

A decorative graphic at the top of the page. It features a horizontal grey line with several rectangular notches of varying widths. Below this line are two overlapping horizontal bars. The left bar is a gradient from light orange to dark red. The right bar is a solid orange color. The word "INTRODUCTION" is written in white, uppercase letters on the right bar.

INTRODUCTION

I – Introduction to the UCTE Operation Handbook (OH) [E]



Chapters

- A. UCTE's basic needs for the Operation Handbook
- B. Target audience for the Operation Handbook
- C. Main characteristics of the Operation Handbook
- D. Main scope of the Operation Handbook
- E. Basic structure of the Operation Handbook
- F. Guide for handbook readers
- G. Procedure for handbook development
- H. Table of handbook policies and appendices
- I. UCTE system overview
- J. Contacts and links

History of changes

v2.5	draft	24.06.2004	UCTE Secretariat	minor changes, OH development procedure update
v2.4	draft	01.03.2004	OH Team	minor changes

Current status

The "Union for the Co-ordination of Transmission of Electricity" (UCTE) is the **association of transmission system operators** in continental Europe, providing a reliable market base by efficient and secure electric "power highways".

The UCTE (up to the 30th of June 1999 named UCPTTE) has created a "Survey of essential UCPTTE recommendations for the interconnected operation" (dated 31st of December 1991) and important additional **rules and recommendations** on specific subjects after that date. Up to now (and if not already replaced by the Operation Handbook) these documents have been in force in the UCTE.

The "**UCTE Operation Handbook**" (OH) is an up-to-date collection of operation principles and rules for the transmission system operators in continental Europe. Additional references to UCTE operation and security rules and recommendations as well as a list of publications, public statistics and information about the members, organisation, structure and activities of the UCTE in general can be found on the UCTE Web site:

<http://www.ucte.org>

This **introduction** is the cover paper for the operation handbook policies and appendices. It includes a general overview, the main characteristics and scopes of the handbook, a description of the handbook structure with the table of contents as well as guides and descriptions for readers. The glossary of terms is provided in a separate paper.

This version of the document (version 2.5, level E, dated 24.06.2004) has "final" status¹.

This document and other chapters of the UCTE Operation Handbook as well as excerpts from it may not be published, redistributed or modified in any technical means or used for any other purpose outside of UCTE without written permission in advance.

¹: The version numbers of handbook documents currently reflect the developments only. As soon as a document is approved and enforced for the first time, the version number may change.

A. UCTE's basic needs for the Operation Handbook

[Union for the Co-ordination of Transmission of Electricity – Articles of Association, 2000]

The “**Union for the Co-ordination of Transmission of Electricity**” (UCTE) co-ordinates the operational activities of transmission system operators in 22 European countries. Their common objective is the security of operation of the interconnected power system. 50 years of joint activities laid the basis for a leading position in the world which the UCTE holds in terms of the quality of synchronous operation of interconnected power systems. Through the networks of the UCTE, 450 million people are supplied with electric energy; annual electricity consumption totals approx. 2100 TWh.

Close **co-operation of member companies** is required to make the best possible use of benefits offered by interconnected operation. For this reason, the UCTE has developed a number of technical and organisational rules and recommendations in the past that constitute a common reference for smooth operation of the power system. The “UCTE Operation Handbook” is the successor to these sets of rules and recommendations, that have been continually developed during the decades of construction and extension of the power system since 1950, reflecting the changes in the technical and political framework.

Only the consistent maintenance of the high demands on quality will permit in the future to set **standards in terms of security and reliability** as in the past. Moreover, the strong interconnections in the UCTE grid require common understandings for grid operation, control and security in terms of fixed technical standards and procedures. They are comprised in this “UCTE Operation Handbook” in an organised form to make consultation easier for members and the general public.

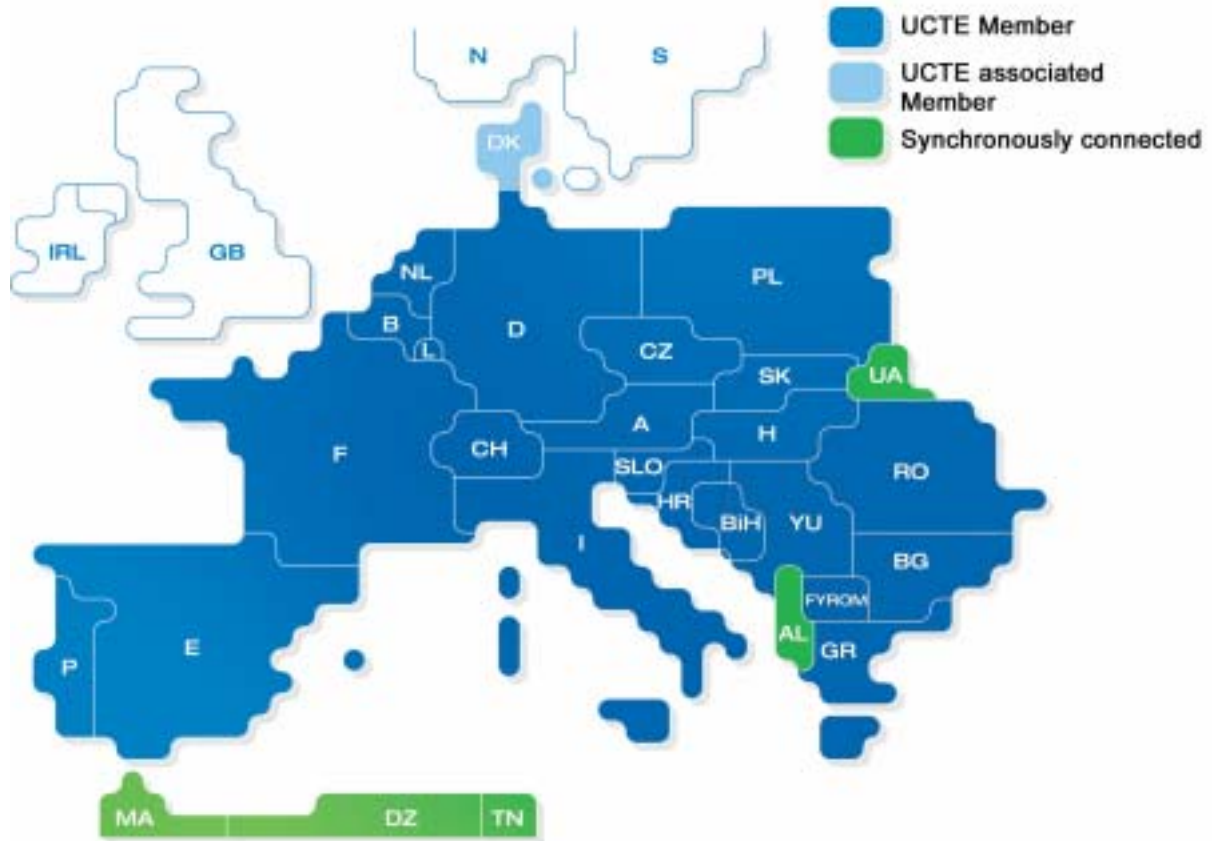
C. UCTE System Overview

For the sake of **general information** and orientation, the following figures show maps of the UCTE system in the overview:

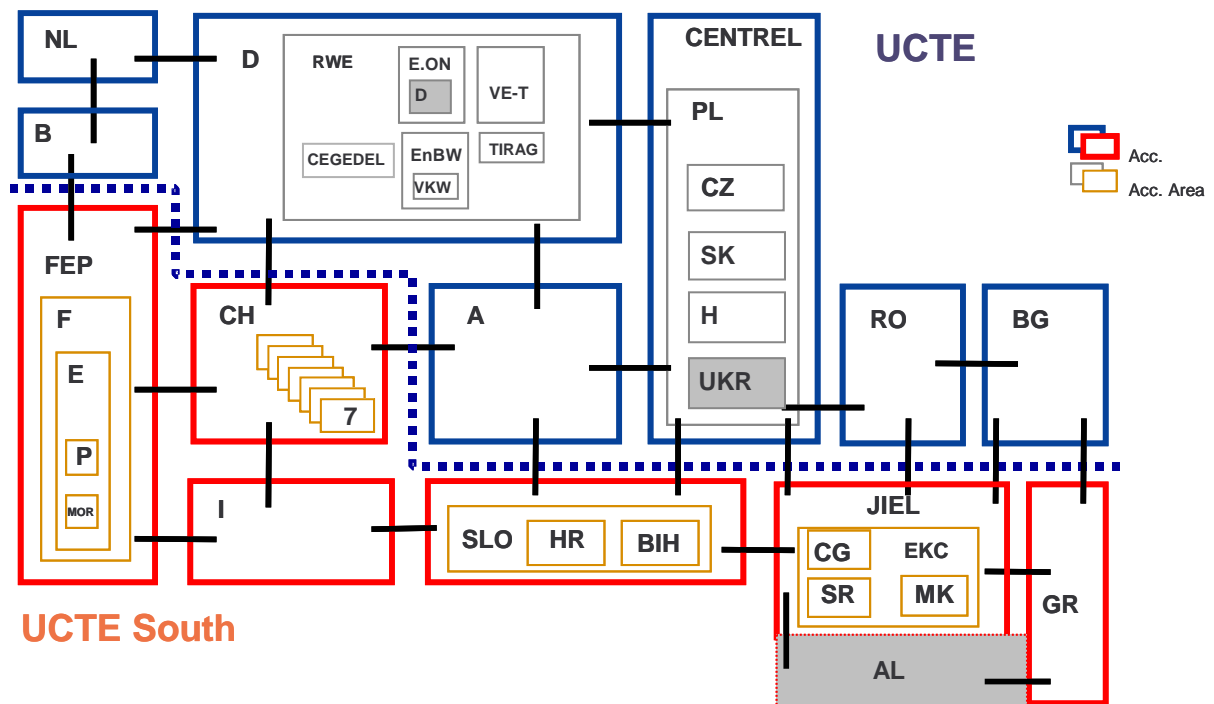
- the map of the complete **UCTE interconnected network** / transmission system of 2003 (available from UCTE at <http://www.ucte.org/>),



- the **political map** (by countries, membership, connection status) of the UCTE SYNCHRONOUS ZONES as of 2004,



- the **structure and organisation of the CONTROL BLOCKS /AREAS** of the UCTE SYNCHRONOUS AREA by countries/companies



B. Target audience for the Operation Handbook

The “UCTE Operation Handbook” shall support consultation and provide assistance to different parties in issues of system operation, such as to

- **Transmission System Operators (TSOs) / Grid Operators, Co-ordination Centres.** Every TSO in the UCTE interconnected network (SYNCHRONOUS AREAS) has declared to follow the technical standards and procedures that are comprised in this “UCTE Operation Handbook” (main focus of the handbook). This Operation Handbook therefore serves as the reference (“legislation”) for the grid operation by the TSOs and guarantees the UCTE’s quality and reliability standards.
- **Generation Companies (GENCOs).** Every party operating a generating unit in the UCTE interconnected network (SYNCHRONOUS AREAS) makes use of the transmission network and may have to deliver products for the provision of system services that are indispensable for secure and stable grid operation. The Operation Handbook sets standards for the essential requirements and capabilities regarding generation that contribute to the operation of the grid by the TSOs.
- **Other associations, traders, customers, politicians and decision makers.** Operation of an interconnected transmission system is bound to physical principles and technical constraints, that differ significantly from other well-known technical or financial systems. This Operation Handbook explains these differences and characteristics in a transparent manner to the public for a better understanding. It can also serve as a general reference document.

D. Main characteristics of the Operation Handbook

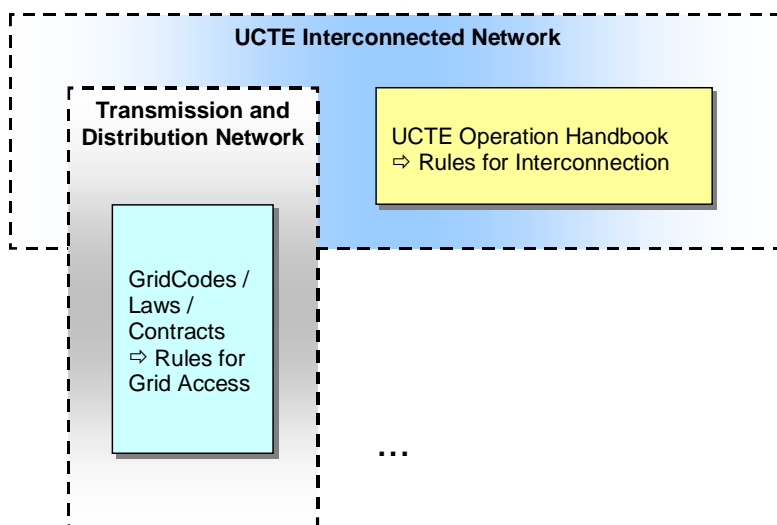
The following **main characteristics** of the “UCTE Operation Handbook” serve as a guideline for the development and set-up of the handbook:

- **Transparency.** Technical and physical principles of transmission grid operation in the UCTE are clearly described and published in the Operation Handbook also for non-experts.
- **Liability.** Following the Articles of Association of the UCTE, as they have been signed by all members, the standards and recommendations of the Operation Handbook were developed as binding for all members (including associated members) of the UCTE and their operation of the grid.
- **Unambiguousness.** All standards and recommendations of the Operation Handbook are written to be straightforward and unmistakable for the processes of secure operation of the UCTE SYNCHRONOUS AREA(S). All terms used in the handbook are defined only once.
- **Relevance to the present.** Standards and recommendations included in the Operation Handbook are continually adapted to the changed technical and legislative environment. A version history clearly shows the status of each part of the handbook.
- **Minor Redundancy.** The Operation Handbook is written to have only the minimum of redundancy that is required. For this purpose, references to other chapters within the handbook are used instead.
- **Modularity.** Each chapter, policy, rule and guideline of the Operation Handbook can be seen as a separate document that may be revised independently of the other parts. All chapters use a similar layout and internal structure.

E. Main scope of the Operation Handbook

The main objective of the “UCTE Operation Handbook” as a **comprehensive collection of all relevant technical standards and recommendations** is to provide support to the technical operation of the UCTE interconnected grid (SYNCHRONOUS AREAS), including operation policies for generation control, performance monitoring and reporting, reserves, security criteria and special operational measures. The basic subject of the Operation Handbook is to ensure the interoperability among all TSOs connected to the SYNCHRONOUS AREAS.

Standards for network access of customers, network tariffs, accounting, the commercial part of unintentional deviations, billing procedures and market rules as well as other standards that may be set by national GridCodes, laws or contracts are **not within the scope** of this Operation Handbook (see next figure).

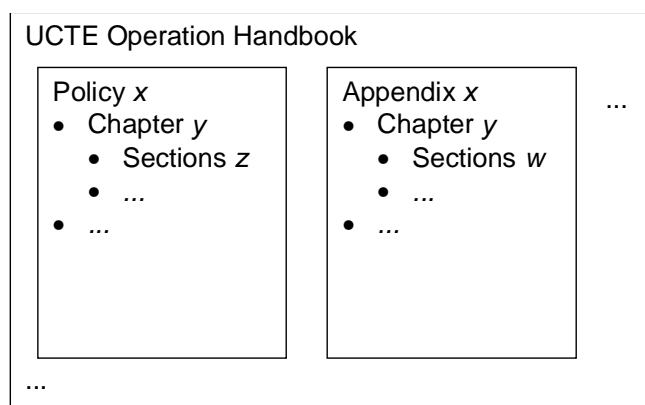


F. Basic structure of the Operation Handbook

The “UCTE Operation Handbook” clearly differentiates between **policies, technical appendices, training documents and data collections** (in independent documents) and is basically structured as follows:

- Preface, general information (UCTE history, organisation,...)
- Introduction, overview, table of contents, versions, basics, operational framework, procedures
- Glossary of terms, acronyms
- Operating policies (common structure, list of policies for transmission and ANCILLARY SERVICES)
- Technical appendices (technical criteria, definitions)
- Training documents (calculation methods, theory)
- Collections of data

The **formal structure** of the operation handbook into policies and appendices, each document with chapters and sections, is shown in the following figure.



The policies themselves have a clear **policy-internal structure** of standards, rules, criteria, requirements, rights and obligations. The table of all policies can be found in section ▶ I.

The policies of the operation handbook themselves are organised in the following **main sections**:

- **Criteria (C)**. Criteria introduce or define specific values or a specific naming as given facts, that may be used or cited within the policy.
- **Requirements (R)**. Requirements are (technical or organisational) prerequisites that are used within a policy. They have to be fulfilled in total before any standard can be applied.
- **Standards (S)**. Standards define rules that are fixed and binding for the addressees, subject to the specific situation. Standards are usually the core part of a policy.
- **Guidelines (G)**. Guidelines describe practical ways for typical operation or usage as recommendations, as they may be used by the addressees.
- **Procedures (P)**. Procedures introduce fixed methods and alternatives for operation or usage as common practice.
- **Measures (M)**. Measures name the actions to be taken, e.g. if a requirement is not fulfilled, a standard is violated by an addressee or a procedure is not used.

G. Guide for handbook readers

The operation handbook makes use of the following **internal reference schemes**:

▶▶ document [-chapter [-section]] ▶ chapter [-section] 📄 document – page

The following **examples** show how to read the references in the documents:

- “▶▶P1” and “▶▶A1” are used as references to the policy or appendix with number 1. Other documents are usually referred to by a single letter, e.g. the introduction by ▶▶I.
- “▶▶P1-A” is used as reference to the chapter A of Policy 1 (within Policy 1 the reference can also be “▶ A” only).
- “▶▶P1-A-C1” is used as reference to the first criterion of section A in policy 1. The same scheme is used for requirements, standards, guidelines, procedures and measures.
- Pages are numbered by the document identifier (“P1” for Policy 1) followed by the page number, e.g. “📄P1-8” is the reference to page 8 of Policy 1.

According to the basic structure of the UCTE Operation Handbook, the following rough **guide for readers** can be given:

- As a good **starting point**, it is recommended to start reading with this introduction document (▶▶I). Basic principles and frameworks for the complete handbook are described here in detail. Moreover, the introduction includes the full table of operation policies that are part of the handbook.
- The glossary of terms (▶▶G) needs to be consulted as a **reference** only. All terms that are formatted in CAPITALISED letters can be found in the glossary of terms. In case of unknown terms, acronyms or units please refer here for definitions and explanations.
- For **reading a policy** (policies are numbered by #) it is recommended to start with the introduction of the policy and to consult the corresponding appendices (▶▶A#), before reading the requirements, standards and guidelines. The appendices usually give a general motivation and technical description of the subjects, that is required for reading the policies.
- The **policies themselves** (▶▶P#) are organised in independent chapters (starting with A), each of them in sections (identified by letters C, R, S, G, P and M, see above) with numbered paragraphs. Before reading and understanding a policy it is necessary to have background knowledge on the subjects. There is no definite way how to read a policy, usually it is best to start at the beginning. Internal references may point to other paragraphs of this policy before or after the current paragraph, external references may point to other policies or appendices as well.

For easy reading, the **first pages** of policies and appendices are commonly organised in the following layout:

P# – Policy #: Title [Level]

Chapters

- A. Chapter A
- B. Chapter B
- C. Chapter C

Introduction

Introduction ...

History of changes

v#.#	draft	01.12.2003	developer	changes...
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Current Status

Status information ...

General notices ...

H. Procedure for handbook development

Following is the description of the development process procedure with the flow chart showing the procedure.

The Operation Handbook development process involves following steps:

1. Process initiation
2. Drafting stage
3. Internal consultation
4. Decisions on external consultation
5. External consultation
6. Final approval
7. Policy implementation

STEP 1

Process initiation

Requests to revise or develop the Policy are submitted to the Steering Committee by the Working Group Operations and Security (WG OS) with a short description of the Policy to be revised or drafted newly. Alternatively, the process is initiated by the Steering Committee. The Steering Committee approves the Policy for development or revision or rejects the request. For each Policy Steering Committee sets a clear deadline for the drafting and revision stage of the process.

STEP 2

Drafting stage

Once the Policy is accepted for development or revision the WG OS then assigns the request to a Drafting Team which prepares the table of contents and a 1st draft of new or revised Policy. Then the Drafting Team presents the 1st draft for internal consultation.

STEP 3

Internal consultation

Comments on the 1st draft will be solicited only from UCTE Members (TSOs). Comments can be sent only by using consultation forum on the UCTE website till the date announced by UCTE Secretariat. The minimum period for internal consultation is 1 month. Based on the comments, the Drafting Team prepares the 2nd draft of the Policy.

STEP 4

Decisions on external consultation

The 2nd draft is the subject of WG OS and corresponding Steering Committee approval for presenting it for external consultation. The bodies can approve the draft Policy for the external consultation or return it for further work to the Drafting Team with a clear statement on how to proceed and what to adapt.

STEP 5

External consultation

Once the Policy is approved by the Steering Committee for the external consultation, it is published on the UCTE website and the external consultation process starts. The consultation period lasts 4 - 8 weeks with respect to the extent of the Policy. Duration of the consultation process will be determined by the WG OS or UCTE Secretariat. Comments on the 2nd draft will be actively solicited from all registered participants. Comments will be accepted only on-line using an internet-based consultation forum. All UCTE members will have to substantiate their position, i.e. that also those who do not want to comment will have

to state it. Based on its own review, the Drafting Team revises the draft Policy as needed and presents it to the WG OS.

STEP 6

Final approval

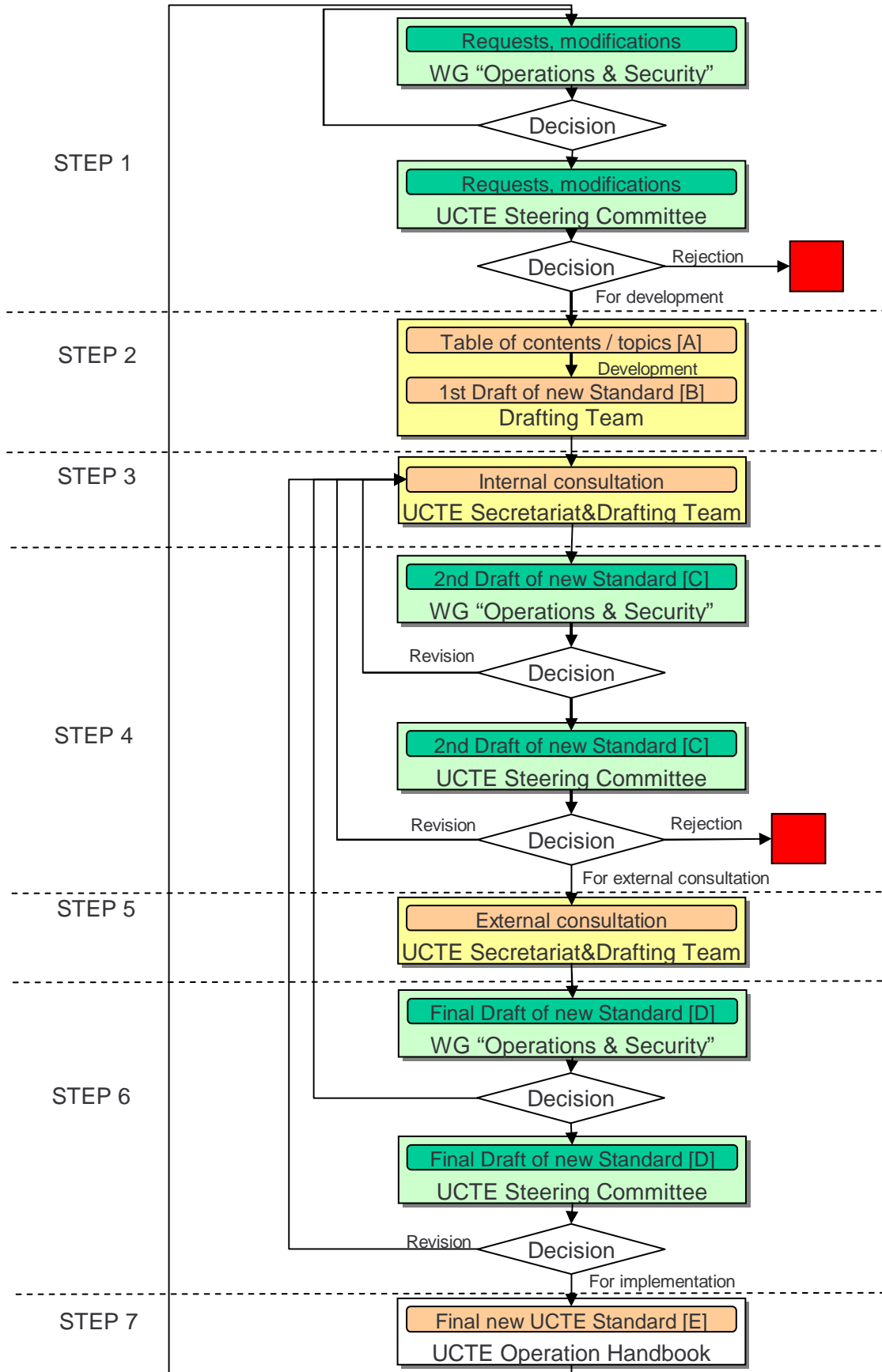
WG OS approves the Policy and sends the final draft including change marks and for information list of rejected comments to the Steering Committee for final approval. If the WG OS does not approve the Policy, it may return the draft to the Drafting Team for further work with a clear statement on how to proceed and what to adapt.

As a rule, the Steering Committee will put the proposed Policy at its next meeting's agenda. If the Policy is not approved, the Steering Committee may return the Policy to the Drafting Team for further work with a clear statement on what to adapt or it may terminate the Policy development.

STEP 7

Policy implementation

Once the Steering Committee approves a new or modified Policy all members are expected to implement and follow the Policy in accordance with all accepted UCTE rule.



The **status of policies** and appendices during procedure is rated according to the following legend:

Level	Description
A	Table of contents
B	Preliminary internal draft
C	Consultation draft
D	Final draft ready for approval by the WG and SC
E	Approved new UCTE Standard.

Process roles:

Steering Committee is the executive directing body of UCTE: It:

- approves the Policy for development
- approves the 2nd draft for external consultation
- makes a final approval of the Policy

Working Group Operations&Security is the body responsible for overseeing the Operation Handbook development process. It:

- initiates the process of Policies development or revision
- assigns the Drafting Team and nominates the DT leader
- sets deadlines for development, revision and consultation periods
- actively participate in the internal and external consultation process
- approves and presents the 2nd draft to SC for approval for external consultation
- approves the final draft and presents it for SC final approval

Drafting Team is a team of technical experts that develops the detail of the Policy. It:

- prepares the table of contents and first draft of the Policy
- presents the draft for internal consultation
- considers and responds to comments (with UCTE Secretariat support)
- revise the draft after internal consultation
- presents the draft to WG OS for approval for external consultation
- revise the draft after external consultation

UCTE Secretariat administers the OH development process. It:

- ensures the integrity of the development process
- ensures consistency of quality and completeness of the OH
- structures the consultation process
- monitors and guide the web-based consultation forum
- publish documents (including layouting according to corporate identity)
- supports the Drafting Teams
- reports to WG OS on the development progress

I. Table of Handbook Policies and Appendices

The following tables of contents list all **existing and planned policies /appendices / documents** of the UCTE Operation Handbook with their individual table of contents.

General part:

ID	Title, contents
I	Introduction A. UCTE's basic needs for the Operation Handbook B. Target audience for the Operation Handbook C. Main characteristics of the Operation Handbook D. Main scope of the Operation Handbook E. Basic structure of the Operation Handbook F. Guide for handbook readers G. Procedure for handbook development H. Table of handbook policies and appendices I. UCTE system overview J. Contacts and links
G	Glossary A. Glossary of Terms B. List of Acronyms C. List of Units

Policies:

ID	Title, contents
P1	Load-Frequency-Control and Performance A. Primary Control B. Secondary Control C. Tertiary Control D. Time Control E. Measures for Emergency Conditions
P2	Scheduling and Accounting A. Scheduling B. Online Observation C. Accounting
P3	Operational Security A. N-1 Security (operational planning and real-time operation) B. Voltage control and reactive power management C. Network faults clearing and short circuit currents D. Stability E. Outages scheduling F. Information exchanges between TSOs for security of system operation
P4	Co-ordinated Operational Planning A. Outage Scheduling

	<ul style="list-style-type: none"> B. Capacity Assessment C. Capacity Allocation D. Day Ahead Congestion Forecast E. Congestion Management
P5	Emergency Procedures
P6	Communication Infrastructure <ul style="list-style-type: none"> A. The EH Network, Architecture and Operation B. Real Time Data Collection and Exchange C. File Transfer data Exchange D. E-Mail on the Electronic Highway E. Information Publication in Hyptertext on EH F. Procedures for future Services on EH G. Non-EH communication among TSOs
P7	Data Exchanges <ul style="list-style-type: none"> A. Code of conduct and generic rules to handle the data
P8	Operational Training

Appendixes:

ID	Title, contents
A1	Load-Frequency-Control and Performance <ul style="list-style-type: none"> A. Primary Control B. Secondary Control C. Tertiary Control D. Time Control E. Measures for Emergency Conditions
A2	Scheduling and Accounting <ul style="list-style-type: none"> A. Scheduling of Power Exchange B. Online Observation of Power Exchange C. Accounting of Unintentional Deviations

J. Contacts and Links

For questions concerning Operation Handbook development process and consultation process please contact [Jakub Fijalkowski](mailto:Jakub.Fijalkowski@ucte.org) at Jakub.Fijalkowski@ucte.org.

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