Connectivity: Investments in Ultra-High Capacity Networks and Bridging the Digital Gap

Contents

- Next generation digital infrastructure
- NGN worldwide overview
- Drivers for NGN deployment
- Emerging models for NGN deployment
- Case studies from the MENA region
- Regulatory and operational challenges
- Conclusion

الجهـــــاز القومــــي لتنظيـــــم الاتصـــالات
NATIONAL TELECOM REGULATORY AUTHORITY

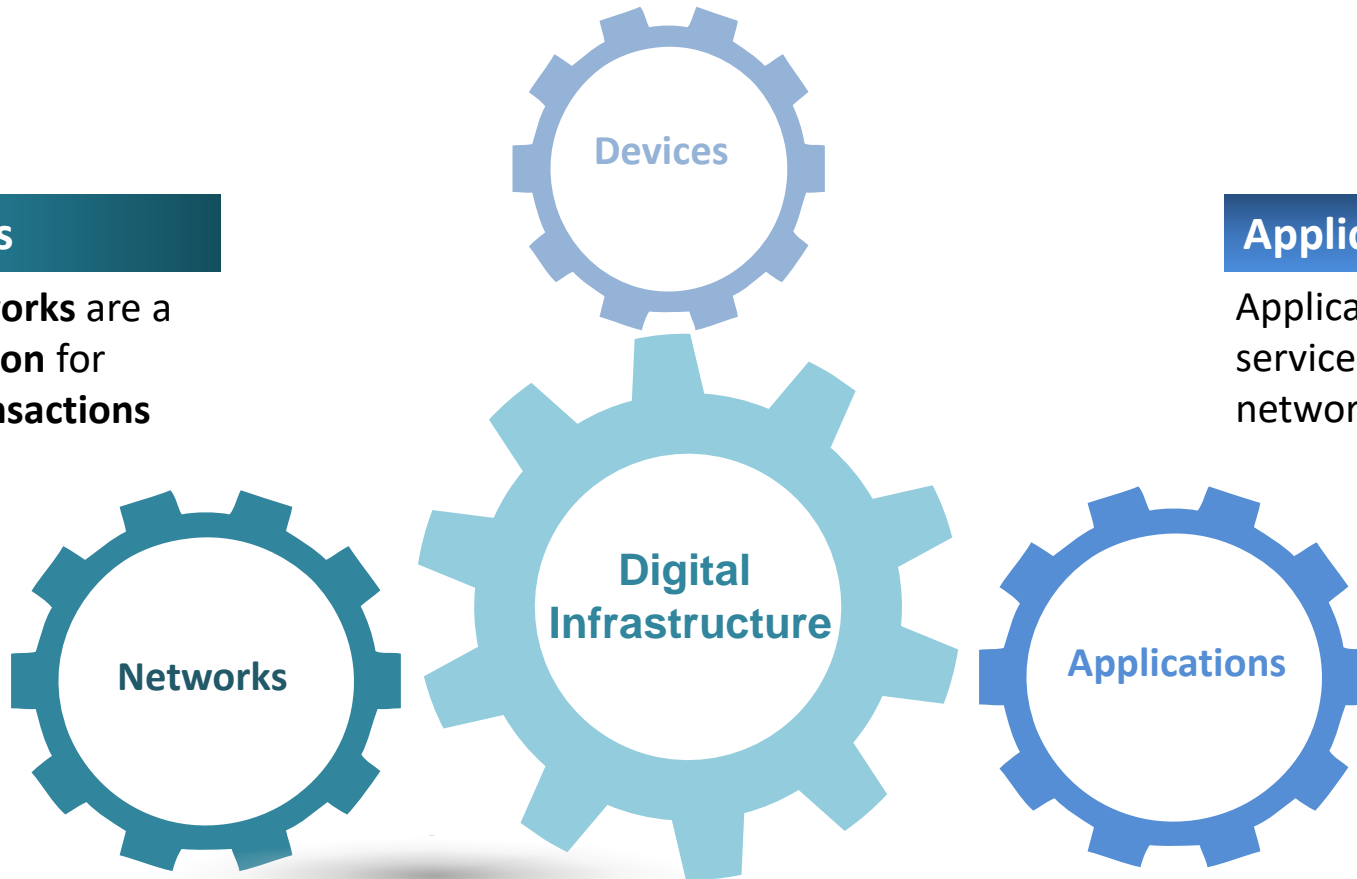# Next Generation Digital Infrastructure

Devices

Enabling access for applications and networks

Networks
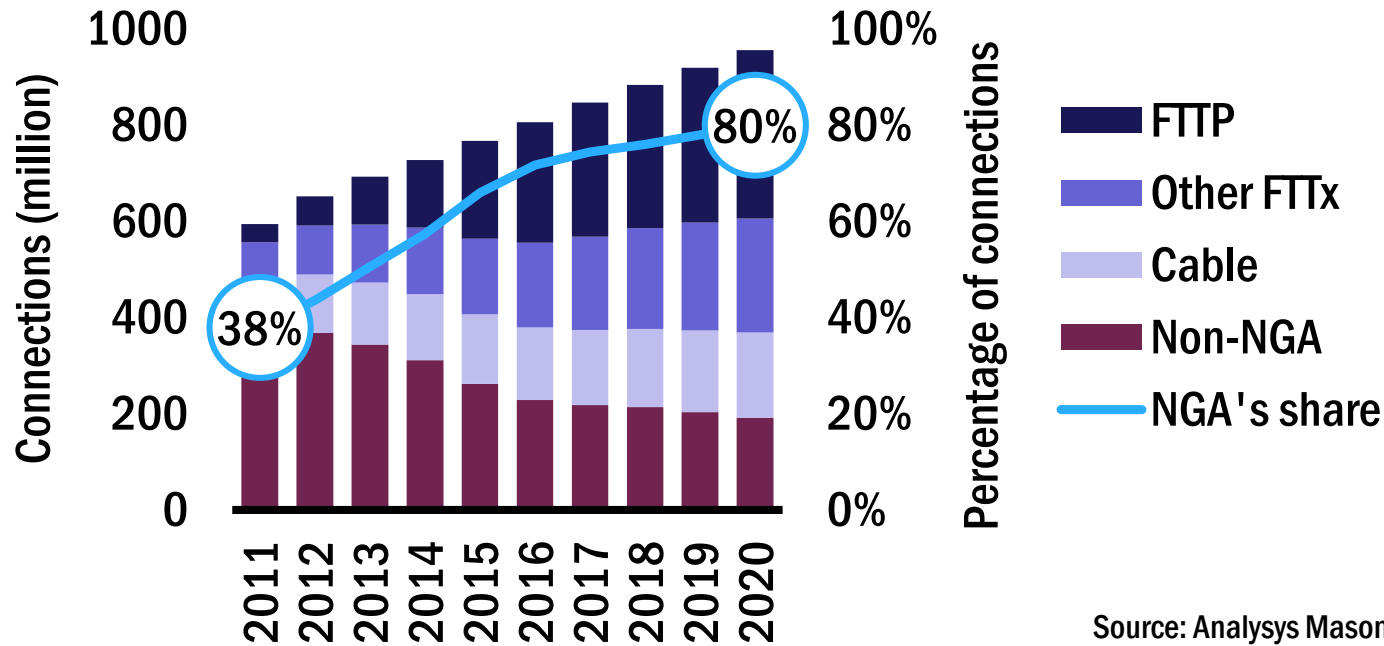
NGN **networks** are a **precondition** for digital **transactions**

Applications

Applications **drive** service **demand** and networks **utilization**

Devices

Digital Infrastructure

Networks

Applications
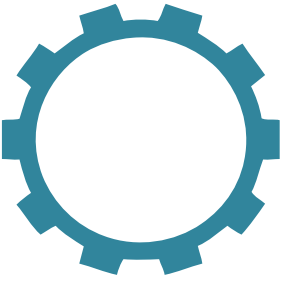
NGN Networks Worldwide Overview

Fixed broadband active connections, by technology, and NGA's share of connections, worldwide, 2011–2020

Legend:
- FTTP
- Other FTTx
- Cable
- Non-NGA
- NGA's share

Source: Analysys Mason

- Fixed broadband continues to grow worldwide due to its levels and types of usage which continue to outstrip the capabilities of mobile networks (in terms of either total system capacity or achievable reliable speeds).

- Fixed broadband can take many forms either investing in a cable infrastructure or FTTX technologies (which include FTTH, FTTB, FTTC)

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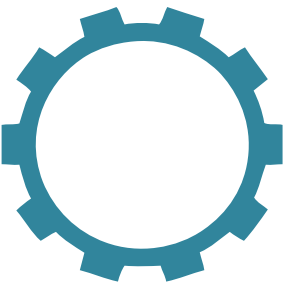
Drivers for NGA rollout (1)

Evolving end user needs

- Global IP traffic will increase nearly threefold over the next 5 years
*- Broadband speeds will double by 2020*

CISCO, VNI 2015-2020

Catering for mobile networks and wireless requirements

- Traffic from wireless and mobile devices will account for two-thirds of total IP traffic by 2020

- Globally, mobile data traffic will increase eightfold between 2015 and 2020

CISCO, VNI 2015-2020

Need for lower OPEX network

NGN networks provide possibilities for lower O& M
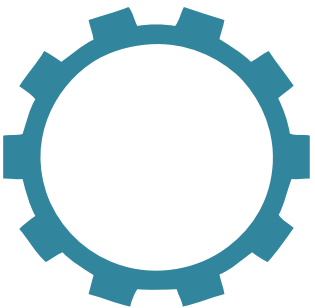
Drivers of NGA rollout (2)

A number of factors seem to influence the deployment of NGA

1. Supply side factors (affecting cost of NGA deployment):
   - Population density and urbanization
   - Network related factors (duct availability , Copper quality)
   - Legislative factors (mandating access to ducts, practices on civil infrastructure work, etc.…)
   - Investment from municipalities / government initiatives.

2. Demand side factors
   - Willingness to pay a premium for higher capacity connections
   - Take up rate of the currently offered Broadband services
   - Presence of demand from public sector (hospitals, schools, etc.…)

3. Degree of infrastructure competition (presence of competing cable and mobile infrastructure)
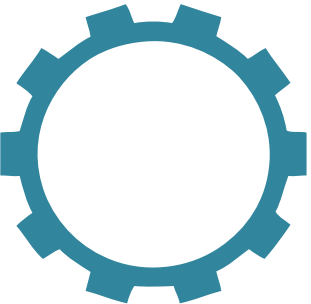
Drivers of NGA rollout (3)

Based on the combination of the aforementioned factors, countries are in different positions in terms of NGA technologies deployed and the pace at which rollout takes place

National regulatory authorities mandate

Having a clear vision for NGN targets (coverage, technology, adoption rate) in light of the country-specific situational factors.

Provide a favorable environment for investment *while* maintaining sustainable competition.
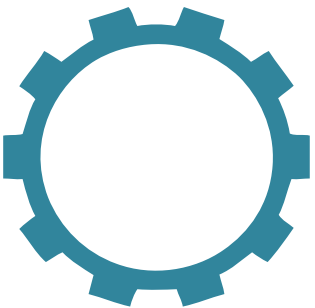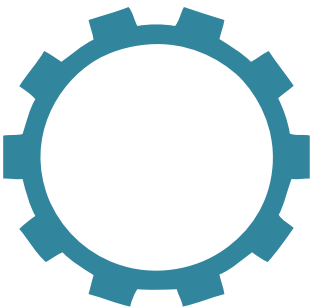
Emerging Models for NGN Deployment

- Different business and regulatory models emerged to support NGN deployment as a function of:

  1. Source of funding (Public or private or PPP).
  2. Entity undertaking the rollout (Private sector, incumbent, SPV)
  3. Regulatory intensity (heavy regulations, regulatory holiday)

- The most prominent existing models*:
  1. Private sector investment, minimal regulations
  2. Graded government support, incumbent led
  3. Graded government support, incumbent led
  4. Government controlled fiber
  5. Private sector, heavy regulated

* *Classification Adopted from Arthur D Little report*

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Emerging Models for NGN Deployment

Pvt. sector, min. regulation

Service providers are free to invest in fiber where they deem suitable. Little to no regulatory pressure to unbundle to competitors is applied, and regulated prices are not enforced

FCC granted regulatory forbearance to ILECs re unbundling to their NGN network elements to access seekers (TRO, 2003).
Results : Aggressive investments from ILECs
The regulatory forbearance triggered a new investment wave from major cable operators.

Govt. Support , incumbent led

The incumbent operator, usually still with a significant government investment stake is mandated to roll out an extensive National Fiber network

Public money is involved in the exercise either directly or indirectly, and some regulation on open access is applied to create a competitive environment

Government contribution through
1. Tax incentives
2. Government backed loans
3. Covering about one-third of the building cost of fiber broadband network to rural towns and villages

Govt. Support , private led

The government drives and partially funds a National Fiber agenda through all the players in the market.
The governments imposes open access regulations and other necessary measures on the built out network to ensure competition
ARCEP aims to enable operators to invest in ultra broadband under equal terms, which means:
1. Access to existing infrastructure, especially civil engineering
2. Sharing new investments, especially in the last mile of the network.
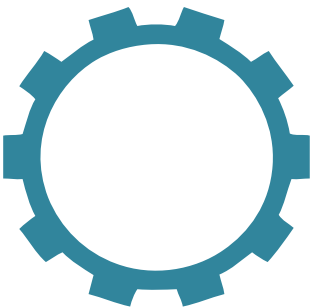
Emerging Models for NGN Deployment

Govt. controlled fiber

The government takes a full hands-on approach to creating and, in some cases, operating a national fiber network.

Public funding could be on national level or regional and municipal level

In 2007, the Australian government announced plans for national wholesale only, open access network.
The network is designed and operated by a government-owned corporation (NBN co.)
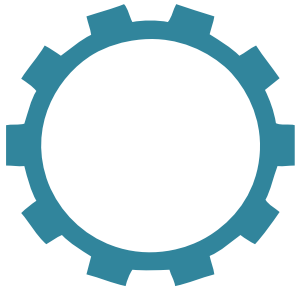
Pvt. sector, heavy regulated

This model relies on private fiber investment coupled with heavy regulation to encourage consumer service competition

The Dutch market features a strong inter-platform competition between DSL, cable and fiber networks.

The Dutch regulatory authority OPTA in December 2008 extended wholesale access obligations from copper to fiber.

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NGN Networks Arab Region Overview

Most advanced FTTH/B projects

FTTH/B expansion due to national program/company

In the process to expand their national FTTH/B network

Newly announced strong ambition for end 2022
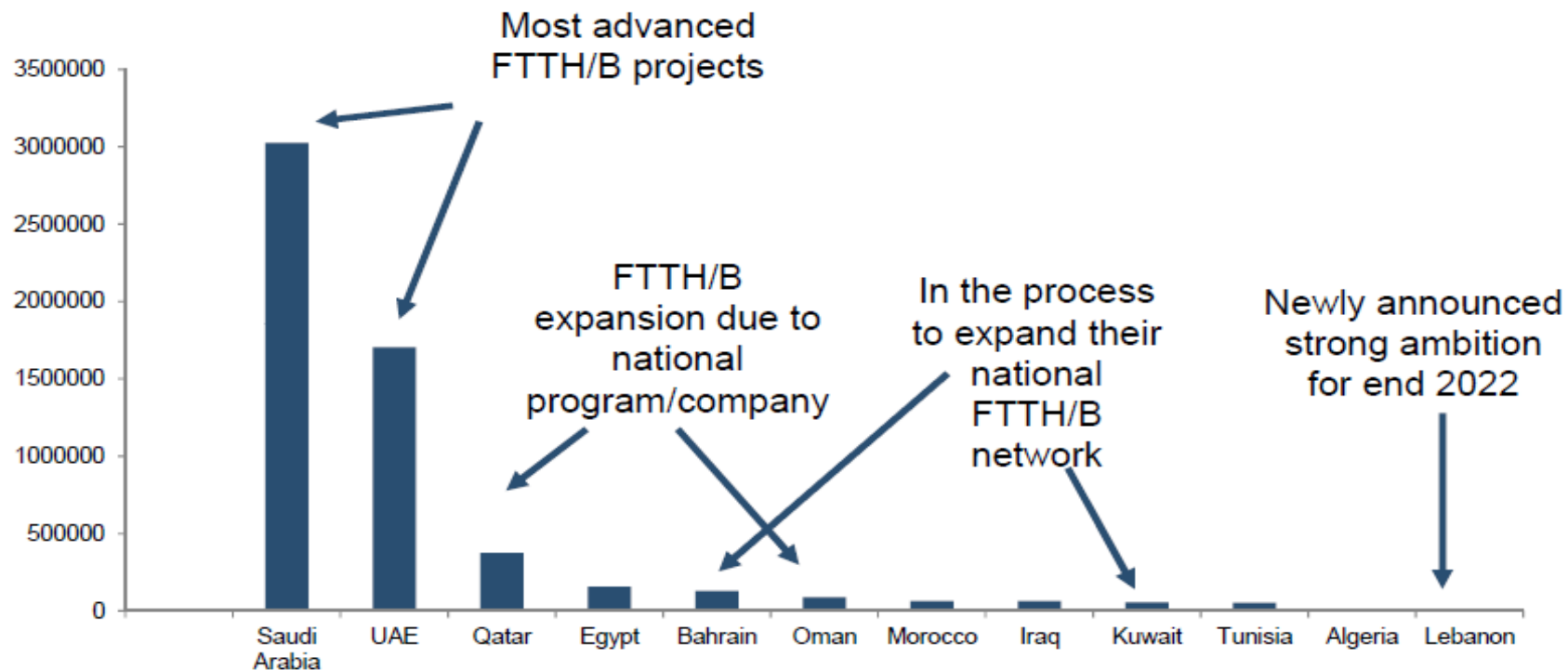
Case Studies from MENA Region

United Arab Emirates

1. UAE has an FTTH coverage of 94% as of 2016.
2. The deployment is driven by both Etisalat and Du which are to a great extent owned by the government.
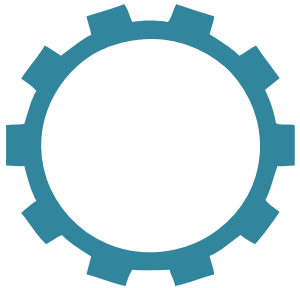3. Retail offerings exist up to 1Gbps bandwidth, and triple play offers are the norm.
4. Take up rate is 89% confirming a great commercial success.
5. TRA directed Etisalat and Du to provide reciprocal Bitstream services to each other, thereby enabling each operator to use the other's fiber access network.
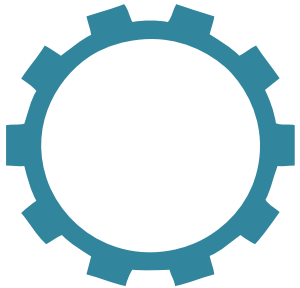
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Case Studies from MENA Region

Qatar

1. Qatar has an almost ubiquitous FTTH coverage.
2. The deployment is driven concurrently by both ooredoo (former Qtel) and QNBN (stated owned fiber utility) with ooredoo rolling out at a faster pace.
3. Retail offerings exist up to 1Gbps bandwidth with trial to offer 10 Gbps.
4. Take up rate is 75 % confirming a great commercial success.
5. With ooredoo reluctant to provide access to its ducts infrastructure to QNBN, the CRA of Qatar resolved is successively working to resolve the access agreements issues.

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Case Studies from MENA Region

Morocco

1. Maroc Telecom (IAM) started offering fiber optic broadband services after it had concluded successful trials in Casablanca and Rabat.
2. Retail offerings up to 200 Mbps is available in major cities.
3. By September 2016, iDate estimates 60K homes passed and 2500 homes connected.
4. In other cities, Maroc Telecom opted for FTTN/VDSL architecture.
5. Maroc Telecom is totally dominating the fixed Broadband market. The regulator ANRT decided to impose full range of wholesale remedies and a reference offer is yet to be published.
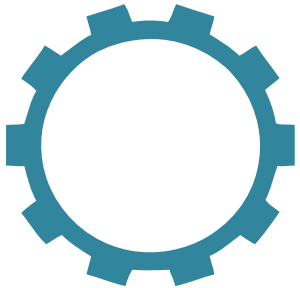
Case Studies from MENA Region

Egypt

1. In 2012, Telecom Egypt announced its strategy to bring fiber closer to end customers using a FTTC architecture.
2. By Q1 2015, 50% of the project was completed by connecting 2 million lines to Multi service access nodes (MSANs).
3. More than 80% of the core network was upgraded to DWDM technology supporting (10G, 40G, 100G) bandwidth.
4. Retail offerings up to 48 Mbps exist, with Egypt featuring one of the lowest Broadband prices in the MENA region.
5. Moreover, NTRA awarded two closed compound to encourage infrastructure competition and induce FTTH/FTTB rollout.
6. Being an early adopter for LLU regulations since 2002, Egypt transposed open access regulations on NGN networks by directing Telecom Egypt to offer L2 Bitstream and Virtual unbundling for other licensed operators.
7. Customer reliance on satellite TV to get premium content coupled with low affordability is undermining investment in fiber networks

E-Misr Broadband plan

- E-Misr Broadband plan was launched in 2011. The first pilot project was applied on 2014 , the target was to cover 1600 governmental entities with high speed internet and upgrading their infrastructure. Till now over 1000 governmental entities are being included in the E-Misr plan.

- A universal Service Fund was created with a budget of 400 million Egyptian Pounds . Over 86 million Egyptians pounds have used to cover uncovered areas.
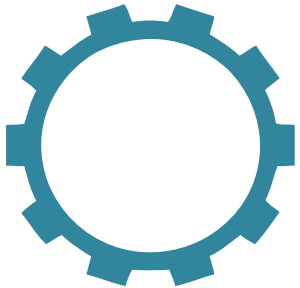
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On the Short term,75 % of households have access to 2 Mbps. E-Misr broadband long term goal is to provide 90% of the households with 25 Mbps
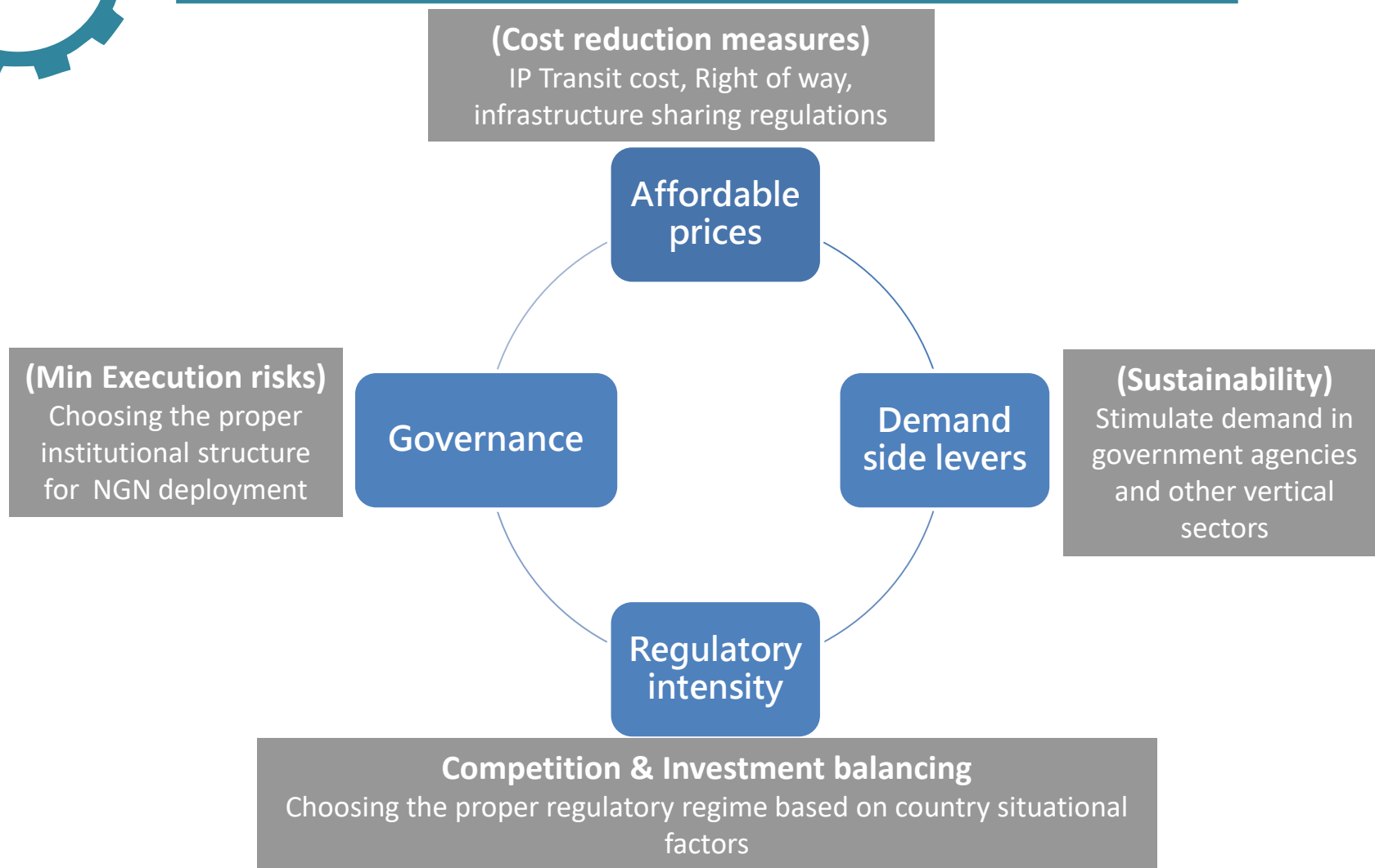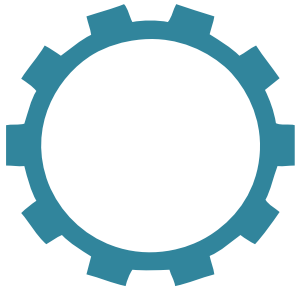

Targets	Short term	Long term
Availability Targets	75% of households have access to Broadband (2 Mbps)	90% of households have access to Broadband (25 Mbps)
	98% of population with 3G coverage	90% of population with 4G/LTE coverage
Penetration Targets	4.5 million (~22%) households subscribed to broadband services	9 million (~40%) households subscribed to broadband services
	8 million (~10%) citizens subscribed to mobile broadband services	14 million (~15%) citizens subscribed to mobile broadband services
National / Social Targets	•50% of Egyptian communities connected to 25 Mbps •50% of 3rd level Egyptian administrative localities served with at least one Public Access Point with 25 Mbps	•100% of Egyptian communities connected to 25 Mbps •Each 3rd level Egyptian administrative locality served with at least one Public Access Point with 25 Mbps

National Telecom Regulatory Authority - Egypt

Regulatory and Operational Challenges

(Cost reduction measures)
IP Transit cost, Right of way, infrastructure sharing regulations

Affordable prices

(Min Execution risks)
Choosing the proper institutional structure for NGN deployment

Governance

Demand side levers

(Sustainability)
Stimulate demand in government agencies and other vertical sectors

Regulatory intensity

Competition & Investment balancing
Choosing the proper regulatory regime based on country situational factors

Regulatory and Operational Challenges

Affordability Pillar

IP transit costs
- Establishment of IXP which reduces cost via peering and localizes the traffic.
- Set national policies to attract content provider to localize data centers / create CDNs.

Right of way
- Working closely with municipalities and relevant ministries to expedite work approval and co-ordinate civil work

Infrastructure sharing
- Encouraging sharing cost between operators for NGN networks

Demand Pillar
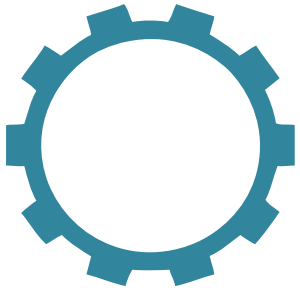
Stimulating govt. demand
- Adopting initiatives to connect governmental agencies to high speed networks.

Stimulating other sectors demand
- Encouraging the adoption of ICT applications in various sectors (Education, health, etc....)

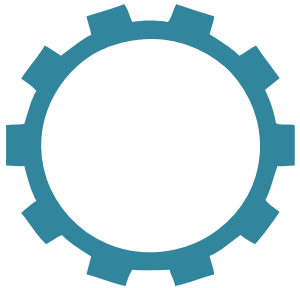## Regulatory & Governance Pillar

- **Financing model**
- **Choosing execution entity**
- **Regulation scheme applied**

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The Need for New Regulatory Paradigms

Pillars of collaborative regulation

• Hold an inclusive dialogue across the different sectors and authorities (competition, customer protection, etc.…)

• Share guiding principles and best practices with other sectors on issues where ICT/telecommunications may be leveraged.

• Define mechanisms for effective coordination, cooperation and accountability across the sectors.

• Create working synergies – ongoing dialogue and regulatory cooperation

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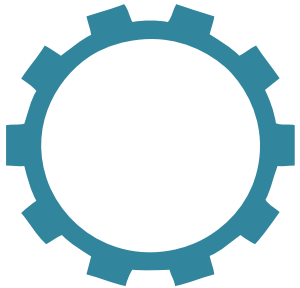# The Need for New Regulatory Paradigms

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Conclusion

- Moving from first-generation to second-generation broadband will require continued investment in network infrastructure; policymakers and regulators should examine incentives to promote investment in NGN deployment and preserving competition given the local situational factors.

- The disruptive nature of applications makes it compelling for NRAs to establish cross sectoral co-ordination procedures to ensure consistent regulation and comprehensive inter-working arrangements.

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Thank you!

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National Telecom Regularity Authority
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