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19CSE314 – Open Source Software

Case Studies: Wikipedia and Drupal

Both **Wikipedia** and **Drupal** are widely known in the open-source software community for their respective contributions, and each has utilized open-source principles to build powerful platforms. Let's take a look at these two case studies to understand how they've evolved and the impact they've had on the open-source world.

Wikipedia: Open-Source Success Story

Overview:

Wikipedia is one of the largest and most well-known open-source platforms on the internet. It is a free, web-based, collaborative, multilingual encyclopedia, supported by the non-profit **Wikimedia Foundation**. It was created in 2001 by Jimmy Wales and Larry Sanger. It is available in multiple languages and is created and edited by volunteers around the world.

Open-Source Technologies Used:

While Wikipedia's core software is based on **MediaWiki**, a widely-used open-source wiki software, it also utilizes other open-source tools in its infrastructure.

- **MediaWiki:** The software Wikipedia runs on, MediaWiki is an open-source wiki engine that powers millions of collaborative websites. MediaWiki was released as free software under the **GNU General Public License (GPL)**, enabling users to modify and contribute back to the software.
- **MySQL and MariaDB:** For data storage and management, Wikipedia has used **MySQL** and its fork, **MariaDB** (since 2013), which are open-source relational databases.
- **Linux and Apache:** The platform's servers run on **Linux**, and it uses the **Apache HTTP Server** to serve the content.
- **PHP:** Wikipedia's server-side scripting is done using **PHP**, an open-source programming language designed for web development.

Success Factors:

1. **Collaboration and Open Editing:** Wikipedia's model of collaborative editing by volunteers around the world has been a huge success. The platform has over 300 active language editions and more than 6 million articles in English alone.
2. **Open-Source Software:** The fact that Wikipedia uses open-source software and contributes back to the community has made it more flexible and cost-effective. It's a significant player in advocating for open-source principles.

3. **Community Engagement:** Wikipedia's success is deeply tied to its active and diverse community. Its open-source approach has allowed thousands of contributors to help improve and grow the platform. The platform also has a strong community of developers contributing to the MediaWiki software itself.
4. **Open Data:** Wikipedia's open content and data policies make it accessible to a wide audience. Data dumps and APIs allow researchers, developers, and organizations to use Wikipedia's data for various purposes, including educational projects and AI training.

Challenges:

- **Vandalism and Misinformation:** Due to the open-editing model, there is always a risk of vandalism or misinformation. However, Wikipedia employs various moderation and oversight tools to ensure the quality of content.
- **Scalability:** As the platform grows, scaling the infrastructure to handle millions of concurrent users, massive data storage, and quick access to articles has been a continuous challenge.

Wikipedia is a prime example of how open-source software can scale globally and support millions of users. By leveraging open-source software like MediaWiki, Wikipedia has built a robust, collaborative platform that is constantly evolving. Its success has helped cement open-source tools as critical to large-scale, internet-based platforms.

Drupal: A Leading Open-Source CMS

Overview:

Drupal is an open-source content management system (CMS) used to build and manage websites. Initially released in 2001 by Dries Buytaert, Drupal has become one of the most flexible, powerful CMS solutions available. It is used by millions of websites, from personal blogs to large enterprise-level applications.

Open-Source Technologies Used:

Drupal is entirely built on open-source technologies and allows for easy customization and extension by users.

- **PHP:** Like Wikipedia, Drupal is written in **PHP**, which is one of the most widely used programming languages for building dynamic web pages.
- **MySQL/MariaDB:** Drupal typically uses **MySQL** or **MariaDB** for database management, allowing for the storage and retrieval of website content.
- **Symfony:** Drupal 8 and beyond uses the **Symfony** PHP framework as part of its architecture, allowing for a more modern, structured approach to web development.
- **Twig Template Engine:** From Drupal 8 onwards, the **Twig template engine** is used to provide better separation between logic and presentation layers.

Success Factors:

1. **Flexibility and Extensibility:** Drupal is known for its highly customizable architecture. It can be used to create virtually any type of website or application, from

blogs to complex enterprise systems. This flexibility has made it a favorite of developers and organizations.

2. **Modular Approach:** Drupal's core system is kept simple, and additional functionality is added through modules. There are thousands of contributed modules available, which allows users to extend the platform's capabilities as needed.
3. **Community Support:** Drupal has a thriving open-source community that contributes modules, documentation, and support. The Drupal Association is dedicated to supporting the project and its community.
4. **Security:** Drupal has a strong focus on security. It provides regular security updates, and its modular nature allows organizations to customize security features based on their needs.
5. **Enterprise Adoption:** Drupal is widely adopted by large enterprises and government organizations due to its scalability, security features, and flexibility. High-profile organizations such as **The White House**, **Tesla**, and **Warner Music Group** use Drupal for their websites.

Challenges:

- **Learning Curve:** While Drupal is powerful and flexible, it has a steeper learning curve compared to other CMSs like WordPress. This can make it harder for beginners to get started with the platform.
- **Performance:** For certain types of websites, especially high-traffic ones, Drupal may require significant optimization efforts to ensure performance remains optimal.
- **Customization and Maintenance:** Although the platform is extremely customizable, maintaining a highly customized Drupal site can be complex and resource-intensive, especially for large-scale sites.

Drupal is a robust, flexible, and scalable open-source CMS that has become a go-to platform for developers and organizations who need a highly customizable website. Its modular approach, strong community support, and enterprise-grade features have contributed to its success and widespread adoption. As with all open-source software, Drupal's ongoing development and improvements are a direct result of contributions from the open-source community.

Summary of Key Differences:

- **Wikipedia:** Focuses on providing an open, collaborative, and multilingual platform for global knowledge-sharing. It relies on the **MediaWiki** software, an open-source wiki platform, and thrives due to its extensive community contributions.
- **Drupal:** Provides a powerful and flexible open-source CMS used for building a wide range of websites, from personal blogs to complex enterprise-level applications. It allows extensive customization through modules and has gained a reputation in both the developer community and large organizations.