Watsonx.ai Proof of experience (PoX) education

watsonx.ai ecosystem

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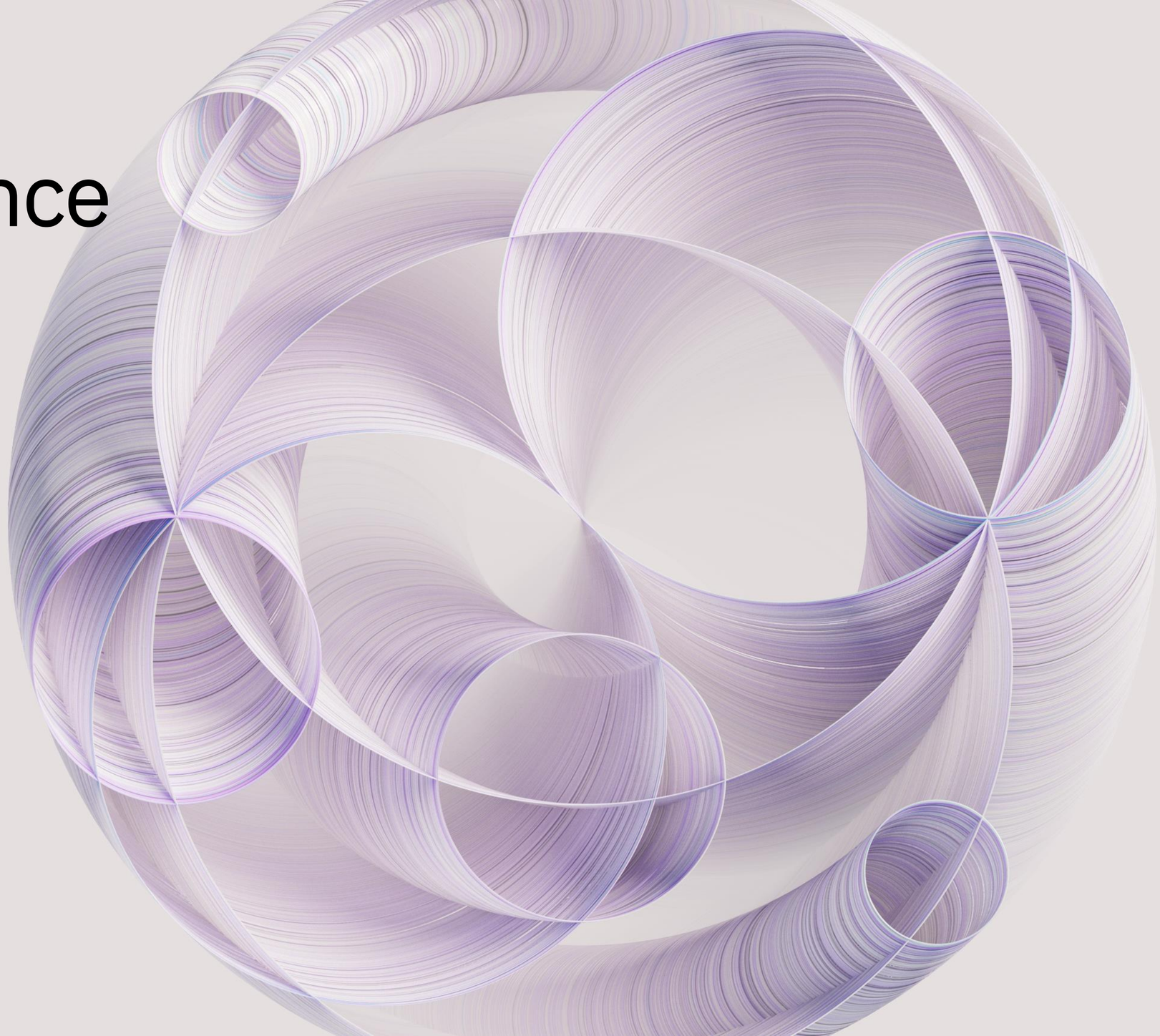

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All client examples described are presented as illustrations of how those clients have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics may vary by client.

Content

Watsonx.ai ecosystem

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- Watsonx applications
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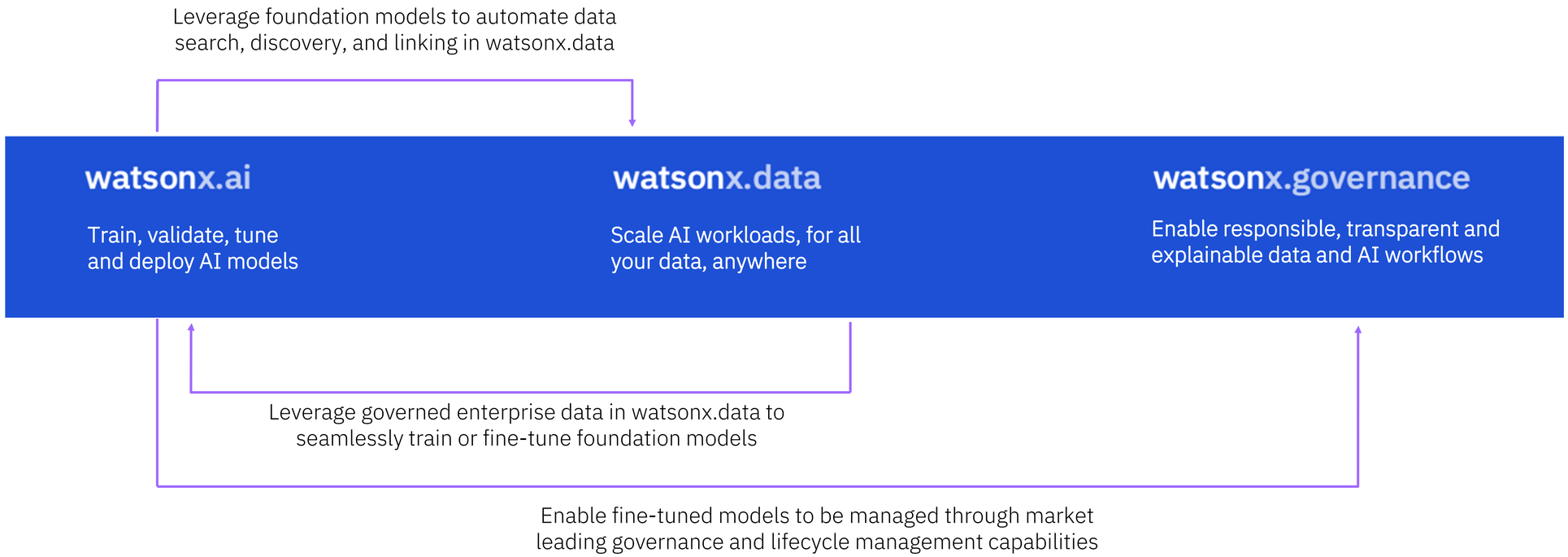
  - Watsonx Assist
  - Watson Discovery
  - Miscellaneous
    - Intellectual property protections
    - Watsonx.ai synthetic data

IBM watsonx.ai ecosystem

- The focus of a Watsonx.ai Proof of Experience (PoX) is generative AI and foundation models
- However, generative AI and watsonx.ai do not stand alone in the business world.
- Clients are using generative AI to solve business problems, and are looking for platforms that span across AI, data, and governance to make applications that solve their business requirements
- This presentation highlights IBM services/software that can be very useful in solving PoX use cases together with watsonx.ai.
- Contents include:
  - Watsonx pillars: watsonx.ai, watsonx.data, and watsonx.governance
  - Watsonx ecosystem: watsonx Code Assist, watsonx Orchestrate, watsonx Assistant, and Watson Discovery
  - Use case examples for these Watsonx ecosystem pieces
  - Miscellaneous items
    - Intellectual property protections for IBM-developed watsonx.ai models
    - Watsonx.ai synthetic data generation

Put AI to work with **watsonx**

Scale and accelerate the impact of AI with trusted data.



IBM watsonx.ai

An enterprise-ready next-generation AI studio for AI builders, bringing together traditional machine learning and new generative AI capabilities powered by foundation models. IBM watsonx.ai can train, validate, tune, and deploy AI models.

Build AI applications in a fraction of the time with a fraction of the data.

Guide models to meet your needs, with easy-to-use tools for building and refining performant prompts to achieve the desired result.

Tune models with your enterprise data; your data remains private and secure.

IBM watsonx.data

Scale AI workloads, for all data, anywhere.
IBM watsonx.data can store, manage, enrich, and access all your data for AI.

Reduce the cost of your data warehouse by up to 50% through workload optimization across query engines and storage tiers

Get started in minutes with built-in governance, security, and automation

Access all your data through a single point of entry across all clouds and on-prem environments

IBM watsonx.governance

An enterprise-ready solution that enables responsible, transparent, and explainable workflows across the AI lifecycle.

Trace and document the origin of datasets, models, and pipelines — so you can explain your AI's decisions, every time

Monitor AI models for fairness, bias and drift — and take action real-time if they go awry

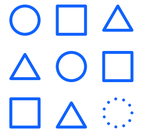
Manage your AI Lifecycle while upholding internal policies and external regulations

IBM watsonx Code Assistant

Empowering hybrid cloud developers with AI-generated code recommendations.

Reduce time-to-productivity and narrow the IT Automation skills gap with AI-generated code

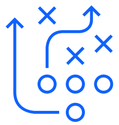
Maintain high levels of accuracy and transparency through attribution of generated content recommendations



Tune the Foundation Model with your own data and customize it with your own standards and best practices.

IBM watsonx Orchestrate

Leverage AI and automation, empower individuals to do work without expert knowledge of business processes and applications



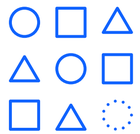
Democratize the availability of automation through natural language

Create a highly accessible experience for non-technical users to be able to leverage

Allow IT to build and import custom capabilities for end users without disrupting existing workflow.

IBM watsonx Assistant

Automate interactions with customers using chatbots or agents across digital and voice channels using a virtual assistant platform that utilizes artificial intelligence techniques, like NLP and ML



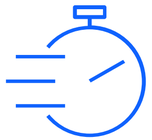
Generative AI-first. Assistant uses LLM-powered AI to achieve the highest accuracy with 80% less training effort, as well as trusted conversational search

Simplified build experience. No-code and generative authoring makes it 3x faster to build with watsonx Assistant than any other platform

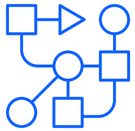
Designed to connect to all the customer support channels and back-end systems, IBM watsonx Assistant creates an experience that is focused on self-service.

IBM watsonx Discovery

Boost the productivity of knowledge workers by automating the discovery of information and insights with advanced NLP and NLU.



Quickly make business decisions & automate workflows with highly accurate insights from large, unstructured, and complex data



Teach domain-specific understanding through custom NLP models to extract the insights you need to automate workflows and make business decisions

Discover deeper insights by using extracting content to segment documents and ignore irrelevant parts.

Positioning watsonx Discovery vs Watson Discovery

Empower customers/employees to resolve their informational tasks by relying on a Gen AI Assistant that can handle all their topics

watsonx Discovery for Semantic Search

- Use for LLM powered Conversational Search
- Highly scalable with simple configuration with watsonx Assistant
- Available on CP4D to start
- Focus on English language for semantic search to start

Empower knowledge workers to create intelligent business processes by automating discovery of information and insights

Watson Discovery

- Use for Intelligent Document Processing
- Embed in business processes and leverage domain specific NLP
- Available on IBM Cloud and CP4D
- Available for multiple languages

IBM watsonx use cases

✓ - Foundation Capability
s - Supporting Capability

Use Case	Tasks	watsonx. data	watsonx. ai	watsonx. governance	watsonx Assistant	watsonx Code Assistant	Watson Discovery
A workforce-facing advisor needs to assist staff with up-to-date processes approved enterprise guidelines, and case evaluation checklists relevant to the Program / Case and its processing stage.	Semantic Search, Question Answering, Topic Modelling, Chatbot, Intent, Prediction	s	✓	✓	✓		✓
An agency worker needs to summarize case history, extract key Case notes from Investigations, intelligence gathering & covert operations into a 'Case Digest' for Program Integrity teams. This will help fraud investigators improve productivity and efficiency.	Summarization, Text Insights	s	✓	✓			✓
A finance company needs to generate test data with tokenized / pseudonymized Personal Identifiable Information for test environments	Synthetic Data Creation		✓				
A quality engineer needs to optimize DevOps Scripts development by generating scripts, and test case generation (unit, integrated test cases) following enterprise & security guidelines	Code Generation					✓	
A virtual educational tutor powered by AI needs to provide accurate content that is responsive to learning differences and contains guardrails that make it safe and governed for use by minors.	Question Answering, Chatbot, Intent, Trustworthy AI, Text Insights	s	✓	✓	✓		✓

Intellectual property protections for IBM-developed watsonx.ai models

- One major client concern (because of the generative nature) for generative AI is that of indemnification.
- Sellers should dispel such worries so clients can use IBM models with confidence
- IBM provides its standard contractual IP indemnification for IBM-developed models:
  - Slate family of encoder-only models
  - Granite family of decoder-only models
- IBM indemnification commitments include the following:
  - IBM does not require its clients to indemnify IBM for a client's use of IBM-developed models.
  - IBM does not cap its IP indemnification liability for the IBM-developed models.
- More details are available
  - Foundation Model & Generative AI FAQs
  - Foundation models in watsonx.ai

watsonx.ai synthetic data generation

- With watsonx.ai, clients have the ability to generate synthetic data
- Synthetic data is useful when
  - Tuning generated AI models or training traditional AI models
  - Testing generative AI models
  - Clients do not want to use any real-life data due to privacy and security concerns
- There are 2 ways to create synthetic data
  - Data generation: Clients manually create a schema and specify how data should be distributed
  - Data mimic: Clients can provide a small sample and ask watsonx.ai to generate a large data set based on the given data

Generate structured **synthetic data** using a variety of models

Statistics-based

Benefits

- High-fidelity
- User friendly
- Privacy
- Automated

Shortcomings

- Approximates
- Stats knowledge

Agent-based

Benefits

- Simulation layer
- Flexible
- Discovery & what-if
- Measure KPIs

Shortcomings

- Advanced
- Domain expertise

Generative AI-based

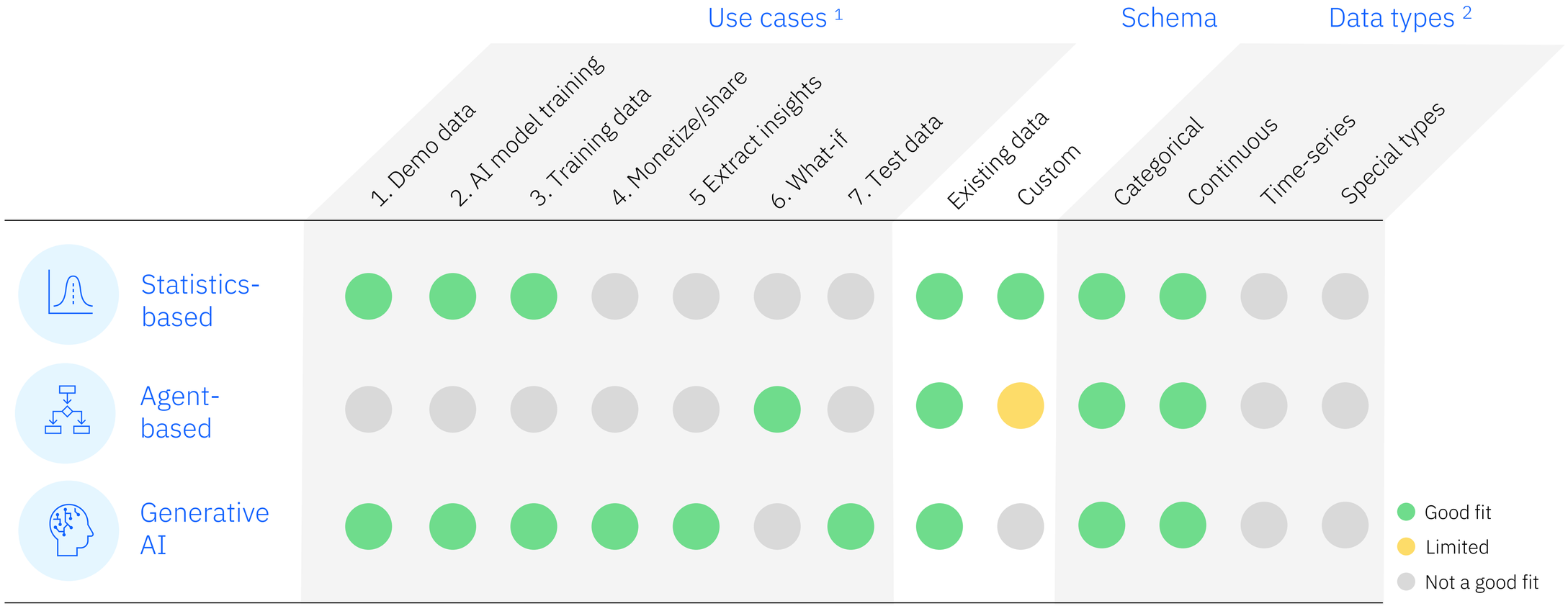
Benefits

- Control
- Automated
- Cost efficient
- Speed
- Privacy
- Custom schema

Shortcomings

- Higher cost & longer runtimes
- Less control

Guidance on which model can enable client use cases



Privacy protection when leveraging existing data

What is differential privacy?

Identifies rare individuals in datasets and adds “noise” **to obscure their individually specific information**

What are its benefits[1]?

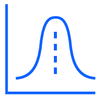
Can’t identify data specific to an individual

Protection against 3rd party attackers

Computational transparency

Privacy bounds guarantee

Assessing the quality of the synthetic output



Fidelity

Measures the quality of the synthetic data in terms of its closeness in distribution to the real data

Fairness [1]

Assesses bias in the synthetic data and the fairness of the predictions with respect to sensitive & protected communities

Utility

Measures the accuracy and performance of a predictive downstream task where predictive models are trained on the synthetic data

Privacy

Assesses leakage of real data in synthetic output, as well as membership inference attacks, such as nearest neighbor