**AI-Driven Production Planning Optimization at Renault**

**Challenges:**  
As a key Project leader in Renault’s global digital innovation team, I was tasked with resolving major inefficiencies in the production planning process. Despite stable demand patterns and adequate inventory levels, the production team faced constant disruptions due to frequent changes in production plans and shortages. These inefficiencies led to increased operational costs, high cycle times, and inconsistent production schedules, which consumed significant management resources. The primary objective was to stabilize demand signals, optimize production sequences, and reduce the frequency of production plan changes, ultimately driving cost reductions and improving operational efficiency.

**Innovative Solution Design:**

I initiated the implementation of an AI-driven supply chain analytics platform to transform Renault’s production planning process. The solution was designed to address key operational challenges and deliver substantial improvements across several areas:

* **AI-Powered Supply Chain Analytics Platform:** I spearheaded the deployment of an AI-based tool that integrated real-time data from production, inventory, and demand forecasts, enabling smarter, faster decision-making across the production lifecycle.
* **Predictive Demand Signal Stabilization:** I led the development of AI models that accurately predicted demand fluctuations, stabilizing the demand signal and reducing the need for frequent adjustments to production plans.
* **Optimized Production Sequences with AI:** I directed the analysis of Renault’s line changeover matrix, leveraging AI algorithms to create the most cost-effective production sequence. This allowed us to implement the production wheel methodology, which optimized the 16-week production plan and aligned it with manufacturing constraints.
* **AI-Driven Scenario Simulations:** I introduced AI-powered dashboards that enabled the team to generate and evaluate multiple production scenarios, analyzing trade-offs between manufacturing costs, capacity levelling, and inventory impact, allowing for informed, data-driven decisions.

**Impact and Results:**

Under my leadership, Renault achieved significant improvements in production planning, cost reduction, and operational efficiency:

* **15% Reduction in Changeover Time and Cost:** AI-optimized scheduling improved the efficiency of production changeovers, reducing both time and associated costs.
* **Stabilized Demand and Prevented Overtime:** AI-driven demand signal stabilization allowed for consistent production schedules, minimizing the need for overtime and variable shift patterns.
* **12% Reduction in Inventory Levels:** Shortened cycle times and improved production adherence led to lower inventory levels, reducing carrying costs and freeing up working capital.
* **60% Reduction in Scheduling Changes:** The implementation of AI significantly reduced disruptions, leading to a dramatic decrease in last-minute scheduling adjustments and boosting production stability.

**My Role:**

As the driving force behind this initiative, I:

* Collaborated with cross-functional teams to define the strategy for the AI-driven supply chain analytics platform and its integration into existing production processes.
* Led the design, development, and deployment of the AI models and dashboards, ensuring seamless integration with Renault’s ERP and production systems.
* Engaged with senior stakeholders to align the project objectives with broader business goals and secured their buy-in for the initiative.
* Managed the global rollout of the solution, overseeing change management efforts and ensuring smooth adoption across production teams.

This project not only delivered tangible improvements in operational performance but also set a new standard for how Renault approaches production planning and supply chain optimization, reinforcing our commitment to leveraging AI for business transformation.