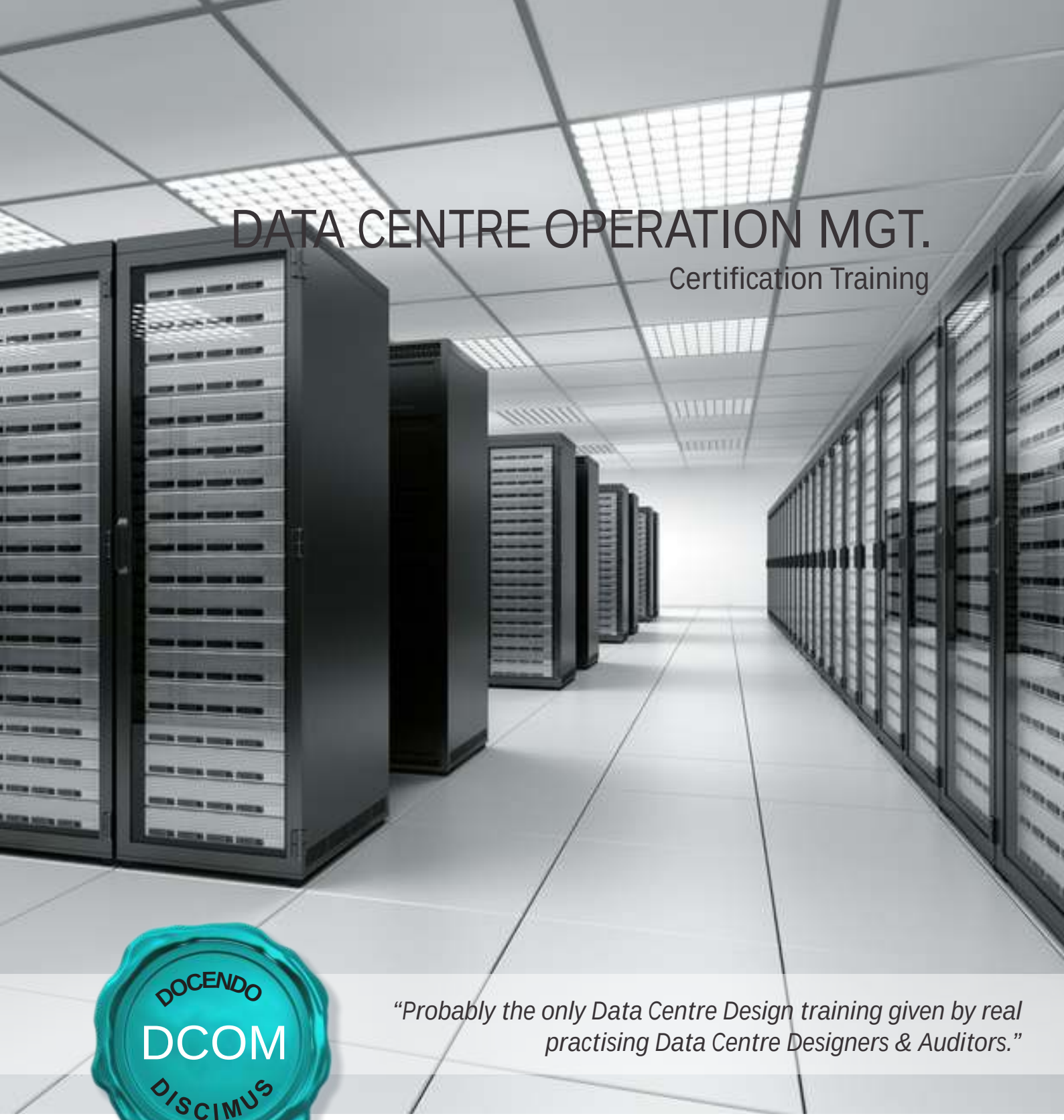


# DATA CENTRE OPERATION MGT.

## Certification Training

DOCENDO DCOM DISCIMUS

*"Probably the only Data Centre Design training given by real practising Data Centre Designers & Auditors."*

CAPITOLINE
DATA CENTRE DESIGN AND TRAINING

KiTS Technologies
*...your kitted ICT partner*

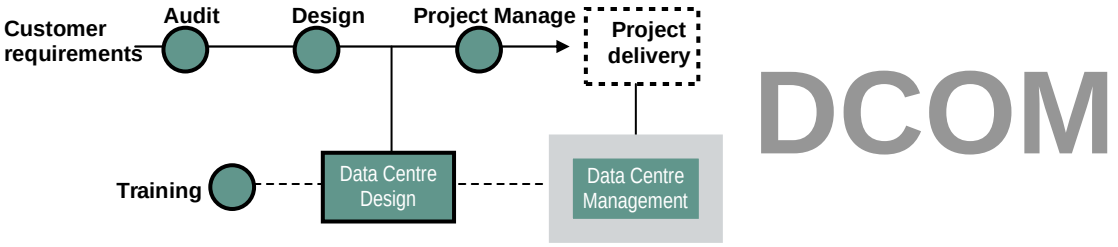
www.kits.ng

# Table of Content


| | |
|---|---|
| DCOM - Best practice for operation management of a data centre or computer room | page 3 |
| Synopsis | page 4 |
| Training benefits at a glance | page 5 |
| Course focus | page 6 |
| Who should attend | page 6 |
| Prerequisites | page 6 |
| Certification | page 7 |
| Learning outcomes | page 7 |
| Instructors | page 8 |
| Instructors profile | page 9 |
| Course Content | page 11 |
| Get certified | page 14 |
| Feedback from delegate | page 15 |

DCOM - Best practice for operation management of a data centre or computer room

Every two weeks, somewhere in the world, a major data centre suffers a major breakdown and loss of availability with an average downtime of 16 hours.




In nearly every case these breakdowns are avoidable with better management practices and procedures in place. In many cases a large investment had been made in redundant power and cooling systems to prevent failure but poor operational systems meant a failure was inevitable.

## What you will learn

- This course will teach you how to reduce the chances of your data centre becoming the next statistic.

- The course is derived from our practical experience as auditors for the Amsterdam Internet Exchange which is the largest internet exchange in the world, plus our experience of auditing large data centres and small computer rooms for customers both in the private and public sector around the World.
  Data centres now account for the same level of $CO^2$ emissions as the Airline industry.

- This course will teach you how to measure your data centre efficiency, identify where improvements can be made and reduce your $Co^2$ contribution. Reference is made to international standards throughout the course including;

  - TIA 942
  - BICSI 002
  - EU Code of Conduct on data centres
  - ISO 27000 series
  - The UpTime Institute
  - NFPA 1600
  - ASHRAE
  - BS 25777

## Synopsis

- Based on real project experience

  Learn from the mistakes of others. Based on our practical experience derived from auditing over 100 data centres across the world this 2-day course focuses on the best practices in the management and operation of data centres.

- What will you learn?

  This comprehensive course will show you how to manage your data centre to improve reliability and security and maximise energy efficiency.

  You will learn exactly what documentation, policies and procedures you should have in place to ensure the smooth running of your facility.

  Did you know that many of the most common and catastrophic data centre failures are caused by the lack of simple procedures? We show you the critical "must have" processes that help you to avoid the common failures. Many Data Centre Managers only experience a few facilities in their career. Our instructors see new facilities every month. If you have a question they will have the answer.

- Simply the best learning experience

  The course is packed with practical exercises to help you in understanding energy efficiency, capacity management and many other topics. If you want someone to just read the slides to you then try one of our competitors. If you want a real learning experience come to us.

  Our classes are interactive which means you can learn not only from the instructor's practical experience and real project examples but also from the experience of fellow delegates.

  The course is kept continuously up to date and explains in detail the relevance of US, UK, European and International standards and how to apply them. Our instructors are actively involved in the committees developing European data centre standards.

> "Simply excellent, this is a mandatory course for all people that work in a DC."
>
> - Luigi Paulon, AG Insurance.

> "A very useful course and I will recommend it for all my co-workers in the bank."
>
> - Mohammed Obaidat, Riyad Bank, KSA.

## Training benefits at a glance.

- Level 5 European Qualification. Also recognised by BICSI and the Chartered Institute of Building Services Engineers (CIBSE).
- BICSI continuing education credits (21)
- All the relevant standards are discussed including TIA 942, The Uptime Institute, The new EN50600 European Data Centre Standard, EU code of Conduct, BICSI 002 and more.
- Comprehensive information packed into 3 days. Don't be fooled by courses with more days there is no additional information just higher costs. (not just the fees but your employees time away from their work)
- Practical exercises are used to improve understanding. Delegates will learn how to calculate the size of electrical equipment and cooling systems and how to lay out the data centre and more.
- We partners wrote the first ever data centre training and have continually developed it to match best practice and the latest standards ever since.
- Delegates will gain a comprehensive understanding of the critical issues affecting design.
- Interactive discussion is encouraged.
- Examples and images from real data centres are used to illustrate points.
- Searchable electronic copy of the training materials to use for future reference.

> "The course is detailed and meet industry expectation."
>
> *- Olugbenga Olutimileyin Kolajo, MainOne Service Company*

# DCOM | Data Centre Operation Mgt.- DCOM

## Course focus

- Saving Energy
  Understanding the green agenda and metrics
  The EU Code of Conduct
  Building Management System and monitoring
  Improving rack and floor layout
  Power factor improvement
  3-phase load balancing

- Improving Reliability
  Understanding the power train
  Calculating load requirements
  Correct operational procedures and documentation

- Meeting the physical requirements of external audit standards

- Planning for Disaster Recover and other changes
  Business Continuity and DR standards
  Sizing the DR facility
  DC Consolidation
  Planning to move/upgrade

Also take a look at our 2-day Data Centre Operational Management course (DCOM). Do both;

DCD + DCOM =
Data Centre Expert

## Who should attend

- IT managers and directors
- Data centre managers and directors
- Facilities managers
- Engineers and consultants involved in data centre specifications

Contact us if you would like this course delivered at your premises.

*Min numbers apply

## Prerequisites

There are no formal prerequisites for the course but attendees must be familiar with general IT and engineering practices

> "This is the most relevant course I have ever attended. It is going to enhance my performance in my job."
>
> *- Adeogun Israel, Chevron Nigeria*

## Instructors

Matt and Barry are the founding partners of Capitoline, each with over 30 years' experience in the IT industry. They are both Chartered Engineers (CEng) with Engineering degrees (BSc(Hons)), Uptime Institute Accredited Tier Designers (ATD), Registered Communications Distribution Designers (RCDD) and Masters of Business Administration (MBA)

Since 2005 Matt and Barry have been exclusively involved in helping customers improve data centre designs and operational management systems. When they are not training they are actively involved in real data centre design and operations management projects.

More details of Matt and Barry's experience and qualifications can be found on the next page.

Capitoline is the only Data Centre training provider which offers you the benefit of this experience.

There is an exam at the end of the 2 days DCOM course and again at the end of the 3 days DCD course. A DCE (Data Centre Expert) certificate is provided to individuals passing both courses. Certificates are also provided for the DCD and DCOM course to those individuals who only attend one of them.

Dates for training are available on our website www.kittechnologies.com, we can also organise training by mutual agreement. The further in advance you are able to advise us then the easier it will be to accommodate your requirements.

> "Honestly speaking, for a novice and even somebody that is a bit informed, if you come for this course, you will gain a great deal."
>
> Onanuga Babafemi- Enterprise Bank Nigeria

# Instructor Profile

Name: Matt Flowerday
Job Title: Partner/Director
Qualifications: MBA BSc (Hons), C.Eng, MIET, DCE, DCDC, RCDD, RTPM

## Qualifications

- BSC (Hons) Electrical and Electronic Engineering
- MBA
- Chartered Electrical Engineer (IET)
- Capitoline DCE
- BICSI DCDC
- BICSI RCDD
- BICSI RTPM

## History

Matt is a founding partner of Capitoline LLP. Originally an electronic and electrical design engineer, Matt has over 29years experience in the IT industry. Working from the very start of the networking industry Matt has consistently worked in leading edge IT roles educating clients in new technologies and their implementation.

Matt was previously CEO and owner of IT infrastructure provider Trescray Ltd. for 18 years. During this time he was Involved in the design and oversight of ICT implementation in a broad range of projects from major co-location data centres to network infrastructures for stadia and corporations.

Matt is actively involved in auditing physical data centre infrastructures including power cooling, communications and locations and layouts etc. and is also involved in assessing and improving data centre.

## Experience

In addition to designing and auditing data centres Matt develops and delivers Capitoline's unique data centre design and operations training to clients across Europe, Africa, Middle East and Asia and has devised and delivered custom workshops for clients worldwide. Examples include;

- Auditing and design for data centre development for Gulf University of Science and Technology in Kuwait and 26 data centres for a mobile phone operator in Saudi Arabia.
- Development and delivery of bespoke training to Aegide, a data centre equipment manufacturer in the Netherlands and for collocation companies and various corporations.
- Development of AMS-IX standard and auditing of collocation Data Centres for the Amsterdam Internet Exchange
- Design and Oversight for Arsenal Emirates Stadium IT infrastructure to support multimedia IP services from HVTV to ticketing systems.
- Design and Oversight for Heathrow Terminal 5 fire systems fibre optic network backbone.

# Instructor Profile

| | |
|---|---|
| Name | Barry Elliott |
| Job Title | Partner |
| Qualifications | MBA, BSc(Hons), C.Eng, MIET, MCIBSE, DCE, RCDD |

## Qualifications

- BSC (Hons) Communications Eng.
- MBA
- UpTime Institute Accredited Tier Designer
- Chartered Electrical Engineer (IET)
- Chartered Building Services Engineer (CIBSE)
- Capitoline DCE
- BICSI RCDD

## History

With over 25 years' experience in the IT industry Barry has worked for BICC, Ferranti, Civil Aviation Authority, Brand-Rex, Novar plc and Honeywell. Barry was one of the founders of the Capitoline consultancy group.

Barry is one of the few engineers in Europe to be qualified as a chartered electrical engineer (IET) and chartered building services engineer (CIBSE). Barry specialises in IT infrastructure and has developed Europe's first qualification in the subject. He is also a past chairman of the cabling trade organisation, BICSI. Barry is the first CIBSE Low Carbon Consultant to apply this qualification the computer room environment and also one of the first TUI (UpTime Institute) Accredited Tier designers in Europe.

Barry wrote the very first data centre training course and Capitoline have continuously developed this to keep up with best practices and the latest data centre standards.

## Experience

- Design and project oversight for Abu Dhabi Judicial Department, Abu Dhabi data centre design, procurement assistance and technical supervision.
- Design and project oversight for Allianz Insurance, 60 Gracechurch St, London, relocation project. ICT and A/V infrastructure for 8 floor building plus data centre
- Design and project oversight for Cheshire County Council data centre. 800 m2 green field site data centre
- Design and project oversight for University of Kent data centre rebuild project. 200 m2 computer room
- Design and project oversight for Anglesey County Council computer room rebuild project
- Design and project oversight for American University of Sharjah new build project for two new data centres

## Learning outcomes

- Understand the importance of energy efficiency in data centres, how to measure it and how to improve it.
- Understand the basic of capacity management in a data centre and make simple calculations.
- Understand how poor layout and procedures lead to serious business continuity issues in a data centre.
- Understand the basics of successful data centre operational management including the documentation which should be in place and the policies and procedures to operate.

## Assessment Criteria

- Demonstrate through exercise an ability to calculate DCiE and PUE and identify how these efficiency figures can be improved upon.
- Calculate some examples of power and cooling capacity and identify adequacy.
- Analyse some examples of bad practice and identify how improvements can be made to reduce risk and increase energy efficiency.
- Obtain a mark of at least 60% in the multiple choice test of 40 questions

> "It has given me the knowledge to understand how proper planning can help increase the IT innovative and general knowledge in operational management of Data Centre"
>
> *- Babatunde Bodunde, Vodacom Nigeria*

| DAY 1 | | |
|---|---|---|
| Session | Contents | Class activities |
| Introduction<br><br>0900 - 0930 | • Introduction to the subject<br>• Why do data centres fail? A review of published data centre failure tables and Capitoline's own analysis of failure modes | |
| Reliability in the power system<br><br>0930 - 1030 | • The energy train from mains input to the rack, in block diagram form<br>• Essential block diagram items e.g. generators, UPS, batteries, PDU etc<br>• N, N+1 and 2N models<br>• Typical power problems and how to avoid them | |
| Reliability in the cooling system<br><br>0930 - 1030 | • Redundancy in the cooling system<br>• Understanding capacity limitations<br>• How long do you have when the cooling fails? | Exercise<br><br>How long until my room overheats? |
| Housekeeping<br>1115 - 1130 | • Keeping it clean and safe a few simple rules | |
| Saving Energy<br><br>1130 - 1230 | • Energy Metrics including PUE and DCiE<br>• EU Code of Conduct & Best Practice<br>• Power and CO2 relationships | |
| The role of BMS and DICM<br><br>1330 - 1430 | • What are BMS and DCIM?<br>• What should be monitored and when<br>• EU Code of conduct requirements<br>• Bringing it all together with a Control Room | Exercise<br><br>Calculate DCiE, PUE and UPS efficiency? |
| Improving rack and floor layout<br><br>1430 - 1545 | • Ideal rack layouts and hot aisle/cold aisle models<br>• Optimising equipment layout within a rack<br>• Cabling: how not to make a mess<br>• Correcting layout to improve energy efficiency | Exercise<br><br>What's wrong? Faults in real examples? |
| Improving power efficiency<br><br>1545 - 1700 | • Amps, volts, kW, kVA and power factor<br>• What is 3 Phase?<br>• Balancing your phases!<br>• How to make energy savings in the power system.<br>• Why does power factor matter? | Exercise<br><br>Is this 3 phase load balanced? |

"The training is superb, educative and highly impacting. The training is explicit and improves ones knowledge on general Data Centre and infrastructure."

*- Akin Ayeni, Zenith Bank*

| DAY 2 | | |
|---|---|---|
| Session | Contents | Class activities |
| Correct operational procedures and documentation<br><br>0900 -1030 | • Data Centre Strategy<br>Formulating a data centre strategy<br><br>• Customer Management<br>Service Level Agreements<br>What is needed to manage customers both external and internal ?<br><br>• Security Management<br>TIA 942, EN50600, BICSI 002<br>British Government Policy framework<br>Payment Card Industry security standard<br>Access control, CCTV<br>Visitor and security policy | |
| 1030 -1230 | • Operations Management<br>Configuration<br>Testing and Maintenance<br>Monitoring<br>Health and Safety<br><br>• Incident Management<br>Alarms<br>Actions<br><br>• Energy Management<br>Procedures to improve energy efficiency | |
| 1330 -1430 | • Capacity Management<br>Understanding limits and staying within them<br>Planning for future needs<br><br>• Availability Management<br>Combining good design and procedures to ensure business continuity<br>Disaster Recovery Planning<br>External & Internal Risks<br>ISO 27000 series<br>NFPA 1600 | |
| 1430 -1500 | • Lifecycle Management<br>Timely renewal of infrastructure<br><br>• Change Management<br>How to make sure that changes and upgrades do not cause problems<br><br>• Supplier Management<br>• Equipment and Materials Management<br>• Cost Management | |
| Summary, Final exam and feedback<br><br>1500 -1700 | | |

## Get Certified

- The course includes exercises and a final multiple online choice examination
- All delegates attending the training and successfully completing practical exercises and passing the exam are awarded a DCOM certificate
- All DCOM certified individuals are provided with the DCOM – Data Centre Operation logo in recognition of their achievement
- Successful delegates gets BICSI continuing education credit (21)
- All delegates who attend both DCD and DCOM and pass the exams are awarded a Data Centre Expert (DCE) certificate and logo.
- CIBSE continuing professional development certificate

CIBSE The Chartered Institution of Building Services Engineers

CIBSE CPD - Continuing Professional Development

European Qualifications Framework

Capitoline's DCE is a European Level 5 qualification

Bicsi CONTINUING EDUCATION CREDIT PROVIDER

21 BICSI CECs awarded for the DCD course

> "The course is a must for IT Companies and Banks"
>
> Ayomwam G.A-Mobil Producing Nigeria

## Feedback from delegates

"I have got a very good overview of Data Centre, Very good information on power and avoiding failures in Data Centres and different types of cooling systems." - *Okon Daniel, NAFDAC*

"The training is superb, educative and highly impacting. The training is explicit and improves ones knowledge on general Data Centre and infrastructure."
- *Akin Ayeni, Zenith Bank*

"The training is excellent, innovative and commendable."
- *Aina S.B, Southfield Communications*

"The training has exposed me to some of the international standards that must be considered in the design and implementation of Data Centre."
- *Ijei Samuel, Inlaks Computer*

"An interesting course with international standard" - *Eboh Paul, CITS, UNILAG*

"The instructor is well grounded and his lectures will surely open your eyes on Data Centre Management." - *Obinna Egwuonwu, Fidelity Bank*

"An excellent course that gives a detailed and knowledge of Data Centre set-up."
- *Olanrewaju Shorunke, Shell Nigeria Exploration Company*

"It has given me the knowledge to understand how proper planning can help increase the IT innovative and general knowledge in operational management." of Data Centre - *Babatunde Bodunde, Vodacom Nigeria*

"This is the most relevant course I have ever attended. It is going to enhance my performance in my job." - *Adeogun Israel, Chevron Nigeria*

## Market leader in training & auditing

- We developed the AMS-IX data centre business continuity standard for the Amsterdam Internet exchange, the largest internet exchange in the world and we are the data centre design consultants for Cisco Middle East and Africa.
- We are contributing authors to the EU Standard EN 50600 data centre standard.
- We are the data centre training and audit partners to the United Nations Logistics organisation.

> "We are the undisputed market leader in data centre auditing with over 150 data centre audits completed covering over 100,000 m2 of floor space"

***AMS-IX Official auditor***

# Often a seemingly complex ICT challenge...

has a very simple solution; working with KITS will help you find the easiest approach (technology & budget) to solve your challenges.

**CONNECTIVITY**

- Fiber Connectivity
- Wireless Connectivity
- Satellite Connectivity
- VPN - Branch Office

**COMMUNICATION**

- PABX | IP-PABX
- Video Conferencing
- TV Broadcasting
- Marine Communication

**SECURITY**

- CCTV | IP CCTV
- Access Control
- UTM | Firewall
- Content Filtering

**INFRASTRUCTURE**

- Data Centre
- Fiber Optics Project
- Structured Cabling
- Computer Rooms

KiTS Technologies
...your kitted ICT partner

www.kits.ng
info@kits.ng

CAPITOLINE
DATA CENTRE DESIGN AND TRAINING

KiTS
Technologies
...your kitted ICT partner

www.kits.ng