

Engineering the future

# ITSF 2004

## The 2nd IEE International Telecommunications Synchronisation Forum

1 – 3 November 2004  
IEE, Savoy Place, London, WC2R 0BL, UK

Technology Overview and Update Workshop:

Monday, 1 November 2004

Main Conference: Tuesday & Wednesday 2 & 3 November 2004

A 3-day papers driven telecom industry forum and workshop, focusing on developments, techniques, issues, problems and solutions relating to synchronisation and timing applicable to the Telecoms Industry. The social programme includes a flight on the London Eye and a Dinner with guest speaker, Graham Whitehead, BTextact.

Organised by the IEE Communications Networks & Services Professional Network

<http://conferences.iee.org/itsf04/>

Supported by:



# Introduction

In 2001, when ITSF was first held, we said that the telecommunications world was rapidly converging towards an IP only environment. This year BT announced that their 21st Century Network evolution would begin to unfold soon and put IP in the access layer. Other telcos are contemplating the same thing. So do we still need to worry about synchronisation (sync)? Let's split the discussion into core and edge requirements.

In the core, IP traffic will be carried over SDH and DWDM technology. Most carriers have now built these core networks, mesh IP in the core is evolving, the ETSI SDH sync rules may need to be revisited. Sync can be refined, improved, perhaps better managed, unsupportable equipment updated or replaced. However, sync still has a role to play.

The edge of a network can be defined in two ways, either as the boundary with another network or the last mile into an application. This latter scenario – beyond the edge – the “fringe” has many legacy services working independently but relying symbiotically on the connection for effective operation. What will happen to these legacy applications if we remove the constant bit rate traceability to network sync? Let's examine one of the more common applications in the last mile space. 15 years ago we designed GSM base stations to self calibrate their radio accuracy from this last mile connection. In the mid 90's we started running E1's over SDH which caused some notable problems to base station performance.

By the middle of 2005 E1s will be delivered by circuit emulation over Ethernet – what now the GSM base station? Some people argue that 3G Node B's will not operate in such an environment. Should the wireless operators with their massive investment in the licences be worrying about this? Should the backhaul providers be considering this? What do you think? If you have a view you need to attend ITSF 2004.

**So, as we further develop transmission technology to handle more and more bandwidth, ask yourself the following questions:**

- Do you understand the need for synchronisation?
- Do you recognise the impact of loss of sync on your application?
- Do you understand the link between QoS and synchronisation?
- Can support and operating costs be improved by the effective deployment of synchronisation (sync) solutions?
- Is there a link between your revenue and quality of sync?
- Are you aware how new technologies (UMTS, DWDM, Ethernet) may impact your company's future operations?

There is a proven need for synchronisation, that's why more than \$200m a year, is spent on synchronisation products by Network Operators and Service Providers around the globe.

So, whether you represent a network operator, service provider, system's integrator, equipment vendor or enterprise user this conference provides the knowledge and industry contacts you need to be successful.

ITSF 2004 is a two day conference preceded by a half day educational workshop. Networking opportunities include a Welcome Drinks Reception coupled with a flight on the British Airways London Eye and a Conference Dinner held in the IEE's Riverside Dining Room with majestic views over the River Thames, the Houses of Parliament and the London Eye.

## What topics will be covered?

ITSF 2004 will look at the full range of synchronisation related topics from the basics through to future technology developments, with a strong focus on practical applications and product-driven papers. For newcomers to synchronisation a workshop session will bring participants swiftly up to speed. Over four Sessions the main conference will cover:

- The Background and Business Case for Synchronisation
- Synchronisation Standards & Measurement Technology
- Network Synchronisation in Local, National & International Networks
- Internetworking with Emerging Technologies – Synchronisation Issues
- Effect of Emerging Core & Access Technology with Synchronisation Transport Layer
- Complementary Disciplines: Time Transfer, Network Management & Planning

## Who should attend?

ITSF 2004 will present a unique opportunity to mix with experts in the field from all areas of synchronisation and is a must for:

- Network designers, planners & architects
- Service & support engineers
- Core & access network strategists
- Transmission planners
- Sync & standards specialists
- Equipment designers
- Network operators
- Managers of network operations, or anyone working in technologies such as ATM, SDH, WDM & DWDM xDSL, IP, optical networks & satellite communications
- Product designers of clock recovery circuits & phase locked loops telecom infrastructure equipment will also find the conference useful

## ITSF 2004 Steering Group

**John Laverty**, National Physical Laboratory, UK (Steering Group Chairman)

**Charles Curry**, Chronos Technology, UK (Conference Chairman)

**Ghani Abbas**, Marconi Communications, UK

**Ray Allwood**, O2, UK

**Jean-Loup Ferrant**, Alcatel, France

**Charlie Ferreira**, Symmetricom, UK

**Mike Gilson**, BTextact, UK

**Phil Johnson**, Easynet, UK

**Martin Kingston**, Orange, UK

**Roe Rae**, Connor Winfield, USA

**Dominik Schneuwly**, Oscilloquartz, Switzerland

**Marc Weiss**, NIST, USA

**Ian Wright**, Chronos Technology, UK

For a full who's who of the Steering Group please visit:

[www.telecom-sync.com/](http://www.telecom-sync.com/)

## NIST-T1X1 Workshop on Synchronization in Telecommunications Systems

ITSF and the NIST-T1X1 WSTS are the two premiere industry neutral workshops in the world focused on Synchronization Issues in Telecommunications Systems. They are hosted independently, but with an informal cooperation between them. The NIST-T1X1 WSTS will be held on 10-12 May 2005, Broomfield, Colorado, USA.

## Conference Organiser

**Simon Blows**, The IEE, Event Services, Michael Faraday House  
Six Hills Way, Stevenage, Herts, SG1 2AY, UK

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## Monday, 1 November 2004

### Workshop

A workshop delivered by leading industry experts covering the current status of synchronisation. The material reflects the latest standards and technology trends, this workshop session is a user-focused review of the main reasons why synchronization is important in telecom networks. All delegates even with a sound knowledge of synchronisation, its origins, definitions and practical implementations will benefit from this up-beat presentation. Participants will enhance their knowledge base and fill in some of the gaps. This should enable full value to be derived from the main conference programme over the following two days.

12:00 Registration and Lunch Supported by Symmetricom



### Technology Overview and Update Session

Session Chair: Ian Wright, Chronos Technology, UK

13:00 Introduction, Fundamentals & Standards  
Ian Wright, Chronos Technology, UK

13.25 Introduction to Civil Timescales  
Peter Whibberley, NPL, UK

### Sync Elements Session

13.45 Quartz Clocks  
Yves Schwab, Oscilloquartz, Switzerland

14.25 Clock Technology  
George Zampetti, Symmetricom, USA

15.05 GPS as a Telecom Sync PRC  
Marc Weiss, NIST, USA

15:45 Break

16.10 Quality Metrics for Sync Networks  
Dominik Schneuwly, Oscilloquartz, Switzerland

16:40 Synchronisation in SDH Networks  
Jean Loup Ferrant, Alcatel, France

17.10 Synchronisation in ATM Networks  
Jim Olsen, Symmetricom, USA

17.30 Fundamentals of NTP  
To be advised

17:50 Chairman's Wrap-Up

18:00 Close of Workshop

18:00 Welcome Drinks Reception  
The Riverside Dining Room, The IEE, Savoy Place

19:45 Meet at British Airways London Eye

20:00 British Airways London Eye Flight supported by Symmetricom  
British Airways London Eye, South Bank



The Welcome Drinks Reception will be held in the Riverside Dining Room at the Headquarters of The IEE, with magnificent views over the River Thames, Houses of Parliament, The London Eye and the City. The London Eye is only a short walk away and this is a perfect opportunity to network with friends and colleagues in a stunning setting. Guests are very welcome.



## Tuesday, 2 November 2004

### Main Conference

08:30 Registration & Coffee

### Overview Session

Session Chair: Charles Curry, Chronos Technology Ltd, UK

09:30 Welcome & Introduction  
Charles Curry, Chronos Technology Ltd, UK

09:35 Keynote  
Michael Fabricant MP, Shadow Minister for Economic Affairs

09:50 The Synchronisation of Frequency, Phase and Time  
in Telecom Networks  
Dominik Schneuwly, Oscilloquartz, Switzerland

10:20 Evolution of Synchronisation Quality Metrics  
and Test Procedures  
Ian Wright, Chronos Technology, UK

10:50 The Future of Satellite Timing Solutions

GPS Future  
Marc Weiss, NIST, USA

Galileo  
Peter Whibberley, NPL, UK



11:20 Refreshments

11:45 Evolution to Next Generation Telecommunication Synchronization Networks  
George Zampetti, Symmetricom, USA

12:15 Embedded GPS Timing at the Edge of the Network  
Rob Rae, Conner Winfield, USA

12:45 Discussion Forum

13:00 Lunch

### Synchronisation for IP/Access Technologies and Applications Session

Session Chair: Phil Johnson, Easynet, UK

14:00 Synchronisation for Improving VoIP Quality  
Jim Olsen, Symmetricom, USA

14:35 Transporting Synchronization over Packet  
Motti Goren, Lycium Networks, Israel

15:10 Recent Advances in IEEE 1588 Technology and Applications  
John Eidson, Agilent, USA

15:45 Refreshments

16:10 An Overview of Synchronization over Packet Network  
Silvania Rodrigues, Zarlink Semiconductor, Canada

16:45 Observations and Measurements of Sync Transport Access Technologies  
Charles Curry, Chronos Technology Ltd, UK

17:20 Discussion Forum

17:30 Close

19:00 Pre-Dinner Drinks  
Riverside Dining Room, The IEE, Savoy Place

19:30 Conference Dinner:  
Guest Speaker – Graham Whitehead, BTextact  
Riverside Dining Room, The IEE, Savoy Place



The Conference Dinner is to be held in the Riverside Dining Room at Savoy Place. Special guest speaker, Graham Whitehead, is a Principal Consultant with BTextact and has made numerous contributions to TV, Radio and printed media. He specialises in looking to the future and drawing the bigger picture of how life might look in the next century. Not to be missed! For a

full biography on Graham Whitehead please see the event website. Guests are very welcome at this social event.

## Wednesday, 3 November 2004

### Synchronisation and Transport Networks Session

Session Chair: Mike Gilson, BTextact, UK

09:00 The New Synchronisation Network of Deutsche Telekom  
Helmut Imlau, Deutsche Telekom, T-Com, Germany

09:45 Cheaper & Deeper  
Greg Mason, BT, UK

10:30 Network Sync Architecture of Sprint's Long Distance/PCS Network  
Chuck Norman, Sprint, USA

11:25 Refreshments

11:40 Models, Measurements and Impact Analysis of Wander Generation in Optical Ground Wire Based Fibre Networks  
Louis Lamarche, Hydro-Quebec, Canada

12:05 Synchronisation and the Optical Transport Network (OTN)  
Dominik Schneuwly, Oscilloquartz, Switzerland

12:30 Synchronisation and Time Tag Distribution  
Eugene Lambert, Hydro-Quebec, Canada

12:55 Discussion Forum

13:00 Lunch

### Synchronisation for Mobile/Wireless Applications Session

Session Chair: Ray Allwood, O2, UK

14:00 Session Chair's Introduction  
Ray Allwood, O2, UK

14:05 Synchronisation Requirements for the Transmission of 3G Wireless Traffic (UMTS Network) – Infrastructure Manufacturers Perspective  
Stefano Ruffini, Ericsson, Italy

14:30 Transport Evolution in Mobile Networks  
Andy Sutton, Orange, UK

15:00 Synchronisation for Mobile Networks; Past, Present and Future  
Martin Kingston, Orange, UK

15:30 Synchronisation Quality at GSM/3G Base Stations  
Charles Curry, Chronos Technology, UK

16:00 Discussion Forum

16:15 Close of Conference

The above programme is subject to change

The IEE is not, as a body, responsible for the views or opinions expressed by individual authors or speakers.



## Booking Information

### Registration Fees

Workshop Registration fees entitle registrants to attend the Workshop on **Monday, 1 November**, receive a copy of the Workshop notes and include refreshments as per the programme. It does NOT include the Welcome Drinks Reception and London Eye Flight – this may be purchased separately if not attending the main conference.

Conference Registration fees entitle registrants to attend the main conference, receive a copy of the Conference Publication and include lunches, the provision of morning and afternoon refreshments plus the Welcome Drinks Reception and London Eye Flight.

Conference Dinner on **Tuesday, 2 November 2004** is an additional cost (see registration form). Guests are very welcome at this event. Contact the organisers if you wish to purchase a table.

### Discounted Registration Fees

Members of the IEE and all Associated Societies are entitled to a Member discounted registration fee.

If you would like to find out more about becoming a member of the IEE, view membership subscription fees or use the on-line membership application facility, please visit: [www.iee.org/membership/](http://www.iee.org/membership/).

You can also apply for Affiliate membership (for those who are not qualified electrical engineers, or who do not work in engineering, but have an interest in IEE activities).

### Payments and Cancellations

Payment for registration is required in advance of the conference and can be made by credit card (Access, American Express, MasterCard, Visa) or cheque made payable to IEE and crossed.

In the event of cancellation, and provided that written notice is received seven days prior to the event, a refund of 50% of the registration fee will be made. If no notice of cancellation is received, no refund can be made.

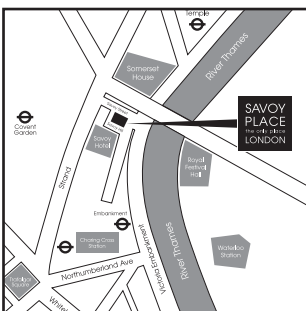
### Value Added Tax

The amounts shown for VAT are calculated at the current rate of 17.5%. If the VAT rate is altered as a result of government legislation, all fees and charges will be adjusted.

### Insurance

The organisers cannot be held responsible for accidents to conference registrants or for damage to or loss of their personal property howsoever caused, registrants should therefore make their own insurance arrangements.

## General Information



### Venue

ITSF 2004 will be held at the IEE, Savoy Place, London, which provides high quality conference facilities and enjoys a unique central London location overlooking the River Thames. The IEE building is within easy walking distance of the underground network, close to the lively Covent Garden area and other parts of the West End with its many restaurants and high standard hotel accommodation.

### Travel

The IEE is situated at Savoy Place, off Victoria Embankment near to Waterloo Bridge. Savoy Place is within easy walking distance of Charing Cross and Waterloo Mainline Stations as well as the following Underground Stations:

**Charing Cross** (Bakerloo and Northern Lines)

**Covent Garden** (Piccadilly Line)

**Embankment** (Bakerloo, Circle, District and Northern Lines)

**Temple** (Circle and District Lines)

A wide number of bus routes also serve the IEE, stopping in the Strand nearby.

Registrants are strongly advised not to travel by car, as the area is a restricted parking zone. There will be no parking available within Savoy Place. If travelling by car is unavoidable, the nearest National Car Parks are situated at St Martins Lane Hotel, 45 St Martins Lane, WC2N and Drury Lane. Please refer to [www.ncp.co.uk/](http://www.ncp.co.uk/) and type 'Savoy Place' in the search function and click on 'Among London Streets' for a map.

### Working Language

The working language of the conference is English and will be used for all printed material, presentations and discussions.

### Registration Information

Delegates are asked to register with the ITSF 2004 conference organisers upon arrival at IEE Savoy Place. The registration desk will be located in the Common Room on the ground floor and will be open at the following times;

**Monday, 1 November** 12.00 – 18.00 hrs

**Tuesday, 2 November** 08.30 – 17.30 hrs

**Wednesday, 3 November** 08.30 – 16.15 hrs

Please note that your name badge must be worn to obtain admission to the conference sessions, the exhibition and for the service of refreshments.

## Sponsorship and Exhibition Packages Available

### Sponsorship

There are a number of sponsorship opportunities designed to help promote your organisations profile at the event and in the market-place.

### Exhibition

The ITSF 2004 exhibition will be open during the conference. The exhibition will take place in the Riverside Dining Room, all lunches, refreshments and the Welcome Drinks Reception will also be held here, giving exhibitors the opportunity to meet and network with delegates in an informal environment.

Full details of costs and how to sponsor the conference can be viewed by visiting the ITSF 2004 website: <http://conferences.iee.org/itsf04/>. If you would like to discuss the possibility of sponsoring or exhibiting at ITSF 2004 further, please contact the ITSF conference organisers.

### Accommodation

BSI (Booking Services International Limited) has been appointed by the IEE to assist delegates attending the conference. An allocation of rooms has been held in the vicinity at specially negotiated reduced rates. To view the hotels on-line or to make a reservation please visit the web site [book@bsi.co.uk](mailto:book@bsi.co.uk) or contact them on :

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## Web

[www.iee.org/events](http://www.iee.org/events)

