Master Class in Interconnection and Next Generation Networks & Access

London, United Kingdom

“Very intensive but very worthwhile! It would have taken months in work to have gathered the level of knowledge & insight I gained in 5 days”

“I want to thank you for the great training course (that exceeded my expectation) and for the wonderful week in Bath”

“I would like to thank you and the ICC for the great, beneficial and well organized course”. “That was a great experience and I wish if I can have another course with ICC in the near future”.

Comments from 2016 Interconnection and Next Generation Access Master Class delegates
about TRMC

Telecommunications is a public utility service which should be available to everyone at a reasonable price. Typically the move to and maintenance of a competitive marketplace requires effective regulatory control.

The Telecommunications Regulatory Master Classes provide a comprehensive understanding of key issues in the world of communications. Delegates benefit from InterConnect Communications’ work with regulatory bodies worldwide, as well as from the insight of the experienced course presenters. The courses are delivered in a modern, comfortable environment, thus creating an atmosphere conducive to concentrated professional development.

Master Class in Interconnection and Next Generation Networks & Access

This Master Class in Interconnection and Next Generation Networks & Access is the ideal training resource for professionals involved in or wishing to learn more about the interconnection of modern telecommunications networks, particularly those working for operators, regulators and other telecommunications organisations.

The course provides delegates with an in-depth knowledge of the principles of interconnection before examining key areas such as network technologies, interconnection services, cost modelling and regulating mobile.

The course also includes a group exercise.

The Master Class covers the following main areas:

- Regulation of Interconnection
- Wholesale and Retail Services
- Setting Interconnection Charges
- Technology of Voice
- Interconnection Voice Services
- Technology of Data
- Interconnection Data Services
- Policy & Regulation: Core Networks
- Policy & Regulation: Next Generation Access
- Policy and Regulation: Mobile Networks
- Overview of Telecom Networks
- Dedicated Modules on Cost Modelling and NGN

who should attend?

With the liberalisation of telecommunications sectors around the world, the Master Classes are of particular interest to a range of professionals working within communications companies or regulatory bodies:

- Senior staff with specific responsibility for the regulation of the communications sector
- Senior staff working within regulatory authorities or government departments with responsibility for interconnection
- Business or regulatory affairs managers within incumbent or new-entrant communications network operators or service providers
- Lawyers working in government or commercial fields
- Senior representatives from funding agencies supporting development of the communications sector

Delegates at the Master Classes will benefit from the first-hand experience of senior technical, legal and operations executives. Communications sector regulation is rapidly changing: can you afford to be left behind?

Comments from previous delegates to previous Master Class:

“Overall one of the best telecom course I’ve attended. Instructors and organisers are very helpful and nice”

“The course is ideal. A perfect mix of learning and relaxation. It’s beyond classroom theory. The instructors brought the class closer to the industry and handled real time situation as affects the industry”

“The course is very detailed and the lecturers are very experienced. They have a wealth of global and industry experience”.

“This course provided an interesting overview of the elements involved in access and interconnection. It most certainly added to my professional development and the capacity building objectives of my organisation”. 

Copyright © 2017 InterConnect Communications Ltd.
InterConnect Communications Ltd (InterConnect) is a management consulting company specialising in the regulation of the electronic communications sector including policy, legislation and regulatory regimes. The company was established in 1984 to help governments create open competitive communication environments and to assist companies to adapt to changes. Our market is global and we have undertaken projects in countries across Western Europe, the Middle East, Africa, Asia-Pacific and the Caribbean. We have also been extensively involved in assisting EU Accession countries to develop their telecommunications regimes to meet EU requirements. InterConnect provides a matrix of regulatory, commercial and technical services which covers the following areas:

- **Regulation** – regulatory frameworks (including sector policy and legislation), the institutional development of regulatory bodies, authorisation and licensing, retail tariff regulation and universal service policy and strategy;
- **Access & Interconnection** – the drafting and review of regulatory guidelines and Reference Offers for network interconnection and Local Loop Unbundling, and the development of cost models and accounting separation methodologies for the regulation of wholesale tariffs;
- **NGNs** - assisting telecommunications regulatory authorities, incumbents and other licensed operators understand the implications of the evolving NGN environment and develop and implement suitable strategies.
- **Numbering** – the creation of National Numbering Plans, the development and implementation of policies to support Number Portability; support in IP naming and addressing;
- **ICT Development** – policies for the use of electronic communications networks as a tool for supporting regional development, designing and supporting the implementation of Open Access Networks, and the development of Universal and Rural Service schemes for boosting teledensity in unserved areas;
- **Due Diligence** – the provision of impartial expert advice to support investment, merger and acquisition strategies;

**Networks and Regulation**

Much of the reform in the communications sector stems from governments, regulators and international bodies such as the European Commission. InterConnect has extensive experience in advising policymakers on developing and implementing regulations and service providers in complying with them.

- Communications Policy and Regulation – developing communications sector policy and law including secondary legislation on licensing, access and interconnection, local loop unbundling, tariffs, pricing, and numbering
- Institutional Development – helping organisations to change and adapt to the evolving communications environment, markets and technologies
- Access and Interconnection Regulations – developing interconnection guidelines, reference interconnection and access offers
- Cost Modelling – advising on costing methodologies and development of top-down and bottom-up cost models
- Wholesale and Retail Tariffs – reviewing existing regulations and controls, recommending changes and assisting with compliance
- Broadband Strategy Development – assisting policymakers with developing and implementing national broadband strategies and plans
- Universal and Rural Service – developing universal service and access policies, and advice on universal service funding
- Authorisation and Licensing – advice on developing appropriate regimes and award processes, supporting applicants in bidding for new licences.

**other TRMC courses**

Log on to [www.icc-uk.com](http://www.icc-uk.com) for more information and online booking for the range of TRMC courses.
DAY 1

Session 1 - Regulation of Interconnection
This session provides an introduction to Interconnection and deals with the key issues:
• What is interconnection?
• Why is interconnection key to competition?
• The role of regulation
• Duties of the regulator
• Establishing the regulatory regime
• Choices for the regulator
• The interconnection market
• Interconnection strategies

Session 2 - Wholesale and Retail Services
Regulation is based on defining markets and services and determining whether one or more operators have dominance. In this session we will look at:
• How markets are defined and how dominance is assessed
• Relationship between wholesale and retail services
• Regulatory remedies including Reference Offers and related obligations
• Interconnection and unbundling
• Wholesale service solutions for NGA networks

Different services clearly exist in fixed and mobile networks and in the case of fixed networks there is a clear distinction between core and access network services with the access services now taking on a more important role.

Session 3 - Setting Interconnection Charges
Setting the costs for interconnection services is a key to developing a competitive environment in telecommunications.
• What methodologies are appropriate to interconnection services and how should each be most appropriately used?
• What is accounting separation?
• Benchmarking
• Revenue Sharing
• Retail Minus
• FAC – historic and current
• The various forms of LRIC

DAY 2

Session 1 - Technology of Voice
This session will look at the technology associated with the provision of voice services. It will look at how voice is carried using the various technologies which are now widely used across the following telecommunications networks:
• PSTN circuit switched
• NGN using IP
• GSM Mobile

The session will also discuss the technical implications for interconnection as a result of the different technologies being used.

Session 2 - Interconnection Voice Services
A range of services have been defined that represent the wholesale equivalent of retail services. Because the focus of regulation is towards incumbent fixed operators many of which still operate a circuit switched core PSTN network, many of these services are therefore still focused on circuit switched technology. This is however now slowly starting to change although many of the IP services are still offered on a commercial rather than a regulated basis. This session will look at the wholesale voice services which are generally offered in both fixed networks and mobile networks.

Session 3 – Technology of Data
This session will look at the technology associated with the provision of data services. It will look at how data is carried using the various technologies which are now widely used across the following telecommunications networks:
• Copper Access Network
• Fibre Access Network
• Wireless Access Network

The session will also discuss the technical implications for interconnection as a result of the different technologies being used.

Session 4 - Interconnection Data Services
As data, especially high speed broadband, becomes more important to society as a whole there is now a need for a wide range of wholesale data services, including various passive services such as facilities sharing. This session will look at the range of wholesale data services including:
• Leased lines and partial private circuits
• Bitstream and VULA
• Local Loop unbundling
• Infrastructure sharing

DAY 3

Session 1 – Policy and Regulation: Core Networks
Core networks are still made up of both circuit switched and IP technologies. We are however seeing an ongoing migration to an NGN environment and regulation therefore needs to be able to cater for these developments. In this session we will look at:
• What regulatory principles need to be followed
• What regulatory issues do NGNs pose?
• How should the differing objectives of operators and others be dealt with?

This session will suggest the real issues that NRAs should focus on.

Session 2 – Policy & Regulation: Next Generation Access
A key aspect of NGNs is expected to be the gradual deployment of faster broadband access, known as Next Generation Access. This session will describe:
• What NGA is
• What the drivers for NGA are
• The regulatory issues posed by NGA and Universal Service Obligations
• Possible approaches to the key issues of access pricing and information sharing
• EU Recommendation on NGA

Session 3 – Policy and Regulation: Mobile Networks
A number of NRAs have declared mobile operators as having SMP for various services. In this session we will look at:
• What are the implications for the operators of this?
• How can the principles developed for SMP fixed line operators be applied in the mobile sector?
• Is it appropriate to mandate MVNO?
• What are the issues from the Regulator and operator perspective from implementing National Roaming and MVNO arrangements
• Is it appropriate for a mobile operator to publish a RIO and how would it differ from a fixed operator’s?

From this point, participants follow a Workstream on either Cost Modelling or Next Generation Access for Wednesday afternoon and Thursday.
Workstream 1 - Cost Modelling

Session 1 – Overview of Principles of Cost Modelling
What are the key principles which are adopted when developing a cost model? In this session we will look at the basic principles, methodologies and different types of cost modelling:

- Cost causation
- Demarcation between access and core networks
- Implications for cost modelling in fixed and mobile networks
- Direct, Joint and Common Costs
- Capital and Current Account Costs
- Common cost mark-ups
- Use of glide paths

Session 2 - Practical Cost Modelling
This session will build on the previous one to look at how LRIC cost models are developed for fixed core, fixed access and mobile networks. It will cover regulatory and accounting issues specific to each kind of network, the development of LRIC as a solution to regulatory challenges (including pure LRIC) and key technical details including:

- How increments are determined
- How cost volume relationships are developed
- How routing tables are developed and used
- How unit costs are calculated
- Cost assumptions for network technologies (NGN/NGA etc.)
- Costing for different wholesale services

DAY 4

Session 3 - Cost Modelling: Case Studies
This session will focus on examples that provide a viewpoint across types of market, technology, services and regulatory objective. Perspectives will be given on:

- Regional and sectoral regulatory remedy choices
- Implementation issues
- Technical accounting variations
- Compliance measurement and enforcement

Session 4 - Cost Modelling: The Future
This session will develop issues and themes arising in the previous ones to highlight major changes and challenges expected to emerge in the future. Subjects covered will include:

- Policy developments across the world
- Changes in markets and technology
- Developments in technical accounting, including standards and methods
- The uses and success of LRIC methodologies

Session 5 – Hands On Cost Modelling
Participants will spend the last afternoon working on a practical exercise that will allow them to consider the various points introduced through the week relating to LRIC modelling and use them to develop a simple bottom up LRIC model for 2G GSM mobile networks.

Workstream 2 - Next Generation Access

Session 1 – NGA Technologies and Roll Out Issues
A range of technologies exist which can be used to deliver NGA services. These include:

- xDSL on end to end copper
- xDSL on copper and fibre
- Point to point fibre
- Point to multipoint fibre
- Wireless including 2G/3G/LTE, Wi-Fi, Wimax
- Satellite

In this session we will look in more detail at the technologies involved, including their strengths and limitations. We will also look at how deployments of NGA are being undertaken in a number of countries worldwide.

Session 2 – NGN Commercial Issues and Service Costing
The concepts of costing and charging for existing fixed and mobile networks are fairly well understood by operators and NRAs. The deployment of NGNs introduces many new challenges in both the retail and wholesale arenas.

- How are the different retail charging methods used for NGN delivered services: Capacity based, Event based, Flat rate, Content based?
- What types of wholesale arrangements can be used: Volume based, sender keeps all, capacity based?
- How could interconnection charges be set for NGN networks?

DAY 5

Session 3 - Economic Development
The business model for universal broadband access investment is much more complex than the USO models which have been developed over the years for voice services as the levels of investment are so much higher. It is therefore necessary to consider the wider benefits to users, service providers and government as well as a country’s economy as a whole.

In this session we will look at the ways in which costs and benefits can be modelled, how the need for gap funding can be determined and the ways in which justifications for financial support can be formulated.

Session 4 – OTT and Net Neutrality
Net neutrality is the principle whereby all information flowing across the internet should be treated equally. But with more people streaming data-rich video and the growth of social networking, the internet faces congestion concerns.

- “A bit is a bit is a bit”?
- The idea of ‘net neutrality’
- Network management
- Network pricing
- The innovation issue
- A competition problem?
- Regulation of the Internet?

Session 5 – Group Exercise
Participants will discuss and work through a simulation exercise based on the deployment of new technologies. The exercise will address the policy, regulatory, commercial and some technical issues associated with the provision of higher speed broadband services. At the end of the exercise, each group will be invited to give a short presentation on the aspect of the case study which they have been discussing.
Eric Tyson has worked in the telecommunications industry for over 30 years, initially with BT and more recently with InterConnect Communications. He has carried out project work throughout Europe, the Middle East, the Caribbean, Asia and Africa working with telecommunications ministries, regulators, operating companies and development agencies. Eric has focused extensively on the development of interconnection and tariff regimes, cost-modelling and regulatory and operator performance matters but also has considerable experience in new services development, business planning and benchmarking.

His recent work includes the review of the existing interconnection issues, recommendations on appropriate interconnection regimes, the development of LRIC cost models for both fixed and mobile services and the application of model outputs to establish fair, cost-based interconnection rates.

Mike Barford is a chartered management accountant and regulatory specialist with over 15 years’ experience in telecommunications regulation and finance. After some years as a commercial accountant in the manufacturing sector, he joined BT, specialising in regulatory pricing, running the Network Charge Control regime financial model, working with regulatory accounting and separation functions and managing the team responsible for the Carrier Price List. On leaving BT, Mike joined Tiscali UK as Regulatory Director where he was responsible for regulatory strategy, policy and public affairs in a time of rapid growth and the development of LLU and NGNs in the UK. He was heavily involved on the industry side of Ofcom’s Strategic Review of Telecommunications and the subsequent BT Undertakings. He dealt with a range of regulatory issues, across telephony, broadband, business services and pay TV. Mike’s particular areas of specialism include economic regulation and regulatory accounting, interconnection, access and infrastructure development.

Leo Borwick has worked in a variety of senior roles in the telecommunications industry for over 20 years, specialising in business modelling, pricing, regulatory policy and strategy. He has worked with fixed and mobile operators, challengers, ISPs, equipment suppliers and regulators in the UK, Europe, Africa and South East Asia. His recent work has focused on LRIC cost analysis, pricing strategy and price cap reviews.

Recent assignments have included building LRIC cost models of fixed and mobile operators, assisting an industry body with developing a consensus on NGN interconnection, assisting the UK regulator, Ofcom, with their review of the future of mobile termination charges and developing a set of scenarios concerning the future of the communications industry for the City of London.

Catherine Joyce is a senior consultant with InterConnect working on interconnection, cost modelling and tariff strategies. She has worked in Jordan, Slovakia, the Czech Republic, Bosnia, Serbia, Gibraltar, Malta, Morocco, Oman and the Lebanon. Before joining InterConnect, Catherine was a senior consultant with Cable & Wireless, where she was responsible for interconnect cost analysis, traffic modelling and analysis, and the development of interconnection strategies.

John Holdsworth has been involved in the telecoms sector for 25 years and has extensive experience of NGN Voice systems based on both SIP and H.323 protocols. He has been a member of ETSI TISPAN and an active member of the UK NICC (who defined the first regulated voice interconnect for NGN networks) contributing both security and call prioritisation elements to this work. An expert on Session Border Controllers and associated security issues, John has both a detailed and systems level knowledge of NGN networking including IMS architectures. Most recently, at Newport Networks, John helped create the first Carrier Calls SIP based Session Border Controller, targeted at NGN Interconnect Applications.

the presenters

TRMC 2017
London’s vociferous mix of grandeur, history, style and culture seems to get more enticing by the year. It charms with leafy Royal parks, free world-class art galleries and frothy ale amid wood-clad pubs; it intrigues with ancient streets and grand architecture, and excites with the neon-lit West End, designer shopping and an innovative dining scene that has become one of the richest in the world.

The average London street transports you back centuries with its architecture, and across continents with its population. Brimming with iconic British emblems, such as the ubiquitous black cab and the Houses of Parliament’s soaring limestone peaks, London unites a colourful history and solid traditions with boundary-pushing creativity and true multiculturalism. Whether exploring one of its glorious markets or taking it easy in a soft green park, expect to see faces from all corners of the globe.

Culturally, London is breathtaking, with its galleries and museums among some of the most prestigious and comprehensive on earth. From the natural wonders housed inside the ornate, terracotta façade of the Natural History Museum to the cutting-edge artists pushing boundaries inside the Tate Modern, a staggering number of London’s cultural attractions are free.

London offers an unrivalled range of cultural, academic and business resources. These include:

- approximately 250 museums and galleries, many of which are world famous, such as the National Gallery, Tate Modern and the British Museum.
- 385 public libraries and nearly one-third third of all the archives in the UK.
- entertainment venues, including classical music and opera at the Royal Albert Hall, Barbican and the Royal Opera House, and famous film venues including the Prince Charles Cinema and National Film Theatre.
- internationally famous sporting venues, including Wimbledon for tennis, Twickenham for rugby, Lord’s and the Oval for cricket and Wembley for football.
- access to London’s vibrant business community and a wide breadth of employers, from finance in the City of London and Canary Wharf, to entrepreneurial and tech start-ups in East London Tech City.

London has one of the largest urban transport networks in the world, with integrated bus, river and road systems spanning the city’s 32 boroughs so getting around is quick and easy.

the venue

This Master Class will be held at the Hilton London Kensington located in the leafy district of Holland Park. The hotel is 30 minutes from Heathrow Airport and only 20 minutes from Paddington Station with excellent transport links into Central London and three different tube lines nearby. Step inside the hotel and you’ll find stylish rooms and suites, fantastic dining and first-class facilities for business and recreation — everything you need for a remarkable stay in the capital.

The course will take place in the Holland Suite which has the latest in audio-visual facilities. Accommodation is not included in this course and attendees can either reserve rooms at the Kensington itself or other London hotels of their choice.
booking form

Please complete the form below as fully as possible.

Company Details:

Company

Address

Postcode

Country

Tel

Fax

Please register these delegates for the following Master Class:

Interconnection and NGN & Access Master Class TBA

Delegates:

Title (Dr/Mr/Mrs etc.)

First Name

Last / Family Name

Job Position

Department

Tel

Email

Title (Dr/Mr/Mrs etc.)

First Name

Last / Family Name

Job Position

Department

Tel

Email

Course Fees and Payment

Fees for the Master Classes are £3200 per delegate, excluding VAT. Please select one payment method from the options below. Payment should be in Pounds Sterling.

☐ Cheque: made payable to InterConnect Communications Ltd.

☐ Bank transfer:


☐ Credit card payment:

We accept credit card payment by Visa and Mastercard.

Customers wishing to pay by credit card should contact us directly with card details after registration has been confirmed and invoice issued. To process your order, we will require the following information:

• Name of Cardholder (as it appears on the card)
• Cardholder Address (as it appears on your card bill) and email address
• Card Number, Start Date and Expiry Date
• Card Security Code (this is the last three digits before or after your card number either on the signature strip or on the front of the card).

Once you have received your confirmation and invoice, please contact Theresa French on +44 1291 638434 to facilitate payment.

Authorising signature

Terms and Conditions

Course Fees: Fees for the Master Classes are £3200, excluding VAT. VAT will be charged where applicable at the standard UK rate. Fees include lunch, refreshments and course documentation. Accommodation is NOT included in this course.

All course fees must be paid by the due date stated on the invoice. All bookings are provisional and will only be confirmed once payment has been received. InterConnect Communications (InterConnect) reserves the right to reallocate places if full payment has not been received.

Delegates are responsible for the payment of any expenses incurred within the hotel. These costs should be settled by the delegate directly with the hotel.

Discounts: Discounts will be offered for three or more places reserved in a single booking irrespective of course attended. A single invoice will be raised and payment must be made by the date indicated on the invoice. Payment will not be accepted in stages related to individual course dates.

Cancellations: Cancellations received in writing up to 14 days before the start of the Master Class will be refunded in full less an administrative charge of 10% (+ VAT where relevant). We are unable to refund cancellations received 14 days or fewer prior to the start of a Master Class. However, in such cases and at InterConnect’s discretion, a place may be offered at a later Master Class. Delegate substitutions may be made at any time, though confirmation of any changes must be received by email, fax or post prior to the start of a course.

Non-attendance: In the event of non-attendance, full course fees will remain payable and no refunds will be made.

Changes to Programme or Venue: InterConnect reserves the right to make changes to or cancel its published course due in part or in full to unforeseen circumstances or insufficient numbers. InterConnect will make all reasonable efforts to notify delegates of any necessary changes in good time and if necessary to reschedule or to relocate the Master Class. Delegates will be entitled to a refund of the course fee if the course is cancelled or is changed to a date or location which is not acceptable to the delegate. InterConnect will have no liability to delegates for damages of any nature arising from the cancellation of a course or from a change in its date, its location or its speakers.

Data Protection: The personal information provided by you or your organisation as part of your attendance will be held on a database and used to facilitate your attendance at the course. This information may subsequently be used by InterConnect to advise you, or others suggested by you, of relevant courses or services provided by the company. Please be assured that InterConnect does not share any such information with external companies.