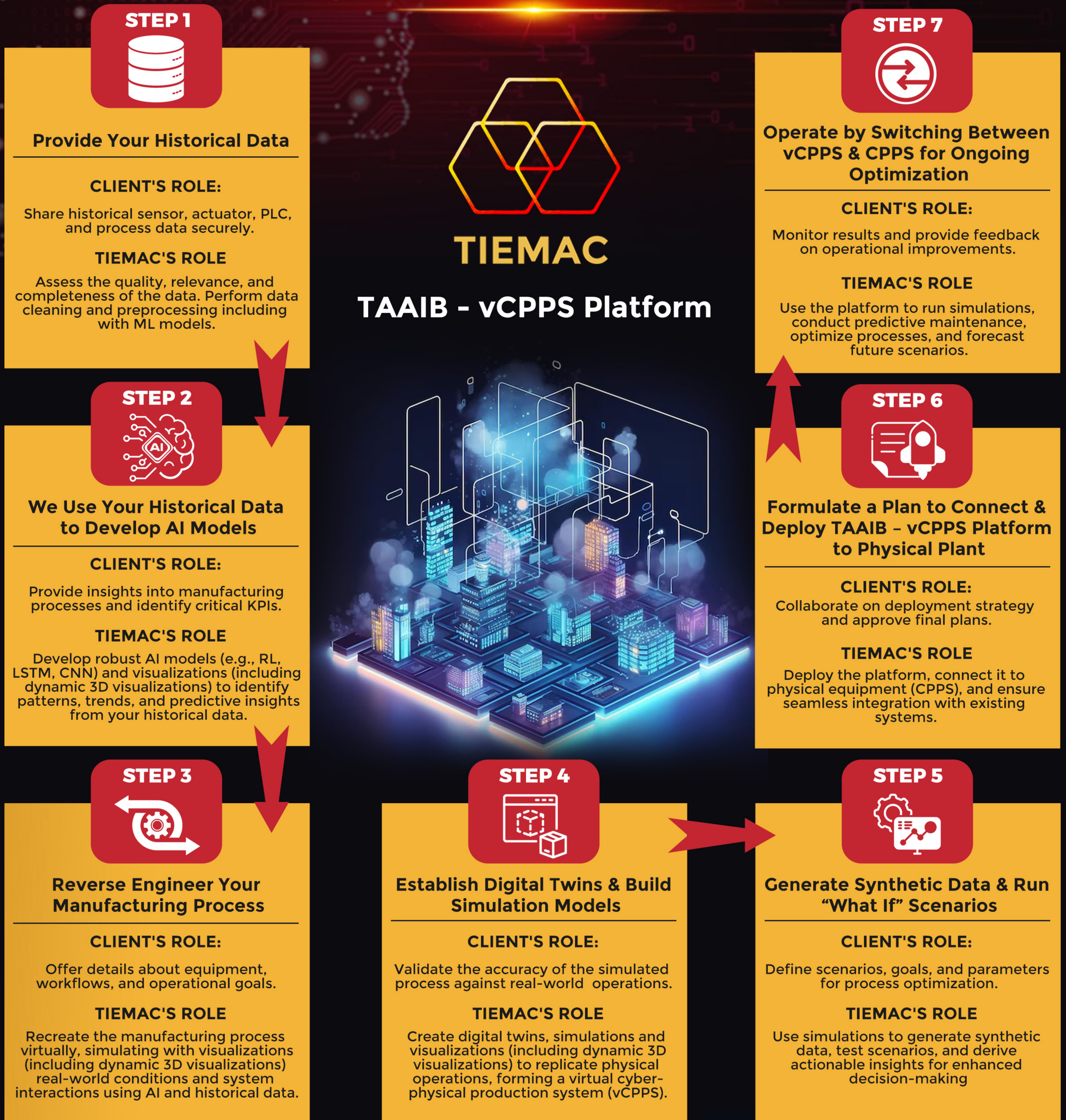# IMPLEMENTATION APPROACH IN TAAIB – vCPPS PLATFORM DEPLOYMENT: TRANSFORMING AI IN MANUFACTURING

Client's Role vs. Tiemac's Role

TIEMAC

TAAIB – vCPPS Platform

STEP 1
Provide Your Historical Data

CLIENT'S ROLE:
Share historical sensor, actuator, PLC, and process data securely.

TIEMAC'S ROLE
Assess the quality, relevance, and completeness of the data. Perform data cleaning and preprocessing including with ML models.

STEP 2
We Use Your Historical Data to Develop AI Models

CLIENT'S ROLE:
Provide insights into manufacturing processes and identify critical KPIs.

TIEMAC'S ROLE
Develop robust AI models (e.g., RL, LSTM, CNN) and visualizations (including dynamic 3D visualizations) to identify patterns, trends, and predictive insights from your historical data.

STEP 3
Reverse Engineer Your Manufacturing Process

CLIENT'S ROLE:
Offer details about equipment, workflows, and operational goals.

TIEMAC'S ROLE
Recreate the manufacturing process virtually, simulating with visualizations (including dynamic 3D visualizations) real-world conditions and system interactions using AI and historical data.

STEP 4
Establish Digital Twins & Build Simulation Models

CLIENT'S ROLE:
Validate the accuracy of the simulated process against real-world operations.

TIEMAC'S ROLE
Create digital twins, simulations and visualizations (including dynamic 3D visualizations) to replicate physical operations, forming a virtual cyber-physical production system (vCPPS).

STEP 5
Generate Synthetic Data & Run "What If" Scenarios

CLIENT'S ROLE:
Define scenarios, goals, and parameters for process optimization.

TIEMAC'S ROLE
Use simulations to generate synthetic data, test scenarios, and derive actionable insights for enhanced decision-making

STEP 6
Formulate a Plan to Connect & Deploy TAAIB – vCPPS Platform to Physical Plant

CLIENT'S ROLE:
Collaborate on deployment strategy and approve final plans.

TIEMAC'S ROLE
Deploy the platform, connect it to physical equipment (CPPS), and ensure seamless integration with existing systems.

STEP 7
Operate by Switching Between vCPPS & CPPS for Ongoing Optimization

CLIENT'S ROLE:
Monitor results and provide feedback on operational improvements.

TIEMAC'S ROLE
Use the platform to run simulations, conduct predictive maintenance, optimize processes, and forecast future scenarios.

Benefits of TAAIB – vCPPS Platform Deployment Approach

- **Unparalleled Accuracy:** Simulated scenarios tailored to your manufacturing process.
- **Cost-Effective:** Test AI solutions virtually with visualizations (Including dynamic 3D visualizations) before rolling them out in the plant.
- **Seamless Integration:** Dual-platform operation between vCPPS and CPPS ensures minimal disruption.
- **Enhanced ROI:** Predictive maintenance, process optimization, and real-time insights drive tangible benefits.