REVOLUTIONIZING RETAIL & MANUFACTURING WITH GENAI

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Agenda

- Common Market Drivers, Problems Solved, and Challenges

- Manufacturing & Retail AI Use Cases

- Challenges

- Case Studies

- Lovelytics 6-Step GenAI Framework

- Demo

- Q&A

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Common Market Drivers, Problems Solved, and Challenges

Market Drivers, Problems Solved, and Challenges

Personalized Marketing & Recommendations

Inventory Management & Demand Forecasting

Product Design & Development

Customer Service & Support

- **Market Drivers**
  - Rising customer expectations, competitive differentiation, inflation/less disposable income

- **Problems Solved**
  - Low engagement rates, high customer churn, customer loyalty

- **Challenges**
  - Data privacy concerns, integration with existing systems

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Market Drivers, Problems Solved, and Challenges

Personalized Marketing & Recommendations

Inventory Management & Demand Forecasting

Product Design & Development

Customer Service & Support

- **Market Drivers**
  - Supply chain optimization, cost reduction, constantly changing customer tastes/preferences

- **Problems Solved**
  - Overstock and stockouts, inefficient supply chains, market flexibility

- **Challenges**
  - Data accuracy, adapting to market fluctuations, global uncertainty

Market Drivers, Problems Solved, and Challenges

Personalized Marketing & Recommendations

Inventory Management & Demand Forecasting

Product Design & Development

Customer Service & Support

- **Market Drivers**
  - Innovation demand, shorter product life cycles
- **Problems Solved**
  - Slow product development, high R&D costs
- **Challenges**
  - Ensuring market fit, intellectual property management

Market Drivers, Problems Solved, and Challenges

Personalized Marketing & Recommendations

Inventory Management & Demand Forecasting

Product Design & Development

Customer Service & Support

- **Market Drivers**
  - Increasing customer expectations, cost reduction, scalability

- **Problems Solved**
  - Response time, consistency, language barriers, personalization

- **Challenges**
  - Data privacy/security, customer acceptance, accuracy & reliability

Manufacturing & Retail AI Use Cases

AI Drives Transformative Value For Manufacturing & Retail
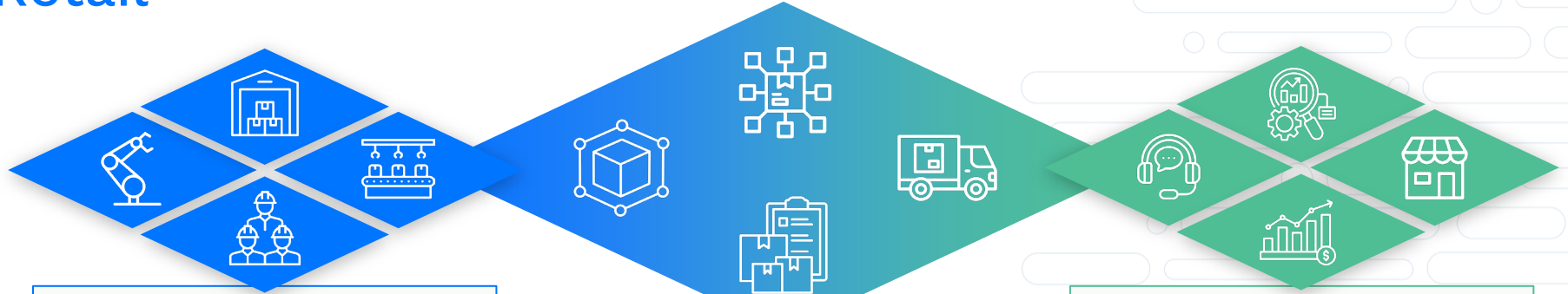
Manufacturing AI Use Cases

- Predictive Maintenance
- Quality Control
- Efficiency and Safety
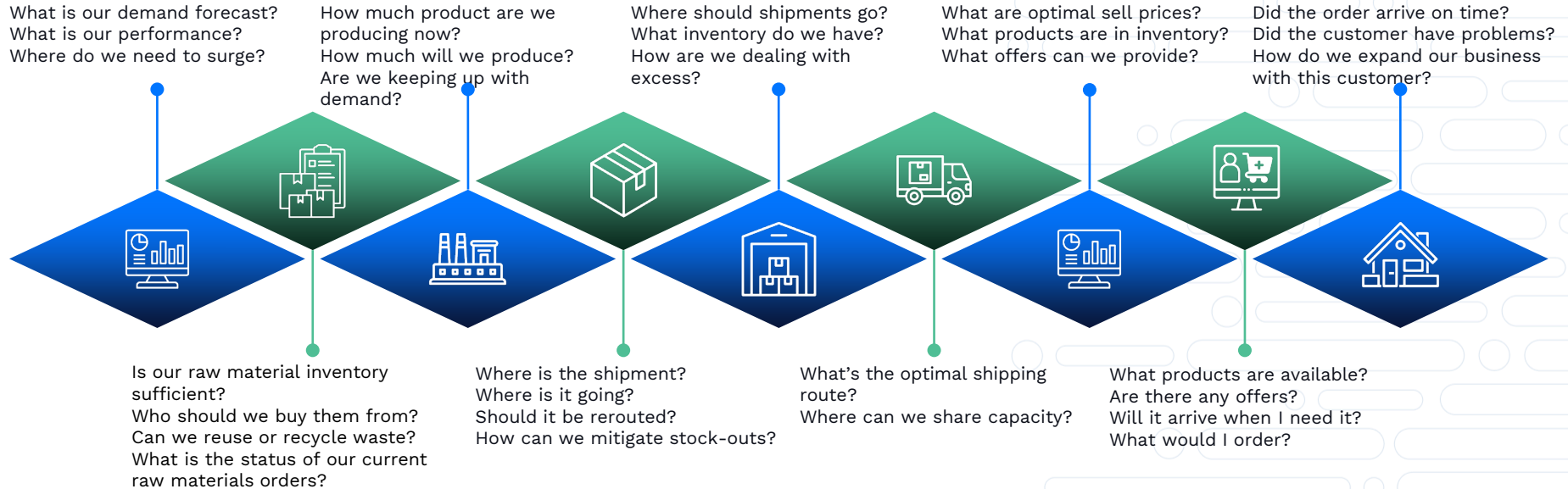- Labor Planning
- Energy Management

Common AI Use Cases

- Distribution
- Supply Chain
- Logistics
- Vendor/Product Onboarding
- Demand Planning & Forecasting
- Inventory Management
- Pricing

Retail AI Use Cases

- Product Design
- Merchandising
- Customer 360
- Personalization
- Customer Service
- Marketing
- Decision Making & Insights

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Supply Chain Innovation With AI

Manufacturers, Retail and Consumer Packaged Goods companies manage complex supply chains that require real-time access to data enabling critical decision making to impact revenue and profits.

What is our demand forecast?
What is our performance?
Where do we need to surge?

How much product are we producing now?
How much will we produce?
Are we keeping up with demand?

Where should shipments go?
What inventory do we have?
How are we dealing with excess?

What are optimal sell prices?
What products are in inventory?
What offers can we provide?

Did the order arrive on time?
Did the customer have problems?
How do we expand our business with this customer?

Is our raw material inventory sufficient?
Who should we buy them from?
Can we reuse or recycle waste?
What is the status of our current raw materials orders?

Where is the shipment?
Where is it going?
Should it be rerouted?
How can we mitigate stock-outs?

What's the optimal shipping route?
Where can we share capacity?

What products are available?
Are there any offers?
Will it arrive when I need it?
What would I order?

Business Goals: ↓ Costs ↑ Customer Service ↑ Agility ↑ Competitive Advantage

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Understand The Challenges

- **Data Security and Privacy**
  - The interconnected nature of advanced AI increases vulnerability to cyber threats and data breaches.

- **Integration with Legacy Systems**
  - Integrating new technologies with existing infrastructure can be complex and costly.

- **Skills and Workforce Development**
  - There is a need for a skilled workforce capable of managing and leveraging AI and related.

- **Initial Investment Costs**
  - Implementing production AI solutions at scale requires significant upfront investment.

- **Standardization and Interoperability**
  - Ensuring seamless communication and interoperability between different systems and devices is crucial.

- **Governance**
  - Ethical considerations
  - Regulatory Compliance
  - Transparency and Accountability

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Case Studies
& GenAI Framework

Case Study

Global Fortune 500 Distributor - *Accelerated Product Onboarding*

Problem Statement

- Companies managing millions of products face challenges in product categorization and matching, and creating detailed product descriptions.
- Analysts spend hours manually searching for relevant products, identifying attributes, and crafting product descriptions.
- The process is time-consuming and error-prone.
- Descriptions must be in multiple formats and languages for different systems.

Technical Design

- Custom ML Models
  - Product/item Categorization
  - Product/item Matching
  - Linear SVC and SGD Classifier models.
- Databricks Vector Search Database
- Foundation Model APIs (Llama-2-70b)
- RAG Pipelines
- Prompt Templates
- Chains with LangChain
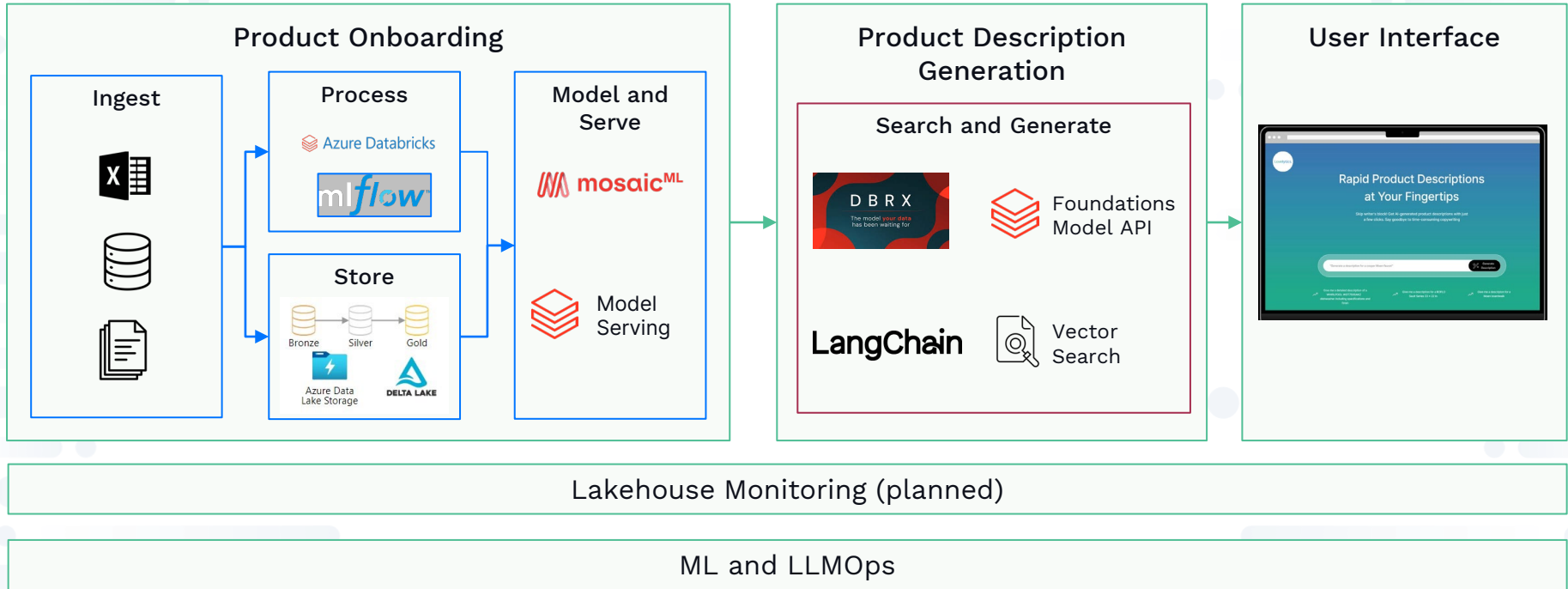- Custom UI
- ML and LLMOps

Integrated 3rd party data from 2.6 million products, including 2.3 million unmapped to the client's products.

Business Value

- Quicker time to market
- Reduces generation time from days to minutes.
- Automation and standardization produces consistently high quality data
- Enhanced customer experience
- Reduces need for customers to go to the competition
- Increased revenue and profits

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Case Study

Product Onboarding and Description Generator

Case Study

Major Clothing Retailer - *Sales Associate Augmentation*

Problem Statement

- Customers entered the store with vague and unclear ideas about their needs.

- This lack of clarity led to frustration for both customers and sales representatives.

- Difficulty in finding the right items resulted in potential lost sales and revenue.
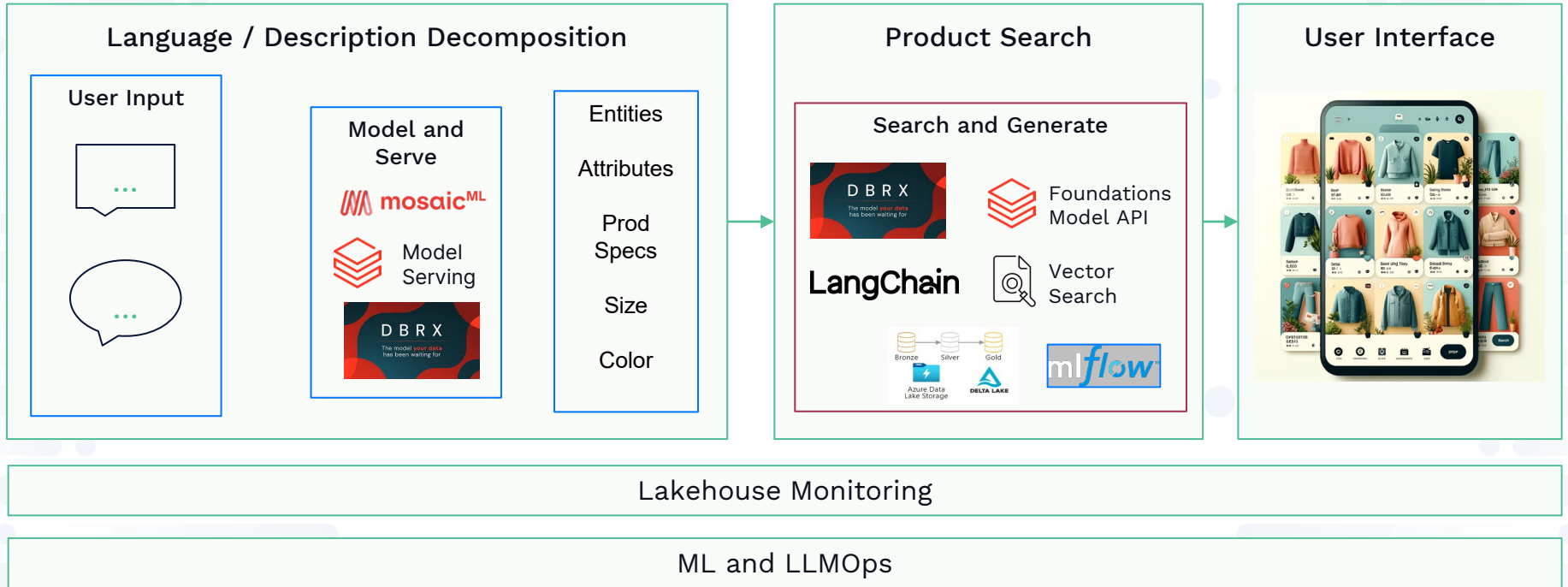
Technical Design

- **Platform**
  - Databricks GenAI
- **Key Technologies**
  - Databricks Vector Search Database
  - RAG Pipeline
  - Foundation Model APIs (Llama-2-70b)
  - Prompt Templates
  - LangChain
  - Intuitive and user-friendly interface design

Business Value

- **Improved Customer Satisfaction**
  - More accurate product recommendations reduces customer frustration, leading to a better shopping experience.
- **Increased Sales**
  - Specific recommendations help sales representatives to quickly find the right items, reducing missed sales opportunities.
- **Efficiency**
  - Sales representatives can serve customers more effectively, improving store efficiency and throughput.

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Case Study

Retail Customer Experience

Language / Description Decomposition

User Input

Model and Serve

mosaic**ML**

Model Serving

D B R X
The model your data has been waiting for

Entities

Attributes

Prod Specs

Size

Color

Product Search

Search and Generate

D B R X
The model your data has been waiting for

Foundations Model API

LangChain

Vector Search

Bronze — Silver — Gold

Azure Data Lake Storage   DELTA LAKE

ml**flow**

User Interface

Lakehouse Monitoring

ML and LLMOps

Lovelytics 6-Step GenAI Framework

AI In The loop

①	②	③	④	⑤	⑥
Workflow Decomposition	Task Evaluation	Quantitative and Qualitative Measurement	Automation Suitability Scoring	GenAI Feasibility Analysis	Ethics and Legal Considerations

Stakeholder Engagement

- Identify key stakeholders
- Gather insights and feedback
- Ensure alignment with objectives
- Communicate progress regularly
- Address concerns and expectations

Prototyping and Testing

- Provide a safe, secure playground
- Teach complex/mega prompting
- Develop initial prototypes
- Conduct controlled testing
- Validate assumptions
- Refine AI solutions
- Gather user feedback

Change Management

- Plan for organizational change
- Provide training and support
- Communicate benefits and impacts
- Develop transition plans
- Monitor and adjust implementation

DEMO —
Product Categorization and Description Generator

Q&A

Appendix