DeltaCSL
Email: hello@deltacsl.com
Phone: +8801765403041

DELTA CYBER SECURITY LIMITED
J-12, Kazi Nazrul Islam Road, Mohammadpur
Dhaka - 1207, Bangladesh.

CASE STUDY
IOT-BASED HOME CONTROL SYSTEM

FROM CHALLENGES TO TRIUMPH

This project aimed to modernize a fragmented IoT home automation setup into a unified, intelligent control system. Using the SOLD architecture, we focused on scalability, multi-protocol support, and real-time responsiveness.

THE CHALLENGES

Conventional IoT solutions suffered from

- Tight coupling between UI and device logic, leading to frequent module failures.
- Latency issues under multi-user loads.
- Difficulty integrating heterogeneous communication protocols (BLE, Zigbee, MQTT).
- Unstructured data storage and state management.

The lack of modularity prevented both scalability and reliability.

STRATEGIC RESPONSE

The SOLD architecture was introduced to deconstruct the monolithic control loop into independent, cooperative layers

- Device Layer: Embedded ESP32 sensors/controllers connected via MQTT.
- Control Layer: Logic engine processing inputs and managing device states.
- Data Layer: Structured and time-series databases (PostgreSQL + InfluxDB).
- Interface Layer: Real-time dashboard via REST and WebSocket APIs.
- Optimization Layer: Dynamic rule engine monitoring latency, load, and energy metrics.
- This model enabled both structural stability and runtime adaptability without rewriting system logic.

RESULT

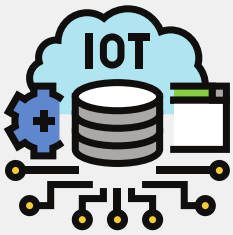
The system evolved from a static control setup to a self-optimizing, multi-protocol IoT ecosystem.

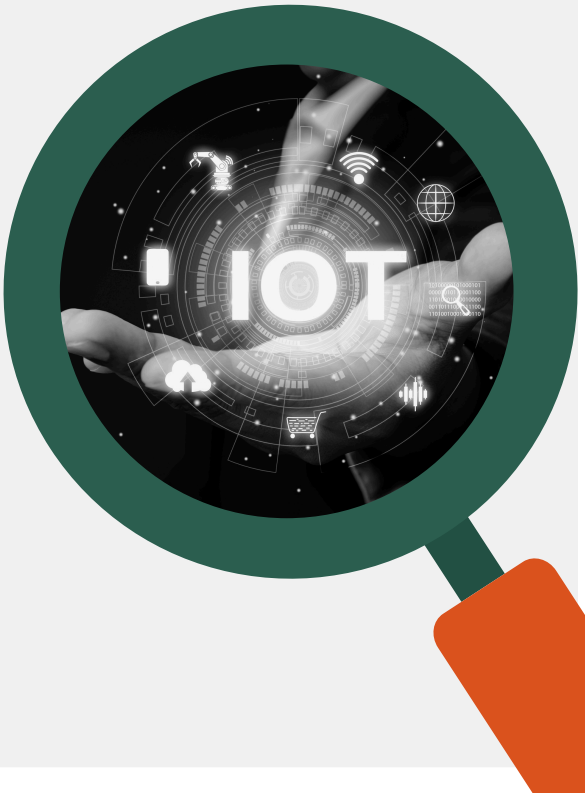
- Latency reduced by 42%.
- 65% drop in update failures.
- Sub-300ms control response time.
- Real-time addition of new devices without backend changes.

CONCLUSION

The SOLD model redefined how IoT ecosystems can grow by designing for adaptability first, not as an afterthought.

Architecture, not hardware, became the foundation of intelligence a decisive shift from reactive automation to proactive, systemoriented smart control.





DeltaCSL
Email: hello@deltacsl.com
Phone: +8801765403041

DELTA CYBER SECURITY LIMITED
J-12, Kazi Nazrul Islam Road, Mohammadpur
Dhaka - 1207, Bangladesh.

CASE STUDY

CUSTOM ERP DEVELOPMENT

FROM CHALLENGES TO TRIUMPH

We developed a tailored ERP platform for a mid-sized enterprise struggling with disjointed workflows. The goal was to unify operations and data management through a modular, scalable design built on the SOLD framework.

THE CHALLENGES

The client faced fragmented ERP systems with inconsistent data, repetitive workflows, slow reporting, and high costs for scaling new functionalities.

- Independent systems with no unified data schema.
- Repetitive data entry and inconsistency between modules.
- Complex and costly scaling of new functionalities.
- Slow reporting and poor operational visibility.
- Traditional ERP systems were inflexible, coupling logic and interface tightly, making long-term evolution difficult.

STRATEGIC RESPONSE

Using SOLD, the ERP became a modular, layered system with unified data and adaptable workflows for seamless expansion.

- System Layer: Core engine orchestrating data exchange between modules.
- Optimization Layer: Workflow automation, rule enforcement, and error recovery.
- Logical Layer: Centralized business logic abstracted from interfaces.
- Dynamic Layer: REST and WebSocket endpoints adaptable to changing requirements.
- Unified Data Schema: PostgreSQL for relational integrity, Redis for cache, and API-first communication.
- This architecture established a foundation where new modules could be introduced with zero disruption.

RESULT

The ERP transformed from fragmented workflows into a single, intelligent operational hub

- 48% faster report generation due to unified data flow.
- 70% fewer data inconsistencies across departments.
- Module rollout time cut from weeks to days.
- Real-time inter-module synchronization using event triggers.

CONCLUSION

Through the SOLD framework, ERP design became an exercise in architectural clarity rather than feature accumulation.

By layering logic, data, and optimization independently, the system gained agility and sustainability a genuine triumph of architectural discipline over fragmented legacy systems.

DeltaCSL
Email: hello@deltacsl.com
Phone: +8801765403041

DELTA CYBER SECURITY LIMITED
J-12, Kazi Nazrul Islam Road, Mohammadpur
Dhaka - 1207, Bangladesh.

CASE STUDY

SAAS PLATFORM DEVELOPMENT

FROM CHALLENGES TO TRIUMPH

This initiative focused on building a multi-tenant SaaS platform that could scale rapidly without compromising performance or isolation. The SOLD model guided the architecture toward agility, stability, and zero-downtime deployment.

THE CHALLENGES

The SaaS system struggled with duplication, performance, isolation, and downtime.

- Code duplication per client customization.
- Performance degradation under high tenant load.
- Weak data isolation compromising privacy and compliance.
- Downtime during feature releases or upgrades.
- Existing SaaS designs lacked both flexibility and operational efficiency.

STRATEGIC RESPONSE

Using SOLD, the SaaS platform became a layered, multi-tenant system with shared services, isolated data, and scalable infrastructure.

- We re-engineered the system with SOLD principles applied to multi-tenant architecture:
- System Layer: Tenant routing, onboarding, and subscription management.
- Optimization Layer: Intelligent load balancing and auto-scaling per tenant.
- Logical Layer: Shared microservices for authentication, billing, analytics.
- Dynamic Layer: Tenant-specific extensions, UI themes, and APIs.
- Hybrid Data Architecture: PostgreSQL schema-based isolation and S3 storage.
- Infrastructure: Containerized microservices (Docker + Kubernetes) with CI/CD for zero-downtime deployment.
- This structure enabled per-tenant flexibility within a shared, maintainable codebase.

RESULT

The platform achieved true elastic scalability and logical isolation, setting a new benchmark for operational

- Onboarding time reduced from 2 days to 10 minutes.
- 38% lower API latency under 1,000+ concurrent users.
- Zero downtime during upgrades.
- Scaled to 100+ new tenants per month without engineering overhead.

CONCLUSION

By structuring SaaS design around the SOLD framework, scalability became inherent rather than engineered after deployment.

The model balanced shared logic with individualized execution achieving both operational agility and tenant security, marking a clear triumph of architectural foresight.