HEADLINE

Enterprise Content Management for Technical Documentation
By Marika Garland

This document is a white paper exploring a potential software development opportunity for an imagined ECM company called Headline.

Executive Summary: ECM Opportunity

Background: Headline and the ECM Market

Headline is an enterprise content management (ECM) software company with nearly 20 years' experience providing effective solutions to its business customers. When Headline began in 2003, the company offered one basic product that included a document library with simple templates and workflows. As the years have continued, Headline has expanded upon its original software to offer three tiered product packages. More recently, Headline has started developing á la carte services that customers can add to product packages or purchase without an accompanying package. The newest additions include MedDocs and MarCommDocs, specialized services for medical documentation and marketing communications materials, respectively.

On a global scale, ECM software revenue has grown steadily over the past five years, and this growth is expected to continue in the future. The ECM software market serves a variety of business customers as every company has some kind of content to manage. This well-established market consists of both mature vendors and newer entrants. In recent years, ECM services have started becoming composable, allowing customers to create their own customized ECM systems from a variety of products and vendors. Headline can take advantage of this development by creating a specialized product for technical documentation.

Summary: Headline and the Future of ECM

Opportunity Analysis: Limitations of Existing ECM Software

Despite its maturity, the ECM software market still has room for innovation and improvements. The technical communication field is growing, but none of the key players in the ECM software market have a product specifically designed to manage technical documentation. Additionally, customers cite high costs and slow learning times as weaknesses of existing ECM products. These issues drain time and resources. Customers have to tailor existing services to meet their technical documentation needs. The high costs hurt revenue, and training staff on confusing software takes valuable time. Furthermore, by failing to provide a technical documentation service, the ECM software market misses an opportunity for innovation.

Unlike some key players in the ECM software market, Headline's products are known for being reasonably priced and user-friendly, so cost and training are smaller concerns. Headline is well positioned to pursue a cost-effective, easy-to-use ECM solution for technical documentation.

Opportunity Fulfillment: Benefits of New ECM Software

By offering a specialized service for technical documentation, called TechDocs, Headline can help customers save time and improve their content. Through preconfigured templates and workflows, TechDocs will increase consistency and accuracy. Headline can offer TechDocs as software as a service (SaaS), saving customers money as compared with on-premises software. Through application programming interfaces (APIs), Headline can offer customers an easy way to integrate TechDocs with other ECM software. TechDocs will use Headline's existing user-friendly design, shortening learning time for old and new customers alike. The software industry as a whole will benefit from TechDocs' innovation and interoperability.

TechDocs will help Headline see increased profit and brand recognition. Because TechDocs will utilize existing code and user interfaces, development costs will be low, but the product will fill a gap by focusing on technical documentation. This new functionality will draw new customers and increase spending from existing customers. TechDocs will also help potential customers recognize Headline as a leader in the market, especially when it comes to technical documentation.

Software Industry Overview

Industry Profile

Industry Description

The software industry includes companies that create and sell applications, scripts, and programs that run on computers. While hardware is the physical parts of a computer, software is the digital portion that tells the computer how to work. Most software falls into two main categories: application software and system software. Application software helps users complete specific tasks, like word processing or web browsing. System software includes operating systems and provides the foundation for application software programs to run [1].

Industry Performance: Current and Historical

The global software industry has seen stable growth over the past several years. As companies have increasingly digitized their processes, their investments in software have grown. Many companies seek to gain business insights and increase efficiency, and data analytics and process automation software can help meet these needs. More recently, the COVID-19 pandemic has driven the demand for collaboration software as many employees adopt remote work arrangements [2].

Investments in software have grown on a personal level as well. People typically buy software only when they have the hardware needed to run it. The percentage of households with at least one computer has increased over recent years, and this change has led to a larger market for software [3].

With both companies and individuals investing in software, the industry reached $569.0 billion (USD) in revenue in 2021. This revenue has steadily grown from $449.8 billion (USD) in 2017 [4]. Figure 1 shows the global software industry's annual revenue from 2017 to 2021.

Figure 1: Global software industry revenue in billions of U.S. dollars, 2017-2021 [4].
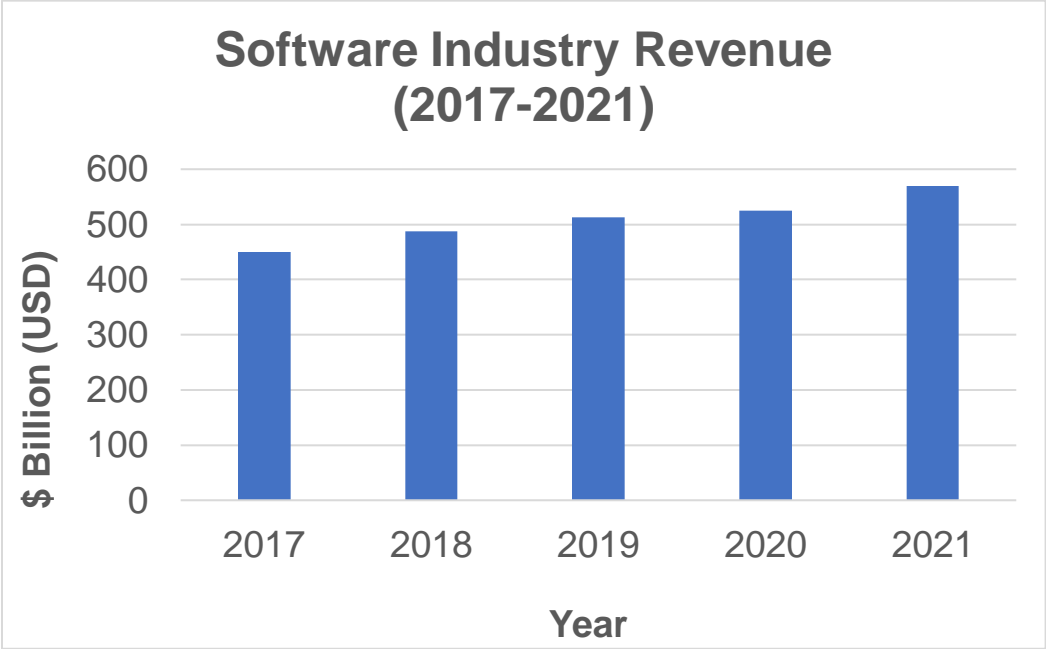
The global software industry had a compound annual growth rate (CAGR) of 4.8% from 2017 to 2021. The industry is expected to grow to $593.3 billion (USD) in revenue by the end of 2022 [4]. Figure 2 shows the percent growth in global software industry revenue from 2017 to 2021.

Figure 2: Global software industry revenue percent growth, 2017-2021 [4].
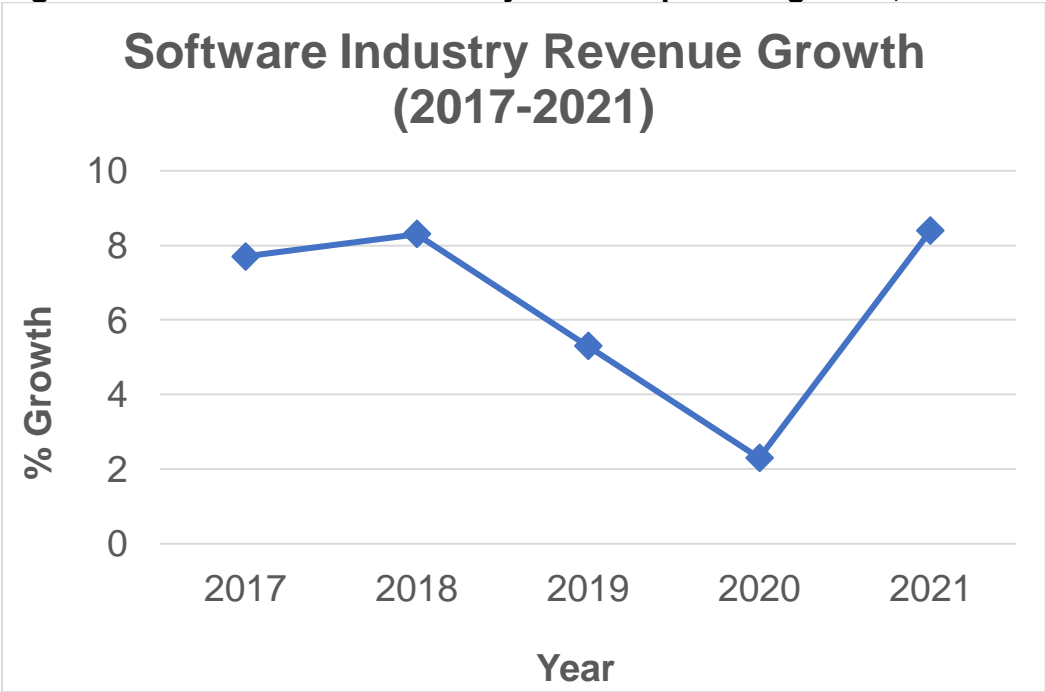
Industry Outlook and Forecast

The global software industry is expected to continue to grow over the next five years. Companies will continue to invest in software to increase efficiency and collaboration [3]. Cyberattacks have increased since the beginning of the COVID-19 pandemic, which will increase investments in security software. Additionally, software as a service (SaaS) is quickly dominating the software industry [2]. With SaaS, cloud providers host applications, allowing users to access them over the internet for greater flexibility [5].

As more and more individuals purchase personal computers (PCs), their spending on software will increase as well. New markets will also emerge as mobile internet connections get faster and smartphone ownership rises [3].

Thanks to investments from both companies and individual consumers, the global software industry has an anticipated CAGR of 5.4% from 2022 to 2026 [4]. Figure 3 shows the projected growth in global software industry revenue from 2022 to 2026.

Figure 3: Projected global software industry revenue percent growth, 2022-2026 [4].
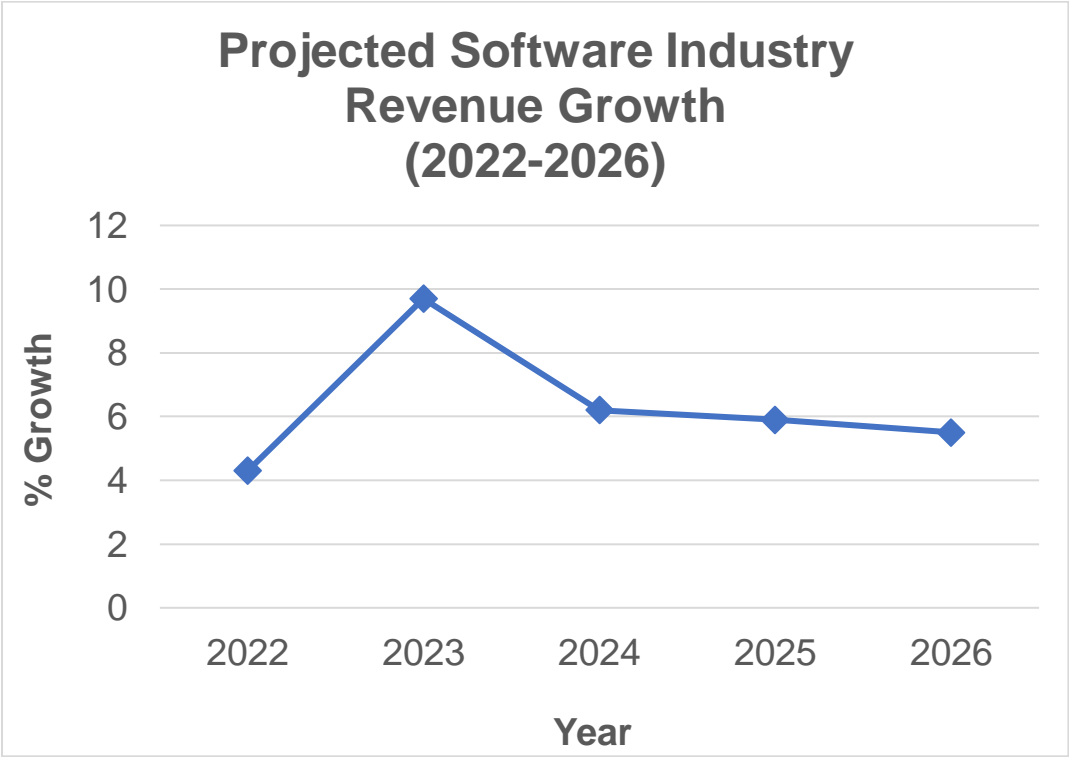
Industry Segmentation

The software industry consists of four major segments: enterprise software, application development software, system infrastructure software, and productivity software. Generating 39.4% of total 2021 revenue, enterprise software is the software industry's largest segment. Application development software and system infrastructure software are about equal at 24.9% and 23.6%, respectively. Finally, productivity represents the smallest segment with 12.2% of total software industry revenue [4]. Figure 4 shows how each segment contributed to the global software industry's revenue in 2021.

**Figure 4: Global software industry segmentation by 2021 revenue [4].**
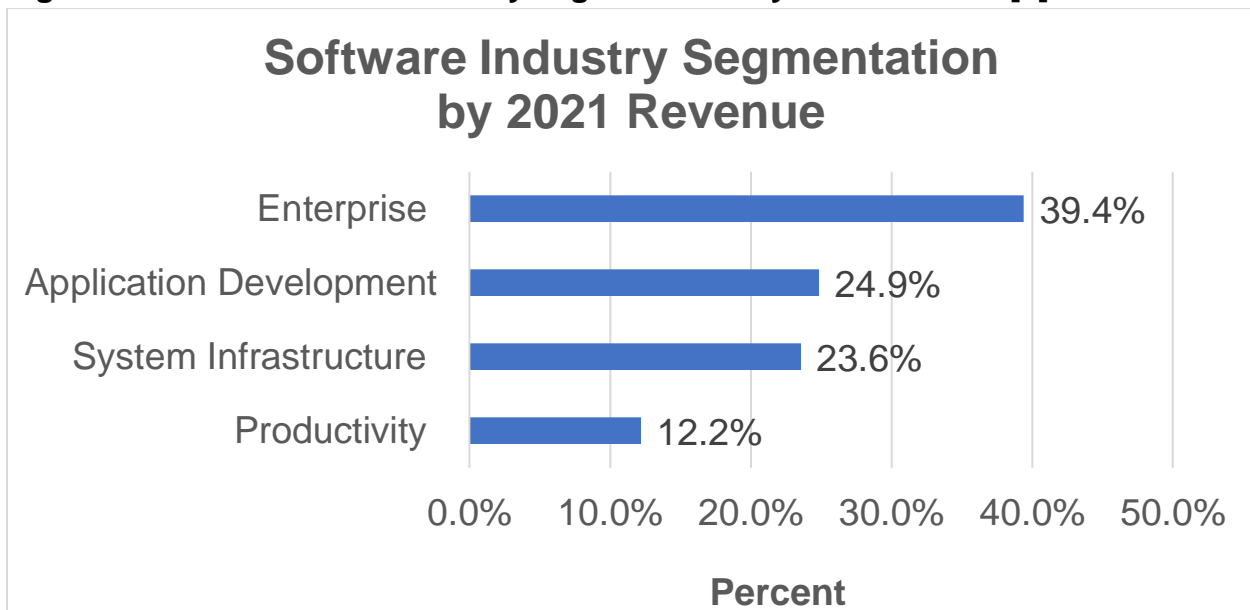
Note: Due to rounding, percentages don't appear to add up to 100%.

Enterprise Software

Enterprise software is the largest segment in the software industry. This segment consists of software that supports large-scale business activities in business-to-business environments. Example products include Salesforce and SAP [10]. Of the four software industry segments, enterprise software has the greatest potential for growth with a projected CAGR of 8.7% by 2026 [2]. Customer relationship management software leads this segment as companies see customer focus as a competitive advantage [10].

Enterprise software can be further broken down into six smaller segments, including content management, which the rest of this report will address [10]. Figure 5 shows these segments and how they contributed to enterprise software's revenue in 2021.

Figure 5: Global enterprise software segmentation by 2021 revenue [10].
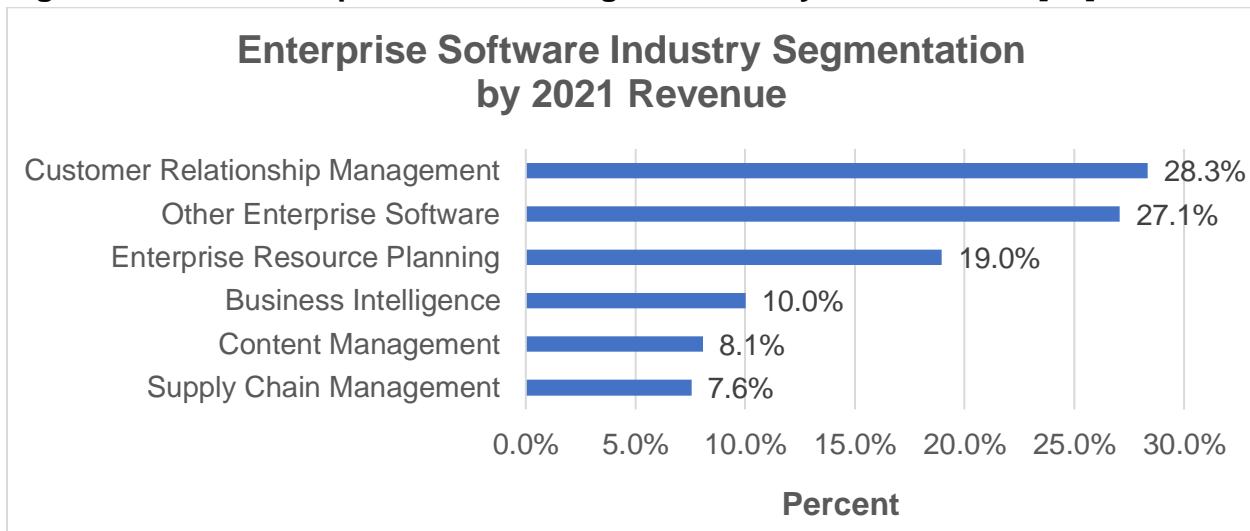
Note: Due to rounding, percentages don't appear to add up to 100%.

Application Development Software

Application development software consists of tools that enable the design, building, testing, and deployment of applications. This segment includes middleware, data management software, and software that provides programming languages and environments [8]. Some application development software requires coding, like Google App Maker. Other options, like Shopify, are aimed at non-technical users and utilize graphical user interfaces rather than traditional programming [2]. The application development software segment is facing strong growth thanks to consumers' demand for a better digital experience [8].

System Infrastructure Software

System infrastructure software provides the basic framework for business processes. Operating system software (like Windows and Android), security software, system management software, and storage software are all examples of products in this segment. In developed countries, this segment is experiencing slow but steady growth mostly due to security concerns and movement toward the cloud. Growth is minimal in developing countries, where low resources limit investment in system infrastructure software [9].

Productivity Software

The smallest segment of the software industry, productivity software is any application that allows users to produce or modify a document, image, video, etc. [6]. This segment's biggest market is office software, which is dominated by Microsoft Office products. Collaboration software is a growing market in this segment as remote work

increases usage. Flexibility remains a top priority for companies as they try to quickly react to market developments. Productivity software helps companies increase flexibility in a digital environment, so this segment will continue to grow [7].

Target Market Analysis: Enterprise Content Management Software

Market Description

Enterprise content management (ECM) software allows employees to create and maintain documents, images and other records that belong to their organization. For the sake of this analysis, enterprise content does not include web content [11]. With ECM software, employees can draft content, edit it, read it, classify it, and share it with teammates for feedback and collaboration. To help maintain security, the software's administrator typically sets up role-based privileges so that employees can only view and edit content that relates to their specific responsibilities [12].

Market Performance: Current and Historical

Like the software industry as a whole, ECM software revenue has increased steadily over the past five years [11]. Fraud and data breaches have led to increased regulations around information governance. Companies are increasingly using ECM software to help ensure compliance and protect their reputations from embarrassing data leaks. Additionally, ECM software helps companies increase efficiency through better organization and reduced dependence on paper documents. The growing number of employees working remotely has also driven the need for the digital collaboration that ECM software provides [13].

ECM software revenue reached $18.1 billion (USD) in 2021. This revenue has steadily grown from $14.6 billion (USD) in 2017 [11]. Figure 6 shows the ECM software market's annual revenue from 2017 to 2021.

Figure 6: Global ECM software revenue in billions of U.S. dollars, 2017-2021 [11].

**ECM Software Revenue
(2017-2021)**
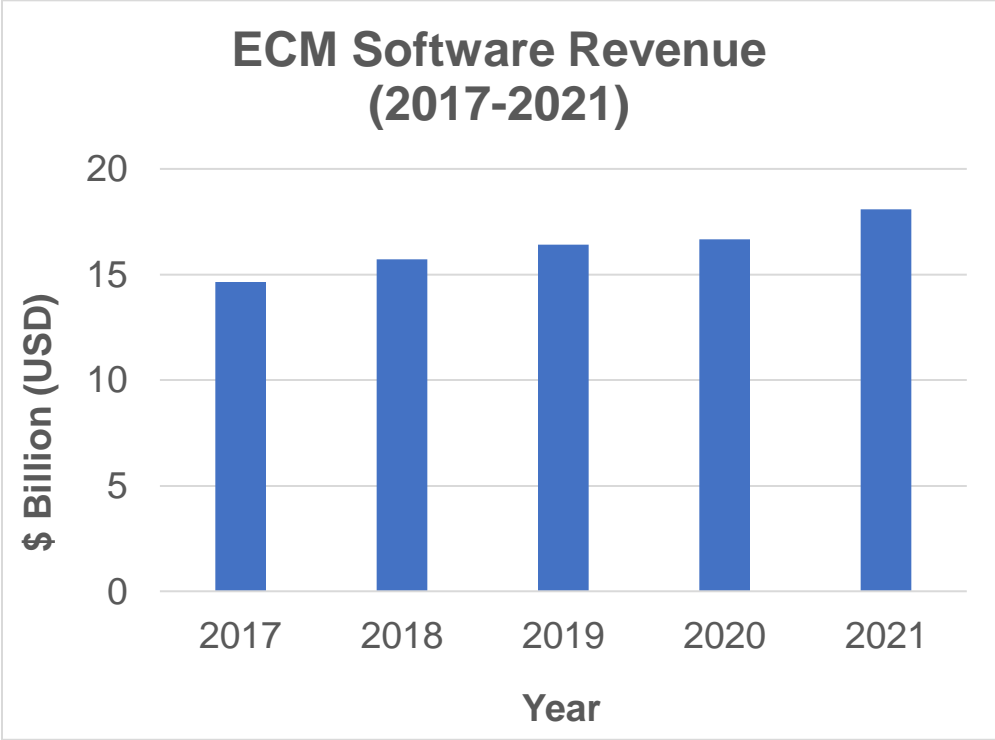
The ECM software market had a CAGR of 4.3% from 2017 to 2021. The market is expected to grow to $18.9 billion (USD) in revenue by the end of 2022 [11]. Figure 7 shows the percent growth in global ECM software revenue from 2017 to 2021.

Figure 7: Global ECM software revenue percent growth, 2017-2021 [11].

**ECM Software Revenue Growth
(2017-2021)**
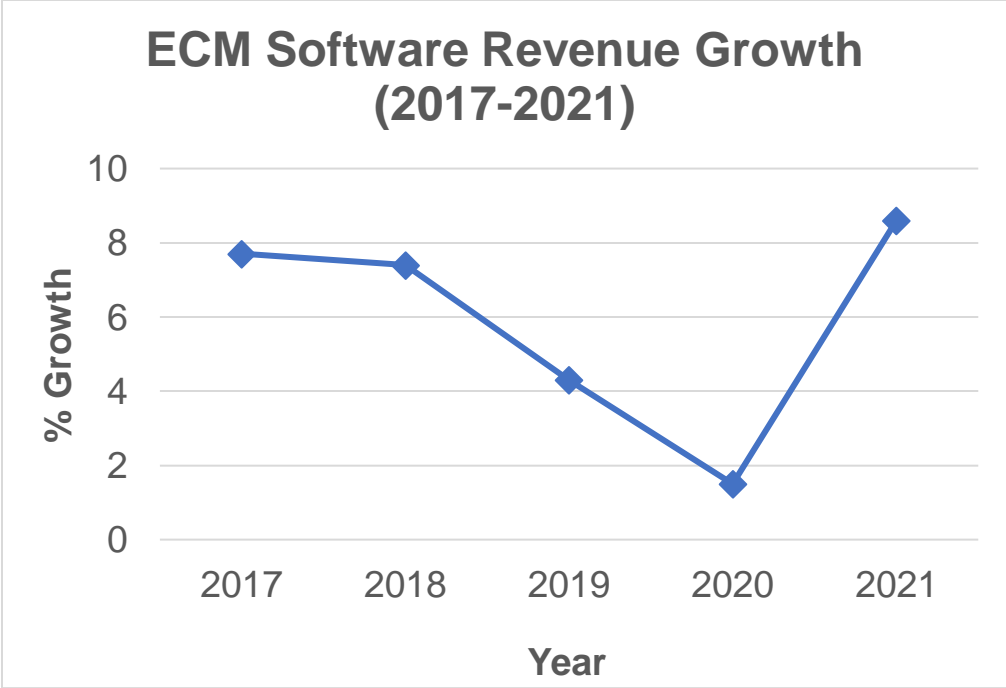
Market Outlook and Forecast

Global ECM software revenue is anticipated to continue growing over the next five years [11]. As companies look to build their agility, ECM software will adapt to meet their needs. ECM software vendors will incorporate more collaboration tools to serve an increasingly remote workforce [13]. Like the broader software industry, ECM software is shifting to the cloud. This change makes enhancements easier and faster, which makes users more willing to invest in the software [14].

Ongoing improvements will help the global ECM software market reach an anticipated CAGR of 5.6% from 2022 to 2026 [11]. Figure 8 shows the projected growth in global ECM software revenue from 2022 to 2026.

Figure 8: Projected global ECM software revenue percent growth, 2022-2026 [11].
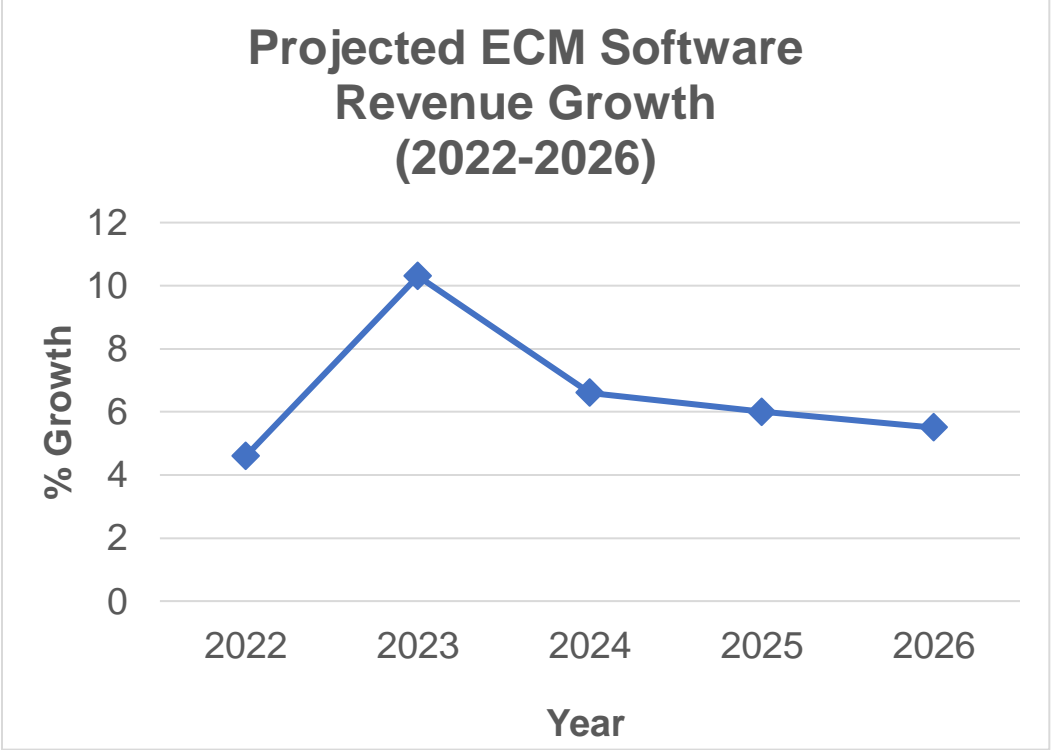
Market Segmentation

The ECM software market has a wide range of business customers because every company has some type of content that it needs to manage. In decreasing order, the top four client types by share of 2020 revenue are banking, financial services, and insurance (BFSI); information technology (IT) and telecommunication; healthcare and life sciences; and government and public sector [15]. These segments can benefit from ECM software in the following ways.

- **BFSI:** ECM software can automate manual processes and eliminate paper documents, speeding up tasks like loan composition and payment processing [16].

- **IT and telecommunication:** By making documentation and brand assets easier to find, ECM software can help this market segment improve their business document libraries [16].

- **Healthcare and life sciences:** When integrated with medical information systems, ECM software can allow medical staff to quickly and easily share electronic medical records [16].

- **Government and public sector:** ECM software can improve administrative services and workflows by digitizing paper documents [16].

Figure 9 further details ECM software market segmentation by client type.

Figure 9: ECM software market segmentation by client type, % share of 2020 global revenue [15]

Market Segmentation by Client Type:
% Share by 2020 Revenue

Client Type	Percent
BFSI	26.1%
IT and Telecommunication	19.1%
Healthcare and Life Sciences	17.3%
Government and Public Sector	12.2%
Retail and Consumer Goods	10.0%
Energy and Utilities	6.1%
Manufacturing	4.9%
Other	4.3%
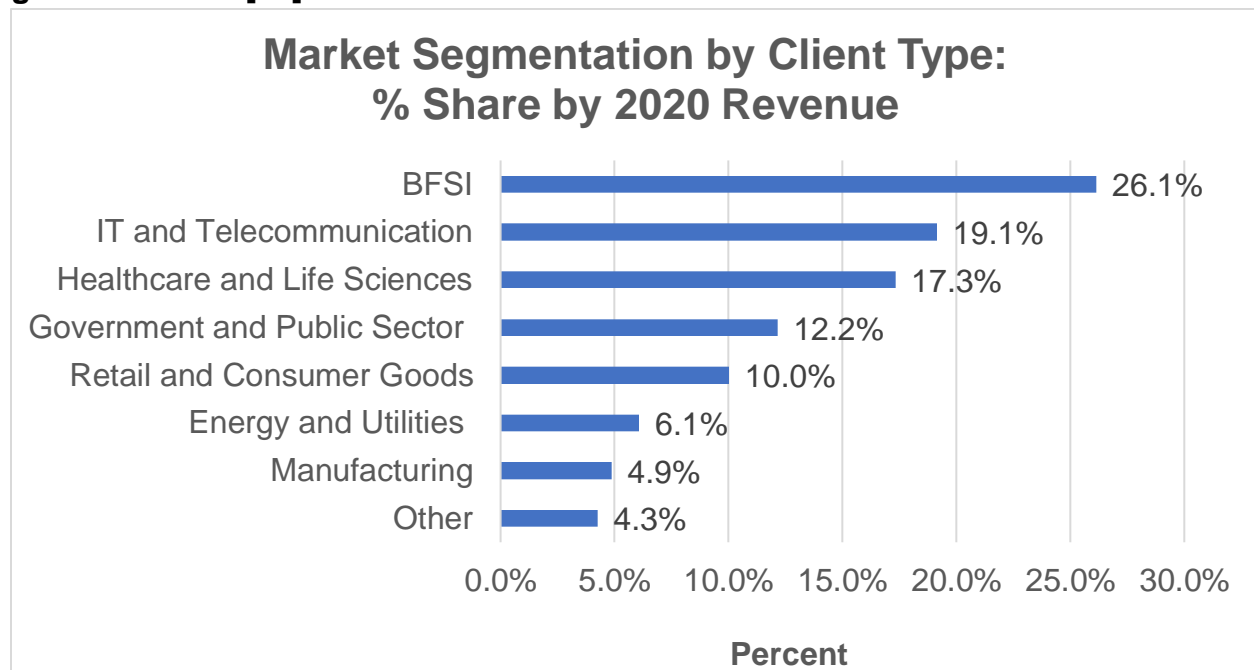
Market Characteristics

The well-established ECM software market consists of both mature vendors and newer entrants. Both have opportunities to prosper as clients seek ECM software that supports increased collaboration and flexibility.

Market Features

The following features describe the ECM software market:

- **Well-established market:** The ECM software market is mature with many vendors offering products for over 30 years. As a result, core ECM capabilities often have few differences between products. Core capabilities include a content repository, records management, and search features. At many companies, ECM software is fully integrated into other business applications to help make content secure and easy to find [17]. With ECM software playing such a long-standing role in companies' operations, many may be unwilling to implement newer vendors. Microsoft is the most influential vendor and controls over one-third of the market [11].

- **Fresh approaches from newer entrants:** Newer entrants to the ECM software market have distinguished themselves from more mature vendors by taking different approaches to core ECM capabilities. For example, many newer entrants are taking greater advantage of cloud solutions [17]. As companies speed up their operations, they need more complex editorial workflows and faster content production. To be successful in the ECM software market, vendors have to keep up with companies' ever-evolving needs [14].

- **Large clients' domination of customer base:** Deploying ECM software requires a high initial investment. Many companies need to hire technical experts to implement the software. They may also need to install additional servers to handle the rising volume of data. These high costs can restrict smaller companies from adopting ECM software. However, larger companies can use their larger budgets to take full advantage of the benefits of ECM software [18].

Market Trends

The ECM software market has experienced the following trends:

- **Transition to composable content services:** Traditionally, ECM software products were intended to support a company's full range of content management needs. In recent years, content services have started becoming

composable, meaning companies can pick and choose which services they want from which vendor to create their own personalized ECM systems. For example, a company could use a document repository from one vendor and a workflow engine from another. Composable content services offer greater flexibility [19].

- **Support for wider variety of user roles:** Managing content involves a lot of different tasks and roles, including editors, writers, marketers, publishers, executives, and developers. ECM software vendors are offering more use-case-based features to support this wide variety of roles. These features include customizable workflows and preconfigured role-based permissions [14].

- **Growing demand for collaboration tools:** As time goes by, more and more companies want to incorporate collaboration into their ECM systems. To save time and increase efficiency, they want a variety of employees to be able to work on the same content at the same time from different locations. ECM software vendors have responded to these needs by offering improved collaboration tools [14].

Market Catalysts

The following catalysts are impacting the ECM software market:

- **Increasing digitization:** Companies continue to digitize their processes to increase efficiency, and ECM software forms a key piece of their digital workplace strategy. Digital content requires a digital system to keep it organized and accessible [17]. Additionally, the increasing use of smartphones, social media, and Internet of Things (IoT) devices creates growing amounts of data, driving the demand for ECM solutions [18].

- **Migration to the cloud:** Software can be made available either on-premises or via the cloud. While on-premises software is limited to a particular server, cloud-based software (also known as SaaS) runs via the internet, allowing users to access it from anywhere. Cloud-based systems offer less system downtime, more flexibility, higher security, more operational reliability, and fewer data loss risks than on-premises solutions. For these reasons, many organizations are migrating to the cloud [14]. Advancements in cloud technology increase companies' expectations of ECM software, driving vendors toward enhancements and innovation [13].

- **Larger teams with more specialized roles:** As the business world becomes increasingly complex, companies are employing larger teams with more

specialized roles. Many of these roles are involved in ECM processes, which has driven the need for ECM software that allows them all to work together. ECM software vendors need to consider companies' wide variety of roles and needs as they create and enhance their products [14].

- **COVID-19 pandemic:** The ongoing pandemic has increased social media use, internet connectivity, and mobilization, all of which create large volumes of data. To help manage this influx of information, many companies rely on ECM software [18]. Additionally, COVID-19 has led many employees to move to remote work arrangements. This increase in remote work has led companies to seek the business continuity and collaboration features that ECM software offers [13].

Competitive Landscape

Key Players

Based on their share of 2021 revenue, the top companies in the ECM software market are Microsoft, OpenText, Adobe, DocuSign, Google, and Box. Table 1 provides a high-level comparison of these vendors. Please note that the 2021 revenue column refers to each company's total revenue and not just the revenue made from ECM software.

**Table 1: Comparison of key players in the ECM software market [17], [20] – [26]**

Company	Areas of Expertise	Strengths	Weaknesses	2021 Revenue (Billions USD)
Microsoft	- Broad range of use cases and clients - Employee productivity - Integration with rest of Microsoft ecosystem	- Integration with Microsoft's productivity suite - Use of SaaS platform - Large network of third-party partners providing additional services	- Limited content capture capabilities - SharePoint's architectural sizing limits - Increased content sprawl	$168.76
OpenText	Integration with leading business	Global presence with over 600 international	Unfavorable customer experience	$3.39

	applications • International customer base • Large enterprises in financial services, public sector, energy, and utilities	partners • Strong integration capabilities • Expanding and evolving cloud-based options	with price negotiation and implementation • Overlapping service offerings • Lack of capabilities for midsize enterprise markets (MSEs)	
Adobe	• PDF storage and sharing • Digital signatures • Video content management	• Integration with other Adobe products • Form creation • Review and feedback functionalities	• Potential difficulty in editing files • Requirement of newer computer model to run smoothly • High cost to implement	$15.79
DocuSign	• Digital signatures	• Integration with other business applications • Effective workflow capabilities • Encrypted email features	• Inconsistent technical support • High time investment to learn and implement	$0.43
Google	• Online document storage • File sharing and collaboration	• Integration with Google Workspace • Compatibility with third-party vendors • More affordable pricing than other options	• User doubts about security • Limited free storage space • Lengthy download times • Unfavorable user interface	$256.74

		• Effective file back-up • Customizable access settings	• Requirement of Gmail account	
Box	• Content collaboration • Clients in financial services, life sciences, and the public sector	• Scalable cloud content services • Services for customers of all sizes • Ease of use and adoption	• Highly variable pricing • Data storage in U.S. data centers • Lagging capabilities, including forms and workflow	$0.77

Figure 10 shows how key ECM software vendors contributed to the market's total revenue in 2021.

Figure 10: Key players in the global ECM software market, % share of 2021 revenue [11]
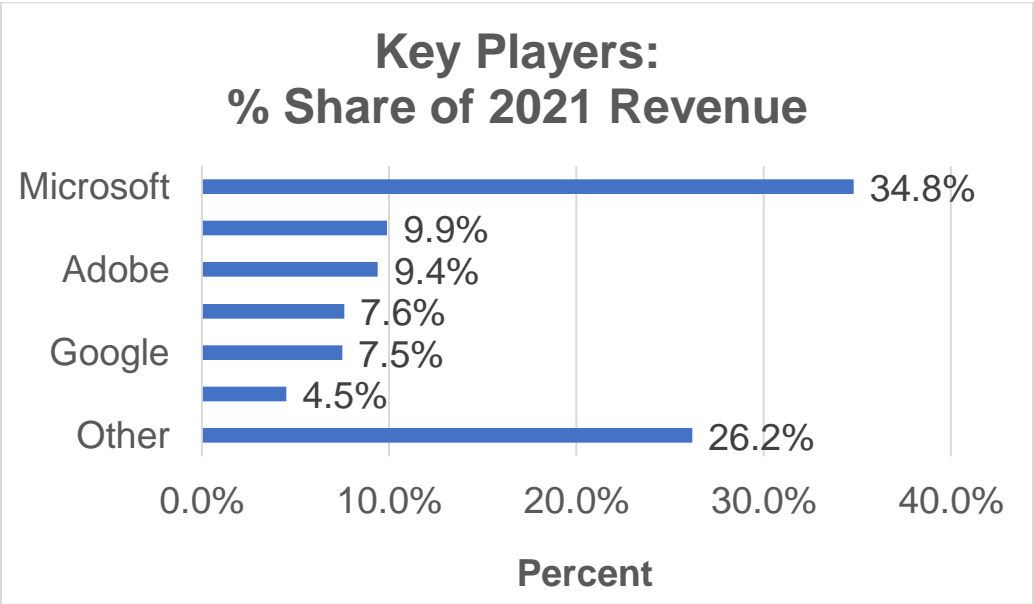
Note: Due to rounding, percentages don't appear to add up to 100%.

Headline's Sustainable Competitive Advantage

This section covers the sustainable competitive advantages for Headline to develop a new ECM software product that focuses on technical documentation.

- **Increased profit with minimal cost:** As a mature ECM software vendor, Headline already has products that cover the core capabilities of ECM. Headline can leverage the infrastructure of its existing products to create a new specialized service for technical documentation. Because this new product will utilize existing code and user interfaces, development costs will be relatively low. However, the product will fill a new need by focusing on technical documentation, and this new need will draw new customers, increasing the company's revenue. Existing customers will also invest more in Headline through the new product, increasing both profit and customer retention.

- **Opportunity for specialized services:** Newer entrants in the ECM software market have found success by taking fresh approaches that distinguish them from more established vendors [17]. Additionally, ECM services are becoming increasing composable, allowing customers to create their own customized ECM systems from a variety of products and vendors [19]. Headline can capitalize on these market characteristics by creating a specialized product for technical documentation. This product will help distinguish Headline from other ECM vendors and will fill a gap left by key players. Headline's new specialized services will help draw both customers investing in ECM software for the first time and customers with more mature ECM strategies. Even customers already using competitors' products may embrace the composable services model and add Headline's new product to their existing ECM system.

- **Improved brand recognition:** Headline is already an established ECM software vendor but trails behind key players in name recognition. Some of these key players (e.g., Microsoft and Google) have achieved this name recognition through products other than ECM software, but that advantage still helps them when selling ECM products. Headline is focused solely on ECM software, and further developing this portfolio will help potential customers recognize the company as a leader in the market, especially when it comes to specialized services for technical documentation.

Opportunity Analysis: ECM for Technical Documentation

Limitations of Existing ECM Solutions

While the ECM software market is mature, it still has room for innovation and improvements. The following issues impact stakeholders:

- **Lack of specialized services for technical documentation:** For the purposes of this report, technical documentation includes written communications about specialized topics like computer applications or environmental regulations [27]. Technical communication is a growing field. The number of technical writer jobs in the U.S. is expected to grow by 12% between 2020 and 2030. This change is greater than the average 8% growth projected for all occupations during this time [28]. As the number of technical writers grows, so will the number of technical documents. Despite this growth, none of the key players in the ECM software market have a product specifically designed to manage technical documentation.

- **High implementation cost:** Both customers and industry experts cite high costs as a weakness of products offered by key players in the ECM software market [17], [20]. In addition to the cost of the software itself, many companies need to hire technical experts and install additional servers. While larger companies can usually handle these costs, smaller companies often cannot, meaning they don't invest in ECM software despite the benefits [18].

- **Difficulty in learning new software:** Customers and experts also list slow learning times as a weakness of existing ECM products. Another weakness, poor user interfaces, contributes to this difficulty [17], [20]. More broadly, a lack of adequate user training is one of the top reasons why the implementation of any software can fail [29]. If software is difficult to learn, it will require more training, making the implementation more likely to fail. Furthermore, training costs increase the already high cost of ECM software, adding to the implementation barriers that smaller companies face.

Significance of Limitations on Stakeholders

ECM software plays a key role for a wide range of business customers because all companies have some type of content to manage [15]. These business customers and the broader software industry are both impacted by the limitations of existing ECM software.

- **Customers:** Business customers have a wide range of ECM software vendors to choose from, but none of the key players offer a service tailored to technical documentation. As a result, customers have to tailor existing services to meet their technical documentation needs. This tailoring may include the creation of technical documentation templates, roles and access levels for technical staff, and content tags for technical materials. This extra work takes valuable time and resources, decreasing productivity. Additionally, the high cost of ECM software further drains resources and can even keep smaller companies from implementing it at all [18]. Finally, customers lose still more time and resources when training staff to use ECM software, which can have a steep learning curve and confusing user interfaces. These difficulties can ultimately cause ECM software implementations to fail and keep customers from managing their content effectively.

- **Software industry:** Innovation helps fuel competition and growth within any industry, and the software industry is no exception. The maturity of the ECM market means that core ECM capabilities often have few differences between products, leaving plenty of room for new features [17]. By failing to offer a specialized service for technical documentation, the ECM software market misses an opportunity for innovation and hampers potential growth for the broader software industry. ECM software's high cost and steep learning curve also hurt the software industry's chances at growth by keeping business customers from investing in ECM products.

Significance for Headline

Headline develops and produces only ECM software, unlike other vendors that also carry non-ECM products (e.g., Microsoft and Google). High implementation costs can keep companies from exploring and eventually investing in ECM software, causing Headline to lose potential customers and revenue. ECM software's steep learning curve can also give customers a bad impression of these products, leading to missed sales opportunities for Headline. However, Headline's products are known for being

reasonably priced and user-friendly, so cost and training needs are smaller concerns as compared with some of the key players in the ECM market.
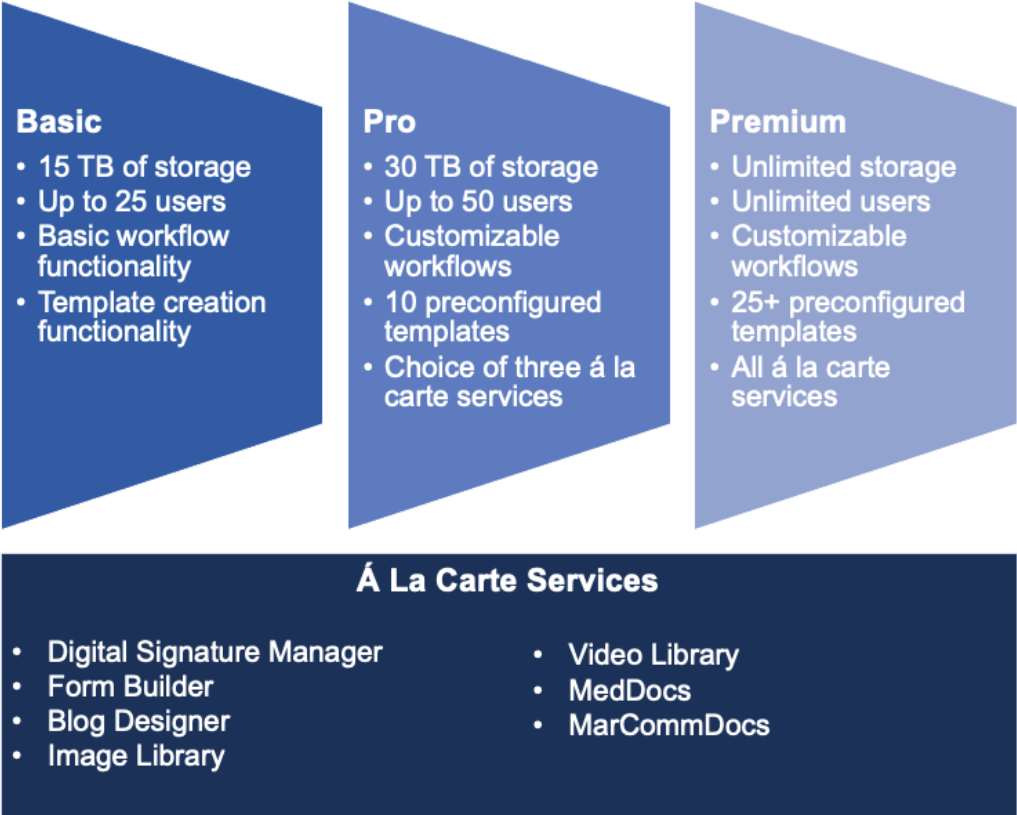
Additionally, Headline suffers as a user of ECM software. The company has a large library of technical documentation but no specialized ECM solution to manage it. Like any other ECM software customer, Headline has to modify its existing products to fit its technical documentation. This extra work takes time and resources away from revenue-generating initiatives, ultimately hurting Headline's profits.

Opportunity Fulfillment: ECM for Technical Documentation

Technology Architecture

Headline offers three tiered product packages (Basic, Pro, and Premium) as well as a collection of á la carte services. Customers choose a product package and add á la carte services as needed. In recent years, Headline has increasingly added to these á la carte services. The newest additions include MedDocs and MarCommDocs, specialized services for medical documentation and marketing communications materials, respectively. Headline's potential new product for technical documentation, TechDocs, will follow a similar approach to MedDocs and MarCommDocs. Like its predecessors, TechDocs will also be available as an á la carte service. Figure 11 shows Headline's service offerings as they are today.

Figure 11: Headline's product packages and á la carte services

Basic
- 15 TB of storage
- Up to 25 users
- Basic workflow functionality
- Template creation functionality

Pro
- 30 TB of storage
- Up to 50 users
- Customizable workflows
- 10 preconfigured templates
- Choice of three á la carte services

Premium
- Unlimited storage
- Unlimited users
- Customizable workflows
- 25+ preconfigured templates
- All á la carte services

Á La Carte Services
- Digital Signature Manager
- Form Builder
- Blog Designer
- Image Library
- Video Library
- MedDocs
- MarCommDocs

SaaS Deployment Model

Like Headline's existing á la carte services, TechDocs will follow a SaaS deployment model. Headline's cloud provider will host TechDocs, and users will be able to access it over the internet from any location and any device [5]. Figure 12 shows how on-premises applications compare to SaaS applications.

**Figure 12: On-premises and SaaS comparison [30]**
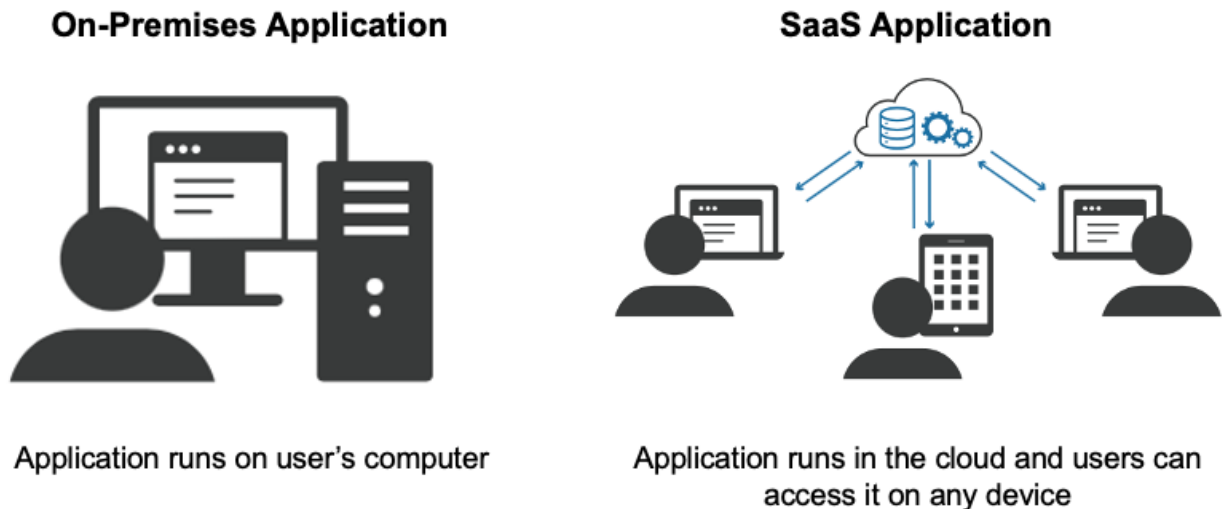
SaaS applications are easier to install than on-premises software, and users don't have to manage set-up or maintenance. Any new features are automatically rolled out to all users [5]. SaaS applications also offer less system downtime, more flexibility, higher security, and more reliability than on-premises solutions [14]. Because SaaS doesn't require users to install and run applications on their own computers or data centers, users save money on hardware, provisioning, maintenance, software licensing, installation, and support [5].

Application Programming Interfaces

Another benefit of SaaS applications is that users can integrate them with other software using application programming interfaces (APIs) [5]. An API is a set of programming code that allows data transmission between software products [31]. Figure 13 shows how an API facilitates the transfer of data between a database and a web application. Using the internet, the web application sends a request for the data to the API. The API then sends the request to the database via a web server. Finally, through the API, the database sends the requested data back to the web application.

Figure 13: How an API works [31]
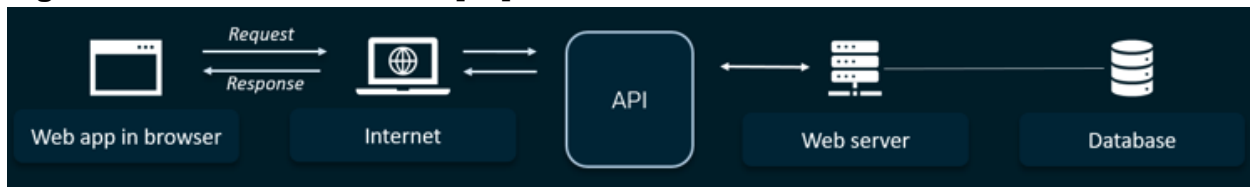
As part of the TechDocs product, Headline will provide APIs to integrate TechDocs with other popular ECM software. This interoperability will allow users to easily add TechDocs to their existing ECM system even if they are already using competitors' products.

Graphical User Interface

TechDocs will utilize the graphical user interface (GUI) from Headline's existing products. Unlike a text-based interface, a GUI allows users to interact with the software using visual elements like icons, buttons, and menus [32]. A GUI is easier to navigate for non-technical users.

Features from TechDocs will be integrated into Headline's existing homepage design. Figure 14 shows an example homepage for a TechDocs customer. Please note that the Headline logo would be replaced with a logo or other imagery chosen by the customer. As with existing Headline products, the customer can also customize other elements, including the top navigation and tiles showing the to-do list, quick links, etc.

The numbered elements in Figure 14 highlight the following TechDocs-related features:

1. **Top navigation:** TechDocs customers will see a link to the service in the top navigation within their Headline homepage.

2. **User roles:** TechDocs customers will have access to preconfigured technical roles and can utilize these roles in their profiles. The User Roles section below discusses this feature in more detail.

3. **Templates:** TechDocs customers will have access to preconfigured templates for a variety of technical documentation types. The Templates section below discusses this feature in more detail.

Figure 14: Example homepage design for a TechDocs customer
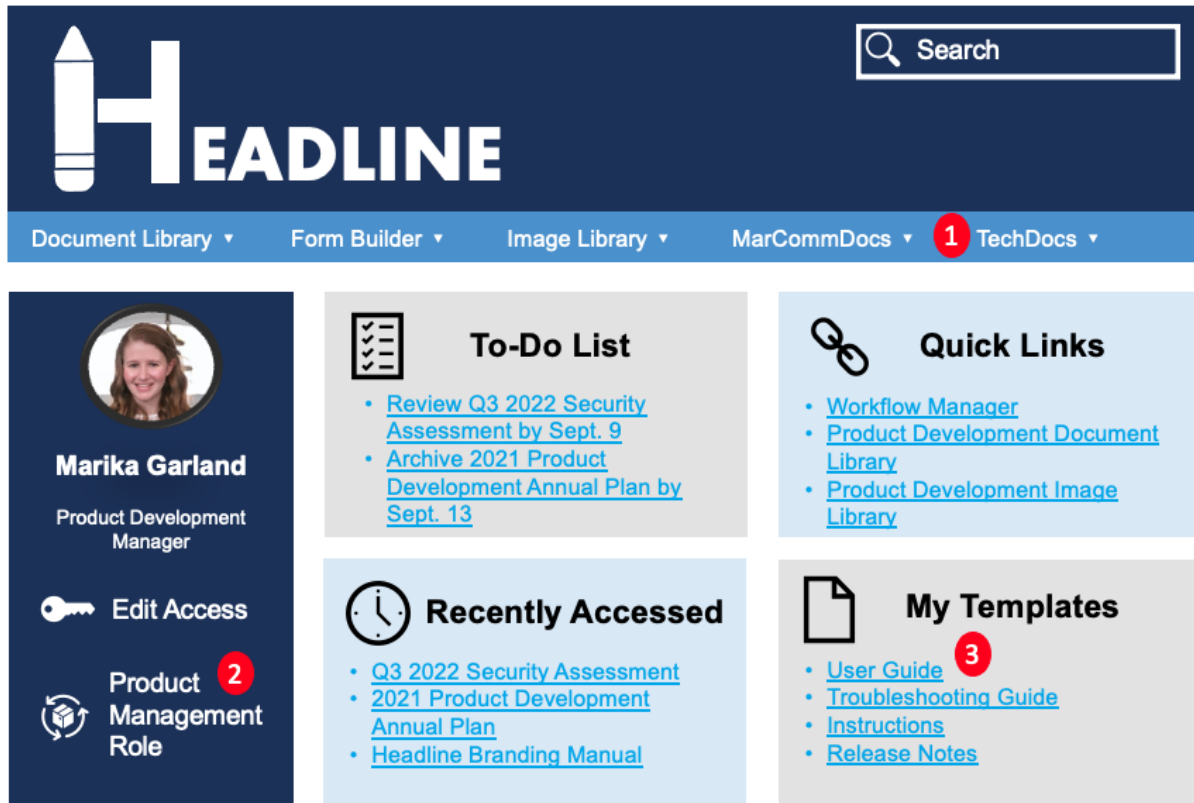
When a user clicks on "TechDocs" in the top navigation, they will see a new screen with the following links as shown in Figure 15: TechDocs Library, Find a Document, TechDocs Workflow, and TechDocs Templates. The sections below discuss these links in further detail.

Figure 15: Example TechDocs homepage
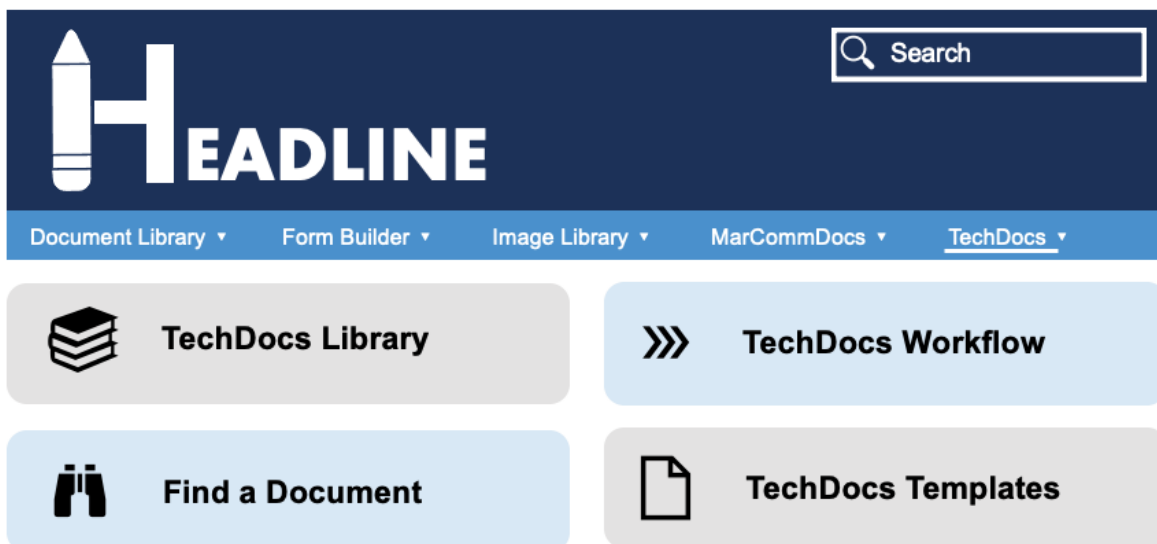
User Roles

Headline already includes a set of preconfigured user roles. However, these roles only include more generic options like writer, editor, publisher, reviewer, and approver. Technical documentation requires collaboration from a variety of technical roles that don't fit these options. TechDocs will include a new set of preconfigured technical roles that users can select when setting up their profiles within Headline. Figure 16 shows a sample of these roles.

**Figure 16: Sample of preconfigured TechDocs user roles**

These preconfigured technical roles will automatically grant the user corresponding permissions. For example, a user with the "Architecture" role would have access to create and edit architecture-related documentation like roadmap and target state materials.

Document Library

TechDocs includes a document library that works similarly to Headline's standard document library. The TechDocs library is a separate library that houses only technical documentation. Users that also have the standard document library can choose whether to list technical documentation in both the standard document library and the TechDocs library. Figure 17 shows an example TechDocs library.

**Figure 17: Example TechDocs document library**
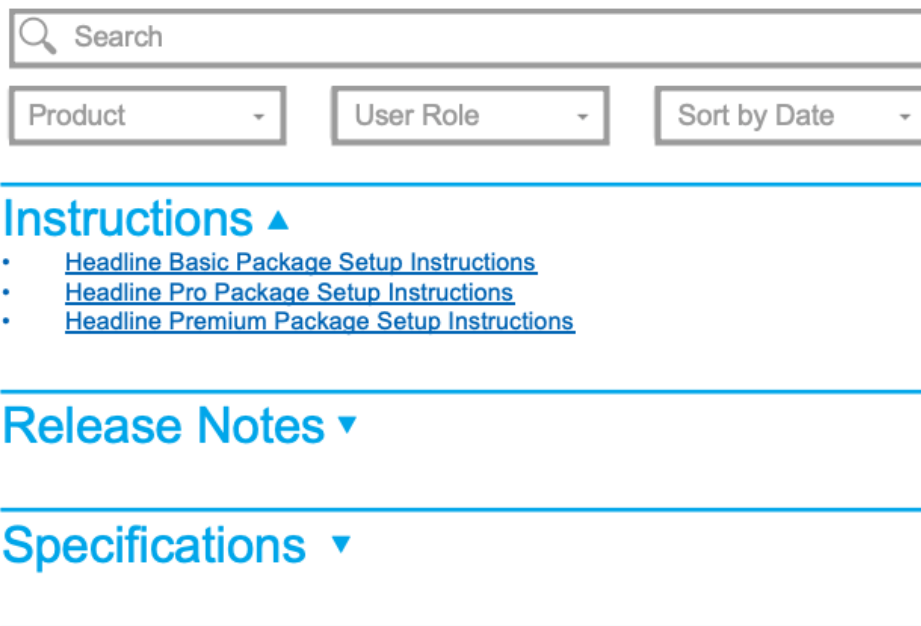
Like the standard document library, the TechDocs library includes customizable expandable sections to house documents. It also features a search bar and customizable filters and sort functionality. In Figure 17, the user has chosen to house their technical documents in three sections: Instructions, Release Notes, and Specifications. The Instructions section is shown expanded with three clickable document links listed. The user has also chosen to allow filtering by product and user role as well as sorting by the date the document was published.

Search

TechDocs will utilize Headline's existing search functionality in both the top navigation bar (as shown in Figure 14) and the document library (as shown in Figure 17). Users can search by the document's title, type (e.g., instructions, user guide), and relevant user role (e.g., architecture, technical communications). Users can also set up additional content tags for use in the search feature. For example, Headline might set up tags for its three product packages: Basic, Pro, and Premier. If a user searched "Basic," they would see all of the documents labeled with that content tag.

Additionally, users will have the option to search for a document using the "Find a Document" button on the TechDocs homepage shown in Figure 15. Figure 18 below shows the options a user will see after clicking on "Find a Document."

**Figure 18: Find a Document page within TechDocs product**
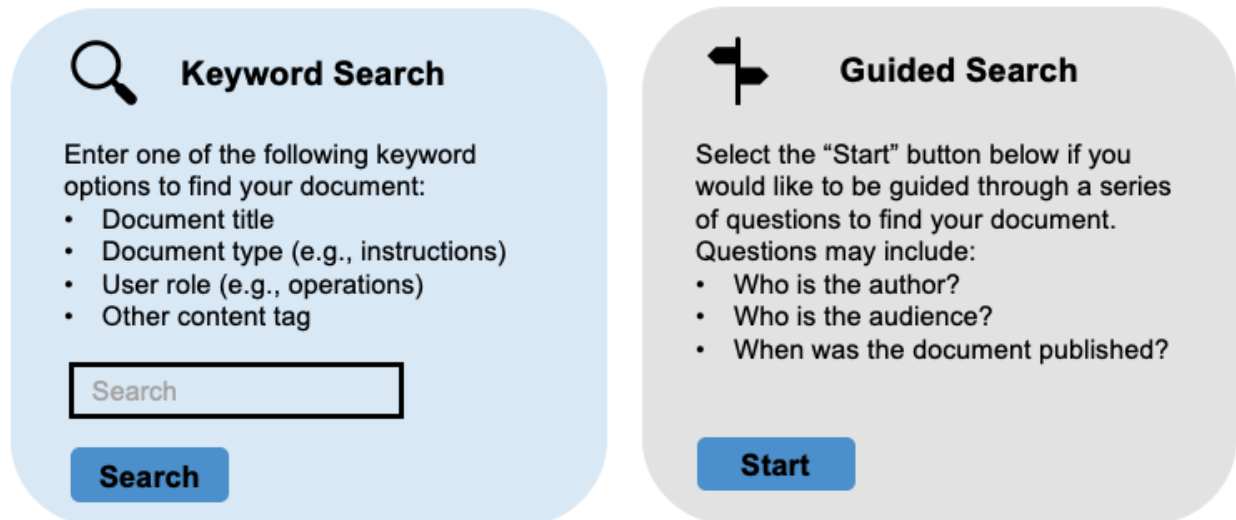
The Find a Document page offers both a traditional Keyword Search a Guided Search. As described in Figure 18, the Guided Search takes the user through a series of questions to find the document they're looking for. These questions are customizable and work in tandem with any content tags. For example, if a company has set up a content tag for audience, one of the questions in the Guided Search might be "Who is the audience?" The user could then choose between options like "internal" and "external." The Guided Search option may be especially helpful for non-technical staff and users who are new to Headline's products.

Templates

Headline's products already feature over 25 preconfigured templates, but none of these templates cover technical documentation. TechDocs will include a collection of specialized technical documentation templates to fill this gap. These templates will include user guides, troubleshooting guides, release notes, specifications, instructions, requirements, directives, and procedures.

Like Headline's existing templates, TechDocs templates can be customized to fit the user's needs. Users can add and remove fields, add a company logo, incorporate formatting, and make fields required or optional. When a user chooses a template, they can enter content with user-friendly text editor fields. Other fields, like a last updated date and table of contents, will be completed automatically. Figure 19 shows what a user might see when filling in an existing template and then what that document might look like once published.

Figure 19: From left to right, user filling in document template and published document
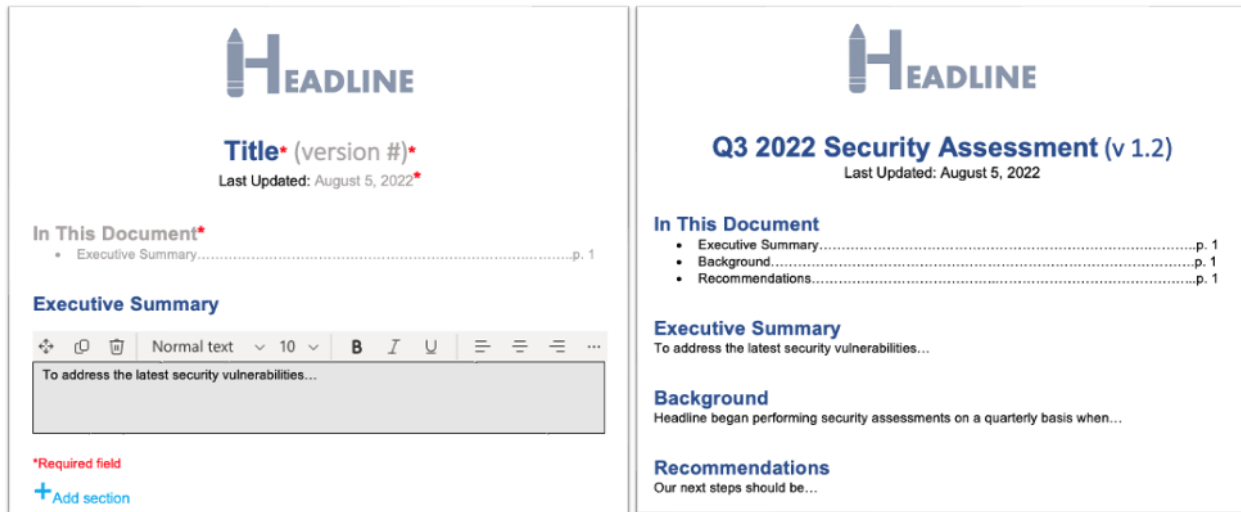
The left side of Figure 19 shows a user filling in a simple template. The template includes the company's logo (Headline's logo in this example). The user will then need to fill in the title, which is a required field. The other three required fields (version number, last updated date, and In This Document) are automatically populated, so they are grayed out for the user. The final field (Executive Summary) is optional. The user can click in the text box to add content or click on the trash can icon to remove it.

The right side of Figure 19 shows a sample completed document using the template on the left. The user has added a title and filled in the Executive Summary section. The version number, last updated date, and In This Document section have been automatically populated. The user has also used the "+Add section" button to add two additional sections: Background and Recommendations.
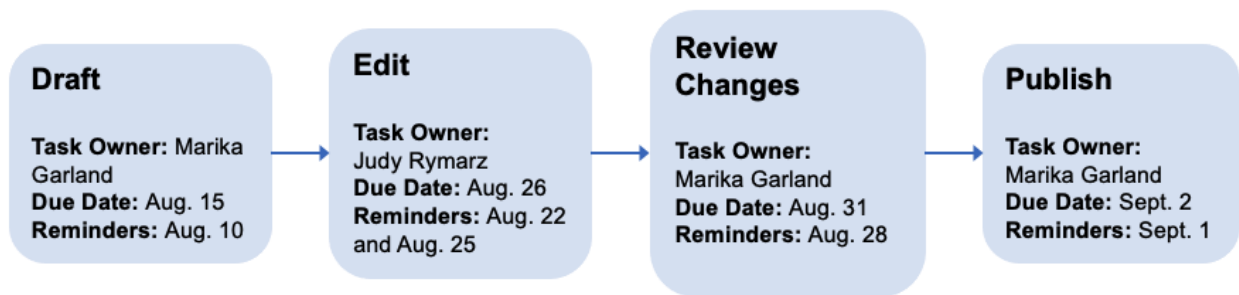
Workflow

Like Headline's existing products, TechDocs will include a workflow feature. The workflow allows users to set up a review and publication schedule for a document. The feature automatically sends documents to reviewers when it is their turn to review. It also provides deadlines and sends reminders as chosen by the user who sets up the workflow. Figure 20 shows a simple workflow example for a document called Q3 2022 Security Assessment Workflow.

Figure 20: Example TechDocs workflow

TechDocs will feature a collection of preconfigured workflows that apply specifically to technical documentation. For example, one workflow might be for a specifications document. It could include steps for operations to draft the document, technical communications to edit it, testing to review it, and technical communications to publish it once finalized.

Features and Functionality

The table below lists the features and functionality of Headline's new TechDocs service:

Table 2: Summary of TechDocs' features and functionality

Feature	Functionality
SaaS Deployment Model	• Flexible access from any location and any device • Easy installation with no set-up or maintenance needed from user • Automatic rollout of new features • Less system downtime, more flexibility, higher security, and more reliability than on-premises solutions • Saved costs on hardware, provisioning, maintenance, software licensing, installation, and support
APIs	• Integration with other popular ECM software products • Support for customizable ECM systems using composable services approach
GUI	• User-friendly interface with easy-to-learn navigation

	• Customizable options for each user to create their own personalized homepage that highlights their favorite links • Integration with existing Headline GUI so existing users don't have to learn a new system
User Roles	• Preconfigured collection of technical roles for the user to choose from • Roles included in user profiles • Access permissions automatically assigned based on user roles
Document Library	• Separate library for technical documentation • Ability to also list technical documentation in standard document library • Customizable expandable sections to house clickable document links • Customizable filters and sorting options • Search box available within library
Search	• Traditional search box in navigation, document library, and Find a Document page • Customizable content tags to facilitate easy searching • Guided Search option with questions to help unexperienced users find documents
Templates	• Collection of preconfigured templates for technical documentation types including user guides, troubleshooting guides, release notes, specifications, instructions, requirements, directives, and procedures • Automatically populated fields like last updated date and table of contents • Ability to customize fields, branding, and formatting
Workflow	• Collection of preconfigured workflows specially for technical documentation • Ability to customize steps, task owners, due dates, and reminder emails

Benefits of an ECM Solution for Technical Documentation

Benefits for Customers

The table below lists the benefits of the new TechDocs service for Headline's current and potential future customers:

Table 3: Summary of TechDocs' benefits to Headline's customers

Benefit	Description
Improved technical documentation	• Improved appearance, more complete information, and greater consistency due to templates • Increased collaboration and accuracy thanks to workflow feature • Better organization due to document library
Low cost	• SaaS deployment model that allows users to save money on hardware, provisioning, maintenance, software licensing, installation, and support • Ability to purchase TechDocs as an á la carte service without purchasing an entire ECM system • Ability for existing Pro and Premium Headline customers to add TechDocs for free
Ease of learning	• Use of existing Headline GUI to assist current customers in learning new service • User-friendly GUI intended to support both technical and non-technical users • No coding required
Saved time and resources	• Easy installation and maintenance through SaaS deployment model • Preconfigured user roles, templates, and workflows • Multiple options to easily find documents • APIs to support integration with other ECM software
Higher security	• User roles that provide access to only documents related to each role • Greater security and fewer data loss risks thanks to SaaS deployment

Benefits for Industry

The table below lists the benefits of the new TechDocs service for the software industry:

Table 4: Summary of TechDocs' benefits to software industry

Benefit	Description
Innovation	• Inspiration for further competition and growth • Move away from high similarity among existing ECM capabilities
Interoperability	• APIs to support interoperability with other ECM software • Ability for other ECM software vendors to promote TechDocs to strengthen their own products
Revenue	• Higher industry revenue through TechDocs product and other new services inspired by TechDocs • Better perception of ECM software through low-cost, user-friendly TechDocs, which may lead companies to invest more

Benefits for Headline

The table below lists the benefits of the new TechDocs service for Headline:

Table 5: Summary of TechDocs' benefits to Headline

Benefit	Description
Revenue	• Low development cost for TechDocs by using Headline's existing infrastructure • Profit from new Headline customers attracted by TechDocs • Profit from existing Headline customers who add TechDocs • Greater retention of existing Headline customers
Brand recognition	• New reputation as leader in technical documentation management • Recognition as innovator in the ECM software market
Improved technical documentation	• Higher quality documentation through use of TechDocs product • Better customer perception of Headline's technical documentation

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