**VTRIA ERP Software Specification for VTRIA Engineering Solutions Pvt Ltd**

**Introduction**

**This document presents the proposed specification for a custom Enterprise Resource Planning (ERP) software, named VTRIA ERP, designed for VTRIA Engineering Solutions Pvt Ltd (VESPL). Headquartered in Mangalore, Karnataka, India, with two offices in Mangalore, one in Bangalore, and one in Pune, Maharashtra, VESPL operates in Industrial Automation, Electrical Control Panels, Industrial Air Conditioning (HVAC), Industrial Refrigeration, and manufacturing large ceiling fans. The software will streamline VESPL’s business processes from sales enquiries to delivery, with stock management across all three locations, task tracking, document generation, role-based access for different user groups, and a new ticketing system for managing customer support issues.**

**The VTRIA ERP aims to enhance operational efficiency, provide real-time visibility into cases and tickets, and ensure compliance through audit tracking. Key features include a queue-based case lifecycle, a ticketing system for customer support issue resolution (mapped to products, customers, etc.), a futuristic, professional, easy-to-use dashboard for case and queue management, automated notifications, customizable settings, and robust manufacturing support. Cases and tickets can be closed at any phase with mandatory comments, with append-only notes at the bottom of each case/ticket page, prefixed with date, time, and updater information. Users can belong to multiple groups, and provisions exist for adding/editing products, makes, models, and tracking batch-specific pricing/discounts. Cases/Enquiries are logged only by sales department users (e.g., Sales Admin, Sales Representative). Managers can assign cases directly to engineers/users. Case aging is implemented with color codes.**

**System Overview**

**The VTRIA ERP will provide a comprehensive, user-friendly platform to manage VESPL’s end-to-end business operations and customer support, tailored to the needs of its diverse user groups and multi-location stock requirements.**

**- Key Features:**

**- Document Generation: PDFs (e.g., Enquiries, Quotations, Invoices) include company header, logo, address, date, place; saved to customizable folders.**

**- Document ID Format: Standardized IDs (e.g., VESPL/EQ/2526/001 for Enquiry, VESPL/TK/2526/001 for Ticket), with 2526 updating annually (e.g., 2627) and a three-digit serial number.**

**- User Groups and Access Control:**

**- Director: Full access to everything, including approvals for quotations, purchase orders, and manufacturing shortfall requests.**

**- General Manager: Oversees operations; can see all queues; approves high-level tasks.**

**- Manager: Manages teams; can see all queues; assigns cases directly to engineers/users.**

**- Team Lead: Leads specific teams; assigns cases within team; views relevant queues.**

**- Engineers: Works on assigned cases or self assign cases (e.g., design, manufacturing).**

**- Sales Admin: Manages sales enquiries, quotations, approvals; can approve from Approval Queue; logs cases/enquiries.**

**- Production Admin: Manages production-related tasks and queues.**

**- Sales Representative: Logs cases/enquiries; handles sales tasks.**

**- Users can belong to multiple groups (e.g., a person as both Designer and Team Lead).**

**- Access restricted by role to ensure data security and workflow efficiency.**

**- Case Tracking: Horizontal flowchart at the bottom of relevant pages visually tracks case progress (e.g., New → Estimated → Quoted → Delivered → Closed). – Also review status.**

**- Stock Management: Tracks inventory across Mangalore, Bangalore, and Pune, supporting bulk/split transfers and inter-store movements, with alerts for stock shortages. Includes tracking of parts with serial numbers, vendor warranty expiry dates, and customer warranty details once sold. Parts are tied to customers upon sale/delivery, enabling queries for warranty status, location, vendor, and remaining warranty period.**

**- Dashboard: Futuristic, professional, and easy-to-use interface displaying user's assigned cases, monitored queues, and all queues during development. Lists cases with Case Number, Customer Name, Opened Date, Status, color code for age, and hyperlink to open case. Managers/GM/Director see all queues.**

**- Reporting: Generates summaries for sales, stock, profits, and manufacturing metrics, exportable as PDF/CSV. Includes a dedicated report showing the lifecycle in chronological order for a specific case, displaying all events, state changes, notes, and actions in a timeline format. Additional reports for warranty tracking, such as parts by customer, remaining vendor/customer warranties, and expired/expiring warranties.**

**- Notifications: Sends email or in-app alerts for case assignments, approval requests, manufacturing shortfalls, and warranty expirations (e.g., alerts for approaching vendor warranty expiry on stocked parts).**

**- Audit Logs: Records all user actions for compliance and accountability.**

**- Settings: Allows Admin to configure company details (e.g., logo, address), document storage paths, and notification templates, including default warranty periods (e.g., 12 months for customer warranties).**

**- Technical Document Versioning: Tracks revisions of technical documents in manufacturing.**

**- Product Management: Provision to add/edit products, makes, models, categories, and subcategories. Tracks batch-specific details (e.g., MRP, discounts from dealers) for new received batches, including serial numbers and vendor warranty expiry dates. Upon sale, automatically assigns customer warranty (default 12 months from delivery date) and links the part/serial to the customer.**

**- Product Flexibility: Products (e.g., for automation, HVAC, or ceiling fans) are not tied to specific categories, with optional grouping during estimation for designer convenience. During estimation and manufacturing, system recommends parts with the oldest vendor warranties first (FIFO logic) to minimize expiration in stock; mouseover on part selections displays recommended serial numbers based on warranty age.**

**- Case Lifecycle: Cases use a queue-based system for progression, where engineers from relevant groups pick tasks from queues, assign to themselves, complete work, and move to the next queue or reject back with comments. Cases can be closed at any phase with mandatory comments. Case aging implemented with color codes.**

**- Case Notes: Displayed at the bottom of the case page; append-only after the last save, with each note prefixed by automatic date, time, and updater information.**

**- Ticketing System: Integrated module for managing customer support issues (e.g., post-sales queries, maintenance requests for products), mapped to specific products, customers, serial numbers, and related cases. Uses a separate lifecycle with its own queue-based workflow, case notes, notifications, and dashboard visibility. Supports warranty claims by displaying vendor and customer warranty details for the linked part/serial.**

**Business Process Flow**

**The VTRIA ERP streamlines VESPL’s operations through a queue-based workflow. Cases start in the default Enquiry Queue. Engineers from appropriate groups pick cases from queues, assign to themselves (group membership required), work on them, and move to the next queue upon completion. Rejections send the case back to the previous queue/person with comments. Managers can assign cases directly to engineers/users. All actions are logged for audit purposes, trigger notifications, and append case notes (prefixed with date/time/updater). Cases can be closed at any phase with mandatory comments; state changes append notes to the case notes section at the bottom of the case page. Case aging is tracked with color codes (e.g., green for new, yellow for aging, red for overdue). The ticketing system follows a similar but separate queue-based flow for customer support issues.**

**1. Sales Enquiry**

**- Description: Captures customer enquiries to initiate projects (logged only by sales department users, e.g., Sales Admin, Sales Representative).**

**- Details: Includes Date, Client (with option to add new clients), Project Name, Description, Source such as email, call, whatsapp, direct and Received By. Status starts as “New.”**

**- Queue: Starts in Enquiry Queue.**

**- Actions: Sales department user picks from Enquiry Queue, assigns to self, updates, and moves to Estimation Queue (sets status to “Assigned”; sends notification; appends case note).**

**- Documents: Enquiry PDF (VESPL/EQ/2526/XXX).**

**- Access: Sales department creates; Designer views.**

**- Dashboard: Displays as “New” or “Assigned,” with case number, customer name, opened date, status, age color code, hyperlink to open.**

**- Rejection/Closure: Possible with comments (e.g., invalid enquiry); reject back if needed.**

**2. Estimation**

**- Description: Designers create detailed cost and material estimates for projects.**

**- Details: Organized into editable Main Sections (e.g., “Main Panel”) and Subsections (e.g., “Incoming”). Materials include:**

**- Name, Make, Model, Part Code: Selected from a comprehensive product database (with provision to add new products/makes/models). Mouseover on parts displays recommended serial numbers based on oldest vendor warranty (FIFO) to prioritize usage and avoid expiration.**

**- Category, SubCategory: Optional for grouping (e.g., “HVAC Parts” → “Compressors”), not tied to products outside estimation.**

**- Quantity: Manual entry, with red highlights for stock shortages across Mangalore, Bangalore, or Pune.**

**- Pricing: Auto-retrieved MRP, Last Price, and Discount (batch-specific); editable Discount %; calculated totals.**

**- Queue: Estimation Queue (picked by Designer from Design group).**

**- Actions: Designer picks from Estimation Queue, assigns to self, completes estimation, and moves to First Review Queue (sets “Pending First Review”; sends notification; appends case note). Rejection sends back to Estimation Queue/person with comments.**

**- Access: Designer edits; Sales-Admin/Manager reviews.**

**- Dashboard: Shows as “Assigned,” “Pending First Review,” or “Estimated,” with case details and hyperlink.**

**- Rejection/Closure: Possible with comments (e.g., unfeasible estimate); reject back if rejected.**

**3. Quotation**

**- Description: Prepares customer quotations based on approved estimations.**

**- Details: Aggregated format with Item List (No., Image, Item Description, HSN/SAC, Quantity, Unit, Rate, Discount, Tax [CGST/SGST/IGST], Amount, Lead Time). Alerts if profit margin <10%.**

**- Queue: Quotation Queue (after approval from Second Review Queue).**

**- Documents: Quotation PDF (VESPL/Q/2526/XXX) and Bill of Materials (BOM, VESPL/BOM/2526/XXX).**

**- Actions: Sales-Admin picks from Quotation Queue, assigns to self, completes quotation, and moves to First Review Queue (sets “Pending First Review”; sends notification; appends case note). Post-second review approval, status updates to “Quoted”; PDF downloadable (appends note). Rejection sends back to Quotation Queue/person with comments.**

**- Access: Sales-Admin generates; Director approves (from Review Queues; full access allows oversight).**

**- Dashboard: Shows as “Pending First Review,” “Pending Second Review,” or “Quoted,” with case details and hyperlink.**

**- Rejection/Closure: Possible with comments (e.g., customer rejection); reject back if rejected.**

**4. Purchase Enquiry (Post-Customer Approval)**

**- Description: Requests supplier quotes for materials listed in BOM.**

**- Details: Editable material list from BOM.**

**- Queue: Purchase Enquiry Queue.**

**- Documents: Purchase Enquiry PDF (VESPL/PR/2526/XXX).**

**- Actions: Sales-Admin or Accounts picks from Purchase Enquiry Queue, assigns to self, completes, and moves to next queue (sets “Purchasing”; appends case note). Rejection sends back with comments.**

**- Access: Sales-Admin or Accounts.**

**- Dashboard: Shows as “Purchasing,” with case details and hyperlink.**

**- Rejection/Closure: Possible with comments (e.g., unavailable materials); reject back if needed.**

**5. Purchase Order (PO) and Proforma Invoice**

**- Description: Formalizes material purchases based on supplier responses.**

**- Details: Includes supplier prices, highlighting differences from estimation.**

**- Queue: PO Queue.**

**- Documents: PO PDF (VESPL/PO/2526/XXX), Proforma Invoice (VESPL/PI/2526/XXX).**

**- Actions: Accounts picks from PO Queue, assigns to self, completes, and moves to Approval Queue (sets “Pending Approval”; sends notification; appends case note). Post-approval, status updates to “Ordered”; PI downloadable (appends note). Rejection sends back to PO Queue/person with comments.**

**- Access: Accounts generates; Sales-Admin approves (from Approval Queue); Director has full access.**

**- Dashboard: Shows as “Pending Approval” or “Ordered,” with case details and hyperlink.**

**- Rejection/Closure: Possible with comments (e.g., supplier issues); reject back if rejected.**

**6. Goods Receipt and Stock Update**

**- Description: Records receipt of purchased materials and updates stock.**

**- Details: Verifies materials against PO; updates serial numbers, vendor warranty expiry dates, and batch-specific pricing/discounts (e.g., dealer discounts for new batches).**

**- Queue: GRN Queue.**

**- Documents: Goods Received Note (GRN) PDF (VESPL/GRN/2526/XXX).**

**- Actions: Accounts or Technicians picks from GRN Queue, assigns to self, completes, and moves to next queue (sets “Received”; appends case note). Rejection sends back with comments.**

**- Access: Accounts or Technicians.**

**- Dashboard: Shows as “Received,” with case details and hyperlink.**

**- Rejection/Closure: Possible with comments (e.g., defective goods); reject back if needed.**

**7. Manufacturing**

**- Description: Manages production of VESPL’s products (e.g., control panels, ceiling fans).**

**- Details:**

**- Case Ownership: Technician assigns themselves, setting accepted date and status to “In Progress.”**

**- Technical Information: Displays Enquiry (Client, Project), Estimation (materials), and BOM details.**

**- Document Management: Upload/download technical documents (e.g., CAD files, PDFs) with versioning to track revisions (e.g., v1, v2).**

**- Material Usage Tracking: Records materials used from BOM, with options to:**

**- Mark as Used (updates stock, assigns specific serial numbers with recommendation for oldest vendor warranties via mouseover or auto-suggest).**

**- Request shortfall approvals (sets “Pending Review”; sends notification to Admin/Director; appends case note).**

**- Return excess materials to stock.**

**- Queue: Manufacturing Queue (picked by Technician from Technicians group).**

**- Actions: Technician picks from Manufacturing Queue, assigns to self, completes, and moves to Approval Queue for shortfall reviews or directly to Invoicing Queue (sets “Delivered”; appends case note). Rejection sends back to Manufacturing Queue/person with comments.**

**- Documents: Versioned technical documents stored with case.**

**- Access: Technicians manage; Admin/Director reviews shortfalls; Sales-Admin can approve from queue; Director has full access.**

**- Dashboard: Shows as “In Progress” or “Pending Review”; “Delivered” post-completion, with case details and hyperlink.**

**- Notifications: Sent for assignments, shortfall requests, and completion.**

**- Reports: Metrics on material usage and production times.**

**- Rejection/Closure: Possible with comments (e.g., production halt); reject back if rejected.**

**8. Invoicing and Delivery**

**- Description: Finalizes customer billing and delivery.**

**- Details: Generates invoices and delivery challans. Upon delivery, automatically assigns customer warranties (default 12 months from delivery date) to serialized parts used in the product, linking them to the customer for tracking.**

**- Queue: Invoicing Queue.**

**- Documents: Invoice PDF (VESPL/I/2526/XXX), Delivery Challan (VESPL/DC/2526/XXX).**

**- Actions: Accounts picks from Invoicing Queue, assigns to self, completes, and moves to Closure Queue (status “Delivered”; appends case note). Rejection sends back with comments.**

**- Access: Accounts finalizes; Director has full access.**

**- Dashboard: Shows as “Delivered,” with case details and hyperlink.**

**- Rejection/Closure: Possible with comments (e.g., delivery issues); reject back if rejected.**

**9. Case Closure**

**- Description: Confirms case completion after customer feedback.**

**- Details: Requires customer confirmation of dispatch/receipt; mandatory comments for early closures. Verifies that all serialized parts have been linked to the customer with active warranties.**

**- Queue: Closure Queue.**

**- Actions: Accounts or Sales-Admin picks from Closure Queue, assigns to self, confirms, and closes (update status to “Closed”; send final notification; appends case note). Rejection sends back with comments.**

**- Access: Accounts or Sales-Admin closes; Director has full access.**

**- Dashboard: Cases move off open list once “Closed.”**

**Ticketing System**

**The integrated ticketing system manages customer support issues (e.g., post-sales maintenance, warranty claims, product queries), mapped to specific products, customers, serial numbers, and optionally linked to existing cases. It operates as a separate lifecycle, similar to the Enquiry process, with its own queue-based workflow, case notes, notifications, and dashboard visibility:**

**- Creation: Logged by authorized users (e.g., Sales Admin, Support Representatives); starts in a default Support Ticket Queue. Includes details such as Date, Customer (with option to add new), Product (selected from database, including make, model, serial number), Description, Issue Type, Source (e.g., email, call, whatsapp), and Received By. Status starts as “New.” Automatically displays vendor and customer warranty details for the selected serial number, including remaining warranty period, vendor, and location.**

**- Workflow: Follows queue-based progression (e.g., Support Ticket Queue → Diagnosis Queue → Resolution Queue → Closure Queue), with assignment, rejection, and closure options. Engineers/Support staff pick from queues, assign to themselves, work on issues, and move forward or reject back with comments.**

**- Details: Ticket Number, Description, Priority, Assigned To, Status, Age Color Code, Linked Case (if applicable), Product/Customer Mapping, Warranty Details (vendor expiry, customer expiry, remaining periods).**

**- Dashboard: Included in case list with hyperlinks; filterable by queue/status/type (e.g., support vs. sales).**

**- Closure: Possible at any phase with mandatory comments; state changes append notes.**

**- Documents: Support Ticket PDF (VESPL/TK/2526/XXX); additional reports or resolution summaries.**

**- Access: Support department creates and manages; relevant groups (e.g., Engineers) handle resolutions; Managers/Directors oversee.**

**- Notifications: Sent for assignments, updates, and resolutions, including warranty-related alerts.**

**- Rejection/Closure: Possible with comments (e.g., invalid ticket); reject back if needed.**

**Dashboard**

**The dashboard provides a futuristic, professional, and easy-to-use centralized view of all open cases, tickets, and queues, enhancing visibility and management:**

**- Personalized View: Upon launch, shows user's assigned cases/tickets and monitored queues (e.g., their own cases with Case/Ticket Number, Customer Name, Opened Date, Status, age color code, and hyperlink to open). During development, all queues are visible.**

**- Manager View: Managers/GM/Director see all queues; can assign cases/tickets directly to engineers/users.**

**- Case/Ticket List: Displays Case ID, Enquiry ID, Client, Project Name, Status, Assigned To, Last Action Date, Current Queue.**

**- Filters: Filter by status (New, Assigned, Pending Approval, Estimated, Quoted, Purchasing, Ordered, Received, In Progress, Pending Review, Delivered) or queue (e.g., Enquiry Queue, Estimation Queue, Support Ticket Queue). Additional filters for warranty-related views (e.g., by customer, serial number, expiring warranties).**

**- Highlights: Cases pending Approval (yellow, e.g., Estimation, Quotation) or Review (orange, e.g., Manufacturing shortfalls).**

**- Case Aging: Color codes based on age (e.g., green for new, yellow for aging, red for overdue).**

**- Reports: Exportable summaries (PDF/CSV) for sales performance, stock levels, profit margins, case turnaround times, and manufacturing metrics.**

**- Access: Role-based (e.g., Technicians see Manufacturing Queue cases, Directors see all).**

**Case Status Flowchart**

**A horizontal flowchart at the bottom of relevant pages visually tracks case/ticket progress (closure possible at any phase):**

**[Enquiry (EQ)] --> [Estimation (ET)] --> [Quotation (Q)] --> [Purchase Enquiry (PR)] --> [PO/PI] --> [GRN] --> [Manufacturing] --> [Invoice/DC] --> [Closure]**

**(New) (Assigned) (Quoted) (Purchasing) (Ordered) (Received) (In Progress) (Delivered) (Closed)**

**- Details: Color-coded (Green: completed, Yellow: current, Gray: pending); includes Pending Approval/Review states. Separate but similar flowchart for support tickets (e.g., [Support Ticket] --> [Diagnosis] --> [Resolution] --> [Closure]).**

**Additional Features**

**- Reporting Module: Generates detailed reports on sales, stock, profits, and manufacturing, accessible via the dashboard for strategic decision-making. Includes a chronological lifecycle report for individual cases/tickets, presenting a timeline of all events, state changes, notes, actions, dates, times, and responsible users in sequential order, exportable as PDF/CSV. Warranty-specific reports: list of parts by customer/serial, vendor/customer warranty statuses, locations, and expiring warranties (sorted by oldest first).**

**- Notification System: Sends email or in-app alerts for case assignments, approval requests, and manufacturing shortfalls, ensuring timely action across locations. Includes alerts for vendor warranty expirations on stocked parts and customer warranty milestones.**

**- Audit Logs: Records all user actions (e.g., submissions, approvals, document uploads) for compliance and accountability.**

**- Settings Module: Allows Admins to configure company details (e.g., logo, address), document storage paths, and notification templates.**

**- Technical Document Versioning: Tracks revisions of manufacturing documents (e.g., CAD files) to support iterative production processes.**

**- Case Notes: Append-only section at the bottom of the case page for comments after each state change; each note prefixed with automatic date, time, and updater information; updates only after the last save.**

**Benefits for VESPL**

**- Efficiency: Streamlines operations from enquiry to closure, reducing manual effort.**

**- Visibility: Dashboard and flowchart provide real-time case tracking, with enhanced warranty visibility.**

**- Flexibility: Supports multi-location stock, multi-group users, batch-specific product management, and warranty tracking without restrictive categorizations.**

**- Compliance: Audit logs ensure transparency and accountability.**

**- Scalability: Configurable settings and reporting support future growth.**