

Lucidworks Digital Workplace

Use-Case/Industry-Pairing Research

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I. Background & Purpose

This report details the findings of preliminary research into where targeted go-to-market opportunities lie for the Lucidworks Digital Workplace solution. The primary focus is to identify *pairings of specific industries and use cases* where these opportunities are most readily available. Also considered are opportunities that:

1. Do and do not include entrenched use of Sharepoint
2. Show the highest potential for cross-selling of Customer Support where there is pre-existing interest in Enterprise Search
3. Show the highest potential for interest in and application of Question Answering systems as an additional technology layer of the Digital Workplace

II. The Digital Workplace Solution

Following are the value proposition and defined use-case subcategories as we've defined them for the Digital Workplace solution.

A. Value Proposition

- Lucidworks Fusion helps large enterprises make their *information assets searchable and highly-available to their knowledge workers* who need to make frequent, rapid information-driven decisions
- Employees should enjoy the same *hyper-personalized experience at work* that they have as consumers when they shop or browse digital commerce

B. Sub-category Use Cases

- Data Discovery: to gain a deep understanding of a company's data in order to navigate through uncertainty and make well-informed decisions (includes App Studio)
- Customer Support: collate and view all relevant information pertaining to a customer's behavior, interactions, data history during support interactions
- Enterprise Search: locate data to answer specific questions and access existing corporate data assets to make better decisions (Fusion alone)

III. Cross-Vertical Considerations

A. Prospects Using Sharepoint

During an initial discovery interview, Lucidworks Sales Engineer **John Lenker** asserted that there is currently a critical window of opportunity for Lucidworks to aggressively market Fusion Enterprise Search capabilities to Microsoft Sharepoint users. This is because Microsoft has imminent plans to relaunch Office 365 with cognitive search capabilities for Sharepoint. Once that relaunch occurs, it may preemptively weaken our ability to market Fusion to Sharepoint customers because, with next-generation search capabilities baked directly into Sharepoint: a) they may not see the need to invest in a third-party search solution, and b) they may (erroneously) believe that such a solution would require that they relinquish Sharepoint functionality.

Therefore, in marketing Fusion to existing Sharepoint customers, it's important to clarify that they don't have to give up Sharepoint, but rather that *Fusion is a dramatically superior search add-on*. We would not sell against Sharepoint, but *with* it—with the following key messages:

1. **Lucidworks specializes in search.** Microsoft is a huge company with no particular specialization. If anything, its strength lies in productivity—not search, where it's unlikely to ever be industry-leading because it doesn't invest in search nearly to the extent that Lucidworks does. The cognitive search function planned for Sharepoint is simply an acquired product (FAST) that has been shoehorned into Sharepoint.
2. **Fusion leads in search development.** By the time Microsoft does make cognitive search capabilities available in Sharepoint, they're sure to be far less developed than Fusion, which has been founded on search and much more advanced in the space.
3. **Fusion leverages Sharepoint's strengths seamlessly.** Sharepoint is a "Swiss Army knife" solution that attempts to do everything. But it should be used for what it's good at, which does not include search. Fusion at its core is all about search *and*, being highly collaborative, seamlessly integrates with Sharepoint as well as other key Microsoft applications such as Graph and Teams, without impacting the Sharepoint UX. One way this is achieved is through an API, so that Fusion search results can be presented within the context and UI of Sharepoint. Sharepoint's search center core is essentially converted to Fusion. In doing so, we leverage Microsoft's strength in productivity with Lucidworks' strength in search.

Fusion can also replace Sharepoint. However, one aspect in which it is at a key disadvantage in replacing Sharepoint entirely is its *lack of a document previewer*. This robust feature in Sharepoint allows users to quickly see the contents of any document without actually loading it, offering a huge productivity advantage. This feature has been reported as being highly desirable among Sharepoint customers, making it unlikely that many customers would buy into a wholesale replacement of Sharepoint with Fusion. Fortunately, users can still benefit from that feature, and all others in Sharepoint, by implementing Fusion on the backend.

B. Prospects Using Systems Other Than Sharepoint

For content management, many companies use proprietary or legacy systems. This applies especially in verticals with scientific underpinnings, such as Aerospace & Defense, Biotech & Pharmaceutical, and Energy & Natural Resources; and in verticals with content created and managed with CAD or imaging systems, such as Aerospace & Defense and Engineering & Manufacturing. Other companies may use long-established, agnostic systems such as IBM Filenet or Netdocuments, the latter of which is often used in industries with high-security requirements such as Legal and Financial Services. Many of these companies may *also* use Sharepoint, either in combination with these proprietary, legacy, or agnostic systems, or with the intention of ultimately migrating content from those systems into Sharepoint. Currently, Fusion lacks connectors to fully integrate with the two dominant agnostic systems, Filenet and Netdocuments. This poses limitations to the adoption of Fusion. In this context, some important questions to ask, which must be answered at the level of *individual prospect* rather than across an entire vertical are:

1. To what extent does a company manage its content in Sharepoint versus the other agnostic systems?
2. For which among a company's proprietary/legacy content management systems does Fusion have connectors?

The answers to these questions will heavily influence how likely a prospect in the aforementioned verticals is to consider Fusion for its enterprise search or data discovery needs.

C. Customer Support Cross-Selling Opportunities

Customer Support is often neglected in search initiatives because organizations often fail to realize the value in a support team's ability to provide quick, complete, and accurate responses to customer inquiries. That ability requires a comprehensive knowledge base of all products and process-related documentation that's accessible and easily searchable. An important component of this knowledge base and search functionality is a mechanism enabling support personnel to record customer inquiries and responses. An information search and retrieval process that works well for customer support dramatically boosts the quality of the customer services experience, thereby benefiting the entire organization. Lucidworks has a number of customers of Enterprise Search and Data Discovery solutions in the *Financial Services and Telecommunications verticals*, where customer support is a critical part of the business model, especially among consumers. As such, there is considerable opportunity to cross-sell the Customer Service solution to these customers.

D. Non-Consumer (B2B) Opportunities for Digital Commerce

During a discovery interview with Lucidworks Account Manager **Steve Mount**, he asserted that we currently have a constricted view of commerce. The use cases we define for the Digital Commerce solution all involve interactions between online retailers and consumers. However, many companies engage in commercial interactions outside the domain of consumer retail. A large part of this commerce involves selling content to other businesses. Some examples of this content are professional photography, as sold by Shutterstock and Getty Images; market and financial data, as sold by Bloomberg, S&P, Moody's, and Fitch; and entertainment imagery, as sold by Disney and Pixar. The ability for such organizations to resell their content would be dramatically enhanced by a technology solution that enables potential customers to find the assets more quickly and easily.

This is a largely untapped marketing opportunity. In this scenario, our Digital Commerce solution would give a 7-27% uplift in findability and add-to-cart conversions. To tap that opportunity, we would need to broaden the definition of "commerce" in the pool of use cases for our Digital Commerce solution. We would also need to hone our marketing messaging to resonate with content publishers, even though they span different verticals altogether. This begins with examining a company's content assets, assessing which among them they have an interest in selling, and then market the Digital Commerce solution as a means to that end. What's more, proof-of-concept is more easily demonstrated and potentially more compelling to Digital Commerce prospects because—unlike Digital Workplace prospects—they're marketing professional who are more engaged with the content and better able to internally justify investment in our solution. And finally, we have less competition in that space.

E. Question-Answering System Opportunities

The Lucidworks Research Team, led by **Chao Han**, has developed an early-stage Question-Answering (Q&A) system. Meant to integrate directly with Fusion, this system enables users to submit queries in the form of natural language questions and receive responses that answer those questions. It can be used with its own UI or as the backend of a pre-existing chatbot.

This system has high potential for application in the following use cases:

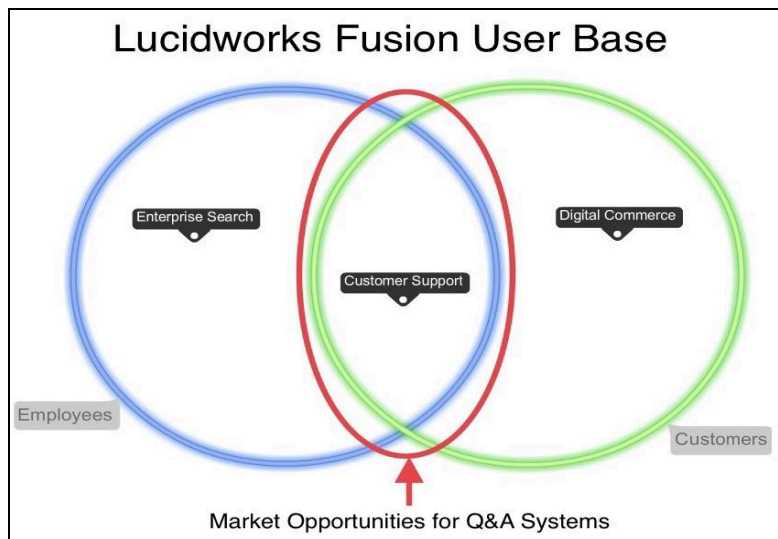
- Augmentation of call center services or IT support ticket records (in Customer Support)
- Search of email or Slack conversations, or Sharepoint FAQs (in Enterprise Search)
- Semantic search for long queries using neural information retrieval (in either Customer Support or Enterprise Search)

Chao explained further the current state of this system during an initial discovery interview:

1. **Value proposition.** Q&A systems retrieve information in complex enterprise use-cases to provide users with accurate answers from indexed documents. They fully utilize a company's existing knowledge base without the need for expensive configuration or

manual work. This system provides value to any company selling a broad catalog of products/services in an asynchronous way.

2. **Market placement.** The verticals where the most immediate opportunities lie for Q&A systems integration in the Digital Workplace are those involving Customer Support, specifically where there are consumer-facing FAQs and/or call centers. Some of the topmost consumer-serving industries are financial services (especially banks and insurance companies), telecommunications, commercial airline carriers, and healthcare providers. If we think of the Lucidworks user base as the following diagram, the “sweet spot” for QA systems lies in the intersection of customer support where users include *both* employees (providing information to customers) and customers (obtaining information on their own).



3. **Chatbot integration.** Many companies implement chatbots on their consumer-facing websites for customer support. However, these are limited, rule-based systems that operate on keyword matching and have simple inputs/outputs. When it comes to natural language questions or long queries, due to the complexity of word relationships and intentions, keyword matching generally fails to capture the context and semantic meanings of questions without utilizing extensive rules and synonyms. Conversely, neural information retrieval (the basis of Q&A systems) expresses words using context-based distributed representation, and finds matches in the vast vector space to expand automatic queries and interpret intention. The Lucidworks Q&A system can be used on its own or integrated into the backend of an existing chatbot system to provide a much richer and sophisticated response corpus. The benefit of using chatbot on top of a Q&A system is that it can use natural-language conversational flow in the context of a virtual assistant. Whereas a Q&A system on its own presents a set of answers based on similarly recognized questions; the interaction is more static, not conversational.
4. **Competitors.** Lucidworks currently has an edge in the market, as there are no incumbents in the space who have commercially released any Q&A systems, either on the backend of a chatbot or as a self-contained solution. Although numerous companies

across industries utilize chatbots on their consumer-facing websites, they are all rule-based and employ no AI technology.

5. **Readiness.** As of April 2019 there has been a working demo of our Q&A system, though it has not been internally announced. Chao's team has given this demo as a POC to a select group of customers, and plans to demo it to additional customers over Q4. As per July 18 call, recommendation is to introduce Q&A capabilities into Fusion 4.2.5 specifically for customers who have seen the POC; then we can talk about the wider message of pluggability for Fusion 5.X. This is totally up to Product. Very confident GA is ready, but Product is focused entirely on Fusion 5.0 right now. This is entirely on Chao's team, with no engineers working on development and release.
6. **Announcing at Activate.** Lucidworks AI Research Engineer Sava Kalbachou is planning a presentation at Activate 2019 on Q&A systems. Given that, it's recommended that a higher-level announcement be made prior to that presentation, broadly touching on Lucidworks' advances in the technology and its potential use cases in the market. (Chao also mentioned her hopes to develop content for a new webinar on Q&A systems in October, which will include many of her team's latest findings.)
7. **Requirements of the Customer**
 - a. **Training Data.** The most efficient and effective launch of a commercial Question-Answering system is one where there is a pre-existing body of **FAQ logs** (e.g. call center, IT helpdesk or document read/click activations) to use as training data. If there is no FAQ data available, a **cold start solution** can be built on top of content documents that the customer will search against. About that solution, Chao reported that "we can utilize a pre-trained vector model to borrow information from other data sources. Our study shows that if we combine Solr score with dense vector results, we can provide decent accuracy boost." It features two training modes: **auto-pilot mode**, enabling a non data scientist to automatically tune parameters; and **advanced-user mode**, enabling finer tuning by a data scientist.
 - b. **Data access.** Chao's team has established the need for direct access to customer data through sftp or a shared aws instance. "If data cannot be shared on cloud, a CPU machine with at least 32 GB RAM and 16 cores are required. One GPU with 11 GB memory is required if want to try the model auto tune feature. Overall a shared aws instance is preferred and we will provide an ami image for easy installation.
 - c. **Participation.** Ideally, a dedicated resource would be available to answer our questions about the customer's data and computing resources. To ensure implementation goes smoothly, the resource and Lucidworks research team would gather feedback weekly from the resource about the Q&A solution.
 - d. **Time to launch.** The model building and implementation process can be done within 2 weeks. Obtaining the appropriate data and access may take an extra two to three weeks, plus any additional time for on-boarding the LW team.

IV. Vertical-Specific Considerations and Recommendations

The following sections are organized by industry. Each one begins with an overview of search requirements specific to that industry, followed by an aggregation of recent Lucidworks sales data and an industry net margin percentage. Capping off each industry section is a summary recommendation (based on the preceding information) in one of three categories of promise:

1. **Immediate** — requires little, if any, further research into vertical-specific demands or minimal development of additional capabilities or outside-system connectors. This is “low hanging fruit” with likely the lowest effort and highest response to targeted marketing.
2. **Intermediate-term** — requires further research into vertical-specific demands and/or development of additional product capabilities or outside-system connectors.
3. **Longer-term/limited** — requires deeper and longer research into vertical-specific demands and/or risks a low ROI on resources needed for targeted marketing.

A. Aerospace & Defense

General Search Requirements. Business in aerospace and defense depends heavily on government procurement. Though companies in this space are engineering and manufacturing operations at heart, winning contracts hinges more on the ability to deliver on requests for proposals (RFPs) than on driving innovation per se. Therefore, they engage in many content-heavy activities that put considerable demands of scale and complexity on document search and management systems. In preparing proposals, these organizations leverage vast amounts of legacy content. Once contracts are won, they maintain hundreds of contractual components and milestones. To support the products they develop and ultimately deliver, they draw up a great deal of technical documentation. Additionally, because many of these products are built from both existing and newly invented components, contractors must be able to manage content on the components themselves as well as on their implementation into new designs. Search products that can *integrate well with established systems in document management (e.g. Documentum, Astoria) and CAD* will be favored by users in this industry.

Relevance to Lucidworks. More research is needed to learn if/how Lucidworks Fusion integrates with these proprietary systems; and if not, what would be entailed in doing so (see [Prospects Using Systems Other Than Sharepoint](#)). Another consideration that could make Lucidworks potentially more attractive to Defense users in particular is *field-level security*, which Fusion currently need to develop further (as per Marcus Eagen). To date (FY2020), Lucidworks has closed-won 21 out of 40 opportunities (53% conversion) in Enterprise Search and Data Discovery, with a median ARR of \$47k and total ARR of \$2 million in this vertical, which has a lower industry net margin of 8%.

In summary, the **Aerospace & Defense vertical shows *intermediate-term* promise** for targeted marketing of Enterprise Search and Data Discovery, contingent on developing integration with established document-management and CAD/imaging systems.

B. Biotech & Pharmaceutical

General Search Requirements. Biotech and pharmaceutical companies operate with considerable uniformity—more than any other vertical. This is primarily because their work is based on biological and chemical sciences with long-established methodologies, substantiated with academic research. It's also because the path from innovation (or discovery) to market is heavily regulated and requires rigorous documentation of a specific format and type. These circumstances, combined with the decades-long experience with search technology by the users in this vertical, mean that search products must meet a higher standard for relevance. What's more, because externally-published content (acquired through fee-based services) is a core electronic resource, search products must not only find and present results from internal content, they must also be able to filter, merge, and *present internal and external content together*. How well the search results are ultimately presented is of critical importance to this vertical's very sophisticated and demanding users.

Relevance to Lucidworks. More research is needed to learn if/how Lucidworks Fusion integrates with external content systems; and if not, what would be entailed in doing so (see [Prospects Using Systems Other Than Sharepoint](#)). Another consideration that could make Lucidworks potentially more attractive to Pharma users in particular is *field-level security* (in the context of sensitive clinical trials data), which Fusion currently need to develop further (as per Marcus Eagen). To date (FY2020), Lucidworks has closed-won 11 out of 43 opportunities (26% conversion) in Enterprise Search and Data Discovery, with a median ARR of \$31k and total ARR of \$564k in this vertical, which has a modest industry net margin of 11%.

Discovery interview findings. Lucidworks VP of Global Partners **Simon Taylor** and Customer Success Manager **Angie Keh** independently expressed their beliefs that this industry definitely shows some potential for targeted marketing. Specifically, clinical trials and population health studies are two ML/AI-specific and very well-funded areas right now—and they align well to our value proposition. More research is needed to help validate to what extent there is promise in targeting those areas.

In summary, the **Biotech & Pharmaceutical vertical shows *intermediate-term* promise** for targeted marketing of Enterprise Search and Data Discovery, contingent on developing integration with external-content systems. **Deeper research highly recommended.**

C. Energy & Natural Resources

General Search Requirements. Oil and gas companies include those involved in chemical development and processing, materials science, petroleum and fossil fuels, and alternative energy. They're populated with engineers and chemists of various specializations who require access to troves of scientific information, for both traditional business models and innovative developments. While innovation is key for materials science and alternative energy firms, even more traditional energy industries and chemical companies are increasingly venturing into new

technologies and research. Search in these more mature organizations entails dealing with vast amounts of legacy content, often indexed manually or residing in proprietary systems. Companies in this vertical have vast troves of content worth mining and leveraging to find solutions to today's growing energy and environmental problems—especially as enabling technologies advance and present new opportunities to apply existing knowledge. Enterprise search solutions that can *convert legacy content—by helping to perform comprehensive audits of older material and getting it into formats for crawling and indexing*—will be considered most desirable to users in this vertical.

In addition to needing access to information for research and innovation purposes, Oil and Gas companies need access to real-time data to run their day-to-day operations. Across the industry, Supervisory Control and Data Acquisition (SCADA) systems are depended on heavily to control and maintain efficiency, process and distribute data to make smarter decisions, and communicate system issues to help mitigate downtime. These systems are heavily data-driven, relying on the ability to receive, process, and supply vast amounts of data in real time. Recent advances in real-time data technology in the IT sector have modernized SCADA, which had increasingly been limited by antiquated, proprietary technology. The introduction of modern IT standards such as SQL and web-based applications into SCADA software has greatly improved the efficiency, security, productivity, and reliability of SCADA systems. Modern SCADA systems benefit from integrating with adjacent business systems that provide important data sets. Fusion's ability to integrate or connect with SCADA systems to provide data for the data acquisition layer of those systems could present a valuable business case.

Relevance to Lucidworks. More research is needed to learn if/how Lucidworks Fusion integrates with legacy content systems used in the industry and then convert that content; and if not, what would be entailed in doing so (see [Prospects Using Systems Other Than Sharepoint](#)). Further research is also needed to learn what extent Fusion can integrate with SCADA systems, and specifically where in the SCADA architecture doing so would provide value. To date (FY2020), Lucidworks has closed-won 7 out of 37 opportunities (19% conversion) in Enterprise Search and Data Discovery, with a median ARR of \$161k and total ARR of \$1.7 million in this vertical, which has a modest industry net margin of 16%.

Discovery interview findings. Lucidworks Enterprise Sales Manager **Eric James** and Sales Engineer **Brian Land** shared their experiences with the Exxon account as well as the broader oil and gas industry. Companies in this vertical have accumulated massive amounts of disparate data over many years, if not decades. These datasets—some of the biggest in the world—are extremely valuable assets from which these companies strive to extract deep insights quickly and accurately. The insights are often leveraged to minimize the risks and maximize the cost-efficiencies involved in oil and gas exploration. Deciding on a site to drill for petroleum or natural gas, for example, is an extremely expensive bet—often costing hundreds of millions of dollars—so it's critical that they get it right. When they do, the profits are extraordinarily high, such that even an expensive software solution like ours pays for itself many times over. As a result, these companies are willing to invest in a highly sophisticated solution that offers several critical capabilities, all of which Fusion has in spades:

- Ingests massive amounts of siloed, widely dispersed, disparately formatted, and inconsistently tagged data that's unwieldy and cannot fit into Sharepoint
- Indexes and updates many different types of data in real time (e.g. weather data, global market data, safety data by drones)
- Analyzes documents using natural language processing (NLP) of multiple languages, and discovers relevancies by classifying those documents based on content
- Leverages customers' own machine-learning (ML) models, enabling them to use all their data and deliver it to users through various applications
- Deploys on-premise, assuaging any operational or security concerns of storing troves of sensitive, proprietary data into the cloud

All that said, Eric and Brian asserted that the strengths of Fusion lie primarily in analyzing data that's textual. It enables an oil-and-gas customers such as Exxon to conduct competitor analysis or sentiment analysis of downstream data (to learn, for example, what retail customers are saying about the company). However, even with its machine learning component, allowing it to continuously improve with increasing input, our solution is unable to ingest and analyze spatial data, which exists predominantly in upstream operations. Specifically, Fusion lacks a set of capabilities critical for this industry: ingesting geospatial mapping data, applying OCR technology to read text on those maps, and then adding metadata (such as well-point information). Until we can close this capability gap, we'll be unable to comprehensively meet the search requirements of the industry's upstream operations. This presents an extremely promising product development opportunity with a great deal of profit potential for the future.

In summary, the **Energy & Natural Resource vertical shows *intermediate-term* promise** for targeted marketing of Data Discovery, contingent on developing capabilities in legacy content conversion and SCADA integration. Although this vertical's conversion rate is low and net margin modest, its mean deal size is fairly high. **Deeper research highly recommended.**

D. Engineering & Manufacturing

General Search Requirements. Engineering and manufacturing companies tend to focus on design and innovation. The information they accumulate and refer to is often in the form of test and measurement results, as well as data in unique formats, such as that found in computer aided design (CAD) systems, drawings, and specifications documents. Because much of the content is graphical in nature, efficient retrieval depends on metadata, which may or may not be present or normalized. Search products that can *discover and normalize metadata and work well with CAD and other imaging systems* will be considered the most desirable to users in this vertical and can therefore be called out as competitive differentiators.

Relevance to Lucidworks. More research is needed to learn if/how Lucidworks Fusion integrates with CAD and this industry's other imaging systems; and if not, what would be entailed in doing so (see [Prospects Using Systems Other Than Sharepoint](#)). Another

consideration that could make Lucidworks potentially more attractive to Manufacturing users in particular is *field-level security* (in the context of sensitive procurement data), which Fusion currently need to develop further (as per Marcus Eagen). To date (FY2020), Lucidworks has closed-won 15 out of 90 opportunities (17% conversion) in Enterprise Search and Data Discovery, with a median ARR of \$17k and total ARR of \$738k in this vertical, which has a modest industry net margin of 11%.

In summary, the **Engineering & Manufacturing vertical shows *intermediate-to-longer term promise*** for targeted marketing of Enterprise Search and Data Discovery, contingent on developing capabilities in graphical metadata normalization and integration w/ CAD systems.

E. Financial Services

General Search Requirements. Banks and investment firms operate on structured data, often in real time, so enterprise search (combined with *analytical and BI tools*) is critical for them. What's more, these capabilities must scale to handle increasing amounts of content in very specific categories and time frames. Also vital for users in this vertical is the ability to *integrate internal and external content, as well as generate graphic representations from results* (charts, graphs, etc.). All of these capabilities have a direct and profound impact on the business of finance, so a search solution that provides them is a compelling sell. Search capabilities are also critical in the context of customer support, because they directly impact responsiveness to client and customer requests. Inquiries that are answered quickly, efficiently, and accurately lead to higher customer satisfaction and lower churn.

Relevance to Lucidworks. More research is needed to learn if/how Lucidworks Fusion integrates with more external content systems to further boost the value prop to this vertical; and if not, what would be entailed in doing so (see [Prospects Using Systems Other Than Sharepoint](#)). To date (FY2020), Lucidworks has closed-won a noteworthy 76 out of 177 opportunities (43% conversion) in Enterprise Search and Data Discovery, with a median ARR of \$50k and total ARR of \$6 million in this vertical, which has a high industry net margin of 25%. (The company has closed-won 0 out of 3 opportunities in Customer Support.)

Discovery interview findings. Lucidworks Customer Success Manager **Steve Adams** shared his experiences with several financial services accounts—Fidelity, J.P. Morgan Chase, and Morgan Stanley—as well as the broader finance industry. To enable their analysts to make better decisions and recommendations, these companies conduct a great deal of research into the financial outlook of assets that impact the products and services they sell. The information going into this research comes from numerous and disparate sources, frequently updated in real time. Until recently, it was common in this industry to use Google Search Appliance (GSA) for enterprise search. However, when Google shut down GSA, it created a vacuum that prompted a sense of urgency for banks and investment firms to find a search replacement.

A number of these firms have chosen Lucidworks for their search replacement. Because our technology brings together sources of information that might otherwise not be obviously linked, it allows financial analysts to see trends and relationships more clearly. This enables them to differentiate themselves against competitors and sell their products more effectively. For example, we've implemented an application at Morgan Stanley that its wealth advisers use to determine what to offer clients based on their unique circumstances. At Fidelity we've implemented an application to aggregate news feeds, providing clients with better information and advice on investments.

In addition, consumers often go to banking and investment websites with a particular task in mind, in the context of self service. These firms are therefore very interested in understanding the intent of their customers in order to route them to the appropriate places on the website to accomplish their intended tasks and/or provide them with the precise information they need. But this is still a greenfield opportunity—financial services firms have historically not thought of search as a crucial function in providing customer support, so they've not invested as much as in enterprise search. Ironically, however (and to the benefit of cross-selling) calculating ROI is much easier for customer support than for enterprise search. We can therefore leverage growing interest in customer support capabilities to educate prospects on the connection between robust search capabilities and a highly efficient customer service experience. On top of this is the growing interest and appeal among these companies for Q&A technology—Morgan Stanley has, for example, already budgeted \$5 million for a Q&A product. (See [Question-Answering System Opportunities](#).) That said, we need to better understand the technology stack that these companies currently use in customer support before we can presume where and how our solution would provide value to them.

Lucidworks Strategic Account Manager **Brandt Anderson** shared his experience specifically with the Fidelity account. The firm currently has Fusion 2.X in place for the enterprise search requirements of its investment advisory platform, serving about 1500 internal users. The on-premise instance had taken over two years to implement and put into production, which explains their use of the older version. As a result, they're not benefiting from the more advanced features of the current version. However, they're not in a huge rush to upgrade, given the cost benefit of doing so for such a small pool of users.

A much more significant initiative is Fidelity's Next Generation Online Search (NGOS), at the core of which will be Fusion 5.X in the role of supporting over 6 million customers on Fidelity.com. The project is currently in the implementation phase and will be replacing the aging IBM Watson, which has failed to meet the evolving demands of clients as they seek to interact with the firm across digital channels. The search technology they're replacing on Fidelity.com:

- Is overly complex and difficult to maintain, resulting in significant effort and delay to client-facing improvements
- Integrates poorly with other parts of the Fidelity digital ecosystem
- Lacks the personalization and relevance that clients have come to expect
- Cannot be deployed into Fidelity's approved cloud environments

- Lacks modern APIs and therefore not broadly useful outside of Fidelity.com

There are two objectives to the Fusion-based NGOS initiative. First is to dramatically improve the client search experience by:

- Enabling clients accomplish their objectives more quickly by improving result relevancy, providing more direct answers, and enabling “next best actions” directly from the search page and obviating the need for telephone interactions (“call deflection”)
- Providing personalized results based on user profiles, account information, and past interactions
- Delivering a highly intuitive and modern user interface that reflects the brand and its leadership in financial technology

The second objective is to build a modern search platform to support and accelerate Fidelity’s business objectives by:

- Deploying search on cloud-based infrastructure that scales with client needs
- Enabling robust APIs that support search interactions in any digital channel
- Reducing development overhead, improving speed-to-market for search improvement
- Decommissioning legacy technology

These objectives are not unique to Fidelity and can be channeled into our messaging to other customers and prospects in Financial Services. Onsite search for these companies is one of the highest-volume points of interaction they have with their clients. These clients rely heavily on search to rapidly navigate to a financial institution’s resources and to research information related to their financial and life goals. We can emphasize this reliance in highlighting the power and value of the customer support capabilities of our Digital Workplace solution.

In summary, the **Financial Services vertical shows *immediate* promise** for targeted marketing of Enterprise Search and Data Discovery, especially with the further development of external-content systems integration. The conversion rate, mean deal size, and net margin are all high, suggesting a large degree of industry demand, amenability, and available resources. Because many companies in this space provide on-demand support to their customers, there’s also **high potential to cross-sell Customer Support**, providing further profitability from our own customers and prospects interested in Enterprise Search or Data Discovery. The Customer Support use case in Financial Services presents a **promising opportunity for implementing and marketing a closed-domain Q&A system**, both for consumer-facing help/contact-us pages and augmented intelligence for support teams.

F. Information Technology

General Search Requirements. High Tech companies thrive on innovation, depending on it arguably more than any other industry for maintaining their competitive edge. The success of corporate innovation hinges on company-wide employee engagement in the ideation process, which in turn demands unfettered and comprehensive access to internal information resources. This is where Enterprise Search and Data Discovery come in. When people can quickly and efficiently share and evaluate the viability of new ideas, they have greater capacity to innovate. With a robust search solution in place, employees across departments in a tech firm can participate in the process of innovating entirely new products and services, or even just incrementally improving on existing ones.

Relevance to Lucidworks. It appears that Lucidworks Fusion requires few if any additional integration capabilities to work with Information Technology content systems, as they're not as specialized or obscure as in some other verticals. This sector is second only to Financial Services among verticals with the company's highest conversation rates and absolute numbers of deals won. To date (FY2020), Lucidworks has closed-won 68 out of 200 opportunities (34% conversion) in Enterprise Search and Data Discovery, with a median ARR of \$44k and total ARR of \$5.6 million. The company has closed-won another 4 out of 20 opportunities (20% conversion) in Customer Support, with a median ARR of \$50k and total ARR of \$247k. This makes a total ARR of nearly \$6 million for all key products to this vertical, which has a modest industry net margin of 11%.

Discovery interview findings. Lucidworks Enterprise Sales Manager **John Perez** shared his experience with the Reddit account. Consistently in the top ten of the internet's most highly trafficked websites, Reddit is a major account for Lucidworks. Reddit had been using Elasticsearch for some time, but made the decision to migrate to Solr because of its superior accuracy at high scale and great integration with AI. The professional services we've been delivering to Reddit have included migrating them from Elasticsearch to Solr. In addition, the company decided to buy Fusion to accelerate the deployment of Solr based applications, given the superiority of our technology to rapidly deploy these applications both internally and externally. All that said, John feels that we need to work on reducing the perception that our solution is complicated and therefore beholden to additional costly services. Our marketing should preemptively emphasize a message of "sophistication" over "complication," where even with its market-leading and highly advanced features our solution is relatively easy to implement and deploy. We should replace the message of "complicated" with "sophisticated."

Lucidworks Enterprise Sales Manager **Kevin Hidalgo** shared his experience with two high-tech accounts: SAS Institute and Red Hat. SAS has been using Fusion for enterprise search, and both companies have been using it internally for their customer support teams and externally on their customer-facing website for call deflection. In the context of these customers, but even generally speaking for any prospect with a large customer support organization—regardless of industry—Kevin expressed a very strong belief that there's a great deal of untapped opportunity for us to market Fusion's customer support use case in particular. What's more, he feels we

should not try to cross-sell it to prospects interested in enterprise search, but rather vice versa. In other words, we should target our marketing to the business rather than to IT because, generally speaking, the business: a) “calls the shots,” and b) has bigger budgets than IT. If we make a sale (of our Customer Support solution) to a company’s business unit, it’s much easier to cross sell (our Enterprise Search solution) to the IT unit. Conversely, in his experience, it’s much more challenging to sell Enterprise Search directly to an IT organization and then have it make the case internally to purchase Customer Support for the business side. This has some compelling implications for our marketing efforts, regardless of which verticals we target.

In summary, the **Information Technology vertical shows *immediate* promise** for targeted marketing of Enterprise Search and Data Discovery. Though the mean deal size tends to be moderate and the net margin modest, what make our solutions attractive to this vertical right out of the box are the low requirement for esoteric connectors and an industry-wide understanding and appreciation of the power and complexity of digital search technology. Because many tech companies provide on-demand support to their customers, there’s also **high potential to cross-sell Customer Support** (especially among consumer brands), providing further profitability from customers and prospects interested in Enterprise Search or Data Discovery.

G. Legal Services

General Search Requirements. Law firms generate huge amounts of intellectual content, so the search systems they use must perform very well at scale. What’s more, these systems must be able to leverage case numbers, client names, dates, content types, and particular metadata that’s standard across much of the content. Another important function of search for the users in this vertical is the ability to present results in rich contextual formats (clustering) to help differentiate similar documents quickly. Finally, because law firms have been early adopters of document management technologies, a desirable search product will be one that can interact with a number of entrenched legacy document or content management systems. This means having and actively supporting appropriate connectors for applications already in use.

Relevance to Lucidworks. There is currently no Lucidworks sales trend data for Legal Services, since there have been no customers thus far in this vertical.

Discovery interview findings. Lucidworks Sales Engineer **John Lenker** reported a prevailing belief in the organization, primarily among the sales team, that law firms are unwilling to invest in an enterprise search or data discovery solution because the dramatic boost in efficiency it would give their legal discovery research would slash the number of hours they could bill clients and therefore impact their profits. However, this claim is profoundly counterintuitive; a search solution, in boosting productivity, would arguably allow law firms to take on additional clients and charge more billable hours. What’s more, the belief is supported by little more than isolated, anecdotal evidence. Recently, there was an RFP from one law firm in NYC, to which the Lucidworks sales team did not respond because of the sheer complexity of that particular firm’s idiosyncratic requests. Conversely, in John’s experience, there is some evidence of pent up

demand for automated e-discovery solutions among law firms, in part because Sharepoint cannot deliver in managing intellectual content. There are currently no vendors in the space vying for this particular use case. John strongly believes the internal sales avoidance of this vertical is unfounded and the market potential calls for further examination (see [Prospects Using Systems Other Than Sharepoint](#)).

Lucidworks VP of Global Partners **Simon Taylor** shared a contrary opinion on our ability to break into the legal sector. In his experience, doing so will be tough because of the “incestuous nature” of the legal industry. There are firmly entrenched players and business relationships and it would be very difficult for a newcomer, let alone one in a nascent space, to disrupt long standing practices in a traditionally conservative field. What’s more, we need to differentiate between corporate counsel entities (for which there might be some opportunities) from independent law firms.

In summary, the **Legal Services vertical shows *intermediate-term* promise** for targeted marketing of Enterprise Search and Data Discovery, specifically to law firms, contingent on the solution’s ability to integrate with their existing content systems. This is warranted by the industry’s high net margin (18%), suggesting a large degree of available resources to invest in search solutions, combined with the high, untapped market potential. Deeper research is needed to ascertain the extent to which we can break into the bubble in which law firms operate.

H. Publishing & Media

General Search Requirements. Newer models of business and distribution have dramatically changed the landscape of entertainment, news, and print media over the last decade or so. But one thing remains the same for companies in this vertical: heavy dependence on search to conduct day-to-day operations as well as to manage content, their most important business asset. New methods of distribution and channels of consumption will only further push the demands on search solutions for this vertical. The more desirable vendors will position their products inventively in this market. But because the vertical retains much of its legacy DNA, it’s important that the technologies are easy to understand, adapt to, and adopt.

Relevance to Lucidworks. It appears that Lucidworks Fusion requires few if any additional integration capabilities to work with Publishing & Media content systems, as they’re not as specialized or obscure as in some other verticals. To date (FY2020), Lucidworks has closed-won 13 out of 40 opportunities (33% conversion) in Enterprise Search and Data Discovery, with a median ARR of \$15k and total ARR of \$575k in this vertical, which has a modest industry net margin of 13%.

Discovery interview findings. Lucidworks Account Manager **Steve Mount** shared his experience with the Macmillan account. It’s his belief that the opportunities for targeted marketing are not necessarily better in Publishing & Media than for other verticals. Rather, a more compelling consideration is to broaden our definition of “publishers” to include

companies—in any industry—that have content assets they could resell commercially to other businesses. Some examples:

- Stock photo companies (e.g. Shutterstock)
- Movie studios (e.g. Disney, Pixar)
- Hospitals (as publishers of medical information and data)
- Market data companies (e.g. Bloomberg, Fitch, Moody's)

These companies could benefit from a search solution that would dramatically improve the find-ability of this content, and therefore make it more compelling to potential customers and boost add-to-cart conversions. This would essentially manifest as our Digital Commerce solution marketed to a B2B audience as a way for companies to create new revenue streams from valuable content assets they already own (also see [Non-Consumer \(B2B\) Opportunities for Digital Commerce](#)).

In summary, the **Publishing & Media vertical shows *intermediate-term* promise** for targeted marketing of Enterprise Search and Data Discovery. Though the mean deal size tends to be low and the net margin modest, the low requirement for proprietary integration or connectors make our solutions attractive for this vertical right out of the box. However, a more compelling play would be to market our Digital Commerce solution to publishers as a way for them to monetize their existing assets by enabling potential business customers to easily find and purchase them.

I. Telecommunication Services

General Search Requirements. Just as in Financial Services, search capabilities are critical for Telecom customer support staff because they directly impact responsiveness to customer requests. Inquiries that are answered quickly and efficiently lead to higher customer satisfaction and lower churn. But the mobile device networks and carrier companies that comprise this vertical need enterprise search solutions to easily find and leverage their own inventions and engineering for future developments. Because these solutions directly impact their competitive differentiation, which in turn affects customer interest, companies in this space might invest more in enterprise search than in search to enhance customer support.

Relevance to Lucidworks. It appears that Lucidworks Fusion requires few if any additional integration capabilities to work with Telecommunication Services content systems, as they're not as specialized or obscure as in some other verticals. To date (FY2020), Lucidworks has closed-won 6 out of 38 opportunities (16% conversion) in Enterprise Search and Data Discovery, with a median ARR of \$84k and total ARR of \$900k. The company has closed-won another 1 out of 3 opportunities (33% conversion) in Customer Support, with a median ARR of \$200k and total ARR of \$200k. This makes a total ARR of \$1.1 million for all key products to this vertical, which has a high industry net margin of 19%.

In summary, the **Telecommunication Services vertical shows *intermediate-term* promise** for targeted marketing of search solutions. This includes Enterprise Search and Data Discovery, where the conversion rate has been high. Although the data is limited in Customer Support sales, the one deal has been sizeable and there is generally high cross-selling potential and a high net margin in this largely untapped part of the market. Because many companies in this space provide on-demand support to their customers, there's also **high potential to cross-sell Customer Support**, providing further profitability from our own customers and prospects interested in Enterprise Search or Data Discovery. The Customer Support use case in Financial Services presents a **promising opportunity for implementing and marketing a Q&A system**, both for consumer-facing help pages and augmented intelligence for support teams.

J. Transportation & Logistics

General Search Requirements. Commercial carriers, shipping, and public transport companies rely on data, more than any other content, to manage equipment, supplies, fleets, personnel, scheduling, and traffic control. Because of the low profit margins in this vertical, a great deal of emphasis is placed on optimizing operations to maximize efficiency gains and minimize costs. For this reason, the business demands software with analytics, BI, and modeling capabilities. Search systems that include or can easily integrate with these functions will be considered most desirable to users in this vertical.

Relevance to Lucidworks. To date (FY2020), Lucidworks has very few accounts in this vertical using our solution for Enterprise Search or Data Discovery. This may be explained by the limited demand due to business models that emphasizes maximizing speed and efficiency and limiting costs, especially given the lower industry net margin of 8%.

Discovery interview findings. In the context of our conversation on question-answering system opportunities, Chao Han shared her belief that commercial airlines are excellent prospects for our Q&A solution (as part of the Customer Support subcategory use case). In fact, one in particular has expressed interest and is scheduled to view our Q&A demo: United Airlines. Once our Q&A system becomes fully developed, it could present a prime opportunity to target our marketing of the Customer Support use case to commercial carriers.

In summary, the **Transportation & Logistics vertical generally shows *limited* promise** for targeted marketing of search solutions. There is one notable exception to this: The Customer Support use case for commercial airlines presents a **promising opportunity for implementing and marketing a closed-domain Q&A system**, both for consumer-facing help/contact-us pages and augmented intelligence for support teams. Marketing to commercial airlines a Customer Support solution with an integrated Q&A system has ***intermediate-term* promise**, contingent on further development and our ability to bring it to market.

V. Final Recommendations

A. Top Use-Case/Industry Pairings for Immediate Marketing Opportunity

(Accounting for product disqualifiers, business integration disqualifiers, incumbent disqualifiers)

1. Enterprise Search for Financial Services (cross-selling Customer Support, ultimately with Q&A system)
2. Enterprise Search for Information Technology (cross-selling Customer Support to consumer-facing companies)

B. Top Industry-Agnostic Recommendations

- C. Prioritize marketing of Customer Support use case of Digital Workplace solution to Business prospects (IT prospects of Enterprise Search & Data Discovery use case will follow)
- D. Expand marketing of Digital Commerce solution to B2B prospects (See Non-Consumer (B2B) Opportunities for Digital Commerce)
- E. Fast track development of Q&A technology, given high interest in Financial Services and potential for Commercial Airlines

F. Top Use-Case/Industry Pairings Warranting Deeper Research

1. Enterprise Search & Data Discovery for Biotech & Pharmaceuticals (specifically for clinical trials and population health studies)
2. Enterprise Search & Data Discovery for Energy & Natural Resources