**Project Scope Statement –** Integrated NPI Build Optimization Framework for Hardware Development

By

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**Name of Project:**

Integrated NPI Build Optimization Framework for Hardware Development

### **Project Purpose and Justification:**

The purpose of this project is to design and implement a comprehensive framework that streamlines the New Product Introduction (NPI) process for hardware manufacturing. The framework will enhance build planning, vendor collaboration, material forecasting, and risk mitigation to ensure timely and cost-effective product launches. This project will simulate real-world manufacturing scenarios to showcase the project manager's ability to coordinate cross-functional teams, manage risks, and drive hardware production readiness.

**Executive Summary**

* **Streamline NPI Build Processes**:  
  Develop an integrated framework for managing hardware build matrices, ensuring precision and readiness for critical components and assemblies.
* **Optimize Vendor Collaboration**:  
  Create a dashboard to simulate vendor collaboration, align lead times, and demonstrate methods to reduce supply chain delays.
* **Enhance BOM Management**:  
  Automate workflows for Bill of Materials (BOM) creation and manage engineering change orders to improve data accuracy.
* **Mitigate Risks in Hardware NPI**:  
  Identify and simulate risks (e.g., material shortages, design changes) to demonstrate effective risk management strategies.
* **Data-Driven Decision Making**:  
  Utilize predictive analytics and dashboards to track build readiness, supplier performance, and risk indicators.

### **Project Objectives:**

* Develop a centralized NPI dashboard for build matrix tracking and production readiness.
* Automate Bill of Materials (BOM) management and engineering change workflows.
* Implement vendor collaboration tools to optimize supply chain performance.
* Integrate risk management processes to mitigate potential production delays.
* Simulate pilot production runs to assess manufacturing readiness.
* Deliver data-driven insights using predictive analytics to optimize hardware production.

## **Business Requirements:**

**Business Need Addressed by the Project:**

The project addresses the need for **streamlined New Product Introduction (NPI) processes** in hardware development, which often suffer from inefficiencies, delays, and lack of visibility into key components of the supply chain, build matrices, and risk management.

**Problem Statement:**

Hardware development projects face the following challenges:

* **Delayed Readiness of Components:** Lack of efficient tracking for build matrices results in missed deadlines and delayed product launches.
* **Inefficient Material Forecasting:** Poor alignment with vendors leads to extended lead times and supply chain bottlenecks.
* **Inaccurate BOM Management:** Manual processes and errors in BOM creation reduce accuracy and hinder decision-making.
* **High Risk of Delays:** Unmanaged risks result in schedule disruptions and budget overruns.
* **Lack of Clear-to-Build (CTB) Visibility:** Insufficient integration of CTB processes reduces clarity on material readiness and logistics planning.

## **Solution Requirements:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Req#** | **Solution Requirement** | **Prioritization (MoSCoW)** | **Acceptance Criteria** | **Who will approve/accept deliverable?** |
| **1** | Develop a Centralized NPI Dashboard | Must Have | Dashboard Displays real-time build matrices and vendor readiness data | NPI Project Manager |
| **2** | Implement Automated BOM Management system | Must Have | BOM workflows are automated and integrate with change management | Engineering & Supply Chain Management |
| **3** | Create Vendor Collaboration Tool | Must Have | Tool tracks vendor lead times and provides automated alerts | Procurement Team |
| **4** | Integrate Risk Mitigation Framework | Should Have | Risks are identified, assessed and mitigation strategies stimulated | NPI Project Manager |
| **5** | Develop Material Forecasting tool | Should Have | Forecasting tools align material availability with production needs | Supply Chain Team |
| **6** | Conduct Pilot Production Runs | Must Have | Pilot builds meet quality and production readiness standards | Manufacturing and Quality Teams |
| **7** | Implement Quality Assurance Checks | Must Have | All components pass quality standards and compliance certifications | Quality Assurance Team |
| **8** | Generate Predictive Analysis Reports | Could Have | Reports provide actionable insights on supply chain performance | NPI Project Manager |
| **9** | Ensure Compliance with Industry Standards | Must Have | Compliance with ISO, CE and other relevant certifications | Regulatory Compliance Team |
| **10** | Develop Final Project Documentation and Presentation | Must Have | Comprehensive report covers all deliverables and outcomes | NPI Project Manager |

**MoSCoW Prioritization Key:**

* **Must Have:** Critical features without which the project will fail.
* **Should Have:** Important but not vital for the project.
* **Could Have:** Enhancements that are desirable but not necessary.
* **Won’t Have (for now):** Not included in this project cycle.

**Project Stakeholders:**

#### **1. Project Sponsor:** **Role:** Project Initiator and Sponsor **Interest:** Ensures the project aligns with strategic goals and is delivered within scope, budget, and timeline. **Influence:** High – Provides funding, approves key decisions, and oversees project progress.

#### **2. Project Manager (NPI Project Manager)** **Role:** Oversees project execution, manages resources, schedules, and ensures deliverables are met. **Interest:** Successful completion of the project objectives with minimal risks and within budget. **Influence:** High – Leads the project team and makes operational decisions.

#### **3. Engineering Team**

**Role:** Responsible for hardware design, BOM creation, and integration with manufacturing processes.  
**Interest:** Accurate and efficient design that meets production and quality standards.  
**Influence:** High – Provides technical expertise and manages design changes.

#### **4. Supply Chain & Procurement Team**

**Role:** Manages vendor relationships, material sourcing, and logistics.  
**Interest:** Ensures timely availability of quality components and materials.  
**Influence:** High – Coordinates with suppliers and ensures supply chain efficiency.

#### **5. Manufacturing Team**

**Role:** Executes pilot production runs and prepares for mass production.  
**Interest:** Smooth transition from prototype to scalable production.  
**Influence:** High – Validates production readiness and manages manufacturing constraints.

#### **6. Quality Assurance (QA) Team**

**Role:** Conducts quality checks and ensures compliance with industry standards.  
**Interest:** Delivery of high-quality products that meet safety and regulatory requirements.  
**Influence:** Medium – Approves product quality before production ramp-up.

#### **7. Risk Management Team**

**Role:** Identifies, assesses, and mitigates project risks.  
**Interest:** Minimizing risks related to delays, cost overruns, and production issues.  
**Influence:** Medium – Recommends risk mitigation strategies.

#### **8. Regulatory Compliance Team**

**Role:** Ensures the product meets industry standards and regulatory requirements.  
**Interest:** Compliance with legal and industry-specific regulations (ISO, CE, FCC).  
**Influence:** Medium – Provides certification and compliance documentation.

#### **9. Vendors & Suppliers**

**Role:** Provide components, materials, and services necessary for production.  
**Interest:** Long-term partnerships, timely payments, and clear communication.  
**Influence:** Medium – Directly impact material availability and production schedules.

#### **10. IT & Data Management Team**

**Role:** Supports system integration, data storage, and dashboard management.  
**Interest:** Reliable and secure data handling for decision-making tools.  
**Influence:** Medium – Maintains technical infrastructure.

#### **11. End Users/Customers** *(Simulated in this project)*

**Role:** Hypothetical users who will benefit from the final product.  
**Interest:** High-quality, reliable, and innovative hardware products.  
**Influence:** Low – Indirect influence through project goals and deliverables.

**Available Resources:**

**1. Human Resources**

* **Project Manager:** Responsible for project planning, execution, risk management, and stakeholder communication.
* **Data Analyst:** Manages data collection, analysis, and validation for material forecasting and BOM workflows.
* **Dashboard Developer:** Designs and develops dashboards for build matrices, CTB tracking, and performance monitoring.
* **Supply Chain Expert:** Provides expertise on procurement, vendor management, and inventory control.
* **Risk Manager:** Develops and implements the risk mitigation framework.
* **Quality Assurance (QA) Team:** Validates workflows, dashboards, and system performance.
* **Stakeholders:** Offer feedback, approve deliverables, and ensure alignment with business goals.

**2. Technical Resources (Tools and Software)**

* **Microsoft Excel:** For managing build matrices, BOM workflows, and data tracking.
* **Power BI/Tableau:** For advanced data visualization and performance dashboards.
* **Microsoft Project/JIRA:** For project management, task tracking, and milestone monitoring.
* **Google Workspace/SharePoint:** For document sharing, team collaboration, and real-time updates.

**3. Data Resources**

* **Simulated BOM Data:** Sample datasets to support BOM structuring, forecasting, and workflow automation.
* **Vendor and Supply Chain Data:** Simulated data for vendor performance, material lead times, and supply chain readiness.
* **Risk Assessment Templates:** Predefined templates for identifying and mitigating project risks.

**4. Infrastructure Resources**

* **Computers/Laptops:** Configured with required software tools for project execution.
* **Cloud Storage Platforms:** Google Drive, OneDrive, or SharePoint for secure file storage and collaboration.
* **Communication Tools:** Microsoft Teams, Slack, or Zoom for team meetings and stakeholder engagement.

**5. Financial Resources**

* **Allocated Budget:** Covers software access, consultation fees (if necessary), and minor operational expenses.
* **Training Budget (Optional):** For any required upskilling in data analysis, dashboard development, or risk management tools.

### **In-Scope Items:**

* **Dashboard Development:** Centralized platform for NPI tracking and reporting.
* **Vendor Collaboration:** Tools for supplier performance monitoring and lead time management.
* **BOM Management:** Automated workflows for BOM creation and engineering change management.
* **Risk Mitigation Framework:** Processes to identify and mitigate production risks.
* **Pilot Builds Coordination:** Simulation of small-scale production runs to validate processes.
* **Quality Assurance:** Integration of quality checks and compliance measures.
* **Final Documentation:** Comprehensive report and presentation of project outcomes.

### **Out-of-Scope Items:**

* **Full-Scale Manufacturing:** The project will not cover mass production beyond pilot runs.
* **Direct Procurement Management:** Actual vendor negotiations and contracts are excluded.
* **Sales and Marketing:** Product marketing and sales strategy development are not part of this project.
* **Customer Support Integration:** Post-launch customer service processes are excluded.

### **Project Deliverables:**

1. Centralized NPI Dashboard for build tracking.
2. Automated BOM and engineering change workflows.
3. Vendor collaboration and lead time tracking tool.
4. Risk mitigation framework with simulation reports.
5. Pilot production readiness checklist and reports.
6. Quality assurance and compliance documentation.
7. Final project report and presentation.

**Project Milestones:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Milestone** | **Description** | **Target Completion Date** | **Owner** |
| Project Initiation and Planning | Finalize project scope, objectives, and resource allocation | Week 2 | Project Manager |
| Requirements Gathering | Collect detailed requirements from stakeholders and define deliverables | Week 4 | Project Manager, Stakeholders |
| System Design and Architecture | Develop designs for build matrices, BOM workflows, and CTB dashboards | Week 6 | Dashboard Developer, Data Analyst |
| Prototype Development | Build initial prototype for dashboards, workflows, and risk frameworks | Week 10 | Dashboard Developer, Risk Manager |
| Risk Management Framework Integration | Implement predictive risk management tools into the system | Week 12 | Risk Manager |
| Testing and Quality Assurance (QA) | Conduct usability testing and validate workflows for accuracy | Week 16 | QA Team |
| Stakeholder Review and Feedback | Present deliverables to stakeholders and incorporate feedback | Week 18 | Project Manager, Stakeholders |
| Final Optimization and Adjustments | Refine dashboards and workflows based on testing and feedback | Week 20 | Project Team |
| Deployment and Documentation | Deploy the final framework and provide user documentation and training | Week 22 | Project Manager, QA Team |
| Project Closure | Final review, performance review and project handoff | Week 24 | Project Manager, Sponsor |

**Key Notes:**

* **Regular Check-ins:** Bi-weekly progress reviews will ensure the project stays on track.
* **Stakeholder Engagement:** Stakeholders will be consulted during major milestones for alignment.
* **Risk Management:** Continuous monitoring of risks throughout the project lifecycle.

### **Project Constraints:**

* Limited access to real-world manufacturing data (use of simulated data).
* Self-sponsored budget and resource limitations.
* Time commitment of 10–12 hours per week.
* Dependencies on simulated vendor and supply chain data.

### **Project Assumptions:**

* Simulated data will closely reflect real-world hardware manufacturing processes.
* Industry-standard tools (Power BI, SAP, ERP systems) are suitable for project needs.
* Vendor collaboration tools will effectively model supplier performance scenarios.
* Risk management models will accurately reflect potential production challenges.

### **Acceptance Criteria:**

* All project deliverables must meet defined quality standards and be completed within the project timeline.
* The NPI dashboard must effectively track build matrices and vendor readiness.
* Risk mitigation strategies must be well-documented and validated through simulations.
* Final documentation must clearly present project outcomes and insights.

**Project Boundaries:**

#### **Process Boundaries**

* **No Custom Process Overhaul:**  
  The project will enhance existing NPI processes but will not redesign or replace core operational workflows.
* **Limited Change Management:**  
  Formal change management strategies (e.g., employee training programs, process adoption plans) will not be developed. Basic user guidance will be provided.

#### **Technology Boundaries**

* **Limited Data Security Measures:**  
  Data security and compliance policies are not part of the project. Existing security protocols will be followed for handling project data.
* **No Cross-Platform Compatibility Testing:**  
  Dashboards and workflows will be designed for internal tools (e.g., Excel, Power BI) but will not be optimized for multiple platforms or devices.

#### **Operational Boundaries**

* **No Supply Chain Negotiations:**  
  The project will not engage in direct supplier negotiations or contract modifications; it will only simulate supply chain data.
* **Exclusion of Real-Time Monitoring:**  
  There will be no implementation of real-time monitoring or tracking systems for component readiness or logistics.

#### **Financial Boundaries**

* **No Additional Capital Investments:**  
  The project will not request funding for new infrastructure, software, or tools beyond existing organizational resources.
* **No Cost Optimization for Procurement:**  
  While the project will optimize material forecasting, it will not focus on procurement cost reduction strategies.

#### **Resource Boundaries**

* **Fixed Resource Allocation:**  
  The project will be limited to the assigned internal resources, with no scope for hiring additional personnel or consultants.
* **Limited Cross-Department Involvement:**  
  Collaboration will be limited to relevant departments (NPI, Supply Chain, Procurement, Engineering) without engaging unrelated teams.

#### **Geographical Boundaries**

* **Single Location Focus:**  
  The project will focus on improving processes within a single operational facility or region and will not expand globally.

**Approvals:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Approval Type** | **Approver Name/Title** | **Role in project** | **Approval Date** | **Signature** |
| Project Charter | Project Sponsor | Provides overall project authorization |  |  |
| Scope Statement Approval | Project Sponsor/Key Stakeholders | Validates project scope and objectives |  |  |
| Budget Approval | Finance Manager/Project Sponsor | Confirms budget allocation and funding approval |  |  |
| Milestone Deliverables | Project Manager/Stakeholders | Approves milestone completions (design, testing) |  |  |
| Risk Management Plan | Risk Manager/Project Sponsor | Reviews and approves the risk mitigation strategy |  |  |
| Final Project Deliverables | Project Sponsor/Stakeholders | Approves final project completion and handoff |  |  |
| Project Closure | Project Sponsor | Approves formal project closure |  |  |

### **Approval Process:**

1. **Documentation Submission:** The Project Manager submits deliverables for review at each stage.
2. **Stakeholder Review:** Key stakeholders evaluate the deliverables and provide feedback.
3. **Formal Approval:** Authorized approvers sign off on completed milestones or deliverables.
4. **Record Keeping:** All signed documents are archived for future reference and audits.

### **Sign-Off Section**

I hereby approve the details outlined in this project plan and authorize the project team to proceed.

|  |  |  |
| --- | --- | --- |
| **Title** | **Signature** | **Date** |
| Project Sponsor |  |  |
| Project Manager |  |  |
| Finance Manager |  |  |