Tech-Clarity

Tech-Clarity Insight:

The Business Value of Knowledge-Enabled Decision-Making

Improving Product Development and Engineering Decisions

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***This summary is an abbreviated version of the report and does not contain the full content. A link to download the full report is available on the Tech-Clarity website, www.tech-clarity.com.**

If you have difficulty obtaining a copy of the report, please contact the author at jim.brown@tech-clarity.com.

Executive Overview

Optimizing the multitude of important decisions in innovation, R&D, and product development requires more than hiring the right people. Effective product decision-making demands companies make the most relevant information available to decision-makers in the right context. Innovation and problem solving require a broad array of knowledge. This information is scattered across internal and external sources such as research libraries, patent databases, and more. Further, it consists of information in many formats, document types, and languages. Aggregating and accessing the right information from the exploding volume of digital information is a significant challenge, making knowledge access an important enabler of innovation. As Tech-Clarity's Product Data Accessibility report concludes, accessing accurate, timely information "*is vital to the health and profitability of a manufacturing company*."

Aggregating and accessing the right information from the exploding volume of digital information is a significant challenge.

Modern search technology offers much better value than traditional, costly knowledge management approaches that require data to be centralized, harmonized, and categorized in advance of knowing what information will actually be needed! Purpose-built semantic research tools are emerging that provide much more focused results and cut search time dramatically. "*When you are searching a small amount of information, keyword searches will probably do well*," explains Sridhar Ranganathan, Technical Leader at Kimberly-Clark Corporation, "*But now with so much available information, just a keyword will return too much noise*." Semantic search offers more effective knowledge retrieval without having to organize information in advance, particularly when searching large volumes of information. "*Semantic search adds another dimension to the search to slice through the huge gobs of data you have more quickly*," Mr. Ranganathan explains.

Knowledge-enabled decision-making combines semantic search with engineering methods to help companies retrieve the most relevant information to make better decisions.

Developing a targeted search to drive innovation decisions is dramatically improved by translating complex problems into the fundamental, conceptual challenges that need to be addressed. Proven engineering techniques offer the opportunity to methodically break problems down into systems elements or root causes so researchers can retrieve relevant information from the vast amount of digital knowledge available today. Defining the right question to ask helps researchers find solutions from others who have solved similar problems in the past, perhaps in a different industry. Knowledge-enabled decision-making combines semantic search with engineering methods to help companies frame

questions appropriately, allowing them to retrieve the most relevant information – across languages, industries and fields of study - to make better decisions.

A survey among power users shows that researchers are shortening the time it takes to find solutions by using semantic search.
Peter Guse, Corporate Research, Innovation Management, Robert Bosch GmbH

But how do you put a value on knowledge-enabled decision-making? The benefits can be invaluable, such as providing researchers with the insight to open up new markets, improve new products, or encourage greater innovation. It can also provide strategic benefits such as protecting intellectual property or discovering room to operate among existing patents. These benefits are both incredibly strategic and highly variable, but also difficult to quantify. Fortunately a highly concrete ROI is available even if companies disregard the strategic benefits and only consider tactical time savings, particularly when teams are already overworked and headcounts aren't growing. "*Even though quantifying the value is very hard, a survey among power users shows that researchers are shortening the time it takes to find solutions by using semantic search*," offers Peter Guse of Corporate Research, Innovation Management at Robert Bosch GmbH.

Applying the metrics derived from this research to a representative manufacturing company shows a cost savings of over $650,000 annually.

This report provides a template to calculate these benefits based on tangible, bottom-line savings. This template is based on US census data and interviews for this paper. Applying the metrics derived from this research to a representative manufacturing company shows a cost savings of over $650,000 annually. While it's important to remember that these are the tactical benefits and they are potentially dwarfed by the benefits of finding a new innovative product, entering a new market, or finding room to operate within a tangled web of patents, it is likely more than enough to pay for the cost of implementing knowledge-enabled decision-making technology.

Conclusion

Research for this paper shows that there are significant, strategic benefits available from using semantic search and enabling tools. The combination of search and tools, knowledge-enabled decision-making, helps companies address the challenge of finding and reusing knowledge given the vast and growing volume of structured and unstructured data in today's corporate world. Without this approach, this information is difficult to access across so many disparate sources consisting of varied formats, locations, and languages.

Semantic search provides a much better approach and cuts search time dramatically and provides a more realistic approach than traditional knowledge management projects. "*How we file things has become less important*," explains Rolls-Royce's Dennis Duke. "*We can find information without having to change how disciplined we are with our filing system or spending the non-value-added, wasted effort to go back and clean up the data and file it because semantic search doesn't care*." In addition, engineering techniques and tools such as root cause analysis and device and process modeling can help companies get the most out of semantic search by helping focus and frame questions appropriately.

We can find information without having to change how disciplined we are with our filing system or spending the non-value-added, wasted effort to go back and clean up the data.
Dennis Duke, Rolls-Royce

The bottom line is that companies have the opportunity to gain many important, strategic benefits from adopting knowledge-enabled decision-making tools and techniques. These have large and perhaps overwhelming financial benefits, but a very healthy ROI is available from time savings even if those important strategic benefits are disregarded. This improved productivity is particularly important in today's manufacturing industry where teams are already overworked and headcounts aren't growing.

Time savings are tactical benefits, and they are potentially dwarfed by the benefits of finding a new innovative product, entering a new market, or finding room to operate within a tangled web of patents.

The value of time savings from knowledge-enabled decision-making is significant, as our example shows. The template in this report can be used for any company by inserting information to tailor the results to company and industry specifics. The results from our example include significant, bottom-line savings. What's important to remember is that the time savings are tactical benefits, and they are potentially dwarfed by the benefits of finding a new innovative product, entering a new market, or finding room to operate within a tangled web of patents. But it is enough to pay for the investment, which can deliver the calculated benefits and more.

Recommendations

Based on industry experience and research for this report, Tech-Clarity offers the following recommendations:

- Identify internal knowledge sources that can be mined to innovate and solve problems
- Leverage external sources for knowledge, including standards and patent libraries, authoritative industry and technical content, and the deep web
- Apply semantic search technology to quickly find relevant knowledge without wasting critical time searching and sifting through too many results
- Take advantage of engineering tools and techniques that can help frame the semantic search more precisely
- Take advantage of the strategic value and benefits of knowledge-enabled decision-making, but justify the project on the tactical time savings that will likely pay for the investment in the first year
- Extend knowledge-enabled decision-making across R&D and Engineering to take full advantage of the opportunity and expand ROI over time

About the Author

Jim Brown is the President of Tech-Clarity, an independent research and consulting firm that specializes in analyzing the true business value of software technology and services. Jim has over 20 years of experience in software for the manufacturing industries, with a broad background including roles in industry, management consulting, the software industry, and research. His experience spans enterprise applications including PLM, ERP, quality management, service, manufacturing, and others. Jim is passionate about improving product innovation, product development, and engineering performance through the use of software technology and social computing techniques.

Jim is an experienced researcher, author, and public speaker and enjoys the opportunity to speak at conferences or anywhere that he can engage with people that are passionate about improving business performance through software technology.

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