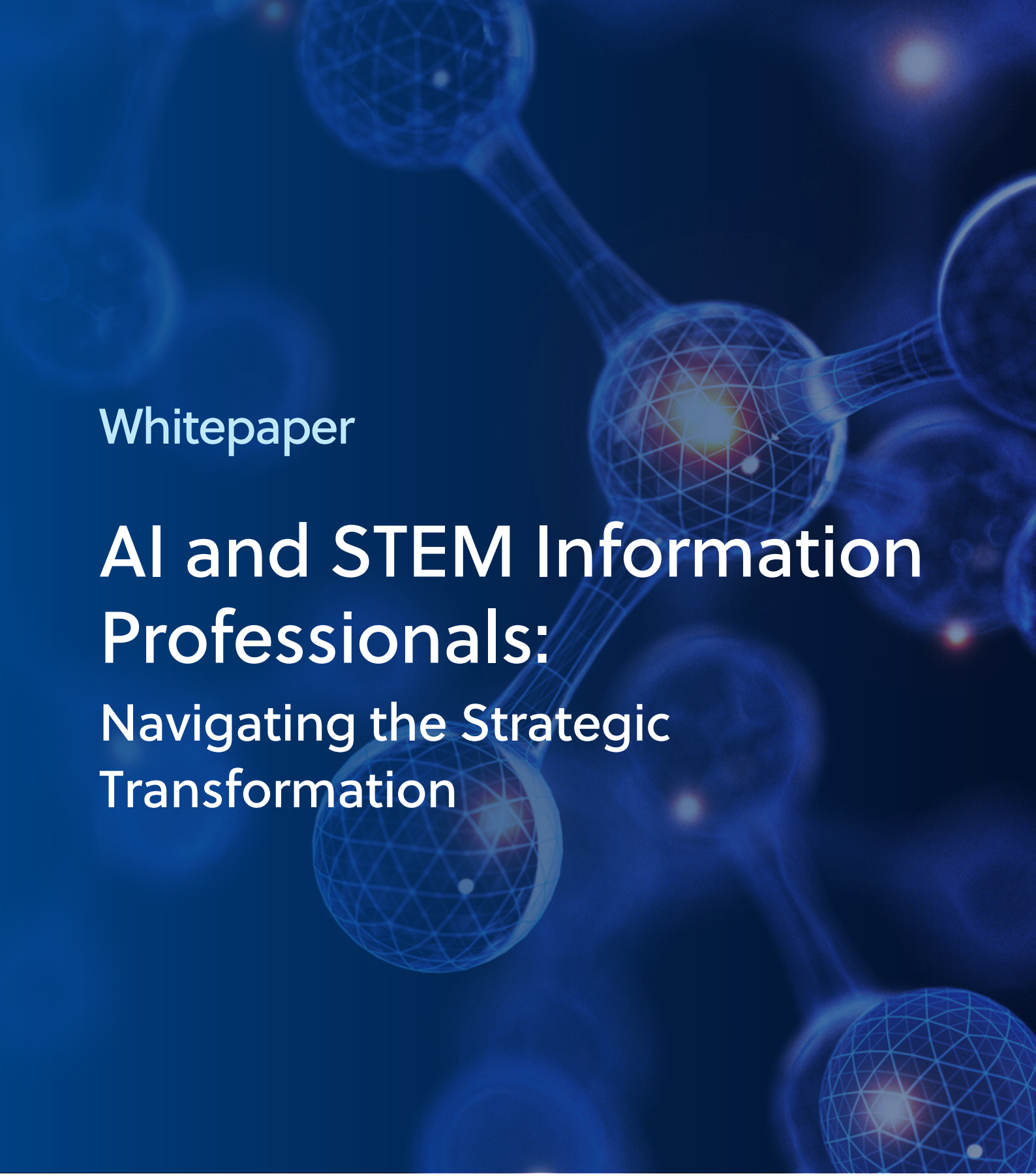

Whitepaper

AI and STEM Information Professionals:

Navigating the Strategic Transformation

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AI and STEM Information Professionals:

Navigating the Strategic Transformation

Mary Ellen Bates
Principal, Bates Information Services

AI isn't arriving with dramatic fanfare and wholesale workflow overhauls. Instead, it's quietly seeping into daily operations through AI-powered productivity tools, enhanced database search features and summarization tools that simply appear as part of existing platforms. One day teams aren't using AI, the next day they realize they've been incorporating it for months without conscious recognition.

"So far, we have not seen a dramatic impact or change in our work," explains a director at a major pharmaceutical company. It's a sentiment that echoes across many information teams today, the sense that the much-anticipated AI revolution hasn't quite arrived yet.

But then comes the revelation: "It's the funny part about using AI. You realize that you are actually doing something," notes an information professional at a global medical device company. "It gets incorporated into what you do without you realizing it."

The team at CCC (Copyright Clearance Center) often hears from customers about the impact of artificial intelligence—particularly generative AI tools—on their roles as information managers. It was with this in mind that I conducted in-depth interviews with information teams at leading pharmaceutical, chemical, and medical device companies who are actively implementing AI solutions within their organizations.

Read on to learn how organizations successfully navigating this transformation fall into two distinct categories: the Cautious Pioneers and the Pragmatic Integrators, each taking markedly different approaches to AI adoption while facing similar strategic challenges.

Two Paths Forward: Cautious Pioneers vs. Pragmatic Integrators

Listening across these conversations, two contrasting strategies for AI adoption consistently emerged from the interview data. These distinct approaches can be categorized as the Cautious Pioneers and the Pragmatic Integrators.

Both approaches share common ground: AI adoption is strategic and gradual, with compliance and risk management as central priorities. Neither group is rushing headlong into AI implementation, but both are positioning their information professionals as essential guides in the process.

The Cautious Pioneers are primarily pharmaceutical and medical device companies running carefully controlled pilot projects in drug safety and medical information. These organizations are using AI for literature summarization in pharmacovigilance, extracting safety data from case reports and supporting regulatory submissions. Rather than broad organizational rollouts, they're conducting meticulously managed tests in high-stakes areas where expert oversight can catch potentially costly errors.

Their emphasis on internal data and compliance isn't merely about being careful—it's about protecting their competitive advantage and substantial investments. As one pharmaceutical information manager puts it: "We're only applying AI tools to our own internal data, and we have no plans to let it go outside the house." When decades of research revenue could be at risk if proprietary data leaks, careful data governance becomes an essential business strategy rather than an optional precaution.

The Pragmatic Integrators are taking a different route entirely.

One information professional claims, "We're still at the shallow end of the pool," but their teams are actively using existing AI tools and built-in functionality for lab notebook analysis and technical report summarization. They're working with patent search tools that now include AI features, and they're systematically teaching their researchers to use these tools responsibly within established guidelines.

The Great Skills Evolution: From Tactical to Strategic

1 Reference Interviews Become Prompt Engineering

"Instead of thinking about building a query, now you're inquiring in order to build a prompt," explains one information professional. "You're focused on understanding what the desired outcome is—not the inputs, but the output."

2 Collection Development Evolves into Data Pipeline Management

Collection development is undergoing its own transformation. "Every publisher has their own format, then we harmonize them to JATS XML format," describes an information manager at a pharmaceutical company. Their team now manages over 20 million full-text articles, building APIs on top of standardized data formats, and creating the infrastructure that enables AI applications across their organization.

This represents a fundamental shift from simply purchasing databases to architecting the information ecosystem that powers organizational AI capabilities. Information professionals are becoming the infrastructure architects of their organizations' AI strategies.

3 AI as the Enhanced "First Search"

Research processes are evolving in subtle but significant ways. Information professionals at a medical device company describe how their workflow now begins differently: "When you get a request to look into something, the process now starts with an internal chat to get a better understanding of the technical field before you begin your formal research."

The sequence has shifted from starting with human expertise and then searching, to beginning with AI for contextual background and then applying expert searching skills. The result is faster, more informed searching with better keyword identification and more targeted strategies. As one professional describes it: "It's like a research assistant who briefs you on the background material before you start."

The fundamental skill of understanding what people actually need and helping them articulate it effectively remains unchanged. The application has simply shifted from building database queries to helping users craft prompts that will generate the right AI outputs.

Information professionals re-discovering that their decades of experience in clarifying ambiguous requests and translating user needs into effective search strategies translates perfectly to the AI era.

Strategic Roles: Where Information Professionals Become Indispensable

AI implementation is creating entirely new roles where information professionals have unique competitive advantages, transforming them from tactical service providers into strategic organizational assets.

AI Literacy Champions

Organizations desperately need people who can teach effective AI literacy, and information professionals are natural candidates for this role. They already possess expertise in critical evaluation, source assessment and understanding information quality—skills that translate directly to AI education.

This AI literacy training encompasses understanding hallucinations versus reliable results, explaining the difference between agents and prompts, navigating copyright and licensing in the context of AI and most importantly, teaching critical thinking with AI outputs. "AI is only as good as the underlying information... garbage in, garbage out," notes a STEM information professional. Information professionals have been applying this principle for decades, making them ideal teachers for organizational AI literacy.

Compliance and Risk Management Specialists

This represents perhaps the greatest strategic opportunity for information professionals. "Organizations generally have low knowledge about AI and copyright," observes a pharmaceutical executive. Meanwhile, the regulatory and legal implications of AI use in STEM organizations are enormous and growing.

A pharmaceutical information manager frames the value proposition bluntly: "Our job is to make sure your guys aren't in court for copyright breaches." This is a value proposition that executives readily Compliance and Risk Management Specialists
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A pharmaceutical information manager frames the value proposition bluntly: "Our job is to make sure your guys aren't in court for copyright breaches." This is a value proposition that executives readily understand. Risk reduction is measurable, essential and directly tied to organizational survival. Information professionals who can navigate the complex landscape of AI compliance, data security and licensing requirements become indispensable organizational assets.

Infrastructure Architects and System Integrators

Information professionals are evolving into the architects of organizational AI infrastructure. They're not just providing access to information anymore—they're building the foundational systems that enable AI across entire organizations. This involves creating APIs for AI applications to access content, harmonizing data across different publisher formats, establishing comprehensive compliance frameworks for AI usage and implementing rigorous quality control measures for training data.

The Reality of Implementation Challenges

While the opportunities are significant, the challenges facing information professionals are real, complex and sometimes unexpected.

The IT Approval Bottleneck

"The major barrier is simply trying to test a tool—you need approval and you're put in line behind a lot of colleagues who also need approval for tools they want to test," explains a medical device information professional.

IT departments across organizations are overwhelmed with AI tool requests, and the approval process has become a significant constraint on innovation. The practical workaround many teams have discovered is pragmatic: "When someone we already work with adds an AI feature, we'll definitely try it out because it's easier to get approval for."

This bottleneck is driving strategic vendor relationship decisions, with teams preferring to expand existing relationships rather than establish new ones simply to navigate approval processes more efficiently.

The Resource Reality

"You need enough headcount because this is time consuming—you really need dedicated time for implementation," states a pharmaceutical information manager candidly. AI implementation isn't simply about purchasing new software—it requires substantial human resources for setup, training, integration and ongoing management.

One pharmaceutical team hired a data engineer specifically for their AI infrastructure project. "In the beginning it was really hard—she came into a team of librarians and I think she was pretty irritated, wondering 'what am I doing here?'" The integration was ultimately successful: "In the meantime, she also says she learned so much and we learn a lot from her."

This experience illustrates the importance of building cross-functional teams that combine traditional information expertise with technical capabilities.

Management Enthusiasm Without Understanding

"Our colleagues can be quite naive about AI implementation. They come and say, 'I want to do AI,' without understanding what that involves," describes a pharmaceutical information manager. "It's often managers who think, 'We need to apply AI—that's the next big thing.'"

Management enthusiasm for AI often comes without understanding of the complexity, compliance requirements or resource needs involved in effective implementation. This creates both a challenge and an opportunity for information professionals to educate leadership and guide realistic implementation strategies.

The ROI Measurement Dilemma

Demonstrating the value of AI-enhanced information services remains elusive. "So far it's mainly a gut feeling," admits a medical device information professional. Traditional ROI calculations prove nearly impossible: "How can I prove that that specific article sped up the drug discovery process by two years or whatever?" asks a pharmaceutical manager.

The solution emerging across organizations involves reframing the value question entirely: "How do you explain how science should work without access to scientific information? It's more what would happen without it." This shift from proving positive impact to demonstrating risk mitigation resonates more effectively with executive leadership.

Strategic Positioning: 4 Ways to Make Information Professionals Essential to AI Success

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1 Collaborative Leadership Rather Than a Defensive Stance

"When a library user asks us about whether a particular AI tool will replace the library, I tell them that AI is just another awesome tool in our tool kit. Let's see how we can apply this to help you get your job done and help you look great," says a specialty chemicals info pro. This collaborative mindset—establishing information professionals as enablers rather than gatekeepers—consistently generates positive organizational response.

The unique combination of skills that information professionals bring makes them natural AI consultants within their organizations. Reference interview expertise translates directly to prompt engineering capabilities, while source evaluation skills apply perfectly to AI output assessment. Their expertise in information quality becomes crucial for ensuring reliable AI training data, and their copyright and licensing knowledge transforms into critical compliance expertise that organizations desperately need.

2 Building Strategic Cross-Functional Partnerships

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3 Leading with Risk Management and Compliance

Positioning expertise as essential for keeping organizations out of legal and regulatory trouble resonates strongly with executives. This value proposition encompasses copyright compliance in AI applications, data security and privacy protection, quality control for AI outputs and comprehensive training and education to prevent misuse.

As one pharmaceutical professional notes: "We have the skills to help get you the answer; this is how I can help you with AI." This consultative approach, combined with deep compliance knowledge, creates a compelling value proposition that executives understand immediately.

4 Proactive Education and Change Management

Organizations need people who can help employees use AI effectively and safely, and information professionals are natural educators with the credibility and knowledge to lead these efforts. "We provide educational guidance because at the end of the day, they're adults who can make their decisions. But we help them understand what a hallucination is, or what an agent is versus a prompt," explains one information professional.

This educational role extends beyond simple tool training to encompass critical thinking about AI outputs, understanding limitations and capabilities, and developing organizational AI literacy that supports responsible implementation.

Future Skills Development: Bridging Traditional Expertise with Technical Capabilities

While core information professional skills remain valuable, specific areas require focused development to maximize effectiveness in AI-enabled organizations.

Technical Competencies for AI Integration

Information professionals need to develop understanding of data formats and APIs to effectively communicate with technical teams and vendors. Prompt engineering expertise is becoming as fundamental as search strategy development was in previous decades. Compliance and licensing knowledge specific to AI contexts is essential, as is basic understanding of how AI systems work, to enable effective collaboration with technical teams.

Enhanced Traditional Skills for Strategic Impact

The evolution of traditional skills into more strategic applications requires focused development. Advanced consultancy and information needs analysis become even more critical when helping organizations navigate complex AI implementation decisions. Critical evaluation capabilities must expand to encompass AI outputs alongside traditional information sources. Training and change management skills become essential as information professionals help colleagues adapt to new tools and workflows. Strategic communication with executives becomes crucial as information professionals highlight their services as essential to AI success.

Professional Development in the AI Era

"We stay current mainly through professional networks—both national and international groups where we hear about tools that others have tested," notes a medical device information professional. Professional networks are proving more valuable than formal literature for staying current with rapidly evolving AI applications.

The key to effective professional development is proactive engagement. As one information professional advises: "The future for info pros is bright. Stay on top of the literature on AI; don't wait for it to catch up with you."

Successful information professionals are combining formal training with practical experimentation, network learning with hands-on application and traditional skills development with emerging technical competencies.

The Strategic Transformation: From Service Providers to Strategic Partners

The interviews reveal a fundamental transformation in how organizations view information professionals in today's AI-driven landscape. Rather than tactical service providers, they're evolving into strategic consultants whose expertise is essential for successful AI implementation.

"Maybe our role as information professionals is turning more toward consultancy—analyzing and presenting results rather than just doing searches," observes a medical device info pro.

This shift from tactical execution to strategic consultation represents a significant opportunity for information professionals who can position themselves effectively. Instead of simply finding information, they're helping organizations make sense of information, use it safely, and build systems that enable better decision-making across the enterprise.

The Competitive Advantage of Information Professionals

The unique combination of skills that information professionals bring—information expertise, critical thinking capabilities, risk awareness and user-focused orientation—creates a distinctive competitive advantage amid widespread AI adoption. Technical teams can build AI systems, but they often lack the domain knowledge and risk awareness that information professionals bring naturally to AI implementations.

Organizations that recognize this competitive advantage are the ones establishing themselves most effectively for AI success. They understand that effective AI implementation requires more than technical capability—it requires the strategic information expertise that information professionals have developed over decades of helping organizations navigate complex information challenges.

The Path Forward

The question facing information professionals isn't whether AI will change their work—it already is changing it. The question is whether they'll proactively see themselves as essential partners in that change or wait for transformation to happen around them.

As one interviewee noted about surviving technological change: "Throughout history we've always looked at things that change our industries as adversarial. Somehow, some way we survive because, again, those skills are transferable."

The research demonstrates that information professional skills aren't just transferable to the AI era—they're increasingly valuable. The organizations that understand this first will be the ones that thrive, and the information professionals who align themselves strategically will find their expertise more essential than ever.

The future belongs to information professionals who can bridge traditional expertise with AI capabilities, who can guide organizations through the complex landscape of AI implementation while ensuring compliance and quality, and who can transform from tactical service providers into strategic partners essential for organizational AI success. AI isn't replacing information professionals—it's making them more strategic, more valuable and more essential to organizational success than ever before.

About the Author

Mary Ellen Bates is the principal of Bates Information Services, providing business insights to decision makers and consulting services to the information industry. Prior to starting her business in 1991, she worked in special libraries for over a decade. She received her MLIS from the University of California Berkeley and now lives near Boulder, Colorado.

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