

Ahmed Shalabi

Senior Solutions Architect — Multi-Cloud, Domain-Driven Design, Event-Driven Architecture

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Summary

Senior Solutions Architect with 12+ years delivering cloud-native, microservices-based platforms across government, banking, retail, and healthcare, including 6+ years as a software/solutions architect. Currently leading architecture at NHCI (National Housing Company Innovation), where I have designed 10+ systems in the Balady citizen super-app ecosystem — payments, debts, notifications, mini-apps, identity, GIS, document management, BNPL, and the underlying infrastructure substrate — and authored 11+ canonical High-Level Designs that serve as the agreed architecture across engineering teams. Core strengths: Domain-Driven Design (multi-bounded-context decompositions), C4 modelling as living architecture, event-driven workflows (RabbitMQ Streams, Kafka, CDC), and hybrid-cloud transitions (on-premise Kubernetes to cloud object storage).

Core Skills

- **Architecture and design:** C4 modelling, Domain-Driven Design (DDD), event-driven architecture, saga / outbox / CDC patterns, Strangler Fig migration, Backend-for-Frontend (BFF), multi-tenant and multi-region design, hybrid cloud, ADRs as living artefacts
- **Cloud and containers:** Kubernetes, OpenShift, OCI Object Storage, AWS, Azure, IBM Cloud, Apigee API Gateway, service mesh, Helm, GitOps
- **Backend:** Java 17 (Spring Boot, MicroProfile), Node.js (Express, NestJS), Python, ASP.NET Core
- **Data and messaging:** PostgreSQL, Oracle 19c, MongoDB, Redis Cluster, Elasticsearch, ArcGIS / Esri, RabbitMQ, RabbitMQ Streams, Apache Kafka, Airbyte
- **Workflow and rules:** Camunda BPMN/DMN (Self-Managed Community and Enterprise), saga compensation, custom rule engines
- **Observability and quality:** Sentry (self-managed), ELK Stack, Prometheus, Grafana, OpenTelemetry, SonarQube, image scanning, Elastic APM
- **Identity and compliance:** OAuth 2.0 / OIDC, JWT, high-assurance SSO, government SSO, PCI DSS, GDPR, PDPL data masking and sanitisation patterns
- **Frontend:** Angular 8+, Carbon Design System, Flutter, mobile Server-Driven UI (SDUI)
- **DevOps and tooling:** Azure DevOps / TFS, Jenkins, GitHub Actions, F5 load balancing, NGINX, Pandoc, PlantUML, Structurizr, draw.io

Professional Experience

Senior Solutions Architect — National Housing Company Innovation (NHCI), Riyadh — 2024–Present

- Led the Domain-Driven decomposition of the Commercial License monolith into several bounded contexts on Camunda BPMN/DMN — now the agreed target architecture. Produced ADRs, C4 diagrams, and a self-managed staging cluster sized for thousands of requests per minute.
- Authored 11+ canonical High-Level Designs spanning Billing, Debts Hub, Commercial License Revamp and Dashboard, Reference Data Management, BNPL, POI and Event Distribution, Building License Revamp, and Centralized Database Decomposition.
- Designed the event-driven Debts Hub gating Balady service issuance on outstanding-debt resolution; replaced REST callbacks with event-driven messaging for reliable, replayable delivery of payment confirmations.
- Authored the hybrid-cloud DMS Migration HLD — a multi-terabyte, multi-million-record migration from on-premise file storage to cloud object storage (in-region) over a secure site-to-site tunnel, using Strangler Fig with per-document backend-flag tracking for a zero-downtime cutover.
- Architected the Balady+ Mini-Apps Platform — permission-bridge runtime, a multi-stage CI/CD pipeline (scan, compliance, automated and manual review, approval gate, post-deploy validation), and a two-tier identity model (basic OTP / high-assurance SSO) with per-app, mini-app-scoped encryption keys.
- Designed the Reference Data Management platform and the Commercial Licenses Dashboard — transactional outbox with RabbitMQ Streams for cache invalidation, MongoDB and Redis read-through, mobile offline bundle;

real-time Elasticsearch and ArcGIS replication with a multi-day replay window, scoped through government SSO claims.

- Authored the POI Platform and Event Distribution Hub and the Centralized Database Decomposition HLDs — outbox-pattern delivery gated through the API gateway for PDPL filtering, consent validation, and commercial-terms enforcement; phased decomposition via CDC, Kafka, Airbyte/DBT with Grafana/Prometheus monitoring.
- Co-architected the centralized Notification Hub and led Camunda BPM adoption — multi-channel dispatch with persist-before-dispatch invariants and bounded retry; open-source BPMN/DMN deployment piloted on the Government Approval Portal for the Constructions and Commercial Revamp programs.
- Drove platform-wide observability, governance, and infrastructure: established the Unified Logging Framework across Java, .NET, Angular, and Apigee; deployed self-managed Sentry on Kubernetes with a full penetration-test evidence chain; authored two governance frameworks (Architecture Contribution and Review); designed Kubernetes cluster sizing for staging, DevOps, and on-premise IoT workloads; reviewed vendor architecture submissions for pavement-asset programs.

Cloud Solution Architect / Tech Lead — IBM, KSA and Egypt — 2016–2024

- Designed and implemented cloud-native microservices solutions for clients across banking (First Abu Dhabi Bank), retail (Nike), healthcare (Dubai Health Authority), and HR/SaaS platforms; also delivered an Oracle ERP (E-Business Suite) implementation for the telecom operator Orange.
- Led digital-transformation initiatives decomposing monolithic applications into microservices on OpenShift, maintaining robust CI/CD pipelines and high availability.
- Implemented PCI-compliant user-data handling and DataPower integration scripts for First Abu Dhabi Bank's KSA backend.
- Integrated ERP systems with IBM Watson through SOA Suite, enhancing business-intelligence capabilities.
- Optimized production performance for high-capacity loads; facilitated agile ceremonies and led development teams to sprint and PI goals; coached junior engineers on cloud-native best practices.
- Prepared prototypes, demos, and technical proposals for stakeholders across the full SDLC.

Technical Consultant — Raya International Service (RIS), Cairo — 2014–2016

- Upgraded custom solutions for compatibility with Oracle EBS R12 (from R11), including the Letter-of-Guarantee and Letter-of-Credit modules.
- Developed Java programs interfacing with Oracle Database; performed financial data analysis and reporting.

Selected Projects (Balady ecosystem, NHCI)

- **Balady Billing System** — canonical microservices payments ensemble with saga-style compensation, dual verification on every gateway callback, and circuit breakers on every external dependency. Apigee, Spring Boot on Kubernetes, Kafka, Oracle 19c, Redis Cluster.
- **Debts Hub** — centralized debts substrate gating service issuance on outstanding-debt resolution; event-driven consumption replaced REST callbacks, eliminating a class of failure via a self-healing reconciler.
- **Balady+ Mini-Apps Platform** — container-based mini-apps with a permission-bridge runtime, a multi-stage CI/CD gate, and two-tier identity (basic OTP / high-assurance SSO) with per-app, mini-app-scoped encryption keys.
- **Commercial Licenses Dashboard** — real-time monitoring for government employees across Saudi municipalities; event-driven replication into Elasticsearch and ArcGIS Server via RabbitMQ Streams with replay.
- **Reference Data Management (RDM)** — single governed source of truth for translations and cross-system code mappings; transactional outbox, MongoDB and Redis read-through, BFF aggregation, mobile offline bundle.
- **Notification Hub** — centralized multi-channel notification platform (SMS, mobile push, web) with persist-before-dispatch invariants, bounded retry, and per-channel queue isolation.
- **BNPL Integration** — Buy-Now-Pay-Later integration in the Unified Payment Page with a signed-webhook security stack (HMAC-SHA256, IP allow-listing, replay protection, idempotency) and encrypted single-use presigned URLs.
- **POI Platform and Event Distribution** — centralized point-of-interest system with multi-precision geohash, Redis geospatial cache, and Esri Geodatabase; PDPL filtering, consent validation, and attribute redaction enforced at the gateway.

Certifications

- AWS Certified Solutions Architect — Associate
- Red Hat Application Development II: Implementing Microservices
- Java SE 8 Programmer I (1Z0-808)
- Oracle Certified Professional (OCP 1Z0-141, 1Z0-147, 1Z0-051)

In progress: Arcitura Digital Transformation Solution Architect · AWS Certified Solutions Architect — Professional · Advanced Kubernetes Administrator training

Education

- **Bachelor's Degree in Accounting**, Mansoura University, 2008–2012
- AWS Web Services Boot Camp · Oracle Developer Diploma · Java SE Programming and ADF I

Languages

Arabic (native) · English (very good)