

ITU Workshop

NGN Regulation and Migration Strategies

(13-15th October, 2010)

Lav Gupta, Principal Advisor,
Telecom Regulatory Authority of India, New Delhi

Phone :+91-11-23216930, Fax: +91-11-23235270
Email: lavgupta@trai.gov.in, lavgupta@gmail.com

Regulatory implications of NGN

Regulator's main concerns

- Support growth, infrastructure, innovation
- Promote level playing field and fair competition
 - Interconnection and wholesale pricing
 - Define and ensure QoS
 - Remove bottlenecks
 - Numbering and number portability
 - Structural and accounting separation
 - USO support
- Regulate tariffs

How will NGN affect competition?

- Would NGN enable new forms of competition?
- Would the old bottlenecks remain?
- Would new bottlenecks be created?

Potential bottlenecks in NGN?

- Hallmark is separation into functional layers
 - Services
 - Control
 - Transport
 - Access
- These layers are full of control points for impeding competition

Two possible extremes

Consolidation of
market power

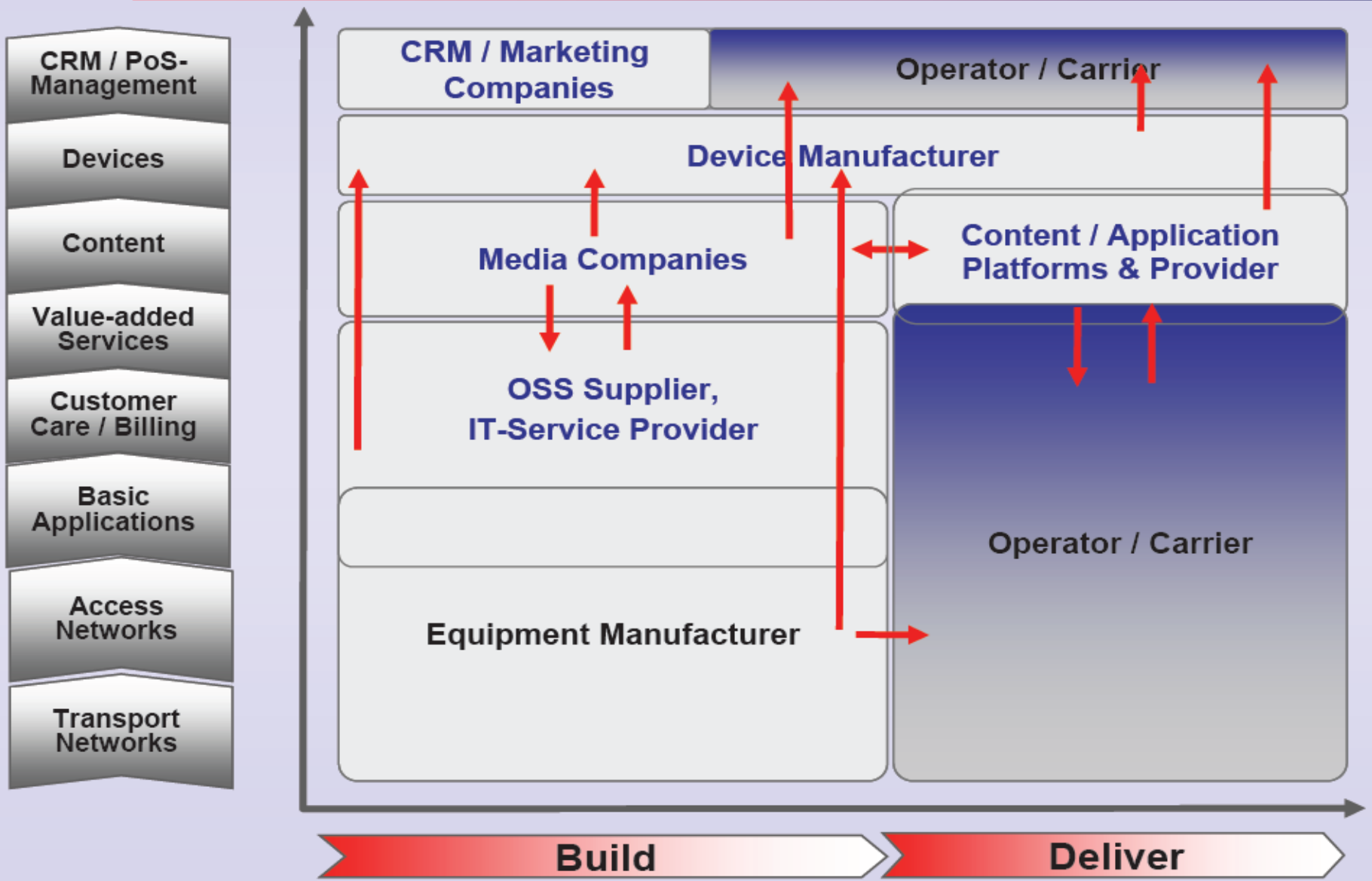


Open and
competitive
era

Is NGN really worth bothering about?

- A marketing hype or reality?
- Why should change in technology have impact on regulation?
- Migration to IP based convergent networks are causing substantial changes throughout the entire value chain of service provision and thus pose significant challenges for regulators.

Convergence disrupts the value chain



Issues that convergence raises

- \$1 trillion shift in valuations and revenues in the converging sectors by 2014
- Industries/companies have to respond: evaluate their strengths and adapt quickly to the changes or lose market share
- Innovation can happen virtually anywhere, at anytime by anybody – every consumer becomes a potential content generator
- New control centres are emerging – market power shifting

Raised user and community expectations

- Panacea for various divides
 - Access
 - Digital
 - Knowledge
 - Social
 - Economic
- Fulfill customers' needs
 - Choice, affordable services
 - Download, create, upload, edit, share content
 - Device, location, provider independence

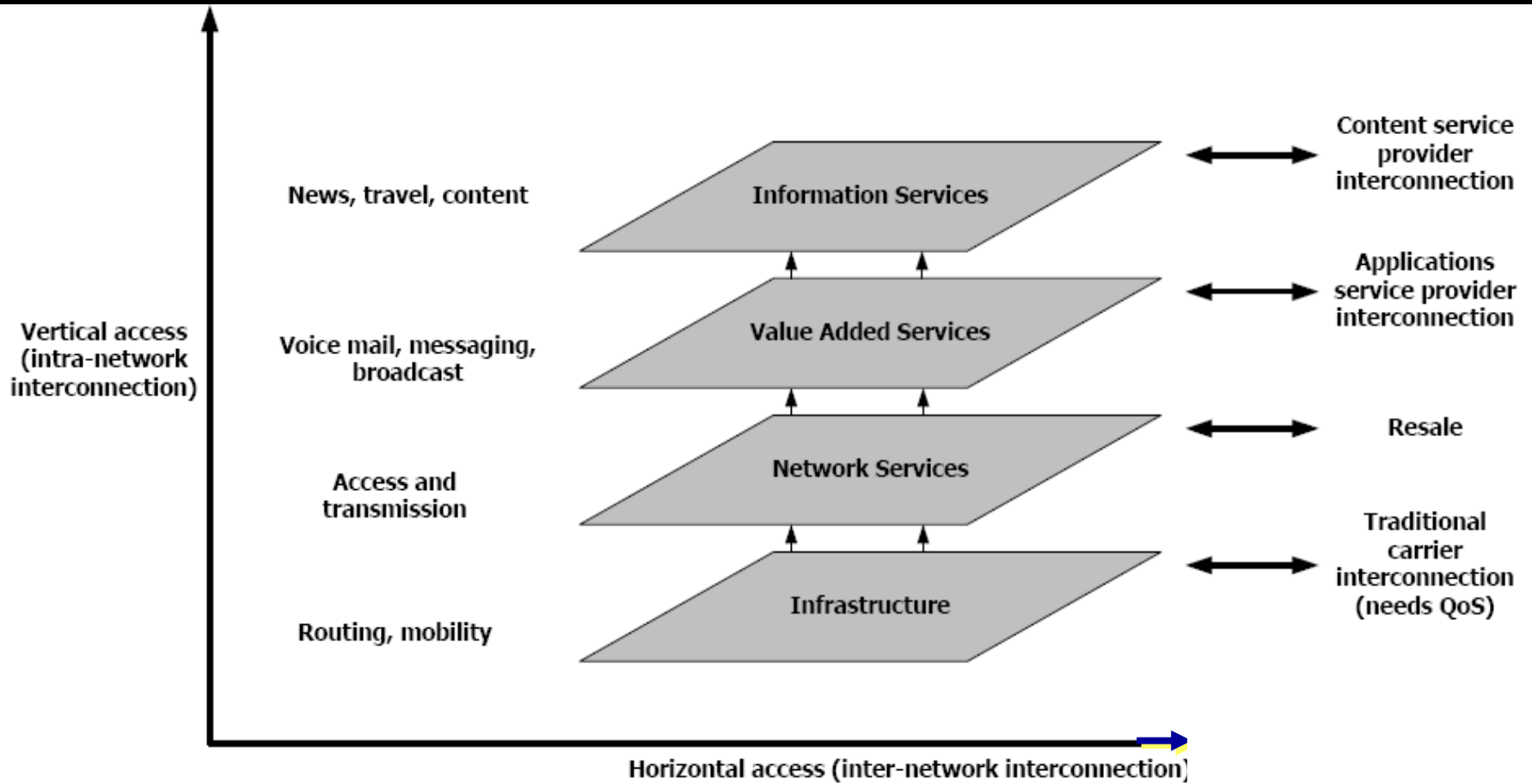
Raised operators' expectations

- Generating **new revenue streams**
- Supporting legacy and new services at **low capex and opex**
- Keeping pace with consumer imagination
 - Mix and match & **rapidly deploy services**
 - **Third party enhanced services**
- Scalable, reliable, service aware, interoperable network

Effects of NGN

- NGN introduces planes and layers
 - The planes are
 - Access plane
 - Transport plane
 - Control plane
 - Service plane
 - Service plane contains services that can be applied to lower planes to create products
 - The single IP core also has layered service architecture
- Next Generation Transport**
- Next Generation Services**

Layers and service of the NGN core



Interconnection at the core

- For any to any connectivity new entrants, existing operators, incumbents have to interconnect at the core
- Simple in traditional, complex by multi-layer, multi-play NGN
- Competitors will seek high degree of unbundling
- Interconnection to NGN may be sought also by non carriers like ASPs and CSPs

- Example: For giving high quality, secure remote access service SP may require location-based service, authentication services, secure quality tunnel - need access to service and control planes
- NGN operators argument:
 - Control plane is to manage IP core
 - others can get control through headers and therefore it should be simple protocol based interconnection
- This appeals superficially as it eliminates "free rider issue". New entrant would have to compete by building own services and control planes. This would limit its capabilities
- Interconnection to the core has to be appropriately dealt with. This aspect is new and not technically intuitive

Points for dominance

- Access
- Transport
- Control
- Services

All have potential control points

NGN Architecture – Layer Functions

Third party applications

SNI

Services/Application

Control

Transport

End User functions

UNI

NNI

Other Networks

- Session and non-session based
- Service user profile
- Registration/Authentication

- Call Control
- Media Gateway access control
- Signalling Gateway control
- Border Gateway control
- Routing
- Charging
- Resource allocation
- QoS

- Access, Edge and Core functions
- Transport layer functions provide connectivity for all components-end user, within NGN

Control Points

Transport

- Create tunnels
- Secure traffic
- Guarantee QoS
- Communication restrictions
- Redirection

Services

- Set up multimedia
- Resolve names and numbers
- Determine user location
- Determine user status
- Access restrictions

Access

- User profiles
- Information on users use

Control

- Media/Signalling gateways control
- Routing
- Charging
- Resource Allocation

Regulatory implications and interventions

Implications

- Operators seek to build or sustain market power – unfair competitive advantage by manipulating control points and customer control
- A challenge is to understand where control points can appear in a new and fairly unknown environment.

Interventions on control points

- If dominance is apprehended over a control point **consider ex-ante regulatory action**. It is difficult to apriori predict the outcome of any regulatory decision.
- Dominance of certain control points could represent irreversible barriers to market entry
- Lack of regulation could hamper development of the information society and the benefits that it is expected to bring
- **Innovation and success must not be punished by harsh regulations.**

Effects of NGN deployment

- Uncertainty among competitors
- Effect may be less problematic if the transition addresses needs of competitors e.g. wholesale opportunities
- If structural separation of wholesale and retail arm is absent then potential adverse effect is higher
- Stranded assets may be a reality
- Regulatory intervention will be decided by the degree of likely cooperation

Regulatory intervention for working competition

- One size does not fit all countries and country conditions must be seen
- Assess likely anti-competitive effects of deployment of NGN by SMPs
- To some extent effective structural separation in some form may eliminate regulators anxiety and need for intervention

- Decide degree of access to layers and the planes
- Minimum requirement could be access to transport and control networks and logically should have access to service plane
- ASPs/CSPs may need access to application/content layer of the core
- Deal with "access holiday"
- Balance infrastructure growth with risk of reinforcement of monopoly position

Regulatory imperatives

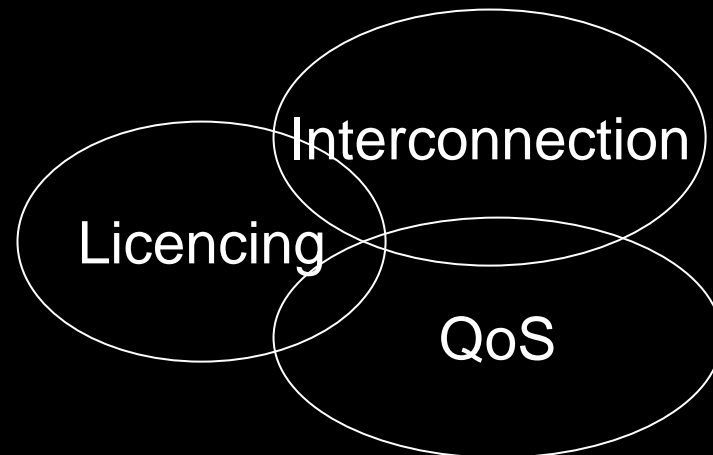
- Promote infrastructure development
- Promote workable competition
- Access to bottleneck facilities
- Deal with stranded assets
- Reduce consumer switching cost
- No free riding

Regulator's dilemma

- Non-involvement carries the risk of creation of a non-level playing field, haphazard growth, non-standard architecture and interfaces based on proprietary products **driven by vendors**.
- Over involvement may curtail investment.

Approach and Extent

- What works will depend upon the various factors in play at the time and the manner in which the regulator wants the network to develop
- The **licencing** framework should create a conducive environment for smooth migration to NGN. Efficient **interconnection** is crucial in NGN environment. The **QoS** is important due to different type of users, service applications and bearer requirements.



“ Virtue is more to be feared than vice, because its excesses are not subject to the regulation of conscience” – Adam Smith