

Implementation of Knowledge Management Tools in Libraries: A Systematic Literature Review



Penerapan *Knowledge Management Tools* di Perpustakaan: Sebuah Tinjauan Literatur Sistematis

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Abstract

Background: The lack of references for practical examples of Knowledge Management (KM) tool applications in libraries can be one of the obstacles to the development of KM tools in non-profit institutions. Therefore, conducting studies is essential to enrich and advance scientific knowledge related to library science and Knowledge Management. **Purpose:** The study aims to describe KM tools commonly used in both profit and non-profit organizations and review their usage in libraries. **Method:** This study is a systematic literature review following the PRISMA framework. A total of 31 articles were collected and subsequently analyzed based on their relevance to the research topic. **Result:** The use of KM tools in organizations is becoming increasingly diverse, incorporating both IT and non-IT approaches. Common types of KM tools used in organizations include social media, websites, the internet, networks, face-to-face interactions, mentoring, and reports. The concept of KM tool usage includes: (1) knowledge strategy, for developing competencies needed in the future; (2) knowledge creation, for problem-solving; (3) knowledge retention, for sharing tacit knowledge; and (4) knowledge measurement, for addressing knowledge deficiency issues. KM tools have also been adapted in libraries for managing knowledge sources and representation, storage, knowledge dissemination, and as tools for problem-solving. KM tools in libraries include the Online Public Access Catalog (OPAC), repositories, social media, face-to-face interactions, and the 'Ask the Librarian' feature. **Conclusion:** The use of KM tools in organizations can be adjusted to meet specific needs and budgets. Libraries, in storing information, have utilized various forms of KM tools, allowing them to effectively and efficiently fulfill their role in managing the knowledge produced by the host institutions.

Keywords: Knowledge Management; Knowledge Management Tools; Library; Systematic Literature Review

Abstrak

Latar Belakang: Kurangnya referensi contoh praktik penerapan KM tools di perpustakaan dapat menjadi salah satu hambatan perkembangan KM tools di lembaga non-profit sehingga perlu dilakukan kajian sebagai upaya pengayaan serta pengembangan keilmuan terkait library science dan KM. **Tujuan:** Kajian ini menguraikan Knowledge management tools yang kerap digunakan pada lembaga profit dan non-profit disertai dengan konsep penggunaan, kemudian meninjau penggunaannya pada perpustakaan. **Metode:** Kajian ini merupakan systematic literature review dengan desain PRISMA (Preferred, Reporting, Items for Systematic Reviews and Meta-Analyses). Data yang dikumpulkan sebanyak 31 artikel dilanjutkan dengan menganalisis data berdasarkan kesesuaian konten (isi) artikel dengan topik riset. **Hasil:** Penggunaan KM tools pada organisasi semakin beragam baik dengan pendekatan IT maupun non-IT. Jenis KM tools yang biasa digunakan pada organisasi yaitu sosial media, website, internet, jaringan, face to face, mentoring, dan laporan. Konsep penggunaan KM tools meliputi: (1) knowledge strategy, untuk penyusunan kompetensi yang dibutuhkan di masa depan; (2) knowledge creation, untuk penyelesaian masalah; (3) knowledge retention, untuk berbagi pengetahuan tacit; (4) knowledge measurement, untuk mengelola masalah kekurangan pengetahuan. Penggunaan KM tools telah diadaptasi pada perpustakaan

dalam mengelola sumber dan representasi pengetahuan, penyimpanan, penyebaran pengetahuan, serta alat bantu dalam pemecahan masalah. KM tools pada perpustakaan meliputi Online Public Access Catalog (OPAC), repository, sosial media, face to face, dan tanya pustakawan. **Kesimpulan:** Penggunaan KM tools pada organisasi-organisasi dapat menyesuaikan dengan kebutuhan dan anggaran. Perpustakaan dalam menyimpan informasi telah menggunakan berbagai bentuk KM tools, sehingga perpustakaan menjalankan tugasnya dalam mengelola pengetahuan yang dihasilkan oleh institusi yang menaunginya secara efektif dan efisien.

Kata kunci: Knowledge Management; Knowledge Management Tools; Perpustakaan; Tinjauan Literatur Sistematis

I. INTRODUCTION

Background. Daily activities are inseparable from knowledge, making it essential to possess in order to adapt to the technological era. Therefore, it can be said that knowledge now plays a crucial role in the growth and development of innovation in life.

Knowledge can be seen as an infrastructure characterized by five interconnected roles: creator, product, distributor, disseminator, and user (Rubin, 2017). Knowledge continuously evolves over time. However, both individuals and organizations face significant challenges in utilizing and managing their intellectual assets, particularly in achieving competitive advantages in today's world. The ability to manage and utilize knowledge, whether by individuals or organizations, is a key factor in determining success in reaching established goals or targets.

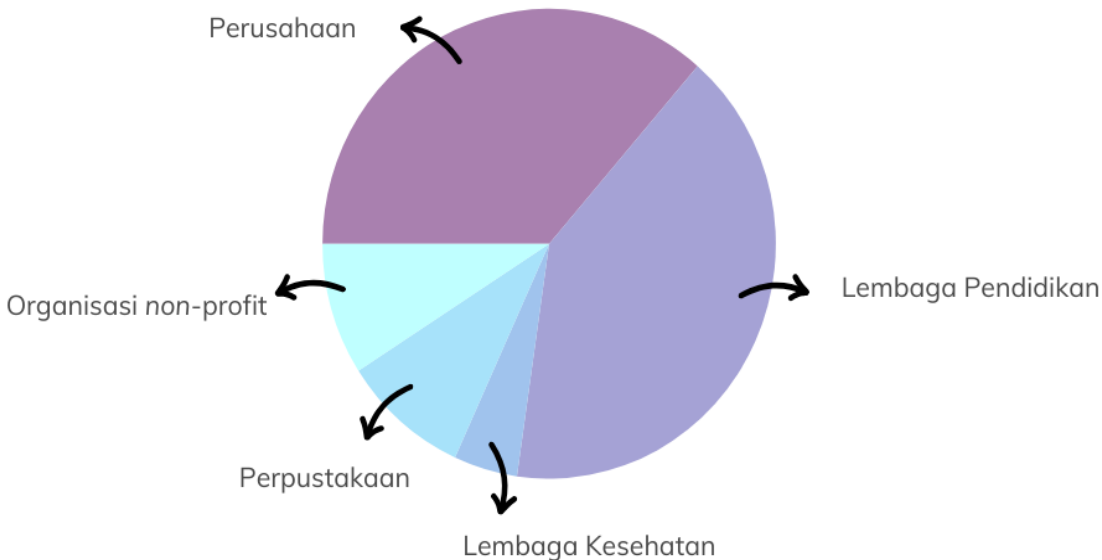
Managing knowledge assets owned by both individuals and organizations is essential for ensuring their continued effectiveness. Therefore, Knowledge Management (KM) plays a crucial role in helping institutions leverage their knowledge to succeed in today's competitive environment (Dalkir, 2017). KM, as a knowledge management system, gathers knowledge from both within and outside the organization, translates it into strategy, implements it internally, and safeguards it by maintaining the KM cycle (Xue, 2017). From this explanation, it is clear that KM provides strategies, processes, and tools to capture, organize, and share knowledge, foster innovation, and assist in organizational decision-making, ultimately leading to improved performance. Implementing KM and KM tools in libraries can enhance the effectiveness and efficiency of library services.

Problems. The complexity of knowledge management makes the implementation of KM in institutions, organizations, and individuals a crucial process that cannot be overlooked in today's world. In practice, implementing KM in organizations, including libraries, does not always run smoothly. A low culture of knowledge sharing and difficulty in identifying valuable knowledge hinder the KM process. Support from superiors, such as encouraging knowledge sharing, conducting workshops, and fostering teamwork, is essential to overcome these challenges (Costa, 2019). Well-managed knowledge provides organizations with opportunities to excel in a competitive environment. The implementation of KM is supported by tools that facilitate the KM process. These tools come in various forms, especially with technological advancements, allowing organizations to easily select the tools that best fit their needs. However, the use of KM tools often incurs significant costs for

purchase, maintenance, and staff training, which can be a barrier for organizations, including libraries, when adopting KM tools (Agarwal, 2014). Additionally, the lack of reference examples for implementing KM tools in libraries is another obstacle to their development in non-profit institutions. Therefore, studies are needed to enrich and expand scientific knowledge related to library science and KM. Figure 1 shows a diagram of the number of publications on the application of KM tools.

Figure 1.

The Number of Publications on the Application of KM Tools



Source: Author's Documentation (2024)

Based on the results of the information search (see **Figure 1**), it was found that most studies on the application of KM tools have been conducted in companies and educational institutions, whereas studies on the application of KM tools in libraries are relatively scarce.

Previous Literature Review. Research on the application of knowledge management has been conducted extensively. One example is a systematic literature review by Aripin et al. (2023), which explores the application of knowledge management through a digital approach in the context of Indonesian international business. The findings from the study indicate that implementing KM in the business sector can enhance competitiveness in the global market, supported by the optimization and adoption of digital innovations. Another study on KM tools was conducted by Osman et al. (2022), who identified 13 ontology-based KM tools by comparing 10 elements such as motivation, knowledge sources, knowledge processes, and types of knowledge.

State of The Art. Previous knowledge management studies, especially those related to KM tools, focused on discussing the industrial and university sectors, there were not many studies on KM tools in libraries. Seeing that there were studies on KM tools in libraries that tended to be old, further research needs to be conducted to follow all the changes and developments in libraries.

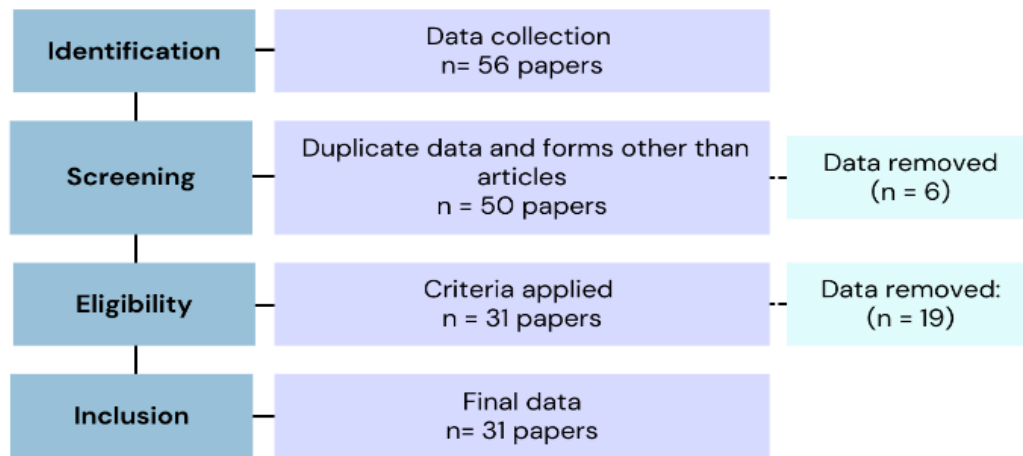
Purpose. This study aims to review Knowledge Management Tools (KMT) commonly used in various institutions, examine the concept of their usage, and explore how KM tools can be applied in libraries, based on related articles. By reviewing a total of 31 articles, this paper also describes the Knowledge Management Tools frequently utilized in institutions,

along with their usage concepts. It then focuses on how KM tools are applied in libraries, drawing on relevant theories from the reviewed articles

II. METHODS

This study is a systematic literature review that thoroughly reviews and analyzes information. Systematic reviews involve the systematic and transparent collection, synthesis, and evaluation of research findings (Garnita & Irawati, 2021). The data collection method followed the PRISMA framework, which consists of four stages: identification, screening, eligibility, and inclusion. The overall PRISMA stages are illustrated in Figure 2.

Figure 2.
PRISMA Stages



Source: Author's Documentation (2024)

At the identification stage, an information search was conducted on Google Scholar using the Publish or Perish tool. Google Scholar was chosen as the database due to its ease of access and the wide range of search results it offers, whereas other databases require subscriptions and are less accessible. The data search was conducted on September 13, 2024, using the keywords 'Knowledge Management,' 'Knowledge Management Tools,' and 'Knowledge Management in Library.' The search results were then filtered based on the criteria of scientific journal articles published within the last 10 years (2014-2023). A total of 56 papers were identified at this stage.

The next stage is screening, which involves filtering the initial data. In this step, filtering is based on the type of work and the removal of duplicate entries. Since the research focuses on research articles, other formats such as books and book chapters were excluded, as well as any duplicate data from the initial search results. The screening process resulted in 50 articles.

The next stage is eligibility, where data is filtered by applying specific criteria. The criteria used in this study are: (1) articles must be in English to ensure consistent understanding, and (2) articles must be open access or provide full access so they can be thoroughly analyzed. The final stage, inclusion, represents the outcome of the data collection process. After applying these criteria, 31 articles were identified, as shown in **Table 1**. These articles

then undergo content analysis to extract the core findings and draw conclusions relevant to the research topic (Azzahrawaani & Agustina, 2023).

III. RESULTS AND DISCUSSION

Types of Knowledge Management Tools. The implementation of Knowledge Management (KM) cannot be separated from tools that support the KM process within organizations, enhancing both effectiveness and efficiency. KM and KM tools should not be narrowly defined, as both are subject to continuous change and development depending on the organization implementing them (Cassandra et al., 2015). KM operates with the assistance of KM tools, which are essential in the process of knowledge management. These tools must be carefully selected by organizations to suit their needs, considering various factors. Consequently, KM tools play a critical role in supporting KM activities, such as knowledge transfer, creation, coding, and the application of knowledge itself (Eslamkhah, 2019).

Based on the review of the collected documents, Knowledge Management Tools can be categorized into two forms: **non-IT tools**, which include articles by Agarwal (2014), Aradati (2019), Corcoran (2017), Ghomi (2018), Jing (2015), Kothari (2016), and Yap (2017); and **IT-based tools**, which include articles by Alsharhan (2021), Büyüközkan (2016), Eslamkhah (2019), Hosseingholizadeh (2018), Jing (2015), Kothari (2016), Pérez (2015), Powell (2017), Rathi (2017), Roxburgh (2022), Secundo (2019), Sungkur (2014), Talamante-Lugo (2019), Vlase (2023), and Wingate (2018).

Non-IT forms refer to KM tools that do not involve Information and Communication Technology in the processes of finding, obtaining, and creating new knowledge (Agarwal, 2014). Examples of non-IT KM tools include the Librarian Infobutton Tailoring Environment (Jing, 2015), After Action Review, Communities of Practice, Peer Assist, Organizational Yellow Pages (Kothari, 2016), Social Networks (Corcoran, 2017), face-to-face interactions, mentoring, reports (Yap, 2017), and feedback from experts (Aradati, 2019). These KM tools are commonly used in libraries or companies to manage knowledge and generate new insights (Agarwal, 2014; Jing, 2015).

With the advancement of technology, IT-based KM tools have been developed to meet organizational needs more quickly and effectively. Moreover, the rapid pace of technological development has resulted in an increasing diversity of IT KM tools (Robson, 2020). In this context, KM tools that use IT are often referred to as KM systems, which involve the use of ICT platforms and tools aligned with KM content objectives (Scarso, 2017). Examples of IT KM tools include the FGMReview website (Pérez, 2015), IntelliJ Enterprise, Microsoft SharePoint, Oracle Beehive (Büyüközkan, 2016), Beta (Scarso, 2017), repositories (Aradati, 2019), Trello, Asana, Google Drive, Dropbox (Oliva, 2019), Technology Transfer Offices (Secundo, 2019), e-learning platforms (Alsharhan, 2021), Wiki (Roxburgh, 2022), The Web of Science (Vlase, 2023), and various internet platforms and other media (Nmehielle & Laoye, 2023; Robson, 2020).

Ghomi (2018) explains that, when implementing KM tools in an organization, it is important to understand the factors that will determine the organization's success, so that the most suitable tools can be selected based on the organization's conditions. Based on this, Ghomi categorizes these factors into three categories, namely:

The effects of management: These refer to the main components of management, including leadership, control, coordination, and others

The effects of resources: These pertain to the resources available to the organization, such as "knowledge assets," human resources, materials, and funding.

The effects of environment: These relate to the environment, especially outside the organization, including competition, market conditions, timing, the economic situation, regulations, and more.

In line with Ghomi's (2018) categorization, Kothari (2016) found in his research that supporting factors for KM tools indicate their feasibility, particularly the availability of resources and support systems, which allow KM to function optimally. Therefore, it is evident that certain factors can support KM tools in helping Knowledge Management operate effectively and efficiently within an organization, especially the availability of resources and systems. When it comes to resources, every individual in the organization must possess KM competencies to serve as a supporting factor for KM tools, ensuring they are used to their full potential. According to Hosseingholizadeh (2018), Personal Knowledge Management (PKM), in the form of KM competencies, can be enhanced by the implementation of appropriate tools. In this context, PKM competencies refer to the ability to rediscover, evaluate, organize, analyze, collaborate, store, and interpret the owned knowledge.

The Functions of Using Knowledge Management Tools. Essentially, KM tools are designed to support knowledge management activities, although it is possible for certain KM tools to focus on a single activity. Based on the review of 31 articles, several functions of KM tools were identified across various institutions. Some of these functions include serving as a resource and representation of knowledge (Malatyinszki & Nagy, 2023; Massingham, 2014a; Roxburgh, 2022), as a storage system for knowledge (Aradati, 2019; Khajouei, 2017; Sungkur, 2014; Talamante-Lugo, 2019), as a tool for sharing and transferring knowledge or information (Büyüközkan, 2016; Corcoran, 2017; Jing, 2015; Kothari, 2016; Pérez, 2015; Powell, 2017; Scarso, 2017), and as a tool for problem-solving and/or decision-making (El-Jardali et al., 2023; Yap, 2017).

KM tools facilitate the flow of knowledge within an organization, making them a vital resource that will continue to be utilized by the institution (Massingham, 2014a). These tools also serve as a means for finding information sources (Malatyinszki & Nagy, 2023). Roxburgh's (2022) study, which focuses on Wiki as a KM tool, explains that Wiki is one of the systems used as a representation of knowledge and a resource for its users. This highlights that Knowledge Management Tools serve as both a source and representation of knowledge for users, benefiting organizations and the larger society.

Knowledge management, which is closely tied to the handling of knowledge, requires tools capable of storing knowledge that can later be disseminated or utilized. Therefore, one of the key functions of KM tools is knowledge storage and sharing. The use of repositories as a system for storing knowledge assets in an institution is an example of knowledge storage (Sungkur, 2014). When an institution's resources include information or knowledge, a storage system is needed to retain and retrieve relevant data for the institution (Talamante-Lugo, 2019).

Repositories, as an example of knowledge storage, also function as tools for the dissemination of knowledge (Sungkur, 2014). Therefore, it can be said that these two functions of KM tools are interrelated. KM tools are developed with the aim of facilitating rapid knowledge transfer and enabling member contact within specific knowledge domains (Powell, 2017; Scarso, 2017). KM tools, particularly repositories, enhance the quality of knowledge storage and dissemination, ensuring that knowledge management in an institution operates more effectively and efficiently (Aradati, 2019).

KM tools, which facilitate Knowledge Management, also assist organizations or institutions in decision-making and problem-solving. As explained by El-Jardali (2023), KM

tools provide accurate and evidence-based information, which helps make decisions more effectively and efficiently. Additionally, these tools aid organizations in improving employee performance and overall organizational quality to achieve previously set goals (Yap, 2017; Nmehielle, 2023).

Based on the previous description, it is evident that various applications of KM tools support the KM process within institutions. Massingham (2014) explains that KM tools generally consist of components such as (1) knowledge strategy, which relates to the preparation of competencies, future capabilities, and decision-making; (2) knowledge creation, which involves the continuous creation of value and creativity in problem-solving; (3) knowledge retention, which refers to the ability to share tacit knowledge, especially with members who are leaving the organization; and (4) knowledge measurement, which addresses how the organization manages its knowledge gaps. Therefore, KM tools can be viewed as supportive tools for KM activities, implemented in various functional forms or concepts.

The Implementation of Knowledge Management Tools in Libraries. A library is fundamentally an information institution that manages information and knowledge resources (Adelia, 2020). It is natural for libraries to implement Knowledge Management in both the internal and external aspects of the library. Internally, the focus is on how knowledge is managed to support the library's role, while externally, the focus is on providing KM services to its users.

Agarwal (2014) explains that knowledge institutions, such as libraries, are responsible for managing knowledge in the following ways: (1) user knowledge, such as a university library storing the research results of its academic community; (2) knowledge resources, which can generate new knowledge when the KM concept is applied by the library. For example, the publication of library news can become knowledge for others and serve as a legacy for the institution in the future; and (3) personal practical knowledge, related to the exchange of information between individuals within the library, such as discussions, book reviews, and similar activities.

Based on these three responsibilities of knowledge management, it is expected for libraries to implement KM tools to enhance their role, function, and performance as institutions dedicated to the management and development of knowledge. Knowledge management can help libraries improve the quality of services provided to users (Olajide, 2015). The tools used by libraries can be classified according to their function, such as storing, distributing, or implementing knowledge management itself. As non-profit institutions, libraries should carefully consider KM tools that can be utilized optimally, especially in terms of budget and the library's support environment. Libraries can choose between paid or unpaid tools (Agarwal, 2014). KM tools applicable to libraries come in various types, including both IT and non-IT based, as illustrated in **Figure 3**.

Figure 3.
Results of Document Review



Source: Author's Documentation (2024)

Referring to the various applications of KM tools in the reviewed articles (see Figure 3), it is evident that libraries can implement KM tools for the following purposes:

- 1) Source and representation of knowledge (Source). Eskha's study (2018) stated that libraries, as sources of knowledge and information institutions responsible for providing and meeting the information needs of users, must be supported by librarians' information literacy competencies. In this context, KM tools can be used to provide users with relevant information sources. An example of this is the use of digital libraries, which provide users with access to information, and Online Public Access Catalogs (OPAC), which direct users to the collections they need.
- 2) Storage of knowledge (Storage). Libraries are responsible for storing various forms of information, which are then provided to users (Putra, 2021). Libraries function to store materials, in this case, the entire library collection, so that it can be accessed by users. Wulandari and Nurisani's (2020) study states that the application of KM tools as storage in libraries includes repositories, which are used to store an institution's assets. Repositories function to store and manage written works from an institution, such as theses and dissertations. Another form of KM tool used for storage is archives. Libraries often serve as storage of documentary evidence for an institution.
- 3) Dissemination of information and knowledge (Sharing). Rahmawati's (2018) study stated that libraries provide access to a variety of information resources, from books to digital materials. The application of KM tools for knowledge sharing in libraries can be implemented by making library collections widely accessible to users. Additionally, libraries can utilize social media as a platform for disseminating technical information or even offering user education to the public.
- 4) Problem-solving tools. The provision of various library services aims to assist users in identifying the resources they need (Kalelioglu & Gülbahar, 2014). The use of both IT and non-IT KM tools in library services is a form of knowledge creation, with librarians providing assistance to users. Yap's (2017) study stated that one example of a non-IT KM tool is face-to-face interaction. This tool has been applied in the library's information

search service to help users find the right information sources. On the other hand, IT-based KM tools, such as the 'Ask a Librarian' feature on digital library platforms, help users access information that can aid in problem-solving.

As previously explained, KM tools can be used to implement Knowledge Management in an institution. In libraries, KM tools can also enhance performance and service quality. Various formats of KM tools can be applied in libraries, such as social media (Olajide, 2015), the Librarian Infobutton Tailoring Environment (LITE) (Jing, 2015), and others, both IT-based and non-IT-based.

Research Limitation. The data collection process was conducted twice to gather research data, specifically scientific articles published between 2014 and 2024. In determining the research criteria, the journal's reputation was not considered due to the limited amount of research data after screening. The discussion of research related to the application of library KM tools is connected to relevant sources and field evidence that support the research topic. The collected data may change with future research, as the number of articles discussing KM tools could increase, allowing for potential updates to the data.

IV. CONCLUSION

Knowledge management tools, which support the implementation of KM in organizations, are classified into two forms: technology-based (IT-based) and non-IT-based. In this context, libraries, as non-profit institutions, can implement KM tools to provide excellent service to users. When implementing KM tools, libraries should consider factors such as budget and the library environment. With the rapid advancement of technology, academic, school, special (research institutions), and public libraries can maximize the application of technology in their KM activities, such as utilizing cloud computing for knowledge storage, chat programs for knowledge dissemination, and more. The use of KM tools in libraries has already been implemented in both IT and non-IT forms, such as disseminating information through social media, using OPACs in library systems, asking librarians via digital library platforms, storing physical and digital collections, and offering face-to-face services. Each KM process may require different tools depending on the library's needs. KM tools can also be classified based on their use, including knowledge processing, transferring, sharing, analyzing, and applying.

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