African Inter-Networking: The challenges and Opportunities

Michuki Mwangi
ISOC, Senior Education Manager
AfriNIC-9
Le-Meridien Hotel, Mauritius

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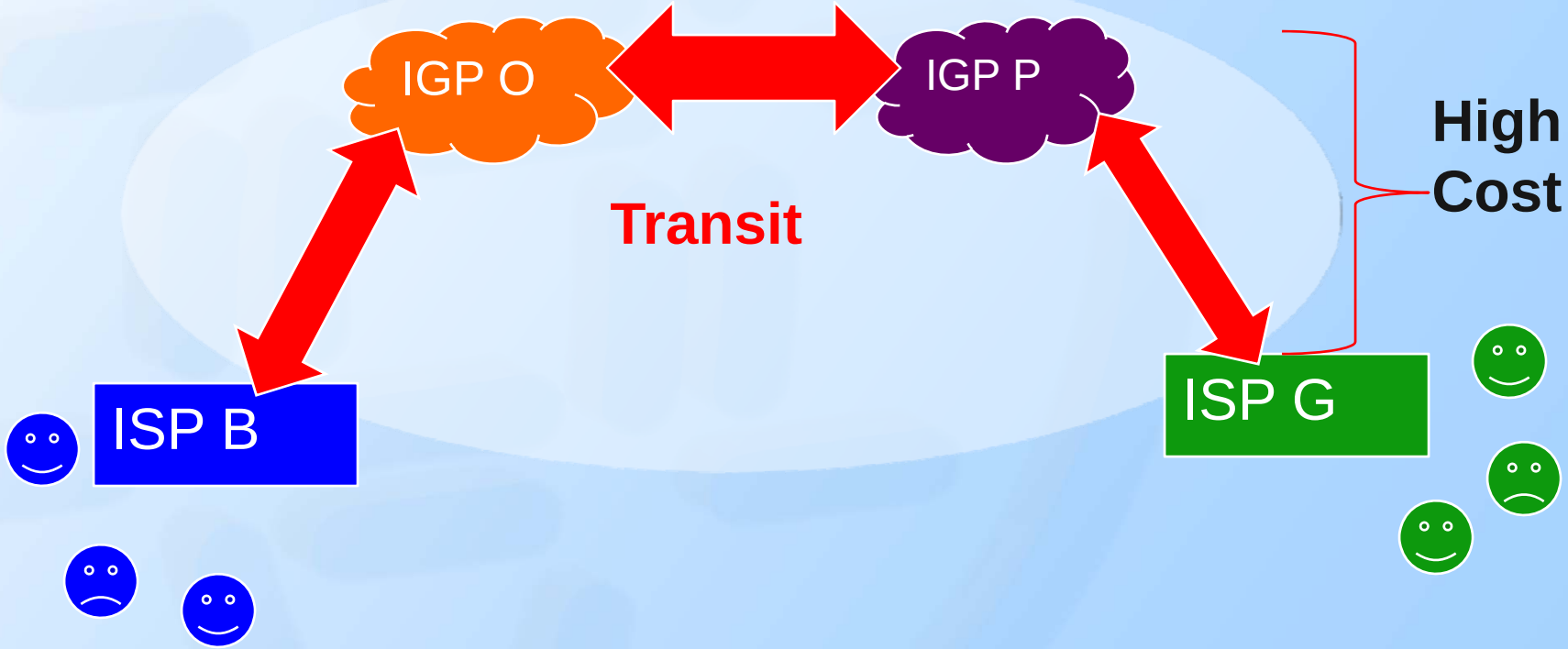
What is Inter-Networking?

- This is defined as the Interconnection of Local Area Networks with Wide Area Networks
- The larger picture is the Interconnection of Wide Area Networks (WANs)
- The WANs are commonly represented by ISPs and Content Providers
- Inter-Networking involves the exchange of traffic between the various operators for free or at a cost.

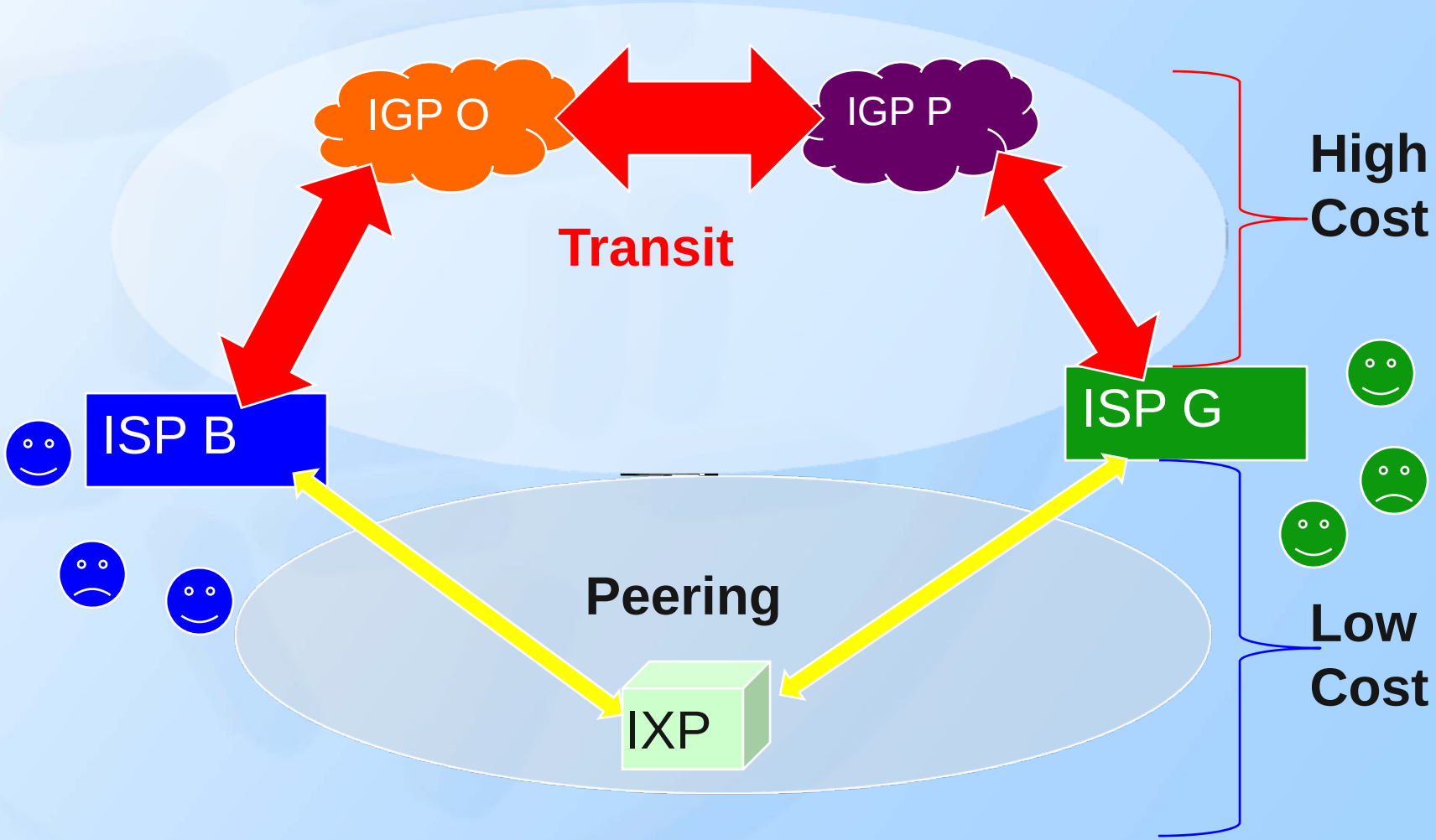
Inter-Networking Concepts

- ***Peering***
  - This is the exchange of traffic between two networks in this case WANs for free
  - In the ISP environment this is the mutual exchange of traffic of its networks and clients with another ISP at no costs other than that of the circuit
- ***Transit***
  - This is the exchange of traffic between WANs at a fee.
  - For ISPs it enables them to have access to networks they cannot reach through peering
  - Its common practices between small and big ISPs

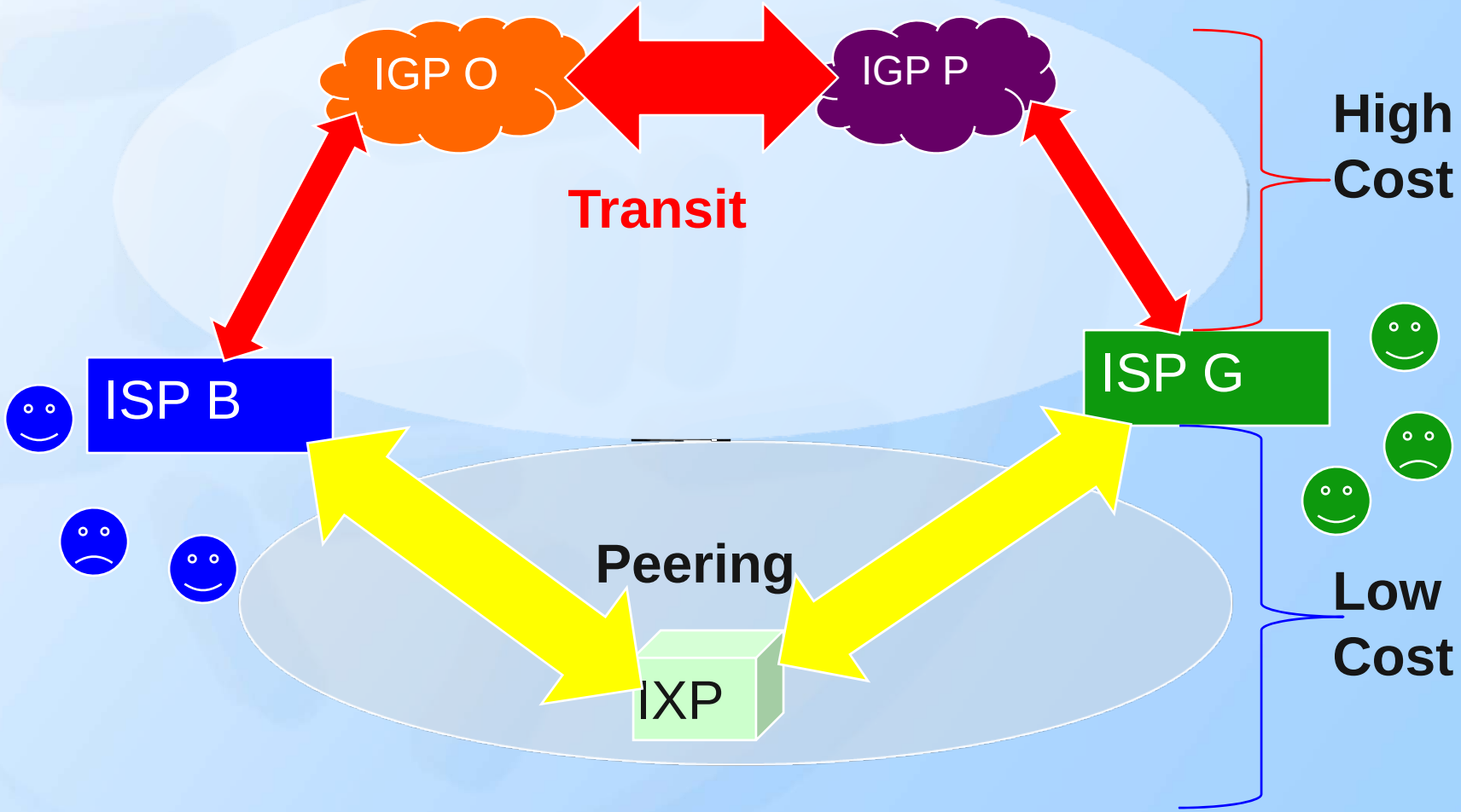
Inter-Networking Models



Inter-Networking Model - current



Inter-Networking Model - future



The Challenges

Policy Challenges

- Uncompetitive regulatory and licensing regimes
- Absence of policy mandates to ensure general awareness creation is undertaken
- Poor mechanisms to develop advanced technical capacities
- No significant investments in ICT R&D
- Lack of adequate ICT policies and absence of legal framework to support e-commerce

Infrastructural Challenges

- As a result of the policy challenges, there has been minimal or no investment in;
  - National terrestrial high capacity infrastructure
  - Regional terrestrial high capacity infrastructure
- Access to infrastructure leeway is not straight forward;
  - No accurate maps of existing infrastructure locations
  - Approval process is slow and costly

Information/Data Challenges!

- There lacks empirical data on how much traffic exchange exists between the African region
- This makes it difficult to develop any potential business cases for regional Inter-Networking
- This has in the past been due to mistrust amongst the operators to share information

The Opportunities

Building Peering and Transit points

- Internet Exchange Points (IXPs) are the ideal peering and transit point
- The provide opportunities for peering (free) access for what would be otherwise transit (paid) access traffic.
- IXPs reduce the overall access costs
- Reduce dependence of International connections for local traffic
- There's need to build IXPs in many potential areas to enhance access to content
- IXPs are technology enablers – ideal locations to launch project testbeds i.e IPv6.

IXPs in Africa

Source:
www.nsrc.org

Research and Development

- IXPs become the ***natural aggregation points*** of National or regional traffic
- They naturally attract research ***into traffic patterns*** especially for traffic within the region.
- The resulting research is useful for the development of ***future services and killer applications.***
- IXPs also promote the establishment of National Research and Education Networks (NRENs)

Other Opportunities – Content!

- Hosting and Collocation Services
  - Both regional and local hosting services
- E-Government Projects and Initiatives
  - The main source of national content and expanding Government service provision
  - The case of Kenya Revenue Authority (KRA) collects over USD $ 6Million Daily via KIXP
- VoIP Call Clearing Houses
  - Promotes cheaper national/regional calling rates
- E-Commerce
  - Implements 24hr economies at the least.

Conclusion

- InterNetworking will play a key role in providing access to reach the next billion
- AfriNIC and ISOC are partnering to bring additional value to IXPs.
- Project involves assisting in implementing Anycast Root server instances, Routing Data collectors, NTP amongst others
- The process will also include enabling IPv6 at the IXPs
- Technology transfer will be a critical component of the project

Questions – Discussion?

Michuki Mwangi
mwangi@isoc.org