TELECOMS TRAINING 2017

- School of Telecoms Management
- School of Advanced Communications Technologies
- Distance Learning
- Customised in-house training

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ABOUT TELECOMS ACADEMY

Why choose Telecoms Academy?

Telecoms markets the world over are facing huge challenges with continuously shifting consumer trends and demands, evolving business models, increased competition, new market entrants and new network technologies. This period of rapid change offers both threats and opportunities to both today’s Telco operators and those organisations serving them.

Some key themes emerging for in the next few years:

1. New ICT and Digital Services such as IoT, M2M, Cloud services, unified communications and virtualisation offer great opportunities to deliver true digital transformation to meet consumers’ increasingly sophisticated needs.

2. Operators face tough market conditions resulting from increased competition from new market entrants and uncertain economic conditions.

3. Increased competition will have an adverse effect on pricing and will need innovative approach to pricing strategies for these new services.

4. New products and services demanded by consumers will need to be developed either via partnerships or in-house as Telco’s move towards becoming full Communications Service Providers (CSP).

5. The necessary skills are missing in most organisations – in order benefit fully, they need to invest in building the key ICT skills within their organisation in order to give them a real competitive advantage.

Telecoms Academy has the knowledge and experience to deliver the skills and competencies your organisation needs to succeed in the rapidly evolving market whether you’re a traditional Telco, new market entrant or organisation providing equipment or services to the ecosystem.

Our training portfolio

Research & Analysis from Ovum
We benefit from the unrivalled analysis of the market provided by the Ovum research team, this vital research is used to enhance and inform our training programmes and ensure that our delegates benefit from the latest thinking.

This combined with our experience training the management and technical teams from operators across the region ensures that we are best placed to help you build the skills and competencies within your organisation so you can address the emerging market trends, reach your business goals and achieve a real competitive advantage.

Essential training programmes to deliver competitive advantage
We have developed a diverse portfolio that develops the key competencies required to make the right choices, develop the right solutions, and to maximise your organisation’s position in the market.

I hope you find these programmes of interest, please contact us to discuss how we can help build the skills you and your organisation needs to succeed in the rapidly evolving communications market.

Tony Wakefield
Training Director, Telecoms Academy
KNect365 TMT

School of Telecoms Management
The School of Telecoms Management delivers best in class business programmes specifically aimed at addressing the issues central to the telecoms industry.

Our courses range from the intensive Telecoms Management to a range of shorter courses covering the commercial, business and management issues key to the industry.

School of Advanced Communications Technologies
The School of Advanced Communications Technology delivers a wide range of short instructor led programmes covering the key technologies across the modern telecoms network. Programmes range from short technology overviews to intensive certified engineer training programmes.

Distance Learning
Designed to rapidly build your competence, knowledge and confidence over a range of different areas, ensuring you gain maximum value. Our portfolio of Distance Learning programmes include University Accredited Diploma programmes and short intensive 3 month programmes.

Competency Services and Development
Training Consultancy Development Services that provide support for Telecoms Operators, including Assessment and Testing; Curriculum Development; Training Needs Analysis; Train the Trainer Initiatives as well as recorded learning modules.
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One of our major strengths is our dedicated team of highly experienced trainers—each of whom train across a wide range of programmes. Their versatility means they can deliver training at all levels and can make complex technology issues accessible to non-technical staff as well as deliver in-depth engineering training. Our business trainers are specialists in their field, enabling them to address the key issues affecting the telecoms industry today. All our training staff deliver training across a wide range of programmes.

The trainer was one of the most knowledgeable people I’ve met.

AA, MOBILY

Wealth of experience is evident from instructor’s knowledge and presentations.

AD, ETISALAT

### Our Senior Programme Directors

**Tony Wakefield**  
**Training Director**  
Tony started his career in telecoms in 1981 with British Telecom, and now heads up the Telecoms Academy. He trains across a wide range of subjects, including in-depth engineering training, and a Programme Director on the Telecoms Mini MBA and more advanced programmes. Tony has a degree in Electronics and Physics from Loughborough University, and is a full Member of the Institute of Leadership and Management.

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**Grant Vernon**  
**Senior Telecommunications Trainer**  
Grant specialises in finance, leadership and management competencies within the telco sector; delivering training as part of the management development programmes for operators and vendors worldwide. Grant is a fully qualified accountant, now a full-time facilitator, professional speaker and trainer and has delivered training to some of the biggest names in the Industry. He has been delivering training for over ten years, with excellent feedback received from delegates worldwide.

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**Alan Mayne**  
**Training Manager**  
Alan has a wealth of experience in telecommunications and IT—having previously worked for BT, DEC, and Ericsson, where he had responsibility for supporting the GSM Network roll-out for a UK operator. Alan was also Training Manager for the Ericsson UK training centre, moving to the Telecoms Academy in 2001. He presents on a range of technical and business courses, and has full responsibility for the Telecoms Mini MBA programmes.

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**Dave McNally**  
**Senior Telecommunications Trainer**  
Having begun his career as a fully qualified Communications Officer and Senior Engineer with Cable and Wireless, Dave now oversees the Telecoms Academy’s suite of advanced technology programmes which includes LTE and WiMAX. His huge experience and knowledge, as well as his flexible and dynamic presentation skills means he is also a very capable Programme Director on a range of telecoms management programmes.

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**Paul Kilby**  
**Senior Telecommunications Trainer**  
Paul offers over 25 years experience in Telecoms and IT. He has extensive management, regulatory and project experience, holding a BEng honours degree and an MBA (Cranfield). Paul effectively conveys technical and business concepts to his delegates, whatever their background. Specialising in Modern Business and Telecoms Networks, he has special technical interests within 3/4G Air interface and Infrastructure, SS7 over IP and HSPA.

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**Grant Vernon**  
**Senior Telecommunications Trainer**  
Grant specialises in finance, leadership and management competencies within the telco sector; delivering training as part of the management development programmes for operators and vendors worldwide. Grant is a fully qualified accountant, now a full-time facilitator, professional speaker and trainer and has delivered training to some of the biggest names in the Industry. He has been delivering training for over ten years, with excellent feedback received from delegates worldwide.

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**Paul O’Leary**  
**Senior Telecommunications Trainer**  
Paul is a highly experienced and professionally qualified Training and Development professional. His expertise lies in an ability to quickly assimilate, present and articulate the capabilities of technology into the business benefits to be gained by customers. This calls for an agile and flexible approach in understanding both the technologies and the customer’s requirements. The experience gained throughout his career, working for BT, Rockwell and Cisco Systems, enables him to enhance his training delivery with many anecdotes and real life examples which add real credence and gravitas, thereby enriching the learning experience for his delegates.

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**Faculty trainers**

We have over 40 specialist trainers, each an expert in their field and experienced in the telecoms, IT or finance industries. They bring a wealth of expertise and capability to our training programmes in specialisations that include technology and engineering, telecoms marketing, commercial and telecoms regulation, leadership, management, and finance. We boast a number of PHDs and MBAs, and fully qualified economists.

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**Ovum Analysts**

The training team is backed by a team of analysts from the dedicated Ovum Research team. We work closely with senior analysts to ensure (appropriate) programmes reflect the current state of the market and current industry priorities—or reflect the development status of any particular technology. Senior analysts often take sessions during our management programmes.
CUSTOMISED IN-HOUSE TRAINING

THE TELECOMS ACADEMY HAS WORKED WITH COUNTLESS COMPANIES TO DELIVER BESPOKE IN-HOUSE TRAINING PROGRAMMES.

An in-house training programme from Telecoms Academy ensures you get a course that precisely matches your organisation’s needs, presented by a first-rate training organisation, with access to all the latest industry information and news, and at a location and time of your choice. Choose one of our highly regarded existing courses outlined in this brochure, or work with one of our experienced training professionals to produce a bespoke course designed specifically for your business.

**Why Choose In-house Training From the Telecoms Academy?**

- Dedicated account managers—who’ll work with you throughout the process and be your first point of contact
- Expert trainers—our team of highly experienced versatile trainers have the knowledge and experience to deliver a highly valuable learning experience
- Fully customisable course content—work with us to develop the training course to match the exact needs of your business and your staff. The modular course structure allows for fast customisation when required
- Unique industry research—where appropriate, our courses include market analysis from Ovum’s team of industry leading researchers and analysts
- The most efficient way to train your staff—at the time and location of your choice to ensure minimal disruption to your organisation
- Flexible delivery options—with a range of instructor led, distance learning and virtual classroom formats available you can build a blended solution to maximise training effectiveness
- Pace enabled training—all our in-house training courses are pace enabled ensuring that each contains the following elements preparation; application; consolidation; and an outstanding end-to-end training experience
- Competency Development Journal (CDJ)—the competency development journal can be used to ensure you consolidate the learning and apply it directly to your own organisation and role. The CDJ is an on-line programme of additional learning, consolidation and reflection that lasts for
- 8 weeks, covering the five major competency areas

**We Train Some of the Biggest Companies in the Telecoms Industry**

- Aepona
- Airtel
- Alcatel
- Arquiva
- Aspire
- British Telecom
- Columbus
- Cosmote
- Dialog
- Emtel
- Ericsson
- Etisalat
- ETSI
- Emtel
- Faroe Telecom
- Fastlink
- Geocell
- Globitel
- Hewlett-Packard
- ING Bank
- Intel
- Intracom ITS
- INWI
- Jawwal
- KPMG
- Microsoft
- Mobiltel
- Mobily
- Morgan Stanley
- Motorola
- MTN
- NEC
- Nokia Siemens Networks
- Nortel
- Optimus
- Oracle
- Oooredoo
- PalmOne
- Redlink
- Saudi Telecom
- Telecoms Austria
- Vodafone

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I really enjoyed the interactive approach employed by the trainer.

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COMPETENCY SERVICES AND DEVELOPMENT

Competency Services and Development
Our team of highly experienced training professionals work with you to understand your organisations business goals and objectives and the skills you need to develop within your organisation to achieve them.

We are experienced in all aspects of skills assessment, programme development and delivery, (through variety innovative, engaging delivery methods) and post course competency assessment. Much of our activity is centred on supporting the training organisation of large multi-nationals. Activities vary widely but we would include the following services as our core training services:

- Curriculum development—consulting and development of structure
- Programme development—wide range of topic areas
- Programme delivery—wide range of delivery methods
- Business simulations
- Pre and post course assessment and testing
- Train the trainer—both subject matter and competency to deliver training
- Programme evaluation
- Analyst key-note sessions
- Live on Web sessions
- Online learning modules
- Internal marketing of training—consulting and development of marketing material

ASSESSMENT CENTRES

A typical assessment centre includes specific tests and exercises designed to assess the candidate’s capabilities against a specified set of competencies for the purposes of restructuring, recruitment or selection. The defined competency set may be pre-existing, or can be developed to meet specific requirements. Different types of competencies can then be assessed using tools and inventories that are underpinned by rigorous academic research, or using exercises that simulate specific aspects of the work environment.

The process provides an opportunity for candidates to demonstrate their suitability for a role in different ways and to build a realistic view of what the employer expects from them. Assessment centres offer a flexible assessment technique that can be tailored to specific role requirements. The duration and format will vary depending on the capabilities being assessed, as well as other specific factors that need to be assessed for the role being filled.

- Highly focused and in-depth HRD support from the industry experts.
- Offers a seamless and practical end-to-end solution
- Enables companies to assess their current talent, recruit best fit, or fast-track their transformation through redeployment or restructuring
- Can be used to redefine business culture - by focusing the organisation on faster development and response times, greater customer intimacy, and clarity in the development of best practice and innovative thinking
- Benefits could include a leaner and more agile organisational structure; a faster response time to competitors’ offers; greater customer centricity; reduced time-to-market; enhanced performance management and monetisation

Exercises typically run from ½ day to 2 days and can be administered over a series of sessions rather than in one sitting. On-site and on-line options are available, and a combination would often give the best solution.
PRE-RECORDED TRAINING MODULES

AVAILABLE TO VIEW AT A TIME CONVENIENT TO YOU TO MINIMISE DISRUPTION TO THE WORKING DAY.

Drawing on Telecoms Academy’s vast experience in delivering training solutions to the global telecoms ecosystem, these bite size learning modules cover the key technology and business issues facing today’s telecoms industry.

What are the Training Modules?
Our series of pre-recorded learning modules offer an ideal way to build knowledge and competencies with large numbers of employees at your organisation in an efficient and unobtrusive way.

The pre-recorded training modules are a series of short, intense online training sessions lasting between 5-30 minutes each. Each well-defined module will take delegates through the topic in a clear and concise but thorough manor to ensure learning is optimised. Delegates are free to pause, rewind and re-watch the module as they wish to really engrain learning.

Each module can be loaded onto your organisation’s internal systems and be made available delegates for the length of your licence giving a resource they can use and reply on over the long term.

Technology and Business Topics Covered
Topics available cover major topics key to those working in the telecoms industry from introductory sessions designed for those new to the industry to individual technology overviews to exploring business issues. If our standard modules don’t meet your exact needs our you’d like to include some information specific to your organisation.

RESEARCH AND ANALYSIS FROM OVUM

Ovum is a leading global technology research and advisory firm. Through its 180 analysts worldwide it offers expert analysis and strategic insight across the IT, telecoms, and media industries. Founded in 1985, Ovum has one of the most experienced analyst teams in the industry and is a respected source of guidance for technology business leaders, CIOs, vendors, service providers, and regulators looking for comprehensive, accurate and insightful market data, research and consulting. With 23 offices across six continents, Ovum offers a truly global perspective on technology and media markets and provides thousands of clients with insight including workflow tools, forecasts, surveys, market assessments, technology audits and opinion. In 2012, Ovum was jointly named Global Analyst Firm of the Year by the IIAR. For more information visit www.ovum.com.
DISTANCE LEARNING

WHY STUDY DISTANCE LEARNING

Finding the time to attend courses of any kind can be very difficult and plans are often put aside indefinitely as we try to build the competencies needed to carry out our jobs in an ad-hoc and often inefficient way. Assessing training and choosing the right course to attend in order to maximise training effectiveness can be difficult—often leading to wasted effort and a missed opportunity.

The suite of comprehensive intensive 3 month and University Accredited 9 month Distance Learning programmes offered by the Informa Telecoms Academy provides the opportunity to rapidly build your competencies over a range of different areas, ensuring you gain maximum value. Interactive resources and study support available to keep you engaged. You can also fit your studies around your current job role, deciding where and when you want to study.

Key benefits
• The courses are examined and qualifications awarded by the biggest global provider of research, intelligence, events and training to the telecoms industry.
• Each course has been developed specifically by the telecoms academy with input from the ovum research team to ensure the courseware is relevant, stimulating and engaging.
• You decide where and when to study and then set your own pace.
• Through our mix of learning delivery methods and online support, we keep you fully engaged and progressing to ensure you meet the required standard.
• You are assigned a dedicated course tutor to help and advise throughout your studies—all tutors have a wealth of real-life industry experience and are now dedicated training professionals.

Enhanced learning
We have put together a range of enhanced learning methods to ensure that you make the most of you programme. Enrol in one of these programmes and benefit from:

Managed learning system
This has been developed in order to offer convenient and flexible access to resources such as course material, frequently asked questions, practice examinations and tutor support.

Fully illustrated courseware
Courseware is a combination of solid courseware, delivered in context and full regard to current trends, data and analysis from the ovum research team. Self-assessment tests in preparation for exams are also included.

Tutorials and webinars in our virtual classroom
The virtual classroom is our tool for delivering online training to our students, providing you with a dynamic environment in which trainers and students can discuss and explore ideas, course work and exercises. Benefit from a wide range of enhanced interactive learning tools:
• Train together with an instructor online and in real time.
• Each tutorial will include trainer presentations, group discussions as well as question and answer sessions.
• Have your questions answered instantly.
• Network with other students—interacting and sharing experiences and ideas—overseen and managed by the distance learning faculty.

"The programme was well structured and the instructional method was excellent." — DS
1. Diploma in Modern Telecoms

Designed for those looking to enhance their knowledge of Modern Telecommunications in general or to build on specific areas of expertise. The programme gives a detailed analysis of the market and technical issues surrounding convergence in mobile, converged and fixed networks. It brings together a comprehensive array of topics in an integrated training package.

Core Modules
- Modern Telecoms
- Enabling Technologies
- Delivering Advanced Services
- Telecoms Business Models

Specialist Modules (select 5)
- Access Network Technologies
- Core Network Technologies
- ICT and Advanced Digital Services
- Connected TV—Internet Protocol for Television Transmission
- Managing Services, PCC & Billing
- Marketing Next-Generation Services
- Operating Effectively in Telecoms
- Advanced Radio
- Advanced IP
- Security and Fraud Prevention

2. Diploma in LTE & Advanced Communications

This programme would suit anyone who requires a detailed understanding of the LTE, the challenges in its deployment and an insight into the current market position. The programme is designed to give you a detailed understanding of LTE, and through its’ modular structure allows for a good degree of specialisation and allows you to tailor your programme to suit you and your organisation’s needs.

Core Modules
- Introduction to LTE & 4G Wireless
- The LTE Air Interface
- Delivering Advanced Services
- The LTE Core Network (Evolved Packet Core)

Specialist Modules (select 5)
- LTE Radio Network Planning
- IP-based Core Network Dimensioning
- Managing Services, PCC & Billing
- Traffic Engineering, QoS & MPLS in IP Networks
- Operating Effectively
- Marketing Next-Generation Services
- WiMAX and other non-3GPP Access Technologies
- Project Management in Telecoms
- Connected TV—Internet Protocol for Television Transmission
- Finance for Telecoms Professionals

University accredited Distance Learning programmes - Enhance your career with an internationally recognised qualification.

Successful completion of either the Diploma in Modern Telecoms, Diploma in Telecoms Business or the Diploma in LTE & Advanced Communications leads to the award of a University Certificate. Our Distance Learning programmes have been fully accredited by, and are offered in partnership with the University of Derby; a UK-based university highly acclaimed in the area of employer engagement.

What Accreditation means:
- Fully aligned with UK University structure – each course has been thoroughly audited and aligned with the UK University structure and credit system
- Study towards a recognised university qualification – successfully complete any accredited programme and you’ll be able to qualify for a University qualification
- Further your career – have the confidence that your qualification will be recognised across the industry.

The modular structure of these programmes offers for a good degree of specialisation and allows you to tailor your programme to suit you and your organisation’s individual learning needs.
3. Diploma in Telecoms Business

Designed for those who need a thorough grounding in telecoms business as part of their job function, or those who have specialist knowledge in a specific area of telecommunications (business or technology), and wish to contribute and communicate more fully and effectively with the wider business—giving them the confidence to better innovate and build value for the organisation.

Core Modules
- Telecoms Business Environment
- Finance for Telecoms Professionals
- Marketing Communications Services
- Operating Effectively in Telecoms

Specialist Modules (select 5)
- Telecoms Technologies
- Project Management in Telecoms
- Customer Engagement & Branding in Telecoms
- Future Business Models for ICT Players
- Customer Relationship Management in Telecoms
- Sales and Value Chain Management
- Budgeting and Forecasting in Telecoms
- Access Network Technologies
- Digital Television and IPTV
- OSS, BSS and Billing

4. Diploma in Digital Connectivity & Communication Systems

This nine-Month blended learning programme brings together outstanding content that reflects the current industry need for talented professionals with the competencies and knowledge to make a real difference, and a range of learning formats that are structured to maximise learning and keep you fully engaged and progressing.

The suite of comprehensive intensive 3 month and University Accredited 9 month Distance Learning programmes offered by the Informa Telecoms Academy provides the opportunity to rapidly build your competencies over a range of different areas, ensuring you gain maximum value. Interactive resources and study support available to keep you engaged. You can also fit your studies around your current job role, deciding where and when you want to study.

Introductory Module
- Communications & Connectivity—Supporting Fast Changing Societies

Core Modules
- Access Network Technologies
- Core Network Technologies
- ICE, Unified Communications & Advanced Digital Services
- Technology Transformation—Virtualisation, Cloud & Convergence

Specialist Modules (Select up to 4)
- Mobile Broadband Technologies
- Managing Services, PPC & Billing
- IP Network & Systems
- Traffics, Engineering, QoS & MPLS in IP Networks
- Connected TV & Multimedia
- Security and Fraud Prevention
- Radio Principles
- Radio Network Planning

Specialist Modules (at least 1)
- Project Management
- Telecoms Business Models
- Finance for Telecoms Professional

It really has broadened my knowledge of current technologies used in the mobile telecom industry.

IAS, M-TEL

Perfect, the learning materials are very useful

AP, ESU

Good experience, it was instructive

MA, CFAO Technologies

The program was well structured and the instructional method was excellent...

DS, Cable & Wireless
1. 4G/LTE Radio Planning and Optimisation Professional

This programme significantly improves your understanding of the issues and techniques used to effectively plan an efficient and advanced 4G cellular network. This assessed course incorporates exercises, self-test assessments, and hands-on planning simulations using an industry-leading radio planning tool—Mentum Planet from InfoVista.

**Modules**
- The Radio Environment & LTE/4G LTE Radio Planning Techniques
- LTE Planning in a Multi-RAT Environment
- Small Cells, Hetnets & LTE Advanced

2. Foundation in Telecoms

This introductory programme is ideal for those new to the industry needing a good grounding in the modern communications industry. The programme covers the evolving telecoms business environment, technology issues and the telecoms customer proposition. It will benefit those looking to start a career in the telecoms industry, or those looking to consolidate their existing knowledge.

**Modules**
- Telecoms Industry & Business Environment
- Telecoms Technologies
- Telecoms Customer Proposition (Services, Marketing, Branding)

3. Finance in Telecoms

This programme looks at the financial aspects of running a successful telecoms business. The main financial concepts and accounting documents are explained with examples. Effective financial control is explored, where budgeting, financial processes, and forecasting techniques are presented and evaluated. Financial data and reports are used to analyse and make sense of the business, using appropriate financial KPIs to evaluate performance and to underpin key strategic decisions.

**Modules**
- Finance for Telecoms Professionals
- Budgeting & Forecasting in Telecoms
- KPIs & Financial Analysis

4. Digital Services and Technology Transformation

This programme looks at the changing role of Telecommunication Operators—and how they are responding to changing market conditions and customer expectations by repositioning as Communications Service Providers; adopting a range of digital services and undergoing major transformation initiatives.

**Modules**
- ICT, Unified Communications & Advanced Digital Services
- Technology Transformation—Virtualisation, Cloud & Convergence
- Managing Services, PCC and Billing

5. Evolving the Core Network—EPC, PCC, IMS and VoLTE

Designed for those looking to develop an in-depth working knowledge of the core network and its likely evolutionary path. It looks at the core network technologies and architectures currently being adopted and existing core network requirements and architectures before looking at a range of service delivery techniques. It examines how best practice techniques are developed through the Evolved Packet Core and a range of advanced systems such as PCC, IMS, & VoLTE.

**Modules**
- Core Network Technologies
- Delivering Advanced Services
- The LTE Core Network (Evolved Packet Core)

6. Telecoms Marketing and Developing the Customer Proposition

Focusing on the role, techniques and implementation of marketing practices within Telcos/CSPs. We examine the changing telecoms marketplace and evolving business models; evaluate the developing customer propositions; and discuss how effective segmentation and customer engagement allow operators to maximise both B2C and B2B opportunities.

**Modules**
- The Telecoms Business Environment
- Marketing Telecoms & Digital Services
- Customer Engagement & Branding

Advance your career with our short intensive 3 Month Distance Learning programmes.

Our fully supported, 3 Month Distance Learning programmes provide an in-depth understanding of key communication industry topics. These assessed courses consist of 3 highly focussed modules, each lasting 4 weeks and incorporating comprehensive courseware, exercises, self-test assessments and live tutor led webinars to help you gain a thorough understanding of the subject matter.

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It really has broadened my knowledge of current technologies used in the mobile telecom industry.

IAS, M-TEL
Our Advanced Business Diplomas are an integrated series of programmes designed to meet the learning development needs of forward looking telecoms professionals and organisations. Over 7,500 mid to senior managers, future managers, specialists, identified talent and directors from a variety of functions from leading operators, vendors, service providers and regulators worldwide have benefited from attending an Advanced Business Diplomas Programme.

Why attend an Advanced Business Diplomas Programme
- Achieve a better understanding of your people, your products, and your business—giving you an unparalleled view of where your organisation stands, its strengths and future growth opportunities
- Have a solid platform on which to make strategic, technical, financial and management decisions that are reliable, well-grounded and commercially viable
- Gain a clear picture of the telecommunications market and its future direction, with forecasts, timelines and analysis from the experts
- Are fully versed in fixed, mobile and convergent network technology and the reasons behind its adoption, its strengths, weaknesses and limitations
- Learn best practice leadership techniques and how they can be applied within the telecoms industry
- Are fully equipped to take on new challenges and progress within your organisation

Who should attend?
These programmes is designed for mid to senior managers, future managers, specialists, identified talent and directors from all functions within the telecommunications sector. It has been developed for those whose time is limited and who work in critical roles or situations where a lengthy period away for study is not possible. The Advanced Business Diplomas Programmes also provide an ideal opportunity to develop the organisation’s talent pool and support succession planning.

Unique Business Simulation
Each Advanced Business Diplomas programme includes a unique Business Simulation exercise that runs throughout the week—acting to tie in each of the modules into the bigger picture in a practical and interactive way. As we deal with each major topic during the week, you’ll have the chance to test your ideas and understanding in a simulated environment, maximising the opportunity for learning, whilst developing a more complete picture of the telecoms environment.

Postgraduate Certificate in Advanced Telecoms Management
- Enhance your career with an internationally recognised Postgraduate qualification

The successful completion of Telecoms Academy’s Telecoms Mini MBA programme plus one other Advanced Telecoms Management Programme along with a Work Based Project will lead to the award of the Postgraduate Certificate in Advanced Telecoms Management awarded by the University of Derby.
ADVANCED BUSINESS DIPLOMAS

1. Telecoms Mini MBA (5 DAY)

This programme is highly participative, focusing on real business, technology and industry issues. It is designed to give participants a critical understanding of the key competency areas required for organisational and individual success within the modern telecommunications industry. It enables participants to make more informed and commercially viable strategic decisions, or to contribute more effectively to value creation within their own organisation. The programme is made up of modules covering five main competency areas, as well as a comprehensive business simulation that runs throughout the programme.

Course Contents
- Strategy and business environment
- Technology
- Finance
- Leadership and people management
- Marketing and customer focus

2. Effective Telecoms Strategies—Advanced Business Diploma (5 DAY)

The rapidly changing landscape of modern communications presents major challenges for the future positioning and sustainability of traditional and new entrant players. This programme has been designed to enable mid-senior managers, future managers, and specialists in telecommunications and related industries to develop effective telecom business strategies—equipping them to steer their organisations more effectively through a high risk environment.

This demanding and comprehensive programme gives participants the tools to undertake a solid strategic analysis and critical appraisal of the wider communications industry based on industry data provided by the Ovum research team. Participants anticipate likely changes and position their organisations successfully and sustainably for the future.

Course Contents
- Strategic thinking
- The market reality
- Implementing the strategy
- Making it sustainable
- Communicating the strategy

3. Customer Focus in Telecoms—Advanced Business Diploma (5 DAY)

The revolution in the provision of communication technologies, services and applications is placing severe pressure on service providers’ ability to deliver what customers value profitably, and to establish a viable long-term competitive business position. CSPs need to develop a deep, multidimensional relationship with their customers and understand how the revolution in the wider communications environment is changing customers’ behaviour. Organisations that fail to place the customer at the centre of their activities will lose ground.

It is designed for those who need a thorough understanding of the customer and customer centricity in the wider context of the industry. It provides the tools to assess where, when and how to become more customer-centric and to use customer focus as the basis for improving overall organisational efficiency and effectiveness.

Course Contents
- Advanced marketing
- Changing customer requirements
- CRM and CEM
- Branding and marketing communications
- Customer focus and ROMI

4. Business Innovation and Growth (BIG)—A Mini MBA (5 DAY)

This programme rapidly builds the competencies that are critical to successful innovation within the modern business environment. As well as providing an excellent foundation in modern business practices, the programme is focused on developing strategies, procedures and environments that maximise innovation and creativity in order to build value and develop competitive advantage.

It is aimed at those from all industries that want to go beyond traditional business practices in order to maximise success. It is an ideal opportunity to share ideas, learn best practice, and to build confidence; for all, it is a chance to expand critical thinking, gain confidence and build the competencies needed to succeed.

Course Contents
- Primer—state of the industry
- Financial benchmarks
- Telco/CSP strategies explored, analysed, dissected and re-constructed
- Business transformation
- Technology transformation
- Innovation—transforming thinking and monetising creativity
- Transforming the customer proposition—the key to future success
- Developing the CSP business—exploring best practice

5. Positioning for the Digital Age—From Telco to CSP—transforming the business (4 DAY)

Driven by changing industry, all major telcos are now undergoing transformation. In order to survive and to remain profitable (and to take advantage of opportunities such as Digital Services, the IoT, Unifies Communications and Virtualisation), the transformation from Telco to full Communications Service Provider (CSP) is not optional.

This Executive Workshop develops best practice ideas on the transformed telco—and in particular examines what needs to be done in terms of the business models, the customer proposition, partnerships, technology and business enablers, people, and culture in order to maximise future performance and become an effective Communications Service Provider.

Course Contents
- Primer—state of the industry
- Financial benchmarks
- Telco/CSP strategies explored, analysed, dissected and re-constructed
- Business transformation
- Technology transformation
- Innovation—transforming thinking and monetising creativity
- Transforming the customer proposition—the key to future success
- Developing the CSP business—exploring best practice
INNOVATION AND TRANSFORMATION—TRANSFORMING THE BUSINESS

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Course Contents
- Maximising success
- Aligning innovation, business environment and strategy
- Maximising value with innovation—financial analysis
- Realising and enabling the potential of people
- Getting things done—systems that underpin successful innovative practices

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Course Contents
- Strategic thinking
- The market reality
- Implementing the strategy
- Making it sustainable
- Communicating the strategy

3. Developing the Digital Services Opportunity (2 DAY)

To capture new digital service opportunities, operators need to develop strategies in a range of areas, including but not limited to: Over the Top (OTT) Services, Machine to Machine (M2M) and Industry Verticals, Cloud Services, Content and Entertainment, Premium Video, Payments and e-Money and Advertising. This programme examines the major trends and developments within the digital services arena, highlighting the opportunities for telecommunications operators and their customers. We set out the role of the telco as well as the key enablers for success—including the technologies, platforms and partnerships that need to be adopted.

Course Contents
- Defining Digital Services
- Dealing with OTT
- Machine to Machine and Industry Verticals
- The Cloud for Operators
- Content and Entertainment
- Payments, e-Money, Financial Services and Advertising
- Business Support Systems for Digital Services
- Developing Digital Services Business Models
- Operator Case Studies

4. Leadership for Telecoms Innovation (2 DAY)

This develops individual leadership and management competencies, and provides a framework on which managers can drive innovation through dynamic leadership, breaking the silo effect and embedding an innovative culture at every level of the organisation. Using Telecoms Industry examples and case studies, it builds greater awareness of both people and commercial issues—enabling individuals to contribute much more effectively in terms of innovation and creating value within their organisation.

Course Contents
- Strategic thinking
- The market reality
- Implementing the strategy
- Making it sustainable
- Communicating the strategy

5. Teams that Drive Innovation—Creating Paradigm Shift in Telecoms (3 DAY)

This programme focuses on developing a team that can effectively drive change and take the organisation on a journey that embraces innovation—but with a wider appreciation of the strategic factors that affect the telecoms industry. It provides a challenging framework to hone a culture focused on innovation and experimentation; encouraging team members to fail fast, succeed sooner and building a philosophy of agile approach providing immediately implementable concepts to deliver quantifiable return on investment.

This Course Will Help You
- Develop a culture that embraces forward looking business practices, encourages innovative thinking and provides a framework that can translate ideas into business success
- Build teams that are more commercially-aware and able to contribute in a proactive manner
- Develop skills to turn ideas into business success and the ability to create, prioritise and clearly communicate innovative ideas
- Built on a systematic approach that is easily understood and consistently implemented by your team
- Establish clear priorities, accountabilities and a positive environment that will enable all team members to work to a clear action plan that delivers
### 1. Regulation in Modern Telecoms (2 DAY)

Technological and economic realities are moulding the design and impact of telecommunications regulation. This 2-Day course is designed to give delegates a good knowledge of telecoms regulation and how regulation shapes technological developments and vice versa. The course concentrates the economics of regulation and the challenges posed by next generation technologies. It examines the political, economic and technical principles that lie behind regulation and draws upon the varying needs and experiences of actual regulatory environments around the world. Regulatory strategy and its commercial impact will be considered by examining the development of example national regulatory organisations, along with a regulatory road map.

**Course Contents**
- Why regulate?
- Regulatory institutions and the process of regulation
- The market review process 1: Market definition
- The market review process 2: Market power
- Abuse of a dominant position
- The market review process 3: The regulator’s power to impose remedies
- Cost models
- Regulating radio spectrum
- The regulatory function

### 2. Finance for Telecoms Professionals (2-4 DAYS)

Straight forward and no-nonsense, participants will learn the practical financial skills that will help them make better management decisions and enable them to get straight to the heart of financial issues, demystify financial information and give them complete confidence and control when making financial decisions including the importance of EBITDA, cash and profit, and the links to the businesses strategies and tactics and understand the most relevant financial ratios in the telecoms industry and benchmark yourself again the top 40 operators to generate options for improving financial performance.

You’ll learn to champion the cause of cost cutting and improving profits and how to establish clear goals, quickly and consistently implement and effectively measure and understand your financial results and those of your competitors.

**Course Contents**
- Critically examine and interpret key financial information including the importance of measuring the impact of marketing activities and establishing the ROI of business decisions
- Confidently assess ROI for potential capital and operational expenditures and understand the differences between cash flow, revenue and capital budgets to optimise your use of working capital
- Be able to appreciate cash-flow, sunken costs and profit and how they are managed and be able to develop forecasts and monitor and control costs and improve revenue and ROI
- Prepare break-even analyses for business plans, new projects and boardroom presentations and prepare, perform and present confidently in a financial environment

### Cost Optimisation for the Telecoms Professional (2 DAY)

This workshop will familiarize you with the key concepts of finance and accounting in a telecoms environment and help you develop and measure KPI’s and business optimization with more confidence and you will gain a toolkit of key ideas and cost management strategies, frameworks for analysing cost and practical techniques for implementing cost reduction.

**Course Contents**
- Initiating strategic cost management projects
- Cost management processes and techniques
- Budgeting—proper budgeting challenges costs
- Zero-based budgeting - the principles
- Overheads and product costing
- Design of cost control reports

### Corporate Governance for Telecoms Professionals (2 DAY)

This course will equip participants with the competencies to interpret the importance of corporate governance in the contemporary business environment. Delegates will be able to contribute to business and society through an increased awareness of the importance of corporate governance, its link to corporate citizenship and its role in responsible business practices that lead to environmental, economic and social sustainability that would benefit society in general.

**Course Contents**
- Introduction to corporate governance
- Corporate governance in relation to specific issues in Telecoms
- Corporate governance challenges of the 21 century
- The legal and regulatory environment
- Sustainability and the triple bottom line
- Board meetings, shareholders’ meetings and the role of directors are focused on.
MARKETING AND CUSTOMER FOCUS IN TELECOMS

1. Foundation in Marketing (2 DAY)
This course provides a comprehensive introduction to the marketing of telecommunications and related products and services. The industry is facing huge challenges in designing solutions that customers want, in positioning customer propositions and in developing a clear brand and competitive proposition that can contribute value to telecoms organisations alongside alternative or complementary communications providers. Many people who are new to a telecoms marketing function, whether from a technical or engineering background, or from a marketing position in a non-communications industry, find these challenges difficult to grasp.

Using concrete examples and hands-on activities, delegates will explore the unique characteristics of marketing to both consumer and business customers within telecoms and acquire essential skills enabling them to address the specific requirements of their marketing roles.

Course Contents
• Marketing strategy and planning
• Understanding customers
• Marketing dynamics
• The marketing mix: designing and pricing solutions
• The marketing mix: distributing solutions
• The marketing mix: promoting solutions
• Measuring the marketing plan

2. Marketing Strategies in Telecoms (2 DAY)
This course is designed to enable delegates to develop specific and sustainable customer-centric strategies for telecoms products and services. It is targeted at both general business practitioners and functional marketing specialists in national and international fixed and mobile telecoms providers, who need to build a strategic marketing plan to steer their business profitably through the fast-moving world of convergence and integration.

Course Contents
• Industry context: convergence, content and competition
• Customer context: choice, customer lifetime value
• Setting and managing customer expectations
• Sustainable competitive advantage
• Customer needs: consumer vs enterprise and wholesale vs retail
• Profitable partnerships
• Product mix: branding, pricing, bundling, channels
• Promotional mix: advertising, PR, viral marketing

3. Customer-centric Pricing Strategies for Telcos (2 DAY)
This is designed to enable delegates to design and implement an effective pricing strategy that focuses on customer value and to optimise revenues and profitability over the long term. This course helps delegates to establish a pricing strategy that is based on true value to consumers of telecoms services in their broadest sense. The course uses cases studies and benchmarks from the telecoms sector along with examples from other leading sectors that make the maximum use of pricing, to demonstrate best practice.

Course Contents
• Market trends and the implications for pricing
• The pricing manager’s toolbox
• Competitive analysis
• Pricing in the marketing mix
• Pricing “Touch points”
• Pricing tactics
• The product life cycle
• Customer lifetime value/profitability

4. Meeting Branding and Customer Engagement Challenges in Telecoms (2 DAY)
It is an exciting and testing time for the Telecoms industry. Increasing popularity of smartphones, the Internet of things and ever increasing thirst for connectivity and speed have breathed new life into the industry. However, it remains challenging for Telecoms brands to differentiate from their competitors that shout out similar messages and offers. Operating in the ecosystem dominated by competent brands like Apple and Google, Telecoms brands need to work extra hard to stay relevant and influential. This 2 Day programme will help you develop effective strategies to meet these challenges.

Course Contents
• The role and objectives of segmentation
• Drivers for a different approach to segmentation
• New methods for identifying and quantifying telecoms market segments
• Designing segment-specific marketing approaches

5. Telecoms Market Analysis and Evaluation (2 DAY)
This is designed to train delegates to probe in depth the factors that influence telecoms organisations’ market approach and to enhance the effectiveness of their marketing efforts. Attendees will analyse in detail the short-term and long-term impact of macro- and micro-environmental, competitor and customer trends on the telecoms market and on their options for addressing market needs. Delegates will then transform the information obtained into knowledge upon which they will be able to build effective strategic and tactical marketing plans. Real examples of current telecoms market analysis efforts are used throughout the course.

Course Contents
• Context and role of telecoms market analysis
• Telecoms environmental analysis
• Telecoms customer analysis
• Competitor analysis
• Evaluating telecoms market opportunities
MARKETING AND CUSTOMER FOCUS IN TELECOMS

1. Customer Value Management (2 DAY)

Most telecoms markets around the world have been categorised as ‘mature’, with over 100% subscriber penetration. Along with market maturity, operators and service providers are experiencing stagnating revenues and falling profitability.

A huge opportunity to grow is by maximising the value of their existing customer base. This does not necessarily just mean selling more products or services to the same customers to prevent them from leaving the network, or engaging in short term churn management activities. A more holistic approach to managing the value of customers as long-term assets to the service provider is required if their full lifetime potential is to be realised. Service providers that do not fully master the techniques of customer value management will lose out to competitors that better understand the underlying growth potential of their customer base in a more holistic manner.

Course Contents
- Defining customer value management
- Calculating customer value
- Improving the quality of the customer base
- Using customer big data to generate value
- Influencing customer value
- Managing customer costs
- The role of third parties

2. Customer Experience Management in Telecoms (2 DAY)

With mobile telecoms markets nearing or above 100% penetration and competition rife, managing churn and building life-long loyalty is now a matter of survival. Now is the time for you to begin developing customers as true assets to your company. This will involve a total re-think of your current customer relationship strategy and realignment of your organisation with your customers’ expectations, delivering total satisfaction at all times.

Building true loyalty by developing a proactive, holistic, ecosystem wide approach to total Customer Experience Management so that your customers become advocates for your products and services. Your customers are your assets: understanding their value drivers and delivering on those, nurturing their experience and delivering on your brand promises at every touchpoint will build their trust, loyalty and ultimately deliver a return on investment by reducing churn and increasing customer lifetime value and profitability.

Course Contents
- Can CSP’s earn their customers’ love?
- Defining end-to-end CEM
- Mapping the customer experience
- Implementing end-to-end CEM

3. Marketing Digital Services (2 DAY)

This interactive and hands-on programme examines the major trends and developments within the global digital services market, describes in detail the different digital services ecosystems and relative positions of the various players, explores segmentation and positioning options for different categories of digital services, and applies the advanced marketing mix to enable marketers to adapt their traditional skills to this demanding new environment.

Course Contents
- The business of telco-enabled content and entertainment
- The content and entertainment ecosystem
- Bringing innovative digital services to market
- Implementation factors

4. Analysing BIG Data for New Revenue Streams (2 DAY)

This is a 2-Day training program recognises the strategic importance of Big Data, and explores how it can be used to develop clear competitive advantage. In order to maximize opportunities, managers in key positions must understand how Big Data can and should be analysed and used to provide an effective competitive capability. This training shows how to generate an effective Big Data strategy, and to manage it properly, in order to deliver better profitability and sales results.

Course Contents
- The Big Data evolution
- Implement a Big Data culture
- Create better business processes
- Managing the Big Data culture

5. Business Intelligence and Analytics for CSPs (4 Day)

This programme to develop the analytical skills needed for an effective Analytics & Insights implementation program. Participants will recognize the importance of business analytics and understand how to create a profitable business analytics project. Participants will acquire knowledge about predictive modelling, segmentation methods, deploying effective customers scoring and profiling models, and perform valuable customer churn programmes to limit defection. Participants will develop their analytical competencies and in particular learn how to implement an appropriate method of market segmentation - effectively analysing unstructured data with text mining.

Course Contents:
- The strategic Big Data trend
- Basic business analytics concepts
- Business analytics software and methods
- Segmentation and rules induction modelling
- Predictive modelling
1. Applied Selling Techniques for the Telecoms Professional (2 DAY)

A practical foundational course designed to ensure rapid practical application of the learning outcomes and an immediate improvement in sales results and key performance measures. New and experienced sales professionals will demonstrate increased confidence and a much better understanding of how their competencies should be applied, developed and improved within their business unit and enable participants to contribute more effectively to value creation and client retention within their own organisation.

The programme maximises both competency development and confidence in participants and will develop and refine a sales development process, to encourage more sales, referrals and repeat business.

Course Contents
- Build a credible, accurate sales forecast
- Recognise customers’ buyer beliefs about selling and develop techniques to overcome challenges
- Demonstrate how to listen effectively and to ask questions to uncover customer needs
- Introduce services as benefits and match them to customers’ needs
- Acquire successful strategies for handling customer concerns and objections
- Generate a thought-provoking after-sales process, to encourage more sales, referrals and repeat business
- Learn effective techniques for minimising and negating the need to discount
- Understand master and implement sales psychology techniques
- Learn cross-selling and upselling
- Master effective techniques for closing and ensure repeat business and referrals

2. Retail Selling Techniques for the Telecoms Industry (2 DAY)

Retail Selling in a telecoms environment has long been one of the most competitive sales environments and the competition only continues to increase. It is vital that telecoms operators make the most of all marketing spend and every customer by giving retail sales staff the skills and confidence to professionally manage, control and close sales including complex digital and ICT products and ensure repeat business.

Course Contents
- Ask effective questions to better understand client needs
- Learn to control the sale and lead a customer to becoming a buyer
- Identify current communication style and establish strategies for effective negotiations skills
- Influence the sales process by accommodating each client’s ‘Needs, Values and Motivations’
- Apply a strategic questioning method, to uncover the client’s current areas of challenge and ideal outcomes
- Present valid solutions with purpose, relating directly to the buyers needs
- Manage and successfully convert resistance and objections
- Utilise planning tools that enable success in both planned and spontaneous negotiations

3. Advanced Selling Techniques for Complex Digital and Enterprise Solutions (2 DAY)

This advanced sales curriculum course rapidly builds the key competencies that enable sales professionals and business development specialists to develop a systematic approach to selling technical, digital and ICT solutions; and excel at designing and finding solutions for customers’ complex business needs. Participants will learn practical methods to create a powerful business case that will motivate both technical and non-technical decision-makers.

Course Contents
- Explain and apply concepts of customer-focused selling for complex technology solutions
- Ask effective questions to better understand client needs and sell technical and enterprise solutions
- Acquire successful strategies for handling customer concerns and objections
- Understand the motivations of the customer to deliver a solution-orientated product/service
- Implement methods of up-selling and cross-selling your product/service
- Review your competition and develop a comprehensive strategy to overcome these
- Develop a systemised and consistent follow-up and support process to develop more customers, repeat and referral business
- Easily configure and present complex technology solutions
- Master sales psychology module to understand your customer’s personality type
- Build more rewarding relationships, referrals and repeat business
- Develop presentation, demonstration and closing skills for complex technology solutions

4. Advanced Negotiating and Closing Techniques for Technology Solutions (2 DAY)

This advanced sales curriculum course will empower sales consultants to negotiate and close high value sales with techniques to get the best out of any negotiation. The training is highly practical and interactive and will dramatically improve your negotiation and closing results to achieve the best possible result in any negotiation.

Course Contents
- Demonstrate how to listen effectively and to ask questions to uncover the customer’s needs
- Show that you understand the customer’s needs and values
- Prepare a compelling offer
- Understand the customer’s decision-making process
- Influence the sales process by accommodating each client’s ‘Needs, Values and Motivations’
- Present valid solutions with purpose, relating directly to the buyers needs
- Manage and successfully convert resistance and objections
- Utilise planning tools that enable success in both planned and spontaneous negotiations

5. Certified Telecoms Sales Professional Boot Camp (2 DAY)

The 5-day boot camp will focus on YOUR selling skills and challenge you to develop, improve your concept and create a clear road map for execution. At the end of the programme you will know exactly what you are going to do, how you are going to do it and who can help you to make it happen with a new network of contacts to help you overcome the challenges that lie ahead. Participants will assess and analyse the telecoms business environment, learn to define the scope of business problems, capture client requirements, design high-value solution approaches, and ensure that the defined scope meets the customer’s needs, goals, objectives, and expectations.

Course Contents
- Embrace the latest tools, techniques and industry best practice in selling
- Identify customer needs and link them to product benefits
- Easily configure and present complex technology solutions
- Master sales psychology module to understand your customer’s personality type
- Build more rewarding relationships, referrals and repeat business
- Develop presentation, demonstration and closing skills for complex technology solutions
1. 5G Technology (2 DAY)

In this programme we explore the concepts of 5G technology, including capability requirements, the technologies that will deliver the core capabilities, and the impact on the customer proposition. We look at the role of 5G in the technology roadmap and what it means for CSPs. Participants will build a comprehensive picture of 5G, as it stands, enabling them to make more informed technology and business decisions and contribute more effectively to successful strategy development.

Course Contents

- 5G concepts, industry initiatives and standardisation
- 5G technology explored
- 5G supporting technologies and systems
- 5G use cases and the customer proposition

2. Network Technology Transformation – NFV, SDN and Cloud Techniques (2 DAY)

This programme focuses on the technical aspects of this network transformation and how it can support the wider transformation within the business. Specifically, we look at the underlying concepts facilitated though the use of SDNs, NFV, and Cloud techniques. Conceptual models, architectures, best practice, operation, and deployment issues are explored in some detail.

Course Contents

- Towards device abstraction
- Software defined networks
- Network Function Virtualisation
- Practical NFV
- SDN and NFV cost/benefit

3. ICT, Unified Communications and Digital Services (2 DAY)

Implementing the next wave of opportunities within the telecoms sector, requires a deeper understanding of ICT and how those concepts are used as the foundation to offer Unified Communication and a range of Digital Services—including cloud-based services, enterprise, M2M, wholesale, content and entertainment, advertising and payments. We examine the major developments within unified communications and digital services, highlighting the opportunities for CSPs and their customers. Key enablers, including technologies, platforms and partnerships are explored as well as deployment issues and implementation options are discussed.

Course Contents

- ICT—concepts
- Unified communications—services, systems and architectures
- Digital services—opportunities, platforms and requirements
- Partnerships and wholesale
- Implementation options and deployment

4. Cloud for Telecoms Operators (2 DAY)

This programme provides a comprehensive overview of the concepts and features of cloud services before looking at the underlying technology and architecture that underpins the cloud, as well as the business drivers/issues facing businesses and consumers when migrating to the cloud. The opportunities for telecoms operators as cloud service providers, the business models available, the likely position within the value chain, implementation options and the foundations on which the telecoms operator’s secure cloud services can be built—including access technologies, security, trust, billing, pricing, customer relationship, IT infrastructure, device management and partnerships.

Course Contents

- Introducing the cloud
- Service models
- Migration to the cloud
- The role of the telecoms operator

5. The Internet of Things (2 DAY)

This Internet of Things (IoT) Training Course examines market predictions for IoT, and shows some ways in which the Internet of Things has already arrived. Case studies show what can be accomplished, both using cellular networks and alternative technologies including mesh and whitespace networks, along with the business models which are driving them. Critical factors in network design are discussed, along with the political and economical drives which are already creating a connected society.

Course Contents

- Definition of terms
- Software agents and Cloud
- Networking technologies
- Case studies
- Political ramifications


This 2 day training programme will focus on standards activity in the realm of radio access. There are already a number of competing technologies that may be suitable for the many and various IoT applications, however they will need to meet the low power/low cost/short and long range requirements of a typical IoT service. This training will provide an over view of the existing and proposed technologies, from WiFi based radio access to 3GPP Release 13 proposals of NB-LTE and LTE-M.

Course Contents

- IoT/M2M Overview
- Existing and Proposed Technologies
- 3GPP—Release 13—Proposed Technology
- IEEE—Proposed Technology
- IETF
- Proprietary—Proposed Technology
- Spectrum for IoT
- IoT Security
1. Introduction to Modern Telecoms (3 DAY)

This course provides an excellent grounding in Modern Telecommunications. Current and evolving services, applications, technologies and networks, within the fixed, mobile and data/internet environments are examined giving a comprehensive overview of the Telecommunications Industry.

Course Contents
• Introducing the basics
• Services and applications
• Transmission, switching, and signalling systems
• Mobile networks including GSM, GPRS and UMTS
• Modern fixed networks
• Data communications
• The internet
• Radio systems
• The evolving telecommunications network

2. Mobile Networks Explained (2 DAY)

Focusing mainly on GSM/GPRS, but including UMTS, it gives a unique insight into modern networks, including messaging, voicemail, WAP and location services. OSS, BSS, NMC, the mobile market place, and the impact of WiFi and WiMAX complete the picture. This course leaves the delegate well equipped for the challenges ahead in mobile communications.

Course Contents
• Introducing mobile networks
• Radio and cellular principles
• User experience, services and applications
• 3G W-CDMA and HSPA
• GSM and GPRS network, procedures and operation
• Network building blocks and supporting systems
• A typical network

3. The Telecoms Operator in 2017—Focus and Opportunities (2 DAY)

This programme looks at the major trends and developments within the industry, highlighting what they mean for a modern telecommunications operator and their customers. We set out the role of the telco in the new business environment and highlight the key enablers for success—including the technologies and partnerships that need to be adopted. The interactive sessions look at fundamental concepts around customer proposition/ experience, partnerships and key enablers such as technology and platforms. Data from the Ovum Research Team is used throughout to back-up the ideas and to put concrete evidence into the equations and discussions.

Course Contents
• A digital world
• Connectivity and mobility
• Platform, devices and operating systems
• Applications and content
• Internet and The Cloud

4. Broadband and Convergence—Services and Technology (3 DAY)

The programme we explore fixed broadband and how it can be deployed in order to support the business, including technologies, capabilities and limitations, and relative costs. We develop a thorough understanding of broadband technology—including capabilities, limitations, major features, and deployment options. This programme also looks at the major technology trends that are shaping the telecoms environment, including the use of IP technology; the introduction and deployment of LTE; advances in Fixed Line technology; convergence; and the latest trends in both network infrastructure and service delivery.

Course Contents
• Key industry trends and industry outlook
• Fixed broadband services and supporting technologies
• Mobile broadband services and supporting technologies
• Convergence of services and technologies
• Delivering TV services and content
• Focus and opportunities—broadband

5. Modern Telecoms Boot Camp (5 DAY)

This comprehensive programme explores the changing world of modern telecoms, focusing on new and emerging technologies and how they are being implemented within both existing and newbuild networks. Capabilities, limitations, operation, implementation and deployment options, as well as likely time-lines and evolution paths are all presented in a logical and clearly defined structure. The overall aim is to bring participants fully up to date with relevant telecoms technologies, systems, and business practices so their decisions and contribution within their organisation is as informed and commercially-grounded as possible.

Course Contents
• Introducing the basics
• A digital world
• Services, content and applications
• IP and the Internet
• Mobile/fixed access networks
• Marketing telecoms services
6. Core Network Engineers Boot Camp (5 DAY)

This programme is ideal for those engineers and technical managers focusing on the core network that need a deep understanding of the current core telecommunications network and a clear technical vision of the IP-based multimedia core network being specified and developed by the Industry. It is suitable for technical professionals working for large or small operators, or for those working with vendors developing technology. It focuses on the issues affecting professionals working with the core network and those in related job roles, and delivers the knowledge and competencies needed to be as effective as possible.

Course Contents
- Core Network Architecture and Protocols
- IP-Based Networks
- IP in the Next Generation Telecoms Core Network
- The Evolved Packet Core (EPC)
- Service Delivery in the Advanced Core Network and EPS
- Advanced Billing for Next Generation Networks
- Policy and Charging Control
- Core Network Traffic Planning Processes
- IP Capacity Planning and Node Dimensioning

7. Radio Planning and Optimisation Engineers Boot Camp (5 DAY)

This programme develops the knowledge and competencies required for the efficient planning and optimisation of modern cellular radio networks in both single and complex multi-RAT environments. It covers topics ranging from the major principles and techniques that underpin cellular radio planning through to the latest radio technologies and the techniques required for the efficient planning and optimisation of advanced radio networks based on advanced modulation schemes and changing customer requirements.

The programme is designed specifically for those working as radio planning engineers or technical managers and delivers the knowledge and competencies needed to plan radio networks as effectively as possible.

Course Contents
- Radio principles
- Spectrum usage, frequencies & planning implications
- Cellular planning techniques
- Coverage, capacity and quality for 2G, 3G and 4G networks
- Network planning and infrastructure sharing
- Femto-cells and WiFi offload
- Interference and mitigation
- Dimensioning the radio network for VoIP
- Optimisation
- Cost per megabyte

8. DOCSIS 3.1 (2 DAY)

This Data Over Cable Service Interface Specification (DOCSIS) course covers key standards and concepts from DOCSIS 1.x through to 3.1. It provides hands-on DOCSIS experience and establishes important foundational knowledge needed for configuring bi-directional channel bonded services and other advanced-service features. While examples of implementing DOCSIS services on the Cisco cBR-8 may be used in this course, most of the learning experiences also apply to other CMTS platforms. The current DOCSIS 3.1 specification supports speeds of 10 Gigabits per second (Gbps) in the downstream and 1 Gbps upstream. The course includes lab activities and/or demonstrations to reinforce the key learning objectives.

Course Contents:
- RF Primer
- DOCSIS Review
- DOCSIS 3.1
- 3.1 Migration Strategies
- Other DOCSIS 3.1 Specifications
1. **LTE Technology (2 DAY)**

This course is designed for the delegate who requires a more technical insight into the operation of LTE, both the radio interface and system architecture are covered in detail. The physical layer sections includes topics such as OFDMA, SC-FDMA and advanced antenna techniques including MIMO. The functions of the eNB, MME, sGW and the standard interfaces X2 and S1 are explained and the overall operation of the SAE is demonstrated with example procedures.

**Course Contents**
- The LTE market
- LTE protocol stack
- Understanding OFDMA/SC-FDMA
- LTE interworking and roaming
- Capacity gains with MIMO techniques
- Standard architecture and interfaces
- LTE session and mobility procedures

2. **LTE Technology Certification Boot Camp (5 DAY)**

This course covers all aspects of LTE core network and radio interface technologies. Day one starts with an overview of LTE including an examination of the role that LTE plays in the future of mobile broadband and an overview of the LTE architecture. Day’s two and three focus on the radio interface, the concepts of OFDMA covered followed by a thorough examination of the LTE physical layer. Day’s four and five turn to the LTE network and examines the architecture of the E-UTRAN and Evolved Packet Core.

**Course Contents**
- Introduction to LTE technologies and market
- LTE radio interface
- E-UTRAN
- LTE core network

3. **LTE for Commercial Professionals (1 DAY)**

This programme focuses on the main requirements for broadband wireless networks and how LTE/LTE Advanced proposes to meet those requirements. The business of LTE and the evolution of mobile broadband are examined, and comparisons are made with alternative and complimentary technologies, including HSPA and WiFi.

**Course Contents**
- Roadmap for 4G and beyond
- Content and LTE services
- LTE service architecture
- LTE applications and ecosystem

4. **Voice over LTE (VoLTE) (2 DAY)**

Voice and voice related services for next generation mobile broadband services such as LTE will be managed and delivered over IP based networks. This programme will cover all aspect of IMS and its capabilities in respect of delivering voice services via the LTE network.

**Course Contents**
- LTE and IMS, architecture and protocols
- VoLTE signalling
- VoLTE roaming
- VoLTE messaging
- IMS Centralised Services (ICS) and RCS
- VoLTE performance and capacity

5. **LTE Advanced (1 DAY)**

This course covers the major aspects of LTE Advanced and will give the delegate an understanding of the new functionalities introduced. The main new functionalities introduced in LTE Advanced are Carrier Aggregation (CA), enhanced use of multi-antenna techniques and support for Relay Nodes (RN) and these are covered in detail on the course. In order to achieve the high Peak data rates required in LTE Advanced, carriers will be aggregated together to provide an increased spectrum bandwidth, the maximum being 100MHZ.

**Course Contents**
- Carrier aggregation
- Advanced multicell co-ordination
- MIMO enhancement in LTE Advanced
- Relay architecture and NODES
6. LTE in Public Safety Networks
(2 DAY)

Public Safety bodies around the world are looking to deploy networks using the LTE standard, to replace aging infrastructure based on TETRA, PMR, and P25. LTE has much to recommend it in this role, but "standard" LTE systems lack key functionality that is required to replace the legacy public safety networks. Despite those limitations, governments globally, are evaluating whether LTE can meet their public safety requirements. With world-wide interest, extended standardisation work has been undertaken to incorporate functionality that support requirements unique to public safety users. This course covers the features that make LTE suitable for public safety use, and the omissions which make it less than perfect, enabling delegates to intelligently enter the debate and identify the right technology for every situation.

Course Contents
• Long Term Evolution
• Spectrum Allocations
• Public Safety Networks
• Public Safety Applications & Use Cases
• LTE, IMS and Service Support
• Network Sharing
• LTE-Advanced Features for Public Safety
• Regional Deployment Examples

7. LTE Technology Bootcamp for Public Safety Professionals
(4 DAY)

This course covers the features that make LTE suitable for public safety use, enabling delegates to intelligently enter the debate and identify the right technology for every situation. This programme will provide a solid grounding in LTE and LTE network architectures before moving to a description of the functions included from LTE Release 12 which provide the necessary enhancements for Direct Mode operations and reliable Group Calling. All network node functions and requirements will be explained and presented with examples of signalling and typical use scenarios.

Course Contents
• Evolution of LTE
• Service Architecture Evolution (SAE) Overview
• IMS and LTE
• Service Management and Delivery
• Voice over LTE (VoLTE)
• Multimedia Broadcast Multicast Service (MBMS)
• LTE Physical Layer
• LTE Air Interface Protocols MAC,RLC,PDCP and RRC
• S1 Interface and X2 Interface
• The Network Planning Lifecycle
• EUTRAN Architecture, Identities and Mobility
• Public Safety Networks
• Group Communications over LTE
• Mission Critical PTT (MCPTT)
1. Backhaul for HSPA and LTE Networks (2 DAY)

This two Day programme provides a comprehensive overview of the increasingly important topic of the evolved backhaul network. It explores the rapidly changing requirements, as well as the backhaul technologies available for ensuring cellular networks are able to support the increased traffic generated as both cellular technologies, and service usage evolve. We examine single technology solutions as well as integrated transmission solutions, including Fibre, Microwave, Copper; and transport technologies such as Carrier Ethernet. Strategies to keep backhaul capacity ahead of traffic demand are presented and discussed in detail.

Course Contents
- Backhaul requirements
- Technology choices
- Trends and forecasts
- Services—the capacity requirements
- Capacity and dimensioning overview
- Integrated solutions
- Implementation options

2. E-UTRAN: Architecture and Protocols (3 DAY)

This course encompasses all aspects of the LTE radio interface and E-UTRAN functions and protocols. A full and detailed description of the LTE radio interface is given including an introduction to OFDMA and its application in LTE. The LTE radio interface layer 2 protocols are examined and the upper control plane layers of RRC and NAS are also covered. The eNB is the focus of the E-UTRAN therefore this course will detail the functions of the eNB and the supported interfaces, these include the Uu, S1_MME, S1_U and X2. The protocols and operation of the S1 interfaces, control plane and user plane are described, with examples of typical signalling and data transfer procedures given. Since the S1 is terminated at the MME and SGW, the general operation and functions of these nodes will also be described.

Course Contents
- LTE architecture review
- LTE radio physical layer
- E-UTRAN identities and mobility
- SCTP primer
- S1 interface
- X2 interface
- E-UTRAN end-to-end signalling procedures

3. LTE/SAE Evolved Packet Core (3 DAY)

A clear understanding of the end-to-end LTE (Long Term Evolution) system is provided by this technical programme. It includes an overall appreciation of system requirements (including support for key applications and Quality of Service implementation), followed by a detailed view of the architecture, functions (by node), protocols, and operation of the Evolved UTRAN (EUTRAN), and Evolved Packet Core (EPC). Signalling and control, intersystem operation, security, and implementation options are all explored to ensure a comprehensive and detailed end-to-end view is provided.

Course Contents
- Overall end-to-end requirements of LTE
- Application and QoS requirements
- Architecture and protocols
- E-UTRAN functions and operation
- EPS functions and operation
- Signalling and control
- Security
- Implementation options

4. LTE EPS and VoLTE (2 Day)

This course describes, in detail, the architecture of the LTE/SAE EPC network which is an essential component of next generation mobile networks. The overall requirements of the LTE/SAE proposals are examined along with the relationship with the existing components within a mobile network, this is developed into a description of the key interfaces and the protocols deployed. VoLTE, SIP and the IMS will also be explained, outlining the concepts of VoLTE and the network requirements to support voice and voice based services. VoLTE SIP signalling examples will be described, giving a global view of the end to end procedures for typical VoLTE events.

Course Contents
- Evolution of LTE & EPC Architecture
- VoLTE Charging and Billing
- VoLTE Signalling
- VoLTE Mobility & Roaming
- Global Procedures for LTE

5. LTE End-to-End Signalling (2 day)

The protocols and signalling used throughout the LTE network are explained in this programme. Each interface is described including the functions of each protocol layer, the messages and procedures for a common event such as registration, mobility and bearer management. In examining each interface the messages and procedures are presented with an information-element level description of the most frequently used signalling messages. Each of the appropriate 3GPP standards will be studied to fully understand the capabilities of the interface in creating, managing and releasing connections.

Course Contents
- LTE Standards and Protocols
- LTE Radio Interface Signalling
- S1_MME (S1AP) Interfaces and Signalling
- S1_MME (NAS) Protocols
- X2 Interface and Signalling
- S11/S1_U Interface and Signalling
**LTE RADIO**

1. **Certified Small Cells Radio Planning and Optimisation Professional (3 DAY)**

As network operators deal with an explosion of traffic and a massive increase in capacity requirements, there is a clear need to understand how small cells, Wi-Fi offload and heterogeneous networks (Hetnets) will be used as one of the major concepts to ensure operators are able to meet requirements. This programme looks squarely at radio planning—including how small cells can be planned within a traditionally deployed network (including multi-Radio Access Technology); best practice for coverage and capacity planning; and how quality can be impacted by effective planning techniques. Optimisation techniques and deployment best practice are also examined. Exercises and demonstrations using industry-standard tools are used throughout.

**Course Contents**
- Small cell concepts and architecture
- Small cells and the radio environment
- Planning of small cells within the wider radio network
- Coverage, capacity, quality and cost
- Optimisation issues
- Hetnets and the Multi-RAT Network

2. **Certified LTE Radio Planning and Optimisation Professional (5 DAY)**

This certification programme covers the principles and execution of LTE radio planning and optimisation. It begins with a discussion of the LTE physical layer explaining the time and frequency domain structures and covering those aspects of the LTE radio interface that will have an impact on coverage and capacity. A detailed examination of LTE link budgets is provided, identifying and calculating the typical link budget reference points and discussing elements of the budgeting process that are unique to LTE. For example, the calculation of link budget pathloss, the course turns to propagation models and cell radius prediction. Typical models are discussed and compared and full link budget and radius predictions are carried out.

To support the link budget and modelling techniques, as well as apply the learning in an industry-leading software package, Mentum Planet will be used to demonstrated and analyse the LTE radio planning process.

**Course Contents**
- LTE architecture review
- LTE radio interface
- Link budgets for LTE
- Coverage planning
- eNB configuration
- IDLE mode parameters
- CONNECTED mode parameters
- Capacity planning for LTE
- Coverage planning for LTE
- Coverage optimisation

3. **LTE Air Interface (2 DAY)**

This course provides a comprehensive technical view of the LTE (Long Term Evolution) radio interface and radio aspects of the E-UTRAN (Evolved UTRAN). As well as the radio technology employed within LTE, the programme explores the UE—E-UTRAN interface (Layers 1-3) in detail, including capabilities, architecture, channels, Quality of Service aspects, operation, and coexistence with (and evolution from) 3G/HSPA.

**Course Contents**
- OFDM concepts
- Radio technology used in LTE
- Radio architecture
- Layers 1, 2 and 3—functions and operation
- LTE channels
- Quality of service and application support
- Co-existence with 3G/HSPA

4. **Small Cells and HetNets for LTE and LTE Advanced (2 DAY)**

As demand for network capacity continues to grow rapidly, operators and vendors are seeking to maximise the efficiency of current network technologies such as LTE, LTE Advanced and Wi-Fi. The small cell and Heterogeneous Network approach will become increasingly important over the next few years to achieve the efficiencies required. This course will guide the participant through the technologies associated with Heterogeneous Networks, including interference management (a key issue), mobility aspects including cell selection/ reselection to and from small cells and handover. The performance improvements promised by small theory and practiced will also be reviewed.

**Course Contents**
- Heterogeneous network introduction
- Interference management and radio resources
- Mobility management

5. **LTE Drive Testing (5 DAY)**

Designed for LTE radio engineers and optimisers, it covers in depth the requirements and objectives of drive test based network testing and tuning, including hands on with network analysis tools. The course will initially explain the purpose of drive testing and detail the preparation required for effective network testing, covering the test equipment required and the setup and configuration of the equipment. The careful selection of drive test routes and determining the objective of testing as well as interpreting and analysing the results is also covered.

**Course Contents**
- LTE Radio Tuning Overview
- Drive Test Execution – Network Analysis
- LTE Drive Test Troubleshooting
- Performance Evaluation
- LTE Retainability
1. WiMAX Explained
(2 DAY)

This two Day course introduces both technical and non technical aspects of WiMAX to enable the delegate to fully understand how this important new technology fits into the future of wireless communications. The need for WiMAX type services are analysed and the standards process from the IEEE and other bodies are covered. Examples of current and future WiMAX applications are given including broadband wireless access (BWA), backhaul networks, and mobile systems. WiMAX may be deployed in licensed or un-licensed bands, the differences are explained in this course along with methods of reducing interference and improving performance. Radio and Capacity planning are also considered as well as some aspects of WiMAX system security and network architecture.

Course Contents
• Introduction to WiMAX
• WiMAX applications
• Deploying WiMAX systems
• Planning for coverage and capacity
• IEEE 802.16 protocol suite
• Security in WiMAX
• Network architecture

2. WiMAX Forum RF Network Engineer Certification Boot Camp
(4 DAY)

This course covers all of the necessary topics to prepare a technical student to take the WiMAX Forum RF Network Engineer certification exam. It is targeted at engineers who are planning a WiMAX deployment, and who need the skills to design the network, balancing requirements of service quality (including throughput and performance) with minimum capital and operations cost. The emphasis is on the design of the RF access network, including base station engineering and siting, and propagation analysis to serve fixed and mobile subscriber stations.

Course Contents
• WiMAX network design options
• Review of RF fundamentals
• Antennas for WiMAX
• RF design considerations for WiMAX
• Performing a WiMAX link budget
• WiMAX path loss modelling
• Frequency reuse—fixed and mobile
• WiMAX performance and coverage planning
• Modelling tools
• Capacity design and oversubscription
2G AND 3G MOBILE

1. HSPA+: A Technical Overview (2 DAY)
This course offers in depth appreciation of the architecture and operation of the HSPA+ system and the evolution of the 3GPP specifications to HSPA+. The business of HSPA and the evolution of mobile broadband are examined, and comparisons are made with other radio technologies. The architecture of the R6 HSPA network is explained and the functions of network nodes and interfaces discussed. The 3GPP study in Release 7 is introduced and the various HSPA+ enhancements, such as MIMO, 64QAM, CPC, described in some detail.

Course Contents
• Introduction to HSPA+
• HSPA+ downlink architecture
• Downlink MAC functions
• HSPA+ downlink channels
• Downlink radio resource management and UE capability
• Future DL enhancements
• Uplink overview
• Uplink MAC functions
• HSPA+ downlink channels

2. GSM Air Interface (2 DAY)
From basic radio principles to detailed signalling sequences, this course explains the mechanisms behind the GSM radio interface. The GSM air interface is described first in general terms, examining the ‘channels’ used by the mobile and the network to establish communications, then with increasing detail, the procedures and messages exchanged between the peer layers of the GSM protocol stack.

Course Contents
• Radio channels and the GSM radio spectrum
• Physical channels and logical channels
• GSM idle mode procedures
• GSM dedicated mode procedures
• GSM protocol stack
• Layer 2 and layer 3 procedures

3. GSM/GPRS Infrastructure and Operations (2 DAY)
The course provides a comprehensive end-to-end technical examination of GSM and GPRS networks, including the air interface, core network and associated service nodes. Details of the architecture and key network protocols will enable delegates to describe how the full range of services and features are delivered to customers. The continuing evolution of GSM and its role in the 3G environment are also analysed.

Course Contents
• Services and features
• The GSM air interface
• GPRS and EDGE
• Service delivery in GSM
• Core network protocols and procedures
• Interworking with other networks
• 3G networks and GSM evolution

4. GSM, GPRS and EDGE Explained (2 DAY)
Equips the delegate with a good overview of the role, features and operation of GPRS and EDGE technology. The GPRS architecture, interfaces, procedures and traffic cases are all explained, together with billing issues, mobility and interworking with other networks. The course also explores how EDGE can be used to raise data rates in a GSM network and to enhance GPRS based services.

Course Contents
• GPRS protocols
• Air interface
• GPRS features and procedures
• Interworking with external networks
• EDGE features and performance
• Enhanced GPRS (E-GPRS)
• Influencing technologies and 3G

5. UMTS Infrastructure and Operation (4 DAY)
Designed to give a thorough understanding of the Architecture, Protocols and Operation of the evolving UMTS system, this course explains the concepts and implementation of the network in detail. It explores the technology in a logical format, including the Radio Access Network, Core Network, and the required underlying systems. The protocols are examined in depth, with appropriate emphasis on the expanding role of IP.

Course Contents
• UMTS architecture
• The radio interface (W-CDMA), including HSPA
• The UTRAN
• Core network architecture and protocols
• IP in the mobile network
• Security and AAA
• SS7 functions and architecture
• Evolving the UMTS network

6. 3G and 3.5G Explained (2 DAY)
This is ideal for those who need to understand the foundations of 3G. Covering 3G Technologies such as W-CDMA, HSDPA, HSUPA, CDMA2000, IP and IMS, as well as services and applications and handsets. This course provides an excellent grounding for those who need to understand the scope, implementation options, business drivers, and rollout strategies for 3G systems.

Course Contents
• Evolution to 3G
• Services overview
• The network architecture
• 3G radio access
• IP Multimedia Subsystem (IMS)
• Procedures—bring it all together
7. 3G Radio Planning (3 DAY)

This course provides an in-depth appreciation of 3G (and specifically UMTS) radio network planning issues. A comprehensive review of the WCDMA physical layer and channels is given, before Coverage, Capacity and Quality planning issues are explained in detail. Techniques used to enhance coverage and performance are also explained. This course is run in association with Imagicom.

Course Contents
- Key concepts that affect performance of a UMTS radio system
- Procedures used for 3G radio planning
- A comparison with GSM radio planning
- Capacity and coverage
- Link budgets for UMTS
- Traffic modelling and quality of service considerations
- Cell planning and optimisation
- Site selection and the use of planning tools

8. W-CDMA Air Interface (3 DAY)

This course primarily focuses on the concepts of W-CDMA, together with the protocol architecture, techniques and physical implementation of the UMTS Air Interface. The functionality and operation of each protocol layer is explained with reference to its implementation in the relevant network elements. Descriptions of the overall system operation illustrate how the protocols interact in order to provide services to the end user. The detailed procedures and operation of HSPA is also discussed.

Course Contents
- Evolution to 3G
- UMTS services overview
- UMTS architecture and protocols
- Generic CDMA principles and techniques
- UMTS layers 1, 2 and 3
- UMTS procedures and techniques
- HSPA techniques
- HSPA procedures
DIGITAL SERVICES

1. Digital Services—Executive Briefing (1 DAY)

This programme examines the major trends and developments from a non-technical business functional perspective within the digital services arena. We will examine and discuss the opportunities for telcos and their customers, setting out the new role of the Telco as well as the key enablers for success - including the technologies, platforms and partnerships that need to be adopted.

Real time current Data and statistics from the Ovum Research Team will be used throughout to support and confirm ideas and to place concrete evidence into the equations and discussions.

Course Contents
- Defining Digital Services
- Dealing with OTT Players
- Machine to Machine and Industry Verticals
- The Cloud for Operators
- Content and Entertainment
- Digital Services Operator Profiles

2. ICT, Unified Communications and Digital Services (2 DAY)

Implementing the next wave of opportunities within the telecoms sector, requires a deeper understanding of ICT and how those concepts are used as the foundation to offer Unified Communication and a range of Digital Services—including cloud-based services, enterprise, M2M, wholesale, content and entertainment, advertising and payments. We examine the major developments within unified communications and digital services, highlighting the opportunities for CSPs and their customers. Key enablers, including technologies, platforms and partnerships are explored as well as deployment issues and implementation options are discussed.

Course Contents
- ICT—concepts
- Unified communications—services, systems and architectures
- Digital services—opportunities, platforms and requirements
- Partnerships and wholesale
- Implementation options and deployment

3. Marketing Digital Services (2 DAY)

This interactive and hands-on programme examines the major trends and developments within the global digital services market, describes in detail the different digital services ecosystems and relative positions of the various players, explores segmentation and positioning options for different categories of digital services, and applies the advanced marketing mix to enable marketers to adapt their traditional skills to this demanding new environment.

Course Contents
- The business of telco-enabled content and entertainment
- The content and entertainment ecosystem
- Bringing innovative digital services to market
- Implementation factors

4. Developing the Digital Service Opportunity (2 DAY)

To capture new digital service opportunities, operators need to develop strategies in a range of areas, including but not limited to: Over the Top (OTT) Services, Machine to Machine (M2M) and Industry Verticals, Cloud Services, Content and Entertainment, Premium Video, Payments and e-Money and Advertising. This programme examines the major trends and developments within the digital services arena, highlighting the opportunities for telecommunications operators and their customers. We set out the role of the telco as well as the key enablers for success—including the technologies, platforms and partnerships that need to be adopted.

Course Contents
- Defining Digital Services
- Dealing with OTT
- Machine to Machine and Industry Verticals
- The Cloud for Operators
- Content and Entertainment
- Payments, e-Money, Financial Services and Advertising
- Business Support Systems for Digital Services
- Developing Digital Services Business Models
- Operator Case Studies
1. Connected Television (2 DAY)

This course covers the increasingly important subject of delivering television and other content over IP-based networks, whether those networks are Telco-grade IPTV systems or Over The Top (OTT) Internet based connections. Commencing with a market snapshot and an analysis of the options, the course proceeds to investigate the formats and protocols used for TV and content delivery and also analysis the platforms and playback technologies currently deployed. IP network architecture and aspects of Quality of Service (QoS) are presented to demonstrate how Telcos can offer Television within multi-play packages for their customers. Finally the course considers the important topic of security and content protection, vital if content owners are to trust distribution partners and channels.

Course Contents
- Introduction to connected television
- The content
- TV delivery protocol stack
- Access and core network
- Internet engineering and QoS
- Key delivery networks
- Content protection and security

2. SS7 and SIGTRAN in Modern Networks (2 DAY)

This course aims to explain the evolving role that Signalling System No. 7 (SS7) and associated signalling systems play in modern telecommunication networks. Examples are used throughout to illustrate different call control scenarios, and also to show how services and mobility can be effectively controlled using the relevant SS7 protocols.

Course Contents
- Signalling requirements, and the basics of SS7
- SS7 functions, architecture and the message transfer part
- Call control and the ISDN user part
- Non circuit-related signalling
- NAP, MAP and CAP SS7 protocols
- The evolving network

3. IN and CAMEL (with Prepaid) (2 DAY)

This course explains the role that the IN (Intelligent Network) concept and CAMEL (Customised Applications for Mobile Networks Enhanced Logic) play in allowing effective control of services and features in modern telecommunication networks. Potential services and applications are discussed and used to illustrate the value that both IN and CAMEL can bring to both operators and users.

Course Contents
- Services in modern networks
- Call control and SS7
- Intelligent network architecture and protocols
- Basic GSM and UMTS operation (call control and service support)
- CAMEL—introducing IN into mobile networks
- CAMEL—the architecture and protocols
- The evolving mobile network

4. Cloud for Telecoms Operators (2 DAY)

This programme provides a comprehensive overview of cloud services and technology and explains in detail what it means for both the cloud services provider and the customer. We start with the concepts and features of cloud services before looking at the underlying technology and architecture that underpins the cloud, as well as the business drivers / issues facing businesses and consumers when migrating to the cloud. The opportunities for telecoms operators as cloud service providers, the business models available, the likely position within the value chain, implementation options and the foundations on which the telecoms operator’s secure cloud services can be built—including access technologies, security, trust, billing, pricing customer relationship, IT infrastructure, device management, integration with other services, and partnerships. Current implementation and deployments options are illustrated with real-life case studies to ensure participants have the full picture.

Course Contents
- Introducing the cloud
- Service models
- Migration to the cloud
- The role of the telecoms operator
- The telecoms cloud market place
### 5. Effective Policy and Charging Control through Diameter Signalling (3 DAY)

This programme explores the drivers, operation and deployment options of advanced Policy and Charging Control using the Diameter Protocol, as well as the impact on the network and interaction with existing signalling systems. It highlights the standard 3GPP solutions, including the migration to the Evolved Packet Core (EPC), as well as the major options for deployment. The Policy and Charging architecture, procedures and scenarios are examined in detail in order to build a comprehensive understanding of the scope and impact of Diameter, as well as best practice implementation options. The course looks at the overall requirements for signalling in modern networks, before focusing on the emerging role of PCC and Diameter in order to ensure continuing efficiency and effective traffic control.

**Course Contents**
- Introduction to policy and charging control
- Diameter protocol
- PCC and related procedures

### 6. OSS/BSS (1 DAY)

Exploring OSS and BSS solutions used in modern telecommunications, this course provides an overview of current and emerging systems as well as the enabling technologies. Procedures and organisational requirements are examined in both OSS and BSS areas, with due regard to the supporting infrastructure and IT requirements. The architecture and software platforms currently installed within networks are discussed and analysed, and a comparison made.

**Course Contents**
- OSS/BSS overview and requirements
- Focus on OSS
- Platforms and supporting networks
- Processes and procedures
- TMF and eTOM
- Focus on BSS
- Architecture and framework
- Integrating OSS and BSS

### 7. Discover NFC Ecosystem and Explore Mobile NFC Payment (3 DAY)

Mobile NFC offers new opportunities to network operators, banks, transport companies and other service providers. This course will allow you to easily understand the main standards, technologies, features and security around this NFC ecosystem, including Secure Elements, Handsets, Trusted Service Management solutions.

**Course Contents**
- Contactless
- NFC (Near Field Communication)
- Secure elements
- Security domain / ISD
- Bank back-end system
- Global platform 2.2
- SP and MNO TSM
- Mobile NFC payment
- Consumer experience

### 8. Security in Next Generation Telecoms (2 DAY)

Security is central to modern communications, but an understanding of that security is far from universal even within the industry. This course covers the most important aspects of security within modern communications networks, including GSM’s security-through-obscurity, mechanisms used in modern data networks, internet security, ciphers and key-exchange systems, and the different protocols and algorithms that are employed. Delegates will understand the resilience, and limitations, of the infrastructure as it stands, and as it is being developed, including the political forces which still influence the deployment of security around the world.

**Course Contents**
- Security concepts and architectures
- Ciphering and authentication
- Keys and key infrastructure
- Security in 3gpp
- Security in data networks and the internet
- Resilience and limitations

### 9. Next Generation and Converged Billing (2 DAY)

The move to digital services and the adoption of more innovative and flexible business models and pricing schemes depend on advanced Business Support Systems in order to maximise opportunities. At the heart of the telco revolution is the billing system. This programme explores the requirements, techniques, architecture and operation of modern (and advanced) converged billing systems. Both real-time and non-real-time charging scenarios are considered. Participants will also explore how billing works with the associated systems, including Policy Control and Charging (PCC) to provide the flexibility and capability needed by the modern telecommunications service provider.

**Course Contents**
- Converged billing requirements
- Advanced billing systems
- Real time and non-real-time billing scenarios
- Architectures and procedures
- Working with policy control and charging
- Revenue assurance and billing
1. IP in Modern Networks (2 DAY)

This course provides a clear understanding of IP technology and its use in modern data/telecoms networks. The requirements for an effective IP Network are explored, followed by a detailed analysis of existing and emerging technologies and systems. The use of IP in both fixed and mobile networks (including GPRS and UMTS), IP applications, addressing, routing, Quality of Service, security, AAA and VoIP are all explored.

Course Contents
• IP Protocol suite overview
• IP and data networks
• VoIP and quality of service
• IP and GPRS
• IP version 6
• SIP and the evolution to all-IP Core
• Security and AAA
• Access technologies (including WLAN)

2. Datacoms for the Telecoms Professional (4 DAY)

With increasing use of IP-based systems and equipment in modern telecoms networks, this very practical course provides the essential knowledge and skills required to implement and manage the increasingly complex infrastructure. Topics include implementing and configuring equipment and networks, configuring, addressing issues, security, protocol operation and integration into modern networks.

Course Contents
• Hands-on practical exercises
• Implementation
• Network configuration
• Datacoms equipment
• Addressing and routing
• Virtual private networks
• Interior/exterior gateway protocols
• Multi protocol label switching

3. Voice over Internet Protocol (VoIP)—Technology and Applications (2 DAY)

This 2-Day training course will provide delegates with a good understanding of the market for Voice over Internet Protocol (VoIP) services and the technologies that will be used to realise these services. This course introduces the concepts of VoIP, explores the drivers for the introduction of this technology and examines some of the current VoIP services. An examination of the architecture, protocols and components of VoIP networks provides a detailed view of how VoIP will be supported and integrated with existing network architectures.

Course Contents
• Introduction to VoIP
• VoIP services and applications
• Architectures for VoIP services
• Protocols and technologies
• VoIP performance requirements
• VoIP in telecoms networks
• Security and AAA

4. Multiprotocol Label Switching (MPLS) (2 DAY)

This course aims to explain the evolving role of MPLS and GMPLS in modern telecommunication networks. Designed to give a thorough understanding of the Architecture, Protocols and Operation of Multiprotocol Label Switching (MPLS), this course explains the concepts and implementation of the technology in detail. Presented in a clear concise format, this course explores key areas of the technology including scaling GMPLS networks, Label Stack Encoding, MPLS and GMPLS Security, Traffic Engineering and more importantly, provides a fundamental understanding of the Label Distribution Protocol. The processes are examined in depth, with emphasis being placed on the expanding role of IP and associated protocols and the use of MPLS over existing ATM and Frame Relay networks.

Course Contents
• MPLS architecture
• Label distribution protocol and procedures
• MLPS label stack encoding for label switching routers (LSR)
• Introduction to MPLS management
• MPLS applications
• Traffic engineering over MPLS generalised multiprotocol Label Switching Scalability
• MPLS and GMPLS security
• Label switching with frame relay
• MPLS using LDP and ATM VC switching

5. NFV and SDN—Architecture and Operations (2 DAY)

Communications Service Providers (CSPs) are going through a period of both business and network transformation in order to realise both efficiencies and to build a framework on which new opportunities and revenues can be maximised. The two areas of transformation are linked. This programme focuses squarely on the technical aspects of network transformation and how it can support the wider transformation within the business. Specifically, we look at the concepts of the Software Defined Network (SDNs), Network Function Virtualisation (NFV) and Cloud techniques. Concepts, architectures, best practice, operation and deployment issues are explored in some detail.

Course Contents
• Transformation initiatives
• SDN, NFV and Cloud techniques defined
• Benefits, capabilities and limitations
• Architectures and operation
• Best practice and deployment