

AHMED SHALABY

SENIOR SOLUTIONS ARCHITECT · Multi-Cloud · Domain-Driven Design · Event-Driven Architecture

PROFILE

Senior Solutions Architect with **12 years** delivering cloud-native, microservices-based platforms across government, banking, retail, and healthcare. At **NHCI (National Housing Company Innovation, 2024–present)** I lead architecture for **~15+ systems** in the Balady citizen super-app ecosystem — payments, debts, notifications, mini-apps, identity, GIS, document management, BNPL, and infrastructure substrate. Authored **11+ canonical High-Level Designs** that are now the agreed architecture across engineering teams. Strong on **Domain-Driven Design** (six-bounded-context decompositions), **C4 modelling** as living architecture, **event-driven workflows** (RabbitMQ Streams · Kafka · Debezium CDC), and **hybrid-cloud transitions** (on-prem Kubernetes <-> OCI Object Storage). Currently pursuing **Arcitura Digital Transformation Solution Architect** and **AWS Solution Architect — Professional** certifications.

CONTACT

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LANGUAGES

Arabic: Native Speaker

English: Very Good

REFERENCES

- Lead solutions architect
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- Project Manager
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SKILLS

- **Architecture & design** C4 modelling · Domain-Driven Design (DDD) · Event-driven architecture · Saga / outbox / CDC patterns · Strangler Fig migration · BFF (Backend for Frontend) · Multi-tenant + multi-region · Hybrid-cloud · arc42 · ADRs as living artefacts
- **Cloud & containers** Kubernetes · OpenShift · OCI Object Storage · AWS · Azure · IBM Cloud · Apigee API Gateway · Service mesh · Helm · GitOps
- **Backend** Java 17 (Spring Boot · Micro-Profile) · Node.js (Express · NestJS) · ASP.NET Core · .NET Core · Python · Go
- **Data & messaging** PostgreSQL · Oracle 19c · MongoDB · Redis Cluster · Elasticsearch · ArcGIS / Esri · TimeScaleDB · RabbitMQ · RabbitMQ Streams · Apache Kafka · Debezium · Airbyte · DBT
- **Workflow & rules** Camunda BPMN/DMN (Self-Managed Community + Enterprise) · Saga compensation · Custom rule engines
- **Observability & quality** Sentry Self-Managed · ELK Stack · Prometheus · Grafana · Jaeger · OpenTelemetry · SonarQube · Trivy · Clair · ClamAV
- **Identity & compliance** OAuth 2.0 / OIDC · JWT · Nafath SSO · MOMAH SSO · PCI DSS · GDPR · PDPL data masking · Sanitisation patterns
- **Frontend** Angular 8+ · Carbon Design System · Flutter · Mobile Server-Driven UI (SDUI) · Razor / Blazor
- **DevOps & tooling** Azure DevOps / TFS · Jenkins · GitHub Actions · F5 LB · NGINX · Pandoc · PlantUML · Structurizr · drawio

CERTIFICATIONS

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

PROFESSIONAL DEVELOPMENT

- Currently pursuing **Arcitura Digital Transformation Solution Architect** certification
- Preparing for **AWS Solution Architect Professional** certification
- Advanced Kubernetes Administrator training

WORK EXPERIENCE

NATIONAL HOUSING COMPANY INNOVATION (NHCI) 2024-PRESENT

selected highlights:

- Led the Domain-Driven decomposition of the Commercial License monolith into six bounded contexts (Approval, User, Commercial, Location, Invoice, Salama) on Camunda BPMN/DMN — now the agreed target architecture. Produced ADRs, C4 diagrams, and a Self-Managed staging cluster targeting 4–8K req/min.
- Authored 11+ canonical High-Level Designs spanning Billing, Debts Hub, Commercial License Revamp + Dashboard, RDM, BNPL, POI + Event Distribution, Building License Revamp, and Centralized DB Decomposition.
- Designed the event-driven Debts Hub gating Balady service issuance on outstanding-debt resolution; replaced REST callbacks with RabbitMQ after resilience issues on the payment-confirmation flow, eliminating that failure class.
- Authored the hybrid-cloud DMS Migration HLD — multi-terabyte, multi-million-record migration from on-prem NFS to OCI object storage (in-region) over site-to-site IPSec VPN, using Strangler Fig + per-document backend-flag tracking for a zero-downtime cutover.
- Architected the Balady+ Mini-Apps Platform — JS Bridge runtime, a 9-stage CI/CD pipeline (scan → compliance → manual review → security gate → registry → K8s deploy → post-deploy validation), and a two-tier identity model (Mobile OTP / Nafath SSO) with per-app encryption keys in the SSO token.
- Designed the Reference Data Management platform and the Commercial Licenses Dashboard — transactional outbox + RabbitMQ Streams for cache-invalidation only, MongoDB + Redis read-through, mobile offline bundle; real-time Elasticsearch + ArcGIS replication with 7-day replay, scoped through MOMAH SSO claims.
- Designed the Balady–AlRajhi BNPL integration for the Unified Payment Page — multi-provider architecture with signed-webhook intake via Apigee and encrypted single-use presigned URLs.
- Authored the POI Platform + Event Distribution Hub and the Centralized DB Decomposition HLD — outbox-pattern delivery gated through Apigee for PDPL filtering, consent validation, and commercial-terms enforcement; phased DB decomposition via Debezium CDC + Kafka + Airbyte / DBT with Grafana / Prometheus monitoring.
- Co-architected the Notification Hub (UCNS) 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 MOMAH's Unified Logging Framework across Java, .NET, Angular, and Apigee; deployed self-managed Sentry on K8s with full PT evidence chain; authored two governance frameworks (Architecture Contribution & Review V1.0, Technology Assessment & Decision V1.0); designed K8s cluster sizing for staging/DevOps and Sadeem IoT full on-prem V2 (approved over the vendor-cloud plan for data-

sovereignty); reviewed vendor architecture submissions for Pavement Asset Maintenance and Road Pavement & Assets.

INTERNATIONAL BUSINESS MACHINE (IBM) 2016-2024

Cloud Solution Architect / Tech Lead

- Designed and implemented software solutions for clients across various industries, with focus on cloud-native microservices architecture
- Led digital transformation initiatives, including decomposition of monolithic applications to microservices architecture
- Facilitated agile ceremonies and provided leadership to development teams, ensuring sprint and PI goal achievements
- Optimized production performance for high-capacity loads, leveraging agile principles for continuous improvement
- Implemented services on OpenShift cluster, maintaining robust pipeline operations and high availability
- Integrated ERP systems with Watson through SOA Suite, enhancing business intelligence capabilities
- Coached and mentored junior team members, promoting best practices in cloud-native development
- Prepared prototypes and demos for stakeholders, facilitating solution visualization and approval
- Demonstrated strong knowledge of source code management and code migration tools
- Participated fully in all phases of the software development life cycle (SDLC)

RAYA INTERNATIONAL SERVICE (RIS)

2014-2016

Technical Consultant

- Upgraded custom solutions for compatibility with Oracle EBS R12 from version 11
- Upgraded modules from 11 to 12 (Letter of guarantee, Letter of credit)
- Developed Java programs for interfacing with Oracle database
- Performed financial data analysis and reporting

KEY PROJECTS

BALADY BILLING SYSTEM

Canonical microservices ensemble for NHC-integrated payment processing, points conversion, and wallet management. 13 services with saga-style compensation, dual-verification on every NHC callback, and circuit breakers on every external dependency. Apigee · Spring Boot on K8s · Kafka · Oracle 19c · Redis Cluster.

DEBTS HUB

Centralized debts substrate gating Balady service issuance on outstanding-debt resolution. Replaced REST-based confirmations with RabbitMQ after resilience issues on the payment-confirmation flow, eliminating that failure class. 7 internal containers.

BALADY+ MINI-APPS PLATFORM

Container-based mini-apps with a JS Bridge runtime, 9-stage CI/CD pipeline (image pull → security scan → compliance → automated test → manual review → approval gate → registry → deploy → post-deploy validation), and two-tier identity (Mobile OTP / Nafath SSO) with per-app encryption keys in the SSO token.

DMS MIGRATION (HYBRID-CLOUD)

Multi-terabyte, multi-million-record dataset migrated from on-prem NFS to OCI object storage (in-region) over site-to-site IPsec VPN. Strangler Fig pattern with per-document backend-flag tracking in Oracle metadata; pilot product as the first cut.

COMMERCIAL LICENSE REVAMP

Multi-month program decomposing the monolith into 6 DDD bounded contexts (Approval, User, Commercial, Location, Invoice, Salama). Camunda BPMN/DMN approval workflows; RabbitMQ payment-confirmation flow with the Billing System; ELK + Prometheus / Grafana + Jaeger / OpenTelemetry observability. Same Camunda-based approach applied to the parallel Building License Revamp.

COMMERCIAL LICENSES DASHBOARD

Real-time monitoring platform for government employees across Saudi municipalities. Event-driven replication from Commercial Domain into Elasticsearch (search, KPIs, prohibition flags) and ArcGIS Server (spatial / radius search) via dedicated RabbitMQ Streams with replay capability. MOMAH SSO three-tier scope.

REFERENCE DATA MANAGEMENT (RDM)

Single governed source-of-truth for translations + cross-system code mappings across .NET MVC, SPA + .NET BFF, mobile, Java services, and partner integrations. Transactional outbox + RabbitMQ Streams (cache-invalidation only — RDM never writes to consumer DBs); MongoDB + Redis

read-through; BFF page-level aggregation; mobile offline bundle. Pilot: healthcertificate.

NOTIFICATION HUB

Centralized notification platform: ingest → templating → per-channel dispatch (SMS / mobile / web) with persist-before-dispatch invariants, bounded retry, and per-channel RabbitMQ queues isolating channel pressure. MongoDB notification store.

CENTRALIZED DB DECOMPOSITION

Platform-level proposal decomposing a shared database into per-business-domain stores via Debezium CDC + Kafka + Airbyte / DBT, with phased migration and Grafana / Prometheus monitoring.

CAMPAIGN CENTRAL

Centralized campaign management for Balady Bu subscriptions, AI-driven recommendations (mediated by aSanitisation Service for PDPL compliance), POI + GIS integration, notifications, analytics. Per-domain databases · 3 RabbitMQ queues.

POI PLATFORM & EVENT DISTRIBUTION

Centralized Point-of-Interest system with multi-precision geohash + Redis geospatial cache and ESRI Geodatabase as authoritative store. Authored the EDH counter-proposal routing Pgee for PDPL filtering, consent validation, attribute redaction, and commercial-terms enforcement before delivery to internal and external commercial vendors.

NIKE

- Contributed to development, designing features to meet PI and sprint goals
- Implemented clean code solutions and enhanced performance of existing features
- Resolved production issues using Agile methodologies with root cause analysis
- Optimized system for high-capacity loads and streamlined deployment processes

HR PROMOTION TOOL

- Supported digital transformation initiatives, implementing features aligned with PI and sprint goals
- Enhanced performance of existing functionalities with clean, efficient code
- Participated in production issue resolution with in-depth root cause analysis
- Implemented services on OpenShift cluster with robust pipeline operations

I ESTIMATE TOOL

- Understood customer business needs and technical requirements
- Provided technical expertise on microservices architecture and design
- Created technical proposals outlining benefits of microservices

- Transformed manual Excel processes into an automated, navigable system

DUBAI HEALTH AUTHORITY (DHA)

- Contributed to digital transformation of application architecture using microservices
- Selected and implemented appropriate technologies for each microservice
- Designed backend services enhancing transnationality between web UI and services
- Developed self-assessment service with custom process rule engine for dynamic configuration

FIRST ABU DHABI BANK (FAB)

- Supported KSA backend team to deliver sprint goals and implement new security measures
- Developed DataPower scripts for integration between external systems
- Implemented secure user data handling with PCI database in data power
- Created and maintained services pipelines for continuous delivery

PANORAMA

- Led digital transformation to microservices architecture
- Developed dynamic new app interface
- Deployed updated asset on cloud OpenShift Cluster
- Updated data models for enhanced user customization

L2C

- Transitioned monolithic application to microservices architecture
- Designed and implemented Spring Boot services for new components
- Enhanced scalability and efficiency through microservices system
- Published created components on nexus server for node package manager and maven repositories

ORANGE

- Developed RESTful APIs for service integration
- Implemented security protocols for data protection
- Created microservices for customer management system
- Optimized database queries for improved performance

EDUCATION

- **AWS Web Services Boot Camp**
- **Oracle Developer Diploma**
- Java SE programming & ADF I
- **Mansoura University (2008-2012)**
Bachelor Degree of Accounting

Last Updated

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