GRAND DUCHY OF LUXEMBOURG
Ministry of Foreign Affairs

Directorate for Development Cooperation

European Union Africa
Infrastructure Trust Fund

Hosting Infrastructure

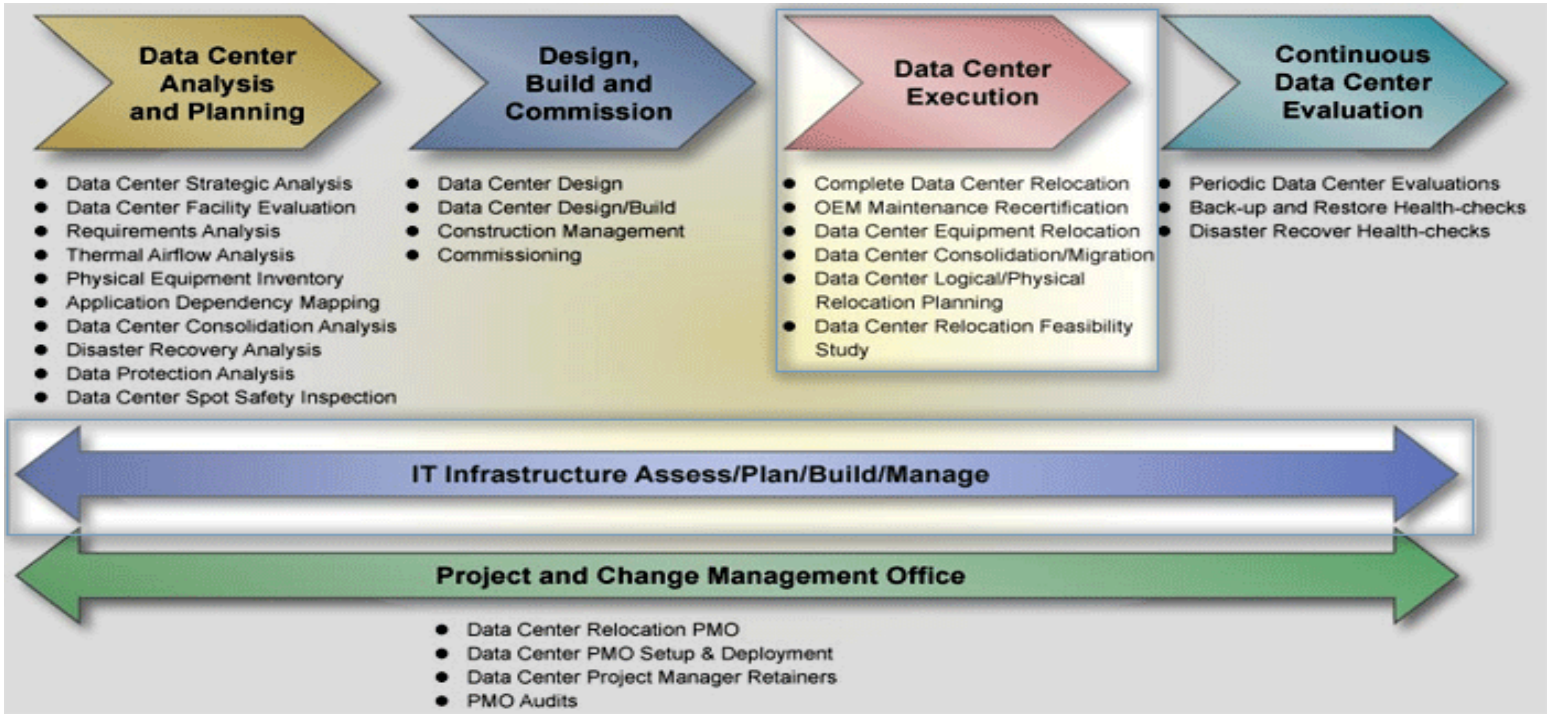
Data Centre Economics

THE IT LIFECYCLE

The IT Lifecycle is 3-5 years before a refresh is required.

Data Centre infrastructure has a 5 year lifecycle before reinvestment is required.

We often think that small businesses have very different challenges to large corporates, and in many senses, that's true. However, when it comes to managing your IT infrastructure, each organization, no matter what size, has its own specific needs as they move through the IT lifecycle of any organization facing economic growth.



COLOCATION ABC

According to Info-Tech Research Group, 64% of organizations engage in some form of data centre colocation services. In addition, Gartner has observed more and more enterprises enlisting colocation services, and the research firm has identified several reasons behind this trend.

Colocation is a physical facilities option for your IT infrastructure

Deployment of IT assets in a colocation facility provides the advantages of:

- Shared power and cooling infrastructure
- Security and resilient architecture
- Reduced Capital Investment Risk

By renting space for IT assets, but keeping ownership and control, organisations can expand quickly and still maintain the stringent quality, resiliency and security requirements of the ideal IT infrastructure.

Colocation Considerations

Whether building or buying/leasing a facility, there are basic fundamental questions that need to be considered.

✓*Does the site have sufficient capacity for initial population as well as future expansion?*

✓*What is the risk of disruption due to natural disaster or security breaches?*

✓*Is the site near diverse routes for multiple carriers?*

✓*Is the site easily accessible by technicians/customers?*

✓*What is the power availability at the site? Is it scalable over the term of the life of the facility?*

✓*What standards does/will the site conform to, and what is the guaranteed/expected availability, covered by SLA?*

✓*Is the site certified for design standards, as well as operational standards? (ISO, PCI-DSS, Uptime Institute, TIA)*

✓*What security procedures and controls will be/are available?*

✓*Is there/Will there be detailed, continuous monitoring and measurement of all critical components? Is this information available?*

✓*Are the facility policies open, and is the facility owned by a competitor? How easy will it be to interconnect to other networks? Structured cabling?*

✓*24/7 On-site support or remote-hands?*

When to consider Colocation:

Geography

- Organizations that operate across a vast geography, whether provincial, national or continental, require a well-situated and well connected central location.

Necessary Requirements

- Cooling, power or weight requirements within facilities are vital, and it's extremely expensive to retrofit an older premises. Often, it's not possible to provide the kind of security and fire protection required within these older buildings as well.

Space alternative

- Colocation provides an alternative to expanding, or building, when organisations have outgrown current space but don't want to relocate everything into new facilities.

Hands-on management

- Remote hands-on management of colocation facilities makes it easier to administer and manage IT infrastructure without needing to be physically located anywhere need the actual hardware setup.

Business benefits:

Improve reliability

Five 9's? Three 9's?

What's the Difference?

Availability is usually expressed as a percentage of uptime in a given year. Many providers will state their availability as percentage such as 99.999 or 99.9.

The difference? Two fewer nines mean an average of 86 seconds more downtime every day or 43 minutes more downtime every month

Business benefits:

Eliminate risk and costs

Financially, colocation makes sense. There is reduced capital investment and lower lifetime cost as non-core expenditure is eliminated from the company balance sheet and setup and monthly costs are significantly lowered.

The average costs of building a data centre are between $2,500 and $25,000 per square metre.

Risk and Compliance

Colocation providers have to ensure that they comply with regulatory requirements, saving customers time and money and making audits far easier.

Carrier Access

Latency is an often discussed and much mooted reason for not moving to colocated facilities. It's important to check that you find a facility which houses as many of the network carriers as possible. Network performance (or latency) can have a direct financial and productivity impact on your business, particularly if you are on a slow network.

Value to Carriers and Regional Carriers

Carriers are an essential and critical building block of the ecosystem. Without carriers, you cannot have CDNs and ISPs. Without CDNs and ISPs, you will have no end-users!

So what do carriers need from a facility?

Stability

- Carriers build their names on their ability to deliver high capacity and uptime. Neutral facilities have absolute focus on making sure that all components are always on

Security

- Carriers need to know that their costly equipment is safe, and that the risk of sabotage is minimal. Security is one of the pillars of a neutral facility.

Customers

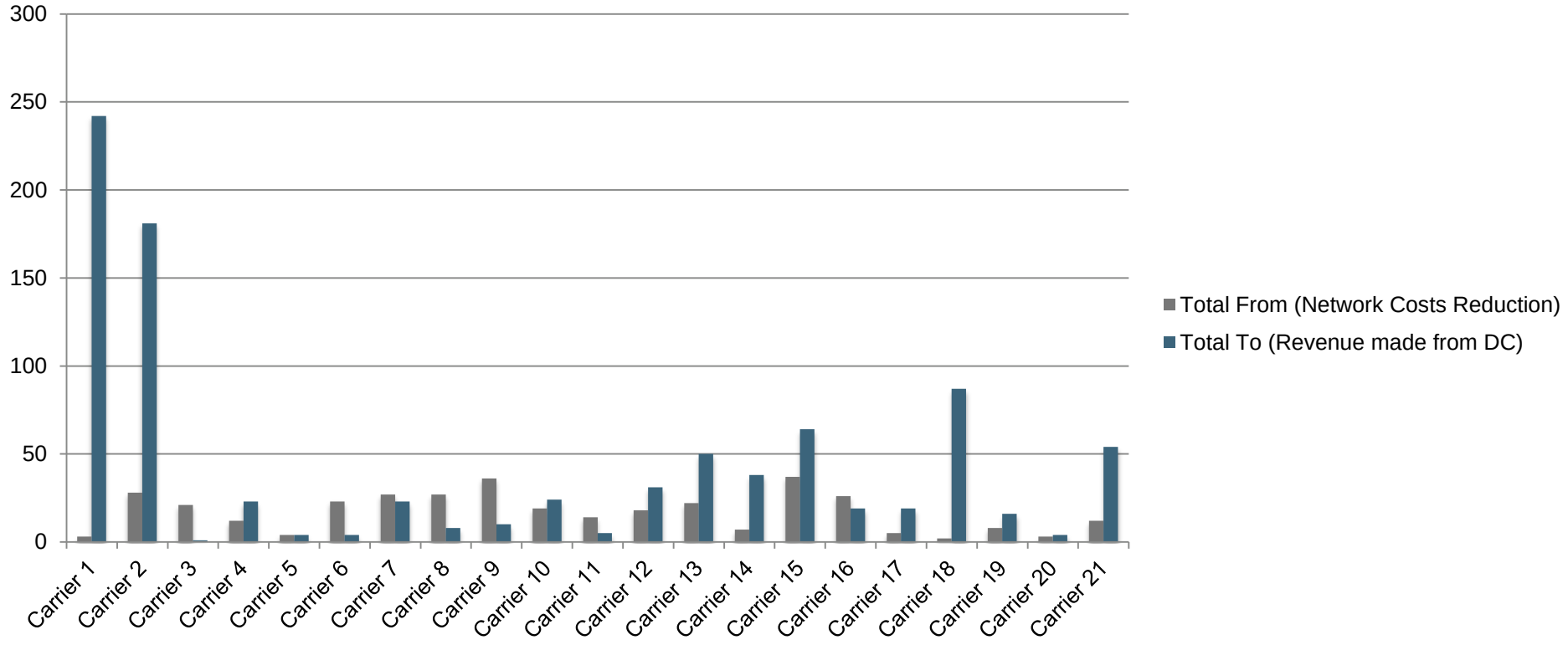
- Carrier deployment is expensive, and as such, carriers need to carefully select deployment sites that offer the greatest reach to customers. Neutral facilities offer a low-risk option, with easy, cost-effective interconnection to a diverse market-place, including ISPs, CDNs, corporates, banks, government, and even other carriers. Everyone in one place.

Scalability

- With customers comes growth. Carriers need the comfort of knowing that the facility can grow with their business.

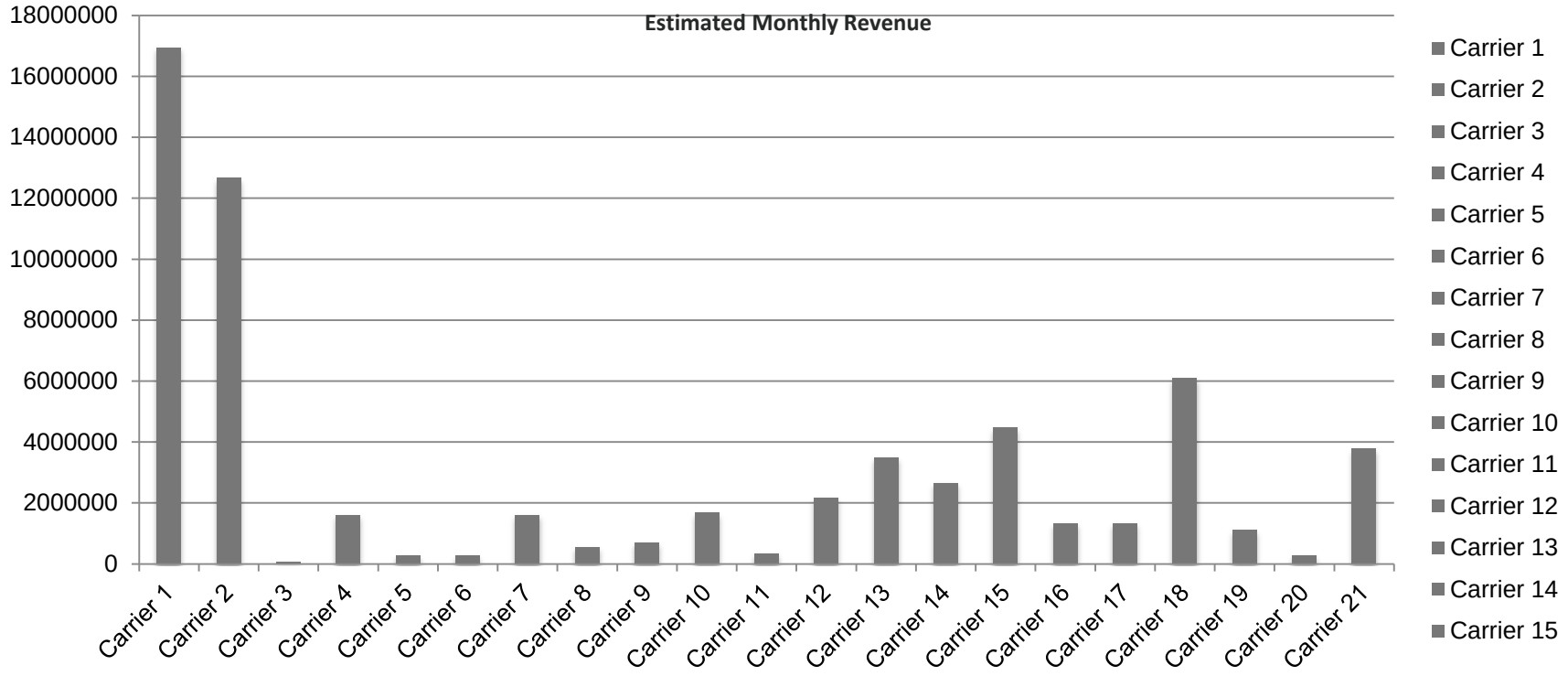
Carrier Neutral Interconnection effect

Neutral interconnection policies and multiple potential partners in one location present significant growth opportunities for carriers.



Carrier Revenue Potential

Conservative estimate of monthly carrier revenue from one colocation facility, based on number of interconnects



Value to IXPS and Regional IXPs

IXPs present an attractive option for carriers, CDNs and ISPs. Neutral network diversity ensures IXP growth

So what do IXPs need from a facility?

Stability

- When networks connect to an IXP, they need to know that the IXP is just as reliable as the rest of their network. An unstable IXP will make it difficult to convince networks to peer.

Peers

- An IXP needs to be as close as possible to as many networks as possible. The more networks an IXP has, the more attractive it becomes. CDNs use IXPs to get content to many networks over one connection. Carriers can use IXPs to provision remote peering ports. ISPs and enterprises use IXPs to get low latency, low-cost access to content. A neutral facility allows all of these networks to easily deploy in one common location, making it easy to connect

Open interconnect policies

- Restrictive interconnect policies hinder growth. Open interconnect policies are in the best interests of the facility, as well as it's customers.

What makes a Data Centres attractive for IXPs?

Creates true colocation value:

✓Existing colocation clients can realise true network savings through reduced requirements e.g. less physical connections;

✓Reduction in transit between clients;

✓Improved network quality e.g. reduced latency;

✓Increased revenue opportunities through neutral interconnection.

✓Symbiotic relationship to facility. As your IXP grows, your facility will become more attractive

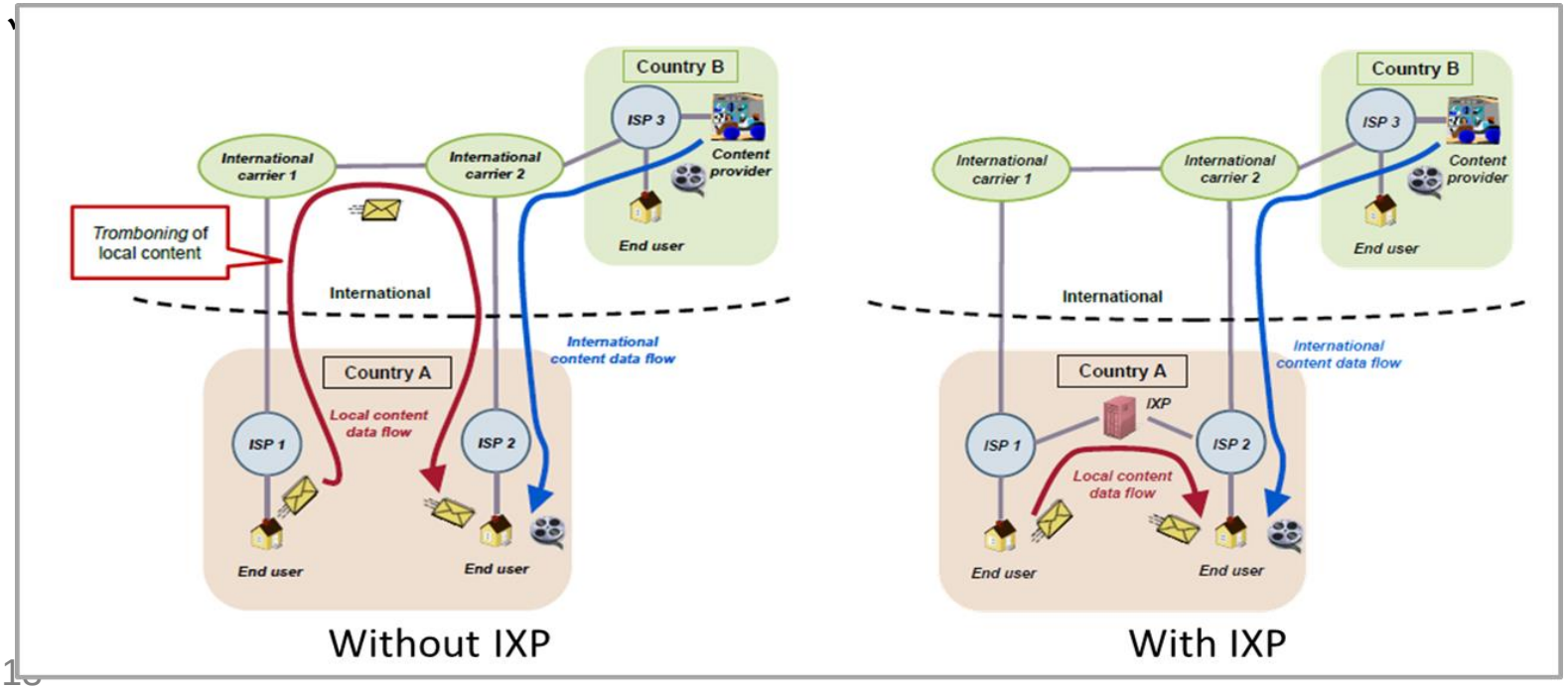
Regional IXP: Global Content

Instant marketplace opportunity:

✓Provides a platform for easy to deliver content to an existing market;

✓Provides a secure, well connected, always on environment for node deployment;

✓Creates value to existing colocation clients to improve their clients user experience and reduce network costs;



IXP Data Centre community Savings

Real example of just one peer that continuously calculates and graphs the amount of money saved (Rand value) by peering at IXPs.

The Neutral Marketplace

Quotes: *How to make sure Regional IXP will last?*

"Keep and guarantee **neutrality and independence" – Franceix**

*"Hosting companies, portals, CDNs, content providers, etc. tend to prefer a richly networked ISP colocation center with an open marketplace of ISP services. This provides the required flexibility, robustness and ever decreasing transit prices that are reasons that large scale content providers build into colocation centers in the first place."- **Dr Peering***

In Region experiences

- In the last 12 months, some national IXPs in Africa have moved their IXPs to data centers (carrier neutral and carrier specific). The moves have been at a cost to;
  - The IXP to meet new location requirements i.e cabinets, power upgrades, etc
  - The carriers who had previously built fiber into the old locations

- The reasons for moving have are;
  - Scalability to meet growing space, power and security demands
  - Improve service reliability
  - Neutrality requirements or balance thereof

- Others have upgraded their facilities to meet growing demands. These are resources that would have otherwise gone to other IXP related investments.

COLOCATION ROI

In a survey of over 200 CEOs, business owners and IT decision makers, 70% expected to see a return on investment from choosing colocation.

- 24% expected a return within six months
- 40% within twelve months

Globally, IT execs have the following to say:

- "Owning and operating IT infrastructure results in higher costs and wasted resources" ~ 60% agree
- "Expect to save on average 25% of IT budgets through outsourcing"
- "Cloud will play a huge role in the IT landscape over the next decade"
- "Providing competitive advantage through enhanced agility, scalability and operational efficiencies is top priority"
- "Purchasing IT assets turned out to be a mistake"
- "IT infrastructure ownership ties us into specific assets, undermining the ability to move with changing environments"
- "We already outsource over 25% of our IT infrastructure"
- "In 5 years' time, over 40% of our IT infrastructure will be outsourced"
- "Outsourcing is key to meet continually evolving compliance requirements, like King III in SA"

Summary

For a Regional IXP to be successful and sustainable it needs to be stable, reliable, and must be accessible by any network that fulfils the technical participation requirements. This means:

- Standard, open and unrestricted interconnection policies - Everybody plays by the same rules
- Always-on, reliable, open hosting facility and infrastructure - Nobody wants content that is not always available
- Reliable, high quality structured cabling systems and procedures - Physical interconnection in the same facility should take hours, not weeks
- Multiple peers and unrestricted market-place – Carriers, ISPs, CDNs, Banks, Enterprises – An exchange cannot grow without peering members
- Scalable space and infrastructure for content growth. Moving a successful exchange is a complex, and costly exercise. Always plan for growth

Effectively, the definition of a vendor neutral datacentre, clearly illustrating that vendor neutral facilities are a perfect fit for Regional IXP deployment.

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