ActiveDocs

DOCUMENT AUTOMATION SOFTWARE

ARTIFICIAL INTELLIGENCE AND DOCUMENT AUTOMATION

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Abstract: A Document Automation product can become an organization's AI Document Engine. To do so successfully, the product needs to have a high level of capability, and an effective methodology must be used to capture existing document-related knowledge.

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1 Summary

Artificial Intelligence removes the need to carry out mundane tasks. Deployed in document processes, AI offers significant advantages.

Some existing document automation products can be used to develop an AI Document Engine. The product's capabilities, and the methodology of AI training required, must be taken into consideration.

ActiveDocs offers both the product and the expertise to make implementing an AI Document Engine into your organization's document processes successful.

2 AI and Document Processes

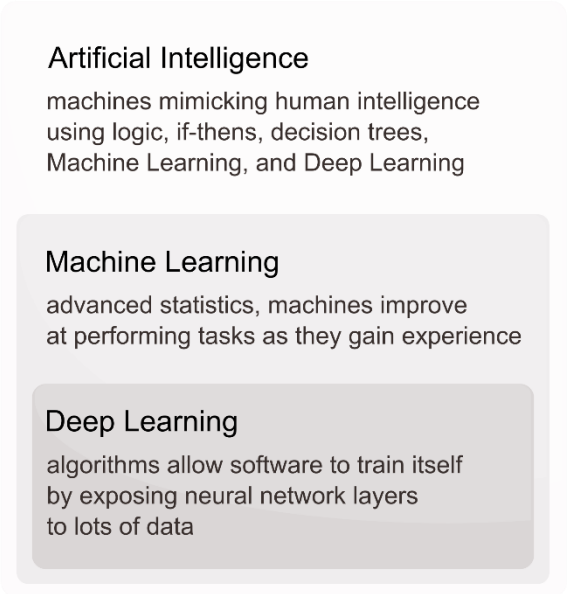
2.1 What is AI?

Artificial Intelligence (AI) describes computers mimicking human intelligence. AI aims to remove the mundane through the use of automation, rules, and decision trees.

Machine Learning can be part of this toolset. It involves advanced statistical analysis, so that machines improve at performing tasks as they gain experience.

Deep Learning can also be used when deploying AI, and lets computers approximate human learning and decision-making. Deep Learning enables AI to train itself by exposing neural network layers to large training data sets.

Good AI is transparent in two ways. The transparency of logic used by the machine is important for humans who want to understand it. At the same time, AI should be a transparent layer; unnoticeable to the end user, well-deployed AI should only reveal itself through its advantages.



2.2 AI in Document Processes

Applying Artificial Intelligence to document processes has the potential to make them quicker, more consistent, and more intuitive.

Quicker: Full automation using AI guarantees faster and much more efficient generation and delivery of documents. When a system is allowed to talk directly to another system, AI can make decisions based on all available data. The process of document automation no longer requires human input, so it becomes quicker.

More consistent: Data used for document generation and delivery is extracted accurately straight from its source. The procedure is consistent every time. This ensures precision, and eliminates human error.

More intuitive: If a human does need to take part in the process, their interaction with the system can be narrowed to focus on what's relevant. This makes tasks more straightforward, and lowers the likelihood of errors, resulting in a smoother and more secure process.

With AI in place, fewer people are needed to make judgements that existing data can drive. Machines can be trusted to make fact-based decisions, while people focus on more creative work. Branding, personalized information, delivery mode and timing – all determined by AI – ensure that documents received by clients retain their human touch.

3 The AI Document Engine

3.1 Turning document automation into an AI Document Engine

Every document automation product, as it comes out of the box, is just an empty shell. To become a useful document automation solution, it needs to be filled with templates, and be given data.

Some document automation products have the potential to become AI Document Engines for the organizations that deploy them. To become an AI Document Engine, not only does the document automation product need to be highly capable – have highly functional templates and be able to work within intricate document processes – it also needs to be "trained" to do the job correctly.

Training an AI Document Engine is different from training standard Deep Learning-based AI engines. Traditional and most frequently encountered AI is usually capable of image, speech, or text recognition. Typical training includes exposure to a large training data set, like a gallery of labeled photos of animals, with the aim to teach the AI to make distinctions and categorizations. This way, AI can learn to identify a picture of an animal, and determine that the animal is a cat, with some degree of confidence – but it is almost never able to achieve 100% accuracy.

An AI Document Engine needs to achieve 100% accuracy. The aim of training is to develop an engine that will produce documents better, faster, with awareness of all applicable rules and aspects of the process. Rather than attempting to teach the AI Document Engine to be almost as good humans, we want to capture and act on all the necessary information that applies to given document processes. Frequently, this knowledge is held by various people and departments with an organization.

Documenting this expertise is the best starting point for training an AI Document Engine, as it creates a reliable framework of business knowledge and logic that can later be used for template logic and design. Figure 1 illustrates the process of capturing existing document-centric knowledge from human brains as completely as possible, and transforming it into a precisely functioning AI Document Engine.

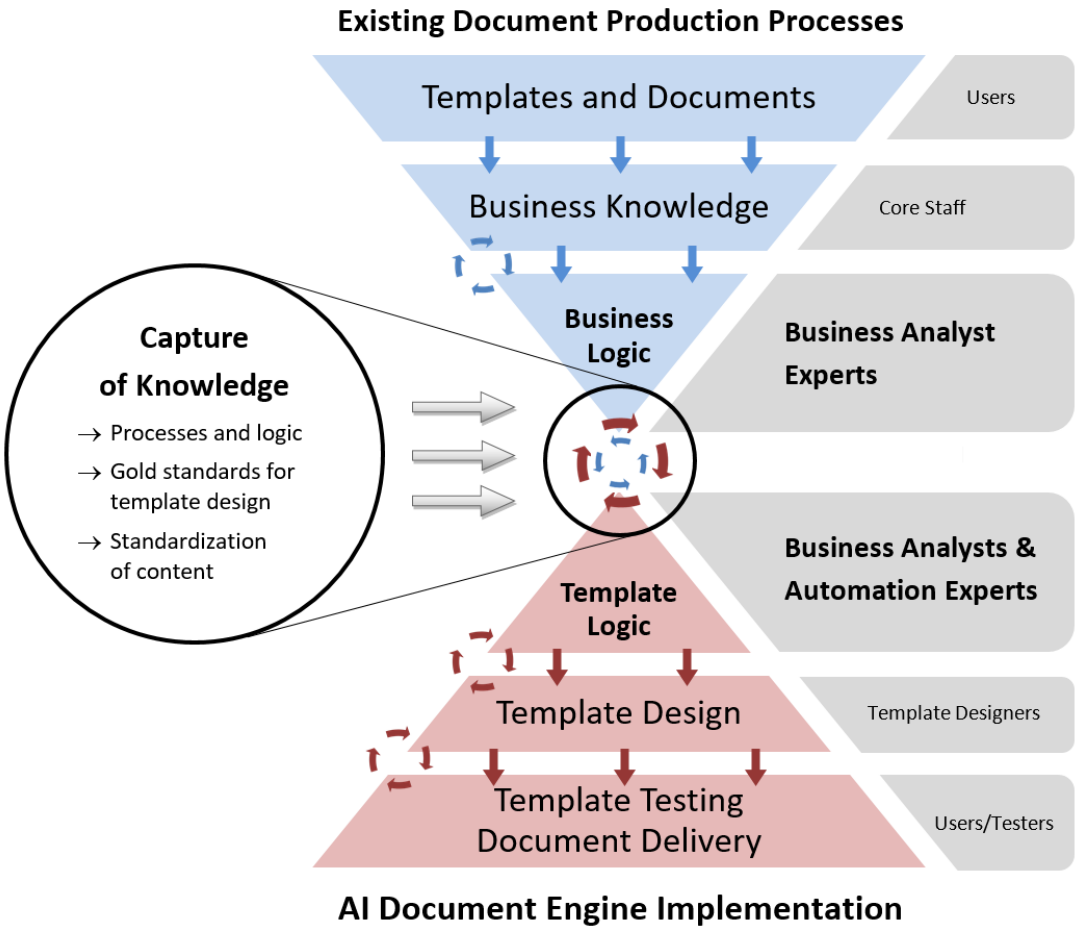


FIGURE 1: STEP-BY-STEP OF TRANSFORMING HUMAN KNOWLEDGE INTO AN AI DOCUMENT ENGINE

3.2 Can your document automation product become your AI Document Engine?

An AI Document Engine supports all-around document production. It provides the same or better decision-making than human document creators, and offers 100% consistency, with a much greater speed.

To determine whether your existing document automation product could become the core of your organization's AI Document Engine, we need to take a closer look at the product itself. It should incorporate a full range of decision-making capabilities, have the ability to implement highly sophisticated rules, be aware of the context in which the document is generated, and, most importantly, have the capability of fully automated document production with intelligent sourcing of data.

Below, we break down the level of capability required within these core areas.

3.2.1. Decision-making

An AI Document Engine makes judgements beyond the basic template-based and content-related aspects. It can make assessments and decisions across all activities associated with the document creation process, and decide where and how document creation interfaces with other systems that take part in the full document lifecycle.

Capability	Document Automation	AI Document Engine
Template selection		✓
Document content	✓	✓
Selection of data sources	Product-dependent	✓
Filtering data	Product-dependent	✓
Output type selection (print, email etc.)		✓
Approvals and approvers		✓
Storage location		✓
Storage type (file system, DMS, database)		✓
Retention policy		✓

3.2.2. Rule sophistication level

Decision-making is as sophisticated as the rules that drive it. Static and dynamic rules, common to document automation products, are often sufficient for making straightforward decisions associated with the creation of a document. A document automation solution that is to become an AI Document Engine needs to offer more to be able to replicate the extent of human decision-making with greater accuracy and speed.

Capability	Document Automation	AI Document Engine
Static rules	✓	✓
Dynamic rules	Product-dependent	✓
Multi-level rule evaluation		✓
Ability to use large data sets in rules		✓
Connectivity with external rules engines		✓
Deep Learning-driven rules engines		✓

3.2.3. Context awareness

While a standard document automation product is aware of the provided data and the contents of each document it creates, it might not be aware the document's context – for example its creator, purpose, or environment. To become an AI Document Engine, the document automation product needs to be able to work with data that describes everything that impacts creation of documents, including their subsequent handling.

Capability	Document Automation	AI Document Engine
Document	✓	✓
Document set		✓
Reusable content		✓
Delivery parameters		✓
Storage parameters		✓
Client		✓
IT environment		✓
User		✓
Organization		✓
Location		✓

3.2.4. Level of automation

To function as an AI Document Engine, a document automation solution needs to support a range of levels of automation. The most important is the ability to switch between fully automated document creation with intelligent data sourcing, and a hybrid automation mode. This is where a human operator can provide missing data input as required, or evaluate why defined validation criteria failed. The switching itself should be automated and intuitive.

Capability	Document Automation	AI Document Engine
User-driven	✓	✓
Automated (all data provided)	Product-dependent	✓
Automated (intelligent data sourcing)		✓
Hybrid		✓

4 ActiveDocs as your AI Document Engine

All stages of the document lifecycle can be augmented by AI, and ActiveDocs is well postioned to bring AI into document processes. Firstly, ActiveDocs provides the expertise that enables the existing document-related knowledge requirements to be accurately captured. Secondly, ActiveDocs has developed a document automation product that is able to apply the captured knowledge to the actual document processes.

4.1 Capture of document-centric knowledge with ActiveDocs

Comprehensive capture of knowledge, and its transformation into an all-around AI Document Engine, is crucial for a successful implementation. At ActiveDocs, we have built up our core expertise in the capture of document-centric information scattered across many people in different organizational departments. The knowledge capture proceeds according to a proven methodology, and engages with document creators, business analysts, subject matter experts, and other organization-specific roles who are involved, even if only marginally, in document processes. This helps ensure that every document-related detail has been recorded, and can become part of the implementation.

4.2 ActiveDocs Document Automation Product

Once document knowledge is accurately captured, it can be applied to document processes. ActiveDocs uses data-driven decision making, so the system knows which templates and data to use when creating documents. It knows which documents to create, when, and what should happen to these afterwards. Correctly written documents are made available to the right recipients at the right time. This offers completely hands-off generation of documents, using data available in the system. No human input is required.

ActiveDocs is aware of the context of each document it creates, so it can decide how the document should be written. Static and dynamic rules become more powerful by allowing the system to use larger data sets, and by connecting with external rules engines. ActiveDocs captures the formal and informal human knowledge that drives the existing document processes. This means that it can easily compile entire packets of documents, spreadsheets, emails, and attachments, mindful of their purpose and destination.

Automatic document selection, use of dynamically chosen data, and routing of documents to their destinations using AI means that the process is entirely automated. For storage, ActiveDocs determines locations and parameters based on defined criteria. For distribution, it evaluates delivery parameters, as well as validating all relevant data points prior to sending out. Each decision made by ActiveDocs is fully traceable, offering visibility and insight into every aspect of the process.

With ActiveDocs, the level of AI involvement in document processes is fully adjustable to suit whatever the business requires. Artificial Intelligence can work in the background, keeping document production hands-off and out of sight. It can work alongside humans, seamlessly integrated into each user's experience. Or it can be a flexible combination of both.

4.3 ActiveDocs helping build AI Document Engines

ActiveDocs has been in business since 1992, and has focused on helping organizations build their AI Document Engines ever since the release of the document automation product ActiveDocs Opus Eclipse in 2012. The product has since become many organizations' AI Document Engine, and continues to evolve alongside our customers. The current release of the product, ActiveDocs Opus Raptor, has capabilities that support organizations in building their AI Document Engines with even greater ease and capability.

5 Conclusion

Artificial Intelligence removes the need to carry out mundane tasks, and can be deployed effectively while retaining full process transparency and control behind the scenes. Some document automation products have the potential to become AI Document Engines, provided that they meet all the necessary criteria. ActiveDocs does. Combined with the ActiveDocs knowledge capture expertise, this offers the opportunity to implement AI into your organization's document processes.