



Meeting the Information Needs of Global Engineering Teams



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Most organizations have invested heavily in information management systems to drive productivity and enable complex work processes across the enterprise. Despite these investments, engineering groups remain unable to systematically increase innovation and deliver the operational improvements that support business growth and profitability.

Significant opportunities remain to ensure technology capabilities are responsive to the needs of these important engineering and scientific knowledge workers.

Companies have spent the past two decades implementing ERM, CRM, Document management systems, PLM and CAD systems to drive business improvements. Today, many if not all of these systems are deployed across most leading corporations and have been central to cost control and productivity improvements.

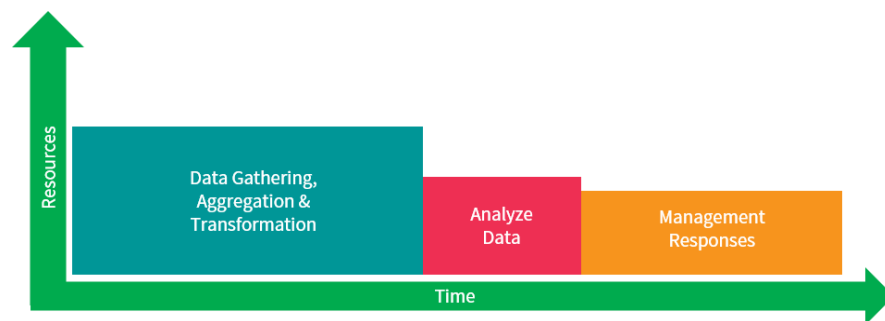
Yet, great opportunity exists to leverage the investments in these systems to improve the innovation and problem-solving capabilities of your engineering and other technical professionals.

IHS Markit provides innovative information solutions to more than 7.5 million engineers and technical professionals spanning the globe and every industry. Our experts see engineering organizations struggling with the following common key challenges:

- Information gaps
- Ad-hoc problem-solving
- Relentless innovation

Information Gaps

One of the greatest challenges facing engineers, scientists and other technical professionals is locating relevant information needed to solve complex problems. In the many cases, they hunt-and-peck across shared drives, corporate libraries and directories, intranets and portals, email, product data and lifecycle management systems, document and content management systems,



websites and more in search of the answers they seek.

Time is wasted, work is recreated, risk is elevated and opportunities are lost.

Current strategies for enterprise content management and retrieval centralize the storage of massive amounts of internal company content, but fail to surface relevant content to the engineering, technical, and scientific knowledge workers responsible for operational and product innovation.

“42% of time spent by knowledge workers seeking, processing, collaborating, and sharing information - time that they could use to solve problems.”

Source: IDC Research

Document management systems, most of which have been in place for many years, are being pushed beyond their original use models to the point that they are becoming slow and difficult to search. The content being surfaced by these systems requires such extensive time to locate and then review for relevance that technical managers often miss locating the right information.

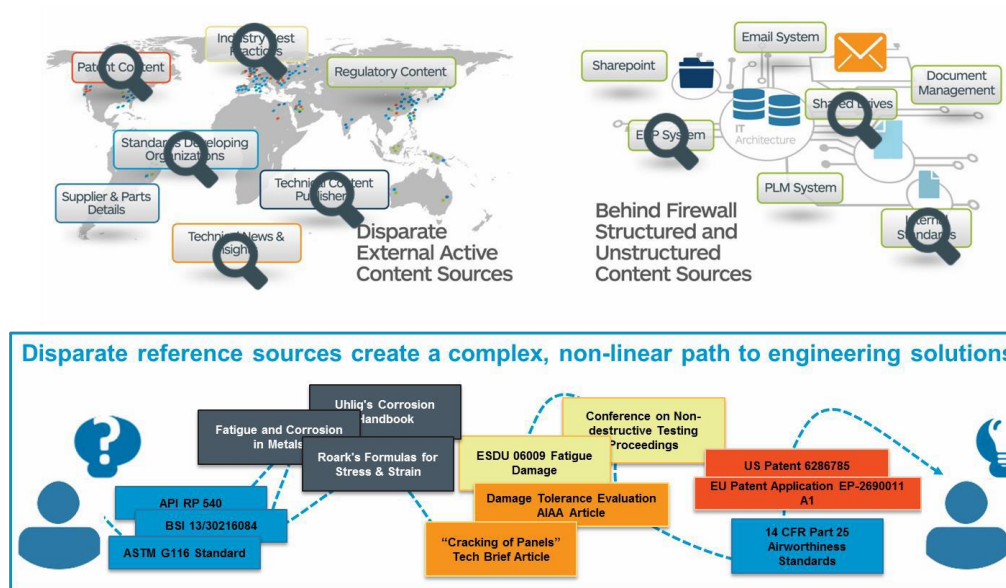
In addition, most deployments of document management systems only return content created and stored within the boundaries of enterprise. For sure internal content can be a great source for technical resources; however, it is equally important to leverage external content such as patents, standards, journal articles and web content in order to accelerate innovation.

Technical Professionals Need Precise Access to Relevant Knowledge Inside and Outside the Organization

For innovation and technical problem solving, what engineers require is the ability to easily research across engineering data and technical knowledge - inside and outside the organization - and advanced knowledge discovery tools that understand the context of their queries (their

In a 2014 study, 71% of organizations polled said search is 'vital' but just 18% report having cross-repository search capabilities. A staggering 75% said it was easier to find information outside their organization than within.

Source: AIIM - 'Search and Discovery – exploiting knowledge, minimizing risk'



design intent and need) to help the solve problems faster.

Ad-Hoc Problem Solving

The ability to continuously fuel product pipelines with new and differentiated products is a competitive necessity and is critical to an organization's success. Yet, the overwhelming majority of companies continue to innovate and solve problems as they have always done: ad-hoc, inefficiently, unpredictably.

Engineers, limited to their own experience and expertise, overlook opportunities and solutions found in other industries or fields of science. Trial- and-error approaches are costly. The impulse to rush products to market results in rework.

To drive sustainable innovation and gain competitive advantage, companies need to bring uniformity, repeatability and efficiency to innovation processes across the product/project lifecycle.

Relentless Innovation

The pace of innovation is accelerating -- as indicated by the explosion in patent applications in recent years.

In light of global competition, shifting consumer demands, ever-changing regulatory requirements, technology advances, and shrinking product life cycles, organizations recognize that relentless innovation is the way to drive sustainable competitive advantage.

Change and innovation is happening both inside and outside of your organization. To innovate ahead of competition, engineers need regular insights into the competitive landscape, advances in technology, consumer sentiment and more – knowledge not readily available within an organization's four walls.

How Can IT Help Meet the Information and Decision-Making Needs of the Engineering Organization?

Current IT strategies for capturing, managing and retrieving corporate knowledge don't deliver the full scope of information engineers, scientists and other technical professionals require.

New strategies exist to help IT organizations leverage existing investments in systems and technology to connect engineers to trusted knowledge, enabling them to:

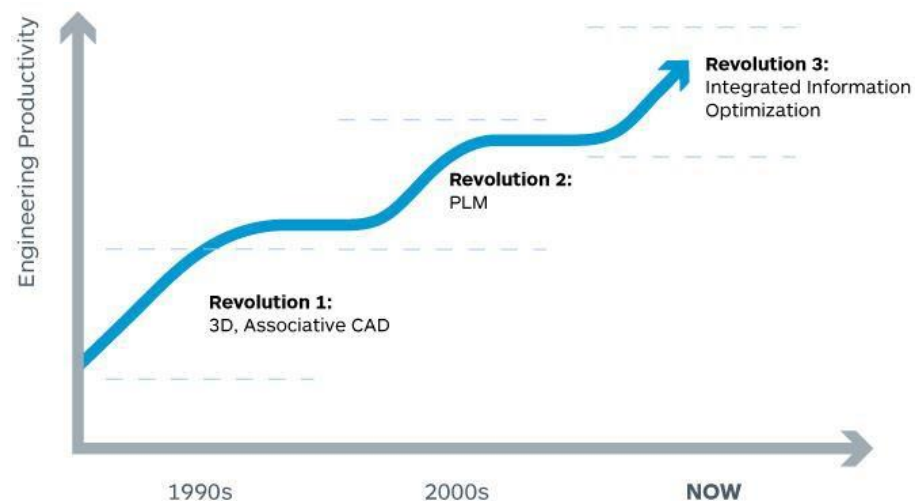
- Accelerate productivity
- Improve problem-solving
- Innovate ahead of the competition

“25% of failures are due to people trying to solve the wrong problems.”

Source: Hands on Systematic Innovation

Engineering Intelligence solutions by IHS Markit: Content, Analytics, Knowledge Discovery and Problem-Solving Tools Purpose-Built for Engineers

Designed to ease the knowledge-access dilemma for engineers and IT teams alike, IHS Markit offers a low-cost, easy-to-deploy software package that gives engineers a single point-of-access to critical internal engineering data and trusted third-party reference material -- regardless of location and with minimal IT involvement.



Engineering Intelligence solutions by IHS Markit deliver significant value to engineering and R&D organizations, boosting productivity and allowing engineers, scientists and researchers to better

and more rapidly deliver better products and projects, discover new markets, improve production and quality, minimize risk and optimize efficiencies.

Accelerate Productivity

With the Engineering Intelligence solutions, companies are ushering in the third revolution of engineering productivity gains. The first revolution added Computer Aided Design (CAD) and 3D modeling tools to the engineer's toolbox, speeding designing and drafting.

Next, companies embraced Product Lifecycle Management as a way to manage and integrate product data, processes and systems. But information – and an ever-increasing amount of it, structured and unstructured and in hundreds of formats – still remained scattered across the enterprise.

It is that problem that Engineering Intelligence solutions solve, delivering integrated information optimization.

The result: Engineering Intelligence solutions give engineers back one third of their research time – freeing them up to solve problems and innovate new solutions.

Improve Problem Solving

Problem solving is core to product development and is the source of invention. Engineering Intelligence solutions by IHS Markit provide engineers with a structured, repeatable process for 'recasting' challenges (i.e. finding new markets, developing new products, mitigating risk) into problems to develop breakthrough solutions.

With Engineering Intelligence solutions, engineers can better identify and focus on those problems they need to solve and focus on which ideas represent the optimal, viable solution. Does the idea and the eventual product it represents align with the competencies and strategy of the corporation? Does it fit relative to revenue and profitability generation? Does it contribute to margin? And what is its feasibility and practicality to manufacture?

To confidently answer these questions and deliver high-value innovation, engineers need to synthesize information in the context of a specific business problem or challenge.

Engineering Intelligence solutions arm engineers with problem-solving methods such as: Root Cause Analysis, Failure Modes and Effects Analysis (FMEA), Value Engineering, and TRIZ. These proven methods serve to focus problem solving, help identify root cause issues, and engineers and scientists better define and understand problems. They also bring uniformity, predictability and discipline to the 'art' of inventive problem solving – resulting in more and better ideas, faster.

Innovate Ahead of the Competition

Companies are innovating at an unprecedented pace to beat competition and remain relevant to their target customer base.

Engineering Intelligence solutions by IHS Markit give engineers insights into the trends needed to develop, maintain, and produce breakthrough products and services.

- Analytic tools transform worldwide patent literature into a strategic, actionable asset of the latest market, technology and competitive trends to rapidly identify new markets and envision next-generation solutions.
- Competitive Intelligence helps monitor competitor activities and anticipate competitive moves.

BENEFITS:

Engineering Intelligence solutions by IHS Markit deliver a single point-of-access to:

- Internal engineering data across shared drives, product lifecycle and product data management systems, email, document management systems and more and across over 400 file types
- Third-party engineering reference materials such as patents, standards, handbooks, journal articles, and other trusted publications
- Analytics for competitive intelligence, market intelligence and technology trends
- Problem-solving tools and methods proven to optimize efficiencies and accelerate innovation

- Insights into Voice of the Customer as expressed in social media and on the Web, help engineers more strategically roadmap and develop products.

By listening to customers, watching technology trends, and monitoring competition in real-time, IHS Markit solutions deliver 1%-5% increase in market share by delivering more competitively-differentiated solutions.

How Does IHS Markit Help IT Meet the Information and Decision-Making Needs of the Engineering Organization?

Engineering Intelligence solutions by IHS Markit integrate internal and external content, analytics, state-of-the-art research tools and proven problem-solving tools and methods to help IT organizations:

- Leverage investments in search, while accelerating knowledge retrieval
- Gain greater ROI from existing internal systems by unlocking corporate knowledge for reuse; enabling secure access of protected content
- Deliver a single point-of-access to internal engineering and external engineer reference knowledge
- Provide engineers with a platform for knowledge access and problem-solving to support engineering decision-making

“With IHS Markit, we have been able to reduce the amount of time spent doing research by approximately 30%, freeing engineers to spend less time researching and giving them a more thorough scope of knowledge before making critical business decisions.”

Astrium

Leverage Investments in Search and Accelerates Knowledge Retrieval Enterprise search applications retrieve documents and are effective so long as an engineer knows which document they seek and where that document might reside.

Unlike traditional search technologies which present piles of links that must be sifted through in order to find relevant information, Engineering Intelligence solutions by IHS Markit’s patented natural language interface empowers engineers to rapidly and precisely find *answers* and concepts to their technical questions. The Engineering Intelligence solutions:

- Improve information discovery
- Increase engineering productivity
- Eliminate reinvention
- Promote reuse of lessons learned and tribal knowledge

Engineering Intelligence solutions use encrypted HTTPS protocol to route user queries to the appropriate federated knowledge repositories. Results are returned and aggregated in the users’ display.

Unlock Corporate Knowledge for Engineering Reuse

Accessing internal corporate knowledge is a time-consuming, tedious and often fruitless undertaking, with industry analysts IDC claiming ‘knowledge workers’ spend 30 to 40 percent or more of their time ‘searching’ for relevant answers and concepts buried in: personal folders, shared drives and networks, corporate libraries and directories, intranets and portals, email, product data and lifecycle management systems, document and content management systems, enterprise resource planning systems and more.

Only IHS Markit offers engineers the ability to unlock relevant engineering knowledge, lessons learned and insights – spanning every industry and engineering discipline - buried in patents, standards, technical journals, ebooks, and a company’s own data repositories, regardless of

Beyond SharePoint, intranet and ECM systems, most content is beyond the scope of search tools. Only 19% of companies report having advanced search across email with less than 10% extending to other enterprise systems.

Source: AIIM - 'Search and Discovery – exploiting knowledge, minimizing risk'

where that data is stored. And, Engineering Intelligence solutions can simultaneously search across this content in five languages, further fostering knowledge reuse and collaboration across global engineering teams.

Engineering Intelligence solutions enhance, but do not replace your existing systems, unlocking best practices and lessons learned buried in disparate corporate knowledge repositories – and accelerating the discovery of rich technical knowledge.

For companies seeking to maximize their investment in existing systems while also providing knowledge discovery tuned for engineers, IHS Markit develops connectors using standard approaches or protocols such as ODBC, HTTP, and RSS feeds.

Engineering Intelligence solutions offer connectors to commercial applications include: Most document management systems use a relational database to store the documents and the metadata about them. IHS Markit can connect to relational databases with the IHS Markit ODBC connector which gives customers the ability to index dozens if not hundreds of different document and PLM systems. In addition, IHS Markit offers specific connectors to the following commercial applications: EMC Documentum; Microsoft Outlook, SharePoint, and File Shares; IBM Lotus/Domino; OpenText Livelink; PTC Windchill; and Siemens PLM Teamcenter, among others.

IHS Markit's advanced contextual indexing dramatically improves knowledge reuse in these systems and help engineers avoid slow searches of their bloated document management systems. IHS Markit's state-of-the-art knowledge discovery tools dramatically improve efficiency. Customers using Engineering Intelligence solutions' connectors routinely report accelerated capabilities at researching and finding relevant data they would have not previously been able to find.

Engineering Intelligence solutions enable organizations to search across internal and external knowledge in five languages and also supports more than 400 different file types.

Engineering Intelligence solutions 'automate' the categorization of engineering data – including vast amounts of unstructured data - making it ready for engineering research. These capabilities help technical executives tackle such challenges as generational turnover, new employee ramp-up and program/product line site relocation or sustainment.

Ensure Document-Level Security

Engineering Intelligence solutions by IHS Markit leverage your current security infrastructure to manage users and access content. Content is not replicated so there is no redundant storage. Access to content is managed by the source application so there are no extra security profiles to maintain. Document security comes from the original application to control access to protected content.

Scale Across the Enterprise

Engineering Intelligence solutions by IHS Markit scale for enterprise performance; indexing operations can be spread among hundreds of nodes (up to 1024) worldwide for continuous operation. Engineering Intelligence solutions seamlessly integrate results from these worldwide sites into a single set of answers, allowing IT to give global engineering teams federated search results on a global scale.

Empower your engineering community – with Engineering Intelligence solutions by IHS Markit.

IHS Markit (Nasdaq: INFO) is a world leader in critical information, analytics and solutions for the major industries and markets that drive economies worldwide. The company delivers next-generation information, analytics and solutions to customers in business, finance and government, improving their operational efficiency and providing deep insights that lead to well-informed, confident decisions. IHS Markit has more than 50,000 key business and government customers, including 85 percent of the Fortune Global 500 and the world's leading financial institutions. Headquartered in London, IHS Markit is committed to sustainable, profitable growth.

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