Tech Potato Softwares LLP

Building Tomorrow's Technology Today

WattOS Portal — Comprehensive Project Quotation

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1. Executive Summary

This quotation covers the complete design, development, and deployment of **WattOS** — a cloud-based **Solar Assets Performance Monitoring Suite**. The platform enables comprehensive monitoring of solar installations including real-time dashboards, alarm management, ticketing, task management, billing, reporting, HR functions, and warranty tracking.

1.1 Project Summary

Item	Value
Total Project Cost	**₹44,50,000** (Forty-Four Lakhs Fifty Thousand Only)
— Application Development	₹37,00,000
— Data Engineering & Pipelines	₹4,50,000
— Quality Assurance (QA)	₹3,00,000
Estimated Monthly AWS Cost	**₹40,000 – ₹70,000**
Timeline to Production	**28 weeks**
Team Size	4 resources
Total Modules	12 major modules
Total Screens	50+ screens

2. Complete Feature Analysis

Based on the Figma design analysis, the platform consists of 12 major modules:

2.1 Dashboards Module

Purpose: Real-time monitoring of solar site performance with KPIs and visualizations.

Feature	Description
Site Overview Header	Site name, location, online/offline status indicator
Current Power Output	Real-time power generation in kW with trend indicator
Today's Energy	Daily energy production in kWh with comparison to yesterday
Inverter Efficiency	Real-time efficiency percentage with trend
DC Voltage	Current DC voltage reading with status
AC Voltage	Current AC voltage reading with status
Grid Frequency	Real-time grid frequency in Hz
Power Generation Chart	Time-series line chart (hourly power output)
Efficiency & Temperature Chart	Dual-axis chart showing efficiency vs temperature
Weekly Energy Production	Bar chart comparing actual vs expected energy
Performance Insights	AI-powered analysis with recommendations
System Health Panel	Component-wise health status (Inverter, Grid, DC Input, Temperature)

Screens: 3 (Overview, Detailed Analytics, Site Comparison)

2.2 Sites Module

Purpose: Site management and selection interface.

Feature	Description
Site Listing	Grid/list view of all sites with status indicators
Site Search	Search by name, location, capacity
Site Filters	Filter by status, region, capacity range
Site Cards	Quick view cards with key metrics per site
Site Selection	Click to navigate to site-specific dashboard
Map View	Geographic visualization of all sites (optional)

Screens: 2 (Site List, Site Details)

2.3 Alarms Module

Purpose: Alarm monitoring, history tracking, and reporting for proactive issue management.

Submenu	Features
Active Alarms	Real-time alarm list, severity indicators (Critical/Warning/Info), alarm details, acknowledge action, assign to user, snooze/mute options
Alarms History	Historical alarm records, date range filters, export to CSV/PDF, alarm resolution tracking
Alarms Report	Summary statistics, alarm trends by type/severity/site, MTTR (Mean Time to Resolve), alarm frequency analysis

Screens: 4 (Active List, Alarm Detail, History, Report Dashboard)

2.4 Tickets Module

Purpose: Issue tracking and helpdesk functionality for site operations.

Submenu	Features
Raise Ticket	Create new ticket form, category selection, priority, attach files/images, assign to technician, link to alarm
Open Tickets	List of pending tickets, status tracking, SLA indicators, filters by priority/assignee/site
Closed Tickets	Resolved ticket archive, resolution details, closure notes, reopen option
Tickets Report	Ticket volume trends, resolution time analytics, technician performance, SLA compliance

Screens: 5 (Create, Open List, Closed List, Ticket Detail, Report)

2.5 Tasks Module

Purpose: Task assignment and tracking for maintenance and operations teams.

Submenu	Features
Assigned to Me	Personal task list, due dates, priority indicators, status updates, completion marking
Assigned by Me	Tasks created/delegated, assignee tracking, progress monitoring
Task Report	Task completion rates, overdue analysis, workload distribution, productivity metrics

Screens: 4 (My Tasks, Delegated Tasks, Task Detail, Report)

2.6 Site Activities Module

Purpose: Scheduled maintenance and activity logging for solar sites.

Submenu	Features
Modules Cleaning	Cleaning schedule, completion logging, before/after photos, cleaning frequency tracking
Inverter Checks	Inverter inspection logs, parameter readings, issue flagging, maintenance history
Meter Reading	Energy meter readings entry, generation vs export tracking, billing data preparation
Site Visit	Visit scheduling, visit reports, checklist completion, visitor log

Screens: 6 (Schedule View, Log Entry Form, Activity History per type, Activity Report)

2.7 Billing Module

Purpose: Invoice generation and payment tracking for site operations/clients.

Submenu	Features
Create New Bill	Invoice generation, line items, tax calculation, energy-based billing, PDF generation
View Bills	Bill listing, status (Draft/Sent/Paid/Overdue), search and filters
Update Payments	Payment recording, partial payments, payment method tracking
Billing Report	Revenue analytics, outstanding amounts, payment trends, aging report

Screens: 5 (Create Bill, Bill List, Bill Detail, Payment Entry, Report)

2.8 Reports Module

Purpose: Advanced reporting for regulatory compliance and performance analysis.

Submenu	Features
ExDR Site Wiz	Site-level export data report, regulatory format, date range selection, auto-generation
ExDR Site Inverter Level	Inverter-wise detailed reports, performance breakdown
ExDR String Level	String-level granular data, fault detection support

Screens: 4 (Report Generator, Report List, Report Viewer, Export Options)

2.9 Graphs Module

Purpose: Custom visualization builder for ad-hoc analysis.

Submenu	Features
Create Graphs	Graph builder UI, parameter selection, date range, chart type selection (line/bar/pie), save graph
Defined Graphs	Saved graph library, quick access, edit/delete, share with users

Screens: 3 (Graph Builder, Graph Library, Graph Viewer)

2.10 HR Module

Purpose: Basic HR functions for field staff and operations team.

Submenu	Features
Todays Activities	Daily activity log, staff check-ins, task assignments for the day
Attendance	Attendance marking (present/absent/leave), monthly attendance report, site-wise attendance
Payroll	Basic payroll view, attendance-based calculation, salary slips (view only for MVP)

Screens: 4 (Daily View, Attendance Sheet, Payroll Summary, Staff Profile)

2.11 Warranty Management Module

Purpose: Equipment warranty tracking and claim management.

Submenu	Features
Warranty Information	Equipment registry with warranty dates, expiry alerts, warranty documents upload, claim history

Screens: 3 (Equipment List, Warranty Detail, Claim Form)

2.12 Settings Module

Purpose: Platform configuration and administration.

Submenu	Features
Add New Site	Site creation wizard, location/capacity/inverter details, commissioning date
Manage Sites	Site list with edit/deactivate options, bulk operations
Update DC Capacity	Capacity modification for existing sites, change history
Add New Component	Add inverters, meters, sensors to sites
User Permission Settings	User management, role assignment, site access control, permission matrix

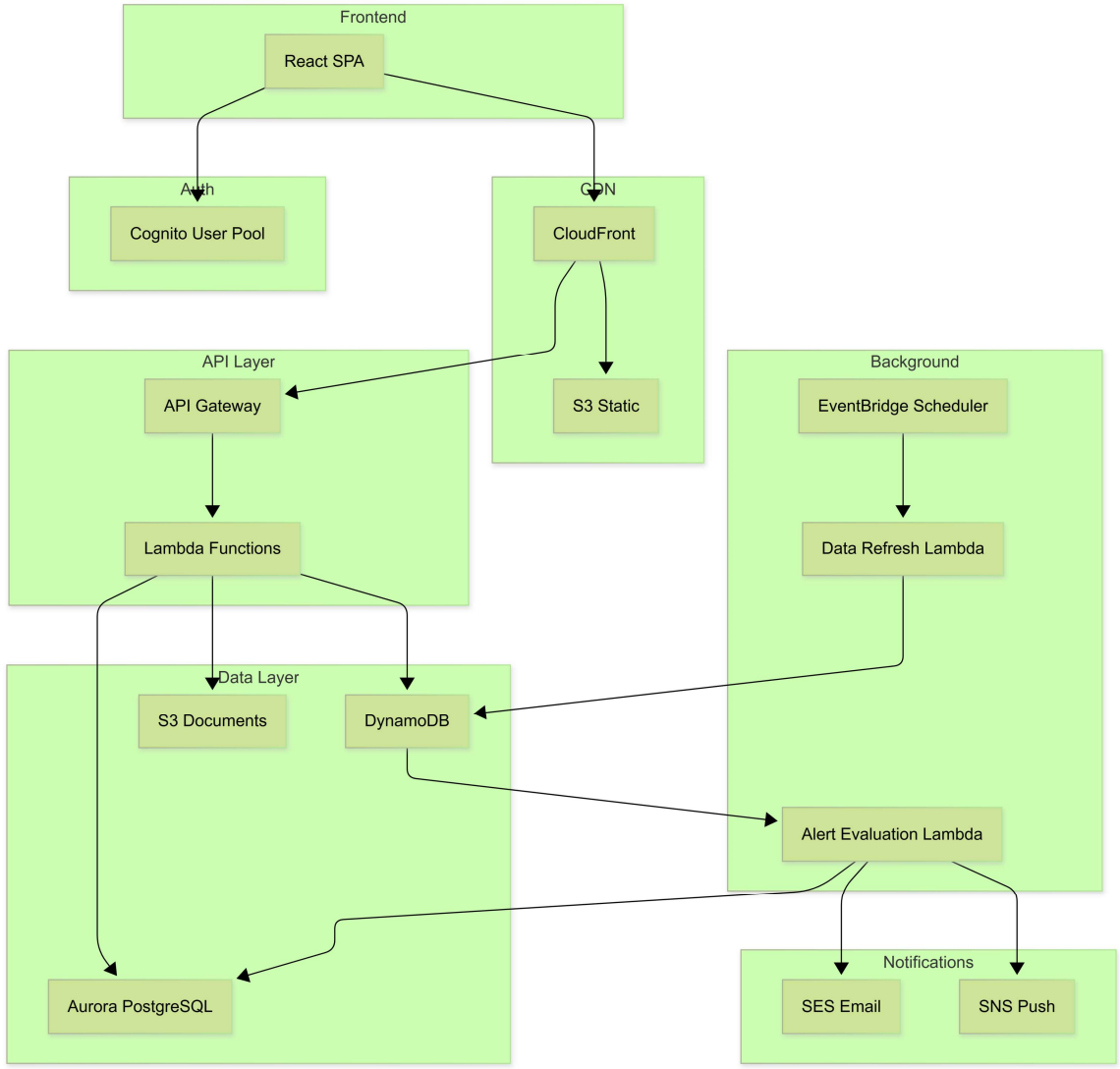
Screens: 6 (Add Site, Site List, Edit Site, Add Component, User List, Permission Editor)

3. Technical Architecture

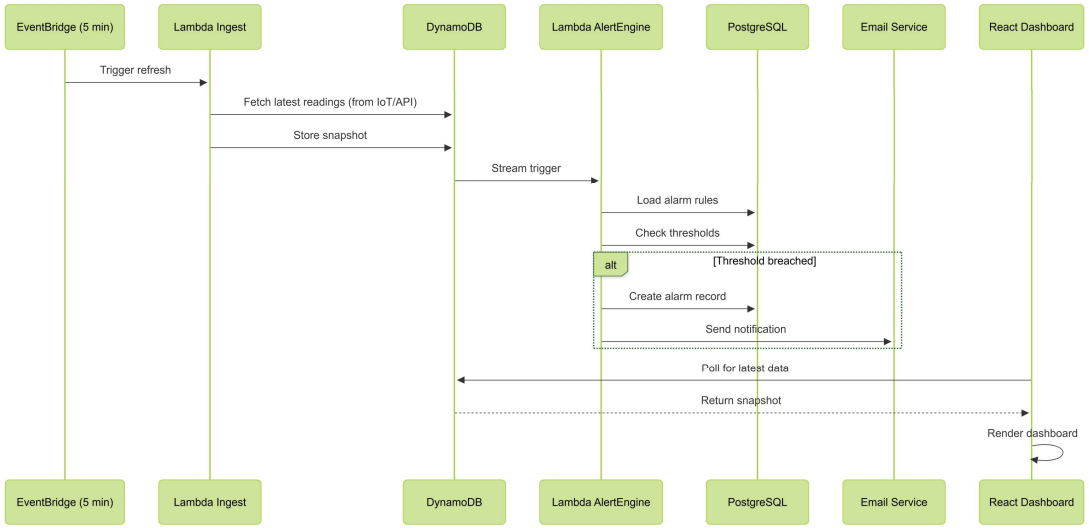
3.1 Technology Stack

Layer	Technology
Frontend	React 18, TypeScript, Tailwind CSS, Recharts, React Query
State Management	Zustand / Redux Toolkit
API	AWS API Gateway (HTTP API) + AWS Lambda (Node.js 20)
Authentication	Amazon Cognito (User Pools + RBAC)
Platform Database	Amazon Aurora PostgreSQL Serverless v2
Time-Series Data	Amazon DynamoDB (on-demand) + Amazon Timestream (optional for graphs)
File Storage	Amazon S3 (documents, images, reports)
Notifications	Amazon EventBridge + SES + SNS
PDF Generation	Lambda + Puppeteer / PDFKit
Hosting	Amazon S3 + CloudFront
Infrastructure	AWS CDK (TypeScript)
CI/CD	GitHub Actions + AWS CodePipeline

3.2 Architecture Diagram



3.3 Data Flow - Dashboard Refresh



4.1 Detailed Effort Breakdown

Module	Screens	Backend (person-days)	Frontend (person-days)	QA (person-days)	Total (person-days)
Dashboards	3	12	18	6	36
Sites	2	6	8	3	17
Alarms	4	14	16	6	36
Tickets	5	16	18	7	41
Tasks	4	12	14	5	31
Site Activities	6	18	20	8	46
Billing	5	20	16	7	43
Reports	4	16	12	5	33
Graphs	3	14	16	5	35
HR	4	14	14	5	33
Warranty Management	3	10	10	4	24
Settings	6	16	18	6	40
Auth & RBAC	3	14	10	5	29
Infrastructure & DevOps	-	20	-	5	25
Integration & Testing	-	10	10	15	35
Total	**52**	**212**	**200**	**92**	**504 person-days**

4.2 Effort Summary

Category	Person-Days	Person-Weeks
Backend Development	212	42.4
Frontend Development	200	40.0
QA & Testing	92	18.4
Total Effort	**504**	**100.8**

5. AWS Infrastructure Cost (Monthly)

All costs in **INR** at FX rate of ₹83 = 1 USD. Pricing based on **ap-south-1 (Mumbai)** region.

5.1 Monthly Infrastructure Cost (Lump Sum Estimate)

Scale	Sites	Users	Monthly AWS Cost (INR)
Pilot	10–30	50–100	**₹40,000 – ₹50,000**
Growth	50–100	200–500	**₹55,000 – ₹70,000**
Enterprise	200+	1,000+	**₹85,000 – ₹1,20,000**

***Note**: AWS infrastructure includes Cognito (Auth), CloudFront + S3 (Hosting), API Gateway + Lambda (APIs), Aurora PostgreSQL (Platform DB), DynamoDB (Time-series), EventBridge (Scheduling), SES (Email), CloudWatch (Monitoring), and related services. Actual costs depend on usage patterns and will be optimized post-deployment.*

5.2 AWS Cost Management

- Client owns the AWS account; billed directly by AWS in USD
- TechPotato provides cost monitoring dashboards and alerts
- Monthly cost review and optimization recommendations included for first 6 months
- Cost optimization strategies applied: reserved capacity, right-sizing, lifecycle policies

6. Development Quotation

6.1 Team Composition

Role	Responsibilities	Allocation	Duration
Senior Developer (Tech Lead)	Architecture, code reviews, backend development, DevOps	2 (full-time)	28 weeks
Full-Stack Developer	Frontend + backend development, API integration, testing	2 (full-time)	28 weeks

***Note**: Senior Developers will also handle architecture decisions and DevOps responsibilities. Full-Stack Developers will cover both frontend and backend work with integrated QA practices. This lean team structure optimizes cost while maintaining delivery quality.*

6.2 Cost Summary (Lump Sum)

Item	Amount (INR)
Development Services	
— Design, Development & Deployment	₹32,00,000
— Project Management & Coordination	₹2,50,000
— Documentation & Training	₹1,00,000
— Infrastructure Setup & DevOps	₹1,50,000
Total Development Cost	**₹37,00,000**

6.3 What's Included

- Complete development of all 12 modules (52+ screens)
- AWS infrastructure setup (IaC with AWS CDK)
- CI/CD pipeline configuration
- API development (~98 endpoints)
- Database design and implementation
- 3 months post-launch warranty support
- Technical documentation and admin guide

7. Data Engineering & Pipeline Development

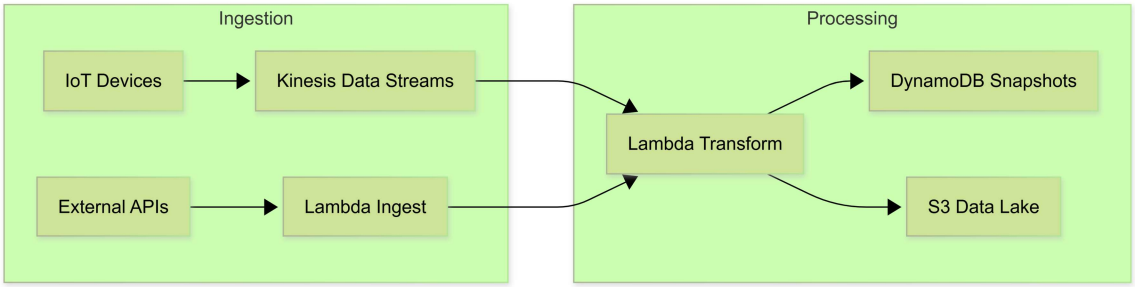
7.1 Overview

The WattOS platform requires a robust data engineering layer to handle real-time data ingestion, transformation, and analytics. This section covers the complete data pipeline infrastructure that powers the dashboards, alerts, and reporting modules.

7.2 Data Pipeline Components

Component	Description
Data Ingestion Layer	Real-time data collection from IoT devices, inverters, and meters via MQTT/HTTP APIs
Data Transformation	ETL processes for raw data cleaning, validation, and enrichment
Stream Processing	Real-time event processing for alarm triggers and threshold detection
Data Aggregation	5-minute, hourly, daily, and monthly rollups for dashboard KPIs
Data Lake	S3-based storage for historical data with partitioning and lifecycle management
Analytics Engine	Pre-computed metrics and trend analysis for performance insights

7.3 Pipeline Architecture



7.4 Data Pipeline Deliverables

Deliverable	Description
Data ingestion APIs	REST endpoints for device data submission
Real-time processing	Lambda-based stream processing with <1 min latency
Data validation	Schema validation, duplicate detection, anomaly flagging
Aggregation jobs	Scheduled aggregations for dashboard metrics
Alert evaluation	Rule-based threshold monitoring and trigger generation
Data archival	S3 lifecycle policies, Glacier for long-term storage
Data quality monitoring	Dashboards for data freshness, completeness, accuracy
Backfill utilities	Tools for historical data reprocessing

7.5 Data Engineering Cost

Item	Amount (INR)
Data Pipeline Development	
— Ingestion layer design & implementation	₹1,20,000
— Stream processing & transformation	₹1,00,000
— Aggregation & analytics engine	₹80,000
— Alert evaluation engine	₹60,000
— Data lake setup & archival	₹50,000
— Data quality & monitoring	₹40,000
Total Data Engineering Cost	**₹4,50,000**

8. Quality Assurance (QA)

8.1 QA Approach

Given the lean team structure, QA is integrated into the development workflow with a combination of automated testing and manual validation at key milestones.

8.2 QA Activities

Activity	Description
Unit Testing	Jest for frontend, Jest for backend Lambda functions
Integration Testing	API endpoint testing with Postman, database integration tests
E2E Testing	Playwright for critical user flows
Performance Testing	Load testing for API endpoints and dashboard rendering
Security Testing	OWASP top 10 validation, authentication flow testing
UAT Support	Test case preparation, bug triage, client demo support

8.3 QA Deliverables

- Test strategy document
- Test cases for all modules (functional + edge cases)
- Automated test suite (unit + integration + E2E)
- Bug tracking and resolution reports
- UAT sign-off documentation
- Performance benchmark report

8.4 QA Cost

Item	Amount (INR)
QA Services	
— Test planning & strategy	₹40,000
— Test case development	₹60,000
— Automated test suite	₹80,000
— Manual testing & UAT	₹70,000
— Performance & security testing	₹50,000
Total QA Cost	**₹3,00,000**

9.1 Total Project Cost

Component	Amount (INR)
Application Development	₹37,00,000
Data Engineering & Pipelines	₹4,50,000
Quality Assurance (QA)	₹3,00,000
Total Development Cost (one-time)	**₹44,50,000**
AWS Infrastructure (monthly, paid by client)	₹40,000 – ₹70,000
Annual AWS (estimated)	₹4,80,000 – ₹8,40,000

9.2 Cost Breakdown Summary

Category	Amount (INR)	% of Total
Application Development	₹37,00,000	83.1%
Data Engineering & Pipelines	₹4,50,000	10.1%
Quality Assurance	₹3,00,000	6.8%
Total	**₹44,50,000**	100%

9.3 Payment Schedule

Milestone	%	Amount (INR)	Trigger
Advance	25%	₹11,12,500	Contract signing
M1: Foundation + Auth	15%	₹6,67,500	Auth, Sites, Settings complete
M2: Dashboard + Alarms + Data Pipeline	20%	₹8,90,000	Dashboard, Alarms, Data Pipeline complete
M3: Operations Modules	20%	₹8,90,000	Tasks, Site Activities, Billing complete
M4: Analytics + HR + QA	10%	₹4,45,000	Reports, Graphs, HR, Warranty, QA complete
M5: UAT + Go-Live	10%	₹4,45,000	Production deployment
Total	100%	**₹44,50,000**	

9.4 AWS Costs (Paid Directly by Client)

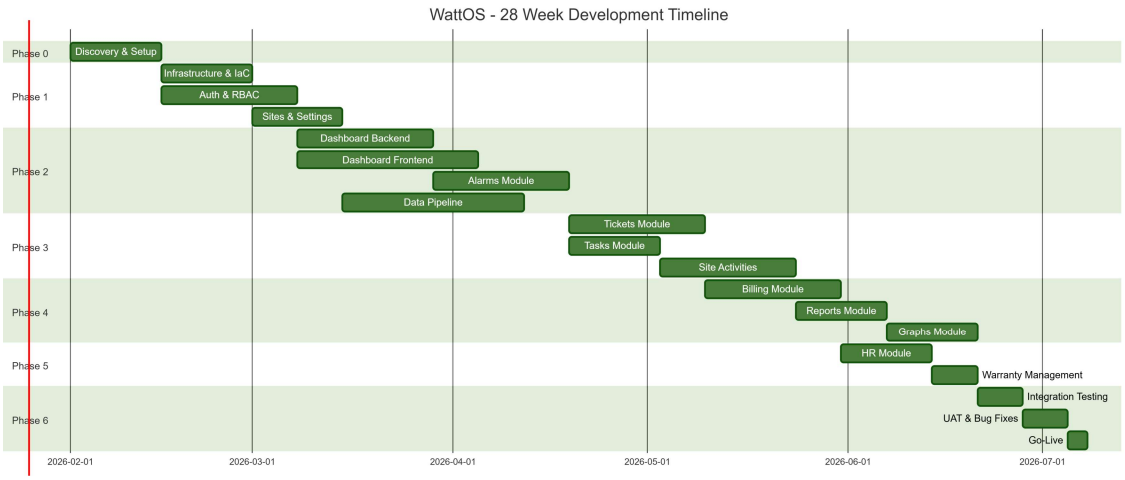
- Client creates and owns AWS account
- AWS bills client directly (USD, converted by bank)
- TechPotato provides cost monitoring dashboards and alerts
- Monthly cost review included for first 6 months post-launch

10. Delivery Timeline (28 Weeks)

10.1 Phase Schedule

Phase	Weeks	Duration	Modules
Phase 0: Discovery	1-2	2 weeks	Requirements, UI/UX finalization, architecture sign-off
Phase 1: Foundation	3-6	4 weeks	Infrastructure, Auth, RBAC, Sites, Settings
Phase 2: Core Monitoring	7-12	6 weeks	Dashboards, Alarms, Real-time data pipeline
Phase 3: Operations	13-18	6 weeks	Tickets, Tasks, Site Activities
Phase 4: Business	19-23	5 weeks	Billing, Reports, Graphs
Phase 5: HR & Warranty	24-26	3 weeks	HR module, Warranty Management
Phase 6: Hardening	27-28	2 weeks	UAT, bug fixes, performance tuning, go-live

10.2 Gantt Chart



10.3 Milestone Deliverables

M1: Foundation (Week 6)

- AWS infrastructure deployed (dev + staging)
- CI/CD pipeline operational
- Cognito authentication working
- User management with RBAC
- Sites CRUD complete
- Settings module functional

M2: Core Monitoring (Week 12)

- Dashboard with all KPIs and charts
- Real-time data refresh (5-minute)
- Alarm detection and notification
- Alarm management UI complete
- Tickets module functional

M3: Operations (Week 18)

- Tasks module with assignments
- Site Activities logging (all 4 types)
- Activity reports and history
- Mobile-responsive operations screens

M4: Analytics (Week 23)

- Billing module with PDF invoices
- All 3 ExDR report types
- Custom graph builder
- Report export functionality

M5: Complete (Week 26)

- HR module (attendance, activities, payroll view)
- Warranty management
- All integrations tested

M6: Go-Live (Week 28)

- UAT completed
- Performance optimized
- Production deployment
- Documentation and training

11. Screen Inventory (52 Screens)

As per figma provided OR based on requirements providedss

12. API Inventory (Estimated)

Module	Endpoints	Methods
Auth	5	10
Sites	6	12
Dashboards	8	16
Alarms	10	20
Tickets	8	16
Tasks	7	14
Site Activities	12	24
Billing	8	16
Reports	6	12
Graphs	5	10
HR	8	16
Warranty	5	10
Settings	10	20
Total	**98**	**196**

13. Database Schema Summary

13.1 PostgreSQL Tables (Platform Data)

Domain	Tables
Tenants & Sites	tenants, sites, site_components, site_inverters, site_meters
Users & Auth	users, roles, permissions, user_roles, site_memberships
Alarms	alarm_rules, alarms, alarm_history, alarm_assignments
Tickets	tickets, ticket_comments, ticket_attachments, ticket_history
Tasks	tasks, task_assignments, task_history
Site Activities	cleaning_logs, inverter_checks, meter_readings, site_visits
Billing	bills, bill_items, payments, billing_configs
HR	employees, attendance, payroll_entries, daily_activities
Warranty	equipment, warranties, warranty_claims
Audit	audit_logs
Total	**~35 tables**

13.2 DynamoDB Tables (Time-Series Data)

Table	Purpose
SiteSnapshots	5-minute interval site readings
InverterReadings	Inverter-level time-series data
DashboardCache	Pre-computed dashboard metrics
GraphData	Custom graph query results (cached)

14. Post-Launch Support

14.1 Warranty Period (Included)

- **6 months** of bug-fix support included at no additional cost
- Critical bugs: 24-hour response, 48-hour resolution
- Non-critical bugs: 72-hour response, 1-week resolution
- Excludes new feature requests and scope changes

14.2 Annual Maintenance Contract (AMC) — Optional

Plan	Monthly Cost	Includes
Basic	₹40,000	Bug fixes, security patches, AWS monitoring, 8x5 support
Standard	₹75,000	Basic + 15 hours/month enhancements, 10x5 support
Premium	₹1,25,000	Standard + 30 hours/month, priority support, 12x6 support

15. Assumptions & Dependencies

15.1 Client Responsibilities

- AWS account access within 1 week of signing
- Designate Product Owner and Technical SPOC
- Provide sample data for all modules
- Timely feedback (within 3 business days)
- Define alarm thresholds and business rules
- Provide branding assets (logo, colors)

15.2 Technical Assumptions

- Single AWS region (ap-south-1 Mumbai)
- English language only
- Data ingestion API/format to be defined in Phase 0
- Up to 200 sites for initial deployment
- Standard working hours (Mon-Fri, 10 AM - 7 PM IST)

15.3 Exclusions

- IoT device/sensor procurement and installation
- Data migration from legacy systems (quoted separately)
- Mobile native apps (React Native available as add-on)
- Third-party integrations beyond email notifications
- On-premise deployment
- Multi-language support

16. Terms & Conditions

1. **Quotation Validity**: 30 days from date of issue
2. **GST**: 18% GST applicable on all amounts (not included above)
3. **Payment Terms**: As per milestone schedule; invoices payable within 15 days
4. **Intellectual Property**: Source code ownership transfers to client upon final payment
5. **Confidentiality**: Mutual NDA to be signed before project commencement
6. **Change Requests**: Scope changes quoted separately with 2-week lead time
7. **Cancellation**: 45-day notice required; payment due for completed milestones
8. **Force Majeure**: Neither party liable for delays due to circumstances beyond control
9. **Warranty**: 6 months post go-live; excludes changes requested by client
10. **Liability**: Limited to fees paid under this agreement

17. Contact Information

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Appendix: Acceptance Sign-Off

	Client	**TechPotato**
Authorized Signatory		
Name		
Designation		
Date		
Signature		