Overview of the Internet, Web, and the Semantic Web

Difference between the Internet and the Web

- **Internet**: The global network of computers that communicate with each other.
- **Web (World Wide Web)**: A service on the Internet that allows users to access and share information through websites and links using web browsers.

Web 1.0 vs. Web 2.0 vs. Web 3.0

- **Web 1.0**: Static web pages where users could only view content, not interact much (the "read-only" web).
- **Web 2.0**: Dynamic, interactive websites where users can create and share content (e.g., social media, blogs).
- **Web 3.0**: The "semantic web," where data is structured and machines can understand and process information for better personalization and interaction.

Semantic vs. Syntactic Search

- **Syntactic Search**: Search based on exact keyword matching (literal interpretation of queries).
- **Semantic Search**: Search that understands the meaning behind the query and provides more relevant results (context-based).

5 Things That Affect Meaning and Interpretation of Knowledge

- **Context**: Where and how the information is used.
- **Language**: The words or symbols used.
- **Culture**: The cultural background influencing meaning.
- **Format**: The way information is presented (text, image, video).
- **User Understanding**: The knowledge and interpretation ability of the user.

Limitation of the Traditional Web & What is the Semantic Web

- **Limitation of Traditional Web**: The web mainly displays content for humans but doesn't understand the meaning of the data, making it hard for machines to interpret.
- **Semantic Web**: An extension of the current web where data is structured so machines can understand, interpret, and use it to help users.

Another Name for the Semantic Web

- Web of Data.

How is Meaning Expressed on the Semantic Web?

- Meaning is expressed through structured data, using ontologies (frameworks that define relationships between concepts), RDF (Resource Description Framework), and OWL (Web Ontology Language).

Linked Data Cloud

- The Linked Data Cloud is a collection of interconnected datasets available on the web that are linked through URIs, enabling easier sharing and integration of data across the web.

Nucleus of the Linked Data Cloud

- DBpedia is often considered the nucleus because it extracts structured data from Wikipedia, forming the core of the Linked Data Cloud.

What is DBpedia?

- DBpedia is a project that takes structured information from Wikipedia and turns it into a form that can be easily read and processed by machines, enabling advanced searches and linking with other datasets.

Three Inherent Benefits of the Semantic Web

- **Better Search Results**: More accurate and relevant results based on understanding content.
- **Data Interconnection**: Easier linking and integration of data from different sources.
- **Automation**: Machines can process and act on information without needing constant human input.

Key Elements in First Three Layers of the Semantic Web Stack

- **URI and Unicode**: Provides unique identification and encoding of resources.
- **RDF (Resource Description Framework)**: A model for describing relationships between resources.

- **RDFS (RDF Schema) and OWL (Web Ontology Language)**: Frameworks that define relationships and structure for interpreting data.