

# Search, accumulation and processing of scientific information



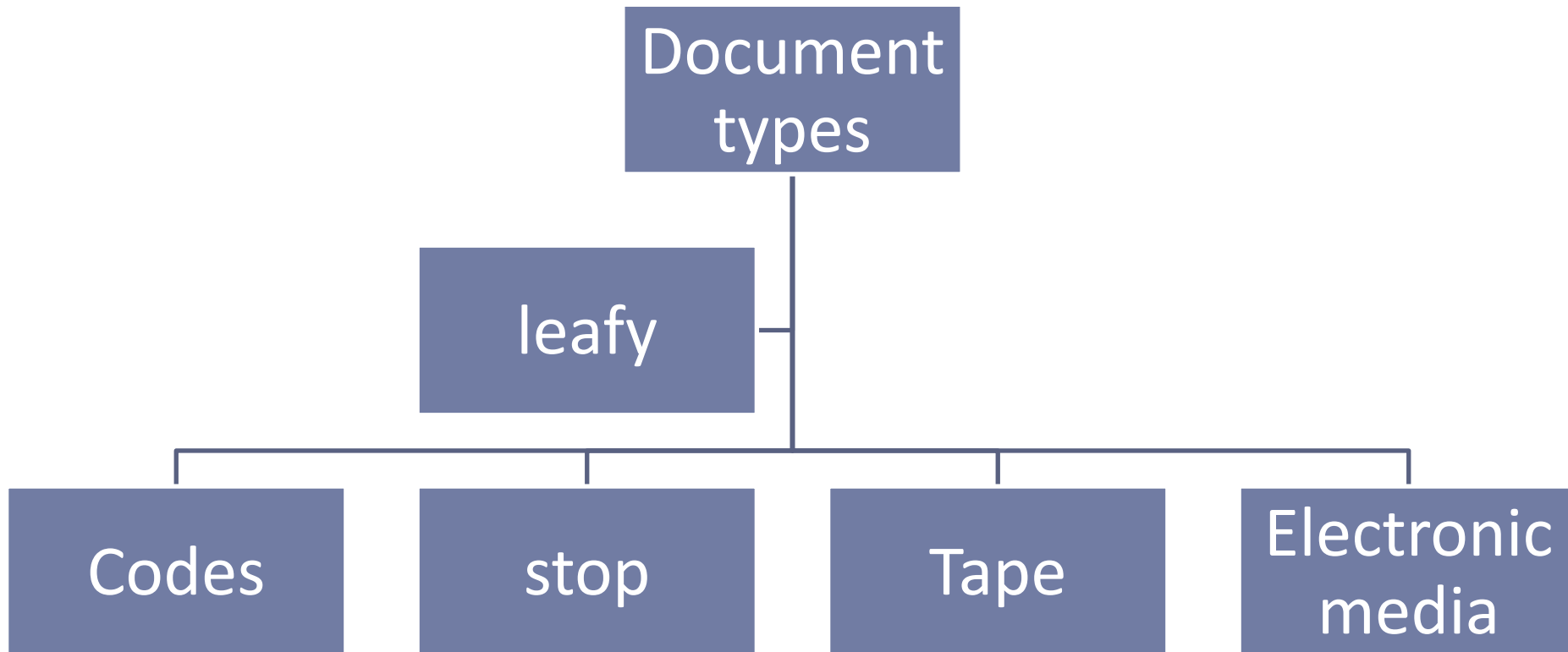
## *Documentary sources of information*



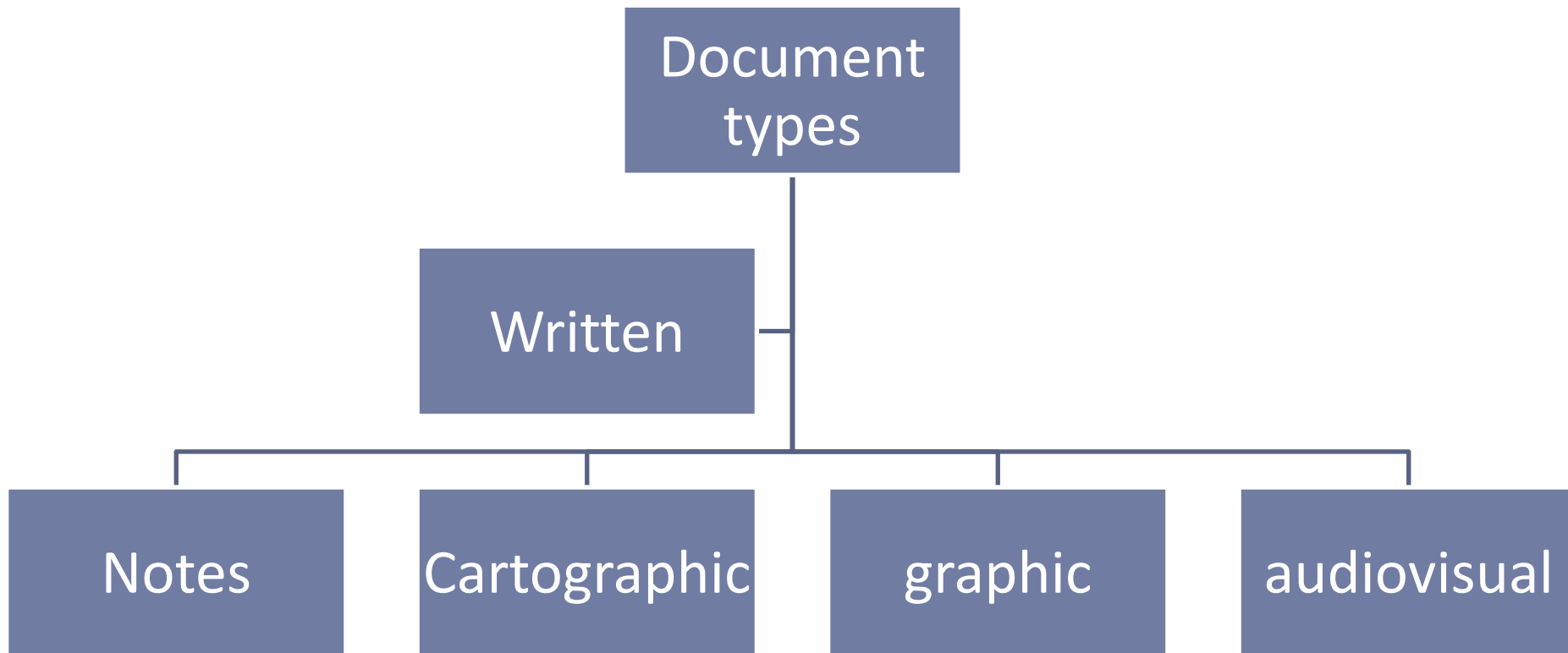
An immense number of objects, including natural ones, fall under the definition of the document. The document began to be considered as a material object containing information in a fixed form.

The term "literature" is often used as a synonym for a document, but this is incorrect. Literature is a collection of written works of social importance. The scope of this term is narrower than that of a document because it does not include sources of information recorded in a different, non-written way.

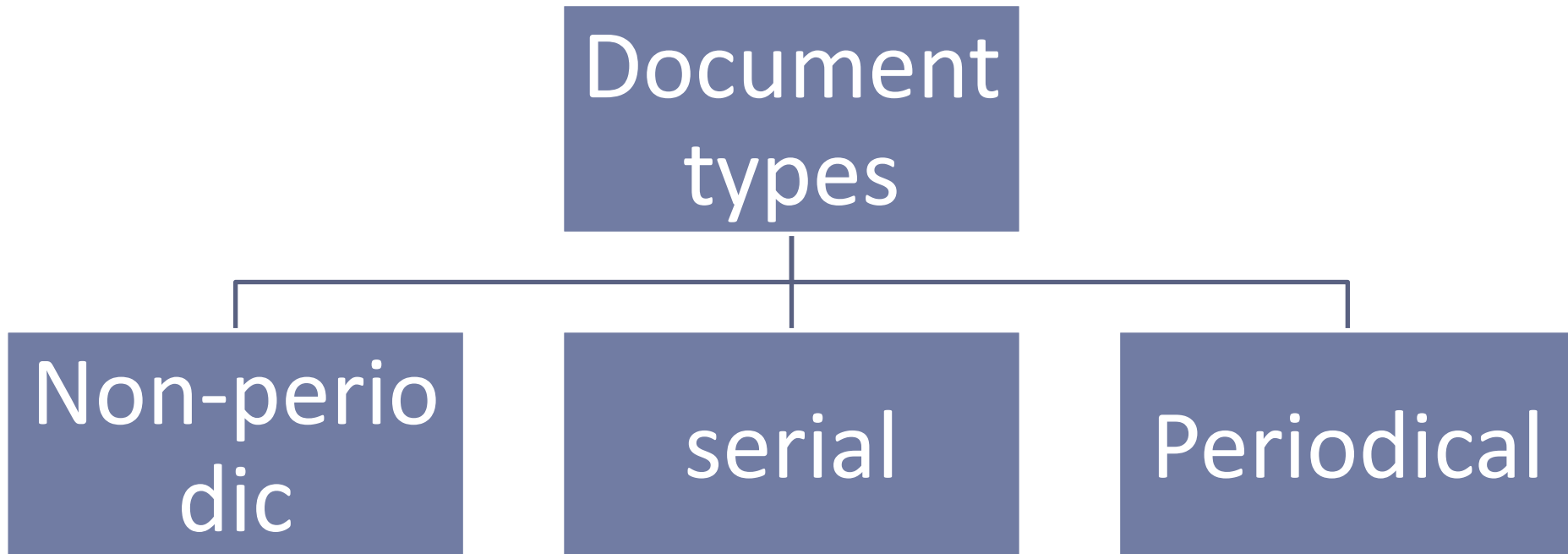
# *Types of documents in a constructive form.*



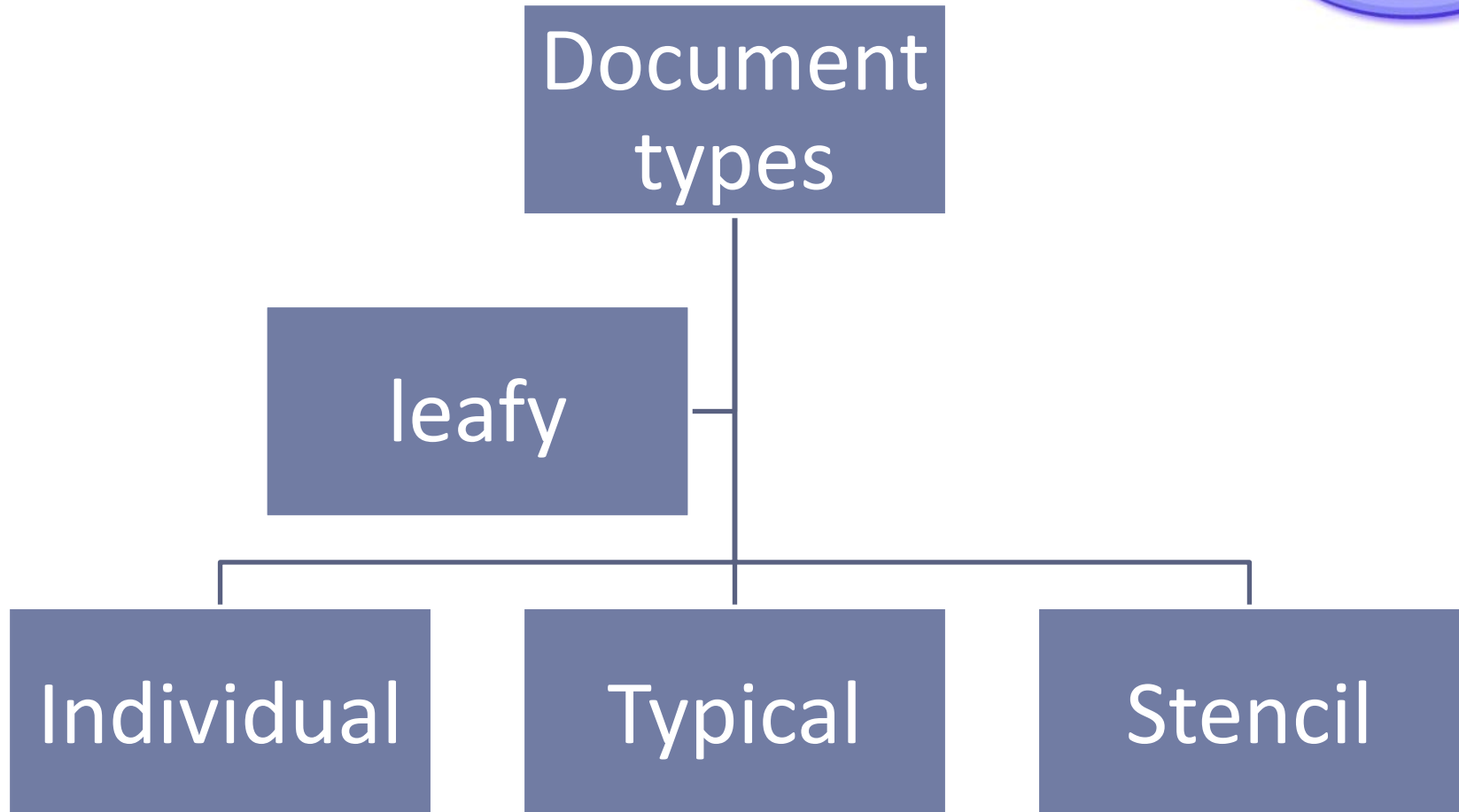
# *Types of documents in a constructive form.*



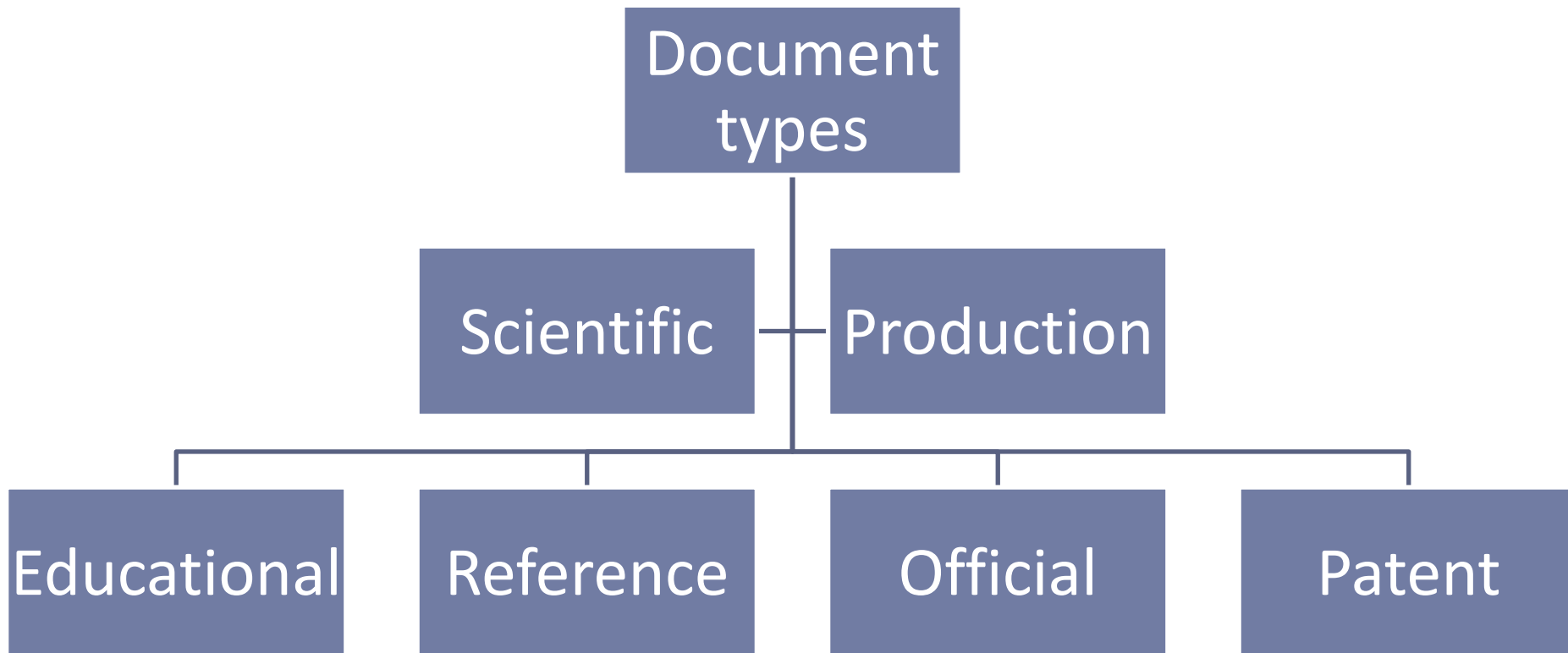
*Types of documents according to their frequency.*



# *Types of documents by the nature of the text.*



# *Scientific papers.*





*The dissertation* is a qualifying scientific work in a certain field of science, which has internal unity, containing a set of scientific results, scientific provisions put forward by the author for public defense, which testify to the author's personal contribution to science and his qualities as a scientist.

*The abstract serves this purpose.* The abstract contains the main provisions of the dissertation, compiled by the author himself. It is published in a limited edition (100–150 copies). The abstract presents the main ideas and conclusions, indicates the contribution to the study, shows the degree of novelty and practical significance of the results.





Scientific publications containing preliminary materials published before the publication in which they can be placed are included in the number of unpublished scientific documents.

Unpublished scientific documents also include reports on the results of completed research and development work (reports on research and development work). They serve as an important source of scientific and technical information, and some of them are reproduced by typographical means, although they are not considered publications in the full sense of the word.



*Standardization* is an activity aimed at the development and establishment of requirements, norms, rules, characteristics, both mandatory and recommended. The purpose of standardization is to achieve the optimal degree of ordering in a particular area through the wide and repeated use of established provisions, norms, and requirements.



The scale of action is:

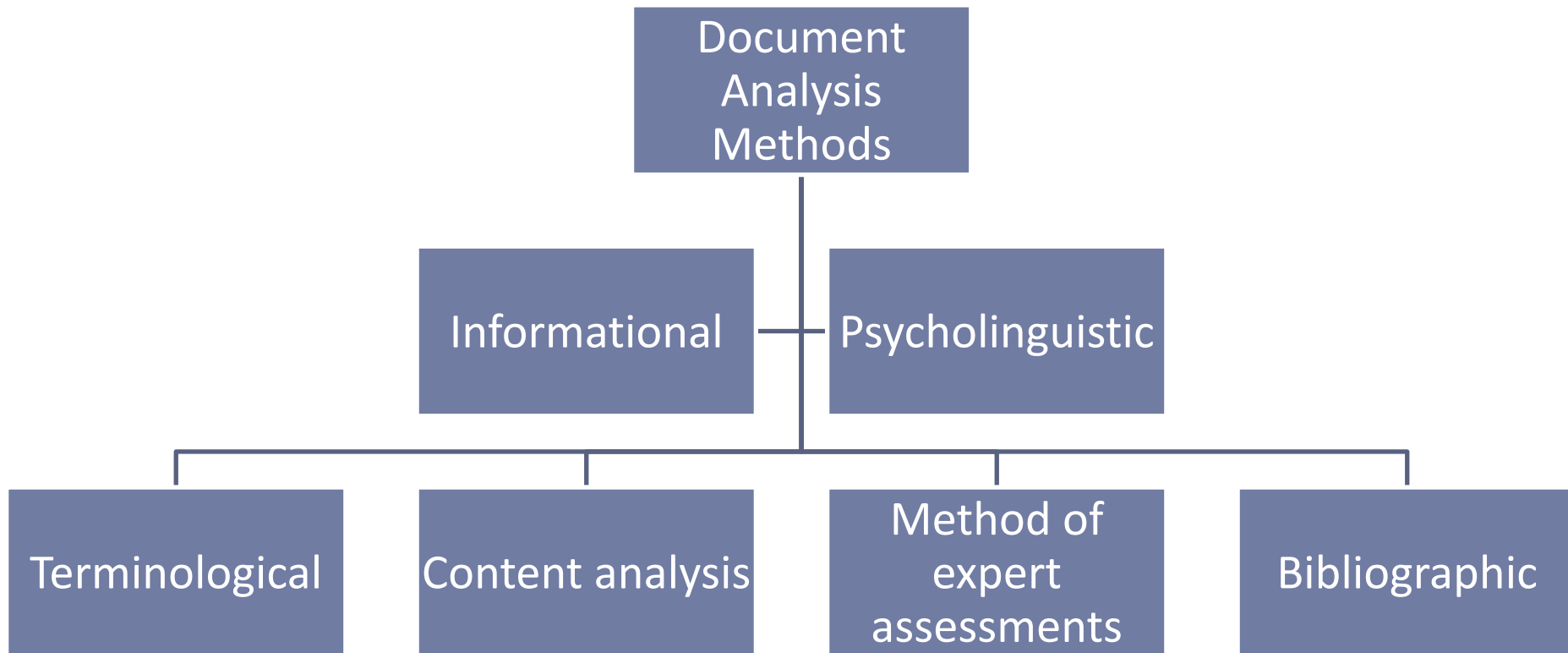
- state standards (GOST);
- industry standards;
- enterprise standards;
- standards of scientific and technical, engineering societies and other public associations

# Document analysis



*Information analysis of a document* involves a formal description of the text in several parameters: information volume, information capacity, physical volume (dimensions), information content, etc.

*The method of terminological analysis* originally arose in linguistics, but over time it was enriched with the methods of logic and is now successfully used in many scientific fields. Its application in each science has its own characteristic features.





*Content analysis*, or a method of quantitative study of the content of a document. The essence of this method is to count the frequency of units found in the text: letters, words, signs, combinations of signs, terms, etc. The selected units after counting are arranged in descending order of the frequency of their use in the text, i.e. a thesaurus is formed.

*Psycholinguistic method of studying documents.* This is a method of studying the text from the point of view of the features of its perception that affect the interest and its accessibility to the reader. The author's intention expresses the main idea of the text, since when preparing the text, the author focuses on certain needs of the potential consumer and seeks to be understood. The method of analysis of the conceptual dictionary also refers to psycholinguistic methods. This method is a tool that allows you to identify the level of readiness of the reader.



*Method of expert assessments.* Expert assessments are used in the analysis and solution of poorly formalized problems, in which the relationship between causes and effects is not entirely clear, and the value and quality of the parameters of interest to the researcher cannot be directly measured.

Expertise is a central concept in expert assessments. Expertise is the actual process of questioning experts, the collection and primary analysis of expert information. There is direct examination, in which questions of interest are asked to experts directly, and indirect examination, in which the answers to such questions are determined as a result of processing other answers.



Depending on the type of questions asked, they distinguish between evaluation and situational expertise. The purpose of the evaluation is to obtain an estimated value of a criterion or parameter measured on a scale. In a situational examination, participants are asked to consider a set of statements, facts, data characterizing the state of the object, then evaluate the cause-and-effect relationships between individual facts and give a forecast for the development of the object in different situations





*Bibliographic method of studying documents.* Bibliographic and scientometric methods refer to methods aimed at studying a quantitative set of documents. When studying documents in statics, the concept of an array of documents arises; when studying in dynamics, one speaks of a flow. A certain time-invariant set of objects - documents is called an array of documents.

*The flow of documents* is a set of objects that change in time and are in dynamics and movement. The characteristic of the flow is its intensity, which is expressed by the number of units of publications and editions per unit of time (month, year).

*Analysis of information sources.* Source analysis can be referred to as "informational", as it includes the search for original sources of information, combined with a preliminary study of their content.



*Printed sources of information.* These include periodicals, which, in turn, are divided into newspapers and magazines and some other types of special publications; book publications - they are much more difficult to classify due to their thematic diversity.

*Specialized information retrieval systems (SIPS).* This is a relatively new means of searching, collecting, organizing and analyzing the original sources of information. Their appearance and rapid development is primarily associated with the rapid progress of information and electronic technologies (the invention of the computer, the development of perfect operating systems and new programming tools).

*Electronic sources of information.* These sources of information include television and radio broadcasting, the Internet and other information distributed in electronic form, including on various computer media.

# Search and accumulation of scientific information



*Systematization* is the ordering and grouping of all collected material according to content and taking into account the sequence of its use in the preparation of written work. A systematic analysis has two main tasks: a thorough check of the completeness of the selection of sources and a superficial check of the consistency of their output data.

*Catalog* - a systematized list of sources stored in the information fund and accounted for in accordance with established rules. Libraries most often use archival, alphabetical, thematic, chronological, bibliographic, subject, general systematic and special catalogues.



*The general catalog* is a list of library sources, systematized in accordance with some fundamental principle, different from the alphabetical and others that we have already considered.

*Thematic catalog* is a list of library sources, systematized in thematic order. In this case, the thematic orientation of the content of the source is taken as a basis.

*Alphabetical catalog* - a list of library sources, systematized in alphabetical order.

*Subject catalog* - a list of library sources, systematized in the subject, i.e. more differentiated than the thematic catalog order. At the same time, information about subjects that are not directly related to each other is systematized alphabetically.



*A chronological catalog* is a list of library sources, systematized in chronological order, reflecting the time of publication of a particular publication, more often a periodical one. The date (year) of the publication of the source in this case is taken as a basis.

*Archival catalog* - a list of archival library sources, systematized in alphabetical (less often - chronological) order.

To find the required source in the archival catalog, it is required to have either information about its title and author, or about the time the publication was published.

*Bibliographic catalog* - a list of library sources containing bibliographic (descriptive) information about the most important (most frequently used in the work) book and periodical publications stored and registered in the library



*A special catalog* is a list of library sources of a certain type. For example, a special catalog can serve as a catalog of articles published in periodicals kept and registered in this library, or a catalog of new acquisitions.

*The scientific reference apparatus* of the book (from the Latin apparatus - device) plays an important role in the process of searching, collecting, analyzing and systematizing the main and auxiliary sources of information.



Information elements include:

- information about the name of the source;
- information about the author (authors) of the source;
- information about the functional purpose of the source;
- information about publishers;
- a brief description of the publication;
- publication data



The explanatory elements of the scientific reference apparatus of the book complement and clarify the author's text of the source. These include a preface and an afterword.

These elements of the scientific reference apparatus of the book are located immediately before and after the main text of the source. symbols (marks, bookmarks, etc.) for preliminary heading of the source material.

General principles for maintaining work records. Keeping records of what has been read is the most effective method of processing information contained in sources used as input in the preparation of a written work: if the reading process is accompanied by the fixation of selected places, then the reliability of assimilation of the material read increases many times over.

Types of work records. The plan (from Latin planum - plane) is the fundamental principle, the framework of the written work, which determines the sequence of presentation of the material.





*Extracts are small fragments of text containing the quintessence of the content of the read.*

*Abstracts (from the Greek. tezos - statement) are the most perfect form of creatively revised extracts. This is a concise presentation of the content of the studied material in an affirmative, sometimes refuting form.*

*Theses, depending on their purpose, can be basic, simple or complex.*

*The main theses are a close to verbatim record of the fundamentally important provisions of the original text with a small addition of generalizations that form the basis for the final conclusions.*

*Simple abstracts are a verbatim list of the main thoughts of the author both for each of the parts of the original text, and for the entire text as a whole.*

*Complex or detailed abstracts are at the same time compact, but quite perfect in their content, material that, together with the plan and other extracts, can serve as the fundamental basis for recording a draft version of the main text of a written work.*



*Synopsis (from Latin conspectus review, description) is a very complex record of the content of the source text, including citations of the most remarkable places in combination with the source plan, as well as a concise analysis of the recorded material and conclusions on it.*

*Summary - a brief assessment of the studied content of the original source of information, obtained primarily on the basis of the conclusions contained in it.*

*Abstract - a summary of the main content of the original source of information, giving a generalized idea about it.*

*Compilation of an updated list of original sources of information. In most cases, after reviewing the records made, the performer needs to make clarifications to the initial version of the list of original sources of information.*

# Electronic forms of information resources



*An information product* is a set of unified information and services presented in a standardized form.

Fact databases contain factual information and are the end product for the user.

Bibliographic databases contain secondary information, i.e. information about publications.

*Consumers of information* can be divided into four categories:

- consumers associated with the design and creation of new technology;
- consumers associated with the adoption of managerial decisions on the creation of new technology;
- consumers associated with scientific research;
- consumers associated with the solution of planning and management tasks.

# Processing of scientific information, its recording and storage



The book annotation provides brief information about the content and readership, shows the scientific and practical significance of the publication, and reveals the main idea.

*The preface to a scientific book* can be presented in various versions. The preface most often explains the motives for writing the book, the features of its content and construction, the degree of completeness of coverage of certain problems.

*Introductory article.* It evaluates the work, characterizes the worldview of the scientist, the system of his scientific and social views, lists the most important works, etc.

*The introduction* is an introductory section to the main text, so when you get acquainted with a scientific book, you need to read it especially carefully.



Registration forms can be different:

- registration of new information on special forms, questionnaires, statistical cards, forming as a result a thematic card index;
- records of a different nature, including observations recorded in laboratory journals, extracts from the minutes of meetings of the department, etc.;
- graphs, drawings, diagrams and other graphic materials;
- fixation of scientific information by photographic methods;
- scientific reports;
- calculations performed with the help of computer programs;
- extracts from the analyzed literary sources, documents (abstracts, dissertations, articles, books, etc.).