AI-Powered
QMS *White Paper*

AI-Powered QMS

Quality Management Systems (QMS) have evolved considerably over the past two decades. Several key trends stand out as being especially significant: cloud-based SaaS applications, highly configurable low-code/no-code platforms, mobile apps, and advanced analytics. Most recently, AI has come of age. It promises to have a transformative effect on the way business users work. Here at Intellect, it's already happening.

Powerful new platforms like OpenAI are enabling us to push the envelope on innovation further than ever before, leading to higher efficiency, lower costs, and increased accuracy. In this white paper, we'll explore the role of AI in the evolution of QMS. We'll discuss the innovations that are available today as part of the Intellect QMS platform, as well as those that are on the near-term horizon. We'll also talk about the implications of AI innovation on the way we all work, with a focus on quality management systems in particular.

"From rigid, one-size-fits-all systems to extreme configurability and cloud-based solutions, empowering organizations to tailor software to fit their business and harness the transformative power of AI for efficiency and competitive advantage."

The Evolution of QMS

Twenty years ago, rigidly designed software systems were the norm. Old-school QMS systems tend to be highly prescriptive, offering a one-size-fits-all approach to data, processes, and roles. By and large, business users have been compelled to adapt their business processes to fit the software, rather than tailoring the software to fit the business.

In fact, many of the QMS products on the market today still cling to this philosophy. Although legacy applications may offer some capacity to tailor screens and reports, most of the software born a

decade or more ago is exceedingly rigid, with little capacity for adaptation. That's a stark disadvantage for growing organizations, whose needs inevitably change over time.

The combination of low-code/no-code platforms and extreme configurability now make it possible to quickly and easily tailor the software to fit the business, rather than the other way around. In the past, changes to the software generally required custom coding. That is generally slow, risky, and expensive to deploy and maintain.
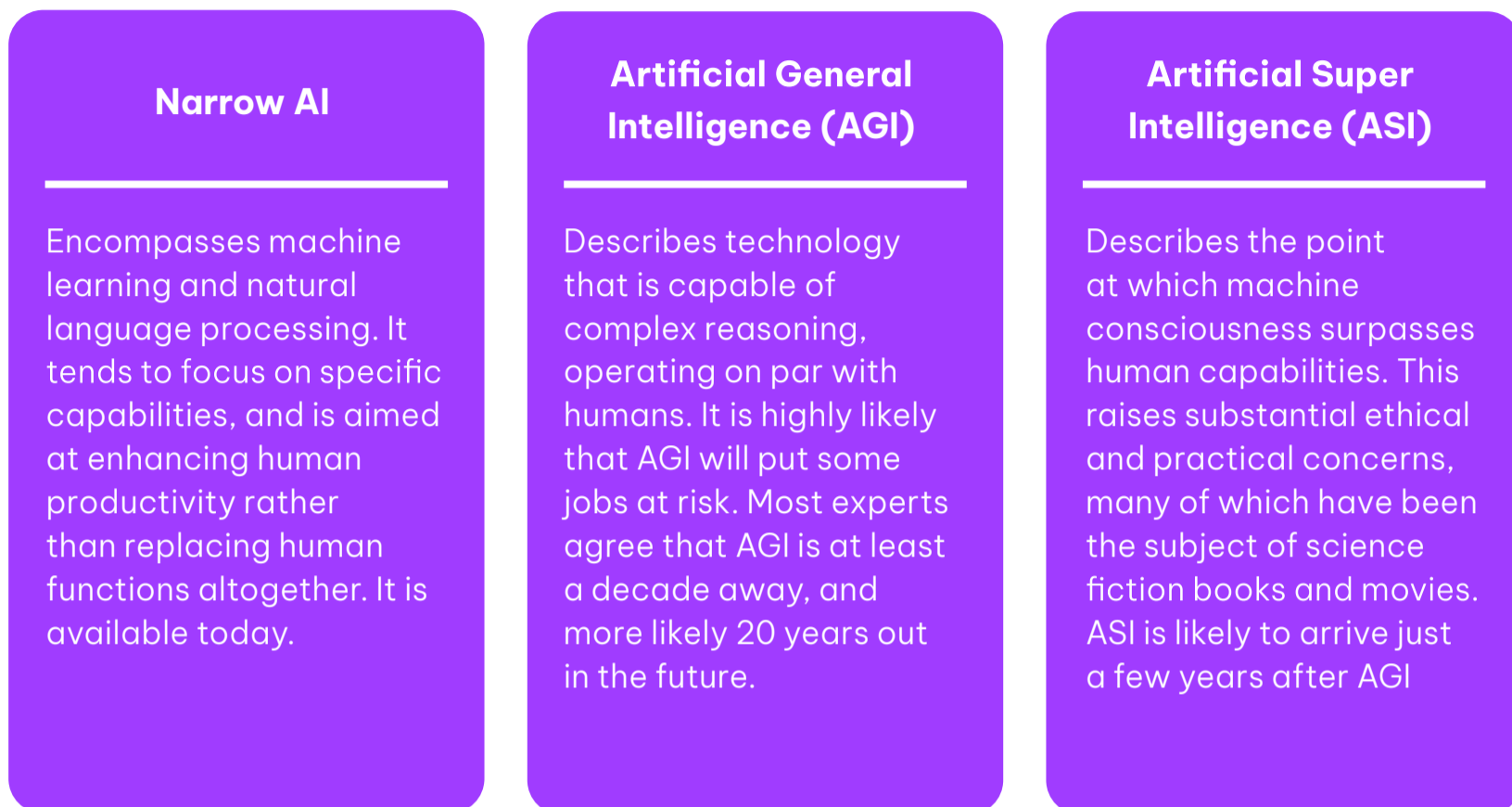
Extreme configurability has changed all that. Non-technical users can tailor the software to fit their organizations' business processes. They can modify screens and reports quickly and easily. Non-technical users can even design and deploy new applications, giving them the power and flexibility to build upon a unified database. When organizations replace fragmented workarounds with a single coherent system, they can work efficiently, access information quickly, and collaborate effectively.

Cloud computing has changed the game as well. SaaS-based QMS offers the convenience of a single system, available anytime and in any location, with managed security and backups. Unified, cloud-based data storage and retrieval make it easier to view the business holistically, offering a single source of truth for QMS across the organization. In addition, SaaS vendors roll out new product features automatically, eliminating the need to schedule and manage potentially disruptive software upgrades.

Today, AI is dominating the headlines. Machine learning algorithms are powering predictive analytics, helping companies to identify potential problems and respond proactively. Generative AI can offer creative suggestions, summarize documents, and even write software code. Companies that leverage these technologies effectively will gain efficiency, improve accuracy and quality, and build competitive advantage.

Artificial Intelligence 101

Before we explore the use cases for artificial intelligence in QMS, let's review some basic concepts first. Experts describe AI in terms of three stages of evolution:

Narrow AI

Encompasses machine learning and natural language processing. It tends to focus on specific capabilities, and is aimed at enhancing human productivity rather than replacing human functions altogether. It is available today.

Artificial General Intelligence (AGI)

Describes technology that is capable of complex reasoning, operating on par with humans. It is highly likely that AGI will put some jobs at risk. Most experts agree that AGI is at least a decade away, and more likely 20 years out in the future.

Artificial Super Intelligence (ASI)

Describes the point at which machine consciousness surpasses human capabilities. This raises substantial ethical and practical concerns, many of which have been the subject of science fiction books and movies. ASI is likely to arrive just a few years after AGI

Broadly speaking, today's narrow AI capabilities fall into two main categories. Machine learning algorithms are well-suited for identifying patterns and making predictions based on them. Financial institutions, for example, are using machine learning algorithms to predict which types of credit card transactions might be fraudulent. Manufacturers are applying predictive analytics to better understand when a piece of equipment may be in need of preventative maintenance.

The second category of narrow AI includes natural language processing (NLP) and generative AI. NLP describes the process of parsing human-readable language and determining its meaning. This can be tricky, especially in cases that involve industry-specific language, company-specific terminology, or sarcasm. Generative AI typically uses NLP to receive instructions from a user, then responds with a human-readable answer. If you have used OpenAI or ChatGPT, then you have used generative AI.

Supercharging QMS with Artificial Intelligence

Imagine a world where your quality team doesn't waste hours digging through documents. That's entirely possible using the AI technology embedded in our Intellect QMS platform. AI can do the heavy lifting for you, summarizing huge datasets and freeing your team to innovate and nurture a quality-centric environment.

Today's AI won't replace your staff. Instead, it will help them make better choices and provide more time to focus on innovation, continuous improvement, and building a stellar quality culture.

Intellect is rolling out new AI-powered features to enhance our existing platform and make it even better. The result is greater efficiency, improved quality, reduced risk, and cost savings. Today's quality management teams must find ways to do more, with fewer resources. Intellect's new AI enhancements are making that possible.

Text-based AI integration: The first level of AI in quality management involves the integration of a text-based generative AI tool. Instead of laboriously reading complex documents, your users can simply tell Intellect AI™ to "Summarize the recent non-conformance in 25 words or less," or "Draft a quiz for this training manual." Text-based generative AI can accelerate your staff's ability to:

- Mitigate risk of NCRs during external audits

- Drive productivity and quality improvements

- Spend less time on admin work and build your quality culture

- Improve ISO and FDA audit performance by finding answers quickly

- Instantly verify if your procedures align with ISO 9001:2015 or FDA 21 CFR Part 11 standards

Real-time AI-powered intelligence: The second level of AI in quality management involves using data to inform real-time reporting and decision-making. Armed with up-to-the-minute information, your people can focus their attention on the right things at the right time.

- Get a six-month trend of non-conformities simply by asking Intellect AI™

- Get real-time updates on quality metrics

- dentify defect trends and focus on preventive actions

- Compare your organization's performance against industry benchmarks

AI-driven continuous improvement in highly-regulated manufacturing facilities and labs: The third level of AI in quality management will lean further into predictive maintenance, predictive analytics, energy optimization, and real-time decision making. The benefits include:

- Enhanced quality control/quality assurance

- Faster, easier, and more accurate regulatory compliance

- Increased operational efficiency

- Improved risk assessment and risk management

- Increased control and visibility to employee training and skills gap analysis

- Streamlined document management

A Few Examples:
Using AI in QMS Document Control

Next, we'll explore some specific examples of use cases for AI in quality management, driven by features that are already part of Intellect's highly configurable QMS platform. Let's look at some practical examples of how Intellect AI™ can make your team more productive today. For these cases, we'll focus on document management.

Creating a SOP Template for ISO 9001 Compliance

Imagine that you're creating a Standard Operating Procedures (SOP) document. To get a quick start, you would like a template designed specifically for ISO 9001. From the Intellect QMS web apps menu, you can simply click on the Intellect AI™ icon. Type "Please create a document template for ISO 9001 documentation." Within seconds, Intellect AI™ delivers a template.

Drafting an SOP Document

Our AI engine can even create a draft document for you, ready for review and fine-tuning by a human editor. Copy and paste it into Microsoft Word, then make your edits, and save.

Document Submission

When you're ready to add your finished document to Intellect QMS, attach the file to the new document record in the QMS system, then click on the Intellect AI™ icon. The Intellect platform can immediately ingest the contents of your document and generate a description for you automatically.

Quiz Creation

Next, let's imagine you need to create a quiz that can help to ensure your team has properly understood the procedures outlined in your document. Again, you can simply click on the Intellect AI™ icon and ask the software to create a multiple-choice quiz for you. In just a few seconds, Intellect will deliver a result to you, which you can then copy and paste into the software of your choice.

Audit Assist

Finally, let's imagine you're preparing for an audit, and you need to find some answers to questions about your standard operating procedures. Instead of performing an exhaustive search to locate the right information, you can simply ask Intellect's AI tool to go get the information for you. If I wanted to know more about SOPs for software releases, I could ask Intellect AI™ and immediately get an answer as the specific location within my SOP document, including the page number and section title.

Intellect AI Data Security

Naturally, most organizations are highly protective of their intellectual property. It's important, therefore, to use AI technology that ensures your data remains fully protected at all times.

Whether using our own Intellect-hosted models or trusted external models like OpenAI, rest assured that your data won't be used in training any models. Our strict protocols ensure that your company's data remains exclusively yours.

With Intellect AI™ your data is encrypted, transferred securely, and is not used to train AI models. Engineered to meet rigorous enterprise standards, our AI tools enable your teams to harness the power of generative AI while safeguarding your valuable data.

Intellect's AI Roadmap

The examples cited above demonstrate the power of Intellect AI™ to supercharge your team's productivity in just one area. Current capabilities of the Intellect QMS platform include AI-driven document management, audit assist, and regulatory-specific guidance.

At Intellect, we don't aspire to be just another AI-Powered Quality Management Solution. Our goal is to help you establish and grow a culture of quality, innovation, and compliance powered by software solutions that enable choice, flexibility, and digitalization without being over-complicated or burning a hole in your pockets. AI is just one part of this goal.

The next wave of AI-driven functionality for Intellect includes built-in machine learning to improve data-driven intelligence, expanding predictive analytics and improving decision support. Wave two also incorporates configuration assistance, making it even easier to take advantage of Intellect's extreme configurability.

As we look to the future, Intellect intends to build upon our leading position as an innovator in QMS and EHS, automating configuration and validation within the Intellect platform.

Want to learn more about the most powerful and innovative QMS on the market?

Contact Intellect today to talk about your aspirations and to learn how Intellect QMS can help you achieve your goals.

Demo Request