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8. An Overview of Format Analysis of Technical Reports

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8.1 Introduction to Technical Report:

A final document providing the facts on a task or exercise is defined as a report. As an R & D report, the research and development research results or progress are presented. A report is organized, objective, and factual information produced by an experienced or gathered person (information) and sent on to a person or persons who are in need or who wants it or who are entitled to it. Usually a technical report is more thorough than an article in a journal or paper at a conference. It includes adequate data to allow a reader to evaluate the original study or development research process. It is a final product of research, survey, research, etc.

In recent years, the technical report, the primary means of recording R&D effort, has become an important source of information. This is mainly due to the time-consuming publishing processes of newspapers and their desire for published research in progress.

However, many times it does not require extensive distribution of the nature of communication and so a technical report is produced. In addition, government-funded research results are often covered by secrecy and national security in the areas of space, nuclear science and defence, and are thus circulated to extremely limited people.

These factors led to the birth, in various forms and formats, of the technical report. Their objectivity and targeted audience characterize the technical reports. They define the problem, analyse and evaluate existing and future circumstances and describe methods for problem solving. Talk about the results, draw conclusions and recommend further action.

For many purposes, a technical report is written. Project proposals are submitted for grants: regular reports on the situation and progress of projects are prepared to inform the management of latest developments in the specific field; technical papers are issued to provide information to the outside world and to those working in the field about new findings, etc.

The project proposals are submitted to the project management for grants. Whatever the form of the report is, it shall be produced with three major purposes: (a) informing the reader on the study result, (b) recording the research results and posterity test results, and (c) recommending a true course of action to be taken. Although the computer and DTP techniques are a significant improvement for the technical report late, the typed report can be very frequently duplicated/mimeographed. Limited copies are generally created for circulation (not more than 50 in most situations). However, many reports are issued in considerable quantities. Although a tiny percentage of reports are published in publications, most reports are published in mostly journals, congresses or symposiums, books etc.

8.1.1 Write a Technical Report:

A technical report shall be published on the basis of existing fundamental knowledge, the technical details of development efforts related to the establishment of a particular artificial device/product. While regular research reports focus on the technical features during the development process, either pure research material or both research and development (R&D) components with an emphasis on research results. Certain fundamental research sections are limited and partially examined in technical reports, but can be ultimately used for future studies. The editorial decision to classify a manuscript as a technical report shall be taken on an individual basis.

8.1.2 Characteristics (TRs vary greatly): Technical reports:

- May contain information, design criteria, techniques, literature reviews, research history, extensive tables, pictures, explanations of failing approaches.
- The equivalent journal literature may be published before; more or different details may be provided than its later journal article.
- May have less background information because the sponsor knows it already
- Could have limited access
- Export-controlled and classified reports
- Can include obscure acronyms and codes for information identification

8.1.3 Form of a Technical Report:

Typically there are five to eight two-column pages in a technical report. Similar to ordinary research papers, technical reports may be organized to include the following components in the article "How to write a regular paper" publisher of the AU J.T. issue of 13(3) January 2010:

- Title, not greater than 75 features;
- Author(s) full name(s), no title(s) available;
- The first author's affiliation and email, and the additional authors' emails (if any, affiliations and e-mails) with the same affiliation as the first author should be included in the footnote;
- Abstract (not above 200 words but 100 words);
- Keywords;

- Introduction to the value of information reported for practice not exceeding one page;
- Report body;
- Conclusion;
- Acknowledgements (optional);
- Report body;
- Appendix references; (optional).

The technical report may however have certain special organisations, based on the technical work carried out, for the respective portions of the report which may be made up of multiple sections. Such a system should be rational, and can be achieved using a simple typeface and an appropriate technical phrase. The text should be logical. In order to create the topic logically, the parts should have coherent content. In one or more Appendices, information that does not suit the subject should be included.

The following is a list of sample sections which may be placed in the report body:

- Technical basis, comprising literature review, description and development of the initial problem and its basic needs and existing remedies;
- Motivations and reasons for the choice of design;
- Methods, design or layout suggested;
- Base, major implementation features;
- Selection of setup or method of measurement;
- Evaluation of performance, comparison, debate and analysis of the results gained.

When analysing the language aspects of technical reports, readability is an important need. The creation of succinct and straightforward phrases with short words and active verbs optimizes the writing process and enables more information to be included.

8.1.4 Types of Report:

The length and type of research reports vary widely. For example, for their annual report, the banks and other financial organisations choose short-state tabulations. In mathematics, there may be many algebraic notes on the report, whereas symbols and formulas can be used in a report by chemists. Literary students frequently prepare a long paper that analyses a writer or book critically.

The news items in newspapers are also a way of writing reports. Others include book reviews, state-owned reporting, doctoral theses, etc. Either a technical report, a public report, a paper, a monograph or even an oral presentation can be delivered to any research. The technical report will be developed for experts interested in the technical procedure and the terminology used in the project. The report is being written in technical jargon. The main emphasis in the technical report is on: I the methods employed; (ii) the assumptions taken throughout the investigation; and (iii) full presentation of the findings with their limitations and supporting information.Popular data are intended for people whose interest in research methods and study conclusions is limited in technical areas. Lay people and even top managers will be present at the audience who demand concise reports.

The popular report stresses simplicity and appeal. Clear writings, a reduction on technical detailed, particularly mathematical specifics, and the liberal application of diagrams should be pursued for simplification. Another quality of a popular report is its attractive layout together with huge printing and many subheadings. In such a report practical issues and political implications are highlighted.

A. Writing Research Report:

The researcher begins drafting the research report once data collecting and analysis work is done. Research reports on social and development need

- Have a clear and logical structure
- Just get there.
- Use simple language and have a good design

Just like an architect needs to set up a design plan for a designed house, you need to first outline your report. There's a head, a body and a tail in this contour. The head is a description of your topic (country and research) in its context, the aims of the study and the methods used. This portion of the report should not be more than a quarter, else it gets highly weighty. The body is the largest portion of your report: it contains results from research. Last but not least, your data, conclusions and recommendations will be discussed.

It is important to group and review your analysed data by objective before you begin writing. Verify if in fact all data are processed and analysed as anticipated in the appropriate approved study protocol / proposal. Draw important findings that relate to the literature of study. You might again be encouraged to revisit your raw data and refine your analysis, or to look for more literature to answer problems that can be brought about from the study of your data. Compile the main findings and quotations from the qualitative data for each particular purpose. You are preparing the report now.

Three parts will, in general, be in the research report.

Part I : The Preliminary Pages

Part II : The Main Text of the Research Report

Part III : The End Matter

B. Content of a Technical Report:

There must be a precise and extensive description of the models, methods, and components used for the design of artificial devices. The aim of the published subject is not merely to inform the development and priority of the prototype, but also to allow other professionals to replicate and test the prototype. A few practical factors are: application of the equipment, optimal modular design and reduced implementation costs. A technical work covering several aspects of the particular development effort and exceeding substantially the size constraints of an individual contribution can be separately published into two or more

sections. Sometimes a typical research paper contains the research parts of a study and the applicable aspects of the study can lead to a technical report. An Addendum can summaries partial new enhancements to the technical contribution that has already been published. An essential aspect of the technical report is a section that examines the balance between the independence and interdependence of factors involved in the execution of the application presented.

This part also describes the unpredictable challenges found, provides interim results and work on lesser-known factors. Depending on the amount of the graphical information, technical reports may occasionally contain up to 10 pages. Large figures with complicated block diagrams, flow charts and electrical circuits may finally extend across a whole page if figure features can be easily seen and properly described. If a large technical illustration in a single graph cannot be provided, a modular method is recommended. Additional figures showing the internal structure of each block should be followed by a reduced block design. Important components and interconnections introduced by the author(s) for the first time should be emphasized and detailed. The joint presentation of several data series in one graph is better suitable for comparison and analysis rather than the drawing of a separate graph for a specific data series. When numerous orders of magnitude differ across the numerical ranges of the data series, a logarithmic scale must be chosen for the corresponding axes. The number of figures, tables and textual contents need to be balanced. Whenever a number of figures or tables are required, an Appendix shall be appended. While the mathematical content of an application generally confined to existing equations, it is sometimes necessary to derive completely or partially less known or new analytical expressions.

In such circumstances it is convenient to provide in a separate appendix the series of equations following the ultimate outcome. For publishing in the journal, technical reports are covering a wide variety of topics including but not limited to:

- Development problems, sustainable social development through innovation and the development of an autonomous economy;
- Management of technology; biotechnology, poverty eradication;
- Health technology, life-saving equipment, prevention of diseases, telemedicine;
- Environmental problems, conservation of nature;
- Management of disasters;
- New knowledge, training and new technologies
- Information technology and communication (ICT);
- Scientific and technological e-learning;
- Transition to a knowledge-driven society and world peace from technology to cyber technology.

8.2 Format Analysis of Technical Reports:

Whatever the arrangement of the basic elements, the letter of transmission, cover and titles, summary, should be provided in a professional technical report. Otherwise abstract. Content table, photo list, and introduction. Materials and techniques, results analysis, conclusions. Recommendations, Recognition. Appendices & symbols, bibliography and references used in the report. In this section, some of these factors are explored briefly.

8.2.1 Letter of Transmittal:

This is a correspondence that sends the report to someone (typically a letter). It can include the title of the report, an overview of the scope and goal of the report, explanations of fixed issues, wherever possible (for example, unavailability of facilities which might have delayed the project), as well as acknowledgment.

8.2.2 Preliminary Material:

This includes title page, preface, if any, abstract or executive summary, content table, illustration list, tables etc.

8.2.3 Title Page:

First in a technical report is the title page. The title, date, institutional information and the like is included. Note that the title page text is not contributed to a report word count.

8.2.4 Cover and Title:

For technical reports, a simple, straightforward page cover and title arrangement is used. Sometimes, for all reports, an institution utilizes the same sort of cover layout (for example NASA, RAND Corp, etc.). Thus, once the different layout is seen, the reader is able to recollect and connect the institution.

The title page provides bibliographical data such as author(s) tittle names or the address (es), the contracting agency(s), publisher(s) or issuing authority, the issue of month and year 6f. Many reporting agencies, such as NASA, NTIS, etc. employ a unique report number for each and every report. Every report uses one report number. This number is shown both on the cover pages and the title pages. If the reader provides correctly this report number, most reports can be discovered through the library. The readers will be impressed by an attractive well balanced title page.

8.2.5 Preface:

The project leader or the head of the establishment normally writes this and contains the history of the project. This shall be excluded if the document provides a lengthy introduction with the genesis of the project.

8.2.6 Table of Contents:

The index lists all sections of the titles and the pages they begin with. The content page provides an overview of the organisation of the report, the depth and focus of the topic being addressed. Only two layers in the content are used when a report is substantial. The division levels, subdivision levels etc. are maintained by indentation, numbering or typography ales (caps, bold, italics, etc.). All figures, flowcharts and tables in the report are listed in the illustrations.

8.2.7 Abstract:

An abstract is called a brief description of the contents of a document. Before attempting to read the entire book, a reader is consulted and hence should stand alone. Informative and indicative abstracts are two types: As the name suggests, the previous document is usually brief in length (15words). The latter is long (250 words) and contains, albeit briefly, the methodology, results and main conclusions.

8.2.8 Summary:

Summary is a re-evaluation of a document's principal findings and conclusions. It is placed after the body content and aimed at enabling readers to understand and examine the text. The summary is, however, presented before the body's material in the technical reports. The problem, aims, key facts, conclusions and recommendations should be summarized. Executive summary, supplied with a report sometimes, is an information digest that provides important information that generally helps to make decisions. These include the financial, material and infrastructure implications, major findings and further recommendations.The abstract and the summary should help readers in finding out whether the document is relevant and in determining whether the document is to be read, keeping up to date on current developments and obtaining an overview of the document.

8.2.9 Body of the Report:

The main body of the report is the introduction, materials and methods, the data analysis, the results debate, the conclusions and recommendations.

8.2.10 Introduction:

The reader is guided by the contents of the report in this important part. A brief literary survey, objective statements and scope are included. The status of the continuing study on the subject is determined by a cursory examination of literature. If the report deals with experiment, the materials and procedures are discussed in full, including alternative methods. The method used for the survey and the reasons why the method is selected should be stated if surveys, investigations etc. are included in the report, the nature of the population. The data collected throughout the investigation are analysed according to several statistical principles. While the purpose and aim of the report are clearly indicated in the objective statement, it does expose the subjects and bounds of the study. The approach indicates how the study has been conducted or followed to achieve the goals of the report. This section follows the problem and background information, which gives the reader an overview of the situation and the conditions underlying it. The reader is detained and a well-written introduction sets the tone, subject and its limitations.

8.2.11 Conclusions and Recommendations:

The judgments and recommendations are developed on the basis of analyses and facts. This section highlights the most important and important statistics and thoughts presented in the report. All conclusions should therefore relate to the facts and data in the report.

The results should be briefly written without long comments. The major recommendations are clear when the results are explicit and straightforward. Each recommendation is numbered and the first one should address the problem and the solution of the report.

8.2.12 End Material:

The end-material shall be considered acknowledgment, references/bibliography, abbreviations and appendices included in the report.

8.2.13 Acknowledgements:

While writing the technical report, the author receives support from various sources. These include donations from parent and other collaborative institutions, materiel, infrastructure and laboratory installations, beneficial discussions with colleagues, peer improvement ideas, and assistance from staff to data collecting or analysis, type-in, etc. All recognition may be grateful to the author for while writing the technical report, the author receives support from various sources. These include grants from parent or other collaborating institutions, materials, infrastructures and laboratory facilities, valuable talks, proposals for development by employees and support from staff in the gathering or analysis of data, typing etc. The author may desire to thank all people who have assisted, which are included in the recognition. However, only those who have actually and significantly involved to the drafting of the report are to be considered carefully.

8.2.14 References:

A scientific study is based on published material used in the development of problems. These intellectual obligations are paid via references and quotes (in text) (at the end). A bibliography is sometimes proposed by the authors for further reading. While all of the sources indicated in this report are necessarily consulted, throughout the preparation of the report the sources listed in the literature do not necessarily need consultation. Later on the citation and listing of references is discussed in a section.

8.2.15 Abbreviations:

At a single place, generally at the end, abbreviations are shown. The author should however maintain their use to a minimal and avoid utilizing acronyms or symbols which are not common and non-standard.

8.2.16 Appendices:

Supportive material such as legislative laws and acts not included in this text but needed to understand the concepts more effectively: long, complicated tables, flow charts and questionnaires which have no influence on the reader's understanding of the report; computer algorithms, long excerpts of other reports, notes, glossaries and mathematical proof that has been used. The inclusion of these in the text is thought to distract the reader's attention and hence is removed from the main text.

These must, however, be maintained to a minimum: otherwise it would be interpreted as having very little information in the original report. The finest written report, which has a few or no appendices, should be borne in mind.

8.3 Suggestions for Preparing References:

Citing and listing references would be standardization practice for authors, readers, and librarians alike. To retrieve knowledge efficiently and unequivocally. The following guidelines are presented to arrive at a standard style of references

a. If the title of the document to be mentioned (e.g. journal article, paper from the proceedings, book chapter, report title, etc) is not included, it would not be served as the prime purpose for providing the reference. It is important to decide promptly whether or not the work cited should be consulted.
b. The references would be unambiguous by dividing them into suitable groupings or sections, say three or four. Author/editor(s) of the document cited: title, journal, volume(issue No), year of parenthesis publication, inclusive page/conference/sympo nomination, place, month and year; title of the original work and editors name (for composite books, in this case); publisher, year etc.; title(s) of the cited document; name of the cited document. Publisher(s) of the original work, volume (issue No).
c. The information concerning the size of the document mentioned in terms of pages is also provided by inclusion pagination. It helps the user as the librarian in calculating the cost in case the document is to be procured from a copy supply facility such as INSDOC or BLDSC.
d. It would be simplistic and also simple to use the upper and lower types for the name of the author.
e. Giving imprint information in parentheses prevents confusion with the conference/site symposium's and year of references.

8.4 Bibliographical Control of Technical Reports:

Reporting literature is not easily accessible. "Grey Literature" is called for technical reports. That's because, contrary to books and newspapers. For reports there is no adequate bibliographical monitoring method. The nature of a classification of content security as limited, confidential and secret also raises issues that make some of them inaccessible. In certain areas of research & development (for instance defence, space, atomic energy etc), the government policy (or sponsorship agency) does not allow business bodies to publish or disseminate studies on certain subject areas. Very little additional information on the existence of a report is available. Further compounding the problem is the enormous number of reporting agencies.

It has become too tough to obtain technical reports due to all these variables. These reports are not readily provided by a seller. The scene has recently changed with the coverage by technical reports in abstracting and indexing periodicals, including the Scientific & Technical Aerospace Reports (STAR), the International Aerospace Abstracts (IAA), the Government Reports Announcements & Index (GRAI) and the Nuclear Science Abstracts (NSA) government reports, as well as inadequate coverage, to a limited extent, of biological

abstracts and chemical abstracts. National bibliographic control agencies (for example, the British R&D reports of the British Library Documents Supply Centre (BLDSC)) have recently published their exclusive R&D reports. While there may well be bibliographical controls and technical reporting in India (UK: BLDSE: USA: NTIS & UMI: CANADA: CISTI) there is no central agency to meet the user's needs.

Although it has been proposed to build a national document delivery centre for technical reporting, no measures have yet been adopted. The Science and Technology Department nevertheless strives in this area to provide reference tools. Because literature from the technical report can support better cross-fertilization by industry in overcoming the technological gap, a national bibliographical control and reporting centre is very necessary.

8.5 References:

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