

# Data Analytics in Automation System

## Manufacturing Case Studies

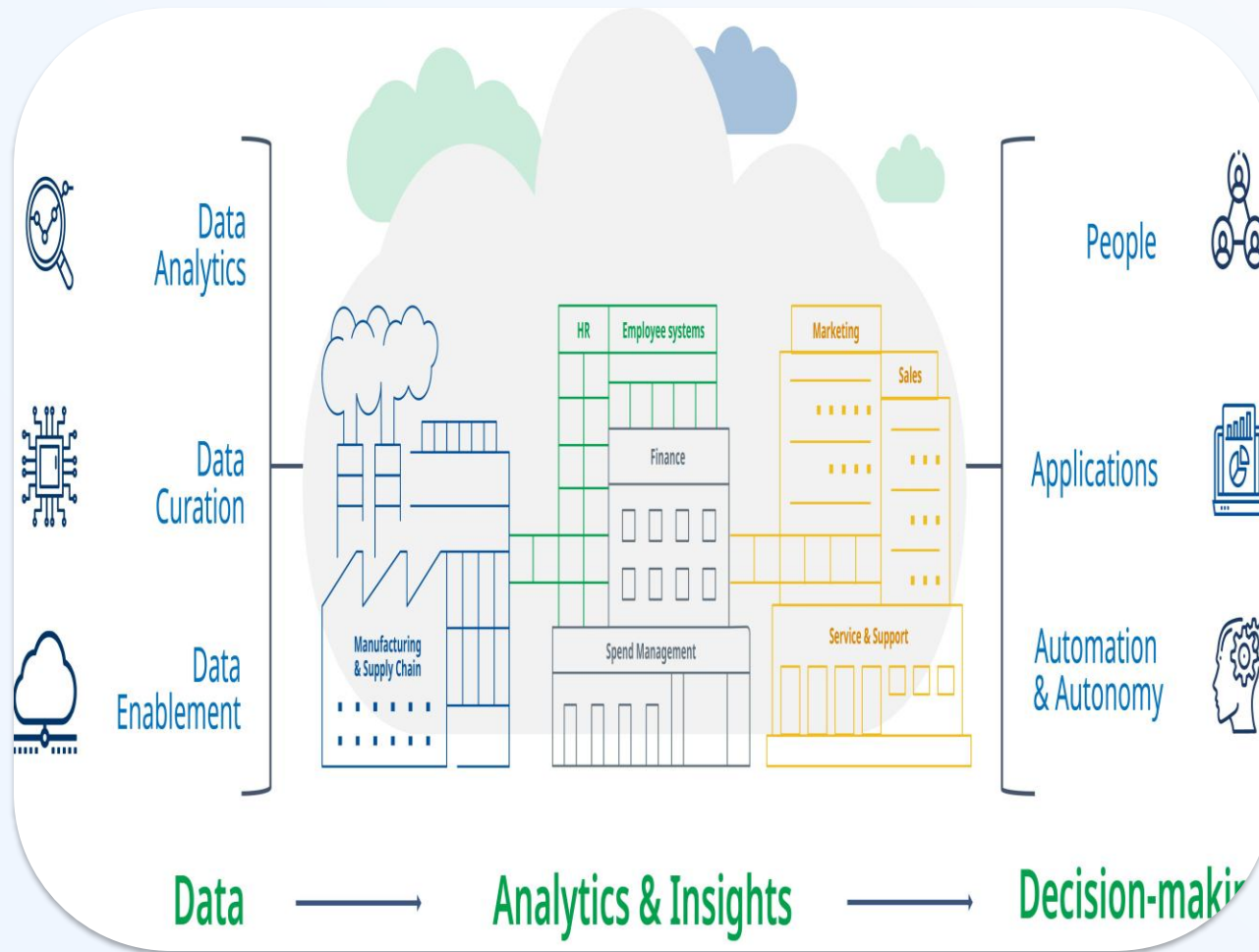
Industry 4.0

Course Code: 23MCT305

Data Analytics in Automation System

Faculty Name: N. KARTHI, AP/MCT

# Introduction to Data Analytics in Automation Systems



## Key Aspects



**Data-Driven Decision Making**



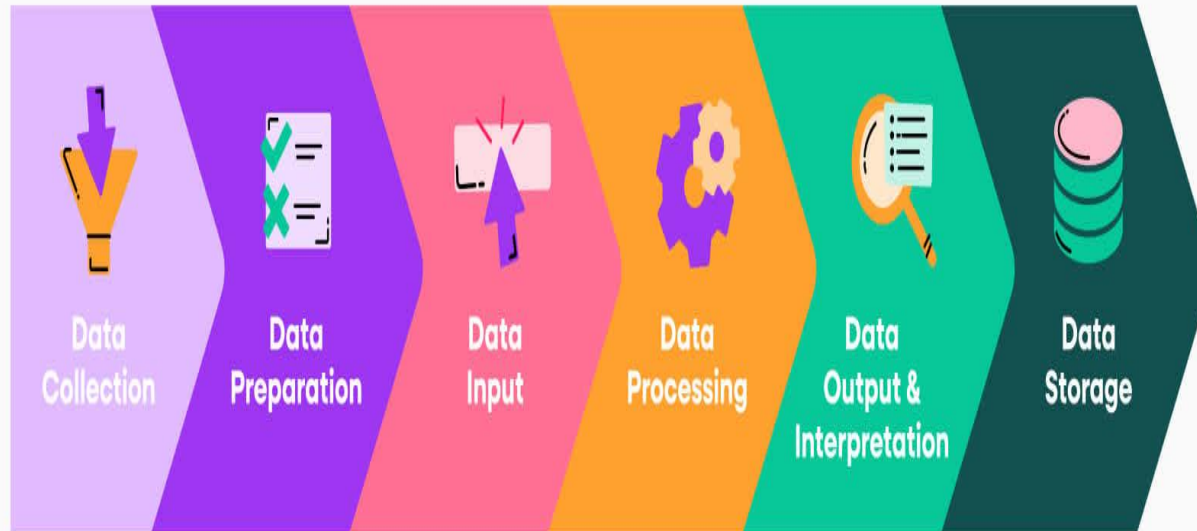
**Integration with Automation Systems**



**Real-Time Monitoring and Analysis**

# Key Components of Data Analytics in Manufacturing

## Stages of data processing



## Core Components

-  **Data Collection**
-  **Data Processing**
-  **Data Analysis**
-  **Data Visualization**

# Benefits of Data Analytics in Manufacturing Automation

## Benefits of using machine learning in manufacturing

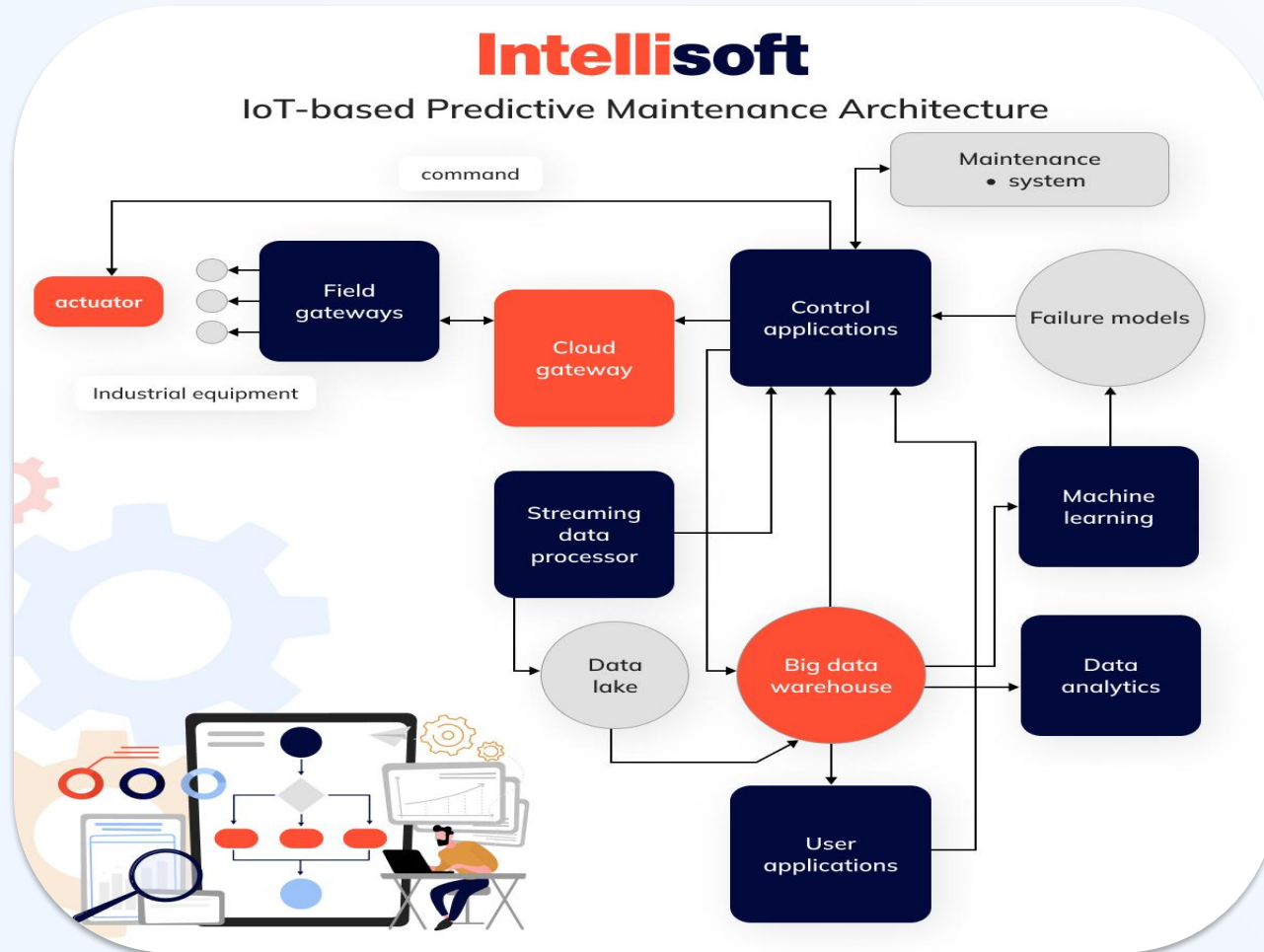


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## Key Benefits



# Case Study 1: Predictive Maintenance



Industry

**Automotive Manufacturing**



Problem

**Equipment Failure**



Solution

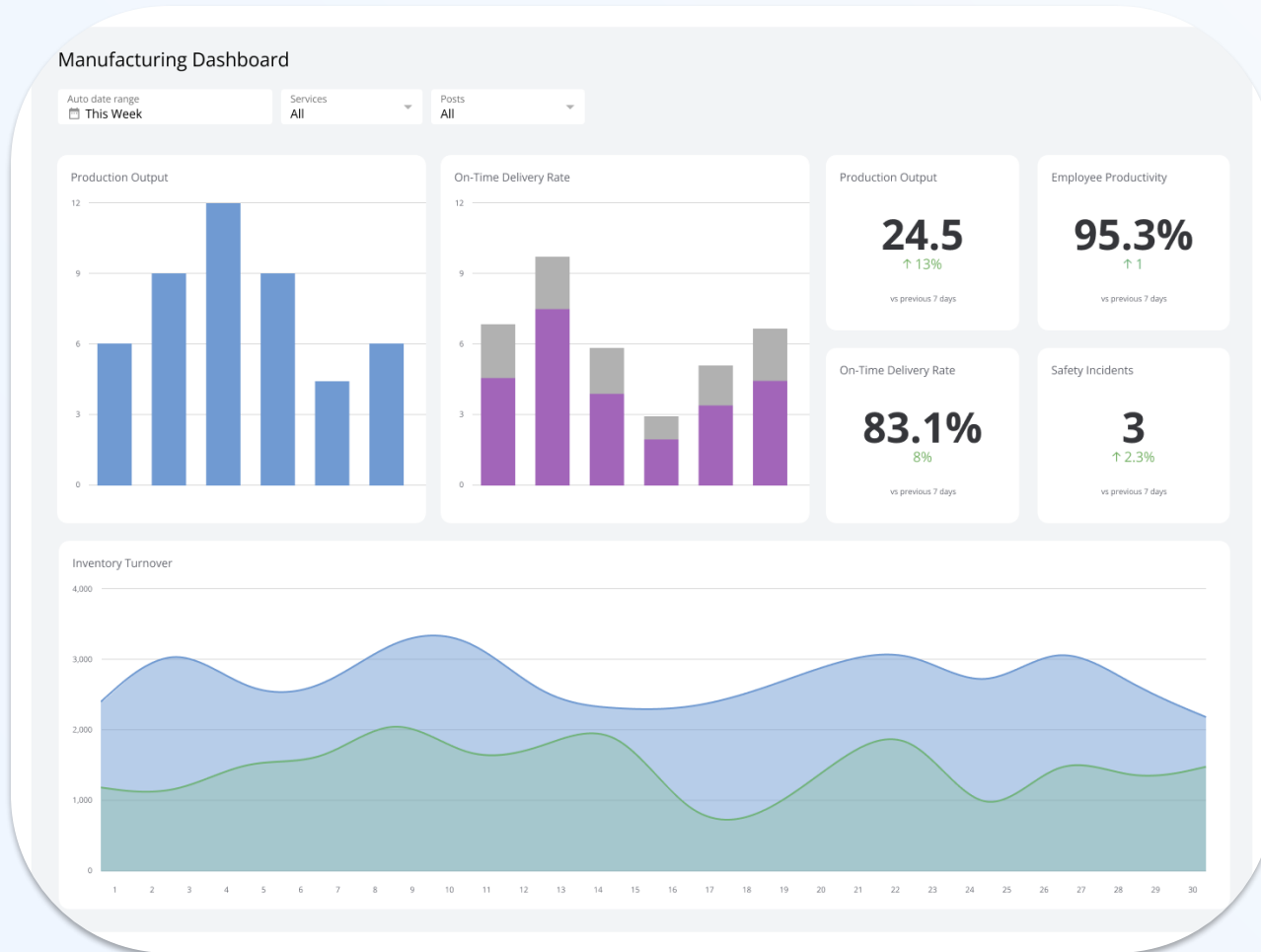
**IoT Sensors + Analytics**



Result

**30% Reduction in Downtime**

# Case Study 2: Quality Control



**Industry**

**Electronics Manufacturing**



**Problem**

**Quality Defects**



**Solution**

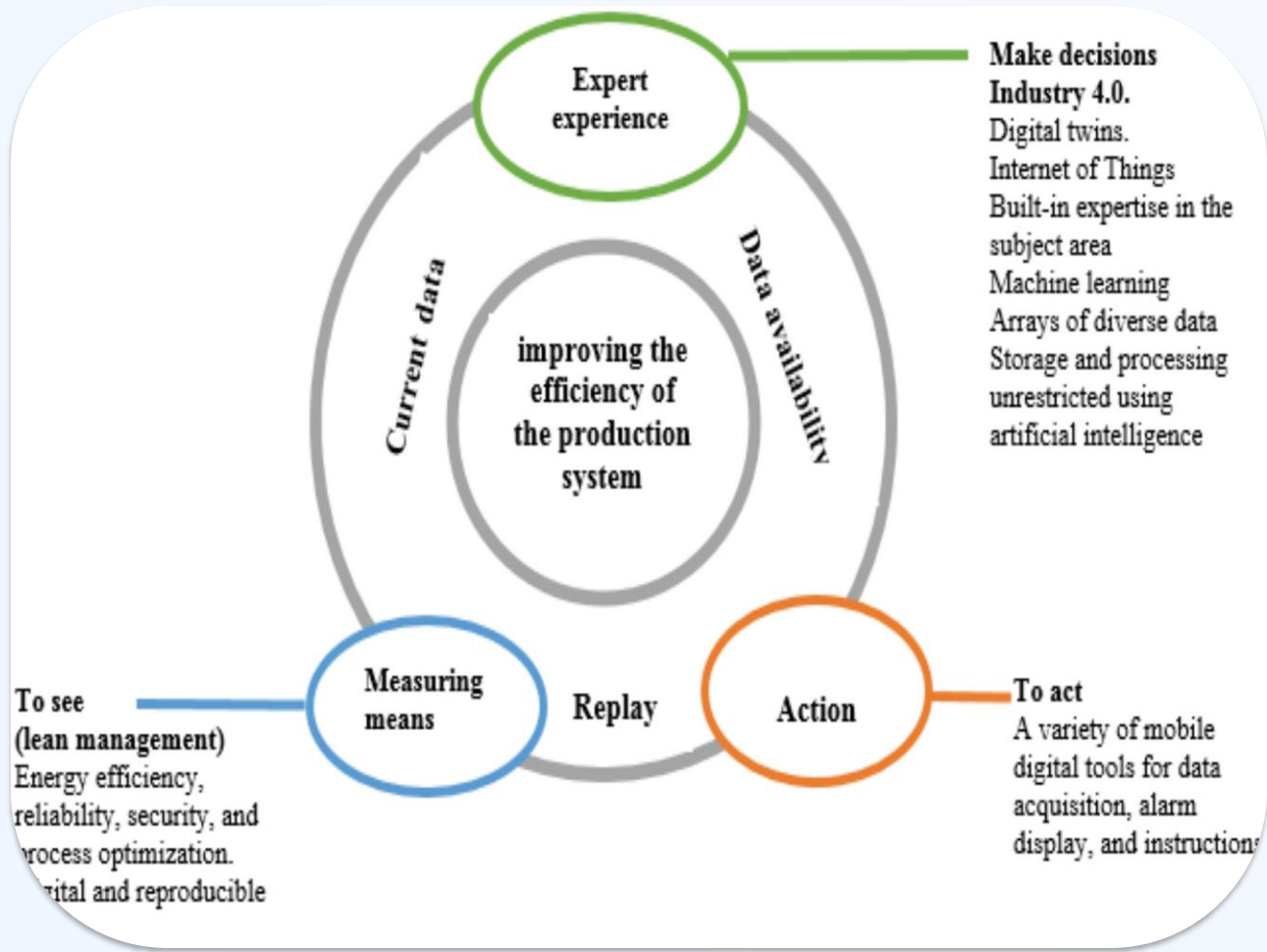
**Real-Time Monitoring Systems**



**Result**

**45% Reduction in Defects**

# Case Study 3: Production Optimization



Industry

**Food Processing**



Problem

**Low Productivity**



Solution

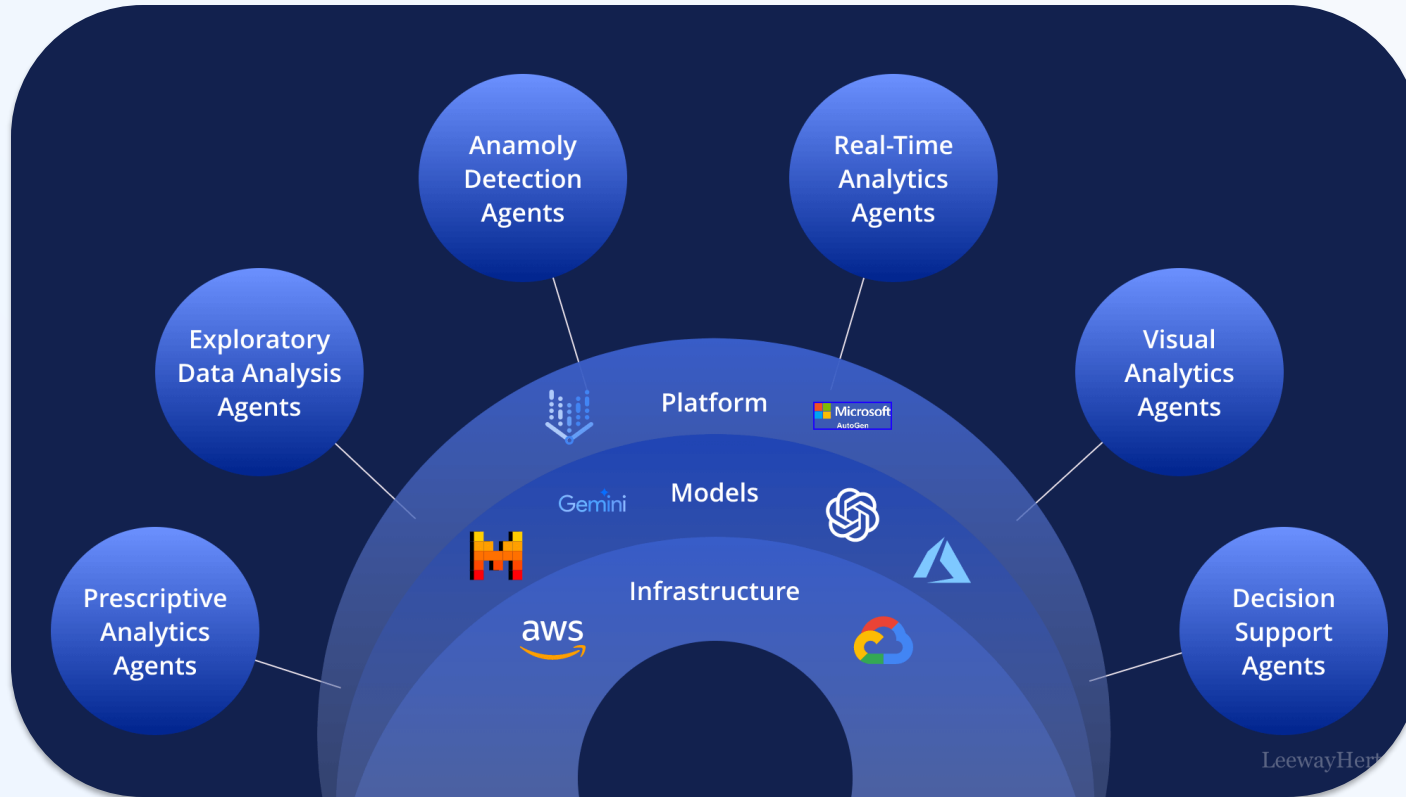
**Process Optimization Analytics**



Result

**25% Increase in Throughput**

# Mind Map: Data Analytics in Automation Systems



## Core Concepts



Data Sources



IoT Sensors



Machine Learning



Predictive Analytics

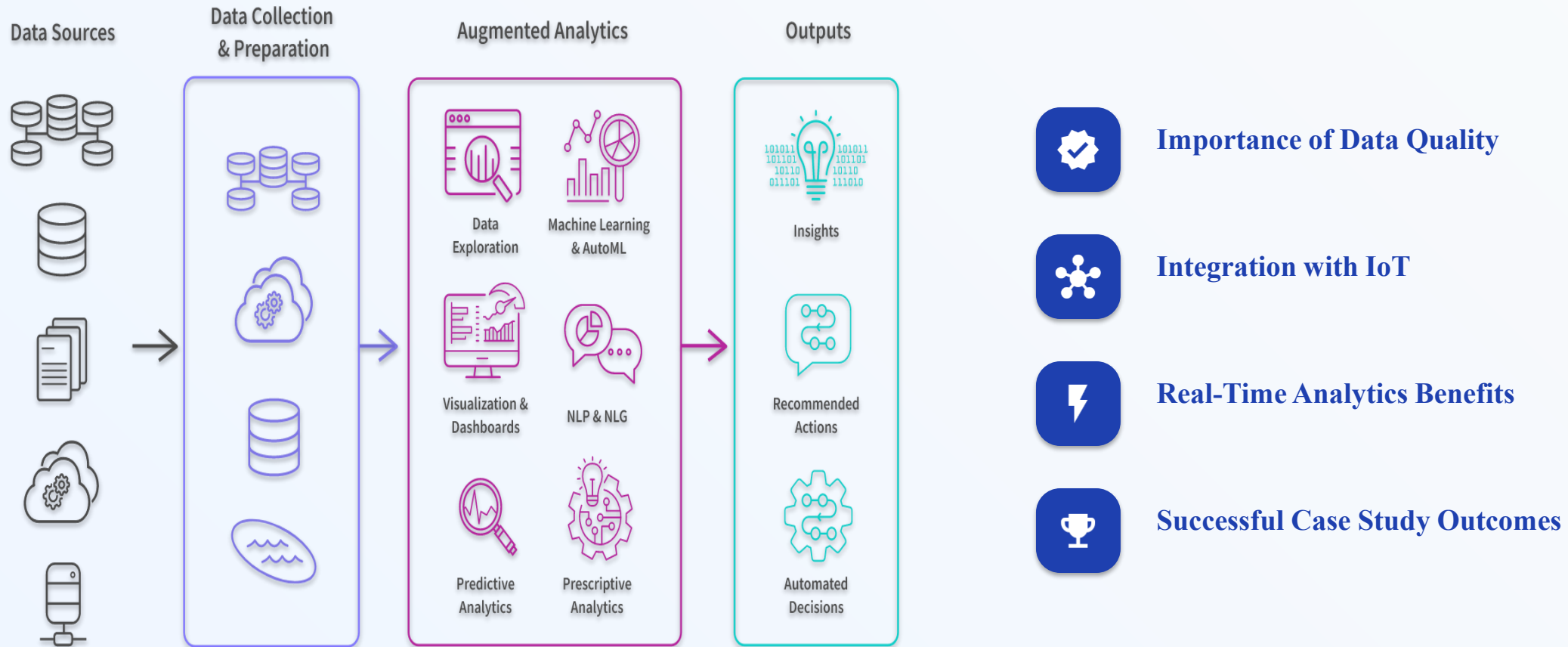


Real-Time Processing



Decision Support





# Recap: Key Learnings



# Summary & Future Trends



## Future Trends

-  **AI & Machine Learning Integration**
-  **Edge Computing**
-  **Digital Twins**
-  **Continuous Improvement**



**Data Analytics Transforms Manufacturing**