

Future of INIS

From Metadata to Dialogue Using ChatGPT

Dr. Dobrica Savić

Contents

01

The Importance of INIS

Unique concept of international information cooperation. World's largest and most popular repository of nuclear information and publications.

02

The power of ChatGPT

Great natural language processing capability. Understands context. Generates human-like responses. Used by millions in various areas. Potential to transform information systems and enhance user experience.

03

Enhancing INIS with ChatGPT

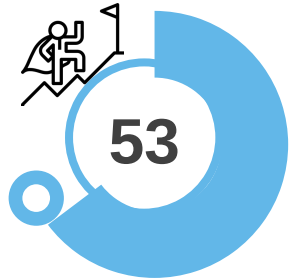
From current information management practice to AI-based transformation.

04

Conclusions

The future depends on our present actions. Great opportunities lie ahead, but significant efforts are required. Responsibility for success rests upon all of us.

The Importance of INIS



Years of operation

INIS started operation in 1970.



INIS Member States

Plus a number of international organizations.



Million records

623,000 full-text documents.



Source of nuclear pubs

Google indicates INIS as the main source of nuclear publications & information.



INIS Member States

IAEA membership is 176 states. INIS has a potential of increasing its members by 44 new states. A number of international organizations could be increased.



Number and Types of Records

INIS Secretariat adds 50% of all records. 75% of countries add only few records. Only 10% of all entered records are NCL. Multiple formats should be included.



Process Automation

Almost all parts of INIS record and publication processing are still manual and labor-intensive.



INIS Promotion

INIS success and achievements are being disregarded or undervalued. E.g. staff & budget cuts, rewriting the Agency history by removing INIS from its timeline, amalgamation with other Sections, no priority IT support, stopping the INIS Newsletter.



The Power of ChatGPT

What is ChatGPT?

Chat Generative Pre-trained Transformer is a complex AI machine learning model that is able to carry out natural language processing (NLP) tasks with a high level of accuracy, simulating human conversation and passing a Turing Test.

Developed by OpenAI in 2021, launched in November 2022. It gained 1M users within a week of its release and exceeded 57M users in its first month. In January 2023, it surpassed the 100M users mark. The website currently has 1.8B visitors per month.

GPT 3 was trained on 175B parameters, while GPT4, launched on March 14, was trained on 170 trillion parameters.

Baidu has Ernie bot.

Google AI is called Bard.

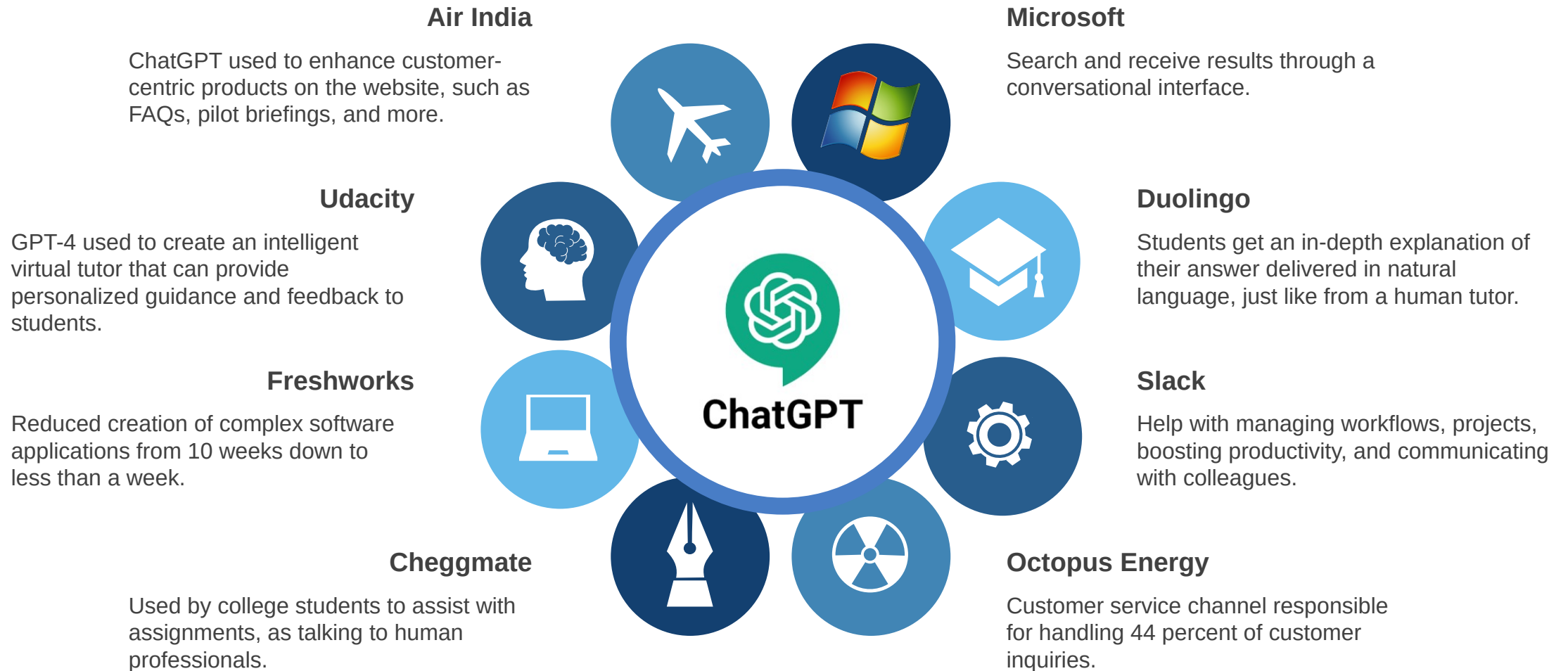
Microsoft Bing integrates GPT technology.

Amazon launched Bedrock with Titan Text, similar to ChatGPT.

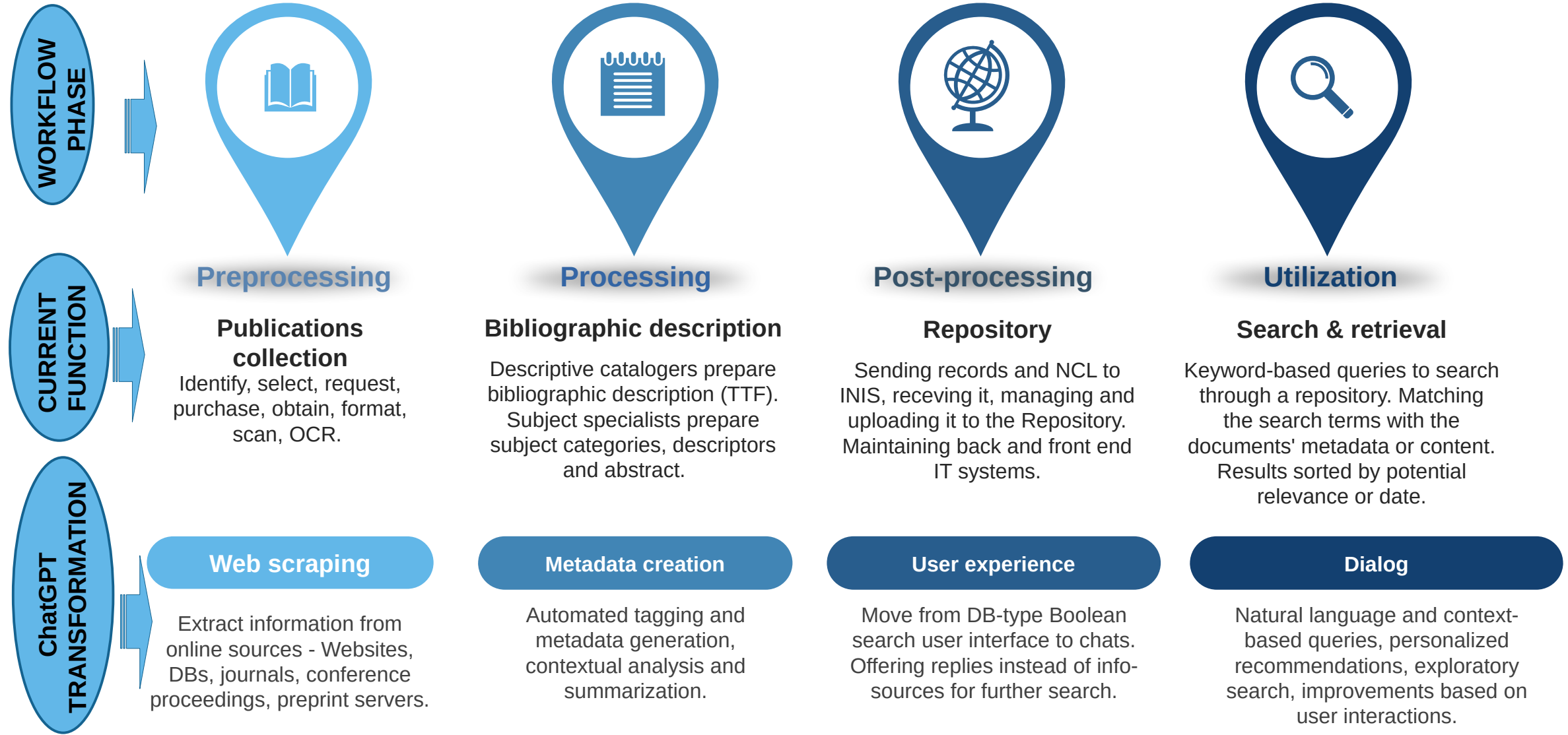
What can ChatGPT do?

- Integrate and leverage vast amounts of knowledge from various sources, such as books, articles, and websites.
- Answer a wide range of questions on various topics.
- Generate coherent and contextually relevant texts, draft emails, and prepare creative writings.
- Write computer code snippets, provide code suggestions, explain code concepts, help with debugging.
- Translate text from various languages.
- Simulate conversations with users.
- Automate customer support and provide 24/7 assistance without the need for human intervention.
- Categorize, classify, tag, automatically generate metadata.
- Condense lengthy text into concise summaries, extracting the most important information.
- Expand users knowledge by providing information on various topics, historical events, scientific concepts, or current news.
- Help with meetings by preparing summaries, identifying key decisions and action items.
- Create amazing images, jokes, stories, poems.
- Explain something in a particular style.

The Power of ChatGPT - Examples



Enhancing INIS with ChatGPT



Web Scrapping

Target Nuclear Information

Fine-tune the ChatGPT model with relevant training data and specific prompts related to nuclear publications, so that it can assist in retrieving and extracting targeted information from websites. It can cover different localities, organizations, specific journals, topics, and other parameters using predefined frequency.

Cross-Referencing and Verification

ChatGPT can cross-reference the scraped information with other reputable sources to validate the accuracy and reliability of the publications. This ensures the gathered data is trustworthy and meets the required standards.



Knowledge Integration

ChatGPT can integrate the scraped nuclear information with its knowledge base. It can provide additional context, related articles, historical data, or scientific background, enriching the overall understanding of the nuclear subject matter.

Multilingual Scraping

ChatGPT's multilingual capabilities enable it to scrape nuclear information from websites in various languages, broadening the scope of data collection and analysis.

Metadata Creation

Metadata Creation

By analyzing the content and context of a scientific document, ChatGPT can automatically generate relevant metadata such as author names, publication dates, journal titles, and citation information. This automation streamlines the process of cataloging and referencing scientific literature, saving significant time and effort.

Contextual Analysis

By leveraging its contextual understanding, ChatGPT can identify relationships between concepts, detect nuances in scientific terminology, and make connections across different research domains. This can help researchers gain comprehensive insights into a specific topic, identify knowledge gaps, and explore potential research directions.



Automated Tagging

By analyzing the content of scientific documents, ChatGPT can extract key topics, concepts, and keywords that accurately represent the document's subject matter. These tags, combined with relevant knowledge organizations systems can serve as valuable metadata and can facilitate efficient document organization, search, and retrieval.

Summarization

ChatGPT can generate concise summaries that capture the essence of lengthy scientific articles. These summaries can provide researchers with an overview of the document's content and help in decision-making regarding the relevance and importance of the research.

Metadata Creation - Example

What Great Companies Know About Culture

Page 1 of 4

**Harvard
Business
Review**

STRATEGY

What Great Companies Know About Culture

by Deidre H. Campbell

DECEMBER 14, 2011

Even in this unprecedented business environment, great leaders know they should invest in their people. Those companies who are committed to a strong workplace culture tend to perform well, and now they are featured prominently in a new ranking recently released by Great Place to Work Institute. Among the top performers on the 2011 World's Best Multinational Companies list are culturally-strong technology companies such as Microsoft, NetApp, SAS, and Google.

But is there a direct correlation between employee investment and the balance sheet? As Prof. James L. Heskett wrote in his latest book *The Culture Cycle*, effective culture can account for 20-30 percent of the differential in corporate performance when compared with "culturally unremarkable" competitors.

To better understand the ROI, my company, Burson-Marsteller, teamed up with the Great Place to Work Institute to ask senior executives from top-ranked companies about the value of a positive work environment. The survey garnered responses from 20 of the top 25 companies in the global workplace ranking. Here's what those companies do in common:

Please create Dublin Core metadata from the article?

```
{  
Full-text of the following article:  
What Great Companies Know About Culture by  
Deidre H. Campbell Harvard Business Review DECEMBER 14, 2011  
}
```

DUBLIN CORE RECORD

Title: What Great Companies Know About Culture

Creator: Deidre H. Campbell

Date: December 14, 2011

Publisher: Harvard Business Review

Subject: Workplace culture, employee investment, corporate performance, ROI strategies

Description: The article discusses the correlation between a positive workplace culture and corporate performance, and the importance of investing in employees to increase productivity, improve recruitment and retention, and save costs.

Type: Text

Format: HTML

Identifier: <https://hbr.org/2011/12/what-great-companies-know-about>

Language: English

Relation: Council for Economic Education, Burson-Marsteller's Corporate Practice, Great Place to Work Institute

Coverage: Global, Multinational Companies

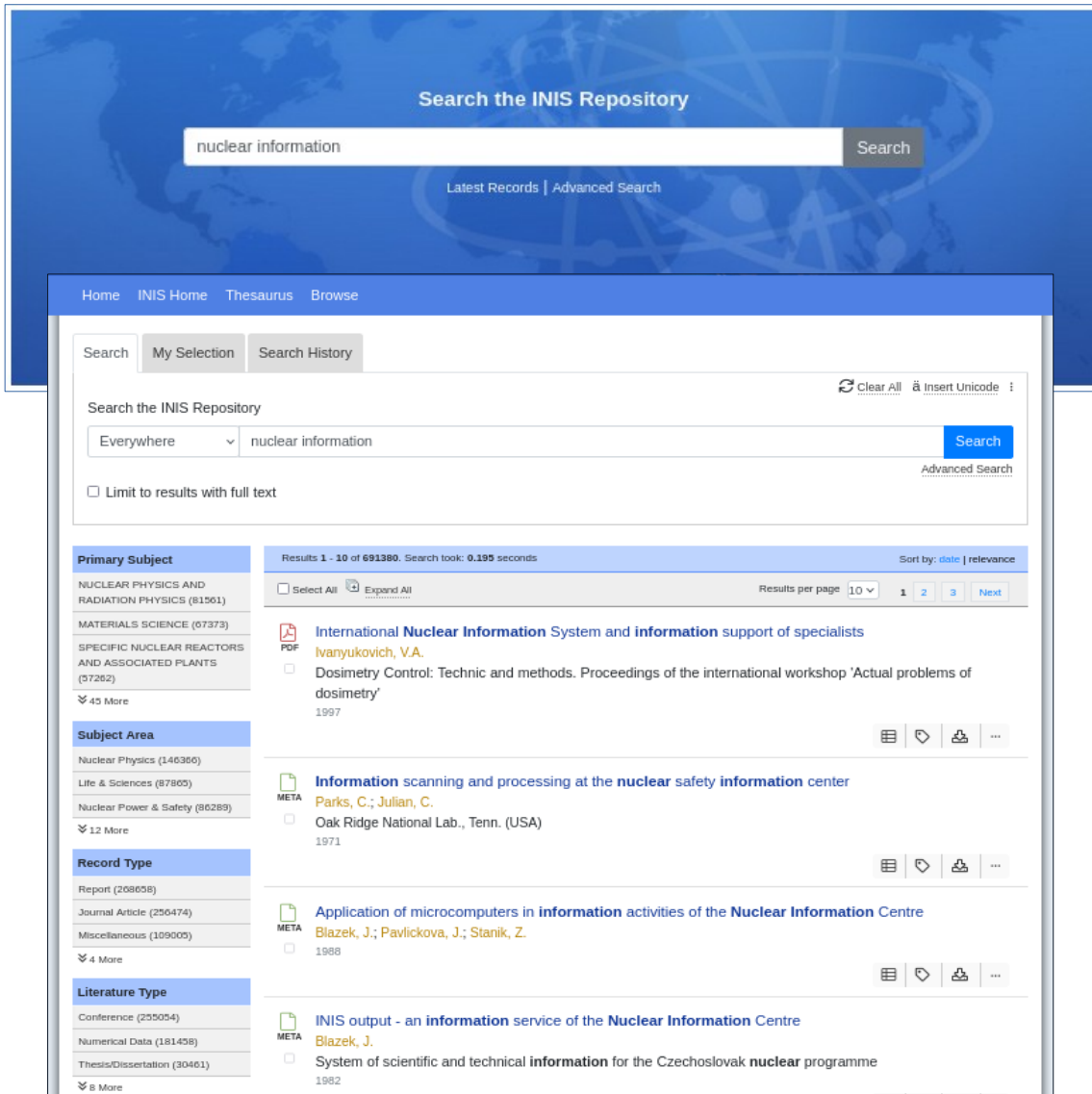
Rights: Copyright Harvard Business Review. All rights reserved.

Metadata Creation - Example

JSON format

```
{
  "title": "What Great Companies Know About Culture",
  "creator": "Deidre H. Campbell",
  "source": "Harvard Business Review",
  "date": "2011-12-14",
  "type": "text",
  "format": "html",
  "subject": [
    "Employee retention",
    "Organizational culture",
    "Strategy"
  ],
  "description": "The article explores the importance of workplace culture and employee investment in the success of a company.",
  "identifier": "https://hbr.org/2011/12/what-great-companies-know-abou",
  "language": "en",
  "publisher": "Harvard Business Publishing",
  "relation": "Council for Economic Education, Burson-Marsteller's Corporate Practice, Great Place to Work Institute",
  "rights": "All postings become the property of Harvard Business Publishing.",
  "coverage": "Global, Multinational Companies"
}
```

User Experience



D

Can you define nuclear information for me?



Nuclear information generally refers to the knowledge and data related to nuclear science, technology, and applications. It encompasses various aspects of nuclear physics, nuclear engineering, and the use of nuclear energy.



Nuclear information includes a wide range of data, theories, and experimental results that contribute to the understanding of the behavior and properties of atomic nuclei, as well as the processes that involve nuclear reactions and interactions. This information can be related to nuclear structure, nuclear decay, nuclear fission, nuclear fusion, and other nuclear phenomena.

Additionally, nuclear information also involves details about nuclear power generation, nuclear reactors, radiation protection, nuclear safety, nuclear waste management, and nuclear non-proliferation measures. It encompasses technical specifications, operational guidelines, regulatory frameworks, and safety standards that govern the use of nuclear technology.

Nuclear information is crucial for researchers, engineers, policymakers, and organizations involved in nuclear science and technology. It helps facilitate scientific advancements, technological developments, and informed decision-making in areas such as energy production, medical applications, industrial processes, and scientific research.

Regenerate response

Send a message.

Dialog

Moving from a DB-type Boolean search user interface to a ChatGPT interface offers several advantages. Here are four major benefits of a document search system that provides replies instead of simply pointing to external info-sources:

Natural Language Interaction

ChatGPT's conversational interface allows users to interact with the system using natural language queries and receive responses in a conversational manner. This eliminates the need for users to formulate complex Boolean queries or understand the underlying database structure. It also makes the search process more intuitive and user-friendly, resembling a conversation with an expert rather than navigating through a rigid search interface.

Contextual Understanding

ChatGPT's advanced language model enables it to understand the context of user queries and provide relevant and contextualized responses. Instead of providing a list of potential sources for further search, ChatGPT can directly address user queries, offer explanations, or provide specific information within the conversation. This contextual understanding enhances the user experience by reducing the cognitive load associated with searching for and evaluating multiple sources.

Personalized Recommendations

ChatGPT can leverage its understanding of user preferences and previous search queries to offer personalized recommendations. By analyzing user behavior and feedback, the system can adapt and refine its responses, ensuring that the information provided aligns with the user's needs and interests. This personalized approach enhances the user experience by tailoring the search results to individual requirements and increasing the relevance and usefulness of the information provided.

Improved Efficiency and Time Saving

With a ChatGPT interface, users can quickly obtain relevant information without the need to browse through multiple sources or sift through lengthy search results. The conversational interface allows users to directly ask questions and receive concise answers or summaries, saving time and effort. Additionally, the system can provide additional context, related information, or follow-up questions to further refine the search and provide a more comprehensive understanding of the topic.

Collaboration and Knowledge Sharing

ChatGPT can facilitate collaboration among users by enabling features like document sharing, commenting, and annotation. Users can engage in discussions, share insights, and collectively contribute to the repository's content.

Conclusions

1 INIS – Most valuable nuclear information resource

- ◆ A unique concept of international information cooperation.
- ◆ World's largest repository of nuclear publications.
- ◆ Most popular nuclear information resource.

3 INIS & ChatGPT – Excellent synergy

- ◆ Using ChatGPT INIS can improve all of its current information management phases and functions.
- ◆ Web scraping of relevant publications.
- ◆ Automatic tagging and metadata creation.
- ◆ Improved user experience.
- ◆ Natural language dialog.

2 ChatGPT – Great opportunity

- ◆ Great natural language processing capability.
- ◆ Understands context.
- ◆ Generates human-like responses.
- ◆ Used by millions in various areas.
- ◆ High potential to transform information systems and enhance user experiences.

4 INIS Future – Joint responsibility

- ◆ Need for further improvements and developments.
- ◆ Should follow its 53 year long path of success.
- ◆ Achievements should be better promoted.
- ◆ Requires your guidance, help and support.
- ◆ It is our joint responsibility.

The future depends on what you do today.

Mahatma Gandhi

THANK YOU

Dr. Dobrica Savić
www.linkedin.com/in/dobricasavic/