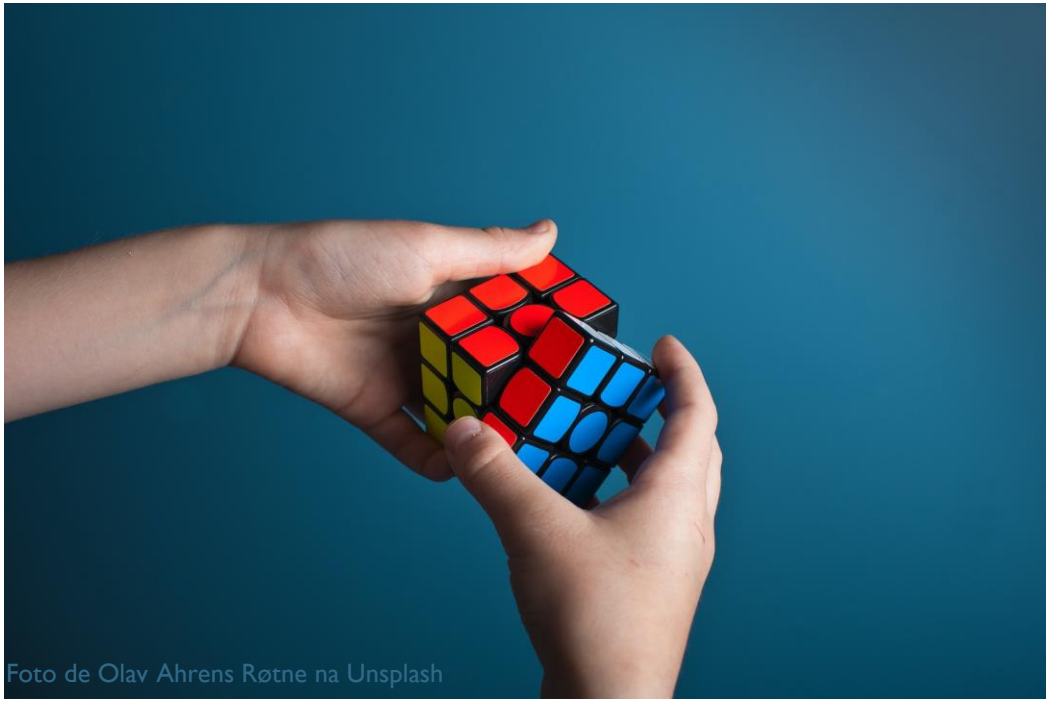

Information resources and Search strategies

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NOVA SCHOOL OF SCIENCE & TECHNOLOGY

BIBLIOTECA FCT UNL
CAMPUS DE CAPARICA

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- Information sources – Categories
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  - Secondary sources
  - Tertiary sources
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  - Repositories
  - Aggregating systems
- Search techniques and strategies
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What is Scientific Information?

It is current, relevant, accurate information whose author is qualified to speak on the subject and whose objective is to be impartial, objective and to promote the evolution of science.

It's information certified through the process of peer review, and published in scientific journals.

What is Peer Review ?

It is the process by which scientific publishers ensure the quality of their publications. It consists in the submission of the works proposed for publication (articles) to the evaluation of one or more specialists in the field, designated by the publishers and invited among the world's leading specialists in the various scientific / disciplinary areas

What are scientific articles?

- It's the main medium used for the formal communication of science
- Allow researchers to communicate to peers the results of a research
- They are written by researchers
- Have peer review
- They are published in journals with mechanisms of validation and certification

Types of Articles

Scientific article: (also known as original research articles)

It describes first hand the results of a research project

Review article:

It is a type of article that organizes and critically evaluates previously published studies in that field of expertise

Rapid Communications ou Letters

Smaller than regular articles, they are a mean of briefly disclosing a work in progress on an ongoing project.

The publishing process is faster.

More appropriate for areas where information has a short lifespan

Proceedings - Papers

- Proceedings are publications through which the various papers / communications that have been submitted, approved and presented at a given congress or conference are known.
- Nowadays it is common for International Conferences, workshops or Seminars to submit the communications to a peer review process.
- They may or may not have been previously published

https://www.youtube.com/watch?v=KXVw6cvugLE

Types of Information Sources

Primary sources - contain original information about the subject, that is to say, when the information is expressed by the 1st time:

- Theses
- Research articles reporting new results published in scientific journals
- Scientific and technical reports
- Conference proceedings
- Statistics, interviews, surveys
- Books and articles presenting original ideas

In some cases, the primary sources are documents that constitute themselves the research object, like: letters, diaries, comics, etc.

They are also referred to as background material so as not to be confused with academic publications introducing new research in the curriculum area.

Types of Information Sources

Secondary sources:

These analyze, interpret and comment the primary sources;

They summarize and structure information from primary sources

- Books and review articles that report or summarize the findings of others, i.e. a summary of existing knowledge
- Library catalogs are included in this categorie

Types of Information Sources

Tertiary sources - these are specialized works that cover «a set of knowledge or concise explanations related to themes, authors, works, associations, resources, etc .; These sources catalog, select and organize information from primary and secondary sources. "(Faria, Pericão, 1999)

- Reference books from the different scientific areas - allow familiarization with subject-specific terminology and help you to get a general idea of a subject (handbook, textbook)
- Encyclopedias
- Dictionaries

Information Sources

To ensure that the source material is reliable, it is best to use primary sources in your academic work.

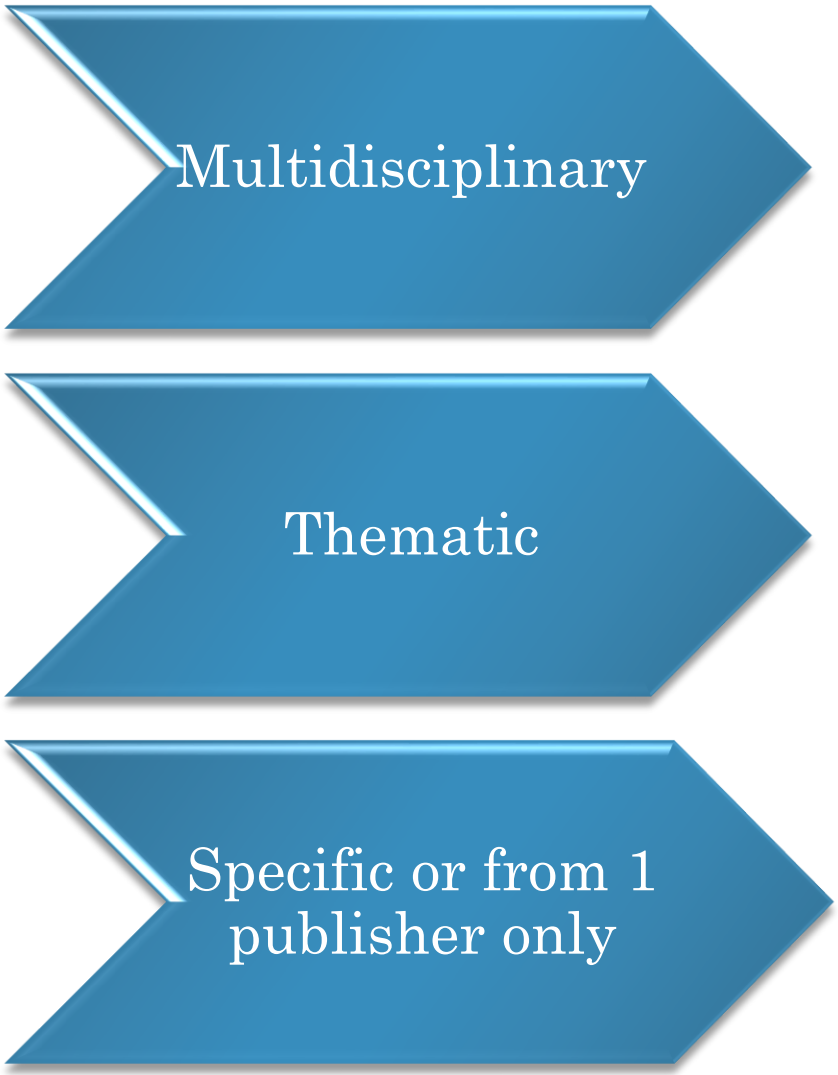
As the information is analyzed, it becomes less accurate…

Where to start?

Retrived from: Seleção de Fontes de Informação Científica – 2016 http://www.slideshare.net/bibliotecasUA/seleo-de-fontes-de-informao-cientfica-2016

https://www.youtube.com/watch?v=KKIbnNLCh8g&index=6&list=PL58B2ECFB395955F9

Different types of databases



Aggregators

B-On

Nova Discovery

Google?

What are aggregators?

- They're tools that join in a single search point several databases and resources.
- Advisable for a first approach to the most recent publication in the various disciplinary areas
- They have the great advantage of saving time as they are very comprehensive.
- They don't always present a structured indexing language, since they collect information from different information systems
- They are not appropriate when you need specific/specialized information

Databases versus search engines

Data Bases	Search Engines
Both are tools that serve to answer an information need	
Subscribed, in open access, repositories, OPAC's = online catalogs (books, scientific journals, etc.)	Searchable websites databases
They are organized by information specialists to meet the needs of researchers	The information is automatically managed by computer programs
They contain subscribed information (inaccessible to the general public) and open access (accessible to the general public)	They contain information accessible to the general public
Where we can find quality information specifically directed to researchers	There is no quality control, information is not always complete and is not always reliable

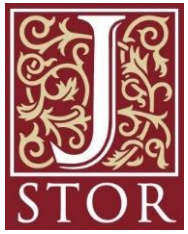
Subscribed databases

Academic institutions pay to provide the best resources to their users

- These resources are not accessible to the general public
- In-campus you have direct access
- From the outside the "Campus" it is done by authentication (VPN)

As a member of the FCT, you have access to B-on where you can find, among other resources, databases in full-text and reference databases that being similar can operate differently

Science and Technology Databases



Open Access databases and resources

- **RCAAP** - Repositórios das várias universidades portuguesas
- **OpenDOAR** (The Directory of Open Access Repositories)
- **DOAJ** (Directory of Open Access Journals)
- **Doab** (Directory of Open Access Books)
- **PubMed**
- **WorldCat**
- **Scielo** (Scientific Electronic Library Online)
- **PLoS** (Public Library of Science)
- **BioMed Central**

Statistics databases

- Eurostat 

- INE (Instituto Nacional de Estatística)

INSTITUTO NACIONAL DE ESTATÍSTICA
STATISTICS PORTUGAL

- Pordata

PORDATA
Base de Dados Portugal Contemporâneo

NOVA Discovery

It is a subscribed resource, made available by NOVA University of Lisbon for all its members

NOVA Discovery is a content aggregator that integrates the catalogs of the various UNL libraries, B-On and Google Scholar.

Searching in this platform within the Campus does not require authentication, outside the Campus it is done by authentication (VPN)

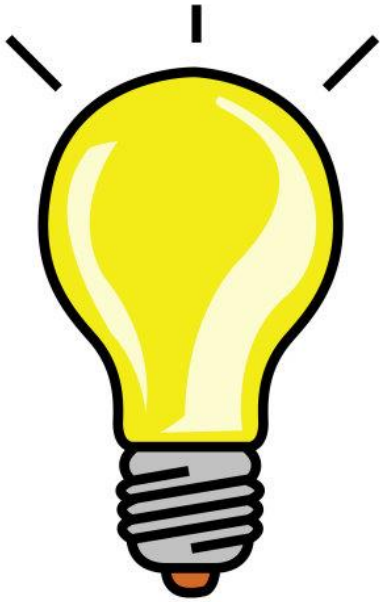
NOVA Discovery

Repositories

What are Repositories

- They are information systems with scientific and academic content available in Open Access.
- They include scientific articles, as well as the so-called gray literature such as master's and doctoral theses, preprints, reports, conference communications
- They are associated with a teaching and / or research institution
- In the repositories you can find the digital file of the referenced document, in full-text format and in open access.
- They allow greater (international) visibility to the scientific production of teaching and / or research institutions.

Where to start



Start with B-on and from there go to specific information sources

Why start with B-On

- It is a federated search engine that will retrieve information within the various databases it has access to
- It allows you to identify from which platform the best results are retrieved
- Allows us to “go” to 1 specific resource
- It is a multidisciplinary resource
- It is a trusted resource
- The information is current

But, … Not everything is online!

Don’t forget Books!

- Many are not available in full text on the Internet.
- Many contain historical content not found elsewhere

Search Library Catalogs!

Don't forget **scientific journals in paper format**, as not all of them are available in digital format.

Use the Interlibrary loan service to find articles that you can’t access directly through the subscribed databases

Interlibrary loan

It is a service that allows the user to obtain documents or copies of them from another institution.

This service can be used by all members of the NOVA community (internal users) and similar domestic and foreign institutions (external users).

For details contact your Library

http://www.dezzain.com/search-engines/the-future-of-web-surfing-seo-trends-from-expert-insiders/

Search for information

The first steps of a scientific project

Mind map or Concept map

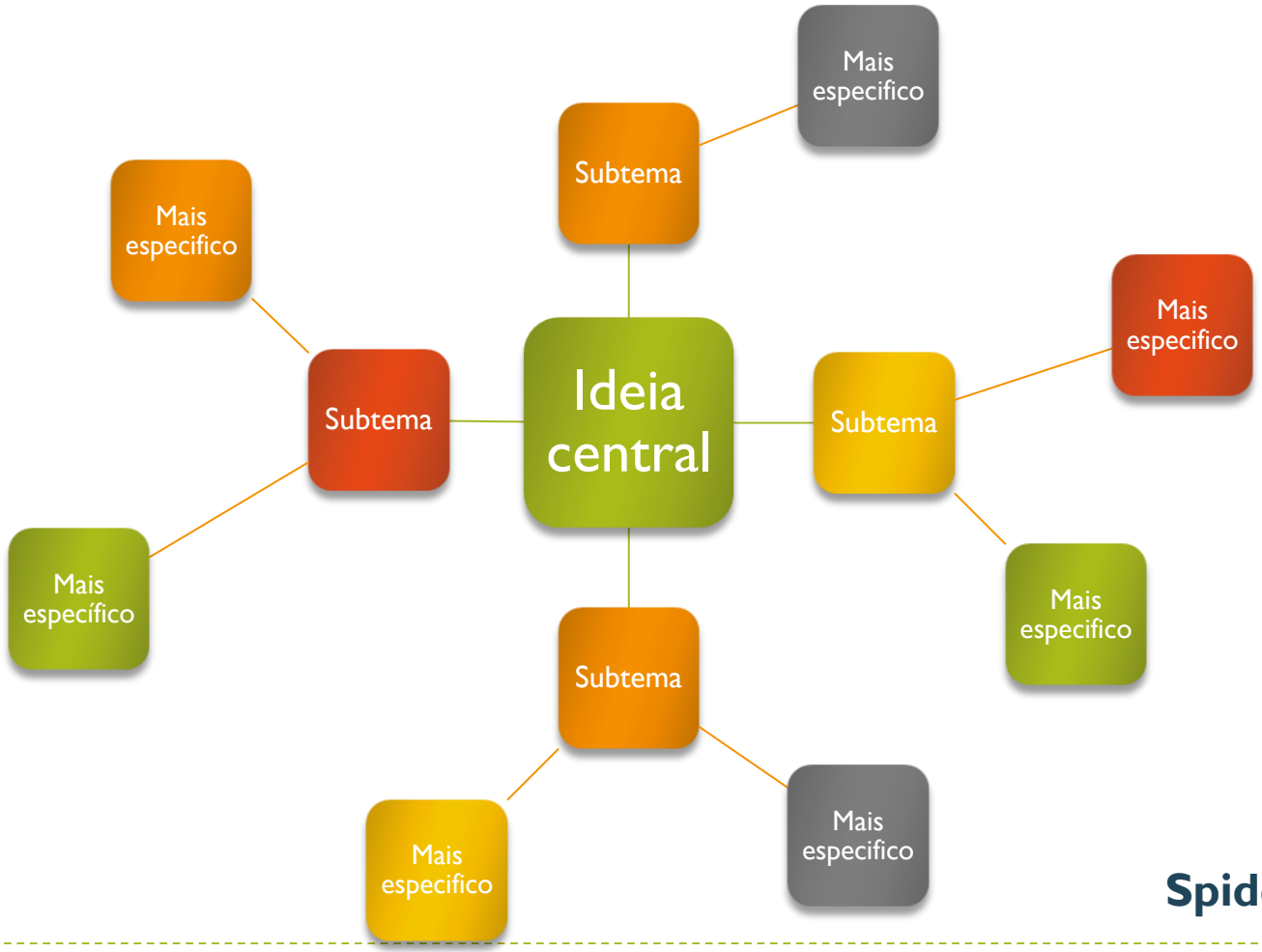
- A concept map is a simple way to visually display the concepts and relationships among ideas/subjects
- This will help you to organize your ideas and define your topic.
- They work as a brainstorming exercise and can be used to capture ideas/thoughts, or to take notes.
- They allow you to organize your work, structure a presentation, review notes…
- They should be done manually, with colors to make visible and explore in more detail the relationships between ideas and / or concepts.

How to do it …

- By hand (although there are softwares to do them) and with colors to make visible and explore the relationships between concepts and stimulate our imagination and our ability to associate
- First, write down the main idea in the center.
- Draw a circle around the idea. This will be the starting point for the concept map.
- A partir do centro e em forma radial adicionam-se ramos de acordo com as possíveis subdivisões temáticas
- A partir dessas linhas adicionam-se ramos secundários para especificação dos subtemas
- Para além das palavras pode conter imagens, post its …

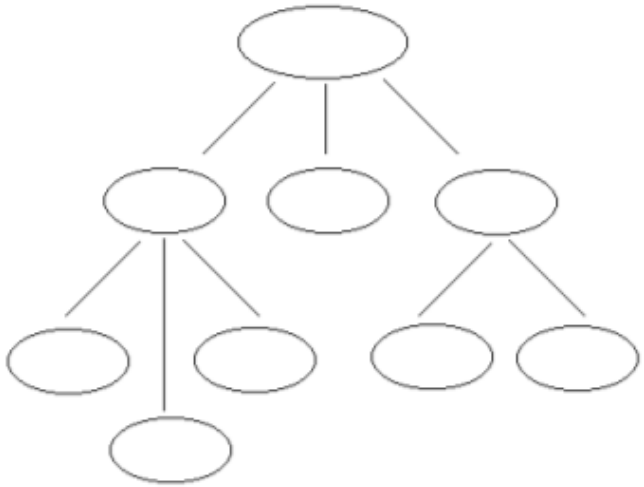
- Like this:

Mind map or Concept map

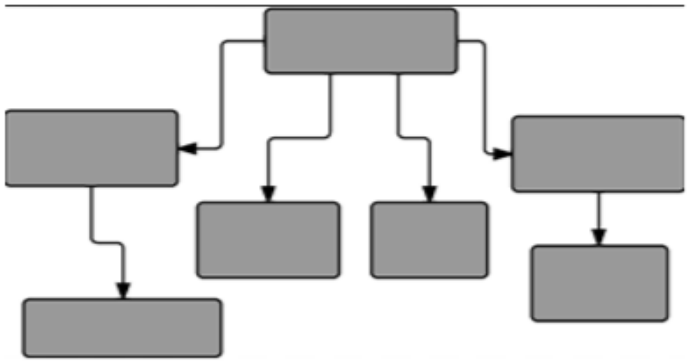


Spider format

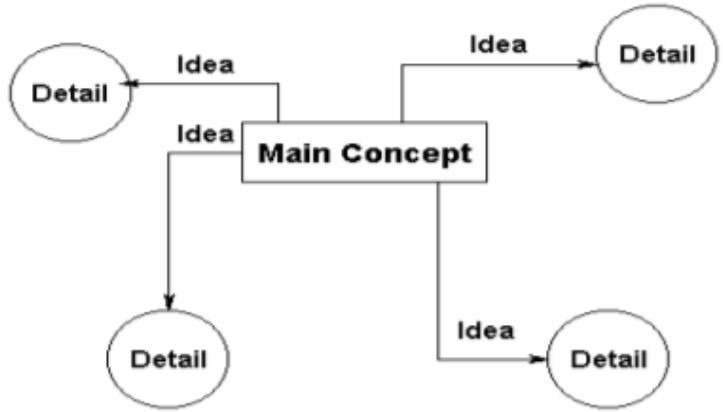
Hierarchical



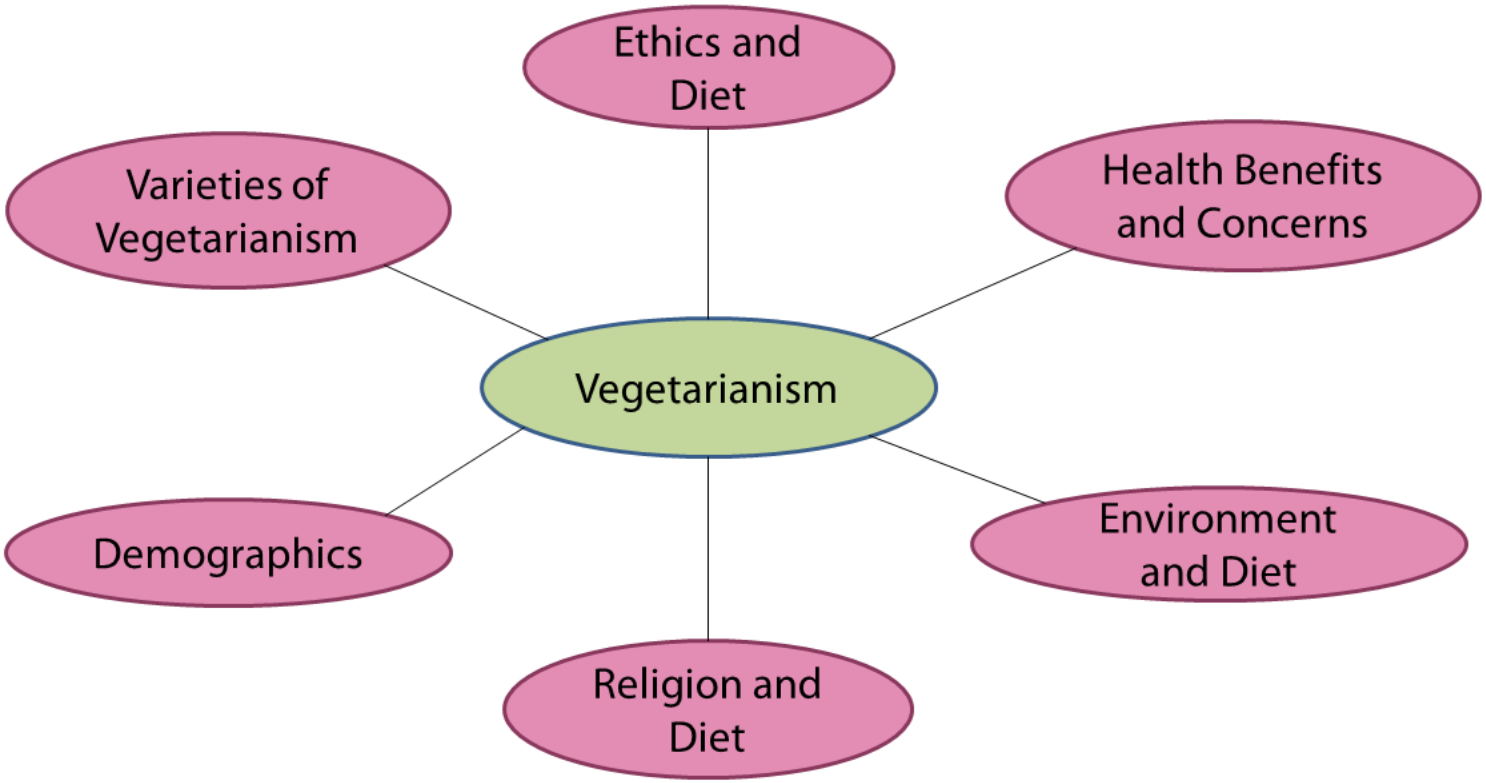
Flow Chart



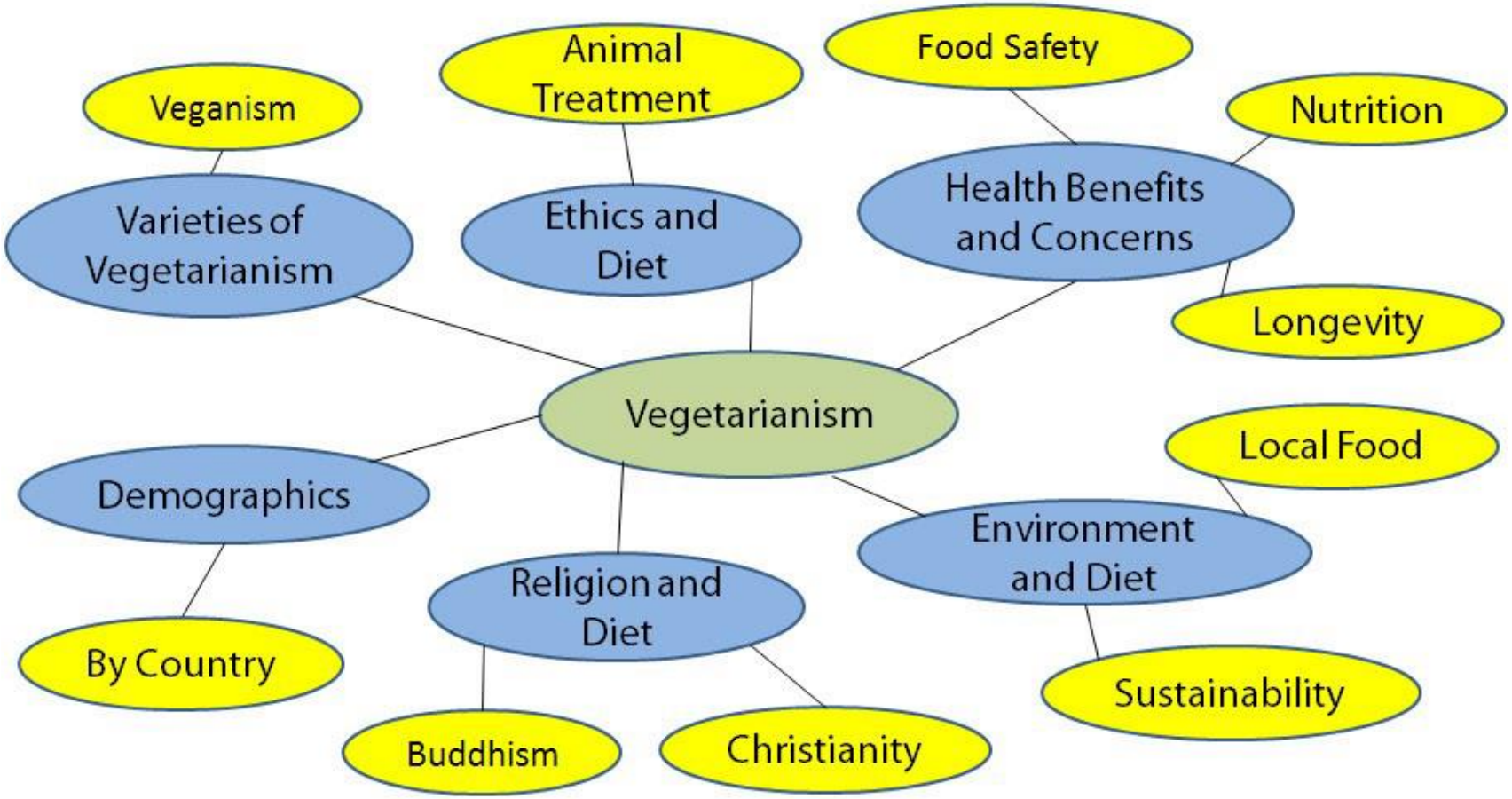
Systems



Mind map on vegetarianism



Mind map on vegetarianism



Mind map softwares

A Google Chrome tool

MIND MAP MAKER

Chrome Web store

For Macs

The basic version is free

The basic version is free; available for Windows, MAC OS and Linux

Web based.
Maps can be saved as images

Search techniques and strategies

Basic search principles

When searching a database you need to be as clear as possible.

Most databases have simple and advanced search features.

Simple search allows the use of natural language and / or keywords but can retrieve many results because the system searches all fields of the bibliographic records.

Advanced search gives us the possibility to use controlled language, associate terms, and search by specific field…

Natural language vs Controlled vocabulary

Natural language	Controlled vocabulary
Words taken from natural language (a good way to start)	Pre-defined controlled vocabulary to describe the content of the document in a library catalogue
More flexible to search (allows multiple combinations)	They allow more exact searches but they're less flexible, because you need to know the exact term (you can always ask the librarian)
The database looks for the keywords anywhere in the record (not necessarily connected together)	You are looking for material only in the subject heading or descriptor field
It may yield too many or very few results depending on whether it is a more or less common theme.	When you have too many results, you need to add other subject heading to filter (date, type of document, author)
May yield many irrelevant results (you need to add filters)	Results are usually very relevant to the topic

Searching by keyword ?

Not always the best way

WHY?

Databases use controlled vocabulary!

… and give better results if properly searched

Search techniques

- Start by defining the terms that best describe your topic, set the limits to your search, and build a "search expression".
- Analyze the results
- In the articles abstract check the field Descriptors and / or Subjects, see the terms used there to describe the document and compare it with your search terms.
- If necessary, redo the search using these controlled terms.

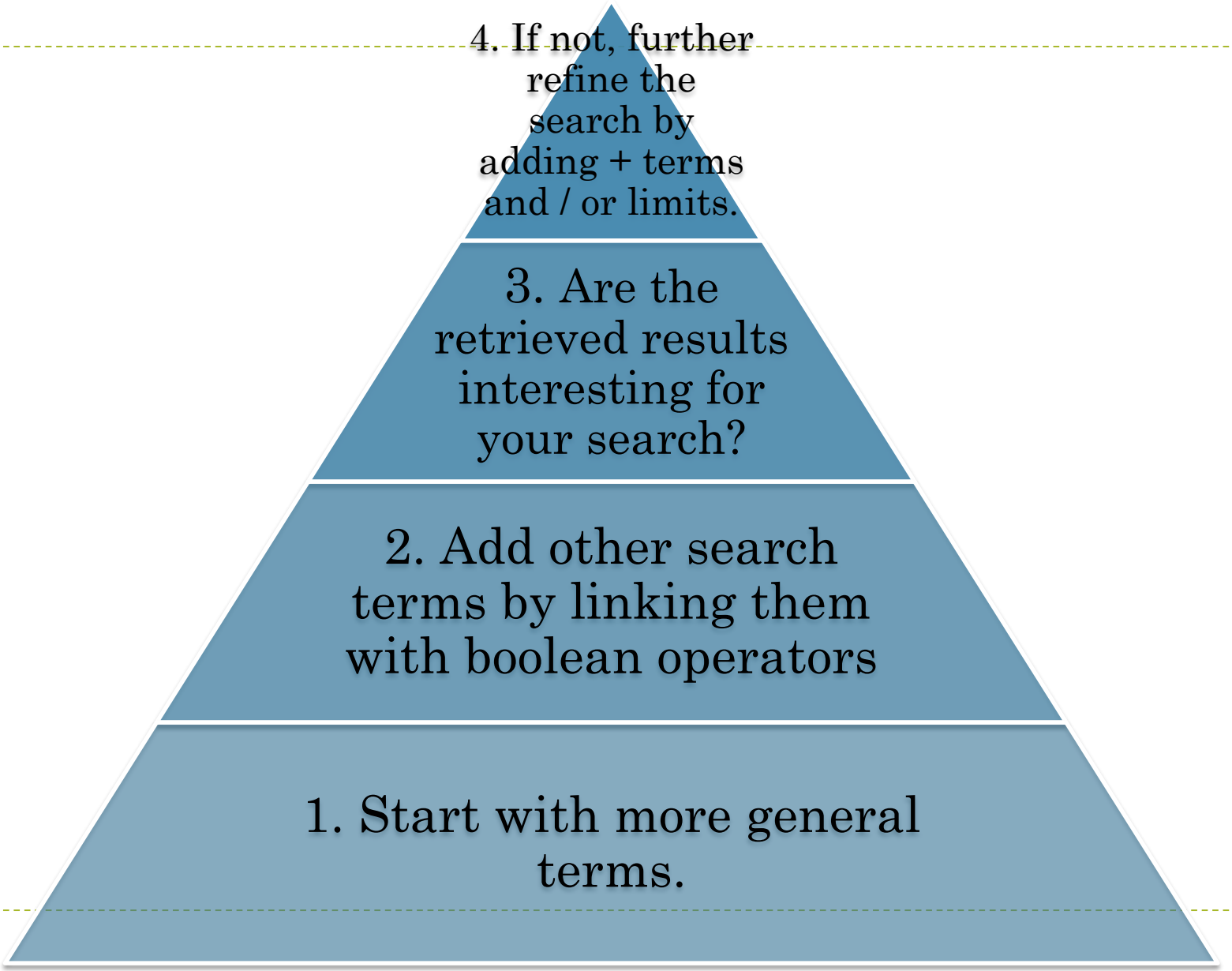
See if the database has an online thesaurus to browse or subject headings that match your topic (check the Help screens)

Search techniques

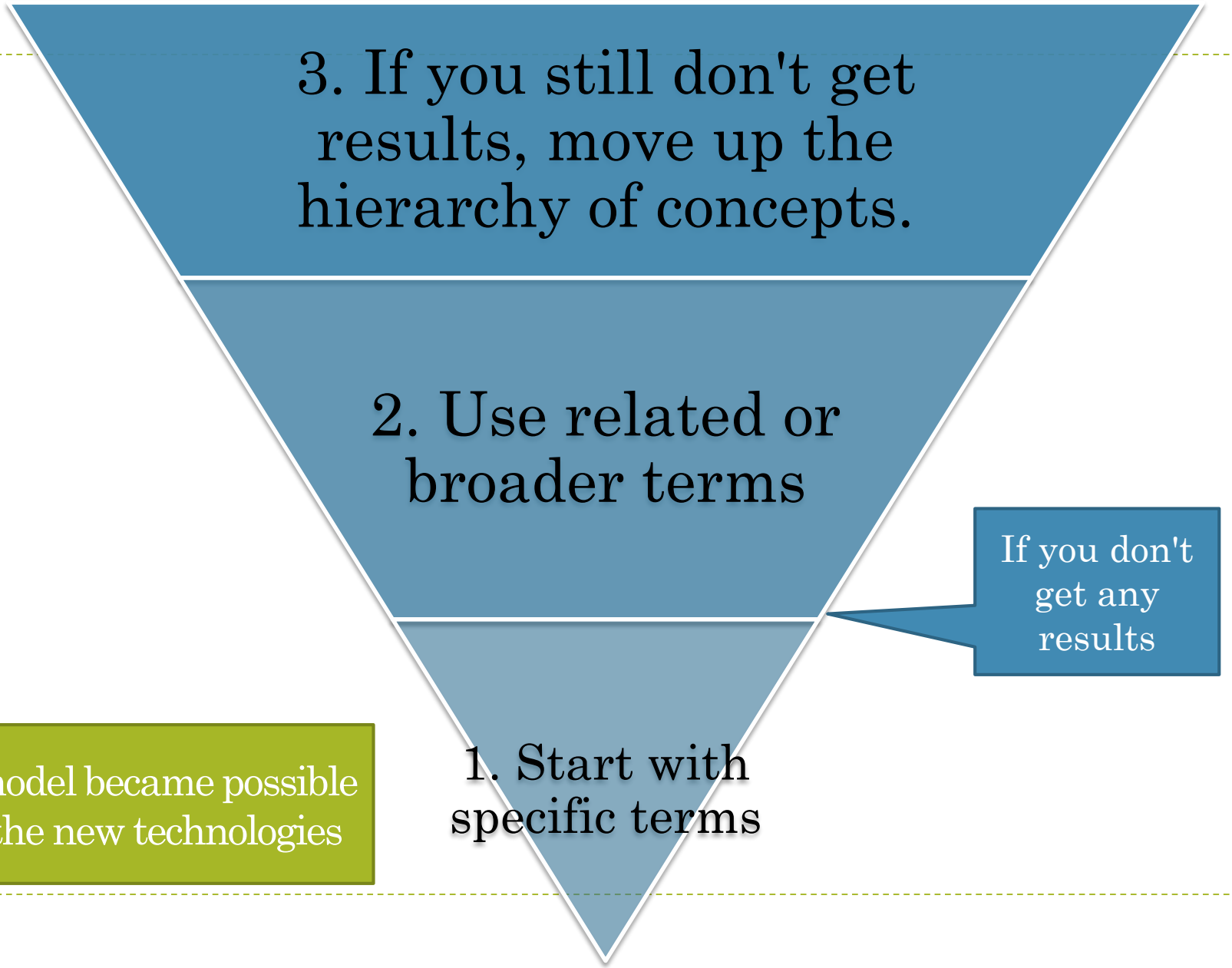
- Boolean operators
- Truncations or “wild cards”
- Quotation marks
- Parentheses
- Search Limits
- “Stop words”
- E no Google

  - / + / OR (the space works as an AND)

Traditional search model: pyramid



The inverted pyramid search model



This model became possible with the new technologies

Search strategies

5 basic strategies:

- Help button (in databases)
- Boolean operators
- Truncations
- Nesting or term associations (use parentheses)
- Controlled vocabulary (thesaurus/subject headings)

The importance of good research skills

Simple search – allows you to search by

- Keyword
- Author
- Title
- Subject

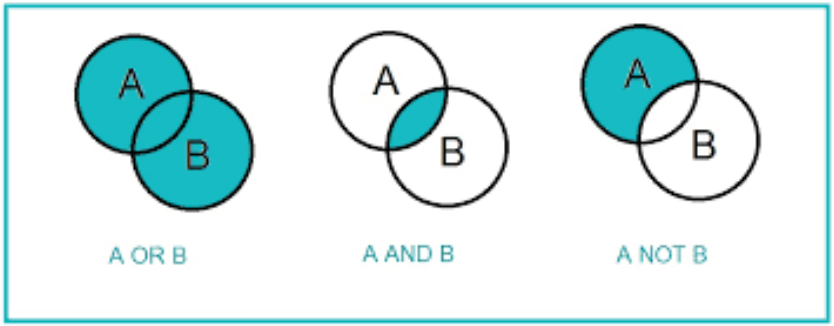
Returns many results, but the records retrieved may not match your specific needs,

Advanced search

- Using the Boolean operators (AND, OR, NOT)
- Truncation or Wild cards
- OR other techniques

It's a more precise search

Build up your search expression using: Boolean operators



"Reading disorder" OR Dyslexia
AND
University OR Academic students
NOT
PhD Students

Truncation or wild cards

like * $? Usefull for replacing characters

Ex:

know* = know, knowing, knowledge, knows

genetic* = genetic, genetics, genetically

Truncation or wild cards

Are symbols that replace characters * $?

- **The asterisk and question mark should be placed at the end of the word,** immediately following the word root, making it possible to retrieve singulars, plurals, and derivations of the term.

The asterisk is considered the most flexible (replaces a maximum of 5 to 7 characters)

Ex: **know*** = know, knowing, knowledge, knows

- **genetic*** = genetic, genetics, genetically

- **The dollar sign and question mark when placed within the word (at any point) replace individual characters**. They are indicated to help you search for the same term with different spellings.

(ex: colour = Ing; color= EUA)

There are databases that use the symbols ! # as truncation.
See the database HELP function

Quotation marks

- When using an expression with multiple words, we must enclose it in quotation marks so that the database understands it as an "exact expression".

- Ex: "Total quality management"

Parentheses (nesting)

- They are used to compose search expressions and combine related terms or search synonyms.
  - Clarify the order of search terms
  - Assess the results

Ex: ("Reading Disorder" OR Dyslexia) AND Students

OR

Ex: Students AND ("Reading Disorder" OR Dyslexia)

The use of acronyms

Don't use them!

Unless you associate them with the full expression, so that the database "understands" what you want to find (in which scientific or disciplinary area)

Ex: Total quality management OR TQM

It is common for different subject areas to have similar acronyms!

Refine your searches

All databases offer the possibility to refine searches using filters or limits such as:

- Specific subjects
- Publication date
- Author
- Type of publication: case studies, reports, peer-reviewed, conference proceedings, etc.
- Journal Title
- And others …

Stop Words

Words that are considered irrelevant to the search!

Stop Words	
• A	• Into
• An	• Of
• Are	• On
• Be	• The
• In	• Witch
• If	

In Portuguese, they are equivalent to
definite and indefinite articles, demonstrative and possessive pronouns, ….

Pearling or pearl growing

Pearling is the act of analyzing the bibliography or reference list (sources cited) of articles that we retrieved from our searches and found relevant to our study.

It aims to identify more articles relevant to our study that were not found in our searches.

It also refers to the analysis of the articles that cited those we identified as important for our study. (cited by).

Snowballing

Snowballing: (amostragem em bola de neve)

It refers to the use of the citations of an article that you found interesting to retrieve others that might be relevant to your research.

Google works differently

Google analyzes:

- the full content of a page
- the exact location of each word
- the content of neighboring pages
- links between pages

Results may be similar to subscribed databases, but unlike these it doesn't mean that it's possible to access the full text of the articles

Google tools and shortcuts

- To associate more than one search term, use + or space
- To exclude terms to search on, use -
- You can also use the boolean OR
- To search for a concept consisting of multiple terms, type the phrase in quotation marks.
- Some words for Google have a special meaning:
  - Website - used to locate a concrete web page
  - Link - show all pages that link to a specific url

- With the translation tool, Google allows you to find pages with similar content in English if the search was done in Portuguese and vice versa

“Think full-text”

- Be precise about what you are looking for
- Don’t use generic terms
- Use controlled language
- Choose combinations of the terms you are looking for with the + symbol
- Use exact quotes in quotation marks
- When defining your search delete or add options:

Ex: proliferation + nuclear OR bush legacy + environment

You can limit your search to web page titles by placing the phrase “in title” or title + the term

Ex: title hybrid cars

Currently, Google already has advanced search tools that allow us to inquire the platform, more effectively.

“Think full-text”

When searching any topic that reflects a current social concern, prefer official sites (eg edu “global warming”)

You can also define the file type you want:

Ex.: filetype: ppt site: edu “global warming” (in this case only powerpoint files of this subject will appear)

You can also choose advanced search right from the start by creating the limits you consider relevant

EXERCISE

How to create a search expression

"How to write a research paper or report in health sciences"

- Determine Concepts / Terms to Search
- Build your search expression using boolean operators and truncations
- Define limits to your search
- Test your search equation in a database or search engine…

Good Luck!

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