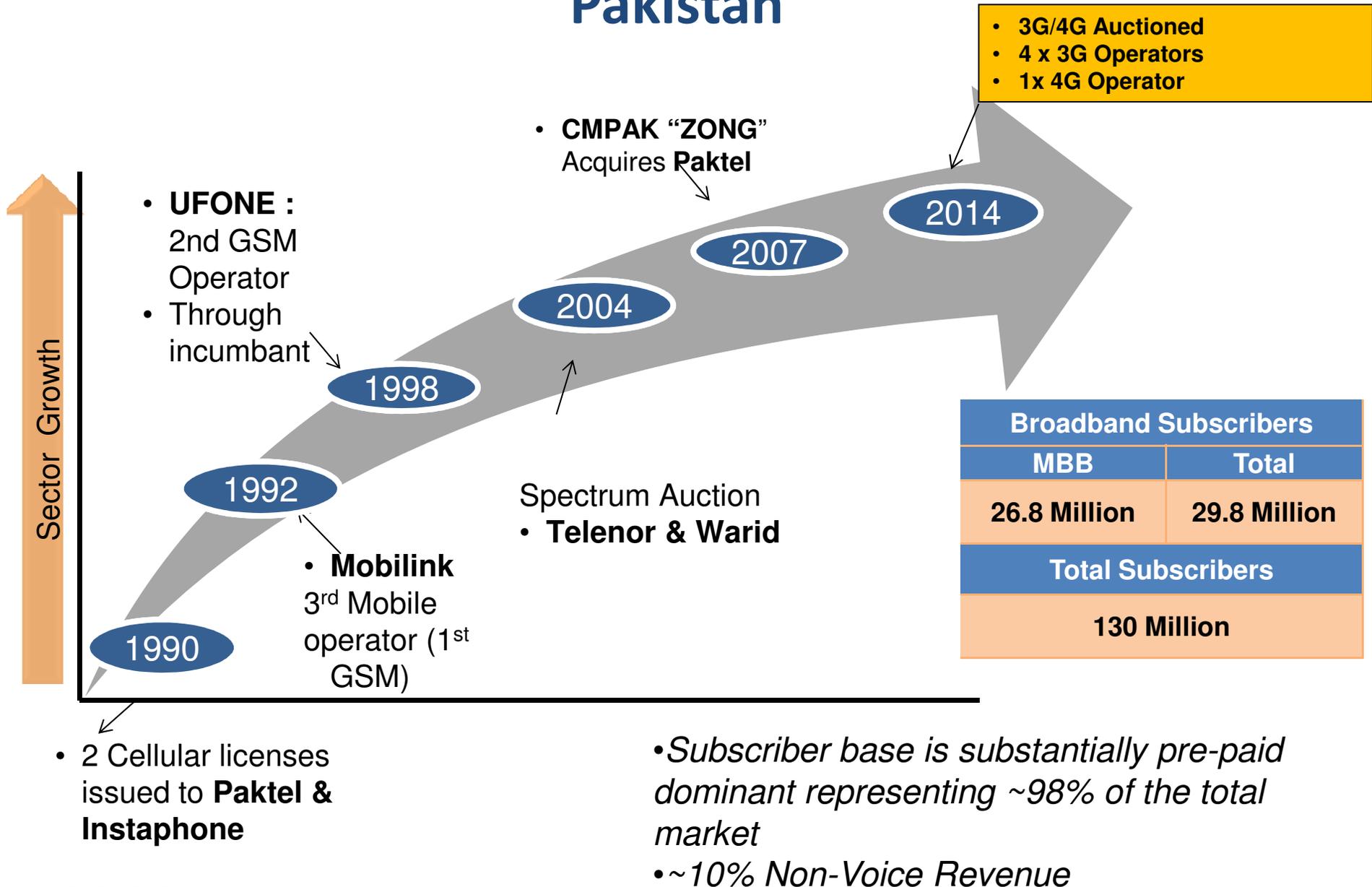
QoS Regulatory Framework

QoS Key Performance Indicators

Results & Initiatives

Conclusions

# Telecom Overview : Evolution of Cellular Industry in Pakistan



SOURCE: PTA Data

## Impact of 3G/4G on Changing the Dynamics of Telecom and IT Sector in Pakistan



### Expected Impact

- Modernization of existing mobile networks
- Growth of device market
- Innovative Apps development
- Digitization impact on Social & Economical sectors e.g. E/M governance, E-Education

# Why Need QoS?

New technologies  
New opportunities  
for increased  
consumer choice

New challenges for  
QoS and for  
consumer  
protection

Regular Monitoring  
to ensure  
consumers get  
quality services as  
promised

# General QoS Regulatory Frameworks



- Standards  
*e.g. ITU, ETSI, National Standards, Industry Standards, Other Standardization bodies*

- License condition  
*e.g. India, Pakistan,*
- Regulation  
*e.g. India, Malaysia, Pakistan, Singapore, Tanzania*
- Industry guidelines  
*e.g. Australia*

- Technical  
*e.g. Call drop, call success rate, connection speed, SMS quality*
- Customer focused  
*e.g. Billing accuracy, fault*
- Guideline  
*e.g. Measurement methods*

- Technical  
*e.g. Network auditing, drive tests*
- Customer survey  
*e.g. Network auditing, drive tests*

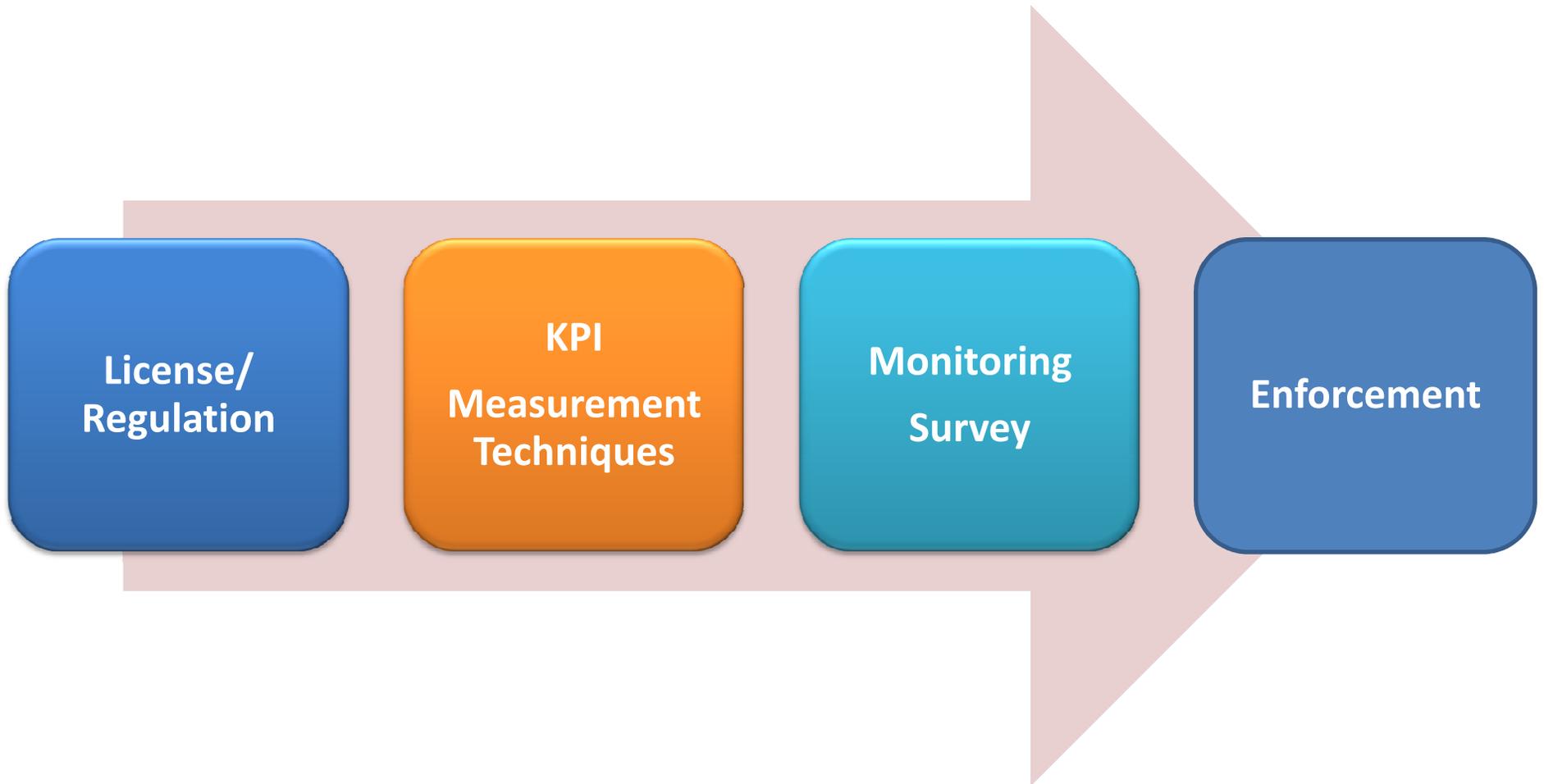
- Regulatory notice  
*e.g. Website, Press release, Directive*
- Publication  
*e.g. Website, newspaper*
- Penalty
- Dispute

# Categories of Potential QoS Parameters



*For details of QoS parameters that have been identified as being potentially useful for comparison of SPs' performance levels, ITU-T Recommendations E.803*

# Quality of Service Regulatory Framework in Pakistan



# Consumer Specific Regulatory Instruments

- Cellular Mobile Network QoS Regulations 2010
- Fixed Broadband Regulations, 2014
- License Conditions
- Telecom Consumers' Protection Regulations, 2009
- Regulations for Measures against SPAM, Obnoxious, Fraudulent & Unsolicited Communications, 2009
- SOPs to Control Spamming, Unsolicited, Fraudulent and Obnoxious Communications

# ITU-T Recommendations and QoS / QoE

	ITU-T Recommendations
Subjective assessment of voice quality	P.85, P.800, P.805, P.806, P.810, P.830, P.835, P.840, P.851, P.880, P Suppl. 24, P Suppl. 25
Objective assessment of voice quality	P.862, P.862.1, P.862.2, P.862.3, P.863, P.863.1
QoS and QoE for multimedia and assessment methods	G.1010, G.1011, G.1030, G.1040, G.1040, G.1050, G.1070, G.1080, G.1081, G.1082, P.1010, Y.1562, P.1201, P.1201.1, P.1201.2, P.1202, P.1202.1, P.1202.2, P.1501
telephony	P.32, P.48, P.50, P.51, P.52, P.57, P.58, P.59, P.61, P.64, P.75, P.76, P.78, P.79, P.300, P.310, P.311, P.313, P.330, P.340, P.341, P.342, P.350, P.360, P.370, P.380, P.581, P.501, P.502, P.505, P Suppl. 10, P Suppl. 16, P Suppl 20,
Hands free Communications and User Interfaces in Vehicles	P.1100, P.1110
Network Performance and OAM for Performance Measurement	Y.1540, Y.1541, Y.1543, Y.1544, Y.1560, Y.1561, Y.1563, Y.1564, Y.1565. G.8013/Y.1731, G.8113.1, and G.8113.2
QOS FOR MOBILE SERVICES	E.804
TRAFFIC MANAGEMENT	Y.1221, Y.1222, Y.1223, Y.1530, Y.1531, Y.1542
BITRATE MEASUREMENT OF INTERNET CONNECTIONS	currently available as working draft under Question 15/11

# QoS – Monitoring Techniques

## Direct Monitoring

- Complaints
- Technical Surveys
- Opinion Surveys

## In-Direct Monitoring

- Reporting
- Publication

# QoS KPIs for Fixed Services

Network Availability

Link Speed

Service Availability

Bandwidth (D/L & U/L)

Retainability

Round Trip Time

Customer Service Complaints

Billing Complaints

Service Provisioning Complaints

Faults Incidence Ratio

Faults Clearance Ratio

Billing Error Ratio

Enquiry Response Time

**Specific for Broadband**

**Specific for Voice**

# QoS KPIs for 2G

Parameter	Standard Value
Network Downtime	< 1%
Grade of Service	≤ 2%
Call Connection Time	≤ 5 Seconds
Call Completion Ratio	>98%
Mean Opinion Score (MOS)	> 3
Service Accessibility	97% (3Years) >98%
SMS Success Rate	> 99%
SMS End to End Delivery Time	≤ 12 Seconds

# Additional QoS KPIs for 3G/4G

Parameter	Definition	Min. Value
User Data Throughput	Refers to Download speed	3G - 256 kbps 4G - 2Mbps
Signal Strength ( <i>RSCP</i> – 3G) ( <i>RSRP</i> – 4G)	<p>Received Signal Code Power (RSCP) denotes the power measured by a receiver.</p> <p>Used as an indication of signal strength.</p> <p>Minimum outdoor signal strength must be achievable with 90% confidence within the areas defined in Rollout.</p>	-100 dBm
Session Abnormal Release Rate	Shows how often an end-user abnormally loses an E-RAB during the time the E-RAB is used.	< 2%

## Mobile Broadband QoS KPIs

<b>Indicator</b>	
<b>Coverage</b>	
<b>Voice</b>	
<b>SMS</b>	
<b>Data Session</b>	<b>Coverage Test</b>
	<b>Throughput Test</b>

# Initiatives Taken by PTA

- Conduct of Nationwide QoS Surveys
- Publication of Survey Results
- Issuance of regulatory directives
- Capacity Building of Human Resource
- Consumer centric development of rules and regulations
- App development for QoS Testing

# App Development for QoS Testing



## PTA Speed Test

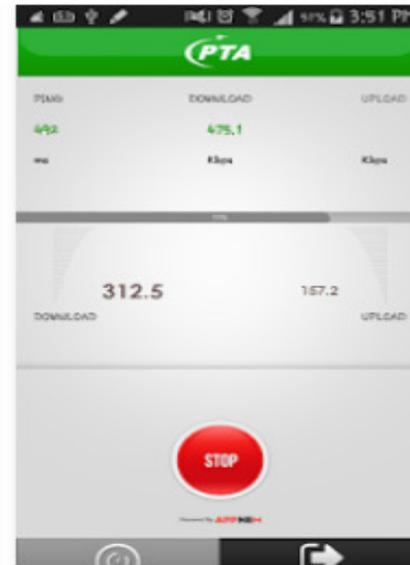
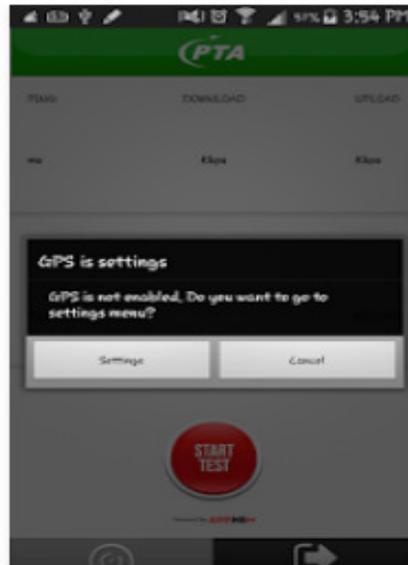
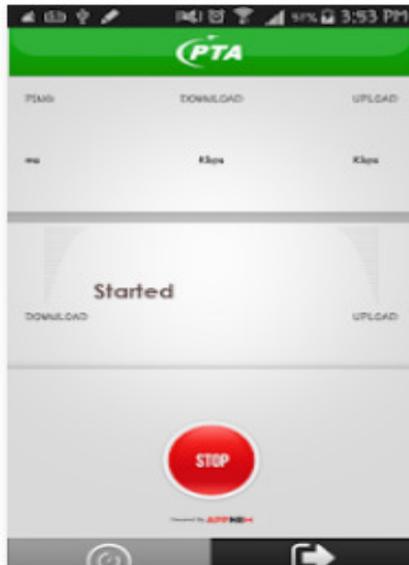
SmartPakistan Tools

3+

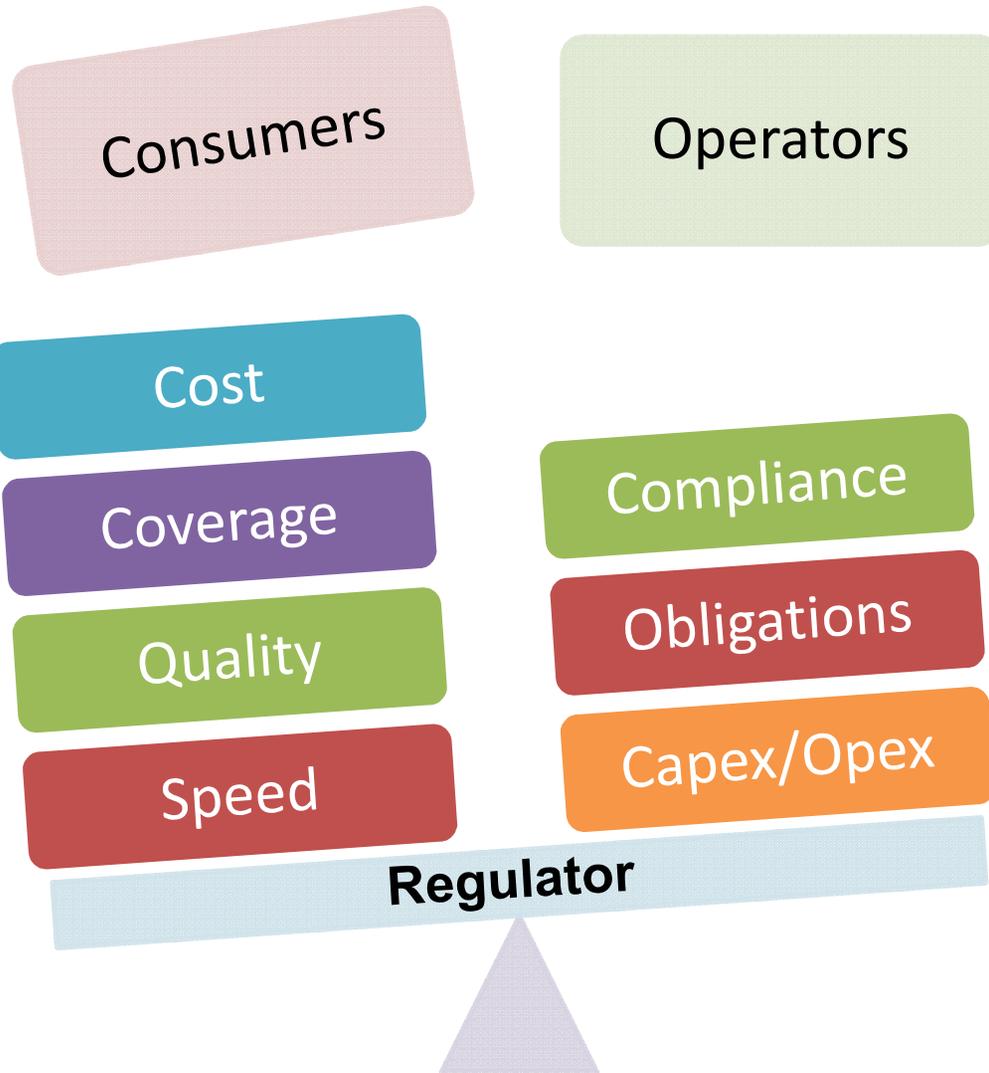
★★★★★ 5

Add to Wishlist

Install



# Conclusions



**Thank You**

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