

5 Ways To Avoid Failure When Implementing AI Solutions

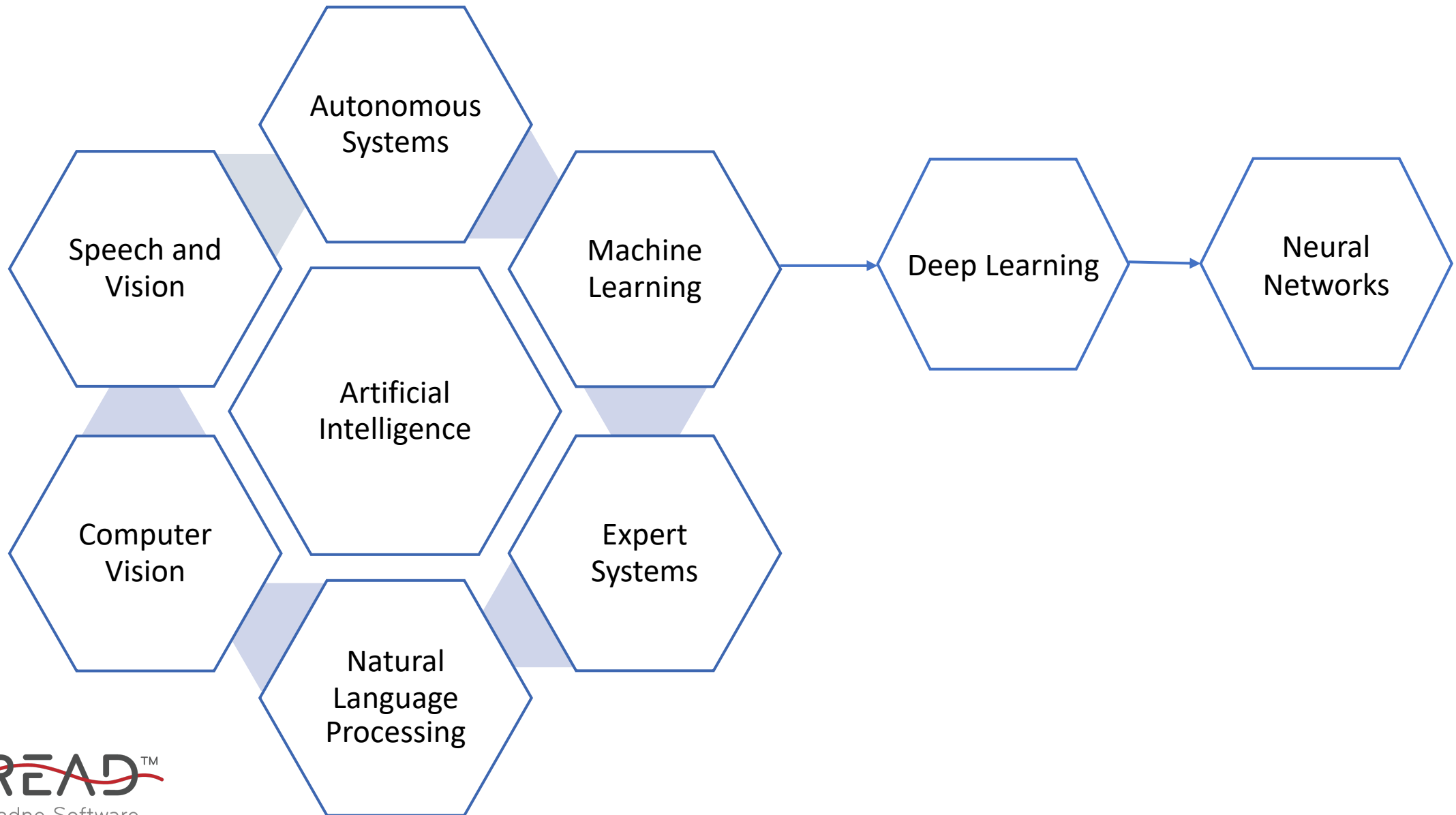
Stephanie Pasas-Farmer, PhD
Ariadne Software, LLC

Artificial Intelligence

What is it?

Applications of AI in Pharmaceutical
Industry

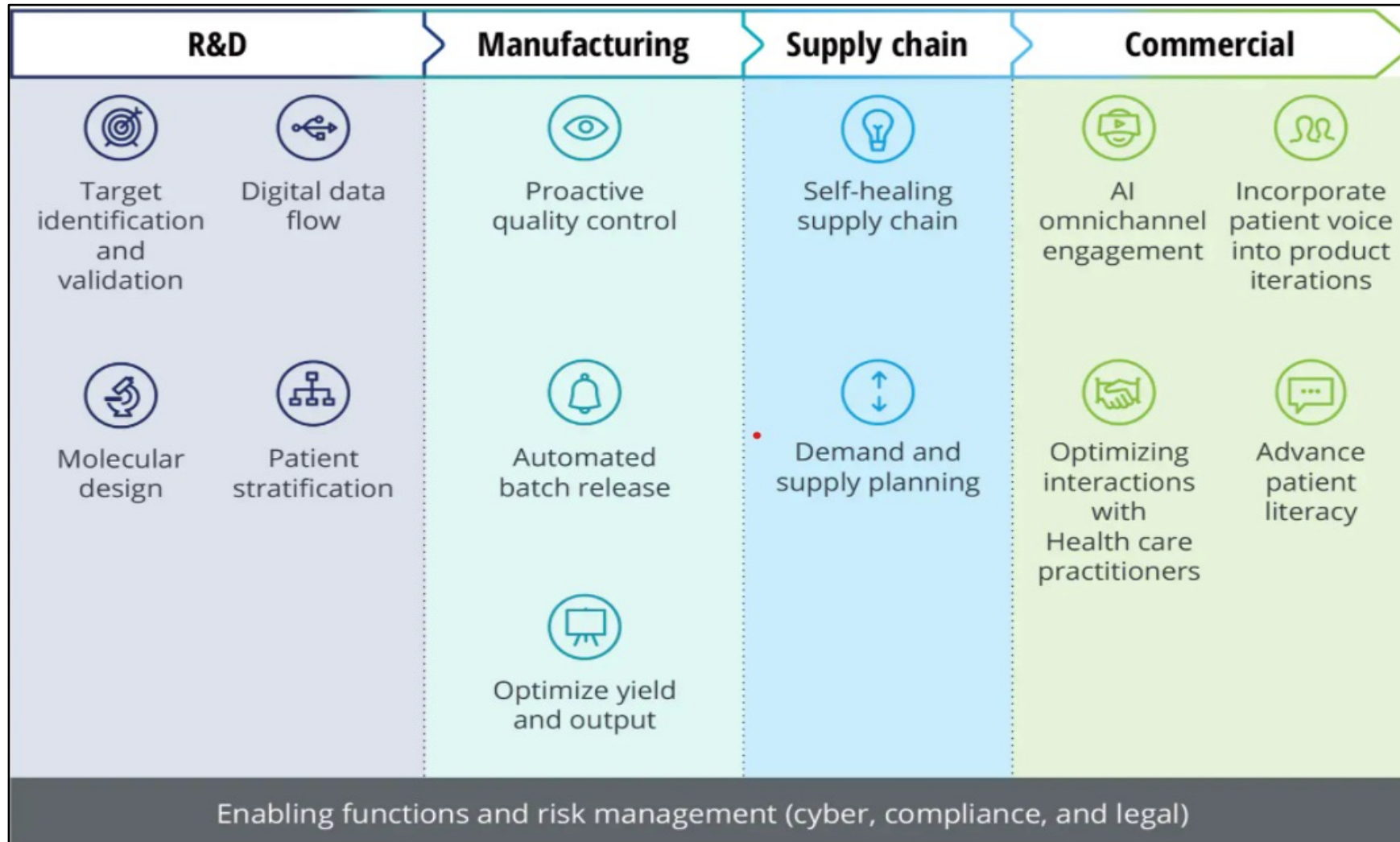
What is Artificial Intelligence?



What is Artificial Intelligence?

- **AI:** A field that simulates human intelligence using computer science and data science for problem solving. Coined in 1955.
- **Expert Systems:** Rooted in 1950-1960s, they guide systems based on if-then rules to take an action.
- **Machine Learning:** The algorithms that are used in AI solutions for problem solving.
- **Computer Vision:** Processing meaningful information from digital images, videos and other visual inputs to take an action.
- **NLP:** Processing spoken or written words in their context.
- **Autonomous Systems:** Systems that can independently plan and decide sequences of steps to achieve a specified goal without micro-management.

Applications of AI in Pharma



Applications of AI in Pharma

AlphaFold

- Predicts how proteins fold into 3D shapes.
- Helps discover the mechanisms that drive some diseases that can further drive designer medicines, more nutritious crops, and enzymes that can break down plastic pollution.

Exscientia

- Employs AI to discover and design medicine in quick time.
- Designed with help of its AI platform, two drugs that are in Phase 1 human clinical trials.

GSK

- **Sensory Models** – Use taste, texture, color, and ML models, to understand consumer preference and product experience OTC products.
- **AI in eye-tracking:** Consumer eye-tracking for better product placement, improving labeling, and understanding consumer behavior.

Approaches to Incorporating AI in Your Toolbox

Build Your Own

Pros:

- Customized to your needs and data

Cons:

- Resource intensive
- Requires AI-ready data – quality, quantity, access, error- and bias-free

Partnership / Co-Development

Pros:

- Helps recruit the right skillset
- Reduces financial burdens

Cons:

- Assume risk and liability
- Can be disastrous if goals and interests are not well-aligned

Commercial Solutions

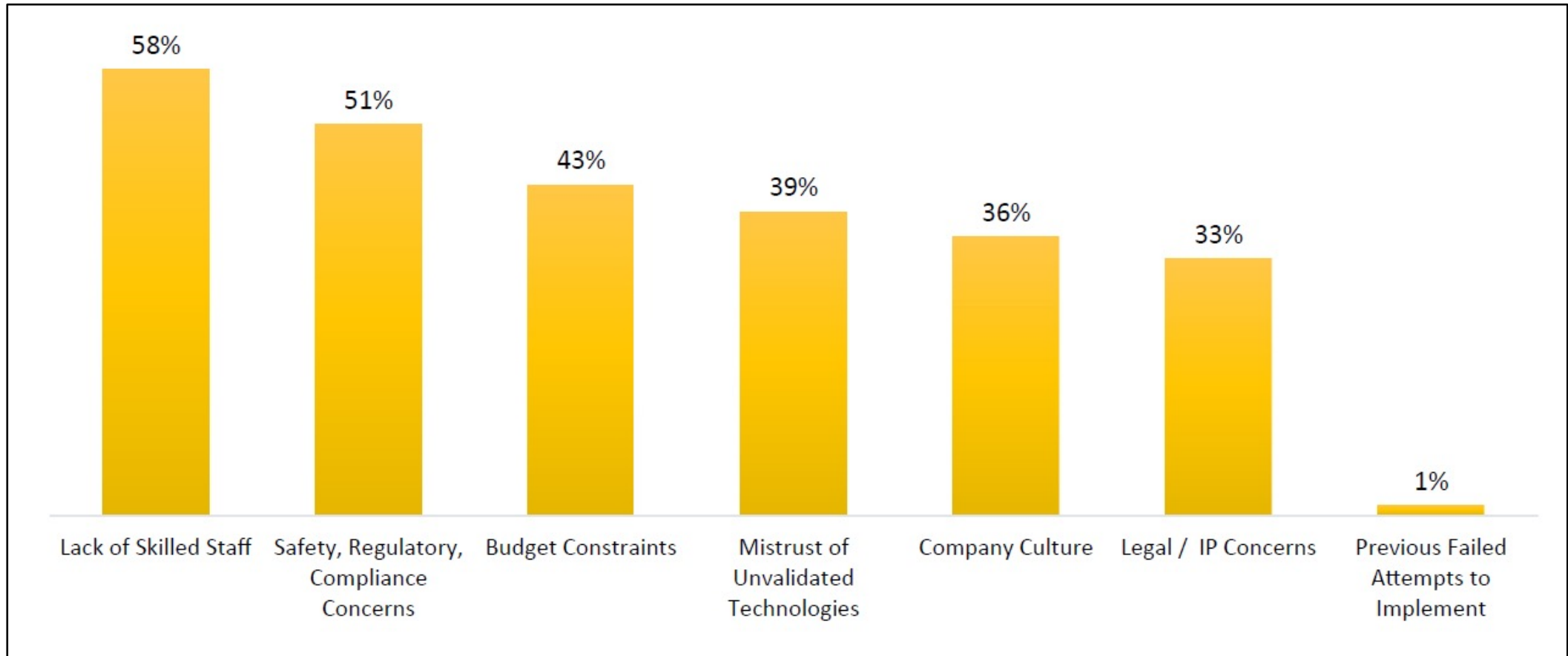
Pros:

- Less resource-intensive

Cons:

- May require customization
- Ensure it complies with regulatory guidance and validate it

Major Factors for not Utilizing Artificial Intelligence Solutions



Challenges and Considerations for using Artificial Intelligence Solutions

Understanding the Problem

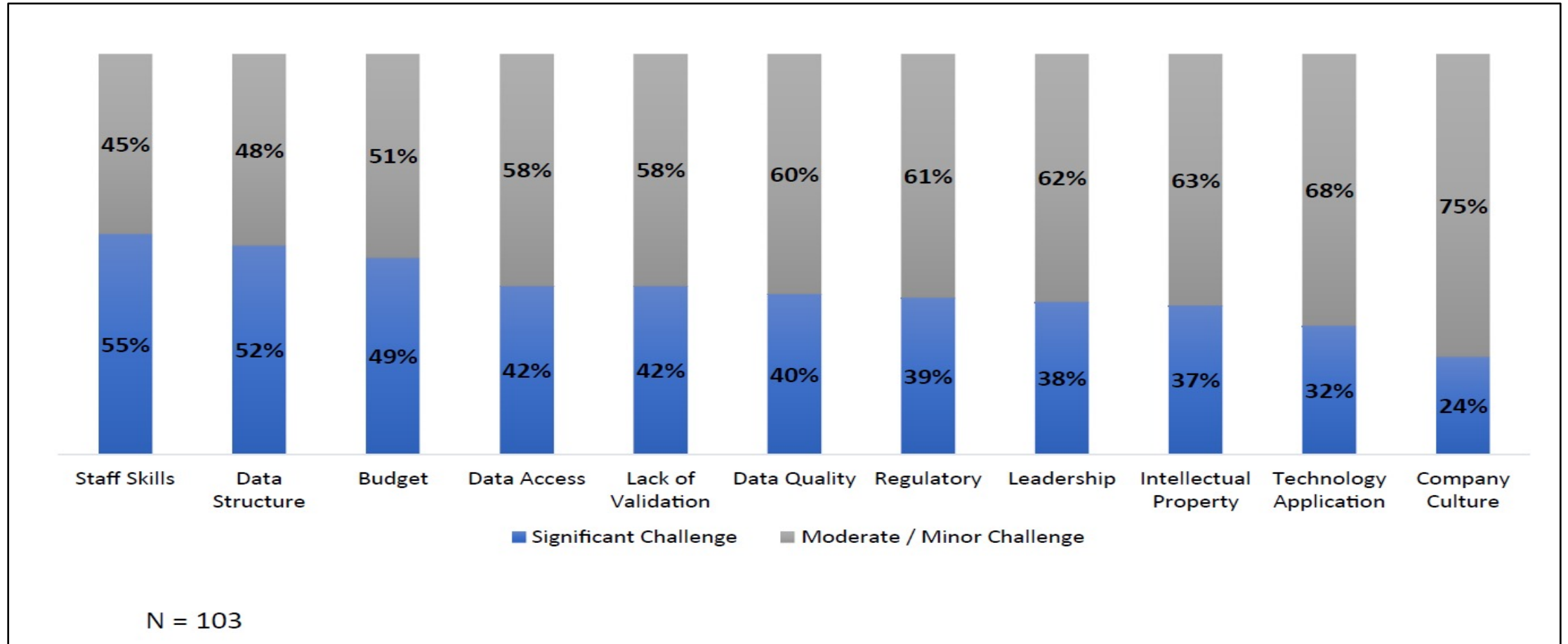
Data

Skillset

Impact on Organization and Operations

Lack of Validation and/or Regulatory Compliance

Challenges and Considerations for using Artificial Intelligence Solutions



Understanding the Problem

- What problem are we looking to resolve? What is its root cause?
- Is use of AI the best solution for the problem? Is the chosen solutions the best way to address the issue?
- GSK: Can't always prove the business value. "Would like to deploy more cognitive services based on chatbots. Still, adaptability is not significant and results in difficulty in proving the value out of such endeavors."
- When implementing, consider if:
 - AI solutions are fit for the purpose or problem you are looking to solve
 - A trial or an MVP can help decide before committing to a solution
 - AI solutions drive business value, and not result in diminishing returns in the long run



Data – Quality, Quantity, Structure

- AI solutions are only as good as the data that it is built upon
- GSK: Efficient machine learning models require training data sets with a minimum of 2 to 3 years of historical data
- Data access to relevant, clean, error-free, unbiased, complete sets of data is often the biggest hurdle
- Lack of standardized data renders AI solutions useless
- When implementing, consider if:
 - Your teams/departments/business functions that could benefit from a solution are siloed. This is not a great situation to implement an AI solution (CGI)
 - You can implement new SOPs that can help generate AI-ready data moving forward



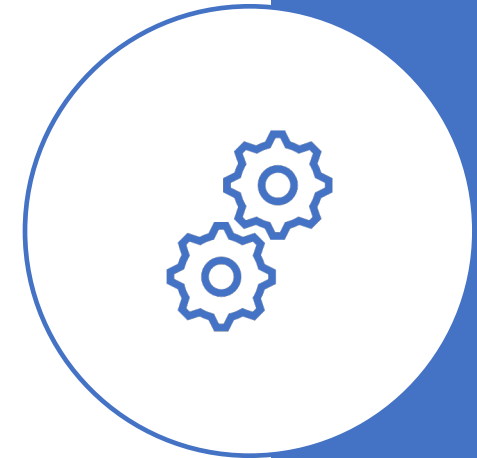
Skillset

- GSK: When developing or partnering on an AI solution, getting the right resource with the right background is very challenging, given the limited data science skilled pool in the market
- When buying a solution, the end-users may require training
- When implementing, consider if:
 - If your project is failing despite the right approach and right solution, you may want to consider if you have the right people (Merck)
 - The people using AI solutions are believers or skeptics, and whether the organizational culture supports use of innovative technologies



Impact on Organization and Operations

- As with any new tool, AI solutions may require some changes to the team, department, or even organization
- These changes may include additional support tools, new skillsets, new SOPs, acquiring new knowledge and more
- When implementing, consider if:
 - The change and the impact on the organization eventually results in diminishing returns in the long-run
 - Not all AI solutions are built equal. Some require more efforts than others



Lack of Validation and/or Regulatory Compliance

- Not all AI tools can be easily validated. For e.g.: tools that predict or design drug candidates in drug discovery can't be validated until those candidates reach preclinical and clinical studies
- Given restrictive nature of FDA guidance on AI solutions, it is difficult to understand if a new AI tool abides by regulatory guidance
- When implementing, consider if:
 - The cost-benefit analysis of an unvalidated AI tool supports its use
 - The vendor is transparent and credible if the solution doesn't fall under FDA's set of regulated AI products
 - Know the scope of FDA's regulatory guidance to judge if a vendor is selling a regulated AI solution without FDA approval



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Thank You

Stephanie Pasas-Farmer

Founder and President, Ariadne Software, LLC

spfarmer@ariadnesolutions.com