Summary of Phase 1

Key Task	What to Document	Deliverables
Define System Architecture	- System architecture diagram (backend, frontend, hardware interactions) - API and framework decisions (Node.js, Angular, JSON, Chart.js) - Justification for technology choices	- System Architecture Diagram - Technical Design Document (TDD)
Define API & Backend Communication	- RESTful API specifications - Endpoints for controlling signal generator & retrieving oscilloscope data - Potential WebSocket integration for real-time data	- API Specifications Document
Define Hardware-Software Interaction	- Hardware-software interaction plan - USB-TMC setup process - SCPI command list - Expected oscilloscope responses	- Hardware-Software Interaction Diagram - PyVISA Test Script - SCPI Commands List
Plan Authentication (OAuth-based Security)	- OAuth provider decision (Google, GitHub, etc.) - Authentication flow diagram - User access levels (Roles & Permissions)	- Authentication Flow Diagram - Technical Document on OAuth Implementation - User Roles & Permissions Document
Plan Kubernetes & CI/CD Integration	- CI/CD pipeline design (Automated testing & deployment strategy) - Kubernetes deployment architecture - Hosting environment selection	- CI/CD Workflow Diagram - Kubernetes Deployment Plan
GitHub Version Control & Documentation	- Repository structure - Initial README.md - Documentation for system architecture, API, and project overview	- GitHub Repository Setup - Initial README.md