INTERNATIONAL COUNCIL
ON LARGE ELECTRICAL SYSTEMS

Guide Book

For

CIGRÉ (UK) NGN - CIGRÉ's Next Generation

WORKING DOCUMENT

CIGRÉ is a permanent international, non government, non-profit-making association, founded in France in 1921.

Its aim is to develop and distribute technical knowledge in the field of the generation and transmission of high voltage electricity.

UK 2007 Rev0

Introduction

It can be argued that the power industry is one of the most important industries in the world. The need for electrical power is essential for the development of society and the welfare of people; without electric power, the world would still be in the dark-ages.

For this reason, it is understandable why many people would want to become involved not only within this industry, but also with developing and sharing their technical knowledge to create state-of-the-art and world practices / standards.

To facilitate this desire of many, CIGRÉ was established to develop and distribute technical knowledge and experience in the field of the generation and transmission of high voltage electricity. It does this by providing an interactive forum that brings together key players, research workers, producers, manufacturers, system operators, traders, and regulatory bodies. Originally founded in France in 1921, this organisation has expanded worldwide with representatives from more than eighty countries.

To the non-member (and even to some members), the CIGRÉ organisation can appear complex and exclusive. To the inexperienced engineer starting out in the power industry, becoming involved with such a prestigious organisation can appear difficult and daunting.

In order to overcome these barriers that seem to be in place for new engineers, the 'Next Generation Network' (NGN) has been established in order to ensure that everyone's opinions and views are heard, to bring a fresh look to an ever ageing industry and more importantly, so inexperienced engineers can learn from the many experts within the industry.

That is, the NGN (with members who will no doubt form part of the future CIGRÉ organisation) will provide the next generation of engineers to lead and to be at the forefront of the power industry in the 21st Century and beyond.

For those wanting to get involved within CIGRÉ and the NGN, this document will hopefully explain the process and the opportunities available to their members.

Contents

1 CIGRÉ Introduction

Since its creation, the core of CIGRÉ's mission has been the development of knowledge and exchange of information. Briefly stated, CIGRÉ is a worldwide organisation that aims to:

- Facilitate and develop the exchange of power engineering knowledge and information between engineering personnel and technical specialists;
- Add value to knowledge and information exchanges by synthesising state-of-the-art and world practices / standards;
- Make managers, decision-makers, regulators and academia aware of the synthesis of CIGRÉ's work in the area of electric power.

More specifically, issues related to the development, operation and management of electric power systems, power generation, high voltage transmission, some aspects of distribution of electricity, as well as the design, construction, maintenance and disposal of equipment and plants are at the core of CIGRÉ's Mission.

1.1 Methodology (How it Works)

CIGRÉ achieves its objects by all appropriate methods, notably as follows:

1. It organises, every two years, a conference known as a 'Session' held in Paris for 2500 delegates.
2. In the years without a Session it organises 'Symposia' spread in locations around the world.
3. It provides a means of addressing issues particular to countries or regions through the action of its 'National Committees' and 'Regions'.
4. Through its sixteen 'Study Committees' (each with multiple 'Working Groups') it carries out and encourages international investigations, coordinated by the CIGRÉ 'Technical Committee'.
5. It creates and maintains friendly relations between associations, administrations, engineers, academics, researchers and manufacturers in all countries.
6. It collaborates with the IEC and other international organisations of related interests.

For a more in-depth overview of the CIGRÉ organisation, see Chapter 5.

2 CIGRÉ Next Generation Network

The purpose of the CIGRÉ-UK Next Generation Network (NGN) is to:

1. Ensure that the interests of new members are represented within CIGRÉ-UK, both for their own benefit and for the future sustainability of CIGRÉ.

2. Provide the opportunity for personal development.

2.1 Scope of the NGN

- Provide a consensus view on how CIGRÉ and CIGRÉ-UK activities can reflect the needs of the NGN Members.
- Provide a vehicle to raise specific NGN member initiatives within CIGRÉ-UK (Technical Visits / Tutorials / etc).
- Provide representation on the CIGRÉ-UK Exec regarding the NGN.
- Participation in CIGRÉ Central Office initiatives aimed at NGN Members.
- Organise specific NGN meetings/events as stand alone events or in conjunction with IET/other bodies.
- Provide the structure for personal development / advice through Mentoring.
- Provide the structure for NGN members to Liaise with contact persons in each CIGRÉ-UK member company/university.
- Provide links into each study committee through Contact with each UK Regular Member.
- Provide the process for selecting NGN members to attend Paris session and to organise the co-ordination between members at the event.

2.2 Why become a member?

The Next Generation Network has been established for professionals who have begun to progress their career within the power industry. The most significant advantage in membership is endless access to knowledge contained in CIGRÉ publications and, through formal and informal relationships, the opportunity of exchanging worldwide information regarding the Power Industry and its operation.

In short, whether you are a PHD student, Researcher, or a member of an Industrial Company, the benefits of membership are clear:
The benefits of joining the NGN include:

- Access to state of the art technical knowledge and information via a whole range of communications media like the ELECTRA Journal and the **e-cigre**

website which is the on-line library and bookstore of CIGRE, where you can search for a CIGRE publication, order a hard copy, or download.

- The opportunity to be at the heart of the latest developments in the fields of electrical power engineering and technology, make the international industry aware of your existence and promote your business.
- Access to Working Groups and key contacts and the facilitation to take part in the technical work within CIGRÉ.
- A mentoring scheme
- Access the Paris Session
- Access to UK events organised by the NGN for its members (Annual events, technical visits, lectures, etc.)
- The interaction with colleagues worldwide in your areas of interest and thereby gain from their experience.

Not only are there many benefits by joining the Next Generation Network, by actively taking part within the NGN, you will provide CIGRÉ with fresh ideas and approaches to problems while also providing CIGRÉ and the power industry the next generation of engineers.

3 CIGRÉ Involvement / Benefits

3.1 Involvement in Sessions

NOTE: This section will be updated for CIGRE NGN members (for example: how to enter, financing, why publish an article etc.) when the process is finalised.

The Paris Session is a one week event where the general programme consists of an opening session on the Sunday, open panel sessions on the Monday, and Study Committee (SC) sessions Tuesday – Friday (four sessions per day).

Each SC session is structured around pre defined topics (these are chosen by the SC and agreed by the Technical Committee) known as Preferential Subjects (PS)

3.1.1 Current Process for contribution within CIGRE

Papers synopses are submitted by National Committees which address one of the PSs. The paper synopses submitted for a particular SC are reviewed by the SC chairman and either accepted or rejected. A SC will normally select around 25 synopses. Once selected, the authors will draft their paper and submit by the January of the year of the session.

The papers are read by a member of the SC, (referred to as the Special Reporter, SR). The SR will publish a report ahead of the session in which the papers are summarised and questions passed for debate at the session.

Delegates prepare contributions for the session that address the questions posed by the SR, papers are not presented.

The general timetable is, year before session:

- Mid January - preferential subjects published.
- January - UK paper selection committee formed and timetable for submitting synopses to selection committee is published.
- May - synopses submitted by CIGRÉ-UK to CIGRÉ Central Office.
- August - synopses selected by SC chairman and authors informed.
- September - referee appointed for each UK paper selected and timetable set for paper completion.

Year of session:

- January - completed papers sent to Paris.
- March - Special Reports published.
- August - contributions to session sent to SR's for agreement.

3.2 Involvement in working Groups

NOTE: This section will be updated for CIGRE NGN members (for example: how to become involved, why become involved, case study, etc.) when the process is finalised.

To find out what the different topics covered by the Study Committees are, and who the relevant contact is for participation within a Working Group, see Chapter 6.

3.3 Mentoring Scheme

NOTE: This section will be updated for CIGRE NGN members (for example: how to become involved, Mentors contact list, case study, etc.) when the process is finalised.

3.4 Events

NOTE: This section will be updated for CIGRE NGN members when the events calendar is finalised. The points below are considerations that are being finalised.

Criteria – The fundamental criteria decided is that events should be open to anyone, to allow for NGN members to develop network contacts.

Three events a year were considered ample, and would not occur over a weekend.

Events organised will include a technical aspect, particularly to give accreditation for industrial members leaving work to attend.

4 CIGRÉ NGN in depth

4.1 Constitution

NOTE: This section will be updated for CIGRE NGN members (for example: how to become a member, how long for, roles and responsibilities, the constitution etc.) when it is finalised.

The proposed structure of the NGN is shown in Fig 4.1

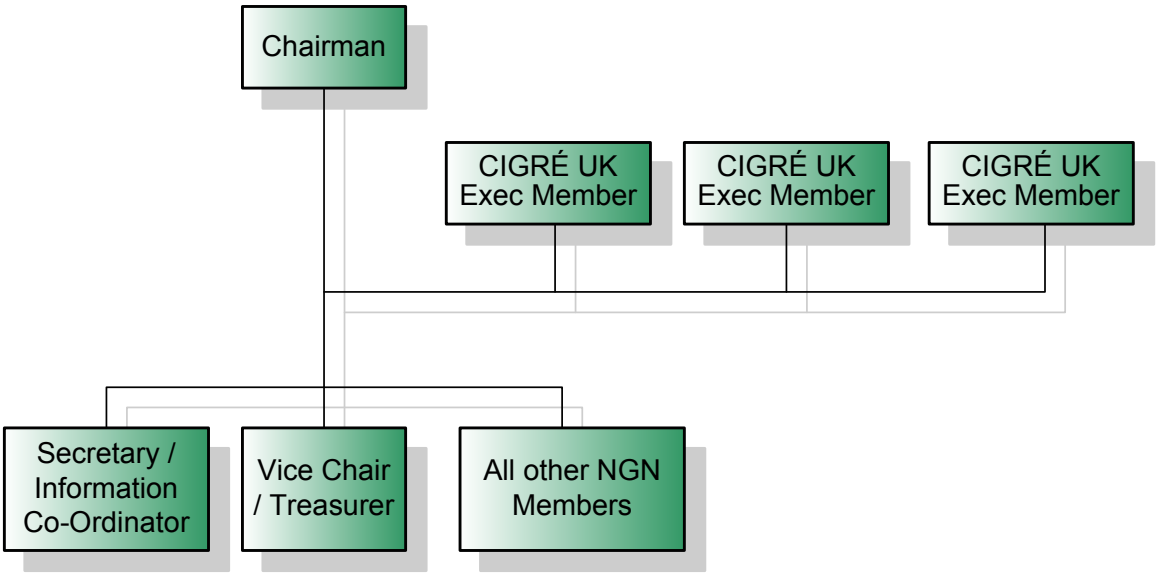

Fig 4.1: Proposed Structure of the NGN Committee.

4.2 Goals

4.2.1 Short Term

- Improve the communication between NGN Members and CIGRÉ-UK.
- Ensure that all people within the criteria to be a CIGRÉ-UK NGN member are aware of the NGN and of the activities and benefits of CIGRE, with the aim of attracting more members.
- Improve communication within the NGN.

4.2.2 Long Term

- Assist the CIGRÉ-UK Executive to focus resources and energy into issues seen as being key for the next generation of T&D Industry staff.
- Develop technical knowledge of NGN members through engagement with established CIGRÉ Working Groups and other technical visits and activities.
- Ensure that CIGRÉ continues to carry out the highly technical activities it is known for.
- To work with CIGRÉ-UK in making their activities more 'visible' to all members and potential members.
- To make sure membership of the NGN is enjoyable and worthwhile.
- To make a positive change to the current image of CIGRÉ.
- Ensure that there is easier access to CIGRÉ Working Groups.
- To uphold a NGN Session in Paris.
- Maintain good communications between NGN Members and CIGRÉ-UK.
- Maintain good communication within the NGN.

5 CIGRÉ in depth

5.1 Differentiation from other international bodies

CIGRÉ works alongside many other organisations, some of the most distinguishable being the Institute of Electrical and Electronics Engineers (IEEE) and the Institute of Engineering and Technology (IET).

Fig 5.1 explains the fundamental differences between CIGRÉ and the other organisations.

	Focus	Geography	Membership Involvement	Technical Committee Work	Differentiation	Summary
IET	Industry Wide	British Influenced	Students to Retirement	Limited to Professional Networks	Member Services	Wide Remit; UK biased
IET – Power Sector	Power Vertical	British Influenced	Students to Retirement	Limited to Professional Networks	Member Services	Power Focus; UK Biased
IEEE	Industry Wide	American Influenced	Students to experts	Delivering IEEE Standards	Member Services	Wide Remit; American Biased
IEEE – Power Engineering Society	Power Vertical	American Influenced	Students to experts	Delivering IEEE Standards	Member Services	Power Focused; American Biased
CIGRÉ	Generation, Transmission & Distribution	Global	Emphasis on those employed in industry and supporting those studying in T&D area.	Cross – industry; provides the basis for standards	T&D; Global; THE Industry Reference; Cross Utility / Supplier / Academia Working Groups	Global; Generation T&D specialisation; Industry Reference; Goes beyond but complimentary to IEEE and IET

Fig 5.1: Differentiation of CIGRÉ and other international organisations.

5.2 Organisation of CIGRÉ

CIGRÉ has a worldwide presence in over 80 countries with 4200 individual members and 900 collective members, deriving its income from members' annual membership fees, from the proceeds of the Sessions and Symposia, and from sale of its publications. It communicates the majority of its business and research mainly in English with French Translation.

5.2.1 Main CIGRÉ Bodies

The main Bodies of CIGRÉ are (as illustrated in Fig 5.2) the General Assembly, the Administrative Council, the Steering Committee, the Technical Committee, the Study Committees and the National Committees.

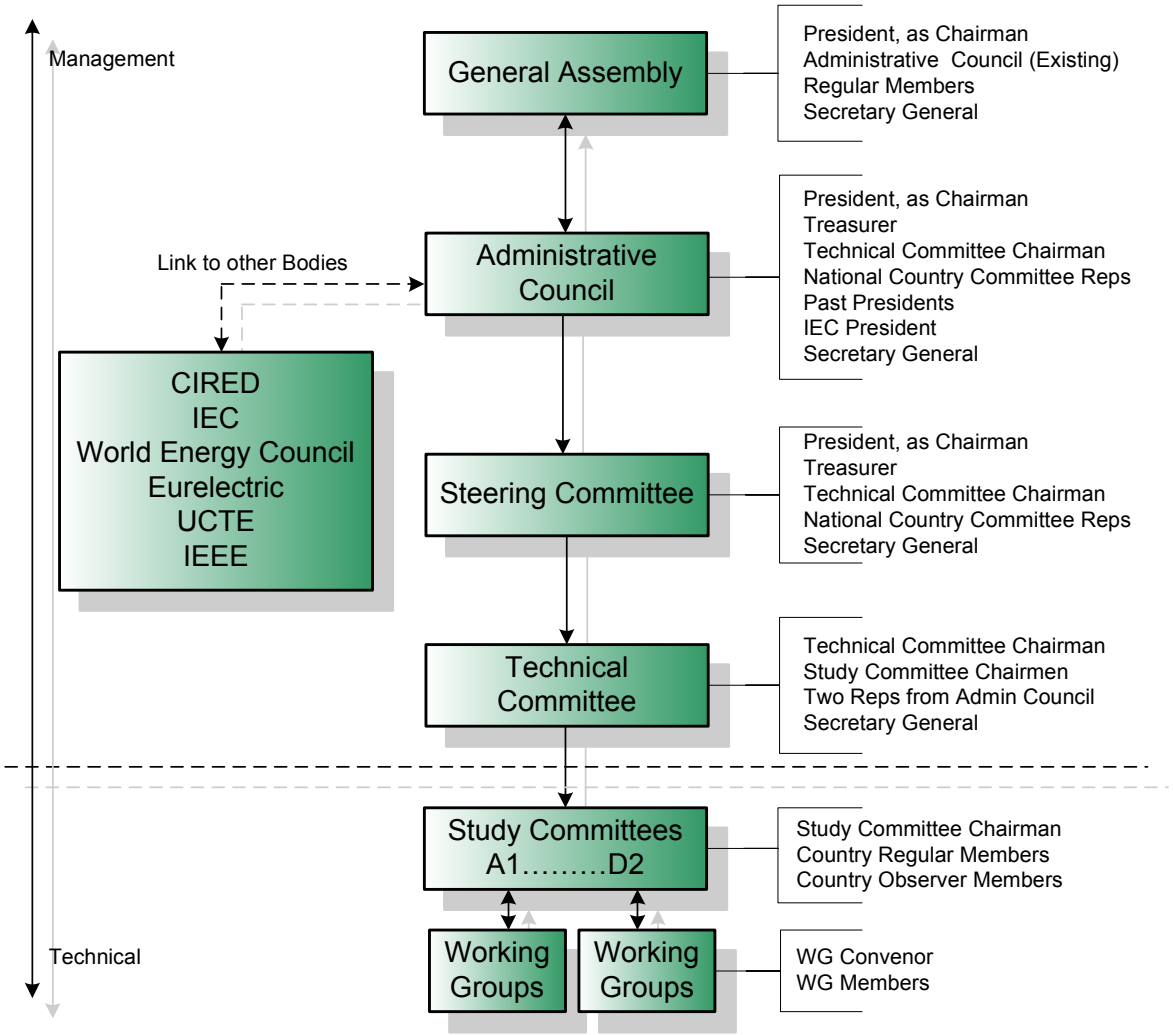

Fig 5.2: Main bodies of the CIGRÉ organisation.

General Assembly - The members of CIGRÉ meet in a General Assembly (called by the Secretary General and chaired by the President) at each biennial Session. The Assembly receives the reports from the Administrative Council and Auditors, agrees the financial accounts, elects the Administrative Council, and sets the future subscription rates.

Administrative Council - The operation of CIGRÉ is carried out by an Administrative Council comprising:

- The President;
- Up to 48 members elected by the General Assembly;
- The president of the International Electro technical Commission (IEC);
- Past Presidents of CIGRÉ;
- Chairman of the Technical Committee.

The council stays in office form the time of its appointment until the following General Assembly. They have all the powers of management and administration of CIGRÉ and will meet at least once a year.

Steering Committee - The Steering Committee has an advisory function and prepares the work of the Administrative Council. It is also responsible, by delegation of the Administrative Council, for such executive decisions as may be necessary between the meetings of the Administrative Council. It is appointed by the Administrative Council; its composition is as follows:

- The President, as Chairman;
- The Treasurer;
- Secretary General;
- Chairman of the Technical Committee;
- Twelve other members, nominated by the Administrative Council from the members of the Administrative Council. These twelve members will be nominated for a period of two years by the newly appointed Administrative Council and will not consist of two members belonging to the same National Committee.

The Steering Committee holds a main meeting once a year, ahead of the Administrative Council meeting, and when required to finalise discussions on particular issues.

Technical Committee - The Technical Committee meets at least once a year and is appointed by the Administrative Council to consist of:

- The Chairman of the Technical Committee;
- The Chairmen of the Study Committees;
- Two representatives of the Administrative Council, elected by the Administrative Council from among its members;
- The Secretary General.

The Technical Committee is responsible for the overall management / co-ordination of the technical activities of CIGRÉ, as shown in Fig 5.3. That is, it keeps under review the work of the Study Committees and of the discussion meetings during the Sessions and Symposia. Regard is taken of the special needs of National Committees and Regions.

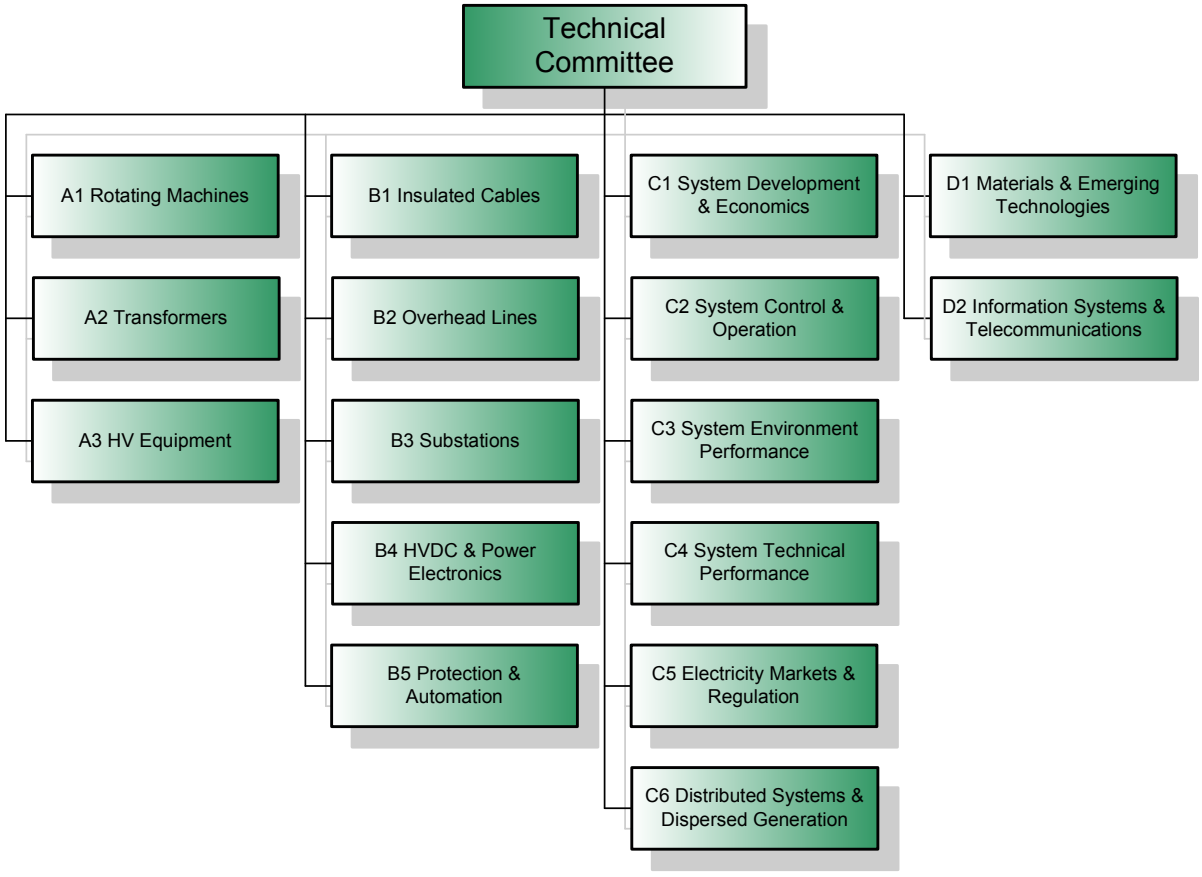

Fig 5.3: Structure of the CIGRE Steering Committees.

Study Committees - The Study Committees are responsible for the study of particular issues and subjects within their scope and for the organisation and control of their discussion meetings during the Sessions.

They comprise of Regular Members and Observer Members who will be individual members of CIGRÉ and are appointed for two years by the Steering Committee on behalf of the Administrative Council, upon proposals by National Committees. They can be re-elected up to three times (making six years in total).

Study Committees comprise a maximum of 24 regular members and 12 observer members, with other members invited to participate at the discretion of the Study Committee chairman. They will meet at least once a year and will normally conduct its work in two ways, Advisory Groups and Working Groups. An advisory group comprises a small number of Study Committee members whose purpose is to identify new areas of work and advise the Study Committee. When an area of work is agreed, a Convenor is appointed who will draft a Terms of Reference (TOR) setting out the scope of work.

After the TOR are agreed with the Study Committee chairman, who in turn gets them agreed with the Technical Committee chairman, a Working Group is established, a Secretary is appointed and members are invited to participate. The TOR are sent to all National Committees and anyone can contact the Working Group Convenor to be involved.

If the TOR contains discrete packages of work, some Study Committees appoint Task Forces to progress a particular package of work. The TOR will include a timetable for completion of the work and progress is reported at each meeting of the Study Committee. The allowed time for completion of work is normally two or three years. On completion, a report is written and after agreement within the Study Committee an Executive Summary is published in ELECTRA and a Technical Brochure is published.

For a full list and descriptions of SCs, see Chapter 6.

5.2.2 Roles & Responsibilities

President - The Administrative Council shall elect from its Members a Chairman who will be the President of CIGRÉ. The Term of Office is two years, renewable not more than once. The President will preside at meetings of the General Assembly, Administrative Council and Steering Committee.

Treasurer - The Administrative Council will elect a Treasurer from its members. The term of office is four years, renewable under exceptional circumstances for a further two year term.

The Treasurer is appointed to give special attention to the financial policy of CIGRÉ. He will set the general financial directives for CIGRÉ and have a general oversight of financial performance with particular responsibility for future planning. The Treasurer

will formally review the accounts and budgets prior to their submission by the Secretary General to the Steering Committee and Administrative Council.

Secretary General and Central Office - The Administrative Council appoints a paid Secretary General who has full authority for operational matters including:

- Administration of CIGRÉ finances in accordance with approved budgets and delegated authorities and achievement of budget objectives; submission of financial reports to the Steering Committee, Administrative Council and General Assembly, after validation by the Auditors and formal review by the Treasurer where so required;
- Preparation of budgets and financial plans, firstly for formal review by the Treasurer, and then for submission to the Steering Committee and Administrative Council;
- Carrying out the processes for the election of officers;
- Liaison with National Committees and directly with members when there is no National Committee;
- Assistance to the activities of the Study Committees;
- Organisational and operational aspects of liaison with other International Organisations;
- The editing and distribution of information through ELECTRA or other media;
- Preparations for the meetings of the Administrative Council, the Steering Committee, and the General Assembly; drawing up of the relevant Minutes; contribution to preparation of the Technical Committee meetings;
- Relations with the media;
- Organisation of the Sessions and of Symposia, and especially the collection and distribution of the papers and the publication of the Proceedings;
- Submitting reports as required by the Administrative Council, the Steering Committee and the General Assembly;
- The day-to-day administration of CIGRÉ with the help of Central Office staff placed under his authority.

Regular Members - CIGRÉ has four categories of members as follows:

- Individual members;
- Collective members - these may be public or private companies, universities, government departments, scientific or research associations, trade associations;
- Young Members / NGN members (in the UK only);
- Honorary members.

5.2.3 National & UK Committee

The members of CIGRÉ in any one country or grouping of countries in an area may set up a National Committee which is to be recognised and accepted by the Administrative Council. A National Committee is set up to make CIGRÉ better known and further its interests in the country concerned. Its functions cover:

- To act as an agency for the collection of members' fees, for forwarding to the Central Office;
- To propose papers for presentation at the Sessions;
- To encourage membership of CIGRÉ, and to organise the representation of their country at Sessions and Symposia;
- To recommend members for Study Committees and to encourage expert collaboration within their respective countries to support the Study Committees;
- To encourage the organisation of meetings;
- To nominate members for election to the Administrative Council and the Steering Committee in accordance with the "Rules of Procedure".

Regions - National Committees may come together to form a Region, which is a set-up designed to enhance technical cooperation between countries and to promote and develop CIGRÉ.

Geographical proximity is the primary motive for forming a Region, but other situations can be accommodated when they fall in with the basic objectives, i.e.:

- Contribute to the activities of the Study Committees, addressing and developing local issues;
- Organise Regional Meetings or other local meetings (Colloquia…);
- Coordinate with industry organisations;
- Coordinate contributions to CIGRÉ main events (Session, Symposia);
- Encourage and provide an incentive to increase CIGRÉ membership and create new National Committees, by incorporating countries without a National Committee in the working structure.

The existence of Regions has no impact on the governance structure of CIGRÉ - National Committees, Administrative Council, Steering Committee - nor does it introduce any hierarchical notion in relations with National Committees or Study Committees.

CIGRÉ-UK - The CIGRE-UK structure is shown in Figure 5.4. The only real difference in structure form the Main organisation and the UK organisation is the

Executive Committee. It is responsible for managing the general activities of CIGRÉ-UK and meets twice a year.

The members of the UK Technical Committee comprises all the UK Study Committee Regular Members.

Each UK Study Committee Regular Member must hold a UK Liaison meeting at least once a year and publishes a report of the activities in their Study Committee.

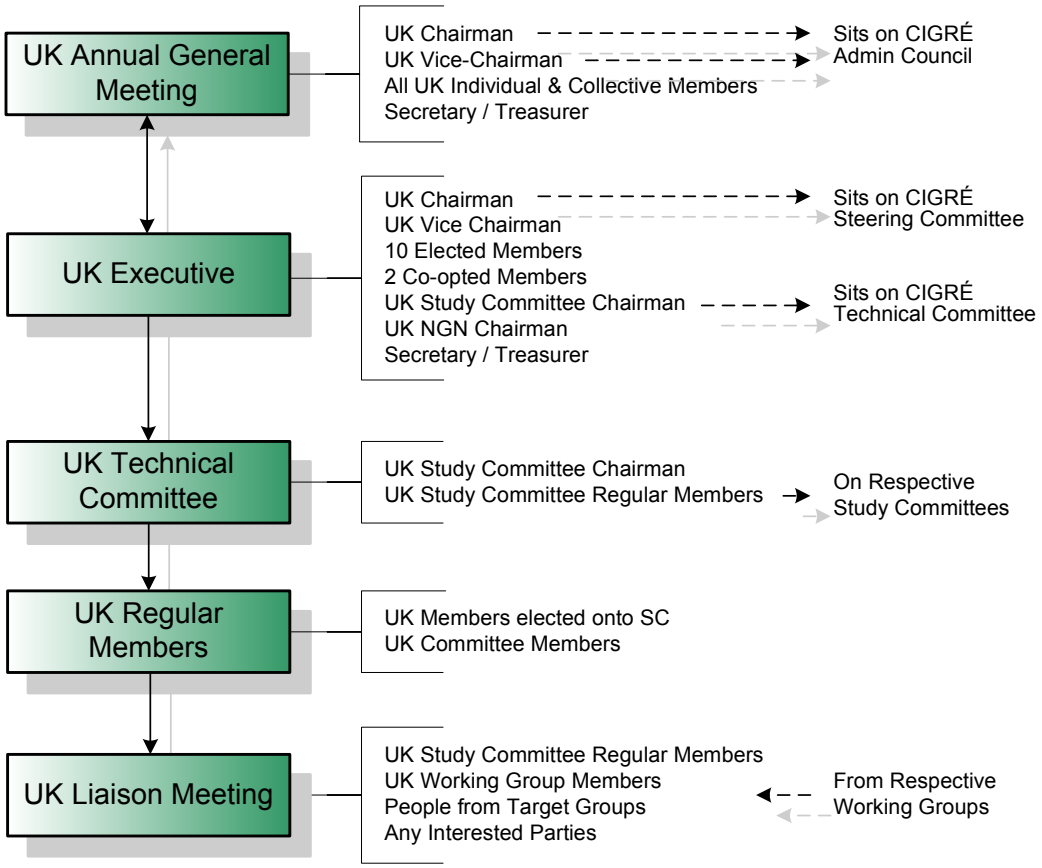

Fig 5.4: Structure of the CIGRÉ-UK Organisation.

6 CIGRÉ Study Committees (SCs)

All Study Committees support and work closely together with relevant equipment and systems committees within its field of responsibility and sometimes in collaboration with other institutions to provide technical support and sound work for international standardisation activities.

At any one time there are around 150-200 working groups across the 16 study committees. These will be in various stages of progress, some just starting and some completing their work.

CIGRÉ-UK has a Regular Member on each study committee. Information on the activities of a particular study committee can be obtained from the relevant Regular Member (RM).

6.1 SCA1 – Rotating Electrical Machines

www.cigre-a1.org; UK RM: Trevor Stokes (wt.stokes@virgin.net)

The activities of SCA1 cover economics, design, construction, tests, behaviour, and materials of turbine generators, hydro generators, non conventional machines, and large motors.

6.2 SCA2 – Transformers

www.cigre-a2.org; UK RM: John Lapworth (jlapworth@doble.com)

The SCA2 activities cover all kinds of power transformers (including industrial, DC converter, phase-shifting transformers), all type of reactors (shunt, series, saturated, smoothing), and transformer components (bushings, tap changers, accessories).

Not only this, the field of study includes design, construction and manufacture, including in site erection, application of material, asset management (maintenance and operation, condition monitoring, techniques in service, repair and refurbishment, disposal), safety and environmental aspects (noise, oil spill, fire, explosion, EMC), quality assurance and testing, behaviour in and interaction with the system under normal and abnormal conditions, dependability (reliability, availability, maintainability, safety), risk management, and economic aspects.

6.3 SCA3 – High Voltage Equipment

www.cigre-a3.org; UK RM: Peter Ozers (peter.ozers@siemens.com)

The SCA3 is responsible for the theory, design, construction, and application of high voltage equipment components, equipment, and equipment systems for both AC and DC systems. This includes the behaviour and interactions with, and duties imposed by the network and other system equipment under normal and abnormal conditions, testing and testing technologies, quality assurance, reliability, maintenance, and asset management.

This equipment includes all devices for switching, interrupting, or limiting currents (circuit breakers, load switches, disconnect switches, earthing switches, fault current limiters, etc.) independent of technology. It also includes surge arresters, capacitors, busbar and equipment insulators, instrument transformers, bushings, and all other high voltage equipment not specifically covered under another equipment study committee's scopes. Emphasis is on function and interaction of high voltage equipment including air and gas-insulated equipment, solid insulation used in high voltage equipment, outdoor insulation, and equipment using other insulation systems and interrupting media.

6.4 SCB1 – Insulated Cables

www.cigre-b1.org; UK RM: Steve Swingler (steve.swingler@soton.ac.uk)

The activities of SCB1 concern all types of AC and DC insulated cable systems for land and submarine connections, focused mainly on high voltage applications. Whenever appropriate, however, lower voltage applications are also considered.

The scope of work covers design, manufacture, installation, service, quality assurance, tests and testing technology, behaviour in and interaction with the network, reliability, asset management, maintenance, and diagnostic techniques in service.

6.5 SCB2 – Overhead Lines

www.cigre-b2.org; UK RM: Sven Hoffman (shoffman@westernpower.co.uk)

The SCB2 covers conductors, earth wires, optical cables and their associated insulators, joints, hardware and accessories, towers including accessories, tower foundations, and earthing systems.

The studies (electrical and mechanical) cover the individual items, the subsystems formed from those items such as conductor bundles, the interactions between the components comprising the subsystems, the effects of the environment on the line's components with regard to design specifications and loading, service life and

deterioration mechanisms, design, route selection, construction, operation, and asset management items (such as maintenance, refurbishment, uprating, upgrading, restoration and dismantling of the line).

6.6 SCB3 - Substations

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www.cigre-b3.org; UK RM: Paul Coventry (paul.coventry@uk.ngrid.com)

The SCB3 is responsible for the design, construction, maintenance and ongoing management of substations, and for electrical installation in power stations excluding generators.

Major objectives include increased reliability and availability, asset management, environmental impact containment, and the adoption of appropriate technological advances in equipment and systems.

6.7 SCB4 – HVDC and Power Electronics

www.cigre-b4.org; UK RM: Norman Macleod (norman.macleod@areva-td.com)

The work of SCB4 addresses HVDC (economics, applications, planning aspects, design, performance, control, protection, control and testing of converter stations), Power Electronics for AC systems and Power Quality Improvement (economics, applications, planning, design, performance, control, protection, construction and testing), Advanced Power Electronics (development of new converter technologies including controls, use of new semiconductor devices, applications of these technologies in HVDC, Power Electronics for AC systems and Power Quality Improvement).

6.8 SCB5 – Protection and Automation

www.cigre-b5.org; UK RM: Richard Adams (AdamsRi@pbworld.com)

SCB5 covers the principles, design, applications, coordination, performance and asset management of System protection, Substation control and automation, Remote control systems and equipment, and Metering systems and equipment.

All technical, organisational and economical aspects are also considered including staff education and training. Emphasis is placed on design and application of digital technology and modern integrated system approach including hardware and software for the acquisition of system state information, local and remote data communication, and execution of control commands.

6.9 SCC1 – System Development and Economics

www.cigre-c1.org; UK RM: Leslie Bryans (leslie.bryans@soni.ltd.uk)

The scope of SCC1 is to study economic and system analysis methods important for the development of power systems and to assist utilities to find the best solutions in various evolving, competitive and unbundled conditions in the context of the overall energy supply system, and with social and environmental considerations.

The main areas of attention are: Methods and tools for power system static and dynamic analysis; Planning predicaments and methods in competitive and regulatory structures; Capacity enhancement by use of risk-based security assessment and advanced in-formation, communication and power-electronics technology for improving system stability and dynamic performance; Future dependence, requirements and economy of ancillary services for frequency and voltage control and other system needs; The impact of pricing and tariff methods for transmission services on system development; Asset management strategies in the definition of optimal policies.; Planning issues related to long distance transmission and international interconnections; System planning issues in newly industrialised and developing countries; Impact on system development of new solutions and technologies in fields such as generation and demand side management.

6.10 SCC2 – System Operation and Control

www.cigre-c2.org; UK RM: Ian Welch (ian.welch@uk.ngrid.com)

The SCC2 covers the technical, human resource and institutional aspects and conditions needed for a secure and economic operation of existing power systems under security requirements against system disintegration, equipment damages and human injuries.

The main areas of attention are: Control and switching of objects, voltage control, frequency control by balancing generation vs. demand, monitoring of loading limits and actions to avoid capacity violations (congestion management); Reserves and emergency strategies, management of fault and restoration situations, interaction between the system and power plants; Short term planning and coordination of system capacity needs with maintenance of the physical assets; Evaluation and bench-marking of the system performance in terms of fault frequency, interruptions, operational and maintenance efficiency, both from the technical and economical points of view; Impact on system operation targets, methods and performance from new institutional structures of System Operators, regulators, market actors, trading mechanisms and contracted ancillary services; Requirements, methods, tools (simulators) and performance indices for training of operators; Development and use of power system analysis and security assessment functionalities within operational

planning and the computer and telecommunication systems supporting the control centres and the operators.

6.11 SCC3 – System Environmental Performance

www.cigre-c3.org; UK RM: Paul Dejong (paul.dejong@uk.ngrid.com)

SCC3 is responsible for the identification and assessment of the various impacts on the natural environment arising in electric power systems, and the recommendation of appropriate monitoring, management and control measures.

Impacts addressed include greenhouse gases, air and water pollution, electromagnetic fields, noise, visual, land use, and flora and fauna impacts. Major considerations include sustainable development vs. economic development, risk assessment, the economics of impact containment, and the effective communication with the public and regulatory authorities. Other considerations include tools and measures for quantifying, controlling and mitigating the environmental impact such as life-cycle assessment, environmental product declarations, and global benchmarking.

6.12 SCC4 – System Technical Performance

www.cigre-c4.org; UK RM: Zia Emin (Zia.Emin@uk.ngrid.com)

The SCC4 is responsible for methods and tools for analysis related to power systems in the following fields: Power Quality Performance (Continuity of supply and voltage quality, measurement and simulation methods, identification of quality indices, monitoring techniques); Electromagnetic Compatibility (High frequency disturbances on the electricity supply and all disturbances reaching equipment other than through the electricity supply); Power System Security Assessment (development of new analytical techniques for assessment of power system security, design of controls and modelling of existing and new equipment, real time stability evaluation and control); Lightning (Analysis of lightning characteristics and interactions of lightning with electric power systems and equipment, including protection in MV and LV networks against lightning, and their standardisation); Insulation co-ordination (Methods and tools for insulation co-ordination in electric power systems and equipment, contributing to optimisation of their cost and reliability.

6.13 SCC5 – Electricity Markets and Regulation

www.cigre-c5.org; UK RM: Lewis Dale (lewis.dale@uk.ngrid.com)

The scope of SCC5 includes analysing the different approaches and solutions and their impact on the electricity supply industry in support of the traditional economists,

planners and operators within the industry as well as new actors such as regulators, traders and independent power producers.

In particular, areas covered are: Market structures and products such as physical and financial markets and the interaction between them, contracts, internationally integrated markets; Techniques and tools to support market actors such as demand and price forecasting profit estimation, financial risk management; Regulation and legislation such as regulation objectives, extension and limits, price regulation of transmission and ancillary services, international harmonisation, environmental, and reliability objectives.

6.14 SCC6 – Distribution Systems and Dispersed Generation

www.cigre-c6.org; UK RM: Nick Jenkins (nick.jenkins@manchester.ac.uk)

The activities associated with SCC6 are principally concerned with the assessment of the technical impacts and requirements which a more widespread adoption of distributed/dispersed generation could impose on the structure and operation of the system and the degree and implications to which such solutions are likely to be adopted in the short, medium and long term.

6.15 SCD1 – Materials and Emerging Technologies

www.cigre-d1.org; UK RM: John Graham (john.graham@trench-uk.com)

The activities of SCD1 concern the monitoring and evaluation of: new and existing materials for electro technology; diagnostic techniques and related knowledge rules; those emerging technologies which may be expected to have a significant impact on the system in the medium to long term.

6.16 SCD2 – Information Systems and Telecommunication

www.cigre-d2.org; UK RM: Philip Johnson (philip.johnson@uk.ngrid.com)

SCD2 covers the principles, design, specifications, engineering, commissioning, performance, operation and maintenance aspects on: Telecommunication and information needs and services (such as all types of data transmission, from voice to video, specialised signalling for teleprotection, SCADA, DMS, EMS, measurement, and billing systems); Information systems for both operational and business activities; Best practices for delivery of TI and telecommunication services to the EPI; Data collection, validation and management; Telecommunication devices, media, networks and applications used in the EPI environment; Requirements on information systems and services: flow-control, security, economy, transparency, regulation, quality and

security (including its management and implementation); Consideration of other related technologies which could pave the way towards an integrated enterprise.

7 Frequently asked Questions

NOTE: This section will be updated for CIGRE NGN members after the Launch event.

8 Further Information

NOTE: This section will be updated for CIGRE NGN members.

If you want to join the group please send an e-mail with your name and address to maria.brucoli04@imperial.ac.uk

Useful Websites:

www.cigre.org (Central Office website) - this contains information on the CIGRE working procedures, membership and details of international activities. All pages of the web-site are available (except some on Technical Committee work) to members.

www.cigre-uk.org (UK Specific website) - The information in the UK site is open and contains the administrative working of CIGRE-UK, details of UK members, the UK study committee members, list of current working groups with the UK contact etc.

www.cigre-uk.org/Whatispage_files/Whatiscigre_page.htm (Who are members) - Visit this website to find out is currently a member of CIGRE. As most companies within the industry and academic institutions are members, it might be useful to ask them about the workings of CIGRE.

www.cigre-uk.org/Forum_files/login.asp (UK Forum) - Discussion between members and each UK Study Committee Regular Member.

www.e-cigre.org (Reference material) - this contains electronic versions of CIGRE publications which can be downloaded. Access is by membership number

A CIGRE (UK) NGN website is currently in construction.

NOTE: - If you have any comments regarding this document (points that are unclear, should be removed or included), please do not hesitate to email them to robert.j.mcdonald@siemens.com.

8.1 Document Control

Rev	Description	Date	Modified By
0	Initial Draft and Document Release to NGN SC Members for comment.	30/07/07	J.R.McDonald
0.1	Draft released on CIGRE-UK Website for reference	22/08/07	J.R.McD0nald