Nominee: Rack Centre

Nomination title: Rack Centre Data Centre Capacity Doubling Project

What was the driving force behind the project – what business or technology challenge needed to be addressed?

• Rack Centre was established to meet the market opportunity in Nigeria and West Africa for data centre colocation. A market with a population of 180m, and 2 million Small and Medium Sized Businesses was projected to grow the demand for technology and therefore carrier neutral colocation services.

• A modular build approach was adopted commencing with 300m2 of white space, 119 racks and 350kW IT power capacity, with a build out plan in modular stages to 3000 racks and 8.5MW of IT power. Strict conditions precedent were met to trigger the commissioning of the next phase in the strategic journey; a doubling of white space and power capacity to 600m2, 255 racks and 750kW of IT power.

• As the first Tier III Design Certified facility in Sub Sahara Africa, the challenge was a complex build programme, encompassing civil works, power capacity expansion, module development and test in the UK, logistics intricacies of transportation from UK to the location in Lagos Nigeria, execute the project to strict cost, quality and time parameters, implement without experiencing one second of downtime, the hallmark of Rack Centre's reputation from live in October 2013. The average pPUE of 1.5 had to be maintained in the context of a harsh operating environment of over 90% humidity, and up to 38 degrees Celsius.

How did the solution address the challenges and were there any particularly innovative aspects that made it stand out?

• Modular build to market demand; BladeRoom modular innovation adopted to enable phased build out. Innovation in construction of the solid base, with critical anchor points in place to swiftly accept the additional module enabling rapid installation. Modules were prebuilt and fully tested in the UK and seamlessly integrated in situ in Lagos. Innovations in the module mount technology ensured minimal vibration avoiding downtime.

• Zero downtime; following successful module integration, the truly Tier III construction enabled all subsystems to be systemically disengaged, integrated, tested and reintegrated seamlessly, ensuring zero downtime in a live environment. The innovation in power modularity and control system enable live power coupling while maintaining 100% uptime.

■ **Time, Cost, Quality;** the programme was delivered ahead of defined timelines and switched on live two weeks ahead of schedule, 15% ahead of costs. Working in conjunction with Arup our Technology Partner, engineering quality of all components of the project was ensured and successfully brought to live.

■ **PUE Maintenance;** the additional module brought into play its own air optimiser, a mirror image of the original. Both optimisers had to be carefully synchronised using the sophisticated building management system to enable effective synchronization of cooling. The pPUE has continued to be maintained at an average of 1.5 keeping the record of the most efficient installation in Sub Sahara Africa. This has a significant impact on energy efficiency, sustainability and green power delivery.

What major challenges were faced during the project and how were they overcome?

■ **Logistics: Lagos Port to Site:** Transport of 5 modules, each 4m high, 4.7m wide and 16m long on 1.2m high truck beds to Site (50km away) through busy highways with bridges (Fly-overs and Pedestrian), Pot-holes, Overhead Electrical Transmission cables, Signage and traffic congestions. Mitigation: Different travel routes were surveyed, bridges/signage/overhead cables heights measured and best travel route selected. Appropriate authorities were notified and coordinated with for the transport. Police and Road safety corps escorts used. Power Transmission company liaised with to shut down transmission on overhead cable on the travel route.

■ **Vibrations during Module foundation build:** Vibrations during civil construction of extended foundations), during compaction will affect critical infrastructure and installed client devices in the existing facility. Mitigation: Static rollers/compactors were used and vibration sensors installed at sensitive positions to avoid adverse measure vibration impact on the existing facility.

■ **Maintaining existing Module foundation levels:** Maintaining existing Module foundation levels and base plate settings. Mitigation: Detailed specifications followed. Independent structural engineer tested existing foundation level with the newly constructed level. BladeRoom visited site to ascertain site readiness and structural levels before Modules was shipped.

■ **Complex Stakeholder Management across Multiple countries:** The needed to manage deliverables, communication, coordination and conflicts between different project stakeholders across multiple countries. Mitigation: An experienced Project Management team managed the complex multiple country stakeholders.

What tangible benefits has the organisation seen as a result of the project's implementation?

■ Modular scale to grow to the largest data centre capacity in Sub Sahara Africa with 3000 racks and 8.5MW of IT power.

- We launched the CloudonGround™, a Rack Centre innovation that provides the first and most comprehensive heterogeneous market place for Cloud Services, hosted and delivered 'on ground' within Rack Centre is expected to transform the 20 million strong Nigerian SME community. Business and Government save on foreign currency by hosting data locally.

- West Africa's carrier neutral data and Internet Exchange and content distribution network. The 'Edge' data centre for global content providers.

- Information Technology is now the fastest growing sector and the fastest growing contributor to GDP in Nigeria surpassing Oil and Gas.

- Following a successful certification assessment, we expect to receive the Uptime constructed facility award by March 2017.

- The government, in consultation with local data centre and telecom providers have launched the National Broadband roll out programme and this is aimed at bringing connectivity to the less fortunate communities and widening much further the availability of remote learning and access to online services.

Why nominee should win

- The project was successfully delivered in a live environment with 100% uptime maintained and with no impact to client services.

- The project was delivered to scope, within budget and ahead of schedule.

- The success of the project has proven that the infrastructure is scalable within a live environment, thus increasing clients' confidence in the technology deployed.

- The success of the project has contributed to the awareness for local data hosting with significant increase for Data Centre colocation services.

- The success of the project ensured the training of local resources with the required skillset to run the Data Centre facility.