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LIVEWORX

A NEW ERA IN PRODUCT LIFECYCLE INNOVATION

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PRODUCTION ASSURANCE: CAN YOU PREDICT THE PROFITABILITY OF FUTURE PRODUCTION?

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Production Assurance AI

Can you Predict Future Profitability?

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New technology applied to your business

Production Assurance AI

Imagine applying technology that creates a better business plan by using generative artificial intelligence (AI) and inferencing

Gathering data from information sources across the enterprise, analyze that data to produce a business plan that predicts future production capacity and profitability

Providing production risk mitigation and intervention processes, key performance indicators (KPIs), and tools that work at the speed of business

What is Production Assurance AI?

Inventory Management
- New Vendors
- More Vendors
- Raw Material Sourcing

Product Mix
- New Products
- Sunset Products
- New Formulation

Supply Chain Planning
- Demand Plan based on History
- ATP
- CTP

Financial Planning
- Global Market Health
- Current Business Climate
- ERP – FICO, PLM, CRM
- Production Cost Accounting
- New and Upgrade of Assets
- M&A Strategy
- New Customer Acquisition and Profile

Business Process Improvements
- Optimized Workflow
- Labor Force
- Knowledge Management

Production Digital Twin
- Plan vs Actual
- LIMMS-Product Quality
- Production Quality

Logistics Management
- Truck/Rail/Ship
- Distribution Network Optimization

Warehouse Management
- Raw Material
- Final Products

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Steps for Production Assurance AI

Integrate historical data from around the Enterprise to build a generative model

Define your baseline

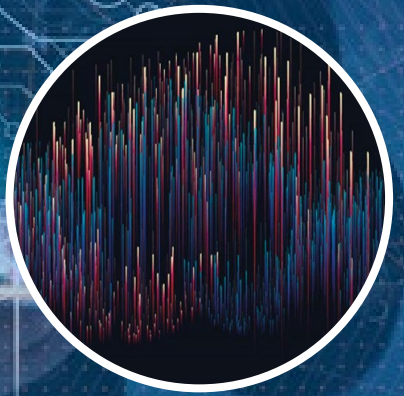
Define strategic outcomes

Identify Disturbance Variables to the enterprise

Put data to work to realize your Production Assurance AI vision

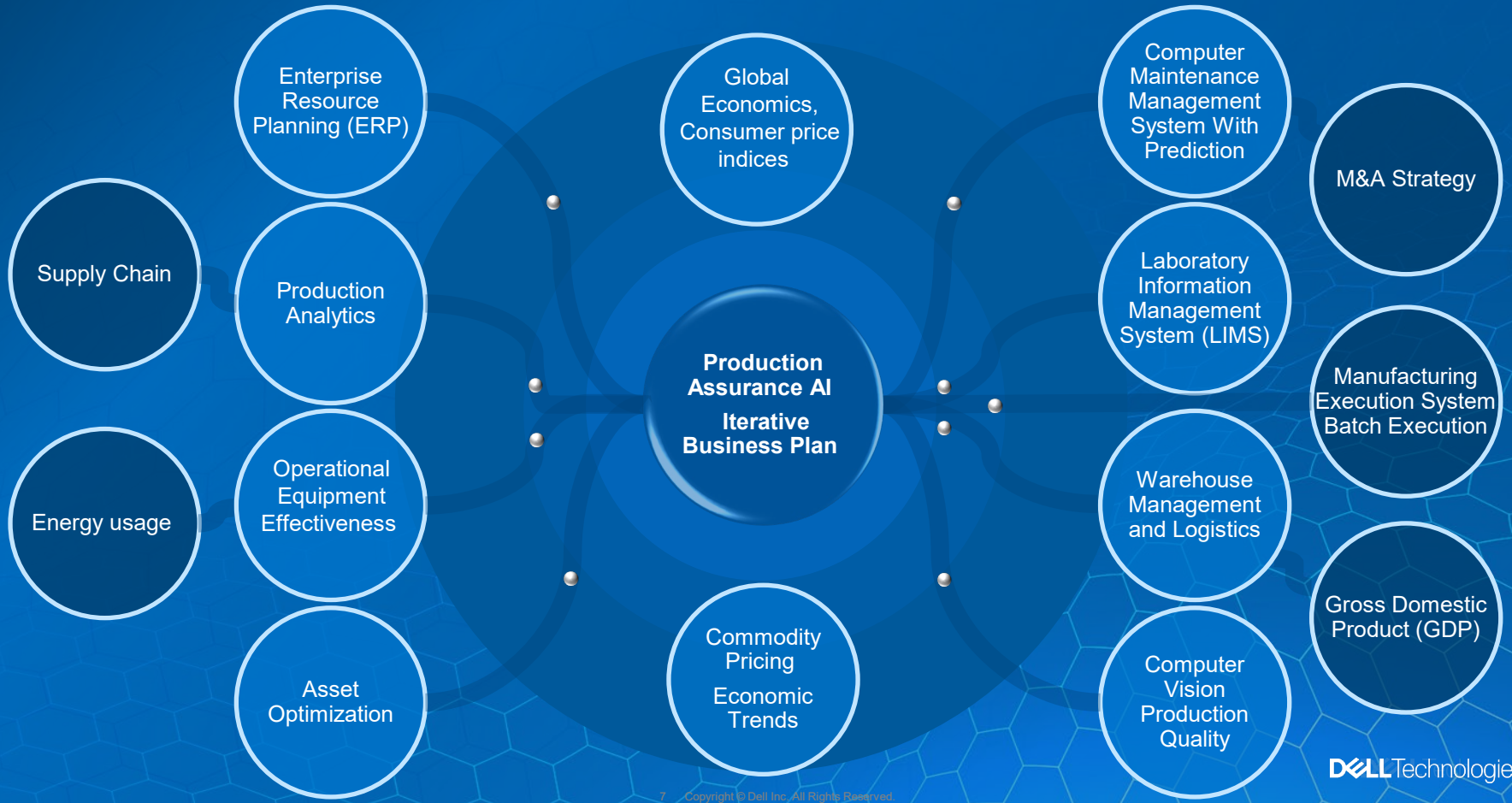
Tools to Measure potential impact on profitability

By harnessing the power of Production Assurance AI, you can leverage past successes to predict future profitability



Creates an iterative multi-year business plan

Key inputs and considerations for Production Assurance AI



Work Streams for Production Assurance AI

- Integrated Planning and Scheduling with Analytics and KPI's
- Multi-unit optimization,
- Business optimization
- Production Optimization across disciplines or departments

Optimization Strategy

Automation & Reliability

- Edge Strategy
- Maintenance Assessments (Asset Planning, Criticality ranking)
- Control and sensor platform Upgrades and consolidation

- Consolidation of applications & architectures
- Consolidation of edge infrastructure & network topologies
- Integration strategies –Interfaces, 5G, 6G, 7G
- Multi-Cloud Management strategies

IT Manageability & Consolidation

Process Improvement

- Business Process and workflow re-engineering
- Human Centered Design
- Edge Analytics
- Computer Vision with AI/ML/DL

Enterprise Strategy

- Enterprise Analytics Strategy- Cloud Analytics –Corp KPIs
- Process Data Interface Development Strategy
- User Productivity Strategy- Mobile, KM
- Corporate Sustainability Plan

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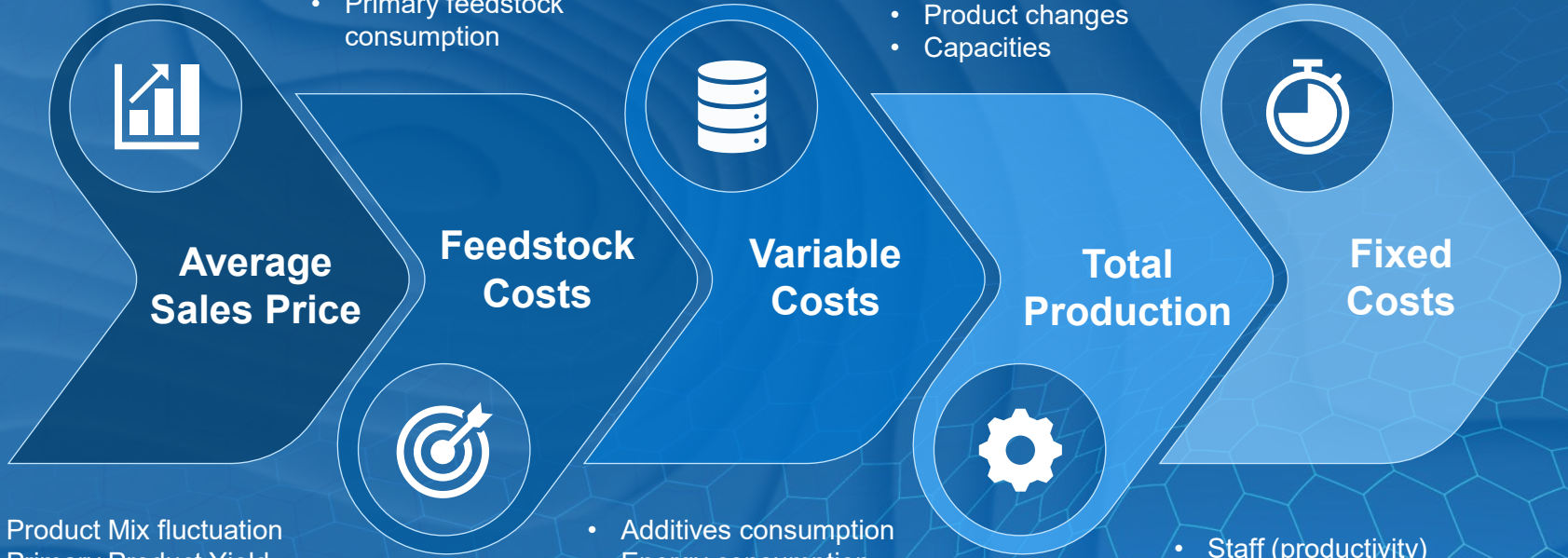
First-Stage Generative Model Training



- Product Mix fluctuation
- Primary Product Yield
- Delta between primary and secondary product price

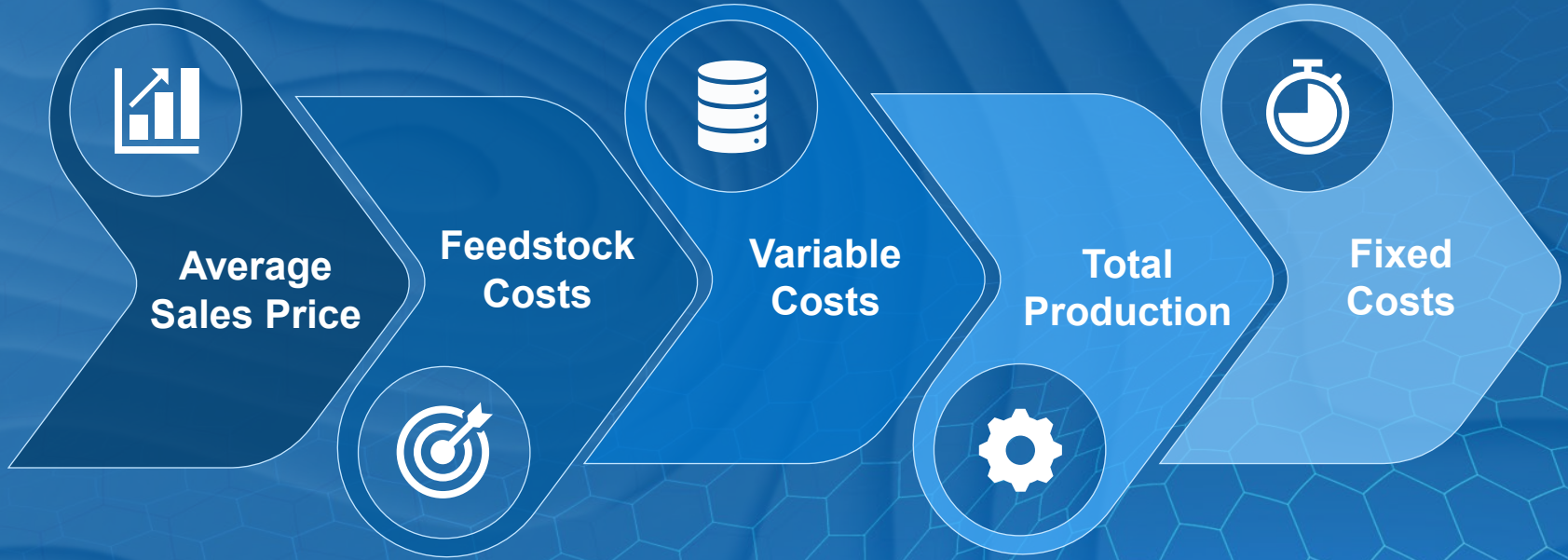
- Primary feedstock consumption

- Additives consumption
- Energy consumption
- By-product yields

- Utilization rates
- Cycle time
- Product changes
- Capacities

- Staff (productivity)
- Inventory information

Second-Stage Generative Model Focused Training



Production Assurance AI

Tools
Executive Portal
Dashboards

AI Platforms
AI/ML/Inference,
Deep Learning

REST/ETL/MDM
SQL, Structured,
Unstructured,
RT-DBMS

Applications
Digital Twin
ERP
Supply Chain
Edge Workloads

Presentation Layer

Production Risk Analysis | Risk Mitigation & Intervention | Production Assurance Plan

Generative AI Decision Engine

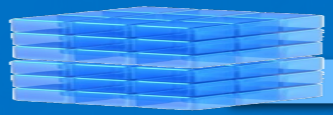
Analytical Modeling, Simulation & Processing Layer

Model building, training, refining & tuning

Enterprise
"Meta-Model"

Pre-processing/Data transformation

Feature Extraction, Ranking, and Optimization



Enterprise Analytics

- 2 Stage Generative Model
- Feature Building/Extraction
- Data filtering

Operational, Business Process Data

- Global Market Health
- M&A
- ERP FICO, CRM , PLM
- Supply Chain ATP, CTP, PTM
- Historical Production Plans
- Historical Demand Plans
- Maintenance
- Labor
- Raw Material Sourcing

Analytical Data

- Plant Dig Twin
- OEE
- Energy, Asset, Yield Optimization
- Product Quality
- Production Quality
- Logistics and DC Optimization
- Warehouse Management

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Calculating Value

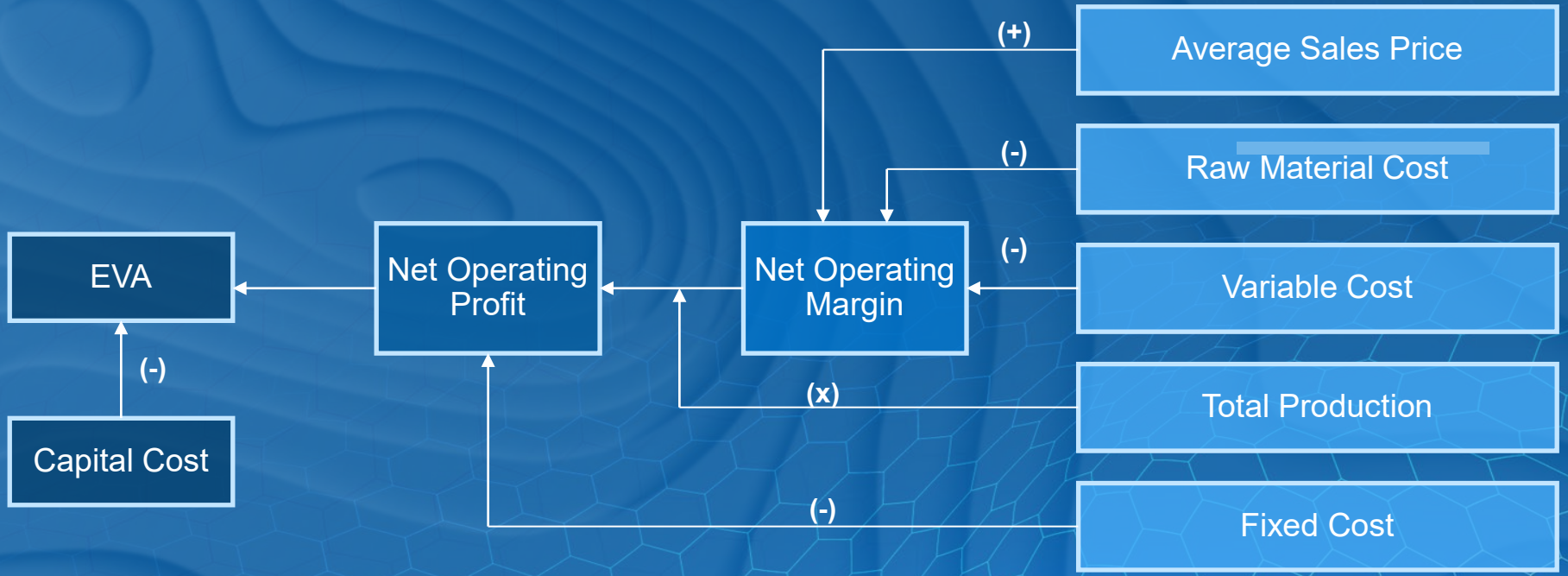
1. $$NPV = [\sum_{0}^{n} CashFlow_x * (1 + discount)^{-x}] - Investment$$

2. $$IRR = Discount\ where:$$
$$[\sum_{0}^{n} CashFlow_x * (1 + discount)^{-x}] = Investment$$

3. $$ROI = [FirstYearCashFlow]/Investment$$

4. $$Payback = TimeUntil \sum CashFlow \geq Investment$$

Calculating Profit Contributors (EVA contributors)



Benefits of Production Assurance AI

Production Assursance AI…

…information sources from around the enterprise brought together to create a business plan that is iterated at the speed of your business

Siloed Calculations Eliminated with the Addition of Interdependencies via AI

Reduce and Possibly Eliminate Massive Spreadsheets

Better Communication Between Departments

Decision Making Made Easier Using " What–if " Tool

Produces An Iterative Multiyear Business Plan Via The Generative Model

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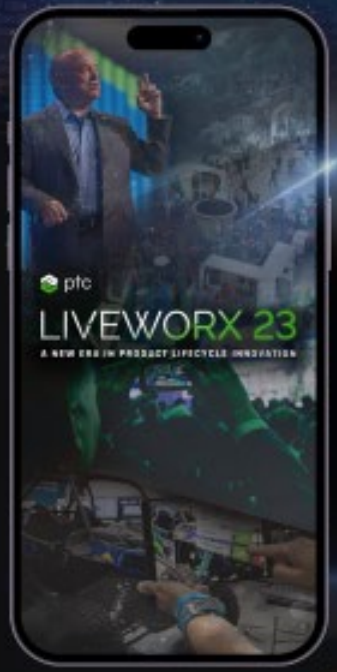
Now is the time to combine new Generative AI technologies to gain insights and answer questions about future profitability



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