AIA Contract Documents

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Artificial Intelligence in Contract Management – Rhetoric and Reality

White Paper in the *AI in Contract Management Series*

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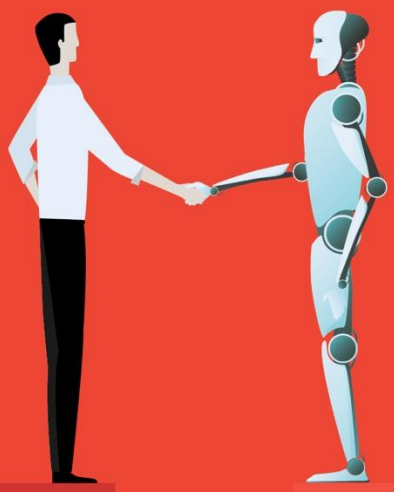


The purpose of this White Paper is to dispel misconceptions about Artificial Intelligence (AI), and to provide a working definition of AI and its use in contract management.

BACKGROUND

Today's automated contract management systems and their use of AI grew out of three different disciplines – contract management, document management, and business analytics.

Contract management companies were usually founded by legal experts who sought to automate time-consuming tasks involved in contract administration. Their value statements revolve around faster approvals and automated management of contract to-do lists. Most were founded in the early to mid- 2000's, with many adding AI text search capabilities in the last few years.

Document management companies first appeared in the early to mid- 2010's and began as automated workflow tools. They grew out of the need to manage large volumes of electronic documents, but were not originally intended to assess document content. Their value is based in "document engineering" for efficiency. Like contract management systems, many have recently added AI text search features to further improve efficiency.

While there are a host of artificial intelligence startups in the past ten years, AI has its roots in the **business analytics** industry originating in the late 1970's/early 1980's. Leaders in that marketplace first added AI capabilities to their offerings about twenty years ago. First AI applications were often in marketing to determine sentiment and behavior from text-based consumer comments. It has been a natural progression from there to applying those same AI capabilities to legal contracts.

AI has become a buzzword that companies across all industries are using in a variety of ways to imply innovation. Business realities are driving this craze – the continuous need to innovate to be competitive; vastly increased volumes of data, compute power,

and new technologies; and the urgency for faster, smarter business decisions in every phase of the business process.

AI has become, by all generally accepted definitions, a market bubble. Like all bubbles, as the buzz grows, so does the rhetoric. Infographics in Figures 1 and 2 present a compressed review of what AI is, and is not.

Figure 1.

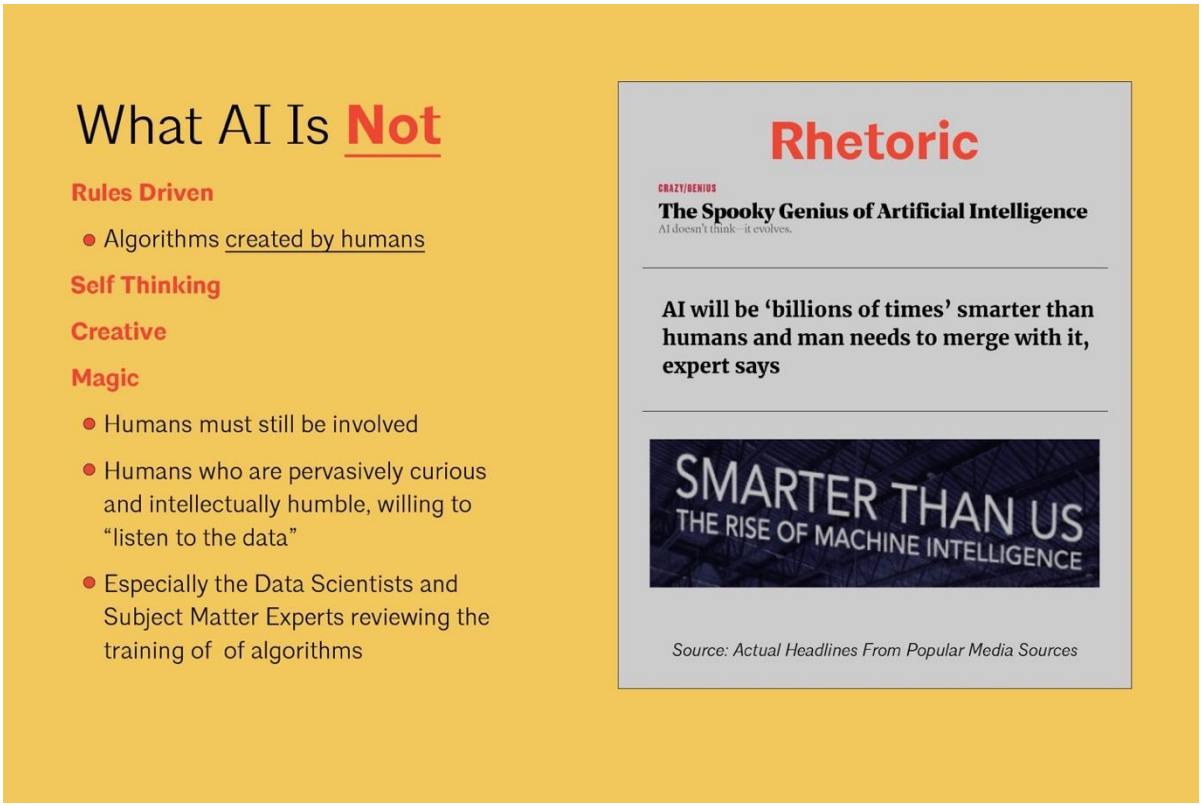
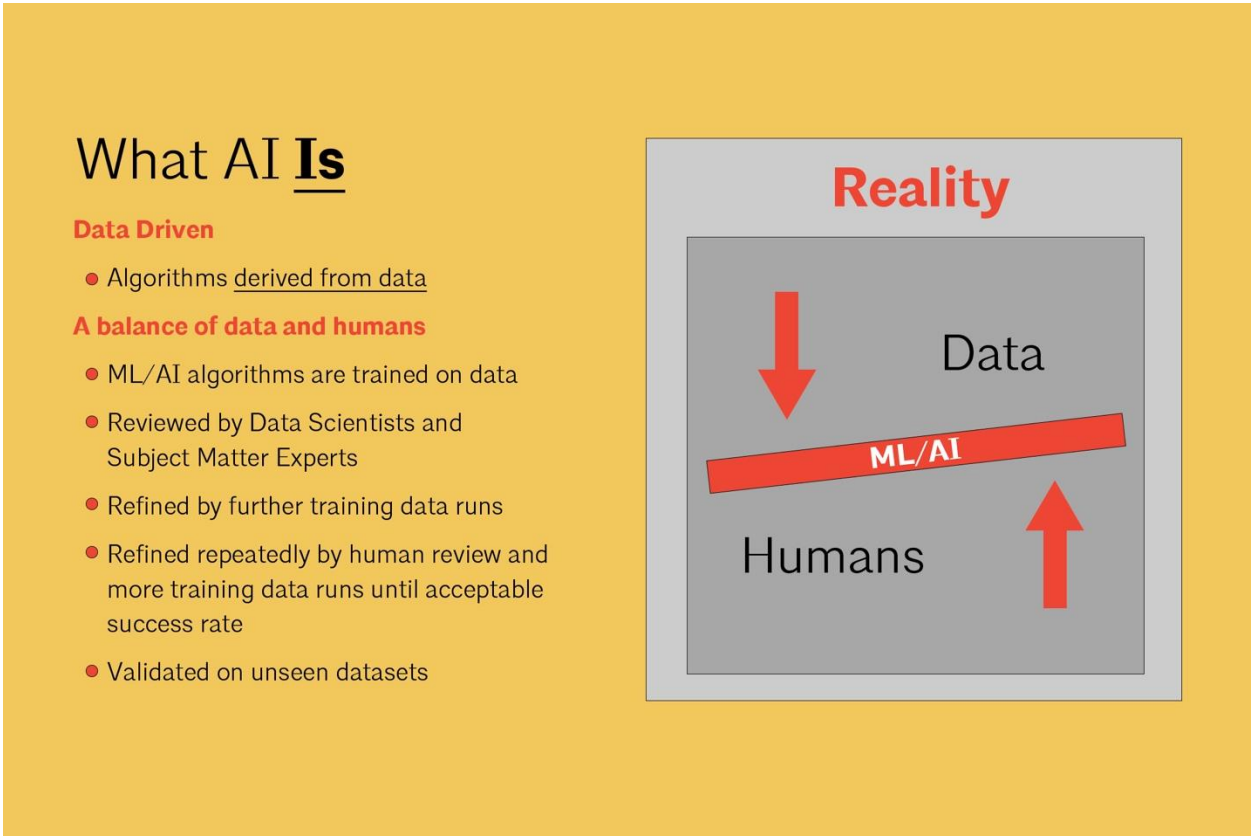


Figure 2.



ARTIFICIAL INTELLIGENCE: A WORKING DEFINITION

Machine learning (ML) – a computer process that is not explicitly programmed by a person, but the computer "learns" by processing one data record at a time and revising that model with each new record.

This is in stark contrast to general analytics based on classical statistics where an entire dataset is ingested and aggregated, then metrics returned on that total set of data. Instead, ML ingests one record at a time, processes it, then reads the next record, processes it, etc.

By the time a ML process gets to the end of a dataset it has created a model, revised it and improved it many times, and rendered the model as an algorithm for predicting what results can be expected in a yet unseen set of data. For this reason, much care in

data preparation (based on sound statistical principles) is necessary to create a "training dataset" that is representative of reality so that the ML algorithm is trained well, i.e., "learns" well, so that future applications of the ML model are also representative of reality and predicts it well.

Artificial intelligence (AI) – AI is little more than ML on steroids, meaning more complex data and more complex ML methods of processing that data.

Some of the terms also touted for AI are "deep learning", "neural nets", "convoluted neural nets", "evolutionary or genetic algorithms", etc. Despite these enticing names, and no matter what one may read in the press or see in the movies, AI is not a machine that can think for itself. Although AI is intentionally designed to appear to think for themselves – to *simulate* human thought – they do not.

Instead, just like ML, AI "learns" one data record at a time, but the learning has the additional complexity of using "hidden layers" for both input and output processes. This is the mechanical, computational way of searching for extremely complex multivariate patterns that are well beyond the ability of the human brain to ascertain, i.e., *artificial* intelligence rather than *human* intelligence. Image recognition is an excellent example of artificial intelligence because it processes many layers of "convoluted" patterns in order to accurately recognize a human face, for instance.

AI IN TODAY'S CONTRACT MANAGEMENT MARKET

Today's contract management offerings and the purpose of their embedded AI differs depending upon from which of the three disciplines the system evolved. Value statements of contract management and document management companies revolve around proclamations of "efficiency", "improved workflow management", "deeper contract visibility", and "faster, safer, and more affordably".

A few contract management companies have extended their offering, claiming to use "AI to read a contract and give advice". This "advice", however, comes from a human being, not AI. AI cannot give advice because *AI cannot determine context, and context is*

necessary for giving advice.[1] Instead, these companies use AI as a text parser, much like an internet search engine, to search a contract for pre-defined words and phrases that legal experts have determined to often be the source of contractual problems. The AI engine finds the requested text, and returns "advice" written by the legal experts who created the system. **These are known as rules-driven systems.**

AI in <u>Rules Driven</u> Contract Management Systems:

- AI's main purpose is *efficiency,* i.e., to speed contract development and review process
- Uses AI to *search for human-defined set of words and phrases in contracts,* then *renders human-defined advice* about that content
- Reduces contractual risk by *leveraging existing knowledge of legal experts*
- Requires a team of legal experts to develop key words and phrases, and a team of data scientists to create *AI searches for those words and phrases* and to develop a rule set of responses defined by legal experts
- Can be developed *with no existing database* of contract documents
- Should *frequently be rewritten,* updating rules to be current with changing business requirements

While rules-driven systems have fostered clear and evident improvements in contract management, **ACD has implemented a new paradigm – an AI knowledge discovery approach - to develop the next generation contract management system. It is data-**

[1] "AI is Still Dumber than a 5-Year-Old" - https://www.inc.com/geoffrey-james/ai-is-still-dumber-than-a-5-year-old-say-scientists.html

driven, not rules-driven. We have taken a Big Data[2] approach instead, using the power of AI to find patterns and relationships in very large complex datasets of legal contracts.

AI in Data Driven Contract Management Systems:

- AI's main purpose is *knowledge discovery,* i.e., for the contracts to inform legal experts and developers of both typical and atypical uses of legal content by users
- Uses AI to *search entire text of a contract, extract all words and phrases,* and delineates the context in which they are used; results are reviewed by legal and construction experts for the purpose of learning new information
- Reduces contractual risk through *crowdsourcing intelligence*
- Requires a team of data scientists to develop *exploratory AI algorithms,* and analyzing and reporting those findings to users
- Requires a *'Big Data' database* of contracts to train the AI algorithms
- Creates a platform of *continuous improvement of new and evolving identification of contract risk* through ever-increasing size of data stores and frequently updated AI algorithms

AIA Contract Documents powered by Catina is using AI as a data exploratory tool to uncover complex relationships in our Big Data library to develop intelligent recommendations on contract language. *We are not using it as just a text parsing and language search engine, as is more common.*

[2] Big Data is a field that treats ways to analyze, systematically extract information from, or otherwise deal with datasets that are too large or complex to be dealt with by traditional data processing application software. (https://en.wikipedia.org/wiki/Big_data).

It is a combination of structured, semi-structured, and unstructured data characterized by large volumes, wide variety, and rapid velocity of data generation. Big Data deployments often involve terabytes, petabytes, and even exabytes of data collected over time. https://searchdatamanagement.techtarget.com/definition/big-data.

In other words, we let the contracts tell us what is in them, then these findings are interpreted and scrutinized by legal and construction subject matter experts to apprize their utility in the context of construction contracts in a host of ways –

- To **determine standards and norms** of contract terms and phrases usage
- To **profile building types** and associated measures of time and cost to complete
- To **identify variations** in liability, indemnity, and local market laws and conditions
- To **identify errors and inconsistencies <u>within</u>** a contract
- To **identify errors and inconsistencies <u>across all</u>** contracts for a project
- To **determine building system impacts** on time and cost
- To **identify normal patterns** of payments to evaluate abnormalities and their effects

In summary, our offering is a decision support tool that uses Big Data and leverages AI in an exploratory data-driven way to improve contract management efficiency, benchmark performance metrics, and identify contract language variations to mitigate risk.