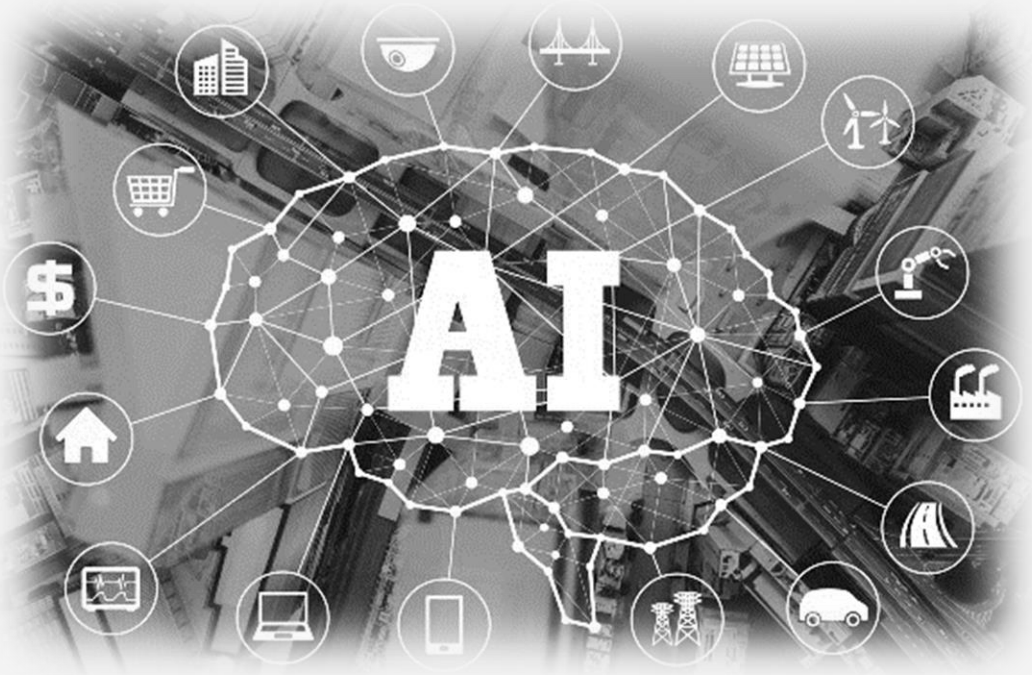
Impact of AI in the Procurement Organization

An introduction to AI Ethics



Topics Covered

Cognitive & AI Technologies

AI Ethics - Why Should We Care

Impact to Procurement

Socially Responsible Intelligent Automation (SRIA) Initiative

There is a perception, the results of an AI solution are more trustworthy because a machine was involved.

The opposite is more likely because it is the human who collected the data and developed the models to enable the machine to produce the results.

Cognitive vs Artificial Intelligence Technologies

Cognitive vs Artificial Intelligence

The term AI is used rather loosely to reference a larger bucket of technologies.

	Cognitive	Artificial Intelligence
Someone writes the initial Code, Model, and/or Algorithm	✓	✓
Output is modified as new information is added	✓	✓
Automatically modify outcomes as new information is added without human intervention		✓

Real World Example...

Starbucks uses 400,000+ data variables to create a personalized experience for their customers

- Augments the human behavior; replicate tactical activities
- Solves problems humans are not capable for solving themselves
- Human interventions is required to adjust outcomes

- Not intended to augment, but rather operate with minimal human interaction
- Creates new ways to solve problems, often perceived as better than a human
- Automatically adjust outcomes

AI & Cognitive Technologies – Knowing the Language

Technology	Definition	Examples
Machine Learning	Increases accuracy at predicting outcomes. Machine learning algorithms use historical (retrospective) data as input to predict new output values.	- Most common technique to validate models across all industries. E.g. patient diagnosis
Deep Learning (Subset of Machine Learning)	Imitates how humans collect & synthesizes information to create meaningful information. From digital images, videos and other visual inputs — and will actions or make recommendations based on the information collected.	- Driverless Taxi (Zoox) - Facial Recognition (iPhone) - Speech (Alexa) - Language Translations (Google) - Customer recommendations (Netflix)
Natural Language Processing	Understand, interpret and manipulate human language. Information and meaning with semantic cues such as words, signs, or images. .	- Spend Analytics (Creactives) - Speech (Alexa) & Language Translations (Google) - USAA Customer Service (Claims Mobile App) - Contracts (Seal)
Neural Networks	Recognize relationships in a set of data that mimics the way the human brain operates. E.g., Data Patterns, Clustering Data, Learn, and Improve	- Supply Chain (Jaggaer) - Predictive Sourcing (BidOps) - Spend Analytics (Creactives) - Driverless Taxi (Zoox)
Robotics Processing Automation (RPA)	Perform tasks done traditionally by human beings. Robots are widely used in such industries as automobile manufacture to perform simple repetitive tasks.	- Auto force close open PO after 3 months - Automating tail end processes (multiple categories)
Computer Vision	Gain meaningful information from digital images, videos and other visual inputs — and take actions or make recommendations based on that information.	- Detect defects on assembly line (manufacturing) - Detect apples are ready for harvest (Chooch) - Driverless Taxi (Zoox) - Early detection of fires (multiple)

Why Should We Care about AI Ethics?

Responsible, Trustworthy, Ethical AI

Untrustworthy AI occurs when the results of AI systemically produce prejudice or skew the results toward one demographic population over another.

For AI to be trustworthy, the consumers of AI must *feel comfortable* in their understanding of how the data is used and how the AI solution is making decisions.

There are two (2) commons types of Bias for AI to yield untrustworthy results:

- Algorithms Bias: models are using biased data

- Social Bias: the models were written inadvertently with blind spots

> *"I expect AI will change 100% of the jobs in the next 5-10 years"*
>
> *2019, CEO IBM*

This leads to asking the following questions:

1. How do we trust the results of software using AI technologies?
2. Everyone says they are using AI; how can we tell the difference?
3. What questions should procurement be asking when evaluating and purchasing AI software?

Real World Examples - Unexpected AI Outcomes

Understanding how AI can negatively influence the outcomes is critical to understanding how AI will be evaluated going forward.

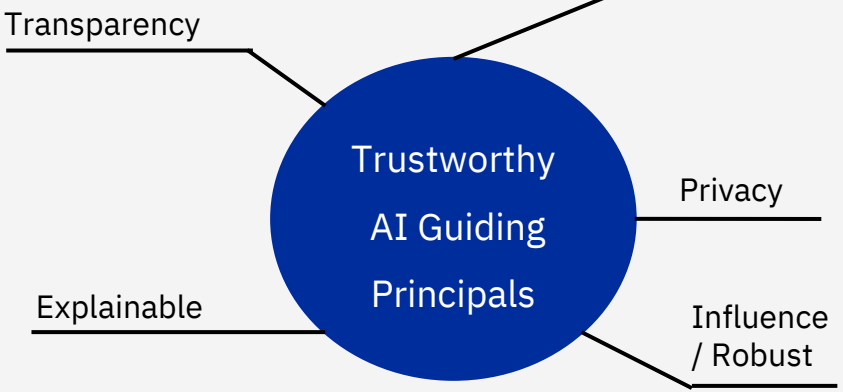
- Apple's credit card algorithm, which has been accused of discriminating against women, triggering an investigation by New York's Department of Financial Services.
- Study, published in the *Journal of General Internal Medicine,* found that the software used by leading hospitals to prioritize recipients of kidney transplants discriminated against Black patients.
- Amazon's automated résumé screener, which filtered out female candidates.
- Microsoft used tweets to train a chatbot to interact with Twitter users, for example, it had to take the bot down the day after it went live because of its inflammatory, racist messages.

https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G

https://www.theverge.com/2016/3/24/11297050/tay-microsoft-chatbot-racist

Ensuring Fair & Trustworthy AI

Ethical AI is mitigating the potential risks for AI results that lack trust and confidence.



Is there a fact sheet that highlights the data source, assumptions, and what is not included.

Mitigating data bias (e.g., how much and where is the data collected? What is the coverage of data? What is not included? What assumptions were made? Example, selection bias is when the data doesn't reflect the population.

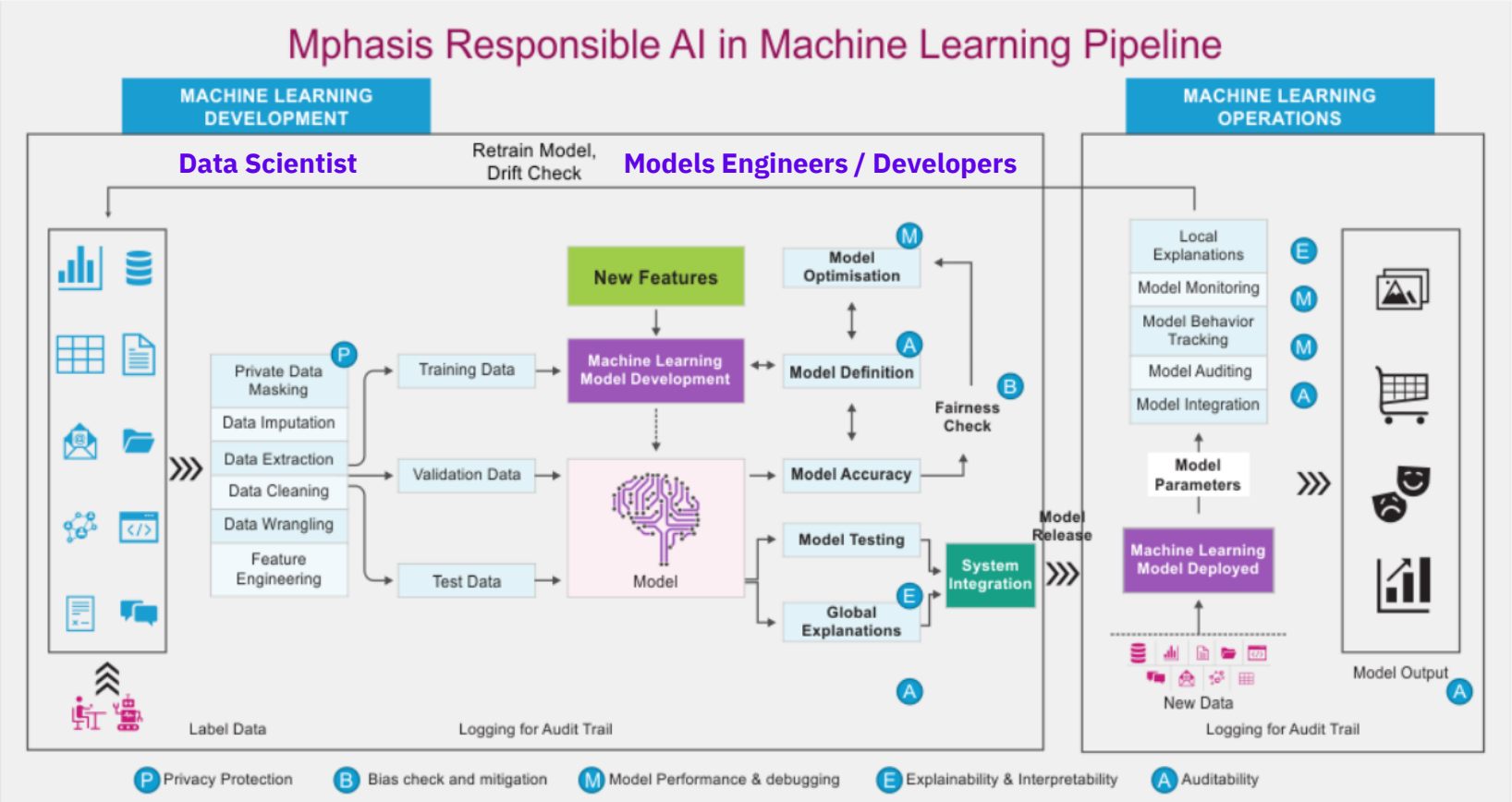
Are the right steps taken to shield the personal information where needed?

Can the results of the models be explained across different scenarios (e.g., if the data looks similar for two individuals, why did one person receive a loan and the other did not?).

Are the models developed in a way to ensure no negative influence is built in from the model developers? Avoiding results which could provide an advantage to some rather than others. Example, confirmation bias is to 'see' the results based on preconceived views.

Example of Governance Framework (AI OPS)

Behinds the scenes, there is comprehensive governance model from concept to production.



Mphasis is a technology company in India

Who is Responsible for AI Ethics

AI Policy and regulation remains in flux but trending with wide variances across country and local agencies.

Inside the organization:

- Startups and small businesses, the role is often combined with Chief Data Officer or Chief Information Officer

- Large, fortune 100 organizations, the role most often sits within Chief Legal Counsel

Outside the organization:

- Country regulation and policy (Australia, France, European Commission)
- US - Federal Agencies are developing additional guidelines
- US – AI bills, task force or resolutions were introduced in 2021 in 17 states. Only four (4) have been approved.

https://www.gibsondunn.com/artificial-intelligence-and-automated-systems-legal-update-2q21/

https://www.ncsl.org/research/telecommunications-and-information-technology/2020-legislation-related-to-artificial-intelligence.aspx

U.S. Food and Drug Administration, 2021, “Proposed Regulatory Framework for Modifications to Artificial Intelligence/Machine Learning (AI/ML)-Based Software as a Medical Device (SaMD).”

https://www.industry.gov.au/policies-and-initiatives/artificial-intelligence

https://knowledge4policy.ec.europa.eu/ai-watch/france-ai-strategy-report_en

Impact to Procurement

Is Everyone Using AI Now?

In 2021, Kearney published results of companies using some form of cognitive technologies in their solutions.

Note: This list is not considered comprehensive. For example, one (1) company was often mentioned as an example in the diagram. Additionally, there are many, many more companies in the category solutions not referenced.

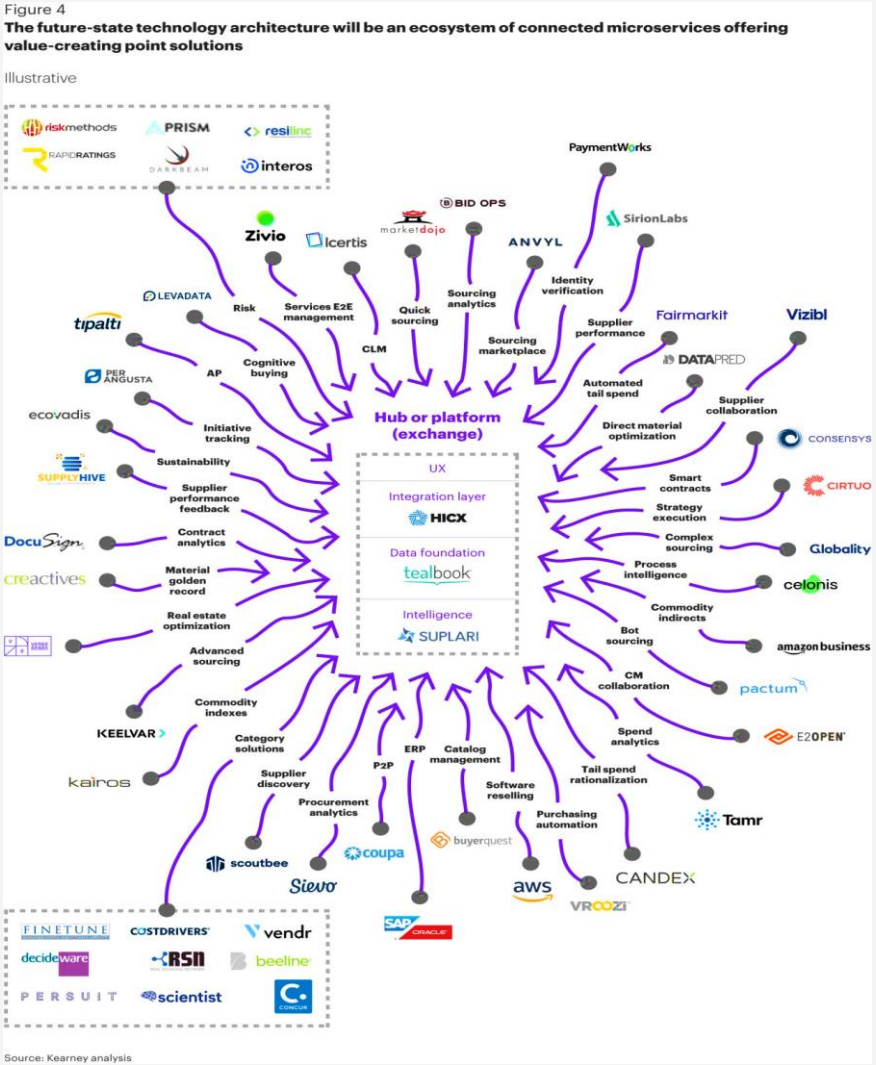
Many companies have been using some form of cognitive technologies long before now:

1. Seal Software – reads PDF contracts and extract information
2. Jaggaer Supply Chain Solution – predictive supplier analytics and real time recommendation
3. Cainiao (logistics) – locates the most optimal delivery route reducing their vehicle in use by 10%.

Figure 4

The future-state technology architecture will be an ecosystem of connected microservices offering value-creating point solutions

Illustrative



Source: Kearney analysis

Examples of Real-World Applications

Solutions using AI did not just happen overnight. It takes time to collect the data, develop, and test the models.

Solutions That Augment
(Deep Learning, NLP, Neural Networks)

Company: BidOps

- Focus: Strategic Sourcing
- 2017: Company Founded
- 3 years: Develop & patented technology
- 2020: 1st Customer

Company: Creactives

- Focus: Spend Visibility
- 2002: Company Founded
- 19 years - improve their models, collected more industry data, and expanded to 25 languages

Solutions That Replace Manual Processes
(Robotics Processing Automation (RPA)**)**

Company: Enterprise Procurement Solutions

- Focus: Procure to Pay
- Partners develop Bots resolve manual tail-end processes
- Developing APIs to connect to other applications with AI infused technology / features

Company: Lately.AI

- Focus: Marketing
- 2014: Company Founded
- Auto generate & schedule social media posts

Consideration When Evaluating AI Solutions

When evaluating solutions using cognitive technologies there are a few things to look for.

1. Is this really AI or Scripted Automation?
   Some companies may use the phrase rule-based or scripted automation. This type of automation is often using if-then-else statements which doesn't mimic human thinking or learn as new inputs are added.

2. Do they take the time and are happy to explain it?
   Typically, suppliers are happy to explain how they are using AI, value, and benefits. They should also be willing to dive deep as much as you inquire.

3. Is there a lot of manual intervention to manipulate the outcomes?
   For AI technology that is maintained, there should be minimal interaction from the company or your team to modify the outcomes.

4. Do you understand what data used to train their models? More importantly what data is missing that aligns with your needs with internal stakeholder or external consumers?
   Is it OK for someone to now have all the data. But if the purpose of using the solution is to look at consumer globally and the APAC data collected is low, this may have an impact on how you make decisions from using the application. Talk with the Supplier about collaborating on strengthen their APAC data.

5. AI Solutions do not just pop up overnight.
   Validate how long they have been in business. There will be gaps between when the company was founded to their 1st implementation.

What Questions Should We be Asking – Check List

- ✓ You mentioned your software solutions is using AI. Where is the AI used in your solution?
- ✓ What outcomes or business problems is the AI in your solution solving?
- ✓ Do you have a factsheet that outlines the data used in developing your models, including coverage, gaps, and assumptions?
- ✓ Can we see a demo, specifically the part(s) of the application that use AI technology?
- ✓ How much time does someone need to be engaged to modify outcomes of your solution?
- ✓ How long did you spend developing and testing your models before bringing this to the market?
- ✓ What governance do you perform internally on the maintenance of the models to ensure consistency in the results?
- ✓ Do you have an internal review board before models are approved for production?
- ✓ How long have you been developing & testing your model before your 1st implementations?
- ✓ How do ensure the individual writing the models are not inadvertently influencing the models?

In Summary...

- Be comfortable with being uncomfortable. Technology is more fluid than ever.
- Be comfortable with change. Change is a constant not just for enterprise-wide implementations
- Experts do not exist, only individuals with an expertise.
- Rise of new c-suite roles such as Chief Data Officer and Chief Analytics Officer. It will be imperative for the CPO to ensure procurement is in their agenda.
- Be open to new innovations. Most of the new AI technology is developed by start ups or small businesses who are not restricted / hindered in their innovation growth strategy.
- Expect emergence of new suppliers. 40% of the suppliers you will work with in 2022, you are not currently doing business with today.
- Expect mergers in the next 2-3 years as smaller companies will be absorbed by larger organizations. It will be more cost effective for enterprise companies.

The SRIA Initiative - Socially Responsible Intelligent Automation (SRIA)

Intelligent Automation's Potential Impact on Business & Society:

- Improve productivity, revenue & profits,
- Enhance business and societal insights/value,
- Enable new products and services,
- Focus human resources on the bigger issues/opportunities.

Intelligent Automation does pose some challenges:

- Potential loss of lower skilled jobs worldwide especially in ill-prepared developing countries,
- Widen the income and opportunity gap worldwide
- Loss of trust and confidence in the use of technology and its good for humanity

Meet the Founder

Matt Shocklee | CEO
Global Sourcing Optimization Services (GSOS)

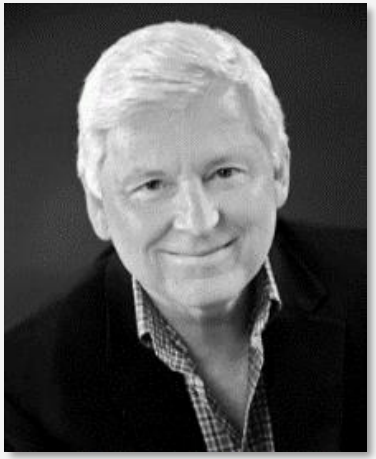
"Doing Well by Doing Good"

"Intelligent automation can create enormous value for business and society. It may also be disruptive in ways that destabilize employment in communities ill-prepared to respond. SRIA Initiatives are designed to tap into some of the economic value created by intelligent automations use in Global Business Services (GBS), thereby providing resources for job training, employment and other opportunities to assist the underemployed and unemployed in their local communities worldwide."

Socially Responsible
Intelligent Automation Initiatives

Questions, Comments, Insights

Appendix



Matt Shocklee

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Mr. Shocklee is a recognized thought and business leader in the Global Business Services (GBS) Industry, i.e. digital innovation, procurement, outsourcing, shared services and sustainability. He is the Founder, President and CEO of an "Individual Enterprise" - Global Sourcing Optimization Services (GSOS). Matt is an Ambassador in the Sustainable Procurement Pledge (SPP) and former Global Ambassador for the Sourcing Industry Group (SIG) & International Association of Outsourcing Professionals (IAOP).

As the Founder and CEO of GSOS, Mr. Shocklee hosts a network of advisors assisting start-up/early-stage companies involved in advanced technologies such as AI, ML, RPA, edge computing, IOT, energy distribution and sustainable living. The network also includes over 50 referral partners worldwide that have varied backgrounds in the C-Suite from across all industries. Matt is the founder of the recently announced Socially Responsible Intelligent Automation (SRIA) Initiative and a new venture focused on the development of the island nation of Belize; Beach & Sea Suites International (BSSI).

Mr. Shocklee's experience includes leadership and senior management positions in marketing, sales, consulting, and service delivery with global technology leaders such as IBM, CSC, Capgemini, and PricewaterhouseCoopers (PwC). For the past 35 years he's assisted public and private sector organizations in the complex process of designing, build and optimization of their respective business operations through the provision of advanced technologies. He's a frequent speaker at GBS industry symposiums and conferences in North America, Eastern Europe/Russia, China, India, and emerging markets worldwide.

Mr. Shocklee has an Undergraduate Degree in Business Administration from Washington, University in St. Louis, MO. and has participated in advanced educational programs at leading colleges and universities worldwide. He currently resides on the Island of Caye Caulker in Belize with his children and grandchild.

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My views are my own and do not represent my current employer

Melissa has 27+ years in procurement and supply chain experience across both consulting and industry.

Melissa began her AI journey in 2004, when her procurement and data expertise from Kearny was used to refine the 'inference engine' for a patented grammar-based analytics application. This application was later purchased by Ariba.

Recognized in 2021 as a 'Global Leader in Consulting – Excellence in Influence', and as the 'Top 25 Global Consultants in 2021', she collaborates with organizations to reimagine their business & technology transformation journeys. Siting at the Coye intersection of the Chief Data Office and the Chief Procurement Office, Melissa addresses how we can remain relevant in our constantly changing global landscape in the new age of cognitive technologies.

Currently an Associate Editor for the AI Time Journal and podcast host 'Impact of AI', she explores how AI & Cognitive technologies impact us daily, both professional and personally.

Founding member of Women Leaders Data and AI, international speaker, and board advisor.

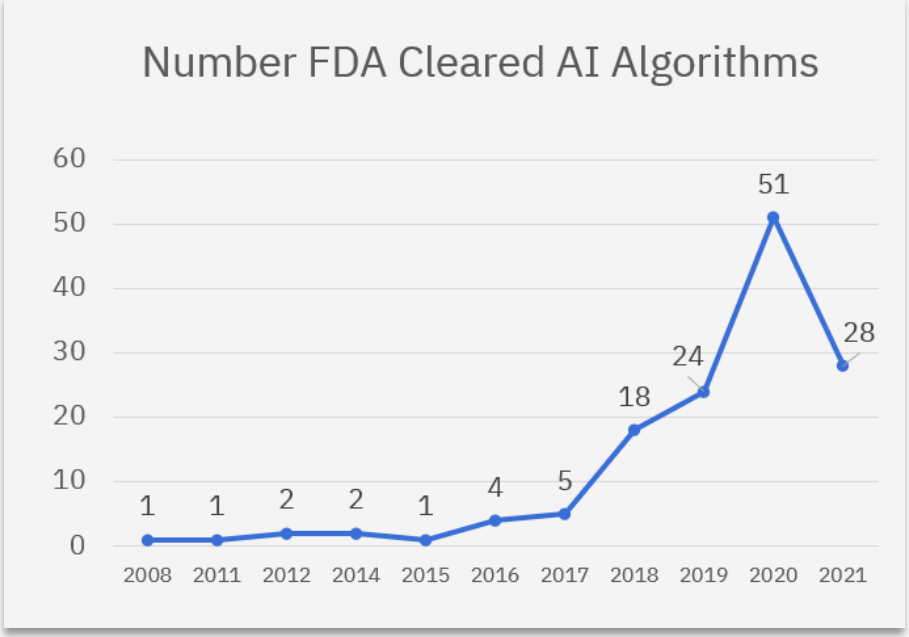
Real World Case Study FDA Regulation - AI in Healthcare

FDA (Food and Drug Administration) is tasked with ensuring the safety and effectiveness of AI-driven medical products. The FDA largely regulates software based on its intended use and the level of risk to patient. FDA is now re-writing guidelines to potentially include interviewing the persons who write the models, along with auditing the governance structure.

If the software is intended to treat, diagnose, cure, mitigate, or prevent disease or other conditions and relies on AI/ML, FDA considers it Software as Medical Device (SaMD).

Dig Deeper into the Data:

1. 96% were based on retrospective data. Using historical data and not prospective with randomized study
2. 31% disclosed how many sites were used or the number of data source
3. Unclear how many patients were involved. For those that disclosed this information the median was 300.



All AI cleared algorithms are designated as neuroradiology or imaging

- U.S. Food and Drug Administration, 2021, "Proposed Regulatory Framework for Modifications to Artificial Intelligence/Machine Learning (AI/ML)-Based Software as a Medical Device (SaMD)."
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- medcitynews.com/2021/04/fda-cleared-ai-devices-lack-critical-information-on-performance-equity/
- models.acrdsi.org/