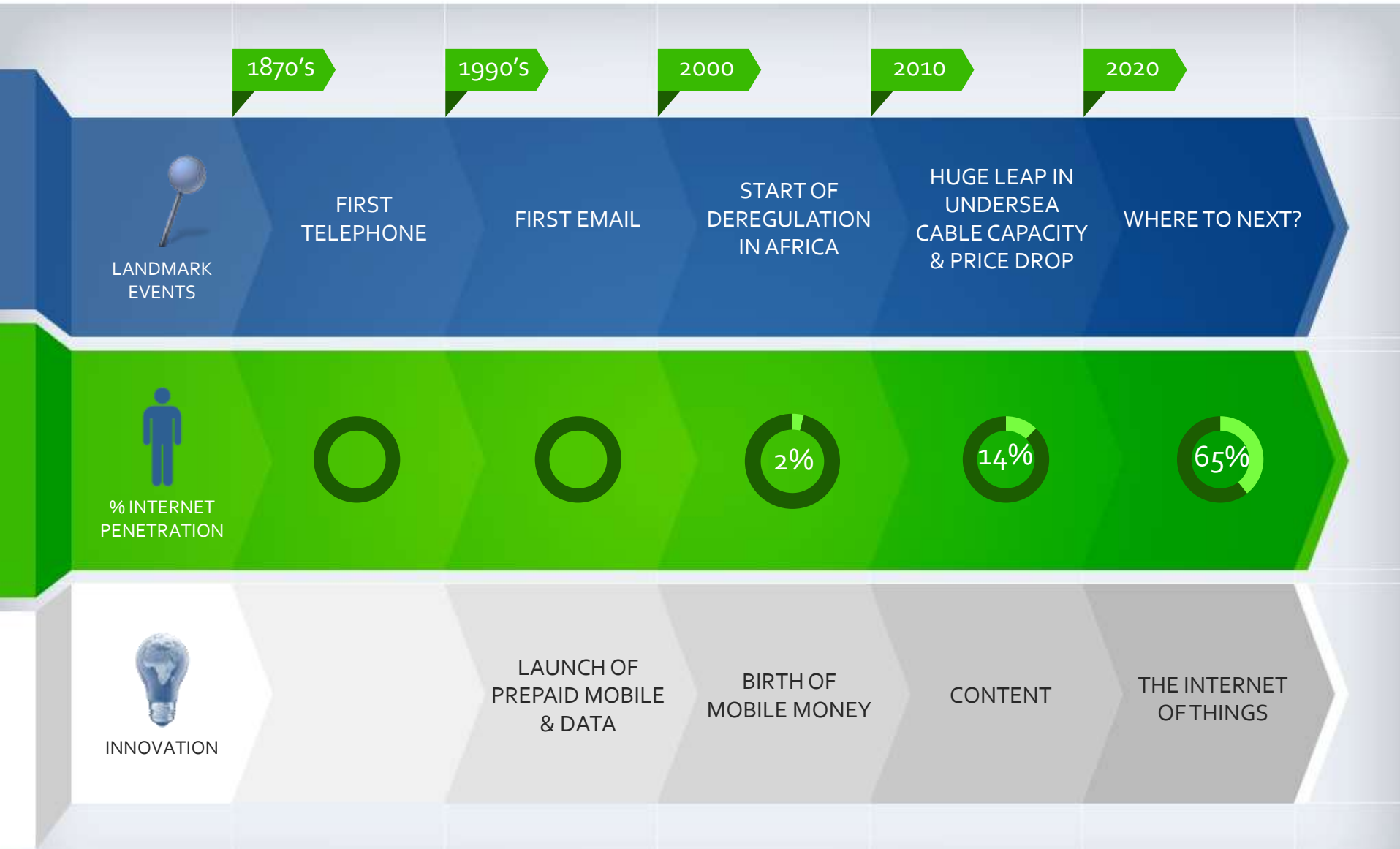


AFPIF: The Neutral Case Study

Andrew Owens



Africa's Internet Timeline



- Key to success has been liberalisation on Telco market
- SA Telco deregulated in 2008
- Dark Fibre introduced by DFA in 2009
- Several new Telco's launched 2009 – 2012
- Teraco first neutral facility in Africa established 2009
- ISP's begun to build own fibre networks
- Submarine cables (SAT3/SAFE 2005, SEACOM 2009, EASSY 2010)
- International bandwidth pricing drop (2008 – 2013): 2008 \$4000 per 1 Mbps vs today \$50.00 per 1Mbps
- Global Telco's & Content entering SA Google, Akamai, Microsoft, Cloudflare, BT, Level3, AT & T etc.)

SA Nuances driving Growth in Colocation

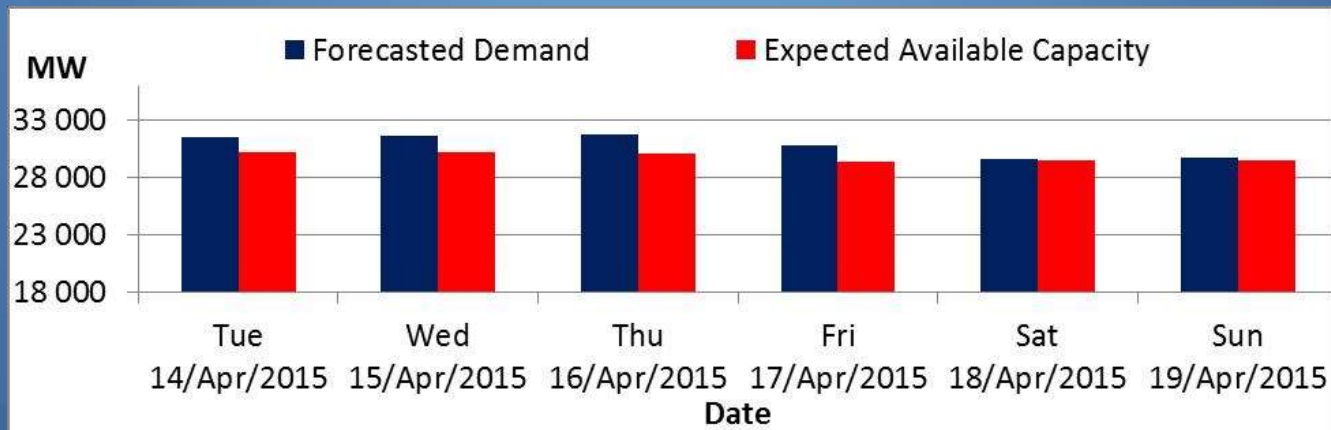
- Many enterprise DC's are beyond useful life due to power and cooling limitation
- IT loads increasing from 1.5kw per cab to 3kw plus
- Location is key! Access to available space, reliable power key for future growth
- Ever growing computing load = growing cooling load = growing electrical load
- Inability to access additional power from council/landlord
- Business need has evolved over time to a need for 99.999% resilient solution
- Cost of reinvestment massive (R/\$, skills, n+1 solution)
- Secondary power as important as primary electrical source. What is your back up to
Secondary power=more capital?
 - Eskom/load shedding (3 year reality)
 - Cable Theft/Transmission failure
 - Voltage/load fluctuations
- Logistics around diesel storage and securing deliveries in time of need



Power... Southern African Example

Power, Power Power.....

- Eskom – Services Southern Africa Region e.g. South Africa, Swaziland, Lesotho etc.
 - Ongoing Load Shedding – No leadership and 3x over their budget
 - Two years behind maintenance e.g. Silo collapsed November 2014
 - Medupi power station was meant to go live in 2013, only at full capacity in 2018 with 6x800MW Turbines – only just meet current demand;
 - Annual power Cost of power estimated more than CPI;
 - Reality is additional Council power only ready in 2019 which can only meet current demand



Already at 80% of power demand with underestimated annual growth

Load Forecasting

Projected Peak and Annual Energy Demand

	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23
% Gth in Basic Demand	5%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Basic Demand(MW)	1,354	1,435	1,521	1,613	1,709	1,812	1,921	2,036	2,158	2,288	2,425
VISION "2030" FL. SH											
ICT Cities				10	30	40	60	80	100	120	150
Lamu Port/Lapset				10	20	30	40	50	60	80	100
Railways					10	20	30	40	60	80	100
Mining Industries					20	40	60	70	80	90	100
Other Industries				10	20	40	60	80	100	120	150
Total Demand (MW)	1,354	1,435	1,521	1,643	1,809	1,982	2,171	2,356	2,558	2,778	3,025
Ann. Energy (GWh)	8,124	8,611	9,128	9,856	10,856	11,892	13,024	14,135	15,348	16,665	18,149

Av. Annual Load Growth = 8.3%

Power... Nigeria Example

- *Roadmap provides 40,000MW by 2020 of which 200,000MW is actually required to sustain growth*
- *Currently delivering 4,400MW which peaks at 4,517 MW with a short fall of over 1,482MW*
- *Alternative Energy is key to the survival*



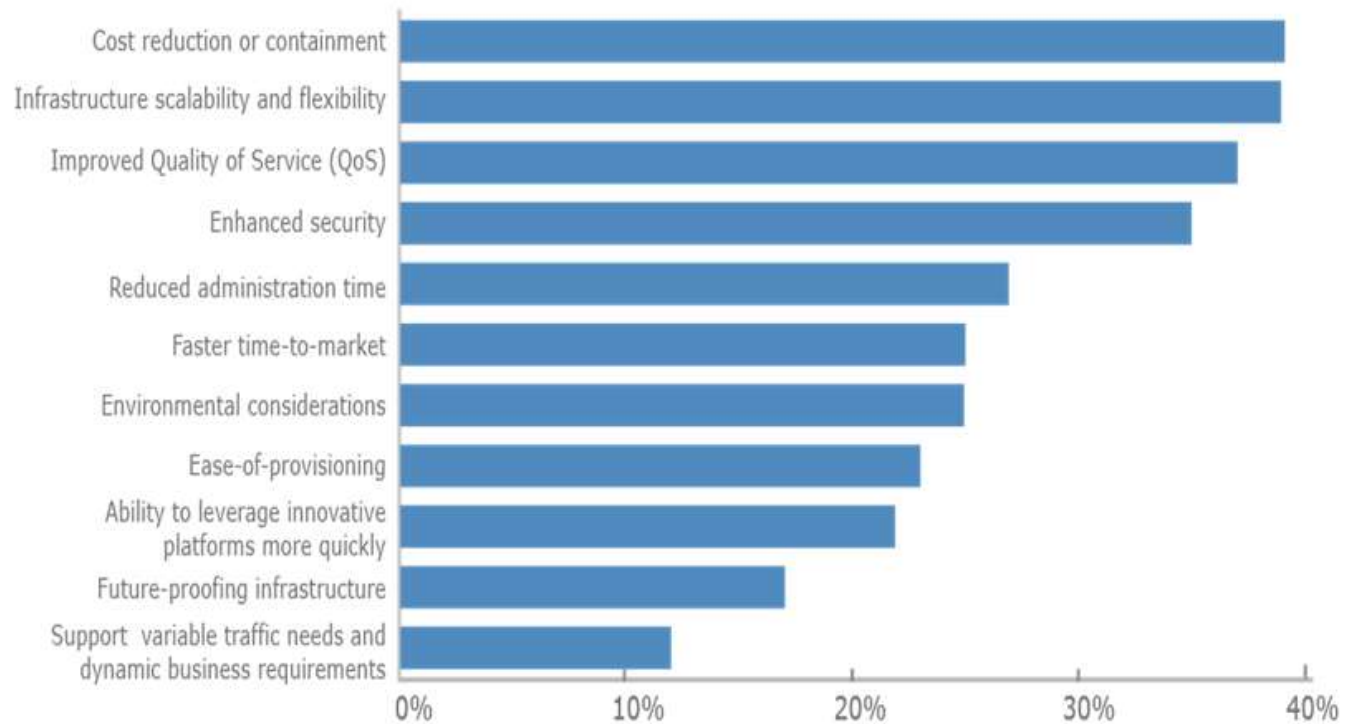
Photo 7: Power sub-station in Lagos



Photo 3: Epileptic power supply make Nigerian enterprises dependant on alternative electricity sources.

Benefits of Outsourcing IT Infrastructure

There are several benefits of outsourcing IT infrastructure using a utility-based model



CAPITAL COSTS

- Civil Structure, Substation, Transformers
- Power Plants, Cooling, VESDA and Security
- Operational and monitoring systems
 - Capacity requirements over the next 3-8 years
 - Power requirements – electrical and cooling kw/m²
 - Location – access to sufficient power
 - Location – access to multiple fibre rings
- Average “white space” costs convert at around R200k/m², which moves to R250k/m² for Tier III configuration (99.999% uptime) with upgradable power capacity

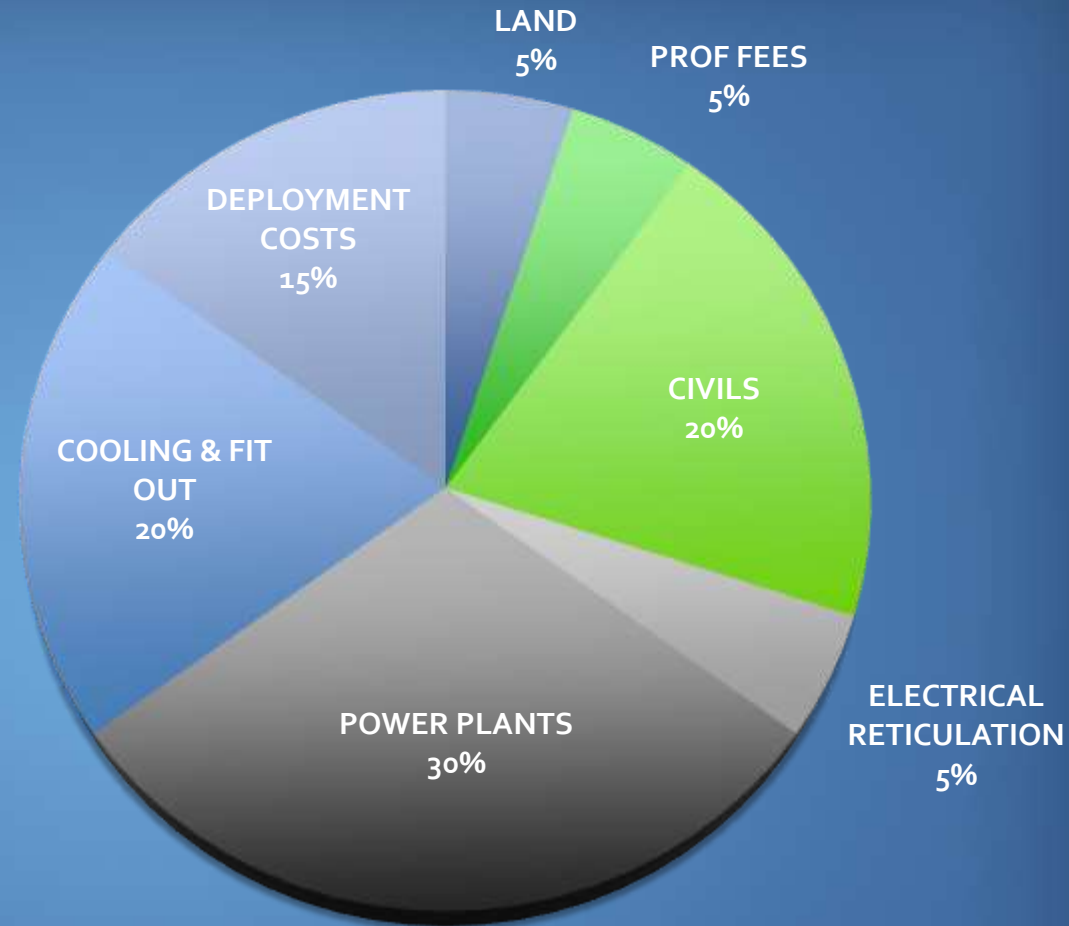
OPERATING COSTS

- Staffing and operational environment 24*7
- Network costs, primary and redundant fibre connections
- Facility rentals
- Security
- Annual facility and infrastructure maintenance
- Staff skills
- Power, Power, Power (100% increase over 5 years)
IT load power plus facilities power (cooling etc.)
A typical DC design 1.4, effective 1.7
Facilities consume between 1 and 2 units of power for each unit consumed by IT kit

The Facts on our latest JB build

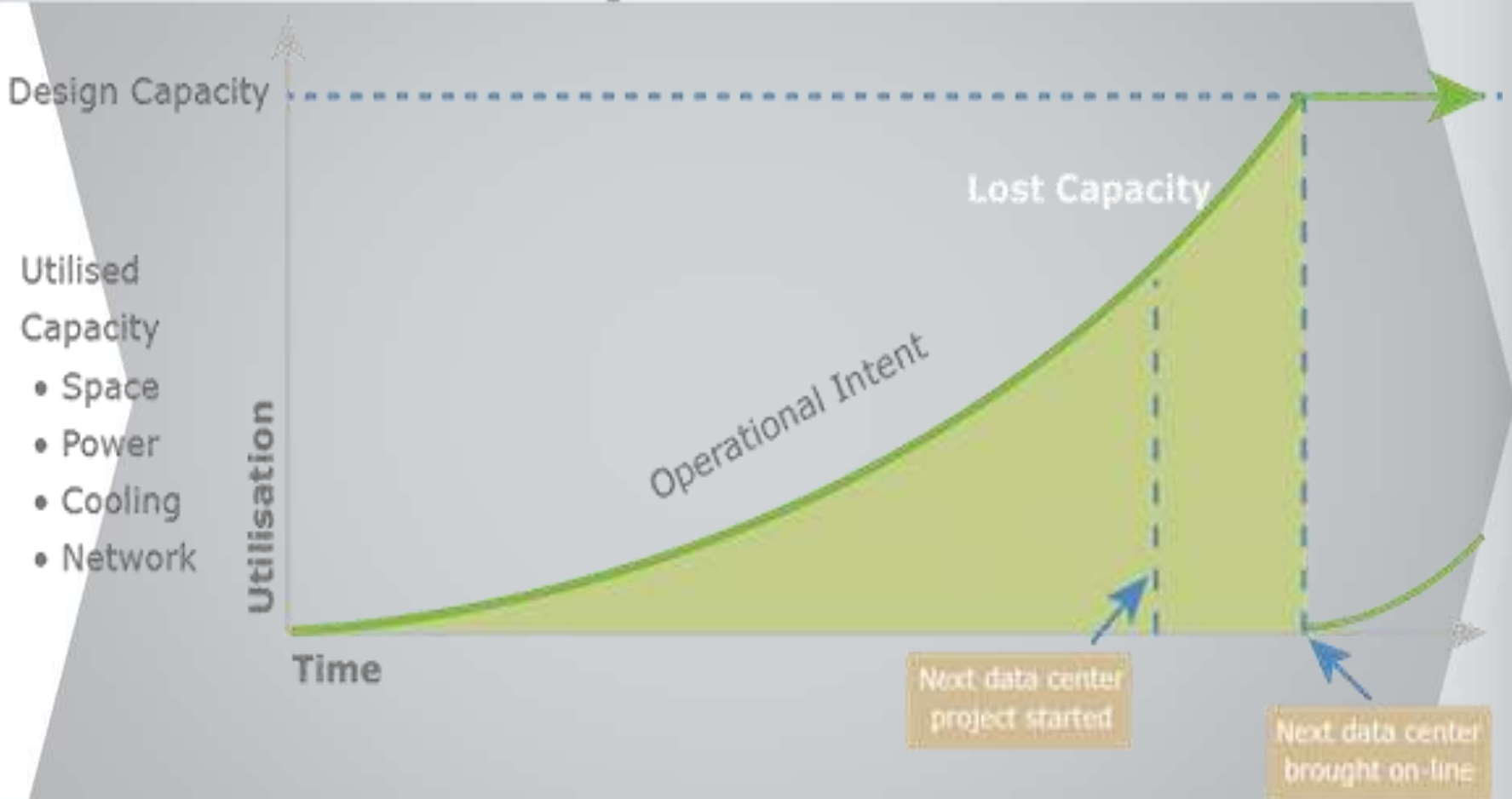
We are extending our existing facilities by 5 000m² and 10MW

- Total of 16 MW of power
30 000m² of structure
10 000m² operational space
4 100 cabinets
- Total 10 year investment in JB facility once all phases operational in the region of R1bn
- 16 MW of power equivalent to 30 000 households (actually a net saver to the grid)

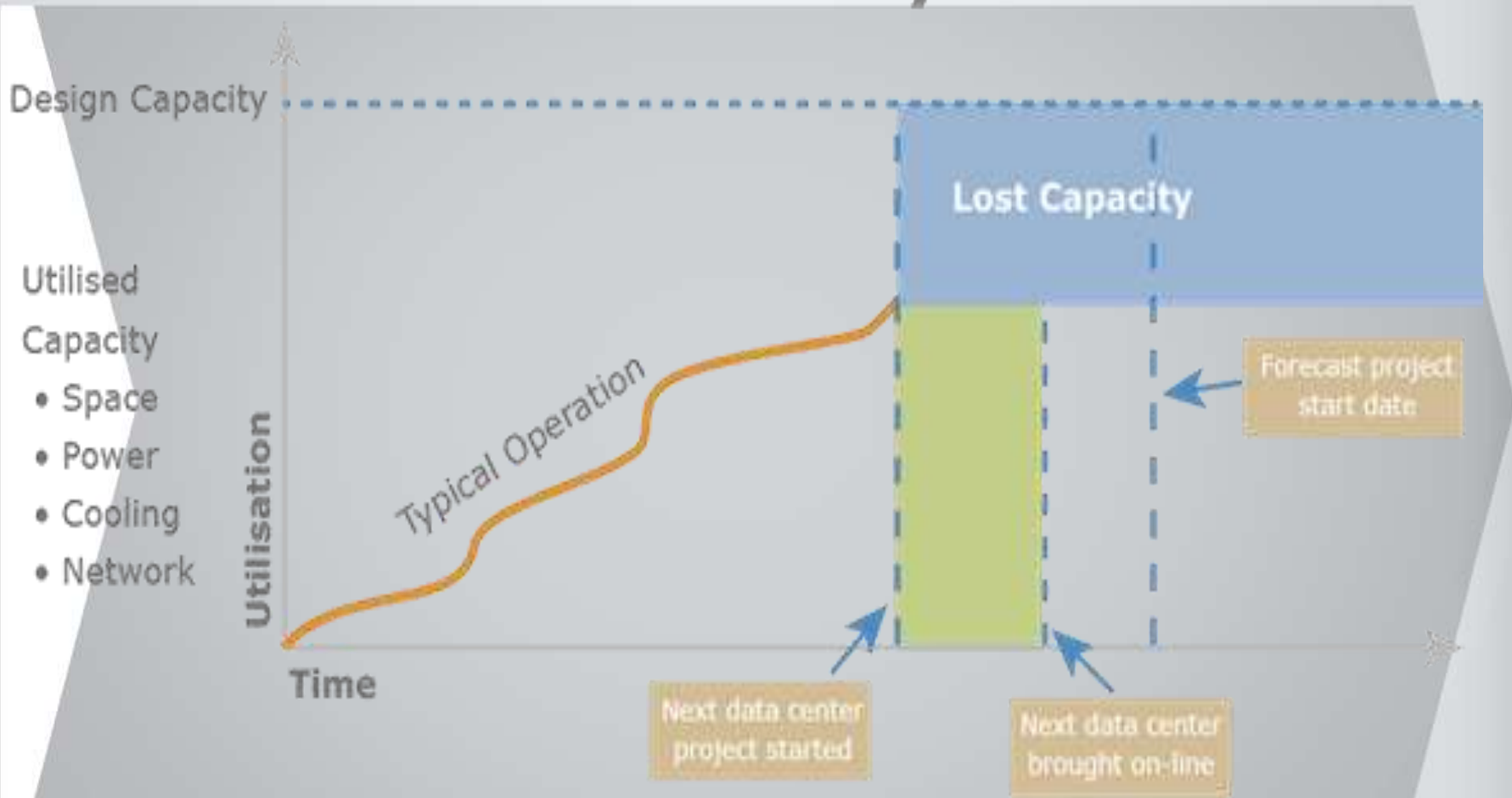


THE NEW BUILD BY %

Operational Intent

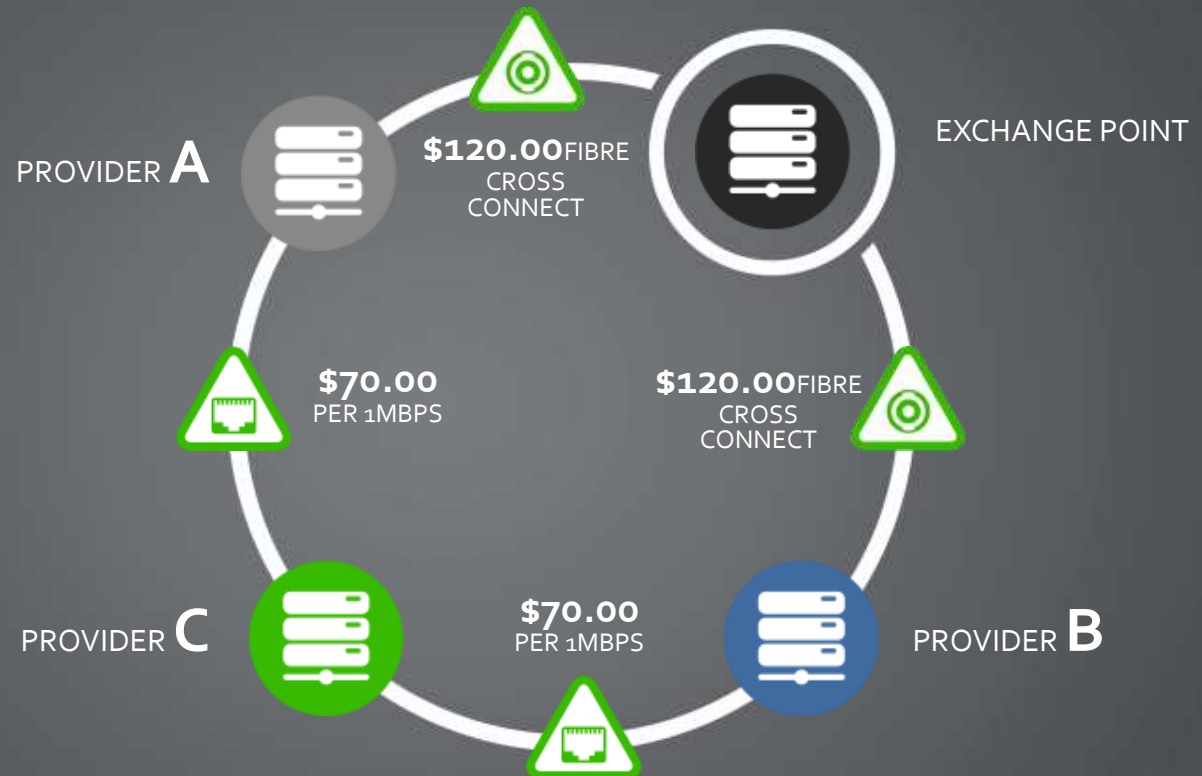


The Reality...

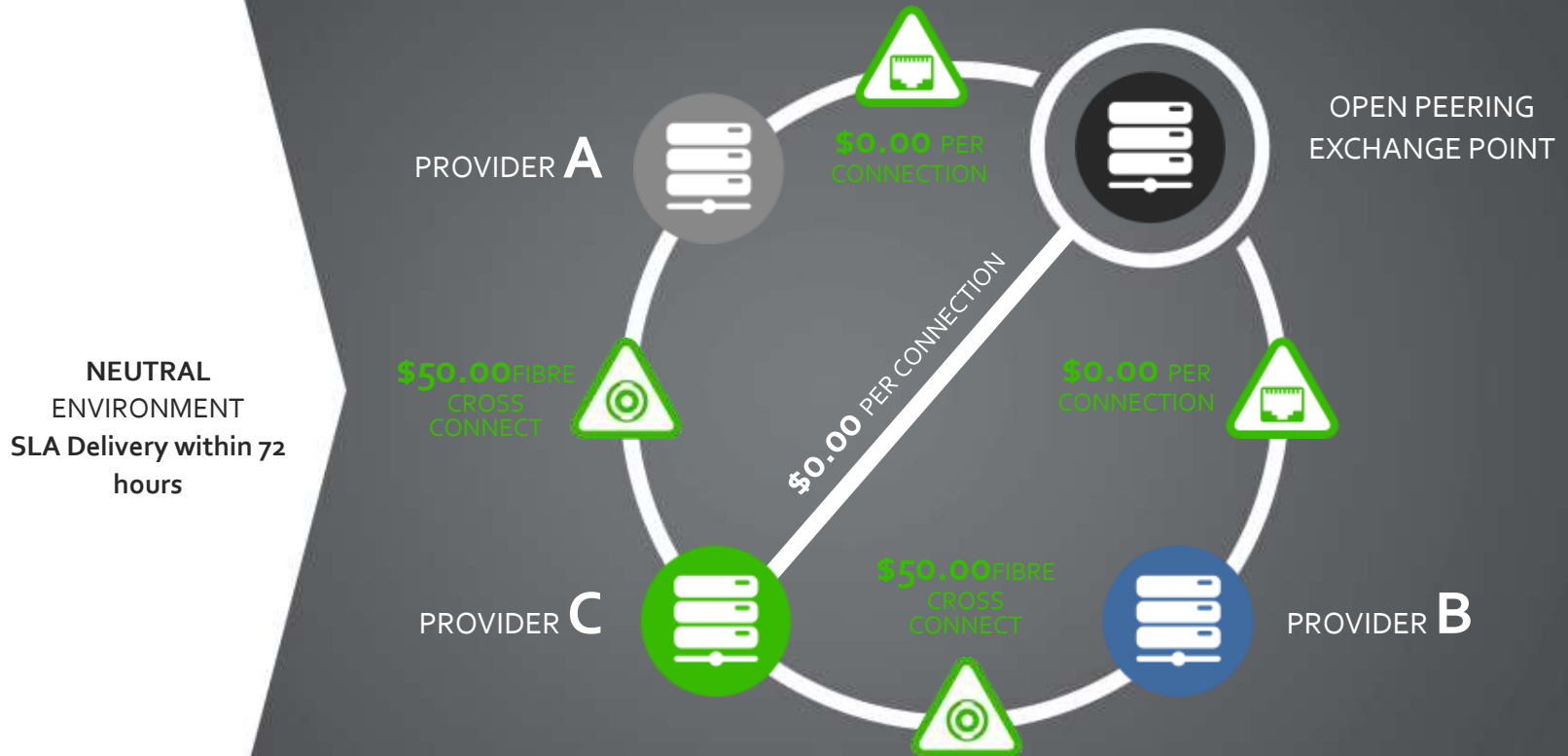


Carrier/ISP Facility – Transit Effect

CARRIER/ISP
ENVIRONMENT
Delivery Times
sometimes
questionable



Teraco's Secret Sauce: Open, Cost Effective Interconnection



Ecosystems key to Data Centre Growth!



Thank you – Questions?
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